Haematuria & Hydronephrosis in Suspected Renal Colic

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Background

CTKUB is the standard imaging modality

Concerns about radiation exposure, cost, access

Negative dipstick haematuria/US hydronephrosis – ?avoid CT

Missed diagnosis may have downstream consequences, e.g. ongoing silent obstruction and kidney atrophy

Research Question:

What is the predictive value of haematuria & hydronephrosis in suspected renal colic?

Method

- Retrospective study
- Emergency Department electronic records
- Convenience sample – cases from 6 months (1st Jan-30th Jun 2016)
- Angliss, Box Hill & Maroondah EDs in Melbourne
- CT hydronephrosis used as proxy for US hydronephrosis

Definitions

Population:

Age ≥ 18y

CTKUB for atraumatic pain

Exposure:

Positive Haematuria

Dipstick positive/macrohaematuria.

Positive Hydronephrosis

Presence reported.

Comparison:

Negative Haematuria

Dipstick negative.

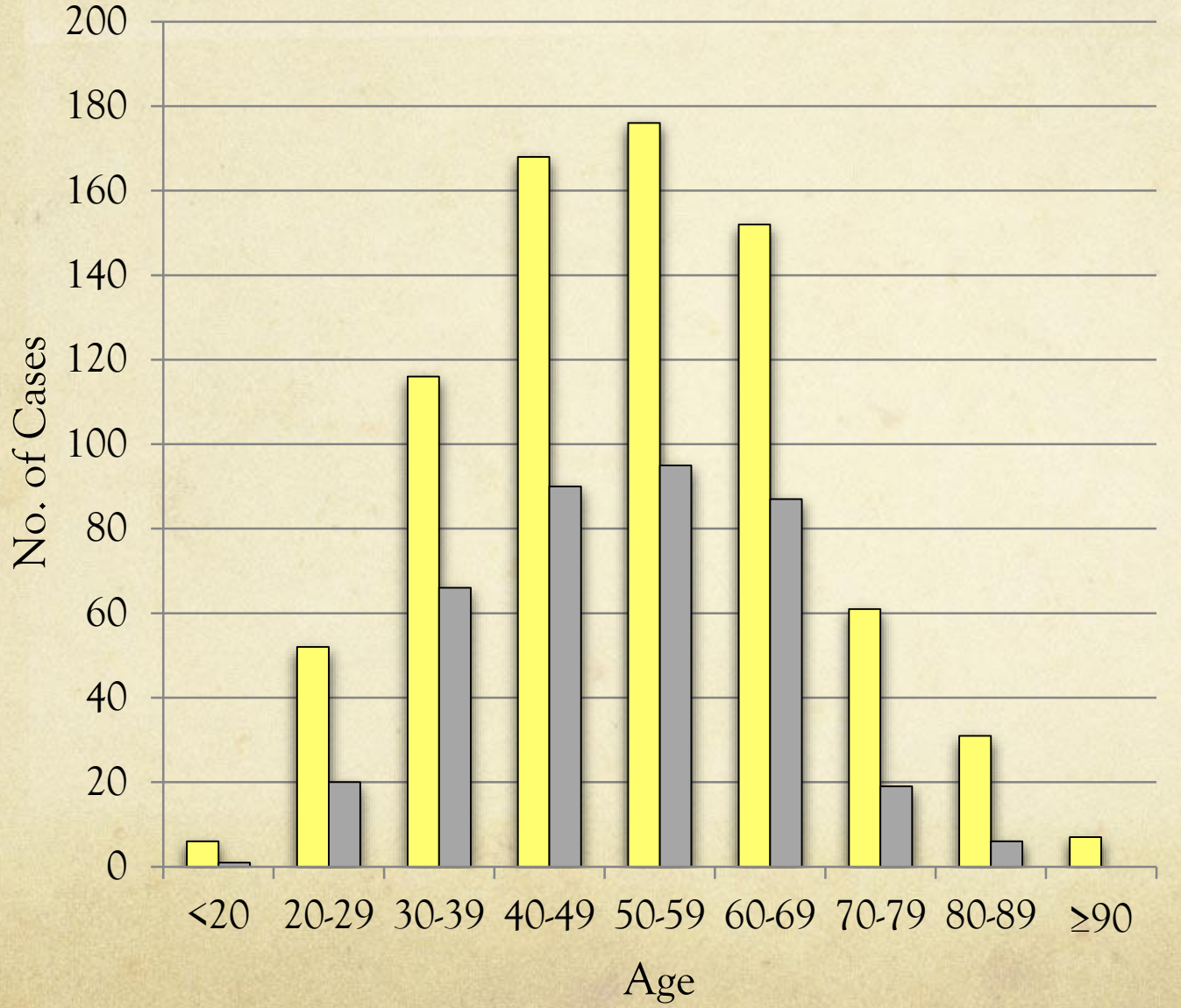
Negative Hydronephrosis

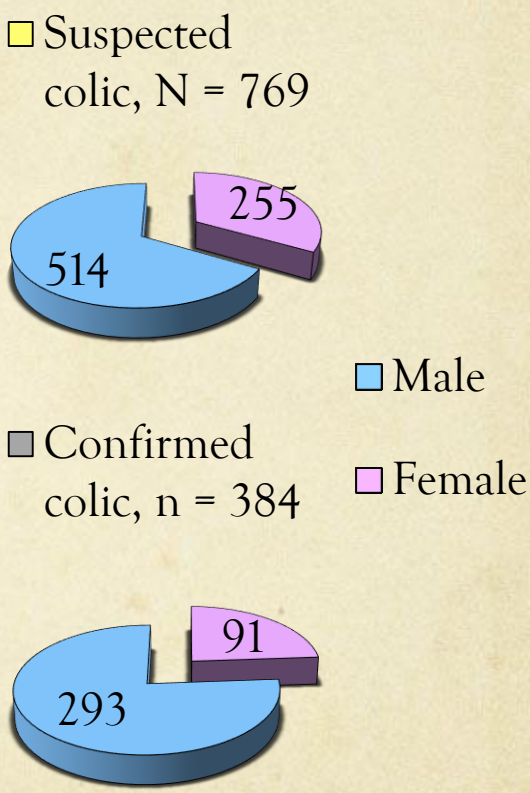
Absence reported.

Outcome:

Ureteric calculi/Staghorn/ Obstructing pelvic calculi reported.

