Methods to Minimise Opiate Use and Pain after Colorectal Surgery: A Network Meta-Analysis of Common Analgesic Techniques

William Xu

The University of Auckland

Methods to minimise opiate use and pain after colorectal surgery:

A network meta-analysis of common analgesic techniques

William Xu, *Chris Varghese, Ian P Bissett, Greg O'Grady, Cameron I Wells*

Department of Surgery, Faculty of Medical and Health Sciences, University of Auckland

AUCKLAND SURGERY

THE UNIVERSITY OF AUCKLAND NEW ZEALAND

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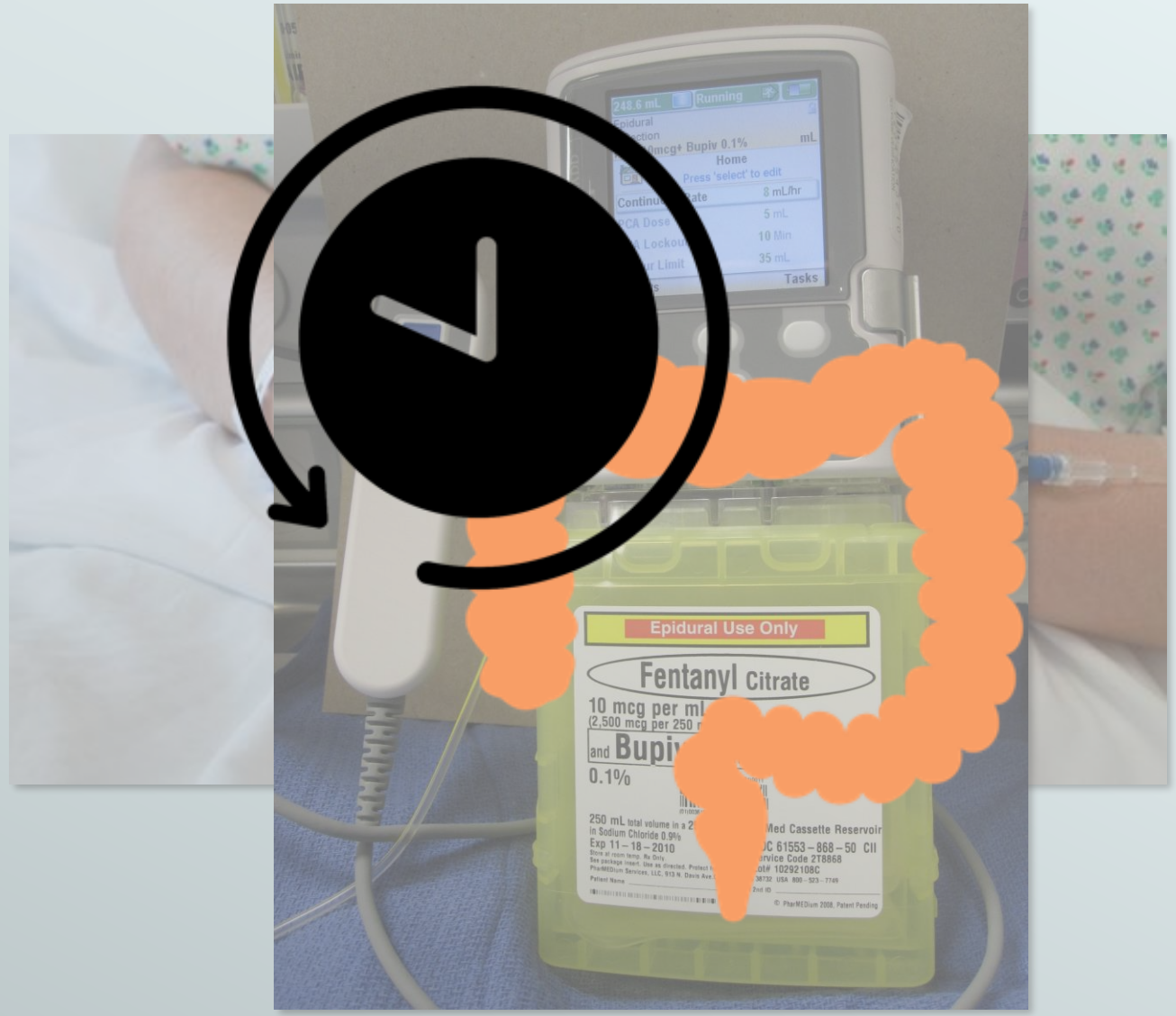
NZAGS New Zealand Association of General Surgeons

@willliamxu_98


Epidural Use Only
Fentanyl Citrate
10 mcg per ml
and Bupi
0.1%
Exp 11 – 18 – 2010

Network Meta-Analysis

Epidural

Spinal anaesthesia

IV lignocaine infusion

IV PCA

Intraperitoneal local anaesthetic

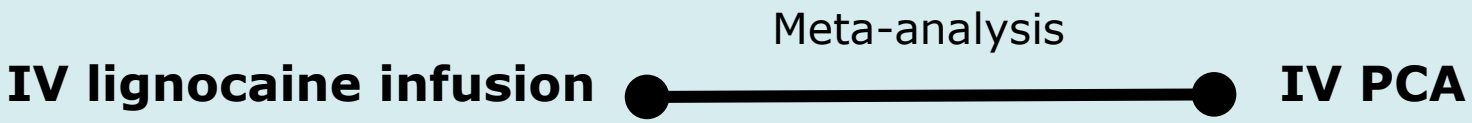
Wound site local anaesthetic infiltration

