



Institute
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of Actuaries

Antibiotic resistance and longevity improvements

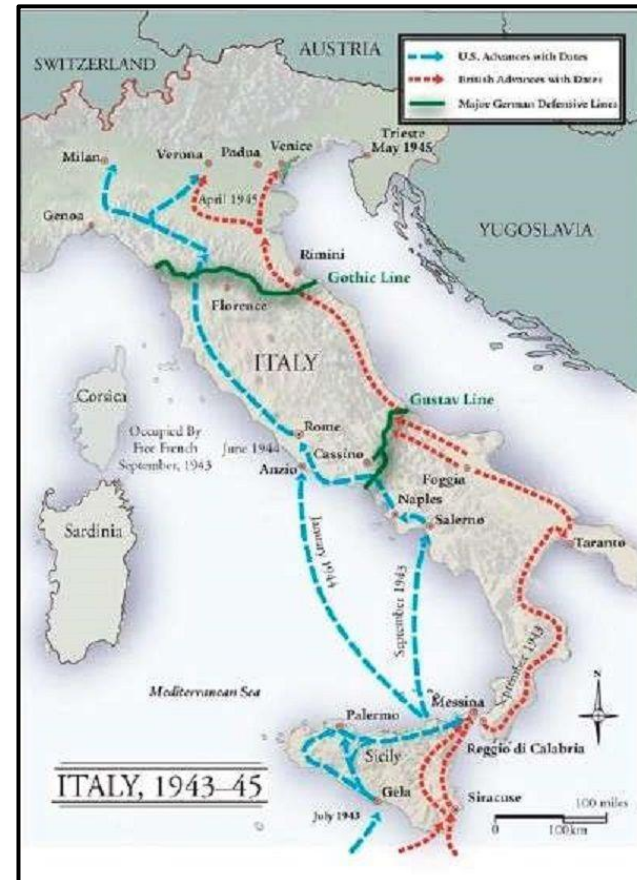
Matthew Edwards



Antibiotics and 'human genetics'



**Brigadier H.C. Edwards
Surgeon, RAMC**



**First major use of
antibiotics – Italy 1943**

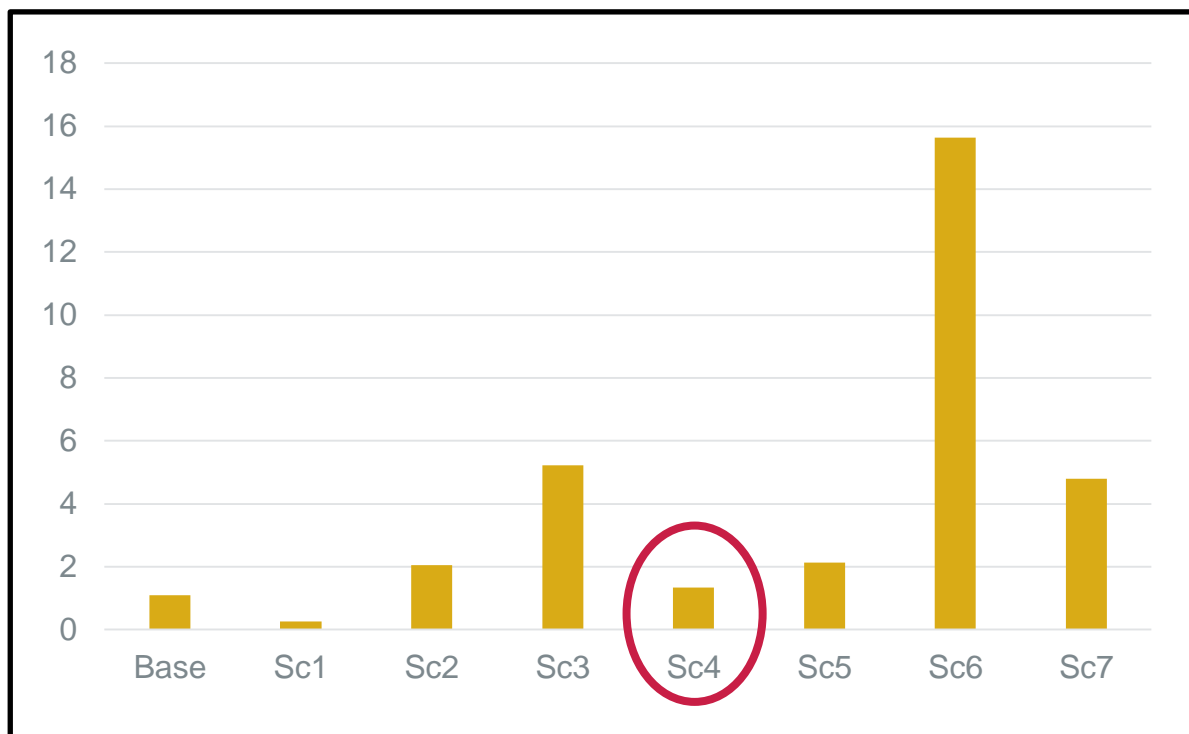
Recent statistics – deaths attributable to AMR