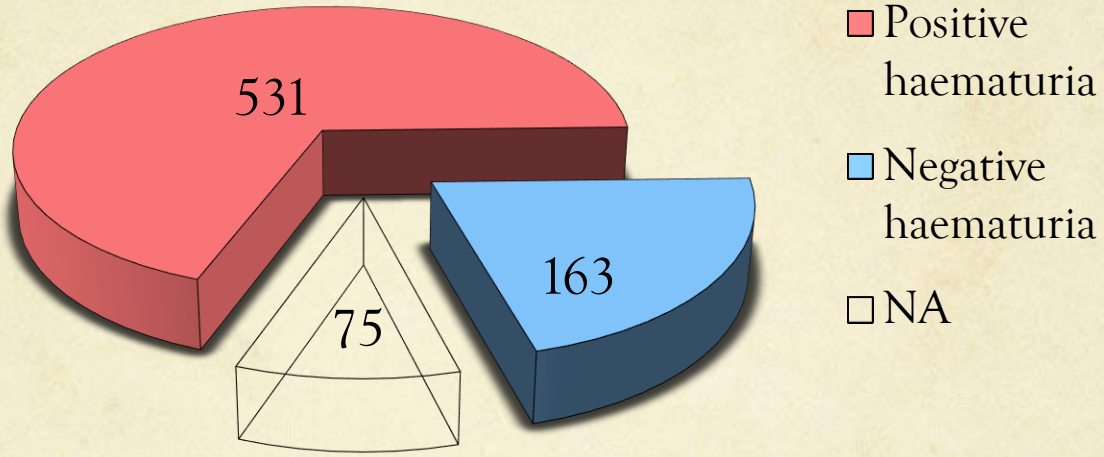
Study Population, N = 769



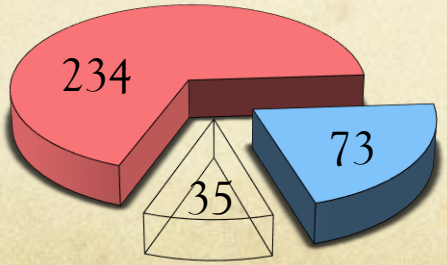


Haematuria

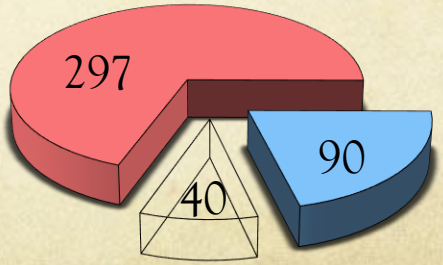
Suspected colic, N = 769



<50y, n = 342

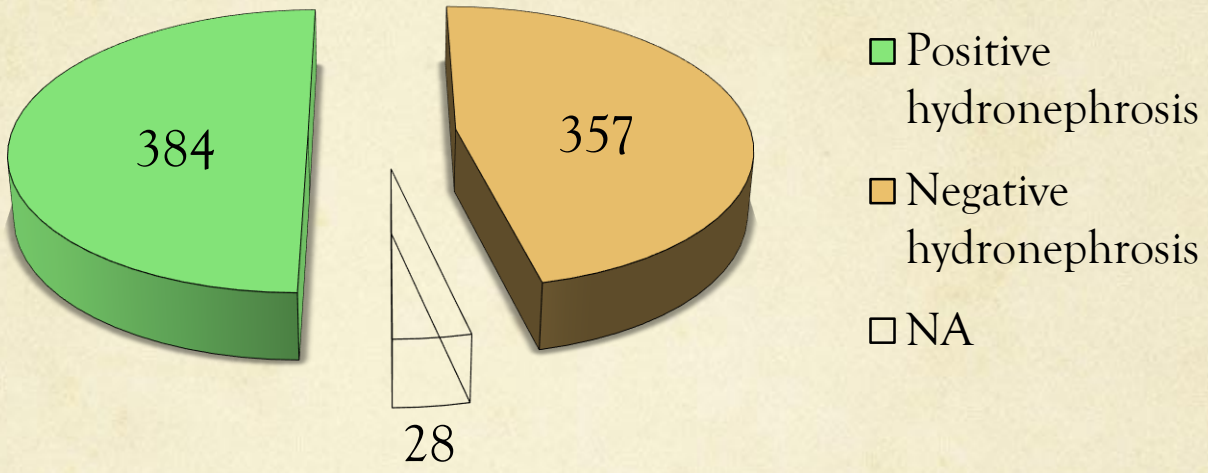


≥50y, n = 427



