

Estimating the costs of perinatal mental health problems

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Background

- Large proportion of women suffer: up to 1 in 5
- Children suffer too: Via genetic and environmental factors starting in the womb (e.g. .. cortisol levels produced when mother is stressed reach the fetus; mother less likely to be able to provide sensitive attachment after birth; ...)
- Negative consequences for children throughout life-time
- Evidence comes from cohort studies (e.g. ALSPAC, Millennium Cohort, South London Development Study)
- Service provision is highly patchy, treatment often inadequate: Less than 15% of localities provide specialist services at level recommended in NICE guidelines and 40% provide no services at all



Initial economic work: Postnatal & perinatal depression

A small **cost-effectiveness** modelling study of *health visiting* based on published trials data (and other sets of evidence):

- Considered the short-term health outcomes and costs (health and social care expenditure);
- Intervention was likely to be cost-effective but not cost saving (in the short-term);
- Did not include long-term impact on mothers and children.

* Bauer, A et al (2010), Health visiting and reducing postnatal depression, In: Knapp M, McDaid D, Parsonage M (eds.) *Mental Health Promotion and Prevention: the Economic Case*, PSSRU, London

Initial economic work: Postnatal & perinatal depression

Modelling study of **long-term costs of the impact on children** based on primary data from the *South London Development Study* (Susan Pawlby and colleagues from King's College)

Step 1: Logistic regression of effects of perinatal depression on child development outcomes at 11 and 16yrs

Step 2: Evidence reviews of studies of epidemiology, health-related quality of life, public sector costs and employment

Step 3: Modelling cost consequences of adverse outcomes over life-time (where possible)

Initial economic work: Postnatal & perinatal depression

Findings

- Indicated potential for large financial gains of investing into this area: For each child exposed to perinatal depression, *public sector costs exceeded **£3,030**, costs due to reduced earnings were **£1,400** and health-related quality of life loss was valued at **£3,760**.*

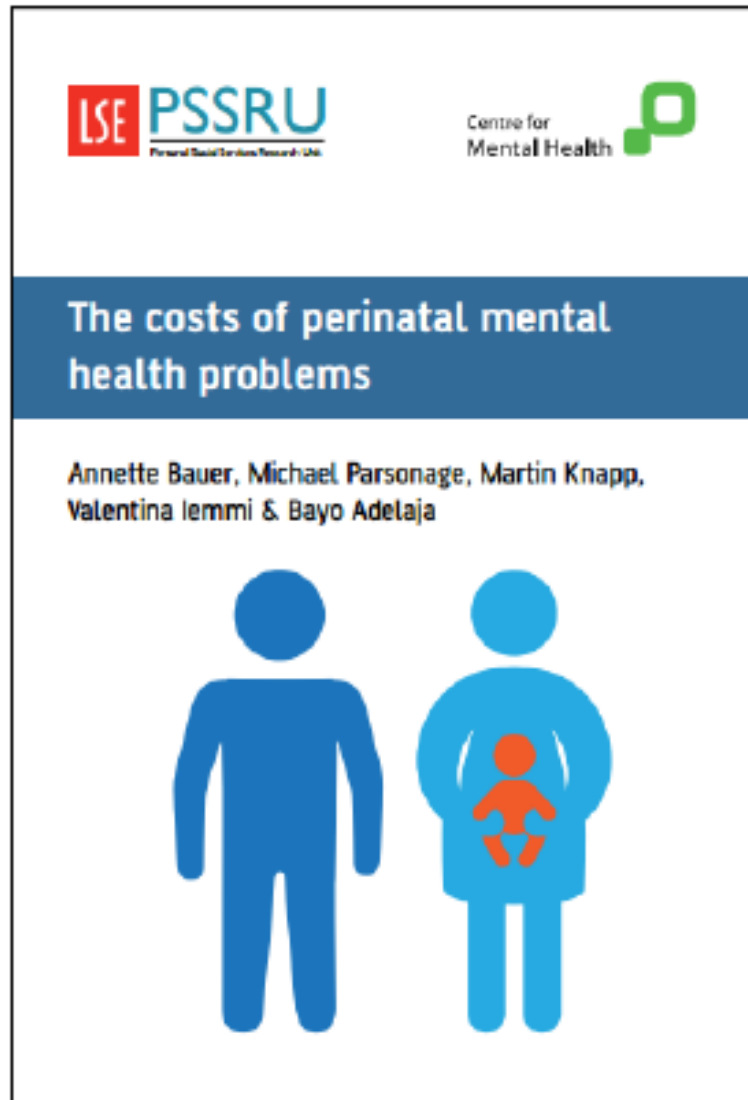
Limitations

- Subset of adverse outcomes and economic consequences; small study sample; perinatal depression only

* Bauer A, Pawlby S, Dominic TP, King D, Pariante CM, Knapp M (2015), Perinatal depression and child development: exploring the economic consequences from a South London cohort, *Psychological Medicine*, 45(1):51-61.