TAP block

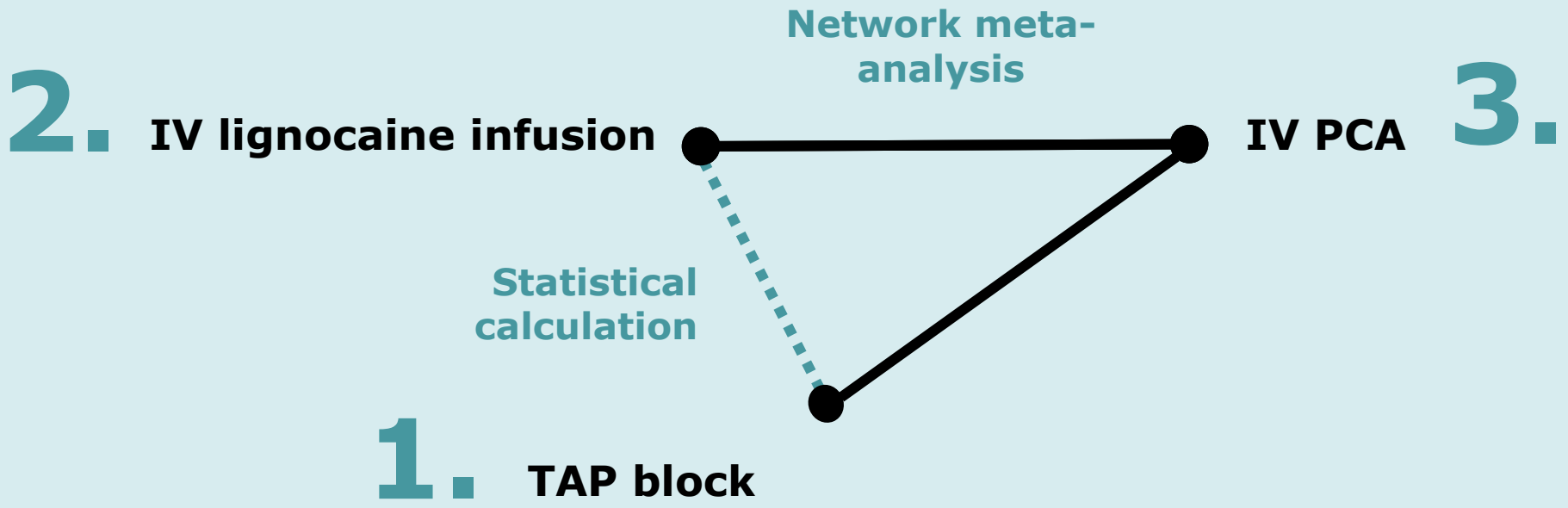
Continuous in-wound infusion

Which is the best...

Network Meta-Analysis



Network Meta-Analysis

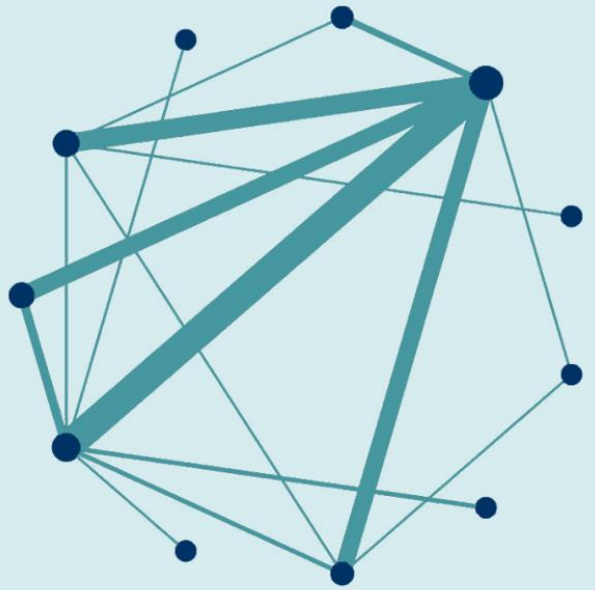


Network Meta-Analysis

Epidural

Spinal anaesthesia

IV lignocaine infusion



IV PCA

Intraperitoneal local anaesthetic

Wound site local anaesthetic infiltration

TAP block

Continuous in-wound infusion

Network Meta-Analysis

Epidural

Spinal anaesthesia

Aim:
Network meta-analysis of RCTs comparing the efficacy of different local and regional analgesic methods following colorectal resection