Hydronephrosis

Suspected colic, N = 769



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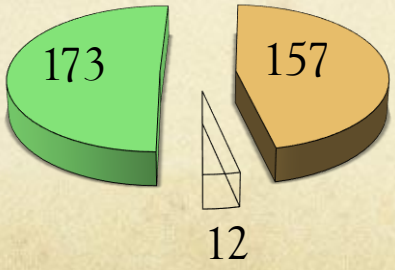

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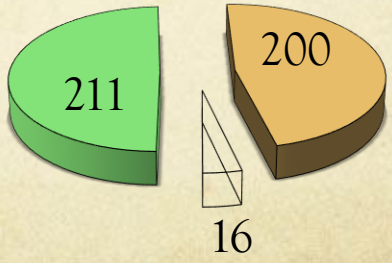
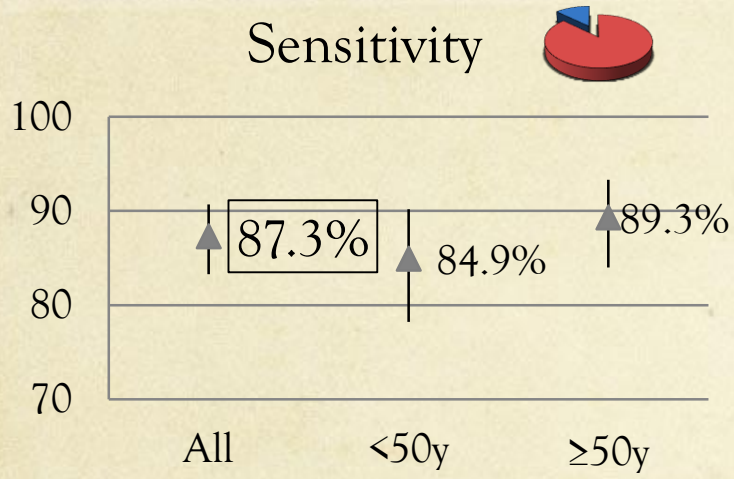


