



Transferability of economic evaluations of medical devices

Illustration in orthopaedic surgery



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Contents

- Background & rationale
- Methodology
- Worked example for orthopaedic surgery
- Results
- Discussion and conclusion



Background & Rationale (I)

- Increasing need to demonstrate the 'value for money' of new medical devices
- Impact on European / national approval and procurement decisions



Background & Rationale (II)

Economic evaluations:

- Challenging
 - Costly
 - Time consuming
- Non-systematic differences in outcomes between countries



Background & Rationale (III)

- Medical devices are often aimed at a 'global' market
- Transferability of economic evaluations has the potential to make a more efficient use of research and development resources





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Objective

To explore a methodological approach
for supporting decision-makers
in transferring results of economic evaluations
to other settings



Methods – general (I)

Two ways of transferring results of economic evaluations:

1. Applying conclusions directly to another setting
2. Keep relevant results and substitute the non-relevant ones

Methods – general (II)

Classification of factors that limit transferability:

- Methodological
 - Healthcare system
 - Population
- } *characteristics*

Methodological

Evaluation perspective

Costs & effects

Discount rates

Costs & effects

Medical cost approach

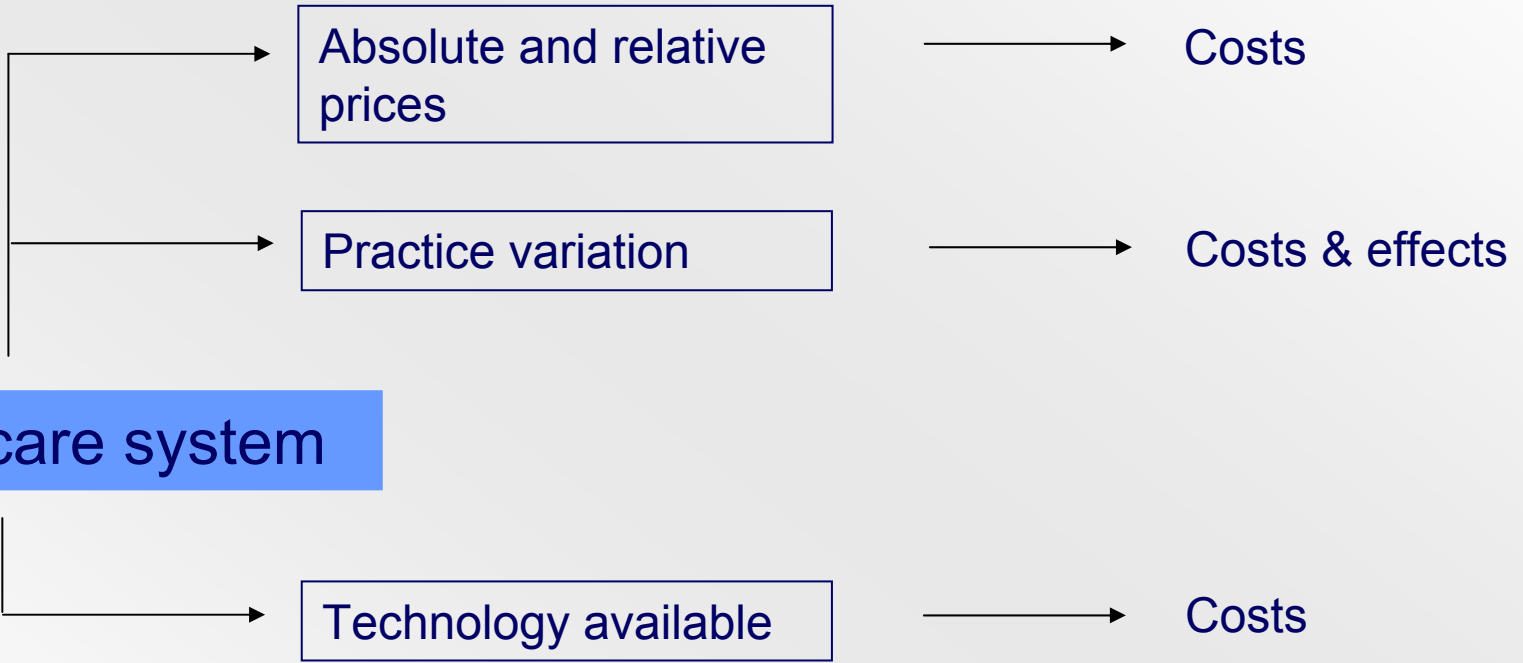
Costs

Productivity cost approach

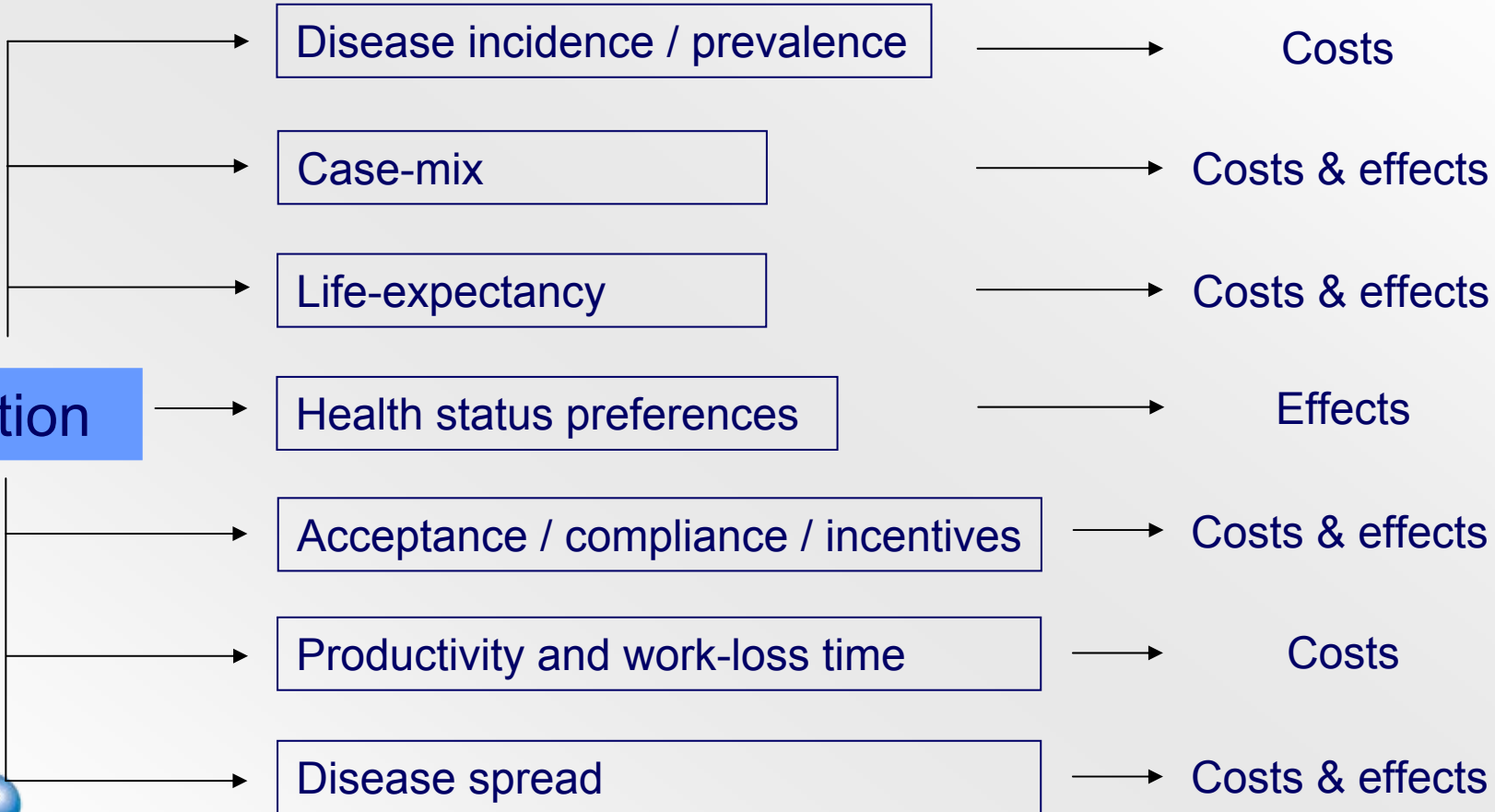
Costs



Healthcare system



Population



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Methods – general (II)

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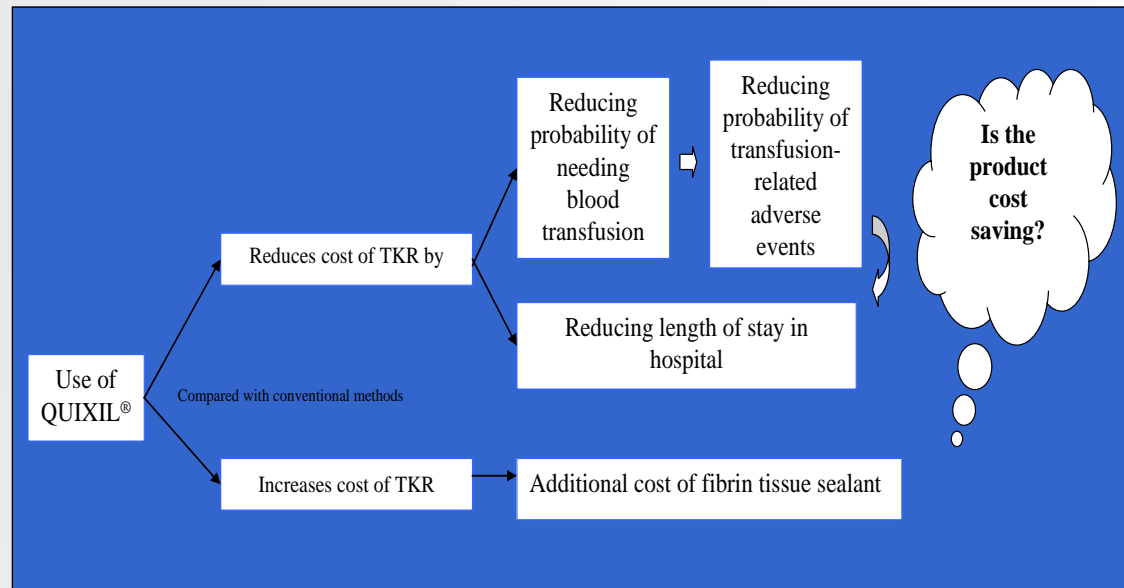
Different levels of effort are required to adjust for this, based on:

