Analgesia for Major Hepato-biliary Surgery

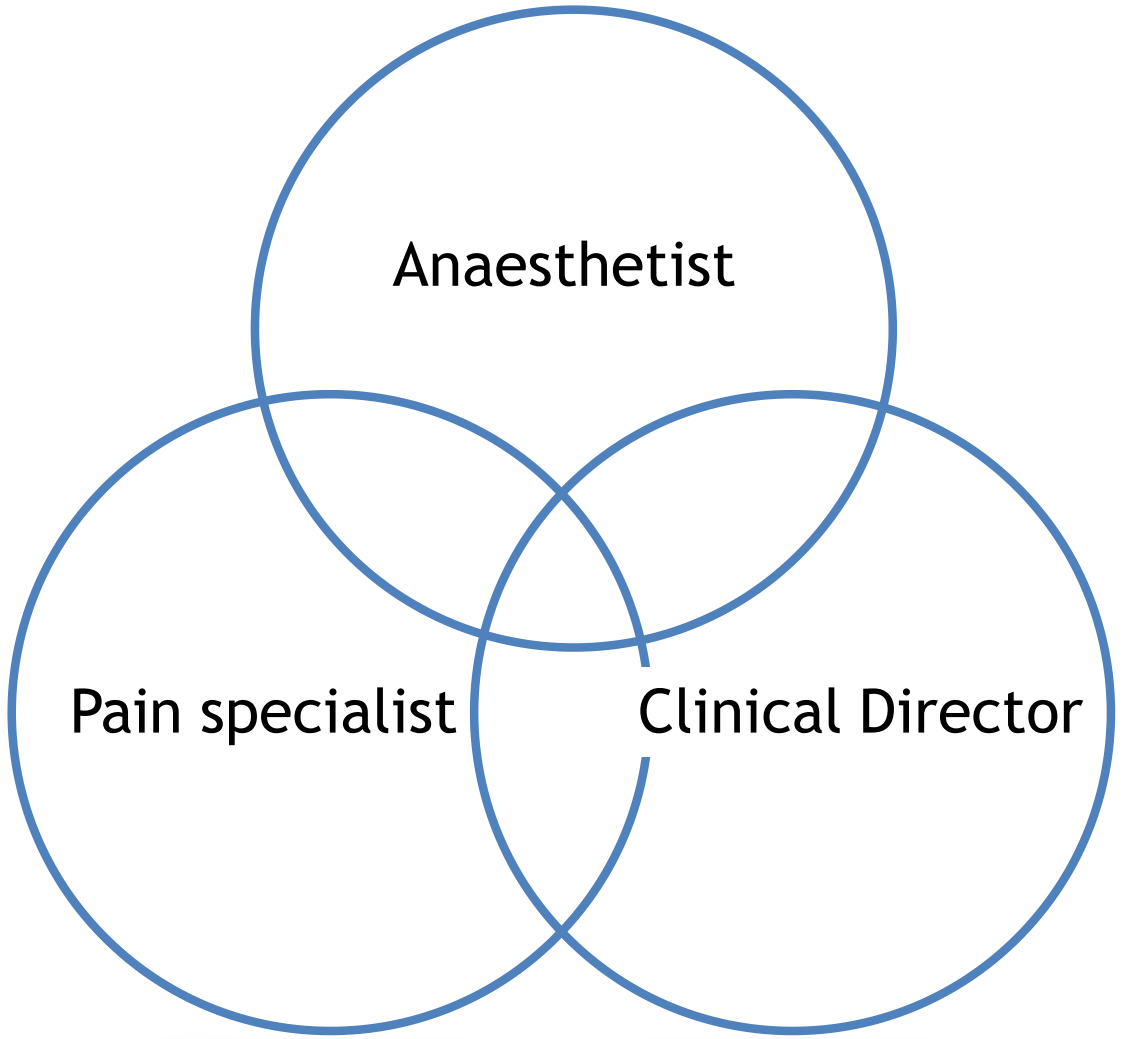
Dr Nilesh Chauhan

Consultant in Anaesthesia & Pain Management

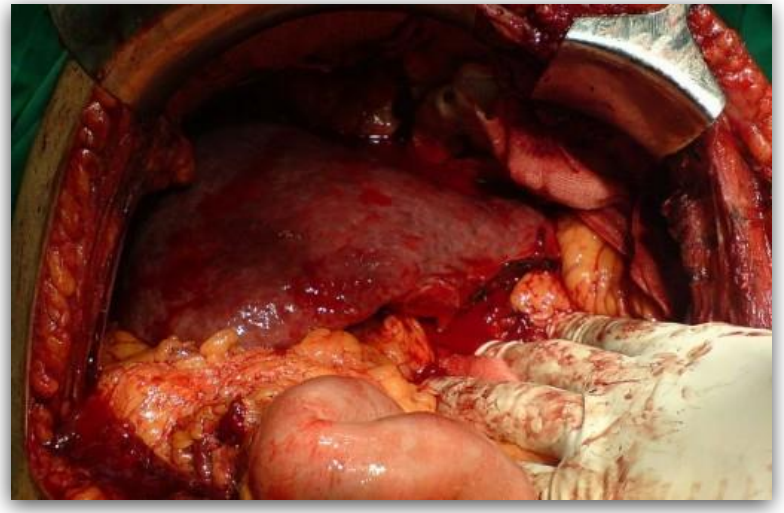
University Hospitals Bristol NHSFT

24th South Thames Acute Pain Conference

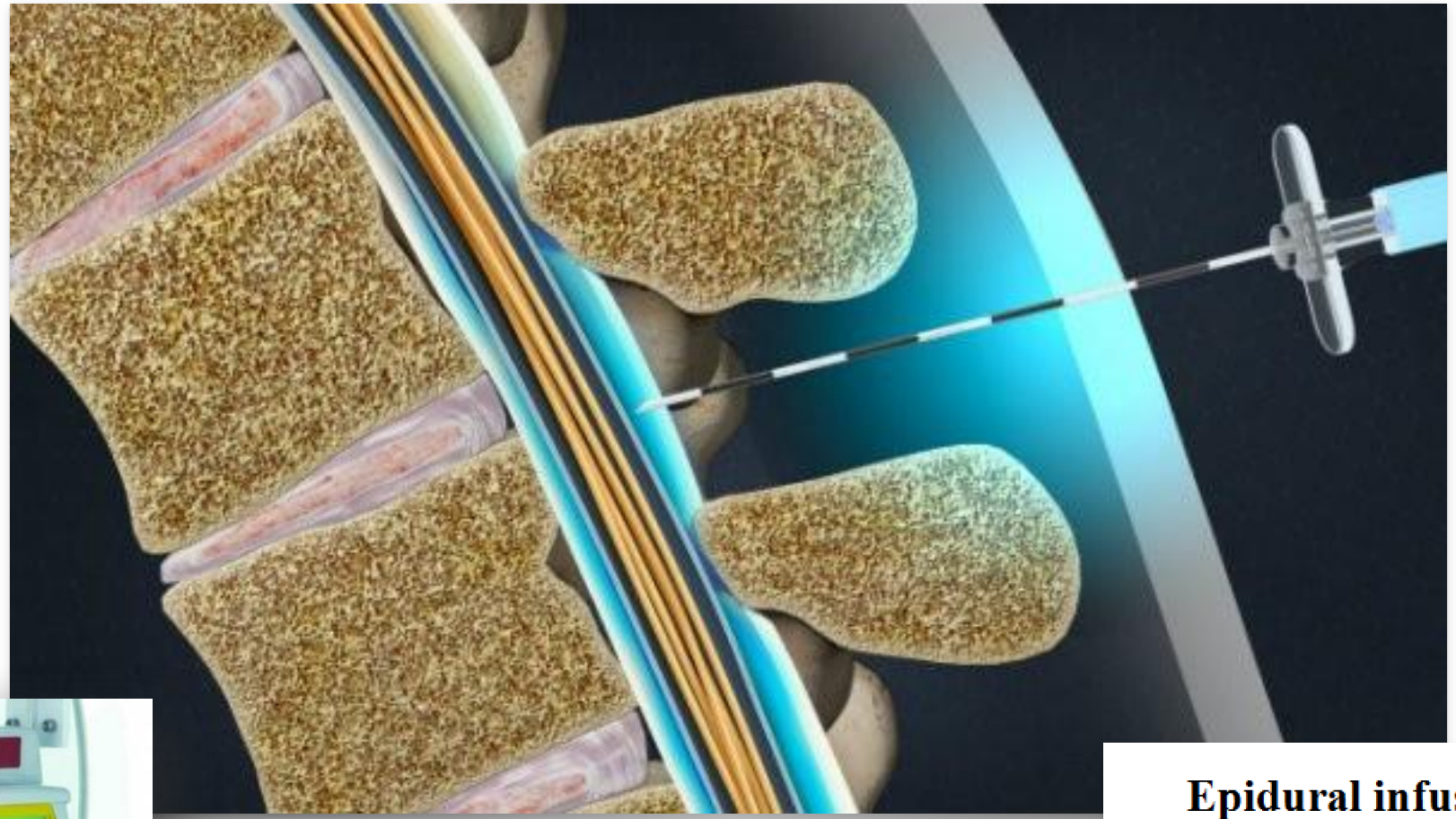
8th November 2018


Anaesthetist
Pain specialist
Clinical Director

Challenges

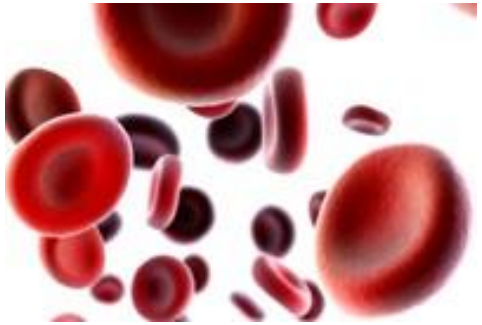



GOLD
999.9



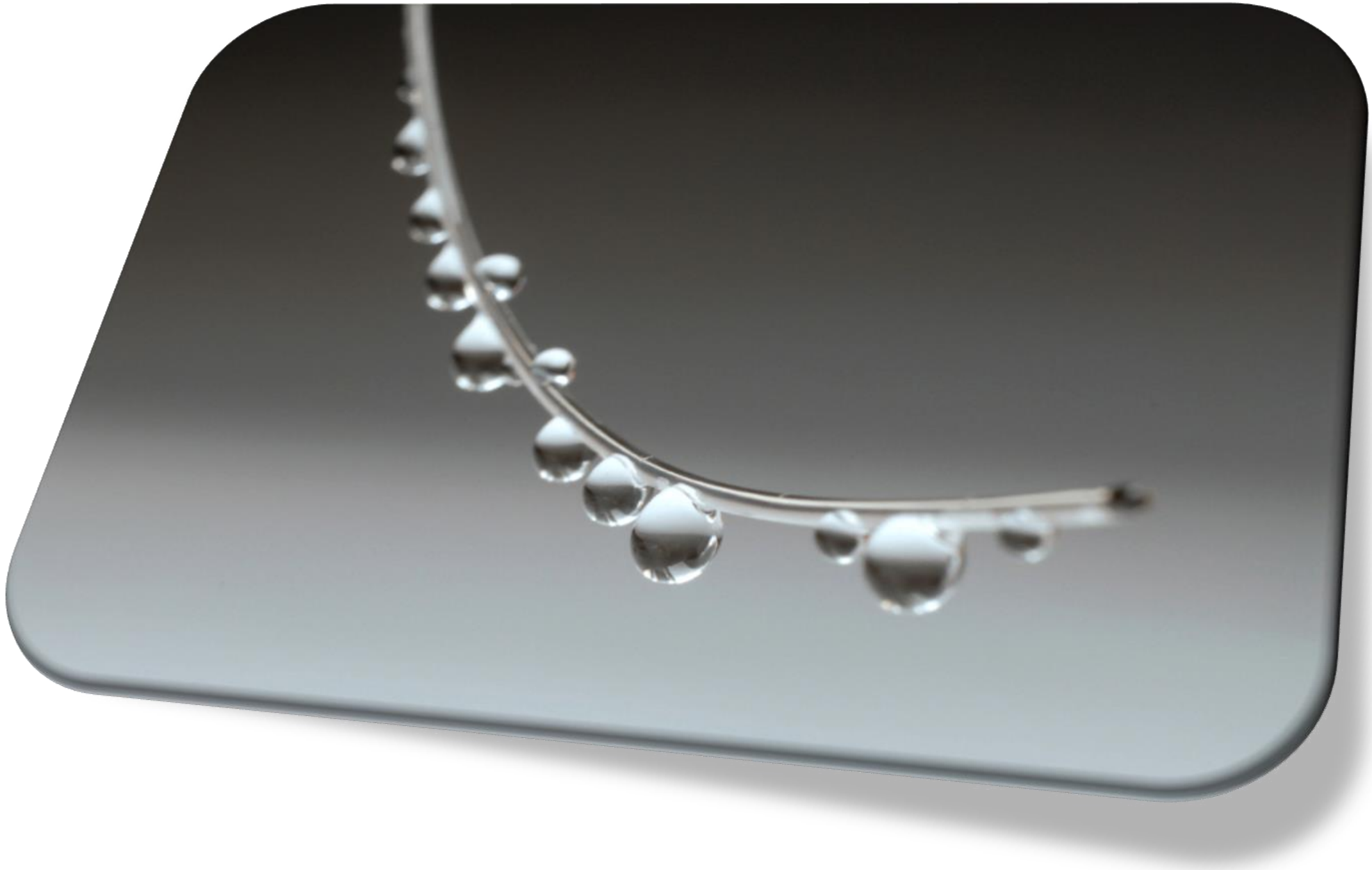
Epidural infusion 500 ml
BUPIVACAINE 0.1%
+ FENTANYL 2 micrograms/ml

Infusion rate: 6 – 20 ml/hour



To Epidural or not To Epidural?


Plan A
Plan B



DOI:10.1111/j.1477-2574.2012.00490.x HPB

ORIGINAL ARTICLE

Randomized clinical trial of local infiltration plus patient-controlled opiate analgesia vs. epidural analgesia following liver resection surgery

Erica J. Revie[1], Dermot W. McKeown[2], John A. Wilson[2], O. James Garden[1] & Stephen J. Wigmore[1]

[1]Department of Clinical Surgery, University of Edinburgh, Edinburgh, UK and [2]Department of Anaesthesia, Critical Care and Pain Medicine, Royal Infirmary of Edinburgh, Edinburgh, UK

Abstract

Objectives: Epidural analgesia is recommended for the provision of analgesia following major abdominal surgery. Continuous local anaesthetic wound infiltration may be an effective alternative. A prospective randomized trial was undertaken to compare these two methods following open liver resection. The primary outcome was length of time required to fulfil criteria for discharge from hospital.

Methods: Patients undergoing open liver resection were randomized to receive either epidural (EP group) or local anaesthetic wound infiltration plus patient-controlled opiate analgesia (WI group) for the first 2 days postoperatively. All other care followed a standardized enhanced recovery protocol. Time to fulfil discharge criteria, pain scores, physical activity measurements and complications were recorded.

