

# Lessons Learnt from Two Health Systems: Using Population Health Management Systems and Patient Portals

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## Abstract

*This paper explores two domains which, on the surface, may seem very different – the US policy directing metrics to measure HIT adoption across the nation and the implementation and utilisation of a practice management system auditing tool (Dr Info) within a region of New Zealand’s general practices. Yet, when looked at under a different view, there are similarities which drive the use of HIT to improve results that engage patients in self-management of their health and clinicians in population health management. Both can improve the delivery of healthcare and provide value for money but both also need support and systems that foster innovation at a patient and practice level. This will continue to be an issue as the health workforce ages and becomes smaller. It is therefore crucially important how we utilise and train our workforce, that they have HIT systems that support their work with the approach that through showing results and improving results, clinicians will engage and want to use the technology to improve their practice. At the same time patients will need support to self-manage their conditions through the utilisation of patient portals and other innovative HIT initiatives.*

## 1. Introduction

Across the world and across the care continuum, results focused use of health information technology (HIT) is a topic that comes under many guises, but targets the same desired outcome – improved population health. Whether it is ‘meaningful use’ metrics in the United States of America (US) or population health auditing in New Zealand, the use of health informatics is ubiquitous in today’s health systems. While the differences across the health care domain – between nations, between health care services – may be cited as limiting factors, there are also commonalities that can be observed and used to influence how policy, process and procedures leverage learnings of HIT implementations. Though nations such as New Zealand, United Kingdom, Canada, and US have fundamental differences in their health systems, their national health plans increasingly focus on a consistent set of common needs – providing more services with fewer resources, improving patient safety and caring for an ageing population with a growing incidence of chronic conditions (1-4). These common issues are evident in the similar use of health information technology to address these problems. For example, the use of a clinical portal to share a patient’s longitudinal record is an innovation which has been adopted by all of these nations. Differences do exist – for example, data standards and privacy governance may be unique based on federal regulations. Tactical level commonalities also exist, for example, work lists and alert conditions, as well as the need to recall patients for screening and immunisations.

### 1.1. Innovation in a health care context

What is innovation in a health care context? The Latin root for innovation means ‘to renew’ or ‘to change’. According to the Harvard Business Review, ‘*If ever a field needed a makeover, it's medicine. Chaotic, expensive, inefficient, and often ineffective, health care is dying for innovation*’ (5). Yet, how do we ‘renew’ the provisioning of health care, and change an ‘innovation’ to ‘practice’, much as Henry Ford changed the provisioning of transportation with innovative automobile delivery in 20<sup>th</sup> century America?

## 1.2. Health informatics can draw us together

Health Informatics New Zealand (HINZ) focuses on facilitating improvements in business processes and patient care in the health sector through the application of appropriate information technologies. According to the British Medical Informatics Society Journal, 2005, health informatics is *'the application of information technology to health care. It constitutes the understanding, skills and tools that enable the sharing and use of information to deliver health care and promote health.'* It is the use of health informatics to share and use information that is the focus of this paper, whether it is sharing across the boundaries of nations, or within the health care system itself, between primary and secondary care providers.

## 2. Clinical Problem

Even within health care systems, innovation implementation has some level of uniqueness and customisation to fit a local need. What works in one specific setting may not work exactly the same for another setting. For example, the use of Computerised Physician Order Entry (CPOE) systems, as a tool to reduce medication errors, was widely promoted in the US, after the Institute of Medicine's report 'To Error is Human' (6). However, many examples exist of 'successful' and 'failed' implementations. Intra-health system sharing is important to gain learnings, but there is no cookie-cutter approach for each institution (7-8). Besides inter- and intra- health system commonalities and differences, there are unique and shared aspects across the health care professional groups as well. For example, both primary and secondary health care providers have implemented electronic health records (EHR), a computerised, longitudinal view of an individual's interaction with the health system. However while secondary healthcare can implement change through large management structures, and invest in training that will support HIT utilisation, primary care depends on small businesses adopting, implementing and utilising new HIT systems in time poor environments that can be seen to detract from clinician time with patients.

