Planning for the Future Irish Healthcare System

DATE
31st May 2018

VENUE
ESRI, Whitaker Square,
Sir John Rogerson’s Quay,
Dublin 2

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TODAY’S PROGRAMME

Session 1: *Projecting demand for Irish healthcare*
The future population of Ireland
How health is changing
Projecting demand for Irish health and social care

Session 2: *Exploring the impacts of proposed system change*
Where care is supplied
Universal access to care

Session 3: *Panel discussion*
Interlinking Research Projects

- ESRI/Department of Health Research Programme in Healthcare Reform from 2014
- HIPPOCRATES Model of healthcare demand and expenditure developed from 2015
- Health Research Board-funded projects on relationship of care across settings (from 2015)
- and reform to achieve universality (from 2018)
The HIPPOCRATES MODEL
Objectives of HIPPOCRATES MODEL - Answer Questions in Irish Health Policy

Published research:
- How much care is used now?
- How much unmet need is there?
- How much demand for care will there be in the future?

Future applications of the model:
- What capacity is needed to meet future demand?
- How much spending will be needed?
- What are the drivers of Irish healthcare spending?
- If reform to change eligibility e.g. further extension free GP care – how much additional demand?
The HIPPOCRATES MODEL

Scope:

- *All* health and social care services (acute, primary, community, long-term)
- Public *and* private demand and expenditures (private hospitals, private payments for GP and other non-acute care)
Projecting Demand

- Detailed analysis 2015 healthcare use
- Projections to 2030
- Compare effect population growth only
- Vary assumptions: population growth, healthy ageing, unmet need and demand
- Projection range by sector
- Key assumption no change in models of care
- Flexibility to change this assumption
The HIPPOCRATES MODEL

Rates of use of health services 2015 x Population 2015-2030 x Costs = Healthcare Expenditure

Healthcare Demand 2015-2030

Inpatient & day patient public hospital care
Emergency & outpatient care
Inpatient & day patient private hospital care
General practice services
Community pharmaceuticals
Long-term and intermediate care
Home care, allied healthcare professionals
Mental health, disability services
HEADLINE FINDINGS:
The Irish healthcare system, 2015

• Hospitals:
  • 1.5m day cases, 69% in public hospitals
  • 4.2m bed days, 85% in public hospitals

• Long-term care:
  • 10.6m bed days

• Home help:
  • 14.3m home help hours, 27% privately paid

• General practice:
  • 17.6m GP visits, 5.9m practice nurse visits
HEADLINE FINDINGS: Projections

In the 15 years, 2015 – 2030,

Projected demand for
- 32% to 37% more public hospital bed days
- 38% to 54% more home help hours
- 40% to 54% more residential care places
- 20% to 27% more GP visits
NEXT: Determinants of Demand

• Population growth
• Population ageing and increased life expectancy
• Healthy ageing
• Unmet need and demand

Other determinants such as effects of technology, higher incomes to be included as model includes expenditure
Determinants of Demand:
1. Population Growth and Ageing
Demographic Context

- Ireland’s demographic profile is unusual in an EU context
  - Rapid population growth, 1996-2016: 31%; 6% in EU-28
  - Relative to the EU, have a favourable demographic structure (e.g. 2016: 13% of pop aged 65+; 19% in EU-28)

- However the population is ageing...
  - Between 1996-2016: 64% increase in pop aged 80+
  - And continued population ageing expected over the short to medium term
Demographic Modelling - Approach

• Modelling Approach: Cohort Component Method
  • In-house demographic model
  • Combine assumptions around fertility, mortality, and migration to generate population projections

• Migration is the key driver of total population change in Ireland
  • Migration flows are very sensitive to economic conditions
  • Link with macro-model COSMO
Demographic Modelling - Assumptions

- Three different population scenarios (Central, High and Low)

