Autumn Lecture 2014: The Age of Uncertainty: What do we know about Growing Old?

Speaker:
Professor Carol Jagger
AXA Professor of Epidemiology of Ageing at Newcastle University

The Age of Uncertainty
What do we really know about growing old?
Outline

- Uncertainty in measuring health
- Five things we know about getting older
- Mainly drawing on 3 longitudinal studies
  - Newcastle 85+ Study
  - MRC Cognitive Function and Ageing Study (CFAS)
  - DYNOPTA (pooled dataset of Australian longitudinal studies)

Health is a slippery concept

- Death is an unequivocal endpoint

- Health is ..........
  - "...a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity" (WHO)
Individual or population health?

It is better to measure inaccurately something which is important than to measure accurately something which is unimportant.

Professor Stephen Evans

1. The course of disability is predictable
Disablement model

Disease → Impairment / Functional → Activity → Participation
Limitation Restriction

Medical care External supports Environment
Risk factors
Lifestyle changes Psychosocial attributes & coping Compensatory strategies

IADLs ADLs
• Shopping
• Laundry
• Cooking a hot meal
• Getting in and out of bed
• Toiletting
• Feeding oneself

Sources: Katz 1963, Lawton & Brody 1969

Order of activity loss

Source: Kingston et al. 2012
Using the activity loss curve

- Local councils currently delivering reablement services at RHS (too late!) or moving the minimum threshold down to save money
- Focus of 2014 Care Act will be the individual – what they need – rather than what the council can provide. Acting earlier up the curve may shorten the time further down where it costs more
- Provide information for older people to be able to better plan support and housing
- Use rapidity of loss as marker for seeking health care
- Designers need to understand order of loss
2. Most of old age is NOT spent dependent

Physical functioning

- 20% able to perform without difficulty all 17 activities of daily living
Disability trajectories

- 9% of men remained fully able over the 5 years
- 12+ years of education associated with better trajectories

Source: Kingston et al

Need for care

- Critical interval (needs 24-hour care)
- Short interval (needs help at regular times daily)
- Long interval (needs help less than daily)
- Independent

Source: Jagger et al. BMC Geriatrics 2011, 11:21
Years with care needs from age 85

- Most years spent needing help < daily
- Women spend more years requiring care at every level

Need for care

- 75% in care homes
- If at home main carer child

- 33% in care homes
- If at home main carer spouse (34%), child (31%)

- 4% in care homes
- If at home main carer child (37%), no-one (18%)
Who are the carers?

<table>
<thead>
<tr>
<th>Born</th>
<th>age 85</th>
<th>child born</th>
<th>child age when parent 85</th>
</tr>
</thead>
<tbody>
<tr>
<td>1921</td>
<td>2006</td>
<td>1947</td>
<td>59</td>
</tr>
<tr>
<td>1931</td>
<td>2016</td>
<td>1956</td>
<td>60</td>
</tr>
<tr>
<td>1941</td>
<td>2026</td>
<td>1965</td>
<td>61</td>
</tr>
<tr>
<td>1951</td>
<td>2036</td>
<td>1976</td>
<td>60</td>
</tr>
<tr>
<td>1961</td>
<td>2046</td>
<td>1986</td>
<td>60</td>
</tr>
<tr>
<td>1971</td>
<td>2056</td>
<td>1997</td>
<td>59</td>
</tr>
</tbody>
</table>

3. Most of old age is NOT spent cognitively impaired
Cognitive functioning

- 3% scored 10 or less
- 10% (81) scored 11-21
- 16% (137) scored 22-25
- 70% not impaired (26-30)
- 16% scored 30!

