Australian **triage** process review

Contents

Contents (cont"d)

Version	Date	Comment
1.0	*04/04/2011*	*Draft Final Report submitted to NSW Health for comment*
1.1	*05/04/2011*	*Draft Final Report submitted to NSW Health with revisions based on feedback.*
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Glossary

ACEM	Australasian College for Emergency Medicine
ACEN	Australian College of Emergency Nursing
ACEP	American College of Emergency Physicians
AHMAC	Australian Health Ministers' Advisory Council
AIHW	Australian Institute of Health and Welfare
ATPR	Australian Triage Process Review
ATS	Australasian Triage Scale
BSL	Blood Sugar Level
CALD	Culturally and Linguistically Diverse
CENA	College of Emergency Nursing Australasia
CIN	Clinical Initiatives Nurse
CENNZ	College of Emergency Nursing New Zealand
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CRG	Clinical Reference Group
CTAS	Canadian Triage Acuity Scale
DNW	Did not wait for treatment in ED
DoHA	Department of Health and Ageing
ECG	Electrocardiograph
ED	Emergency Department
EDIS	Emergency Department Information System
ESI	Emergency Severity Index
ESSU	Emergency Short Stay Unit
ETEK	Emergency Triage Education Kit
GP	General Practitioner
LAOR	Left ED at own risk after treatment started
HPPPC	Health Policy Priorities Principal Committee
LOS	Length of Stay
MHTS	Mental Health Triage Scale
MOC	Model of Care
MTS	Manchester Triage Scale
NNAPEDCD	National Non-admitted Patient Emergency Department Care Database
NTS	National Triage Scale
NZ	New Zealand
PECC	Psychiatric Emergency Care Centre
STEMI	ST-Elevation Myocardial Infarction

Executive summary

Aims of the Australian Triage Process Review project

Health specialists and government organisations have recognised a need to review the current Australian triage process and system[1,2,3] to assess whether the process supports the clinical prioritisation of patients, needs of the community, and management of patients presenting for emergency care, and whether the system supports service planning and resource management in Emergency Department (ED).

Australian EDs face ongoing challenges that affect service delivery and have led to a change in the triage process. Increasing interventions, at triage and in the waiting room, place additional pressure on the role of triage. With the introduction of new ED models of care and increasing patient complexity, there is a need to better understand what happens at triage and what opportunities are available to improve the patient experience.

This Final Report has been prepared for the Health Policy Priorities Principal Committee (HPPPC) of the Australian Health Ministers Advisory Council (AHMAC), and is the culmination of consultation activities carried out as part of the Australian Triage Process Review (ATPR) project. The report describes the methodology used and the review's findings.

The ATPR project reviewed the triage process in Australian EDs to understand:

- current triage practices
- streaming into ED models of care
- the need for complexity tools at triage.

The ATPR project was initially intended to review the Australasian Triage Scale (ATS) and triage process associated with its application. However, it was recognised that the Australasian College for Emergency Medicine (ACEM) was already conducting an ATS review. Hence, in consultation with the ATPR project Steering Committee and with endorsement from the HPPPC, it was agreed to change the ATPR project focus. While the ATS was not the major focus of the project, it was inevitable that its role would be considered in a review of the triage process and the project would make recommendations to ACEM for consideration in their review.

The key outcome of the ATPR project is:

- a set of recommendations for the future development of triage processes that facilitate and support streamlining the triage role, streaming and complexity principles, triage education and competency, quality and performance monitoring, improving the patient experience, an ATS revision, and research opportunities.

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[1] Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals, 2008 - Overview Published 27 November 2008. Retrieved from http://www.lawlink.nsw.gov.au/Lawlink/Corporate/ll_corporate.nsf/vwFiles/E_Overview.pdf/$file/E_Overview.pdf Last accessed January 2011.

[2] Broadbent, M., Creaton, A., Moxham, L. & Dwyer, T. (2010). Review of triage reform: the case for national consensus on a single triage scale for clients with a mental illness in Australian emergency departments. *Journal of Clinical Nursing,* 19, (5-6), 712–715.

[3] FitzGerald, G., Jelinek, G., Scott, D. & Gerdtz, M.F. (2010). Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92.

Approach to ATPR project

The ATPR project took a multifaceted approach to gathering data for analysis. This included:

- A Steering Committee of jurisdictional nominees experienced in the provision of emergency care, who provided cross-jurisdictional oversight of the project and direction for the review, and validated recommendations for the report.

- A national Clinical Reference Group (CRG) comprising clinicians with expertise in emergency care. This expertise included all aspects of triage, education and research, advanced/extended skills development for emergency nurses, determinants of complexity, paediatrics and mental health. The CRG helped focus the review and validate findings and recommendations for the future of triage in Australia. The second CRG meeting also included expertise from New Zealand.

- Consultation with emergency care Colleges to provide professional insight and guidance. This consultation was particularly relevant to the inclusion of the ATS in the review. College representatives guided the development of questions for the data collection tools and participated in the second CRG meeting.

- A literature review to identify the key challenges in EDs internationally, the triage scales, and the models of care used in EDs to support the triage process. This literature review was enhanced via international consultation with the United States, United Kingdom, New Zealand and Canada.

- An ED survey administered online to EDs in Australia and NZ. The survey yielded 180 responses from 87 EDs, and gathered information about triage processes, ED models of care, staffing to support triage, the use of the ATS and its strengths and weaknesses.

- An operational review, consisting of site visits to 16 EDs nationally – a total of 280 ED staff were consulted through focus groups, interviews and process mapping sessions. Triage processes were observed for 316 triage episodes during the site visits.

- Consultation with consumer representatives to understand the patient experience. This consultation was supported by a review of academic literature, reports and satisfaction surveys from local EDs, state health departments and from international satisfaction surveys. While the ATPR project set out to gather meaningful information about the patient experience of triage, data was limited for analysis in this report. Hence recognising the importance of the patient experience, there is an opportunity to conduct further research into this area.

   In examining the triage process it is important to understand that triage is affected by what is happening both in the ED and in the rest of the hospital. When referring to models of care we are describing the way in which the health services are delivered. Some examples of models of care identified throughout the review include fast track, short stay units and medical assessment units.

Findings of the operational review

The data gathered during the site visits was analysed according to factors that influence triage, as follows:

- the ED profile
- factors that affect the triage role
- the process of triage.

ED profile:

- EDs with higher activity tended to have more models of care in place – fast track and short stay units were most common.

- There was no indication that the models of care in place influenced the proportion of triage categories assigned.

- Presentations to the ED via ambulance tended to be for higher acuity, category 1, 2 and 3 patients.

Factors that affect the triage role:

- ED activity did not directly influence the number of staff at triage, with the exception of the afternoon shift (busier period of the day) where the number of staff increased in those EDs with high activity.

- EDs with fewer models of care had a greater number of triage nurses on the afternoon shift.

- 75 % of EDs use the Emergency Triage Education Kit (ETEK) to support triage education.

- Nurses with 5-10 years experience were most consistent in completing triage within the Australasian College for Emergency Medicine (ACEM) recommended 3-5 minutes.

- Timeframe for triage was shortest for category 1 patients, taking on average 3 minutes.

- Total triage time was longest for category 3 patients, taking on average 6 minutes. This group also had the greatest number of interventions and delays at triage. Category 3 patients were described as the most difficult triage decisions, and triage times were longer as staff collect additional information to assist that decision-making.

- Ambulance presentations took approximately 6.5 minutes to triage compared to approximately 5 minutes for walk-in patients.

- Time taken to triage increased in line with increases in the number of interventions, vital signs, interruptions and delays. Triage nurses were interrupted most frequently by phone calls unrelated to the current triage.

- Quality audits of triage were not consistently carried out in EDs and there was no standardised tool used for auditing purposes.

Triage process:

The triage process looked at the factors that affect the flow of patients from entry at triage, through the ED and to other services. These factors included triage innovations and challenges, the triage environment, the ATS, streaming and complexity, performance measures and the patient experience.

Factors that assisted the flow of patients were:

- The triage nurse is one of the most experienced clinical nursing staff in ED, with an important role in communication, risk assessment and clinical prioritisation of patients.

- Models of care in place in ED assist the triage role.

- Pre-hospital triage assists with patient flow for some patient groups - ambulance paramedics are taking a greater role in pre-hospital triage and referral to definitive care pathways eg ST-Elevation Myocardial Infarction (STEMI) patients.

- Clear and concise signage is important to help patients find their way and to provide information about what to expect in an ED and at triage.

- The triage area should provide safety for staff and enable clear communication to facilitate patient assessment.

- The ATS is a readily understood tool that caters well for the identification of higher acuity patients.

- The strength of the ATS is that it provides a common language to all staff working in the ED.

- The ETEK mental health guidelines are used by most EDs visited.

- Streaming to models of care was in place in many EDs, with most streaming by complexity.

Factors that impeded the flow of patients were:

- The ATS is considered limited when triaging paediatric and lower acuity patients and is not an accurate indicator of patient complexity.
- Adjunct triaging tools to stream patients to mental health services are not used consistently in EDs.
- No formalised complexity criteria were used and decisions were made based on the triage nurse‟s experience and critical decision-making. It was agreed during the site visits that a set of complexity principles would be most effective in supporting triage decision-making.

Other aspects of the triage process that were considered are:

- „Triage to treatment time‟ as a performance measure demonstrates only one aspect of an ED‟s performance. A more complete view would be obtained when treatment times are combined with other quality and outcome measures.
- The definition of „triage to treatment time‟ needs revising, as reporting varied between individual EDs and jurisdictions, and was influenced by the interpretation of the definition.
- ED characteristics such as activity and models of care can affect the ED‟s ability to meet „triage to treatment times‟, therefore benchmarking between non-peer group EDs was considered inaccurate.

The patient experience:

- The patient experience of an ED is an important aspect of the triage process.
- Patient satisfaction improves as patients are given information about what to expect when presenting to an ED for treatment.
- Tolerance for waiting is influenced by a patient‟s need to be kept informed of expected wait times, and updated as these times change.
- As an expert in triage and assessment, the triage nurse plays a key role in alleviating fear and anxiety while a patient waits for treatment.
- The term „triage‟ is generally understood, but jurisdictional awareness raising programs and local information strategies would increase the consumer‟s understanding.

Recommendations

The information collected and synthesised as part of the ATPR project has allowed the project team to develop a set of recommendations that can be considered by the emergency community and Colleges, and by state and territory governments. These recommendations are listed below.

Recommendation 1: To promote national consistency in addressing triage challenges and facilitating improvements, it is recommended that a collaborative approach be taken by engaging the Cross Jurisdictional Clinical Advisory Group (CJCAG) of AHMAC to drive the implementation of recommendations from this project. It is recognised that there may need to be redefinition of CJCAG and that a balanced membership of medical and nursing clinicians is required for this work. Membership also requires representation from each emergency care college and jurisdiction.

For Recommendation 1, to reduce duplication of emergency care committees and agendas, the project team consider the best approach is to utilise this existing Clinical Advisory Group.

Recommendation 2: The role of triage should be streamlined with a return to the core purpose of triage, that is, to assess and clinically prioritise patients. It is recommended that this streamlining and redefinition be carried out by the CJCAG to facilitate a nationally consistent approach.

Recommendation 3: To support Recommendation 2, a consistent approach should be taken to allow the reallocation of tasks that are outside the core role of triage. This should include process redesign, tailored to the ED based on demand, available resources, and models of care in place.

For Recommendations 2 and 3, once a national triage role redefinition is complete, EDs can consider their own workforce and models of care and develop local guidelines for the triage role. The redefined role should also be included in a revision of the existing triage position statement and guidelines from CENA and ACEM respectively.

Recommendation 4: ACEM in collaboration with College of Emergency Nursing Australasia (CENA) and the Australian College of Emergency Nursing (ACEN) should review:

- the ATS as a five point scale
- the appropriateness of timeframes assigned to each category and the thresholds for triage performance so that they are related to clinical outcomes for patients
- revision and clarification of criteria for allocation of patients as triage category 3.

For Recommendation 4, the ATS is validated as a five point scale and has been modelled internationally. Without further review of the ATS no recommendation can be made to change the scale or associated timeframes.

Recommendation 5: Principles should be developed to guide assessment of patient complexity, and these principles should complement the ATS and support decision-making and streaming of patients at triage. It is recognised that the development of these principles will require widespread consultation to facilitate national consistency, and to then allow adaptation at a state-wide or individual hospital level.

For Recommendation 5, triage nurses use critical thinking to make complexity-based decisions at triage. Complexity principles included in a national triage education program can provide a standardised approach to these triage decisions.

Recommendation 6: Patients should be streamed from triage and the principles in Recommendation 5 should also facilitate streaming of patients to appropriate models of care in the ED, as well as those outside ED such as medical assessment units. To facilitate a mechanism for sharing information about streaming guidelines, a nationally accessible information repository or website should be considered.

Recommendation 7: In EDs where streaming to models of care is carried out, consideration should be given to alternative treatment strategies (such as order of arrival). It is recognised that development of models of care for streaming will not be suitable for all EDs.

Recommendation 8:

A. Experienced Registered Nurses should continue to carry out the role of triage.

B. The ETEK program should be revised to incorporate geriatrics and complexity principles, and to enhance the paediatric and mental health components. This revised ETEK should be endorsed by the nursing and medical emergency care Colleges and each jurisdiction as the minimum competency level for all triage nurses. Once endorsed, this will facilitate a nationally consistent and recognised approach to developing triage competency among nursing staff and enable movement of nurses across jurisdictions.

Recommendation 9:

A. A nationally consistent quality audit tool should be developed for triage to enable EDs to carry out appropriate and meaningful review of the triage process.

B. Once developed, this quality audit tool should form part of ETEK and be introduced in EDs as a component of the education program.

Recommendation 10: The National Health Information Standards and Statistics Committee (NHISSC) and the National E-Health Information Principal Committee (NEHIPC) should review and clarify the ED triage data definitions to enable consistent national reporting.

Recommendation 11: „Triage to treatment times" should continue to be measured as an important process and quality measure of EDs. However, government and other regulatory bodies should adopt other key measures of quality, process and patient experience across the whole ED patient journey.

For Recommendation 11, „Triage to treatment times" only considers one aspect of an ED and does not measure triage performance. The inclusion of quality, process and outcome indicators, developed using best available evidence, can provide a more accurate picture of ED performance.

Recommendation 12: Jurisdictions should continue to inform and raise awareness of the role of Emergency Departments and triage with the general public and the wider medical community. This will assist in setting realistic expectations about what should happen during the ED visit.

Recommendation 13: Quality of the ED experience is an important indicator of the quality of service delivery. The measurement of patient experience and staff satisfaction should be carried out on a continuous basis as a core part of an ED‟s quality measures.

Introduction to the final report

1

1.1   About the project

EDs provide high profile services, and are a core part of the public health system. There is international commitment to improving the patient‟s experience through the health system and to maximising the safety, quality and efficiency of emergency care. In a context of increasing ED demand one of the major challenges facing modern EDs is how to provide emergency care that is appropriate to today‟s health landscape. Integral to this for each ED is prioritising the care to be provided and ensuring resources are available to provide that care.

Health specialists and government organisations have recognised a need to review Australia‟s current triage processes and system.[4,5,6] This need for review is to assess whether the triage processes support the clinical prioritisation of patients, the needs of the community, and the management of patients presenting for emergency care, and also whether they meet the needs of the ED in service planning and resource management.

The Australian Triage Process Review (ATPR) project was commissioned to undertake the review from the second of October to the 19th of May, and this is its final report.

1.2   Purpose

The purpose of the ATPR project was to review the current triage process in Australian EDs; identify opportunities for the triage process to be streamlined to meet the key challenges of the ED; support ED models of care and streaming into these models of care; and assess the need for complexity tools at triage.

1.3   Scope

The project‟s scope incorporated a review of:

- national and international literature concerning the challenges affecting EDs, alternative triage scales, and available triage methods
- national triage processes and the opportunities for streamlining the triage process (eg streaming to models of care)
- the timing of triage and the potential for a earlier formalised pre-hospital triage (eg ambulance service triage)
- guidelines for re-triage
- geographical location of triage in the hospital and concept of triaged patients moving to another area rather than back to the waiting room
- the word „triage‟ and its relevance for the wider community
- the benefits of a complexity tool to support ED streaming

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[4]   Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals, 2008 - Overview Published 27 November 2008. Retrieved from http://www.lawlink.nsw.gov.au/Lawlink/Corporate/ll_corporate.nsf/vwFiles/E_Overview.pdf/$file/E_Overview.pdf Last accessed January 2011.

[5]   Broadbent, M., Creaton, A., Moxham, L. & Dwyer, T. (2010). Review of triage reform: the case for national consensus on a single triage scale for clients with a mental illness in Australian emergency departments, *Journal of Clinical Nursing*, 19, (5-6), 712–715.

[6]   FitzGerald, G., Jelinek, G., Scott, D., & Gerdtz, M.F. (2010). Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92

- increasing complexity and needs of patients
- balancing of overarching triage policies and clinical prioritisation (eg chest pain)
- future of the ATS and its suitability for use in the future (eg in an environment of streaming patients to ED models of care).

While the role of the ATS within the triage process has been considered as part of this project, it was not the project''s major focus. The Australasian College for Emergency Medicine (ACEM) is currently in the process of conducting a review of the clinical appropriateness of the ATS categories, hence, in consultation with the ATPR project Steering Committee and with endorsement from the HPPPC, the focus of the project was changed to include the triage process only. This project and report may help to inform that ACEM review process through recommendations made.

1.4   Key outcomes of the project

This final report is the culmination of the consultations and activities of the ATPR project. The report describes the methodology and findings of the operational review, as well as its discussions and outcomes. The operational review was conducted to identify current triage process and practices, and to identify opportunities for best practice improvements in triage for EDs nationally.

The key outcome of the ATPR project is:

- a set of recommendations for the future development of triage processes that facilitate and support streamlining the triage role, streaming and complexity principles, triage education and competency, quality and performance monitoring, improving the patient experience, an ATS revision, and research opportunities.

1.5   Final report structure

The report is presented in the following sections:

Introduction – Section 1: a summary of the project and the final report.

Background – Section 2: an overview of EDs and triage systems used nationally and internationally, as well as the key challenges they face and the impact those challenges have on the ED and triage process. Section 2 also contains an overview of the triage process in Australia, the ATS, and triage scales internationally.

Approach– Section 3: the project methodology and approach to data collection and analysis. This section also details the ED stakeholders involved in the operational review.

Operational review – Section 4: the key findings and discussion from the site visits and operational review. The key themes and outcomes of the data analysis are presented and discussed in this section.

Recommendations- Section 5: the recommendations emerging from the review and evaluation of the triage process described in previous sections. Practical recommendations are provided to guide the next steps to improving triage practices nationally and to assist in informing the review of the ATS to be carried out by ACEM in collaboration with College of Emergency Nursing Australasia (CENA) and Australian College of Emergency Nursing (ACEN).

Background to the project

2

2.1 Challenges facing Australian EDs

Australian EDs are facing serious challenges that affect service delivery. An increasing rate of patient presentations, in combination with defined and limited hospital capacity and access block, results in ED overcrowding. The ongoing supply and retention of adequately trained registered nurses for triage is also a challenge for EDs, as experienced staff age and leave the workforce.

2.1.1 Demand and capacity

EDs have little control over the rate or number at which patients present. In recent times EDs have used historical data to predict presentation trends over time of day and seasonally, to plan for surges in demand. Despite this, major events requiring emergency services can quickly lead to sudden overwhelming demand in the ED, with a concurrent decrease in capacity. [7]

Changes in demography due to population growth, ageing and trends in burden of disease represent a fundamental driver of demand for emergency health services. From 2003-04 to 2008-09 there has been a 22% increase in ED presentations for all public hospitals in Australia.[8] From hospitals reporting to the National Non-admitted Patient Emergency Department Care Database (NNAPEDCD) in the past 5 years (2005 -2010), ED presentations are reported to have increased at an average rate of 4.9% a year. With the patient flow process beginning at triage, when EDs face increasing demand, the triage process therefore has the potential to create a bottle neck.[9]

EDs, like other hospital departments and units, have limited capacity. The ED capacity is further reduced by ‚boarding" admitted patients waiting for an inpatient bed, reducing the ability of staff to evaluate and treat new patients.[10] A point prevalence survey for ACEM estimated that caring for patients waiting for beds represents over one-third of ED workload in major hospitals.[11] This, plus increases in patient demand, places the ED at risk of overcrowding. ED overcrowding can result in long wait times for patients to be seen; ambulance bypass; patients spending longer periods in ED awaiting ward beds; and increasing clinical risks. [12]

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[7] FitzGerald, G., Jelinek, G., Scott, D., & Gerdtz, M.F. (2010). Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92

[8] NSW Department of Health: Triage Benchmarking Review, Deloitte October 2008

[9] American College of Emergency Physicians, (2006). Approaching full capacity in an emergency department: an information paper. Retrieved from http://www.acep.org/crowding/ Last accessed 12.01.2011

[10] Eitel, D.R., Rudkin, S.E., Malvehy, M.A., Killeen, J.P. & Pines, J.M. (2008). Improving service quality by understanding emergency department flow: a white paper and position statement prepared for the American Academy of Medicine. *Journal of Emergency Medicine*, 38(1), 70–79.

[11] Richardson, D (2009). Access Block Point Prevalence Survey 2009, *The Road Trauma and Emergency Medicine Unit, Australian National University, on behalf of the Australasian College for Emergency Medicine. Retrieved from* http://www.acem.org.au/media/Access_Block_Update_2009-2_201109_.pdf Last accessed 21/12/10

[12] Combs, S, Chapman, R. & Bushby, A. (2006). *Fast Track: One hospital's journey, Accident and Emergency Nursing*. 14, 197-203.

2.1.2 Workforce

Overcrowding in EDs has many negative effects on quality of care, patient satisfaction, and staff-related outcomes, including decreased productivity, poor morale, and staff dissatisfaction.[13,14] A literature review of access block and ED overcrowding concluded that the resulting work-related stress on ED staff was a key factor in staff choosing to decrease their clinical hours in emergency medicine, thus exacerbating workforce problems.[15]

Performing in the role of triage requires a specific level of knowledge, skill and experience, and an ability to make complex decisions using clinical reasoning. The triage process requires extensive knowledge and experience to deal with the clinical and resourcing complexities.[16] Education and succession planning are therefore an important part of facilitating and maintaining a sufficient supply of skilled triage staff in EDs.

2.2 Triage in Australia

2.2.1 The role of triage

ED triage helps manage the relationship between timeliness of care and resource availability.[17] It aims to align clinical services to the care needs of the patient, and to provide an effective tool for departmental organisation, monitoring and evaluation.[17]

Increased ED demand has been the catalyst for the evolution of the triage role. It has changed from a brief patient assessment and allocation of a triage category, to one that includes nurse-initiated investigations and treatments and the commencement of patient pathways. While clinical interventions were introduced at triage as a solution to increasing demand and long ED waits, the extended role of triage warrants further analysis and has therefore been an area of focus for this project.

In Australia, for nurses to be deemed competent at performing triage, they must meet a minimum set of standards and competencies. The CENA position statement was developed to define the role of the ED triage nurse and endorse a minimum set of required practice standards.[18] Those standards form the foundation of triage accreditation, although states and local health networks can add to or modify the requirements. CENA's minimum standards state that to perform in the role of triage a person must be a Registered Nurse (RN) with clinical expertise in emergency nursing.

Similarly, the ETEK (2009) states that a nurse performing triage must have an appropriate level of experience, training and supervision, and require specialised knowledge to perform in the role.

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[13] Wiler, J.L., Gentle, C., Halfpenny, J.M., Heins, A., Mehrotra, A., Mikhail, M.G. & Fite, D. (2010). Optimizing emergency department front end operations, *Annals of Emergency Medicine,* 55(2),142-160.

[14] Eitel, D.R., Rudkin, S.E., Malvehy, M.A., Killeen, J.P. & Pines, J.M. (2008). Improving service quality by understanding emergency department flow: a white paper and position statement prepared for the American Academy of Medicine. *Journal of Emergency Medicine*, 38(1), 70–79.

[15] Forero, R. & Hillman, K. (2008). Access Block and Overcrowding: A literature review. *Prepared for the Australasian College for Emergency Medicine (ACEM) by the Simpson Centre for Health Services Research South Western Sydney Clinical School University of New South Wales*, Retrieved from http://www.acem.org.au/media/media_releases/Access_Block_Literature_Review_08_Sept_3.pdf Last accessed 20 December 2010.

[16] Considine, J., Botti, M. & Thomas, S. (2007). Do knowledge and Experience have specific roles in triage decision-making? *Academic Emergency Medicine,* 14, 722-726.

[17] McCallum Pardey, T.G. (2006). The clinical practice of emergency department triage: application of the Australasian Triage Scale – An extended literature review Part 1: evolution of the ATS. *Australasian Emergency Nursing Journal,* 9, 155-162.

[18] College of Emergency Nursing Australasia, (2009). Position Statement, Triage Nurse. Retrieved from http://www.cena.org.au/documents/CENATriageNursePSJuly2009.pdf. Last accessed January 2011.

The ACEM has released policies and guidelines for triage in EDs.[19,20] ACEM states that all patients presenting to an ED should be triaged by a specifically trained and experienced RN.[19] In Australian EDs, the accredited triage nurse is expected, at a minimum, to undertake an assessment of the patient and allocate a priority category. The assessment should cover the presenting problem and general appearance of the patient, and may require physiological observations. ACEM also recommends that triage assessments should generally take 2 to 5 minutes and that vital signs should only be measured at triage if required to estimate urgency or if time permits.[20]

2.2.2 The Australasian triage scale

ACEM formalised and standardised the triage process by developing the ATS. The ATS is based on a revised version of the National Triage Scale (NTS) developed in the early 1990s. The revised triage scale was implemented in Australia and New Zealand in 2000.[21,22]

The ATS is a 5-point scale that is used by hospital-based emergency services throughout Australia and New Zealand[21] to help sort patients by clinical urgency.[22] It has also provided the foundation for other countries to develop their own triage scales; for example, the Manchester Triage Scale (MTS) in the UK and the Canadian Triage and Acuity Scale (CTAS).[23] Other countries such as Hong Kong and Belgium have subsequently implemented a 5-point triage scale.[22]

The ATS standardised approach to triage has been shown to facilitate equitable access to emergency care services based on urgency and regardless of patient demographics.[24] The 5-point scale consists of 5 categories, each of which correlates to an ideal maximum waiting time for a patient to be treated by a clinician. Patients are allocated a category based on their clinical urgency, and access to emergency treatment is prioritised accordingly. Performance indicator thresholds are also included in the ATS and these form the basis of performance reporting for EDs in Australia. Table 1 shows the ATS categories, correlating wait times and the performance indicator thresholds for each category.[23]

Table 1: The Australasian Triage scale

ATS category	Acuity (maximum wait time)	Performance indicator threshold standard
1	Immediate	100%
2	10min	80%
3	30min	75%
4	60min	70%
5	120min	70%

Source: FitzGerald *et al*, 2010, Emergency Department triage revisited.

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[19] Australasian College for Emergency Medicine, (2006). Policy on the Australasian Triage Scale. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/P06_Aust_Triage_Scale_-_Nov_2000.pdf Last accessed January 2011.

[20] Australasian College for Emergency Medicine, (2000). Guidelines on the implementation of the Australasian triage scale in emergency departments. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/G24_Implementation___ATS.pdf, Last accessed January 2011.

[21] Considine, J., LeVasseur, S.A. & Villanueva, E. (2004). The Australasian Triage Scale: Examining emergency department nurses' performance using computer and paper scenarios. *Annals of Emergency Medicine*, 44(5), 516-523.

[22] McCallum Pardey, T.G. (2006). The clinical practice of emergency department triage: application of the Australasian Triage Scale – An extended literature review Part 1: evolution of the ATS. *Australasian Emergency Nursing Journal*, 9, 155-162.

23 FitzGerald, G., Jelinek, G., Scott, D. & Gerdtz, M.F. (2010). Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92

24 Gerdtz, MF., Chu, M., Collins, M., Considine, J., Crellin, D., Sands, N., Stewart, C. & Pollock, W.E. (2009). Factors influencing consistency of triage using the Australasian Triage Scale: Implications for guideline development. *Emergency Medicine Australasia*, 21, 277–285.

2.2.3 The concept of urgency

A triage category is allocated based on the "need for time-critical intervention to improve patient outcome, potential threat to life, or need to relieve suffering" (Considine et al 2004, p 517).[25] The core criterion underlying the category decision is the „urgency" of the patient"s complaint and the nurse"s assessment of the time by which medical assessment should occur.[26] The category"s timeframe for treatment is not necessarily indicative of the severity of the illness. For example, conditions which may not be severe, such as a dislocated joint, may require more timely treatment than a severe illness for which the outcome of the illness is known and little can be done to change it.

Clinical and environmental factors also contribute to the urgency classification of a particular patient. The factors that influence urgency, including the circumstances of the illness and the perceptions of the patient and family, have been a driver for the ATPR project.[26] In recent years some highly publicised incidents in various jurisdictions across Australia have highlighted the evolving nature of public expectations and values relating to the quality of care.[27] These factors all contribute to the identified need to review the current triage process in Australia.

Determination of urgency criteria internationally

The urgency criteria assigned to each triage category differ across the world. All triage systems have been described as being based on the consensus opinion of nursing and medical experts. Clinical experts have designed decision trees to support clinical risk assessments or predictions of resource use to define urgency levels.[28]

In Australia the triage urgency criteria were first developed based on the observations and behaviours of triage nurses, where consistent and distinct actions followed nursing assessment.[29] These actions determined the urgency level of the patient in terms of how long they could wait to see a doctor. Further studies demonstrated the reproducibility and validity of the urgency scales which formed the basis of the NTS,[29] which was modified further to include performance standards that were „acceptable" to the community.

There is minimal evidence in the literature that provides a rationale for the differences in urgency categories and time scales internationally. Nor is there evidence about the clinical outcomes internationally of patients using the urgency criteria. It is clear therefore that to evaluate the appropriateness of these criteria, patient outcomes should be examined; however, the scope of this project – which is a review of the triage process – does not include clinical appropriateness of the scale. ACEM, CENA and ACEN and their clinical experts are best placed to undertake that aspect of the review.

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[25] Considine, J., LeVasseur, S.A. & Villanueva, E. (2004). The Australasian Triage Scale: Examining emergency department nurses' performance using computer and paper scenarios. *Annals of Emergency Medicine*, 44(5), 516-523.

[26] FitzGerald, G., Jelinek, G., Scott, D., & Gerdtz, M.F. (2010). Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92

[27] Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals, 2008 - Overview Published 27 November 2008. Retrieved from http://www.lawlink.nsw.gov.au/Lawlink/Corporate/ll_corporate.nsf/vwFiles/E_Overview.pdf/$file/E_Overview.pdf Last accessed January 2011.

[28] Moll, HA., 2010, Challenges in the validation of triage systems at emergency departments: commentary, *Journal of Clinical Epidemiology, 2010 63: 384 – 388.*

[29] FitzGerald, G., Jelinek, G., Scott, D., & Gerdtz, M.F. (2010). Emergency department triage revisited. *Emergency Medicine Journal*, 2010 27:86-92.

2.2.4 International triage

Outside Australia, the three most commonly described triage scales are the Manchester Triage Scale (MTS), Canadian Triage Acuity Scale (CTAS) and the Emergency Severity Index (ESI) from the USA. These scales are similar in that they are all 5-point scales based on urgency, although the timeframes vary.

- Manchester Triage Scale (MTS) – the time scales range from category 1 requiring immediate treatment, to category 5 which can wait up to 240 minutes for treatment. This is double the ATS category 5 of 120 minutes. The key difference from the ATS is the 52 flowcharts for different presentations, each designed to assist in the triage of a specific presenting complaint (eg head injury and cough). The system requires the triage nurse to access one of the 52 flowcharts, then assess the patient based on the key discriminators (life-threat, pain, haemorrhage, acuteness of onset, conscious level, temperature), then allocate a triage category accordingly.[30,31]

- Canadian Triage Acuity Scale (CTAS) – the time scales range from category 1 requiring immediate intervention, to category 5 up to 120 minutes (consistent with the ATS).[32] The CTAS defines category 2 as requiring intervention within 15 minutes, which is longer than the ATS"s 10 minutes. The CTAS also includes performance indicator thresholds that are used to measure the ability of an institution to meet required time-to-physician assessment. For example, 100% of category 1 patients should be seen immediately. Unlike Australia, these performance indicator thresholds are not used by the Canadian government to monitor an individual ED"s performance.

- Emergency Severity Index (ESI) – The ESI does not define time intervals for review by a physician and access to potentially lifesaving interventions. It provides a method for categorising ED patients by both acuity and resource needs, which is a unique feature of this tool.[33] After assessing for the most acutely ill patients (ESI level 1 and 2 patients), the algorithm directs the triage nurse to estimate how many resources will be needed to stream the patient to ultimate disposition.[30]

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[30] Simon, H.K., Ledbetter, D.A. & Wright, J. (1997). Societal savings by fast tracking lower acuity patients in an urban paediatric emergency department. *The American Journal of Emergency Medicine*, Vol. 15, pp. 551-554.

[31] van der Wulp, I, van Baar, ME., Schrijvers, AJP.2008, Reliability and validity of the Manchester Triage System in a general emergency department patient population in the Netherlands: results of a simulation study, *Emergency Medicine Journal* 2008 25: 431-434.

[32] Murray, M., Bullard, M., Grafstein, E. (2004). Revisions to the Canadian Emergency Department and Acuity Scale implementation guidelines. *Canadian Journal of Emergency Medicine*. 6 (6): 421-427

[33] Gilboy N, Tanabe P, Travers DA, Rosenau AM, Eitel DR. (2005). Emergency Severity Index, Version 4: Implementation Handbook. *Agency for Healthcare Research and Quality*. Publication No. 05-0046-2. Rockville, MD, May 2005.

2.3 The use of the ATS

2.3.1 Reliability/validity

The use of a 5-point triage scale appears to be the most valid method. Studies have reported a greater reliability with 4- and 5-level triage scales than with 3-level scales.[34,35,36,37,38] It has also been noted that a 5-point scale is more accurate and has less under- and over-triaging when compared to other scales.[38] In support of these findings, the four major formalised triage scales from around the world (ATS, MTS, CTAS and ESI) are 5-point scales.

The Victorian Department of Health conducted a literature review of the ATS in 2001. The review suggested that consistency in the application of the ATS varied depending on the specific clinical characteristics identified by the triage nurse and the type of patient presentation.[39,40] The ATS has been critiqued for its reduced ability to appropriately assess and triage specific groups of patients, specifically:

- mental health
- paediatric
- obstetric. [41,42]

Mental Health

There is growing evidence to suggest that triage nurses not specialised in the area of mental health can find triage of these patients challenging. Broadbent et al (2002) demonstrated that a 5-point Mental Health Triage Scale (MHTS) could be aligned to the ATS to support such nurses.[43] The results of that study demonstrated discrepancies between the triage of Mental Health patients when using the ATS alone compared to when using the MHTS. For example, of the patients allocated a category 4 using the ATS alone, 5.7% met the MHTS category 2 requirements and a further 55.7% met the MHTS category 3 requirements.[43] In a subsequent study, Broadbent et al (2007) defined the challenge associated with mental health triage tools as being the lack of a standardised approach to their use.[44]

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[34] Van der Wulpl, I., & Stel, H.F. (2010). Calculating kappa's from adjusting data improved the comparability of the reliability of triage systems: a comparative study. *Journal of Clinical Epidemiology*., vol. 63, no. 11, pp. 1256-63.

[35] Wulpl, I. & Stel, H.F. (2010). Calculating kappa's form adjusting data improved the comparability of the reliability of triage systems: a comparative study. *Journal of clinical Epidemiology*, vol. 63, no. 11, pp. 1256-63.

[36] Fernandes, C.M, Tanabe, P, Gilboy, N, Johnson, L.A, McNair, R.S, Rosenau, A.M, Sawchuk, P, Thompson, D.A, Travers, D.A, Bonalumi, N & Suter, R.E. (2005). Five-Level Triage: A Report from the ACEP/ENA Five-Level Triage Task Force, *Journal of Emergency Nursing*, 2005, vol. 31, no. 1, pp. 39-50

[37] Funderburke, P & Atlanta, G. (2008). Exploring Best Practice for Triage, *Journal of Emergency Nursing*, vol. 30, no. 2, pp. 180-182

[38] Travers, D.A, Waller, A.E, Bowling, J.M, Flowers, D & Tintinalli, J. (2002). Five-Level Triage System More Effective Than Three-Level in Tertiary Emergency Department, *Journal of Emergency Nursing*, vol. 28, no. 5, pp. 395-400.

[39] Victorian Department of Health (2001). Consistency of Triage in Victoria's Emergency Departments - Literature Review, 2001. Retrieved from http://archive.health.vic.gov.au/archive2006/hdms/litrev.pdf. Last accessed 14.01.2011

[40] Gerdtz, M.F, Chu, M, Collins, M, Considine, J, Crellin, D, Sands, N, Stewart, C. & Pollock, W.E. (2009). Factors influencing consistency of triage using the Australasian Triage Scale: Implications for guideline development. *Emergency Medicine Australasia*, 2009, 21 277-285.

[41] Durojaiye, L. & O'Meara, M. (2002). A study of triage of paediatric patients in Australia. *Emergency Medicine*, 14, 67–76.

[42] Broadbent, M; Moxham, L & Dwyer, T. (2010). Issues associated with the triage of clients with a mental illness in Australian emergency departments. *Australasian Emergency Nursing Journal*, 13(4) 117-123.

[43] Broadbent, M, Jarman, H & Berk, H. (2002) Improving competence in emergency mental health triage. *Accident and Emergency Nursing*, 10(3), 155-162.

[44] Broadbent, M, Moxham, L., & Dwyer, T. (2007). The development and use of mental health triage scales in Australia. *International Journal of Mental Health Nursing*, 16(6), 413-421.

A national MHTS has been recommended that can be used in Australian EDs.[44] The merits of adapting the ATS or using a separate MHTS are supported by a number of studies.[45,46,47,44]

Positive outcomes associated with the MHTS include improved competence and confidence of ED staff when triaging people with mental illness;[44] higher sensitivity in identifying patients who warrant urgent mental health intervention;[48] shorter „seen-by times";[47] and a reduction in the number of patients with psychiatric/psychosocial problems who left ED without being seen.[47]

Paediatrics

In Australia, the allocation of a triage category between adult and paediatric patients has been shown to be inconsistent.[49] A potential reason for this is the level of education, experience and training of the triage nurse.[49] Nurses not specifically trained in paediatrics may find triaging paediatric patients challenging due to lack of expertise in the physiological and cognitive differences in children. This potentially leads to children being allocated a lower priority triage category (category 5) less often.[49]

The reliability of the ATS for paediatric presentations was investigated by Van Veen et al (2008) and rated as „moderate" to „poor". The study showed the ATS rated the lowest when compared to the MTS, CTAS and ESI. The ATS does not include parameters or specific descriptors for paediatric patients, in contrast to other scales. For example, the CTAS has paediatric modifiers to assess physiological severity and temperature, pain, mechanism of injury and blood sugar level.[50] There is an opportunity to refine the ATS as a triage tool for paediatric patients, increase the awareness of serious paediatric indicators and allow for a more standardised triage approach for paediatric patients.[51]

Obstetrics

Obstetric patients in the ED are another group that has been investigated for appropriate triage allocation. Research has focused on the potential for poor recognition of the acuity of the presenting problem due to a lack of understanding of normal physiology in pregnancy. In a study by Gerdtz et al (2009) it was highlighted that pregnancy-related presentations have significantly lower levels of concordance with the ATS than other patient groups (adult pain).[52] Based on the study"s results, Gerdtz et al (2009) recommended that a pregnancy support tool be introduced into EDs.[52]

2.3.2 Alternative triage processes

One of the aims of the ATPR project was to evaluate the opportunities for alternative triage processes to meet the increasing complexity of ED patients. Alternative triage processes have the capacity to manage overcrowding, increase efficiency and streamline patient flow.

[45] Travers, D.A, Waller, A.E, Bowling, J.M, Flowers, D. & Tintinalli, J. (2002). Five-Level Triage System More Effective Than Three-Level in Tertiary Emergency Department. *Journal of Emergency Nursing*, 28(5) 395-400.

[46] **Victorian Department of Health (2001). Consistency of Triage in Victoria's Emergency Departments** - Literature Review, Retrieved from http://archive.health.vic.gov.au/archive2006/hdms/litrev.pdf. Last accessed 14.01.2011.

[47] McDonough, S, Wynaden, D, Finn, M, McGowan, S, Chapman, R. & Hood, S. (2004). Emergency department mental health triage consultancy service: an evaluation of the first year of the service. *Accident and Emergency Nursing*, 12(1) 31-38.

[48]   Patel, A. S, Harrison, A. & Bruce-Jones, W. (2009). Evaluation of the risk assessment matrix: a mental health triage tool. *Emergency Medical Journal*, 26, 11-14.

[49] Crellin, D.J. & Johnston, L. (2003), Johnston Poor agreement in application of the Australasian Triage Scale to paediatric emergency department presentations. *Contemporary Nurse*, 15(1-2), 48-60.

[50] Warren, D, Jarvis, A, LeBlanc, L & Gravel, J. (2008). Revisions to the Canadian Triage and Acuity Scale Paediatric Guidelines (PaedCTAS). *Canadian Journal of Emergency Medicine*, 10(3), 224-232.

[51] Durojaiye, L. & O'Meara, M. (2002). A study of triage of paediatric patients in Australia. *Emergency Medicine*, 14, 67–76.

[52] Gerdtz, M.F, Chu, M, Collins, M, Considine, J, Crellin, D, Sands, N, Stewart, C. & Pollock, W.E. (2009). Factors influencing consistency of triage using the Australasian Triage Scale: Implications for guideline development. *Emergency Medicine Australasia*, 21, 277-285.

Different studies in Australia have shown that criteria other than urgency have merit in streamlining patient presentations.[53,54] These criteria have been developed to assist the triage process and include such characteristics as:

- likely disposition
- patient complexity.

Disposition

Dividing patient presentations into two flow-streams based on predicted disposition (likely admission vs. possible discharge), where each stream is treated by specialised personnel in separate locations, has led to improvements in waiting times and length of ED stay.[55] The rationale for using predicted disposition is that admitted patients are considered to require longer stays in ED and require more resources to treat and manage.[56] Despite this, it is recognised that some „discharge" patients can also have high levels of complexity and require a long length of stay (LOS) in the ED before discharge can occur.

Complexity

Streaming based on „complexity" is shown to successfully decrease waiting times with associated cost savings.[57] Studies have been conducted into streaming ED patients into two complexity streams – fast track patients with low complexity conditions that require low nursing involvement, and the remaining presentations[58,59] that require greater nursing involvement and more procedural work. While no single definition or measure of complexity is described, the basic premise appears to be the time taken to arrive at a diagnosis and provide treatment, and the nursing resources required to deliver that care. These determinants were used to assess current practices in EDs visited as part of the operational review, and to identify any variation.

The project found that in the EDs visited, the triage process had been modified to fit with new models of care, in particular streaming. An example of this was the practice of not triaging patients back into the waiting room. Instead, patients were streamed directly to a secondary waiting area for ongoing monitoring and treatment by the care team. This streaming approach has been found to be effective in EDs.

2.3.3 Patient experience

When presenting to an ED for treatment, patients expect to receive quality care that is delivered in a timely fashion. These expectations are not always met and influence the patient experience during the triage process and ED patient journey. ED demand and overcrowding creating bottlenecks has the

53 Ieraci, S., Digiusto, E., Sonntag, S., Dann, L. & Fox, D. (2008). Streaming by case complexity: Evaluation of a model for emergency department Fast Track. *Emergency Medicine Australasia*, 20, 241-249.

54 Kinsman, L., Champion, R., Lee, G., Martin, M., Masman, K., May, E., Mills, T., Taylor M.D., Thomas, P., Williams, R.J. & Zalstein, S. (2008). Assessing the impact of streaming in a regional emergency department. *Emergency Medicine Australasia*, 20, 221-227.

55 Ben-Tovim, D.I; Bassham, J. E, Bolch, D, Martin, M.A; Dougherty, M. & Szwarcbord, M. (2007). Lean thinking across a hospital: redesigning care at the Flinders Medical Centre. *Australian Health Review*, 31(1), 10-15.

56 Kelly, A.M, Bryant, M, Cox, L. & Jolley, D. (2007). Improving emergency department efficiency by patient streaming to outcomes-based teams. *Australian Health Review*, 31(1), 16-21.

57 Simon, H.K., Ledbetter, D.A. & Wright, J. (1997). Societal savings by fast tracking lower acuity patients in an urban paediatric emergency department. *The American Journal of Emergency Medicine,* 15, 551-554.

58 Department of Health. A&E Clinical Quality Indicators. December 2010

59 Institute for Clinical Evaluative Sciences. (2010). *Development of a consensus on evidence-based quality of care indicators for Canadian emergency departments*. . Retrieved from http://www.ices.on.ca/file/National%20ED%20Quality%20Indicators%20March%2010%202010.pdf. Last accessed 11.02.11

potential to cause delays for triage and treatment. This increases the potential for risk, and can result in dissatisfaction with the ED experience due to a lack of understanding about the reason for delays.

For specific patient groups, there can be a lack of recognition of the urgency of their condition at triage. These patients can experience long waits for treatment, increased risk and in some instances patients will leave the ED without being seen and treated, further adding to the risk for these patients.

The introduction of streaming from triage and subsequent improvement in ED patient flow has been shown to have a positive effect on the patient experience. Streaming from triage can result in the allocation of patients to the right care team, creating the opportunity for improved quality of care, with a concurrent decreased wait times for treatment.

2.3.4 Review of the Australasian triage process

In summary, the reasons for undertaking the ATPR project were:

- The combination of challenges posed by increased volume of patient presentations, limited ED capacity, and retention of an adequately trained workforce. These challenges have highlighted the need to evaluate the capacity of the triage process to effectively manage ED demand now and into the future.

- Understanding the need for alternative or complementary triage tools, such as complexity determinants, that can help the decision-making process when streaming patients to appropriate care teams and models.

- Improving the patient experience of triage.

Approach to the ATPR project

3

3.1   Introduction to the review

The ATPR project has multiple stakeholders with a vested interest in the outcomes related to the triage process and associated factors, such as triage tools and performance measures. For this reason the review required a combination of consultation processes. These took the form of an ED survey, site visits to a selection of EDs nationally, and consultations with Emergency Colleges and the emergency care community via a Clinical Reference Group (CRG) and Steering Committee. A description of all sources of evidence is provided below.

3.2   Sources of evidence

3.2.1 Literature review and international consultations

The pioneering of a NTS in Australia (the ATS) was revolutionary in standardising the triage process. This standardisation enabled other countries to model their triage systems on the ATS. Many studies have been undertaken which examine ED and triage, resulting in various forms of publicly available literature and reports. A selection of these was used in the review.

Search methodology

Desktop research covered peer-reviewed journals, government policy documents, grey literature, white papers and project reports from studies in Australia and internationally. An electronic search identified current literature relating to EDs, triage and models of care. The Cochrane Library, Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL), PsycINFO, ScienceDirect, Pubmed and CIAP databases were searched using the terms listed in Table 2. In addition, a number of ED websites were searched, including Australasian College for Emergency Medicine (ACEM), American College of Emergency Physicians (ACEPs), and College of Emergency Nurses Australasia (CENA). Other relevant websites, including Jurisdictional Health websites, the Department of Health and Ageing (DoHA) and the Australian Institute of Health and Welfare (AIHW) websites were also searched using a variety of keywords. Finally, the reference lists of articles and reports obtained through the above databases and search engines were scanned to identify other potentially relevant articles and reports.

Table 2: Keywords used during database search

Key word search criteria – Emergency Departments	Accident and emergency department; casualty; emergency department; emergency room; emergency medicine, health system; overcrowding, emergency demand, emergency treatment, emergency presentations, patient satisfaction, patient experience, wait times, queuing, patient complexity, complexity measures, complexity tools.
Key word search criteria – Triage	Triage, emergency nursing, classification, acuity, computerised decision support, information technology, emergency treatment, system, paediatric, decision making, mental health, national triage scale, Australasian triage scale, Manchester Triage System (MTS), Canadian Triage and Acuity Scale (CTAS), Emergency Severity Index (ESI), soterion rapid triage
Keyword search criteria – ED models of care	Fast track, streaming, models of care, team based models, Advanced Practice Nurse; Allied Health; Clinical Initiative Nurse; emergency nurse practitioner; Emergency Physician; liaison nurse; Mental Health Nurse; Nurse Practitioner, Physician Assistant; Physiotherapist
Keyword search criteria – Patient experience	Satisfaction, patient safety, patient experience, satisfaction survey, waiting time, queuing.

The investigation of triage in ED focused on:

- the triage processes and triage scales in place internationally
- models of care
- the health workforce involved in the triage process
- specific patient groups
- the performance of EDs.

The investigation of these themes involved a literature review of mostly subjective data. It was necessary to take a qualitative focus which did not include randomised controlled trials. While some studies incorporated this level of evidence, more often they applied prospective and retrospective evaluation and deductive logic to form recommendations and conclusions. Therefore, papers included in this literature review were sourced primarily from peer-reviewed journals and also grey literature.