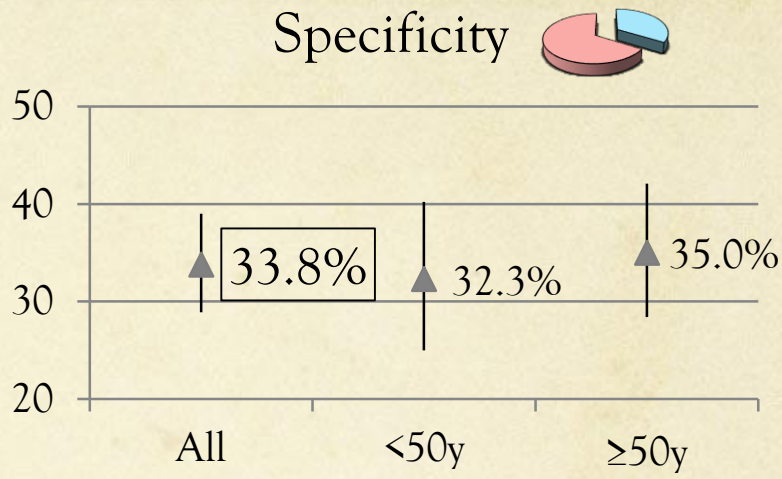
Association with colic

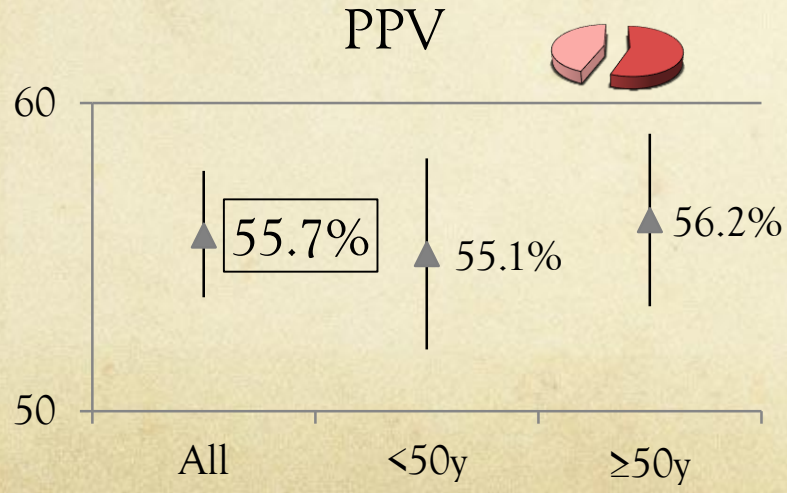
	Positive CT colic	Negative CT colic
Positive haematuria	296	235
Negative haematuria	43	120

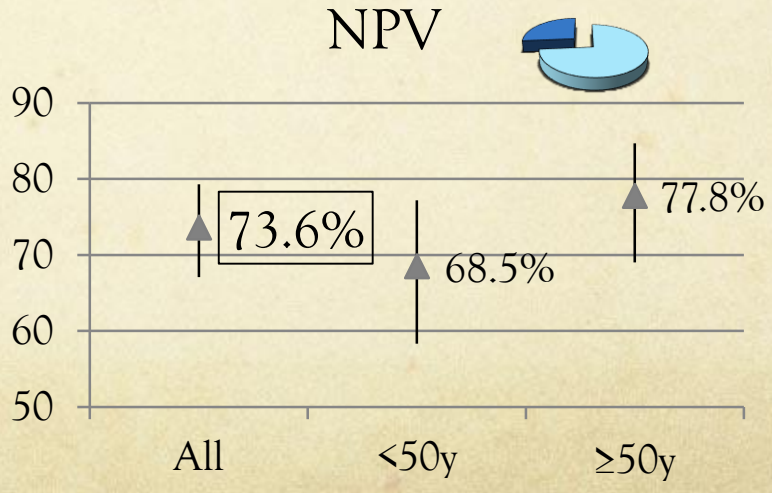
	Positive CT colic	Negative CT colic
Positive hydronephrosis	329	55
Negative hydronephrosis	45	312

