Blueprint objective	**2. Performance information and reporting that is fit for purpose**
Case example	**Using advanced analytics to improve our patient experience: How big data can drive improvements in service planning and delivery.**

What is the community need or problem being addressed?

Northeast Health Wangaratta (NHW), like many regional/rural health services, faced ongoing financial challenges given the increased demands for services. Costs were increasing at a faster rate than revenue year-on-year for the past three years.

NHW intuitively felt the rising resourcing demands were somehow linked to the growing complexity of their patient profile however, NHW did not have the capability in house to undertake the level of data analytics required to explore this further.

A partnership was therefore established with data analytics firm, Finity Consulting, who developed an advanced analytics model to measure 'patient complexity' and its relationship to the trends in NHW finances.

What is the approach being implemented?

The activity implemented was an advanced health data analytics model that was aimed at:

- Confirming if patient complexity had in fact increased and, if so, quantify and identify key drivers
- Analysing end-to-end organisation costs and cost drivers associated with service delivery
- Identifying opportunities to strategically and operationally improve the delivery of services

What have been the key enablers to the success of this approach?

NHW management had a clear motivation to improve their service delivery and at the same time to resolve the growing financial constraints it faced. The key enablers were the identification by NHW of their ever increasing patient complexity challenge and their decision to build a collaborative working partnership with an analytics firm.

What have been some of the challenges to the success of this approach?

While priding itself on the high quality of care it delivers NHW, like most rural hospitals, has lacked the analytical capability necessary to explore its patient profile data as a way to improve its service delivery. Part of the problem has been the enormous complexity of hospital datasets and the need to manage the associated Personal Health Information (PHI) with due care. Furthermore, the lack of access to external data on the local population has limited NHW's ability to anticipate and plan for changing community needs.
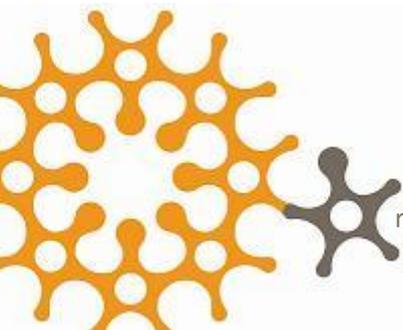
What is needed to scale-up the successes?

Data model

The data model leverages the same highly structured data sets that are used by all health services and which form the basis of regular data submissions to government. All activity-based funding models were included and can easily be updated annually. The data model itself has been specifically designed and built to be scalable, potentially to a national level.

Health services planning

The model employs comparative analysis and highly advanced statistical methods (including the use of machine learning) to provide the insights required for evidence-based health service planning, for instance:

- Operationally, findings enabled the identification of patterns that are predictive for service utilisation, costs associated with complex care and resourcing required to support the increasing patient complexity over time.
- The additional demographic, clinical, patient flow and psychographic data enable the identification of groups of people in the community who are at greatest risk of become frequent consumers of health care services.

Broader health service planning

The business intelligence produced is evidence-based and can be used in the individual or collaborative broader health planning processes required amongst health care providers, such as Primary Health Networks (PHNs), GPs and other community service providers.

Strategically

Strategically, this new level of intelligence supports the development of targeted models of care, informing health planning processes and enabling the measurement and monitoring of benefits realisation linked to measurable health outcomes.

Data quality and integrity

The model has been developed in close consultation with highly experienced clinical and allied health care professionals. It provides ready access to a powerful data pool for research where data integrity is assured as it is a direct by-product of clinical care and service delivery.

Government policy

The outputs of this work have been designed to inform and contribute to key aspects of government policy development across the full spectrum of the health system.

More information

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