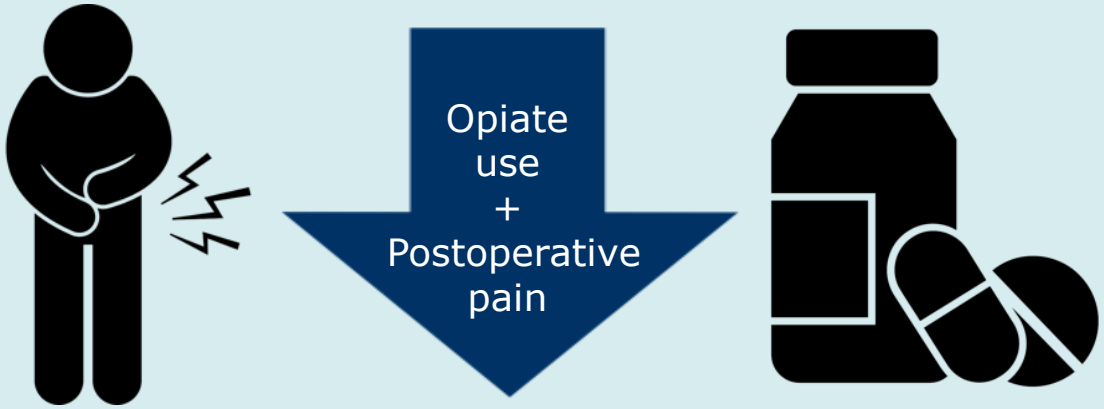
TAP block

Continuous in-wound infusion

Methods

RCTs

Primary outcomes



Inclusion/Exclusion Criteria

Adults undergoing colorectal resection

Local or regional analgesia

Comparing different formulations

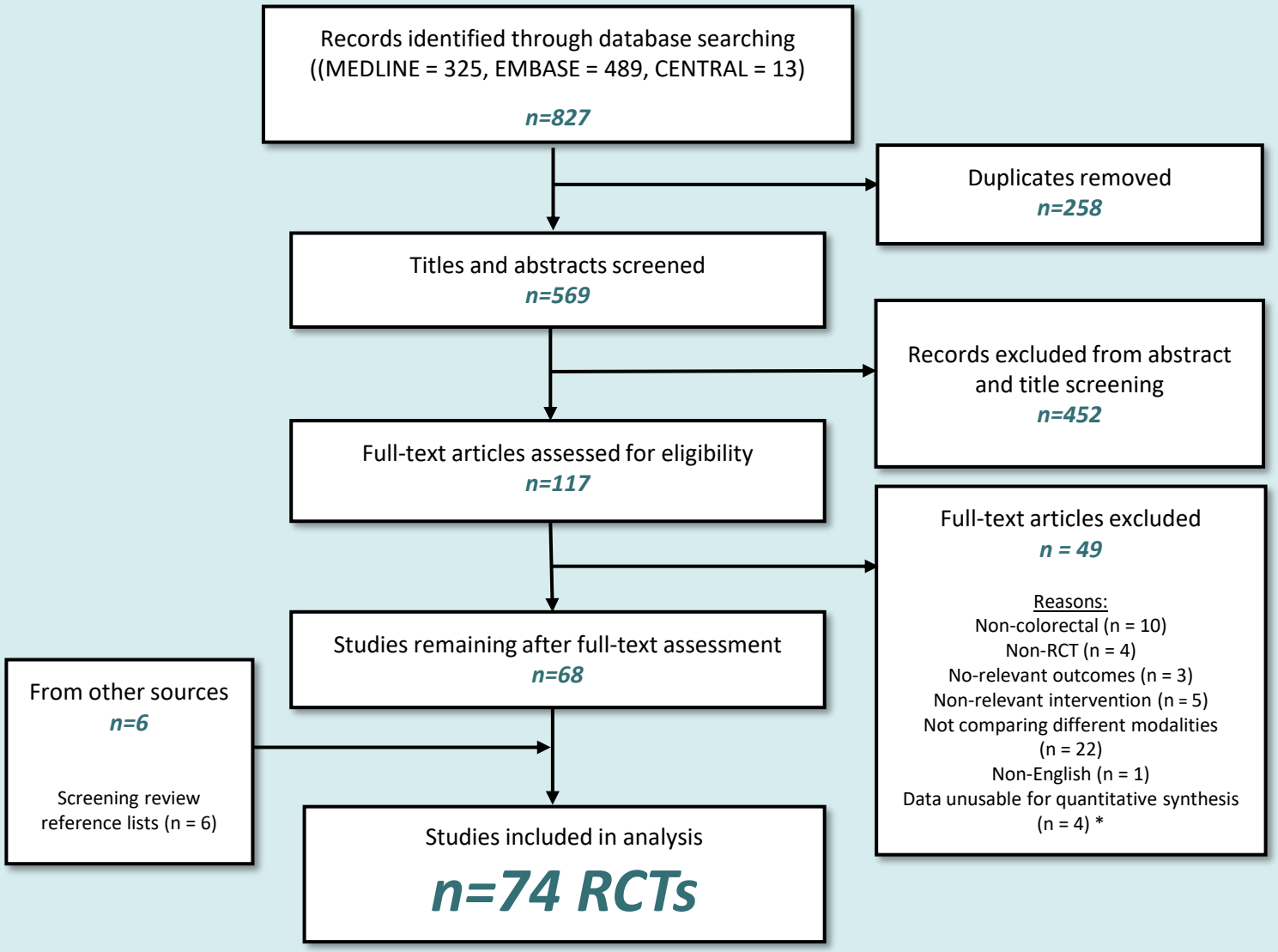
Secondary outcomes

Time to first stool + oral diet + Length of Stay

Pain on movement or cough

Complications

Results



5101 patients

11 analgesic methods

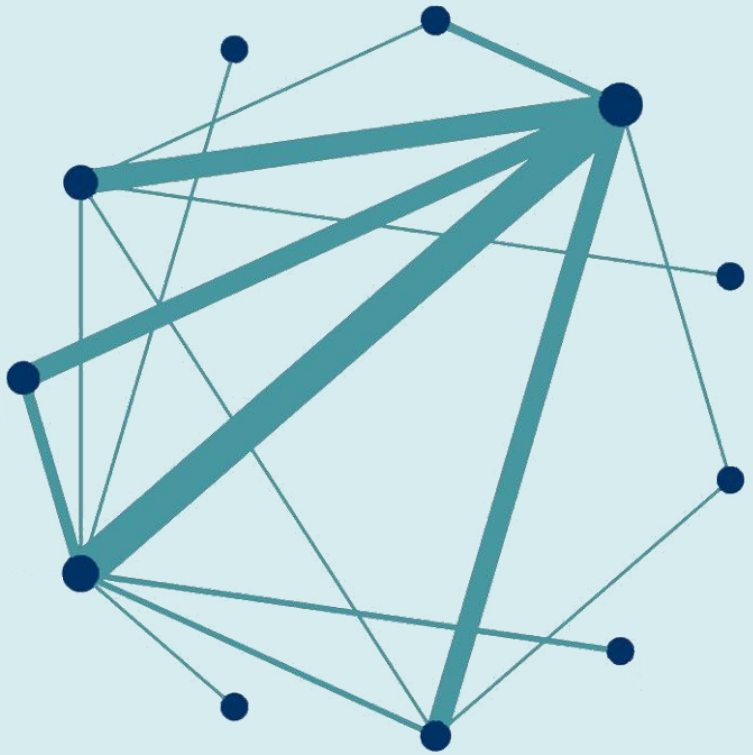
Subgroups:

Open surgery
1517 patients

Minimally Invasive Surgery
2427 patients

1962 patients

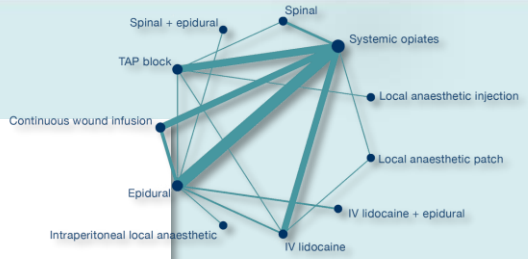
Results



NETWORK:
Pain at rest
24 hours

3641
Patients

Results



PAIN AT REST – 24 HOURS

Continuous wound infusion

Epidural analgesia

Intraperitoneal local anaesthetic

IV lidocaine

IV lidocaine + epidural analgesia

Local anaesthetic patch

Local anaesthetic injection

Spinal analgesia

Spinal + epidural analgesia

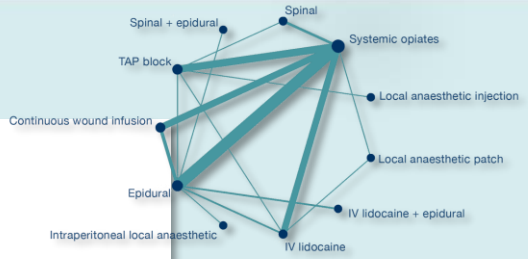
TAP block

-5 0 5

Mean difference (95% CrI)