Predictive values of haematuria









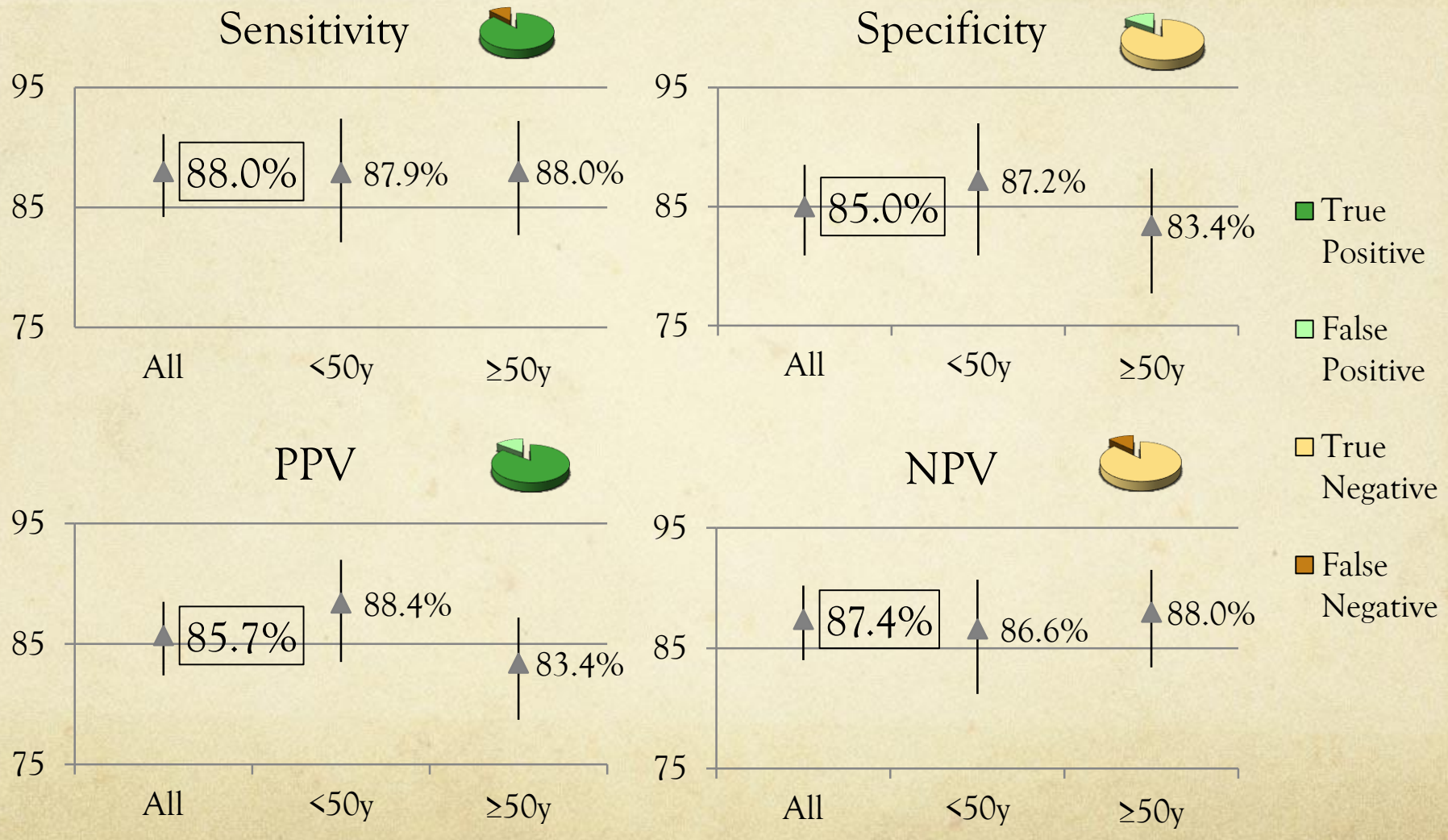
True Positive

False Positive

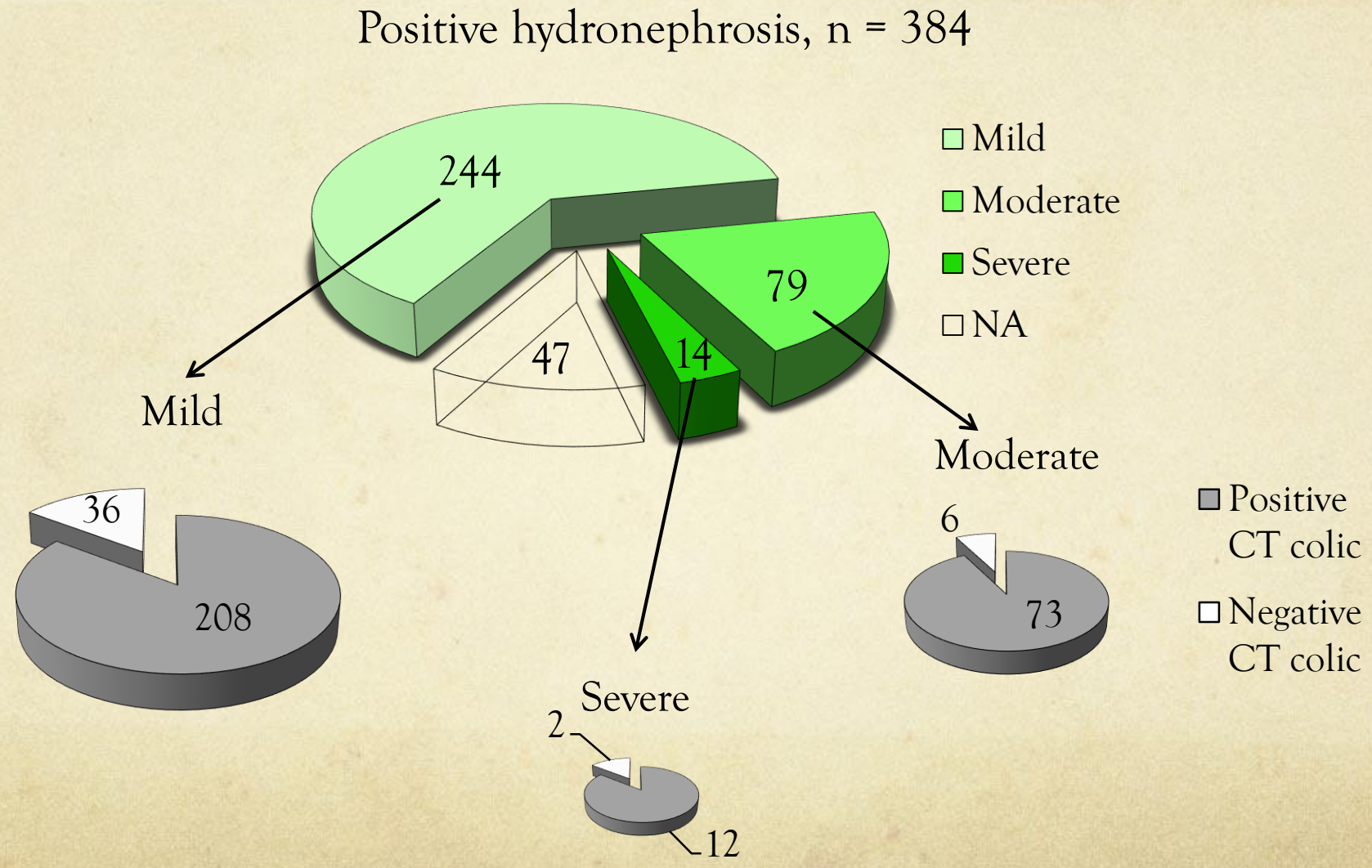
True Negative

False Negative

Predictive values of hydronephrosis