<table>
<thead>
<tr>
<th></th>
<th>Assumptions – Central</th>
<th>Assumptions - High</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fertility:</strong></td>
<td>Fertility: Total fertility rate</td>
<td>Fertility: Total fertility rate</td>
</tr>
<tr>
<td></td>
<td>Unchanged at 1.94</td>
<td>Rises to 2.1 by 2021 and constant thereafter</td>
</tr>
<tr>
<td><strong>Migration:</strong></td>
<td>Migration: Net immigration</td>
<td>Migration: Net immigration</td>
</tr>
<tr>
<td></td>
<td>Averaging 9,000 to 2021 and 13,000 p.a. thereafter</td>
<td>Averaging 39,000 to 2021 and 28,000 p.a. thereafter</td>
</tr>
<tr>
<td><strong>Mortality:</strong></td>
<td>Mortality: Life expectancy at birth</td>
<td>Mortality: Life expectancy at birth</td>
</tr>
<tr>
<td></td>
<td>Increase from 78.4 to 82.9 years for males and 82.9</td>
<td>Increase to 83.2 years for males and 86.8 for females</td>
</tr>
<tr>
<td></td>
<td>to 86.5 for females by 2030</td>
<td>by 2030</td>
</tr>
</tbody>
</table>

The chart displays the population structure of a specific year, categorized by age groups and gender. It shows the distribution of the population into three age groups:

- **Children** (<1 year)
- **Working-age population** (15–64 years)
- **Older population** (≥ 65 years)

The age distribution is further broken down by sex, with separate segments for **Men (2016)** and **Women (2016)**.
Population Structure: 2030 (Central Scenario)

- **Older** (≥ 65 years)
- **Working-age population** (15–64 years)
- **Children** (0–14 years)

*Men (2030)*    *Women (2030)*
Summary of Population Projections

• Population to increase to between **5.35m** to **5.79m** by 2030 in Central and High scenarios
  • This is an overall increase of between 14 to 23% on 2015
  • Migration is key driver of differences in Central and High scenarios

• The number of older persons is set to increase
  • Population aged 65+: 1 in 8 now. By 2030: 1 in 6

• Central scenario growth between 2015 and 2030:
  • Total: 14%; aged 65+: 60%; aged 80+: 89%

• High scenario growth between 2015 and 2030:
  • Total: 23%; aged 65+: 63%; aged 80+: 94%
Determinants of Demand

2. Health and Ageing
Health and Ageing

• Life expectancy has increased significantly

• Demographic modelling in the report projects life expectancy to continue to increase contributing to larger population especially at older ages

• Will life expectancy improvements be accompanied by extra years of life lived in good or poor health (i.e. with or without a morbidity/disability)? – “Healthy Ageing”

• There have been considerable changes in population health and healthy ageing over time
  • Individuals are dying at later ages, but with (multiple) chronic conditions
Causes of Death Ireland, 1916 and 2014

Healthy Ageing

• There are three main healthy ageing assumptions:

1. Expansion of Morbidity – “failure of success”
   • Gains in longevity accompanied by additional years with morbidity/disability
   • E.G. If LE gain is one year, we assume that an 80-year old in 2030 will have the health status and the rate of healthcare use of an 80-year old in 2015

2. Dynamic Equilibrium – “proximity to death”
   • Gains in longevity accompanied by an equivalent reduction in morbidity/disability
   • E.G. If LE gain is one year, we assume that an 80-year old in 2030 will have the health status and the rate of healthcare use of a 79-year old in 2015

3. Compression of Morbidity
   • A gain in health status exceeds the gain in life expectancy by 50 %
   • E.G. If LE gain is one year, we assume that an 80-year old in 2030 will have the health status the rate of healthcare use of a 78.5-year old in 2015
Healthy Ageing Evidence

- Healthy Ageing approaches adopted in the report reflect evidence from the national and international literature
- Where available, evidence from each health and social care area examined separately

Examples of Healthy Ageing Assumptions adopted in the Report

<table>
<thead>
<tr>
<th>Sector</th>
<th>Assumption</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Practice</td>
<td>Expansion of Morbidity</td>
<td>• General practice services face demand for treatment of chronic diseases&lt;br&gt;• Expansion in chronic disease observed in UK, Sweden, US</td>
</tr>
<tr>
<td>Home Care, Long-Term Care</td>
<td>Compression of Morbidity</td>
<td>• Irish evidence shows reduced disability rates in older people&lt;br&gt;• Age-specific disability rate reductions in US, Japan, international review&lt;br&gt;• Recent reductions in age-specific dementia rates in UK, US</td>
</tr>
</tbody>
</table>
Determinants of Demand

3. Unmet Need and Demand
Unmet Need and Demand

- **Drivers of demand**
  - Population growth and ageing
  - Healthy ageing
  - **Unmet need or demand**

- Unmet need refers to care not received
  - Unmet demand refers to unmet need where care has been sought (e.g. hospital waiting lists)

