MODELLING DEMENTIA HEALTHCARE PATHWAYS IN LOW, MIDDLE AND HIGH INCOME COUNTRIES

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Adelina Comas-Herrera
Personal Social Services Research Unit (PSSRU)
London School of Economics and Political Science
a.comas@lse.ac.uk
@adelinacohe
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DEMENTIA: NOT JUST A “DEVELOPED WORLD” CONDITION

Ageing is happening all over the world, and at a much faster pace in the low and middle-income countries.
The speed of population ageing:
Time expected for the % of population aged 65+ to increase from 7 to 14%

Dementia is a global issue, growing faster in low and middle income countries

% increase in the numbers of people with dementia, 2015 to 2030

- Switzerland: 45%
- South Korea: 110%
- South Africa: 48%
- Mexico: 95%
- Indonesia: 87%
- China: 70%
- Canada: 59%

Absolute numbers are important too: estimated numbers of people with dementia, 2015 and 2030.

DEMENTIA HEALTHCARE PATHWAYS

How to expand care sustainably: task-shifting
Two different challenges:

• Adapting well-established health systems (High Income Countries, HIC), dominated by a tradition of “curative” health care, to the needs of increasing numbers of people with dementia.

• Developing new health care provision to meet the needs of increasing numbers of people with dementia (and other chronic conditions), in a context of rapid ageing and Low and Middle Income Countries (LMIC) resource availability.
Health care is a relatively low part of the total costs of dementia, and perhaps too low:

- **Diagnostic** is the gateway for access to health and social care. But low coverage: 40-50% in most HIC, around 5-10 in most LMIC.
- **Lack of specialist services**: very few in LMIC. In HIC they struggle to keep up with rapidly increasing numbers of people with dementia.
- Even **interventions** with a strong evidence-base (for example acetylcholinesterase inhibitors and memantine) are **not being delivered** to all who might benefit.
- Other interventions (eg early post-diagnostic support, case management/ coordination) remain **thinly evidenced**, particularly with regards cost-effectiveness.
- In the event of **new treatments** that alter the course of dementia, there will be a need for healthcare delivery systems capable of providing high coverage, with equity.
Expanding healthcare for people with dementia: task-shifting

- **Task-shifting**: delegating selected tasks to existing or new health professional cadres with either less training or narrowly tailored training.

  - Shifting tasks from higher to lower skilled workers (e.g. from a neurologist specialist doctor to a general practitioner),
  - Shifting tasks from workers with more general training to workers with specific training for a particular task (e.g. from a PCP to a dementia case manager).

- **Assumptions**:
  - The unit cost of the task-shifted option is cheaper, and that the quality of care and its outcomes are equivalent.
  - The less-specialised cadre are more numerous and can be trained more quickly: the dementia healthcare workforce could be scaled up more quickly.

- **Evidence**: with adaptation and appropriate training and supervision, it is feasible for interventions developed to be delivered by specialist doctors to be taken on by non-specialists (and non-doctors) without an adverse effect on clinical outcomes (growing evidence of moderate quality)

- **Task-sharing**: In reality, almost all task-shifted models of service delivery include an element of task-sharing between specialist and non-specialist services.
A task-shifted dementia health care pathway

1. Diagnostic (mostly primary care, GPs and case managers)
2. Initial treatment and post-diagnostic support:
   1. Assessment for anti-dementia drugs
   2. Post-diagnostic support package
   3. Carer training and support
3. Continuing care
   1. Anti-dementia medication reviews
   2. Management of behavioural and psychological symptoms
   3. Case management
4. End of Life care
COSTING DEMENTIA
HEALTHCARE PATHWAYS
Costing a task-shifted dementia healthcare pathway: 2015-2030

**Method:**

- Demographic and prevalence of data to calculate numbers of people with dementia in 2015 and 2030.
- Assuming that diagnostic rates increase (from 50% in 2015 to 75% in 2030 for HIC and, respectively, from 10% to 50% in LMIC).
- Applying unit costs of care to the different elements of the care pathway.
- Assuming that the real costs of care will increase in line with GDP per capita.
- We only cost the dedicated dementia pathway, not all the health care use by people with dementia.
Comparable unit costs of care?

- Difficult to obtain unit costs for most services and most countries.
- Calculated “international unit costs”:
  - Used Unit costs of Care from the UK (PSSRU Unit Costs 2015 and DH) to obtain the relative cost difference between care professionals (and interventions/services/tests/drugs).
  - Used WHO Choice 2008 unit costs of care data to obtain the relative unit costs differences between countries (in PPP International $ and including the UK).
  - Adjusted the “between country cost differences” for changes in PPP 2008 to 2015, between each country and the UK.
  - Adjusted the 2015 UK Unit costs to reflect country differences and applied exchange rate to US$ 2015.
- Where local data was available (e.g. costs of GP, specialists, nurses, or for particular drugs or tests, this was used.)
How much does it cost to provide the task-shifted pathway? (cost per year, in 2015 US$)

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Indonesia</th>
<th>Mexico</th>
<th>South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per person with dementia</td>
<td>13</td>
<td>10</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Cost per person diagnosed</td>
<td>130</td>
<td>98</td>
<td>21</td>
<td>37</td>
</tr>
</tbody>
</table>
Impact of differences in unit costs on the relative cost of each part of the care pathway

<table>
<thead>
<tr>
<th>Service</th>
<th>China</th>
<th>Indonesia</th>
<th>Mexico</th>
<th>South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community health workers</td>
<td>1.15%</td>
<td>1.41%</td>
<td>19.76%</td>
<td>7.52%</td>
</tr>
<tr>
<td>General practitioners</td>
<td>0.90%</td>
<td>1.20%</td>
<td>17.78%</td>
<td>15.67%</td>
</tr>
<tr>
<td>Specialist doctors</td>
<td>0.25%</td>
<td>11.16%</td>
<td>3.54%</td>
<td>3.27%</td>
</tr>
<tr>
<td>Nurses</td>
<td>2.30%</td>
<td>2.83%</td>
<td>39.67%</td>
<td>19.98%</td>
</tr>
<tr>
<td>Anti-dementia medication</td>
<td>91.98%</td>
<td>81.50%</td>
<td>3.97%</td>
<td>49.04%</td>
</tr>
<tr>
<td>Blood tests</td>
<td>0.74%</td>
<td>0.06%</td>
<td>0.04%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Neuroimaging</td>
<td>1.37%</td>
<td>1.62%</td>
<td>10.76%</td>
<td>3.73%</td>
</tr>
<tr>
<td>Hospital inpatient stays</td>
<td>1.32%</td>
<td>0.22%</td>
<td>4.48%</td>
<td>0.77%</td>
</tr>
</tbody>
</table>
Some costing considerations:

- The relative cost of different healthcare professionals is not the same (i.e. in the UK GPs unit costs are higher than specialists).
- Not all professionals are the same: most primary care doctors in rural China do not have a university degree.
- There are huge differences in the costs of drugs, depending on the policies with regards generics and additional prescription fees.
- The costs of equipment such as MRI scans can also be very different in LMIC and HIC.