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The Transformation of Ambulatory Orthopedic Surgical Anesthesia: A Mixed Methods Study of Diffusion of Innovation in Healthcare

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Research Objective

To provide insight into how an innovation in healthcare is implemented and diffuses into the system.

Specifically studying the innovation of transitioning from the routine use of general anesthesia (GA) to peripheral nerve blocks (PNB) for anesthesia during ambulatory orthopaedic procedures on the upper and lower extremities.

Study Design

We utilized a mixed methods quantitative and qualitative methodology.

Quantitative

- Retrospectively reviewed operative and anesthesia records from 1998 to 2012 at the UNM.
- Select ambulatory orthopaedic procedures.
- Identifying the type of anesthetic used (GA vs PNB).

Qualitative

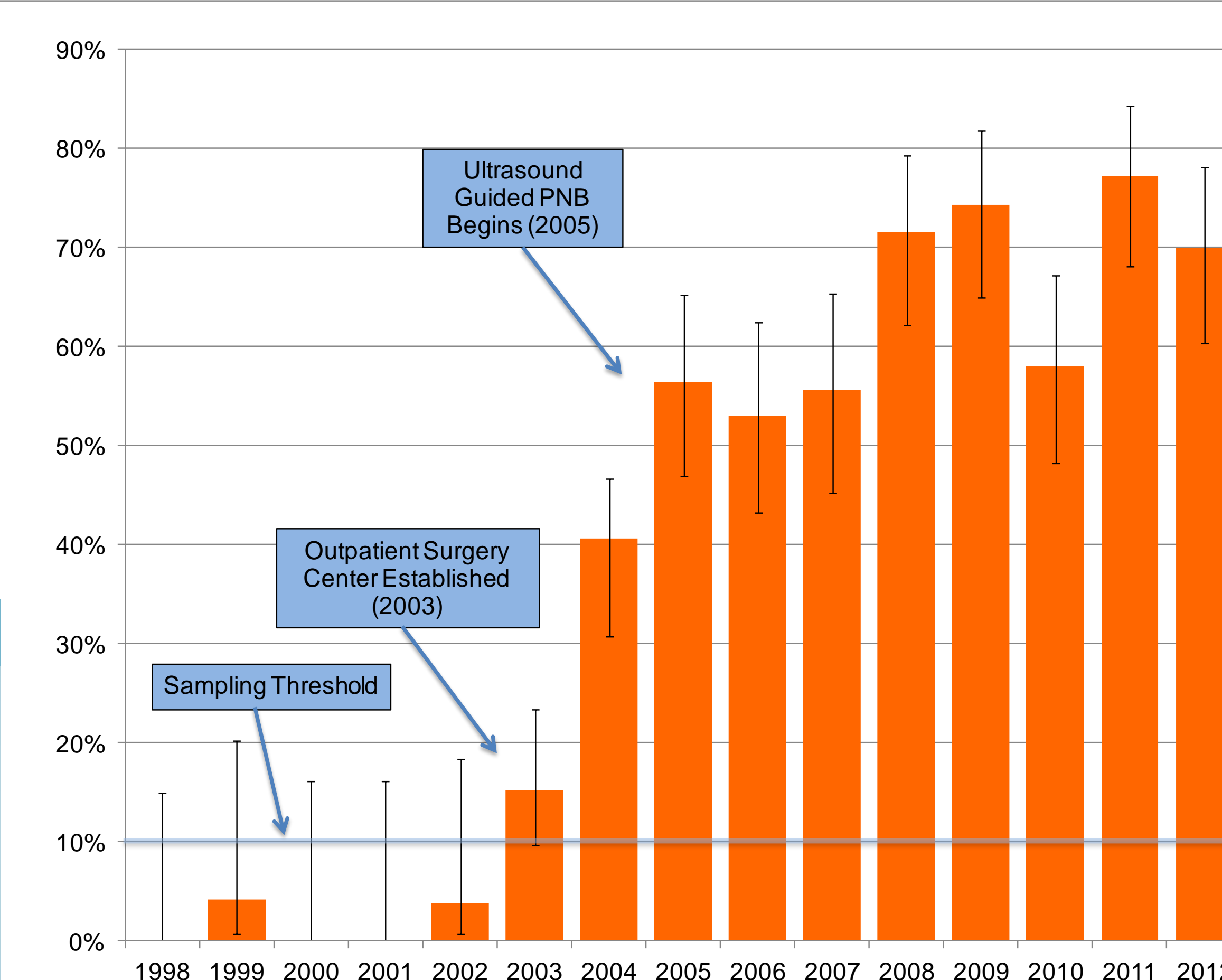
- Interview guide derived from Diffusion of Innovations (DOI) theory.
- Interviewed orthopaedic surgeons, anesthesiologists and nursing administrators present at the time of the innovation.
- Using DOI framework and inductive thematic review of the interviews, we identified key themes associated with the adoption of PNBs at a single institution.

Principal Findings

- From 2003 to 2012 the use of PNBs increased from less than 10% to over 70%.
- The adoption timeframe followed an S-shaped curve (Figure 1).
- Key themes included: improved safety, quality and efficiency, physician leadership and trust, organizational structure and technological changes.
- The innovation was an optional decision-making process that took root in a satellite facility.

Figure 1

Percentage of ambulatory orthopaedic procedures in which a peripheral nerve block was used for anesthesia at the University of New Mexico Hospital, according to year. The error bars represent 95% CIs.



Abbreviations

DOI, Diffusion of innovations

PNBs, Peripheral nerve blocks

GA, General anesthesia

Anesthesiologist #1 (Safety, Quality, and Efficiency)

"...you don't have to put the whole body to sleep like you do with a general anesthetic...the patients do much better because when the surgery is done, they have no pain. They are able to go home much faster than recovery from a general anesthetic. There is a low incidence of nausea and vomiting."

Orthopaedic Surgeon #2 (Physician Leadership and Trust)

"I was very nervous, I had no faith. And anesthesia talked me into it. And, I soon fell in love with the sciatic nerve block...We followed their [anesthesiologists'] lead, we trusted them."

Conclusions

PNB provides a useful model to understand the adoption and diffusion of an innovation using optional decision-making in the healthcare setting. Critical elements include characteristics of the innovation, which facilitated the decision-making process, and the positioning of the innovation in a satellite facility away from the core clinical facilities.

Relevance to delivery and clinical practice

Initiation of an innovation at a satellite facility may reduce opposition and allow the innovation to take root. As healthcare systems attempt to create value through innovations, the DOI theory can guide implementation of promising changes.

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