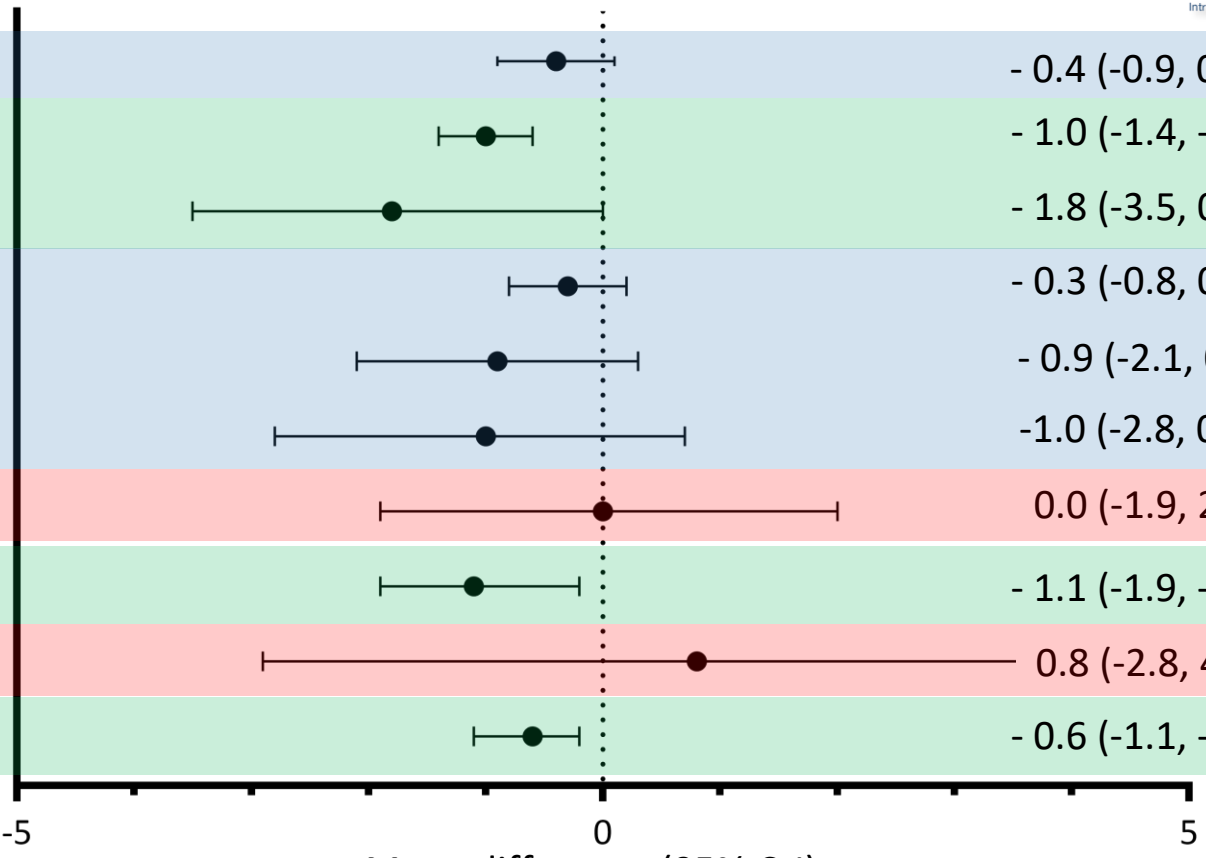
0-10 NRS

Results

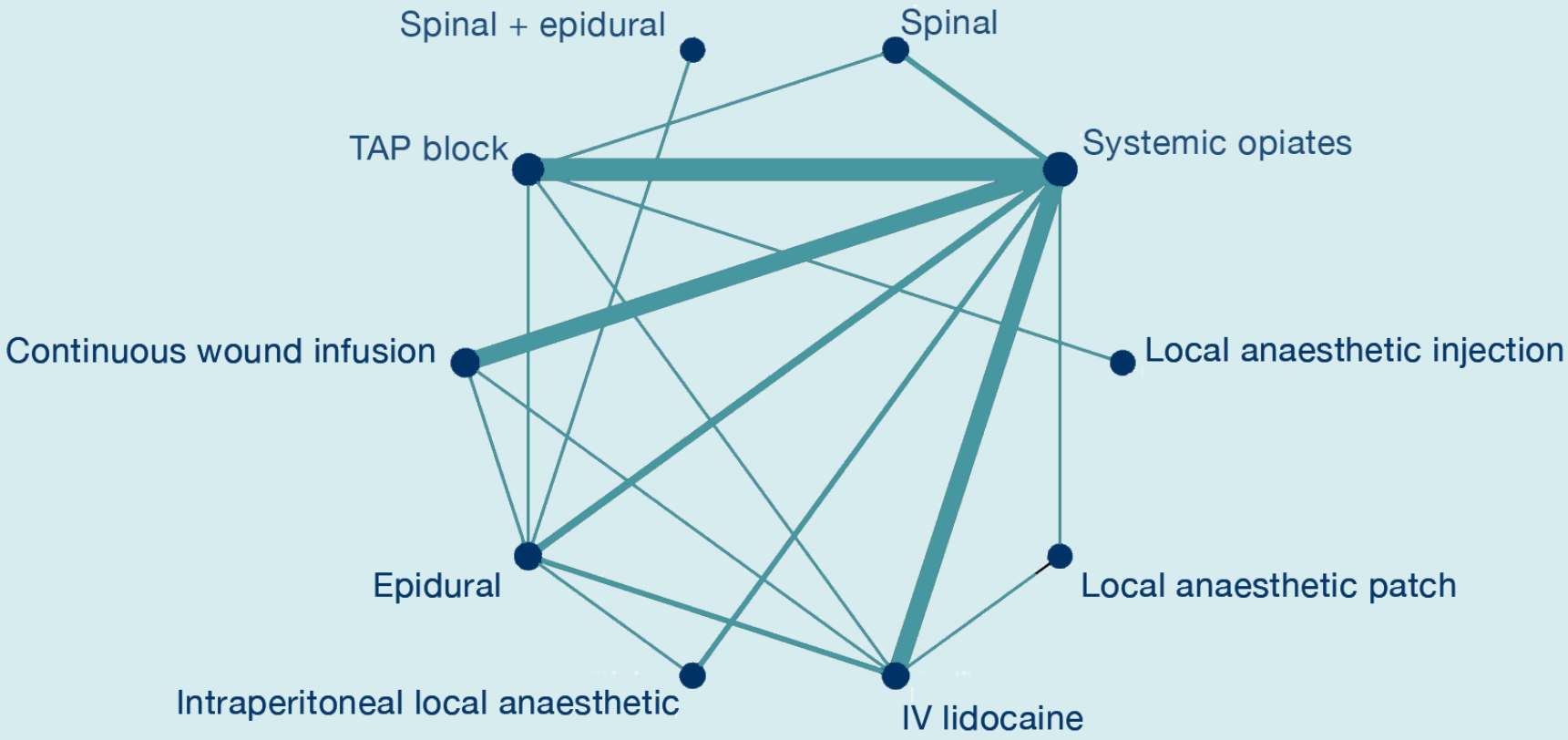


PAIN AT REST – 24 HOURS

Continuous wound infusion	- 0.4 (-0.9, 0.1)
Epidural analgesia	- 1.0 (-1.4, -0.6)
Intraperitoneal local anaesthetic	- 1.8 (-3.5, 0.0)
IV lidocaine	- 0.3 (-0.8, 0.2)
IV lidocaine + epidural analgesia	- 0.9 (-2.1, 0.3)
Local anaesthetic patch	-1.0 (-2.8, 0.7)
Local anaesthetic injection	0.0 (-1.9, 2.0)
Spinal analgesia	- 1.1 (-1.9, -0.2)
Spinal + epidural analgesia	0.8 (-2.8, 4.3)
TAP block	- 0.6 (-1.1, -0.2)