Collaborative research

- Commissioned by the **Maternal Mental Health Alliance**
- Part of *Everyone's Business* Campaign
- Funded by **Comic Relief**



- In partnership with the ***Centre for Mental Health***
- In consultation with an *expert reference group*
- *NICE clinical guideline* updated at the same time
- *Presented to Parliament in Oct. 2014*

Cost of illness study: Aims

General: **To produce estimates of the overall costs of maternal perinatal mental health problems.**

More specifically:... **To investigate**

- The *distribution of costs* between groups i.e. **mothers & children**; for *different perinatal conditions*;
- **Life time** costs at present value per case and per birth;
- Perspective of **government**: expenditure for public services in health and social care, education and criminal justice) and
- Perspective of **wider society**: government plus value for life years lost, health-related quality of life impairments and productivity losses).

Cost of illness study: Method

Decision modelling approach - *rationale*

Allows to

- Synthesise data from a variety of sources following principles of meta-analysis;
- Utilise information from a wide range of different cohort studies;
- Extrapolate data beyond endpoints of relevant studies and model life-time economic consequences;
- Link intermediate to final outcomes such as quality of life and productivity losses;
- Incorporate uncertainty around parameters;

... and avoids having to carry out primary data collection or analysis and to rely on single source.

Method: Steps involved

- Designing the pathway (model structure) based on initial evidence of adverse outcome
- In depth literature review of adverse outcomes
- Selection of studies, appraisal and information extraction
- Additional data searches
- Adaptions of model structure based on data, defining time periods
- Calculating additional risk (risk differences)
- Calculating annual cost of adverse outcome for identified time periods
- Calculating net present values

Method: Literature review

1. Cohort (and other types of) studies of **resource use or costs** linked to perinatal mental health problems
2. Cohort (and other types of) studies which measured the *relationship between perinatal maternal mental health problems and mothers' and child's health and wellbeing outcomes*
3. Systematic reviews and meta-analyses on prevalence and natural course of mental health conditions
4. Cohort (and other types of) studies which quantified resource use or costs linked to adverse child outcomes
5. Unit cost data, national statistics

Searches needed to be pragmatic! Quality not formally assessed; instead we applied certain criteria to prioritise e.g. large cohort studies from UK, published in peer reviewed journals

Method: Decision modelling

Incremental approach: additional costs associated with perinatal mental health problems;

- Directly or from additional data sets (national averages)

Principles and standards of attaching **monetary values** (recommended by the National Institute for Health and Care Excellence (NICE) and other government bodies)

