IAA MWG St Petersburg  Item 26
UK research, HMD, MSRC priorities
(From UK Mortality and Longevity Update May 2016)

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UK update

- Current position
- Other areas of interest
- Future
UK update – current position

- Longevity bulletins
  - Modelling edition, November 2015
- UK Mortality improvements falter?
UK update – Modelling
Longevity bulletin Modelling edition, November 2015

Contents, inter alia –

- Historical analysis
- CHD improvements
- Irish experience
- Can ageing be treated?
- High age mortality
- Projection by extrapolative methods
- Projection by cause of death and risk factors
UK update – Modelling

Contents, inter alia –

- How resistance emerges
- Clinical implications
- Basic facts
- Economic implications
- Current developments
- Research into new antibiotics
- Case study
UK update – current position

- **Longevity bulletins**
  - *Modelling edition, November 2015*
- **UK Mortality improvements falter?**
MWG Zurich April 2015

Figure 3. Trends in male life expectancy at ages 65, 75 and 85, selected EU countries,* 2003 to 2012

* EU countries with population over 35 million

Source: PHE analysis of data from Eurostat
MWG Vancouver Oct 2015

Figure 5: Annualised four-year mortality improvements in England & Wales, 2000-2015, weighted average of ages 18-102

CMI Working Paper 83. Recent mortality in England & Wales
Press release

Life expectancy at older ages is the highest it's ever been

A new report by Public Health England (PHE) finds that life expectancy at older ages in England has risen to its highest ever level.

According to PHE’s report on recent trends in life expectancy at older ages:

- men can now expect to live for a further 19 years at age 65, 12 years at 75, 6 years at 85 and 3 years at 95
- women can expect to live for a further 21 years at age 65, 13 years at 75, 7 years at 85, and 3 years at 95

This follows our report last year of a drop in life expectancy at some older ages between 2011 and 2012.

Source: gov.uk
Dementia/Alzheimer’s and respiratory disease behind biggest annual increase in deaths since the 1960s

Deaths from dementia or Alzheimer’s and respiratory disease, including flu and pneumonia, were key factors behind the largest annual rise in deaths since the 1960s.

Provisional analysis of death registrations in England and Wales show a 5.6% increase in deaths in 2015; the biggest year-on-year percentage increase seen since 1967-68, when deaths were up by 6.3% on the previous year.

Registered deaths, England and Wales, 1995 to 2015

Source: Office for National Statistics, ONS
UK update – other areas

NB Not just UK developments!

• DIY websites
• Rising white mortality in US
• Medical error: 3rd largest cause of death
• HMD
UK update – other areas

- **DIY websites** (that provide facilities for professionals and the general public to delve into the details of a database)

- **Ubble based on:**
  
  5 year mortality predictors in 498,103 UK Biobank participants: a prospective population-based study, Ganna and Ingelsson, Lancet August 2015

- **SEER US National Cancer Institute**
  Surveillance, Epidemiology and End Results Program

- **JaCCC**
  Japanese association of Clinical Cancer Centers
On this website, you can explore the findings of scientific research carried out by Andrea Ganna and Erik Ingelsson. Their study, which is published in the Lancet, is the largest of its kind and is based on a national health resource called UK Biobank.

This website presents the two main parts of Andrea and Erik’s work: the Association Explorer and the Risk Calculator. These are closely connected – the Risk Calculator is based on findings from the Association Explorer.

Association Explorer

Click on this interactive graph to explore how closely 655 measurements from the UK Biobank study are associated with different causes of death.

Risk Calculator

The Risk Calculator uses your answers to calculate your risk of dying in the next five years. Some answers increase your risk, while others decrease.
Choose Cancer Site

Lung and Bronchus

Recent Trends in SEER Incidence Rates
Lung and Bronchus, 2000–2013
By Race/Ethnicity

Both Sexes, All Ages

Legend (Race/Ethnicity)
- American Indian / Alaska Native (includes Hispanic)
- Asian / Pacific Islander (includes Hispanic)
- Black (includes Hispanic)
- Hispanic (any race)
- Non-Hispanic White (includes Hispanic)
- White (includes Hispanic)

Rate per 100,000

Year of Diagnosis

Interactive Risk Charts to Put Cancer in Context

It's difficult to read a newspaper or magazine, watch television, or surf the Internet without hearing about cancer. Unfortunately, these messages are often missing basic facts needed for people to understand their chance of cancer: the magnitude of the chance and how it compares with the chance of other diseases.