Results: Between August 2009 and July 2010, 65 patients were randomized to EP ($n = 32$) or WI ($n = 33$). The mean time required to fulfil discharge criteria was 4.5 days (range: 2.5–63.5 days) in the WI group and 6.0 days (range: 3.0–42.5 days) in the EP group ($P = 0.044$). During the first 48 h following surgery, pain scores were significantly lower in the EP group both at rest and on movement. Resting pain scores within both groups were rated as mild (range: 0–3). There was no significant difference between the groups in time to first mobilization or overall complication rate (48.5% in the WI group vs. 58.1% in the EP group; $P = 0.443$).

Conclusions: Local anaesthetic wound infiltration combined with patient-controlled opiate analgesia reduces the length of time required to fulfil criteria for discharge from hospital compared with epidural analgesia following open liver resection. Epidural analgesia provides superior analgesia, but does not confer benefits in terms of faster mobilization or recovery.

2013

Procurement

- Multiholed fenestrated catheter with choice of sizes
- Uniform flow
- Pre-filled disposable pump with at least 300mls 2.5/3.75% bupivicaine
- To last at least 72hrs
- Consistent flow rate 5mls/hr
- Easy to use / teaching

2013

Proposal

‘New procedure’ application at Trust Clinical Effectiveness Group:

Business Case

Application to Divisional Board:

Risks:

- Wrong drug / route administration
- Lack of training / inappropriate use of recovery
- Drug and prescribing errors
- LOS, DOSC

Advantages:

- Clinically effective
- Reduction in nursing time
- Epidural avoidance (and the associated adverse outcomes)


Business-case
OPP-process
Operating-Plan
Local-evidence
Economic-benefit
Quality-vs-Safety
Cost
Cost-pressure
neutral
Investment-Framework
Length-Of-Stay
Proposal
Trial
Risks
Relevant
Board
Meetings
Investment-framework
Governance
Finance-director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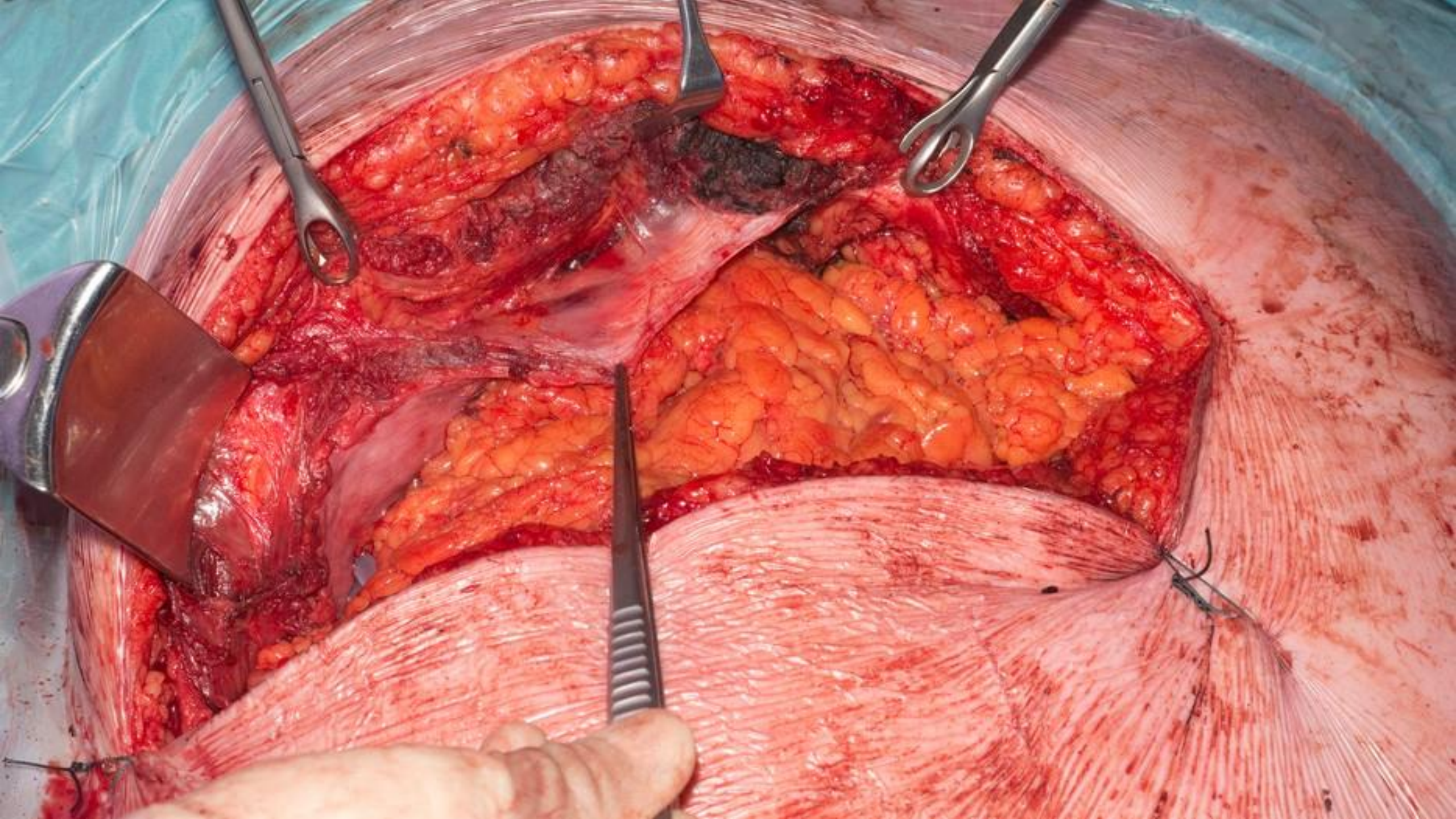
Risks
Investment-framework
Governance
Finance-director
Business
OPR-process

