1. **Chair and Discussant Information**

**Chair**

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1. **Session Overview**

Session title

Introducing a Reference Case for costing global health interventions

Primary field as outlined

Methodology

Session description (Include an overview of the session, including how participant discussion will be promoted (750 word maximum)

Estimates of the costs of global health interventions are required for the analysis of efficiency in service delivery, economic evaluations, priority setting and the formulation of resource requirements at both the country and international levels. Currently, costs are estimated using a wide range of approaches, often combining research methods for data collection with routinely collected data. There are a wide variety of guidelines available to analysts, both on costing for specific purposes (such as economic evaluations) and for specific global health interventions or disease areas. Yet, there is no commonly agreed-upon guidance on principles, methods, and reporting standards for cost estimates across different global health areas.

The lack of consistency in both estimation methods and the reporting of costs for health interventions has long been recognised. Of particular concern is the impact that this can have on the variability of economic evaluation results, which should be comparable across interventions. A review of economic evaluations in the Tufts Medical Centre Cost-Effectiveness (CEA) Registry found a high level of variation in costing methods, although noting that consistency had improved over time. Differences in data collection methods and in the application of analytic methods, a general lack of comprehensiveness, and inconsistent compliance to existing guidance have all been observed. As a result, many reviews of global health costs conclude that methodological heterogeneity and lack of transparency make it impossible to compare studies over setting and time and several point to the need to develop standardised methods for cost estimation in global health.

This session presents work by the Global Health Costing Consortium to develop a reference case for global health costing. The reference case approach has its origins in the field of economic evaluation. The first US Panel on Cost-Effectiveness in Health and Medicine (‘US Panel’) proposed the use of a reference case “to improve comparability of cost-effectiveness analysis designed to inform decision-making while allowing analysts the flexibility to design studies that answer issues specific to a particular problem or industry”. This concept has since been applied by the International Decision Support Initiative (iDSi) to economic evaluations in global health and has been recently extended by the second US Panel.

In line with these efforts, the goal of the ‘Reference Case for Global Health Costing’ is **to improve the relevance, use and quality of cost estimates.** The reference case is a guide that helps ensure that the process of cost estimation is transparent and clear, so that those using cost data can interpret the findings properly and assess their quality (accuracy, precision, generalizability and consistency). The reference case aims to provide a framework for analysts to ensure they fully consider how their methods may influence the quality of their estimates. It aims to do this in a way that is not onerous and does not discourage innovation in the development and application of cost estimation methods.

An online platform is planned that will include a dynamic tool that assists both producers and users of cost data to utilize the reference case effectively. The tool will be developed that guide producers of cost data through a series of questions that will help ensure that the final protocols that are designed meet minimum standards.

The aim of this session is to encourage discussion and debate around the need for, content and use of the Reference Case. To inform discussion, we will make a series of concise presentations that first summarize the background work done to prepare the reference case. This includes the development of a quality assessment framework and two systematic reviews of cost studies in tuberculosis (TB) and HIV. We will also present the results of a survey of cost data users and producers, a bibliometric review of academic work on costing methods and specific guidance for practitioners. Referring to these reviews we will make the case for a need for a common Reference Case. We will then present the outline of the Reference Case, with copies of the full document available for participants.

The session will then focus on an organized discussion around three topic areas, introduced by invited discussants. First, Thomas Wilkinson from PRICELESS, South Africa will reflect and invite comment from the audience on the complementarity between this reference case and those for economic evaluation. Second, Dr. Carol Dayo Obure and Dr. Edwine Barasa from the African Development Bank and KEMRI respectively, will reflect and invite comment from the audience around the feasibility and usefulness of the Reference Case for informing both the use and production of cost data at the country level. Finally, Dr. Bruce Larson from Boston University will reflect and invite comment on the methods development that is required going forward, including the key aspects of the Reference Case that will be utilized most heavily by producers and users of cost data to inform the development of the dynamic tool described above. We will encourage a wider discussion from the audience on actions that will be required to ensure adoption and the involvement of stakeholders going forward.

Declaration on potential conflicts of interest

No conflicts of interests declared

**Individual Papers**

**Paper Presenter(s) Information**

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Paper Title: A review of the quality of tuberculosis costing studies

Background

Variable quality of unit cost data may lead to poor decision making due to biased results. Quality can relate to robustness, precision and reliability of the data, as well as standard reporting of cost methods and results. If quality of reporting is high, comparability across cost estimates and settings is enhanced. Conversely if reporting quality is low it is difficult to use cost estimates appropriately. In order to improve the nature and use of cost data in priority setting and decision making, understanding the quality of cost data and reporting can help to inform, which methods need strengthening and what areas of reporting should be standardized. Findings from a review of cost methods and reporting will be used to guide the development of the reference case and improved methods for TB and HIV costing. Therefore, the aim of this systematic review is to assess the reporting quality of costing studies, using tuberculosis (TB) and costs from a provider perspective as an example.

Methods

We conducted a systematic review using key words relating to cost, tuberculosis (TB) and treatment, we searched six electronic databases (Pubmed, EMBASE, Medline, Econlit, The National Health Service Economic Evaluation Database and The Cost-Effectiveness Analysis Registry). Next, we developed a comprehensive extraction tool, which allowed us to describe the methods used and appraise the quality of existing literature. A quality assessment tool was developed after a review of previous guidance, and reporting standards. Inclusion and exclusion criteria were applied to establish those studies that contained primary cost data. Data was extracted on study scope, sampling, methods, inclusion of costs, valuation and analysis.