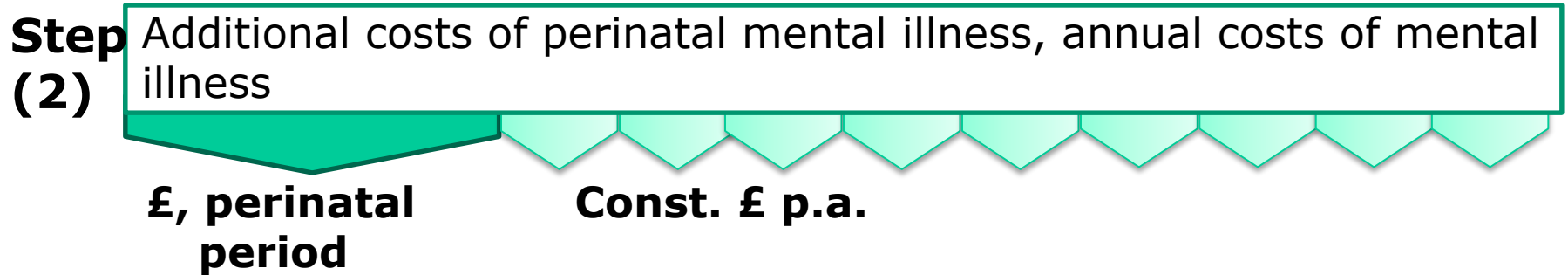
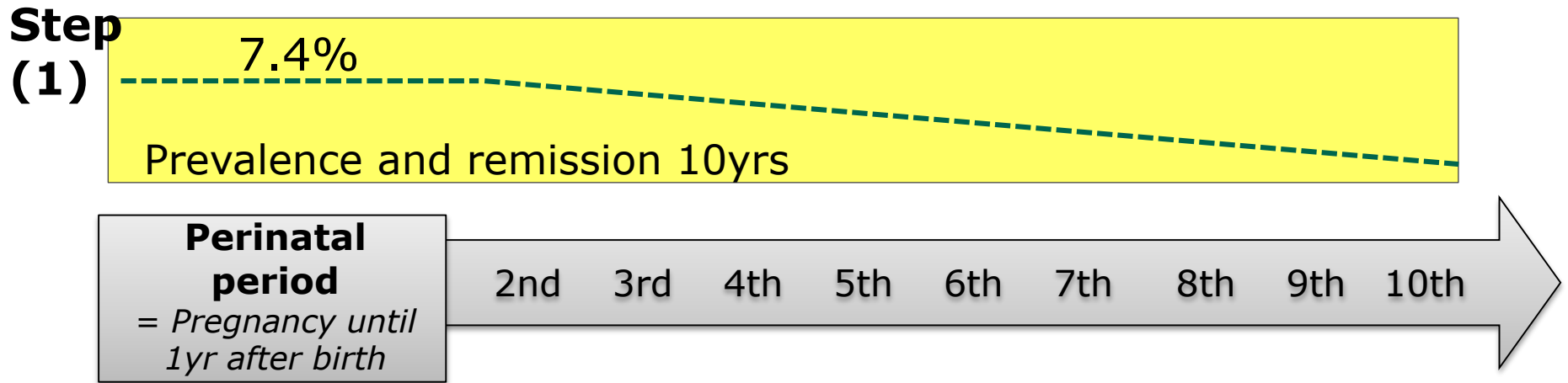
- **Unit costs attached to public service use** from PSSRU Unit cost book for health and social care and NHS Reference costs
- **Mean weekly wage rates** from Office for National Statistics
- **Willingness-to-pay value** for a health-related quality adjusted life year gained
- **Value of prevented fatality** for whole life lost (suicide or infanticide)
- **Discount rate** of 3.5%; average growth of earnings of 2%

Method: Decision modelling

Assumptions

- *Remission* of an episode of mental illness occurring during the perinatal period => cut-off point at 10 years
- *Average age of women at childbirth* of 32 years
- *Average remaining life expectancy* of 44yrs (based on an average life expectancy for women of 76 years)
- *Retirement age* of 65yrs

