

“Gowns off” for single shot obstetric spinal anaesthesia

A Quality Improvement project with an environmental focus
Making single-shot spinals greener — evidence, environmental impact & implementation at GWH

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BACKGROUND & EVIDENCE

Sterile gowns are standard UK practice for neuraxial anaesthesia, yet the evidence base is strikingly thin. Internationally, most high-income countries perform spinals routinely without gowns. New consensus guidelines published in April 2026 by the RCoA, OAA, ANZAC and AAGBI have **recommended a move away from mandatory sterile gown use**:

“In uncomplicated adult patients, the routine use of a sterile gown when performing a single-shot spinal anaesthesia should not be considered mandatory”

Phillips C et al. *Anaesthesia*. 2026 April 16

“Neither ANZCA nor AAGBI cite any research evidence to support gown use in neuraxial procedures.”

Tuohey BH et al. *Anaesthesia & Intensive Care* 2023.



NEURAXIAL INFECTION EPIDEMIOLOGY

1 : 47,000 <i>Epidural abscess incidence</i>	< 1 : 200k <i>Bacterial meningitis incidence</i>
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1 / 100k <i>CNS infections from spinals (global)</i>	0.4 / 100k <i>CNS infections in obstetric CNBs</i>
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NAP3 data: 20 infective complications across 700,000 blocks (incl. 325,000 spinals) — only 4 complications arose from spinals specifically. Subsequent international systematic review of 76 studies (mix of gown/non-gown countries): incidence **0.96 per 100,000** across >3 million patients.

NAP3, RCoA 2009 · Makito et al. *Can J Anaesth* 2021 · Selvamani BJ et al. *Reg Anaes Pain Med* 2024

RCT: No significant difference in epidural catheter colonisation rates between gowned and ungowned anaesthetists

Siddiqui et al. *Regional Anesthesia and Pain Medicine* 2014

WHAT ACTUALLY CAUSES INFECTION?

Meningitis and epidural abscesses are predominantly caused by **commensals of the nose and oropharynx** — not skin or clothing.

Meningitis <i>Streptococcus Viridans</i>	Epidural Abscess <i>Staphylococcus Aureus</i>
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Genotypic matching has confirmed bacterial strains originate from the **anaesthetist's nasopharynx**. The most common risk factor for post-spinal meningitis is **absence of a face mask** — not a gown.

The mask matters far more than the gown

Reynolds F. *Anesthesiol Clin* 2008 · Zorrilla-Vava et al. *Minerva Anestesiologica* 2018

References

Phillips C et al. *Anaesthesia*. 2026 April 16 · Tuohey et al. *AIC* 2023 · NAP3 RCoA 2009 · Selvamani et al. *RAPM* 2024 · Reynolds. *Anesthesiol Clin* 2008 · Siddiqui et al. *RAPM* 2014 · Makito et al. *CJA* 2021 · Vozzola et al. *AORN* 2020 · *NHS Digital* 2023–24

SCALE OF IMPACT ACROSS SEVERN DEANERY

~10,000 obstetric spinals performed annually across the 5 trusts in Severn Deanery:

1,820 University Hospitals Bristol and Weston	1,664 Royal United Hospital	2,078 North Bristol Trust	~4,500+ Gloucester Hospitals & Great Western Hospitals Trust
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Annual environmental and financial cost of using disposable gowns for all 10,000 obstetric spinals:

9,532 kg CO ₂ e Emissions	1,247 kg Solid Waste to Landfill	5,209 L Water Consumed	£19,500 - £27,000 Estimated Annual Cost
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Equivalent to driving Bristol → Liverpool 237 times (290 km each way)

Based on Vozzola et al. *AORN* 2020 · *NHS Digital* maternity statistics 2023–24

IMPLEMENTATION

1) A Local Education Programme was rolled out at the GWH Anaesthetic Clinical Governance, involving consultants, residents and specialist doctors.

2) Posters were introduced in obstetric theatres to promote stakeholder engagement among midwives and obstetricians

3) A new Trust Infection Control SOP for Single Shot Spinal Anaesthesia in Obstetrics was launched in September 2025 permitting gown omission under defined criteria. This was completed alongside a larger **regional programme** already enrolled in other local hospitals.