International consultation was undertaken to enhance the literature review and to provide an international context for ED triage processes and scales. The following countries were selected for consultation: the United States (US), United Kingdom (UK), Canada and New Zealand. PwC representatives working in the health and emergency care sector, with close links to health care facilities, were then contacted to participate. Data was collected initially via a survey that examined current ED and triage challenges, triage models and models of care. The survey was completed in consultation with PwC"s health care clients and supplemented by their own experiences. The data collected was then used as the basis for follow-on interviews conducted by the project team.

Five surveys were completed, all by PwC staff directly – two in the US, one in the UK, one in Canada and one in New Zealand. Follow-up interviews included the addition of a Canadian Director of Emergency and Critical Care Services to provide additional insight into the Canadian two-step triage process.

A full copy of the Evaluation Report is provided in Appendix A.

3.2.2 Consultation with the Steering Committee

A Steering Committee was convened with jurisdictional nominees. Its purpose was to provide cross-jurisdictional oversight of the review and to advise the project leader and NSW Department of Health on the review process and deliverables.

The Steering Committee's role was to:

- advise on the priorities and direction of the project

- maintain project advocacy and provide direction

- identify appropriate stakeholders for consultation

- identify and assess any risks and challenges in not meeting project performance criteria and objectives, and help develop strategies to address them

- facilitate review and comment by jurisdictions on project discussion papers, reports and proposed outcomes

- advise on selection of EDs from each state/territory to be included in the site visits and surveys

- validate and endorse the project's deliverables, outcomes and report

- provide progress reports to AHMAC via the HPPPC.

Meetings were held at key points in the project to allow for feedback and direction for different aspects of the operational review. The Steering Committee also took a key part in validating and agreeing to the recommendations.

3.2.3 Consultation with the Clinical Reference Group

The CRG's purpose was to provide clinical expertise and opinion to focus the review, identify the different challenges faced, validate review findings and comment on proposed recommendations. The CRG was comprised of clinical experts from each jurisdiction.

To convene the CRG, the project team invited participation from leaders in emergency care who had a focus on triage, extended triage nursing roles, mental health triaging tools, paediatrics, and complexity research. Additionally, jurisdictions and professional colleges were invited to nominate clinician representatives (both medical and nursing). This invitation extended to a representative of the Royal Australian and New Zealand College of Psychiatrists and New Zealand emergency care Colleges.

The CRG representatives attended two roundtable sessions during the review in order to:

- Roundtable 1 – strengthen the project team understanding of the ED environment and identify issues that should be included in the literature and operational reviews

- Roundtable 2 – validate key themes and opportunities emerging from the analysis.

The CRG also had a role in validating and commenting on the findings and recommendations of this report.

3.2.4 College consultations

Emergency medicine and nursing Colleges were invited to participate in the project to provide professional insights and guidance. Letters of invitation were sent to the ACEM, CENA, Australian College of Emergency Nursing (ACEN), the NZ Emergency Medicine representative and College of Emergency Nursing New Zealand (CENNZ).

All Colleges took part in a teleconference which discussed triage processes, models of care and the workforce. CENA and ACEN provided the interview questions to their members for supplementary

feedback. In addition, ACEM was consulted throughout the development of data collection tools and additional questions specific to the ATS were included with direction from the ACEM representative. An ACEM representative also participated in the interview and focus group session of an ED site visit.

All Colleges were invited to attend the second CRG meeting to provide additional input and guidance to the project, and were consulted further for their advice on the proposed recommendations. The Colleges also had a role in validating and commenting on the findings and recommendations of this report.

3.3　Observational review – approach to data collection

Information from the literature review was themed according to the different factors that involve triage and the triage process. These factors were discussed and agreed with the Steering Committee and CRG, and used to focus the operational review and survey. The themed factors that influence the triage process can be seen in Figure 1 below.

Figure 1: Factors influencing the triage process
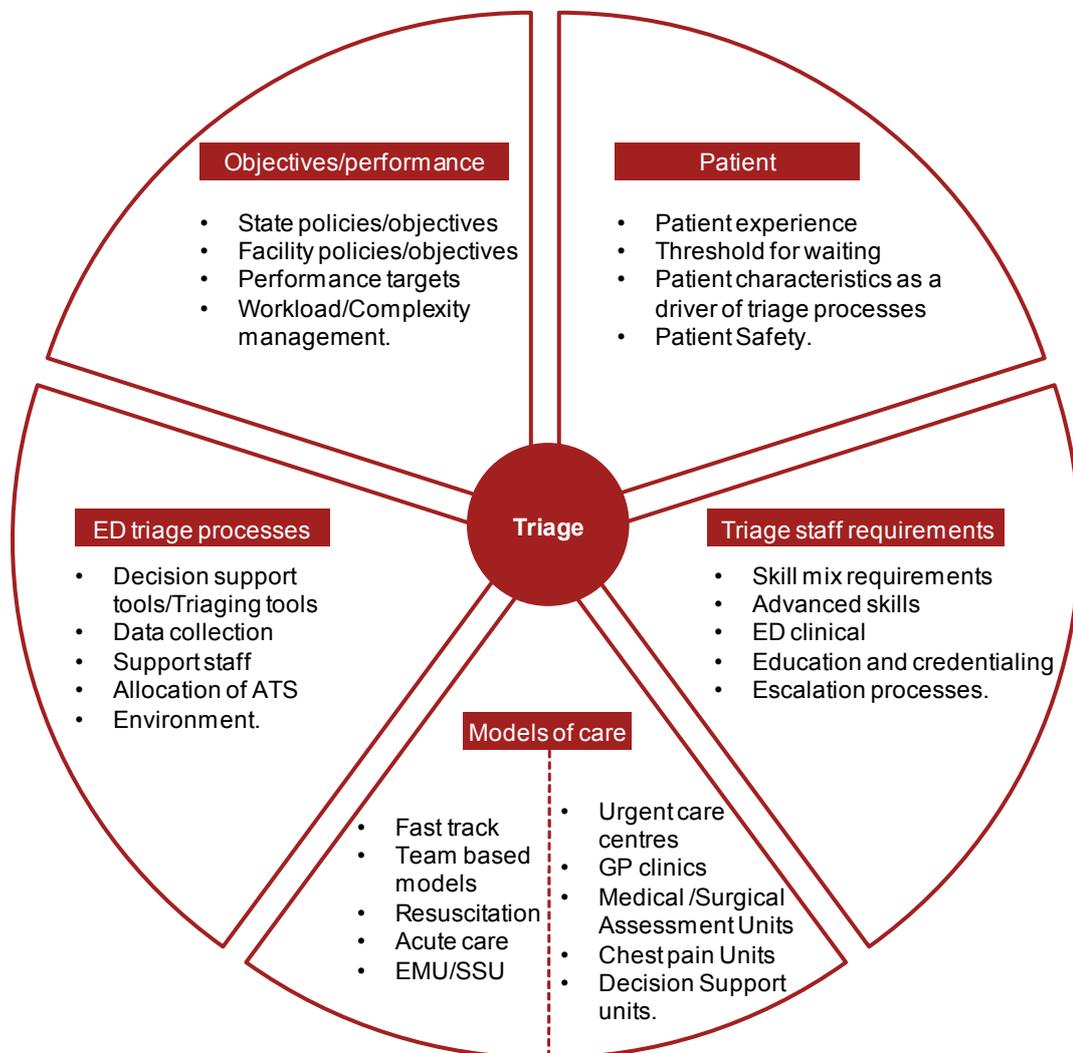
3.3.1   ED survey

EDs in Australia and New Zealand were surveyed to identify:

- current practices in triage
- alternative triaging models and practices in place (eg streaming models)
- supportive triaging tools that have been developed
- ED models of care in operation
- staffing requirements for triage
- ED performance.

The project team aimed for a selection of 60 EDs nationally, representative of location (state, metro and rural) and activity, and those that had a selection of models of care in place. EDs for inclusion were nominated by each jurisdiction.

The survey was administered using an online web-based system to allow collation of survey results for analysis. The survey was distributed to nominated EDs and remained open for three weeks to allow time for completion. The key limitation of the online survey was the inability to save the survey mid-way, resulting in some partially completed surveys. Partially completed and duplicate responses were removed.

The final survey data consisted of 180 respondents from 87 EDs in Australia and New Zealand.

The survey questions were developed in consultation with the Steering Committee and the CRG. ACEM also provided guidance into the development of the survey questions. The questions focused on:

- demographics of the ED
- triage workforce, skill mix and education requirements
- triage processes
- models of care and the process of streaming to EDs
- performance measures
- local ED and state-wide policies.

A copy of the survey questions can be seen in Appendix B.

3.3.2   National ED site visits

The project team conducted ED site visits at 16 locations. The EDs were nominated by jurisdictions with the aim of selecting a representative sample from all states and territories, by location (metro vs rural), activity and level of ED as proxy for complexity. Jurisdictions nominated 13 EDs, and 3 additional EDs were selected based on the results of the survey. The existence of innovative models of care, EDs in a regional location and a dedicated paediatric ED were selected. Figure 2 shows the EDs visited nationally.

Figure 2: National ED site visits

1. The Alfred Hospital
2. Monash Medical Centre
3. Royal Brisbane & Women"s Hospital
4. Royal Darwin Hospital
5. Flinders Medical Centre
6. Mount Gambier Hospital
7. Townsville Hospital
8. The Canberra Hospital
9. Royal Hobart Hospital
10. Royal Perth Hospital
11. Albany Hospital
12. Bankstown Hospital
13. Ballarat Hospital
14. Nepean Hospital
15. Royal Children"s Hospital
16. Royal Adelaide Hospital

All EDs visited provided the project team with valuable insights into their ways of working, novel approaches to triage, and challenges experienced in managing patient demand. To allow adequate collection of qualitative data the following activities were carried out:

- Observation of the triage process – this involved observation at two different times of the day using an observation checklist. A copy of the observation checklist can be seen in Appendix C.

- Focus groups – these sessions included frontline staff involved in triage and were held to explore the triage process and identify associated issues, points of difference and themes, and to identify any novel approaches to managing the triage process.

- Process mapping – these sessions were held to identify the key steps in the triage process that assisted or impeded the patient journey through triage and into the ED.

- Interviews with ED management – these were carried out to gain an understanding of the ED and triage challenges facing medical and nursing managers, including benchmarking and performance measures.

The following data collection processes are described in more detail.

The operational review allowed consultation with 280 ED staff during the site visits.

Figure 3 and Figure 4 provide a breakdown of all staff consulted by professional group and also by data collection activity.

Figure 3: ED staff participating in ED consultations nationally (n=280)

Staff participation at site visits
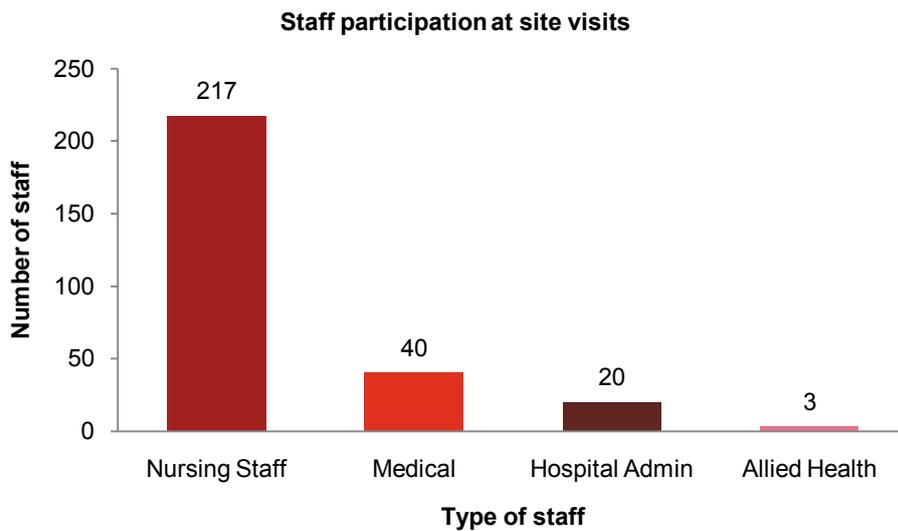
Source: ED site visits.

Figure 4: ED staff participation in consultations by activity (n=280)

Consultation participation by activity

- Interviews
- Process Mapping
- Focus groups
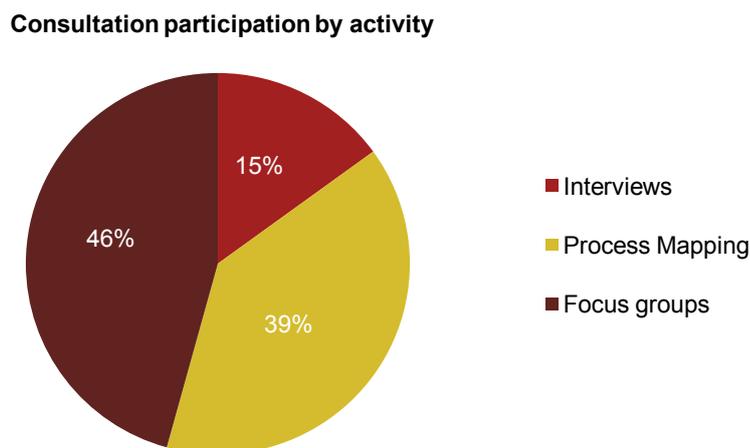
Source: ED site visits.

3.3.3 Observational study of triage

The purpose of the observational study was to understand the following:

- the practical aspects of the triage process and different triage practices between EDs
- where variation existed in the triage of different patient groups and types of presentations
- whether there were differences in triage practices with fluctuations in demand; for example, between the morning and afternoon shifts as patient presentations increased.

The observer remained with the triage nurse throughout the triage process for a minimum of 20 triage episodes (this number was not achieved in some of the smaller EDs with fewer presentations).

A total of 316 triage episodes were observed in total across the 16 EDs.

Other documentation reviewed to support the process included triage guidelines, standing orders and management guidelines, local policies, documentation and recording systems, and escalation processes to manage demand.

Data was collected using a data collection tool developed for the project. The data collection tool included 10 categories for observation with subcategories to capture all aspects of the triage process.

Table 3: Category areas for observation at triage – ED site visits

Category of observation	Subcategory
General information	Patient initials, triage staff name, triage nurse level experience
Presentation to ED	Self referral, referral from specialists/general practitioners (GP) rooms, expected patient , re-presentation
Mode of arrival	Walk in, ambulance, police
Registration	Counter, pre-triage, post triage, bedside
Triage time	In, out
ATS category	Assigning a category from 1 to 5.
Patient classification	Mental health, paediatric, obstetrics, aged care
Documentation	Documentation during triage, documentation post triage
Intervention	Bloods, vitals, electrocardiograph (ECG), x-rays, first aid, pain relief, other interventions such as urinalysis, rehydration, blood sugar level (BSL), breathalyser)
Interruptions	Paramedic/Ext staff, ED staff/hospital staff, patients/relatives, clerks, phone calls
Delays to triage process	Patient transfers (wheelchair, orderly, escort etc), documentation, interventions, contacting specialist teams, triage nurse absent from triage area, CALD patient, equipment (missing/failure), inappropriate documentation, other (assisting patients to toilet etc).

3.3.4 Focus group sessions

The purpose of the focus group sessions was to explore the triage processes and identify the issues, points of difference and themes. A selection of frontline staff involved in or performing in the role of triage participated. Nursing staff representation in these sessions reflects the fact that nurses have a primary role in triage in EDs.

On most occasions the handover period between morning and afternoon shifts provided an opportune time to conduct these sessions. The structure was to work through a set of questions relating to:

- the role of triage
- challenges and strengths of the current triage process
- the staff allocated to triage and process involved in learning to triage
- the role of the ATS in triage
- ED models of care
- special considerations for paediatric presentations.

Figure 5 provides a breakdown of staff participating in focus groups.

A total of 128 staff took part in the focus groups.

Figure 5: ED staff participating in focus group sessions (n=128)

Focus groups participation
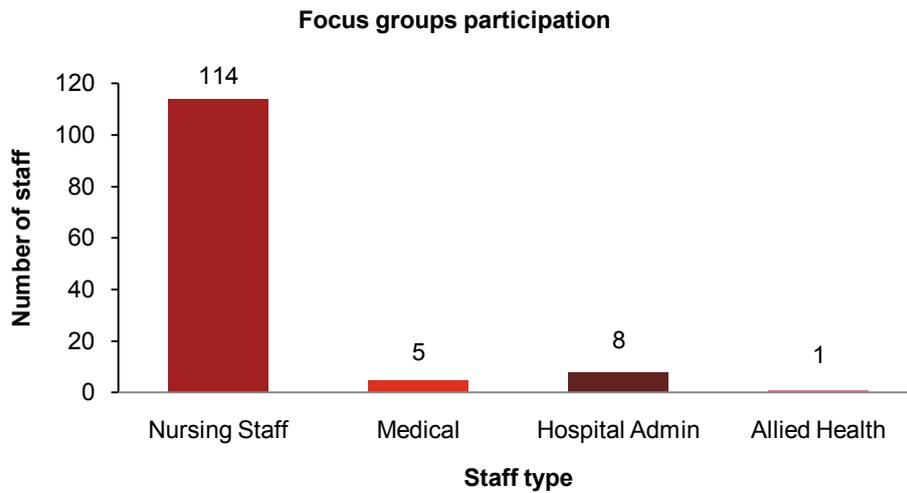
Source: ED site visits.

3.3.5 Interviews with ED Managers/Directors

Interviews with ED management (ED Director and Nurse Manager) occurred at each site. Due to the seniority of their roles, their participation was often dependent on their availability on the day. The purpose of the interviews was to understand the key challenges associated with triage and those facing ED management.

Interviews covered a structured set of questions relating to:

- the role of triage in ED
- triage"s evolution to date and future opportunities
- support tools or processes that have been implemented to support the work of triage
- practices that limit or hinder the role of triage
- the ATS and consistency of triage
- performance measures in the ED
- paediatric management
- ED challenges and escalation processes
- future focus of the ED

Figure 6 below provides a breakdown of staff interviewed by profession.

A total of 42 Managers/Directors were interviewed.

Figure 6: ED management staff participation in interviews (n=42)

Interviews with ED Management
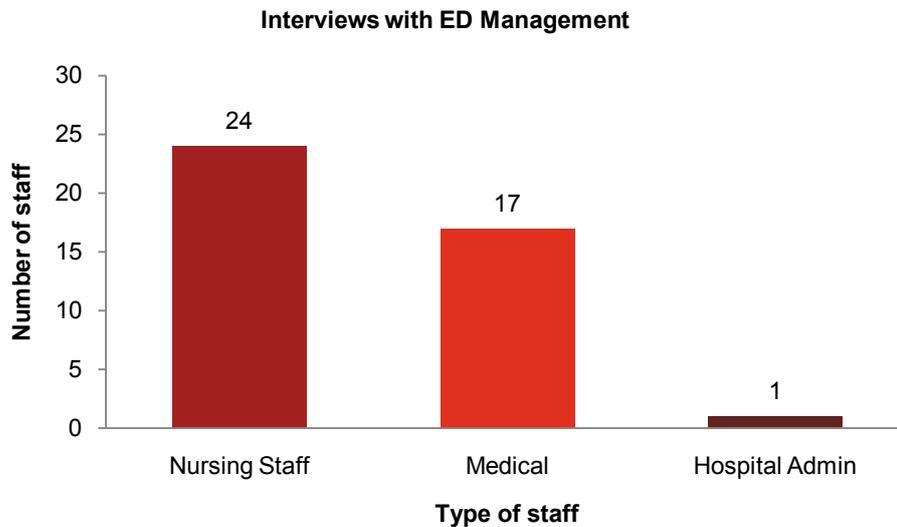
Source: ED site visits.

3.3.6   Process mapping sessions

Triage process mapping sessions took place at each ED visited. The purpose was to capture the sequence of events that lead to a triage occurring and the concurrent steps that occur in the process of triaging a patient and streaming to a care team or model of care (MOC). The process maps were intended to be used to:

- identify the triage process and current systems in use and their implications
- capture the issues/challenges associated with triage and in managing patient demand and workload.

The process map began with the referral of a patient for triage (either from a pre-hospital referral or presentation in ED) and finished with their transfer of care from triage to another area of ED or to a different care provider.

The triage process was categorised into three high-level steps. The first step was the notification of the patient‟s arrival. The second step described the process of triage including assessment, allocation to triage category, documentation, interventions, communication and transfer to care provider. The third step was the handover of patient information and documentation.

An example of a high level triage process map can be seen in Figure 7. This process map is representative only and may not reflect the order or number of steps in the triage process for all EDs. It should be noted that in carrying out detailed triage process mapping in EDs it was found that there was wide variation in the process, a high level of complexity and large number of steps involved in the triage process. This detail is not depicted in Figure 7.

Other documentation, triage guidelines, standing orders, document recording systems, training and education, performance and review processes, were reviewed as part of the process mapping session.

At each site staff with an overall view of the triage process and referral pathways were invited to participate. This means that most of the participants were nursing staff or staff involved either in triage or the education of staff performing the triage role. Figure 8 shows the proportion of staff who participated in the process mapping sessions by profession.

A total of 110 staff took part in process mapping.

Figure 7: High level triage process map
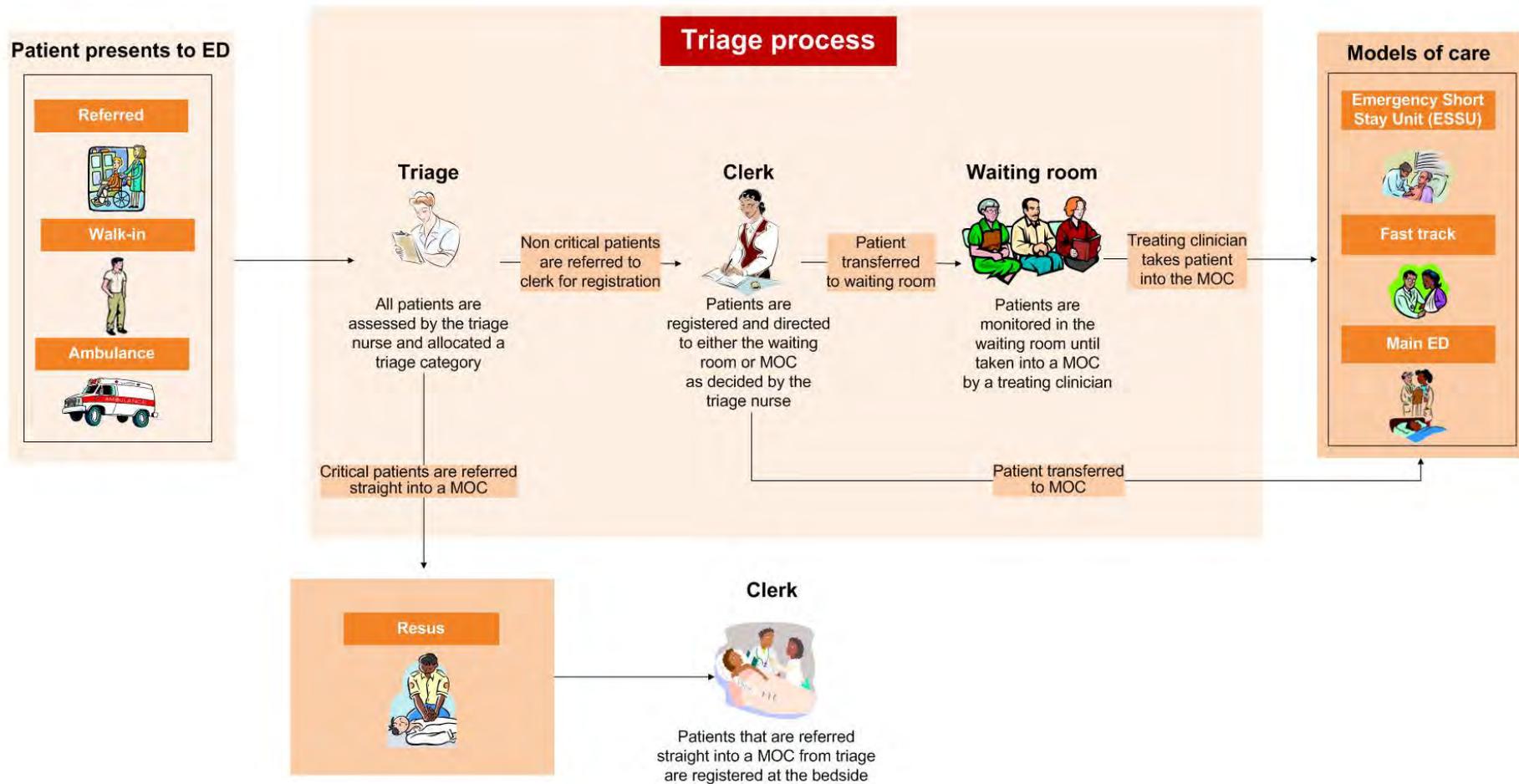
Figure 8: ED staff participating in process mapping sessions (n=110)

Triage process mapping participation
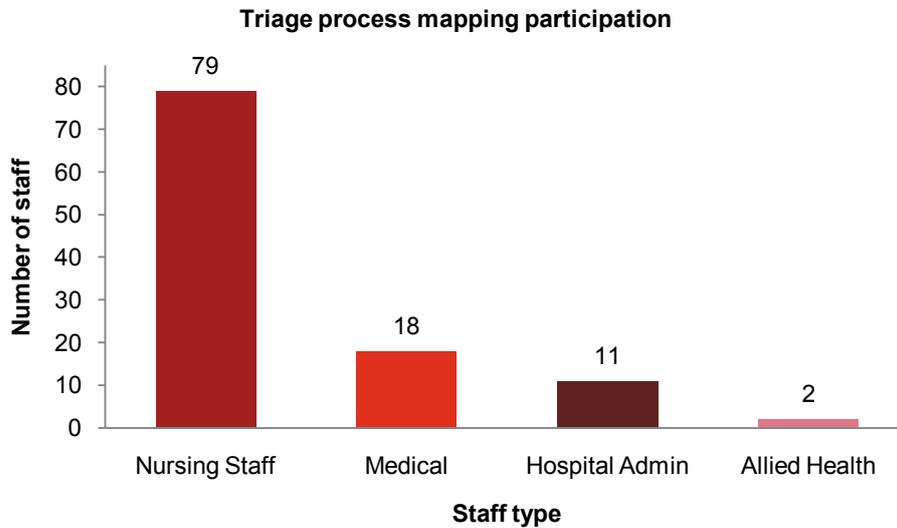
3.4   Patient experience

To understand the patient experience of ED and triage, local ED and state-wide patient surveys were reviewed, in conjunction with academic literature and reports. Surveys were found to be limited, both in the number available and also in the information they provided. While much has been written in the literature about patient expectations, satisfaction, and tolerance for waiting, the project team sought to supplement that information through consumer consultations.

Consumer consultation was carried out using structured questions about their understanding of the word „triage", the triage process, their experience of waiting, the signage and ED environment, and gaining access to treatment in ED. Consumers were also asked about their satisfaction with their experience and any suggested areas for improvement.

Consultation was achieved in two ways:

1. Consumer representatives from Queensland were consulted in a focus group session. The group consisted of people from rural and remote, indigenous, culturally and linguistically diverse (CALD), mental health, carers and aged care groups, all of whom had experience of ED. Five consumers participated in the focus group.

2. The structured questions were sent out via email to consumer representatives. Written responses were received from consumers who comprised carers, mental health, oncology and paediatric representatives. Ten consumers provided written feedback.

While the number of initial ED consumers consulted is low and represents a small sample, there is an opportunity to conduct further research into the ED patient experience.

Taken together, the sources of evidence for the ATPR project have allowed the project team to gain a multifaceted perspective of EDs and of triage in Australia.

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Operational review – Key findings and discussion

4

4.1   Contextual analysis of EDs

A conceptual framework was established to focus the data collection from the 16 EDs visited nationally. It was developed in consultation with NSW Health, the ATPR Steering Committee and the CRG. The framework categorised the data collection and methods into three contextual dimensions, reflecting the factors that influence triage:

- the ED profile
- the factors that affect the triage role
- the process of triage.

The ATPR team requested data from EDs about their profile. For example, this included information of the ED"s activity, interventions carried out at triage, ED models of care in place, including staffing numbers and level of staff experience. Information about the operational domains was also collected through observation and consultation with EDs. Collectively, this information provided insights into the triage process and ED operations in each ED. The contextual framework can be seen in Table 4 below.

Table 4: Dimensions and operational domains of the contextual framework

Contextual dimension	Operational domains
ED profile	Activity Models of care Casemix Mode of arrival Information systems
Factors that affect the triage role	Triage staffing Triage experience Time taken to perform triage Interventions Interruptions Delays
Process of triage	Innovations Challenges Environment Australasian Triage Scale Streaming and complexity Performance measures Patient experience

Purpose of the analysis

Triage is the entry point into the ED system for patients. It is a dynamic process that all EDs use in various ways depending on their size, number of presentations, availability of MOC, and local, jurisdictional and national policies in place.

The purpose of the contextual analysis was to understand the differences in current triage processes and analyse the effect the operational domains have on the triage process. The analysis therefore considered the relationship between the triage process and the operational domains, recognising that they are interrelated and both are likely to influence each other.

It is important to understand that ED triage is also affected by what is happening in the ED and in the rest of the hospital; for example, factors such as access block and ED overcrowding. While these factors are recognised as having a key impact on ED operations and triage, data about access block

and periods of ED overcrowding was not collected or analysed as it was outside the scope of this review.

Table 5 shows the 10 operational domains and the related factors that have the potential to affect the triage process.

Table 5: Contextual framework operational domains and sources of data for analysis

Operational domains	Factors	Sources of data
Activity	Annual volume of patient presentations to triage Models of care	ED site MyHospitals website Survey data
Casemix	% triage categories Admission rate	ED site
Staffing	Annual volume of patient presentations to triage Models of care Local policies	ED site MyHospitals website Survey data
Information Systems	Local or state information systems	ED site Survey data
Time taken to perform triage	Interventions Interruptions and delays Triage experience Mode of arrival	ED site Survey data
Interventions, interruptions and delays	Activity Local practices	ED site Survey data MyHospitals website
Models of care	Local practices Activity	ED site MyHospitals website Survey data
Triage experience	Local practices	ED site Consumer consultation
Mode of arrival	Activity	ED site MyHospitals website
Education	Local practices	ED site Survey data
Innovations and good practice	Local practices	ED site Survey data
Challenges and barriers	Local practices	ED site Survey data
Environment	Local practices	ED site Consumer consultation
Australasian Triage Scale	Local practices	ED site Survey data
Streaming and complexity	Local practices	ED site Survey data Consumer consultation
Performance measures	Activity State-wide reporting	ED site Survey data

Operational domains	Factors	Sources of data
Patient experience	Local practices Patient satisfaction and expectations	Consumer consultation Satisfaction surveys ED site Academic literature

4.2   ED profile

A focus of the ATPR project was to understand triage processes in relation to models of care and streaming. This section describes the analysis of the ED profile, including volume of presentations, models of care, mode of patient arrival, staffing and information systems. The analysis sought to understand the influence of the ED profile on the triage process and allocation of triage categories. For this purpose, the following factors were analysed:

- the models of care to support EDs in Australia and NZ

- the influence of ED activity on the number of models of care in place in an ED

- the influence of models of care, ED and triage processes on the proportion of triage categories assigned

- triage processes in the absence of 24-hour onsite medical staff

- the relationship between mode of arrival and triage categories

- information systems used at triage and their impact on the triage process.

All data presented was collected from the 16 ED site visits, with survey respondents" data included where it was available. Below in Table 6 is a summary of key findings from this section.

Table 6: Key findings by ED profile

ED profile	Key findings
MOC	The most frequent MOC identified in the ED survey was short stay (55%) The most frequent MOC identified in the ED site visits was fast track (88%) Barriers to successful MOC implementation included available human and physical resources, and a willingness to change
Activity vs. the number of MOC	As ED activity increases so does the number of ED MOC
Proportion of triage categories vs. the number of MOC	The proportion of presentations in each triage category was not influenced by the number of MOC
EDs without 24 hour medical cover	MOC are not in place to support triage
Mode of arrival	Higher acuity patients (category 1, 2 and 3) present via ambulance
Information systems	No consistent information systems were in place nationally; 8 systems were noted during the site visits Systems in place had the potential to delay the triage process.

4.2.1   ED activity

The activity levels of the 16 EDs visited ranged across three thresholds as seen in Figure 9:

- less than 25,000 presentations annually

- 25,000 to 50,000 presentations annually

- more than 50,000 presentations annually.

From EDs visited, the greatest proportion were in the greater than 50,000 threshold. Seven had an annual presentation rate of 60,000-70,000 and 5 had 50,000-60,000. The average annual presentation rate for the 16 EDs was 54,153 with a range from 18,000 to 69,696 presentations annually.

While the EDs visited are not necessarily representative of the spectrum of all ED activity, the surveys included a greater number of EDs in the lower ranges to provide representation across all ED types.

Figure 9: Percentage of EDs by annual presentation rate
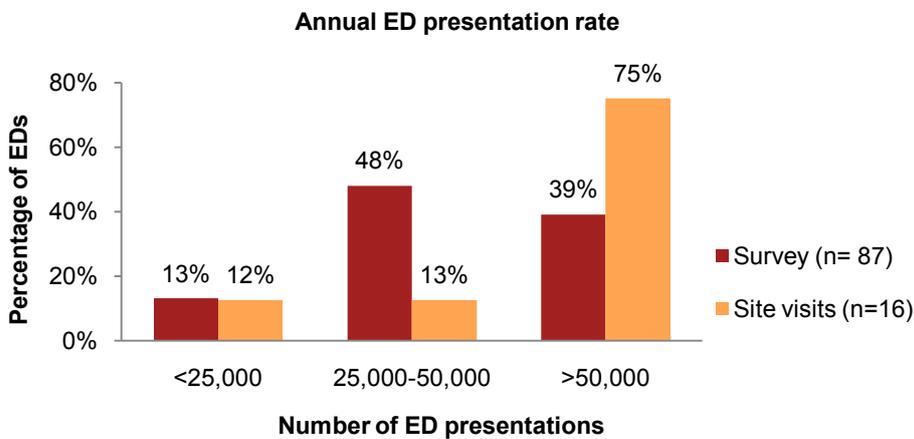
Source: Individual ED data and MyHospitals website 2009-10 ED data.

4.2.2   Models of care and clinical pathways supporting ED operations

EDs are continuously responding to changes in the profile and patterns of patient presentations, changes in technology, and changes in the composition of their workforce. In recent years there has been a focus on introducing more flexible patient-centred MOC and clinical pathways. These have been introduced in various EDs following evidenced success nationally and internationally in improving the quality, safety and efficiency of ED care.

It was clear from the ED site visits and the ED survey that considerable efforts had been made to promote access to the appropriate care teams. Overall, numerous models of care and clinical pathways were identified. A summary of these can be seen in Table 7.

Table 7: Models of care and clinical pathways in place to support ED presentations

Model of care	Survey	Site visit	Clinical pathway	Survey	Site visit
Aged Coordination and Evaluation Team	✓	✓	Asthma	✓	
Cardiology Assessment Unit	✓		Back pain	✓	
Cardiology Assessment team		✓	Chest pain	✓	✓
Chronic Care Assessment Teams	✓		Direct admit		✓
Clinical Decision Unit	✓		Febrile children under 3 months	✓	
Early Pregnancy Unit	✓	✓	Fractured neck of femur	✓	
Emergency Medical Management Unit	✓	✓	Infants under 1 month	✓	
Fast track	✓	✓	Mental health	✓	
General Practitioner Clinic*	✓	✓	Oncology/Febrile neutropenia	✓	✓
Medical Assessment Units	✓	✓	Paediatric	✓	✓
Paediatric unit	✓	✓	PV bleeding/Early pregnancy	✓	✓
Psychiatric Emergency Care	✓	✓	Scrotal pain	✓	
Rapid Assessment and Planning Unit		✓	Stroke	✓	
Short Stay Unit	✓	✓	Surgical pathway		✓
Specialty Outpatient Unit	✓	✓			
Surgical Assessment Unit	✓	✓			
Urgent Care Centre	✓				

*This mode of care is offered to clinically appropriate patients following an informed choice

4.2.3 The number of models of care in operation

> **Summary of findings:**
>
> - The most frequent MOC identified in the ED survey was short stay (55%)
> - The most frequent MOC identified in the ED site visits was fast track (88%)
> - Barriers to successful MOC implementation included available human and physical resources, and a willingness to change to new ways of working.

Survey respondents identified a greater number of MOC in operation than seen during ED site visits. It was found during site visits that while different names were used for some MOC, they functioned in the same way. For example a fast track service for low complexity patients was referred to as „quick assessment" in some EDs, however all versions functioned in a similar way for a similar cohort of patients. Hence for data analysis purposes, they were classified as „fast track".

The fast track model was the most established MOC in EDs visited (88%) and the second most reported for survey respondents (54%). It could be suggested that with increasing activity this MOC is better established to stream less complex patients away from the main areas of ED.

Emergency Short Stay Units (ESSU) and Emergency Medical Units (EMU) were also in place in over 60% of all EDs visited and over 55% of ED survey respondents. The Medical Assessment Unit (MAU) was also a feature of Australian EDs and was identified in 30% of EDs included in site visits and the ED survey. Psychiatric Emergency Care Centres (PECC) were identified in EDs as a MOC to support referral of patients from the ED to a more appropriate care team. GP Clinics were available in close proximity to some EDs and allowed for patients to be offered an alternative to ED treatment.

ED activity and MOC

Summary of findings:

- As ED activity increases so does the number of ED MOC

To understand the relationship between an ED‟s activity level and the MOC in operation, this data was analysed to identify any key factors. Results are presented below:

- The <25,000 group had the least number of MOC. Two EDs from site visits had no current models of care in operation although both had trialled the fast track model but were unable to continue due to insufficient staffing or floor space. The survey averaged 1 MOC per ED, with the most frequent MOC fast track and GP clinics attached to ED. The maximum MOC in this group was three.
- In the 25,000-50,000 cohort, a similar average was found between the site visits and the survey although the type of MOC varied. The ED sites visited averaged 3 MOC, with 4 being the most of all EDs. All the EDs had fast track and EMU. Other units included MAU, ESSU and an aged care assessment team. ED survey respondents averaged 4 MOC with short stay units being the most reported followed by MAU and fast track. The maximum MOC identified was 9 in 1 ED.
- The >50,000 cohort showed the greatest variation between the site visit and survey data. The site visits averaged 3 MOC with 5 being the most for any site visit. All ED sites had fast track units with the next most frequent MOC being ESSU followed by MAU and EMU. The remaining MOC were GP clinic, rapid assessment and planning unit (RAPU), PECC and paediatric units. The survey showed an average of 4 MOC per ED, with fast track being the most reported followed by ESSU and MAU. The maximum MOC in operation in 1 ED was 9.

The data shows that as activity increases, so do the MOC, to enable the management of patients and resources, and streaming into different areas for appropriate care. Some smaller sites used different MOC to manage patient demand but were unable to sustain or effectively implement these MOC due to lack of resources, both human and physical.

Successful implementation of MOC

The successful implementation of these MOC takes considerable planning and consultation, as well as ongoing monitoring. Varying levels of successful implementation were observed across the 16 ED site visits, with staff also identifying multiple barriers as to why these models of care had failed to be embedded in the hospital‟s business processes.

When looking to an evidence base for the successful implementation of different models of care, a number of studies have reported their effectiveness. These findings were supported during the ED site visits, however additional data about the cost effectiveness of implementation was not available for analysis and will require additional research.

The implementation of fast track models in EDs has been found to be effective. A fast track service significantly improved quality, safety and efficiency outcomes such as reduced waiting times, LOS and did-not-waits.[60,61,62]

The benefit of PECC has also been demonstrated and this model facilitates access for mental health patients to experienced mental health staff. PECCs can provide increased patient privacy and monitoring which has been found to minimise the risk of self-harm or absconding from the ED. The PECC also reduces the number of ED beds occupied by mental health patients and provides a central contact point for GPs and other community services.[63]

The demand for assessment and treatment in ED by elderly patients is increasing. A former NSW Health Minister stated the "number of people aged 75 years and older who are going to public hospital EDs is rising by 20 % each year".[64] The Intergenerational Report 2010 suggests that the number of Australians aged between 65 and 84 will double, and those over 85 years will quadruple over the next 40 years.[65] This has led to the establishment of models to better manage these patient groups. One such model is the Medical Assessment Unit (MAU), developed to provide faster and better coordinated care for older medical patients within the hospital, as an alternative to the ED.

ESSU have been shown to be an effective model for improving ED patient flow. The ESSU can reduce LOS in ED and avoid admission to inpatient wards. In one study 85% of patients reported the advice and instructions given about discharge information from the ESSU was adequate.[66] The hospitals that used ESSUs reduced their access block and ambulance diversions by 20% and 30% respectively.[66]

A number of models have been described for the assessment of elderly patients in ED. The implementation of Aged Care or Care Co-ordination Teams (CCT) has been associated with significantly reduced admissions from ED and high patient and staff satisfaction. These models have been introduced into many NSW and Victorian EDs: By 2006 Aged-care Services in Emergency Teams (ASET) had been established in 36 NSW EDs.[67] In Victoria, a CCT at Royal Melbourne Hospital saw 2,532 patients in a year, and significantly reduced hospital admissions that year for the aged patients.[68]

Barriers to success included:

- poor continuity of patient care across departments
- inappropriate skill mix and staffing profile to staff the models adequately
- dependence on one champion/sponsor
- breakdown in communication

[60] Ieraci, S., Digiusto, E., Sonntag, P., Dann, L. & Fox, D. (2008). Streaming by case complexity: Evaluation of a model for emergency department Fast Track. *Emergency Medicine Australasia, 20*, 241-249.

[61] O'Brien, D., Williams, A., Blondell, K. & Jelinek. (2006). Impact of streaming "fast track" emergency department patients. *Australian Health Review, 30*, 525-532.

[62] Flowers, L., Gross, L., Kuo, P. & Sinclair, S-A. (2006). State Profiles: Reforming the Health Care System 2005, 13th Edition. AARP Public Policy Institute.

[63] Frank, R., Fawcett, L. & Emmerson, B. (2005) Development of Australia's first psychiatric emergency centre. *Australasian Psychiatry*, 13(3), 262-272.

[64] Reba Meagher, (2008) Medical Assessment Units provide specialist treatment for elderly patients NSW health. *NSW Health*, Retrieved from http://www.health.nsw.gov.au/news/2008/20080409_00.html Last accessed 14.02.11

[65] Commonwealth of Australia. (2010). Australia to 2050: future challenges. Retrieved from http://www.treasury.gov.au/igr/igr2010/Overview/pdf/IGR_2010_Overview.pdf Last accessed 14.02.11

[66] Arendts, G., MacKenzie, J. & Lee, J. (2006). Discharge planning and patient satisfaction in an emergency short-stay unit. *Emergency Medicine Australasia, 18*, 7-14.

[67] NSW Health. (2006). Clinical Services Redesign Program: Models of emergency care. North Sydney: NSW Health. Retrieved from http://www.archi.net.au/documents/resources/models/emergency_care/models-emergencycare.pdf Last accessed 14.02.11

[68] Moss, J. E., Flower, C.L., Houghton, L.M., Moss, D.L., Nielsen, D.A. & Taylor, D.M. (2002). A multidisciplinary Care Co-ordination Team improves emergency department discharge planning practice. *Medical Journal of Australia, 177*, 427-431.

- restrictive admission/patient transfer criteria
- lack of physical resources in which to house the MOC
- inability to access hospital resources, to the detriment of patient flow.

Table 8 provides a summary of models of care seen in operation in the EDs visited.

Table 8: ED Models of Care seen in operation summarised

Model of care	Description
Fast track[69,70,71]	Used to streamline the care of low urgency/low complexity patients. The emphasis for this group of patients is early commencement of care by a clinical team. Fast Track operates with dedicated staff in a physically separate zone, which may consist of cubicles and/or procedure rooms. This MOC is designed to reduce waiting times and LOS for a defined cohort of patients.
Emergency Short Stay Units[72,73]	ESSUs provide rapid and frequent assessment and short-term therapy and observation for patients who are likely to be discharged home within 24 hours. They can be an effective means of improving patient flow through ED, limiting patient LOS in ED to 6 hours and avoiding admission to a ward for patients who are deemed to require monitoring for a limited period of time
Paediatric areas[74]	A separate paediatric area should be used only for paediatric patients. It should be set up with a dedicated medical and nursing team from the usual ED staff pool. This model provides a rapid stream for treatment and assessment.
Psychiatric Emergency Care Centres[75]	Aims to provide a separate stream for psychiatric presentations to the ED. Provides a safe service for consumers, service providers and the public. Targets patients suffering from an acute mental health illness or disorder and who are at risk of behavioural disturbance.
Medical Assessment Unit[76,77]	To treat non-critical medical patients, the elderly and those with chronic disease and complex conditions, in an area separate from the main ED, and in some places as an alternative to the ED.

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69 Considine, J., Kropman, M., Kelly, E. & Winter, C. (2008). Effect of emergency department fast track on emergency department length of stay: a case control study. *Emergency Medicine Journal*, 25, 815-819.

70 Kwa, P. & Blake, D. (2008). Fast Track: Has it changed patient care in the emergency department? *Emergency Medicine Australasia, 20*, 10-15.

71 Kinsman, L., Champion, R., Lee, G., Martin, M. Masman, K., May, E...Zalstein, S. (2008). Assessing the impact of streaming in a regional emergency department. *Emergency Medicine Australasia*, 20, 221-227.

72 Clinical Epidemiology and Health Service Evaluation Unit. (2004). Models of care to optimise acute length of stay: SOU, MAPU, EMU. The Royal Melbourne Hospital: Parkville, Victoria.

73 NSW Health. (2006). Clinical Services Redesign Program: Models of emergency care. North Sydney: NSW Health.

74 The Scottish Government Health Delivery Directorate Improvement and Support Team. (2007). Unscheduled Care Collaborative Programme. The Scottish Government: Edinburgh. Retrieved from http://www.scotland.gov.uk/Resource/Doc/200790/0053681.pdf. Last accessed 13.02.11

75 Flowers, L., Gross, L., Kuo, P. & Sinclair, S-A. (2006). State Profiles: Reforming the Health Care System 2005, 13th Edition. AARP Public Policy Institute.

76 Emergency Models of Care for the Future – the NSW perspective. NSW health. Retrieved from http://www.changechampions.com.au/resource/Daniel_Comerford.pdf Lased accessed 24.03.11.

77 Medical assessment unit – faster, safer, better care. NSW Health. Retrieved from http://www.archi.net.au/resources/moc/complex/mau-nsw Last accessed 24.03.11.

Model of care	Description
Aged Coordination and Evaluation Team[78]	Can comprise a mix of staff - nurse, occupational therapist, physiotherapist and social worker. Teams target patients over 65 to assist with their assessment and treatment and coordinate community referrals to prevent avoidable admissions
GP clinic[78]	Clinics co-located to the ED. Triage nurses can offer low acuity patients the choice of alternative treatment at a co-located GP clinic – this option is only available once the patient is fully informed of the consequences of this choice and the patient may still choose to be treated in the ED if they so desire
Early pregnancy unit[78]	Provides a specialty area to deal with early pregnancy problems of patients that are less than <20 weeks gestation.

EDs without 24-hour medical coverage

Summary of findings:

- MOC are not in place to support triage

While EDs without 24-hour onsite medical cover were outside the scope of the ATPR site visits, it was important to understand the impact that lack of available medical cover had on the triage process and MOC in place in smaller EDs.

Data was analysed for 11 such sites that responded to the survey - 13% of the total EDs surveyed. The 11 sites comprised 7 EDs with <25,000 annual presentations, and 4 with 25,000-50,000 annual presentations. Few MOC were used in these EDs, with an average of 1 MOC for each ED, with fast track being the most common.

Overall it appears that EDs without 24-hour medical cover do not have MOC in place to support triage. These EDs face additional challenges and decisions at triage, such as when to call in a doctor – a challenge not faced in EDs with 24-hour medical availability.

4.2.4 Case mix – Proportion of ED presentations by triage category

Analysis of the data around casemix, sought to answer the question of whether the triage process, models of care and local ED practices influence the triage categories assigned to patient presentations. The site visit data provided a good sample of triage episodes seen in the EDs around Australia. Data collected from the 316 episodes observed was compared to the national presentation rates for each category. The results show that the proportion of assigned triage categories across sites was comparable to national proportions as demonstrated in Figure 10.

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78 Australia triage process review site visit 2011.

