Breast surgery audit: blocks, volumes and dose

Blocks used for each operation, the total local anaesthetic given, and what was left for the surgeon.

NORA 2
NORTHWEST REGIONAL ANAESTHESIA ALLIANCE

PATIENT AND OPERATION

Audit no. _____ Date _____ Age _____ **Sex** ☐ F ☐ M **ASA** ☐ 1 ☐ 2 ☐ 3 ☐ 4 Weight (kg) _____ Height (cm) _____

Operation _____ **Side** ☐ L ☐ R ☐ Both **Anaesthetic** ☐ General + block ☐ Block + sedation ☐ Block only

BMI _____ Dosing weight (kg) _____ **Weight used** ☐ Actual (BMI under 40) ☐ Lean (BMI 40 or more)

Risk factors for toxicity ☐ Age over 70 ☐ Cardiac ☐ Renal ☐ Hepatic ☐ None

MAXIMUM DOSE FOR THIS PATIENT

Drug _____ Concentration (%) _____ **Adrenaline** ☐ Yes ☐ No Maximum dose (mg) _____

Maximum volume at this concentration (mL) _____

BLOCKS PERFORMED

Block	Done	Side	Drug and concentration (%)	Volume (mL)	Dose (mg)	Ultrasound	Time
Paravertebral							
PECS I (interpectoral)							
Pectoserratus							
Serratus anterior							
Erector spinae							
Superficial cervical plexus							
Parasternal							
Intercostobrachial							
TAP, each side							
Other:							

TOTALS AND THE SURGEON'S SHARE

A. Total block volume (mL)	B. Total block dose (mg)	C. Left for the surgeon: maximum volume minus A (mL)	D. Surgeon told the figure in C	E. Surgeon infiltration given (mL and %)	F. Grand total (mg) and % of maximum
			Yes / No		

If the surgeon uses a different drug or strength, add the fractions: (block mg ÷ block maximum) + (infiltration mg ÷ infiltration maximum) must stay at or below 1.

OUTCOME

Worst pain in recovery (0-10) _____ Morphine equivalent in recovery (mg) _____ **Nausea or vomiting** ☐ Yes ☐ No

Signs of toxicity ☐ Yes ☐ No **Converted to general anaesthetic** ☐ Yes ☐ No ☐ Not applicable

Pain at 24 h (0-10) _____ Opioid in 24 h (mg) _____ **Discharged as planned** ☐ Yes ☐ No Comments _____

Breast surgery audit: blocks, volumes and dose: notes and standards

How to use the sheet, suggested standards and references.

NORA² NORTHWEST REGIONAL ANAESTHESIA ALLIANCE

BLOCKS TO CONSIDER FOR EACH OPERATION

Operation	Blocks to consider	Usual total block volume (mL)
Awake mastectomy (no general anaesthetic)	Superficial cervical plexus + parasternal + paravertebral or serratus anterior; intercostobrachial if axilla	45 to 50
Mastectomy	Paravertebral, or PECS II (PECS I + pectoserratus), or serratus anterior	20 to 30
Mastectomy with axillary clearance	Paravertebral or PECS II	20 to 30
Wide local excision (invasive cancer or DCIS)	PECS II or serratus anterior, or infiltration alone	0 to 30
Sentinel node biopsy	Infiltration; serratus anterior or PECS II if needed	0 to 30
Axillary node clearance	PECS II, serratus anterior or paravertebral	20 to 30
TRAM or DIEP flap	Paravertebral or PECS II, plus TAP each side for the donor site	60 to 70
Latissimus dorsi flap	Paravertebral, erector spinae or serratus anterior	20
Implant reconstruction or expander	PECS II or paravertebral	20 to 30
Augmentation (both sides)	PECS II or paravertebral, each side	40 to 60
Implant exchange, removal or rupture	PECS II or infiltration	0 to 30
Breast reduction (both sides)	Paravertebral or PECS II each side, or infiltration	0 to 60

USUAL STARTING VOLUMES

Block	mL per side
Paravertebral	20
PECS I (interpectoral)	10
Pectoserratus	20
Serratus anterior	20
Erector spinae	20
Superficial cervical plexus	10
Parasternal	15
Intercostobrachial	5
TAP, each side	20

MAXIMUM SINGLE DOSES USED BY THE NORA² CALCULATOR

Drug	Plain	With adrenaline
Bupivacaine	2 mg/kg, ceiling 175 mg	3 mg/kg, ceiling 225 mg
Levobupivacaine	2 mg/kg, ceiling 200 mg	3 mg/kg, ceiling 225 mg
Ropivacaine	3 mg/kg, ceiling 200 mg	3 mg/kg, ceiling 250 mg
Lidocaine	5 mg/kg, ceiling 350 mg	7 mg/kg, ceiling 500 mg

Dosing weight: actual up to BMI 40, lean at BMI 40 or more. Dilute to fit: 60 mL in a 70 kg patient needs levobupivacaine 0.23% or weaker.

STANDARDS

- Total dose from every block and the infiltration within the maximum: 100%.
- Surgeon told the remaining volume before infiltrating: 100%.
- Dose, volume and concentration of each injection documented: 100%.

Volumes are starting points for an adult of average build, not guideline figures. Reduce them in small or frail patients.

REFERENCES

1. Jacobs A, Lemoine A, Joshi GP, et al. PROSPECT guideline for oncological breast surgery: a systematic review and procedure-specific postoperative pain management recommendations. Anaesthesia 2020; 75: 664-73. https://doi.org/10.1111/anae.14964
2. El-Boghdadly K, Pawa A, Chin KJ. Local anesthetic systemic toxicity: current perspectives. Local Reg Anesth 2018; 11: 35-44. https://doi.org/10.2147/LRA.S154512