A division's worth of data

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Throughout the international community there is an increasing focus on the benefits of collecting, pooling and analysing patient data. General practice provides a great opportunity to create a comprehensive database of the Australian population as 90% of Australians visit their general practitioner each year and general practices are increasingly computerised.

This article discusses the facilitatory role divisions of general practice can play in harnessing quality data from general practice and the benefits that may follow. It describes experience from 3 years of data pooling by the Melbourne East General Practice Network in Victoria and makes recommendations for other organisations interested in data collection.

Keywords: general practice; quality improvement; medical informatics

There is growing international recognition that widespread adoption of electronic health records represents a useful resource[1–4] and early work suggests that algorithmic processing of large amounts of data may be more effective than traditional scientific methods.[5] General practice is widely perceived as an appropriate place for pooling data.[6,7] In Australia this pooling could occur effectively through the divisions of general practice. This article is based on the data pooling experience of the Melbourne East General Practice Network (MEGPN) in Victoria.

Secondary use of data can help reduce the disparity and variation in services across institutions and geographical areas; disparities need to be identified and understood before they can be addressed.[8] General practice data has previously been highly segmented but now computerisation allows data pooling and expanded analytical techniques.[9] Use of data within individual practices has been shown to improve individual patient care, with variable effects on costs.[10] However, due to the complexities of combining large, silo datasets, work of this type is in its infancy.[9] Existing methods predominantly concentrate on data for use within a single organisation or for comparing widely separated organisations.[11]

There are many sources of Australian health data including federal and state repositories,[12] hospital databases[13] and various organisation-specific disease registers. Each of these sources has limitations, and critically, none accurately represents the whole population. Traditionally data has either been specifically collected for the purpose of research, or has been a byproduct of data collected for administrative purposes.[14]

Potential benefits of data collection

Potential benefits of data collection are limited primarily by the capacity to collect and process the data. Expanded techniques could be used to determine geographical locations of disease clusters and map specific population movements (such as refugees) within regions. With software capable of realtime notification, epidemic notification and response could also be facilitated. Genetic screening will also rely on good data.

Limitations of collected data

There are inherent limitations of data collected in general practice because of the variability in coding and quality data issues, and the existence of patient duplicates, both within practices and between practices. Divisions of general practice can provide support to improve quality[15] but considerable work is required as data is collected for diverse purposes such as government as well as internal reporting.

Divisions of general practice and data pooling

The most complete source of patient information in Australia currently sits on the disconnected servers of 15 000 general practices – 90% of GPs use a computer and 68% store significant clinical information on them.[16] With 90% of the Australian population visiting their GP each year,[17] the potential of this collection of data is significant.

Divisions of general practice are well placed to support practices to reach this potential. Divisions already have engaged relationships with their practices: communicating new knowledge, treatments and ways of working with GPs and practice staff.[18] Many divisions are already engaged in quality improvement strategies and data gathering at the practice level, and this could be expanded to a more regional pooling of data.

The MEGPN experience

Melbourne East General Practice Network supports 578 GPs in 141 general practices, serving a population base of 505 635. For the past 3 years, MEGPN has targeted practices that have the potential to implement advice and have supported regular, one-to-one visits with authoritative and succinct materials for educating all practice staff on data quality processes, as this is the most effective way to support quality improvement in general practice.[19]

As part of the process to try and ascertain and reach the potential health advantages of its use of general practice data, MEGPN adopted the principle of a 'data hierarchy' to guide the approach to data use and ensure first and foremost that data collected was useful in helping the practice to directly enhance patient care. From most to least important, the data function hierarchy was classified as follows:

- support clinical interventions
- clinical governance
- population based decision support
- policy and strategy
- research
- administration and business support.

In this context, clinical governance refers primarily to the ability of practices to benchmark their practice data. After these functions were complete, data could be aggregated for further uses such as population health strategies and research. Melbourne East General Practice Network has access to data from multiple sources, which allows for triangulation of data. The main data sources come from using extraction tools such as the PCS Clinical Audit Tool® (CAT) and the Practice Health Atlas®, matched with other sources such as annual practice surveys and program evaluations.

MEGPN data usage

The authors provide two worked examples of how data is being used within MEGPN – the use of data for population health support and the use of data to inform policy and strategy. The aim is to outline some of the potential uses of data rather than provide a comprehensive account.

Population health support

To obtain information for the purposes of population health support, de-identified data from practices with a mental health nurse was collated at the division level and matched/merged with other data to produce regional population health information. *Figure 1* compares mental health prevalence data (aggregated from practices in two different local government areas) with a national profile and the local government data. This data was used to inform policy for the Australian College of Mental Health Nurses, as well as a local government population health needs analysis and service planning for local hospitals.

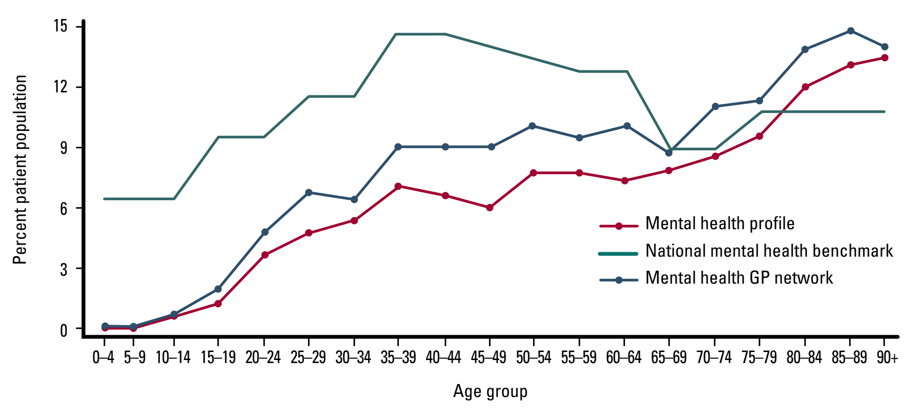

Figure 1. Mental health profile prevalence by age comparison

The mapping and analysis in utilising general practice data in one local government area serves to enrich local data and inform and support changes to services and activities in the region. The information gained from this data and analysis also contributes to clinical governance and internal evaluation of programs provided to the practices by MEGPN.

