Reorganising specialist cancer surgery for the 21st century: a mixed methods evaluation

Cost-effectiveness analysis
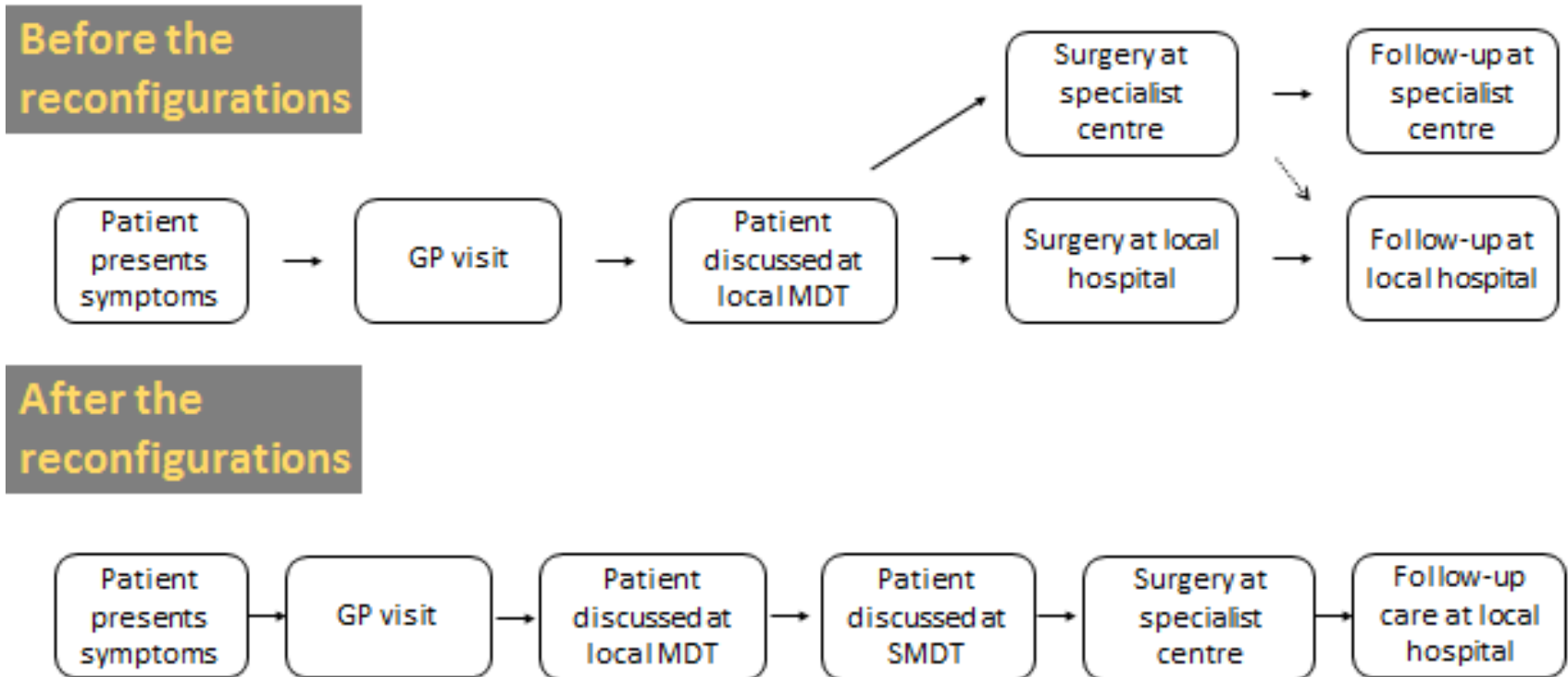
Caroline Clarke & Rachael Hunter

RESPECT-21 study management team: Angus Ramsay, Cecilia Vindrola, Catherine Perry, Victoria Wood, Steve Morris, Mariya Melnychuk, Laura Vallejo Torres, Ruth Boaden, Michelle Morton, Naomi Fulop (CI)

