

DISEASE ERADICATION – THE JOURNEY THROUGH BIG DATA

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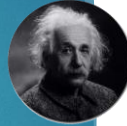
Summary

- ▶ 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 met our goal?
- ▶ The problem is not necessarily clinical but rather Systems and resources problem.

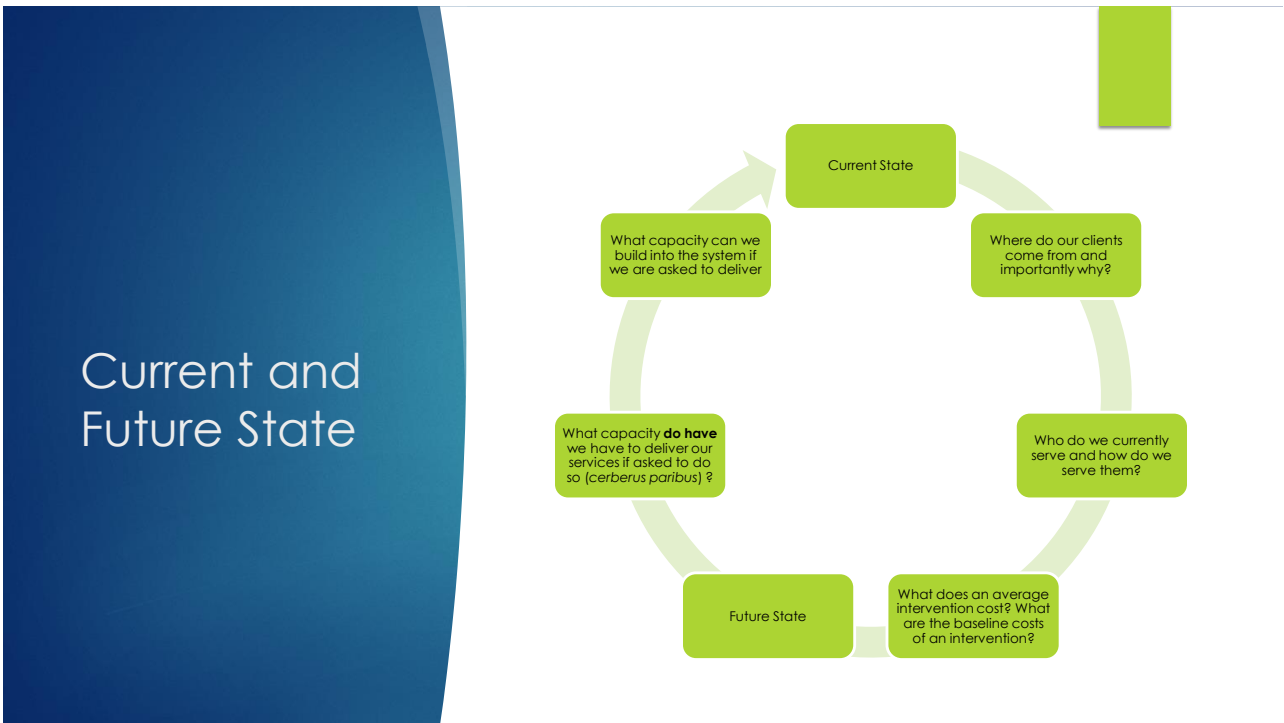


Purpose of IT Strategy

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



Understanding Big Data

Big Data is used to understand the nature of the "problem"

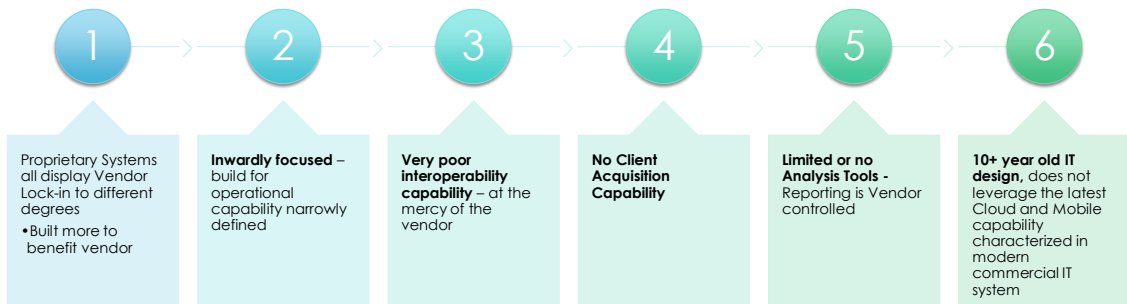
- ▶ **Data is living** both organic and design
- ▶ **Data Atrophy** is a big problem – eg Addresses
- ▶ **Data Drift** – Change in procedures introduce variance in underlying data
- ▶ **AI techniques** for Data Matching – Machine Learning and Levenshtein Distance
- ▶ Adopting **Reporting strategies** for data integrity