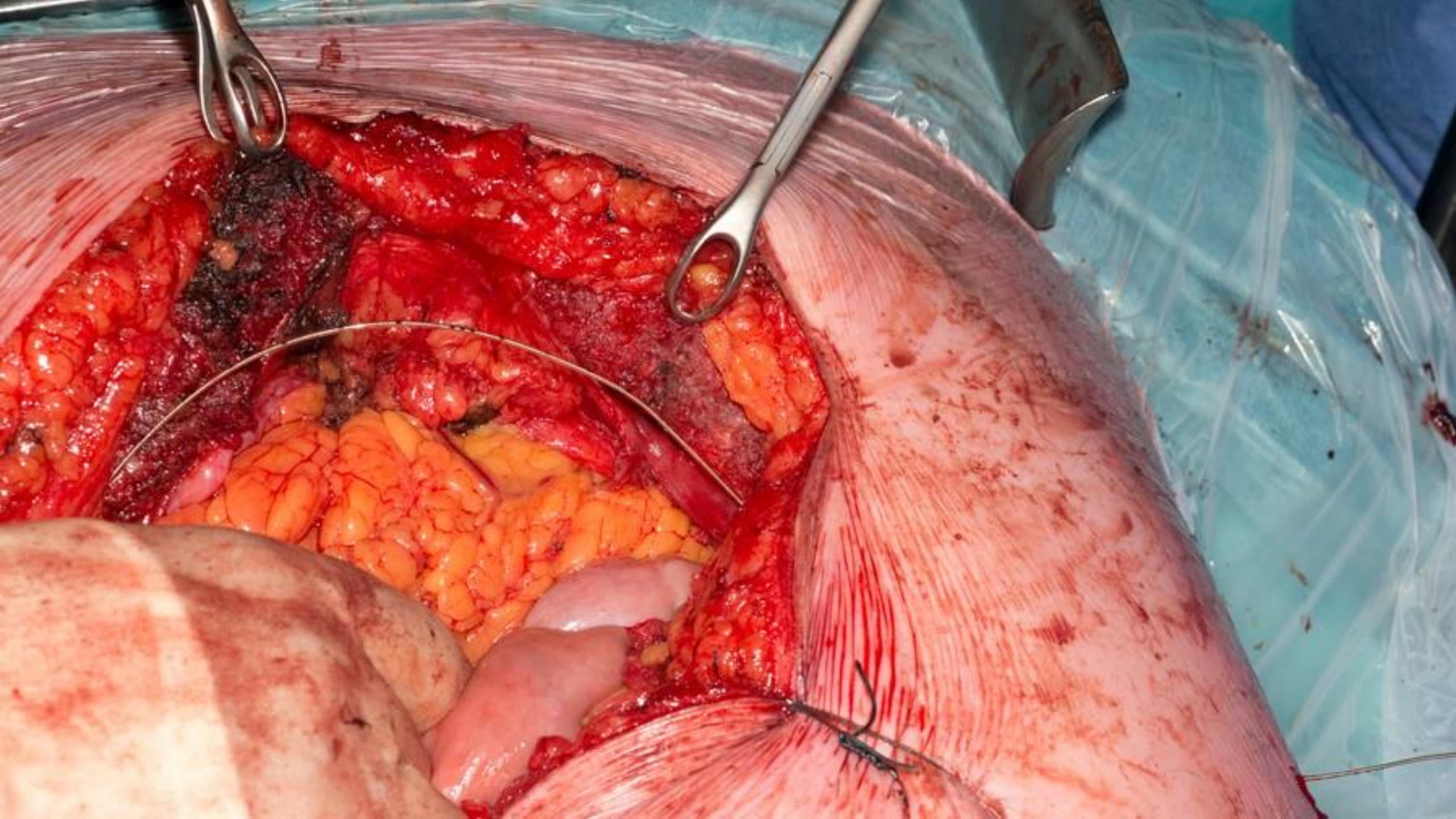
2013
2014

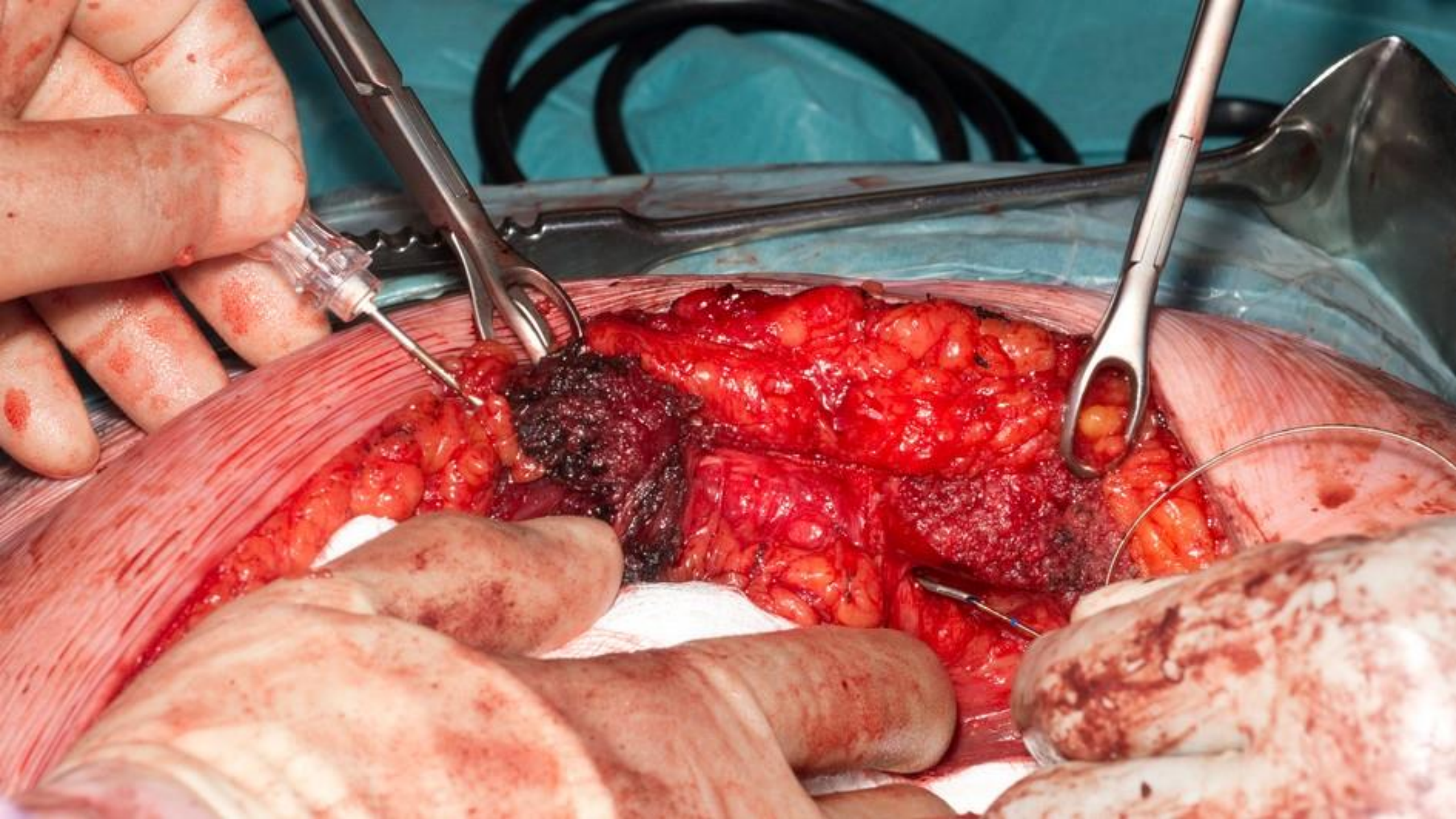
Business Case

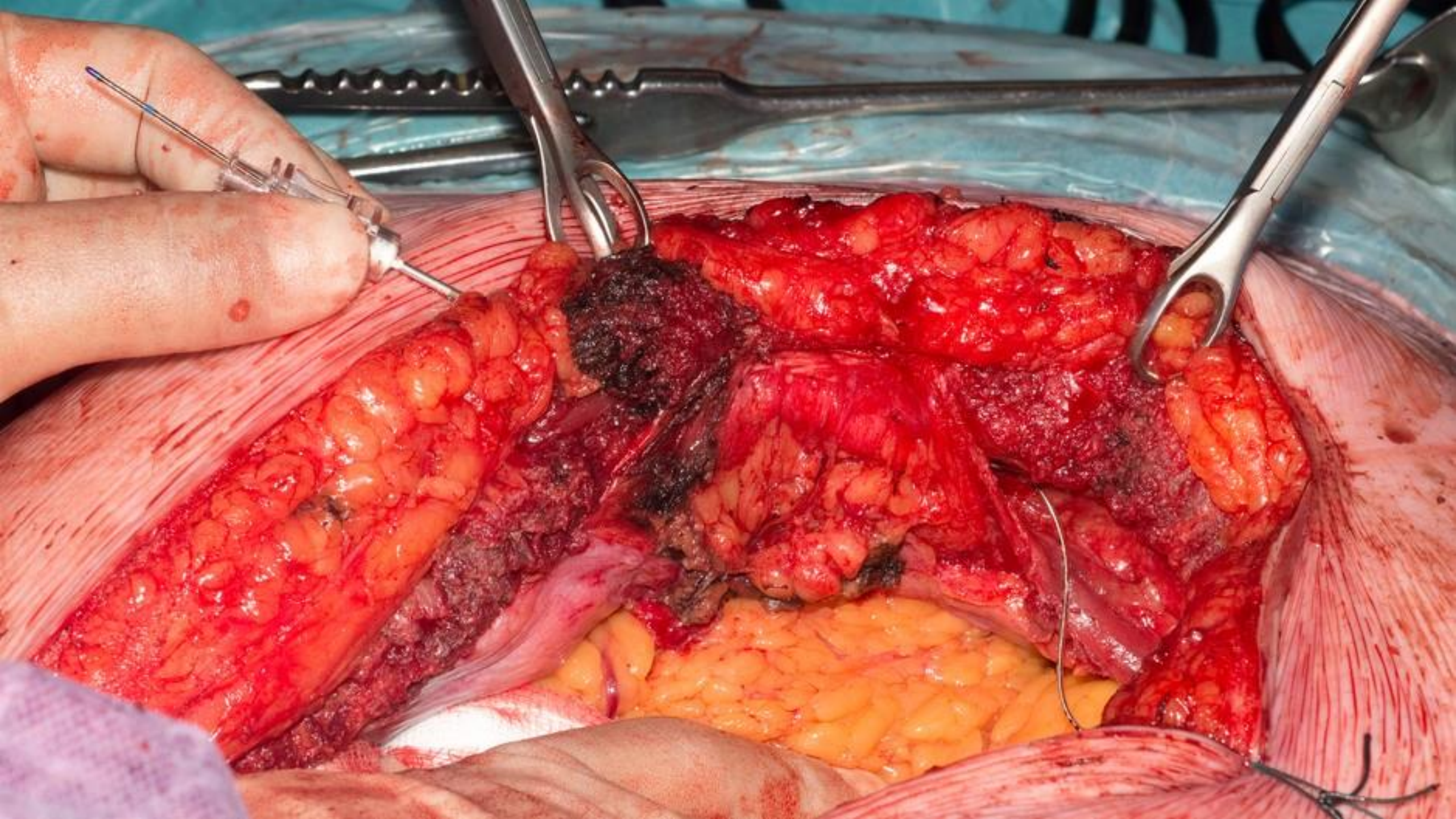
Local evidence

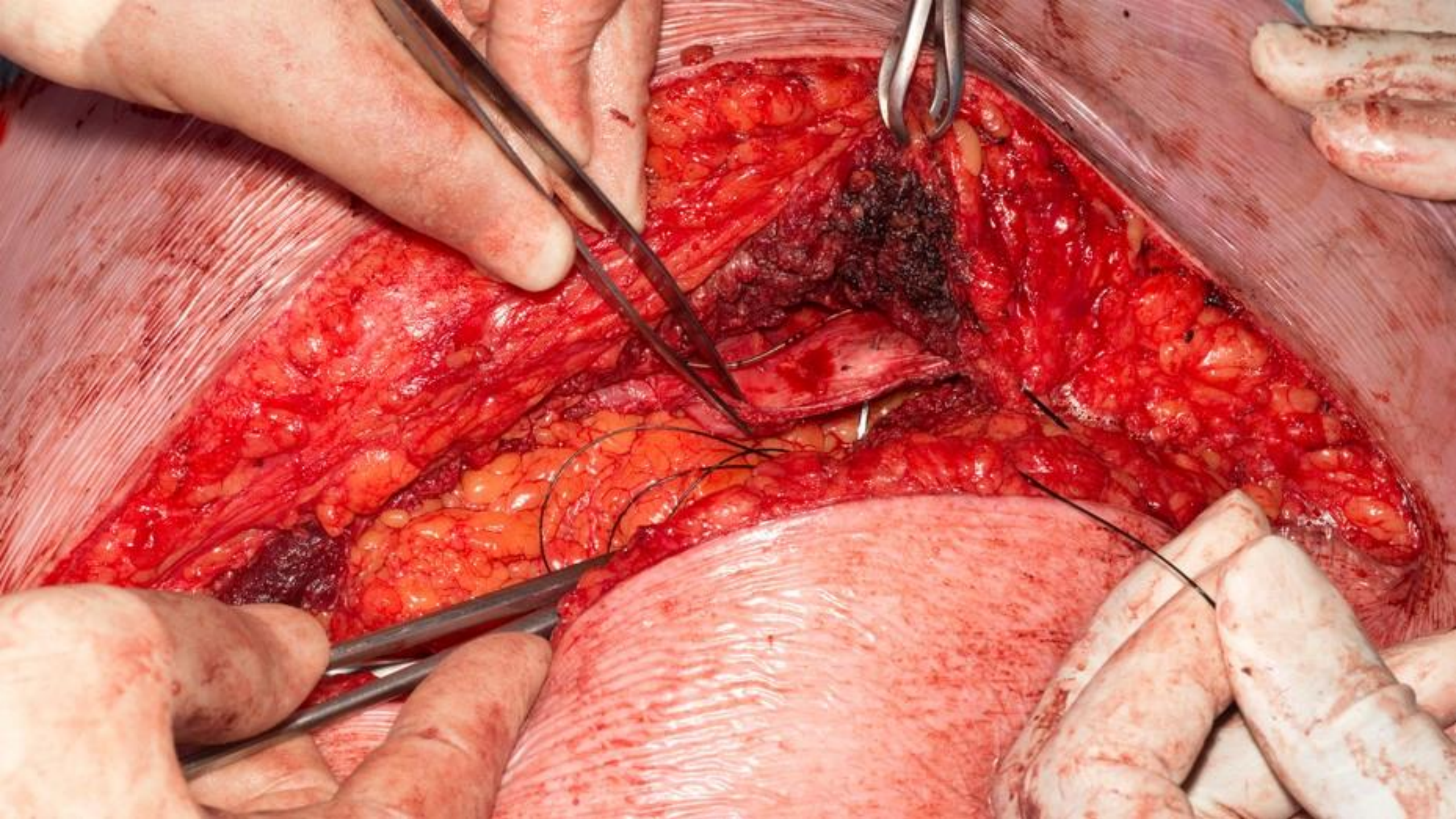
- Procurement process shortlisted 2 suppliers
- Trial of 2 x 5 pt's vs 10 pt's (epidural)
- Data collected October 2014 to Feb 2015
- Liver Resections (Right Sub-costal incision)
- Surgeon (*consultant)* has been formally trained









