Modelling value using predictive analytics: Collaborative Commissioning

LUMOS Symposium
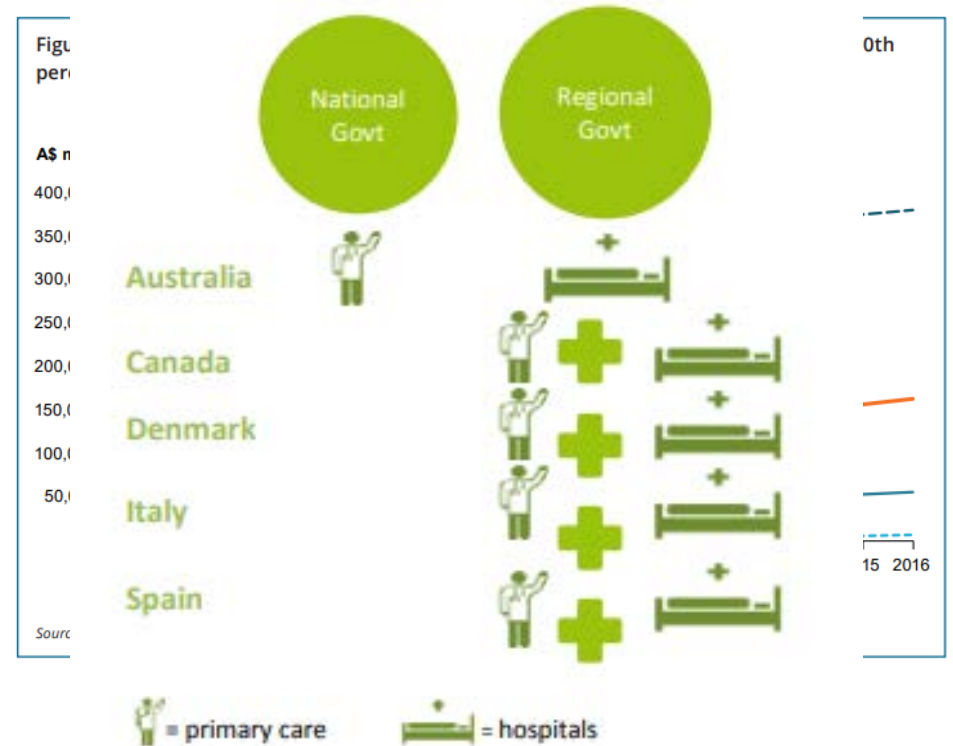
Collaborative Commissioning **Lumos**

Collaborative Commissioning acknowledges the traditional custodians of the land that we work on.

We pay our respects to Elders past and present and extend that respect to other Aboriginal peoples present here today.
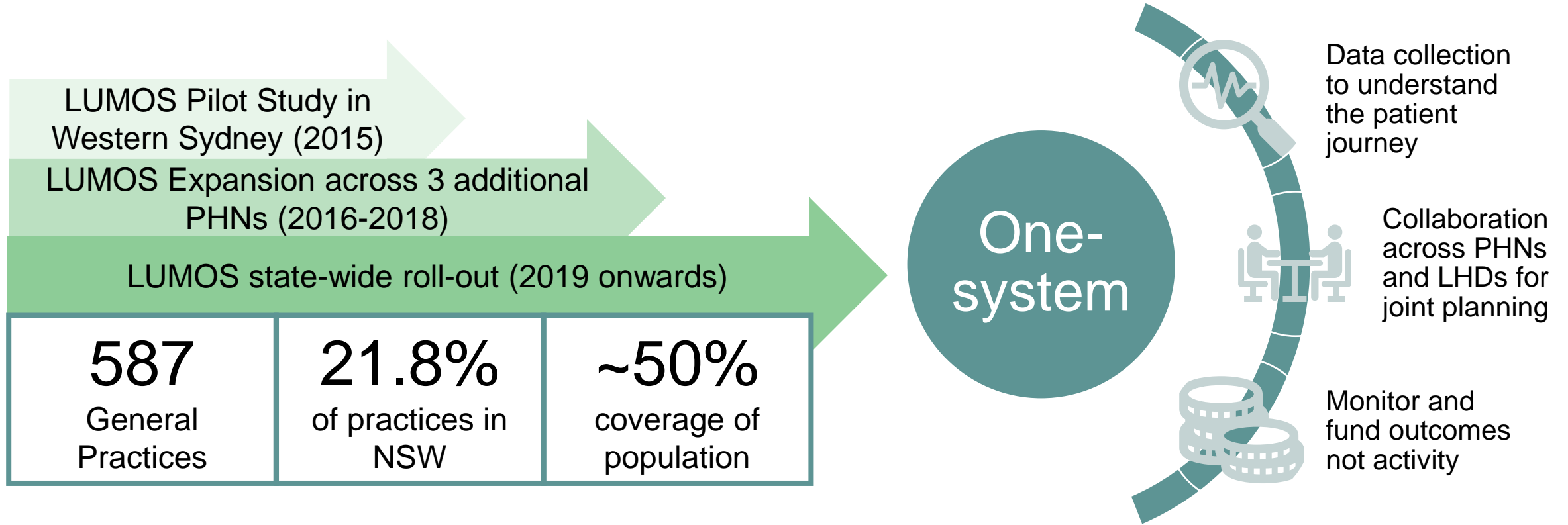
Health system challenges