Figure 10: ED presentations by triage category

Proportion of ED patients by triage category
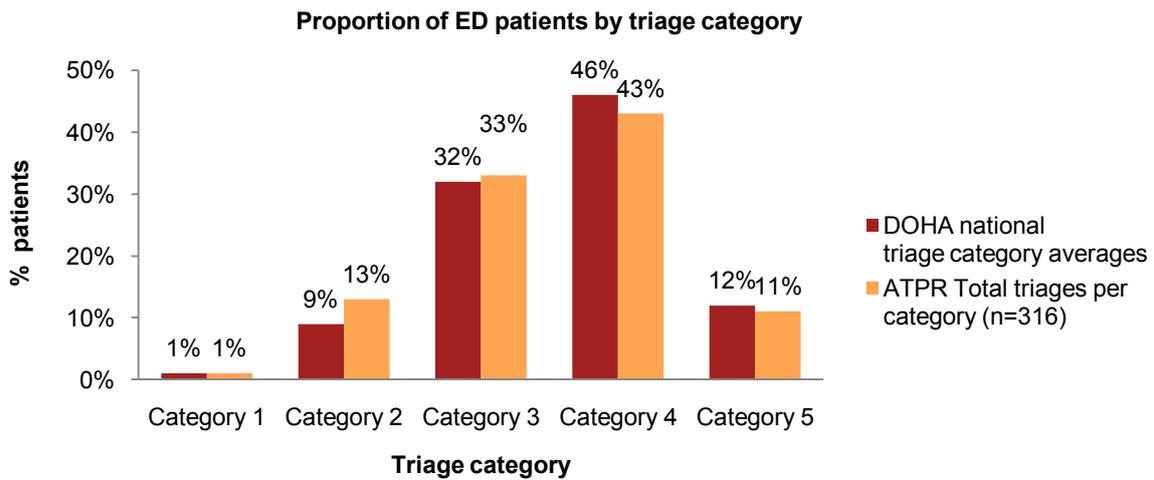
Source: The state of our public EDs June 2010 report, pp. 84. Department of Health and Ageing.

Proportion of triage categories in relation to MOC and ED practices

Summary of findings:

- The proportion of presentations in each triage category was not influenced by the number of MOC

A recent study on ED performance in Australia[79] found significant differences between jurisdictions in relation to the proportion of patients classified into each triage category. These differences were greatest in categories 3 to 5. Additionally, a study in a NSW ED found an overuse of category 3 in that ED.[80] The data was analysed to understand whether there is any relationship between the proportion of triage categories assigned and MOC and ED practices.

Models of care – In assessing the proportion of triage categories in EDs, it was considered that EDs with well developed and functioning MOC may assign categories differently. For example, EDs with well established fast track models may allocate a greater proportion of category 4 or 5 as they would be better equipped to deal with the lower acuity patients. However, this was not found to be the case, and EDs with well established fast track models did not see an increase in any particular triage category.

The site visit data did not show any correlation between the number of MOC and the percentage of patients in each triage category. For example, category 5 patients accounted for less than 10% of all

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[79] Eager, K., Dawber, J., Masso, M., Bird, S. & Green J. (2011). Emergency Department Performance by States and Territories – stage one. Centre for Health Service Development. University of Wollongong.

[80] Rojo, J. (2010). T3 Project: An Exercise in Redesign, Quality, Safety and Improvement, Conference Presentation, Redesigning Healthcare Summit May 2010.

triage episodes in 9 EDs, and those EDs averaged 2.7 MOC; but the 7 EDs where category 5 patients accounted for greater than 10% of triage episodes averaged 3 MOC. This was consistent across the other triage categories. In addition, having a particular MOC in operation did not influence the allocation of triage categories.

ED practices – During the site visits 2 practices of seeing patients according to triage category were observed. These were:

- to see patients in order of urgency, or ATS category
- to see ATS category 1 and 2 patients in order of urgency and category 3, 4, and 5 patients in order of arrival.

To assess whether local ED practices might influence the allocation of a triage category, the practice of treating patients using alternative methods was compared to the proportion of triage categories given. For example, if the ED practice is that patients are treated in time order, the triage nurse might allocate a higher proportion of category 4 and 5.

The data show this was not the case and EDs which treated patients in time order did not have a higher proportion of triage category 4 and 5 compared to EDs that saw patients in order of urgency, or ATS category. Consequently the allocation of a triage category is not influenced by local practices around order of treating patients.

4.2.5 Mode of arrival

Summary of findings:

- Higher acuity patients present via ambulance

The mode of patient arrival observed during ED site visits was predominantly walk-in, with 72% compared with 25% from the ambulance service. Other arrivals comprised 3% of all presentations and included arrivals by inter-ED transport vehicles, mental health teams, Medical Emergency Teams (MET), police, and international retrieval personnel.

Data about the mode of arrival by triage category has been analysed, as seen in Figure 11. It shows that the higher the triage category, the more likely it is a patient will present via ambulance. This is true of triage category 1, 2 and 3 patients, where ambulance presentations were most frequent for these high acuity groups. This data is from a sample of 316 triage episodes and hence may reflect conditions at the time of observation rather than being a true indication of actual mode of arrival proportions.

Figure 11: Proportion of ED presentations by mode of arrival and triage category (n=316)

Percentage of ambulance and walk in presentations per triage category
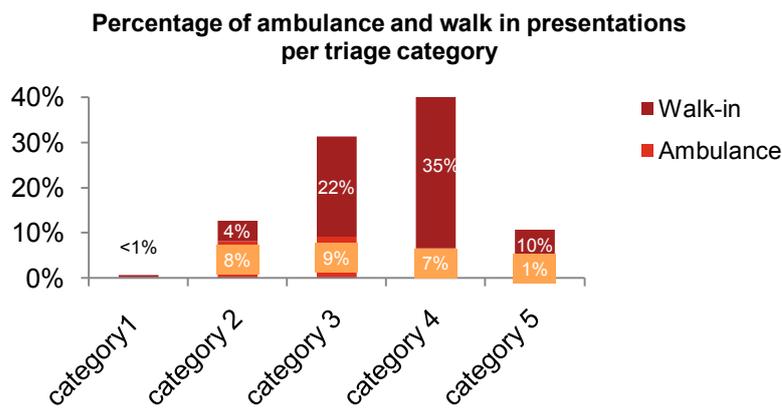
4.2.6 ED information systems

> Summary of findings:
>
> - No consistent information systems were in place nationally; 8 systems were noted during the site visits
>
> - Systems in place had the potential to delay the triage process

The triage process includes two main activities:

- the assessment of patient

- the recording of data collected during the assessment.

These activities are intrinsically linked and can delay the triage process depending on the detail in each activity and the system used to collect the assessment data. IT systems used for data collection were observed in ED site visits to understand their influence on the triage process and time taken for each triage episode.

The 16 ED site visits revealed 8 different ED information systems in use. Figure 12 shows the range of systems in place and the percentage of EDs that use each system. Some information systems were determined by jurisdictional information technology systems, while other EDs sourced and implemented systems to suit their needs. One ED had developed a standalone system to suit its local need.

The information system used in each ED influenced the time taken to perform triage, although it was difficult to define how much additional time documentation added. From observations it was noted that with some information systems, additional time was required for staff to fill out more than one screen. The screens consisted of information such as injury and falls assessment, and in some cases also required manual documentation after printing out the triage sheet to include information such as medications, medical and social history. The addition of these factors extended the length of time taken to triage.

Figure 12: ED information systems in EDs visited (n=16)
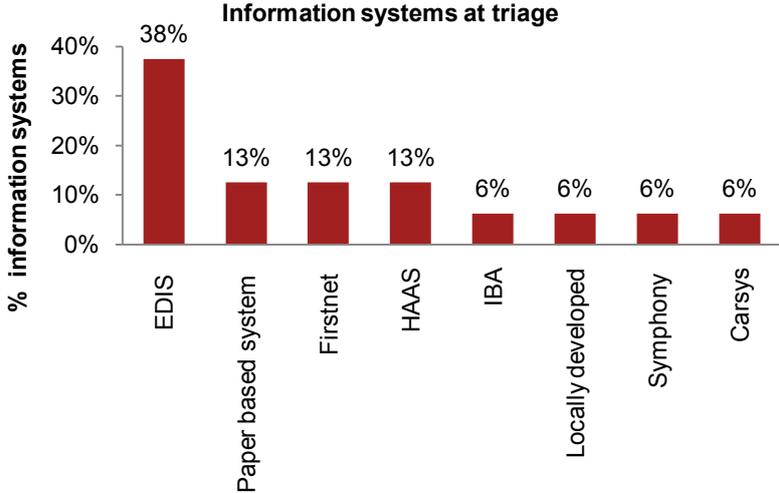
Source: ED site visits.

4.3   The role of triage

ACEM defines the role of triage as the first point of contact for the public when they enter the ED. ACEM recommends the role be performed by staff members who are specifically trained and experienced. The role generally involves a Registered Nurse who uses clinical judgement, critical thinking skills and patient assessment skills to arrive at a triage decision which should take 2-5 minutes. The assessment should describe the presenting problem, general appearance, and relevant physiological observations. Reassessment of patients and re-triaging may be required. Investigations may also begin at triage.[81.]

Table 9 highlights the key findings of the triage role.

This section addresses several aspects of the role of triage:

- staffing at triage, staff competencies, education and training, and staffing levels proportional to ED activity
- quality audit and review of the triage nurse and process
- the length of time taken to triage
- the factors that affect the length of triage, such as interventions, interruptions, delays, staffing levels and triage experience.

Table 9: Key findings by role of triage

Role of triage	Key findings
Triage education	EDs are predominantly using a combination of ETEK and locally developed triage material
Triage staffing numbers by activity	The number of triage staff allocated to an afternoon shift increases in EDs proportional to the level of ED activity; this is not consistent for the morning or night shifts
Triage staffing numbers and models of care	The number of MOC increases when the number of triage staff increases on morning and night shifts The opposite occurs on afternoon shifts; with fewer MOC, the number of triage nurses increases
Triage experience	Nurses with 5-10 years triage experience have the highest percentage of triage episodes under 5 minutes
Triage quality audits	Practices of auditing the triage role vary between EDs and there is no standard national Quality Assurance tool for EDs to use No ED reassessed triage nurse on a competence regular basis

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81 Guidelines on implementation of the Australasian triage scale in emergency departments, 2005, August 05, pp. 2-3. *Australasian College for Emergency Medicine*. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/G24_Implementation__ATS.pdf Last accessed 12.03.11

Role of triage	Key findings
Triage time	Category 3 patients take the longest to triage and also have the most interventions, interruptions and delays during the triage process. Category 1 patients are the quickest to triage and have the least interventions, interruptions and delays.
Mode of arrival	Patients presenting by ambulance take 1.17 minutes longer to triage than walk-in patients
Interventions	58% of the triage episodes were completed in 11 minutes or more had vital signs performed. Only 6% of vital signs were performed in triage episodes under 2 minutes
First aid	First aid is part of the triage process and EDs that performed first aid during triage average 2.3 minutes longer per triage
Triage interventions	Analgesia, x-ray and other inventions occur most frequently in triage episodes over 5 minutes
Phone calls	The number of phone calls a nurse made during the triage lengthened the time taken to triage Phone calls are the greatest cause of interruptions and delays at triage

4.3.1   Triage staffing

Triage competencies

As per the guidelines and policies endorsed by ACEM and CENA, a Registered Nurse (RN) was observed in the role of triage at each ED site visit. This requirement is part of the minimum set of standards and competencies to be a triage nurse.[82,83,84] The CENA minimum standards state that a triage nurse must be an RN with clinical expertise in emergency nursing, and some states also require a post-graduate qualification for a triage nurse prior to the RN beginning triage practice.

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[82] College of Emergency Nursing Australasia, 2009. Position Statement, Triage Nurse. Retrieved from http://www.cena.org.au/documents/CENATriageNursePSJuly2009.pdf. Last accessed January 2011.

[83] Australasian College for Emergency Medicine, (2006). Policy on the Australasian Triage Scale. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/P06_Aust_Triage_Scale_-_Nov_2000.pdf, Last accessed January 2011.

[84] Australasian College for Emergency Medicine, (2005). Guidelines on the implementation of the Australasian triage scale in emergency departments. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/G24_Implementation___ATS.pdf, Last accessed January 2011.

Triage education

Summary of findings:

- EDs are predominantly using a combination of ETEK and locally developed triage material

All EDs required the RN to complete a triage training package before they could perform in the triage role. The level of training varied across sites, from in-house triage programs and ETEK to the completion of additional advanced learning modules, which could take 18 months to complete. Some sites also required staff to be accredited in Advanced Life Support before performing in the triage role.

The ETEK[85] was in use in 100% of sites visited, and was the preferred tool for teaching triage in the vast majority of those sites. The ETEK program was often supplemented by local training packages and guidelines supporting the local context. This is supported by survey data which reports that 74% of survey sites use ETEK in conjunction with local training resources. See Figure 13 below for a summary of education resources used.

Figure 13: Triage education resources used in Australian EDs (n=87)

Triage education resources used by survey respondents
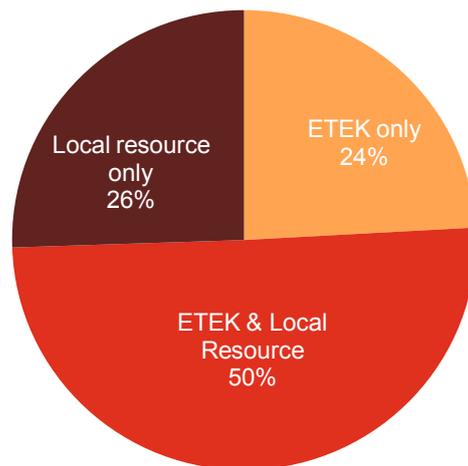
Source: ATPR survey.

It should however be noted that in 2 sites, the Manchester Triage Scale (MTS) structured decision-making tools were used by novice triage nurses to learn specific features of the triage process.

Benefits of ETEK

Some of the benefits of the ETEK tool suggested by sites were that it had:

- improved consistency among triage nurses
- provided a structure for triage education

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85 Australian Department of Health and Ageing, 2009, Emergency Triage Education Kit: Triage Workbook. Retrieved from http://www.health.gov.au/internet/main/publishing.nsf/Content/5E3156CFFF0A34B1CA2573D0007BB905/$File/Triage%20Workbook.pdf Last accessed January 2011.

- provided a resource of consistent up-to-date information as opposed to the trainer simply passing down their knowledge to new triage nurses
- gave employers confidence in supporting new staff to begin in triage (if they had completed ETEK)
- provided useful tools to assist triage decision making, such as the Mental Health guidelines.

One site using Emergency Department Information System (EDIS) had uploaded the ETEK package onto the system for use by triage nurses as a reference tool when required.

If the ETEK package were to be reviewed in the near future, some commonly suggested improvements are:

- more interactive scenarios to help with the visual cues aspect of triaging
- elements that support the increasing acuity and complexity of patients
- specific information and additional discriminators relating to the paediatric and geriatric cohorts.

In addition to an improved ETEK, it was also suggested that endorsing ETEK as the minimum national education standard would improve triage nurse training and give employers confidence as staff move between EDs and jurisdictions. With this base level of triage competence, the RN would then be required to carry out local training to develop understanding of local policies and patient demographics. With a move to a national nursing registration body for staff working in the health system, endorsing a national triage education program would support a nationally consistent approach to triage competency. New Zealand currently has a mandatory National Triage course and 100% of the survey responses received from New Zealand noted its use.

Training & experience

All EDs visited described the triage nurse role as fundamental to the developmental pathway of an ED nurse. Developing the competencies to work in the role of triage was part of the progression of the ED nurse and becoming skilled at triage facilitated a clear process of clinical judgement and decision-making at the point of patient presentation to ED.

Most sites considered that the role requires at least 2 years ED nursing experience in addition to completion of ETEK and on-the-job training. Other sites required a post-graduate qualification. Several sites suggested that all aspiring triage nurses must work as nurse team leader in resuscitation before being able to triage and that training for the team leader and triage roles should be offered concurrently. It was also recognised that triage was an ongoing learning process which would not be acquired by attendance at a triage course alone. Development of the skills and knowledge required to manage the challenges of triage occurs over time.

Training support

It is recognised that supporting and providing triage training will have some cost implications for the ED. These costs will arise from the provision of supernumerary and supported shifts during learning periods, as well as from the provision of appropriate supervision from senior staff. For most EDs visited, triage staff considered that the support and training provided was more than satisfactory, with staff having access to between 1 and 3 supernumerary shifts in addition to the formal training days. Novice triage nurses also had access to senior nursing and medical staff for support as required. This level of support was not as evident in regional and rural sites, observed in site visits and surveys, where access to triage training and supervision from experienced staff was found to be limited.

Secondary triage process

The review revealed a number of EDs that utilised a secondary triage process system where brief initial triage (with no detailed medical history collected or interventions) was performed, followed by a secondary assessment. This secondary process was usually performed on patients who had been streamed directly into a specific MOC or who had been triaged into the waiting room.

The secondary process involved a more in-depth physical assessment that included commencement of diagnostic testing and treatment. The allocated triage category may then be upgraded or downgraded depending on the assessment findings. Of the hospitals that used this system, there was minimal reallocation of triage category. Nevertheless it did provide a „safety net‟ for the primary triage nurse in that the patient would be thoroughly assessed shortly after their initial assessment. This also reduced the need to perform a lengthy initial triage and mitigated the temptation to up-triage patients so they can be assessed quicker.

During consultation it was concluded that this secondary assessment process is part of the ED service delivery. A change to the triage category can occur following assessment and this is part of the dynamic process of triage, whereby re-triage can occur throughout the entire ED patient journey.

Triage staff in ED

The number of triage staff allocated per shift was analysed to identify the relationship to the number of MOC and the number of ED presentations. The site visits revealed a variation in the number of triage staff in EDs, as seen in Figure 14 and Figure 15. ED staff consulted thought this variation was dependent on activity and models of care. These findings are discussed below.

Triage staffing numbers proportional to ED activity

Summary of findings:

- The number of triage staff allocated to an afternoon shift increases in EDs proportional to the level of ED activity; this is not consistent for the morning or night shifts

- ED activity was a poor indicator of the number of triage nurses allocated per shift

The number of triage staff allocated per shift was analysed to identify the relationship to the number of MOC and the number of ED presentations. The site visits revealed a variation in the number of triage staff in EDs, as seen in Figure 14 and Figure 15. ED staff consulted thought this variation was dependent on activity and models of care. These findings are discussed below.

Activity was generally a poor indicator of the number of triage nurses, with the exception of the afternoon shift. EDs with higher activity in the afternoon had more triage nurses at those times. As the number of annual presentations to an ED increased, the numbers of staff allocated to triage on morning and night shifts did not increase proportionally. Interestingly, 1 ED at the higher end of annual presentations allocated 1 triage nurse per morning, afternoon and night shift, the same as EDs below 25,000 presentations.

The triage staffing level on morning shifts was greater for EDs with 25,000 – 50,000 presentations, with 55% allocating 2 triage nurses and 10% allocating 3 per shift. For EDs with <25,000 presentations and >50, 000 presentations, 1 triage nurse was allocated to the morning shift in 89% and 86% respectively.

The number of triage nurses allocated to triage on afternoon shifts directly increased in line with the level of ED activity. Of the EDs with <25,000presentations, 94% allocated 1 triage nurse and 6% allocated 2 triage nurses. The number of EDs with 2 triage nurses increased to 45% for EDs with 25,000-50,000 presentations and increased to 74% for EDs with >50,000 presentations.

The night shift had lower levels of staffing, with 85% of EDs with 25,000-50,000 presentations and >50,000 presentations allocating 1 triage nurse per shift. Of the EDs with <25,000 presentations, 74% allocated 1 triage nurse and 26% of the EDs identified that there was no designated triage nurse at night. In some smaller EDs visited, the triage nurse had a dual role, i.e. as nurse in charge of the shift and allocated to triage. Figure 14 and Figure 15 show the number of triage staff allocated to each shift by ED site visit data and data from survey respondents.

Figure 14: Number of triage nurses allocated per shift site visits (n=16)

Number of triage nurses per shift ED site visit
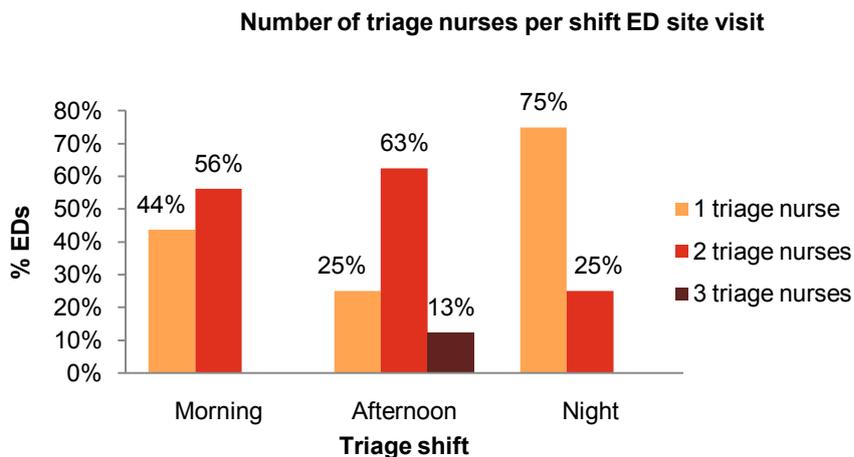
Figure 15: Number of triage nurses allocated per shift ED survey (n=87)
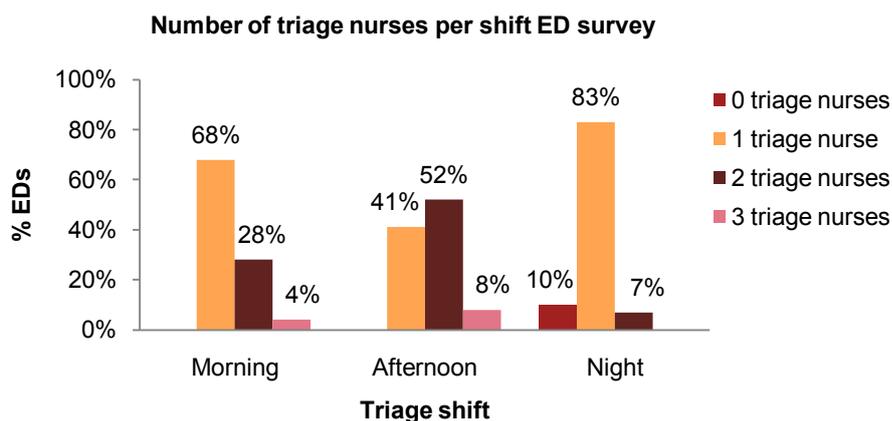
Number of triage nurses per shift ED survey

4.3.2 Triage experience

Summary of findings:

- Nurses with 5-10 years triage experience have the highest percentage of triage episodes under 5 minutes

The observational review showed that nursing experience varied, from nurses performing triage for the first time that day, to nurses with 20 years experience. In Figure 16 triage level of experience is compared to triage time within 5 minutes – the timeframe endorsed by ACEM. Nursing experience was divided into 4 groups to represent the broad representation of triage experience and to determine whether experience affected the length of a triage. Each „experience" group shows the percentage of triage episodes that were completed in less than 5 minutes. The results do not show a linear correlation between level of triage experience and triage performed within a 5 minute time period, as it appears nurses with 11 years or more experience have the lowest percentage of triage episodes within 5 minutes.

Figure 16: Triage nurse level of experience compared to time taken for triage (n=316).

Triages performed in 0-5 minutes compared to triage experience
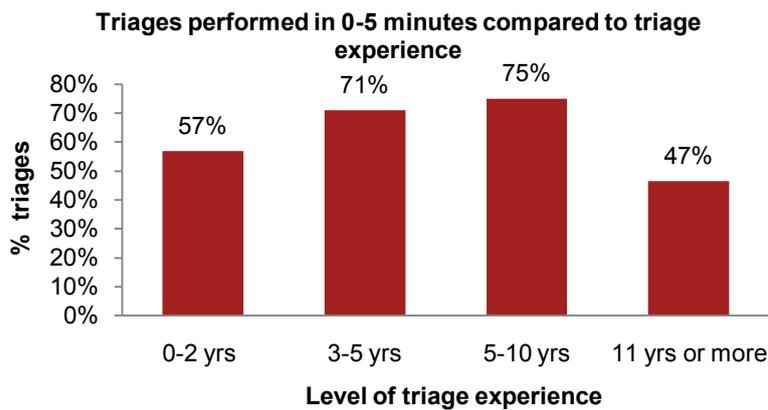
Source: ED site visits.

Triage quality audits and review

Summary of findings:

- Practices of auditing the triage role vary between EDs and there is no standard national quality audit tool for EDs to use

- Triage nurse competence was not reassessed routinely in EDs

Quality audits and review processes are an important management activity in the ongoing monitoring of triage practices and support processes in an ED. They allow for continuous quality improvement and learning, using real triage examples. As part of the ATPR review the existence of quality audit processes and tools was investigated.

Many EDs visited cited the use of case review and triage audits as a learning tool, with many noting the need for the triage nurse and the rest of the ED team to learn from their own practice and the impact of their decisions on the patient"s journey through the ED. This practice review was considered an integral part of the triage learning process. One site in particular suggested that triage nurses need permission to make mistakes as it is part of the learning process, while another suggested that it was necessary to remove fear of the triage role by providing ongoing education and exposure to different cases. One survey respondent stated that their ED provides new triage staff with monthly reviews and feedback for the first three months as a triage nurse.

Of the EDs visited, 3 were using a formalised audit tool and two others carried out audits regularly with defined criteria for review. Other EDs performed audits on triage documentation and discussed triage performance with the individual triage nurse, or in a team environment for peer review. Less formally, other EDs would audit triage if there was found to be a day of particularly high numbers of categories 2 or 3. Remaining sites audited triage practices where adverse events had occurred or complaints been made. Survey data indicated a similar approach to quality assessment, with only 32% of respondents suggesting they practise quality review processes of triage.

No ED carried out regular competency checks on triage staff once they had been deemed competent to perform in the triage role, and triage audits on individual nurses were carried out only in the instance of an adverse event or complaint

While many sites displayed good initiatives regarding review of the quality and consistency of triage, there was no common timeframe or approach. The regularity of these reviews varied across sites from weekly to yearly, or on an ad hoc basis.

4.3.3 Time taken to complete triage

Summary of findings:

- Category 3 patients take the longest to triage and also have the most interventions, interruptions and delays at triage.

- Category 1 patients are the quickest to triage and have the least interventions, interruptions and delays.

Time taken to triage has been considered as part of the project following the introduction of clinical pathways and nurse-initiated interventions at triage. A NSW study into category 3 allocation found delays were occurring at triage[86]. These delays were a result of triage nurses collecting irrelevant or unnecessary information to make the triage decision, duplication of triage information relayed to the team leader, and duplication of documentation. In addition, the experience level of the triage nurse extended decision-making time, and feedback from other ED staff decreased the nurse"s confidence in decision making. Findings from the observation of triage processes are presented below according to triage category.

- *Category 1* – The average triage time was 3 minutes, with a range of 2 -4 minutes. The longest triage was due to the triage nurse having difficulty finding the appropriate presentation data code in the information system. The nurse was also observed to manually document additional information on the triage sheet, including vital signs, allergies, social and medical history and current medications. It must be noted that this patient was treated immediately and the triage process occurred concurrently with the patients treatment.

- *Category 2* – The average triage time was 5 minutes, with a range of 1-13 minutes. The longest triage was due to difficulty reading a handwritten referral letter. The nurse had to walk into the ED (20-30 metres from the triage area) to find a doctor and ask for help in interpreting the letter, and then manually document additional information on the triage sheet - this included vital signs, allergies, social and medical history and current medications.

- *Category 3* – The average triage time was 6 minutes, with a range of 1-35 minutes. The longest triage was due to a full set of vital signs being performed, first aid administered and interruptions from ambulance and ED staff during the triage process. Two unrelated phone calls also delayed the triage: one from ambulance control about a priority patient en route, and a second from the triage nurse to the team leader regarding the priority patient. In addition the nurse attended to a patient enquiry from the waiting room, filled out psychiatric paper work from a previous patient, and triaged 3 ambulance patients, before completing the paperwork for this particular patient being triaged.

- *Category 4* – The average triage time was 5 minutes, with a range of 1-28 minutes. The longest triage was due to the nurse having to find a wheelchair to transfer the patient into the triage area where a full set of vital signs and physical assessment (chest auscultation) was performed. The nurse was interrupted by an interstate patient enquiry about attending the ED"s fracture clinic. The patient had inappropriate paperwork and the nurse had to determine if the patient was actually booked in to the fracture clinic. The nurse investigated the matter with multiple phone calls and rectified the situation for the interstate patient before completing the triage. There was a large amount of documentation required for this triage episode.

- *Category 5* – The average triage time was 4 minutes, with a range of 1-19 minutes. The longest triage episode was for a patient who was offered and agreed to alternative treatment at their GP. The triage nurse had difficulty locating the GP"s phone number and then made 2 telephone calls to the GP for an appointment for the patient.

These results are summarised in Figure 17.

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86 Rojo, J. (2010). *T3 Project: An Exercise in Redesign, Quality, Safety and Improvement, Conference Presentation, Redesigning Healthcare Summit May 2010.*

Figure 17: Average length of triage time per triage category (n=316)

Average length of time per triage category
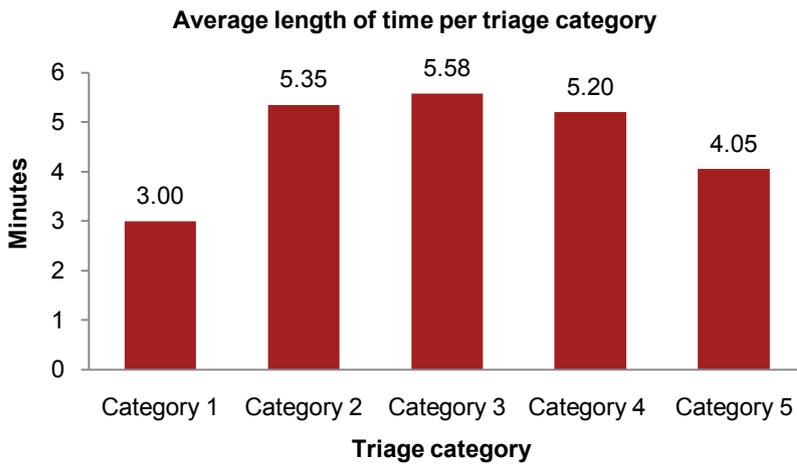
Data from the site visits was compared to data from the ED survey to assess differences in time taken for triage. It should be noted that the ED site visit data was taken from actual times observed and the ED survey data was taken from respondents reporting average times across a range, therefore survey respondents estimated times. The results of the comparison can be seen in Figure 18. This shows that almost 50% of survey respondents identified the average time taken for triage to be 3-5 minutes. The ED site visit data and observed triage times showed the greatest number of triage episodes to be in the 5-10 minute timeframe. However, when combining the timeframes of 0-5 minutes, the majority of triage episodes in ED site visits fell into this range. This is 58% of all triage episodes, which is consistent with ACEM‟s recommended timeframes.

Figure 18: Time taken to triage by ED site visit and ED survey respondents

Time taken to complete triage
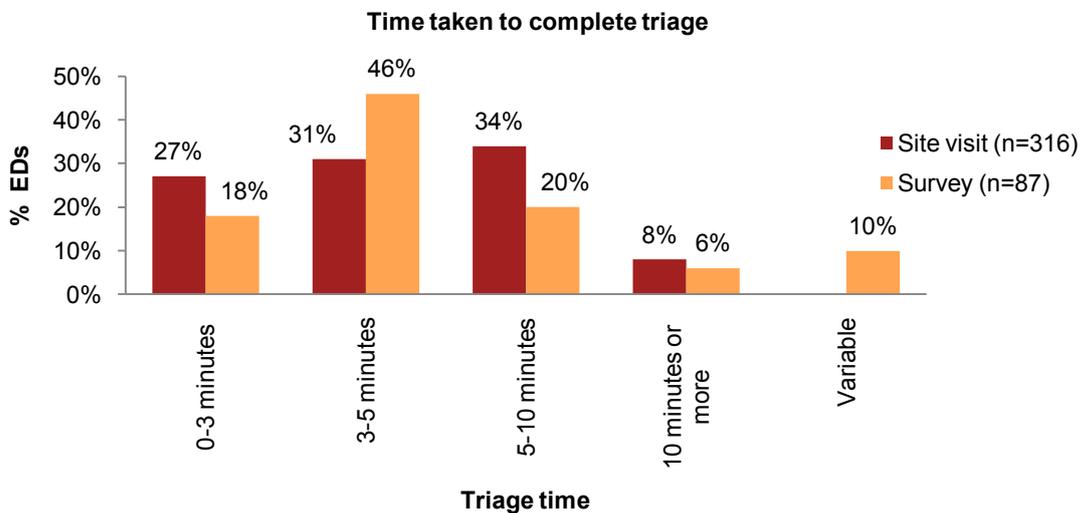
Mode of arrival

<table>
<tr><td>Summary of findings:

• Patients presenting by ambulance take 1.17 minutes longer to triage than walk-in patients</td></tr>
</table>

Data was analysed to determine a relationship between mode of arrival and time taken for triage. This is presented below in Figure 19. Ambulance arrivals had the longest time taken to triage, of 6.23 minutes, this being 1.17 minutes longer to triage than walk-in patients.

In addition, as seen above in Figure 17, category 2 and 3 patients have the highest triage times and account for 32% and 35% of all ambulance arrivals respectively.

Figure 19: Average time taken to triage by patient mode of arrival (n=316)
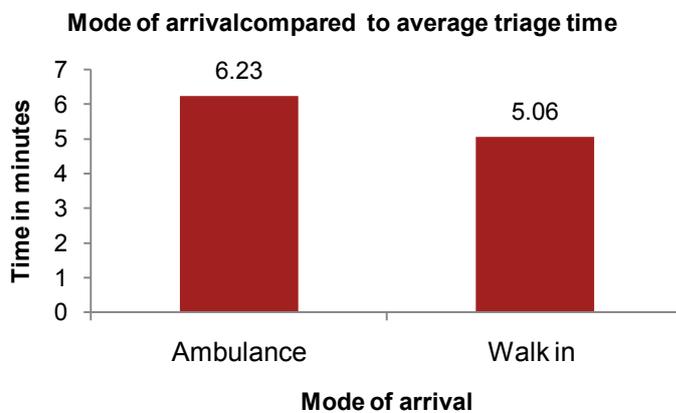
Source: ED site visits data.

4.3.4 Interventions, interruptions and delays at triage

To understand the processes at triage and factors influencing time taken to triage and the tasks carried out by the triage nurse, the observational review captured data about interventions, interruptions and delays. This section presents an analysis of the impact these factors have on the time it takes to triage a patient. Table 10 summarises the data collected in the observational review.

Table 10: Interventions, interruptions and delays captured at triage as part of the observational review

Intervention, interruptions, delays	Description
Vital signs	Include blood pressure, pulse oximetry, respiratory rate and temperature
ECG	Electrocardiograph
X-ray	Patient sent for x-ray from triage
First aid	Attending to any laceration, abrasion, bruising or swelling
Analgesia	Paracetamol, paracetamol/codeine mixtures, morphine
Physical assessment	Abdominal examination and chest auscultation
Weighing	Weighing paediatric patients
Other intervention	Blood sugar level, breathalyser, non-analgesic medication, icy poles for rehydration therapy and collecting urine samples for urinalysis
Ambulance interruptions	All ambulance staff – interruptions unrelated to a patient triage
ED staff interruption	Nurses, doctors and allied health
Patient relative interruption	Enquiry about patient in the ED or in the waiting room
Clerical interruption	All clerical staff – unrelated to current triage
Phone call	Phone calls to and by the triage nurse
Other delays	Awaiting orderly to bring wheelchair, checking old notes, triage nurses leaving the triage area to transfer patients into the main ED or to examine patients in the waiting room
Large amount of documentation	Documentation that exceeded ACEM"s standards of: date and time of assessment; name of triage officer; chief presenting problem(s); limited relevant history; relevant assessment findings; initial triage category allocated; re-triage category with time and reason; assessment and treat area allocated; any diagnostic – first aid or treatment measures initiated[87].
Detailed history	Medical or social history that is not part of the presenting complaint

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[87] Australasian College for Emergency Medicine, (2005). Guidelines on the implementation of the Australasian triage scale in emergency departments. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/G24_Implementation___ATS.pdf, Last accessed January 2011.pp2-3.

Triage interventions and activities

The difficulty in assessing interventions carried out at triage is determining what is appropriate and what could be performed by someone else as part of ED service delivery. Below is a discussion of the interventions carried out at triage and their appropriateness for each category.

Vital signs

> Summary of findings:
>
> - 58% of the triage episodes completed in 11 minutes or more had vital signs performed. Only 6% of vital signs were performed in triage episodes under 2 minutes

ACEM"s triage guidelines state that "vital signs should only be measured at triage if required to estimate urgency, or if time permits".[88] ACEM guidelines can be interpreted broadly, therefore the vital sign guideline can fit many presentations. Whether to take vital signs is a subjective decision determined by the triage nurse and local ED practices. Some EDs had an expectation and culture of recording vital signs for the majority of patients. Other EDs had an expectation and culture of not recording vital signs at triage. However, it is evident that as the number of vital signs recorded increased, so did the length of triage. Figure 20 demonstrates the link between the increase in the percentage of vital signs taken at triage and the subsequent increase in length of triage.

Figure 20: Triage time taken when vital signs are recorded (n=316)

Length of triage with vital signs recorded
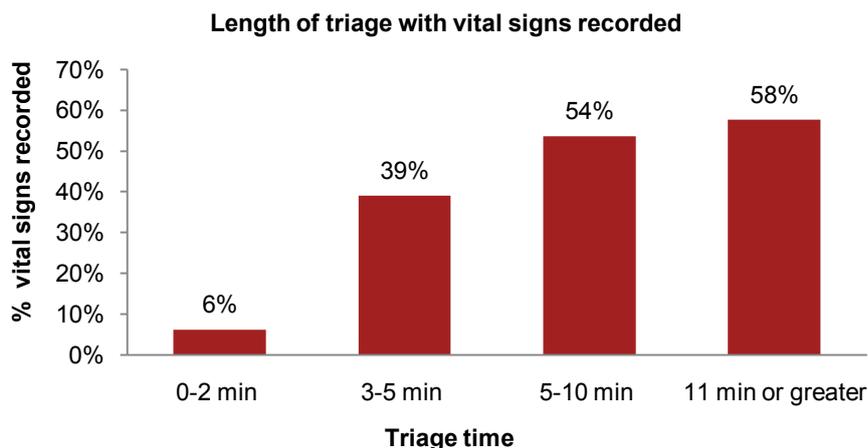
Source: ED site visits.

In the site visit data, 39% of category 2 patients had vital signs taken. This appears to be a high proportion considering that ACEM recommends category 1 or 2 should be taken into an appropriate assessment and treatment area immediately. While it is recognised that vital signs can assist in the allocation of an urgency rating, this practice has the potential to delay category 2 patients from being transferred into the ED for timely treatment.

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[88] Australasian College for Emergency Medicine, (2005). Guidelines on the implementation of the Australasian triage scale in emergency departments. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/G24_Implementation__ATS.pdf, Last accessed January 2011. pp1.

First aid

> **Summary of findings:**
>
> - EDs that perform first aid at triage average 2.3 minutes longer per triage than those that do not

First aid is listed as a role of triage by CENA in their triage nurse position statement which is incorporated in the ETEK workbook.[89] Providing first aid may not help the triage nurse in determining a patient"s category, and could be considered the commencement of treatment. From the 16 ED sites visited, 9 did not perform first aid at triage. Those 9 averaged 4.2 minutes for all triage episodes (ranging from 2-7 minutes), compared to EDs that did perform first aid which averaged 6.5 minutes (ranging from 4-9 minutes).

Analgesia, x-ray and other interventions

> **Summary of findings:**
>
> - Analgesia, x-ray and other inventions occur most frequently in triage episodes over 5 minutes

Other interventions" include diagnostic tests and commencement of treatment. These 3 interventions at triage account for 28% of interventions in groups that took 6-10 minutes and 11 minutes or more. When comparing the triage episodes that took 3-5 minutes and under 2 minutes, these groups had 10% and 7% of these 3 interventions respectively.

The data shows that where interventions are performed at triage, the triage time is longer. This increased time can potentially delay access to treatment for the patient being triaged and for subsequent patients awaiting triage. It is therefore worth considering whether these interventions need to be conducted at triage or whether they could be carried out by another staff member.

In interviews and focus groups, staff suggested that when time permitted and patients were waiting there was value in commencing these interventions in the waiting room. This would have benefits, for example, when a patient has to wait for a long time before receiving analgesia or to increase the speed of diagnosis by initiating investigations such as x-rays.

Other staff commented that interventions delayed patient access to treatment and subsequent treatment times. It was suggested that these interventions should be carried out by another clinician, thus allowing the triage nurse to attend to the triage role and decrease the possibility of delaying triage and treatment for patients. The key findings for interventions carried out at triage can be seen in Table 11.

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[89] College of Emergency Nursing Australasia, 2009. Position Statement, Triage Nurse. Retrieved from http://www.cena.org.au/documents/CENATriageNursePSJuly2009.pdf, Last accessed January 2011.

Table 11: Key findings for interventions carried out at triage (n=316)

Domain	Key findings
Triage interventions	39% had vital signs performed
	9% had other interventions including collecting urine specimens, rehydration, BSL, breathalysers
	9% had some form of physical assessment
	6% had first aid treatment
	5% had analgesia given
	1% had an ECG

Phone calls

> Summary of findings:
>
> - As the length of triage increases so does the number of outgoing calls from the triage nurse
> - Phone calls are the greatest cause of interruptions and delays at triage

Phone calls were another variable that increased with the length of triage. As the time taken to perform triage increased, the number of outgoing phone calls from the triage nurse increased, from 40% of all calls in the triage group of 3-5 minutes to 60% of calls for the triage group of 11 minutes or more. The outgoing phone calls varied according to triage category, and for category 2 patients they were to seek advice and arrange a cubicle for treatment.

Triage documentation

Documentation processes at triage were shown to increase triage times. This appeared to be related to practice and culture in the ED, and not individual nurse practice. Most EDs had a practice of either documenting large amounts of information or only documenting a minimal amount; there were few EDs in between.

Triage interruptions and delays

> Summary of findings:
>
> - Time taken to perform triage correlates to an increased number of interruptions and delays

Interruptions to the triage process have the potential to delay patient access to treatment, as the triage nurse may be taken away from their primary role. To understand the impact that interruptions and delays had on the triage process and time taken to triage, data collected during the observations was analysed. Data analysed was placed into time thresholds as seen in Table 12

Table 12   Time taken to triage with interruptions and delays (n=316)

Triage time	Key findings
2 minutes or less	20.6% of triage episodes were seen in this time frame and very few interruptions or delays were seen
3-5 minutes	This group represents the largest proportion (40.5%) of all triage episodes. Phone calls increased and 60% of phone calls were incoming to the triage nurse
6-10 minutes	This group represents 30.7% of all triage episodes Interruptions increased from phone calls with 50% of calls from the triage nurse. ED staff and patient relative interruptions increased.
11 minutes or more	This group represents 8.2% of all triage episodes There was an increase in interruptions and delays and phone calls, with outgoing phone calls from the triage nurse being 63% of all calls.

Data was also analysed to determine the proportion of interruptions and delays at triage. Results can be seen in Table 13.

Table 13: Interruptions and delays at triage (n=316)

Domain	Key findings
Interruptions	14% of all triage episodes had phone calls. 51% were incoming calls; 49% were outgoing calls 9% of all triage episodes were interrupted by an ED staff member 5% of all triage episodes were interrupted by a patient relative 2% of all triage episodes were interrupted by a paramedic 1% of all triage episodes were interrupted by clerical staff
Delays	9% of all triage episodes included manual documentation of each triage on a central display area in the main ED Of the EDs with information systems requiring registration of patients before triage, 12% had to wait 2-5 minutes for clerical registration Other delays such as having to walk out of the triage room to see a patient or to bring a patient into the triage room accounted for 1% of all delays

From the data presented it appears that phone calls are the greatest cause of interruptions and delays at triage. Approximately half of these calls were made by the triage nurse to discuss a patient‟s presenting problem and to get a bed allocated for assessment. While communication to the ED is important, alternative methods of communicating information about triaged patients and to arrange a bed space worked well in other EDs. These included streamlined processes such as using an overhead page, computer based communications and a doorbell.

Several sites were observed to allocate other ED staff as responsible for „pulling‟ the patient into the ED following triage. This process allowed the triage nurse to focus on the core task of carrying out triage without unnecessary delays. Combined, 17% of triage episodes included some sort of interruption from another staff member or patient relative. While interruptions from staff in ED are expected, interruptions from patients and relatives could be minimised with alternative communication and information processes.

4.4   Triage process

This section analyses the triage process to identify innovative and good practices, and the challenges faced by EDs. It also analyses the ATS use in EDs, streaming and complexity, and pre-hospital triage and its relevance for ED presentations.

The ED and triage environment is an important factor as it influences the triage process, patient safety and privacy, as well as way-finding for patients seeking treatment in the ED.

ED benchmarking and performance measures are also considered in this section, as triage times have become the main focus of measuring ED performance nationally. The role of the triage process and the impact of rest-of-hospital and ED activity are important in discussing these measures.

Finally, the patient experience is included in this section. The patient experience has great relevance to the triage process and waiting in ED. The first experiences for a patient at triage can set the tone for their entire patient journey and episode of care. Observations and a descriptive analysis from consumer consultation, ED site visits, ED surveys, publicly available reports and the literature is provided on the following pages. Table 14 provides a summary of key findings for the triage process.

Table 14: Summary of triage process

Triage process	Key findings
Triage role	The triage nurse is one of the most experienced nursing staff in ED
	The triage role provides:
	• communication link between the patient , the waiting room and the rest of ED
	• risk management in providing safety for patients in the waiting room area
	• clinical assessment for each patient entering ED.
	Activities that hinder triage are:
	• tasks that take the triage nurse away from the triage area
	• barriers to timely patient information or unnecessary data entry
	• any communication requirements that are not directly related to the assessment of the patient.
	ED MOC were shown to reduce the pressure on triage staff.
Triage environment	• Signage should be clear and informative for patients
	• Triage areas should provide safety for staff while allowing for privacy and effective communication with patients.
	• Waiting rooms are an opportunity to communicate with the public and manage patient expectations.
	• Consideration should be given to creating flexible ED spaces that can be modified as care delivery models change.

Triage process	Key findings
ATS	• The ATS strength is that it is nationally consistent tool, readily understood and caters well to the identification of time-critical patients. • The ATS is limited in its ability to triage special groups such as paediatrics. • The triage of lower category patients is subjective and there is little specificity for triaging these patients. • The ATS is not a useful queuing tool and does not allow for decisions based on complexity. • Some EDs are seeing lower acuity patients in order of arrival once they are streamed to an MOC. • The triage of patients in pain and with urgent psychosocial needs should be considered in a revised tool. • Mental Health patients are triaged using the ETEK mental health guidelines, but this is not consistent across all EDs.
Complexity and streaming	• EDs are using complexity determinants at triage to stream patients to the MOC. • The most commonly referred to are fast track guidelines for low acuity patients. • Without formalised complexity guidelines and determinants, complexity decisions are driven by the experience and clinical decision-making skills of triage nurses. • Complexity principles developed through consultation and collaboration; and included in ETEK, are considered the most appropriate approach to improving complexity-based decisions at triage.
Performance measures	• Triage times represent only one aspect of ED performance. • National agreement on measuring and capturing „time to treatment" is required. • For the purpose of future benchmarking there is a need to consider ED characteristics. • Quality and outcome based performance indicators should be included to better monitor ED performance.
Patient experience	• Patient satisfaction improves as patients are given information about what to expect when presenting to an ED for treatment. • Patients" tolerance for waiting increases as they are given information about expected waiting times and are kept informed as these times change. • As an expert in triage and assessment, the triage nurse plays a key role in alleviating fear and anxiety while a patient waits for treatment. • Continuous updates by staff are considered important by patients and would improve the patient experience and reduce DNW rates. • Comfort and safety in the waiting room is important, especially for specific groups such as aged and paediatric patients. • While the word "triage" is familiar in the media and general community, understanding of the nature of the triage process is limited. Rather than change the term, raising awareness of what to expect in the ED which is culturally appropriate would improve the general understanding and expectations that the patients and carers have of ED.

4.4.1 Role of triage

Summary of findings:

- The triage nurse is one of the most experienced nursing staff in ED and has advanced knowledge and skills
- The role provides:
    - a communication link between the patient , the waiting room and the rest of ED
    - risk management in providing safety for patients in the waiting room area
    - clinical assessment for each patient entering ED.
- Activities that hinder triage are:
    - tasks that take the triage nurse away from the triage area
    - barriers to timely patient information or unnecessary data entry
    - any communication requirements that are not directly related to the assessment of the patient.
- Triage streaming to MOC reduced the number of patients in the waiting room which increased staff satisfaction.

The triage nurse is the first contact for patients arriving in the ED, and is responsible for managing the flow of presentations. The nurse will generally triage both walk-in and ambulance patients and allocate each patient to a cubicle, the waiting room or another treatment location in the ED.

Process and pathways are individually determined based on:

- a brief visual assessment of the patient
- assessment of presenting problem and medical acuity
- targeted observations and assessment
- access and availability of treatment resources.

During ED site visits triage nurses of differing skill levels and experience were observed to, at a minimum, undertake an assessment of the patient and allocate an ATS category.

It was observed at multiple sites that the triage nurse carried out several other functions in addition to the triage assessment process. In contrast, other sites had streamlined the triage process and removed extraneous tasks from the triage role. In ED consultations it was stated that there is now too much attached to triage; the role has become blurred and it is difficult to determine when the triage process ends. Table 15 below summarises the observations about the triage role.