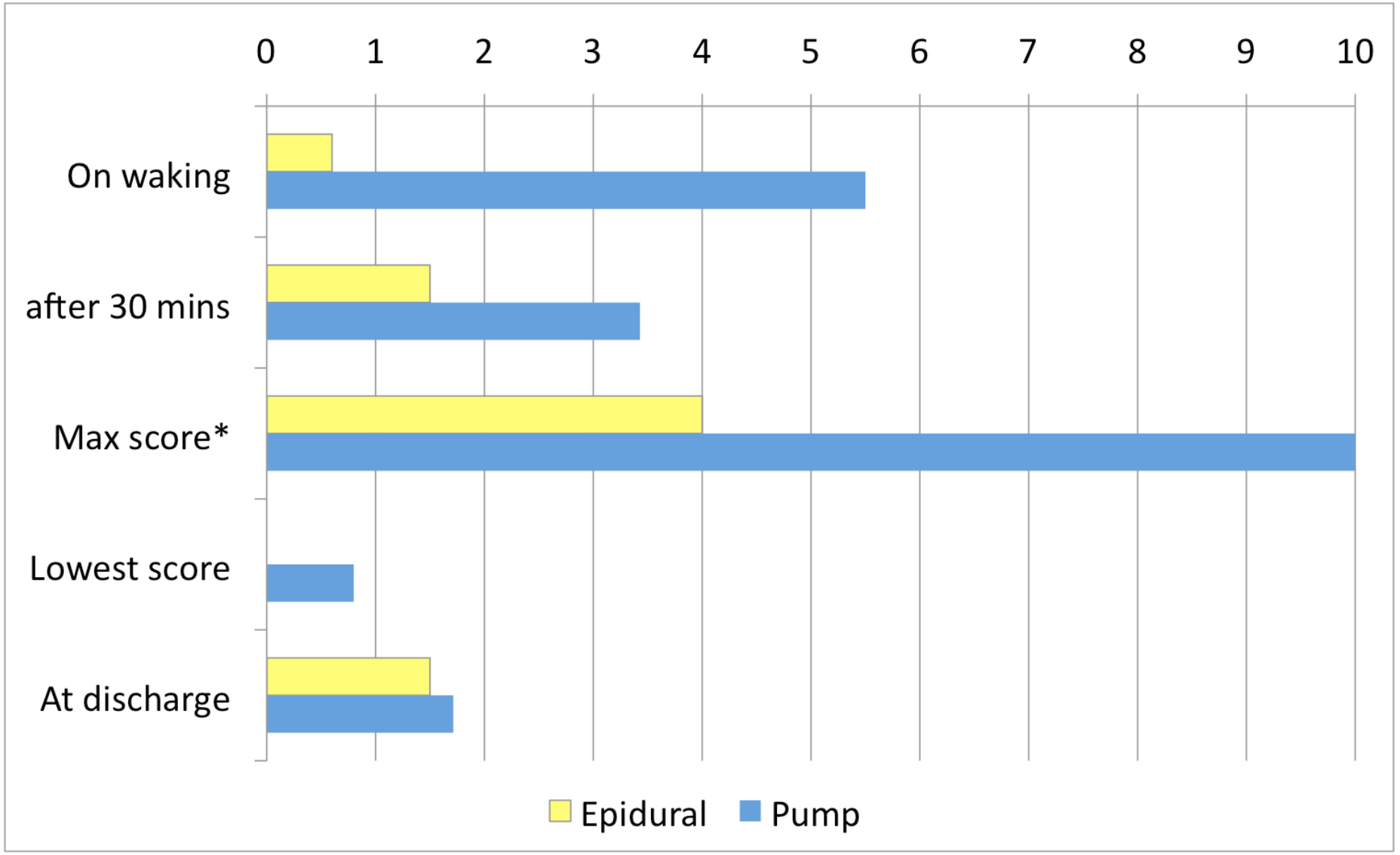


Local evidence - Demographics

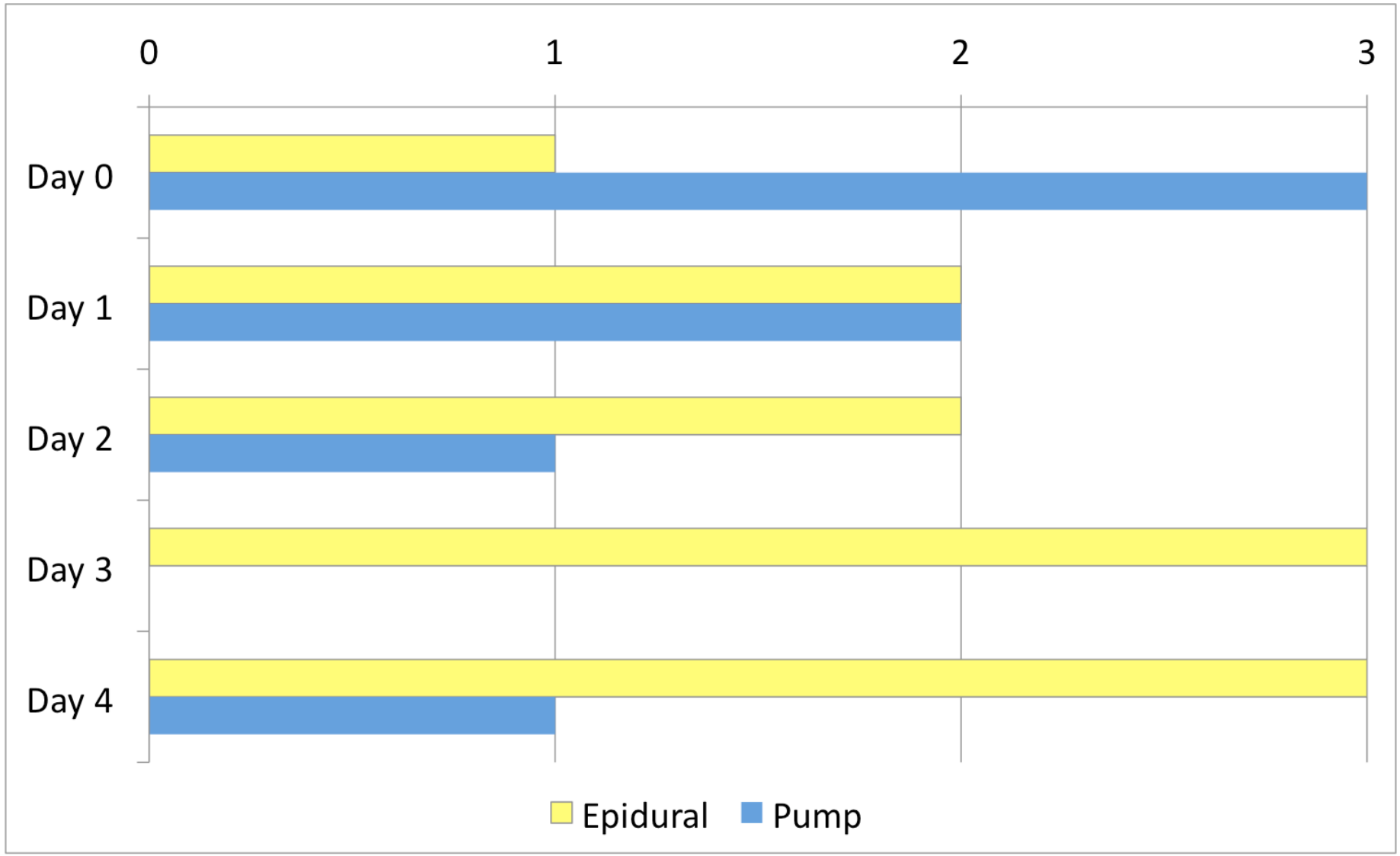
	Epidural	Pump/Soaker
Number	8	10
Age mean (range)	57 years (22-77)	60 years (28-80)
Gender (male:female)	50:50 split	40:60 split
ASA mean	2.3	2.2
Cardiac Risk (POAC)	1(7) 2(1)	1(8) 2(2)
Co-Morbidities	1 IHD, 3 Lung disease	1 IHD, 1 Lung disease, 1 CKD

2013 2014 2015

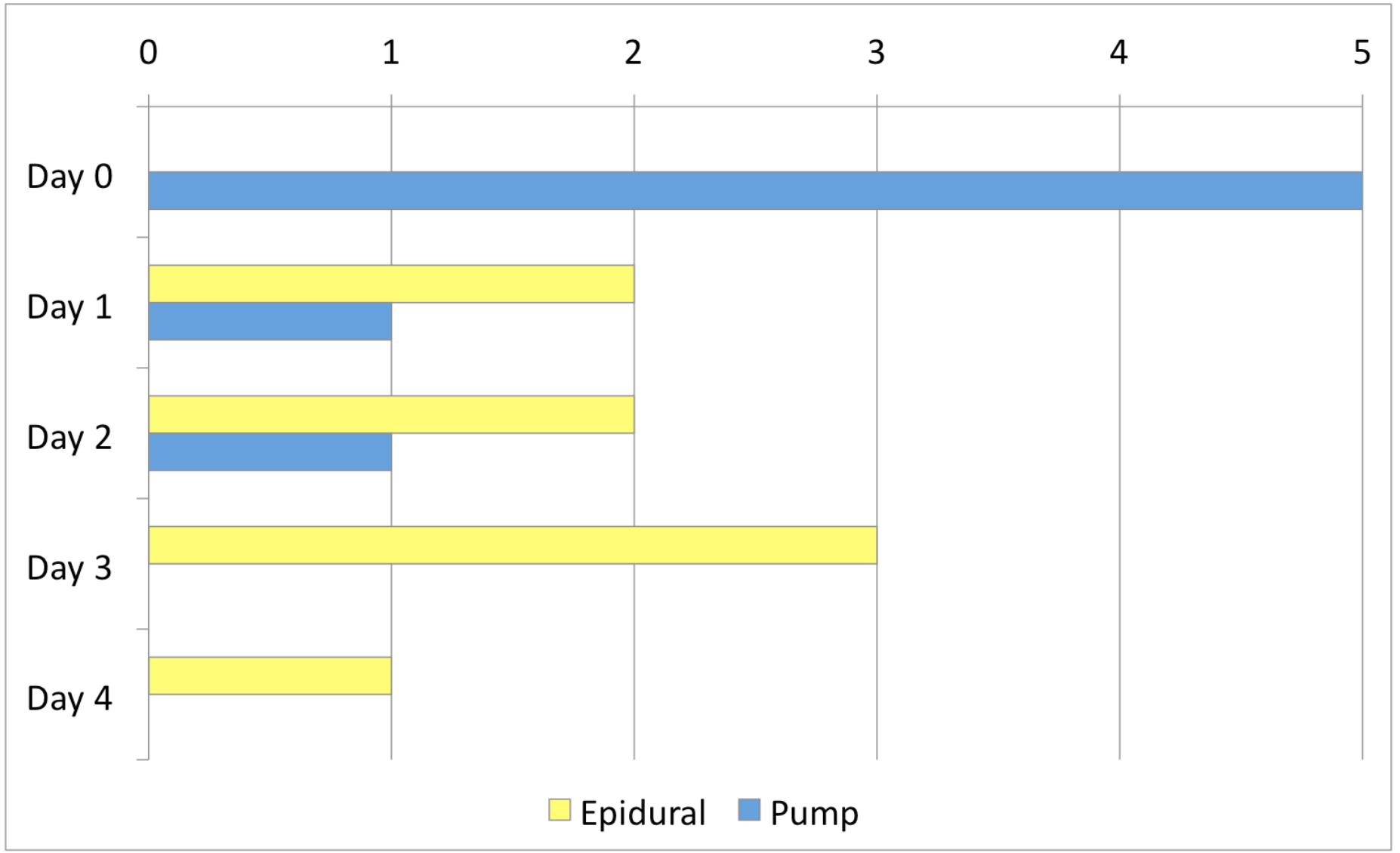
Local evidence - recovery pain scores



Local evidence - pts with moderate pain



Local evidence - pts with severe pain



Local evidence - opioid use

Epidural group	Pump/soaker catheter
22mg morphine/day pp	21 mg morphine / day pp

Fentanyl 20mcg = 1mg morphine
Alfentanil 1mg = 10mg morphine
Oxycodone bioavaliability ~70%
Oramorph bioavailability ~35%

Local evidence - complications

Epidural group (8 pts)

- 3 block height inappropriate for level of wound
- 2 changed to a plain bupivacaine bag (no fentanyl)
- 4 converted to PCAs
- 3 complained of pruritis