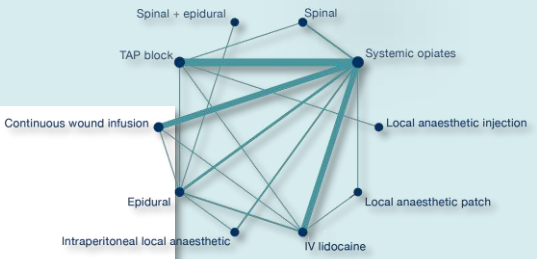
Results



NETWORK:
Opiate intake
24 hours

2632
Patients

Results



OPIATE CONSUMPTION – 24 HOURS

Continuous wound infusion

Epidural analgesia

Intraperitoneal local anaesthetic

IV lidocaine

Local anaesthetic patch

Local anaesthetic injection

Spinal analgesia

Spinal + epidural analgesia

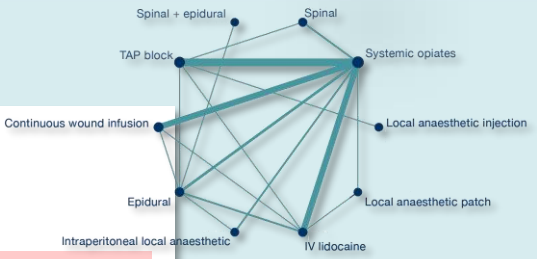
TAP block

-100 -50 0 50 100

Mean difference (95% CrI)

IV Morphine Equivalent Doses

Results



OPIATE CONSUMPTION – 24 HOURS

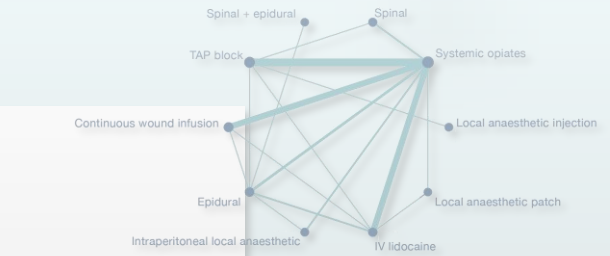
Continuous wound infusion	-5.5 (-27.0, 17.0)
Epidural analgesia	9.7 (-14.0, 34.0)
Intraperitoneal local anaesthetic	-4.2 (-40.0, 31.0)
IV lidocaine	-9.0 (-62.0, 43.0)
Local anaesthetic patch	-9.0 (-62.0, 43.0)
Local anaesthetic injection	-21.0 (-85.0, 42.0)
Spinal analgesia	-30.0 (-66.0. 4.5)
Spinal + epidural analgesia	4.8 (-58.0, 68.0)
TAP block	-21.0 (-40.0. -3.0)

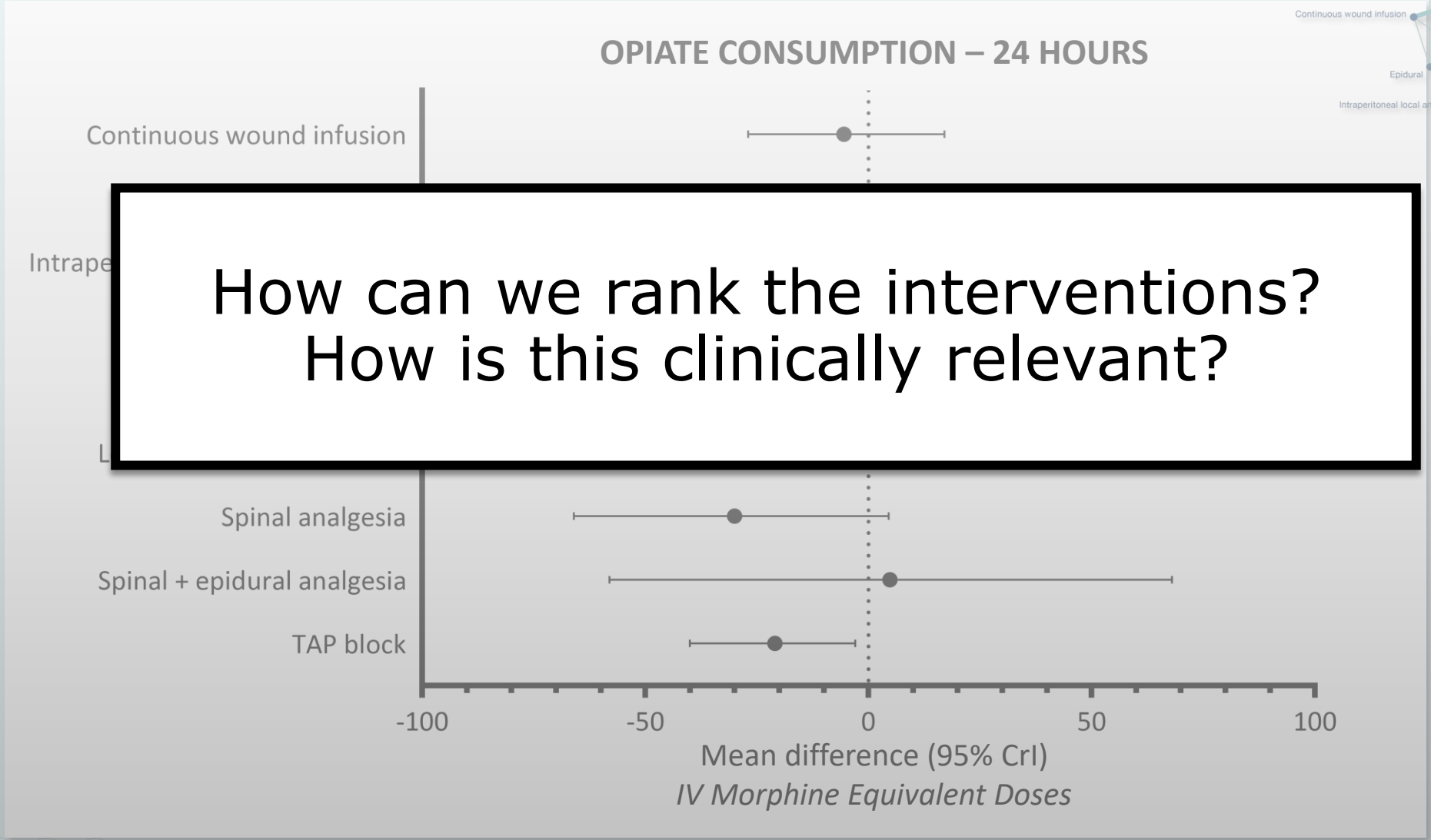
-100 -50 0 50 100

Mean difference (95% CrI)