Table 15: Summary of the triage role

	Observed extra triage roles	Streamlining innovations observed
Calls in/received	Answering the dedicated priority phone line from the ambulance service Some sites receive a call to notify every pending ambulance arrival and make a call to nurse or doctor in charge for every call received.	• Notification calls received only for category 1 or 2 patients • Medical officer (MO) in charge or nurse in charge answers BAT phone directly.
	Triage nurse responds to ambulance transport calls, adds information to IT system „expects" screen and assigns a preliminary category.	Transfer-in Coordinator (flow) can carry out this activity.
	Organising accommodation for out-of-town patients	Delegation to other area of the hospital
	Clinic appointments from outer regional hospitals	Delegation to other area of the hospital
Calls out/made	Contact nurse manager/flow coordinator for a bed/bed availability check	Streamlined communication process (eg doorbell, mobile paging system, IT system)
	Request for consultation notifications to: • Mental Health nurse/liaison • Aged Care/Community Services team • Allied Health team • Sexual Assault team	• IT registration/triage systems that flag patient arrival/team respond appropriately. • Teams monitor ED waiting room via IT system and identify and pull any appropriate patients
	Contact orderly to transfer patient into ED	Streamlined communication process (eg doorbell or mobile paging system)
	Notify resuscitation team about incoming patient	Streamlined communication process (eg doorbell or mobile paging system)
	Confirm patient arrival with expecting team on ward	Transfer-in Coordinator role and/or bypass ED with direct admission to ward pathway
	Call to hospital bed manager re ward bed allocation	Transfer-in Coordinator role or ED patient flow manager
	Triage nurse calls admitting officer for all obstetric patients (2 sites)	Obstetric and gynaecology referral pathways
	Call MO for a rapid assessment at triage if needed	Streamlined communication process (eg doorbell or mobile paging system)
	Call to clinic to advise of expected arrival of an ED referral, including: • Eye or Dental clinics • PECC • MAU • Gynaecology clinic <20weeks • >20weeks to delivery suite	Electronic messaging/referral forms or shared IT access to receive updates
	Call to switchboard directly to request orderly/security support for expected violent patients	• Specific notification code to security • 24 hr security at triage/within ED

Observed extra triage roles	Streamlining innovations observed
Call to activate a trauma response – team and/or hospital-wide	Single call to active trauma code with clear guidelines for response by all team members
Call to theatres to prepare equipment for trauma	
Inter-hospital transfer – triage liaises with ward for bed	Transfer-in Coordinator role and/or bypass ED with direct admission to ward pathways
Call to nurse in charge as escalation for increasing triage demand	Streamlined communication process (eg doorbell or mobile paging system)
Organise accommodation for out-of-town patients	Delegation to other area of the hospital
Clinic appointments for outer regional hospitals	Delegation to other area of the hospital
Call clinical initiatives nurse (CIN) or triage assist to initiate treatment or transfer patients	Co-located roles for easy verbal communication
Notify nurse in charge if waiting room patient deteriorates	Escalation page
After-hours escort of relatives to wards	Delegation to other area of the hospital
Treatment initiation of first aid, IV fluids, analgesia. Ordering pathology etc	• CIN nurse/waiting room nurse • Rapid assessment or waiting room treatment area
Waiting room monitoring and management	Delegation to or supported by a CIN or waiting room nurse
Monitoring and management of corridor patients on trolleys	• Ambulance officer shared care with CIN • Ambulance officers care for patient until ED staff available • Business rule for MO in charge to see patient within 30 minutes of arrival
Attend to relatives in waiting room and escort to patient treatment area in ED	Delegation to waiting room nurse or orderly
Open doors for ambulance arrivals	Ambulance swipe card access to ED
Manually check „expects" screens for patients	Automatic pop-up and population of the triage screen from „expects" screen.
Entry of minimum data set	Secondary triage/assessment process
Entry of paper notes into „expects" or triage record	No paper – all electronic entry
Physically locate medical records for patient	E-records

The rows from "After-hours escort of relatives to wards" through "Open doors for ambulance arrivals" are grouped under the row-label "Other triage roles"; the rows from "Manually check 'expects' screens" through "Physically locate medical records for patient" are grouped under the row-label "Data entry".

4.4.2   Triage process – Good practice and innovations

The operational review of the 16 ED sites across Australia revealed that most EDs continuously review their practices and implement innovations to streamline processes, gain efficiencies and improve performance outcomes. It should be noted that only a sample of EDs was visited and therefore there may be innovations currently in practice that are not included in this report.

When reviewing the triage process the primary focus was on:

- the process of referral for triage
- assessment and allocation of a triage category and the ED location for the patient to be seen
- the transfer of care from triage.

Triage, however, is part of the care continuum for patients presenting to an ED and cannot be considered in isolation. Data was therefore analysed and has been presented along the care continuum as indicated in Figure 21.

Figure 21: The ED patient journey continuum

Referral > ED arrival > Triage > Post triage > ED operations > Discharge/ admission

Review of current practice suggests there are three key areas of innovation:

- Process redesign– resource utilisation, streamlining of process, models of care
- Workforce redesign– specific roles in addition to the core ED workforce that were seen to add value
- IT & Communication system design and innovation – use of communication and technology to achieve improved outcomes.

Table 16 illustrates the practices identified as being particularly innovative across the triage and ED continuum.

Table 16: Innovative practices that influence the triage processes

	Referral	ED bypass	ED bypass from triage	Triage	Post triage	ED operations	Discharge from ED
Process innovations	• Direct admit to ward pathways	• Ambulance STEMI bypass to the Cardiac Catheterisation Laboratory • Redirection to ambulatory care services • Redirection to after-hours GP clinics	• Gynaecology Assessment Unit referrals for <20week gestation patients • Medical Assessment Unit direct referrals • Surgical Assessment direct referrals • Co-located Psychiatric Evaluation Clinic direct referrals • Co-located Geriatric Assessment units direct referral • Co-located GP clinic option for patients • In-hours referrals to co-located: – ENT clinics – Eye clinics – Dental clinics – Women's clinics – Burns dressing unit	• Triage treatment initiation (eg first aid, analgesia and x-ray orders) • Streaming and fast track inclusion/exclusion criteria • Local referral pathways for: – Chest pain – Febrile neutropenic – Sexual assault – Stroke – Fractured NOFs – <20week pregnancies – Mental Health • Mental Health triage assessment form to establish level of risk and observation level required • Parallel processing by clerks • Mental Health management plans at triage for frequent attendees • Two-step triage process • Geriatric assessment – assess/activate level of resources required later	• CIN/Waiting room nurses initiating treatment in waiting room eg analgesia, IV fluids, pathology • Waiting room EN role assist patients and relatives in the waiting room • Rapid assessment by MO • Rapid Entry Assessment and Treatment (REAT) nurse – directed by triage to commence interventions for waiting patients • Secondary waiting rooms for MOC areas – reduces crowding in the main waiting room and supports requirements of separate streams • 30-min time to assessment pathways	• Team-based care – medical staff allocated to teams (Consultant/registrar lead, 1 intern and 1 RN) and follow patient • Fast track clinics • MAU can view patients on ED patient lists and pull appropriate patients through to beds	• 6am psychiatrist rounds to assess/discharge o/night Mental Health patients • 4hr LOS rule = whole-of-hospital accountability for ward bed access • Ability to discharge from triage, RAT or fast track • Emergency surgery pathways • Short stay units • Acute Admissions Unit (AAU) runs 16hrs a day and removes the accumulation of patients in ED awaiting a ward bed each day • Surgery lists – contract with a co-located private hospital to provide planned surgery lists for public patients to minimise hospital bed block.

	Referral	ED bypass	ED bypass from triage	Triage	Post triage	ED operations	Discharge from ED
Workforce innovations	• Transfer-in coordinator coordinates all expected patient transfers in including paperwork, bed allocation and entering into „expects" screen	• Extended Care paramedics – able to do 12 lead ECG and communicate to ED specialist to advise on ED bypass		• Triage coordinator role to coordinate and support at sites with multiple triage nurses	• Mental Health specialist/liaison nurses • Chest pain specialty/liaison nurses • Emergency Aged Care teams • Drug & Alcohol Specialty teams • Roving Registration clerks in ED • Volunteer – trained in bereavement counselling and some other basic skills to assist in waiting room and ED	• Operations manager responsible for patient flow • Nurse coordinator responsible for teams and resourcing • Nurse practitioner running fast track	• Discharge coordinator – liaises with patient and organises any transport and community service needs
Information systems and communication innovations		• 12 lead ECG transmission to ED specialist for review	• Waiting room TV screens communicating the ED triage process and basic health information as well as other available options for care; eg GP clinic contacts details, ambulatory care contacts	• details received about expected patient pops up and populates the triage screen • Chart labelling system for common presentation – identifies pathway and assessments required. Sets of labels for specific presentations • One patient chart for all information to be entered through patient journey • Minimum data set for falls risk, mini mental and domestic violence screen – sends automatic flags to relevant teams for follow-up	• Doorbell system to communicate cat 1 & 2 patients • Mobile broadcast system so overhead pages can be made from any point in the ED by triage, AO or NIC • Visitor stickers – for easy identification and 2 per patient to limit visitors in ED	• Electronic touch-screen bed board for ED identifying tasks to complete • Colour coded streams and teams for easy identification • E-records of past visits able to be pulled up • Swipe card access to cupboards – 2 person swipe required for Schedule 4 drugs	

Triage process – Challenges

The interviews and focus groups conducted at sites allowed open and frank discussions with ED staff ranging from junior RNs to ED directors.

Some of the key challenges identified by multiple sites were:

- the role of ED as a gatekeeper to all wards in the hospital
- increasing levels of violence and abuse towards triage and ED staff
- patient privacy and ability to appropriately assess a patient in a specific space at triage
- capacity to deal with the increasing complexity of patients
- decreased access to inpatient ward beds can result in bottlenecks in the flow of patients and ED overcrowding, with a decreased ability to treat ED patients
- models of care/in-patient departments that have the capability to take direct referrals from triage but instead request full medical clearance and work-up in ED first
- levels of risk involved in waiting room management and monitoring the initiation of treatments in this environment.

There was a strong consensus that while there is room for improvement, the triage process on the whole is:

- useful for sorting and prioritising patients and to facilitate patient safety
- flexible enough to be adapted locally
- effective in identifying those patients that require immediate treatment.

Sites recognised that in the context of increasing demand and acuity of patients, the barriers to accessing resources or taking next steps to treatment are a limiting factor. Survey responses echoed these points of view.

4.4.3 Timing of triage

The ATPR aimed to understand the timing of triage and whether there was a role for pre-hospital triage and allocation of a triage category. The existence of pre-hospital triage activities and procedures was therefore examined in the operational review. It is recognised that triage is a dynamic process and can begin early in a patient journey, in the pre-hospital setting. Pre-hospital triage activities fell into two specific areas:

- pre-hospital triage as part of the patient journey
- pre-hospital triage with the purpose of ED bypass.

Pre-hospital triage as part of the patient journey

While pre-hospital triage normally occurs with the ambulance services, triage as a concept occurs when a health professional assesses the level of urgency and care needs of a patient. From the first point of contact, the triage and assessment of patient urgency for the next level of care should be viewed as an iterative process, with reassessment at multiple points along the patient journey.

The pre-hospital triage is relative to the health provider‟s level of triage education, environment and available resources at the time of assessment. Triage assessment performed by health professionals in the pre-hospital setting is recognised as different to triage nurse assessment in an ED.

ED staff consulted as part of the operational review acknowledged that the ambulance service plays an important role in triage. They agreed that differences in ambulance and ED systems, protocols and understanding of the ATS would limit the value of allocating a triage category in the pre-hospital setting by the ambulance service.

A patient"s condition may improve or deteriorate en route to ED. Hence the patient"s urgency on arrival may change and therefore will need reassessment at each point of contact and transfer of care.

While accepting that re-triage is necessary, there are nevertheless opportunities for improving the current process of pre-hospital triage communication for example:

- Improved communication with ambulance services about the need for structured triage information. Information should be consistent between ambulance staff and the receiving hospitals. Triage time data collected showed that the ambulance triage episodes were longer than those for walk-in patients. The majority were higher acuity (category 2 & 3) patients, however with consistent information there should be some level of efficiency gained in the handover of a patient from trained health professionals.

- Improved communication with GP services:

  – Use of pre-hospital information – The medical assessment, referral actions and notes provided by a GP could be used by triage and ED staff in a more structured way and considered an important part of the patient"s assessment. Current efforts by GPs to provide pre-hospital information were observed to be ad hoc and were often not recorded or acknowledged. The patient"s perception of triage to treatment time may be negatively affected by this.

  – Feedback to GPs – It was raised at multiple sites that there was sometimes miscommunication about the ED being the most appropriate place for the GP to refer the patient to for treatment. However, with the exception of 2 sites, there did not appear to be a standardised process of communication between ED and GPs to provide timely feedback or advice on appropriate referral processes and access to direct hospital admission services. Staff suggested that patients referred from GPs may have been given unrealistic expectations about care provided in ED. Patient understanding of the triage process was also a significant contributor to these expectations.

Pre-hospital triage – ED bypass

Pre-hospital triage with the opportunity of ED bypass is generally undertaken by paramedics during a trauma or cardiac event, where patients can be taken directly to a theatre or cardiac catheterisation laboratory for primary intervention.[90, 91]These models are considered effective and triage in these instances is carried out by ambulance paramedics with additional training.[92]

Pre-hospital triage and cardiac pathways were seen at multiple large facilities. Ambulance paramedics were able to transmit 12 lead ECG traces electronically and have them assessed by a medical officer before arrival, and initiate treatment en route to the ED. Two sites had a pathway for a full ED bypass and redirection to the cardiac catheterisation laboratory. One site still required the ambulance staff to collect patient labels at ED and have the triage nurse do a brief visual assessment.

This shows that pre-hospital triage activities are occurring and in some instances the role of the ambulance service in formalised triage is increasing. Despite this, there is agreement among the emergency care clinicians consulted that while triage exists in a pre-hospital setting it should not replace triage on presentation to the ED.

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[90] Cox, S, Currell, A, Harriss, L, Barger, B, Cameron, P. & Smith, K. (2010). Evaluation of the Victorian state adult pre-hospital trauma triage criteria, *Injury - International Journal of the Care of the Injured*, 11th November.

[91] Mulholland, S.A; Gabbe, B.J. & Cameron, P. (2005). Is paramedic judgement useful in pre-hospital trauma triage? *Injury - International Journal of the Care of the* Injured, 36(11), 1298—1305.

[92] Ortolani, P, Marzocchi, A, Marrozzini, C, Palmerini, T, Saia, F, Baldazzi, F, Silenzi, S, Taglieri, N, Bacchi-Reggiani, M.L, Gordini, G, Guastaroba, P, Grilli, R & Branzi, A. (2007). Usefulness of Prehospital Triage in Patients With Cardiogenic Shock Complicating ST-Elevation Myocardial Infarction Treated With Primary Percutaneous Coronary Intervention. *The American Journal of Cardiology*, 100, 787—792.

4.4.4 Triage and waiting room environments

Summary of findings:

- Signage should be clear and informative for patients

- Triage areas should provide safety for staff while allowing for privacy and effective communication with patients.

- Waiting rooms are an opportunity to communicate with the public and manage patient expectations.

- Consideration should be given to creating flexible ED spaces that can be modified as care delivery models change.

The Special Commission of Inquiry into Acute Public Health Services in NSW (2008) highlighted the role of the ED as the public face of the hospital and emphasised that the patient experience in the ED can often be seen as an indication of how public hospitals operate overall.[93] Similarly the Department of Human Services Victoria conducted a review of patient experience in ED in Victoria through an audit of waiting rooms and accompanying consumer research.[94] Results suggested that the physical environment of the ED waiting room and communication with patients contributed most to levels of patient satisfaction.[94]

Directing patients to triage

In most sites visited, the triage area was immediately accessible from the ED entry. Sites where this was not the case were under redevelopment and in an interim physical state. At some sites the ED signage was not clearly differentiated from other signage and some old signage was still in place. On entry to the ED the signage was sometimes:

- obscured
- unhelpful for identifying the process of seeking assistance in the ED.

Most sites had defaulted to the use of signs with the words „Triage" and „Registration" which did not indicate to the uninitiated patient what they needed to do.

An example of effective ED signage was seen at one site. This signage was well placed in the waiting room without other signage distraction, and provided clear guidance about the ED triage processes for the patient as seen in Figure 22. An important aspect of effective signage is that it gives the patient clear direction about what to do. Similar signage would improve risk management and patient safety in some EDs where focus groups pointed out that patients can be overlooked in busy periods when they sit in a crowded waiting room. Another ED visited provided Braille signage for vision impaired patients.

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[93] Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals, 2008 - Overview Published 27 November 2008. Retrieved from http://www.lawlink.nsw.gov.au/Lawlink/Corporate/ll_corporate.nsf/vwFiles/E_Overview.pdf/$file/E_Overview.pdf Last accessed January 2011.

[94] Department of Human Services, Victoria, 2007, Improving the patient's experience in Victoria's public hospital emergency departments: Summary report. Retrieved from http://www.health.vic.gov.au/emergency/improving-experience0507.pdf , Last accessed 14.02.11.

Figure 22: ED waiting room signage

What should I do?
1. See Triage Nurse
2. See Administration Clerk
3. Wait to be Called
4. Tell us if you are feeling worse

Source: Seen in ED waiting room during ED site visit.

Triage area

The triage and registration areas at EDs visited were enclosed by safety screens and locked doors. While acknowledging that this provides the necessary level of staff protection and safety, staff reported that the environment produced challenges in relation to triage, as set out below:

Communication – The safety screens installed varied in design and often created issues in communication with patients. Staff reported that this often frustrated patients and at times was a factor in increasing aggression. Some screens were observed to be better for communication than others.

Privacy – The poor communication also contributed to lack of privacy for patients who may need to communicate important and private information. Nurses expressed frustration at often not being able to ask questions that would influence their triage assessment.

Assessment –The safety screens hindered staff"s ability to assess patients. Nurses had to take patients into the ED area to assess their condition. Some sites had specific areas available for this while other sites assessed patients in spaces available in the triage office.

Visibility –Triage nurses at most sites reported that the ability to see the patients for whom they are responsible was hindered by the safety screens. Some sites had little to no vision of areas of the waiting room or the corridor where patients wait. At one site it was difficult to see the end of the triage line during busy times.

Further consideration is therefore needed in designing triage areas that provide safety for staff while minimising barriers to communication and assessment. Of note was an ED under redevelopment which had no screens installed at the time of the ED site visit. Instead the ED had a security guard sitting in triage at all times. Triage staff reported an uneasy level of exposure to the public, however it was also noted that anecdotally the degree of violence and aggression during this period had been reduced.

Waiting room environment

The time spent waiting in an ED waiting room can affect an individual"s overall perception of the whole ED experience and the service provided.

Some of the ED sites visited paid particular attention to the environment of their waiting room and considered its impact on patient flow, streaming and the importance of the patient experience.

Initiatives included:

- Patient information fact sheets
- Secure paediatric waiting/play areas/Games consoles
- Multiple TV screens
- Comfortable chairs
- Use of interior design to create an appropriate environment
- Access to food and drink while waiting.

Demarcation of „Waiting for Triage" seats was observed in a number of EDs and considered a strategy to improve safety for patients waiting to be triaged. However, they did not capture all patients waiting to be triaged, as patients often self-selected other areas of the waiting room to sit.

For patients waiting to be triaged no EDs were observed to capture information about how long a patient waited in ED before being triaged. There was no system in place to collect this information as patients were seen by the triage nurse first and hence were not registered into the ED IT system with a time stamp for arrival. There is an opportunity for EDs to investigate novel approaches to collect this information, eg through the use of registration kiosks such as those used in banks.

The waiting room at some EDs was seen as an opportunity to communicate key information to patients. Large television screens located in the waiting room provided timely information on:

- current wait times or causes for wait (eg multiple trauma arrivals)
- alternative options for treatment of minor injuries and ailments (eg After hours GP clinics, Emergency Dental Clinics)
- basic First Aid strategies to employ at home and appropriate public health announcements (eg Quit Smoking, flu vaccines, child vaccination).

ED environment and streaming

The practice of streaming patient presentations from the point of triage into appropriate care areas is shown to have led to improvements in waiting times and length of ED stay[95] and is discussed in the following pages. It was evident that this concept was being used, to varying extent, at most of the sites visited.

Sites at which the practice was most established had adopted some significantly different design and space concepts to those of the historical ED, in the design of both the waiting room and the department itself. While high activity EDs traditionally had large waiting areas, the practice of streaming meant that the size of the main waiting area was not always relative to the activity level of the ED. Some sites with the greatest activity levels had small to medium main waiting areas, and patients were moved to secondary waiting areas within a MOC.

The level of alignment of the physical environment to the MOC was found to have a positive impact on functionality of the model and patient flow. Reducing the number of patients waiting in the main waiting area has the potential to improve patient safety and reduce the workload of the triage nurse who may otherwise be responsible for a large number of undifferentiated patients. Examples of this alignment are:

- a separate location and wait area for fast track patients
- secondary waiting rooms for people who have progressed through triage assessment and may be receiving treatment
- ambulance entries in close proximity to the triage nurse
- separate and appropriate waiting and treatment areas for paediatric patients
- separate physical areas for patients waiting to transfer to different models of care.

Streaming from triage to secondary waiting areas creates an opportunity for the improved management of waiting rooms, the concept of perceived waiting time, and the level of associated patient risk. Sorting patients into smaller, more specific waiting areas was observed to provide the following benefits:

- A significant reduction in the number of patients under the care of the triage nurse reduced the level of pressure on this role. Focus groups at ED sites suggested that the reduced level of pressure and

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[95] Ben-Tovim, D.I.; Bassham, J. E., Bolch, D., Martin, M.A., Dougherty, M. & Szwarcbord, M. (2007). Lean thinking across a hospital: redesigning care at the Flinders Medical Centre. *Australian Health Review,* 31(1), 10-15.

risk associated with a full waiting room resulted in a more satisfying work environment for the triage nurse, and improved patient safety.

- Ability to initiate specific treatments and monitoring based on the streaming group in a more controlled and specifically resourced waiting room environment.

- Reduction in perceived waiting times- patient satisfaction was suggested by staff to be greater with this model than the traditional waiting room model, as patients reported that moving into an area specific to their needs gave them a sense of progression through the system.

Some recognised limitations observed or reported are as follows:

- Current space and design of EDs – the streaming concept was often not considered at the time of building or redeveloping EDs and the available space in established hospitals can be limited and highly valued.

- Staffing models require an appropriate number of specifically skilled staff to support the MOC and secondary waiting areas. The functioning of some models is dependent on the availability of specific staff.

- Communication between triage and the secondary waiting areas in relation to patient safety - physically separate areas produce some challenges in communicating patient needs.

Some sites visited had taken full advantage of their redevelopment opportunity and created contemporary and functional spaces that had relevance for the way the ED envisaged the delivery of care in the future.

4.4.5 The Australasian Triage Scale

Summary of findings:

- The ATS strength is that it is a nationally consistent tool, is readily understood and caters well to the identification of time-critical patients.

- The ATS is considered limited in its ability to triage special groups such as paediatrics.

- The triage of lower-category patients is subjective and there is little specificity for triaging these patients.

- The ATS is not a useful queuing tool and does not allow for decisions based on complexity.

- Some EDs are seeing lower acuity patients in order of arrival once they have been streamed to an MOC.

- The triage of patients in pain and with urgent psychosocial needs should be considered in a revised tool.

- Mental Health patients are triaged using the ETEK mental health guidelines, but this is not consistent across all EDs.

While this project was not designed to review the ATS in depth, the project could not be completed without some consideration of the ATS in the context of the triage process. To address questions about the ATS, the project team consulted with representatives of ACEM in addition to consultation with the CRG. Areas for investigation were reviewed by the ACEM representatives, and ATS specific questions were suggested by them for the operational review(ED survey and site visits).

Suggested questions focused on understanding whether the emergency care community felt the ATS was still appropriate for use in a contemporary ED and also if it was being used in EDs the way it was intended. Additionally the review sought to identify the strengths and limitations of the ATS from the perspectives of the ED clinicians.

Findings from the ED survey show that the majority of respondents agreed or strongly agreed that the ATS is used appropriately to determine clinical urgency. Reasons for neutral or non-agreement responses were cited as, for example, needing additional assessment information such as ECGs to determine categories. Additionally it was felt that since the introduction of ETEK there had been improvements in the way the ATS was applied. There was a suggestion, in all of the ED surveys, interviews and focus groups, that the ATS has too many categories. Comments were that the main purpose of triage should be to distinguish patients who need immediate management from those who don't, and that allocation of patients to streams is critical at triage.

In some EDs it was found that patients were triaged according to the ATS and those that were not time critical, ie category 1 or 2 patients were excluded, would be seen in order of time arrival once they had been streamed into a MOC. In some EDs this had become standard practice for the lower acuity category 4 and 5 patients. Some EDs consulted suggested the ATS should be revised to reflect this alternative process. One ED that had taken this approach saw a decrease in the proportion of categories meeting performance benchmarks, but saw an increase in patient and staff satisfaction with no apparent adverse events or outcomes for patients.

It would therefore seem feasible for this approach to be investigated further as part of any revision to the ATS, provided it is contingent on well developed MOCs and streaming in place to support it.

Considerable discussion centred on the up-triaging of a patient in pain who did not have any other medically urgent requirement. Rather than allocating category 2 automatically for such patients (as per the ATS descriptors), it was suggested that a triage category appropriate to the medical condition be assigned, with a secondary pain scale rating. This would be used to determine the urgency for analgesia. Not all sites agreed with this; some stated that assigning a triage category 2 is appropriate, with the administration of analgesia considered „time to treatment" or „time seen".

Patients in psychosocial distress were also raised as a group that could be triaged in a similar way to a patient in pain. While these patients (in psychosocial distress) may not have a medical condition that warrants a high triage category, their level of distress may require attention or transfer to a more discrete area sooner.

In view of this, the triage of patients in pain and those who present with psychosocial distress should be considered in a review of the ATS. Alternatively, they can be considered in the development of complexity principles, ie they might require only minimal medical intervention, but they may require other support services and consultations to be arranged before discharge.

Strengths and limitations of the ATS

Descriptive analysis of the focus groups, interviews and ED surveys has identified strengths and limitations of the ATS. These are listed below.

Strengths were found to be as follows:

Ease of use

- provides a common and consistent language that is easily understood by all ED clinicians – triage categories are an important signal to ED staff about the urgency of patients presenting
- is considered readily applicable nationally; transferability regardless of ED size, location and local demographics is important, and also allows movement of staff between EDs
- is easy to teach to both nursing and medical clinicians and is described as teaching critical thinking skills, clinical risk and the ability to prioritise care
- categories of the scale are not complicated
- five triage categories allow for differentiation between patients presenting.

Safety

- provides a safety net for staff in clinical decision-making and is applicable to both the novice and experienced nurse
- is a very effective tool for the identification of time critical category 1 and 2 patients (these sick patients will be prioritised)
- supports up-triaging in cases of perceived risk.

Monitoring and consistency

- time-scales provide a good framework within which an ED can work
- is a validated and consistent tool
- allows trend analysis of ED presentations.

Limitations were found to be as follows:

Specific populations

- lacks discriminators for the triage of paediatric and Mental Health patients –mental health triage can create ‚grey" areas and mental health triage tools are not used consistently
- Some patient groups are over-triaged – there are some local and political drivers for over-triaging, (eg early pregnancy patients with threatened miscarriage) which leads to an inconsistent national triage practice.

Triage categories

- categories 3-5 were considered by ED clinicians as problematic and there were suggestions that assigning to either of these three categories is arbitrary and can be subjective – it was considered that there is little specificity in these triage categories as a large number of presentation types fit into these groups

- category 3 can be used as a „safe" category if the triage nurse is unsure about a patient

- category 4 patients can give a false sense of security to medical staff as they are not considered critical

- category 5 is seen in a negative light and is considered in some EDs to be a punitive category assigned in a small number of cases only

- category 5 patients can often be seen sooner than category 3 or 4 due to their low complexity and suitability for a MOC such as fast track or an Emergency Nurse Practitioner.

- due to the subjectivity of triage it is applied inconsistently, influenced by the individual triage nurse or ED; there is even variability within a single shift where several staff are triaging.

ATS uses

- not designed as a queuing tool but being used in this way

- can result in inappropriate waiting times for patients if all are seen in category order; this means it is not seen to add value to the ED process

- is not considered relevant in smaller sites where immediate care is available

- only includes „urgency", does not recognise some presentations/risk factors

- does not consider the increasing complexity of patients presenting to ED

- categories assigned can be manipulated to meet benchmarks; staff may give higher categorys depending on the ED, or local ED business rules can influence the consistency of triage

- does not relate to streaming options or resource requirements; the ATS was designed for a single queue to see a doctor, while now patients can be seen in a MOC by a nurse or an ED team.

Monitoring performance and quality

- timeframes are not considered appropriate to the current ED environment and there is lack of evidence to support these times

- it is not a measure of quality and is considered an inappropriate measure of performance – rather it is considered a useful benchmarking tool for internal use to monitor individual ED performance

- funding and staffing are inappropriately based on triage categories and not on patient diagnosis.

Mental Health triage

The triage of Mental Health patients was reported as being problematic due to inconsistency in the tools and criteria used, and the lack of experience of triage nurses in assessing and managing these patients.

The operational review examined the tools and processes used in the triage of Mental Health patients.

Tools

The Victorian Emergency Department Mental Health Triage Tool provides descriptors of observed and reported behaviour of patients with mental health symptoms to assist in allocation of the most appropriate triage category. It is used in conjunction with the ATS[96] and these descriptors are part of the ETEK workbook.

ED surveys and interviews revealed that EDs using the ETEK as an education program also used the included mental health triage tool. ED staff described it as a useful tool to support decision-making at triage for this patient group. However, they also noted that community Mental Health teams used a triage scale that does not align to the ATS. This created confusion and sometimes disagreement about the urgency of the patient.

Support and processes

Many EDs had access to Mental Health teams for support. In some instances Mental Health patients could be referred directly to the Mental Health team for assessment. In others, the patient had to be seen by the ED medical team before referral. Mental Health support teams were reflected in the survey –50% of respondents had Mental Health liaison teams in place, and 25% had PECCs in place. To facilitate appropriate and timely referral of Mental Health patients to the PECC or Mental Health team, some EDs used referral guidelines. The survey results also revealed guidelines in place to direct the care of mental health presentations for 43 of the 180 survey respondents. For 1 ED visited, the vision was to be able to stream patients directly to a Mental Health assessment unit as appropriate.

Paediatrics

The triage process review sought to understand whether differences existed between the dedicated paediatric EDs and the mixed paediatric and adult EDs. One dedicated paediatric ED was among the sites visited, and it offered insight into the difference in triage practices between the two types of EDs. The site visits revealed that a mixed ED takes 1 minute longer on average than a paediatric ED to triage paediatric patients, even with a greater number of interventions performed.

The shorter time appears to be that triage nurses in a dedicated paediatric ED are more confident triaging children due to their greater knowledge and experience with these patients. The environment is usually more conducive to reducing the child"s anxiety, with play equipment in an open layout where children can see other children. It can be easier to assess the paediatric patient when there is less anxiety on the part of the child. In a mixed ED the environment is not always child friendly, and the specific paediatric knowledge and experience of all ED staff may be limited.

Consultations revealed there was a gap in the ATS regarding the triage of paediatric patients, which has led to a number of mixed EDs developing local triage policies and practices for paediatric patients. For example, 1 ED has a local policy of allocating a category 2 to all paediatric patients under 12 months old regardless of their presenting complaint. The exception to this was if they were allocated a category 1, requiring immediate treatment. This practice forms part of a risk management strategy to support the triage nurse when assessing sick children.

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[96] NSW Department of Health, (2007), Key Drivers of Demand in the Emergency Department: A hypothesis driven approach to analyse demand and supply. Retrieved from http://www.health.nsw.gov.au/pubs/2007/pdf/booz_allen_report.pdf , Last accessed 06.02.11.

4.4.6 Complexity and streaming

Summary of findings:

- EDs are using complexity determinants at triage to stream patients to the MOC.
- The most commonly used are fast track guidelines for low acuity patients.
- Without formalised complexity guidelines and determinants, complexity decisions are driven by the experience and clinical decision-making skills of triage nurses.
- Complexity principles should be developed through consultation and collaboration, and included in ETEK. This is considered the most appropriate approach to improving complexity-based decisions at triage.

Level of urgency is currently the basis for assigning a triage category. However, EDs have introduced new ways of working and new models of care, and decision-making for streaming into these new models requires additional and different information. EDs in some instances are using disposition to determine streaming while others are incorporating complexity into the triage decision-making process. The project sought to answer the question of whether a complexity tool needs to be introduced at triage to support streaming and decision-making; the project team therefore addressed streaming and complexity in the consultation process and also included questions in the survey.

The concept of streaming is being used more frequently in EDs nationally. The most common streaming guidelines used at triage were found to be „fast track criteria", that is, low acuity and low complexity patients with a simple condition easily recognisable at triage. In consultations, it was suggested that as nurses are already making complexity decisions about patients at triage, this could be formalised by developing an adjunct to the ATS to assist the triage process. This complexity decision-making was described as being based on the triage nurses" experience and clinical judgement, consequently any information or tool to assist the complexity decision would need to be easily available to triage staff.

The consultation process identified a number of determinants of complexity that could be used:

- Age
- Resource utilisation – including types of resources required
- Clinical care requirements
- Co-morbidities
- Mental state or cognition.

The survey investigated the use of complexity tools to assist triage decision-making, and the results support the findings from the consultations. From 133 respondents, 17 said they had complexity tools in place and respondents described the use of streaming guidelines:

- to identify co-morbidities, age and risk factors
- to identify low acuity/high complexity and low acuity/low complexity presentations for streaming to different models of care such as a care team and fast track
- for specific patient groups such as oncology patients and early pregnancy
- for paediatric presentations
- using the MTS.

From the 133 respondents, 66 indicated streaming criteria were used in their ED. The streaming determinants and frequency are below in Figure 23.

Figure 23: Criteria for ED streaming (n=133)

ED streaming criteria
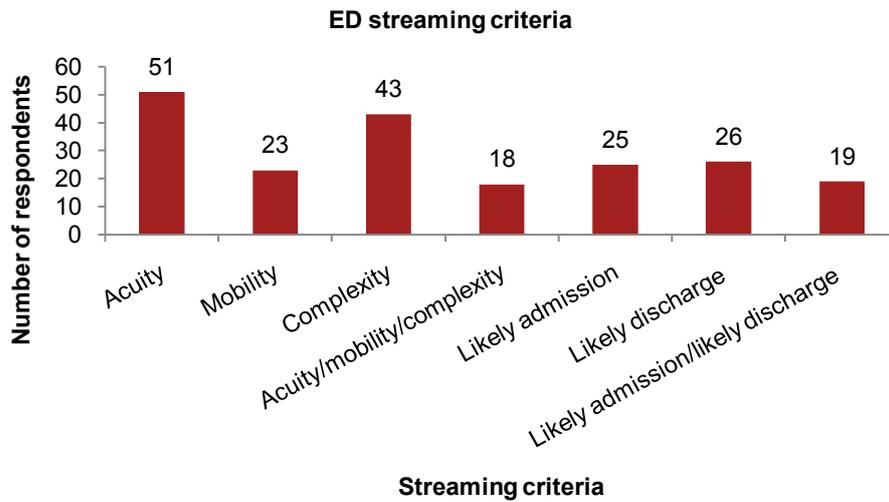
Source: ATPR survey.

Seven EDs streamed patients to a team-based MOC and 5 were able to stream patients to an MOC outside the ED. These MOCs were described as a minor injury unit and a medical assessment and planning unit for specific patient cohorts. Different practices were also described for inter-hospital transfers presenting via ED and triage, and streaming of paediatric patients to a paediatric medical officer within working hours.

Examples of two complexity tools identified during ED site visits were primarily focused on aged patients and were used for risk screening. One ED used an „Older Person"s Initiative" screening tool at triage, while another used a screening tool for persons greater than 70 years. This patient group is asked 4 questions at triage to assess the level of resources that will be required later, and discharge planning requirements so these can be initiated early in the patient journey.

Data shows that streaming by complexity in conjunction with use of the ATS has improved the delivery of care in an ED. Streaming to MOC is considered an important part of the triage role. One ED visited had audited streaming processes in the ED and found that nurses showed 80% accuracy when streaming patients to an MOC based on complexity. Hence it appears that the concept of streaming by complexity has merit, and the complexity principles and determinants should be considered as part of a review of the ATS, triage process and education programs.

4.4.7   ED benchmarking and performance management

Summary of findings:

- Triage to treatment times represent only one aspect of ED performance.
- National agreement on measuring and capturing „triage to treatment time" is required.
- For the purpose of future benchmarking there is a need to consider ED characteristics.
- Quality and outcome-based performance indicators should be included to better monitor ED performance.

There is mounting pressure on EDs, with increasing media and political attention on performance. In recent times ED performance has been scrutinised against the ATS „triage to treatment" timeframes. While consensus among EDs visited was that these timeframes are good internal indicators of performance and of variance in demand and acuity, there were strong objections to their use as:

- measures of the whole ED"s performance
- benchmarking tools
- a basis for funding.

The current performance-based monitoring system is coupled with overall health system reform, which brings with it an increasing need for the ED community to share insights into good practice and optimise patient flow through the ED. However, performance comparisons between EDs were seen as a deterrent to openly sharing insights, particularly into the process of managing patient demand.

Reform, redevelopment and process redesign bring improvement opportunities that can be shared. Throughout the review some EDs visited were physically under redevelopment - 50% had recently undergone a redevelopment or implemented a new MOC into their ED.

Validity of benchmarking

For any performance measures and benchmarking to be meaningful, the inherent differences between EDs must be understood. Common differences that were cited in the review were catchment population, size and role of the hospital, resources available and the acuity of presenting patients. These variables are recognised as influencing ED performance, yet many ED managers and members of the CRG did not believe they are adequately cited in public documentation about hospital performance. The consultations suggested that as modifications to an ED are made, „triage to treatment time" becomes less relevant as a benchmarking tool.

A less widely recognised or discussed variable is the process by which the performance data is collected. It is a basic requirement of any meaningful comparison of performance that data be collected consistently. This view was supported in the consultations and ED survey. It was stated that with different MOCs in place and nurse-initiated pathways, the point at which „triage to treatment time" was measured varied across EDs. It was asserted that waiting times need to be defined based on interventions commenced and by whom.

Table 17 summarises some of the key variations observed in data collection that have reporting implications for ED performance and activity measures.

Table 17: Variance in practice for recording triage activity and ATS timeframes

Triage activity – Variance in practice

- At sites where all patient access to the hospital was via ED, patients were visually assessed by the triage nurse.
- At other sites the following practices were observed:
  – if there was a bed available on the ward the patient was moved there directly by the orderly and triage data was not recorded
  – for risk management purposes the patient was triaged into a separate category. This represented a virtual waiting bay and was not counted in ED activity data
  – the patient was triaged as normal and brought into the ED department before being transferred elsewhere in the hospital.
- At multiple sites triage staff suggested patients might wish to attend the after-hours GP service, an eye or dental clinic or other available services (in hours) as an alternative path for treatment. If patients chose any of those options sites reported they would either:
  – not record the triage data
  – record these presentations as DNWs.
- Triage nurses at some sites reported they would discharge minor injury patients from triage. These are reported as nursing attendance in some sites and DNWs in others
- When patients asked to re-attend ED the next day or within 48hrs, they were re-triaged and counted in activity by some sites and not others.

Timeframe measures

- Six of the 16 sites visited registered patients before they were triaged as a matter of normal practice. This variation in practice had the potential to affect wait times
- One site had no clerical support and the triage nurse performed triage and registration simultaneously
- Two of the sites visited had no electronic IT system to support registration and triage documentation; it was recorded manually
- At several sites a category 1 patient‟s triage category and allocated stream were assigned in the data retrospectively due to the focus on clinical management at the time
- „Triage to treatment time‟ was defined differently at each site:
  – some EDs record from registration; others record from time of triage completion
  – some define the „time to be seen endpoint‟ as nurse-initiated treatments (eg first aid or analgesia); others report the time to be seen endpoint as time to see a doctor.

There were 58 respondents to the survey question about the ATS performance indicator thresholds as an appropriate measure of ED performance. Of these, 22 felt they were an appropriate measure of performance. Comments in relation to this were that they were appropriate if used in conjunction with other quality measures, and that they had greater relevance to the more urgent categories 1 and 2, and less so for the lower categories 3-5. The other 36 respondents felt the triage categories were not a good indicator of performance. ED triage performance can be affected by the rest of the hospital (eg access block and lack of available beds in the hospital causing ED delays). „Triage to treatment time‟ does not give an indication of quality of care delivered according to evidence-based models, and care delivery models have changed considerably, hence it is difficult to quantify „commencement‟ of treatment. The triage categories give an overall indication of ED performance in the context of the system in which ED operates.

A suggestion from all consultations was that a suite of measures to include process, quality and outcome measures would provide a more realistic view of the ED performance. Patient satisfaction was considered by many to be an important indicator of performance.

Performance measures

During the review the performance measures for each ED were compared to the MOC in place and the annual activity level. No significant correlation was made between the performance measures and activity level of an ED, however there was a correlation between the number of MOCs and the performance of triage categories 1-4. EDs that did not reach the performance thresholds for each triage category had more MOCs than EDs that did meet the performance thresholds.

The reason EDs are breaching the timeframes is difficult to assess as the causes appear to sit outside the scope of this review. For example, causes could be related to any of the following:

- Medical and nursing staff levels in the ED; bed capacity in the ED; back-end processes in the hospital that supports the ED.

- Some EDs visited were not seeing all patients in ATS order. These EDs see category 1 and 2 patients in ATS order and categories 3, 4 and 5 in order of arrival.

- EDs that have multiple MOCs may commence treatment or assessment, but it is not captured as „medical assessment‟ or „treatment commenced‟. This does not mean the level of care or service is diminished, but the performance targets do not reflect the care that has already been given to the patient. Variation in data capture was evident, where although the patient was assessed and treatment commenced by the triage nurse, these actions was not recognised as initiation of active treatment and therefore was not recorded in some EDs.

Performance according to each category is explained in more detail below.

- Category 1 – the performance threshold is that 100% of patients are seen immediately. The site visits average 100%, with only 2 EDs just below the 100% target. The two EDs below the threshold averaged 4 MOCs compared to an average of 2.7 MOCs for the EDs that did reach the performance target.

- Category 2 – the performance threshold is that 80% of patients are seen within 10 minutes. The site visits averaged 82%, with 7 EDs not reaching the 80% performance threshold. These EDs averaged 3.3 MOCs, whereas the 9 EDs that achieved the 80% target had 2.9 MOCs.

- Category 3 – the performance threshold is that 75% of patients are seen within 30 minutes. Of all the triage categories this was the lowest performer, with the site visits averaging 64%. The 10 EDs that did not reach the threshold averaged 3.6 MOCs. The 6 EDs that did reach the 75% target averaged 1.7 MOCs.

- Category 4 – the performance threshold is that 70% of patients are seen within 60 minutes. This category was the second lowest performer of the sites, averaging 66%. The 9 EDs that did not reach the threshold averaged 3.5 MOCs and the 7 EDs that achieved the target averaged 2 MOCs.

- Category 5 – the performance threshold is that 70% of patients are seen within 120 minutes. This category achieved its target in the site visits, with the average being 84%. The number of MOCs in place for EDs was consistent.

4.4.8 Patient experience

Summary of findings:

- Patient satisfaction improves as patients are given information about what to expect when presenting to an ED for treatment.

- Patients" tolerance for waiting increases as they are given information about expected waiting times, and are kept informed as these times change.

- As an expert in triage and assessment, the triage nurse plays a key role in alleviating fear and anxiety while a patient waits for treatment.

- Continuous updates by staff are considered important by patients and would improve the patient experience and reduce DNW rates.

- Comfort and safety in the waiting room is important, especially for specific groups such as aged and paediatric patients.

- While the word "triage" is familiar in the media and general community, understanding of the nature of the triage process is limited. Rather than change the term, culturally appropriate community awareness raising would improve the general understanding and expectations the patients and carers have of the ED.

Central to any improvement in healthcare is consideration of the patient experience. The ATPR project therefore encompassed an evaluation of the patient experience, looking to international and local patient experiences. Patient experience can be influenced by many things including expectations and prior knowledge of health care, whether real or perceived.

The operational review of EDs considered the patient experience based on several factors:

- patient expectations and tolerance for waiting times

- communication and the triage experience

- an understanding of the term triage and associated triage processes.

While this qualitative review did not focus on the collection of data using a specific patient survey, sources of information included local surveys that had been done in individual EDs, at a jurisdictional level, and international surveys of ED satisfaction, as well as a review of international literature. The data also included consultation with patient representatives (consisting of indigenous groups, CALD groups, aged care, mental health carers and rural groups) via teleconference and written feedback.

Patient satisfaction

In this review, „patient satisfaction" refers to whether patient expectations have been met. When discussing patient satisfaction in an ED context, it is has been described as having a positive impact on treatment and also on the willingness of patients to adhere to treatment regimens and pathways.[97] Determinants of patient satisfaction have been variously described in the literature and some have suggested that waiting times are most important, while others have described the interpersonal skills and empathy of staff, alongside communication, as most important.[98,99]

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[97] Welch, S.J. (2010) Twenty years of patient satisfaction research applied to the Emergency Department: a qualitative review. *American journal of Medical Quality,* 25(1), 64-72.

[98] Boudreaux, E.D., Ary, R.D., Mandry, C.S.& McCabe, B. (2000), Determinants of Patient Satisfaction in a Large, Municipal ED: The Role of Demographic Variables, Visit Characteristics, and Patient Perceptions. *American Journal of Emergency Medicine,* 18(4), 394-400.

[99] Topacoglu, H., Karcioglu, O., Ozucelik, N., Ozsarac, M., Degerli, V., Sarikaya, S., Cimrin, A.H. & Soysal, S. (2004), Analysis of Factors Affecting Satisfaction in the Emergency Department: A Survey of 1019 Patients. *Advances In Therapy,* 21(6), 380-388 .

When assessing satisfaction, consumer representatives were asked about their experience of ED and triage, and it was found that each consumer had prior experience in an ED. While many appeared to have had positive experiences, negative experiences were also described and these related to communication:

- the way in which it was delivered by busy staff
- lack of communication about expected waiting times
- follow up communication while waiting for treatment.

Tolerance for waiting

There is a strong correlation between patients" perceptions of waiting times and their satisfaction.[97,100] Waiting time can be a strong determinant of patient satisfaction, however expectations about wait times may not be met. Patients can sometimes overestimate the urgency of their condition, and as a result can perceive their wait time as too long.[97] Other factors that feed into this are a lack of understanding of the triage process and a perceived unfair patient flow, ie other patients being seen before them.[89] Evidence in the literature shows that tolerance for waiting improves once the patient understands why they are waiting and how long they are likely to wait.[97]

Patient satisfaction surveys from the US[101] and UK[102] also identified that delays in the ED can reduce patient satisfaction, but this can be mitigated with regular updates, and through setting expectations with patients and their families. From an ED patient satisfaction survey collected during ED site visits, patients" commented that the ED was a very busy and stressful place. Waiting times were described as lengthy and 1 patient commented that this meant they were left in pain in the waiting room.

An important point raised in consumer consultations was that the triage nurse should identify themself as an expert in triage assessment to alleviate any fears a patient or their family may have about waiting for treatment. Consumers also felt that the improved communication will alleviate stress and anxiety for those waiting.

Consumers consulted all agreed that information about estimated waiting times is important and should be given at triage. There was a perception among some mental health and paediatric consumers consulted that they would wait longer for treatment in an ED because they were considered less urgent than other patients presenting. Most consumers expected to wait no longer than 1-2 hours to be treated. Even if wait times were extended, information about delays could be relayed to the patient and carer/family member as it became available.

There was a preference for frequent updates every 30-minute, however it was also recognised that this might not be achievable in a busy ED. Most consumers stated that information and updates about waiting times should be provided by ED staff in person and not posted on an electronic sign. For these consumers, electronic posting of updates was not considered a supportive or caring approach to take in a patient-centred environment. In contrast several other consumers suggested a number system that correlated to urgency would be beneficial so they could monitor their place in the queue, and the number of patients in each category waiting to be seen ahead of them.

[100] Cassidy-Smith, T., Baumann, B.M.& Boudreaux, E.D. (2006), The disconfirmation paradigm: throughput times and emergency department satisfaction. *The Journal of Emergency Medicine*, 32(1), 7-13.

[101] Press Ganey, (2010), Emergency Department Pulse Report: patient perspectives on American Health Care.

[102] Picker Institute Europe, 2008, The key findings report for the 2008 Emergency Department Survey, Acute Surveys Coordination Centre for the NHS patient survey programme.

Patient expectations

Clearly, patient expectations may not match what really happens in the ED. Most consumers consulted were able to describe clearly the process of the sickest patients being seen first as a priority, yet still stated they expected treatment to commence within an hour of arrival in ED. Staff participating in focus groups and interviews described „failed" expectations where patients arrive with information, sometimes from a primary care provider, about what to expect. This can lead to confusion for the patient if care is not provided within the timeframe they expected.