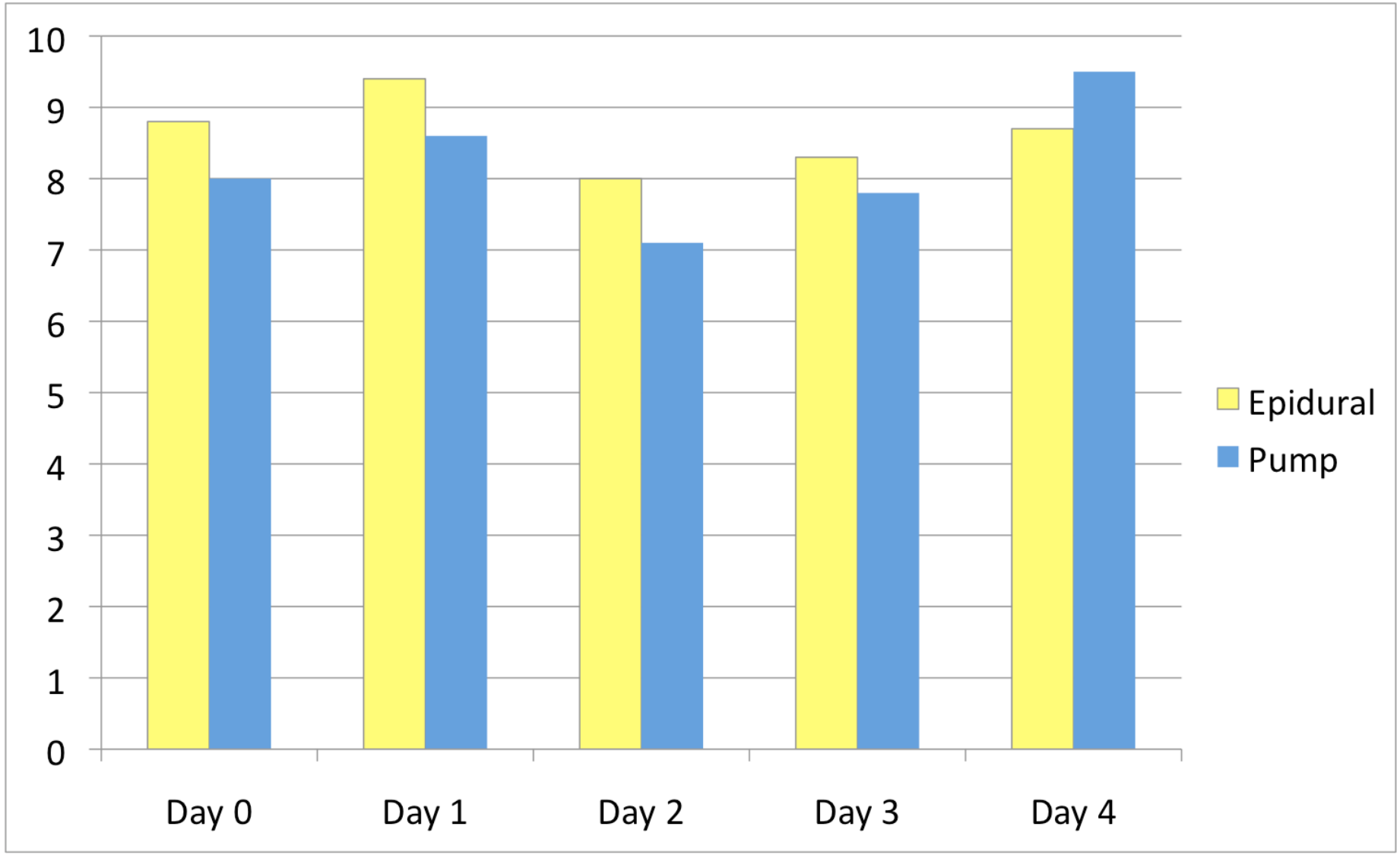
Pump/soaker catheter

- Nil

Local evidence - length of stay

	Epidural	Pump/Soaker
Mean LOS in Critical Care (range)	**3.2 days** (1-7)	**2.6 days** (1-5)
When "ready for ward bed"	3 days	1.7 days
Mean LOS in Hospital (range)	**9.3 days** (6-16)	**6.2 days** (4-10)
% mobilising to chair on Day 1	24%	100%
% still on Vasopressors on Day 1	50%	0%
Average inotrope use per person)	13.9 hours	1.5 hours

Local evidence - satisfaction scores



2013 2014 2015

VS

Epidural Pack containing disposables for insertion	
Epidural giving set (100-163XE905)	
Choroprep X 2	
Local Anaesthetic Bag; bupivacaine + fentanyl 500ml x 2 (for 72 hours)	
Cost of treatment of Hypotension (Noradrenaline)	
Cost of ethyl chloride spray required to test the epidural block every 4 hours until 12 hours	

	Cost
Bluebox Medical Pump with fenestrated catheter - pre-filled; Total cost for Proposed LA Infusion	Cost saving: £1.01
Double catheter	
Bluebox Medical Pump with fenestrated catheter - pre-filled; Total cost for Pr LA Infusion	Cost Pressure: £22.82

2015

Business Case

Only for Wound catheter
Continuous Local Anaesthetic Infiltration
400ml BUPIVACAINE 0.375%

Prefilled elastomeric pump only

Infusion rate: **5 ml/hour**

Signature:	Bleep:	Start date:
Pharm:		Stop date:

Duration approx. 80hrs
For no other route

University Hospitals Bristol NHS
NHS Foundation Trust

Clinical Standard Operating Procedure (SOP)

INSERTION AND MANAGEMENT OF 'ACE MEDICAL WOUND INFILTRATION CATHETERS' & 'AUTOFUSER ELASTOMERIC PUMPS' IN THEATRE

SETTING	University Hospital Bristol NHSFT Hey Groves Theatre and Recovery.
FOR STAFF	Registered practitioners and medical staff.
PATIENTS	Adult patients undergoing surgery.

Indications for use:

Only for use in adult patients undergoing surgery where an *epidural* ***and*** *inotropes* would otherwise be required.

Insertion:

ONLY by a consultant surgeon that has received formal training in the insertion technique.

Ensure catheter is in the appropriate muscle layer and catheter is NOT inadvertently suture during closure of the wound.

For training contact: Mr Reyad Abbadi or Mrs Meg Finch-Jones

University Hospitals Bristol NHS
NHS Foundation Trust

ADULT ACUTE PAIN SERVICE: Clinical Guideline

LOCAL ANAESTHETIC INFILTRATION ANALGESIA USING AUTOFUSER ELASTOMERIC PUMP

SETTING	Designated wards within University Hospital Bristol NHS Foundation Trust (UHBristol), excluding maternity and children's services. (Updated list of designated wards is available in Hey Groves theatre recovery or with the clinical site managers).
FOR STAFF	Anaesthetists and Operating Departmental Practitioners (ODP). Registered Nurses (RN) who have undertaken formal training with the Adult Acute Pain Service within University Hospital Bristol NHS Foundation Trust and are caring for adult patients receiving local anaesthetic infiltration analgesia.
PATIENTS	Adult patients receiving local anaesthetic infiltration analgesia with AutoFuser pump.

Definition:

A fenestrated catheter (catheter with multiple holes along its length) is inserted by the trained surgeon during closure of the wound. The catheter is placed between muscle layers near nerves. This technique can be used to provide analgesia post-surgery or trauma. The injection/infiltration of local anaesthetic to the nerves in the affected area block pain impulses travelling from the pain receptors to the brain.

Local anaesthetics have an opioid-sparing effect, therefore minimising or eliminating adverse side effects of opioids and the associated distress this can cause to the patient.

Local anaesthetic toxicity can occur, especially if delivered in excessive doses or inadvertently given intravascularly. **This is very rare but it is important that the signs are recognised**. Symptoms of local anaesthetic toxicity will usually affect the central nervous system and/or the cardiovascular system.

Professional responsibility:

Only a RN who is competent in the administration of intravenous (IV) drugs and has received formal training with the Adult Acute Pain Service should care for a patient receiving local anaesthetic infiltration. The patient must only be cared for on a designated 'local anaesthetic infiltration' ward.

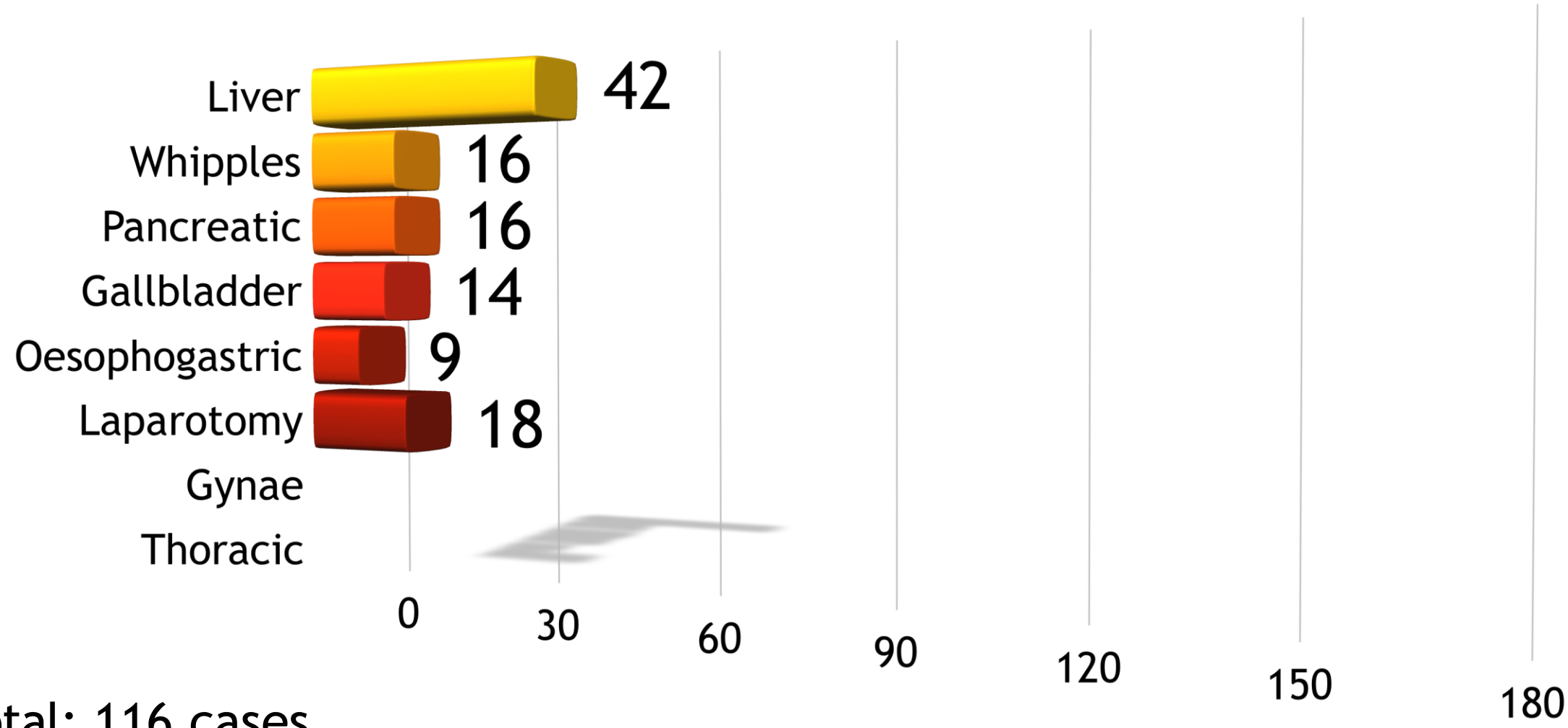
Anaesthetists:

- Please use prescription labels available in the Adult Acute Pain Service files in Hey Groves theatres/recovery or the standard infusion template on Philips ICCA for critical care patients.
- The Anaesthetist must fill in an Adult Acute Pain Service Audit form for the Adult Acute Pain Service to evaluate patient progress.