- the impact of these factors on the final outcomes
- difficulty of finding better estimates



Example

- The use of fibrin tissue sealant to reduce blood loss during orthopaedic surgery (e.g. total knee replacement - TKR)
- Initial cost model suitable to the NHS
- Method to adjust this for other countries



UK results

Potential savings per patient after use of QUIXIL®	
Incremental cost of QUIXIL®	+ £67 (10ml dose)
	- £312 (5ml dose)
Cost of QUIXIL®	£757 (10ml dose)
	£378 (5ml dose)
Blood transfusion(s)	£82
Adverse events	£8
Hospital stay	£600

“The conclusion of this study strongly depends on the amount used and cost of the fibrin haemostatic device. Additionally, the results are sensitive to the reduction in hospital length of stay and the price of an additional day in hospital.”

UK results

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Important transferability factors

- Costing approach for direct costs
- Absolute and relative prices
- Practice variation (i.e. dosage regimes)

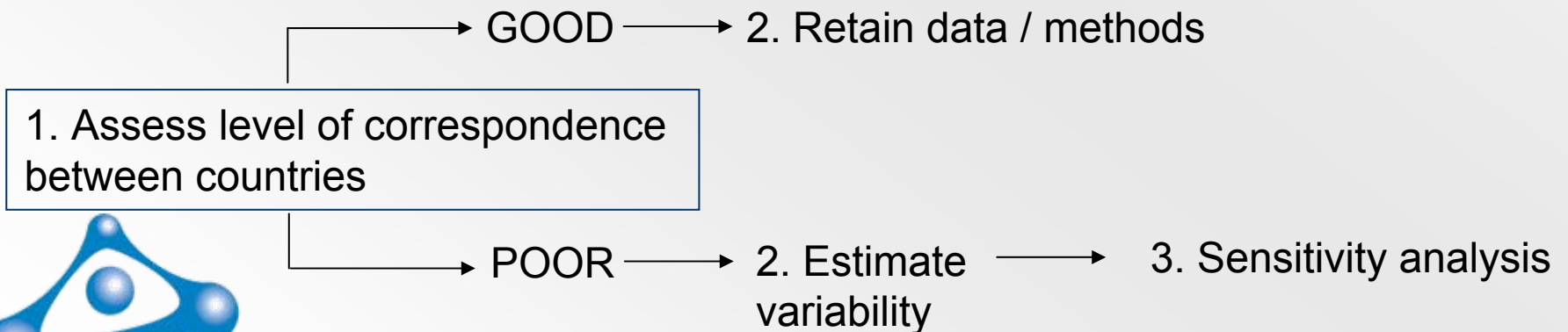
} Major importance

- Evaluation perspective
- Availability of technology in public/private hospitals

} Minor importance

How to deal with this?

- Factors of major importance:
 - substitute with country-specific data
- Factors of minor importance:



Application to Germany

- Substitution of most important cost parameters:
 - One additional day in hospital
 - Fibrin sealant
 - *Blood transfusion*
- Practice variation: breakdown in severity categories
- Evaluation perspective and availability:
 - Good correspondence → retained original approach



Model outcomes for Germany

Potential savings per patient after use of QUIXIL[®]

Incremental cost of QUIXIL [®]	+ €445 (10ml dose)
	+ €53 (5ml dose)

- Relatively low costs for additional hospital day and blood transfusion
- Whilst costs of fibrin sealant comparably high

- Difference between severe and non-severe cases:
 - cost of surgical procedure
- No evidence (yet) for difference in hospital length of stay or number of blood transfusions required
 - no substantial difference in model outputs between severity levels

Model outcomes for France and Italy

- Collection of country-specific cost estimates currently ongoing
- Practice variation pertains mainly to dose of fibrin used (i.e. 2-5ml instead 5-10ml):
 - large cost implications, when assuming equal effectiveness



Discussion and conclusion

- Feasible and efficient methodology for transferring data between countries
- Methodological issue:
 - Identification of parameters for which model outcomes are 'most sensitive' is limited to the parameters included in the model
 - Excludes parameters that are potentially more important but for which no data are available yet
 - *Value of information analysis to determine the return of investment of doing further research towards these parameters*