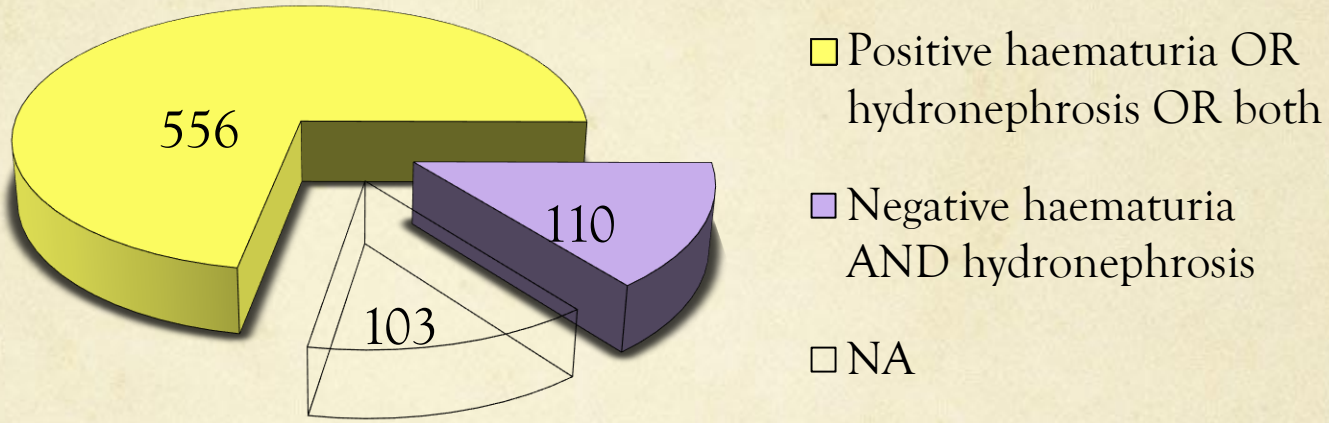


Hydronephrosis degree



Doubly negative

Suspected colic, N = 769



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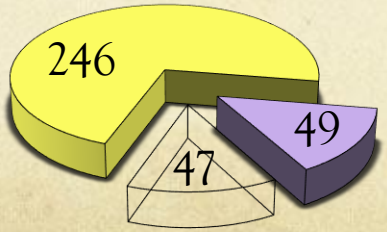
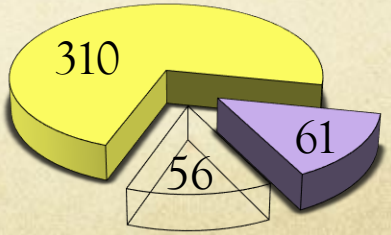