IV Morphine Equivalent Doses

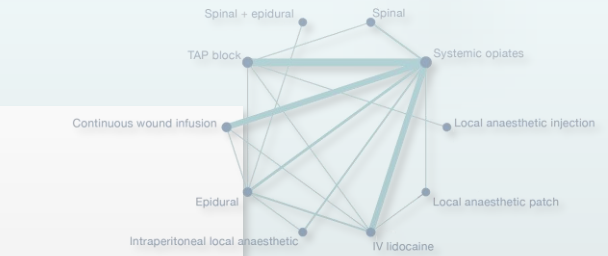
Results

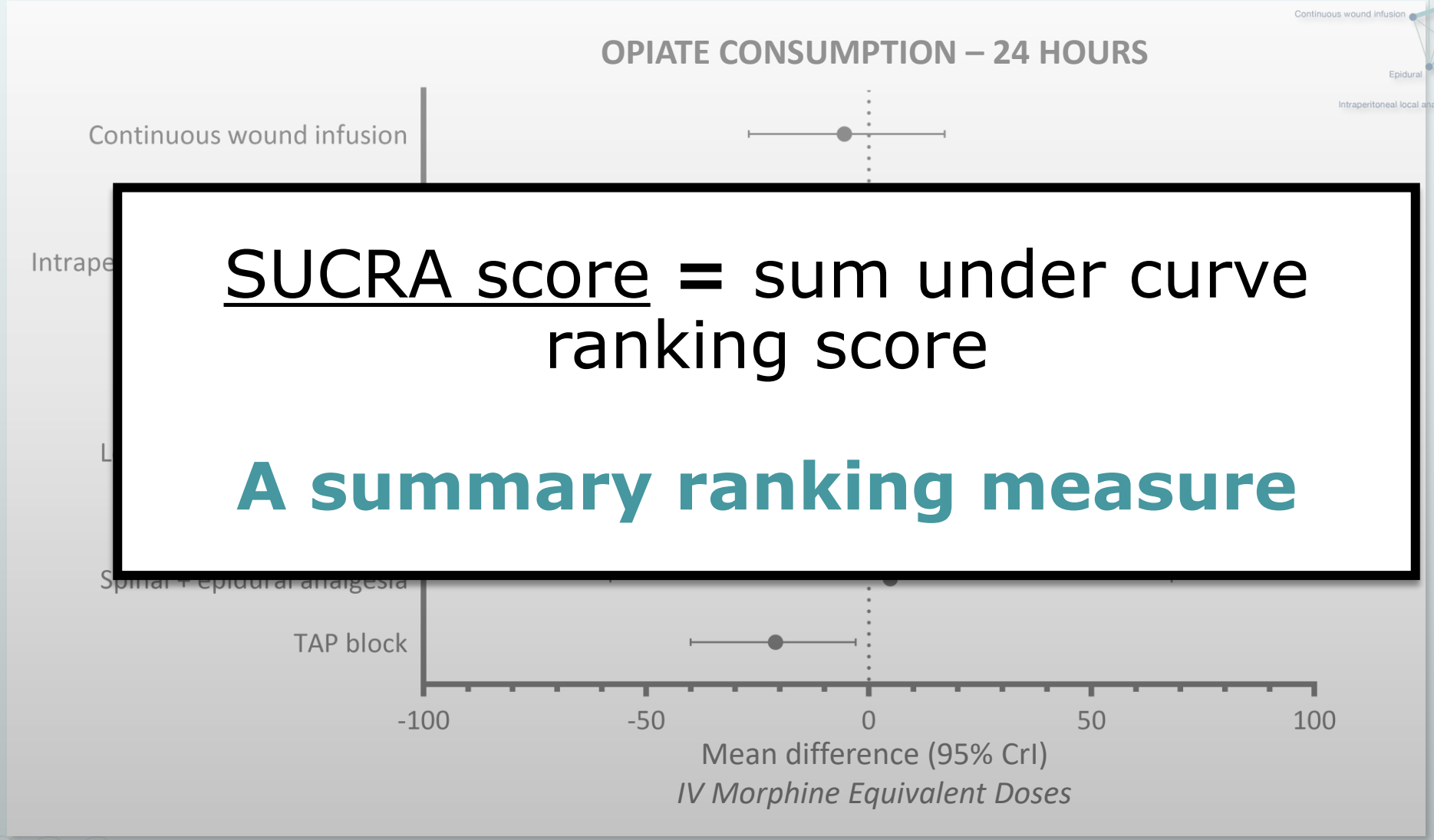




How can we rank the interventions?
How is this clinically relevant?

Results





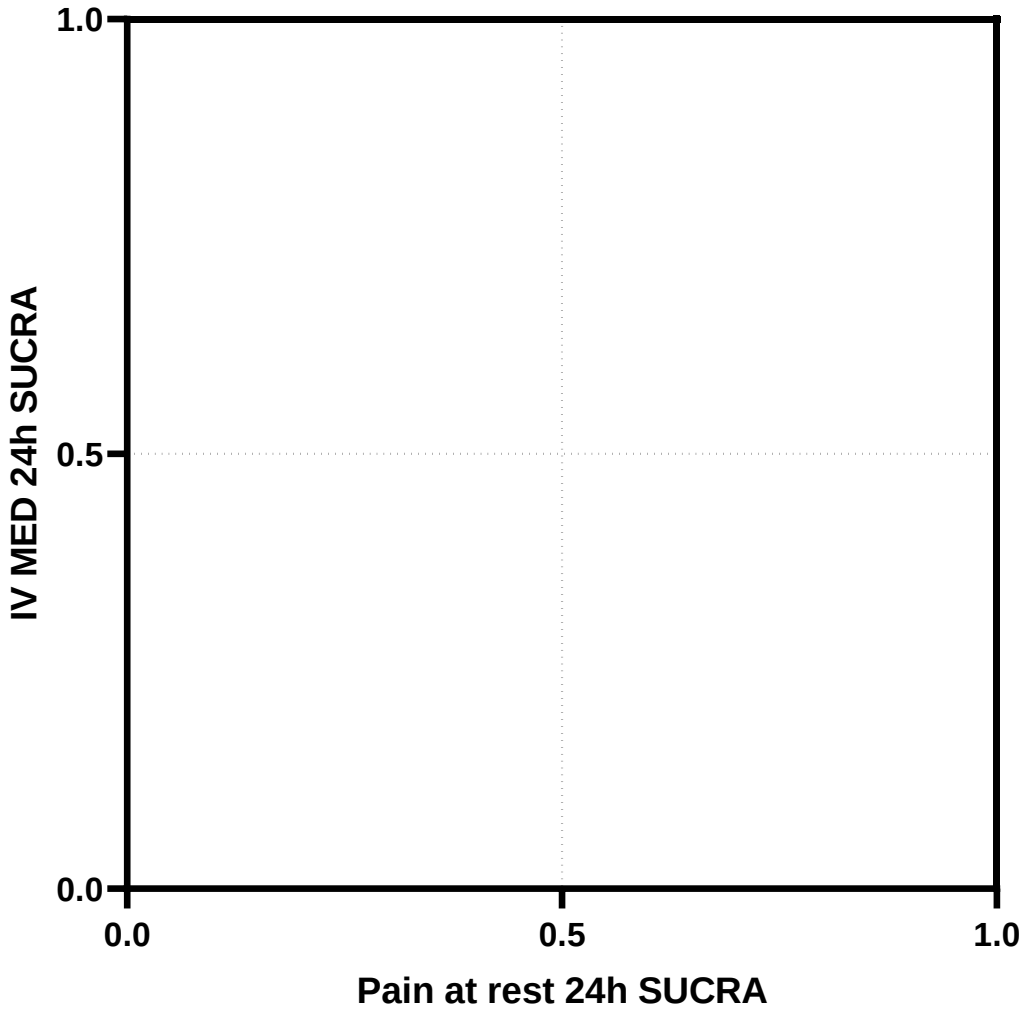
SUCRA score = sum under curve ranking score