The SOP was ratified at the Anaesthetics Departmental Clinical Governance.

GOWN-FREE CRITERIA (all must apply) — Category 4 (elective) caesarean section — Single-shot spinal planned — BMI < 35 kg/m² — Not immunocompromised — No complex co-morbidity contributing to infection risk
GOWN REQUIRED IF — Any exclusion criterion applies — More than 3 skin passes required — Clinician judgement deems it appropriate

INFECTION CONTROL PRECAUTIONS RETAINED

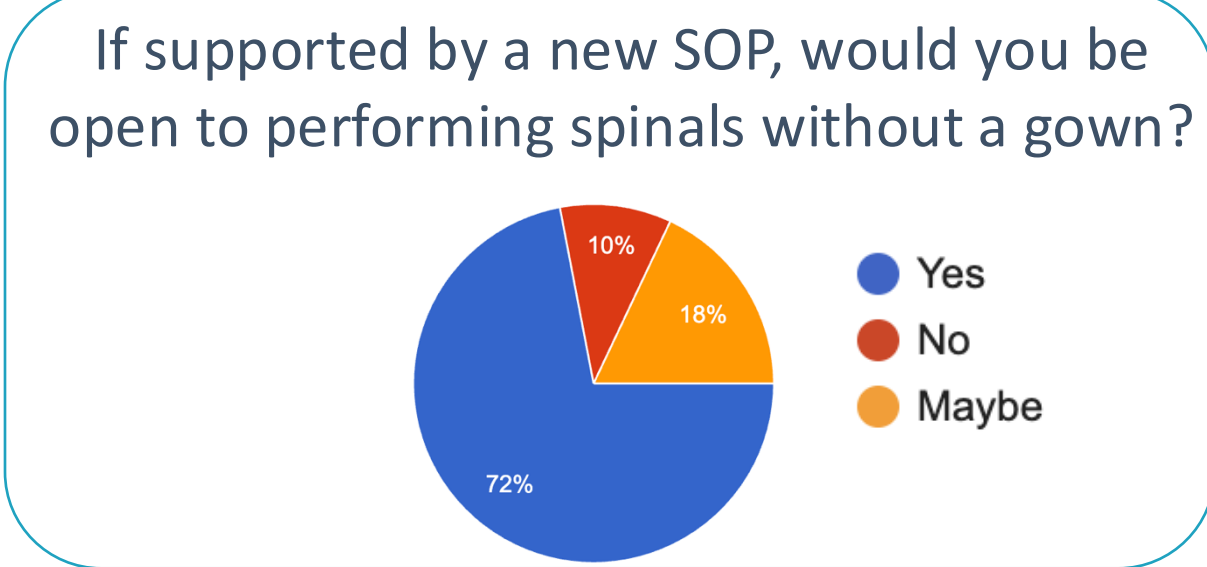
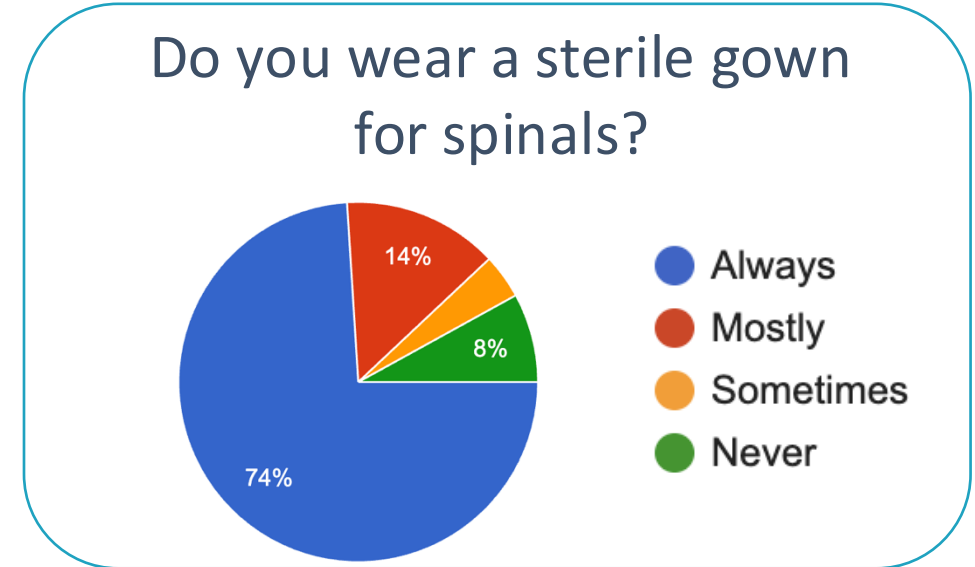
Omitting the gown does not mean relaxing asepsis. **The SOP mandates:**