- Unmet need/demand applied to baseline activity rates
  - Survey vs administrative data
Unmet Demand for Hospital Care

• Measure unmet demand at end-2015
  • Based on National Treatment Purchase Fund (NTPF) data
  • Avoids double-counting
  • Unmet demand defined by international and national waiting time thresholds

• Outpatient
  • **High Volume**: 70 days (Sláintecare Report)

• Inpatient/Daycase
  • **High Volume**: 15 days [urgent], 84 days [routine] (Norway’s and Portugal’s urgent threshold, Sláintecare Report)
## Findings: Unmet Need and Demand

<table>
<thead>
<tr>
<th>Sector</th>
<th>Activity measure</th>
<th>Unmet need/demand estimate as percentage healthcare use in 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public hospitals</td>
<td>Elective inpatient cases</td>
<td>1 - 3</td>
</tr>
<tr>
<td></td>
<td>Day patient cases</td>
<td>2 - 5</td>
</tr>
<tr>
<td></td>
<td>Outpatient attendances</td>
<td>1 - 8</td>
</tr>
<tr>
<td>General practice</td>
<td>GP visits</td>
<td>2</td>
</tr>
<tr>
<td>Long-term care</td>
<td>Residential LTC places</td>
<td>2</td>
</tr>
<tr>
<td>Home care</td>
<td>Home care packages</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Home help</td>
<td>3</td>
</tr>
<tr>
<td>Public community therapy</td>
<td>Physiotherapy referrals</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Occupational therapy referrals</td>
<td>5</td>
</tr>
</tbody>
</table>
Modelling Healthcare Demand
Model Construction

• Activity (health care use) estimated for 2015 and grouped into cohorts based on a set of characteristics (e.g. age and sex)

• Age/sex activity rate profiles are generated through combining with 2015 age/sex population data

• At its simplest, demand projected by multiplying age/sex activity rate profiles by projected annual age/sex population volumes
Activity Rate Profiles Differ by Age

• As there are more of them, the greater overall volume of healthcare users may be younger people.
• However, older people tend to use healthcare services more frequently than younger people.
• So activity rates are higher for older people.
• Activity rate age profiles vary by service.
• These differences make the effects of population ageing on projected demand vary by service.
Activity Profile: Public Hospital Inpatient Bed Days, 2015

Graph showing the activity profile for public hospital inpatient bed days in 2015, with lines representing bed days for male and female populations, and bed day rates for male and female populations. The graph is divided by age groups from 0 to 90 years.
Activity Profile:
Public Hospital ED Attendances, 2015
Developing a Projection Range

• For each service we develop a range of preferred demand projections

• Each projection scenario applies alternative assumptions about
  • Projected population growth
  • Healthy ageing
  • Unmet need and demand, if available

• Assumptions are evidence-based but there remains uncertainty

• The range of these projections reflects the element of uncertainty about underlying assumptions
Developing a Projection Range –

Public hospital discharges

Volume of Activity (000s)

Year

2015  2018  2021  2024  2027  2030

Central Population

Central Population/ Healthy Ageing

Central Population/ Healthy Ageing + Unmet Demand

High Population/ Healthy Ageing
Findings – Current Use of Services and Projected Demand
### Selected Findings, Healthcare Use, 2015

<table>
<thead>
<tr>
<th>Sector</th>
<th>Activity measure</th>
<th>Volume of activity 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>‘000s</td>
</tr>
<tr>
<td>Public hospitals</td>
<td>Inpatient cases</td>
<td>514</td>
</tr>
<tr>
<td></td>
<td>Day patient cases</td>
<td>1,010</td>
</tr>
<tr>
<td></td>
<td>Inpatient bed days</td>
<td>3,273</td>
</tr>
<tr>
<td></td>
<td>ED attendances</td>
<td>1,138</td>
</tr>
<tr>
<td></td>
<td>Outpatient attendances</td>
<td>3,299</td>
</tr>
<tr>
<td>Private hospitals</td>
<td>Inpatient cases</td>
<td>133</td>
</tr>
<tr>
<td></td>
<td>Day patient cases</td>
<td>459</td>
</tr>
<tr>
<td></td>
<td>Inpatient bed days</td>
<td>613</td>
</tr>
<tr>
<td>General practice</td>
<td>GP visits</td>
<td>17,551</td>
</tr>
<tr>
<td></td>
<td>Practice nurse visits</td>
<td>5,944</td>
</tr>
</tbody>
</table>
## Selected Findings, Healthcare Use, 2015