Prevalence of dementia has reduced
Years with cognitive impairment (1)

Cognitive impairment = MMSE 0-23

Source: Anstey et al. Int J Epidemiol 2014

Years with cognitive impairment (2)

Cognitive impairment: mild = MMSE 22-25
Mod/severe = 0-21

Source: Matthews et al. J Gerontol 2009 1:125-131
4. Very old age is not for sissies!
You don’t get there without something

High prevalence of disease

- 58% Hypertension
- 52% Osteoarthritis
- 47% Cataract
- 47% Atherosclerosis
- 17% COPD
- 13% Diabetes
- 8% Dementia
Not just one disease

Multimorbidity is the norm for very old people

Median disease count:
Men = 4
Women = 5

28% (men) and 32% (women) had 6+ diseases

5. Healthy ageing depends on where and how you live
## Inequalities at birth 2006-2011

<table>
<thead>
<tr>
<th></th>
<th>LE at birth</th>
<th>DFLE at birth</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>77.7</td>
<td>78.7</td>
</tr>
<tr>
<td>0.10</td>
<td>75.3</td>
<td>76.5</td>
</tr>
<tr>
<td>0.90</td>
<td>79.7</td>
<td>80.7</td>
</tr>
<tr>
<td>10-90% range</td>
<td>4.4</td>
<td>4.2</td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>81.8</td>
<td>82.7</td>
</tr>
<tr>
<td>0.10</td>
<td>79.8</td>
<td>80.9</td>
</tr>
<tr>
<td>0.90</td>
<td>83.6</td>
<td>84.4</td>
</tr>
<tr>
<td>10-90% range</td>
<td>3.8</td>
<td>3.5</td>
</tr>
</tbody>
</table>

- DFLE inequalities exceed LE inequalities
- LE inequalities are reducing but DFLE inequalities are not

## Extending working life

<table>
<thead>
<tr>
<th></th>
<th>UTLA (N)</th>
<th>Male DFLE&lt;65 (%)</th>
<th>Female DFLE&lt;65 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East</td>
<td>11</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>East Midlands</td>
<td>9</td>
<td>56</td>
<td>67</td>
</tr>
<tr>
<td>London</td>
<td>32</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td><strong>North East</strong></td>
<td>12</td>
<td><strong>100</strong></td>
<td><strong>83</strong></td>
</tr>
<tr>
<td><strong>North West</strong></td>
<td>23</td>
<td><strong>74</strong></td>
<td><strong>74</strong></td>
</tr>
<tr>
<td>South East</td>
<td>19</td>
<td>32</td>
<td>26</td>
</tr>
<tr>
<td>South West</td>
<td>15</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>West Midlands</td>
<td>14</td>
<td>57</td>
<td>50</td>
</tr>
<tr>
<td><strong>Yorkshire and The Humber</strong></td>
<td>15</td>
<td><strong>73</strong></td>
<td><strong>73</strong></td>
</tr>
<tr>
<td>ENGLAND</td>
<td>150</td>
<td>50</td>
<td>44</td>
</tr>
</tbody>
</table>
Putting into world context

- Health expectancy has been put forward in the 2nd phase of *Healthy Japan 21*
  - Goal 1: increase health expectancy (i.e. DFLE)
  - Goal 2: reduce regional inequalities in health expectancy

- Inequalities (range) in DFLE at age 65 between Japanese prefectures*
  - Men: 3.0 years (2000) to 2.1 years (2010)
  - Women: 3.1 years (2000) to 2.5 years (2010)

- Inequalities (range) in DFLE at age 65 between English UTLA**
  - Men: 7.9 years (2006-8) to 8.5 years (2009-11)
  - Women: 8.9 years (2006-8) to 9.3 years (2009-11)

