Did you know...?
Widening the lens on risk to health and wellbeing

International Digital Health and Care Congress
Kings Fund
Karen Bryson
Director, Health & wellbeing
xantura ltd

11th September 2014
Did you know …?

- Matched community & social care data has strong predictive capabilities
- Diagnosis is **not** needed to predict
- Point of entry determines the destination
- Health and social care **are** more (cost) effective together
- Deprivation is not the cause of health or social care demand
- “Need” does not drive social care cost
- Carers keep people at home for longer

but …

- Husbands beware – your wife is more likely to send you to a care home
Northamptonshire County Council

Why now?

Journey towards using Big Data

Why bother?

IG Core

What now?
Why big data – why now?

Central Control

- Targets
- Contracting
- ACG/PARR Risk Stratification
- Ring-fenced investment
- Mergers & Integration
- Health Restructuring
- LA Needs Assessment
- Criteria
- Financial focus

Behavioural

- Social Care
- Personal budgets
- PH transfer to LA
- Better Care Fund
- CCG Commissioner
- Procurement Routes
- HSCIC
- Health/Social Care integration
- Admission risk prediction

Structural

- Big Data
- Personal Control

Northamptonshire County Council

Northamptonshire Healthcare NHS Foundation Trust

xantura
Risk stratification – the journey

Evolution → Revolution

PARR → CPM → ACG → Holistic risk stratification

Northamptonshire County Council
Northamptonshire Healthcare NHS Foundation Trust
xantura
Risk stratification – the journey

Evolution → Revolution

PARR
CPM
ACG

Information Governance
Digital data
Big data analytics

Holistic risk prediction

Northamptonshire County Council
Single matched data - multiple risk models
Why bother? Early seed hypotheses

**Entry Point**
- Where clients enter the system is important in determining where they end up.
- Most deprived areas are also highest costs areas.
- Service take-up across NCC and NHFT will be similar.
- Higher NHFT input reduces NCC non-res service demand.
- Higher NHFT input reduces NCC residential service demand.

**Geographic**
- Current service intensity is a good predictor of future service take-up.
- Higher levels of NHFT input result in lower costs for NCC.
- Higher levels of NHFT input result in lower NHFT costs.
- Presence of carers results in a reduction in take-up of NCC services.

**Needs rating as a predictor of cost**
- Needs ratings provide a good assessment of NCC costs.
- Needs ratings provide a good assessment of NHFT costs.
- Higher levels of deprivation drive higher NCC referrals.
- Higher levels of deprivation drive higher NHFT referrals.

**Deprivation**
- Needs scores are higher for more deprived groups.
- Presence of carers results in a reduction in take-up of NHFT services.
- The closer the carer relationship the greater the impact on service take-up.

**Service Relationships**
- Northamptonshire County Council
- Northamptonshire Healthcare NHS Foundation Trust

**Carer role**
- Higher NHFT input reduces NCC non-res service demand.
- Higher NHFT input reduces NCC residential service demand.
- Most deprived areas are also highest costs areas.

Understanding FE cohort
Why bother? The research approach

- Data added incrementally as value and data security established
- Analysis supports strategic and operational planning and decision making
- Provides a replicable methodology to support business cases for change

![Diagram of research approach]

Available data → Analysis framework → Findings

- Clustering
- Develop initial seed hypotheses
- Construct modelling data asset
- System model
- Modelling
- Analysis
- Test predictive capability

Northamptonshire County Council
Northamptonshire Healthcare NHS Foundation Trust
The University of Northampton
Xantura
Why bother? – new insights

If there is a carer you are more likely to
• enter health care first
• stay at home – unless the carer is a wife, daughter or son
• use care services if mental illness

Deprivation and needs as predictor of cost
• Strong correlation between deprivation (guaranteed credits) and social care costs – but not assessed need
• Negative correlation between community health care and deprivation
Why bother? – new insights

Service Relationships
• If enter health care system first less likely to need social care
• Early levels of health community input to social care packages lowers long term social care costs
• Community based social care packages lowers the demand on community health care
• Residential services seem to have little impact on Community Services referral rates

Geography
• Highest cost social care geographies do not correlate with deprivation
Why bother? health & social care better together ...

- **Service recommendation** – single assessment for ALL social care and community service requests
- **Savings** – £7.5 million of institutional home care
- **Counterfactual** – those who have only health or social care assessment
- **Evidence based on reality** – matched NCC and NHFT data, over 65 years, April 2010 – Dec 2013

<table>
<thead>
<tr>
<th>Group</th>
<th>Discharge Home</th>
<th>Hospital</th>
<th>Care Home</th>
<th>Nursing Home</th>
<th>Usual Res</th>
<th>Unknown</th>
<th>Specialist Centre</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NCC and NHFT Care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numbers of clients</td>
<td>226</td>
<td>120</td>
<td>57</td>
<td>16</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NCC Service Only</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numbers of clients</td>
<td>8784</td>
<td>3,162</td>
<td>2,811</td>
<td>1,054</td>
<td>527</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NHFT Community Service Only</td>
<td></td>
<td>46%</td>
<td>19%</td>
<td>6%</td>
<td>4%</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Number of clients</td>
<td>55716</td>
<td>25,629</td>
<td>10,586</td>
<td>3,343</td>
<td>2,229</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Clients</strong></td>
<td>64,726</td>
<td>28,911</td>
<td>13,453</td>
<td>4,413</td>
<td>2,762</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>As % of total clients</td>
<td></td>
<td>45%</td>
<td>21%</td>
<td>7%</td>
<td>4%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- Over 50% go home
- More likely to go to hospital without Community services
- Less likely to go into a Care or Nursing Home
Current data sharing debate

- thorny issue
- concern of data loss disproportionate to insights from matched data
- impact of not sharing data devastating
- cultural – not security – issue
- who owns data?

xantura IG Bridge

- underpins all our work
- pseudonymised data
- proprietary solution
- exceeds ICO and HSCIC standards
- allows safe data sharing
- can’t phish – data pushed based on local thresholds
What now?

Is this changing practice and behaviours?
- New insights at the moment – looking at MDT and crisis hub
- Questioning long held assumptions about what drives demand and costs
- Core platform for new health & wellbeing service
- Review of health & social care relationships and roles at early stages
- Has proven we can resolve health IG issues – and share data safely

What next?
- Refine the model
- Add in wider data – welfare, acute, primary care
- Insight to support in evolving MDT and crisis hub models
- Use in earnest to predict need and evaluate impact
Contact

- Wajid Shafiq, CEO, Xantura
  - Wajid.shafiq@xantura.com

- Dr Akeem Ali, Director of Public Health, Northamptonshire County Council
  - Aali@northamptonshire.gov.uk

- Karen Bryson, Associate Partner, Atos
  - Karen.bryson@atos.net