Summary

- Hepatitis Foundation NZ has over last 2 years embarked on a IT modernization program as platform for delivering on Hepatitis 2030
- HFNZ has completely embraced Microsoft Azure Cloud as it’s IT platform including Office 365, Dynamics and Azure Analytics and Cognitive Services
- This include both a Monitoring System and National Registry
- Cascade of Care mapped over Commercial Solution
- HFNZ believes that the core of the "problem" is not necessarily a Clinical but largely Systems problem.
- HFNZ is in the process of linking National Datasets to the Registry to target potential clients
- Big Data leads to Big Understanding

Full Presentation: https://www.hepatitisfoundation.org.nz
What is the Problem we are trying to Solve?

“If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it.”

- If the answer was “to eliminate Hepatitis by the year 2030”, then what is the question we are trying to solve?
- How do we eliminate Hepatitis within a reasonable timeframe with the resources that we can marshal within the broader environment we cohabit?
- Alternatively, given K clients, X the cost of finding them, Y cost per Screen and Z cost per Intervention, how can we meet our goal?
- The problem is not necessarily clinical but rather Systems and resources problem.

Purpose of IT Strategy

To Understand:
- What we do and how we do it (resource allocation)
- Who our clients are and how best to reach them (Client Profiling)
- What resources are applied to deliver what we deliver (Intervention costs)
- How to reach those we don’t reach (Client Acquisition)
- “You can’t improve what you can’t measure” – Peter Drucker
Big Data is used to drive the organisation, not just run the organisation.

Current and Future State

- Where do our clients come from and importantly why?
- Who do we currently serve and how do we serve them?
- What does an average intervention cost? What are the baseline costs of an intervention?
Understanding Big Data

Big Data is used to understand the nature of the “problem”
- Data is living both organic and design
- Data Atrophy is a big problem – eg Addresses
- Data Drift – Change in procedures introduce variance in underlying data
- AI techniques for Data Matching – Machine Learning and Levenshtein Distance
- Adopting Reporting strategies for data integrity

National Registry vs Monitoring Screening

- Proactive – You go find the Client
- Client Acquisition
- Understanding the “Problem”
- Capacity Constrained
- Process partly owned by others
- Reporting is Outcome Centric
- External Constraints
- Reactive - The client comes to you
- Client Management
- Managing “Problem”
- Managing Process
- We own the process
- Reporting is Individual Centric
- Internal Constraints
Platforms we Didn’t Choose

1. Proprietary Systems all display Vendor Lock-in to different degrees
   • Built more to benefit vendor

2. Inwardly focused – build for operational capability narrowly defined

3. Very poor interoperability capability – at the mercy of the vendor

4. No Client Acquisition Capability

5. Limited or no Analysis Tools - Reporting is Vendor controlled

6. 10+ year old IT design, does not leverage the latest Cloud and Mobile capability characterized in modern commercial IT system

What We Did Choose

- Microsoft Office 365, Dynamics 365 and Azure Cloud
- All subscription model that scales up and outwards
- Modern Cloud Based Platform that is Extensible and Flexible
- Exploits Mobile, Office, Analytics, and Cognitive Capabilities.
- Enterprise Level Access and Authentication
- Desktop and Mobile Integration with Enterprise Security
- Dramatically improve Business Continuity Profile for Organisation
- Supports Legacy Communications through inhouse Proprietary Connectors.
Cascade of Case to Funnel Management

Screening, Registry and Management System
Data Validation and Verification

- All data is anonymised – use Field Level Security to redact identifying data from research and reporting applications
- Address Data Synced with NZ Post Address File
- All Geographical Data is Geo-encoded and matched to Domicile/DHB and Mesh block
- Census 2013 data well out of date, (NZ Pop +7%) 2018 Latest Census
- Built in Verification Modules for Data Matching and Duplication Detection
- Reporting Systems for variance and drift – Gap Analysis

Linked DataSets

- NZ Post
- Google Geocoder API
- Koordinates (NZ Stats)
- Ministry of Health
- Statistics
- Census
Referral System -> Client Acquisition By Design

Evolution from Referral Management to Acquisition and Processing

Making it Easier to Do Business with HFNZ

- Electronic Referrals – 95% within 12 months
  - Self Referral/Web Referral forms within 3 months
  - Healthlink Referrals automated within 3 months
- Patient Portal – Manage their relationship with Foundation
  - SMS/Secure Email – signal email is available (like IRD)
- Chain of Consent Improvements – How can we do electronic consents; timely, clearly and legal
- Validation of Addresses data at each touchpoint
Data Warehousing - Outcomes

HBsAg Prevalence by Sex & Age Cohort — 2016

Variance over time

Insight

Snapshots of Aggregates

HBsAg Prevalence by Sex & Age Cohort — 2016

Males Females Overall

Reporting and Analytics Framework

- Aligning Metrics to Business Requirements
- Operational Reporting evolves over time – Micro view with Macro implications
- Cost per intervention Early Stage vs Late Stage
- New System **Forward Liability metrics** Now able to be calculated
- Research and Analysis Reporting
  - Drug and Treatment Data - identify and improve data gaps.
  - Realtime Dashboarding for operations and management
Dramatically improving our understanding of who we serve and how we serve them. So we can continually improve that service.