**50,000 deaths / year
in Europe and USA**

**700,000 deaths / year
worldwide**

Projections – O’Neill Review

Working age deaths in EU/EEA/OECD countries – millions p.a., yr 20



Total lives lost from now to 2050 – of the order of 100s of millions

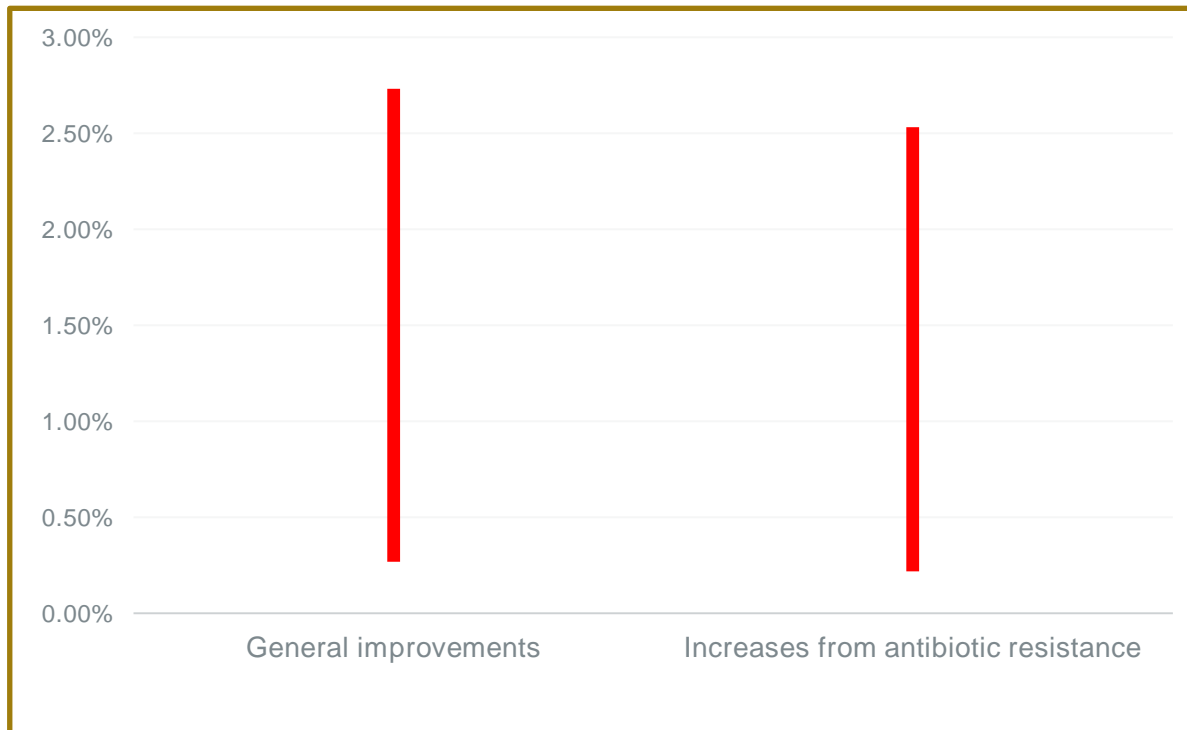
Modelling challenges

- What will be the mortality of infectious diseases?
 - Will this return to pre-1950 levels?
 - Efficacy of vaccination programs
- Will infection rates increase?
- What will be the effect on standard medical treatments?
 - Hip replacement
 - Cancer treatment
 - Caesarean sections

Comparison v future mortality improvements

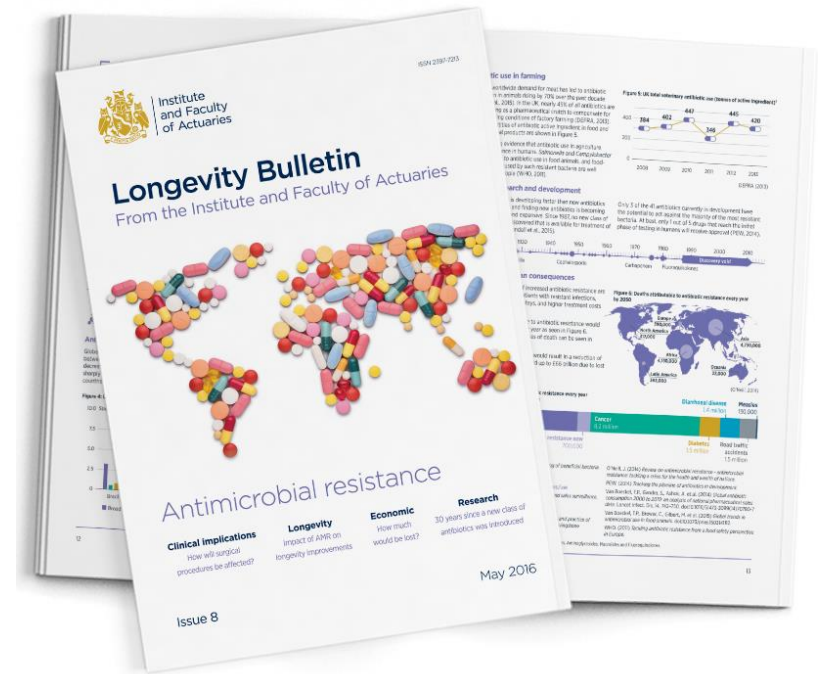
$$\text{Unknown}_1 - \text{Unknown}_2 = x$$

1.5%?
1.25%
1.0%?



Country?
Age??

IFoA Longevity Bulletin



‘Quite possible – perhaps even likely – that the recent era of material mortality improvements will give way to many years of material mortality worsening’
Professor Dame Sally Davies, Chief Medical Officer, England & Wales

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