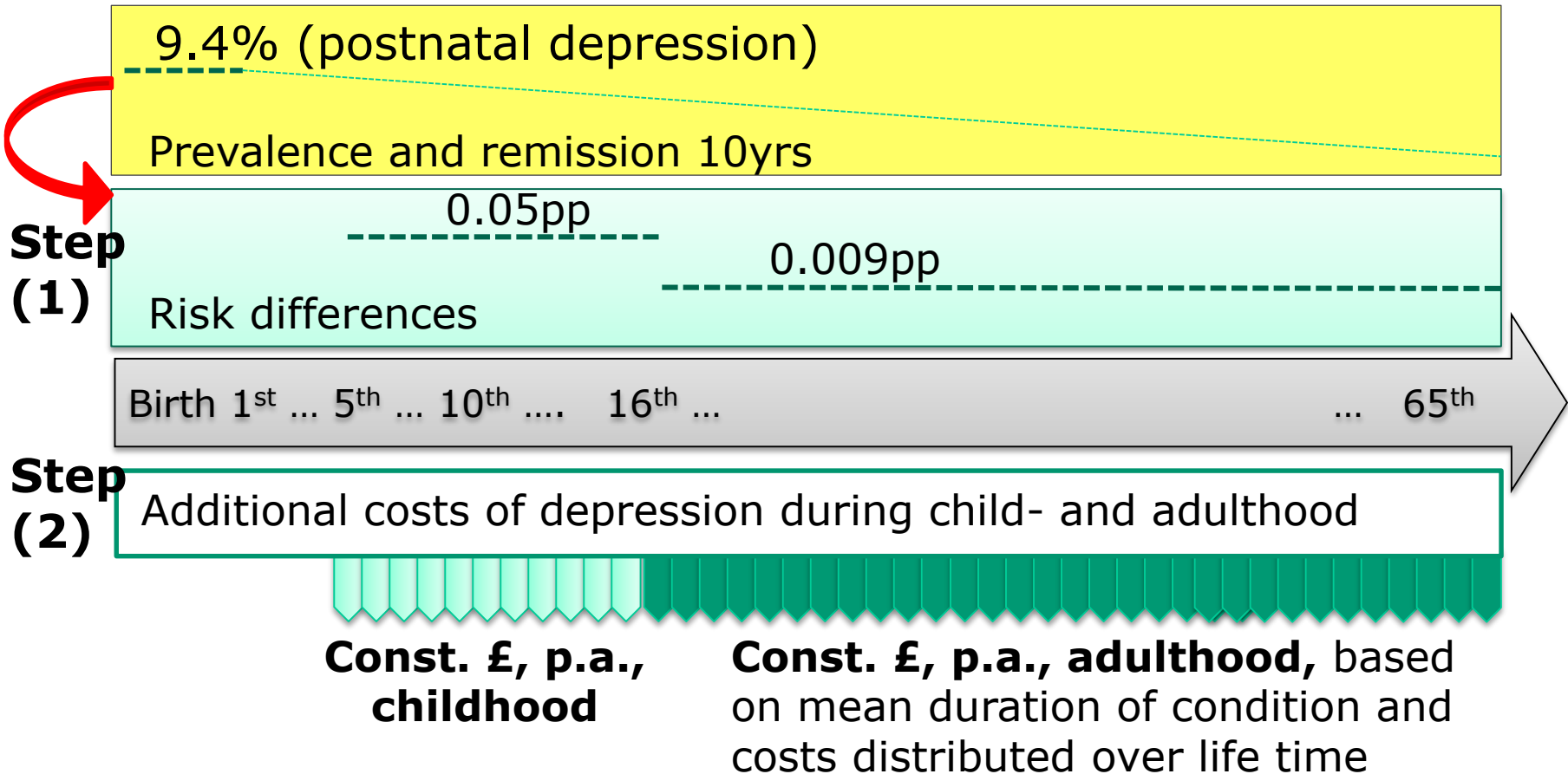
MOTHER, cost of perinatal depression or anxiety



Step (3)

$$\text{Present value} = \sum_{t=0}^{10} \text{Mean prevalence}_t \times \text{Costs}_t \times (1 + i)^{-t}$$

Impact on CHILD, Example outcome: depression



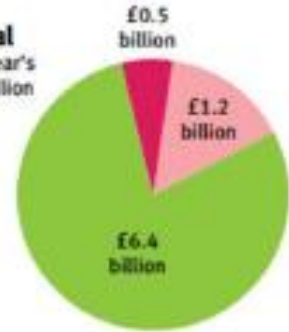
Step (3) Present value = $\sum_{t=5}^{65} \text{Mean prevalence}_t \times \text{Costs}_t \times (1 + i)^{-t}$

Key findings

Key points from the report

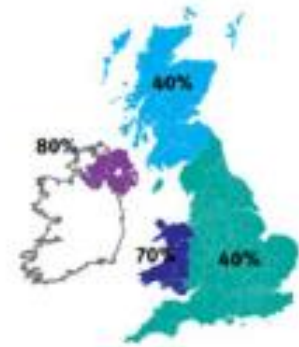
Known costs of perinatal mental health problems per year's births in the UK, total: £8.1 billion

- health and social care
- other public sector
- wider society



Up to 20% of women develop a mental health problem during pregnancy or within a year of giving birth

Women in around half the UK have NO access to specialist perinatal mental health services



Suicide is a leading cause of death for women during pregnancy and in the year after giving birth



Costs v improvement
The cost to the public sector of perinatal mental health problems is **5 times** the cost of improving services.

Key findings

Average cost to society of one case of *perinatal depression* **£74,000**, of which **£23,000** relates to mother and **£51,000** relates to child.

Perinatal anxiety (when it exists alone and is not co-morbid with depression) costs about **£35,000** per case, of which **£21,000** relates mother and **£14,000** to the child.

Perinatal psychosis costs around **£53,000** per case, of which about **£47,000** relates to mother and **£6,000** to child (=> *lack of evidence of longer term impact on child*).

...a lot of media attention



Advantages and challenges of using cohort data to estimate economic consequences

- Causality
- Range of risk factors that can be controlled for
- Different outcome measures
- Different follow up points
- Service use often not captured appropriately
- Missing data



Thank you!

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