



# Improving outcomes for patients following adrenal surgery: the importance of addressing unwarranted variation in surgical volumes

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*Comment on:* Hussein M, Toraih E, Fouad AM, *et al.* National perspective on hospital readmissions following adrenalectomy. *Gland Surg* 2022;11:970-80.

Submitted May 31, 2022. Accepted for publication Jun 20, 2022.

doi: 10.21037/gS-22-336

View this article at: <https://dx.doi.org/10.21037/gS-22-336>

In this issue of *Gland Surgery*, Hussein *et al.* use administrative data from the United States (US) Nationwide Readmissions Database (NRD), which is part of the Healthcare Cost and Utilization Project (HCUP), to investigate factors associated with hospital readmission following adrenal surgery (1). Prolonged initial hospital stay and postoperative complications were associated with a higher risk of readmission. Complications were significantly more frequent in patients with malignancy and in patients undergoing a procedure at a low adrenalectomy volume hospital. Readmission extended overall hospital stay by an average of 2 days, costing an additional \$18,529.49 per admission.

For relatively rare surgical procedures, such as adrenalectomy, use of large administrative datasets are an important information source. Although such datasets often lack detailed information regarding presentation and clinical and patient reported outcomes, more detailed single-site datasets invariably have too few patients to provide significant insight into broader trends. Information provided by both these data sources can help build a coherent picture. As such, the work of Hussein *et al.* (1) is a welcome addition to the research literature.

Higher levels of surgical complications (and subsequent readmissions) in patients with malignancy and who are older, frailer and with a greater number of comorbidities is

not unexpected. However, identification of a greater risk of complications in low-volume centres is more concerning and likely to be unwarranted. Sutherland *et al.* sought to define how unwarranted variation in healthcare arises and how to identify it (2). They identified a failure to follow evidence-based guidelines, lack of engagement with patients' needs, the needs and preferences of the provider placed above the needs of patients, a lack of technical competence and poor resource allocation as key drivers for unwarranted variation in patient outcomes. Given the increasing evidence of a volume-outcome association in adrenal surgery, it is logical to argue that poorer patient outcomes in low volume centres and surgeons is unwarranted and amenable to change (1,3-9). In the US, a number of initiatives have contributed to reductions in low volume surgery (10). However, concerns have been raised that the US model of healthcare funding means that an observed volume-outcome association can be distorted by selective referral of patients to better-performing high-volume centres (11). In this case, better outcomes result in higher volume. However, only if high volumes lead to better outcomes (the practice-makes-perfect model) does it make sense to centralise surgery or set minimum volume standards.

Data from outside the US help shed some light on the extent of any volume-outcome association. In the United

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Kingdom (UK), The Getting It Right First Time (GIRFT) programme is tasked with investigating and reducing unwarranted variation in clinical practice between hospital trusts that unduly impacts on patient outcomes. UK healthcare is funded from central government and free at the point of delivery. Thus, selective referral is much less important as a potential confounder of the volume-outcome relationship. The GIRFT programme identified a volume-outcome associations in 4,189 patients undergoing adrenal surgery in England (3). A significant association has also been identified in other fields of endocrine surgery (12,13).

Based on this broader picture across different study designs and settings, evidence that higher volume adrenal surgery is associated with better outcomes seems overwhelming and the case for minimum volume standards and/or centralisation is clear. Further work is needed to understand the views of patients and their families, surgeons and health service managers. Any changes must not unduly impact on service access and health equity for marginalised patient groups or on service viability and training opportunities for junior medical staff. Setting up effective collaborations between hospitals can be challenging but is possible with appropriate incentives and motivation (14).

Hussein *et al.* (1) note the costs of complications and associated readmissions in their cohort. The burden of extended hospital stay and readmission on patients' quality of life is also likely to be considerable, with deconditioning and hospital-acquired infection risk key concerns. As surgical services recover from the COVID-19 pandemic, efficient working practice, that minimises hospital stay and readmission risk and optimises patient outcomes will be more important than ever.

## Acknowledgments

*Funding:* None.

## Footnote

*Provenance and Peer Review:* This article was commissioned by the editorial office, *Gland Surgery*. The article did not undergo external peer review.

*Conflicts of Interest:* Both authors have completed the ICMJE uniform disclosure form (available at <https://gs.amegroups.com/article/view/10.21037/gS-22-336/coif>). The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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**Cite this article as:** Gray WK, Lansdown M. Improving outcomes for patients following adrenal surgery: the importance of addressing unwarranted variation in surgical volumes. *Gland Surg* 2022;11(7):1130-1132. doi: 10.21037/gS-22-336