

Measuring outcomes clearly: Overcoming challenges of mental health and chronic disease reporting.

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Introduction

Federal or state funding to implement mental health and chronic disease programs usually have an obligation to report back on the services delivered and their outcomes. In most cases, the format of these reports are quite cryptic to the organisation that delivers the service. Team leaders and clinical managers need to better understand the impact of the services they deliver and gain insights to the data so that they can help improve service delivery.

From a product perspective, the requirements for collecting data change over time and it is important to design systems that are flexible and provide value at each stage of it's development. In this presentation we will look at a product journey of building a data warehouse from conception, having meaningful data available for the clinical managers, the challenges faced and preparing for the next wave of consumer data from mobiles and wearables.

Technology Brief

A custom extract and transform tool with support for message digest hashes for data integrity was developed to cater for reduced licensing costs, re-extraction of data, duplicate and dispersed data. Data extraction was scheduled at regular intervals, zipped and transported to the central data warehouse via FTP (File Transfer Protocol). Sites from across Australia had the capacity to send de-identified data to a central repository.

Embarcadero ER/Studio was used to design the dimensional star schema of the clinical repository. The data warehouse was built using Microsoft SQL Server© Analysis services. Integration services was used for loading the source data. Since the core system supported OLAP (online analytical processing), the system was agnostic to the visualisation tools used. Clients with limited budgets or local access to the database could use applications like Microsoft Excel© while enterprise clients had the option to use tools like Tableau© for browser based access.

Implementation Processes

The scope of the initial phase for headspace, a national youth mental health service, was to collect quantitative data on their consumers and then look at the surrounding qualitative factors like demographics, reported problems, diagnosis, drug and alcohol use and frequency. Since the reporting needs were yet to be defined, there was an element of ambiguity on how this data was to be used and the patterns that may be identified. This defined the architecture of the solution requiring dynamic multidimensional capabilities rather than static reports.

Subsequent market requirements from Medicare locals and service delivery organisations identified the need to analyse complex datasets around health outcome measures like HoNOS (Health of the Nation Outcome Scales) and LSP-16 (Life Skills Profile). Chronic disease management introduced a different set of challenges as Blood Pressure, HbA1c (glycated haemoglobin), smoking status and various user defined values were required to be tracked. The solution involved giving the users the ability to define their own data collection fields and have that automatically available within the data warehouse in a meaningful way. Training has been found to be one of the important factors in implementation. Staff who are used to static reports were required to understand new concepts like slowing changing dimensions. Equally important is adding context to measurements and how different dimensions to data effect the meaning of quantitative data and measuring outcomes.

Conclusion

Understanding the fundamentals of data collection for reporting is vital. Our learnings may be applied to new organisations like the Primary Health Networks reducing their need to learn by trial and error, saving time and money.

This case study reveals the benefit of using a data warehouse and emphasise why it is prudent for funders, managers and team leaders to drive their own reporting to identify correlations between data that technical report writers may fail to realise.

Keywords

mental health, chronic disease, measuring outcomes