A summary ranking measure

Results

24 hours
Post-operatively

SO	Systemic Opioids
Spi	Spinal analgesia
EA	Epidural analgesia
CWI	Continuous in-wound infusion
IPLA	Intraperitoneal Local Anaesthetic
IVL	Intravenous Lidocaine Infusion
LA Patch	Local Anaesthetic Patch
LAI	Local Anaesthetic at Incision Site
TAP	Transversus Abdominis Plane Block



Results

24 hours
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SO	Systemic Opioids
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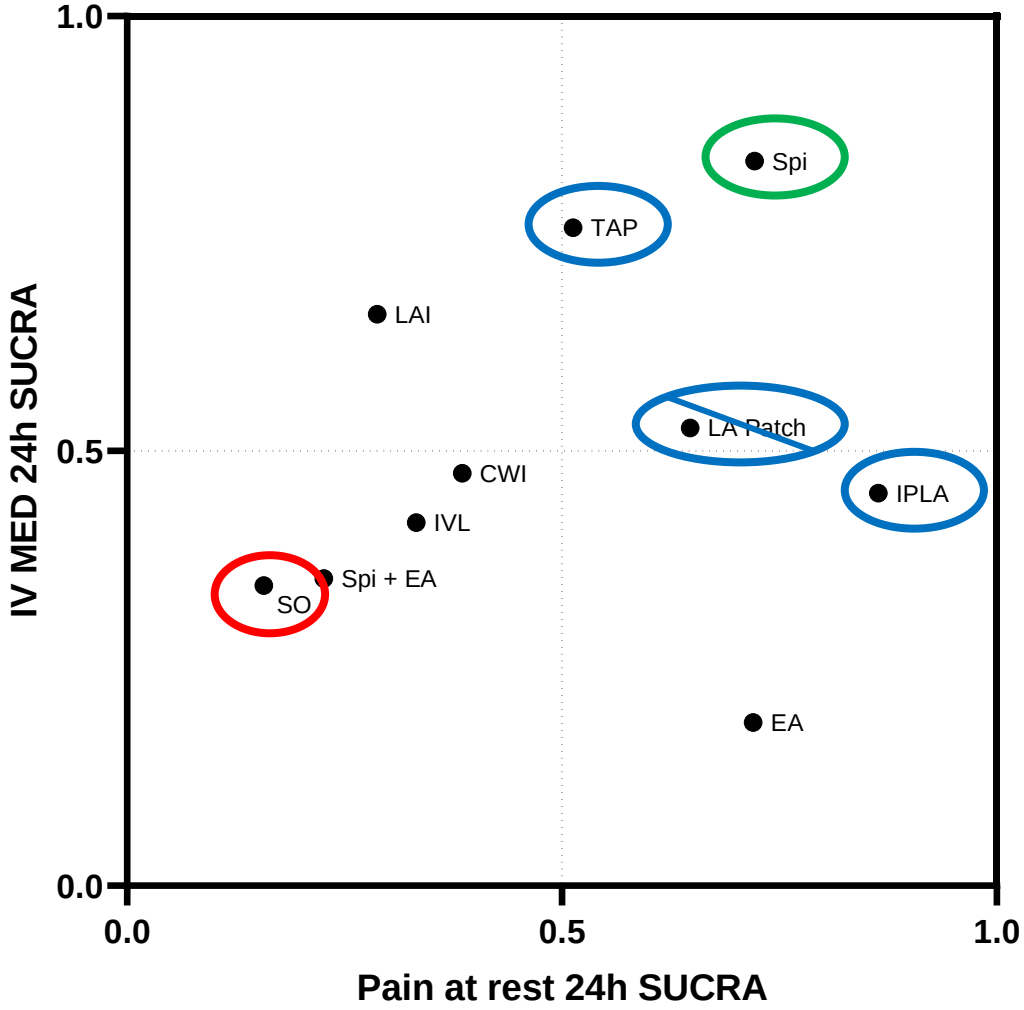
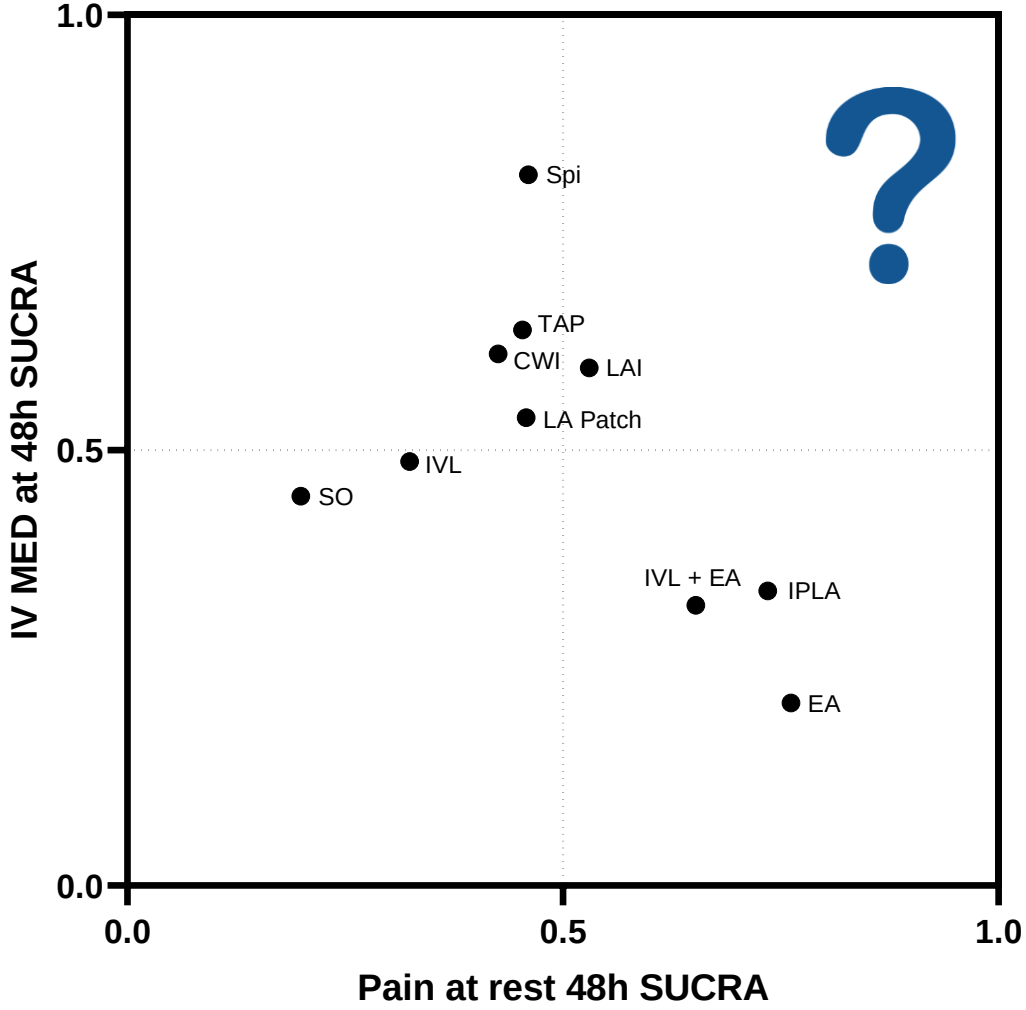


