Incorporating equity-of-access into health economic evaluations: Surgical task-shifting for C-sections in Sierra Leone

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Introduction

Problem: Unable to meet population needs for surgical care in Sierra Leone:

Limited number of surgeons

Poor, inequitable coverage

Slow workforce growth & retention

Potential solution: Surgical task-shifting: lower-level healthcare workers (non-surgeons) are trained to provide some surgeries

→ Introduced for some surgeries with a training programme for community health workers, continued quality monitoring, support and supervision launched in 2011.

→ Evidence that task-shifting for C-sections in Sierra Leone is likely to be cost-effective.

→ But current evidence from standard cost-effectiveness analysis does not capture the equity benefits of increasing fair access to surgical care across the country.

References: 1-4

Objective

To explore the extent to which modified equity-informative cost-effectiveness analysis and patient-level simulation modelling can provide evidence on the equity of access impact of surgical task-shifting, in addition to evidence on cost-effectiveness.

Methods

- A patient-level discrete-event simulation model was developed to evaluate the cost-effectiveness of surgical task-shifting for C-section in Sierra Leone.
- Outcomes: Improvements in access to C-section (met need) & Disability Adjusted Life Years (DALYs) averted.
- Equity-of-access variables (socio economic status, district and travel time) were assigned to each patient and determined their pathway to receipt of care.
- Health outcomes and costs were disaggregated according to equity characteristics and distributions were analysed, guided by distributional cost-effectiveness analysis methods but adapted to provide evidence of equity of access impacts besides cost-effectiveness.

