Success stories

Metacognition and clinical reasoning

Dr Stephen Gourley

Deputy Chair, National Rural Health Alliance and

Director Emergency Medicine, Alice Springs Hospital, Northern Territory

Lean thinking
Six-Sigma
Root cause analysis
Swiss cheese theory
Airline safety models
Checklists


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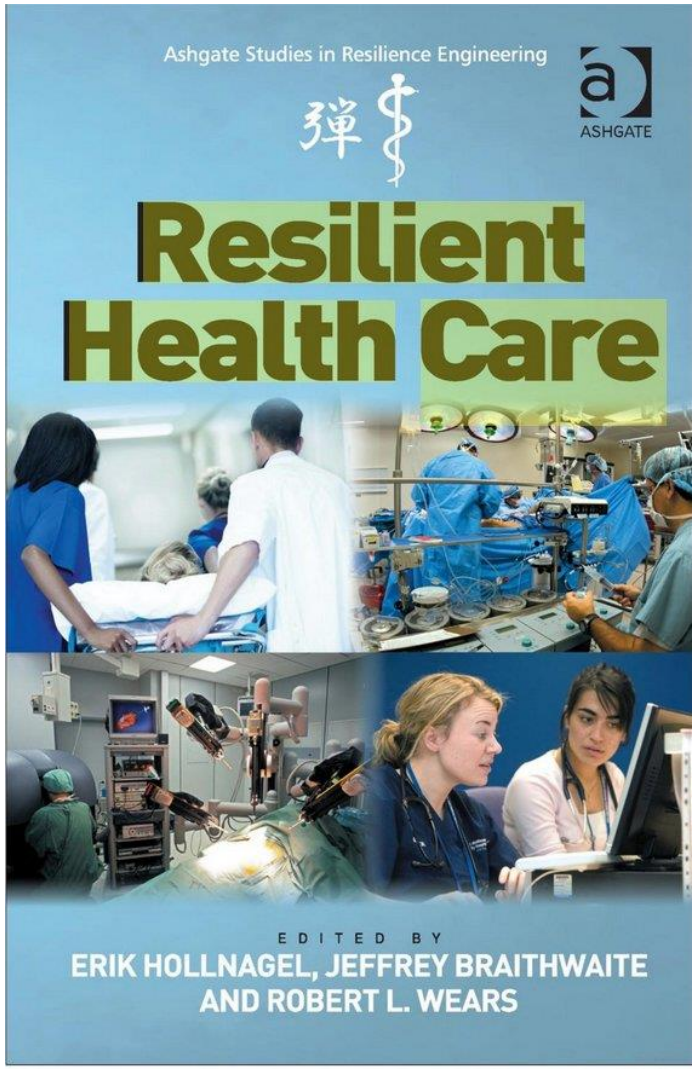
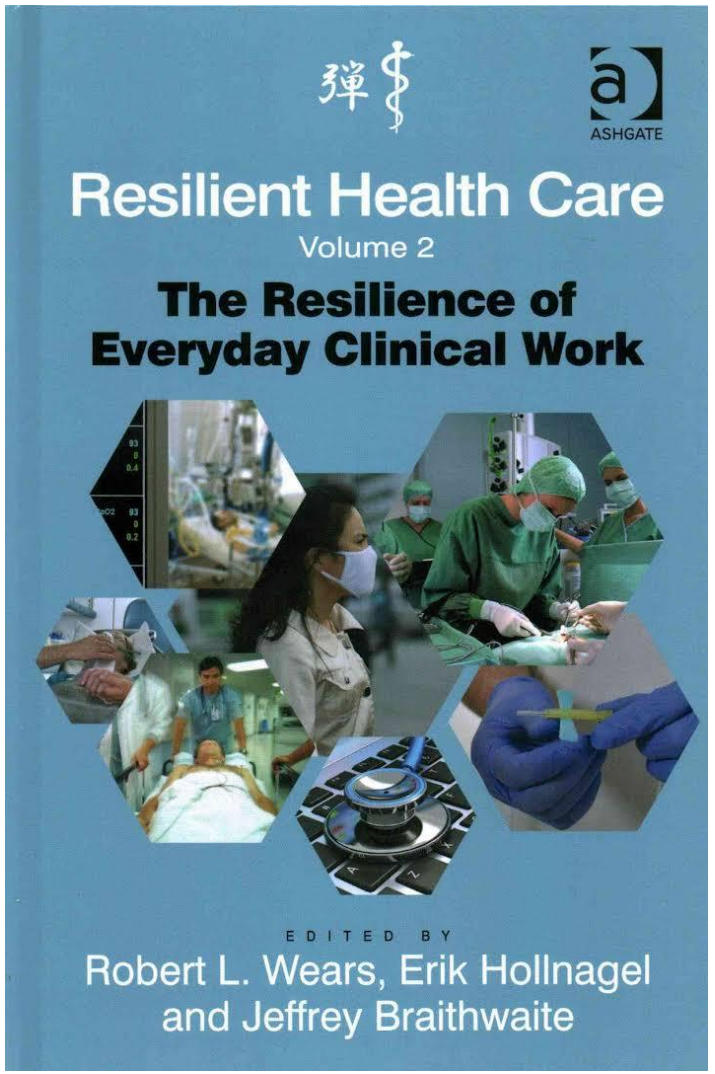
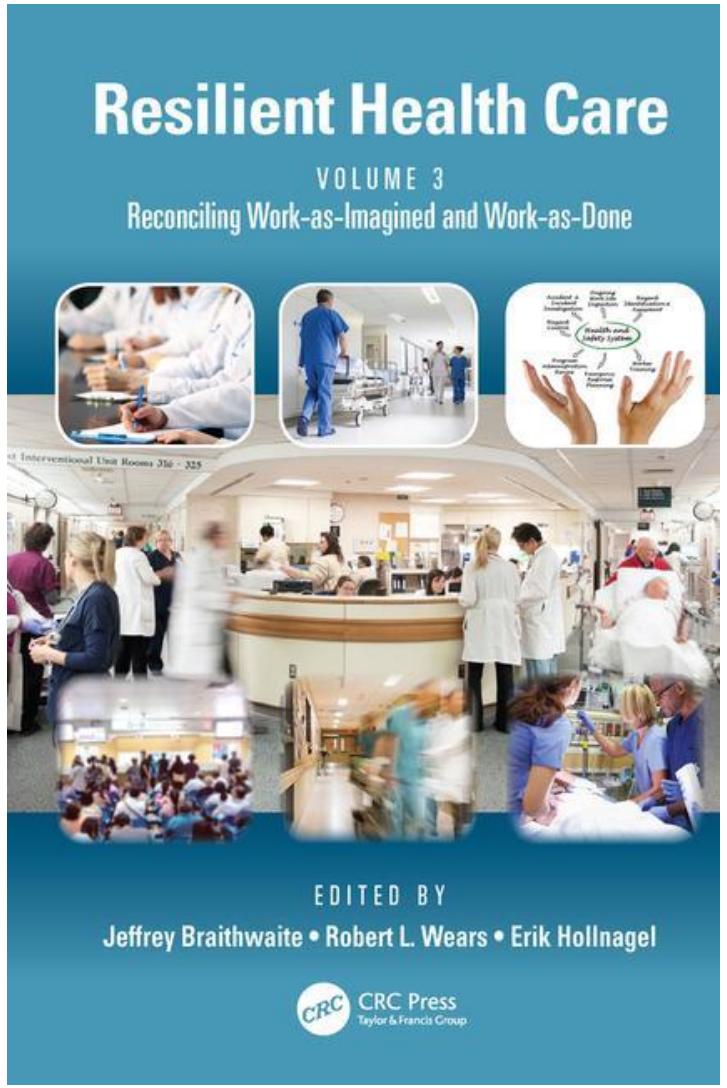
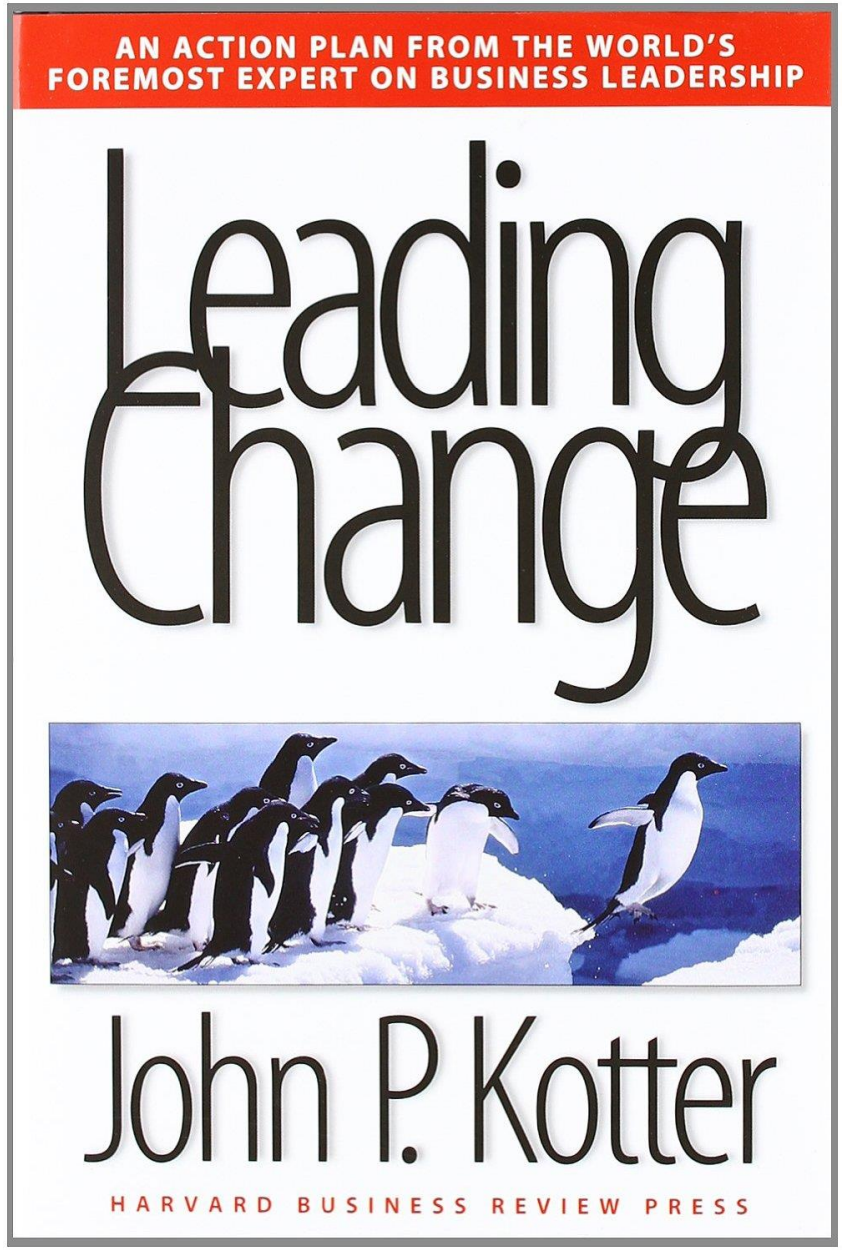
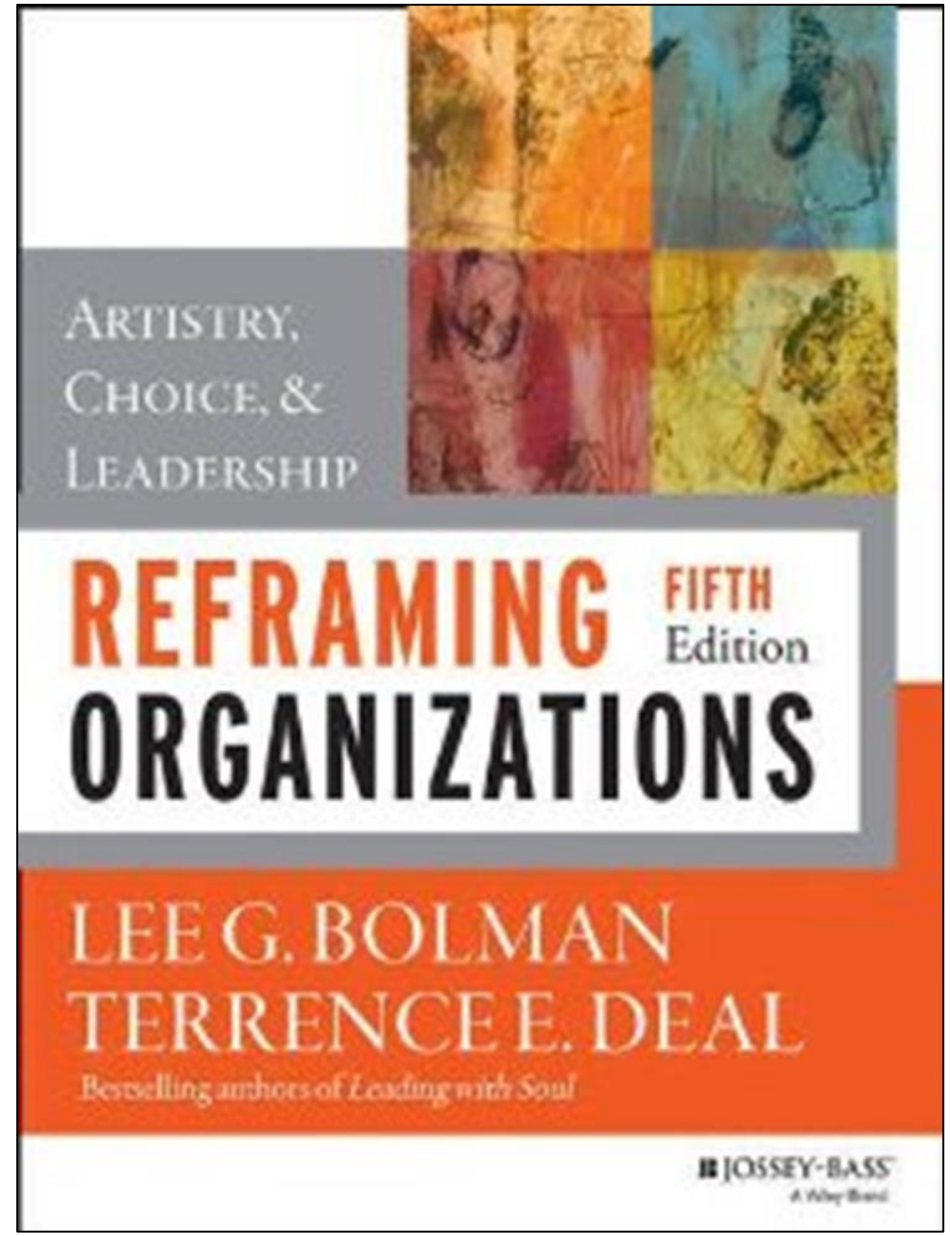
Six-Sigma
Root cause analysis
Swiss cheese theory
Airline safety models
Checklists