National Registry vs Monitoring Screening

- | | |
|---|--|
| <ul style="list-style-type: none"> ▶ Proactive – You go find the Client ▶ Client Acquisition ▶ Understanding the "Problem" ▶ Capacity Constrained ▶ Process partly owned by others ▶ Reporting is Outcome Centric ▶ External Constraints | <ul style="list-style-type: none"> ▶ Reactive - The client comes to you ▶ Client Management ▶ Managing "Problem" ▶ Managing Process ▶ We own the process ▶ Reporting is Individual Centric ▶ Internal Constraints |
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Platforms we Didn't Choose

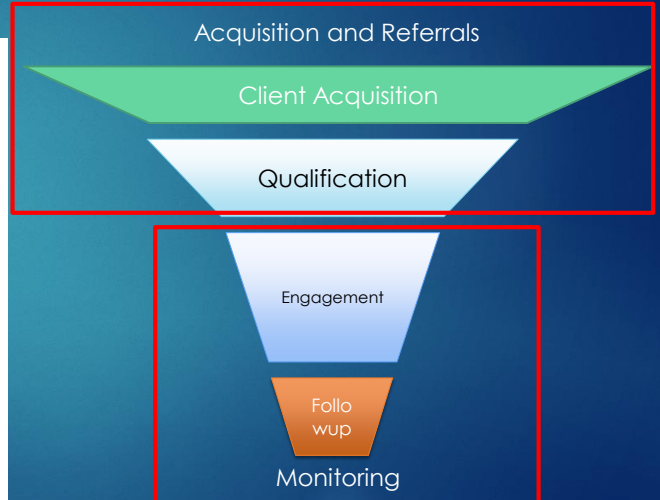
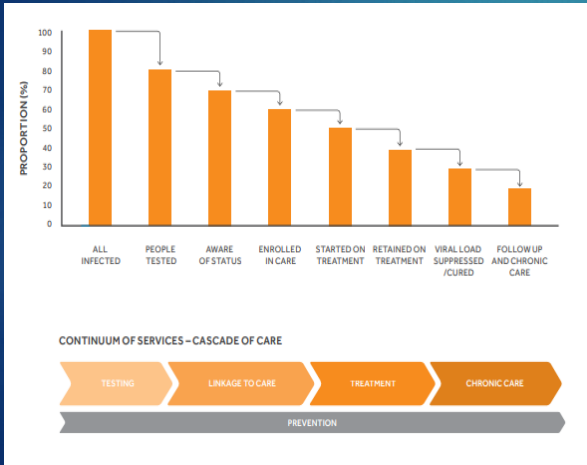


What We Did Choose

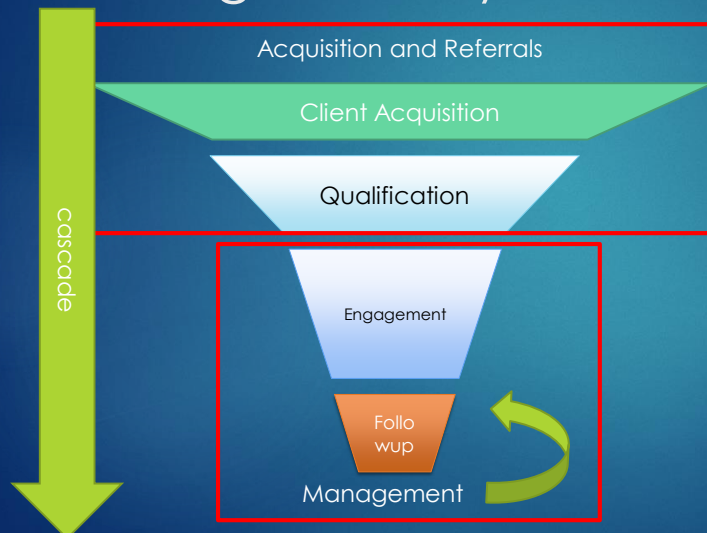
- ▶ Microsoft Office 365, Dynamics 365 and Azure Cloud
- ▶ All subscription model that scales up and outwards
- ▶ Modern Cloud Based Platform that is Extensible and Flexible
- ▶ Exploits Mobile, Office, Analytics, and Cognitive Capabilities.
- ▶ Enterprise Level Access and Authentication
- ▶ Desktop 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