<table>
<thead>
<tr>
<th>Sector</th>
<th>Measure of healthcare use</th>
<th>Volume of activity 2015/end 2015 ‘000s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term care</td>
<td>Residents/places</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>LTC bed days</td>
<td>10,580</td>
</tr>
<tr>
<td>Home care</td>
<td>Home help service</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>Home care package recipients</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Home help hours</td>
<td>14,311</td>
</tr>
<tr>
<td>Community Nursing and Public Community Therapy</td>
<td>Public health nurse visits</td>
<td>1,362</td>
</tr>
<tr>
<td></td>
<td>Public physiotherapist visits</td>
<td>760</td>
</tr>
<tr>
<td></td>
<td>Public occupational therapist visits</td>
<td>347</td>
</tr>
<tr>
<td></td>
<td>Public speech and language therapist visits</td>
<td>147</td>
</tr>
</tbody>
</table>
## Demand Projections, 2015-2030

<table>
<thead>
<tr>
<th>Sector</th>
<th>Measure of healthcare use</th>
<th>Projection Range % increase 2015 to 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public hospitals</td>
<td>Inpatient cases</td>
<td>24 to 30</td>
</tr>
<tr>
<td></td>
<td>Day patient cases</td>
<td>23 to 29</td>
</tr>
<tr>
<td></td>
<td>Inpatient bed days</td>
<td>32 to 37</td>
</tr>
<tr>
<td></td>
<td>ED attendances</td>
<td>16 to 26</td>
</tr>
<tr>
<td></td>
<td>Outpatient attendances</td>
<td>21 to 30</td>
</tr>
<tr>
<td>Private hospitals</td>
<td>Inpatient cases</td>
<td>20 to 25</td>
</tr>
<tr>
<td></td>
<td>Day patient cases</td>
<td>24 to 28</td>
</tr>
<tr>
<td></td>
<td>Inpatient bed days</td>
<td>28 to 32</td>
</tr>
<tr>
<td>General practice</td>
<td>GP visits</td>
<td>20 to 27</td>
</tr>
<tr>
<td></td>
<td>Practice nurse visits</td>
<td>26 to 32</td>
</tr>
</tbody>
</table>
### Demand Projections, 2015-2030

<table>
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<tr>
<th>Sector</th>
<th>Measure of healthcare use</th>
<th>Projection Range 2015 to 2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long-term care</td>
<td>Residents/places</td>
<td>40 to 54</td>
</tr>
<tr>
<td></td>
<td>LTC bed days</td>
<td>40 to 54</td>
</tr>
<tr>
<td>Home care</td>
<td>Home help service</td>
<td>44 to 57</td>
</tr>
<tr>
<td></td>
<td>HCP recipients</td>
<td>44 to 66</td>
</tr>
<tr>
<td></td>
<td>Home help hours</td>
<td>38 to 54</td>
</tr>
<tr>
<td>Community Nursing and Public Community Therapy</td>
<td>Public health nurse visits</td>
<td>26 to 35</td>
</tr>
<tr>
<td></td>
<td>Public physiotherapist visits</td>
<td>24 to 30</td>
</tr>
<tr>
<td></td>
<td>Public occupational therapist visits</td>
<td>33 to 38</td>
</tr>
</tbody>
</table>
Conclusions and Policy Implications
Conclusions

• Rapid Irish population growth unusual, major driver of demand
• Growing numbers of older people major driver even if optimistic healthy ageing
• Annual average projected demand growth of 1-3%
• In the context of rising population and labour force
Future Research

• Current HIPPOCRATES projections assume no change to models of care
• But reform may change where some care is supplied
• To inform planning for health and social care services evidence required on:
  • Substitution of care e.g. from hospitals to community or long-stay settings
  • Design of healthcare reforms
• Future developments of the HIPPOCRATES Model and topics for Session 2
Policy Implications

• Major implications for capacity planning, capital investment, workforce planning and training

• Reform that lessens projected demand increases in one setting will lead to greater than projected demand increases in others

• Capacity and supply will need to increase in all sectors to avoid increased unmet demand

• The healthcare system is currently within this projection period and experiencing these pressures
DISCUSSION

Available at: