Submission to the Productivity Commission: Public inquiry into data availability and use

Submitted by

LORICA HEALTH PTY LIMITED

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1. Executive Summary

Lorica Health is an active participant in the Australian health care market through its commercial relationship with 30 of 33 private health insurers and a range of Government payers, providers and regulators. We develop healthcare analytics software that improve the fairness and efficiency of the Australian health care system.

Lorica Health is an early-stage spin off from the Commonwealth funded Capital Markets Cooperative Research Centre (CMCRC). Our view is that broader data capture, improved linkage and subsequent access to healthcare datasets can provide significant social benefit, especially when the inherent drive for innovation of the private sector is fused with the reach and weight of the public sector. It is our experience that privacy concerns inevitably align with commercial imperatives and can readily be managed with a longer term view in the pursuit of shared value. The following observations lay out a range of immediate opportunities.

This submission is broken into five sections:

1. Executive Summary
2. Case studies
3. Our point of view
4. A series of recommendations
5. Overview of Lorica Health

2. Case studies

This section includes samples of Lorica Health products and case studies that provide evidence of the need for improved data sharing across health care. In addition, the value of innovation that the private sector can bring to public sector settings is also demonstrated.

Case Study A: HIBIS Express

HIBIS Express analyses more than two thirds of Australia's private health insurance claims for 30 of Australia's 33 private health insurers, enabling the automatic detection and management of health claims leakage, inclusive of fraud, abuse and errors.

Rule-based analytics use custom-coded, logic-based algorithms to mine claims data for irregular claiming patterns, with more than 450 proprietary algorithms now in active production. Lorica's subject matter experts, business analysts and software engineers work together to constantly improve and expand this rule set based on requests and feedback from clients and in-house research into emerging compliance issues. By capturing this collective knowledge and codifying it into additional rules, the platform also provides a means of capturing, retaining and distributing strategically critical corporate memory. ***Once a new rule is developed, it is typically shared with all Lorica clients so as to improve the performance of the software across the entire user base.***

Machine learning involves the continual integration of outcome data into the way an algorithm detects patterns, such that over time, the algorithm refines its focus on its intended target. In other words, the algorithm "learns". ***In the context of our experience with private health insurers, this capability has been deployed on our rules to reduce the number of false positive alerts by 50% while maintaining over 90% of true positive alerts, thereby directly improving the efficiency with which compliance operations are carried out***

The HIBIS Express Platform also features a suite of integrated analytic and workflow capabilities that deliver operational impact and value by providing a wide and evolving range of functionality in support of the identification and management of anomalous claiming and billing behaviours.

Case Study B: I+PLUS

Our I+PLUS clinical analytics platform is a claims analytics tool which offers rich and responsive analysis in support of benchmarking, contracting and management of health service delivery. I+PLUS provides advanced provider performance derived from the application of claims-scoring and predictive modelling.

I+PLUS advanced analytics have been developed to support:

- *claims analysis*
- *provider performance assessment*
- *provider contract negotiation and management; and*
- *provider referral and readmission analysis*

I+PLUS has been developed to support filtering of data by patient characteristics, treatments, DRGs, hospital peer groups and other factors, such that we can present results that compare 'like with like'. In addition, we have incorporated widely used risk scores and adjustments in an attempt to describe relative patient risk.

Surgeon Dashboard

It is surprising to many that highly trained surgeons provide care with little in the way of performance feedback gleaned from the vast quantities of data collected in Australia about their work. I+PLUS Surgeon Dashboard has been designed to address this gap by summarising carefully curated and highly granular quality metrics for presentation to individual surgeons in a risk adjusted, peer-grouped manner.

Hospital quality metrics

In 2015 Lorica Health worked with key Australian health care quality regulators and payers to develop a method for identifying Hospital Acquired Complications (HACs) in hospital claims data and relate this back to the relevant hospitals and clinicians. This work involved 11 hospitals (both public and private, multiple states) and is being referenced in support of improving quality of care transparency to the health care sector.

This early work has demonstrated the ***positive effect that clear and reliable presentation of quality metrics back to clinicians and providers can have.*** *Clinicians and providers are inherently driven to provide the best possible care to the community and acknowledge the utility of using such insights to improve how this is achieved.*

3. The role of private sector innovation

Lorica Health's work represents what is possible when healthcare data is made available for innovation (eg Surgeon Dashboard is being co-developed with a range of possible data sponsors). At present, the siloed and heavily restricted nature of most healthcare datasets prevents innovative and entrepreneurial firms from contributing to the public good.

Further, our experience has shown that the coordinated use of data analytics and technology to inform policy and drive positive change is one of the most effective ways to improve the cost-effective delivery of high quality health care to all citizens. There is a growing field developing in Australia where techniques from behavioural economics and psychology are being used to influence compliance and policy outcomes in the public and private sectors. The private sector has already started to deal with the challenges of getting this execution right, primarily in regards of the privacy and respect shown to customers and providers.

The sensitivity of health care data necessitates that it is managed with utmost care and respect, particularly when it comes to privacy. Again, innovation is supporting how such challenges are met with novel "privacy preserving" data management methods allowing for the simultaneous maintenance of privacy and analytic utility.