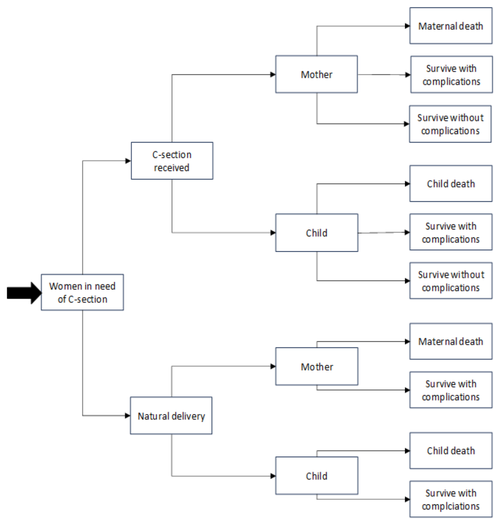


Figure 1: Model structure

Results

Figure 2: DALYs averted with task-shifting for C-section

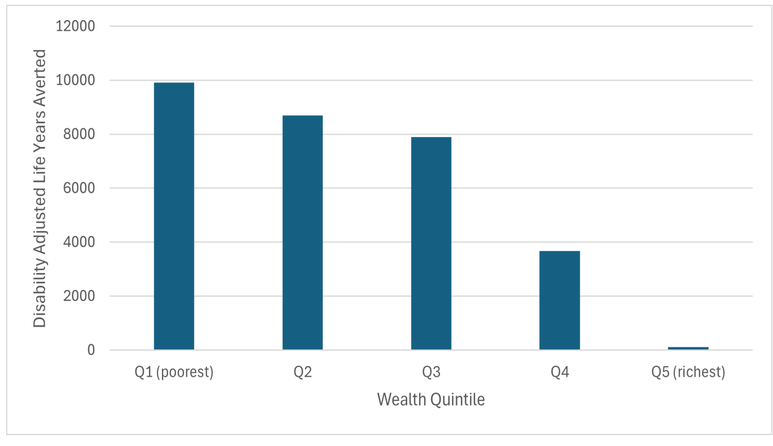


Figure 3: Impact of task-shifting on access to C-section

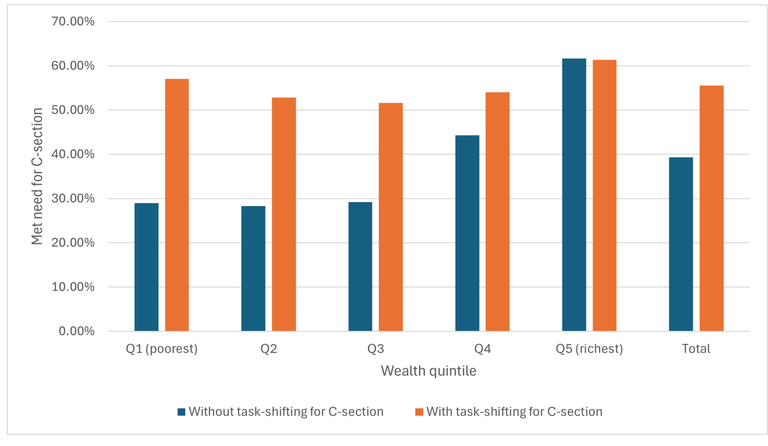
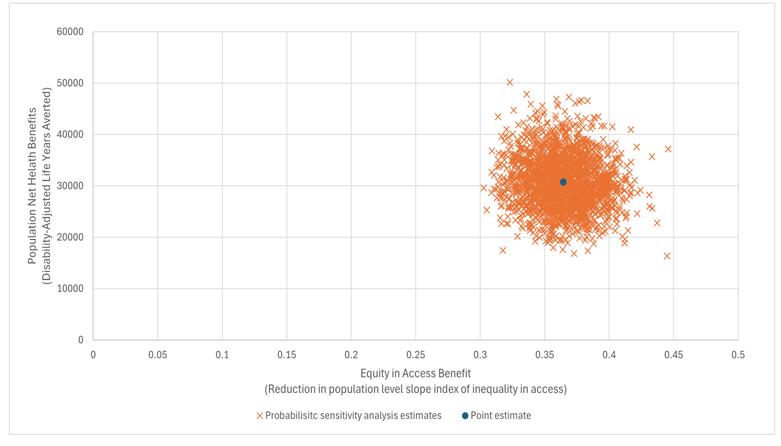


Figure 4: Equity of access-efficiency impact plane:



- Mean cost per C-section: without task-shifting: USD 617 (SD 182.25); with task-shifting: USD 401 (SD 111.96)

  →Estimated cost saving of USD 121 (SD 57.63) per C-section provided with task-shifting
- Task shifting for C-section in Sierra Leone results in DALYs averted across the population, with greatest benefits among the poorest groups *(Figure 2)*
- Surgical task shifting improves access and equity-of-access to C-section in Sierra Leone across wealth quintile groups *(Figure 3, Figure 4)*
- Task –shifting for C-section in Sierra Leone is likely to be cost-effective (improving population net health) and reduce inequalities in access to C-section *(Figure 4)*

Conclusions

- Surgical task-shifting for C-section in Sierra Leone improves overall access and equity-of-access to C-section across wealth quintiles, alongside improving health outcomes and reducing costs.
- It is therefore beneficial in progress towards universal health coverage besides being a cost-effective means to improving provision of C-section in Sierra Leone.
- Standard methods of cost-effectiveness analysis can be adapted to also provide evidence on equity-of-access to care using modified equity-informative cost-effectiveness analysis methods.
- This can be important where health decision makers want to identify interventions that will support progress towards universal health coverage.
- Using patient-level simulation modelling approaches can be useful in providing evidence on equity-of-access impacts of interventions alongside cost-effectiveness and are likely to be more efficient than undertaking similar analyses using cohort models.

References

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3. Chu, K., et al., Surgical task shifting in sub-Saharan Africa. PLoS medicine, 2009. 6(5): p. e1000078.
4. Dawkins, B., Shinkins, B., Ensor, T., Jayne, D., Ashley, T., van Duinen, A. J., Bolkan, H A., Meads, D., Evaluating access improving interventions: An economic evaluation of surgical task-shifting for C-sections in Sierra Leone, Applied Health Economics and Health Policy, 2025. p. 1-19
5. Icons from surang and flaticon.com
6. Map: https://www.worldometers.info/img/maps/sierra_leone_physical_map.gif

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