Risk charts present these basic facts by showing the chance of dying from a variety of cancer and other diseases over specific time frames. Because age, sex and race are so important in determining your chances, the charts let you account for these factors. While other factors make an important difference (like smoking or having a serious disease run in your family), the numbers from the charts will get you into the right ballpark.

Get Started

Choose from one of the four risk charts offered below.
1. Diagnosed year:

Survival rate is increasing year to year. Yet, without a sufficient number of samples, data cannot be compiled. Try searching from newest 1 year, 5 years and finally 5 years to increase the sample space. If data space is still insufficient, choose a wider span of diagnosed years. Also, by searching from older to newer 5 year survival rates, you can observe the improvement of treatment for that cancer.

2. Site:

Choose a wider span of diagnosed years for rarer sites.

3. Clinical stage:

A choice from clinical stage I to IV (based on all of the available information obtained before surgery to remove the tumor) is available. Please do not use your clinical stages after surgery or the other treatment. Sub-stages such as stage 2a cannot be searched.

4. Cancer survivor survival rate:

First, calculate with the date of first check-up / treatment, day 0. Next, search with the survival days since diagnosis. Depending on the type of cancer, survival rate may improve, or decline due to reasons such as relapse, aftereffect, or concurrence of another cancer.

5. Gender:

Choose relevant gender as females tend to have higher survival rate than males.

6. Age:

Survival statistics of Japanese association of Clinical Cancer Centers collects cancer samples from patients aged 15 to 94. Please consult a doctor for children and seniors above 95 years old.

7. 10-years survival rate:

In addition to 5-year survival rates, you can calculate the 10-year survival rate of patients diagnosed between 1998 and 2002 for selected cancer sites.

From Survival rate census of Month, YYYY by Survival statistics of Japanese association of Clinical Cancer Centers
https://kapweb.chiba-cancer-registry.org/usage
UK update – DIY websites

- **DIY websites**
- **Rising white mortality in US**
- **Medical error: 3rd largest cause of death**
- **HMD**
Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century

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Contributed by Angus Deaton, September 17, 2015; sent for review August 32, 2015; reviewed by David Cutler, Ion Skinner, and David Weir

This paper documents a marked increase in the all-cause mortality of middle-aged white non-Hispanic men and women in the United States between 1999 and 2013. This change reversed decades of progress in mortality and was unique to the United States; no other rich country saw a similar turnaround. The midlife mortality reversal was confined to white non-Hispanics: black non-Hispanics and Hispanics at midlife.

The comparison is similar for other Organisation for Economic Co-operation and Development countries.

Fig. 1 shows a cessation and reversal of the decline in midlife mortality for US white non-Hispanics after 1998. From 1978 to 1998, the mortality rate for US whites aged 45–54 fell by 3%; per year on...
UK update – other areas

- DIY websites
- Rising white mortality in US
- Medical error: 3rd largest cause of death
  - Medical error—the third leading cause of death in the US, MA Makary and M Daniel, British Medical Journal May 2016
- HMD
Medical error—the third leading cause of death in the US

*BMJ* 2016; 353 doi: http://dx.doi.org/10.1136/bmj.i2139
(Published 03 May 2016) Cite this as: *BMJ* 2016;353;i2139

Conclusions:
Death Certificates don’t have a facility to acknowledge medical error
If medical error were a disease, it would as the third leading cause of death
The system should be revised
HMD at risk – position at Oct 2015

The Human Mortality Database (HMD) collects and provides open, international access to detailed mortality and population data for 37 countries or areas.

It is the work of two teams of researchers in the USA and Germany, with the help of financial backers and scientific collaborators from around the world.

