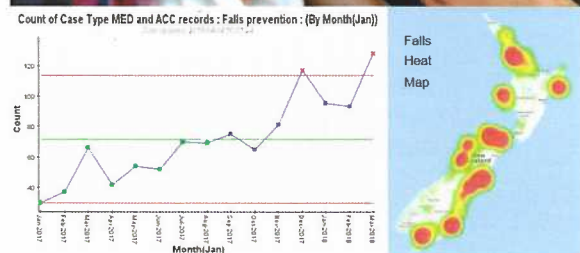


Integrated Clinical Analytics System



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St John NZ has been developing an integrated clinical analytics system since early 2016. The project has been driven by the 'Right Care, Right Time' (RCRT) program and was sparked by the transition from paper-based patient report forms to electronic patient report forms (ePRF). This enabled electronic capture, identification and codification of patient information for more than 500,000 incidents a year. The successful completion of the Clinical Hub pilot in Auckland in 2015 and the staged national rollout of Clinical Hub in 2016 have also resulted in fundamental changes to how we understand patient ambulance experiences.

RCRT aims to further the understanding of a patient's healthcare experience, the role of ambulance and dispatch practices and the effectiveness of service delivery models to meet strategic and local demands of the New Zealand healthcare system. The program involves development of information architecture between the clinical and operational repositories across the ePRF system, Clinical Hub, InformCAD dispatch system and the Ministry of Health hospital datasets.

Aim

The aim of integrated clinical analytics is to support safe and patient-centric healthcare delivery by improving clinical and operational practices and system-based integration.

A range of elements for consideration include: understanding 111 contacts for patients on a low acuity journey and their interactions with the Clinical Hub; use of patient-specific information including patient demographics; and assessing quality of clinical practice by ambulance clinicians.

Background

RCRT requires the tracking of patient interactions with the aim of changing the emergency ambulance service delivery model. Changes include

virtual clinical telephone assessments and increasing the number of 'see, treat and referrals' from incidents without transport. As the initiatives aim to redirect patients from hospital emergency departments in a clinically safe and appropriate manner, it is paramount that continuum of care for patients is measured.

Method

A holistic journey was modelled from the viewpoints of patients, clinicians, support managers, executives, system level measures, funders and considering governmental health strategy and legislation.

Each stakeholder group had their needs and wants, as well as future intentions captured from a blue-sky approach. Both the process and rationale of information needs and context were captured for designing the integrated clinical analytics system.

Implementation

The integrated clinical analytics system was implemented with the eventual three output mechanisms:

1. Scripted reporting based on business, operational and clinical measures, including investigated business case developments. This is primarily used to create compound derived measures. e.g. pregnant and alcohol intoxicated patients attended.
2. The use of automatic subscription reports through SQL Server Reporting Services, including data driven subscriptions. The evolution of this mechanism went from initial tabulated reports and simple charts supported by data, to functional dashboards, e.g. alcohol intoxicated patients dashboard.
3. The development of the ePRF feed in Signals-From-Noise (Sfn), a statistical process control analysis tool. This contains up to 500 commonly used measures and 93 derived definitions to create a self-service clinical analytics system.

Outcomes

The clinical analytics system has enabled the following improvements:

- The capability to deliver system wide clinical audits, focused audits, clinical research or incident investigations, has significantly improved as has the level of specificity and sensitivity in clinical or operational content.
- Right Care, Right Time metrics for emergency department redirections, such as the effectiveness of clinical telephone assessment in reducing responses, and the establishment of patient referrals, destination policies and clinical pathways.
- The ability to apply analytics across patient demography and cohort analysis by population health conditions and outcomes.
- Through linking with hospital and primary care records, we can measure the volume of incidents where ~15% of incidents calling 111 had a prior 48-hour contact with primary or secondary health services. We found only 17% of patients followed instructions to see a GP in a timely manner after being advised.
- Through hospital reconciliations, we determined that ambulance transports make up 22% of ED presentations, but 34% of hospital admissions.