Equipment (all single use / disposable):

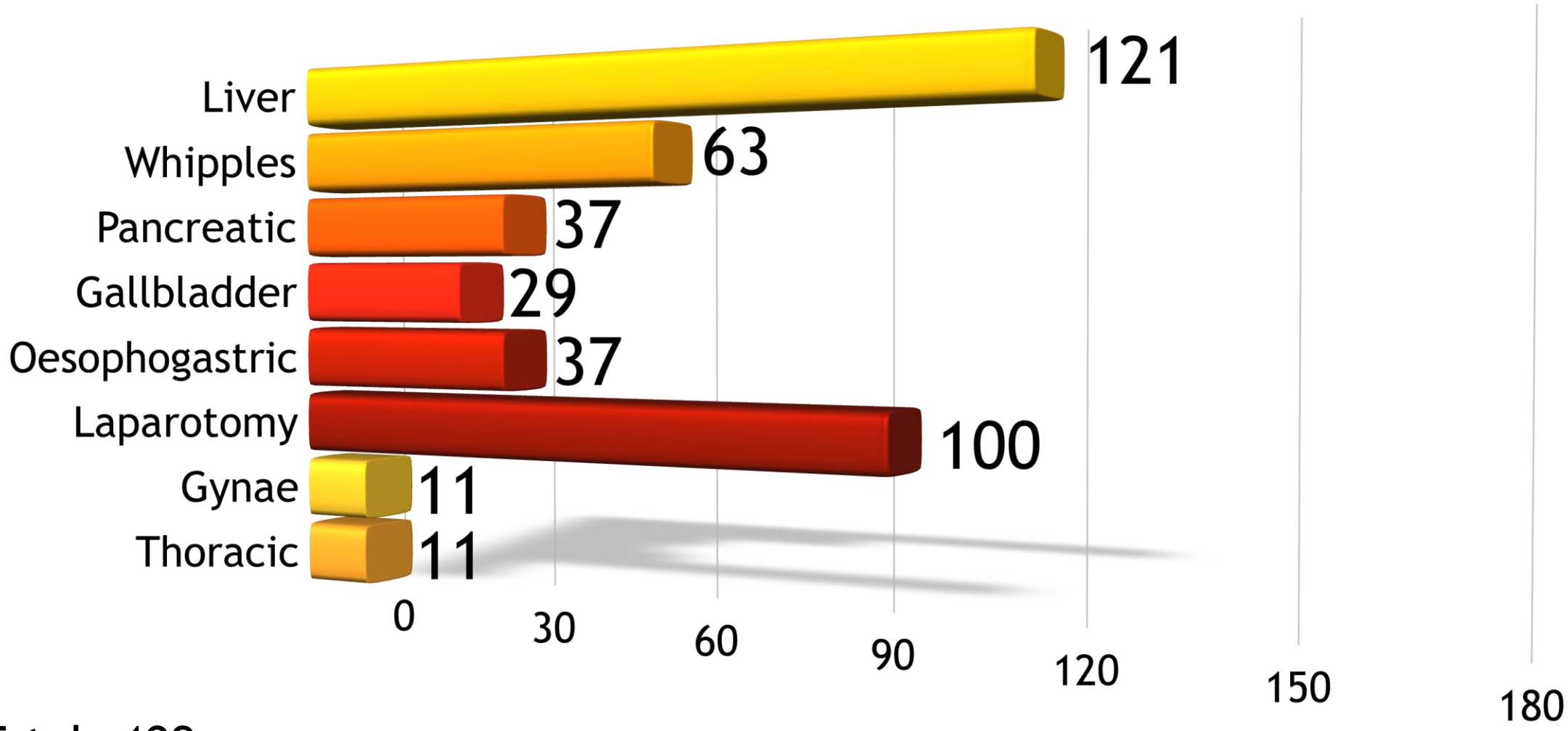
1. Pre filled 'AutoFuser' elastomeric pump:
   400mls 0.375% Bupivacaine.
   5ml/hr flow restrictor.
2. AutoFuser pump **case**.
3. Pump case **strap**.

Follow up data - first 12 months



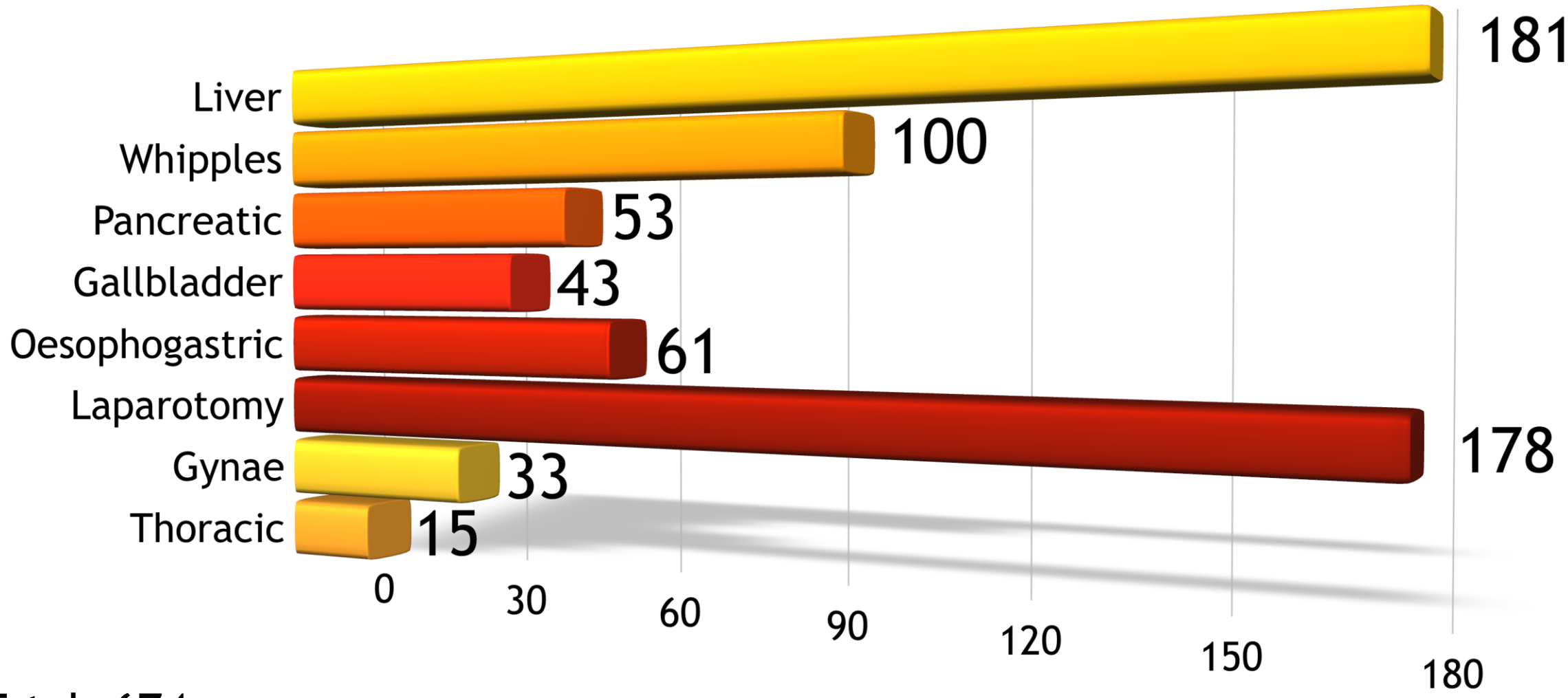
Total: 116 cases

Follow up data - 24 months



Total: 409 cases

Follow up data - 24 months

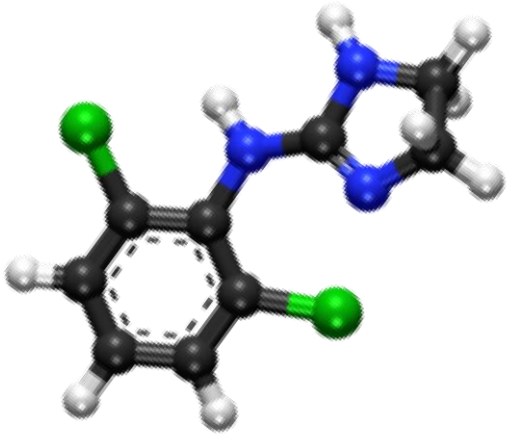


Total: 674 cases

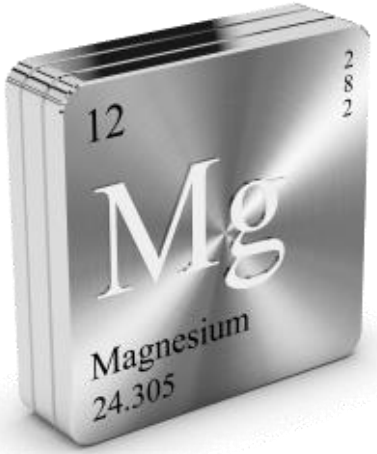
2018

Incidents

Adjuvant analgesia



Special Ketamine



Placebo controlled randomised controlled trial with blinding

Chief Investigator: Dr Ben Gibbison

Sponsor: University Hospitals Bristol NHS Foundation Trust

Funding: This study is funded by the National Institute for Health Research - Health Technology Assessment Programme (15/101/16). The views and opinions expressed therein are those of the author(s) and not necessarily reflect those of the National Institute of Health Research, NHS, or the Department of Health and Social Care