Helpful and friendly staff

Consumers provided mixed views on the friendliness and helpfulness of staff. Some found the staff to be helpful and sensitive to their needs, while others found them to be uncaring and disinterested. This was attributed to the staff being busy. The consumers also felt that patients should be at the centre of the care process and that staff should demonstrate understanding of what patients may be experiencing. For CALD and indigenous groups it was felt that ED staff at triage and reception would benefit from cultural awareness training to better understand their patients" needs.

Some consumers commented that in some EDs the first piece of information seen on arrival is the sign stating that EDs will not tolerate aggression and violence. While recognising a need for such information, this signage has the potential to create an „us and them" mentality in patients and is not conducive to putting patients at ease.

It was also pointed out by consumers that the ED needs to care for its own triage staff by providing appropriate education and sufficient breaks from the triage area to prevent „empathy burnout". Staff lacking empathy at triage was considered a potential area that could influence a patient"s experience and satisfaction with the ED journey.

Better information: communicating with patients waiting

The ED focus group sessions highlighted the fact that communicating with the waiting room about changes in wait times was usually done by the more experienced nursing staff. Less experienced staff lacked the confidence to communicate with a large group of patients waiting, because of fear of patient dissatisfaction. This point highlights a need for customer service and communication training for nursing staff working in triage.

A research paper from the US on the effects of waiting room „rounding" in an ED describes the potential improvements to patient satisfaction. Rounding is a technique of regular checks and communication with patients in the waiting room and treatment areas. This allows the staff to provide updates about delays, provide pain control, and keep patients and family informed about their treatment, all considered important to improving satisfaction and patient safety.[103] The study found that rounding is effective in improving patient outcomes and is also effective in reducing the number of ED patients who „did not wait" or „left at own risk".

This „rounding nurse" strategy was supported in the findings from consumer consultation, whereby consumers want information about the wait, their condition, and what to expect. Dedicated waiting room nurses were not observed as a feature of the 16 EDs visited. In most EDs a second triage nurse took responsibility for communication and care provided in the waiting room.

Waiting room comfort

Comfort in the waiting room was also important and this included access to food and drink. Consumers felt that this was best done through free provisions from volunteer services such as the Red Cross. Other consumers described the use of a „comfort nurse" in the waiting room as an important strategy

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[103]Meade, C.M., Kennedy, J. & Kaplan, J. (2010), The effects of Emergency Department staff rounding on patient safety and satisfaction. *The Journal of Emergency Medicine*, 38(5), 666–674.

and this person would provide comfort measures such as blankets and pain relief, ongoing monitoring and communication (similar to the „rounding nurse" described above). It was suggested that this perception of care would greatly improve the tolerance for waiting.

The use of volunteers in the waiting room was demonstrated in several EDs. The volunteers were seen to be effective in providing comfort measures, reassurance and companionship to some patients who presented unaccompanied.

Improving the patient experience

A report from the former Victorian Department of Human Services (2007) [104] about the Improving the Patient Experience Program, describes the many initiatives that have been implemented to improve the patient experience of ED. In that project, stakeholder focus groups were held to understand the patient experience and allow consumer input into the project. They identified key areas for improvement as:

- better information about what to expect, what to do and what would happen as part of the ED visit
- helpful and friendly staff who understand what people are going through
- a safe and comfortable environment in which to wait that also caters to specialist groups, eg children, elderly and mentally disturbed.

Aged patients

In recognition of the increasing number of aged care patients visiting an ED, the Victorian program investigated aged care needs and how to improve the experience for this group. Findings from this research showed the following areas are important:

- many were reluctant to seek emergency care as they perceived others to be sicker and they did not want to be a burden
- waiting in ED can be an uncomfortable experience, and the environment can be noisy, busy and stressful
- pain relief can be refused by the patient for a variety of reasons (other health issues and potential side effects were reasons cited)
- procedures and investigations were described as making the patient feel worse or tired, and reasons for procedures were not commonly explained
- communication was important and it was stated that information needs to be provided in a way they could understand
- carers and family wanted to be involved in their care.[105]

Cultural awareness

The Victorian program also included a strategy to improve the experience for Aboriginal people, who are considered a group with special needs.[106] A number of activities to address priorities for improvement were identified, and included cultural sensitivity and cultural safety.

The findings from the Victorian program to improve the patient experience were reinforced in the consumer consultations and supported in the ED interviews and focus group sessions.

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[104] Department of Human Services, Victoria, 2007, Improving the patient's experience in Victoria's public hospital emergency departments: Summary report. Retrieved from http://www.health.vic.gov.au/emergency/improving-experience0507.pdf , Last accessed 14.02.11.

[105] Department of Health, Victoria, 2010, Improving the patient experience for older people in the Emergency Department: Extract. Retrieved from http://www.health.vic.gov.au/emergency/improving_patient_experience_older_people.pdf , Last accessed 14.02.11

[106] Department of Health, Victoria, 2010, Improving the patient experience for Aboriginal people in the emergency department. Retrieved from http://www.health.vic.gov.au/emergency/ipe_aboriginal_ed.pdf , Last accessed 14.02.11

The principles behind providing culturally sensitive materials and cultural safety were supported in the consumer consultations. It was felt that in combination with cultural awareness training for staff there could be a baseline set of „rules" or principles from which all patient assessments could be made. This would facilitate physical examinations and interviews being carried out in a culturally sensitive way regardless of cultural background.

ED staff suggested that in busy periods, managing patient expectations with information about waits and clinical prioritisation could be improved. They supported the need for clear and simple communication about processes and interventions, and the inclusion of carers in those communications. ED staff suggested that information about models of care in place would help in managing patient expectations and outlining clinical fairness. There is also a need to consider comfort and safety, especially in the waiting room, for aged care patients.[107]

Community understanding of the word „triage"

The word „triage" has been in use for over 200 years and comes from the military. While readily understood in the emergency care community, its appropriateness in a contemporary ED has been questioned and whether it is readily understood. In a report by Hughes and Walters (2007),[108] it was suggested that it be replaced with an alternative term such as „priority" which could be understood by the general community. Similarly, the Garling Report (2008)[109] describes the term triage as „meaningless" to most of the community and concluded that there would be benefit in changing it. Both reports suggest the signage in an ED is equally important to improving the understanding of what to expect at triage during an ED visit.

To test these views, the operational review targeted questions towards:

- the term „triage" and whether it was understood by patients/consumers of the ED
- understanding what community education/awareness raising would be required to improve patient expectations.

Consumer understanding

ED consultations suggested that the term triage was not readily understood in the community, and that there are people who do not understand the process or purpose of triage – that it is a queuing system to allow patients to be seen in order of urgency and not in order of arrival. It was felt that additional work needs to be done to manage community expectations with regard to the term „triage". There was a suggestion that the term be changed to „prioritisation" as it was more meaningful. This view was mirrored in the ED survey, where respondents felt that triage and the ATS means nothing to the general community.

Consumer representatives differed in their views. Consumers from the focus group considered it to be a universal term that is used in the media. When questioned further, all were able to describe what it meant although the „tri" implied to 1 person that it was a 3-point scale. Remaining consumer responses showed the majority understood the term and process. The exception to the belief that triage was understood by the general community was for CALD groups and a mental health consumer who described it as an after-hours counselling service. To better understand triage, several consumers suggested alternative terms and these included „check in" and „emergency assessment".

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[107] Department of Health, Victoria, 2010, Improving the patient experience for older people in the Emergency Department: Extract. Retrieved from http://www.health.vic.gov.au/emergency/improving_patient_experience_older_people.pdf , Last accessed 14.02.11

[108] Hughes, C. and Walters, W. 2007, Report of inquiry into the care of a patient with a threatened miscarriage at Royal North Shore Hospital on 25 September 2007. Retrieved from http://www.health.nsw.gov.au/pubs/2007/pdf/inquiry_rnsh.pdf , Last accessed 14.02.11

[109] Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals, 2008 - Overview Published 27 November 2008. Retrieved from http://www.lawlink.nsw.gov.au/Lawlink/Corporate/ll_corporate.nsf/vwFiles/E_Overview.pdf/$file/E_Overview.pdf , Last accessed January 2011

From the patient satisfaction surveys collected during the review, one ED asked patients about their understanding of the triage system. Over 75% rated their understanding as excellent, which may have been due to local ED practices and signage in the waiting room.

Awareness raising

For consumers, and particularly the CALD group, it was felt that to combat the lack of understanding of triage there needs to be written ED communication to define the term and explain the process. This would improve the health literacy of consumers' visiting an ED.

The ED staff and CRG felt the triage term and the ATS needs to also be linked back to community care providers, achieved through education programs. Linking to community care providers is considered an important element of education for EDs, as many local GPs and others may lack understanding about what the ATS represents and the type of conditions associated with different ATS categories.

Members of the CRG from New Zealand described extensive public education and awareness programs that exist there. As a result of these programs, ED patients understand the term „triage" and the role of an ED. Triage is considered an educational opportunity and communication with patients about the process is considered an essential part of the triage nurse"s role.

Expectations of care delivery

ACEM defines „time to medical assessment and treatment" as the point at which care for the patient commences. This can be recorded in one of three ways:

- time seen and treated by a doctor or nurse practitioner
- time seen and treated by a nurse under supervision of a doctor
- initiation of a documented, problem specific pathway, guideline or protocol; this can be by either nurse or doctor.[110]

This definition is relevant in today"s ED, as care can be initiated by ED nursing staff – either in the ED treatment area or waiting room as necessary.

In ED consultations it was suggested that ED patients do not consider that treatment has started unless they have been treated by a doctor. 60% of consumers providing written feedback agreed. This viewpoint was explored with the consumer focus group. For the most part it was considered that treatment could be started by nursing staff as long as they had a base level of competency and the level of care provided was commensurate to their position. The exception was for CALD groups. It was expressed that culturally some CALD groups perceived nursing staff to have lesser skills and knowledge, and that these groups would wait to see a doctor in preference to a nurse no matter how long the wait. Explanation of the nurse"s role and capabilities in the ED may help to address this viewpoint and perception.

The focus groups also pointed out that, because of cultural or religious beliefs, some CALD groups will not see staff of a specific gender. This can be challenging in situations where limited staff are available. The CALD consumer representative considered this an area in which cultural awareness training for ED staff would help the process and understanding.

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[110] Australasian College for Emergency Medicine, (2005) Guidelines for the implementation of Australasian Triage Scale in Emergency Departments. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/G24_Implementation__ATS.pdf, last accessed 23.03.2011.

Future improvements for the triage process

When asked about potential improvements for their next ED visit, it was suggested that actions with the potential to have most impact would be to take a positive and consumer-centred approach and provide clear and consistent communication to patients and their families. This communication included information about expected waiting times with regular updates as these times changed.

Written and visual communications were also identified as important and included information brochures and television screens that:

- defined the term triage
- explained the process and what triage categories mean
- described the staff consumers may encounter in the ED
- provided information about alternative care providers.

Consumers also stated that access to interpreters at triage was important and comfort measures in the waiting room would help to make the ED more welcoming.

Recommendations

5

The ATPR"s aim was to provide recommendations to the HPPPC regarding possible improvements to the Australian triage process and potential areas of future research.

The information collected and synthesised by the project has therefore allowed the project team to develop a set of recommendations that can be considered by the emergency community and Colleges, and by state and territory governments.

The recommendations for improvement are listed below and have been grouped as follows:

- Driving triage reform
- Streamlining the triage role
- Revision of the ATS
- Streaming and complexity principles
- Triage competency
- Performance indicators
- Patient experience, expectations and tolerance for delays.

5.1   Driving triage reform

Recommendation 1: To promote national consistency in addressing triage challenges and facilitating improvements, it is recommended that a collaborative approach be taken by engaging the Cross Jurisdictional Clinical Advisory Group (CJCAG) of AHMAC to drive the implementation of recommendations from this project. It is recognised that there may need to be redefinition of CJCAG and that a balanced membership of medical and nursing clinicians is required for this work. Membership also requires representation from each emergency care college and jurisdiction.

In an effort to reduce duplication of ED initiatives, committees and agendas, it is recommended that the existing CJCAG, an established advisory group, is tasked with driving the implementation of recommendations from this report. To ensure successful implementation, CJCAG should include representatives from the emergency care community with appropriate expertise in the field of triage.

5.2   Streamlining the triage role

Recommendation 2: The role of triage should be streamlined with a return to the core purpose of triage, that is, to assess and clinically prioritise patients. It is recommended that this streamlining and redefinition be carried out by the CJCAG to facilitate a nationally consistent approach.

Recommendation 3: To support Recommendation 2, a consistent approach should be taken to allow the reallocation of tasks that are outside the core role of triage. This should include process redesign, tailored to the ED based on demand, available resources, and models of care in place.

The role of triage is – and should be – to complete a brief assessment of a patient"s presenting problem, how quickly the patient needs to be seen, and by which care team.

As a result of ED overcrowding, there has been a change over time so that patient care is front-loaded at the point of triage, which has led in some instances to delays at triage and a subsequent increased risk to patients waiting to be seen. Additionally, some jurisdictions have adopted policies for risk assessments at triage, which has also affected the time taken and amount of data collection required at triage.

Interventions and secondary risk assessments are part of an ED"s service delivery and should be carried out as a separate activity from triage. Some interventions in relation to patient safety and comfort can be carried out as required, for example:

- vital signs
- first aid
- pain relief.

Each ED will need to reconsider its own workforce models and models of care to facilitate this move away from interventions at triage. Several ways in which this has succeeded in other EDs are through the introduction of:

- waiting room nurses –who can monitor patients and provide first aid and comfort measures
- clinical initiatives/RN with extended skills to begin care pathways and diagnostics such as x-ray, pathology and pain relief
- volunteers in the waiting room.

Alternatively, in EDs where the triage role has the potential to allow time for treatment and investigations to begin, this can be assessed by looking at ED activity by time of day. Understanding demand at triage will allow the ED to develop local guidelines regarding activities that can be carried out in the less busy periods.

ACEM and CENA have respectively developed triage guidelines and a position statement for the triage nurse. It is important that once Recommendations 2 and 3 have been addressed, these guidelines and position statement be revised and aligned to any future changes in the triage role definition.

5.3   Revision of the ATS

Recommendation 4: ACEM in collaboration with College of Emergency Nursing Australasia (CENA) and the Australian College of Emergency Nursing (ACEN) should review:

1. the ATS as a five point scale
2. the appropriateness of timeframes assigned to each category and the thresholds for triage performance so that they are related to clinical outcomes for patients
3. revision and clarification of criteria for allocation of patients as triage category 3.

At the outset of this project it was recognised that ACEM was undertaking a review of the ATS, led by a multidisciplinary working party.

The ATS is an important triage tool in Australian and New Zealand EDs and has created a common language that is easily understood in the emergency care community. In this regard, a consistent and universal category is important and needs to be maintained to support ED decision-making.

There is widespread agreement that timeframes for triage categories are required in order to drive performance and accountability, and to allow benchmarking. However, in their current form these timeframes are considered problematic. They were developed using a consensus approach and are based on what was considered acceptable at the time (early 1990s). No evidence has been collected to support their safety or appropriateness, and in moving towards a revised tool it is important to consider patient outcomes. As part of the revision of the ATS, ACEM should therefore collect evidence of patient outcomes related to associated triage timeframes, and review the appropriateness of those timeframes.

There is also an opportunity for ACEM to consult internationally with countries using a 5-point scale, to consider the standardisation of acceptable timeframes to allow for future international comparison and benchmarking.

During the consultations it was suggested that the ATS could be revised to a 3-point scale. This was prompted by the view that patients who are emergent (current categories 1 & 2) could be combined and seen immediately on arrival, with category 3 patients remaining separate, with a refocus on them to improve seen times and care provided. Category 4 and 5 patients could then be combined and seen

in order of arrival. This is based on an approach that patients are required to be seen „now, soon, or later" –for this reason, a 3-point scale would help identify how patients fit into these three criteria.

The project is not recommending that this approach be taken, as the 5-point scale has been validated and found to be the most accurate and appropriate discriminator. The 5-point scale is supported in the literature[111,112,113,114] and allows for patients to be differentiated.

5.4   Streaming and complexity principles

Recommendation 5: Principles should be developed to guide assessment of patient complexity, and these principles should complement the ATS and support decision-making and streaming of patients at triage. It is recognised that the development of these principles will require widespread consultation to facilitate national consistency, and to then allow adaptation at a state-wide or individual hospital level.

A set of complexity principles should be developed by the emergency care community and included in ETEK as discriminators to help with triage decision-making.

The principles would include determinants such as:

- age
- independence and mobility
- co-morbidities
- recent medical events/admission
- mental state/cognition.

The review investigated the question of whether a complexity tool could be developed to assist triage nurses in decision-making and streaming to models of care. Examination of the literature and complexity tools in place in EDs visited revealed that no tools designed to be used at triage currently exist. Rather, complexity is used in some EDs to define criteria for inclusion and exclusion to models of care such as fast track models. The tools that have been described in the literature or are in development in Australia determine patient complexity once the patient is in the ED.

A preferred option to a complexity tool is to develop an agreed set of complexity principles and incorporate them into a revised ATS and ETEK. ED staff consulted agreed that while a tool may provide a framework for the novice triage nurse to develop critical decision-making skills at triage, it might also increase the workload and add to the time taken to triage, hence it is not recommended.

The emergency care community recognises that triage nurses currently make complexity-based decisions using critical thinking and complex decision-making. Triage nurses are among the most experienced nursing staff in the ED and hence the principles included in triage education will provide a consistent and standardised approach to their decision-making nationally.

Recommendation 6: Patients should be streamed from triage and the principles in Recommendation 5 should also facilitate streaming of patients to appropriate models of care in the ED, as well as those

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[111] Van der Wulpl, I., & **Stel, H.F. (2010).** Calculating kappa's from adjusting data improved the comparability of the reliability of triage systems: a comparative study. *Journal of Clinical Epidemiology*, vol. 63, no. 11, pp. 1256-63.

[112] Fernandes, C.M, Tanabe, P, Gilboy, N, Johnson, L.A, McNair, R.S, Rosenau, A.M, Sawchuk, P, Thompson, D.A, Travers, D.A, Bonalumi, N & Suter, R.E. (2005). Five-Level Triage: A Report from the ACEP/ENA Five-Level Triage Task Force, *Journal of Emergency Nursing*, 2005, vol. 31, no. 1, pp. 39-50

[113] Travers, D.A, Waller, A.E, Bowling, J.M, Flowers, D & Tintinalli, J. (2002). Five-Level Triage System More Effective Than Three-Level in Tertiary Emergency Department, *Journal of Emergency Nursing*, vol. 28, no. 5, pp. 395-400.

[114] Funderburke, P & Atlanta, G. (2008) Exploring Best Practice for Triage, *Journal of Emergency Nursing*, vol. 30, no. 2, pp. 180-182

outside ED such as medical assessment units. To facilitate a mechanism for sharing information about streaming guidelines, a nationally accessible information repository or website should be considered.

Recommendation 7: In EDs where streaming to models of care is carried out, consideration should be given to alternative treatment strategies (such as order of arrival). It is recognised that development of models of care for streaming will not be suitable for all EDs.

For the purposes of this project, „streaming‟ is a process of allocating patients from triage to specific treatment areas according to care needs. Streaming pathways and guidelines have been shown to be effective in facilitating the appropriate treatment and management of patients presenting to an ED.

Streaming also has the benefit of allowing staff working within the care streams to focus on the specific patient group. With well developed and defined models of care in place, EDs will have an opportunity to improve both care delivery and safety for patients and patient flow through the ED.

The review recognised that in some EDs there were modifications to the way in which the ATS was used. That is, in some EDs patients were assigned a triage category, streamed into an appropriate MOC where immediate care needs were met, and then seen in order of arrival. Changing the order in which patients were seen could only be considered if the ED had appropriate care teams established. This approach is not suited to time-critical category 1 and 2 patients.

5.5   Triage competency

Recommendation 8:

A. Experienced Registered Nurses should continue to carry out the role of triage.

B. The ETEK program should be revised to incorporate geriatrics and complexity principles, and to enhance the paediatric and mental health components. This revised ETEK should be endorsed by the nursing and medical emergency care Colleges and each jurisdiction as the minimum competency level for all triage nurses. Once endorsed, this will facilitate a nationally consistent and recognised approach to developing triage competency among nursing staff and enable movement of nurses across jurisdictions.

Nurses working in triage are required to make rapid and often complex decisions about a patient‟s condition. For this reason experienced emergency nurses are best placed to work in the triage role. It is therefore important that these staff have a base level of training and competency that is nationally consistent. Taking this national approach to triage education will align with the principles of the National Nursing and Midwifery Registration Board.

An ETEK revision specific to the rural and remote triage was not identified as part of the review. However, it is recognised that an opportunity exists to review the rural and remote triage module as part of an overall ETEK review.

5.6   Performance indicators

Recommendation 9:

A. A nationally consistent quality audit tool should be developed for triage to enable EDs to carry out appropriate and meaningful review of the triage process.

B. Once developed, this quality audit tool should form part of ETEK and be introduced in EDs as a component of the education program.

In terms of ongoing monitoring of triage practices and support processes in an ED, quality audits and review processes are an important management activity. It was found that there is no consistent approach to quality reviews in an ED and no standardised or validated tools available to carry out these reviews. To facilitate an improved and nationally consistent approach to quality assessments of triage,

a quality audit tool and indicative timeframe for these reviews should be considered. It is proposed that the quality audit tool be developed in close consultation with the emergency care community and experts in triage education and research. Development of the tool will be evidence based and correspond with ETEK and the tool will be provided to EDs as a core part of ETEK.

The tool could contain, for example:

- appropriate allocation of triage categories according to vital signs and presenting symptoms[115] including the use of ETEK physiological discriminators
- standards on documentation requirements[107]
- recognition of risk factors and complexity
- time taken to complete triage
- adverse events.

A standardised audit tool would allow an objective measure of triage and the identification of any issues affecting the triage process. Using this information, an ED can then develop local improvement activities to strengthen its triage process.

Recommendation 10: The National Health Information Standards and Statistics Committee (NHISSC) and the National E-Health Information Principal Committee (NEHIPC) should review and clarify the ED triage data definitions to enable consistent national reporting.

„Triage to treatment time" is an important indicator in EDs, however throughout the review it was found that EDs were measuring it differently, regardless of jurisdiction or size of ED. This highlights the need to review and clarify the definition of triage to treatment time and how the data is collected.

Nurse-led interventions and investigations have been introduced consistently in EDs across Australia. These can facilitate an improved triage to treatment time for those patients who would otherwise have been waiting for a medical officer. It was suggested in consultations that analgesia, first aid and nurse-initiated interventions should be included in the definition of triage to treatment time. In agreeing to this there should be collaboration between the emergency care community and Colleges.

Recommendation 11: Triage to treatment times should continue to be measured as an important process and quality measure of EDs. However, government and other regulatory bodies should adopt other key measures of quality, process and patient experience across the whole ED patient journey.

Measuring triage to treatment time considers one component of ED performance, and is not a measure of the triage process or triage performance. There has been a focus by government on the ATS performance standards as a measure of ED performance, with the result that in some states funding is linked to individual ED performance. However, as mentioned in the report, there is limited evidence in relation to patient outcomes and triage to treatment time by ATS category. Members of the emergency care community consider that they should not be linked to performance or benchmarking and that EDs and government should move towards assessing performance using additional measures.

Option 1: A balanced scorecard approach that considers the quality measures of time to treatment, patient outcomes, staff and patient satisfaction with the ED, and financial performance.

Option 2: ED performance is measured using more quality, process and outcome-focused measures which could include:

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[115] Wong, T.W. Tseng, G & Lee, L.W. (1994) Report of an audit of nurse triage in an accident and emergency department. Journal of *Accident and Emergency Medicine*. vol. 11, pp. 91-95.

- Time to treatment for specific conditions
  - Time to analgesia
  - Time to antibiotics
- LOS in the ED for admitted and discharged patients
- Unplanned re-attendance to ED within 48 hours
- In-hospital mortality for admissions from ED
- Unplanned admissions to an intensive care unit within 24 hours of admission to the ward from ED
- Number of sentinel events
- Number of complaints
- Patient satisfaction/experience
- Staff satisfaction/experience
- Patients that did not wait (DNW) or left ED at own risk (LAOR).

In an environment of national health reform it is important that there be consensus about how EDs are measured on performance. The measures listed above are indicative only and should be developed and agreed using a nationally consistent approach in consultation with the patients, their families, the emergency care community and the Colleges. The development of the indicators should be based on best available evidence and consensus. Once agreed, the indicators could be adapted by jurisdiction to facilitate collection and measurement, according to state-wide health strategies and plans.

5.7   Patient experience, expectations and tolerance for delays

Recommendation 12: Jurisdictions should continue to inform and raise awareness of the role of Emergency Departments and triage with the general public and the wider medical community. This will assist in setting realistic expectations about what should happen during the ED visit.

From consumer consultation as part of the review, it became evident that the general community awareness of EDs and the triage process is limited. While jurisdictions have referred to various ED awareness raising programs in place nationally, they may not be meeting consumer needs and therefore could be enhanced.

To facilitate a better understanding by the general community about EDs and their role in providing healthcare, it is recommended that state governments continue to inform the community through awareness campaigns.

Local strategies for patient education and management of expectations should complement these awareness campaigns and initiatives. This can include information about ED and triage processes, and the reasons behind potential delays. These strategies should include, for example:

- Communication by the triage nurse or a waiting room nurse to inform patients and relatives of the process and estimated wait times; this will include regular updates while in the waiting room, about possible delays and to provide reassurance.
- Communication strategies such as communications workshops for frontline triage staff.
- DVDs in the waiting room that explain the process in ED and the process of triage and what wait times mean.
- Written information in the waiting room providing simple explanations for the different terms and models of care in the ED, and ED fact sheets (available in different languages) so patients are better informed about care expectations.
- Signage in the waiting room that clearly outlines the processes for triage and ED, and directs what patients need to do on arrival (ie where patients should go first).

- Volunteers should be considered for the waiting room, and specific guidelines about their role developed to facilitate a shared understanding between staff and volunteers.

Recommendation 13: Quality of the ED experience is an important indicator of the quality of service delivery. The measurement of patient experience and staff satisfaction should be carried out on a continuous basis as a core part of an ED"s quality measures.

A patient"s experience in ED is considered a good indicator of ED performance. Additionally, staff satisfaction can influence the quality of care provided. To allow EDs to better understand and manage their performance, it is important to conduct regular surveys of the patient experience and staff satisfaction. These surveys could be part of a jurisdictional approach or be locally developed and undertaken on a regular basis.

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Prof Mike Ardargh	National Clinical Director of ED services NZ, ED director of Christchurch Hospital

Special thanks also go to the EDs that participated in the observational review and data collection:

Emergency department		
The Canberra Hospital, ACT	Mt Gambier Hospital, SA	The Alfred Hospital, VIC
Bankstown Hospital, NSW	Flinders Medical Centre, SA	Royal Children"s Hospital, VIC
Nepean Hospital, NSW	Royal Adelaide Hospital, SA	Ballarat Hospital, VIC
Royal Darwin Hospital, NT	Royal Hobart Hospital, TAS	Royal Perth Hospital, WA
Royal Brisbane Hospital, QLD	Monash Medical Centre, VIC	Albany Hospital, WA
Townsville Hospital, QLD		

Appendix A
Evaluation Report
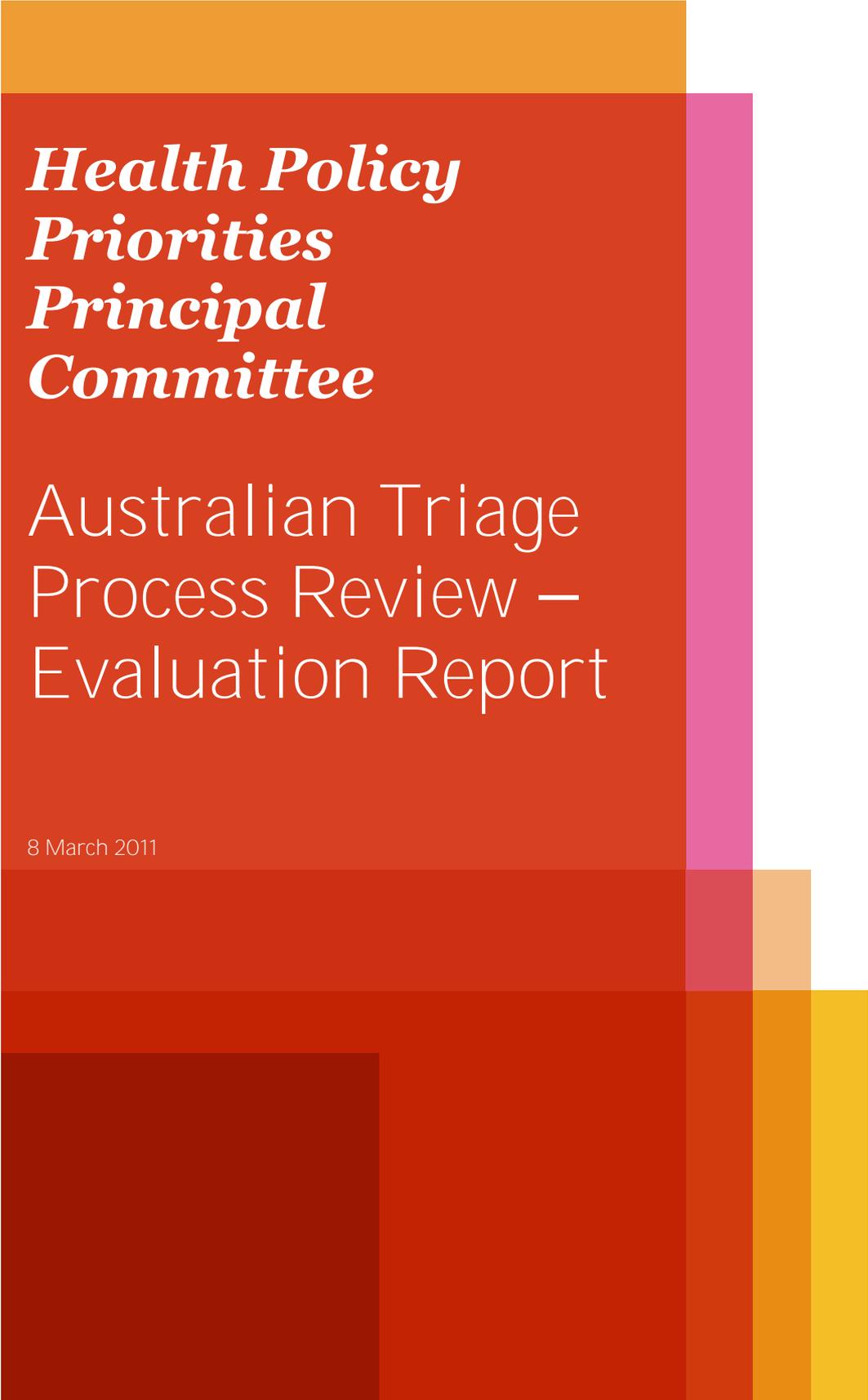
Health Policy Priorities Principal Committee

Australian Triage Process Review – Evaluation Report

8 March 2011

Contents

Glossary

ACEM	**Australasian College for Emergency Medicine**
ACEN	**Australian College of Emergency Nursing**
ACEP	**American College of Emergency Physicians**
AIHW	**Australian Institute of Health and Welfare**
ATPR	**Australian Triage Process Review**
ATS	**Australasian Triage Scale**
CALD	**Culturally and Linguistically Diverse**
CIN	**Clinical Initiatives Nurse**
CRG	**Clinical Reference Group**
CTAS	**Canadian Triage Acuity Scale**
CENA	**College of Emergency Nursing Australasia**
DoHA	**Department of Health and Ageing**
DNW	**Did not wait**
ESI	**Emergency Severity Index**
ED	**Emergency Department**
ETEK	**Emergency Triage Education Kit**
ECG	**Electrocardiograph**
EDIS	**Emergency Department Information System**
eTRIAGE	**Electronic Triage Program**
FT	**Fast track**
GP	**General Practitioner**
ICU	**Intensive Care Unit**
ICT	**Information and Communications Technology**
LWBS	**Leave Without Being Seen**
LOS	**Length of Stay**
MOC	**Model of Care**
MHTS	**Mental Health Triage Scale**
MTS	**Manchester Triage Scale**
NTS	**National Triage Scale**
NZ	**New Zealand**
NHS	**National Health Service**
PCTAS	**Paediatric Canadian Triage Acuity Scale**
PED	**Paediatric Emergency Department**
STEMI	**ST-Elevation Myocardial Infarction**
TERB	**Triage Education Resource Book**
UCC	**Urgent Care Centre**

1 Introduction to the evaluation report

1.1 Purpose

Emergency Departments (ED) provide high profile services, and are a core part of the public health system. There is international commitment to improving the patient journey and to maximising the safety, quality and efficiency of the emergency care provided in a context of increasing ED demand. One of the major challenges facing modern EDs is the provision of emergency care that is appropriate **to today's health landscape. Integral to this for the ED is prioritising the emergency care provided and** facilitating the equitable allocation of resources to provide that care. In Australian EDs this is achieved using a system wide approach to triage to appropriately prioritise and refer patients to emergency care models.

Health specialists and government organisations have recognised a need to review the current Australian triage processes and system.[116,117,118] This need for review is to assess whether the triage processes support the clinical prioritisation of patients, needs of the community, management of patients presenting for emergency care and also meet the needs of the ED in service planning and resource management.

There are extensive papers published internationally about EDs and triage, hence the review of the literature included in this evaluation report is not exhaustive. Rather this targeted literature review has been prepared as part of the Australian Triage Process Review (ATPR) project for the Health Policy Priorities Principal Committee (HPPPC). The report is for use by the project team and project Steering Committee to inform the operational review of the project by:

- Providing an understanding of the ED triage scales and processes in a national and international context
- Providing an understanding of the contextual factors that impact on the effectiveness of triage scales and processes
- Guiding the development of areas to focus the operational review
- Providing a platform for the Final Report.

This evaluation report outlines from a literature review, the different triage scales and practices that are in place internationally and assesses their practical application for different patient groups. The literature review also examines the role of triage, and different triage processes that have been implemented and/or trialled in different EDs as well as tools that support the triage process. Finally the report examines the patient experience and their satisfaction with emergency care episodes.

1.2 Roadmap to the evaluation report

The report is separated into the following sections:

Introduction – Section one provides a summary of this evaluation report which includes a literature review and international consultations about the triage process. This section provides a description of

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116 Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals, 2008 - Overview Published 27 November 2008. Retrieved from http://www.lawlink.nsw.gov.au/Lawlink/Corporate/ll_corporate.nsf/vwFiles/E_Overview.pdf/$file/E_Overview.pdf Last accessed January 2011.

117 Broadbent, M., Creaton, A., Moxham, L.& Dwyer, T. (2010). Review of triage reform: the case for national consensus on a single triage scale for clients with a mental illness in Australian emergency departments. *Journal of Clinical Nursing*, 19(5-6), 712–715.

118 FitzGerald, G., Jelinek, G., Scott, D. & Gerdtz, M.F. (2010). Emergency department triage revisited. *Emergency Medicine Journal*, 27,86-92

the methodology and key search terms used to identify current literature, and the methodology to gather information from international contacts.

Background – Section two provides an overview of EDs and triage systems used nationally and internationally. The history of triage systems and challenges in the current ED environment affecting triage are also described. This section summarises the common triage scales in use internationally and examines their validity and reliability. This section also discusses the concept of complexity and how it may be used at triage.

Role of triage – Section three highlights the key findings from the literature review about the role of triage and the current credentialing and education requirements to perform in the triage role. Also outlined is the evolution of the triage role to what is expected today.

Triage process – Section four highlights the key findings from the literature review on implemented and/or trialled triage processes and associated tools to aid the triage process.

Patient experience – Section five provides a review of the patient experience in ED and describes the factors that are important to improving that experience in an emergency care setting.

International Consultations – Section six provides a summary of the international consultations that were undertaken to broaden the understanding of triage processes and scales in the international context.

Key findings – Section seven provides a summary of the key findings identified from the literature review.

Annotated bibliography – Section eight provides the annotated bibliography that informed the findings in this report.

Appendix A – provides acknowledgement of the staff involved in the international consultations.

Appendix B – CENA endorsed minimum standards for triage.

Appendix C – NSW Health assessment and triage guidelines for obstetric patients.

1.3   Methodology for the report

1.3.1   Literature review

An electronic search was conducted to identify current literature relating to EDs, triage and models of care. The Cochrane Library, Medline, CINAHL, PsycINFO, ScienceDirect, Pubmed and CIAP databases were searched using the terms listed in Table 18. In addition, a number of ED websites were searched, including Australasian College for Emergency Medicine (ACEM), American College of Emergency Physicians (ACEPs), and College of Emergency Nurses Australasia (CENA). Other relevant websites, including Jurisdictional Health websites, Department of Health and Ageing (DoHA) and Australian Institute of Health and Welfare (AIHW) websites, were also searched using a variety of keywords. Additionally, the reference lists of articles and reports obtained through the above databases and search engines were scanned to identify other potentially relevant articles and reports.

Table 18: Keywords used during database search

Key word search criteria – Emergency Departments	Accident and Emergency Department; Casualty; Emergency Department; Emergency Room; Emergency Medicine, Health System; overcrowding, emergency demand, emergency treatment, emergency presentations, patient satisfaction, patient experience, wait times, queuing, patient complexity, complexity measures, complexity tools.
Key word search criteria – Triage	triage, emergency nursing, classification, acuity, computerised decision support, information technology, emergency treatment, system, paediatric, decision making, mental health, National Triage scale, Australasian Triage Scale, Manchester Triage System (MTS), Canadian Triage and Acuity Scale (CTAS), Emergency Severity Index (ESI), Soterion Rapid Triage
Keyword search criteria – ED models of care	Fast track, Streaming, models of care, team based models, Advanced Practice Nurse; Allied Health; Clinical Initiative Nurse; Emergency Nurse Practitioner; Emergency Physician; Liaison Nurse; Mental Health Nurse; Nurse Practitioner, Physician Assistant; Physiotherapist

The quality of the evidence obtained for the literature review was considered to provide an indication of the weight that could be assigned to it. The investigation of triage in EDs focused on the triage processes and triage scales in place internationally, operational models of care, the health workforce involved in the triage process, specific patient groups and the performance of EDs. The nature of these subjects does not lend itself readily to randomised controlled trials. While some studies included this level of evidence, more often the relevant studies included prospective and retrospective evaluation and deductive logic to form recommendations and conclusions. Hence with this in mind the papers included in this literature review were sourced primarily from peer reviewed journals and also grey literature.

1.3.2   International consultations

International consultation was undertaken to enhance the literature review and to provide an international context for ED triage processes and scales. Following selection of countries for consultation, PwC representatives working in the health and emergency care sector, with close links to health care facilities, were contacted to participate. The countries proposed for inclusion were the United States (US), United Kingdom (UK), Canada and New Zealand. Data was collected initially via a survey that examined current ED and triage challenges, triage models and models of care. The survey was completed in consultation with their health care clients and supplemented by their own experiences. The data collected was then used as the basis for follow on interviews conducted with the project team.

Five surveys were completed, all by PwC staff directly – two in the US, one in the UK, one in Canada and one in New Zealand. Follow up interviews included the addition of a Canadian Director of Emergency and Critical Care Services to provide additional insight into a Canadian two-step triage process.

> ### 🌐 *International consultations*
>
> ***Findings from the international consultations have been included throughout this report and are identified in example boxes like this one.***

A summary of survey results and interviews can be found in Section 6.

2 Background

The Australian healthcare system is facing growing pressure and significant emerging challenges as the health needs of our population change. These challenges are driving increased health care service demands, costs and complexity, and are testing the limits of the financial, physical and human resources of the Australian health system.

EDs provide a high profile service to the community and are often the first point of contact for those with illness or injury. EDs have a commitment to improving the patient journey by providing a safe, high-quality and efficient environment for the timely assessment and treatment of patients presenting for emergency care.

ED triage is a process of sorting and prioritising patients based on a brief clinical assessment by nursing staff to determine clinical urgency.[119] This equates to the allocation of a priority category/score to the patient that determines the time and sequence of care that will be received in the ED.[120,121] Triage scores are also used as case-mix measure, where the triage scale is directly related to outcome measures (eg length of stay; ICU admission) and provides performance indicators for analysis.[120,121] As part of the casemix model, the use of the ATS and disposition, and urgency related groups has been described in several papers.[122,123,124] Stuart (2004) and Sprivulis (2004) describe the use of the ATS as a primary variable in case mix systems with the disposition of the patient (admitted/transferred/dies) as a secondary variable.[123,124] Stuart investigates the urgency and disposition group (UDG) ambulatory casemix model, in use since 1998/1999 as a method for determining ED funding in South Australia based on activity targets.[125] From the study, the effectiveness of the casemix system in an environment of increasing demand was found to underestimate the activity in EDs experiencing access block. The inclusion of the ATS categories as part of a funding instrument is a consideration for the future if changes to the ATS are recommended from the ATPR project or any other ATS review.

Emergency care is described as beginning at the point of triage.[126] The role of triage is integral to emergency care as it allows the ED to assign scarce resources to an increasing number of ED presentations. Triage facilitates the equitable allocation of these resources based on the clinical urgency and needs of the ED patient in achieving an optimal outcome.[127] A standardised approach to triage has been in place in Australian EDs for over 17 years. This approach in its simplest form is a categorical scale for rating clinical urgency. This categorical scale is an evolution of the Ipswich Triage Scale (ITS) which, following endorsement by ACEM in 1994, was adopted as the National Triage Scale (NTS). The NTS has evolved further to become the Australasian Triage Scale (ATS) in 2000.[127,121]

[119] Twomey, M., Wallis, L.A. & Myers, J.E. (2007), Limitations in validating emergency triage scales. *Emergency Medicine Journal*, 24, 477-479.

[120] College of Emergency Nursing Australasia, (2009) Position Statement, Triage Nurse. Retrieved from http://www.cena.org.au/documents/CENATriageNursePSJuly2009.pdf. Last accessed 02.11.10January 2011.

[121] Australian College for Emergency Medicine (2006) *Policy on the Australasian triage scale* http://www.acem.org.au/media/policies_and_guidelines/P06_Aust_Triage_Scale_-_Nov_2000.pdf Last accessed 14.01.11

[122] FitzGerald, G., Jelinek, G., Scott, D. & Gerdtz, M.F. (2010) Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92.

[123] Sprivulis, P. (2004). Pilot study of metropolitan emergency department workload complexity. *Emergency Medicine Australasia*, 16, 59-64.

[124] Stuart, P. (2004). A casemix model for estimating the impact of hospital access block on the emergency department. *Emergency Medicine Australasia*, 16, 201–207.

[125] Ibid

[126] Considine, J., Botti, M. & Thomas, S. (2007). Do knowledge and experience have specific roles in triage decision making? *Academic Emergency Medicine*, 14(8), 722-726.

[127] FitzGerald, G., Jelinek, G., Scott, D. & Gerdtz, M.F. (2010) Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92.

Emergency medicine is a dynamic and progressive practice in a time critical environment. The practice of emergency medicine has undergone review and enhancement as the needs of the community have shifted. Since its inception in 1994, the NTS was reviewed and modified in 2000 to become the ATS.128 The ACEM policy on the ATS121 was reviewed again in 2006 with no changes required to the scale. Overseas triage scales such as the CTAS 2008 and the Emergency Severity Index (ESI 4) have been comprehensively reviewed and updated or include a program of continuous updates. At the time of writing this report it is our understanding that ACEM is in the early stages of conducting a review of the ATS.

The emphasis for this review of triage processes has stemmed from the fact that EDs and the practice of emergency medicine has changed in recent years. Some of the most notable changes have been:

- Improvements in patient flow management in ED and introduction of new ED models of care such as fast track, patient streaming, observation and assessment units

- Increased skills of emergency care staff such as nurse practitioners, extended nursing roles and ambulance paramedics

- Improvements in technology, for example, data gathering and triage assistance tools

- The introduction of performance standards such as emergency access performance and 4 hour targets.

Given the changes that have occurred in the way in which emergency care is delivered since the ATS was introduced, combined with escalating demand, there is an opportunity to improve patient journey and subsequent patient outcomes through a national review of the ED triage processes and the application of the ATS in supporting these processes.

2.1   The history of triage scales

The word triage is derived from the French word trier, meaning to sort. This approach for sorting patients was implemented by the French military to establish treatment priorities for wounded soldiers. The use of triage by EDs around the world commenced in the early 1960s in response to increasing emergency service demands competing with finite emergency resources.129 Triaging processes were initially ad hoc and in Australia began to evolve with the development of a triage scale at Box Hill Accident and ED in Victoria. This scale was refined to include waiting time limits and clinical urgency.130 Despite the existence of the Box Hill triage scale, at the time there was no system wide approach to triage used in Australia.

The Box Hill scale was subsequently studied by Emergency Physicians and further refined to develop a 5 point scale called the Ipswich Triage Scale, which was used to assist in sorting the influx of patients into EDs.130 The Ipswich Triage Scale (ITS) was validated and found to be a reliable measure of medical urgency. Recognising that EDs needed a system wide approach and standardisation of triage, the ITS was modified and endorsed for use by ACEM.130 Hence in 1993 Australia became the first country to implement a national triage tool called the NTS.131 In 2000 the scale was updated to become the ATS,

128 McCallum Pardey, T.G. (2006). The clinical practice of emergency department triage: application of the Australasian Triage Scale – An extended literature review Part 1: evolution of the ATS. *Australasian Emergency Nursing Journal*, 9, 155-162.

129 Moller, M., Fridlund, B.& Goransson, K. (2010) Patients' conceptions of triage encounter at the emergency department. *Scandinavian Journal of Caring Science*, 24(4), 746-754.

130 McCallum Pardey, T.G. (2006). The clinical practice of emergency department triage: application of the Australasian Triage Scale – An extended literature review Part 1: evolution of the ATS. *Australasian Emergency Nursing Journal,* 9, 155-162.

131 Gravel, G., Gouin, S., Bailey, B., Roy, M., Bergeron. & Amre, D. (2007). Reliability of a computerised version of the paediatric Canadian triage and acuity scale. *Academic Emergency Medicine*, 14, 864-869.

and is currently used by hospital based emergency services throughout Australia and New Zealand.[132] The ATS also provided the foundation for other countries to develop their own triage scales such as the Manchester Triage Scale (MTS) in the UK and the Canadian Triage and Acuity Scale (CTAS).[127] Other countries such as Hong Kong and Belgium have also subsequently implemented a 5-tier triage scale. [130] A timeline for development of the most commonly used triage scales can be seen in Figure 24.

Figure 24: Timeline of the development of formalised Triage Scales
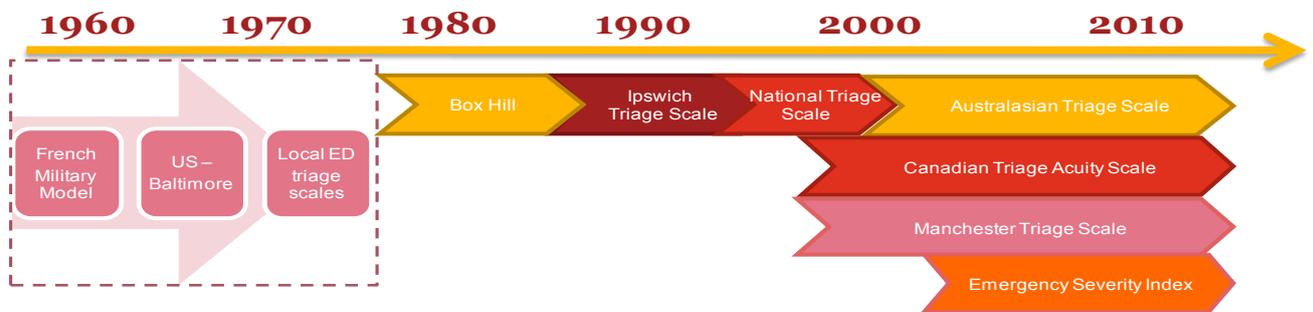
2.2   Current context – National & International practice

The ability to deliver timely care has become a challenge for EDs around the world. ED overcrowding has grown as the demand and capacity mismatch increases and EDs are seen to be operating at or over capacity with associated negative consequences[133,134] nationally and internationally there is increasing pressure to deliver efficient services and improve the safety and quality of patient care. Central to this is improving and streamlining ED services by focusing on patient pathways and flow in and out of the ED. In response to this need for improvement, internationally there has been the introduction of new models of delivering care to patients presenting to an ED for treatment.[135,133,134]With the introduction of these models an essential step in EDs is to have triaging systems and processes that facilitate triaging patients to the appropriate place and team for emergency treatment.

> **🌐 International consultations**
>
> *In the USA, UK and Canada new models of care have been introduced to manage the increasing demand for emergency services. One such model in the US focuses on US physicians doing rapid screening exams at triage to reduce the number of patients being seen in the main ED unnecessarily. The US has also adopted demand and capacity systems that use a colour coded system to trigger performance interventions based on fluctuating demand. In Canada and the US there is increasing use of physician assistants located at triage to assist with commencement of interventions and treatment. In the UK there has been an introduction of 'rapid assessment triage' – a senior registrar at triage to expedite patient access to diagnostics and treatment.*

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[132] Considine, J., Le**Vasseur, S.A. & Villanueva, E. (2004). The Australasian Triage Scale: Examining emergency department nurses' performance** using computer and paper scenarios. *Annals of Emergency Medicine*, 44(5), 516-523.

