

Scottish National Burden of Disease, Injuries and Risk Factors Study (SBOD)

Diane Stockton
Study Lead
NHS Health Scotland

diane.stockton@nhs.net



SBOD Study team

ISD (NHS National Services Scotland)	NHS Health Scotland
Ian Grant (Principal researcher)	Diane Stockton (Study lead)
Oscar Mesalles-Naranjo (Senior information analyst)	Elaine Tod (Public Health Information Manager)
Grant Wyper (Senior researcher)	
Colin Fischbacher (Advisor)	Gerry McCartney (Advisor)
Richard Dobbie (Advisor)	Neil Craig (Advisor)

Why conduct a national burden of disease study?

- To provide comprehensive data on health needs to support rational resource allocation.
- To identify inequalities in the burden of disease across sub-populations and socio-economic groups.
- To analyse the contribution to this burden of selected risk factors.
- To provide epidemiological information against which to compare the relative impacts of interventions in reducing the burden of disease and to inform economic evaluation of those interventions.
- To help address the future challenges posed by the ageing of the population, changes in disease and risk factor patterns, and the increasing costs of health services through the production of projections of the disease burden.
- To assess whether the large effort to undertake a Burden of Disease study for Scotland, is warranted, by comparing our results to the results that can be obtained for Scotland from the GBD study.

What is Burden of Disease

Disability-Adjusted Life Year (DALY)

=

Fatal burden (i.e. the years lost because of early death: YLL)

+

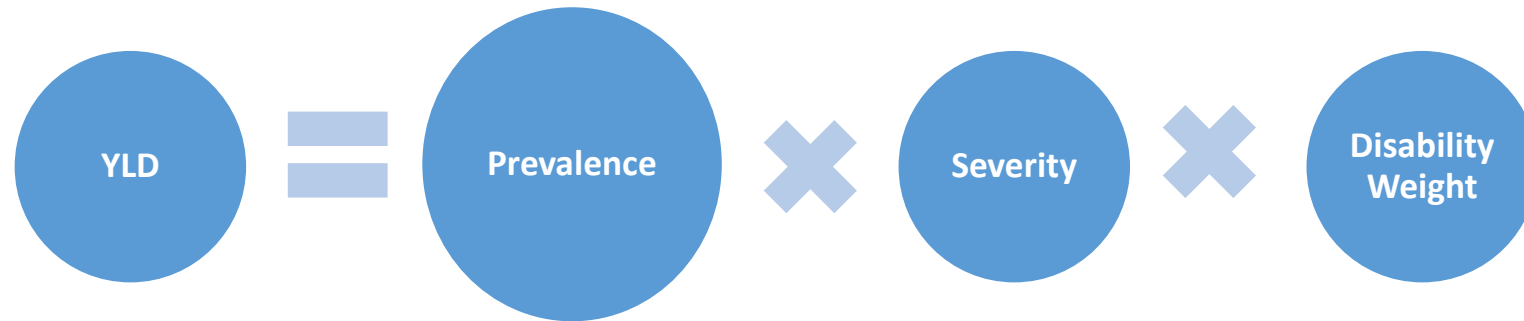
Non-fatal burden (i.e. years lost because they are lived in less than ideal health: years lived with disability: YLD)

Years of life lost to premature mortality (YLL)



- Mortality is based on cause-specific deaths as recorded by NRS
- Redistribution of ill defined deaths as per GBD method
- Life expectancy is derived at age of death (Scottish life tables)

Years lived with disability (YLD)



- Prevalence – how many people have each disease, condition or injury at a specific point in time
- Severity - what proportion of people we would expect to have mild, moderate and severe disability for each disease, condition and injury
- Disability Weight- the level of disability that experts working with the GBD Study have attributed to each disease, condition and injury at each severity level. Graded between 0 (no disability) and 1 (death).

Imagine a block of flats where 10 people live. In 2015....