A common private sector constraint on data sharing is the pressure of competition and the view that a proprietary dataset is a form of competitive advantage. However, numerous examples exist in Australia (banking, general insurance) and internationally (US National Healthcare Antifraud Association) where traditionally competitive entities have collaborated with respect to their compliance activities. This is particularly true in healthcare where it is possible for an illegitimate provider or patient to be defrauding numerous insurers simultaneously. While sharing sensitive information specifically for compliance purposes may require specific legislative cover, the strong precedent for success suggests this should at least be considered by policy makers. Compliance may be the first, but should not be the last, use case for the sharing of information across competitors, and in health care, one can argue strongly that a moral case exists to do just that when quality of care can benefit. For

such an approach to work requires mutual value to be identified and trust to be reinforced over time.

Current silos of data and a general reluctance to share information between public and private data holdings limits the scope of innovation. For example, without access to linked primary and hospital care datasets a state hospital system may be forced to make decisions relating to prevention programs (eg wellness campaigns) without the ability to monitor the effect of this strategy in the community.

Looking to the future, we believe that healthcare is an industry where regulation can be implemented and enforced through technology. So called "Regtech" is a concept emerging from "FinTech" innovations such as bitcoin and blockchain technologies in financial markets. Blockchain may in the near future provide an opportunity to build compliance into markets, which may then provide ways to improve the efficiency and validity of all healthcare transactions and effective markets.

Allowing data to be linked and appropriately used by a broader range of health care sector groups will allow innovation and dynamism to drive improved system efficiency and health outcomes.

4. Recommendations

#	Key recommendations
1	***Prioritise the creation of person linked health datasets that cover the entire healthcare system. These may need to be publicly held to safeguard privacy challenges.*** *Without a single, completely linked healthcare dataset that covers the entire system from end to end it is not possible to satisfactorily assess the impact of policy decisions. There is a broad range of social and public goods that could come from such a dataset including the elimination of fraud, improvement of care quality and coordination, reduced cost and improved health outcomes, to name a few.* *Additionally, as the funder of our universal healthcare system – Medicare – the Australian Government will inevitably need better information from which to make policy decisions related to the funding and planning of Medicare into the future.* *Key datasets to be considered for linkage include: Medicare Benefit Schedule, Pharmaceutical Benefit Schedule, Hospital Casemix Protocol for private hospitals, Admitted Patient Care data for public hospitals, and GP and community care data.*

2	***Explore how aggregated datasets (matched for key demographic markers) could be used to facilitate the sharing of linked healthcare datasets without breaching privacy.*** *The private sector has shown that individual privacy considerations can be managed by mandating that analysis happen at a sufficiently aggregated level (ie above the level at which an individual can be identified). This is occurring with credit card data where Australian and International banks have used aggregation and modelling techniques to assess the behaviour of a group of "similar individuals" for marketing purposes.* *A similar approach would allow the linked dataset of recommendation 1 be made available to appropriate public and private sector organisations for the purpose of innovative healthcare planning, funding and delivery.* *For example, a Primary Health Network situated in a rural area with a high proportion of chronic disease may have difficulty assessing its future demand for primary care services over the next 5 years. Ideally they could request access to a country-wide dataset matched to their unique demographic and geographic profile that outlines the expected primary care needs over time including GP, pharmaceutical and community facilities in a meaningful and detailed way. Such a strong evidence base would allow the PHN to allocate their funding with greater confidence than currently possible.*
3	***Invest in developing quality, value and outcome measures. Start collecting and sharing findings immediately.*** *Even with an end to end person-linked healthcare data view, there would be a number of gaps in the areas of quality of care, value of health intervention and ultimate outcome. The Government must take a leading role in this area by promoting, funding and driving increased data capture and partnership with leading research in this area.* *New and broader measures should also be considered. Modern technology allows for low cost, wide breadth surveys of health and wellbeing outcomes through smart phones and SMS-based systems. Personal health trackers, the GPS tracking on mobile phones and spending data can all be used in addition to traditional surveys (eg Patient Reported Outcome Measures) as a way to assess how well a person's lifestyle has responded following a medical intervention.*

4	***Identify areas of common value.*** *In order to manage around commercial in confidence issues in the private sector it is crucial to find areas of common value. An example of this is in private health insurance where insurers may be willing to bypass these issues and share data with a trusted third party in order to identify fraud. By sharing data, they are able to engage in much more powerful fraud detection (eg a provider who is billing 8 hours per day to 5 different insurers may not flag as a risk on any individual system, but once combined is clearly conducting fraud).*

5. Lorica Health

Lorica Health creates healthcare analytics products delivered through software that provide improved fairness and efficiency to the Australian Health system. Our current customers include 30 of the 33 Private Health Insurers in Australia and a range of public payer and provider bodies.

Our products and associated services leverage a unique mix of healthcare expertise covering:

- Leading research (in both academic and commercial fields)
- Clinical knowledge
- Big data analytics capabilities
- Commercial acumen in healthcare
- Key architectural and solution components include data management, mining and visualisation, business rules, predictive modelling and network analysis.

Our solutions are built upon on a platform that embeds and maintains full coverage of all key claiming, diagnostic and treatment coding systems including the Medicare Benefits Schedule (MBS), ICD-10 (AM), AR-DRG, Classification of Hospital Acquired Diagnoses (CHADx) and Complications (HACs). In addition, our Recoveries Practice allows health funds to fully outsource their recoveries activities to an experienced and skilled recoveries team. This has the dual benefit of boosting our customers' return from recoveries, but also markedly reducing the resources required to capture them.

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