Policy and strategy

Data represented in *Figure 1* from practices with a mental health nurse has been used to inform policy for the Australian College of Mental Health Nurses, as well as a local government population health needs analysis, and service planning for local hospitals.

Figure 2 highlights the potential for capacity building in general practice and the ability of a general practice network to measure health outcomes. In this graph the improved recording of smoking status for respiratory patients demonstrates increased recording in those practices that employed a practice nurse. Feeding back that data to all practices resulted in an increase in the number of practices employing a nurse.

Barriers to collection and pooling

Factors that can limit collection and pooling of data include the degree of coverage and engagement, the strength of relationships with practices, and software issues.

Coverage and engagement

Forty-four percent of practices supported by MEGPN (representing 50% of GPs) are increasingly providing high quality data for 248 946 individual patients, or 53% of the area population. This patient population represents 'active' patients who have attended these practices at least once in the past 15 months. These practices engage in quality improvement processes because they are interested in improving patient health outcomes and understanding the business case for allocating more practice income to support these services. Despite regular effort on the part of the practice liaison team of MEGPN, there are some practices that choose not to engage. These unengaged practices may not be computerised or may have software that is incompatible with the data extraction tools. Alternatively, these practices may not see value in using data for quality improvement, or the benefits to their practice of general practice network contact.

Melbourne East General Practice Network's ability to engage with all practices in its catchment is further limited by a number of factors, including:

- human resources required to make contact with practices and build productive relationships with key people
- the large number of practices
- computer power to process data and apply extraction tools
- limited personnel with skills for high level analysis and research.

Relationships with practices

Although it remains unproven, the authors believe the fundamental enabler in the process of data collection and pooling is the close relationship of the network with the practices. This multifaceted relationship is far richer than the technology processes and audit/feedback loops involved and provides a strong base for quality improvement activities. A further strength is MEGPN's respect of the principle that control of the data sits first with the patient, then the practice, then the division.

When considering the extension of this program of data collection to beyond 50% of the practices within MEGPN, several factors come into play. The audit activities are funded by the network as a core activity rather than from a specific program, as such this data quality and feedback activity competes with many other priorities, and staff numbers are a limiting feature. In addition, even if all practices were able to engage with the process of improved data collection and analysis, the authors give a generous estimation that only 75% of practices would desire to participate.

Software issues

The current extraction tools do not work with all clinical software programs. Although data from a significant percentage of practices can be used, the software architecture of clinical systems does not lend itself to easy extraction and manipulation of data. In addition, controversy rages over 'ownership' of data, although the authors believe that the uses to which the data can be put are far more important than the issue of ownership. Regardless of who 'owns' the data, there is public and personal interest in it being available for the type of data aggregation activities outlined in this article. Utilising service oriented software architecture instead of closed databases could enhance these activities and improve the care provided to the community. Another issue with software is that there are differing coding structures used within programs, and none use the Australian standards of Systematised Nomenclature of Medicine-Clinical Terms – SNOMED CT-AU®.

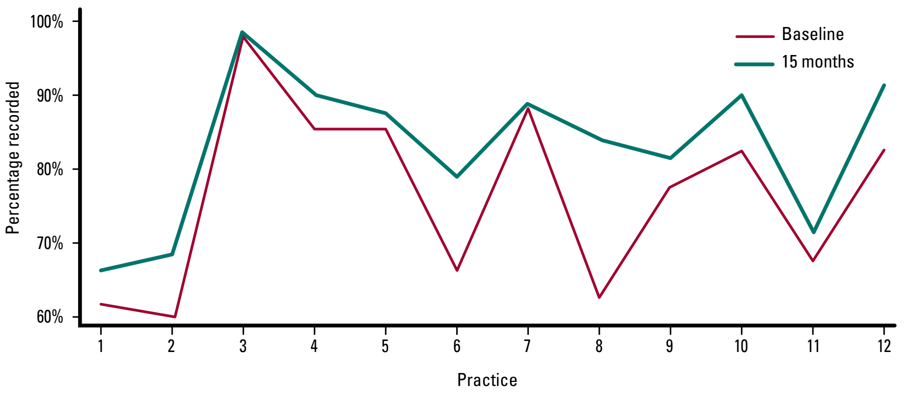

Figure 2. Smoking status recording for patients with a respiratory condition

Privacy and confidentiality

At present, all data collected by the division is de-identified. While the use of identifiable data without consent is clearly inappropriate, there is uncertainty over the use of de-identified data[20,21] and the rights of the individual. As part of accreditation, all practices inform patients of their privacy guidelines, but use of data in this way is not explicitly mentioned. As the data management processes within the network continue to mature, MEGPN has committed to work with practices to ensure that patients have consented to wider use of clinical data.

Summary

- General practice holds the most complete resource of patient information for the Australian population.
- General practice networks have the ability to successfully engage and support practices to increase the quality of their data, manipulate information to support clinical interventions, and mobilise population health and policy decisions.
- Realisation of potential is limited by the need for a standardised approach to software architecture and data coding, as well as by a lack of dedicated resources for general practice networks to engage all general practices.
- Considering the extensive potential benefits to all levels of the health system, these problems are certainly worth solving.

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