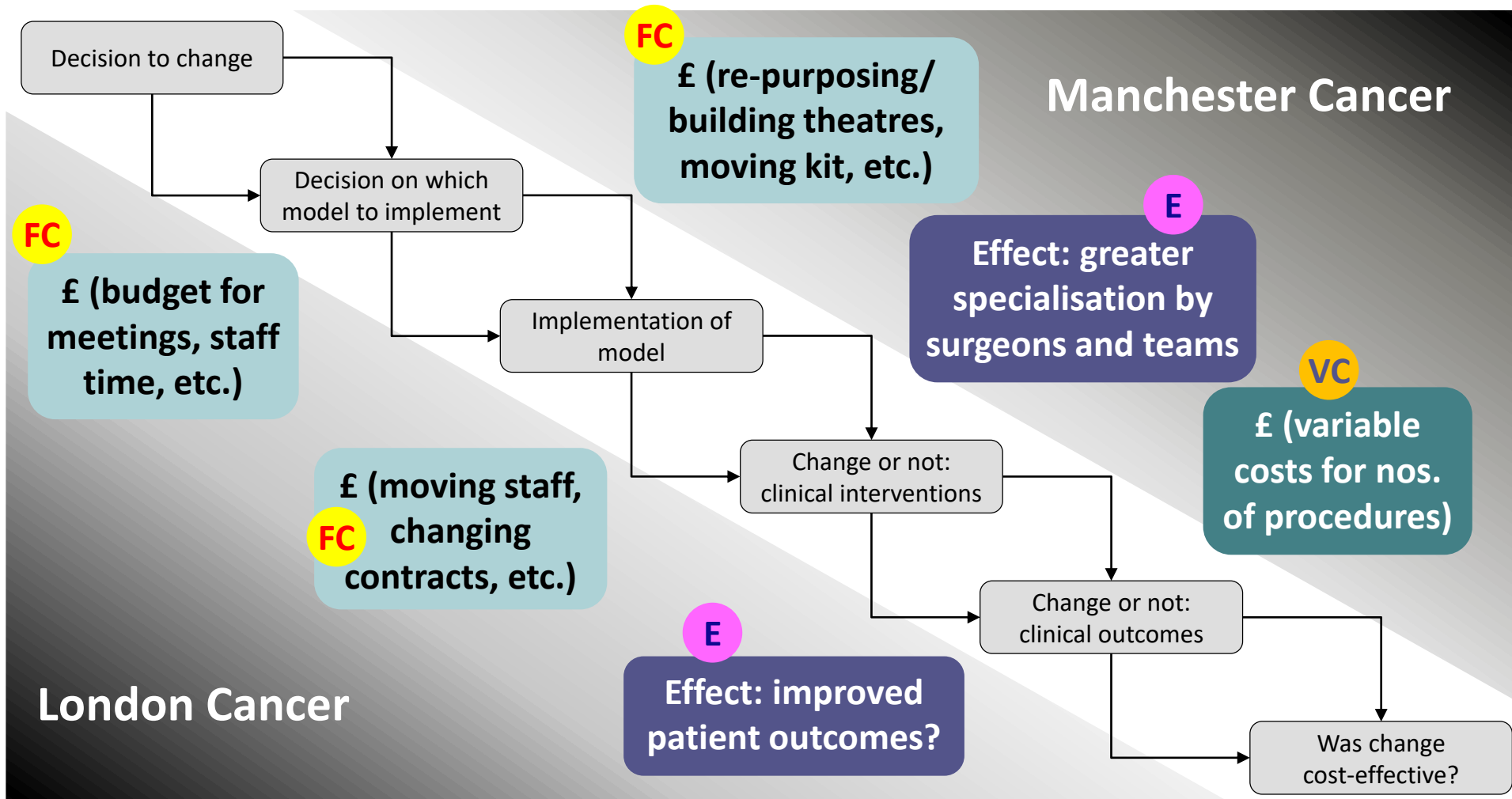Methodologists' meeting
Wed 5 October 2016