## 3. Implementation and Design

### 3.1. US example of metrics to improve adoption, best practice and health literacy

In 2009, the US government approved the American Recovery and Reinvestment Act (ARRA), which, among other programmes, provided funding of more than US\$25 billion to health information technology which was to be used to reduce costs, improve outcomes and improve patient safety. One portion of this amount, US\$19B, was to encourage the adoption of HIT through the use of electronic health records. Eligible providers and organisations may apply for funding based on meeting criteria for the 'meaningful use' of the technologies (9).

Many of the Meaningful Use criteria establish benchmarks which encourage evidence-based, best practice guidelines. For example, following the earlier IoM citing of the value of CPOE for reducing medication errors, one meaningful use metric is to ensure that physicians utilise CPOE systems for at least 30% of the medications ordered for their patients. The purpose of the financial lever is to encourage the adoption of CPOE. Though not yet finalised, expectation is that Stage 2 and Stage 3 will increase the benchmark value to reflect the growing awareness of the benefit of CPOE, and therefore a higher level of adoption. This is an example of using metrics to encourage the adoption of best practice guidelines for improved safety in patient populations. Other metrics, such as evidence-based best practice for chronic conditions, like diabetes, cardio-vascular disease or obesity, are also being utilised. Metrics have financial incentive benchmarks, but also display in comparison to other individuals, organisations or geographical districts.

Another use of metrics encourages the use of HIT to increase patient engagement in their own health management. The initial phase (Stage 1) of the metrics designed to measure meaningful use of HIT contain several criteria which encourage a model of care that increases patient health literacy. These metrics include:

- Patient Specific Education Resources – Enabling a provider to electronically identify and provide patient-specific education resources.
- Patient Reminder – Enable a provider to electronically generate a patient reminder list.
- Electronic copy of health information – Enable a provider to create a clinical record in a human readable form on some form of electronic media.
- Timely access – Enable a provider to provide to the patient timely online access of their medical record.

All of these levers can be enabled by the use of a *patient portal*. A patient portal enables patients to access their medical record, request appointments, view educational materials and have secure communication with their care providers. Though Stage 1 does not require the use of a patient portal to achieve the meaningful use objectives, measures in Stage

2 (currently under review) will require the use of a patient portal to gain access to ARRA funding. In the US, the use of metrics to encourage HIT adoption and health literacy, such as through CPOE or electronic patient education, is seen as a lever towards improved patient population outcomes.

### 3.2. Dr Info overview of product and process of implementation

General practice has been tasked with taking a population health approach. Targeting at risk group, linking general practices with their communities and service provider that can assist the patients and their practice are important ways in which general practice can improve population health. Recently in New Zealand there has been a push to define what population health means for Primary Health Care.

*Taking a population health approach within a PHO means making use of demographic and health needs data to plan clinical programmes in partnership with the communities served. It means that a PHO delivers services in a variety of community settings to improve access, explicitly taking account of health inequalities and how these might best be reduced. Taking a population health approach also involves promoting health above and beyond diagnosing and treating illness. It involves a PHO engaging in health promotion in partnership with other sector community organisations, and recognising such partnerships as integral to improving health outcomes for its enrolled population and wider communities (10).*

In July 2010, ProCare Health Ltd funded the rollout of a Patient Management System (PMS) population health auditing software (Dr Info) for its 172 general practices in the Auckland region. To monitor and manage a successful rollout of the software, a survey was run online prior to the software rollout to find out the views, approaches and difficulties general practice and PHO staff (n= 226) had with population health management.

## 4. Evaluation

### 4.1. Adoption of electronic health records in the US

The US government began making payments to some of the 42,000 registered health care providers in June 2011. More than 300 providers received approximately US\$75 million by attesting that they have complied with the ‘meaningful use’ criteria (11). While these metrics reflect the use of HIT, associating the anticipated outcomes, such as improved patient safety, better management of chronic conditions and increased engagement with patients, has yet to be shown. The Health and Human Services Department has announced that it intends to conduct surveys of patients and providers to better understand the perceptions around the use of EHRs. Studies have shown that it can take as long as two years or more to be able to measure the anticipated improved outcomes of HIT (8). While the US government has reported an increase in the adoption of HIT, studies providing evidence of the value from HIT continue to prove challenging in the short term.