Ashgate Studies in Resilience Engineering
ASHGATE
Resilient Health Care
EDITED BY
ERIK HOLLNAGEL, JEFFREY BRAITHWAITE AND ROBERT L. WEARS


ASHGATE
Resilient Health Care
Volume 2
The Resilience of Everyday Clinical Work
EDITED BY
Robert L. Wears, Erik Hollnagel and Jeffrey Braithwaite


Resilient Health Care
VOLUME 3
Reconciling Work-as-Imagined and Work-as-Done
EDITED BY
Jeffrey Braithwaite • Robert L. Wears • Erik Hollnagel
CRC Press
Taylor & Francis Group


AN ACTION PLAN FROM THE WORLD'S FOREMOST EXPERT ON BUSINESS LEADERSHIP
Leading Change
John P. Kotter
HARVARD BUSINESS REVIEW PRESS


Artistry, Choice, & Leadership
REFRAMING ORGANIZATIONS
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Bestselling authors of Leading with Soul
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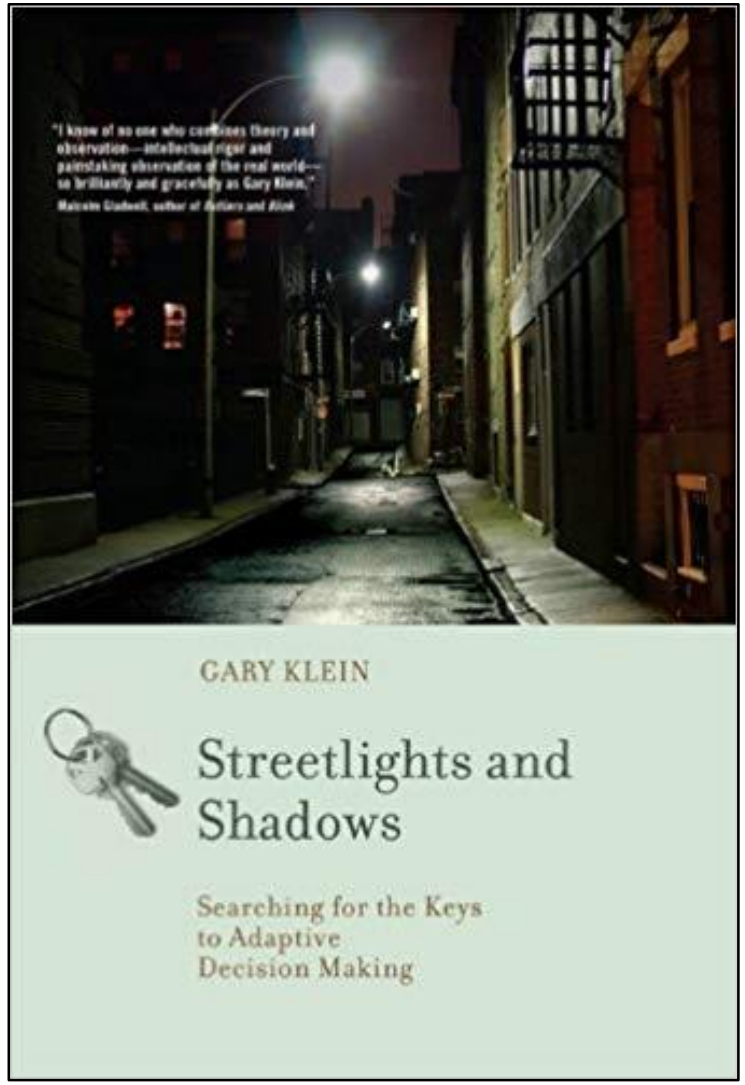
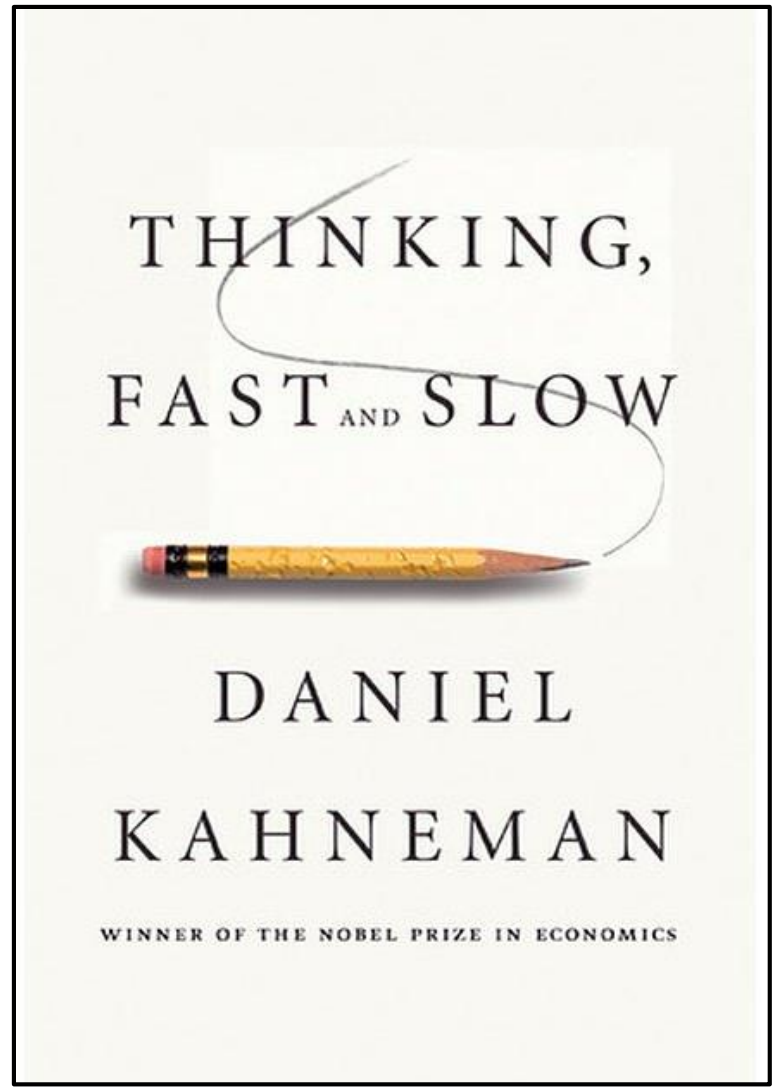

"I know of no one who combines theory and observation—intellectual rigor and painstaking observation of the real world—so brilliantly and gracefully as Gary Klein."
GARY KLEIN
Streetlights and Shadows
Searching for the Keys to Adaptive Decision Making


THINKING, FAST AND SLOW
DANIEL KAHNEMAN
WINNER OF THE NOBEL PRIZE IN ECONOMICS

METACOGNITION

Thinking about thinking….