The RESPECT-21 study

- Mixed methods evaluation of centralisation of **bladder**, **prostate**, **kidney** and **OG** (oesophago-gastric) specialist cancer surgery in London Cancer (NE and central London) and Manchester Cancer (Greater Manchester)

- Funded by NIHR Health Services and Delivery Research Programme (£1,186,864)

- September 2015 - February 2019

- CI is Naomi Fulop (DAHR, UCL)

- Protocol paper should be published next month (*Implement Sci*)

Simplified representation of the changes

Before the reconfigurations:
Patient presents symptoms → GP visit → Patient discussed at local MDT → Surgery at specialist centre → Follow-up at specialist centre / Surgery at local hospital → Follow-up at local hospital

After the reconfigurations:
Patient presents symptoms → GP visit → Patient discussed at local MDT → Patient discussed at SMDT → Surgery at specialist centre → Follow-up care at local hospital

MDT = multi-disciplinary team
SMDT = specialist multi-disciplinary team

Conceptual framework; costs and effects

Adapted from Fulop et al. "Explaining outcomes in major system change: a qualitative study of implementing centralised acute stroke services in two large metropolitan regions in England." *Implement. Sci.* 2016;11:80.

FC **Cost data**
(fixed implementation costs)

- Data to be obtained from qualitative analysis: interviews, documentary analysis (e.g. meeting minutes), and financial data sources (budget sheets).
  - Create timeline of all meetings and workshops
    - People: cost per hour x no. hours (from meeting minutes)
    - Other costs: from budget sheets, cost of room hire etc. for workshops with providers
  - Re-purposing of buildings, new theatres, changing staff contracts, etc.

vc **Cost data**

(variable costs after implementation)

- <u>HES</u>: Hospital **resource use and unit costs** – No./type of inpatient stays and outpatient appointments.

- Published sources for unit costs where not available locally.

E Effects data

"Primary" outcomes:

- Prostate: data directly from providers/commissioners
  - Prostate cancer: proportion of men remaining **pad-free** at 12 months

- Bladder/renal/OG: ONS linked to HES (from NHS Digital)
  - Bladder cancer: 30-day post-operative **mortality** (2% -> 1%)
  - Renal cancer: 30-day post-operative **mortality** (2% -> 1%)
  - OG cancer: 30-day post-operative **mortality** (2% -> 1%)

