

# Big Data and Healthcare Analytics

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# Big Data and Healthcare Analytics – Why Now?

- More data
- Linked data
- New data
- Growing need/motivation to use data

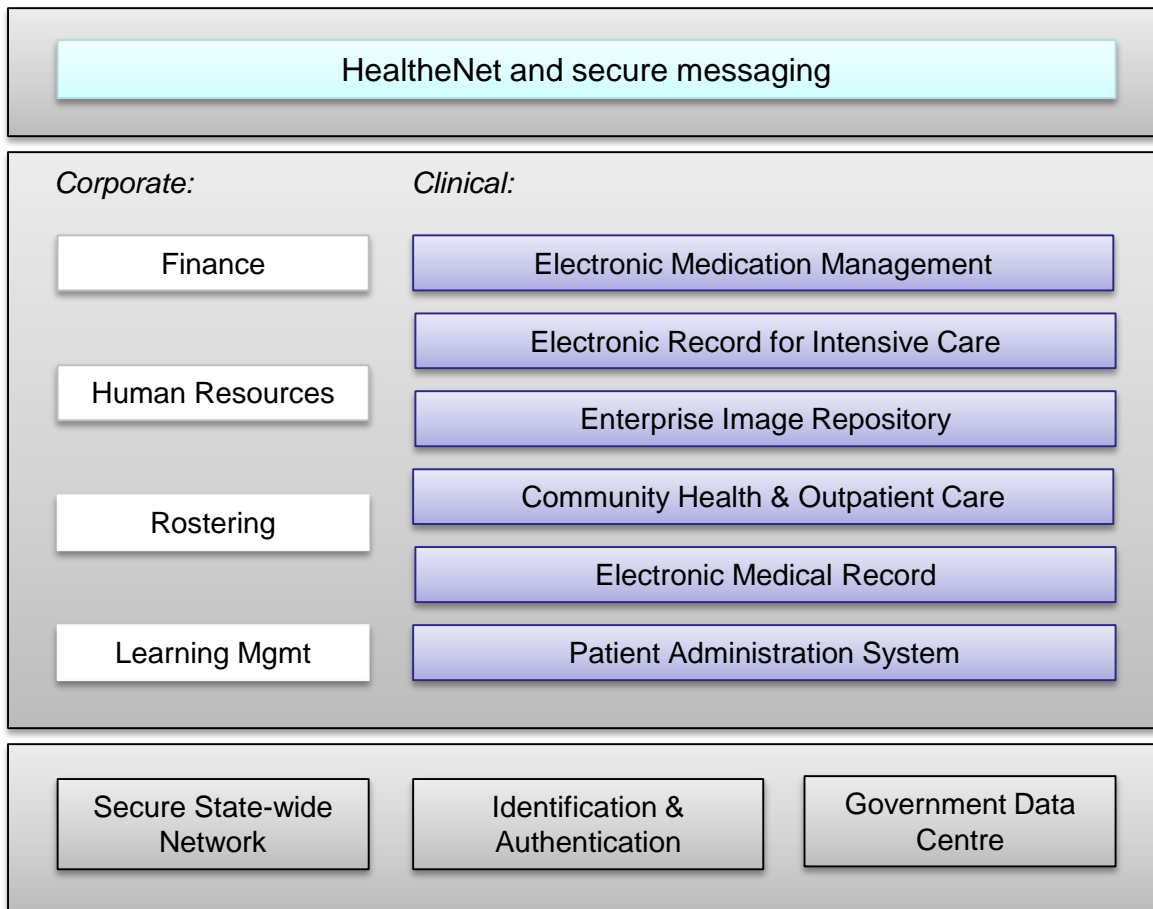
# More Data – NSW Health

- More than 20 well established state-wide data collections (and growing)
- Electronic Medical Record systems in most hospitals
- New systems (clinical and corporate) and increasing functionality of existing ones

