Administrative data: what surgeons should know about big data

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Perspective

Administrative data are commonly encountered by surgeons, yet they are often dismissed as inaccurate or irrelevant. The recent partnership between RACS and Medibank Private to study surgical variation in the quest for greater healthcare efficiency is an example of their use¹. It is timely that surgeons understand the strengths and weaknesses of administrative data, and their potential for measuring surgical outcomes.

Every patient treated in a hospital has their admission routinely summarised into alphanumeric codes for the purposes of administration. Patient demographics, acuity, length of stay, diagnoses, procedures and discharge destination are collated by trained coders who scrutinise medical records. In Australia, details of pharmacological treatment, imaging and treating doctor are not routinely captured.

Mortality reporting was once the sole purpose of administrative data. It is still an important purpose as demonstrated in a recent publication from the Victorian Audit of Surgical Mortality². Other uses include hospital benchmarking as done by groups such as Dr Foster Global Comparators³. The US National Inpatient Sample (NIS) uses administrative data in the form of billing information to determine health policy. Australian healthcare funding has relied on coding since 2011. Financial incentives focus coders to use well-remunerated codes but overall increase the accuracy and completeness of coding⁴.

Administrative data are increasingly being used to explore surgical outcomes in research and audit. Their strengths lie in their routine collection, large patient numbers and cost-efficiency. Clinical interpretation of administrative data requires

clear cohort definition. Combinations of data fields can be used to define more specific cohorts⁵. Outcomes these data can provide are limited to the available data fields, which may be less extensive than clinically collected data. Administrative coding classifications do not always match clinical classifications. These issues can lead to misinterpretation of administrative data and perceptions of inaccuracy. However, our study on administrative data in acute diverticulitis has demonstrated good correlation with clinical notes⁶. For any disease, study of how coding describes the condition is required to facilitate clinical interpretation of administrative data.

Data linkage can enhance the use of administrative data for clinical outcomes. Linkage with purpose-built clinical databases is a powerful method of combining the automaticity and efficiency of administrative datasets. This results in the provision of more data fields but requires the use of unique patient identifiers that are not currently available in all states (**Fig. 1**). This would also enable longitudinal follow-up of patient outcomes outside of the index treating hospital. The Queensland Colorectal Cancer Audit, led by the Queensland Cancer Control Analysis Team (QCCAT), is an example of such data linkage⁷.

With any form of big data, there are issues of rights of access to data and concerns about others using these data to impact on surgical autonomy. It is noteworthy that governments and administrators have accessed administrative data for decades. Administrative data in their current configuration are more suited for hospital-level reporting than auditing individual surgeons. These data are useful for surgical outcomes measurement, but it is imperative that surgeons, with their clinical perspective, provide leadership in the clinical interpretation of such data.

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Figure 1

Example of linkage between database fields that augments 'big data', using patient identification number.

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