Forecasting the extent of future public health challenges using the Scottish Burden of Disease study

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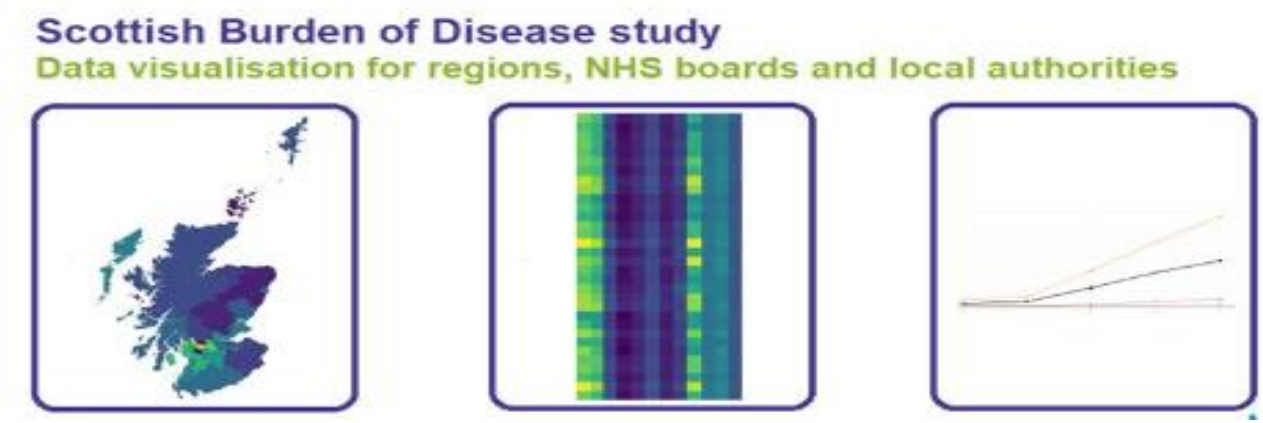
Public Health Scotland

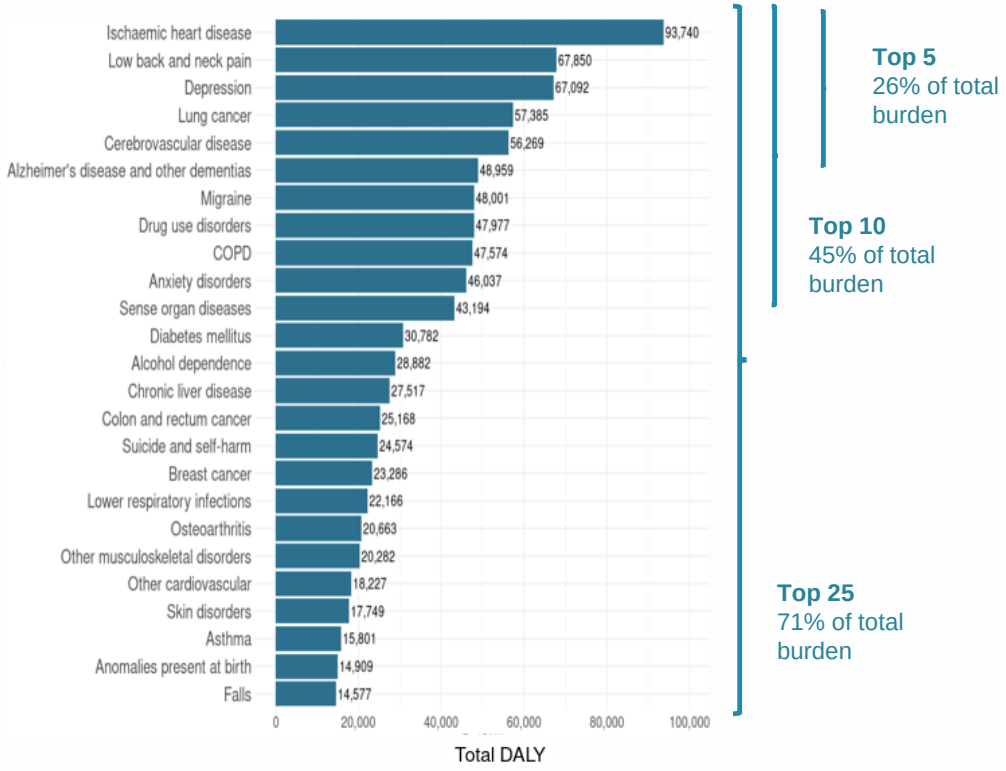
Scottish Burden of Disease study

- Global burden of disease (GBD) estimates produced annually
- Local estimates needed to inform local decision making
- **Scottish Burden of Disease (SBoD)** study launched 2013
- Estimates of burden for 132 diseases/conditions
  - Nationally – deprivation decile
  - Range of local geographies