- Australia faces **rising healthcare costs** due to ageing population, increasing chronic disease, changes in consumer expectations and technologies.

- Rising rates of non-communicable diseases and avoidable hospitals presentations suggests that Australia's **primary care requires investment and reform**

- **System fragmentation makes it difficult** for patients to navigate and for providers to deliver higher value care

Impediments to overcoming fragmentation has been **lack of visibility across the patient journey**

**Collaborative
Commissioning**

Transition towards value-based healthcare has been enabled through evolution of the LUMOS data asset

LUMOS Pilot Study in Western Sydney (2015)

LUMOS Expansion across 3 additional PHNs (2016-2018)

LUMOS state-wide roll-out (2019 onwards)

587	21.8%	~50%
General Practices	of practices in NSW	coverage of population

One-system

Data collection to understand the patient journey

Collaboration across PHNs and LHDs for joint planning

Monitor and fund outcomes not activity

Collaborative Commissioning

Collaborative Commissioning aims to accelerate the shift from volume to value through a whole-of-system approach to optimally use all health resources to deliver care in the community

Governance

- Formal partnership model between LHDs, PHNs and other local organisations
- Local accountability

Local solutions

- Locally defined areas of need
- Codesigned and reconfigured care pathways
- Realigned local services with a focus on community care

Outcome reporting

- Outcome measurement across the quadruple aim
- Data collection and reporting across primary (Lumos) community and acute

A new financial model

- Realigned LHD resources
- Integration of other payment systems
- Seed funding activity