- Measuring and monitoring Acquisition Strategies
- Measuring Yield
- Measuring and monitoring KPIs
- Measuring and monitoring Outcomes

Data Validation and Verification

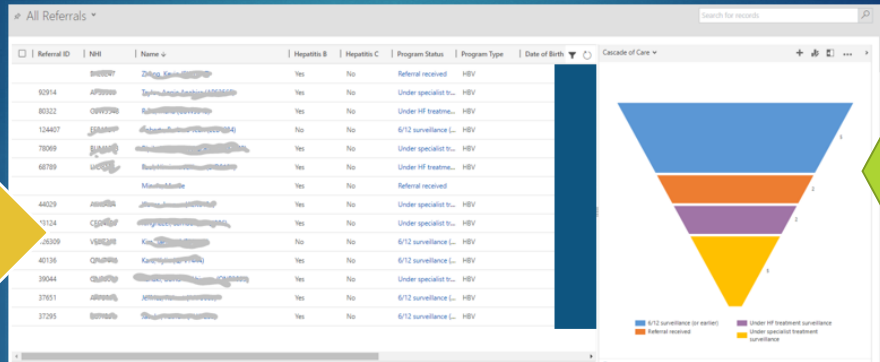
- ▶ All data is anonymised – use **Field Level Security to redact** identifying data from research and reporting applications
- ▶ Address Data Synced with NZ Post Address File
- ▶ All Geographical Data is Geo-encoded and matched to Domicile/DHB and Mesh block
- ▶ Census 2013 data well out of date, (NZ 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



Referral System → Client Acquisition By Design

Electronic In Bound Referrals



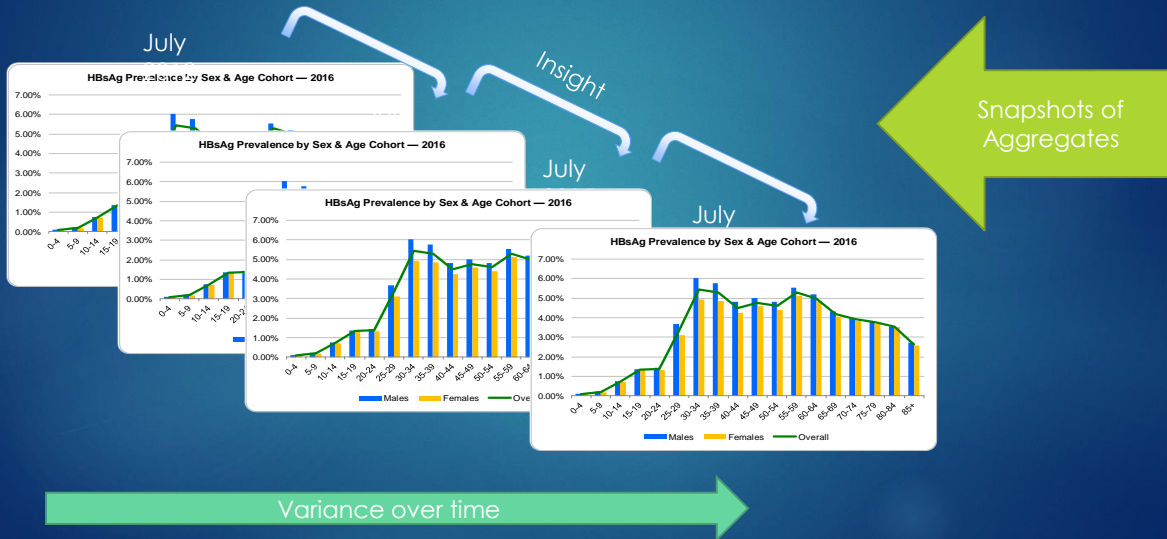
Cascade

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



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