*Source: *Minagawa & Saito, 2014; **ONS

Where and how you live
Contributors to inequalities in DFLE at birth

<table>
<thead>
<tr>
<th>Women</th>
<th>DFLE at birth</th>
<th>1991</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social Class IV and V (%)</td>
<td>-0.16 (0.03)</td>
<td>-0.35 (0.03)</td>
</tr>
<tr>
<td></td>
<td>Unemployment rate (%)</td>
<td>-0.53 (0.05)</td>
<td>-0.67 (0.08)</td>
</tr>
<tr>
<td></td>
<td>Retirement migration</td>
<td>0.42 (0.11)</td>
<td>1.42 (0.15)</td>
</tr>
<tr>
<td></td>
<td>Population density</td>
<td>0.02 (0.01)</td>
<td>0.01 (0.01)</td>
</tr>
<tr>
<td></td>
<td>Non-white population (%)</td>
<td>0.03 (0.02)</td>
<td>0.05 (0.01)</td>
</tr>
<tr>
<td></td>
<td>( r^2 )</td>
<td>0.70</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Source: Wohland et al 2014, JECH

DFLE at birth for ethnic groups, 2001

Source: Wohland et al 2014, Ethnicity & Health
## SES and lifestyle contributors - GOR

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff</th>
<th>SE</th>
<th>P-value</th>
<th>Coeff</th>
<th>SE</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>%Unemployed</td>
<td>-1.45</td>
<td>0.43</td>
<td>0.077</td>
<td>-1.67</td>
<td>0.49</td>
<td>0.062</td>
</tr>
<tr>
<td>%Low social class</td>
<td>-0.89</td>
<td>0.15</td>
<td>0.004</td>
<td>-1.00</td>
<td>0.18</td>
<td>0.003</td>
</tr>
<tr>
<td>% No qualification</td>
<td>-0.41</td>
<td>0.11</td>
<td>0.057</td>
<td>-0.45</td>
<td>0.14</td>
<td>0.057</td>
</tr>
<tr>
<td>%Binge drinking</td>
<td>-0.59</td>
<td>0.17</td>
<td>0.068</td>
<td>-0.47</td>
<td>0.11</td>
<td>0.022</td>
</tr>
<tr>
<td>%Heavy drinking</td>
<td>-0.28</td>
<td>0.15</td>
<td>0.380</td>
<td>-0.34</td>
<td>0.09</td>
<td>0.027</td>
</tr>
<tr>
<td>%Smoking</td>
<td>-0.50</td>
<td>0.26</td>
<td>0.267</td>
<td>-0.96</td>
<td>0.26</td>
<td>0.052</td>
</tr>
</tbody>
</table>

But its not all gain in good years ........

![Graph showing years gained in total life expectancy (TLE), cognitive impairment free life expectancy (CIFLE) and life expectancy with cognitive impairment (CILE) without risk factor (high educated)](image_url)

*Years gained (*= significantly>0) in total life expectancy (TLE), cognitive impairment free life expectancy (CIFLE) and life expectancy with cognitive impairment (CILE) without risk factor (high educated)*

*Source: Anstey et al 2014, IJE*
Healthy Life Expectancy

"Increased longevity without quality of life is an empty prize. Health expectancy is more important than life expectancy."

Dr Hiroshi Nakajima, Director-General WHO 1997

Increase in healthy years should exceed increase in life expectancy or unhealthy years will increase.

Conclusion

- There is a lot we know about growing older:
  - The course of disability is predictable
  - Around 2 (men) or 3 (women) years are spent requiring daily or constant help – most provided by children
  - Around 1.5 (men) or 3 (women) years are spent with moderate or worse cognitive impairment and this is constant across age
  - Multiple diseases are more the norm in very old age
  - There are strong regional differences in healthy ageing
- But our knowledge is based on current cohorts – what will the future bring?
- Microsimulation may provide a way of exploring the uncertainty of the future

Prediction is very difficult, especially about the future. Niels Bohr (1885 - 1962).
How can we support and treat people with dementia in an acceptable way that's affordable?

Acknowledgements

InHALE, MRC CFAS, and Newcastle 85+ teams and study participants

The Dunhill Medical Trust
And finally .......

To be old? It’s to be young longer than the rest – that’s all.

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Question and Answer Session