One **20-year-old man** died suddenly from a heart attack while exercising. His life expectancy was **77.6 years**, so he lost **57.6 years of life**.

$$77.6 - 20$$

Life expectancy current age

$$= 57.6 \text{ YLL}$$



One **80-year-old man** died of a stroke. Having lived to this age, his life expectancy was **87.8**, so he lost **7.8 years of life**.

$$87.8 - 80$$

Life expectancy current age

$$= 7.8 \text{ YLL}$$



One **45-year-old woman** had a moderate case of bronchitis that limited her activities a small amount for two weeks. This amounted to **0.002 lost years** of healthy life in 2015.

Two weeks illness with a low level of impairment

$$= 0.002 \text{ YLD}$$



One **60-year-old woman** had severe COPD that limited her a great deal all year round. This amounted to **0.41 lost years** of healthy life in 2015 (around 5 months).

12 months lived with a severe condition and high levels of impairment

$$= 0.41 \text{ YLD}$$

The remaining six residents had no illnesses and didn't die in 2015.

Total DALYs (YLLs + YLDs) for this block of flats in 2015:

$$57.6 + 7.8 + 0.002 + 0.41 = 65.8$$

To note:

- We adjust our DALYs to account for multi-morbidity (i.e. if someone has more than one disease we make sure the burden they live with only gets counted once)
- The DALY components indicate whether the burden of a disease is predominantly lived with or causes death. Non-fatal burden is not the same as prevalence of a disease.
- So, for example, when we say that 98% of disease X is fatal, what we mean is that of the people with disease X, 98% of the burden is due to early death and 2% is due to the physical consequences, in that year, of living with disease X.

Results which will be available in July

- Overview report
- Age sex report
- Deprivation report
- Burden attributable to alcohol report
- Technical report
- Disease briefings for 25 conditions with largest burden
- Results by NHS Board
- Spreadsheets of the data

Results which will be available by end of the year

- Short report summarising the results for each NHS Board
- Projections (for 25 diseases with largest burden) to 2025
- Burden attributable to specific risk factors

Burden of key risk factors

- Burden of stroke explained by modifiable risk factors (completed)
- Hospitalisations (and costs of) attributable to overweight and obesity (completed)
- Burden attributable to alcohol (July)

Later in the year:

- Burden attributable to obesity
- Burden attributable to smoking
- Burden attributable to socio-economic inequality

“What if” scenarios

Cannot use this information to set priorities and allocate resources in health. Needs to be considered alongside information on effective strategies and the costs of these.

Work alongside the Health Scotland Triple I project to model the potential impact of specific policy measures or interventions on:

- 1) Reduction in DALY
- 2) Reduction in health inequalities
- 3) Reduction in hospitalisations
- 4) Reduction in prescribing costs

Work with health economists to:

- To inform estimates of the fraction of economic costs attributable to a certain disease or risk factor ***avoidable via a range of effective policy measures or interventions***
- To increase the availability and quality of evidence on the economics of prevention, to help identify the most cost-effective prevention or treatment strategies.

Australia ACE-Prevention Study

Solid platform for Policy Action to:

- Direct available resources towards best-practice cost-effective services
- Modify not cost-effective services to improve their cost-effectiveness
- Discontinue not cost-effective services that cannot be made more cost-effective or be justified on other compelling grounds
- Target services to those in need, as opposed to people with low-risk profiles who are unlikely to benefit in a cost-effective manner

https://public-health.uq.edu.au/files/571/ACE-Prevention_final_report.pdf

Burden of multi-morbidity

- Explore multi-morbidity in Scotland and the impact it has, by demography
- BOD studies have traditionally treated the overlap between any two diseases to be the same
- Studies to date have shown the effect of this assumption to have a minimal effect on the end result
- Aim to use community prescription data to measure dependent co-morbidity
- Use to inform the interventions considered in the “what if” scenarios



<http://www.scotpho.org.uk/comparative-health/burden-of-disease>

Diane.stockton@nhs.net

Ian.grant@nhs.net

Questions

- What are the implications of this study for your prevention work?
- What sort of questions do you think it could help you answer?
- What do we need to provide to you to make this information most useful?