## State Wide Integration and Data Sharing *(integrating care)*

## State Wide Applications *(a standard approach)*

## State Wide Infrastructure *(a solid foundation)*



# Linked Data – NSW Health

- The Centre for Health Record Linkage (CHeReL)
  - Established in 2006
  - Dedicated population data linkage unit for NSW and the ACT
  - Contains over 107 million records from 20 frequently requested datasets
  - Has been used by over 1,370 investigators to-date and attracted more than \$70 million to NSW
  - Around 45 new projects with 225 investigators are approved each year (currently: 180 active data linkage projects)
- Expanding range of data sets being linked

# New Data – NSW Health

- Biometric data
- Bioinformatics data (e.g. genomic)
- Patient Reported Measures
- Integrated care (incl. aged care and social care; risk stratification; shared care plans)
- Social media
- Internet of ‘healthcare things’

# Patient Reported Measures

*Enabling patients to provide direct, timely feedback about their health related outcomes and experiences to drive improvement and integration of health care across NSW.*

Individual

Improve quality of care by informing care planning and management

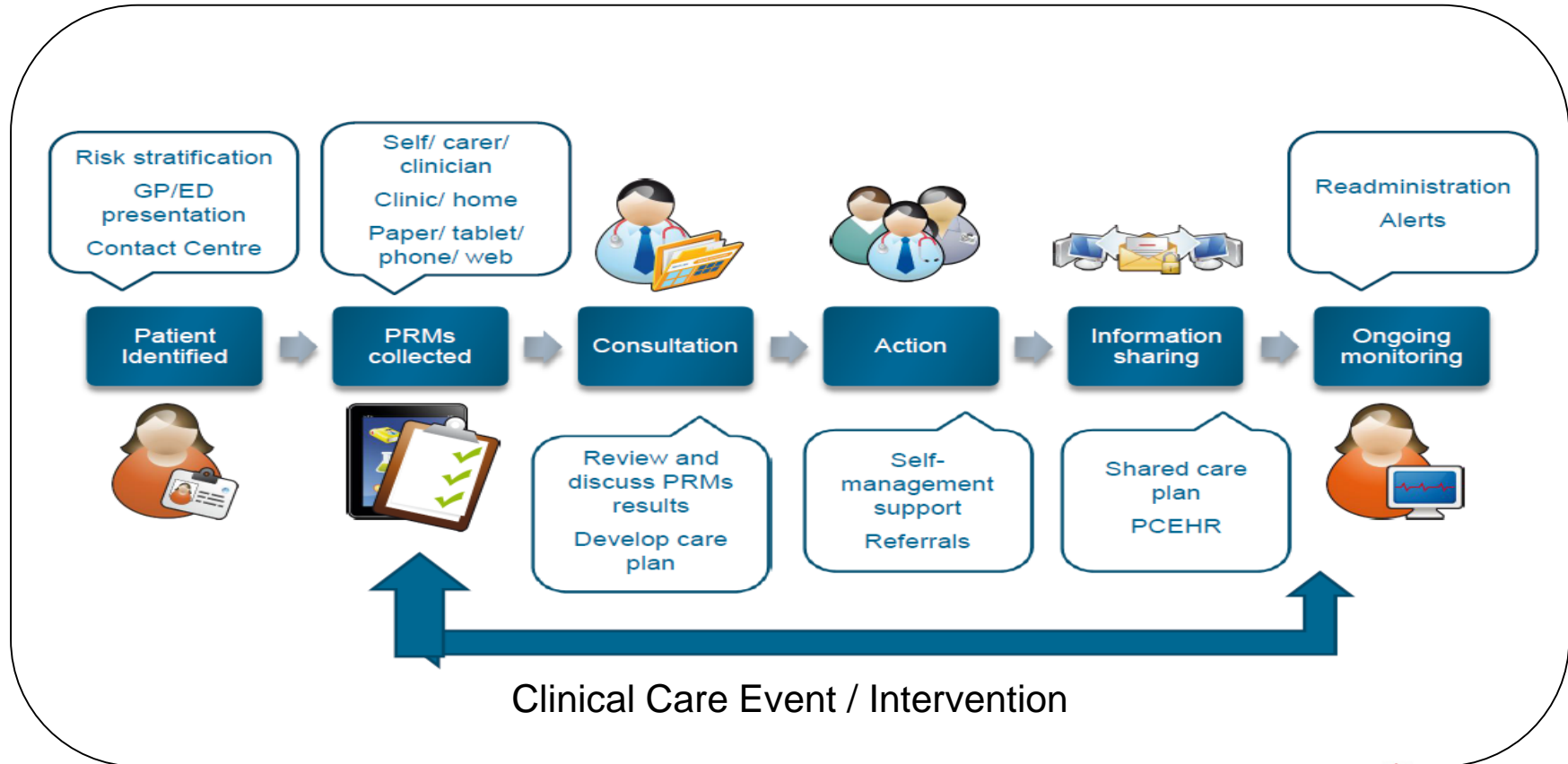
Service

Identify what is working well and areas for improvement

System

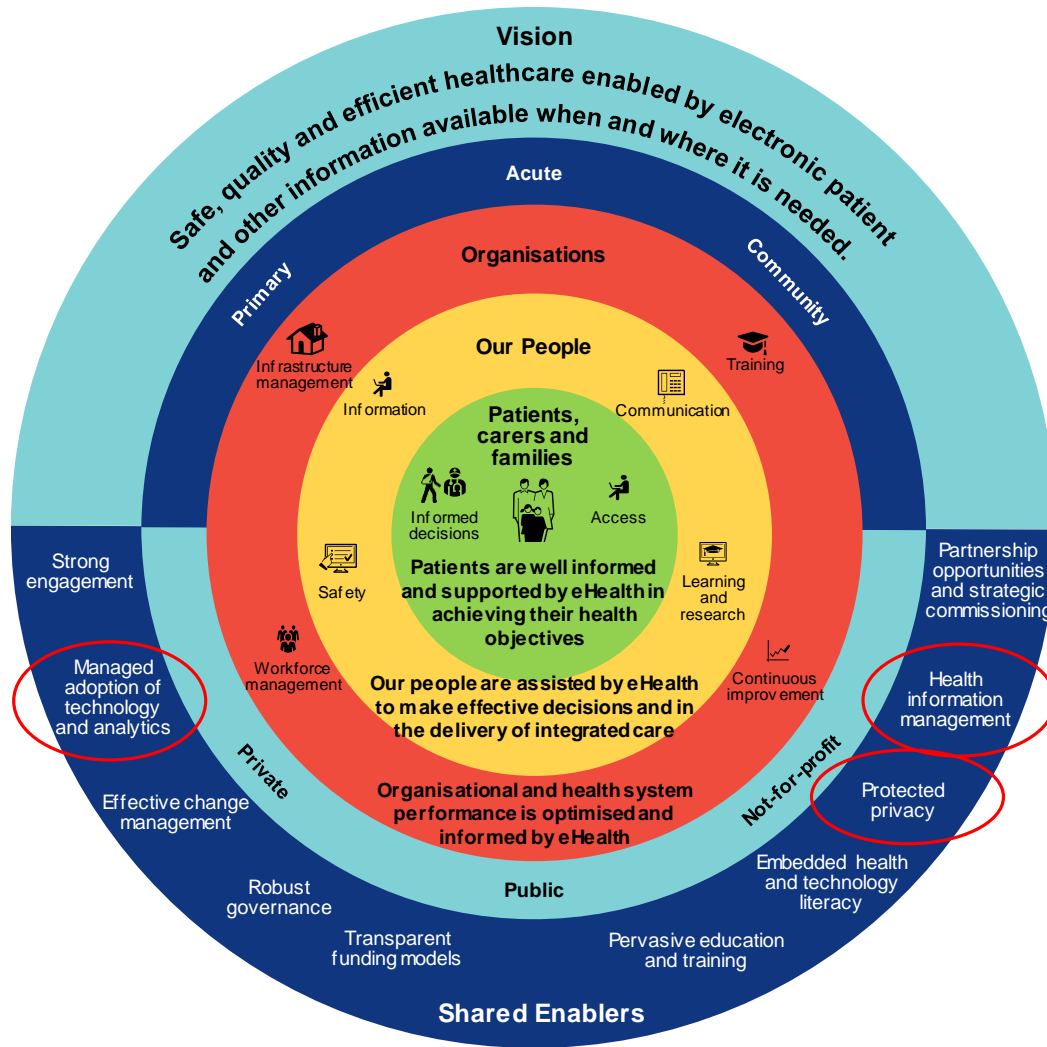
Evaluate system of integration and outcomes (the Integrated Care Strategy)