Data to inform each stage of the Collaborative Commissioning Approach

Collaborative Commissioning

Western Sydney
Cardiology in the Community

Western Sydney
Value Based Urgent Care Centre

Northern Sydney
Frail and Older Persons

Western NSW and Far West
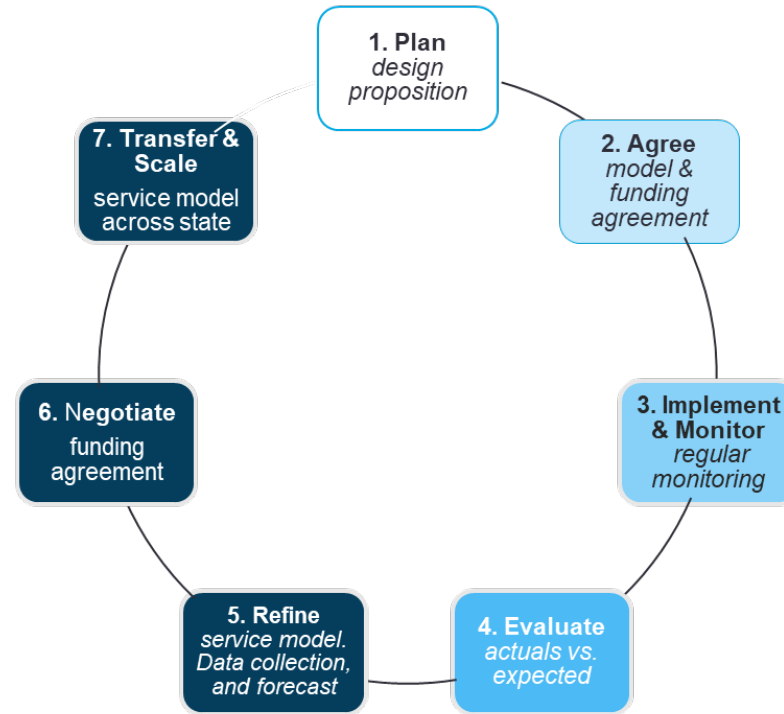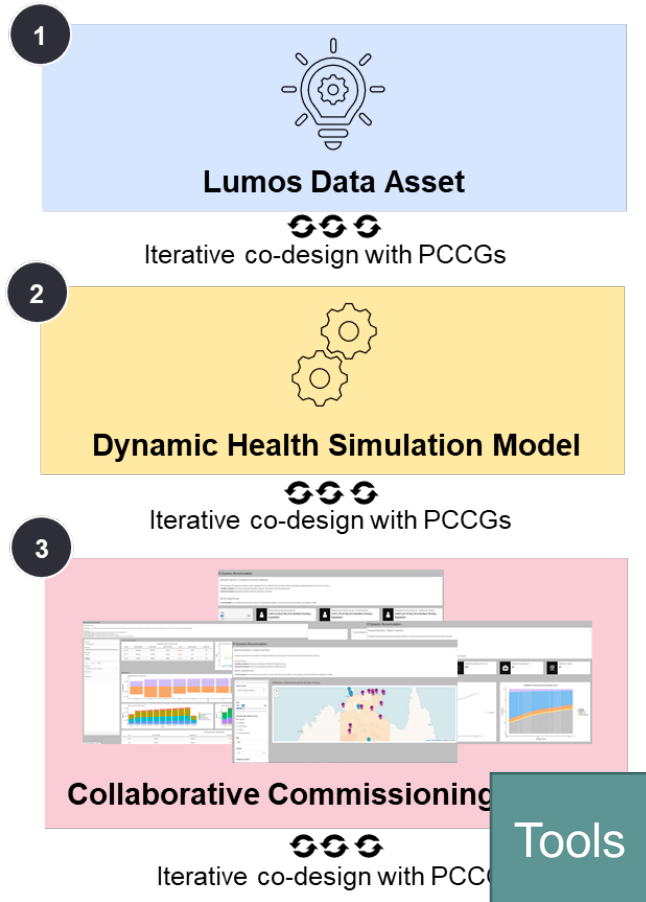*Uncontrolled or undiagnosed Type 2 Diabetes*

Murrumbidgee
Uncontrolled or undiagnosed COPD / CHF

Nepean Blue Mountains
TBC

Illawarra Shoalhaven and Southern NSW
TBC

The LUMOS data asset is a key enabler to all aspects Collaborative Commissioning lifecycle

1 Lumos Data Asset
Iterative co-design with PCCGs

2 Dynamic Health Simulation Model
Iterative co-design with PCCGs

3 Collaborative Commissioning
Iterative co-design with PCC...

Tools

1. Plan
design proposition

2. Agree
model & funding agreement

3. Implement & Monitor
regular monitoring

4. Evaluate
actuals vs. expected

5. Refine
service model. Data collection, and forecast

6. Negotiate
funding agreement

7. Transfer & Scale
service model across state

Collaborative Commissioning

The DSM provides the capability for sophisticated analytics allows forecasting, monitoring against forecasting and re-forecasting of outcomes

Dynamic Simulation Model provides a capability for one-system modelling to inform long term planning. The model provides a patient centric view of demand, supply and implications to models of care, workforce and infrastructure.

Data inputs

Hospital data:
- Activity data
- Cost per NWAU
- Infrastructure info (e.g. OTs, ED trolleys, etc.)
- Workforce information (e.g. VMOs, doctors, nurses, etc.)

GP data:
- Utilisation
- Workforce information
- Number of GPs in PHNs
- Practice details

Census / Demographic data

Minimum staffing requirements

Demand projections

20 year Infrastructure strategy

Population

Cost

Service utilisation

Workforce

Dynamic Health Simulation Model

Models of care

Funding

Infrastructure

Analysis outputs

10 year projection of:
- Demand
- Supply
- Unmet demand
- Cost and funding differences

Scenario Analysis:
- Strategies related to chronic conditions
- Improving early intervention rates
- Changing models of care – movement to "care closer to home"

Impact of scenarios:
- Projection output
- Difference from baseline – infrastructure, workforce, etc

Collaborative Commissioning

Illustrative Example of analytics using LUMOS

Collaborative Commissioning **Lumos**

Urgent care for frail and older persons in Northern Sydney

► As part of NSW Collaborative Commissioning, Northern Sydney PCCG developed a model of care aimed to **improve outcomes for frail and older persons aged 75+** residing in Northern Sydney.