Learning about learning….

Knowing about knowing ….

Awareness of awareness…

METACOGNITION

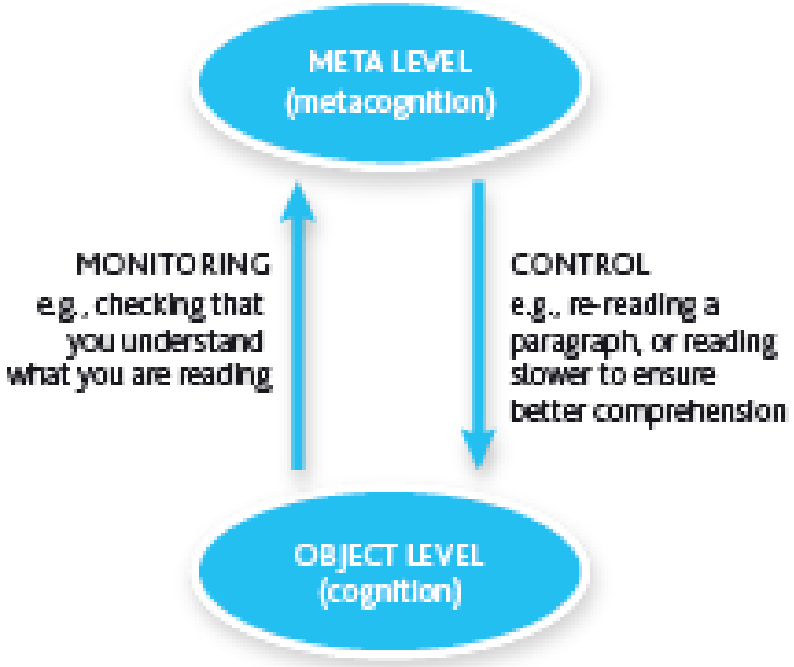
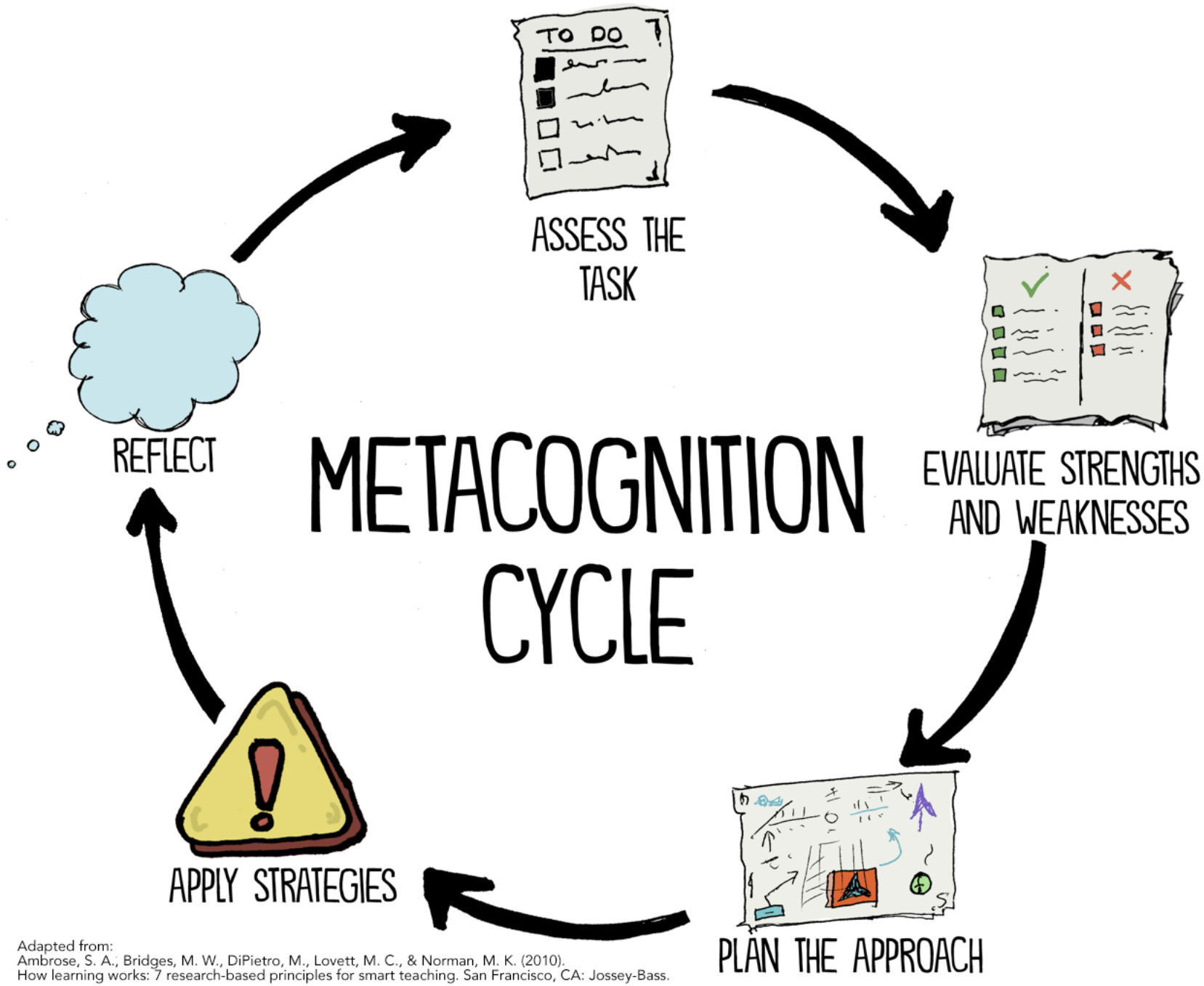


Figure 1. Nelson and Narens' (1990) Model of Metacognition

METACOGNITION

- **Content knowledge** – understanding your own capabilities – often inaccurate and greater confidence in performing well is associated with a less accurate metacognitive judgment of performance
- **Procedural knowledge** – about doing things. This type of knowledge is displayed as heuristics and strategies. A high degree of procedural knowledge can allow tasks to be done more automatically (like driving a car).
- **Strategic knowledge** – your capability for using strategies to learn information
- **Conditional knowledge** – knowing when and why to use content and procedural knowledge

METACOGNITION CYCLE

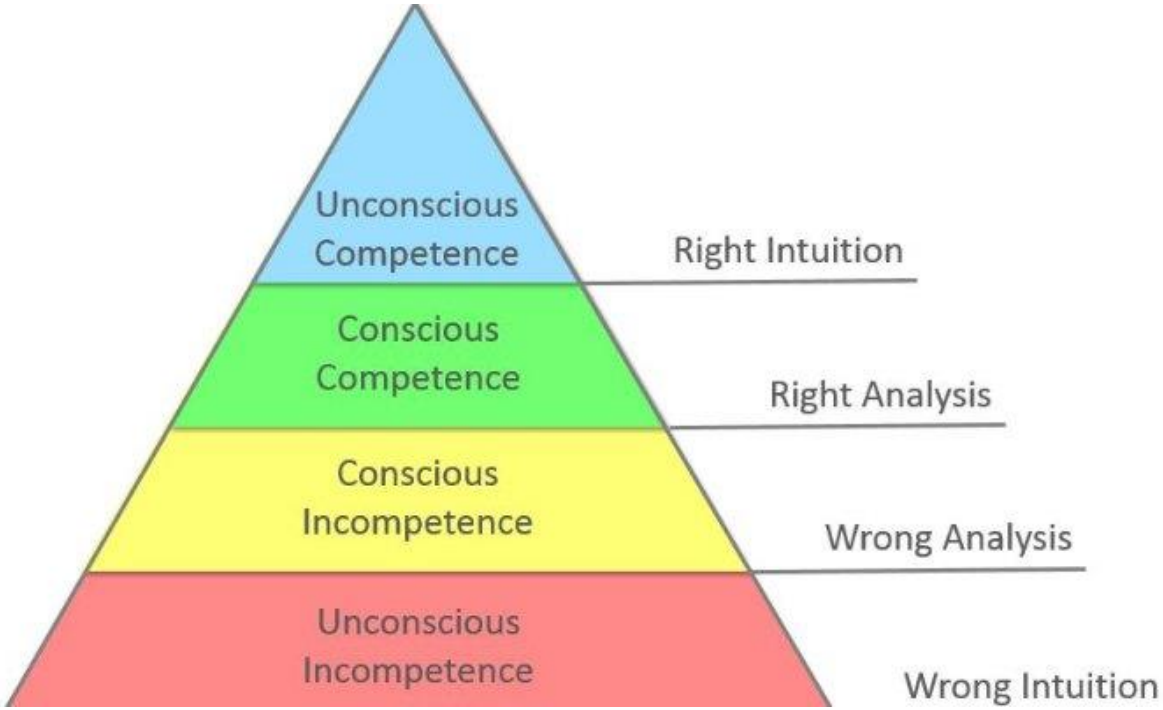


Adapted from:
Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010).
How learning works: 7 research-based principles for smart teaching. San Francisco, CA: Jossey-Bass.