# Example: Proposed PRMs Scenario in Clinical Practice



Source: Agency for Clinical Innovation





# Growing Need/Motivation to Use Data

- Activity Based Funding
- Process optimisation (incl. predictive capabilities)
- Safety and quality agenda
- Unwarranted clinical variation
- Integrated care
- Local innovations in clinical (and other) analytics
- Health/Medical research agenda
- Consumer demand

# Responses to Data Opportunities – NSW Health

- New tools (e.g. Activity Based Management Portal; Patient Flow Portal)
- New data management platforms (e.g. data warehouses; secure research environment)
- New partnerships (health providers + central agencies + universities/researchers + vendors)
- Workforce development
  - E.g. 45 highly specialised biostatisticians trained in partnership with the Biostatistical Collaboration of Australia; further 16 in training this year

# Draft NSW Health Analytics Framework

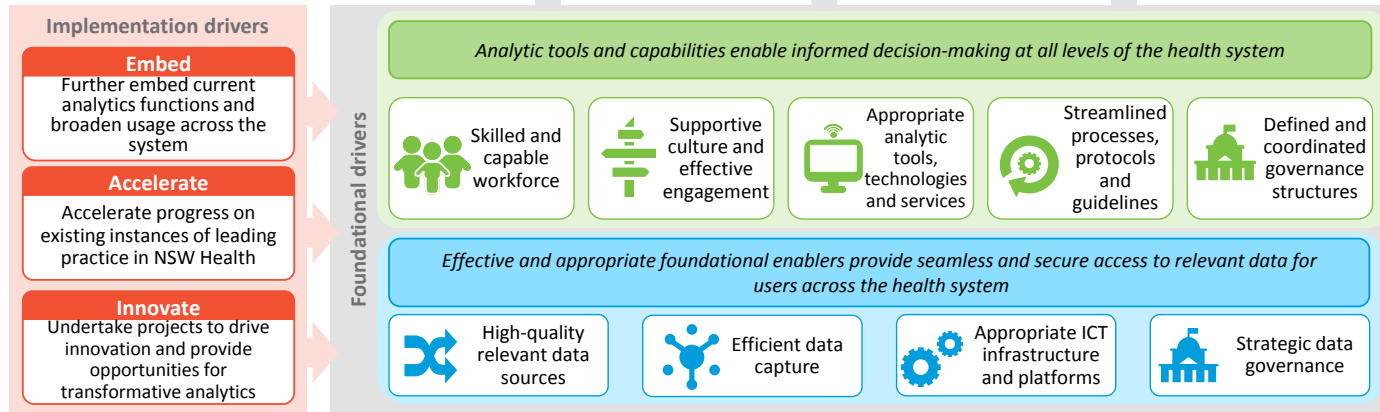
NSW Health Analytics Framework

*Transformed health through data and insights*

*Analytics will enable NSW Health to provide world-class and truly integrated healthcare, by delivering data and insights that support evidence-based decision making, planning and performance*

The NSW Health Analytics Framework will have strong links to whole-of-government initiatives to drive a coordinated approach to analytics.

	Consumers	Clinicians	Health and other services	Health system	Population
Benefits					
	Empowered consumers are enabled to make the right health care choices and have access to better value care	Highly informed clinicians are able to continually improve clinical practice through timely access to data and information	Informed providers maximise workforce resourcing and financial efficiency to provide better value and higher quality care	The NSW Health system operates at an optimal level through greater transparency on the quantity and quality of services	The NSW population has improved health and well-being through better risk factor prediction and management of population-level health programs or interventions



**Definition:** health analytics is the use of data, technology and quantitative and qualitative methods aimed at gaining insight for making informed decisions to improve health outcomes and health system performance.