Forecasting burden of disease in Scotland

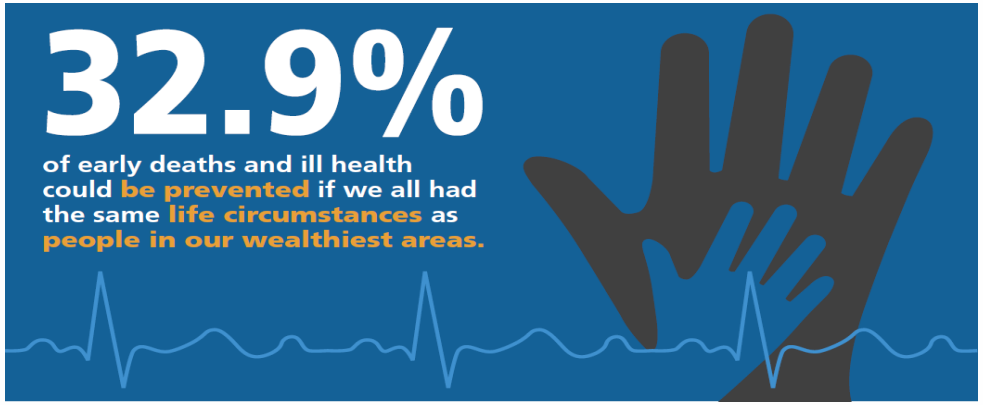
Scottish Burden of Disease 2016



Top 5
26% of total burden

Top 10
45% of total burden

Top 25
71% of total burden



Challenges affecting Scotland

- Health inequalities – ill-health and mortality experienced earlier in more deprived communities
- Stalling life expectancy and previous improvements in LE not matched by improvements in ill-health
- Ageing population

Projection the burden of disease

- Policy and service planning & scenario planning – evidence based decision making
- Provides a ‘best guess’ estimate of a non-COVID world

Data sources and methods

Time series morbidity and mortality data

- Prevalence, incidence and mortality counts generated (2000 – 2019)
- Linkage of patient-level morbidity and mortality data
- Age-sex specific population estimates and projections to 2041

Projection methodology

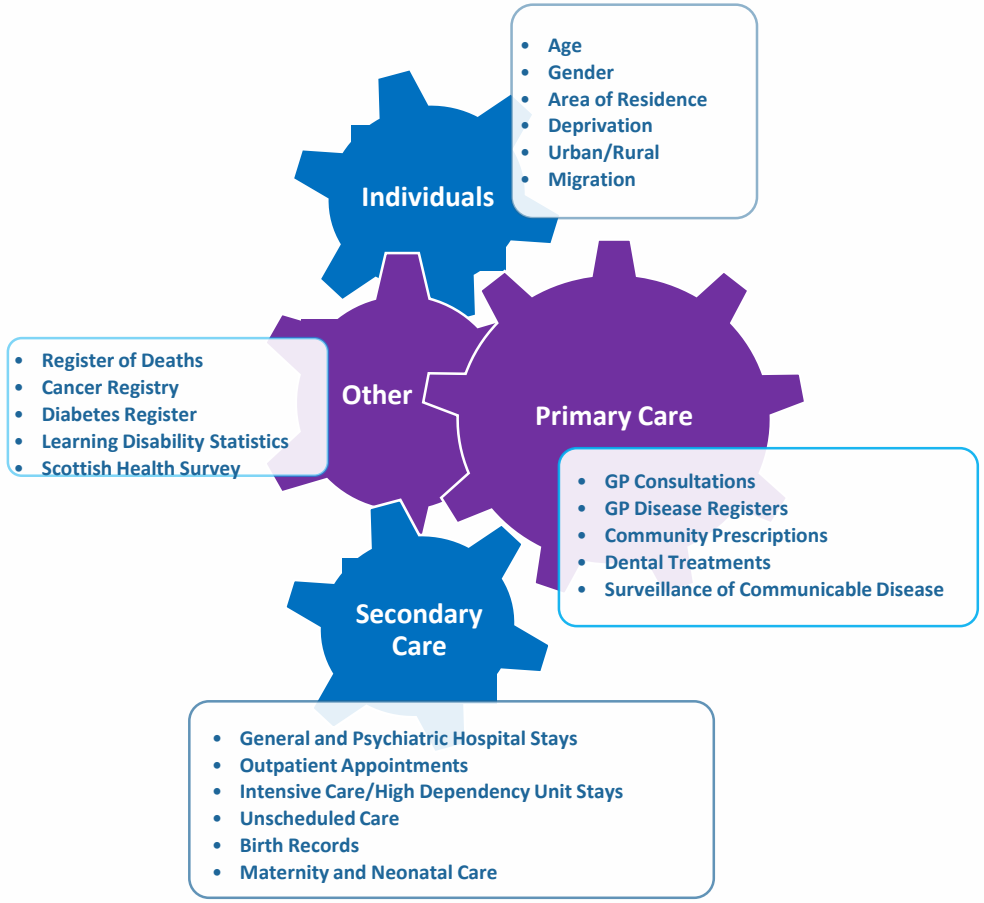
- Age-period-cohort models applied to historic data
- 4 x 5-year periods available
- Age, age-period, age-cohort, full age-period-cohort models
- Sex-specific projections of prevalence, incidence and mortality