► Through Collaborative Commissioning and Joint Development processes, this model was **tested, modified and refined**, and the relative financial **benefits and costs modelled and evaluated**.

► This model is now being implemented within the region.

Expanding to scale across all of NSW

► To understand the potential for **expanding the model across the whole of NSW,** further modelling was performed using the LUMOS data asset and the NSW Health Dynamic Simulation Model (DSM) at a state-wide level

   ► Sustainability analysis was undertaken to give an indicative scoping of the potential benefits and costs of a scaled roll-out and when the model might become "self-sustaining" from a financial point of view

   ► The aims of the model and Collaborative Commissioning principles align with Premier's Priority to *"reduce preventable visits to hospital by 5% through to 2032 by caring for people in the community"*

Key proposed benefits from Northern Sydney model

25% Reduction in emergency presentations for people aged 75+

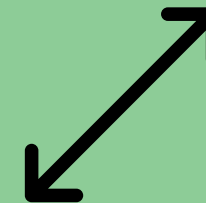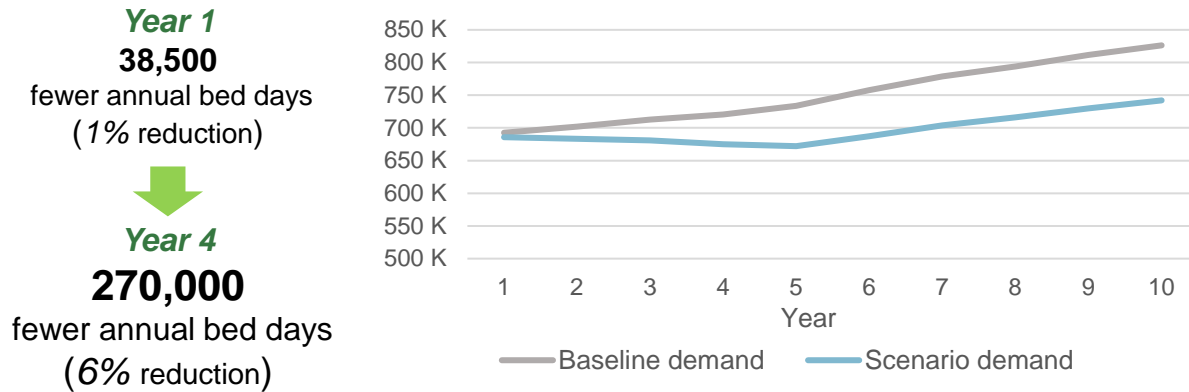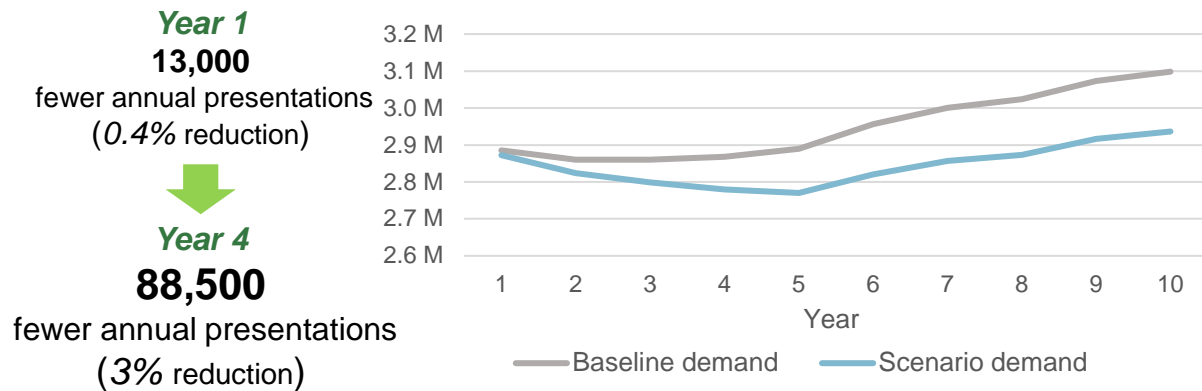**25%** Reduction in associated hospital admissions