Institute *for* Healthcare Improvement

Learning Theory:

Maslow's pyramid




Disney · Pixar
INSIDE OUT

Type 1 Thinking

Type 1 Thinking

- Fast
- Automatic
- Frequent
- Emotional
- Stereotypical
- Unconscious

TYPE 2 Thinking


TYPE 2 Thinking
• Slow
• Effortful
• Infrequent
• Logical
• Calculating
• Conscious
SADNESS
#INSIDEOUT
©2015 Disney.Pixar

“H” ANGER

#INSIDEOUT

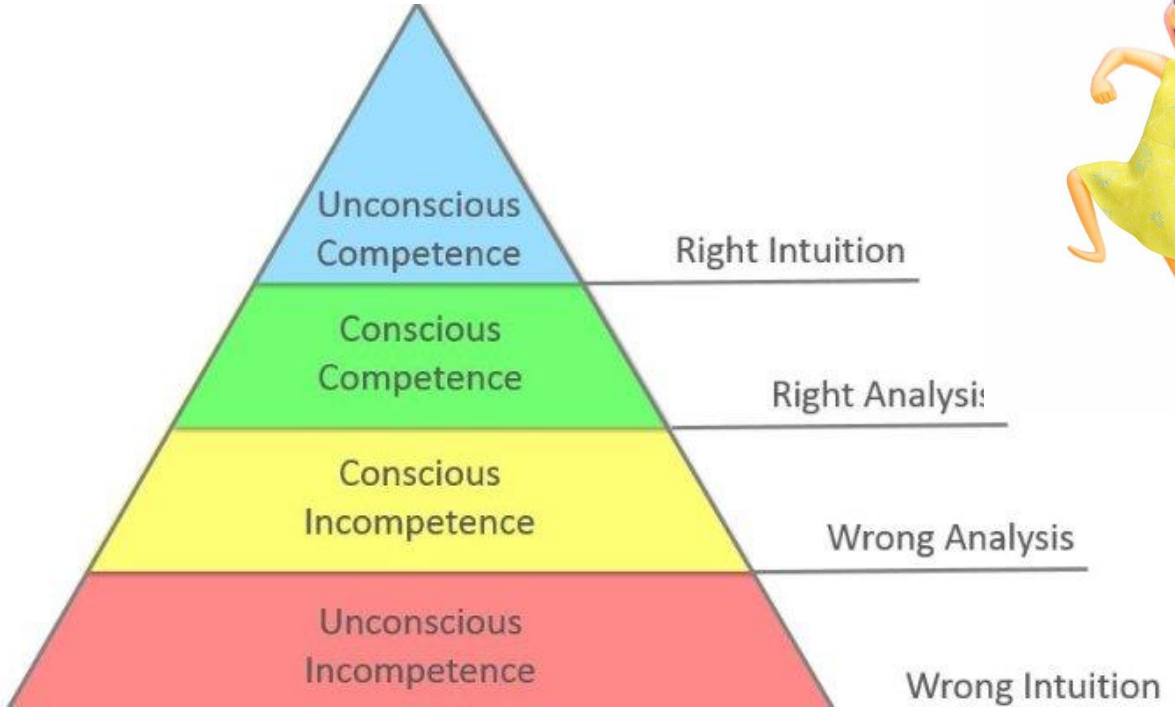

FEAR


DISGUST

Type I thinking in training…..

Learning Theory:

Maslow's pyramid



Cognitive Biases

Many described and seem to keep expanding

Important to know they are there

But more important to listen to Type 2 when there is a concern

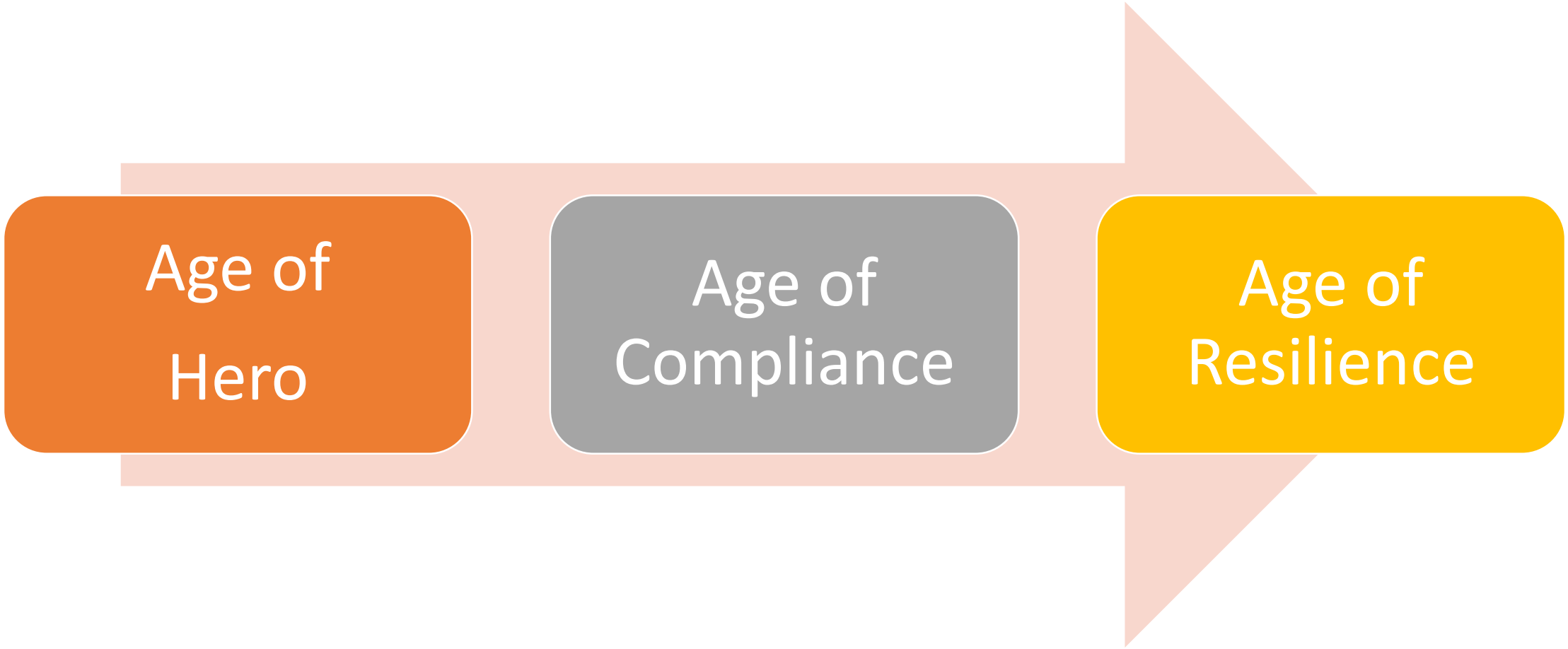
Examples:

- Anchoring
- Availability
- Substitution
- Optimism and loss aversion
- Framing
- Sunk cost
- Overconfidence

….Biases help to explain why we are terrible at statistics and numbers

Possible solutions

What's new in safety?



Possible solutions

- Resilience theory
  - Work in a complex adaptive system
  - Linear models to look at error are not fit for purpose
  - Linear solutions are unlikely to succeed (and haven't)
- Safety II model
  - Focus on what goes right, rather than what goes wrong
- Clinical leadership
  - Positive, supportive, collaborative
- Strong organizational culture
  - "The way we do things around here"
  - Focus on work-as-done, rather than work as imagined

Thank you

Australasian College
for Emergency Medicine

Success stories

Supervising for safety

Dr Amanda Stafford

Clinical Lead Royal Perth Hospital Homeless Team

Emergency Department Consultant

Royal Perth Hospital, Western Australia

Clinical Supervision & Patient Safety

Dr Amanda Stafford
Royal Perth Hospital

Clinical Supervision

- A formal process of professional support and learning which enables individual clinicians to develop knowledge and competence and assume responsibility for their own practice.

- Cutcliffe and Butterworth, 2001

- “The current flaw is that many work practices depend on the judgement of junior doctors to recognise when they don’t know or are out of their depth.”

- Clinical Supervision at the point of care
  Clinical Excellence Commission 2012 NSW

- Trainees are junior, mobile, inexperienced and may be “unconsciously incompetent” in their task and need to be actively supported and supervised rather than passively overseen.”

- Clinical Supervision at the point of care
  Clinical Excellence Commission 2012 NSW

Training as an Apprenticeship

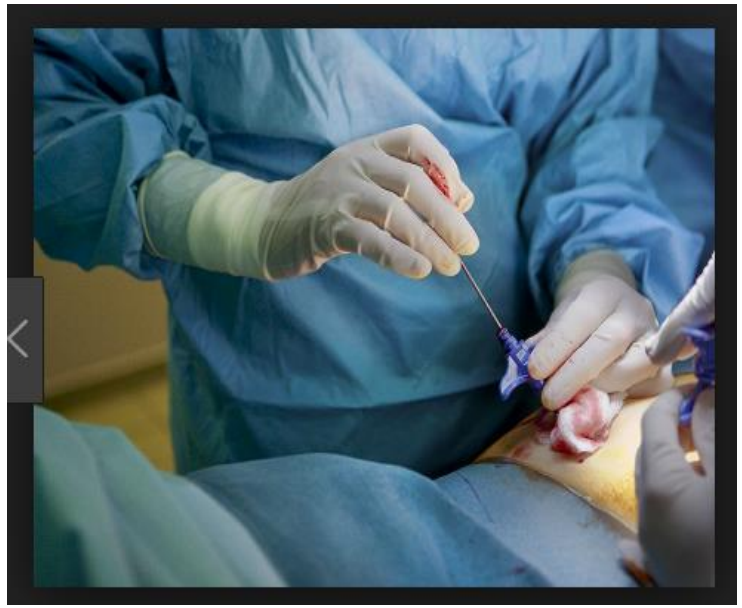
- "The apprenticeship model persists as the major model of training, especially in procedural specialities."