[133] Wiler, J.L., Gentle, C., Halfpenny, J.M., Heins, A., Mehrotra, A., Mikhail, M.G. & Fite, D. (2010) Optimizing emergency department front end operations. *Annals of Emergency Medicine*, 55(2), 142-160.

[134] Eitel, D.R., Rudkin, S.E., Malvehy, M.A., Killeen, J.P. & Pines, J.M. (2008). Improving service quality by understanding emergency department flow: a white paper and position statement prepared for the American Academy of Medicine. *Journal of Emergency Medicine*, 38(1), 70–79.

[135] Ieraci, S., Diguisto, E., Sonntag, P., Dann, L. & Fox, D. (2008). Streaming by case complexity: evaluation of a model for emergency department fast track. *Emergency Medicine Australasia*, 20, 241-249.

According to FitzGerald, Jelinek, Scott and Gerdtz (2010), over the past 20 years triage processes have been standardised in a number of countries and efforts made to facilitate consistency of application.[127] A range of ED triage scales are used across Australasia, North America and Europe, however there is currently no international standard for ED triage.[127] Despite the increased use of ED triage scales in many countries, research into the inter-rater reliability of these scales suggests mixed results and there is a lack of evidence-based interventions to improve consistency.

Australia and Canada are the only countries to have national triage policies.[136] They use a 5 point triage scale which currently appears to be the most valid method, as studies have reported a greater reliability of 4 and 5 level triage scales compared to 3 level triage scales.[137]

The four most commonly used triage scales internationally are:

- Australasian Triage Scale (Australia & New Zealand)
- Manchester Triage Scale (UK)
- Canadian Triage and Acuity Scale (Canada)
- Emergency Severity Index (US).

With reported benefits of each triage scale and little ability for international benchmarking between the scales there are increasing calls for the development of an International Triage Scale. It is proposed that this will be supported by an international collaborative approach towards a triage research agenda. Such an agenda would seek to further develop application and moderating tools, and to utilise the scales for international benchmarking and research.[127] The 4 triage scales identified above are discussed in more detail in Section 2.3 and Section 2.4.

The concept of urgency

The concept of urgency is central to ED triage and is the common element of triage scales currently used internationally. As outlined in a study by Considine *et al* (2004) the allocation of a triage category is made based on the "need for time-critical intervention to improve patient outcome, potential threat to life, or need to relieve suffering" (Considine *et al* 2004, p 517).[138] The core decision underlying the current Triage scale approach is the 'urgency' of the patient complaint and the nurse's assessment of the time by which medical assessment should occur.[127] The timeliness of treatment that constitutes the urgency category is different from severity of illness. For example conditions which may not be severe, such as a dislocated joint, require more timely treatment than a severe illness such as a terminal malignancy. The terminal illness may not be deemed urgent as eventual outcome of the illness is known and little can be done to change this. Clinical and environmental factors also contribute to the urgency of any particular patient.

In discussing the concept of urgency it is necessary to note that the definition of urgency is also influenced by societal and organisational factors, including the circumstances of the illness, and the perceptions of the patient and the family.[127] The health service framework and the basis for decision-making must evolve and take into account the current societal expectations of quality of care, what is reasonable and ethical practice and what technology is available to support this. In recent years some highly publicised incidents in various jurisdictions across Australia have highlighted the evolving

[136] Fernandes, C.M., Tanabe, P., Gilboy, N, Johnson, L.A., McNair, R.S., Rosenau, A.M., Sawchuk, P., Thompson, D.A., Travers, D.A., Bonalumi, N. & Suter, R.E. (2005). Five-Level Triage: A Report from the ACEP/ENA Five-Level Triage Task Force. *Journal of Emergency Nursing*, 31(1) 39-50.

[137] Van der Wulpl, I. & Stel, H.F. (2010). **Calculating kappa's from adjusting data improved the comparability of the reliability of triage systems: a** comparative study. *Journal of Clinical Epidemiology*, 63(11), 1256-63.

[138] Considine, J., LeVasseur, S.A. & Villanueva, E. (2004) The Australasian Triage Scale: Examining emergency department nurses' performance using computer and paper scenarios. *Annals of Emergency Medicine*, 44(5), 516-523.

nature of public expectation and values relating to quality of care.[139] These factors all contribute to the identified need to review the current triage processes in Australia.

Determination of urgency criteria internationally

The urgency criteria assigned to each triage category differs across countries. According to a paper by **Moll (2010) all triage systems are based on nursing and medical expert consensus opinion. "These** experts design decision trees to support clinical risk assessment or predictions of resource use to define **urgency levels" (Moll 2010, p. 384).**[140]

As described by FitzGerald *et al* (2010), in Australia the triage urgency criteria was first developed based on the observations and behaviours of triage nurses, where consistent and distinct actions followed nursing assessment.[141] These actions determined the urgency of the patient in response to the time a patient could wait to see a doctor. The Ipswich Triage Scale was analysed and found to have a high level of concordance in triage assessments between nurses, a direct relationship with other severity measures and a direct association with patient outcomes.[142] Further studies demonstrated repeatability and validity of the urgency scales which formed the basis of the NTS.[143] However the NTS **was further modified to include performance standards that were more 'acceptable' to the community,** for example the category 5 urgency criterion was changed from days to 120 minutes.

The Canadian Triage and Acuity Scale (CTAS) is derived from the ATS. Despite this there is a different urgency category attributed to category 2 patients. Similarly the MTS, developed in Manchester by a triage working group in 1994,[144] has different urgency criteria for category 4 and 5 patients. The clinical urgency criteria for the three scales can be seen in Table 19.[145]

Table 19: Time to physician assessment by Triage Scale (Source: Fernandes *et al* 2005)

	Category 1	Category 2	Category 3	Category 4	Category 5
ATS	Immediate	10	30	60	120
CTAS	Immediate	15	30	60	120
MTS	Immediate	15	60	120	240

Despite the differences in urgency categories between scales, there is minimal evidence presented in the literature that provides a rationale for the different time scales. Nor is there evidence provided about the clinical outcomes of patients between scales using the urgency criteria. In a review of triage literature by Fry and Burr (2002) differences between the ATS, CTAS and MTS have been described. These differences are considered to allow for limitations of the scales in different settings. For example

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[139] Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals, 2008 - Overview Published 27 November 2008. Retrieved from http://www.lawlink.nsw.gov.au/Lawlink/Corporate/ll_corporate.nsf/vwFiles/E_Overview.pdf/$file/E_Overview.pdf Last accessed January 2011.

[140] Moll, HA. (2010). Challenges in the validation of triage systems at emergency departments: commentary. *Journal of Clinical Epidemiology*, 63, 384 – 388.

[141] FitzGerald, G., Jelinek, G., Scott, D. & Gerdtz, M.F. (2010) Emergency department triage revisited. *Emergency Medicine Journal*, 27, 86-92.

[142] Ibid.

[143] Ibid.

[144] Van der Wulp, I., van Baar, M.E. & Schrijvers, A.J.P. (2007), Reliability and validity of the Manchester Triage System in a general emergency department patient population in the Netherlands: results of a simulation study. *Emergency Medicine Journal,* 25, 431-434.

[145] Fernandes, C.M., Tanabe, P., Gilboy, N., Johnson, L.A., McNair, R.S., Rosenau, A.M., Sawchuk, P., Thompson, D.A., Travers, D.A., Bonalumi, N. & Suter, R.E. (2005). Five-Level Triage: A Report from the ACEP/ENA Five-Level Triage Task Force. *Journal of Emergency Nursing*, 31(1), 39-50.

in different geographical locations (rural vs. metropolitan areas) and for EDs with limited access to medical staff.146 Fernandes *et al* (2005) reflect that there is no gold standard measure of medical acuity by which triage scales can be compared and goes on to describe the benefits of a standardised triage acuity scale as improving quality of care, patient safety and ED operations.

Using the information about the differing urgency criteria internationally, it is clear that to evaluate the appropriateness of these criteria, patient outcomes should be examined. The scope of this triage process review project does not include clinical appropriateness of the scale. In relation to assessing the clinical applicability of the current ATS urgency criteria, ACEM and its clinical experts are best placed to undertake that aspect of the review.

🌐 *International consultations*

When asked about factors for consideration in determining a triage category, international survey respondents agreed that urgency is the most critical indicator at triage. Other indicators are used however such as with the Emergency Severity Index (ESI) 4. The ESI is differentiated in its approach to triage in that it includes acuity as well as resource utilisation.

2.2.1 The triage scale as an ED performance measure and statistical tool

Performance measures are essential components of public reporting and quality improvement. As discussed, the current urgency criteria and waiting times for each of the 5 ATS categories were established by ACEM when the NTS was first introduced. An unintended use of the ATS waiting times and performance standards for each category, has been their use as the basis for ED performance nationally. The ATS waiting times and performance standards are used as a performance and benchmarking measure by state and territory governments. According to FitzGerald *et al* (2010)[141] public debate has focused on the failure of an ED to meet performance criteria associated with the triage assessment. Despite widespread use, performance measures for Australian EDs differ in each state and territory. South Australia does not measure performance targets for category 4 and 5 presentations,147 however all other Australian states and territories measure ED performance by wait times attributed to each of the 5 ATS categories.148

In understanding the relevance of these measures for benchmarking it is important to understand the data collection process and operational definitions. A triage report: The NSW Department of Health triage benchmarking review (2008)149 shows variation in ED benchmarking and the capture of performance data at triage. The report included a review of the time from when a patient is triaged to when active treatment commenced. Active treatment time is defined by ACEM as the first active treatment that a patient receives from a nurse or a doctor. In EDs the triage nurse often performs important assessment and treatment as part of the triage process. For example a patient who presents with a suspected fractured ankle, can be assessed by the triage nurse, given analgesia and sent for a nurse initiated x-ray. Variation was evident between EDs in data capture, where although the patient

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[146] Fry, M. & Burr, G. (2002), Review of the Triage Literature: Past, Present, Future? *Australian Emergency Nursing Journal,* 5(2), 33-38.

[147] Department of Health, Victoria, Australia. Your hospital: An overview of public hospital activity -Emergency Care. Retrieved from http://www.health.vic.gov.au/yourhospitals/emergency-care.htm ,Last accessed 07.03.11

[148] Department of Health and Ageing. The state of our public hospitals, June 2008 report. Retrieved from http://www.health.gov.au/internet/main/publishing.nsf/Content/E6CAF670D550F646CA25747700074A51/$File/SoOPH_2008_whole.pdf pp 64-74. Last accessed 02.11.10

[149] NSW Department of Health: Triage Benchmarking Review, Deloitte October 2008. Retrieved from http://www.health.nsw.gov.au/resources/news/pdf/triage-bench-rev.pdf Last accessed 02.11.10

was assessed and treatment commenced by the triage nurse, these actions were not recognised as initiation of active treatment and hence were not recorded as such in some EDs.

There is little evidence in the literature that describes the use of the triage scale as a statistical tool. Time based measures other than triage performance standards have been used to measure an EDs performance. For example in the UK 4 hour targets were introduced into the ED in attempt to reduce long ED waits. Despite this the impact of the ED time target has not resulted in a consistent improvement in ED care.[150] Subsequently in the UK there is now a move away from performance indicators that revolve around time, instead moving to ED quality indicators to gain a more comprehensive and balanced view of the delivery of care in the ED. The indicators are aimed at supporting patient expectations of high quality ED care while allowing the ED to demonstrate their level of excellence and ability to continuously improve their delivery of care.[151] The indicators are focused on three categories: the effectiveness of care; the patient experience; and patient safety.

In Canada the CTAS is used and also has time-based performance standards. However unlike Australia these standards are not consistently used to measure an EDs performance. Similar to the UK, Canada is moving to more outcome based measures of performance. The Ontario Ministry of Health and Long-term Care commissioned a study from the Institute for Clinical Evaluative Sciences to establish a cost conscience set of evidence based quality indicators for care in the ED.[152] The study found 170 indicators from a literature search which were assessed using a scoring criteria based on scientific soundness, relevance and importance. A national steering committee consisting of experts from hospital administration, emergency medicine, health information, government and provincial quality councils selected a final set of indicators. The top 3 indicators were:

- ED operations – ED length of stay (LOS): time from initial documentation of patient in the ED until physical departure from the ED
- Patient safety – Percentage of unplanned returned visits to the ED resulting in admission within a 48hr or 72hr period.
- Pain management – Time to first analgesia dose for painful conditions requiring analgesia.

The remaining five indicators consist of specific treatment measures for nominated conditions and include measures of time to treatment for these conditions.[152]

Summary

- Triage data capture and collection processes vary and hence are not considered useful in measuring performance and benchmarking
- There is scant evidence of the triage scale being used as a statistical tool to measure proportions and ED profiles
- Other countries are moving toward more outcome based measures in ED to measure performance.

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[150] Jones P, and Schimanski K. (2010) The four hour target to reduce Emergency Department 'waiting time': a systematic review of clinical outcomes. *Emergency Medicine Australasia*. 22(5), pp.391-398.

[151] Department of Health. A&E Clinical Quality Indicators. December (2010). Retrieved from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_123055.pdf Last accessed 12.11.10.

[152] Institute for Clinical Evaluative Sciences. Development of a consensus on evidence-based quality of care indicators for Canadian emergency departments. March (2010). Retrieved from http://www.ices.on.ca/file/National%20ED%20Quality%20Indicators%20March%2010%202010.pdf Last accessed 12.11.10.

2.3   Overview of the Australian triage process

The ATS is core to Australian triage processes. Over time and in response to the changes in emergency care and increasing demand, additional factors have been added to the process. These include nursing interventions at triage, tools to assist the triage process such as streaming models, guidelines and standing orders, and the way in which staffing at triage is arranged. It is proposed that these factors will be explored as part of the ATPR project and information from this evaluation report will guide that review.

The Australasian triage scale

Gerdtz *et al* have cited the ATS as successfully implemented into Australian EDs. This standardised approach to triage has shown to provide equitable access to emergency care services regardless of patient demographics.[153] The ATS comprises a 1-5 categorical scale of clinical urgency. Each category of the scale correlates to an ideal maximum waiting time to be seen by a physician. Patients are allocated a triage category based on their clinical urgency and access to emergency treatment is prioritised accordingly. Performance standards are also included in the ATS and these form the basis of performance reporting for EDs in Australia.

Table 20 shows the ATS categories, correlating wait times and also demonstrates the standardised performance standards for each category.[127]

Table 20: The Australasian Triage Scale

ATS Category	Acuity (maximum wait time)	Performance standard
1	Immediate	100%
2	10min	80%
3	30min	75%
4	60min	70%
5	120min	70%

Source: FitzGerald *et al*, 2010, Emergency Department triage revisited.

The ATS with these associated performance standards is now used in Australia as a clinical indicator for triage, and a benchmarking tool and funding mechanism for Government.[127] The association of the ATS with funding has been described in a review of the literature from the Department of Human Services Victoria (2001) which discusses the extended use of the ATS. As an example of funding associated with the ATS, the Emergency Service Enhancement Program (ESEP) was introduced in 1995 by the Victorian Department of Human Services to provide bonus payments to EDs who met performance standards.[154]

Emergency Department Activity in Australian EDs

A report from the DoHA: the state of our public hospitals (2010), looks at public hospital activity and performance in 2008 -09.34 According to the report, from 2003-04 to 2008-09 there has been a 22% increase in ED presentations. In 2008-2009 there were 7.2 million ED presentations to all public

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[153] Gerdtz, MF., Chu, M., Collins, M., Considine, J., Crellin, D., Sands, N., Stewart, C. & Pollock, W.E. (2009). Factors influencing consistency of triage using the Australasian Triage Scale: Implications for guideline development. *Emergency Medicine Australasia.* 21, 277–285.

[154] **Victorian Department of Human Services, 2001, Consistency of Triage in Victoria's** Emergency Departments: Literature Review, http://archive.health.vic.gov.au/archive2006/hdms/triage.htm Last accessed 17.01.2011.

hospitals in Australia.[149] The majority of these – 5.8 million – **presented to 'larger' EDs who reported** triage data. Of this number of ED presentations, 70% were seen within the recommended time frame for their triage category, an improvement of 1% since 1999.[155] This data implies that despite the increasing demand, EDs have been able to modify practices to manage that demand without increases in wait times.

The Australian Institute for Health and Welfare (AIHW) also reports national hospital statistics data annually. In the report for 2010 (Australian hospital statistics 2009–10: emergency department care and elective surgery waiting times) data presented were collected from 184 participating hospitals.[156] The data relating to ED activity and activity by triage category are presented below.

Nationally in 2009–10, 5.8 million ED presentations were recorded in the AIHW report. Less than 1% of these emergency presentations were assigned a triage category of ***Resuscitation*** (category 1), and approximately 9% were assigned a triage category of ***Emergency*** (category 2). The majority of emergency presentations were ***Urgent*** (category 3) or ***Semi-urgent*** (category 4). ***Non-urgent*** (category 5) presentations comprised just over 10% of all ED presentations nationally.

These percentages have been based on the data presented in **Table 21**.From these data it can be seen that there is some variation among the states and territories in the proportions of presentations in each triage category. However, predominantly the data show consistency between jurisdictions in the proportions of patients in each triage category.

Table 21: Emergency presentations, by triage category, major public hospitals, Australian states and territories (2009–10)

Triage category	NSW	Vic	Qld	WA	SA[a]	Tas	ACT	NT	Total
Resuscitation	12,150	9,239	9,140	4,959	4,316	818	515	786	41,923
Emergency	165,940	120,819	113,511	65,764	42,958	10,692	9,870	9,232	538,786
Urgent	601,387	428,810	447,221	184,884	133,842	48,531	33,345	36,144	1,914,164
Semi-urgent	894,173	656,006	459,639	296,984	160,682	65,011	48,612	67,907	2,649,014
Non-urgent	312,159	177,649	76,046	40,553	27,044	14,784	13,978	12,936	675,149
Total[b]	1,988,734	1,392,523	1,105,557	593,159	368,842	140,224	106,320	127,005	5,822,364

(a)   Includes records for which the type of visit was ***Not reported*** for South Australia.

(b)   Includes emergency presentations for which the triage category was ***Not reported.***

Source: Australian Institute of Health and Welfare 2010. Australian hospital statistics 2009–10: emergency department care and elective surgery waiting times. Health services series no. 38. Cat. no. HSE 93. Canberra: AIHW

[155] The state of our public hospitals, June 2010 report. Retrieved from http://www.health.gov.au/internet/main/publishing.nsf/Content/sooph10/$file/SoOPH_2010_FINAL%20REPORT.pdf Last accessed.

[156] Australian Institute of Health and Welfare 2010. Australian hospital statistics 2009–10: emergency department care and elective surgery waiting times. ***AIHW Health services series*** no. 38. Cat. no. HSE 93. Canberra.

Streaming criteria used in Australian EDs

Different studies in Australia have shown criteria other than urgency have merit in streamlining patient presentations to an ED.[157,158] These criteria have been developed to assist the triage process and include such things as likely disposition of the patient as well as patient complexity. The criteria are discussed below and streaming is described in more detail in Section 4.1.

Research has shown that dividing patient presentations into two flow streams based on predicted disposition (likely admissions vs. possible discharge) where each stream is treated by specialised personnel in separate locations, has led to improvements in waiting times and length of ED stay.[159] The rationale for using patient disposition is that admitted patients are considered to require longer stays in ED and more resources to treat and manage.[160]

When basing the streaming on 'complexity', studies in the United States and Australia have utilised a 'fast track' model to successfully decrease waiting times with associated cost savings.[161,135] This model was shown to be successful in several Australian EDs. For example a study in a midsized referral hospital in Sydney and a regional hospital in Victoria categorised patients into two complexity streams – fast track patients with low-complexity conditions that require low nursing involvement, and standard ED presentations [151,152] that require greater nursing involvement and more procedural work. Such research has shown decreases in waiting and treatment times and increases in patient satisfaction as discussed in Section 5.

Complexity determinants in Australia

For the ATPR project, one of the aims is to identify if there is a need for complexity tools at triage. From the literature of Australian studies there is discussion around streaming by complexity, however there is no single definition or measure of complexity described. Most models that stream by complexity have broad and general determinants such as likely to be admitted or discharged and high or low resource use required by the patient. Research shows these broad determinants are at the discretion of the triage nurse to interpret and use when deciding where the patient will be streamed.

This is evident from a study by Ieraci *et al* (2008) which required triage staff to use complexity principles in determining streaming options for presenting patients. In this study when streaming by complexity, the most complex aspect of ED care is described as the diagnosis and determining treatment. If at triage the nature of the required treatment is evident, the number of steps in management can be minimised.[162] Additionally, the degree to which a patient required physical care and continuous observation were determinants of complexity. Hence in this model patients were streamed to fast track if their clinical requirement was evident at triage and they did not require nursing in a bed.[163]

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[157] Ieraci, S., Digiusto, E., Sonntag, S., Dann, L. & Fox, D. (2008) Streaming by case complexity: Evaluation of a model for emergency department Fast Track. *Emergency Medicine Australasia*, 20, 241-249.

[158] Kinsman, L., Champion, R., Lee, G., Martin, M., Masman, K., May, E., Mills, T., Taylor M.D., Thomas, P., Williams, R.J. & Zalstein S, (2008). Assessing the impact of streaming in a regional emergency department. *Emergency Medicine Australasia*, 20, 221-227.

[159] Ben-Tovim, D.I., Bassham, J. E., Bolch, D., Martin, M.A., Dougherty, M. & Szwarcbord, M. (2007). Lean thinking across a hospital: redesigning care at the Flinders Medical Centre. *Australian Health Review*, 2007, 31(1) 10-15.

[160] Kelly, A.M., Bryant, M., Cox, L. & Jolley, D. (2007) Improving emergency department efficiency by patient streaming to outcomes-based teams. *Australian Health Review*, 31(1), 16-21.

[161] Simon, H.K., Ledbetter, D.A. & Wright, J. (1997). Societal savings by fast tracking lower acuity patients in an urban paediatric emergency department. The *American Journal of Emergency Medicine*, 15, 551-554.

[162] Ieraci, S., Diguisto, E., Sonntag, P., Dann, L. & Fox, D. (2008) Streaming by case complexity: evaluation of a model for emergency department fast track. *Emergency Medicine Australasia*, 20, 241-249.

[163] Ibid

In a study by Kinsman *et al* **(2008) the triage nurse determines the patient's requirement for complex** care and streams the patient accordingly. The complexity principles were based on the premise that diagnosing and formulating a treatment plan is the most difficult task for medical staff, whereas nursing complexity is associated with the patients need for physical care and the amount of observation required.[164]

In a study by Considine *et al* (2008) the determinants of complexity and referral to the fast track stream were patients with specific non-urgent complaints who were expected to be discharged from the ED, and had an expected ED LOS of less than 60 minutes. These patients did not require trolley care, intravenous analgesia or intravenous fluids. The fast track patients were identified by the triage nurse based on these criteria.[165]

All three studies have similar determinants of complexity identified at triage. While not necessarily described in an identical way the basic premise appears to be around the time taken to arrive at a diagnosis and provide treatment, and the nursing resources required to deliver that care. These determinants can be used to assess the current practices in other EDs visited as part of the operational review and to identify any variation to these determinants.

Other studies have been carried out around patient complexity in EDs. For example a study by Sprivulis (2004) was carried out in Australia. For the study, presentation complexity was defined as **"the total diagnostic and procedural effort expended in assessing and managing a patient during an ED attendance" (Sprivulis 2004, p 60).**[166] The proxy definition for low complexity patients was patients having no more than one procedure, one investigation and one consultation. In the low complexity proxy group there was a higher proportion of self-referred, lower urgency category, non-ambulance transported and discharged patients compared to the high complexity proxy group. The results of this study suggest that similar to the determinants identified by the previous three studies, patients could be triaged and streamed based on complexity. Resources required to provide a diagnosis and treatment would be used as a determinant of complexity.

Summary

- Urgency is a consistently used criterion in triage scales internationally and in Australian public EDs.

- There is movement in some EDs toward introduction of a streaming model from triage with corresponding improvements to LOS and wait times.

- Streaming by complexity, for example to a fast track service, is the most consistently described. No definitive complexity criteria has been described, however the determinants of complexity appear to be resource utilisation and ability to reach a diagnosis. It is evident from the literature that patient complexity and determinants of complexity will continue to be refined as it is adopted more widely as part of streaming.

2.4   Overview of international triage scales

There have been several studies [127,128] reviewing the different triage scales that have been developed and are in place internationally. Fernandes *et al* (2005) have compared the four most commonly used triage scales. This review was part of a process of analysing and making recommendations about a 5-point triage scale for use in the US, as at the time there was no uniform method for triaging in place in

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[164] Kinsman, L., Champion, R., Lee, G., Martin, M., Masman, K., May, E., Mills, T., Taylor M.D., Thomas, P., Williams, R.J. & Zalstein, S. (2008). Assessing the impact of streaming in a regional emergency department. *Emergency Medicine Australasia*, 20, 221-227.

[165] Considine, J, Kropman, M, Kelly, E & Winter, C. (2008) Effect of emergency department fast track on emergency department length of stay: a case – control study. *Emergency Medicine Journal*, 25, 815-819.

[166] Sprivulis, P. (2004). Pilot study of metropolitan emergency department workload complexity. *Emergency Medicine Australasia*, 16, 59-64.

the US. From the study, summary descriptions of the MTS, CTAS and ESI[167] have been provided and these are included below.

Manchester Triage Scale

The MTS is a 5-level triage scale developed in Manchester in the UK by an ED triage group and in use in UK EDs since 1997. The 5 point scale prioritises patients based on urgency with associated time scales to be seen, that range from a category 1 requiring immediate treatment, to a category 5 who can wait up to 240 minutes for treatment.

This scale differs from others in that there are 52 flow chart diagrams for different presentations and each is designed to assist in the triage of a specific presenting complaint (eg, head injury and cough). Each of the flow charts depicts six key discriminators:

- life-threat
- pain
- haemorrhage
- acuteness of onset
- consciousness level
- temperature.

The system requires the triage nurse to access 1 of 52 different flow charts and then assess the patient based on the key discriminator and to allocate a triage category accordingly.[161,168]

A study of the MTS has found inter-**rater reliability to be "moderate" to "substantial" and reliability is** not influenced by the experience of nurses. The MTS was also found to be more sensitive for children who need immediate or urgent care than for other patients in the ED.[169] These findings can be **proposed a result of the use of the 52 flow charts that can guide a nurse's** decision-making and hence can promote consistency of triaging among all triage nurses, especially the novice triage nurse.

The Canadian Emergency Department Triage and Acuity Scale

The CTAS was developed in the mid 1990s by a group of physicians and is based on the ATS. CTAS became a mandated reporting data element by the Canadian Institute of Health Information in 1997 and was adopted by some hospitals in the US. CTAS is a 5-level triage scale with corresponding timeframes to initiate medical evaluation allocated to each category. The CTAS also include performance standards that are used to measure the ability of an institution to meet required time to physician assessment. For example, 100% of level 1 patients should be seen immediately. The CTAS uses an extensive list of clinical descriptors for each level. These include high-risk historical factors, signs and symptoms, physiologic parameters, point-of-care testing, and nursing assessment-diagnosis.[161] As described the CTAS has many similarities to the ATS.

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[167] Fernandes, C.M., Tanabe, P., Gilboy, N., Johnson, L.A., McNair, R.S., Rosenau, A.M., Sawchuk, P., Thompson, D.A., Travers, D.A., Bonalumi, N. & Suter, R.E. (2005). Five-Level Triage: A Report from the ACEP/ENA Five-Level Triage Task Force. *Journal of Emergency Nursing*, 31(1), 39-50.

[168] Van der Wulp, I., van Baar, M.E. & Schrijvers, A.J.P. (2007) Reliability and validity of the Manchester Triage System in a general emergency department patient population in the Netherlands: results of a simulation study. *Emergency Medicine Journal*, 25, 431-434.

[169] Ibid

The Emergency Severity Index

The ESI is a tool 5-level triage algorithm developed by a group of emergency physicians and nurses in the United States in the late 1990s for use in ED triage.[161] The ESI has been subsequently revised and expanded to include additional criteria and guidance to manage specific patient groups. The ESI triage algorithm yields rapid, reproducible, and clinically relevant stratification of patients into 5 groups, from level 1 (most urgent) to level 5 (least urgent). The ESI provides a method for categorizing ED patients by both acuity and resource needs which is a unique feature of this tool.[170] The ESI has been successfully implemented by hospitals in different regions of the country, by university and community hospitals, and by teaching and nonteaching sites[164] as well as in several European countries. There has been ongoing refinement and research on this scale since its initial publication by Wuerz *et al* in 2000. After assessing for the most acutely ill patients (ESI level 1 and 2 patients), the algorithm directs the triage nurse to estimate how many resources will be needed to stream the patient to ultimate disposition.[161]

Summary

- All 4 triage scales discussed use a 5-point scale based on urgency

- All 4 triage scales have been developed using expert clinician consensus to agree timeframes to be seen, these timeframes are not consistently applied between tools

- The ESI is unique in that it also includes resource utilisation.

2.4.1   Reliability/validity

Since the inception of formalised triage scales there has been investigation and debate surrounding reliability and validity. Validity of triage scales can be considered the extent to which the scale measures what it aims to measure, in most cases this is primarily medical urgency but may include secondary aims regarding case-mix, resource consumption, workload and admission rates. Reliability of triage scales primarily focuses on reproducibility, inter-rater reliability and reliability across facilities.

The development and implementation of the ATS (and its precursors, the ITS and NTS) involved extensive validation through both research and operational experience.[127] The ITS was found to be a valid and reliable measure of medical urgency (Fitzgerald, 1989; Jelinek, 1996; Brentnall, 1997).[171] Jelinek and Little (1996) researched the inter-rater reliability of the NTS describing the reliability of the **NTS as 'Good' and concluding it is a reliable measure of urgency for patient presentations to the ED.**[172]

In Australia the ATS is used in most EDs as a measure of medical urgency. The Victorian Department of Health conducted a literature review in 2001 to determine the degree of consistency in triage **processes across Victoria's EDs. The review suggested that:**

- Consistency in the application of the ATS varied depending on the specific clinical characteristics identified by the triage nurse

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[170] Gilboy, N., Tanabe, P., Travers, D.A., Rosenau, A.M. & Eitel, .D.R. (2005). Emergency Severity Index, Version 4: Implementation Handbook. *Agency for Healthcare Research and Quality*. Publication No. 05-0046-2.

[171] As cited in McCallum Pardey, (2006)[128]:
   Fitzgerald G. (1989). Emergency Department Triage, *Brisbane: University of Queensland*.
   Jelinek G. (1996). Canadian Tirage and Assessment Scale. *Emergency Medicine* vol 8, pp.229-30.
   Brentnall E.W. (1997). A history of triage in civilian hospitals in Australia. *Emergency Medicine*, vol 9, pp.50-54

[172] Jelinek, G.A. & Little, M. (1996) Inter-rater reliability of the National Triage Scale over 11,500 simulated occasions of triage. *Emergency Medicine*, 8, 226-230.

- Patient gender influenced which triage category was assigned with males being more likely to be allocated to Category 1, Category 2 and Category 3 whilst females were more likely to be allocated to Category 5

- Patient age influenced which triage category was assigned with both children and the elderly less likely to be allocated to Category 5.[173]

Despite this further research into the reliability and validity of the ATS has produced some contrasting results with recommendations by some authors for review or additions to the current ATS, in particular, for mental health, obstetrics and paediatric patient groups as discussed later in this section. There are examples of other established triage scales being used in Australian hospitals, for example Grouse *et al* (2009) found the MTS had 'Good' reliability in an Australian hospital.[174]

More recent research has focused on the specific components of triage scales that may influence reliability and validity. These include:

- the number of categories of the scale (eg three or 5 point scales)

- the education and role of the person performing triage

- the applicability of triage scales for specific patient groups (eg paediatric, obstetric, mental health)

- the effect of support tools (such as computer based tools).

Three or five point triage scales

The number of categories, or points, of a triage scale may affect reliability and validity. Several recent articles have compared 3 and 5 point scales and indicate a 5 point triage scale is a more reliable and valid option. [175, 176, 177,178] Travers *et al* (2002) also note that a 5 point scale is more accurate and has less under and over-triaging when compared to other scales. In support of these findings the four major formalised triage scales from around the world (ATS, MTS, CTAS and ESI) consist of 5 point scales.

Nursing reliability

The triage role in the ED is most often performed by a nurse. McCallum Pardy (2006) found the NTS lacked an appropriate training package for nurses, which created problems with its clinical application due to individual nurse interpretation of the triage scale.[128] This was until the introduction of the ATS and corresponding development of a standardised triage education package. Research by Gertdz *et al* (2009) examined the factors influencing the ATS consistency and reliability and found that individual nurse characteristics did not influence consistency and reliability.[179] This research may have provided a platform for recent efforts to improve the repeatability of the ATS which have focused on education, in

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[173] Victorian Department of Health (2001) Consistency of Triage in Victoria's Emergency Departments – Literature Review. Retrieved from http://archive.health.vic.gov.au/archive2006/hdms/litrev.pdf ,Last accessed 14.01.2011

[174] Grouse, A.I., Bishop, R.O. & Bannon, A.M. (2009) The Manchester Triage System provides good reliability in an Australian emergency department. *Emergency Medicine Journal,* 26(7), 484-6.

[175] Wulpl, I. & Stel, H.F. (2010). Calculating kappa's form adjusting data improved the comparability of the reliability of triage systems: a comparative study. *Journal of clinical Epidemiology*, 63(11), 1256-63.

[176] Fernandes, C.M., Tanabe, P., Gilboy, N., Johnson, L.A., McNair, R.S., Rosenau, A.M., Sawchuk, P., Thompson, D.A., Travers, D.A., Bonalumi, N. & Suter, R.E. (2005). Five-Level Triage: A Report from the ACEP/ENA Five-Level Triage Task Force. *Journal of Emergency Nursing*, 31(1) 39-50.

[177] Funderburke, P. & Atlanta, G. (2008) Exploring Best Practice for Triage. *Journal of Emergency Nursing*, 30(2), 180-182.

[178] Travers, D.A., Waller, A.E., Bowling, J.M., Flowers, D. & Tintinalli, J. (2002) Five-Level Triage System More Effective Than Three-Level in Tertiary Emergency Department. *Journal of Emergency Nursing*, 28(5), 395-400.

[179] Gerdtz, M.F., Chu, M., Collins, M., Considine, J., Crellin, D., Sands, N., Stewart, C. & Pollock, W.E. (2009) Factors influencing consistency of triage using the Australasian Triage Scale: Implications for guideline development. *Emergency Medicine Australasia*, 21, 277-285.

particular the Emergency Triage Education Kit (ETEK)[127] to improve repeatability across individual triage nurses and hospitals. The development and roll out of the training programs has been endorsed by ACEM, state, and federal governments.[127]

With new models of care implemented into EDs there can often be additional decision-making processes involved in the triage. In relation to these triage decision-making processes, several studies have assessed the predictive ability of triage nurses with respect to admission and discharge, to aid streaming to different models of care. Beardsell & Robinson (2010) found triage nurses predicting admission is not sufficiently accurate to inform hospital in-patient bed management systems with 54.23% of presentations correctly identified.[180] Results from another study by Holdgate *et al* (2007) showed that:[181]

- Triage nurse correctly predicted the disposition in 75.7% of patients (95% CI: 73.2-78.0).

- Nurses were more accurate at predicting discharge (83.3%) than admission (65.1%) (P = 0.04).

- Triage nurses were most accurate at predicting admission in patients with higher triage categories and most accurate at predicting discharge in patients with injuries and febrile illnesses (89.6%, 95% CI: 85.6-92.6).

- Predicted discharge was least accurate for patients with cardiovascular disease 41.1% (95% CI: 26.4-57.8).

Specific patient groups

In recent years the ATS has been critiqued for its ability to appropriately assess and triage specific groups of patients, specifically for paediatric, obstetric and mental health patients.[182,183]Research by Gertdz *et al* (2009) found that consistency and reliability of the ATS was influenced by the type of patient presentation. The reliability of the scale was lower for the 'mental health' and 'obstetric' presentation groups than for an 'adult pain' presentation group.[173] The authors recommended that using the ATS alone for mental health and obstetric patients was insufficient and that decision support tools be developed to assist the triage of these patient groups.

The investigation of specific triage support models for mental health, paediatrics and obstetrics are described in more detail below.

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[180] Beardsell, I. & Robinson, S. (2010). Can emergency department nurses performing triage predict the need for admission? *Emergency Medicine Journal*, October 20, 1-4.

[181] Holdgate, A., Morris, J., Fry, M. & Zecevic, M. (2007). Accuracy of triage nurses in predicting patient disposition. *Emergency Medicine Australasia*, 19(4), 341-345.

[182] Durojaiye, L. & O'Meara, M. (2002) A study of triage of paediatric patients in Australia. *Emergency Medicine*, 14, 67–76.

[183] Broadbent, M., Moxham, L. & Dwyer, T. (2010). Issues associated with the triage of clients with a mental illness in Australian emergency departments. *Australasian Emergency Nursing Journal*, 13(4), 117-123.

Mental health

Mental illness is a condition that requires specialist knowledge and experience to diagnose and treat.[184,173] There is growing evidence to suggest that triage nurses not specialised in the area of mental health can find triage of these patients challenging. This has been attributed by Broadbent *et al* (2010) and a National Institute of Clinical Studies report (2006) to the current ATS descriptors which are considered not applicable for the assessment and triage of patients with mental health problems[185,177] In 2002 Broadbent *et al* (2002) demonstrated that a 5 point Mental Health Triage Scale (MHTS) could be aligned to the ATS to support nurses not specialist in mental health.[186] The results demonstrated discrepancies between the triage of mental health patients when using the ATS alone compared to using the MHTS support. For example, of the patients allocated a category 4 using the ATS alone, 5.7% of these patients met the MHTS category 2 requirements and a further 55.7% met the MHTS category 3 requirements.[180]

Broadbent *et al* (2007) discussed that the challenge associated with mental health triage tools is that there is no standardised approach to their use.[187] The authors recommend a national MHTS that can be used in Australian EDs.[181] The merits of adapting the ATS or using a separate MHTS are supported by a number of studies.[178,173,188,181] Positive outcomes include:

- improved competence and confidence of ED staff in triaging people with mental illness[181]

- higher sensitivity in identifying patients who warrant urgent mental health intervention[189]

- shorter "seen by times" in overall functioning of the ED[182]

- a reduction in the number of patients with psychiatric/psychosocial problems who left ED before being seen[67]

- benefits for mental health patients.[178]

Paediatric

Paediatric patients are a specific group for which the reliability and validity of triage scales have been investigated. The reliability of the ATS was investigated by Van Veen *et al* (2008) and was rated as 'Moderate' to 'Poor'. Van Veen *et al* (2009) compared the reliability of the 4 major triage scales with paediatric patients.[190] This study showed the ATS to rate the lowest when compared to the MTS, CTAS and ESI. The highest ranking scale which is the MTS was rated as having a 'Good' reliability.

[184] Broadbent, M., Jarman, H. & Berk, M. (2004). Emergency department mental health triage scales improve outcomes. *Journal of Evaluation in Clinical Practice*, 2004, 10(1), 57-62.

[185] National Institute of Clinical Studies Victorian emergency department – mental health triage project, August 2005 – March 2006. Retrieved from http://www.health.vic.gov.au/emergency/mhprojectreport.pdf ,Last accessed 12.11.10

[186] Broadbent, M., Jarman, H. & Berk, M. (2002) Improving competence in emergency mental health triage. *Accident and Emergency Nursing*, 10(3), 155-162.

[187] Broadbent, M., Moxham, L. & Dwyer, T. (2007). The development and use of mental health triage scales in Australia. *International Journal of Mental Health Nursing*, 16(6), 413-421.

[188] McDonough, S., Wynaden, D., Finn, M., McGowan, S., Chapman, R. & Hood, S. (2004). Emergency department mental health triage consultancy service: an evaluation of the first year of the service. *Accident and Emergency Nursing*, 12(1), 31-38.

[189] Patel, A. S.; Harrison, A. & Bruce-Jones, W. (2009). Evaluation of the risk assessment matrix: a mental health triage tool. *Emergency Medical Journal*, 26, 11-14.

[190] Van Veen, M. & Moll, H.A. (2009). Reliability and validity of triage systems in paediatric emergency care. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*, 17(38), 38-46.

Table 22: Common triage scales and paediatric reliability[184]

Triage scale	Reliability assessment
The Manchester Triage System	'Good'
Emergency Severity Index	'Good to 'Moderate'
Paediatric Canadian Triage and Acuity Score	'Moderate'
Australasian Triage Scale	'Moderate' to 'Poor'

The ATS does not include parameters or specific descriptors for paediatric patients compared to other scales. For example the CTAS has paediatric modifiers divided into first and second order modifiers to assess physiological severity and temperature, pain, mechanism of injury and blood sugar level. The second set of modifiers assess patient welfare, encompassing abandonment, maltreatment, physical, sexual abuse and mental health issues.[191]

It has been suggested that due to the significant differences paediatric patients have physiologically and mentally, nurses not specifically trained in paediatrics may find triaging paediatric patients challenging. Durojaiye and O'Meara (2002) compared reliability of paediatric trained nurses compared to nurses at a mix adult and paediatric ED for triaging paediatric patients. [192]The results showed the paediatric nurses had more reliable triage episodes. The findings from the study also recommended that the ATS be refined as a triage tool for paediatric patients allowing for a more standardised approach to the triaging of this patient group.

In response to such research and recommendations a paediatric triage tool was developed in Canada. An evaluation in 2005 of the new Paediatric Canadian Triage and Acuity Scale in a Canadian paediatric ED reported a 3.7% decrease in patients that did not wait (DNW)to receive treatment.[193] However, the evaluation concluded the paediatric specific tool did not perform better than the previous Adult Canadian Triage and Acuity Scale and for some outcomes, the predictive ability for admission of the adult tool was more reliable.[187]

Obstetrics

Obstetric patients in the ED are another patient group that has been investigated for appropriate triage. Research has focused on the potential poor recognition of pregnant patients and the severity of their presenting conditions due to a lack of understanding of normal physiology in pregnancy. In a study by Gerdtz *et al* (2009) it was highlighted that pregnancy presentations have significant lower levels of concordance compared to comparison patient groups (adult pain). Based on results of the study, Gerdtz *et al* (2009) recommend a pregnancy support tool be introduced into EDs. The inception of the tool is discussed in further detail in Section 4.5 and an example maternity management pathway can be found in Appendix C.

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[191] Warren, D., Jarvis, A., LeBlanc, L. & Gravel, J. (2008). Revisions to the Canadian Triage and Acuity Scale Paediatric Guidelines (PaedCTAS). *Canadian Journal of Emergency Medicine*, 10(3), 224-232.

[192] Durojaiye, L. & O'Meara, M. (2002) A study of triage of paediatric patients in Australia. *Emergency Medicine*, 14, 67–76.

[193] Gouin, S., Gravel, J. & Bergeron, S. (2005). Evaluation of the Paediatric Canadian Triage and Acuity Scale in a paediatric ED. *American Journal of Emergency Medicine*, 23(3), 243-247.

Computer based support tools

Computer based support tools involve triage that is managed through the use of information technology to assist the nurse in determining a triage category, provisional diagnosis, or to prompt further questioning. A study by Aronsky *et al* (2008) of computerised triage showed it to be a versatile, adaptable, and effective approach in supporting ED staff with the triage assessment.[194] Dong *et al* (2006) assessed a web-based triage decision support tool (eTRIAGE) based on Canadian Triage and **Acuity Scale and found the eTRIAGE tool provided a 'Moderate' to 'Good' reliability.** [195]

An example of computerised triage is provided by Considine *et al* **(2004) where emergency nurses'** performance was evaluated using triage scenarios characterised by the type of patient population (adult versus paediatric) and mode of delivery (paper versus computer).[132] The first group used a paper-based tool (script-only) to assist with triage. The second group used a computer-based tool (script plus still photographs) to assist with triage. The study revealed that the allocation of the appropriate triage category was higher in the computer-based group 66.2% (kappa=0.56) compared with the paper-based group 55.4% (kappa=0.42).

A further study of the validity of computer triage was undertaken by Sadeghi *et al* (2006) comparing the sensitivity and specificity of computer triage to the ED specialist for patients that require admission. The results revealed the computer triage system had a higher sensitivity than the specialist (90% versus 64%) and a lower specificity (25% versus 48%) for patients who required hospitalisation.[196]

Summary

Validity and reliability will continue to be investigated and refined as triage scales evolve. The current evidence base indicates:

- Triage scales are reliable and valid tools to identify medical urgency for patients presenting to the ED and to assist in the management of resources and workforce
- Research and revision of triage scales for specific patient groups (mental health, obstetric, paediatric) has been recommended by several authors
- A 5-level acuity system is preferred
- Further research into computer-based support systems is warranted, especially those that enhance decision-making(etriage)
- Continued development of nursing education and competency development may improve reliability of triage.

2.5   Current ED challenges

2.5.1   Demand

While there is predictability in EDs about the number and type of patients that will present on any given day, the EDs have little control over the rate at which they present and the total number. Major

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[194] Aronsky, D., Jones, I., Raines, B., Hemphill, R., Mayberry, S.R., Luther, M.A. & Slusser, T. (2008) An Integrated Computerized Triage System in the Emergency Department. *AMIA Symposium Proceedings*, November 6, 16-20.

[195] Dong, S.L., Bullard, M.J., Meurer, D.P., Ohinmaa, A., Holroyd, B.R. & Rowe, B.H. (2006) Reliability of computerised emergency triage. *Academic Emergency Medicine*, 13, 269-275.

[196] Sadeghi, S., Barzi, A., Sadeghi, N. & King, B. (2006) A Bayesian model for triage decision support. *International Journal of Medical Informatics*, 75(5), 403-411.

events requiring emergency services can quickly lead to sudden overwhelming demand in the ED with a concurrent decrease in capacity.[127] Changes in demography due to population growth, ageing and trends in burden of disease represent a fundamental driver of demand for emergency health services.

A study commissioned by NSW Department of Health (2007) describes the two fundamentally different patient groups that are driving demand for ED services with polarised needs and motivations. **Young adults are driving growth in primary care patient attendances with 'injuries and poisoning',** while those patients aged 65+ are represented in triage categories 1, 2 and 3, and are increasing the non-primary care attendances often based on health issues around chronic disease. These data indicate that both primary care and non-primary care patients are growing at a fast rate.[197] As mentioned previously, from 2003-04 to 2008-09 there has been a 22% increase in ED presentations for all public hospitals in Australia.[149] From hospitals reporting to the National Non-admitted Patient Emergency Department Care Database (NNAPEDCD) in the past 5 years (2005 -2010), ED presentations are reported to have increased at an average rate of 4.9%.

These increases in patient demand place pressure on the ED and without corresponding changes to the care of emergency care the ED is at risk of overcrowding. A study by Combs *et al* (2006) into fast track models identified that ED overcrowding can cause:[198]

- long wait times for patients to be seen
- ambulance bypass
- patients spending longer periods in ED awaiting ward beds
- increasing clinical risks.

Access Block and overcrowding in EDs previously showed seasonal variation that reflected the demand for inpatient beds.[199] According to the ACEM paper (2004) in recent times these peaks in demand have become consistent and are now an all year round experience resulting in ED overcrowding. With the patient flow process beginning at triage, when EDs face increasing demand the triage process can create a bottle neck.[200] Several strategies to overcome these challenges have been described in an information paper from the ACEPs (2006) to combat triage bottlenecks and these include:

- 'triage bypass'
- electronic bed tracking systems
- increased staffing patterns in times of increased demand
- team triage and rapid triage.[200]

2.5.2 Capacity

EDs like other hospital departments and units, have limited capacity. Furthermore, EDs usually have limited control over admission and transfer of care out of ED and hence the capacity and capability of the unit at any given point in time.

ACEM (2004) notes that while demand is increasing, a finite and reducing bed supply limits the ability of EDs to successfully transfer care in a timely manner, therefore increasing patient wait times.[202]

[197] NSW Department of Health, (2007) Key drivers of demand in the emergency department: A hypothesis driven approach to analyse demand and supply, *NSW Department of Health*, December 2007.

[198] Combs, S., Chapman, R. & Bushby, A. **(2006). Fast Track: One hospital's journey**. *Accident and Emergency Nursing*, 14, 197-203.

[199] Australian College of Emergency Medicine, (2004) Access Block and Overcrowding in Australian Hospitals. Retrieved from http://www.acem.org.au/media/Access_Block1.pdf , Last accessed 05.01.11

[200] American College of Emergency Physicians, (2006) Approaching full capacity in an emergency department; an information paper. Retrieved from http://www.acep.org/crowding/ Last accessed 12.01.2011

Similarly a decrease in the number of Australian EDs accessible by the community is evidenced by the NSW Department of Health (2007) report that reveals a 50% of private hospitals have closed their EDs in the last 6-7 years.[197] A point prevalence survey for the ACEM estimates that caring for patients waiting for beds still represents over one third of ED workload in major hospitals,[201] hence this has the effect of reducing available beds to the care for undifferentiated emergency patients. This is also evident in other countries and in the white paper by Eitel *et al* (2007) describes the impact of 'boarding' admitted patients waiting for an inpatient bed as reducing the ability of staff to evaluate and treat new patients.[134] It stands to reason that as demand increases, access block occurs and EDs become overcrowded the supply of ED beds decreased placing pressure on the system.