25% Reduction in associated ambulance transfers

Sustainability benefits within acute system

Released capacity in the acute sector
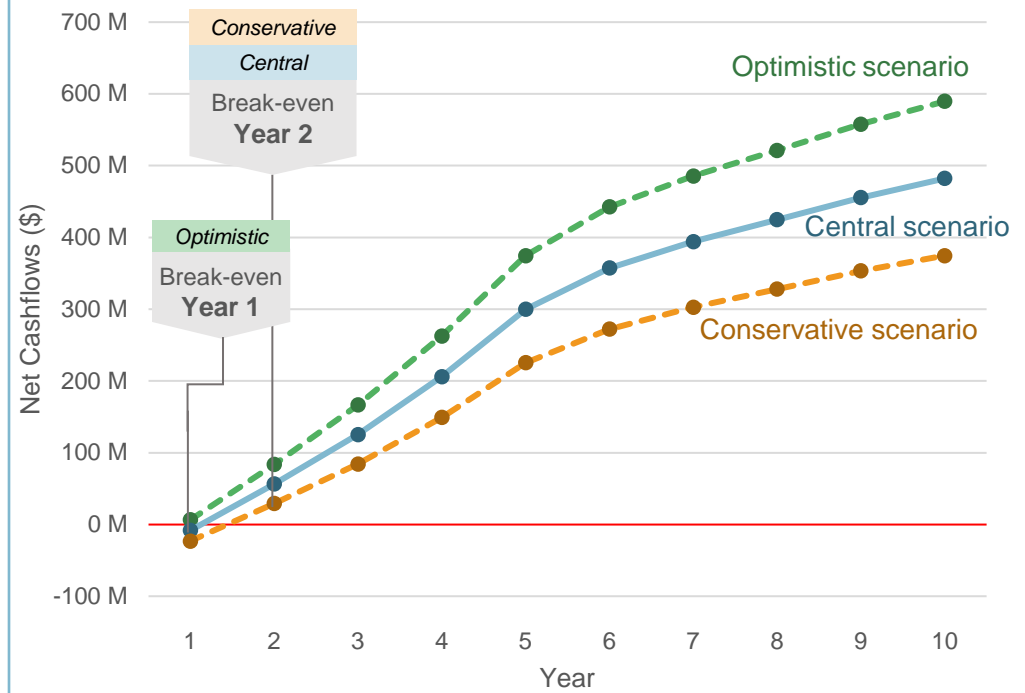
Hospital admissions – medical admissions from ED

Year 1
38,500
fewer annual bed days
(*1%* reduction)

⬇

Year 4
270,000
fewer annual bed days
(*6%* reduction)

— Baseline demand   — Scenario demand

Emergency Department presentations

Year 1
13,000
fewer annual presentations
(*0.4%* reduction)

⬇

Year 4
88,500
fewer annual presentations
(*3%* reduction)

— Baseline demand   — Scenario demand

Ambulance transfers

Year 1
14,000
fewer annual transfers
(*1%* reduction)

➡

Year 4
89,500
fewer annual transfers
(*6%* reduction)

System sustainability ?

Conservative
Central
Break-even
Year 2

Optimistic
Break-even
Year 1

Optimistic scenario
Central scenario
Conservative scenario

- ► Optimistic and conservative scenarios are based on costs varying by 20% and benefits by 10% in either direction
- ► A larger variation is applied to costs due to the greater uncertainty arising from translating costs from NS model across the whole state

Estimated benefits of avoided activity

$44.2m
annual benefits
in year 1

➡

$326.5m
annual benefits
in year 4

Key takeaways

Behaving as **one system**, depends on being able to see how one part of the system impacts another

Data **builds consensus** of local needs and develops trusted partnerships focused on patient outcomes

Using data to inform the entire cycle at a local regional level, allows a more informed approach to **joint planning and delivery** across the continuum of care

LUMOS supports CC to **monitor the performance** to drive a more informed approach to designing and delivering a model of care

Better linked patient level health data and more sophisticated analytics enable **health system reform**