- Clinical Supervision at the point of care
  Clinical Excellence Commission 2012 NSW

Main EM Skills

Diagnostic Skills

Technical Skills




Lack of evidence
© Can Stock Photo - csp38029226

Clinical Supervision at the point of care
Clinical Excellence Commission 2012 NSW

- 54 RCAs 2008 and 2009 in NSW

- Clinical Supervision theme

- - clinical reasoning
- - decision making
- - care provided

Major Issues

- Lack of recognition of deterioration 31/54
- Inadequate treatment 23/54
- Missed diagnosis 14/54
- Delayed diagnosis 4/54
- Wrong treatment 4/54
- Delayed treatment 3/54

Major Contributors

- Availability of Senior Clinician
- Workload
- Rostering/Skill Mix
- Conflicting Priorities
- Lack of Senior Clinician Review or Input
- - escalation of care
- - appropriate level of care
- - culture re involving Senior Clinicians
- - effectiveness of supervision

Measuring the Effectiveness of Clinical Supervision

- 

More positive……

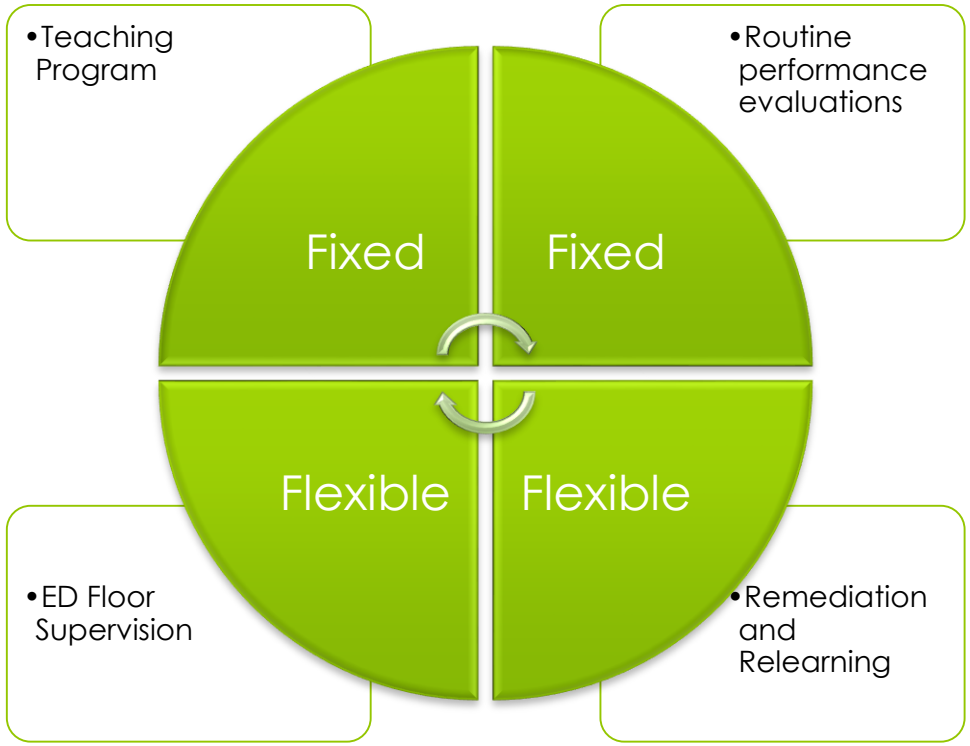
- Term report & WBA

- FACEM exam

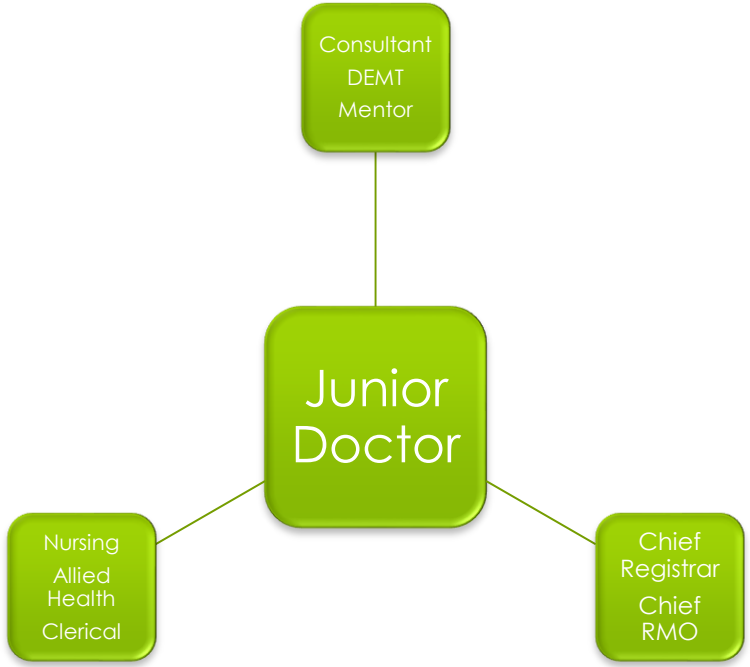

JUST DO IT.

Good Clinical Supervision

Need a framework and system



Multi-disciplinary Team



Poorly performing doctors

Thank You

Australasian College
for Emergency Medicine

Success stories

Clinical practice improvement
ED sepsis project

Dr Anh Tran

Emergency Physician, Emergency Department

Werribee Mercy Hospital, Victoria

Patient story

2030 59 yo female (Type 2 DM) presented at post fall
Triage: Pulse 112 RR 20 BP 138/53 Sao2 95% room air GCS 15
Category 4
90 mins : Temp 40.1 pulse 109 RR 21 BP 113/86 Sao2 94% room air

Bloods and blood culture sent

150 minutes: “A/W r/v by EDMO”

7.5 hours: Temp 39.5 pulse 121 RR 20 BP 95/50 Sao2 95% room air GCS 14/15

T/F resus, IV antibiotics, Nsaline 500mls

?lactate

9.5 Hours: stable, improved GCS referred to med team

Sepsis care -audit

VAED code: “Severe Sepsis”
“Septic shock”

N=18

Recognition at triage	67%
Started on a sepsis pathway	0%
IV antibiotics administered within 1 hour	22%
IV fluids administered within 1 hour	50%
Lactate measured	94%
2x blood cultures taken	67%
Adult Retrieval Victoria consulted (UCC or regional ED only)	22%
Transfer to other hospital (UCC only)	44%

What to do?

a. Keep auditing

b. Communicate the audit to clinical staff in the hope they improve performance

c. Schedule face to face education sessions to educate clinicians on the importance of good sepsis care

d. Communicate the importance of timely interventions in sepsis

e. Clinical practice improvement project

Safer Care Victoria

30th JANUARY 2019

Implementing a sepsis bundle of care in the WMH emergency department

End of project report

February 2019

VICTORIA

WERRIBEE MERCY HOSPITAL

WMH ED has a 3 bed Resuscitation area (x1 paediatric), 9 monitored cubicles and 6 unmonitored cubicles, a designated fast track area and a 10 bed Short Stay Unit.

Medical EFT :

FACEM EFT 7 JMO 25

Nursing 70

The emergency department sees 40000 patients per year.

This project coincided with the opening of the ICU at Werribee Mercy Hospital on August 1. (increased presentations)

Hospital inpatient services include: general medicine (including HDU/ICU), general surgery, obstetrics and gynaecology, special care nursery and psychiatry.

Limited subspecialty services

Mercy Health

Care first

Safer Care Victoria

Safer Care Victoria (SCV) is the state's healthcare quality and safety improvement agency. Works with patients, families and carers, clinicians and health services to monitor and improve the quality and safety of care delivered across Victorian public health system.

ECCN- Emergency Care Clinical Network.

This network brings together clinicians who deliver emergency care

Within Urgent Care Centres, Emergency Departments and through Ambulance Victoria to improve the quality of care and patient experience in Victorian emergency departments.

What are we trying to accomplish?

Aims

Improve early recognition of sepsis

Improve early intervention

Antibiotics within 1 hour

Improve early escalation of care

Measure 1: Proportion of patients identified at triage

Measure 2: Proportion of patients initiated on a sepsis pathway in ED

Measure 3: Proportion of patients administered IV fluids within one hour of presentation

Measure 4: Proportion of patients administered IV antibiotics within one hour of presentation

Measure 5: Proportion of patients with lactate measured

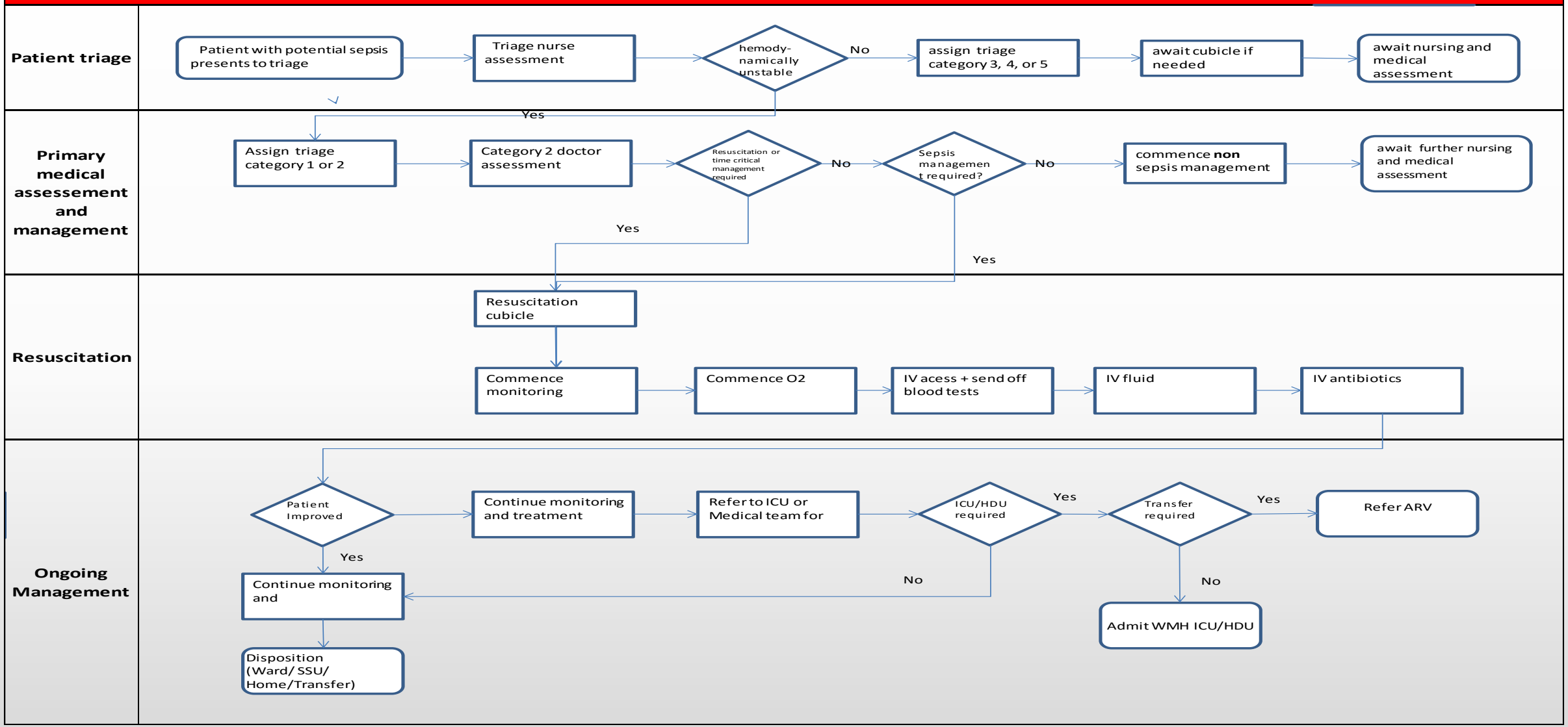
Measure 6: Proportion of patients with 2 sets of blood cultures taken within 6 hours of presentation