2.5.3 Workforce

Overcrowding in EDs has a myriad of negative effects on quality of care, patient satisfaction, and staff-related outcomes, including decreased productivity, poor morale, and staff dissatisfaction.[133,134] A literature review of access block and ED overcrowding concluded that the resulting work related stress on ED staff was a key factor in staff choosing to decrease their clinical hours in emergency medicine, thus exacerbating workforce problems.[202]

Triage is a demanding role carried out by experienced ED nurses and requires complex cognitive processing of data which can be limited, incomplete or ambiguous. Such processes are required to be completed in a 2-5 minute general assessment of the patient as outlined by ACEM.[121] Therefore the triage process requires staff with extensive knowledge and experience to deal with the triage complexities, such as clinical and resourcing complexities.[203] For example, pressure from limited bed resources and overcrowded in waiting rooms can in some instances impact the triage category given to patients.[204] Literature suggests that the ultimate triage system should be simple enough to allow easy assessment of a large amount of people presenting with varying signs and symptoms in the shortest possible time.[205]

Ultimately this role requires a specific level of skill and experience. As the workforce ages and leaves the system, the supply of these skilled and experienced triage nurses is diminished. Adding to this the current pressure on EDs there is risk that availability of experienced triage nurses could be further reduced. As discussed in Section 2.4.1 reliability and validity, a standardised education program has been developed and implemented in Australia to facilitate the up-skilling of nurses to triage.

> ### International consultation
>
> *In the USA and Canada there are ongoing challenges faced with triage as the accuracy and inter-rater reliability of the triage staff can result in human error around triage decision making.*

[201]Richardson, D. (2009). Access Block Point Prevalence Survey 2009, *The Road Trauma and Emergency Medicine Unit, Australian National University, on behalf of the Australasian College for Emergency Medicine*. Retrieved from http://www.acem.org.au/media/Access_Block_Update_2009-2_201109_.pdf , Last accessed 21.12.10

[202] Forero, R., & Hillman, K. (2008). Access Block and Overcrowding: A literature review. *Prepared for the Australasian College for Emergency Medicine (ACEM) by the Simpson Centre for Health Services Research South Western Sydney Clinical School University of New South Wales,* Retrieved from http://www.acem.org.au/media/media_releases/Access_Block_Literature_Review_08_Sept_3.pdf , Last accessed 20.12.10.

[203] Considine, J., Botti, M. & Thomas, S. (2007). Do knowledge and Experience have specific roles in triage decision-making? *Academic Emergency Medicine*, 14, 722-726.

[204] Dong, S.L., Bullard, M.J., Meurer, D.P., Ohinmaa, A., Holroyd, B.R. & Rowe, B.H. (2006). Reliability of computerised emergency triage. *Academic Emergency Medicine*, 13, 269-275.

[205] Moll, H.A. (2010). Challenges in the validation of triage systems at emergency departments. *Journal of Clinical Epidemiology*, 63, 384-388.

Background

Summary

Increasing demand is an ongoing theme in ED and a corollary of that is an available supply of ED services to meet that demand. The availability of nursing staff is a worldwide challenge as for ED triage there is a recognised need for skilled and experienced staff to be working in this role.

3 Role of triage

3.1 Who performs triage?

As discussed, triage is a process that is critical to the effective management of modern EDs.[127] Triage aims not only to align clinical services to the care needs of the patient, but also to provide an effective tool for departmental organisation, monitoring and evaluation [127]Fitzgerald *et al* (2010) describe triage as an essential element of modern medical care that is necessary to assign relatively scarce resources to the broad medical needs of patients.[127] In emergency medicine triage assists in the management of the relationship between timeliness of care and relative resource availability.[127]

The role of triage has constantly evolved since its inception. Fitzgerald *et al* (2010) note that some of the earliest triage roles were undertaken by clerical staff or by the patients themselves who were asked to select between a medical or surgical casualty for treatment.[127] From these early stages the role of triage began to develop into a formalised, structured process which has been influenced by emergency medicine demands. Outside of these early examples traditionally the role of triage has been a process performed by emergency nurses.[127] Bergeron *et al* (2002) found that triage performed by nurses demonstrated a greater reliability when compared with triage performed by ED physicians, however it was noted that this may have been due to the nurses being more familiar with the triage scale system.[206]

Current examples exist of triage being performed by staff other than nurses. In some health systems health professionals outside the ED may be involved in triage pre-hospital, for example, paramedics and general practitioners (GP). International consultations conducted during this review revealed some GPs in New Zealand are using the ATS to triage patients. This can assist in the treatment of patients in after hours GP clinics and in identifying patients to be transferred to an ED with a predetermined ATS category assigned. This pre-hospital triage can also facilitate identification of some patient groups (paediatric and mental health patients) who can be transferred directly to a hospital ward bed.

> **International consultation**
>
> *Across the USA, Canada and NZ, the triage role has been described as multi-disciplinary consisting of Nursing, Administration, Medical and Allied Health staff. The exception is the USA who also use 'Physician Extenders' described as Nurse Practitioners and Physician Assistants.*

3.2 Skill and knowledge required to triage

The traditional model of a single staff member performing triage results in autonomous decision-making for the allocation of a triage category. In Australia, for nurses to become accredited at performing triage an individual must meet a minimum set of standards and competencies. In some models of care, triage may include a medical officer, although at a minimum, triage must be attended by at least 1 triage qualified Registered Nurse. The CENA position statement was developed to define the role of the ED triage nurse and endorse a minimum set of nurse practice standards required.[207] These summarised standards are listed below and can be seen in more detail in Appendix B:

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[206] Bergeron, S., Gouin, S., Bailey, B. & Patel, H. (2002).Comparison of Triage Assessments among Pediatric Registered Nurses and Pediatric Emergency Physicians. *Academic Emergency Journal*, 9 (12), 1397-1401.

[207] College of Emergency Nursing Australasia, (2009). Position Statement, Triage Nurse. http://www.cena.org.au/documents/CENATriageNursePSJuly2009.pdf ,last accessed 10.01.11.

- Triage should be conducted by a qualified Registered Nurse with clinical expertise in emergency nursing
- The triage nurse must complete a triage education program
- The triage nurse must engage in continuous education
- The triage nurse should initiate appropriate interventions at triage (first aid and emergency intervention)
- Patients in the waiting room are monitored, managed and continually reassessed
- A safe triage environment for patients and staff should be provided (duress alarms, easy access to triage area).

There is general consensus nationally about what level of expertise is required to perform triage, although there is no national standard on the level of experience required. The CENA minimum standards form the foundation of triage accreditation, although states and local health networks can add and modify the requirements. CENAs minimum standards state that to perform in the role of triage it must be a Registered Nurse with clinical expertise in emergency nursing. Similarly the ETEK (2009) states that a nurse performing triage must have an appropriate level of experience, training and supervision to perform in the role. Triage requires nurses to be able to use independent judgement for each triage episode, and utilise their expertise to individualise the assessment of the patient.[208]

In a survey of 412 triage nurses across NSW Fry & Burr (2001) found that the majority of respondents (n = 226; 57%) believed that 7-18 months emergency experience was required before commencing a triage role.[209] In some states a post graduate qualification is generally required before triage can be undertaken. Other requirements endorsed by CENA are the completion of a triage education program and continual education in triage and emergency care. An ACEM endorsed triage program has been implemented across Australian EDs and usually includes attendance at a two-day education and training workshop, with several supported days in triage prior to being deemed competent and able to tr5aige independently.

ACEM state that all patients presenting to an ED should be triaged by a specifically trained and experienced registered nurse.[210] In Australian EDs, the accredited triage nurse is expected, at a minimum, to undertake an assessment of the patient and allocate a priority category. ACEM state the assessment should cover the presenting problem, general appearance of the patient and may require physiological observations. ACEM also recommend that triage assessment should generally take no more than two to 5 minutes and that vital signs should only be measured at triage if required to estimate urgency or if time permits.[211]

A US paper outlines the qualifications required to work in the Boston Medical Centre ED.[212] Nurses are required to have previous ED and/or critical care experience and to work in any area of triage, the nurse must also have:

- a minimum of 1 year experience in the ED

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[208] Department of health and Ageing. (2009). Emergency Triage Education Kit. Retrieved from http://www.health.gov.au/internet/main/publishing.nsf/Content/5E3156CFFF0A34B1CA2573D0007BB905/$File/Triage%20Workbook.pdf Last accessed 12.11.11

[209] Fry, M. & Burr, G. (2001). Current triage practice and influences affecting clinical decision-making in emergency departments in NSW. *Australia, Accident and Emergency Nursing*, 9(4), 227-234.

[210] Australasian College for Emergency Medicine, (2006). Policy on the Australasian Triage Scale. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/P06_Aust_Triage_Scale_-_Nov_2000.pdf ,Last accessed 10.01.11.

[211] Australasian College for Emergency Medicine, (2000). Guidelines on the implementation of the Australasian triage scale in emergency departments. Retrieved from http://www.acem.org.au/media/policies_and_guidelines/G24_Implementation___ATS.pdf , Last accessed January 2011.

[212] Fisher, L., Whalen, K.C., Mass, M. & Mass, S. (2004). A Look at a Two-step Triage System: "How One High Volume, Level I Trauma Center Decreased Long Triage Waits". *Journal of Emergency Nursing*, 30(6), 584-585.

- attended a 2-day triage workshop

- successfully complete an individualised clinical orientation to the area with a preceptor.

While the competency and education requirements are not identical there appears to be consensus between Australia and the US facility in the study about what is required of nurses to facilitate performing in the role of triage.

3.3   Evolution of the triage role

The key drivers of emergency care such as increasing demand and patient complexity have resulted in the evolution of the role of triage. Fry & Burr (2002) suggest the triage process has become complicated by the increasing complexity of patients encountered by the triage nurse leading to the nurse requiring extensive medical, surgical and psychosocial knowledge to deal with a broad range of complex problems.[213] The changes in ED demand have also resulted in ED triage nurses performing duties in addition to standard triage. Fry & Burr (2001) report that of 412 NSW triage nurses surveyed in their study, 96% reported performing extended roles that included initiation of treatment and/or investigations.[209] A list of procedural task can be seen in Table 25. This list reveals a broad range of activities that range from investigations to referral to other services. It is obvious from the list that the most frequent tasks performed are investigations to assist in reaching a diagnosis and management plan.

Table 23: Additional investigative procedural tasks performed by triage nurse (Fry & Burr, 2001, Table 26)[209]

Investigative/procedural tasks	%
Urinalysis	81
Blood sugar levels	73
Wound management	72
Collection of specimens	70
Mid stream urinalysis	63
Pain management	61
Basic life support	61
Twelve lead ECG	59
Radiology	32
Pathology	29
Pregnancy testing	29
Allied health referrals	26
Venous access	26
Community service referral	25

[213] Fry, M. & Burr, G. (2002). Review of the Triage Literature: Past, Present, Future. *Australian Emergency Nursing Journal*, 5(2), 33-38.

Investigative/procedural tasks	%
Doppler tests	6
Suturing	4
Plaster management	3

The majority of respondents in Fry & Burr's study (75%) believed the role should encompass investigations and treatments that are traditionally performed by physicians. The study indicated the following areas for inclusion into ED triage nurse roles: (level of respondent's agreement indicated in %)

- Ordering radiology (64%)
- Pain management (57%)
- Hemodynamic observations (57%)
- Wound repair (49%)
- Patient education (45%)
- Venepuncture (31%)
- Plaster application (32%).

The evolution of the triage role from brief patient assessment and allocation of a triage category to inclusion of extended investigations and treatments highlights the continuous adaption required in delivery of emergency care and provides context to the current review of the triage process in Australia. While extended tasks were introduced as a solution to increasing demand and long ED waits, it is clear that this extended role is an area of focus for the project. Assessment of the investigations and treatment carried out at triage will facilitate an understanding of their appropriateness in the current ED environment and can also help to identify some of the causes of delays at triage.

3.4   Triage challenges

Nurses encounter many challenges during the triage process such as multitasking, determining clinical urgency, coordinating care, instigating diagnostics and commencing interventions. In of the aforementioned triage standards and guidelines, the expectation is that these tasks will be performed within minutes. This is a difficult proposition and proposes many challenges as highlighted by Fry & Burr *et al* (2001) that found nurses experience high levels of anxiety when performing triage despite clinical expertise and experience.[209] **Chung's (2005) research describes the challenges nurses encounter** during the decision-making process of triage. The author highlights that the four main influences in the triage process are:[214]

- interruptions during triage
- time constraints while triaging
- lack of triage training
- previous clinical experience.

Chung (2005) concluded the main component in triage decision-making for the nurse was previous clinical experience.

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[214] Chung, J.Y. (2005). An exploration of accident and emergency nurse experiences of triage decision making in Hong Kong. *Accident and Emergency Nursing*, 13(4), 206-213.

Role of triage

Further researcher describes the challenges in allocating patient care in the ED. Clifford Brown *et al* (2010) notes that nurses spend significant time conferring about ED bed spaces.[215] This appears to escalate with the introduction of specialty units as highlighted by Lyons *et al* (2007) where 67% of time spent away from triage causing delays in the triage process, is due to escorting patient into a specialty area.[216] According to study, these triage delays could be minimised with lesser skilled staff such as porters undertaking transfers.[217]

Finally, as discussed in the previous Section 3.4, the role of triage nurses has changed with an increasing number of tasks being carried out by triage nurses.

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[215] Clifford-Brown, J., Challen, K. & Ryan, B. (2010). What happens at triage: a naturalistic observational study. *Emergency Medicine Journal*, 27(12), 931-933.

[216] Lyons, M., Brown, R. & Wears, R. (2007). Factors that affect the flow of patients through triage. *Emergency Medicine Journal*, 24(2), 78-85.

[217] Ibid,

4 Triage process

As evidenced in the previous sections, the process of triage has evolved nationally and internationally in an attempt to cope with increases in patient presentations to the ED. A variety of triage processes exist in EDs and this section will discuss those that are featured most prominently in the literature. They include:

- Streaming to models of care, such as fast track
- Assisted triage
- Two step triage
- Pre-hospital triage
- Triage tools (algorithms, paediatric, and mental health).

4.1 Streaming at triage

Streaming is the manner in which patients are separated at triage into designated areas of the ED for assessment and treatment. Patients can be streamed into areas such as fast track, medical assessment units (MAU), Urgent Care Centres (UCC), chest pain units or team based models of care. The rationale for streaming is to separate patient groups that require different tasks such as level of observation and care, and intensity of investigation and treatment. In concentrating patient groups it is anticipated that resources can be allocated more appropriately, efficiently and effectively to service the patients needs and speed their flow through the ED[218],

From the literature reviewed several recent articles discuss the concept of streaming in an ED. Streaming is generally determined by two methods:

1   Streaming patients on their triage category, for example streaming ATS or ESI category 4 or 5 patients to fast track.[227,228,229,230,231] The rationale for streaming category 4 and 5 patients is they are considered to be low acuity/complexity patients.[227,234,229,233]

2   Patients that are likely to be admitted and patients that are likely to be discharged.[218,222,224,225] The rationale for streaming on admission is that admitted patients generally require more time in the ED then patients that are for discharge. Therefore by streaming patients that are not going to be admitted it allows beds to be available for patients that will require admission.[218]

The rationale for 1 model is to separate patients depending on their level of complexity. What determines that complexity varies and is determined by the local ED. Listed below are some of the complexity determinants identified in the literature.

- Level of nursing dependency[219]
- Complexity of care required[152],[220],98
- Number of procedures, investigations or consultations required[221],[222]

[218] Kelly, A.M., Bryant, M., Cox, L & Jolley, D. (2007). Improving emergency department efficiency by patient streaming to outcomes-based teams. *Australian Health Review*, 31(1), 16-21.

[219] Ieraci, S., Diguisto, E., Sonntag, P., Dann, L. & Fox, D. (2008) Streaming by case complexity: evaluation of a model for emergency department fast track. *Emergency Medicine Australasia*, 20, 241-249.

[220] Considine, J., Kropman, M., Kelly, E. & Winter, C. (2008). Effect of emergency department fast track on emergency department length of stay: a case – control study. *Emergency Medicine Journal*, 25, 815-819.

[221] Sprivulis, P. (2004). Pilot study of metropolitan emergency department workload complexity. *Emergency Medicine Australasia*, 16, 59–64.

- Likelihood of admission or discharge[218],[223],[224],[225],[226],

- Priority of triage category, for example steaming categories 4, 5 (or 3 only due to pain)[227],[228],[229],[230],[231],

- LOS within a predicted time frame eg LOS < 1 hour[232],[233],[220]

- Ability of a patient to be ambulant and self caring[117]

- Patients need for an examination bed.[234],[213,220]

Much of the literature has examined the benefits of steaming. Using streaming models in ED has been shown to improve ED performance indicators as discussed below:

ED bed occupancy rate

Streaming from triage has the ability to reduce the number of people requiring a bed in the main ED by reducing the flow of patients into that area. A study by O'Brien *et al* (2006) streamed ATS category 3, 4, 5 patients that were likely to be discharged, the study noted that 21.6% of their presentations were streamed to fast track, decreasing the amount of patients that needed to be seen in the main ED[225]. A study by Brailsford *et al* (2004) streamed patients with minor cases" (triage category 4 and 5) and the results showed a bed occupancy reduction of 1% per annum over 5 years in the ED. [227]

Time spent waiting for treatment

Streaming from triage has also shown to reduce the amount of time patients spend waiting for treatment in Australian EDs. This was evidenced in a study by Kelly *et al* (2007) where patients were streamed into nursing and doctor teams based on likely disposition. In the study reductions of 5 minutes for category 3 patients and 18 minutes for category 5 patients were noted using the streaming model. [223] Ieraci *et al* (2008) streamed patients into fast track and results from this study showed the mean waiting time reduced from 55 minutes to 32 minutes with mean treatment time reduced from

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[222] Welch, S. (2008). The ED of Today Morphs into the ED of Tomorrow, Emergency Medicine News, 30(5), 23.

[223] Kelly, A.M., Bryant, M., Cox, L. & Jolley, D. (2007) Improving emergency department efficiency by patient streaming to outcomes-based teams. *Australian Health Review,* 31(1), 16-21.

[224] King, D.L., Ben-Tovim, D.I. & Bassham, J. (2006). Redesigning emergency department patient flows: Application of Lean Thinking to health care. *Emergency Medicine Australasia*, 18, 391–397.

[225] O'Brien, D., Williams, A., Blondell, K. & Jelinek, G.A. (2006). Impact of streaming "fast track" emergency department patients. *Australian Health Review*, 30(4), 525-532.

[226] Ben-Tovim, D.I., Bassham, J. E., Bolch, D, Martin, M.A., Dougherty, M. & Szwarcbord, M. (2007). Lean thinking across a hospital: redesigning care at the Flinders Medical Centre. *Australian Health Review*, 31(1), pp. 10-15.

[227] Brailsford, S.C., Lattimer, V. A., Tarnaras, P. & Turnbull, J. C. (2004). Emergency and on-demand health care: modelling a large complex system. *Journal of the Operational Research Society*, 55, 34-42.

[228] Schull, M.J., Kiss, A. & Szalai, J.P. (2007) The Effect of Low-Complexity Patients on Emergency Department Waiting Times. *Annals of Emergency Medicine,* 49(3), 257-264.

[229] Weintraub, B., Hashemi, T. & Kucewicz, R. (2006) Creating an Enhanced Triage Area Improves Emergency Department Throughput. *Journal of Emergency Nursing*, 36(6), 502-505.

[230] Combs, S., Chapman, R. & Bushby, A. (2006) Fast Track: One hospital's journey. *Accident and Emergency Nursing*, 14, 197-203.

[231] Farley, H., Hines, D., Ross, E., Massucci, J.L., Alders, V., Reed, J., Sweeney, T., Jasani N. & Reese, C.L. (2009). A Lean-based triage redesign process improves door-to-room times and decreases number of patients at triage. *Annals of Emergency Medicine*, 54, S96.

[232] Rodi, S.W., Grau, M.V. & Orsini, C.M. (2006) Evaluation of a Fast Track Unit: Alignment of Resources and Demand Results in Improved Satisfaction and Decreased Length of Stay for Emergency Department Patients. *Quality Management in Health Care*, 15(3), 163-170.

[233] Quattrini, V. & Swan, B.A. (2009) Evaluating care in emergency department fast tracks. *Journal of Emergency Nursing*, pp. 1-7.

[234] Cooke, M.W., Wilson, S. & Pearson, S. The effect of a separate stream for minor injuries on accident and emergency department waiting times. E*mergency Medicine Journal*, 19(1), 28-30.

209 to 191 minutes.[135] The low complexity criteria for fast track patients was determined by two factors: **a patient's clinical requirement was evident at triage; and the patient did not require a treatment bed.** Finally a study by O'Brien *et al* (2006) that streamed patients based on likelihood of discharge and with a triage category of 3, 4, or 5, saw ED waiting times reduced by 20.3%.[225]

ED length of stay

In a study by Ben-Tovim *et al* (2007) length of time spent in the ED was also affected by a model of streaming patients that were likely to be admitted and those that were likely to be discharged. Investigation of this model demonstrated a reduction of 48 minutes in the LOS of patients in ED.[226]

In the streaming model studied by Considine *et al* (2008)[220] patients were streamed according to: the prospect of patients spending less than 60 minutes in the ED; and patients did not require a treatment bed or intravenous therapy. LOS for patients in this model reduced from 132 minutes in the control group to 116 minutes in the fast track group. The study also noted that fast-track patients had a higher incidence of discharge within two hours (53% of fast track patients discharged vs. 44% of patients in **the "usual ED" process) and** 4 hours (92% of fast track patients discharged vs. 84% of patients in the "usual ED" process).[220]

Kinsman *et al* (2008) streamed patients into low and high-acuity areas based on the complexity of care required (the determinants of this complexity were not revealed in the study) with resulting improvements. The results showed a 0.62% improvement in patients spending less than 8 hours in the ED and a 0.54% net reversal trend of patents spending less than 4 hours in the ED. [152]

O'Brien *et al* (2006)[225] streamed patients that had category 3, 4, or 5 that were likely to be discharged. Results from the study showed LOS reduced by 18% compared to the same period from the previous year. A Canadian study by Rodi *et al* (2006) noted the largest reductions in LOS from 127 to 53 minutes (41% reduction).[232] This study streamed patients to fast track using a strict inclusion and exclusion criteria. The inclusion requirements were: expected treatment of less than 1 hour; patients must be ambulant or able to independently transfer from a wheelchair; and have a CTAS category of 4 or 5 (or 3 only due to pain). The exclusion criteria comprised patients who are likely to receive intravenous medications and/or fluids, children less than 1 years of age, abdominal pain, chest pain, shortness of breath (SOB), pregnancy, active vomiting, psychiatric complaints, and abnormal vital signs.

In a US study, reductions in LOS were seen in a paediatric streaming model by Hampers *et al* (1999). Patients aged between 2 months and 10 years of age were streamed into a fast track model. The fast track inclusion criteria were that the child was triaged as non urgent. This was described as a child who **had an "uncomplicated history and reassuring physical examination (ie active, alert, vigorous and well-**perfused), and for whom a substantial delay (up to 8 hours) in medical attention was considered **unlikely to result in serious harm". The results showed the average** LOS was 28 minutes shorter in the fast track for this patient group.[235]

Did not waits

With a shortened LOS and decrease waiting times for treatment, it is not surprising that a concurrent decrease in DNW in ED have been demonstrated. In Australian studies, DNW were reduced as follows:

- From the study by Ben-Tovim *et al* (2007) patients classified as a DNW reduced from 7% of all arrivals to just over 3%.[226]
- Ieraci *et al* (2008) also noted that the DNW group reduced from 6.2% to 3.1%.

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[235] Hampers, L,C., Cha S., Gutglass, D.J., Binns, H.J. & Krug, S.E. (1999). Fast Track and the Pediatric Emergency Department: Resource Utilization and Patient Outcomes. *Academic Emergency Medicine*, 6(11), 1153-1159.

Two other Australian studies by King *et al* (2006)[236] and Combs *et al* (2006) also noted reductions in the DNW group but did not reveal numerical values.

Patient satisfaction

With the improvements noted above as a result of streaming, it is clear that patient satisfaction should be considered as part of this triage process review. In a study by Weintraub *et al* (2006) patient satisfaction increased from the 60th percentile to the 90th percentile.[229] Rodi *et al* (2006) also stated that patient satisfaction improved with the introduction of streaming. [232]

Negative effects of streaming

Although benefits were demonstrated from streaming in the ED, several studies have identified negative impacts of streaming, Studies from Brailsford (2004)[227] and Combs *et al* (2006)[230] note that streaming can improve the management of less urgent patients, however it is described as often at the expense of urgent patients as resources may be redirected towards the fast track unit. This was also evident in the study by King *et al* (2006) which revealed a slight increase in wait times for triage categories 2 and 3 patients with negatively affects associated with the care of more seriously ill patients.[236] Other negative effects of streaming were noted by Combs *et al* (2006) where difficulty was experienced finding sufficient and appropriately skilled nursing staff to work in the fast track area. The concurrent reduction of general floor staff in the ED resulted as skilled staff diverted to the fast track model.[230]

Finally, Brailsford *et al* (2004)[227] and Weintraub *et al* (2006)[229] recommends for streaming to be effective the system should flexible, in that, streaming is only triggered when waiting times reach a certain threshold or implemented during peak periods of demand.

Hence it is evident from the Australian studies that streaming has the potential to improve patient outcomes and ED performance. Streaming to a fast track model was the preferred for EDs, focusing the streaming on low complexity patients. Several studies revealed negative effects from using streaming models, however it is possible that implementing a carefully structured streaming and fast track model an ED can continue to provide equitable and adequate care to all presenting patients regardless of clinical urgency.

4.2   A two-step triage process

In two separate studies conducted in North America, Fischer *et al* (2004)[237] and Laskowski-Jones *et al* (2005)[238] describe a two-step or two tiered triage system. This system generally involves a brief initial assessment, usually a verbally assessment only, followed by a more in-depth triage in a secondary location. This allows for quick sorting of patients by urgency and identification of an appropriate treatment area to which the patient can be sent for a complete triage assessment. The two step triage process is supported by Funderburke *et al* (2008) who assessed triage best practices and recommended that a brief or focused triage, with initial standing orders and a secondary triage is an optimal component of triage.[171]

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[236] King, D.L., Ben-Tovim, D.I. & Bassham, J. (2006). Redesigning emergency department patient flows: Application of Lean Thinking to health care. *Emergency Medicine Australasia,* 18, 391–397.

[237] Fisher, L., Whalen, K.C., Mass, M. & Mass, S. (2004). A Look at a Two-step Triage System: "How One High Volume, Level I Trauma Center Decreased Long Triage Waits". *Journal of Emergency Nursing*, 30(6), 584-585.

[238] Laskowski-Jones, L., Toulson, K. & McConnell, L. (2005). Assessing and Planning for Triage Redesign. *Journal of Emergency Nursing,* 31(3), 315-318.

The research article by Fischer *et al* (2004) discuses the two-step triage process in a Boston medical centre in the US. The model involves:

Step one

The step one triage nurse performs a rapid patient assessment involving determining the presenting problem and assessing a patients airway, breathing, circulation, and level of disability as well as the **patients "general appearance, colour (to assess perfusion), facial expression, gait"** [237] **and level of pain"** to determine the patients acuity level and location of care. After this brief visual assessment the step 1 nurse had the option to send the patient to one of three areas: the UCC; the acute side of the ED; or the non-acute side of the ED. Patients that qualified for the UCC were registered and sent to that area for a focused assessment by the UCC RN. Patients that required the acute side of ED were taken directly to that area of the ED. Non-acute patients were the group who were then sent to the step two triage nurse for a more comprehensive triage assessment.

Step two

Here the presenting complaint was thoroughly investigated, along with the patient's medical history, allergies and a full set of vital signs was measured. After the step two triage nurse has completed the assessment, the nurse was able to send the patient either to the UCC, acute side of ED or into the waiting room. Additionally, if the patient warranted pathology, radiology or other interventions protocols were in place for the nurse to be able to commence these tasks. Finally Clerks registered acute side patients at the bedside, and all other patients were registered prior to being placed in the queue for their designated area.

The results of this study showed that patients triaged to the UCC expedited the flow of patients in the waiting room and shortened the LOS for low acuity patients. Because LOS of UCC patients was reduced, the UCC was able to accommodate more patients, thus alleviating some of the volume burden in the ED.[237]

A second study by Laskowski-Jones *et al* (2005) described a two-step triage model that was implemented in the an adult and paediatric hospital in the US. The model consisted of a multidisciplinary team of registered nurses, emergency care technicians, and clerical staff to work in the two areas of triage.

Step one

The step one area of the triage consisted of three individual sound and bullet proof booths that promoted both patient confidentiality and staff safety. The role of the step one triage nurse was to **rapidly assess a patient's chief (verbal) complaint and establish a triage priority. An ED clerk would a** quickly register the patient ie name, date of birth, address, phone number, social security number, race, sex, and marital status. [238] **The full registration was completed at the patient's bedside by the admitting** clerks stationed in the ED. Patients were either sent into the ED or referred to secondary triage (no determinant for which location was noted).

Step two

Staff controlled access for patients entering into the step two triage area to promote safety. The step two triage area comprised seven individual assessment areas. In this area the nurse would perform a more confidential and comprehensive nursing examination, including vital signs, and commence definitive care when required. The step two triage process included a triage coordinator who facilitated meeti**ng the patient's needs, staffing resources at triage and prompted ED throughput.**[238] While the triage model was described in detail, no indication of patient outcomes or improved ED throughput were published.

While no similar two-step triage models have been described in the Australian literature, there is value in assessing its potential as a triage strategy to increase time to initial triage, especially in busy EDs.

🌐 *International consultation*

In Ontario, Canada international consultations revealed the implementation of a Torpedo nurse model.

- *Step 1. The torpedo nurse is placed at the entrance of the ED and patients are immediately triaged by that nurse as they enter the hospital. This triage is a quick verbal triage (60 sec) where presenting problem is ascertained and vital signs are performed. Patients with a CTAS category of:*
  - *1 are transferred straight to ED*
  - *2-3 are transferred to a primary triage nurse. This group is seen by the primary triage nurse in order of clinical urgency*
  - *4-5 are transferred to a model of care such as a UCC. If the patients is being streamed to the UCC the torpedo nurse will undertake a more in-depth triage on this group to warrant transfer to the model of care.*
- *Step 2. For category 2-3 patients the primary triage nurse performs a more confidential and comprehensive nursing examination so interventions can be commenced. These interventions include pathology, x-ray referrals and initial treatment.*

4.3   Assisted Triage

Traditionally triage is undertaken by a solitary nurse, although many contemporary triage models use additional clinicians at triage[239,240,241,242,243,244,245] The assisted triage models consist of additional staff being present at triage such as a doctor [239,241,242], an additional nursing staff member [243] or a number of staff providing a team based approach. [240,244,245]

Doctor present at triage

Research by Holroyd (2007) examined the affect of using a doctor at triage in a Canadian hospital. The doctor was placed at triage from 11am – 8pm daily to initiate patient management, assist the triage

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[239] Richardson, J.R., Braitberg, G. & Yeoh, M.J.(2004). Multidisciplinary assessment at triage: A new way forward. *Emergency Medicine Australasia*, 16, 41-46.

[240] Subash, F., Dunn, F., McNicholl, B. & Marlow, J. (2004). Team triage improves emergency department efficiency. *Emergency Medicine Journal*, 21(5), 542-544.

[241] Holroyd, B.R., Bullard, M.J., Latoszek, K., Gordon, D., Allen, S., Tam, S., Blitz, S., Yoon, P. & Rowe, B.H. (2007). Impact of a Triage Liaison Physician on Emergency Department Overcrowding and Throughput: A Randomized Controlled Trial. *Academic Emergency Medicine*, 14(8), 702-708.

[242] Terris, J., Leman, P., O'Connor, N. & Wood, R. (2004). Making an IMPACT on emergency department flow: improving patient processing assisted by consultant at triage. *Emergency Medical Journal*, 21(5), 537-541.

[243] Partovi, S.N., Nelson, B.K., Bryan, E.D. & Walsh, M.J. (2001). Faculty Triage Shortens Emergency Department Length of Stay. *Academic Emergency Medicine*, 8(10), 990-995.

[244] Choi, Y.F., Wong, T.W. & Lau, C.C. (2005). Triage rapid initial assessment by doctor (TRIAD) improves waiting time and processing time of the emergency department. *Emergency Medicine Journal*, 23(4), 262-265.

[245] Vega, V, & McGuire, S.J. (2007). Speeding up the Emergency Department: The RADIT Emergency Program at St. Joseph Hospital of Orange. *Hospital Topics,* 85(4), 17-24.

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nurse, answer all medical consult or transfer calls and manage ED administrative matters.[241] The results showed that LOS decreased by 36 minutes for days when the doctor was present at triage compared to control days. The patient group who left without assessment being completed also decreased from 6.6% to 5.4%.[241]

In Australia, Richardson *et al* (2004) tested the prospect of placing a doctor at triage in a Victorian hospital. The model consisted of a senior doctor working at triage and this was either an ED consultant or senior registrar. The triage area was redesigned to include a mini assessment/treatment cubicle behind the triage desk so the doctor could provide early medical assessment and instigate investigations in a recliner chair. Patients were then referred to an appropriate model of care (MOC) or to the waiting room. The results showed that the percentage of patients seen within ATS performance indicators increased from 75% to 81% in category 2 patients and from 56% to 78% in category 3 patients. The number of DNW patients reduced by 50% and a staff survey showed a high staff satisfaction rating.

Research from Terris *et al* (2004) also examined placing a doctor at triage in a London Hospital. On presentation the patient would be greeted by the nurse with a brief verbal assessment to determine if the patient was too ill to be registered by the clerk. After registering a focused history and screening examination, including vital signs [242] was performed by the doctor. Both the nurse and the doctor carried out investigations and further treatment before transferring the patient to the next MOC. The results from the Terris *et al* (2004) study showed an overall reduction in the number of patients waiting to be seen in the ED from 18.3 to 5.5 people at two hourly assessments. Additionally, 48.9% of patients were discharged home immediately after assessment and treatment with no patient waiting more than 4 hours for an initial clinical consultation.[242]

An additional staff member at triage

A US study by Partovi *et al* (2001) examined the effect of placing a faculty member at triage from 9am to 9pm daily to compare the LOS to the usual triage process at Texas Tech University Health Sciences University hospital. The role of the faculty member was to facilitate the triage process by rapidly evaluating and moving serious patients to patient care areas, ordering diagnostic studies and fluid hydration, discharging patients who had simple problems directly from triage, and encouraging rapid registration of new patients. [243] The results of the study showed the mean LOS in ED for the faculty member group was 363 minutes compared to 445 minutes in the control group. The proportion of patients who left without being seen also reduced by 46% compared to the control group.[243]

Team based triage

The team based model was employed in a Hospital in Hong Kong. Choi *et al* (2006) described the structure of the triage model as consisting of a nurse, doctor and healthcare assistant. The nurse triaged patients in the usual manner taking vital signs and a brief history, and allocating a triage category to patients. The doctor would assess the patient during the triage process and initiate necessary investigations and treatments. The healthcare assistant provided help to the nurse in carrying out observations and directing patients to designated cubicles or the radiography department. The results of this model showed a 38% decrease in waiting time, 23 % decrease in processing time and improvements were seen in the processing time of category 4 and 5 patients.[244]

In a UK Hospital, Subash *et al* (2004) evaluated the use of 4 clinicians at triage, comprising of a consultant, a middle grade doctor, senior house officer (SHO) or a triage nurse and another SHO (a SHO is a junior doctor undergoing specialty training under the supervision of consultants and registrars). When patients presented to the ED they were seen by the first available member of the triage team. Staff would commence treatment and investigations or directed the patient to another member of staff if a lengthy procedure was required, for example, suturing.[240] The nurses involved were encouraged to extend their role to making decisions about radiology, treatment, and discharge. The model showed several improvements as listed:

- decreases in time to be triaged from 7 minutes to 2 minutes
- decreases in time to see a doctor from 32 minutes to 2 minutes

- decreases in time taken to be sent to radiology from 44 minutes to 11.5 minutes
- decreases in time to be discharged were also seen going from 82 minutes to 37 minutes.[240]

Finally Vega *et al* (2007) evaluated a rapid assessment and discharge program at triage in a metropolitan hospital in the US. The program ran during peak ED times (2 pm to 10:30 pm) seven days a week and the triage team consisted of a designated physician, registered nurse, licensed vocational nurse, patient care technician and a bedside financial registrar. The goal was to see and discharge patients within an average time frame of 90 minutes without using a treatment room or bed in ED. The focus of the team was on non-urgent complaints, such as coughs, colds, urinary tract infection symptoms, uncomplicated fever, and minor injuries. [245] More complex patients were referred to an ED bed for more thorough investigations. Patients who had x-rays or pathology were placed in a room adjacent to the triage area so as to not occupy a bed while awaiting their diagnosis. Once the patient was ready for discharge the RN gave discharge paperwork, follow-up instructions, and medications and sent the patient to the financial services station for financial registrar to collect details such as demographic and insurance information. Finally the registrar would officially discharge the patient from the ED. The results showed that all patients in the program were discharged within 97 minutes. Furthermore a patient satisfaction survey rated the quality of service received as either good or excellent.[245]

4.4   Pre-hospital triage

Pre hospital triage is generally undertaken by paramedics during a trauma[246],[247] or cardiac event where patients can bypass hospital triage and be taken directly to a theatre or cardiac catheterisation laboratory.[248] Such processes have merit in expediting care of a patient. This was demonstrated by Ortolani (2007) where patients directly transferred to a cardiac catheter laboratory for definitive care were associated with a median total ischemic time of 142 minutes, an average decrease of 70 minutes compared with more conventional triage strategies.[248] The details of this process are highlight below.

Pre-hospital triage

In Bologna, Italy, Ortolani (2007) investigated the use of pre-hospital triage. Patients who called emergency services (000 equivalent) were screened for potential ST-Elevation Myocardial Infarction (STEMI) using a computer-based tool that assisting in diagnosing and allocating a priority category to the patient. If an acute myocardial infarction was reasonably suspected, an ambulance equipped for pre-hospital triage was despatched containing a physician and 2 paramedics. [248]

On arrival an electrocardiogram was conducted and transmitted to an intensive care unit, where a cardiologist would confirm the diagnosis. In cases of confirmed diagnosis of STEMI, the patient was immediately transferred to the intervention laboratory, bypassing hospital triage. [248]

Two Australian studies by Cox (2010) and Mulholland *et al* (2005) examined the role of pre-hospital triage undertaken by the ambulance services. Cox (2010) evaluated the performance of the current pre-hospital trauma triage criteria and provided recommendations about refinements to the criteria to

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[246] Cox, S., Currell, A., Harriss, L., Barger, B., Cameron, P. &, Smith, K. (2010). Evaluation of the Victorian state adult pre-hospital trauma triage criteria. Injury. *International Journal of the Care of the Injured*, 11th November.

[247] Mulholland, S.A., Gabbe, B.J. & Cameron, P. (2005). Is paramedic judgement useful in pre-hospital trauma triage? Injury. *International Journal of the Care of the Injured*, 36(1), 1298—1305.

[248] Ortolani, P., Marzocchi, A., Marrozzini, C., Palmerini, T., Saia, F., Baldazzi, F., Silenzi, S., Taglieri, N., Bacchi-Reggiani, M.L., Gordini, G., Guastaroba, P., Grilli, R. & , Branzi, A. (2007). Usefulness of Prehospital Triage in Patients With Cardiogenic Shock Complicating ST-Elevation Myocardial Infarction Treated With Primary Percutaneous Coronary Intervention. *The American Journal of Cardiology*, 100, 787—792.

minimise under and over triage of patients. The purpose of pre-hospital trauma triage is to ensure that **the right patients are transported to the right hospital with respect to the hospital's trauma capabilities.** The study found the current trauma criteria to have poor discriminators to confirm major and minor trauma patients.[246] With results showing that over 37.5% of trauma patients were over triaged, the study suggested that this reflected individual paramedics exercising discretion when triaging rather than following the triage criteria. The study recommended a revised triage model to identify major trauma patients and to reduce over-triage of minor trauma patients to the major trauma services. The study also indicated that with refinements made to the triage criteria, there should be a decrease in discretionary decision-making by paramedics in the field.

The lack of reliability in paramedic discretionary decision-making was also seen in a study by Mulholland *et al* (2005) that evaluated the ability of a paramedic to predict injury severity in Melbourne, Australia. The study found that there was no clear evidence supporting paramedic judgement as an accurate triage method as the number of patients misclassified by paramedics was too great for this to be an adequate triage procedure.[247]

Pre-hospital triage in Australia is currently limited to ambulance paramedics, and is primarily for trauma and myocardial infarction (STEMI) criteria. The two studies discussed indicated that pre-hospital triage was most reliable when following pathways and with defined criteria. As part of this review, the existence of pre-hospital triage activities and procedures will be examined in line with an assessment of their effectiveness.

International consultation

In New Zealand some General Practitioners (GPs) are accredited to triage patients using the ATS. Therefore patients can be transferred to the ED with a predetermined triage category. Also Paediatric and mental health patients are able to admitted direct to the ward from the GP clinic.

4.5 Triage tools

An increasing number of triage support tools have been developed to assist staff to deal with specific medical conditions or patient groups. Triage support tools are used in an attempt to standardise triage and increase its reliability. The most common triage tools can be grouped under the following areas and are discussed briefly below:

- **Algorithms** – An algorithm is a set of well-defined instructions to accomplishing a task. A triage algorithm consists of a precise step-by-step pathway that requires the triage nurse to navigate through yes and no answers until it ends with a provisional diagnosis or triage scale. In a US study by Patel *et al* (2008) findings showed that clinical algorithms or pathways that assist in quickly scanning a patient during the course of triage were shown to be a more valuable triage tool than triage models without algorithms.[249] An example of the effective use of triage algorithms is in the UK MTS, which uses 52 triage algorithms to standardisation in patient assessment and allocation of a triage category. Using these algorithms has been shown to be effective especially for novice nurses at triage. The MTS is described in more detail in Section 2.4.

- **Computer based support** – Using computer- based decision support tools assist the triage nurse in determining a triage category, provisional diagnosis, or prompt further questioning of the patient. These computer-based tools have reportedly been adopted in Canada, Australia, the UK and

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[249] Patel, V.L., Gutnik., L.A, Karlin, D.R & Pusic, M. (2008). Calibrating urgency: triage decision-making in a pediatric emergency department. *Advances in Health Sciences Education*, 13(4), 503-520.

Switzerland. [189],[250],[132] They have proven effective for use in EDs17 and also in the community for telephone triage systems.129 Despite the widespread uptake of computer-based systems, limitations have been described, associated with individual clinician preferences and also the capabilities of the system.[188] Additionally the computer based systems have not been were not found to decrease the length of time taken to complete the triage, rather although it was suggested they did alter the triage nurses work environment by significantly reducing task jumping and interruption duration.[251] For the operational review, there is an opportunity to explore the systems in place in EDs visited and the associated workload implications and benefits in using computer-based decision support tools at triage.

- **Mental health** – As introduced in Section 2.4.1 the ATS is considered to have limitations for triaging mentally ill patients. Currently there are mental health triaging tools being used in Australia, but it has been noted that there is no standardised approach to their use. Two of the notable support tools are the Royal Hobart Mental Health Triage Scales and the South Eastern Sydney Area Health Service Mental Health Triage Scale.

  Broadbent *et al* (2007) discusses the development of a MHTS at the Royal Hobart Hospital in 1994.[252] The tool was aimed at aligning itself with the then NTS to improve a nurses assessment of mentally ill patients while attempting to reduce the wait times for this patient group at triage. The MHTS comprised 4 categories aligned with the NTS categories 2, 3, 4 and 5. The scale did not have specific descriptors for category 1 patients as the triage nurse used the same descriptors as the NTS for these patients.[252]

  In 1998 the South Eastern Sydney Area Health Service (SESAHS) developed a 5 point scale for mental health that aligned to the then NTS.[253] This MHTS was piloted and then implemented across 5 other EDs. The SESAHS MHTS was introduced into an ED in Victoria and has been further modified to become the Victorian Emergency Department Triage tool. [252]An example of the SESAHS Mental Health tool can be seen in 8Appendix C.

  Broadbent *et al* (2007) concludes that there is little evidence about the uptake of MHTS in Australia. It is clear from several studies 131 that benefits exist for patients and carers, and staff from the use of MHTS in Australian EDs. Broadbent (2007) reports that using the MHTS improves the competence and confidence of ED staff in triaging people with mental illness. Other benefits outlined included:

  – A reduction in DNWs for mental health patients

  – Ability of non-mental health staff to use the tools to assess presenting patients

  – Positive impact on the functioning of EDs – shorter seen times

  – Improved staff perceptions of the service.[254]

- **Paediatric** – As introduced in Section 2.4.1 paediatric patients are considered a speciality group who require a specialised triage support tool. Canada has a triage scale dedicated to the triage paediatric patients. The Paediatric Canadian Triage and Acuity Scale was revised in 2008 and consists of six main components that are specifically tailored to the paediatric patient.[185] In Australia, Durojaiye and O'Meara (2002)[176] and Bergeron *et al* (2002)[206] recommend that there is a need to refine the ATS as a triage tool for paediatric patients allowing for more accurate triaging.

[250] Meer, A., Gwerder, T., Duembgen, L., Zumbrunnen, N. & Zimmermann, H. (2010). Is computer-assisted telephone triage safe? A prospective surveillance study in walk-in patients with non-life-threatening medical conditions. *Emergency Medical Journal*, November.

[251] Levin, S., France, D., Mayberry, S., Stonemetz, S., Jones, I. & Aronsky, D. (2006). The Effects of Computerized Triage on Nurse Work Behavior. *AMIA Annual Symposium Proceedings.*

[252] Broadbent, M., Moxham, L. & Dwyer, T. (2007). The development and use of mental health triage scales in Australia. *International Journal of Mental Health Nursing,* 16(6), 413-421.

[253] Ibid.

[254] McDonough, S., Wynaden, D., Finn, M., McGowan, S., Chapman, R., & Hood, S. (2004). Emergency department mental health triage consultancy service: an evaluation of the first year of the service. *Accident and Emergency Nursing*, 12(1), 31-38.

Currently there is no evidence of such paediatric tools are in existence in Australian EDs. The existence of such paediatric tools will be examined as part of the operational review for this project.

- **Obstetrics** – Recent events in Australian EDs have highlighted a need to review processes for obstetric and early pregnancy presentations to an ED.[255] While some states and EDs have guidelines for management of obstetric and pregnancy related presentations, at present there is no national pregnancy/obstetric decision support tool. An example of a state based guideline is from NSW where an early pregnancy health directive highlights the specific initial assessment and triage requirements of women with bleeding/pain in early pregnancy patients of less than 12 weeks gestation. The directive can be seen in Appendix D.

Summary

Triage assist tools are in existence in some countries and states of Australia. These tools consist of computer-based decision support tools and other algorithms and triage tools that can guide the assessment and management of specific patient groups. It is clear from the literature that there is benefit to adopting these tools, however there is currently no standardised approach in Australia to their implementation.

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[255]Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals. Vol 1. Retrieved from _www.lawlink.nsw.gov.au/acsinquiry_ _Last accessed 12.11.10._

5   Patient experience

Health systems in many countries are progressively focusing not only on quality in clinical care but also on aspects of the patient experience. The NHS (National Health Service) reform in the UK for example **includes a focus on patients' views and interests as** a core driver to influence reform.[256] There is general agreement among health professionals that improving the patient experience is desirable and may have a positive effect on patients, staff and the public perception of the health system.[257]

As a result Australian public health jurisdictions are gathering information on the patient experience and seeking to improve aspects of the patient journey. A focus on patient experience has led to increased measurement and publication of research and performance indicators. An example is the NSW Health Patient Survey (2009)[258] conducted annually which seeks to gather feedback from a sample of patients who have undergone treatment in the public health system.

Common measurement concepts include 'patient satisfaction' and service factors that are considered to impact on the pati**ent experience, such as 'waiting time'. Various survey, interview and observational methods have been employed in research studies and surveys with as yet no 'gold standard' for patient** satisfaction definition or measurement emerging.[257] Following a review of literature regarding patient satisfaction in emergency medicine Taylor and Benger (2004) recommended that both individual service factors and overall satisfaction be included in measurement. [257] More recent research also indicates that health system level factors (such as coordination between services, confusion regarding appropriate service to attend) may also impact patient satisfaction.[259]

5.1   Emergency departments and the patient experience

The ED plays a critical role in the patient experience. The Special Commission of Inquiry into Acute Public Health Services in NSW (2008)[260] highlights the role of the ED as the public face of the hospital and emphasises how patient experience in the ED can often be seen as an indication of how public hospitals operate overall. The time spent waiting in an ED **waiting room affects an individual's overall** perception of the whole ED experience and the service provided. Maister *et al* (1985) suggest that once a patient has waited for a long time in the waiting room, they will continue to consider the ED experience to be negative no matter how good the subsequent service is.[261]

In Victoria, the ***Improving the Patient Experience Program*** is a key priority of the Victorian Government and aims to improve person-centred emergency care.[262] The Department of Human Services Victoria conducted a review of patient satisfaction in ED in Victoria through an audit of waiting rooms and accompanying consumer research. This resulted in three broad recommendation areas of ED improvements aimed to enhance patient satisfaction:

[256] Department of Health. (2000). The NHS plan: A plan for investment, a plan for reform. *Department of Health, London*: HMSO. Retrieved from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents/digitalasset/dh_118522.pdf , Last accessed 22.12.10.