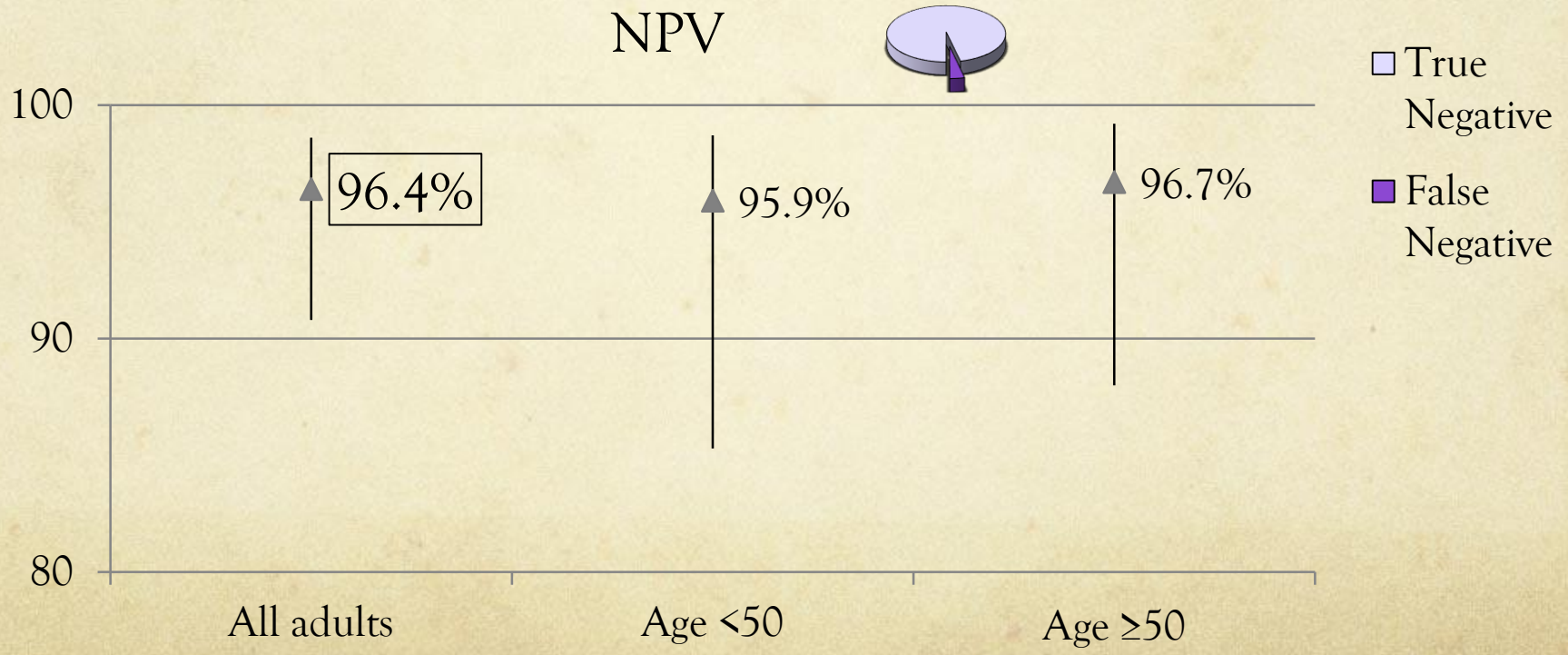


≥ 50y, n = 427



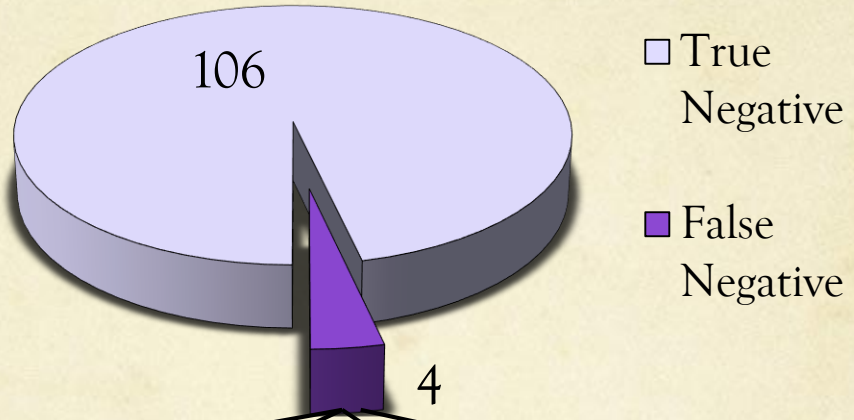
Doubly negative NPV

	Positive CT colic	Negative CT colic
Double negative	4	106
Either or both positive	325	231



Missed stones?