E Effects data

- **Utility** scores for QALYs
  - Assess feasibility of obtaining patients' health state information from linked datasets, i.e. cancer registries – need to know what health states patients are in (i.e. morbidity), and for how long
  - Utility weights to attach to these health states then likely to come from published sources.
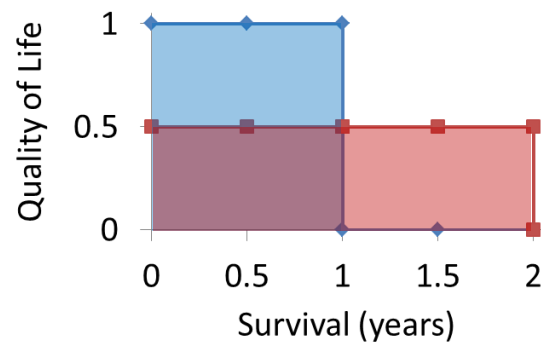
Quantitative methodology:
<u>difference-in-differences</u> estimation
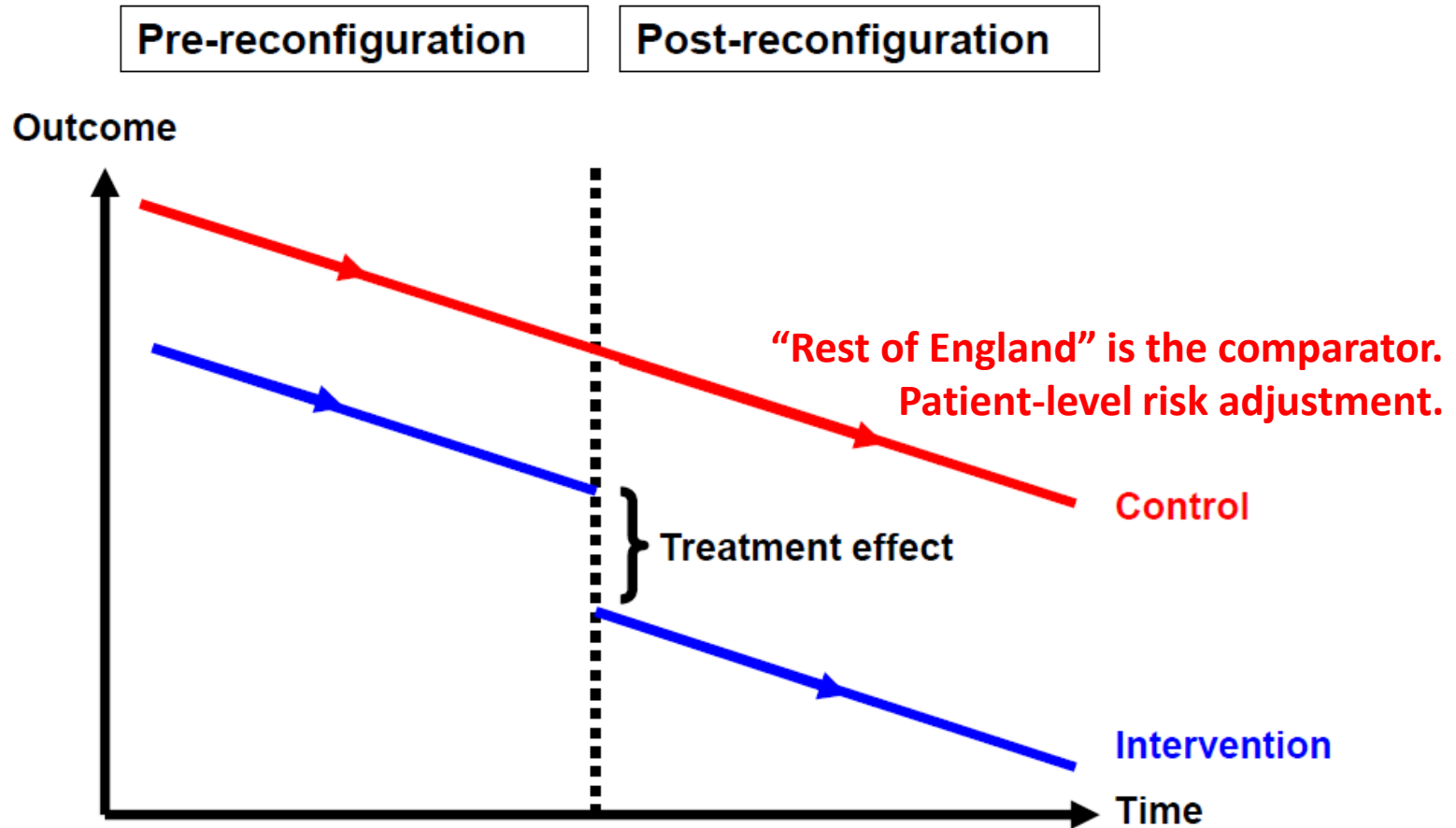
What is the "end result"?

- Calculate the probability that the changes result in a higher net monetary value than would have occurred without the changes.
    - Additional QALYs (**ΔE**) multiplied by a value which a policy maker is willing to pay (**WTP**) for an additional QALY produced

$$(\textbf{WTP per outcome} \times \textbf{ΔE}) > \textbf{ΔC} \qquad \text{ICER} = \frac{\Delta C}{\Delta E}$$

    - **If ΔC is smaller than the left-hand side (ΔC and ΔE both positive), it was worth it** (or if WTP is bigger than ICER)

- Extensive sensitivity analysis of the results.
- Can we extend the model to find the "break-even point" as there are probably large fixed (sunk) costs?