Measure 7: Proportion of patients where Adult Retrieval Victoria was consulted

Measure 8: Proportion of patients transferred to higher level of care (inter-hospital transfer or transfer to ICU/HDU)

What change will lead to an improvement?

Management of patient with potential sepsis -Process Map




Triage
Assign
Analgesia

WMH Sepsis project affinity diagram

Why do patients presenting to the emergency department with suspected sepsis not receive optimum care?

Recognition

- Some patient groups not being assessed and managed appropriately eg
- current sepsis criteria not bieng followed
- high risk patients are not identified
- patients not assigned correct triage category
- recognition delayed due to increased workload

Process

- observations for suspected sepsis not standardised ie some not doing BP/Temp at
- deteriorating patient in waiting room not reassessed
- patients not reviewed post treatment in a timely manner ie there is not standardised review process
- en a patient is septic the frequency of observations and process of review is not
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Clinician Knowledge

- uncertainty re which bloods to take -- lactate: ?venous/ arterial blood culture: ?how many sets/ which site/ ?take before antibiotics
- when analyser is calibrating there is uncertainty about alternative actions resulting
- uncertainty re what interventions
- uncertainty re which antibiotics to give and when to give ie benchmark time
- uncertainty re when to escalate ie trigger, time frame for referral , acceptable physiological parameters
- understanding of how much to give
- understanding re when to give intervention and the best time frame

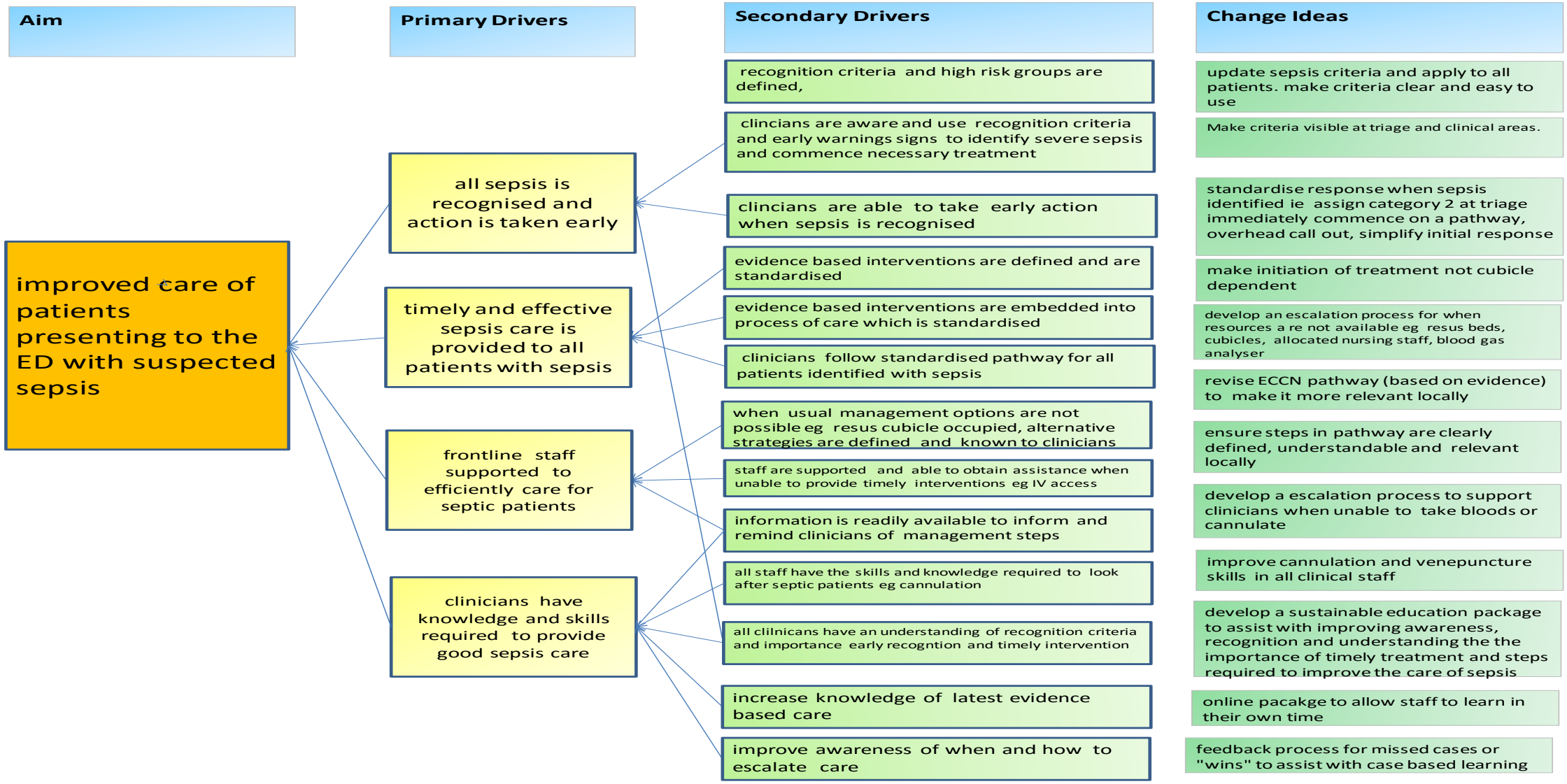
Task

- other competing demands on Cat 2 doctor hence delayed charting of IV abs
- delay in cannulation due to bed availability, staff availability
- delay in cannulation due to unsuccessful attempts and one operator attempting
- delay in antibiotics due to getting the medication charted due to other competing demands, doctors need to look up what to give, doses
- delay in antibiotic due to increased preparation time

Equipment

- planned calibration of lactate prevents lactate level being obtained hence delays
- not enough beds available to commence interventions
- no resus space available when busy

ECCN Sepsis Project- Driver diagram



What changes will lead to improvement?

- **Improving recognition**
- **Standardising care to assist with early, effective intervention (in line with evidence based practice)**
- **Improving clinician awareness and understanding**

WERRIBEE MERCY HOSPITAL
Emergency Department
ADULT SEPSIS PATHWAY

SURNAME | UR/N
GIVEN NAME | DOB | SEX
ADDRESS
SUBURB | POSTCODE | TELEPHONE

1. Does your patient have a known or suspected infection?

- History of fevers or rigors
- Neutropenia or recent chemotherapy
- Indwelling medical devices
- Recent surgery or invasive procedure
- Skin: cellulitis, wound, petechial rash
- Respiratory: cough, shortness of breath
- Abdominal: pain, peritonism
- CNS: decreased mental alertness, headache
- Genitourinary: dysuria, frequency

2. Does your patient have abnormal vital signs?

SEVERE SEPSIS

≥ 2 of the following:
- SBP < 100 mmHg
- Altered mental status
- Lactate >2 mmol/L

YES → This patient is at risk of rapid deterioration / septic shock

AND /OR

SEPSIS WARNING SIGNS

≥ 2 of the following:
- Temperature <36°C or >38°C
- Heart Rate >90 per minute
- Respiratory Rate >20 per minute
- WCC <4 or >12 x 10^9/L

YES → Patient may have sepsis

Consider other causes:
- Myocardial infarct
- Haemorrhage
- Ischaemia
- Pulmonary embolism
- Transfusion or drug reaction

Patient requires:
- Clinical assessment
- Repeat observations within 30 minutes and manage accordingly
- Re-evaluate for sepsis

Does your patient have a Goals of Care form and/or Advance Care Directive to limit treatment?
Review before proceeding.