Doubly negative, n = 110



20 y M, <1mm stone, L pelvic brim, conservative Mx

37 y M, 2mm stone, L distal ureter, conservative Mx

51 y M, 4mm stone, R VUJ, conservative Mx

58 y M, 6mm stone, R PUJ, stent by Urology

Limitations of study

- Retrospective study
- Sample size limitation
- Incomplete documentation

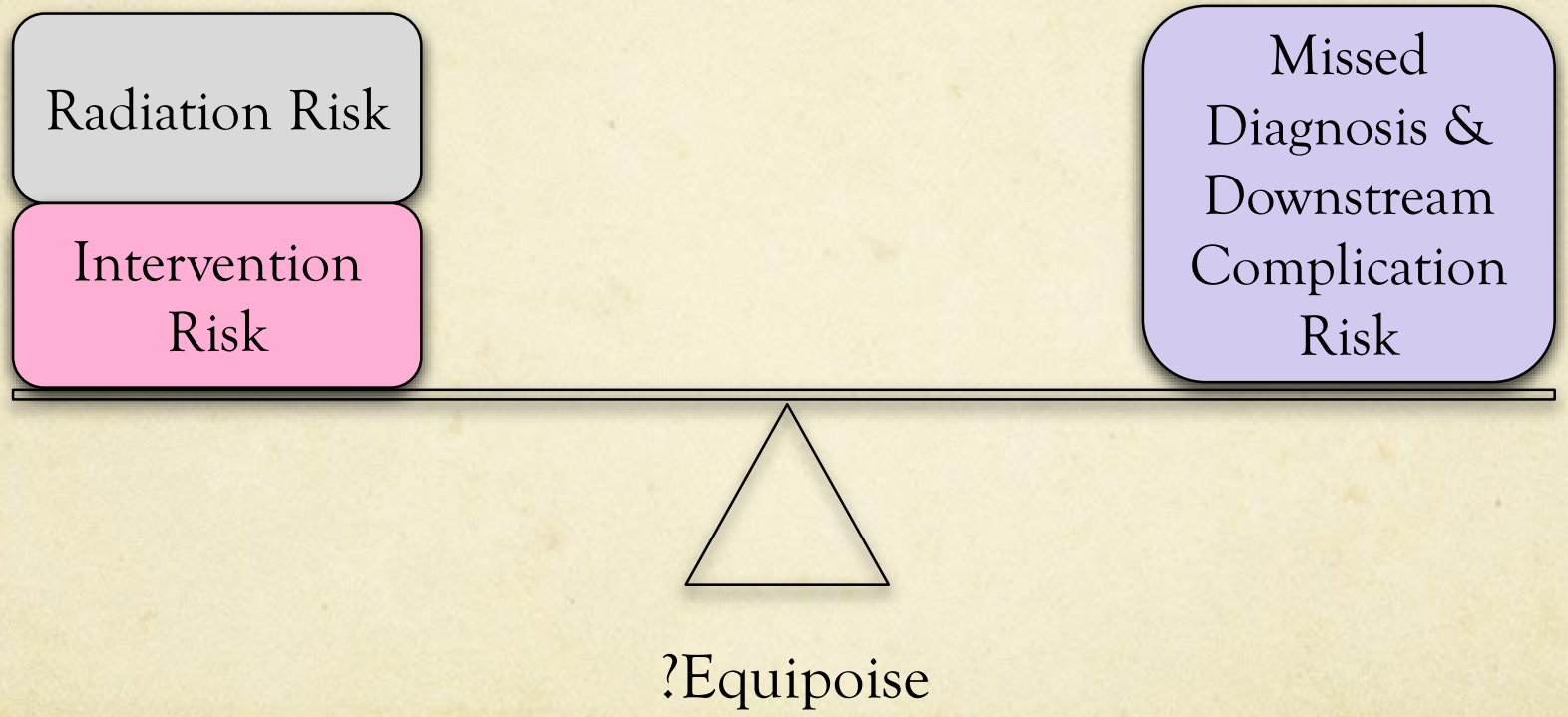
Summary

Haematuria has high prevalence.
1 in 4 negative haematuria cases will have a stone.

Hydronephrosis is mild in the majority of cases.
1 in 8 negative hydronephrosis cases will have a stone.

1 in 28 negative haematuria AND hydronephrosis will have a stone.
Some of these cases will still require Urology intervention.

Future


Radiation Risk
Intervention Risk
Missed Diagnosis & Downstream Complication Risk
?Equipoise

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