Estimating future burden

- Disability weights applied to projected prevalence to determine YLD

YLD = prevalence x severity x disability weight

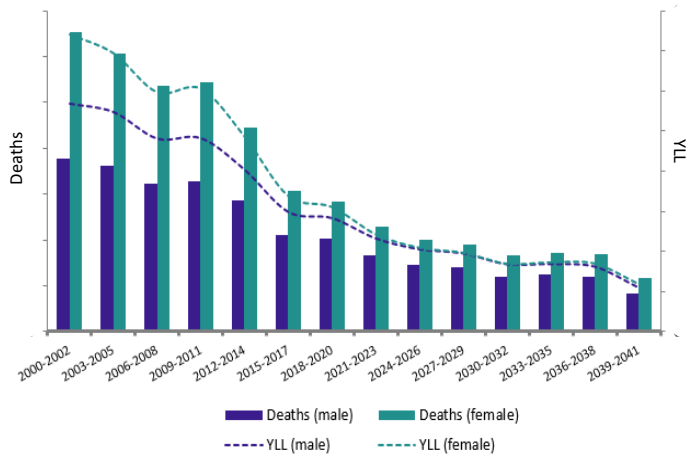
- Projected age-specific mortality used with constant aspirational life table to determine YLL



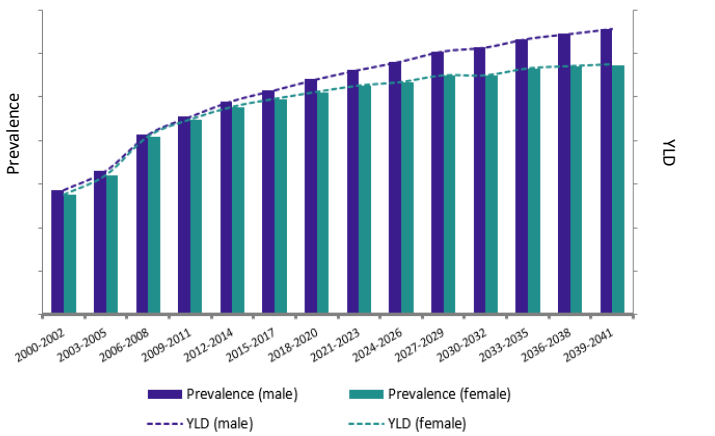
Results

- Full mortality projections available for 132 causes of disease
- Morbidity projections available for cancers, cardiovascular diseases, respiratory and others

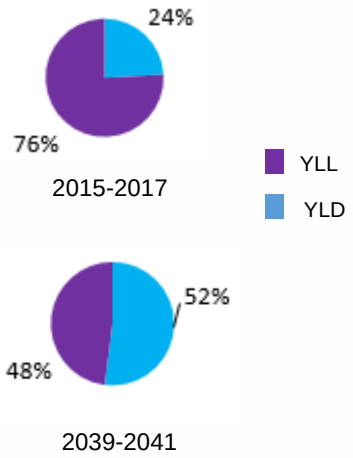
Cerebrovascular disease – mortality projections



Cerebrovascular disease – morbidity projections



Cerebrovascular disease – Proportion YLL/YLD



- Reducing mortality and YLL seen across most of ‘top 25’ causes of burden
- Exception to this ‘social’ causes, e.g. drug-related deaths and deaths from alcohol use disorders and diseases primarily affecting elderly population, e.g. Alzheimers.

Next steps

Scenario planning and interventions

- Focus on modifiable risk factors – e.g. alcohol, obesity, dietary
- Use population attributable fractions to estimate how changes in risk factor proportions may affect future burden
- How can we stop these DALYs becoming a reality – which interventions provide best return?

Dissemination

- Engagement with decision makers at all level policy-makers at governmental level and public-health practitioners ‘on the ground’:
- Development of data visualisations

https://www.scotpho.org.uk/comparative-health/burden-of-disease/overview/

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