It is widely used by researchers to compare consistent multi-country data.

Funding for the HMD is now at risk and the team are keen to find new sources of funding. If you can help, contact Magali Barbieri at hmd@mortality.org
HMD at risk – and now?

HMD needs US$ 300,000 to $350,000
HMD considering options – eg user group
Continuation of free-to-user support is considered essential
Society of Actuaries is funding at US$70,000 – renewable subject to progress
UK IFoA considering support
Other actuarial societies?
Other types of organisation possible?
UK update - future

- UK Mortality Research Steering Committee
- Key questions for actuarial science
- Longevity Bulletins
- Longevity in the 21st Century
- Conferences and Symposia
Purpose of MRSC on behalf of IFoA

On issues related to longevity, morbidity and mortality:

- Champion Thought Leadership
- Support and report into Research and Thought Leadership Committee (RTLC)
- Provide cross-disciplinary forum to raise and resolve issues and disseminate knowledge
Hot topics for research focus

1. How will population longevity develop in the future in your defined countries or internationally?

2. New evidence or analyses of historical morbidity and mortality patterns.

3. What would disrupt current mortality trends?

4. How will Big Data contribute to understanding population health behaviours, trajectory and patterns; improving mortality analyses and forecasting?

5. New techniques for mortality and longevity analyses and forecasting.

6. Implication of mortality and morbidity trends for commercial, retirement and policy decisions.

February 2016
How will population longevity develop in the future?

- Consider projection of future trends, learning from wider fields including statistics, medical sciences, epidemiology and demography.

- Consider differences in mortality rate and mortality improvement rates in sub-populations such as gender, socio-economic status and health.

- Consider causal processes of morbidity or mortality trends. Examples would include changes in health drivers, resources and environment.
Key questions for actuarial science

New research initiative from IFoA (UK)

- **Modelling, Measurement and Management of Longevity and Morbidity Risk** - The development of a new generation of mortality and morbidity models, with a specific focus on the drivers for mortality.

- **Use of Big Health and Actuarial Data for understanding Longevity and Morbidity** - The development of new statistical and actuarial methods in the use of Big Data, in the context of health and wider applications. Press release [here](#).

- **Minimising longevity and investment risk while optimising future pension plans** - Future pension products that meet customer needs, balancing stability, performance and cost.
UK update - future

- UK Mortality Research Steering Committee
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- Longevity Bulletins
- Longevity in the 21st Century
- Conferences and Symposia
This conference will provide a multi-disciplinary forum for the exchange of information on the latest relevant research, and also an opportunity to learn about established knowledge from a range of different disciplines, all with the aim of better understanding and managing this complex yet critical subject.
International Symposium
7-9 September 2016, Royal Holloway, University of London, UK
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Themes:

1. How will population longevity develop in the future in your defined country or internationally?
2. New evidence or analyses of historical morbidity and mortality patterns.
3. What would disrupt current mortality trends?
4. How will Big Data and 'internet of things' contribute to mortality trends and analyses?
5. New techniques for mortality and longevity analyses and forecasting.
6. Implication of mortality and morbidity trends.
Confirmed speakers in 2016 include:

Dame Karen Dunnell, Chair of Longevity Science Panel

Matthew Edwards, Senior Consultant, Willis Towers Watson

Professor Carol Jagger, AXA Professor of Epidemiology of Ageing, Newcastle University

Paul Johnson, Director, Institute for Fiscal Studies

Professor Thomas Kirkwood CBE, Associate Dean for Ageing, Newcastle University

Joseph Lu, Longevity Science Director, Legal & General

Chris Martin, Clinical Modelling Consultant, Legal & General

Professor Jay Olshansky, Chief Scientist and Co-Founder, Lapetus Solutions

Dr Amlan Roy, Managing Director and Head, Global Demographics & Pensions Research, Credit Suisse

Professor James W. Vaupel, Founding Director of the Max Planck Institute for Demographic Research and Head of the Laboratories of Survival and Longevity and of Evolutionary Demography
International Symposium
7-9 September 2016, Royal Holloway, University of London, UK

Enrol now!

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