Data, analytics and reporting

Context

- 'Big data' presents opportunities to inform care and decision making though predictive analytics. Sources of 'big data' include phone apps, remote monitoring solutions and wearable technology. Predictive analytics leverages machine learning by reading, recording and interpreting big data via the use of algorithms.

- Analytics is a broad term, and can encompass predictive analytics, informatics using spatial data, genomic, phenomic and other omics data and cohort analysis of 'big data' of which may be useful in population planning.

- By analysing and interpreting data in a timely manner, there is potential to improve patients' health outcomes.

- The Grattan Institute detailed that the first step in improving hospital safety in Australia was to better use the information that is already collected, and to give people access to it, and then apply it to their circumstances.[1]

- With a view to improve transparency and accessibility, the Department of Health has reviewed its publicly available performance reports, including elective surgery waitlist data and emergency department activity. While these performance reports are static, they are accessible and easy to navigate. Further improvements to the public reporting of key health system information are planned with the goal of providing a centralised location, more dynamic reporting and allow comparison of performance across the system for users. Health Service Providers (HSPs) are also reviewing and developing plans to increase local performance reporting for both internal purposes and external release.

- In 2016, *a Review of the Western Australia's data linkage capabilities* was released. It put forward a set of short-, medium- and long-term recommendations including a whole-of-government approach on how to better connect data.[2]

- Precision public health is described as the application and combination of new and existing technologies which analyse and describe individuals and their environment to develop preventive interventions for at risk populations and overall public health.[3] Precision public health is on the immediate horizon and can assist in determining current patient risks and future needs to tailor interventions to the right people at the right time. Coupled with the availability of spatial data, genomic, phenomic and other omics data could provide population level statistics to pursue better population health and improve efficacy of information. This data is likely to play a large role in the future of health and bioinformatics.

- An Electronic Health Record (EHR) contains information that can be managed, added to and accessed across multiple healthcare organisations. EHRs contain information from all the clinicians involved in a patient's care.

- My Health Record provides an online summary of an individual's key health information, allowing individuals and clinicians to access information about themselves from many different health providers such as discharge summaries, prescription and dispense records, pathology reports and diagnostic imaging reports. My Health Record has the potential to improve communication, care from health professionals, and to provide better support and management of patient care.

Access to information

- The Panel heard that access to data and information is essential, and investment in data and data systems and analytics to enable transformational change is required. The amount of data generated in healthcare is expanding. This information can guide diagnosis and treatment decisions, if it is available to health professionals. As healthcare processes become increasingly digitised, the data available for use will create opportunities for insights to support treatment and resource decisions, and service planning.
- Through submissions and engagement, the issue of duplication of referrals and tests emerged which was frustrating for patients. This is, in part, due to lack of visibility of visits to specialists and tests. Removing barriers to sharing information electronically between health service providers was repeatedly suggested. Sharing clinical data through digital solutions could reduce harm or waste from unnecessary or duplication of tests and procedures, and improve timeliness of clinical decision making - ultimately saving money, time, and improving patient care and experience.

Capacity and capability

- Submissions highlighted that data and information are considered foundational enablers for progressing reform priorities, and a prerequisite to an efficient and effective health system. Data and information supports systemwide knowledge of performance and can highlight variability.
- The Panel heard that there are opportunities to drive better value healthcare through transparency and confidence in data processes.
- Acceleration of the use of data across the health system was heard to be essential for the creation of a true culture of data-driven decision making.
- Access to data and analytics could present opportunities to better engage with staff, increase accountability and foster innovative approaches to care.
- New data collections and systems were suggested for patient reported outcome measures (PROMs), building on methods of patient reported experience measures (PREMs) and to engage clinicians to use patient reported outcomes with clinical and safety performance information to drive patient centred reform.

Transparent public reporting

- Providing access for consumers to access information and data empowers them to make informed decisions about their healthcare.
- Transparent public reporting of safety and quality, and performance drives accountability, continuous improvement and efficiency, and aligns with the Australian Commission on Safety and Quality in Health Care.

- The *Review of Safety and Quality* in the WA health system in 2017 made a number of recommendations. In particular, the Review found that WA lags behind other national and international health systems in providing patients and staff important information regarding safety and quality of services, costs and other measures of performance.

New and emerging technologies

- Submissions and feedback from engagement indicated that the WA health system is underinvested in new and emerging technologies and there is potential to maximise data and analytic capabilities. Technology to support data collections and analytics can include artificial intelligence, block chain and machine learning. These provide new capabilities to streamline, enable proactive analytics and benchmarking and will disrupt the traditional use of data.

Data integration and sharing

- The Panel heard that artificial intelligence and machine learning will provide opportunities to reduce the time taken in standardising and cleaning data.
- Privacy legislation is an instrument that most jurisdictions across Australia have developed to protect an individual's data. Effective legislation and policy for data sharing and privacy are critical to ensure high integrity and standards. At present, WA does not have data sharing or privacy legislation to provide clarity on safe and ethical use of data.
- The *National Digital Health Strategy* aims to improve data quality and interoperability through the adoption of clinical terminologies, unique identifiers and data standards to enhance safety and the quality of patient care with a linked health system that effortlessly shares high quality data with the right people at the right time.[4] The Commonwealth My Health Record, enables patients to control what is added and which healthcare providers have access to their health information.
- The Data Linkage Branch at the Department of Health has been a pioneer of data linkage in Australia. Demand for linkage services continues to increase. A centralised location for whole-of-government data analysis incorporating improved technology and infrastructure could help enable access and foster delivery of information.

Data analytics and reporting

- Predictive analytics will have a role in improving the health of the community through driving down avoidable readmissions, will assist with staffing demands and will help to identify trends and service gaps.
- Analytics supporting population segmentation and modelling will enable focused services, strategies and policy to better support health needs of people in the community (including frequent users of services).
- Analytic capability gaps could be mitigated through:
    - Partnerships with the university sector and other government agencies in areas such as health economics; noting the requirement to consider the data sharing, intellectual property, research and publishing concerns.
    - Expanding graduate training opportunities in health data analytics to grow capability across the system.

- The potential power of analytics to help improve care quality, make services more efficient and reduce costs should be explored. Data supports a sustainable health system, through:
  - Ensuring meaningful data for clinicians and hospital staff to make informed decisions to improve quality of care both at the point of care and through service reforms and innovation.
  - Ensuring quality data is used by the health system to accurately represent performance such that it can be managed.
  - Provision of linked aggregate data from different clinicians/sites/areas to see the 'bigger picture' and enable macro level analysis including both financial and clinical data for service planning and research.
  - Permitting the identification of systemwide clinical variation.

Exemplars considered

A range of exemplars were identified throughout the course of the SHR in public submissions, Clinical and Consumer and Carer Reference Groups, Working Groups and in public forums. The following exemplars are indicative, however are not an exhaustive list of the exemplars considered throughout the SHR.

NSW Agency for Clinical Innovation (ACI)[5]

- The ACI works with clinicians, consumers and managers to design and promote better healthcare for NSW through supporting service redesign and evaluation, adoption of innovations in healthcare and designing better models of care.
- The ACI is also responsible for reviewing clinical variation and supporting clinical networks to develop standardised clinical approaches informed by sound evidence.

Bureau of Health Information (BHI)[6]

- The BHI provide independent standard analysis and regular public publishing of performance reports - including the "safety and quality, effectiveness, efficiency and responsiveness of the system to the health needs of the people of NSW". BHI is board governed and independent of the NSW public healthcare system and provides interactive data access and a range of reports including patient survey results.

health.wa.gov.au

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