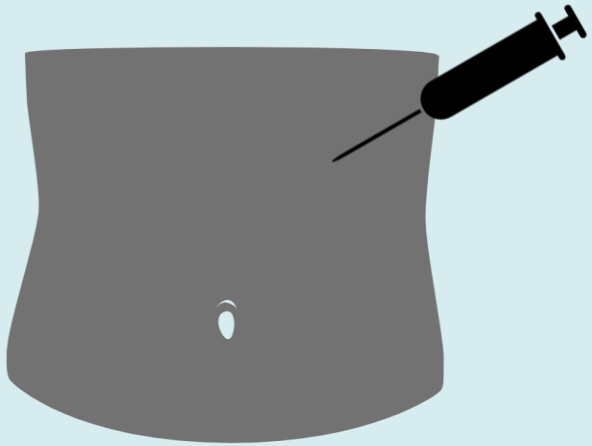
Results

48 hours
Post-operatively

SO	Systemic Opioids
Spi	Spinal analgesia
EA	Epidural analgesia
CWI	Continuous in-wound infusion
IPLA	Intraperitoneal Local Anaesthetic
IVL	Intravenous Lidocaine Infusion
LA Patch	Local Anaesthetic Patch
LAI	Local Anaesthetic at Incision Site
TAP	Transversus Abdominis Plane Block



Conclusions



Spinal analgesia and **TAP blocks** best balanced pain control and opiate minimisation at 24 hours postoperatively

Conclusions

NMAs are broad;
Individual tailoring still needed

Future RCTs to confirm findings in ERAS context

Technical variations exist
More head-to-head RCTs needed

Longer acting analgesic agents?

Acknowledgements

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Prof Greg O'Grady

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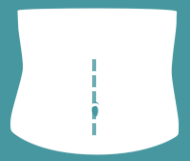
Subgroup analysis



PAIN (24H):
Epidural better. TAP block & spinal trended lower

OPIATES (24H):
None reached significance. IVL & TAP blocks trended lower

PAIN (24H):
Epidural & spinal better. TAP trended lower

OPIATES (24H):
Spinal better. TAP trended lower

PAIN (24H):
Epidural better. IPLA and spinal trended lower

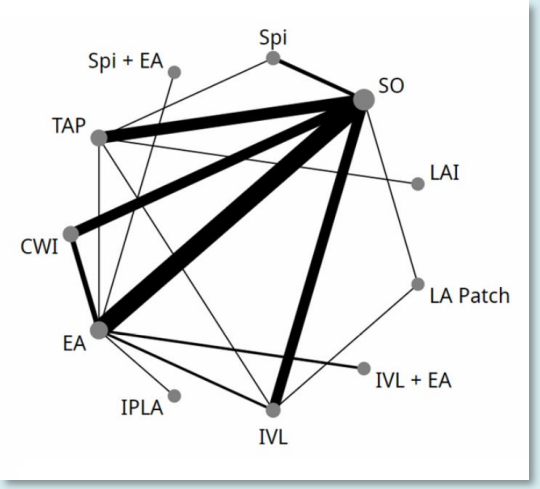
OPIATES (24H):
None reached significance. Spinal and TAP trended lower

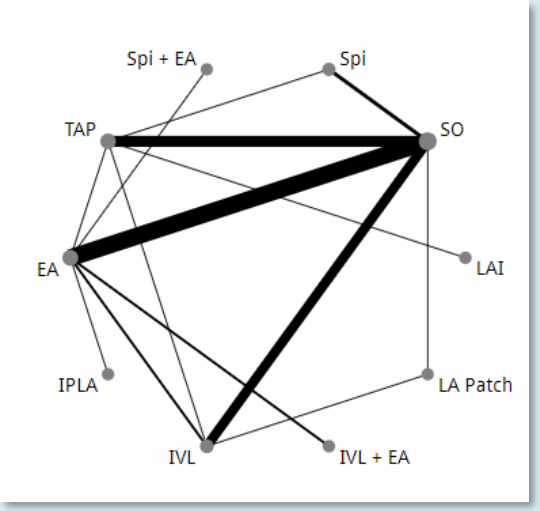
Consistency and heterogeneity

Sensitivity analysis of subgroups
+
Direct vs indirect comparisons

Difficulty interpreting as differences in interventions in each network maps

Similar rankings with systemic opiates being the least favourable





Time to bowel motion

Length of stay + others