[257] Taylor, C., & Benger, J.R. (2004). Patient satisfaction in emergency medicine. *Emergency Medicine Journal*, 21, 528-532.

[258] NSW Department of Health. (2009). NSW Health Patient Survey 2009 Statewide Report. *NSW Department of Health*. Retrieved from http://www.health.nsw.gov.au/pubs/2009/pdf/patient_survey_2009.pdf , Last accessed 22.12.10.

[259] O'Cathain, A., Coleman, P. & Nicholl, J. (2008). Characteristics of the emergency and urgent care system important to patient: a qualitative study. *Journal of Health Services Research & Policy*, 13, 2 April.

[260] Garling, P. (2008). Final Report of the Special Commission of Inquiry: Acute Care in NSW Public Hospitals. Vol 1. Retrieved from www.lawlink.nsw.gov.au/acsinquiry , Last accessed 12.11.10.

[261] Maister, D. H. (1985) *The Psychology of waiting lines*. www.davidmaister.com .

[262] Department of Human Services. (2007). Improving the Patient Experience Program, Summary Report. *Published by the Metropolitan Health and Aged Care Services Division, Victorian Government Department of Human Services, Melbourne, Victoria, Australia*. Retrieved from www.health.vic.gov.au/emergency , Last accessed 12.11.10

3   physical environment – amenities, signage, location of triage services

4   patient needs – expectations, waiting room management

5   staff and patient relations – communication and interpersonal relations.

It seems that patient satisfaction in EDs may be lower than that reported elsewhere in the public system. One of the 9 **patient care categories reported in the NSW Health Patient Survey is 'Non-Admitted Emergency Patients' who are those treated in ED. The 2**009 survey report indicates that performance on a measure of overall care for Non-Admitted Emergency Patients was the lowest out of all patient care categories (83% being satisfied with their overall care as compared to all other categories that scored between 89-96%).

The 2009 NSW Health Patient Survey indicated the dimensions that were most strongly correlated to positive patient satisfaction for Non-**Admitted Emergency Patients were "Access to Care"; and "Emotional Support". In addition the following** 5 drivers of positive overall care score were identified:

- patients receiving complete care (ED)

- the availability of doctors

- staff providing patients with an explanation of what was done to them in the ED

- organised care

- doctors and nurses working well together (ED).

The literature aimed at identifying important factors in patient experience in the ED has been accumulating over the past 15 years. The following areas have commonly emerged as major service factors in the patient experience.

1.   Aspects related to waiting times

2.   Provision of information and explanation to patients

3.   Interpersonal, attitudinal and communication skills in staff

4.   Environment for waiting.

These areas are discussed briefly below.

5.2   Aspects related to waiting times

Waiting times in EDs are a common measure of access to care and service delivery. Many different intervals may be measured with differing specific definitions, however in simple terms time measures in ED are typically either: time from patient arrival until seen by clinician; time from patient arrival until treatment commenced; or a measure of total LOS in the ED. The impacts of waiting time in ED have been shown to effect patient satisfaction. Taylor and Benger (2004) identified studies that revealed aspects of waiting times important to patient satisfaction. These are discussed below. [257]

Waiting time

The evidence for the effect of waiting time on patient satisfaction in the ED is mixed. Kennedy *et al*. (2008) reviewed the literature on factors associated with patients who leave the ED without being seen and found that the issue of longer waiting times clearly emerges as a central concern of patients.[263]

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[263] Kennedy, M., MacBean, C.E., Brand, C., Sundararajan, V. & McD Taylor D. (2008). Leaving the emergency department without being seen. *Emergency Medicine Australasia*, 20(4), 306-13.

Rutherford *et al*. (2010) reported overall LOS in the ED was a concern for 19% of adolescent patients in the ED, however was not significantly related to patient satisfaction.[264] Taylor and Benger (2004) identified eight studies that measured waiting time with only three of these studies reporting a strong correlation between waiting time and patient satisfaction.[257]

Perceived waiting time

The evidence regarding a patient's perceived waiting time is compelling. Thompson *et al*. (1996) found perceived waiting time was a strong predictor of patient satisfaction while actual waiting time was not.[265] Boudreaux *et al*. (2006) suggest a strategy for improving satisfaction lies in the management of patient expectations in the waiting room through provision of information about waiting time and process.[266] Taylor and Benger (2004) identified six studies that measured perceived waiting time with five of these studies reporting a strong correlation between waiting time and patient satisfaction.[257] Despite this there is little evidence of interventions designed to improve perceptions of waiting time and further study in this area has been recommended.[257]

Triage category

Triage has an important role in the beginning of the patient experience as staff conducting triage are often the patient's first encounter with a medical professional in the ED. The Department of Human Service Victoria's review of patient satisfaction in ED provides insight into the role of triage in the patient journey. Consumer research included documenting patient and carer perspectives of their ED journey. Figure 25 outlines a diagrammatic view linking documented patient and carer perspectives and the patient's journey through the ED. The consumer research highlights anxiety with the first contact in the ED and outlines common patient and carer concerns during this stage of the patient journey.[262] Waiting for long periods is associated with feelings of frustration, aggravation distress and annoyance. The brunt of these emotions is seen in the waiting room where the longest waits are felt by the patient.[261]

[264] Rutherford, K., Pitetti, R., Zuckerbraun, N., Noel, S., Smola, S., & Gold, M. (2008). Adolescents' Perceptions of Interpersonal Communication, Respect, and Concern for Privacy in an Urban Tertiary-Care. *Pediatric Emergency Care*, 26(4):257-273.

[265] Thompson, D.A., Yarnold, P.R., Williams, D.R. & Adams, S.L. (1996). Effects of actual waiting time, perceived waiting time, information delivery, and expressive quality on patient satisfaction in the emergency department. *Annals of Emergency Medicine,* 28,657-665.

[266] Boudreaux, E.D., Cruz, B.L.& Baumann, B.M. (2006). The Use of Performance Improvement Methods to Enhance Emergency Department Patient Satisfaction in the United States: A Critical Review of the Literature and Suggestions for Future Research. *Society for Academic Emergency Medicine*, 13(7), 795.

Figure 25: The patient experience (source: Department of Health Victoria, 2007)[262]
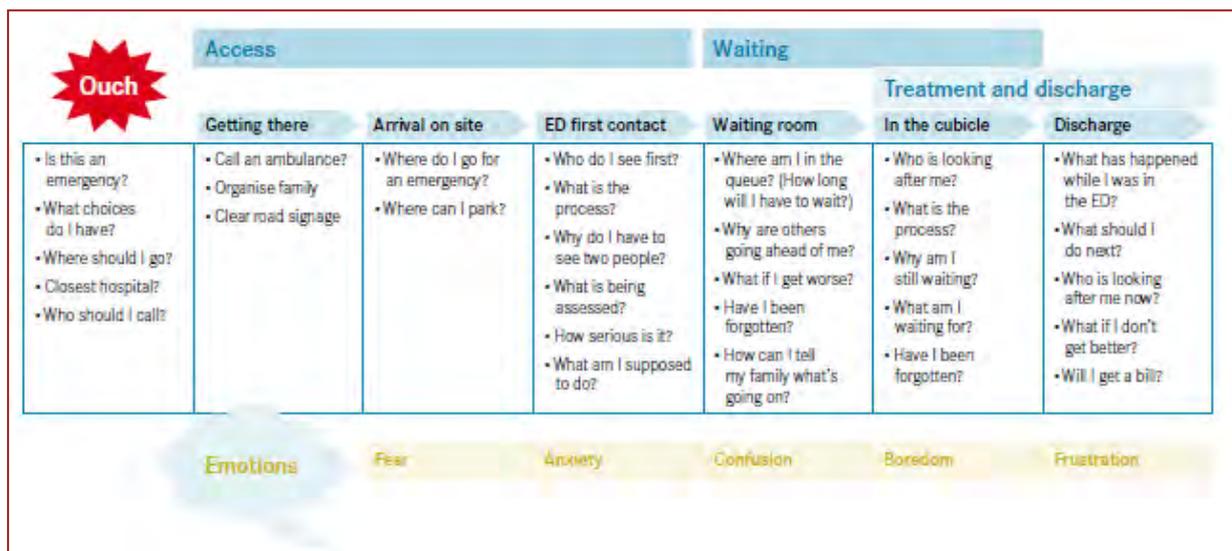
Taylor and Benger (2004) suggest that while triage category may be strongly correlated with patient satisfaction in some studies triage category is also related to actual waiting time [257] and thus the nature of an independent relationship is not clear. The type of triage process employed may influence actual waiting time and in turn patient satisfaction. Travers and Lee (2006) found that a team triage approach reduced actual waiting time for patients to be seen by a doctor[267] and Boudreaux *et al*. (2006) highlighted the use of alternating patient assignment to provider teams rather than "zone"-based assignment as improvement option to EDs. The impact of different triage processes is explored further in Section 4 where several studies indicate positive impact on patient satisfaction through the implementation of streaming models[229],[232] and team based triage processes.[245]

A discussion paper looking at the psychology of ED waiting experiences suggests the key reasons impacting people's perception of ED wait times are that:[268]

- uncertain or unexplained waits are perceived longer than known or finite waits

- unoccupied time feels longer than occupied time

- anxiety makes waits seem longer

- unfair waits seem loner than equitable waits.

5.3   Provision of information and explanation to patients

Provision of information and appropriate explanation to patients in health care is highlighted in many research studies and improvement initiatives. Garling (2008) highlighted "Communication" as a domain of concern when considering patient satisfaction. Similarly the *Improving the Patient Experience Program* in Victoria includes communication and waiting room management improvements and the NSW Health Patient Survey (2009) recommends a focus on improvement to provision of appropriate information to ED patient about their condition and treatment.

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[267] Travers, J.P., Lee, F.C. (2006). Avoiding prolonged waiting time during busy periods in the emergency department: is there a role for the senior emergency physician in triage?. *European Journal of Emergency Medicine,* 14,342-348.

[268] Norman, D. (2008). The Psychology of waiting lines. August 21, 2008 *Excerpt from Chapter 4, Clerks and Waiting Lines, from a draft book manuscript tentatively entitled "Sociable Design."*

A perceived or real lack of information in the ED can influence patient satisfaction.[257] The provision of appropriate information has implications for the management of patient expectations and perceptions of waiting times in the ED. An example can be seen from Göransson and Rosen (2009) who found the majority of patients in a Swedish ED expressed concern at the limited information provided regarding waiting times following their initial triage.[269] Boudreaux *et al*. (2006) reviewed interventions in the US and found modest evidence supporting a range of performance improvement interventions for improving ED patient satisfaction, two of which were focused on information can communication:

- Enhancing provider communication and customer service skills
- Incorporating information delivery interventions (eg, pamphlets, video) that target patient expectations.

5.4 Interpersonal, attitudinal and communication skills in staff

The quality of interaction between patients and staff in ED is an important predictor of patient satisfaction. Thompson *et al*. (1996) found information delivery and expressive quality of staff was correlated with patient satisfaction.[265] Garling (2008) highlighted emotional concerns when considering patient satisfaction.[260] Rutherford *et al*. (2010) showed measures of interpersonal communication and respect were related to patient satisfaction.[264] Other impacts on communication, such as interpreter services have also been shown to influence patient satisfaction (Chan 2010).[270] Taylor and Benger (2004) identified seven studies that suggested that increased information on ED arrival, and training courses designed to improve staff attitudes and communication, are capable of improving patient satisfaction.[257]

5.5 Environment for waiting

The environment for waiting has been suggested as a potential improvement area to enhance the patient experience.[264] The ***Improving the Patient Experience Program*** in Victoria recognises the need for physical amenities upgrades and Garling (2008) highlighted physical factors as a concern when considering patient satisfaction.[260]

5.6 Summary

Improvement of health systems is progressively focusing on both quality in clinical care and aspects of the patient experience. The ED, as the public face of the health system, plays an important role in the patient experience.

The type of triage model employed and the role of the triage staff in initial contact, ongoing waiting room communication and wait time expectations management have the potential to significantly influence patient satisfaction. Specific aspects of emergency care that influence the patient experience include:

- access to care and waiting times
- provision and communication of appropriate information and explanation

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[269] Göransson, K.E. & von Rosen, A. (2010). Patient experience of the triage encounter in a Swedish emergency department. *International Emergency Nursing*, 18, 36– 40.

[270] Yu-Feng Chan, Y., Alagappan, K., Rella, J., Bentley, S., Soto-Greene, M. & Martin, M. (2010). *Interpreter Services in Emergency Medicine*. *The Journal of Emergency Medicine*, 38(2), 133–139.

- the physical environment for waiting in the ED.

Research is progressing to develop interventions aimed at improving these areas of the patient experience. Taylor and Benger's (2004) review of literature regarding patient satisfaction in emergency medicine recommended three intervention areas worthy of further study:[257]

1. Improving interpersonal, attitudinal and communication skills in ED staff
2. Provision of more information and explanation
3. Reduction of the perceived waiting time.

6 International consultations

6.1 Profile of international participants and data collection

International consultation for the ATPR was undertaken to enhance the literature scan by providing additional, current international perspectives for ED triage models and processes. Data was collected from New Zealand, Canada the UK and the USA initially via a survey that examined current ED challenges, workforce models and models of care. The survey was completed by PwC staff in consultation with health care clients and supplemented by their own experiences of emergency care. The data collected was used as the basis for follow-on interviews conducted with the project team. Five surveys were completed, two from the USA and one each by NZ, UK and Canada.

Data from the survey and interviews was collated and categorised into themes as follows:

- Triage scales and processes
- Triage staff
- Emergency care models
- Tools to assist the triage process.

6.2 International consultation results

6.2.1 Triage scales and processes

The results of the consultations and survey indicated different triage scales are in place in each country (Table 25). In the USA where there is no national triage policy in place, a variety of scales are used, although it has been stated that the ESI 4 is most commonly used. Hybrid scales have also been described as being in use in some specialised hospitals. The UK also describes a uniqueness of the triage process, whereby it is considered health system based rather than solely based in ED. To support this the UK uses NHS Direct in the pre-hospital setting to effectively direct patients to care in the right setting, thereby avoiding unnecessary ED presentations.

Table 24: International consultations – Triage scales in use in USA, Canada, New Zealand and UK.

Triage system/scale	USA	CANADA	NZ	UK
Australasian Triage Scale	✓		✓	
Canadian Triage and Acuity Scale	✓	✓		
Emergency Severity Index 4	✓			
Manchester Triage Scale	✓		✓	✓

Each of the countries identified specific challenges with regards to the triage process. These are described below:

- **Performance targets** – all countries indicated challenges in meeting specific waiting time targets associated with ED performance standards. The UK described a move away from time based performance targets to outcome based measures.

- **Inter-rater reliability** – both the USA and Canada described challenges with inter-rater reliability of individual triage staff and the opportunities for human error and challenges as a result of

subjective decision-making at triage. The UK describes novice staff at triage also delaying the triage process.

- **Triage system flexibility** – the USA described that the ability to 'flex' the triage system to assist in the management of capacity and demand of throughput. This is described further below under models of care, demand and capacity management. In the UK there are challenges between the metropolitan and rural areas as triage is considered less important in a rural setting where demand is less and wait times are shorter.

- **Funding implications** – in NZ the funding structure of the system may influence a patient's decision to present to the ED or to an alternative health care facility (eg afterhours GP clinic). Patients may receive free care at the ED while having to pay for care at the after-hours clinic. Initiatives to address this issue are currently underway. This is consistent with the UK who describe the price differential as influencing a patient's decision to visit an ED in preference to the GP.

- **Access block in clinical assessment units** – in Canada a model that includes Clinical Assessment Unit's was trialled. These units accepted patients that required 24 hour observation before being admitted to hospital, however were found to be ineffective due to the hospitals only being allowed to admit 10% of the patients from these units resulting in significant access block. These units have since been converted into MAU style units to deal with geriatric patients and assist in preventing access block and overcrowding in ED.

- **Extended role of the triage nurse** – in the USA and Canada the extended role of the triage nurse has been cited as a challenge. In Canada it was found that triage nurses were performing too many tasks and slowing down the triage process. As a result there has been an introduction of new care directives and allied health staff to provide assistance with bloods and electrocardiographs (**ECG's**) and reduce triage workload. In the USA 'physician extenders' (Nurse Practitioners and Physicians Assistants) are used to support the triage nurse in commencing interventions.

- **Patient perceptions of ED** – in the UK the biggest challenge to the provision of Emergency Services is patient expectations and a poor understanding of when to visit an ED. People consider the ED as efficient and effective and hence choose to visit the ED over alternative models of care resulting in increased demand for triage.

6.2.2 Triage staff

The responses from international consultation indicated the staff groups involved in the role of triage were included from across all disciplines (Table 26). The exception of this was in NZ where no allied health staff were involved at triage. Multidisciplinary triage teams were cited as in place in all countries consulted. The USA was the only country to use 'physician extenders' at triage and these staff were Nurse Practitioners and Physicians Assistants. In the USA the staff working at triage varied from shift to shift in some organisations depending on demand and formed a part of the triage system flexibility/demand and capacity management mentioned above. The UK described paramedics triaging in the pre-hospital setting and these staff were used in the triage of chest pain patients, especially in the instance of myocardial infarction.

In Canada consultations indicated that improvement initiatives were currently focused on placing physicians at triage to assist with rapid assessment and treatment, medical directives at triage to assist with decision-making and also live wait time updates to improve patient satisfaction and information provided. The UK also described placing physicians at triage with a 'rapid assessment triage' where senior registrars can expedite interventions and referral to specialist teams.

Table 25: International consultations – Staff involved in the triage process

Staff groups	USA	CANADA	NZ	UK
Nursing	✓	✓	✓	✓
Medical	✓	✓	✓	✓
Administrative	✓	✓	✓	✓

Staff groups	USA	CANADA	NZ	UK
Allied Health	✓	✓		✓
Multidisciplinary teams	✓	✓	✓	✓
Other				✓

6.2.3   Emergency care models

The consultations explored the various models of care in place in EDs and discussed the implications of these models on the triage process and the suitability of the triage process to stream patients to appropriate models of care. Each country indicated those common models of care which are in operation (Table 27) and notable discussion points are described below:

- **Multidisciplinary triage** – All countries indicated have triage models that can use a multidisciplinary approach to increase patient flow through the triage process and ED process. In the UK these were described as effective in decreasing unnecessary diagnostic ordering and also in improving the time taken for initiation of treatment, as patients can be referred to a speciality team much sooner.

- **ED diversion** – In NZ an accident and medical model is in place which has increased services and is staffed by GPs and appropriate patients are directed to this service as an alternative to ED. In the USA the nurse practitioner in the ED is able to refer patients that present to the ED directly to allied health services where appropriate. In Ontario, Canada there are pathway management initiatives underway to avoid patient admissions to the ED (such as the Torpedo Nurse described below). In the UK programs are being developed in a project called 'Co-creating Health' whereby chronic disease patients co-design their care process including escalation processes in times of exacerbations of their ongoing condition.

- **Torpedo Nurse** – In one Canadian ED a new triage model called Torpedo Nurse has been introduced. With this model the patient is immediately triaged upon entering the ED. This triage is a basic, verbal triage where the presenting problem is ascertained and vital signs are measured. The patient is given a preliminary CTAS category and then directed to the next triage stage. If the patient is low acuity and can be seen in a fast track/UCC additional information is collected by the Torpedo Nurse and they are streamed directly to that area. All other patients are referred to the primary triage nurse and a more comprehensive triage is completed. Patients are then seen in order of priority and streamed appropriately.

- **Admission or discharge** – In NZ has a streaming model that uses the ATS categories to determine if they are likely to be admitted or not.

- **Demand and capacity management** – The demand and capacity management system in the USA, is a system that is triggered when triage becomes overwhelmed by demand. All aspects of the ED, including triage will be modified to deal with the increase in demand (eg additional staffing at triage, triage staff experience level, streaming of patients directly to wards, utilisation of rapid screening at triage).

In all four countries surveyed there were many models of care in place to support the ED in providing emergency care (Table 27). The exception was streaming models which were absent from EDs in the USA. Additional models cited in the USA however, included Trauma Assessment units, Admission Units, and Travel and Business Services.

Table 26: International consultations – Models of care

Models of care	USA	CANADA	NZ	UK
Medical Assessment Units	✓	✓	✓	✓
Minor Injury Units	✓	✓	✓	✓

Fast Track and Rapid Assessment Services	✓	✓	✓	✓
Streaming Models		✓	✓	✓
Team Based ED Care Models	✓	✓	✓	
Psychiatric Emergency Care Units	✓	✓	✓	✓
Urgent Care Centres	✓	✓	✓	✓
Aged Care Assessment Teams	✓	✓	✓	✓
Chronic Care Assessment Teams	✓	✓	✓	✓
Surgical Assessment Units	✓	✓	✓	✓
Others	✓			

6.2.4   Tools to assist the triage process

The consultations explored the extent and use of tools to support the triage process. Each country employed a variety of triage support tools (Table 27). Additional commentary provided regarding the use of triage support tools included:

- **Streaming tools** – This was not familiar term to in USA and as such there were no streaming tools identified. In addition, although in NZ patients may be streamed from triage according to likely disposition, no formalised streaming tools are in place to assist this process. In Canada the triage nurse may stream patients directly into psychiatric, geriatric and cardiology units for evaluation and treatment. In the UK the triage nurse could stream patients into different care models, however there was variation in streaming processes and models of care patients could be streamed to.

- **Decision support tools** – In NZ cardiovascular and asthma clinical decision support tools were described

- **Complexity Tools** – Both the USA and Canada identified complexity tools, however in NZ and the UK there were no complexity tools in place to assist with triage decision making

- **Pre-hospital triage** – In some instances in NZ GPs are able to apply the ATS to triage patients and send them directly to ED. It was indicated that GPs can also admit mental health and paediatric patients directly to the hospital ward, effectively bypassing ED where appropriate. NHS Direct is a well established pre-**hospital triage system in the UK with a direct '111' number to call for advice and referral.** This service is focused on directing the patient to the right place for care eg a GP or walk-in clinic. In the UK paramedics can triage chest pain patients and direct them to the appropriate care setting not necessarily in the ED. The EMS/Ambulance service does not have the capability to treat **patients and divert them away from ED's in both the USA and Canada (Can**ada is currently piloting a program to divert patients away from ED).

Table 27: International consultations – Triage tools

Triage tools	USA	CANADA	NZ	UK
Mental Health Triaging Tools	✓	✓		✓
Trauma Triage Tools/guidelines	✓	✓	✓	✓
Chest Pain Pathways	✓	✓	✓	✓
Streaming Tools		✓		✓
Clinical Decision Support Tools	✓	✓	✓	✓
Computerised Triage Assessment	✓	✓	✓	✓
Triage Algorithms	✓	✓	✓	✓

Paediatric Triaging Tools	✓	✓	✓	✓
Clinical Pathways for Specific Conditions	✓	✓	✓	✓
Early Pregnancy Pathways	✓	✓	✓	✓
Staff Support Roles	✓	✓	✓	✓
Telephone Triage Systems	✓	✓	✓	✓
Pre-Hospital Triage Performed by Emergency Services Staff	✓	✓	✓	✓
Stroke Pathways	✓	✓	✓	✓
Complexity Tools	✓	✓		

7 Key findings

This evaluation report has been prepared as part of the ATPR project to inform the operational review of the project. The report is the result of desktop literature review and a sample of international consultations which have been synthesised to gain a greater understanding of the major formalised ED triage scales in operation and the extent of different triage processes adopted to manage demand in the context of new and emerging models of care. The reliability and validity of triage scales in practice has been explored where possible to gain a greater understanding of their use in different settings and with varied patient groups.

The information presented in this report will be used to guide the decision-making around areas of focus for the ATPR. It will guide the development of data collection tools used for the operational review – For site visits and surveys. The information gathered about streaming methodology and the concept of complexity determinants in an ED will be discussed with stakeholders in an attempt to explore their feasibility for future use. A summary of key findings from the literature review and international consultations that will be used to guide the review is included below:

- ED overcrowding and access block is an international phenomenon and demand for ED services is growing at a rate that is difficult to sustain.

- A range of new models of care have been trialled and implemented in EDs around the world in an attempt to overcome these challenges.

- Challenges facing EDs in relation to triage include:

  - Demand for services and capacity to meet that demand

  - Patients perceptions and dissatisfaction with wait times

  - An availability of a skilled workforce to perform in the role of triage

  - Expectations of the triage role in which interventions and external factors can slow the triage process and place additional demands on triage staff.

- Nurses primarily perform the triage role and there is also evidence in some places of multidisciplinary teams at triage to meet demand and ED needs.

- The triage role has evolved over the years in response to a changing ED environment and in some instances nurses are required to carry out multiple interventions as part of triage.

- Minimum nursing standards for triage are recommended in Australian EDs, however there is **variability internationally about the nurses' level of experience required before performing in the** role. There is agreement that ED experience is required alongside completion of appropriate training and education.

- Reliability of triage scales is varied in the literature:

  - Five-point triage scales are most commonly used internationally and all include urgency criteria – these scales have been found to have greater reliability than 3-pount scales.

  - The ATS has been found to have limited reliability in the triage of specific patient groups, particularly mental health and obstetric presentations.

  - Computer based systems have been found to be reliable but do not reduce time taken to triage

  - Nursing reliability using the ATS has been linked to education provided and nurses were found to be less reliable in predicting likely admission from triage.

  - Consistency of triage can be influenced by clinical characteristics and age of the patient, and can also be influenced by external factors such as the demand and overcrowding in ED, and referral of patients to specialist services.

- The triage processes have evolved internationally to meet increasing demand and as a result initiatives have been introduced with the impact of improving flow and wait times and patient and staff satisfaction. These initiatives include:

- Streaming – The preferred method for streaming is by complexity, however there are no consistently described complexity determinants in the literature – Consensus appears to be that it is resources required and ease with which a diagnosis can be made.

- Pre-hospital triage practices – ambulance paramedics are the most common group triaging in the field and this is predominantly for trauma and myocardial infarction.

- Assisted triage using specific tools and processes – these included computer-based decision support tools, algorithms, and triage tools and guidelines developed for specific patient groups.

- The ED, as the public face of the health system, plays an important role in the patient experience.

- The type of triage model employed and the role of the triage staff in initial contact, ongoing waiting room communication and wait time expectations management have the potential to significantly influence patient satisfaction. These include access to care and waiting times, provision of communication and information and the physical environment for waiting in the ED.

- Further research into patient satisfaction in emergency medicine could focus on improving interpersonal, attitudinal and communication skills in ED staff, the provision increased information and explanation and reducing perceived wait times.

Appendix B Background information and Project outline

Australian Health Ministers Advisory Council 'Australian Triage Process Review'

Background information and Project outline

Background

In September 2009 Australian Health Ministers approved an AHMAC recommendation that an *Independent review of the Australian triage scale used by Australian Emergency Departments'* be undertaken in 2010.

The Australian Triage Process Review (ATPR) project aims to review the triage process to assess whether:
- it supports ED models of care
- if the process supports streaming of patients into appropriate models of care
- if there is a need for complexity tools at triage.

Consideration will be given to whether the triage process may inform the implementation of new models of care and how patient acuity and complexity can be incorporated into the triage process.

As this project is reviewing the triage process, it is inevitable that the role of the Australasian Triage Scale (ATS) within the triage process is considered, however this is not the major focus of this project.

The review will be overseen by the Health Policy Priorities Principal Committee (HPPPC) of AHMAC and the NSW Department of Health will manage this review on behalf of the HPPPC.

The ATS has been in use across Australian EDs for over 15 years, following its endorsement by the Australasian College for Emergency Medicine (ACEM) in 1993. The ATS is part of the triage process which is generally undertaken by a registered nurse. Based on the clinical symptoms, history and assessment, the nurse allocates the patient to one of the five ATS categories. The triage category is linked to a time frame of how long the patient may safely wait to be assessed and treated by an ED clinician.

Over the past 15 years there have been major changes in the caseload and functions of EDs driven by a wide range of factors including:

- the growth in numbers attending EDs
- changing demographics of patients
- the increasing range of clinical complexity and other care needs
- developments in early intervention and hospital admission avoidance services and strategies
- the introduction of better patient flow management and models of care such as 'Fast Track' zones use of Clinical Initiative Nurses and creation of short stay admission units within or adjacent to EDs
- the growth in other models of care for subsets of patients seen in EDs
- increasing use of clinical pathways to improve patient safety and clinical outcomes,
- the increased use of EDs as a streaming point for persons with mental health and psychosocial needs
- the variability in access to primary care services
- increased skill levels of ambulance paramedics
- the introduction of the Health Direct 24/7 call line.

ED clinicians (both medical and nursing) have identified that the triage process requires review, this includes tools used in the triage process. The aim is to ensure that any triage process not only identifies clinical urgency, but facilitates patient streaming to appropriate ED service streams or other models of care.

The final report should address the following:

1) A review of the international literature to compare the Australian triage process with other models

2) Identify Evidence Based Practice in relation to models of triage that are capable of being clinically and cost effectively implemented in Australian and New Zealand Emergency Departments.

3) Determination of how the triage process may be modified to fit with new models of care in particular, patient streaming, taking in to account patient complexity and urgency.

4) A review of the current triage system in terms of national reporting of performance indicator thresholds (key performance indicators) and appropriateness of the triage system to provide an accurate measurement of performance.

5) A review of the whole triage process to determine if there are best practice improvements that could be made. This may facilitate recommendations which improve patient safety, clinical care, the patient and carer experience, ED staff job satisfaction, recruitment and retention.

6) Issues that will warrant exploration as part of a review of the triage process include:
   - at what time initial triage should be undertaken and the potential for this to be done earlier in the process e.g. by ambulance paramedics
   - the requirement for retriage at intervals after arrival in the ED
   - the physical location of triage in the ED
   - the word 'triage' and the relevancy of the term for the wider community.
   - the competencies required for triage, taking into account skill and staffing levels in rural and remote areas
   - streamlining the process of triage
   - implications of ED streaming following triage
   - the role of a 2 tiered triage
   - the increasing range in complexity of clinical and other care needs.
   - consideration of balancing competing or overarching triage policies and clinical prioritisation of patients. (i.e. Chest pain triage policies, PV bleeding in pregnancy policies and local triage guidelines)

7) Consultation with all jurisdiction Health Departments including New Zealand and address the differing aspects of ED practices and performance in the review.

8) The review should include an evaluation of international and local patient experiences, including patient expectations and tolerance for delay at various time-targets.

9) An analysis of ED service requirement to have access to both urgency and complexity tools to support ED streaming.

Intermediate objectives of:

- Literature review and identification of Evidence Based Practice
- ED Triage process review
- Review of effectiveness of triage process with new and changing models of care
- Monthly meetings with the ATPR Steering Committee
- Twice monthly meetings with NSW Health representative
- Meetings with HPPPC as required.

Milestone of the project include:
- Reportable in 3 phases at 2 monthly intervals.
- A communication plan, including presentation time provided to HPPPC, Steering Committee and others as required.
- Measurable outcomes to assess progress of the review process on a 2 monthly basis with final hard and soft copy report to be submitted at the end of the review.

Deliverable	Timing
1. Project Plan accepted	2 weeks from contract commencement
2. Evaluation report	2 months from contract commencement
3. Draft Report	4 months from contract commencement
4. Final Report	6 months from contract commencement

While this review is an independent review under the auspices of the HPPPC, it is important that the review is undertaken in close consultation with State and Territory jurisdictions and professional bodies including:
- ACEM
- College of Emergency Nursing Australasia (CENA)
- Australian College of Emergency Nursing (ACEN)
- Relevant State and Territory Emergency advisory committees
- Royal Australian College of Physicians
- Paediatric Emergency Medicine group
- Ambulance Services
- Royal Australian College of Surgeons re: trauma patients
- AMA
- Australian Council of Healthcare Standards
- Australian Commission on Safety and Quality in Health Care

Concurrently the Australasian College for Emergency Medicine (ACEM) is undertaking a review of the ATS to quantify the ability of the scale to reflect complexity as well as clinical urgency.

Appendix C
Survey

ATPR - ED Survey

Emergency Department Triage Process Review Survey

1   *Please state your name*

2   *Please state your e-mail address*

3   *Please state the name of your hospital*

4   *Please select the title which best describes your position*

5   *Please select what best represents your Emergency Department activity:*

    < 25,000 presentations annually   ☐

    25,000- 50,000 annually   ☐

    > 50,000 annually   ☐

6   *Are medical staff available onsite in your ED 24/7?*

    Yes   ☐

    No   ☐

7   *What is the 'Key' role of Triage in your department?*

    To risk-stratify patients to assess who can wait the longest   ☐

    To identify the sickest patients and have them seen by a medical practitioner immediately   ☐

    To move all patients into their relevant stream to ensure they see the appropriate practitioner in the shortest time available   ☐

    To fully assess a patient as the reason for their attendance and initiate treatment   ☐

8   *What number of staff are allocated to perform the role of triage per shift?*

    Morning   ☐

    Afternoon   ☐

    Night   ☐

9   *What staff are available to support the triage nurse whilst patients are in the ED waiting room and waiting for*

    Nurses working to clinical pathways   ☐

    Staff able to initiate blood tests   ☐

    Staff allocated to monitor the waiting areas   ☐

    Staff available to transfer/transport patients around ED   ☐

    Other, please describe

10 *How many hours per day are there dedicated medical staff located at triage to facilitate rapid assessment and treatment of patients?*

11 *What secondary processes do Triage nurses perform at Triage?*

    Nurse initiated X-ray   ☐

    Nurse initiated Analgesia   ☐

    Nurse initiated Pathology   ☐

    Contacting specialist teams   ☐

    None   ☐

    Other, please describe

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ATPR - ED Survey

12 *Does the current Triage process contribute to delays in patients commencing treatment?*
  Yes ☐
  No ☐
  Please describe

13 *What are the required training/competencies for staff working at Triage in your Emergency Department?*
  Post graduate qualifications ☐
  Completion of Emergency Triage Education Kit ☐
  Successful completion of internal training program ☐
  Completion of supernumery supported shifts at triage ☐
  Competency assessment ☐
  Completion of other training ☐
  Annual competency review ☐
  Ongoing triage quality reviews/audits ☐
  Other, please describe:

14 *What is your ED escalation policy / process in place to allocate additional staff to Triage in peak periods of demand?*
  Reallocate staff from other areas of ED ☐
  ED Nursing Management staff assistance ☐
  ED Nursing Educator assistance ☐
  Draw additional staff from hospital wards ☐
  Medical Staff assistance ☐
  Other, please describe:

15 *Does your Emergency Department use the Australasian Triage Scale (ATS)?*
  Yes ☐
  No ☐
  If No please specify what is used

16 *In conducting triage, do you agree/disagree with the following statement? 'The Australasian Triage Scale is used appropriately to determine clinical urgency'*
  Strongly agree ☐
  Agree ☐
  Neutral ☐
  Disagree ☐
  Strongly disagree ☐
  Additional comments

17 *Do you agree/disagree with this statement? 'When Triage is performed in my ED, the ATS is always used'*
  Strongly agree ☐
  Agree ☐
  Neutral ☐
  Disagree ☐
  Strongly disagree ☐
  Additional comments

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ATPR - ED Survey

18 *Do you think the ATS is relevant in its current form and for future use?*

    Yes ☐

    No ☐

    Please provide additional comments

19 Please describe the strengths and/or weaknesses of the current ATS, and any alternatives you currently use.

20 *Do you have a team-based (multidisciplinary) triage model? i.e. Dr & Nurse together. Please select those included in the team*

    Doctor ☐

    Nurse ☐

    Allied Health ☐

    Clerk/Administration ☐

    None ☐

    Other, please describe

21 *If a doctor (as part of the MDT) sees a patient at Triage and treatment is initiated, is the ATS category still relevant?*

    Yes ☐

    No ☐

    Why?

22 *Which of these models of care are located within your Emergency Department?*

    Fast track ☐

    See and treat ☐

    Acute care ☐

    Aged Care Emergency Service/Coordination teams ☐

    Chronic Care Assessment teams ☐

    Advanced nursing roles e.g.: Nurse Practitioner ☐

    Extended nursing roles e.g.: Clinical Initiatives Nurse, Waiting Room Nurse ☐

    Trauma Teams ☐

    Rapid Assessment Teams ☐

    Early Pregnancy Units ☐

    Emergency Medical Unit (short stay unit in ED) ☐

    Mental Health Liaison roles ☐

    Minor injury units ☐

    None ☐

    Other - if other please specify

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ATPR - ED Survey

23 Which of these models of care are in place in your hospital to support the Emergency Department?

Medical Assessment Units (MAU) ☐
Surgical Assessment Units (SAU) ☐
Clinical Decision Units (CDU) ☐
Early Pregnancy Unit (EPU) ☐
Mental Health: Psychiatric Emergency Care Centres (PECC) ☐
Cardiology Assessment Unit ☐
Speciality outpatient unit ☐
Urgent Care Centre ☐
GP Clinics ☐
Other, please describe

24 Do you use a complexity tool to assist in Triage decision making?

Yes ☐
No ☐
If yes, please describe

25 Does your Emergency Department use streaming models at triage?

Yes ☐
No ☐

26 In your ED, do you stream patients prior to allocation of a Triage category? e.g.. to a Model of Care?

Yes ☐
No ☐
If yes, please describe

27 Please select from the list below the criteria used to stream patients e.g. High acuity to resuscitation room

Acuity ☐
Mobility ☐
Complexity (the resources and interventions required) ☐
Likely admission / discharge ☐
Team based care model/pods/modules ☐
To models of care outside the ED ☐
Other, please describe

28 How satisfied are you with the current triage processes in your ED in facilitating timely and appropriate delivery of care to patients requiring Emergency treatment.

Extremely satisfied ☐
Satisfied ☐
Dissatisfied ☐
Extremely dissatisfied ☐
Additional comments

29 Are there processes in place to actively 'pull' patients into specialised services from the Emergency Department? (e.g. Specialist nurses and units, MAU, SAU)

Yes ☐
No ☐
If yes, please describe

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ATPR - ED Survey

30   Does your Emergency Department use specific criteria to determine a triage category? e.g.. all Chest pains are allocated T2

      Yes ☐

      No ☐

      If yes, please describe

31   Do you have guidelines that define the triage process for specific patients? Please select those that apply

      Mental health ☐

      Paediatric ☐

      Early pregnancy ☐

      Oncology ☐

      Other, please describe

32   Are there processes in place to facilitate bedside clerical registration and triage?

      Yes ☐

      No ☐

33   Are you using mobile computer systems to facilitate bedside registration and triage?

      Yes ☐

      No ☐

34   What referral processes are in place to manage expected patients and speciality referrals who arrive to the ED? e.g. referrals from other hospitals, GP referral to specialist, specialists rooms

      Triage Nurse calls team to ED ☐

      ED Dr treats patient & calls team ☐

      Contact Bed Manager ☐

      Direct patient to ward ☐

      Direct patient to admissions office ☐

      Direct patient to clinic ☐

      None ☐

      Other, please describe

35   Please estimate the time taken from time of arrival to triage time in your Emergency Department?

      < than 3 mins ☐

      3- 5 mins ☐

      5-10 mins ☐

      > 10 mins ☐

36   Please estimate the time taken to complete the triage process in your Emergency Department?

      < than 3 mins ☐

      3- 5 mins ☐

      5-10 mins ☐

      > 10 mins ☐

      Variable

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ATPR - ED Survey

37 *Are the ATS Performance Indicator Thresholds (i.e. 'time to assessment & treatment') an appropriate measurement of an EDs performance?*

    Yes ☐

    No ☐

    Additional comments

    [   ]

38 *From your experience, are delays experienced for patients waiting to be Triaged in your ED?*

    Yes ☐

    No ☐

    Additional comments

    [   ]

39 *What percentage of the ATS Performance Indicator Threshold targets are being achieved in your ED? (please refer to performance for previous FY09/10) % symbol not required*
Answering this question is optional

    Category 1 immediate <2 mins

    Category 2 <10 mins

    Category 3 <30 mins

    Category 4 <60 mins

    Category 5 <120 mins

40 *Does your ED collect emergency access performance information? e.g. % of patients admitted to hospital from ED within a timeframe (Please provide performance as a % where available for previous FY09/10)*
Answering this question is optional

    4hrs ☐

    6hrs ☐

    8hrs ☐

    Other ☐

41 *What is the average length of stay (ALOS) in your Emergency Department in hours?*

    ALOS for admitted patients

    ALOS for discharged patients

42 *What aspects of the triage process could be improved to improve patient safety in your ED?*

43 *Do you collect performance information regarding "rate of re-triage" in your ED? i.e.. allocation of a different category to initial category following further assessment.*

    Yes ☐

    No ☐

    If yes, please provide an estimate of the frequency of patients re-triaged

    [   ]

44 *What is the percentage of patients who "DID NOT WAIT" to be seen in your ED? please refer to performance for previous FY09/10*

45 *Does your definition of patients who "LEFT AT OWN RISK" (LAOR) include patients who may have had treatment initiated within the triage process?*

    Yes ☐

    No ☐

    Additional comments

    [   ]

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ATPR - ED Survey

46   *Please list below any other performance measures that are routinely collected in your ED to assess and monitor*

47   *Does your Emergency Department have policies in place that guide the triage process? e.g. Jurisdictional policy stating that 'Triage must be undertaken by a Registered Nurse' If yes, please select from the list below*

National	☐
State/Territory/Jurisdiction	☐
Area/Cluster/Health Service/Local Health Network etc	☐
Representative body (e.g. ACEM, CENA)	☐
Emergency Department	☐
Other, please describe	

48   *What policies and alternatives to ED treatment are in place to support flow from triage to a non-Emergency Department location?*

Direct admission to ward	☐
Referral to alternative models of care	☐
Referral to GP clinic	☐
Referral to alternative service providers	☐
Discharge home	☐
Hospital in the home	☐
None	☐
Other, please describe	

49   *What pre-hospital practices are in place in your local area?*

Pre-hospital assessment and allocation of triage category by paramedics	☐
Extended Care Paramedics	☐
Aged care assessment teams	☐
Pre-hospital thrombolysis by paramedics	☐
Pre-hospital ECG and referral directly to cardiac services by paramedics	☐
Gap triage	☐
None	☐
Other, please describe	

50   *Do you think ambulance officers could/should Triage?*

Yes	☐
No	☐
Additional comments	

51   *Please include any final comments about the Triage process*

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Appendix D Triage Observation Template

OBSERVATIONAL STUDY

Patient initials / number	
Staff initials	
Triage Experience (years):	

Presentation to ED:

Comments

Self referral	
Referral from Specialists/GP rooms	
Expected Patient	
Representation	
Other	

Mode of arrival:

Comments

Walk In	
Ambulance	
Police	
Other	

Registration:

Comments

Registration counter	
Pre Triage	
Post Triage	
Bedside	

Triage Time:

Time / Comments

In	
Completed	
Out	

Category:

Comments

1	
2	
3	
4	
5	

Patient Classification:

Comments

Mental Health	
Paediatric	
Obstetrics	
Aged Care	

Documentation:

		Comments
Pre triage		
Post triage		
During triage		

Interventions:

	Triage	Other	Comments
Bloods			
Vitals			
ECG			
Xrays			
First Aid			
Pain Relief			
Other (urine, Cannula, GCS etc)			

Interuptions:

	Triage	Other	Comments
Paramedic/Ext staff			
ED staff/ Hospital Staff			
Patients/Relatives			
Clerks			
Phone Calls			

Delays to Triage process:

	Triage	Other	Comments
Transfer (wheelchair, orderly, escort etc)			
Paperwork			
Bed available			
Intervention			
Specialists			
Triage Absent			
CALD (NESB)			
Equipment (Missing/Failure)			
Documentation			
Other: (assisting pt. to toilet etc)			

Appendix E Consumer questionnaire

The Australian Triage Process Review project – Consumer Consultation and feedback

Please find below questions which we would like your opinion on about the triage process and your understanding of triage:

1. What does the word triage mean to you?

2. What would be an alternative term that is more readily understood/ describes the process?

3. When you arrive at an ED seeking treatment, what do you expect will happen to you?

4. How long do you expect to wait before being seen?

5. What do you consider is an acceptable length of time to wait to be seen?

6. What do you understand about why there can be a wait to be seen?

7. What information would you like to be given about the triage categories?

8. Reflecting on your previous experiences in an ED, what do you consider was positive and negative about that experience? What was it about the experience that influenced your selection?

	Positive	Negative	Why
a. The time it took to be seen by the triage nurse			
b. Nurses attentiveness and response to your needs			
c. Friendliness and professional attitude of the staff			
d. Respect for your privacy during assessment with the triage nurse			
e. Information about the estimated waiting time			
f. Information about the ED process and what to expect			
g. The follow up communication with the triage/waiting room nurse while I was waiting			
h. The comfort of the waiting room, eg. information available to me, television/DVD, food and water, noise levels, temperature, comfortable seating, area for my child to wait.			

9. What communication would you like to receive when you visit an ED and are triaged or asked to wait in the waiting room?

   a. Estimated waiting time   Y ☐   N ☐

   b. Triage category assigned to my condition   Y ☐   N ☐

   c. Information about the triage process and what I can   Y ☐   N ☐
      expect as part of my assessment in the ED?

   d. Other information, please specify.

10. In what format/way would you like that information provided?

[blank box]

11. How often would you want to receive updates on how much longer you will have to wait?

Every 30 minutes	Y □
Every hour	Y □
At least every 1.5 hours	Y □

12. When do you consider you have been seen and treatment commenced?

a. Seen by nursing staff	Y □	N □
a. Seen by a doctor	Y □	N □
a. Seen by other health care provider.	Y □	N □

13. How would describe your overall experience with triage and waiting in the waiting room to be seen

[blank box]

14. What would improve you experience if you had a future visit?

[blank box]

15. Based on your triage experience, how likely would you be to recommend an emergency department visit to a relative or friend who needed emergency treatment?

[blank box]

Thank you for taking the time to answer these questions.

Appendix F International consultation questionnaire

International questionnaire on Emergency Department triage processes

1	In your country / region is there evidence that Emergency Departments (EDs) have introduced new ED models of care to manage increasing demand for	Place 'X' in boxes below
	Yes	
	No	
	Please describe	Please describe here –

2	What ED models of care are in place in your region/country? Please mark all that apply	Place 'X' in box below
	Surgical Assessment Units	
	Medical Assessment Units	
	Minor Injury Units	
	Team Based ED care models	
	Psychiatric Emergency Care Units	
	Urgent Care Centres / GP clinics	
	Others, please describe	Please describe here –

3	What triage systems/scales are in place in your region/country? Please mark those that apply	Place 'X' in boxes below
	Manchester Triage Scale	
	Emergency Severity Index 4	
	Canadian Triage and Acuity Scale	
		Please describe here –

International questionnaire on Emergency Department triage processes

4	*What triage tools are in place in your region/country to assist the triage process? Please mark all that apply*	**Place 'X' in boxes below**
	Mental Health Triaging Tools	
	Trauma Triage Tools / guidelines	
	Chest Pain Pathways	
	Streaming Tools	
	Clinical Decision Support Tools	
	Triage Algorithms	
	Early Pregnancy Pathways	
	Clinical Pathways for specific conditions	
	Staff support roles - for example blood collection	
	Telephone triage systems	
		Please describe here -

5	*What staff groups are involved in/ responsible for the triage process ? Please mark all that apply*	**Place 'X' in boxes below**
	Nursing Staff	
	Medical Staff	
	Administrative staff	
	Other – Please specify	Please describe here –

6	*believe are the biggest challenges to delivering Emergency Department services in your country / region using the current triaging systems?*	**Place 'X' in box below**
	Please describe challenges.	Please describe here –

7		**Place 'X' in boxes below**
	Please describe.	Please describe here –

International questionnaire on Emergency Department triage processes

8	Most triage scales/systems are based on clinical urgency. From your experience are there other clinical indicators/factors that should be applied to assist the	**Place 'X' in boxes below**
	Yes	
	No	
	Please describe.	Please describe here –

9	From your experience are there unique or specific triage models/processes that your country / region has in place that are not utilised elsewhere?	**Place 'X' in boxes below**
	Yes	
	No	
	Please describe.	Please describe here –

10	Who in your region/country is responsible for changes to/redesign of triage scales and processes?	**Place 'X' in boxes below**
	Government department or agency	
	Government contracted / funded organisation	
	University or university-affiliated organisation	
	Professional Emergency Department Colleges	
	Professional Colleges (Medical or Nursing)	
	Individual Facilities	
	Private software company	
	Other, please specify	Please describe here –

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