If sepsis is most likely
COMMENCE SEPSIS PATHWAY
Notify medical officer
Consider escalation of care as required

RECOGNISE, RESUSCITATE & REFER

Six key actions in 60 minutes:
1. Oxygen administration
2. Two sets of blood cultures
3. Venous blood lactate
4. Fluid resuscitation (500mls)
5. Intravenous antibiotics (see attached guideline)
6. Monitor observations, urine output and reassess

Cancer patients currently undergoing systemic chemotherapy require first antibiotic within 30 minutes

WERRIBEE MERCY HOSPITAL
Emergency Department
ADULT SEPSIS PATHWAY

GIVEN NAME | DOB | SEX
ADDRESS
SUBURB | POSTCODE | TELEPHONE

First 30 minutes from presenting signs/symptoms

Activation of pathway

Date: __/__/__ Triage Time/Time of recognition: ____:____ TRIAGE CATEGORY ☐

Name: Sign: Designation:

Has a Goals of Care/ACD/Resuscitation Options been completed? ☐ Yes ☐ No ☐ Unknown
Has the sepsis pathway been discussed with the patient and/or Medical Treatment Decision Maker Y / N

ESCALATE care if patient starts to deteriorate at any stage, e.g. NOTIFY SENIOR MEDICAL OFFICER

Signs/ Symptoms

1. Does your patient have two or more SIRS criteria, and/or severe sepsis?
- ☐ Temperature <36°C or >38°C
- ☐ Heart Rate >90 bpm
- ☐ Resp Rate >20/min
- ☐ WCC <4 or > 12 x 10^9/L
- ☐ Systolic BP <100mmHg
- ☐ Altered mental state

2. Does your patients also have any of the following risk factors, signs or symptoms of infection?
- ☐ History of fever or rigor
- ☐ Neutropenia or recent chemotherapy
- ☐ Indwelling medical device
- ☐ Recent surgery/invasive procedure
- ☐ Skin: cellulitis, wound, petechial rash
- ☐ Respiratory: cough, shortness of breath
- ☐ Abdominal: pain, peritonism
- ☐ CNS: decreased mental alertness, headache
- ☐ Genitourinary: dysuria, frequency

3. Does your patient have clinical signs of hypoperfusion?
- ☐ Cool peripheries (hands and feet)
- ☐ Decreased/no urine output (for >8 hrs)

Medical review

Name: Time: CONTINUE PATHWAY: Y / N

1. Oxygen administration

Aim SpO_2 92-96% (or 88-92% for COPD & chronic type II respiratory failure) TIME: ☐ Initials

Ensure IV access

Large bore peripheral cannula inserted/available for fluid bolus, OR
If central venous access device already available: type (if applicable) _____

2. Blood cultures

Two sets of blood cultures TIME: ☐ Initials
(2 peripheral; or 1 from all lumens of device or port if accessible, plus 1 peripheral)
*DO NOT DELAY ANTIBIOTIC ADMINISTRATION IF BLOOD CULTURES DIFFICULT TO OBTAIN

3. Lactate

Venous blood lactate TIME: ☐ Initials
Record lactate level _____mmol/L

Pathology

- Collect FBC, UEC, CRP, LFTs, coags and blood glucose level
- Consider cross match if patient at risk of anaemia or known recent surgery

DO NOT WAIT for test results. Commence fluid resuscitation and antibiotics ASAP.

4. Fluid Resuscitate

If hypotensive (SBP<100mmHg) or lactate >2mmol/L

Fluids must have medical officer authorisation and be prescribed on the IV Therapy Chart

- Give RAPID fluid bolus STAT TIME:
- 500mL 0.9% sodium chloride or Hartmann's solution*

1st bolus required and given ☐ ☐ Initials
If no response to initial fluid resuscitation with ongoing hypotension repeat fluid bolus

2nd bolus required and given ☐ ☐
Caution if signs of pulmonary oedema, history of cardiac dysfunction or elderly patient

* Antibiotics MUST NOT be administered concurrently with Hartmann's, flush with compatible fluid before or after

If blood pressure does not improve after fluid bolluses ESCALATE care and consider inotropes

Emergency Department
ADULT SEPSIS PATHWAY

SURNAME		UR/N
GIVEN NAMES	DOB	SEX
ADDRESS		
SUBURB	POSTCODE	TELEPHONE

First 60 minutes from presenting signs/symptoms

Clinically examine the patient for a focus of infection, e.g. chest, urinary tract infection

5. Antibiotics

Check the patient's **ALLERGY STATUS** – indicate:
- ☐ no penicillin allergy
- ☐ non-life-threatening penicillin allergy (e.g. rash)
- ☐ life-threatening penicillin allergy (e.g. anaphylaxis)

Record antibiotic allergy and reaction:

Initials ☐

For SUSPECTED, KNOWN or UNKNOWN infection:

Refer to empiric antibiotic guidelines on next page (circle presumed site)

Initials ☐

Antibiotics must be prescribed on a medication chart by a medical officer.

ADMINISTER ANTIBIOTICS AS SOON AS POSSIBLE (WITHIN 60 MINUTES)

**Cancer patients currently undergoing systemic chemotherapy require first antibiotic within 30 minutes*

Time prescribed: ____:____ *Time given:* ____:____

Initials ☐

Steroids

Consider hydrocortisone if patient taking corticosteroids or known/suspected steroid deficiency

If deteriorating or NOT improving – ESCALATE care, e.g. ICU referral

Name of contact: _____ Time: _____:_____

First 6 hours

6. Monitoring

Monitor vital signs & fluid balance every 30 mins for 2 hours then hourly for 4 hours or more frequently as needed.

Keep oxygen saturation 92-96% (88-92% if at risk of CO_2 retention)

Assess for deterioration which may include one or more of the following:
- ☐ Increasing respiratory rate (in orange or purple zone on observation chart)
- ☐ SBP <100 mmHg
- ☐ Decreased or no improvement in consciousness
- ☐ Urine output < 0.5 ml/kg/hour
- ☐ If lactate elevated repeat in 2 hours – if elevated >2 mmol/L ESCALATE care, e.g. ICU referral

Investigation

Initiate investigations as directed by likely source, consider:
- ☐ Diagnostic imaging (e.g. CXR)
- ☐ Sputum for MCS
- ☐ Urine MSU (or CSU) for MCS
- ☐ Wound swab for MCS
- ☐ Throat swab for respiratory multiplex PCR
- ☐ Stool for *C. difficile* testing (if diarrhoea present)

Source control

ALWAYS CONSIDER THE NEED FOR SOURCE CONTROL

Refer to infectious disease and/or surgical teams early

Double-click to show white space

Empiric antibiotic guide based on presumed site of infection

Infectious Diseases consult (if available)

- Empirical regimens are intended for initial therapy ONLY (up to 48 hours) – modify as soon as additional information is available
- Ensure the patient's clinical findings and investigations are concordant with the presumed site of infection; if uncertain, use the recommendations for unknown site of infection
- The following guidelines have been adapted from Therapeutic Guidelines (TG): Antibiotic (version 15, 2014), please refer here for more detailed information if required or seek expert advice
- All doses recommended in this guideline are for normal renal function with CrCl>50ml/min, dose reductions may be required for patients with renal impairment – see Appendix 2.6 (Table 2.33) TG for advice
- Risk factors for high risk of multidrug-resistant organisms: known colonisation with multidrug-resistant organism, e.g. ESBL, *Pseudomonas*, high risk travel (Indian subcontinent, Asia, Southern/Eastern Europe)

No allergy to penicillin	Non-life threatening penicillin allergy	Life threatening penicillin allergy
UNKNOWN SOURCE OF INFECTION		
ceftriaxone 1g IV 24-hourly **PLUS** flucloxacillin 2g IV 4-hourly	ceftriaxone 1g IV 24-hourly **PLUS** cefazolin 2g IV 6-hourly	ciprofloxacin 400mg IV 12-hourly **PLUS** vancomycin IV (see dosing table)
• Add **vancomycin IV** if MRSA is suspected • Use **meropenem 1g IV 8-hourly** if high risk of multidrug-resistant organism		
FEBRILE NEUTROPENIA		
piperacillin/tazobactam 4.5g IV 6-hourly	cefepime 2g IV 8-hourly	ciprofloxacin 400mg IV 12-hourly **PLUS** vancomycin IV (see dosing table)
• Consider adding **stat gentamicin** and **vancomycin** if severe sepsis, SBP<100mmHg or lactate ≥ 2 • Add **vancomycin IV** if MRSA or line-related infection suspected • Use **meropenem 1g IV 8-hourly** if high risk of multidrug-resistant organism OR if meningitis not excluded (e.g. unconscious) as piperacillin-tazobactam has poor CNS penetration • Consider adding **metronidazole 500mg IV 12-hourly** (to cefepime and ciprofloxacin regimens) if intra-abdominal infection possible • Seek specialist advice if fungal infection suspected		
INTRAVASCULAR DEVICE SOURCE (remove device)		
piperacillin/tazobactam 4.5g IV 8-hourly **PLUS** vancomycin IV (see dosing table)	ceftazidime 2g IV 8 hourly **PLUS** vancomycin IV (see dosing table)	ciprofloxacin 400mg IV 12-hourly **PLUS** vancomycin IV (see dosing table)
• Consider piperacillin/tazobactam 4.5g IV 6-hourly in critically ill patients with severe sepsis or septic shock • Use **meropenem 1g IV 8-hourly** if high risk of multidrug-resistant organism • Consider adding **antifungal** cover if severe sepsis, high risk (e.g. prolonged intravenous access) or known colonisation with *Candida*		
RESPIRATORY TRACT SOURCE		
ceftriaxone 1g IV 24-hourly **PLUS** azithromycin 500mg IV 24-hourly	ceftriaxone 1g IV 24-hourly **PLUS** azithromycin 500mg IV 24-hourly	moxifloxacin 400mg IV 24-hourly
• Consider oral **oseltamivir 75mg 12-hourly** if influenza suspected • Consider ceftriaxone 1g IV 12-hourly in critically ill patients with severe sepsis or septic shock • Replace ceftriaxone with **piperacillin-tazobactam 4.5g IV 6-hourly** OR **meropenem 1g IV 8-hourly** if severe AND known respiratory colonisation with resistant organism, e.g. *Pseudomonas, ESBL* • Consider adding **flucloxacillin 2g IV 6-hourly** and **vancomycin** if strongly suspect *Staphylococcus aureus* in severe cases (e.g. rapid clinical deterioration or cavitating pneumonia)		
URINARY TRACT SOURCE		
ceftriaxone 1g IV 24-hourly **PLUS** amoxicillin 2g IV 6-hourly	ceftriaxone 1g IV 24-hourly	ciprofloxacin 400mg IV 12-hourly
• Consider ceftriaxone 1g IV 12-hourly in critically ill patients with severe sepsis or septic shock • Use **meropenem 1g IV 8-hourly** if severe AND high risk of multidrug-resistant organism		

Online sepsis education package

Power point presentation

10 question quiz

All clinical staff

voluntary

Change 1

improve early recogniition of sepsis

PDSA 1
-trial use of prompt at triage and process for calling out sepsis on the overhead for 1 shift

PDSA 2
calling out sepsis and commencing pathway from triage for 1-2 patients (form printed from triage)

PDSA 3
recognising and commencing pathway from cubicles - simulated

PDSA 4
recognition and commencement of pathway during 1 week

Period October 2018

Change 2

Use of pathway and compliance with interventions

PDSA 1
Trial in a simulation
Time taken to time stamp and administer antibiotics

PDSA 2
Trial changes on 2-3 different simluations with different staff
Time taken to administer antibiotics