Hypothesis

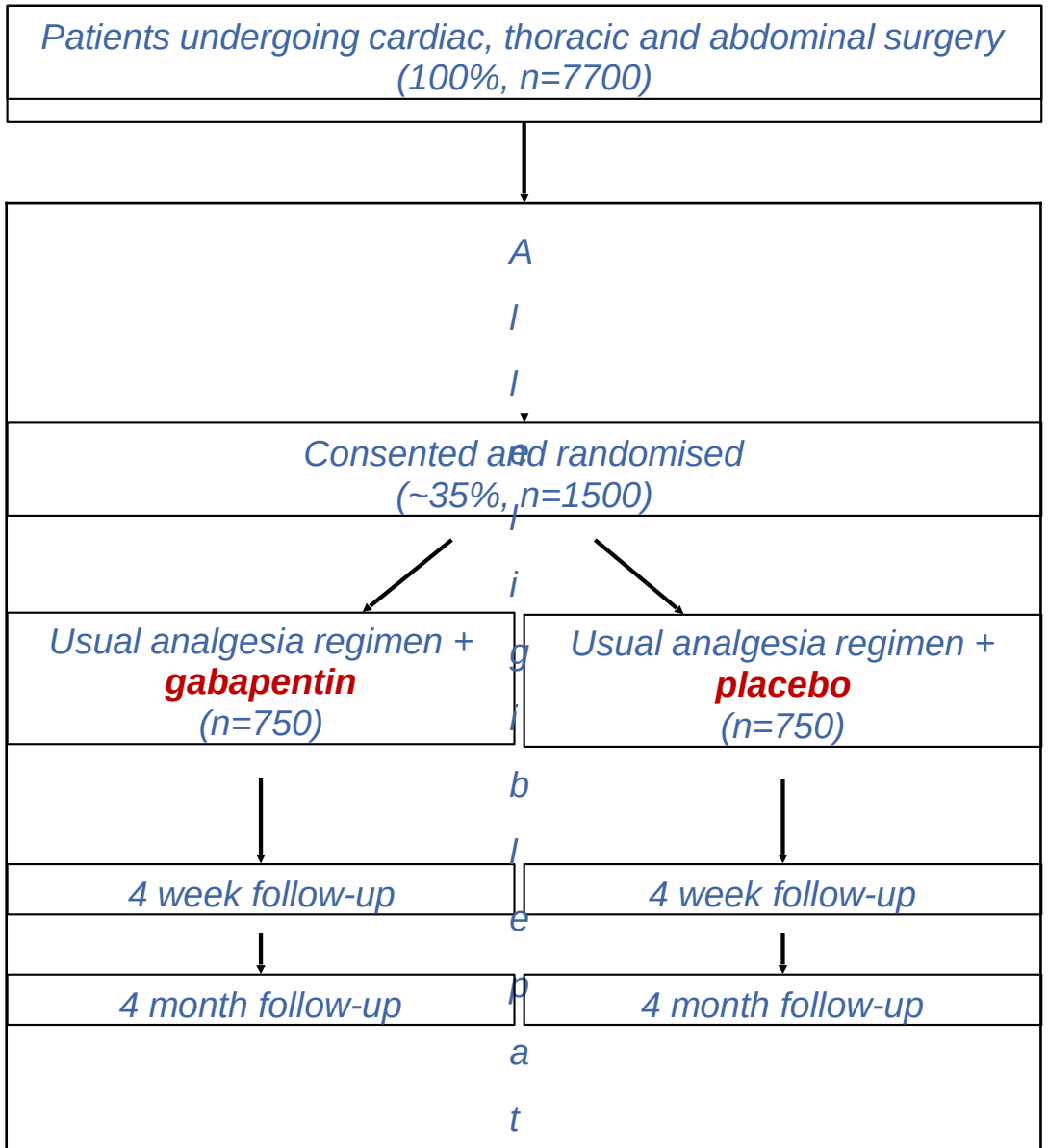
GAP STUDY
GABAPENTIN IN POST SURGERY PAIN

Gabapentin reduces opioid use after surgery and speeds up recovery, compared to standard multimodal analgesia (usual care).

- >130 small RCTs shows that gabapentin reduces opioid consumption and reduces post-op pain
  - Impact on length of hospital stay or quality of life has not been assessed
- Gabapentin currently used ‘off label’ in the peri-operative setting
  - UK wide survey has shown large variation in prescribing practice
- Evidence base not robust enough to inform national guidelines
  - Large RCT required

Gabapentin vs Placebo

- Multi-centre, double blind, randomised controlled trial
- Bristol & Southampton
- Adults undergoing elective cardiac, thoracic or abdominal surgery, expected LOS at least 2 post op days
- Intervention - 600 mg gabapentin pre-operatively plus 600 mg/day post-op for 2 days (300 mg morning and evening)
- Placebo – taken at the same time points as the active tablet



Outcomes

GAP STUDY
GABAPENTIN IN POST SURGERY PAIN

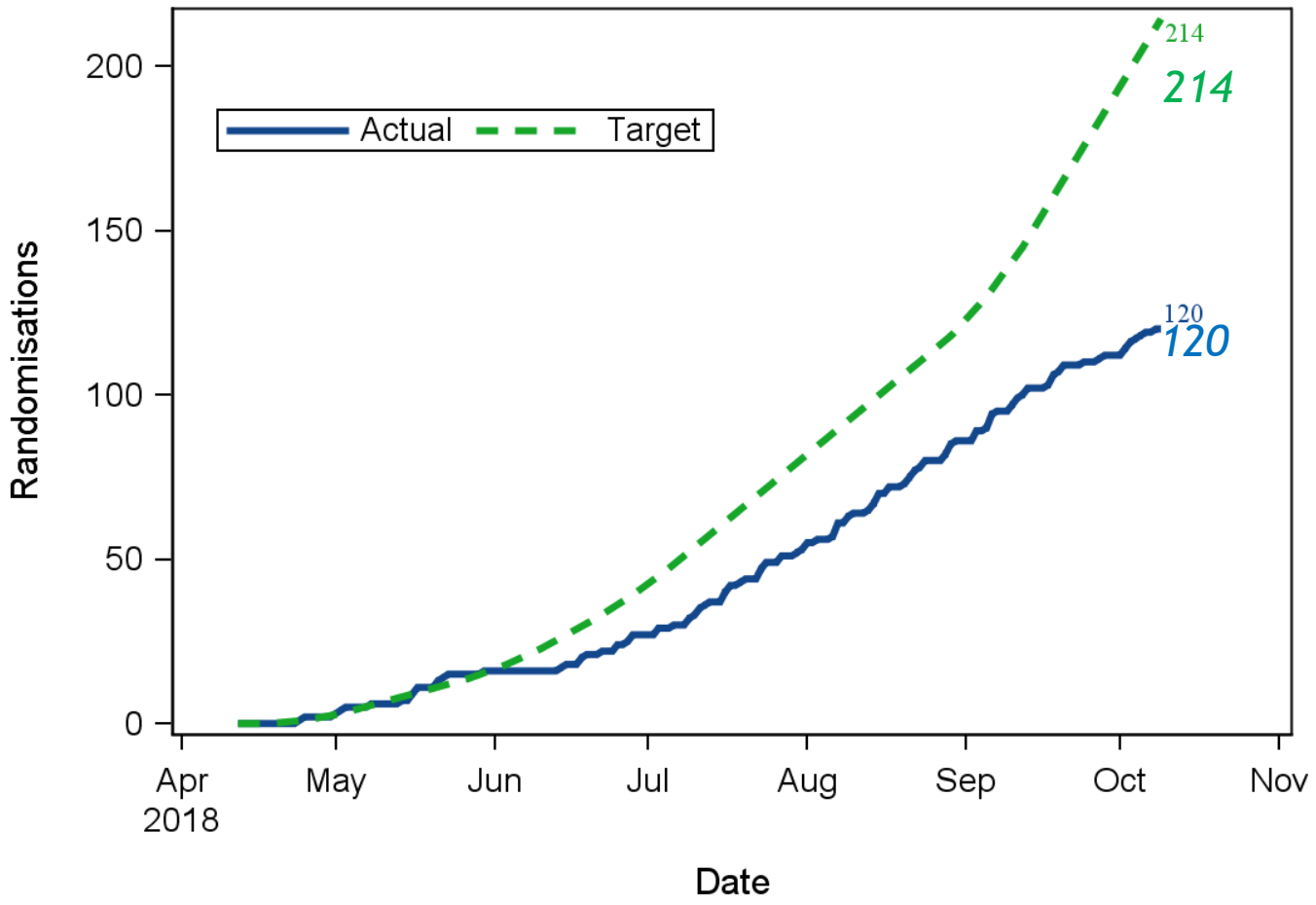
Primary outcome:

- Time (LOS)

Secondary outcomes:

- Opioid consumption
- Acute post-operative pain
- Chronic pain
- Adverse health events
- Serious adverse events
- Health related quality of life
- Resource use

Recruitment



Can you help *close the GAP?*

Criteria for GAP sites:

- Surgical centre (abdominal, thoracic, cardiac)
- Research nurse team/capacity

gap-study@bristol.ac.uk

Phase I: 500 patients by February 2019

Phase II: 1500 patients by July 2020


IDEAS
SUCCESS
PLANS
TEAMWORK
BUSINESS


WORDSEARCHES
COLLECTION
WIN £1,000 CASH!

Thanks

Acute Pain team:

Maria Stockman

Kathryn Edwards

Rachel Cockcroft

Isabelle Woodbridge

Rachel Huston

Dr Charlotte Steeds

HPB Surgeons

Mr Reyad Abbadi

Mrs Meg Finch-Jones

Barbara Wilson *(Pharmacy)*

Dr Andrew Bartlett*(SpR)*

Theatre ODP:

Miles Clarke

Jenny Martinez

Micheal Barnes *(procurement/purchasing)*

Sian Lewis *(Finance manager)*

Alice Woolstenhomes *(Assistant divisional manager)*

GAP CTEU team

Maria Pufulete

Chris Rogers

Sara Rogers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