### 4.2. Dr Info implementation and utilisation in a primary health care setting

The online survey of practice staff showed that the biggest barrier to practices using new HIT systems are existing work volume, patient management systems being seen as time consuming and as taking clinicians away from face-to-face clinical work. Frequently, it appeared that the general practices who had adopted population health auditing systems such as Dr Info were also the employers of nurses who were motivated, and had undertaken postgraduate education or other focussed training. This group, perhaps because of the data they were using, appeared to have a better knowledge of their practice’s enrolled population.

**Table 1 - Summary of barriers to delivering a population health approach**

<b>Barrier</b>	<b>2010 (N=226)</b>
Insufficient time	79.1% (n=167)
Limited access to a computer with ‘Dr Info’ to audit PMS for follow-up or recall	30.3% (n=64)
Computer skills insufficient to use an IT system to monitor population	31.8% (n=67)
Too few nurses to provide healthcare in clinics	55% (n=116)

The barriers to delivering a population health approach (see Table 1) were seen to be insufficient time (79.1%), too few nurses to provide healthcare in clinics (55.0%), computer skills insufficient to use an IT system to monitor population (31.8%), limited access to a computer with Dr Info to audit PMS for follow up and recalls (30.3%).

It could be proposed that even when practice staff has access to population health auditing tools such as Dr Info, there are sometimes insufficient computer skills to use the tools to monitor and population health. This can be attributed to an aging workforce, clinicians not using HIT systems regularly in their workday and there not be enough time for clinicians to develop and maintain their HIT skills.

## 5. Lessons Learned

There are similarities in US and New Zealand health systems. For example, both systems have adopted metrics to pay-for-performance, particularly for improved patient outcomes. However, US system uses metrics to encourage best practice guidelines for individuals already within the system, for example encouraging clinicians to use CPOE during patient visits or to increase patient engagement through online access to their health information. The New Zealand system currently uses metrics to find patients who are overdue for screening and immunisations so that patients are cared for using best practice guidelines.

Though US ARRA funding provides some level of HIT support and training for clinical practices through Regional Extension Centers, the metrics focus on adoption more than technology availability and workforce capability. In New Zealand, health workforce capacity is going to become an increasingly pressing issue. Based on feedback from the Dr. Info implementations, access to computers for general practice staff and training for clinicians to have the computer skills they need could be one way to support general practice to manage their population's health. However time and resources are needed to enable this. Nurse clinics, that have HIT systems that support population health management, could be one potential way of addressing this issue. Nurse clinics could support patients with long-term conditions (such as diabetes, cardiovascular disease or HIV.) These patients could also make use of online patient portals, a tool that could effectively help patients self-manage their long term condition and improve their health literacy. These options are going to be increasingly important in a health environment which demands value for money, better, sooner, more convenient health systems, and patient centred care.

## 6. Future Directions

What is key to focusing on population health is patient engagement in the future and the need for patients to be supported to utilise HIT. New Zealand has low levels of health literacy even though there is a high level of literacy (12). The advantage of improving health literacy is that it can enable and empower patients to make the optimal health decisions for themselves. Health literacy can also decrease patient risk factors, increase self-confidence and self-efficacy (13). The Stage 2 funding for the ARRA, which requires online access for patients to their health information, reflects a common goal for health literacy and patient self-management. The health workforce also needs to be supported to adopt HIT and utilise it so that they can follow best practice guidelines and engage patients in education, reminders and information about their health. This may include additional computer training and availability to those already utilizing HIT or transforming models of care by extending further into the community for long-term condition management. Regardless of the specific approaches used by health systems to improve population health metrics are a common tool used to gauge the effectiveness of HIT. By sharing lessons learned both across and within health systems, all health care stakeholders can more effectively use HIT to reach their shared desired outcomes of improved population health.

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