PDSA 3
Study compliance and time to antibitoics and other measures for 3 days

PDSA 4
Study compliance and time to antibitoics and other measures for 7 days

Period Oct- Nov 2018

Change 3

Implement online education package

PDSA 1
Trial on 2 Participants

PDSA 2
Trial on 4 participants

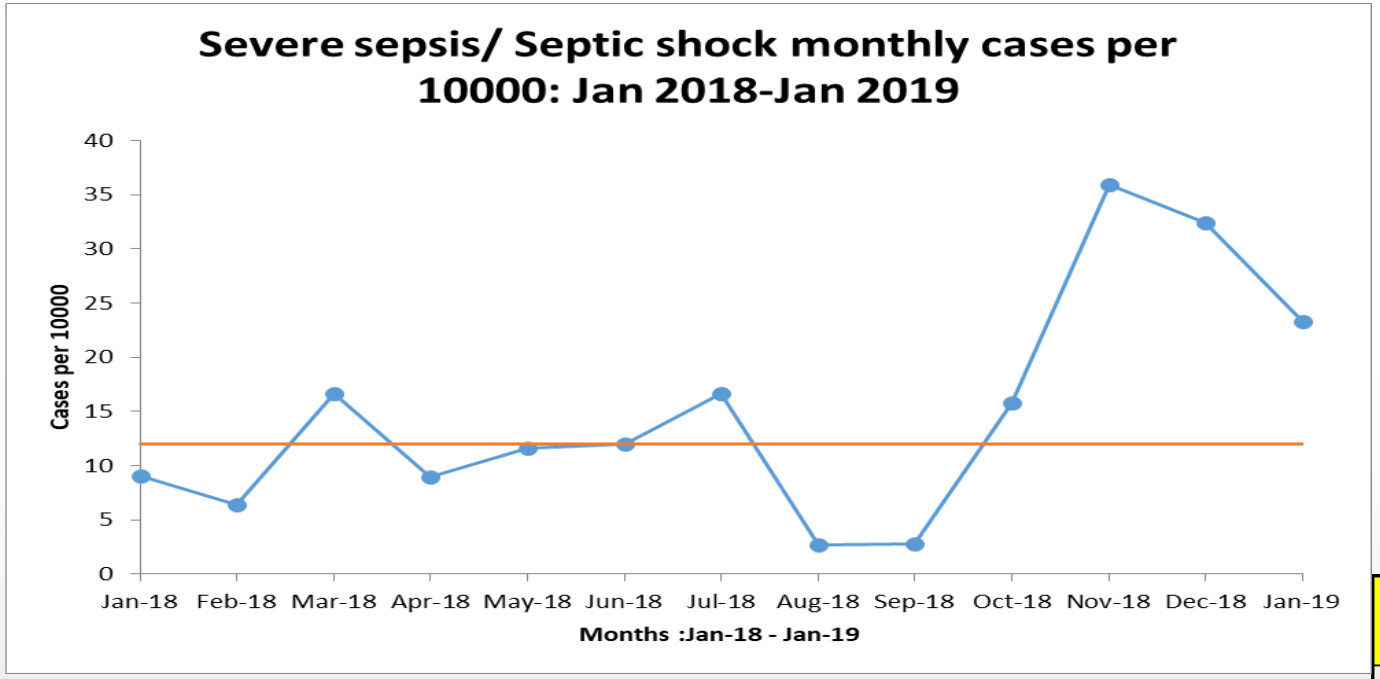
PDSA 3
Trial on ANUMS and consultants

PDSA 4
All JMO and nursing

Period Oct- Dec 2018

How do we know if there has been an improvement?

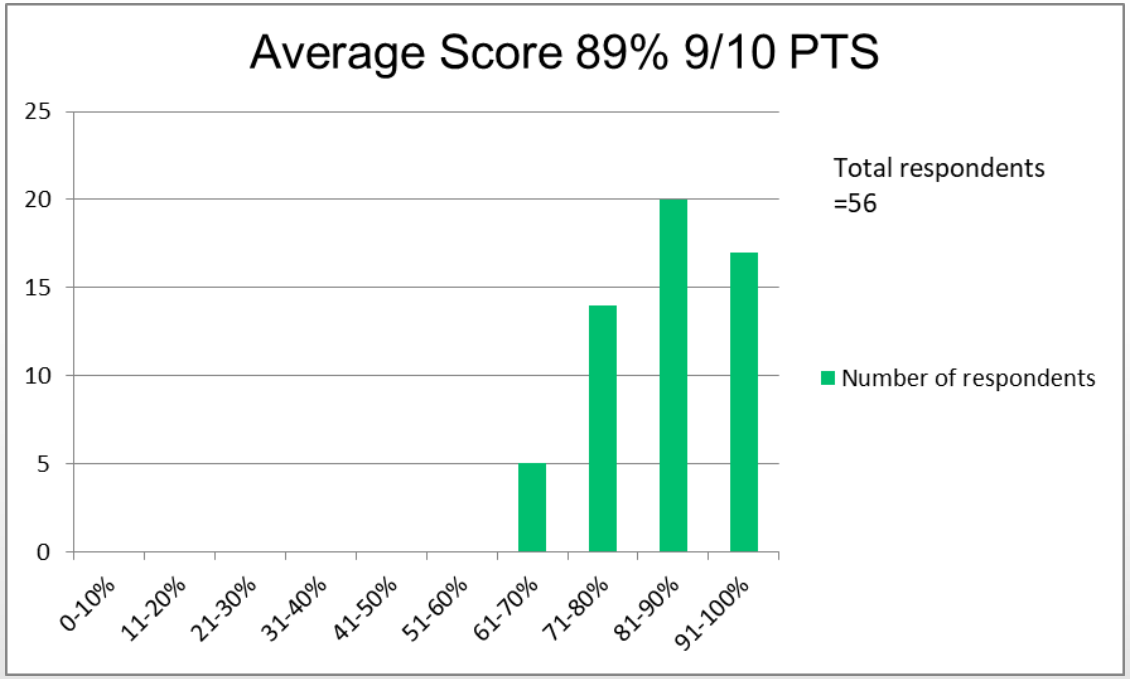
Evaluation - Recognition



Pre PDSA testing/implementation (April 2018-Sept 2018)	Triage Category	Count
	Cat 1	0
	Cat 2	14
	Cat 3	3
	Cat 4	2

Post PDSA testing/implementation (Oct 2018-Jan 2019)	Triage Category	Count
	Cat 1	1
	Cat 2	28
	Cat 3	7

Evaluation- Sepsis Education



Question Ranking		
Questions (10)	Difficulty	Average Score
Q9 Which of the following sepsis criteria does NOT require escalation of care for HDU/ICU	1	70%
Q10 Which of the following statement is FALSE regarding further monitoring in sepsis	2	73%
Q7 Which clinical sign is the most common in adult patients with severe sepsis?	3	82%
Q3 Which patient has a high risk of developing sepsis	4	84%
Q4 Which of below is not a component of SIRS	5	89%
Q2 Which patient has the highest risk of death	6	95%
Q8 According to the sepsis pathway which patient requires escalation of care to ICU/ HDU within 60 minutes?	6	95%
Q1 Which of the following is considered a life threatening emergency	8	100%
Q5 In patients with sepsis which of the following steps which of the following is not a priority in the first 60 minutes?	8	100%
Q6 You are assessing an 60 year old male who has presented with confusion. Vital signs are: T 38.5 HR 110 RR 25 SBP 100.What is your initial management?	8	100%

Did this education package improve your understanding of sepsis												
	was not helpful		somewhat helpful		neutral		helpful		very helpful		Total	Weighted Average
star	1.85%	1	5.56%	3	3.70%	2	42.59%	23	46.30%	25	54	4.26
											Skipped	2

Measures

Measure	Pre data (1 Jan - 30/06/2018)	Post Data (30/10/2018-29/01/2019)
Recognition at triage	66%	96%
Started on sepsis pathway	0%	80%
IV antibiotics within 1 hour	22%	80%
IV fluids within 1 hour	50%	76%
Lactate measured	94%	100%
Blood cultures 2 sets within 6 hours	63%	83%

Mercy Health

Care first

PATIENT STORY

31 yo male presented at 1617 with fevers, headache and throat pain and cough, vomiting

Met sepsis criteria with high fever, tachycardia and hypotension (Sa02 >95% GCS 15)

Assigned Category 2 and sepsis pathway commenced immediately

Bloods (Blood cultures x2 and lactate) taken at	**17 minutes**
IV fluids commenced at	**18 minutes**
IV antibiotics at	**18 minutes**
Persistently hypotensive despite initial treatment	
Escalation of care at (resuscitation cubicle)	**90 minutes**
Medical registrar review	**135 minutes**
ICU registrar review	**165 minutes**
Transferred to HDU	**180 minutes**
Outcome	
ICU length of stay	**2 days**

This patient presented on a day whereby the ED recorded its maximum number of presentations.

Benefits

- **Process for change following identification of patient safety problem/incident**
- **Systematic methodical process to bring about change**
- **Proactive vs reactive approach**
- **Frontline clinician engagement**
- **Builds collaboration within and outside the ED**
- **Improvements can be identified and communicated**
- **Areas for further improvement could be identified**

Challenges

- Takes time
- Improvement science knowledge not widespread
- Service improvement team support
  - Availability
  - Clinical perspective
- Trust in the approach and understanding change
- Measurement
- Support and resourcing of project teams
- Engagement and support by leadership
  - Training
  - Building time to work on projects

Supporting clinical practice improvement in the emergency department to improve patient safety

- **Increase knowledge and experience in improvement work**
- **Engage and support projects**
- **Advocate for resourcing of improvement projects**
- **Look for improvement opportunities both within and external to ED**
- **Shift focus from measurement to improvement work**

Project Team

- **Project Lead :Margaret Daly (ANUM)**
- **Medical Project Lead: Anh Tran (Emergency Physician)**
- **Rachel Vorlander (Antimicrobial stewardship pharmacist)**
- **Prema Madaiah (RN)**
- **Stacey Paterson (RN)**
- **Abby Bean (Quality coordinator)**

Australasian College
for Emergency Medicine