



# Ethical considerations and a practical framework for priority setting during an epidural equipment shortage

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Resource allocation in health care has returned to the forefront of Canadian consciousness with news of nationwide shortages, including epidural equipment. Health Canada announced in mid-July 2022 that a major supplier would have reduced availabilities of epidural kits, with the shortage expected to last until mid-2023.<sup>1</sup> While several provinces have reported low stocks, the problem continues to expand across Canada as well as England and Australia.<sup>2</sup> Although important steps have been taken to improve communication, uncertainty remains regarding the impact on Canadian health care delivery.<sup>3</sup> Even though alternative modalities of delivering anesthesia and analgesia are available, the physiologic effects of epidural analgesia can reduce complications such as prolonged postoperative ventilation, inadequate pain control, and delayed return of gastric motility, all of which can prolong hospital stay and increase resource use.<sup>4</sup> These issues are particularly salient in the obstetrical population. Given their ubiquity in the clinical setting and the dynamic nature of the shortage, the question arises of how clinicians and organizations should perform priority setting in the face of an epidural equipment shortage.

Several key ethical issues arise when considering how to allocate nonpersonnel resources in short supply. Gibson *et al.*<sup>5</sup> highlighted key ethical principles in resource allocation: beneficence, solidarity, equity, utility, stewardship, and trust. The University of Toronto Joint Centre for Bioethics Ethics Working Group has offered an allocation framework for addressing drug supply shortages

based on these ethical considerations, and this framework has been endorsed by the Ontario Ministry of Health and Long-Term Care.<sup>4</sup> This ethical framework, modified to address the current epidural equipment shortage, is intended to be adapted by clinicians and health care institutions to make rationing decisions in the face of their own supply constraints and patient population served. Although some may argue that a framework is not sufficiently prescriptive to be immediately applicable, it offers an approach to resource planning that can be adapted locally to best fit individual institutional realities. A “one-size-fits-all” approach to the shortage would be impractical and unrealistic given the variation in local practices and time-sensitive nature of the problem. An institutional approach of establishing an explicit set of criteria for rationing reduces microallocation decisions for each individual patient and prevents implicit rationing based on bias or other inappropriate criteria.<sup>5</sup>

In brief, the strategies of conservation, prioritization, and limitation of access can be implemented during an epidural equipment shortage based on supply and demand at each organization.

The framework begins with prioritizing the principles of beneficence and stewardship by developing strategies to maintain standard of care in the face of changing supply. Practically speaking, this means employing conservation strategies to minimize unnecessary use of epidural catheters. Clinicians must begin by reassessing the indications for epidural catheters, identifying surgeries where the benefits of continuous epidural anesthesia or analgesia over other techniques are minimal or equivocal. For example, reconsidering placement of an epidural for patients undergoing open living donor nephrectomy where patient-controlled analgesia or abdominal field blocks could be effective instead. Concomitantly, identifying surgical and patient factors that place individuals at high risk for postoperative complications that could be avoided with adequate epidural analgesia would ensure these individuals remain prioritized without compromising

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clinical outcomes. Where there is a benefit from regional anesthesia, sites must decide whether single-shot techniques, possibly with longer-acting medications, can provide similar efficacy compared with catheter-based approaches. One example is the provision of larger spinal anesthesia doses for revision total hip arthroplasty cases rather than placement of epidural catheters. These reassessment and reprioritization strategies should be initiated when hospitals foresee an impending diminished availability of supplies but are not actively suffering from reduced stock. Conservation strategies are facilitated by advanced planning, in terms of education from health care providers regarding alternative analgesic and anesthetic techniques and ensuring adequate availability of alternatives. Appropriate patient counselling is critical to alleviating patients' fears and facilitating shared decision-making to enhance patient autonomy.