- Theatre hat & face mask for anaesthetist** — *always required*
- Any assistant or observer must also wear a mask whilst opening equipment and assisting procedure**
- Lanyards must not be worn**
- Surgical scrub of hands & arms** — *ABHR or chlorhexidine/iodine*
- Hands dried with sterile towel** — *away from sterile field*
- Sterile gloves, 0.5% chlorhexidine skin spray, sterile drape applied**
- If more than 3 skin passes are made, to re-scrub and use surgical gown**

All midwives & anaesthetic ODPs/nurses asked to wear masks when assisting — oropharyngeal organisms are the predominant risk.

BASELINE CLINICAL PRACTICE AUDIT

When initially surveyed, before the implementation of the SOP, the majority of anaesthetists (44/50) used sterile gowns during spinals. The audit also demonstrated there was a willingness to perform gownless spinals if supported by a new SOP.



INITIAL RESULTS & SURVEILLANCE

>47 Gownless spinals performed at GWH	12% (6/50) to 60% (9/15) Proportion of Anaesthetists performing gownless spinals
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A **post-intervention survey** was completed gathering feedback from anaesthetists regarding the implementation of gownless spinals and potential further expansion into main theatres and non-elective caesareans sections:

“I have done so many using a gown, I feel very uncomfortable not using one” **“Gives no additional protection to the patient”**
“Supported by evidence, better for the environment” **“It would be a lot quicker and safer if you didn’t have to gown for an emergency LSCS”**
“Been doing it for years”

Barriers to change highlighted in post implementation survey:

- Patient Caesarean category** (42.9% or 6/14)
- Unsuitable patient BMI** (28.6% or 4/14)
- “I do not feel comfortable performing gownless spinals”** (28.6% or 4/14)

Expand to category 1–3 caesareans?



Expand to main theatres?



DISCUSSION

Following the interventions, the proportion of anaesthetists performing gownless single-shot spinals increased significantly from **12% to 60%** demonstrating that **a change in practice** can be achieved using **targeted interventions**. There have been **no cases of central nervous system infection** in the obstetric population following the introduction of the gownless protocol.

The post-intervention feedback reflects the current differing opinions on surgical gown use within neuraxial procedures. Concerns regarding **procedural familiarity** and **‘not feeling comfortable’** performing gownless spinals were contrasted with positive feedback highlighting the **cost saving aspects** and **lack of evidence supporting gown use**.

The feedback also highlights a willingness for this **change in practice to be expanded** into both non-elective caesarean sections and main theatres, in line with RCoA guidelines. This would further reduce the **Trusts environmental and financial waste**.

These results support the feasibility of implementing the new RCoA Guidelines but also highlights the need for **ongoing education and continued auditing to promote evidence-based practice** with emphasis on the strict use of masks and ANTT, whilst limiting the environmental waste and financial cost of unsupported practices — **‘Green Anaesthesia’**.

Next step: Expand to non-elective caesarean SSS → Expand to Main Theatres → Trust wide standard

- Evidence for sterile gown use in single-shot spinals is absent — with new RCoA guidelines stating that sterile gowns should not be considered mandatory in single-shot spinal anaesthesia.**
- Removing disposable gowns from 10,000 annual obstetric spinals across Severn could save >9.5 tonnes CO₂e, 1,247 kg of landfill waste and >£19,500 — with no evidence of increased infection risk.**
- GWH’s implementation of an Education Programme and new SOP demonstrates that a change in practice is achievable with potential NHS-wide adoption amplifying the environmental and financial benefits substantially.**
- Feedback from anaesthetists demonstrated a strong willingness to change current practice. However, highlighted potential barriers to change, emphasising the importance of continued education and auditing of practices in line with current guidelines.**