Once epidural equipment supplies have dwindled significantly and conservation strategies have been exhausted, the framework moves on to allocation based on utility. At this point in a shortage crisis, some individuals will be harmed by limited supply. An ethical approach to allocation may help in maximizing benefit and minimizing harm. A task force composed of relevant stakeholders, including clinicians, hospital administrators, and procurement officers, should be created to establish relevant decision-making criteria for priority setting. Gibson *et al.*<sup>5</sup> suggest that patients requiring urgent/emergent access, those with the most potential for clinical benefit, those with the highest potential for harm from lack of access, and those for whom other alternatives are unavailable or suboptimal should be prioritized. For example, obstetrical patients represent individuals that should be prioritized as they require urgent access, receive clear benefit from effective epidural analgesia during labour and delivery, and may come to psychological harm from withholding neuraxial techniques or at risk from alternatives such as general anesthesia.

Additional resource allocation criteria identified in the literature include whether lack of access would impact other hospital resources, and the clinical mission of the institution.<sup>6</sup> These criteria could be applicable at a thoracic centre where an elderly patient with comorbid respiratory disease requiring an open thoracotomy would be prioritized to avoid the harm of prolonged postoperative ventilation. The role of the task force would be to identify relevant criteria for allocation based on their local realities and balance competing demands within the same institution. Even within a prioritized group, however, further risk stratification may be required to ensure certain groups are given precedence as they may gain significant advantages from epidural analgesia and anesthesia (e.g., parturients with cardiac lesions) or risk of harm from lack of access

(e.g., pre-eclamptic patients). The Saskatchewan Health Authority highlighted these nuances in a recently published decision-making guideline using maternal and fetal risk to dictate priority of access.<sup>7</sup> Using this approach, other patient populations beyond obstetrical patients may also be prioritized based on the institution's patient population and resources. For example, patients at high risk for postoperative pulmonary complications following major abdominal surgery should be considered high priority using the considerations highlighted. To ensure the decision-making process is fair, the accountability for reasonableness framework suggests that the rationale for priority setting be transparent and publicly accessible, be based on criteria relevant to fair-minded credible individuals, be appealable and revisable, and be accountable.<sup>7</sup>

In the event of critical supply, a reasonable approach would be to allocate a certain number of epidural kits available for daily use based on existing stock and expected delivery dates. The proposed task force should transition from a list of prioritized patients and procedures to a ranking system. Challenges may arise when patients of similar risk profile present concurrently. First-come, first-served may be considered appropriate in some situations, from an equity standpoint. Nevertheless, this should be applied with caution in a setting such as labour and delivery, where patients may be predisposed to request earlier labour epidural analgesia to ensure access. Instead, the proposed task force should determine a fair procedure to perform resource allocation in an equitable manner. For example, offering labour epidural analgesia after painful progression of labour is confirmed. Although imperfect, this approach to limiting access should be understood in the context of maximally depleted resources and represents a rationing strategy aimed at maintaining fairness while balancing the previously mentioned ethical considerations. A regular audit of clinical outcomes for patients affected by the shortage could identify whether the criteria remain valid or whether some groups are suffering disproportionately. When confronted with individuals with their own purchased epidural supplies, clinicians must remember their obligation to uphold quality of care and the consequences of using unverified and possibly nonsterile equipment, not approved by Health Canada.

While this proposed approach is intended to help with decision-making for individual health care organizations, it would be remiss not to consider the shortage discussed herein in a broader societal context. Provincial and national authorities have a responsibility to perform macroallocation of kits and alternatives in a way that ensures fair and equitable access to a limited resource, including considering interinstitutional transfer if the situation dictates. A task force could have clearly defined thresholds regarding when

the process of conservation shifts to prioritization and limitation of access.

This information should be transparent and made readily available to foster trust in the allocation process and uphold institutional accountability. In keeping with the principle of transparency, patients potentially affected by the shortage should be advised of the possibility of reduced access and the decision-making criteria for prioritization being applied at the institution. In addition to information on the allocation process currently in place, patients should understand the dynamic and revisable nature of resource allocation based on availability, as well as their right to appeal. Although this approach requires significant time commitment and interdisciplinary collaboration, it offers a method based on ethical principles for priority setting during an epidural equipment shortage. The COVID-19 pandemic highlighted the importance of a well reasoned approach to triage and advanced planning. Our recent experience can be leveraged to fast-track the creation of sound policy and ensure optimal care in the face of limited resources.

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