Results and discussion

Of 16348 records identified utilising our search strategy, 662 papers met our inclusion criteria and 112 of these articles contained empirically-collected TB provider costs. We have observed considerable variation in the methods used by authors in areas such as the reported discount rate, methods to measure and allocate costs. Some areas had poor reporting such as whether ‘above sites costs’ were included, and ‘allocation criteria’ used. Broader areas such as the ‘purpose’ of the costing were well reported on.

Conclusion

Reporting on the methods of costing of TB interventions is only partially transparent and the methods used vary considerably in some areas, such as costs to be included and allocation of shared resources. A reference case on costing may help encourage researchers to be explicit and transparent in how they estimate the cost of global public health interventions.

**Declaration on potential conflicts of interest**

No conflicts of interest

**Funding sources for research**

Bill and Melinda Gates Foundation

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Paper Title: Assessing the Quality of Voluntary Medical Male Circumcision Costing Literature

Abstract (500 words maximum)

Background

The quality of costing research consists of context-appropriate costing methods and clear and thorough reporting of study characteristics. Producing high quality research according to these two standards can be challenging. First, methodological choices may not be straightforward, and there may not be any empirical validation of methods for a particular setting. Second, although numerous sources provide researchers with guidance for methodological choices, there is comparatively less guidance available to aid researchers in reporting. High-quality methods produce precise and replicable cost data, while high-quality reporting allows results to be used in the correct setting and for the intended purpose. The Global Health Cost Consortium (GHCC) is seeking to understand the current quality of costing literature for HIV in order to develop guidance and tools to improve quality in future research. We evaluated the quality of reporting and the variation in costing methods in cost studies for voluntary medical male circumcision (VMMC).

Methods

We developed a comprehensive data extraction tool to capture reporting standards and methodological choices in parallel with cost data and site-level attributes. We conducted an informal literature search (formal search pending) of VMMC cost literature. After abstract screening, full-text review, and applying exclusion criteria, we extracted data on reporting quality and methods. We evaluated quality in the following categories: scope, sampling, methods, inclusion of costs, valuation, and analysis. For each reporting standard, we specified whether reporting was explicit, inferred, not reported (and unable to be inferred), or not applicable. Finally, we tabulated the results and analyzed trends in high- and low-quality reporting and methodological choices by individual variable.

Results and Discussion

After screening and exclusion, we extracted data from 29 VMMC costing studies. Areas of high-quality reporting include costing purpose (27 explicitly reported, 2 inferred), sample size (25 explicitly reported, 4 not reported), inclusion/exclusion of overhead costs (20 explicitly reported, 8 inferred, and 1 not reported), and a discussion or analysis of scale effects (18 explicitly discussed or analyzed, 11 not reported). Areas of low-quality reporting include sampling methods (6 explicitly reported, 10 inferred, and 13 not reported), allocation methods (3 explicit, 3 inferred, 23 not reported), and sources of input prices (3 explicitly reported, 5 inferred, 21 not reported). Methodological choices were highly varied. For example, 29% of studies used a bottom-up costing approach, 14% used a top-down approach, 32% used a mixed approach, and 25% did not report their approach (and it was unable to be inferred).

Conclusion

The quality of reporting in VMMC costing literature varies based on the item being reported. In general, the reporting quality is low, and efforts should be made by researchers to explicitly report all attributes of their studies, with particular attention to describing methods in detail. Methodological choices also show a high level of variation; however, this analysis was limited by low-quality reporting. Our results indicate the need for structured guidance in the form of a reference case for global health costing research.

**Declaration on potential conflicts of interest.**

**Funding sources for research**

**Paper Presenter(s) Information**

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Paper title: The current state of costing guidance in low- and middle-income countries: a survey and bibliometric review

Introduction

A variety of guidelines are currently available to analysts. Yet, there is no commonly agreed-upon guidance on principles, methods, and reporting standards for cost estimates across different global health areas. The aim of this study was to provide an overview of existing guidance on costing methods, and to identify evidence to draw upon in development of a reference case for collecting TB and HIV cost data. We present results from two linked studies: a bibliometric review of publications advising on cost methods, and a survey conducted on users and producers of cost data in low and middle-income countries (LMIC).

Methods

We searched four databases for publications providing guidance on costing methods for any disease, in any setting; databases include: Econlit, Global Health, Pubmed, and Embase. In addition we conducted extensive snowball and manual searching for grey literature. Study bibliometric data was extracted, and information on article topic and methods were drawn from publication abstracts.

An electronic survey was designed for people involved in the production or use of cost data in low- and middle-income countries. The survey was distributed via a number of channels, including: the Global Health Cost Consortium stakeholder meeting, LinkedIn posts on the pages of IHEA and the International AIDS Economics Network, newsletters for health economists managed by the African Health Economics Association and by Bruce Hollingsworth, and direct email to those known to be working in the field including official contacts for National Health Accounts in LMIC.

Results

Literature searches returned a total of 5931 titles, and snowball sampling and manual searches for unpublished literature contributed an additional 80 papers. We selected 331 publications for extraction. The large majority of publications were focused on a high-income country setting. A large number (105) were methodological papers focusing on one aspect of costing; the most common topics for these single-issue papers included resource use measurement (78 publications), activity-based costing (25 publications), top-down vs. bottom-up costing (21 publications). The degree to which guidance was based on empirical analysis varied substantially depending on the topic.

The survey returned 58 respondents, from a wide variety of geographical settings and educational backgrounds. Producers of cost data tend to rely less on disease-specific guidance for costing, and more on reporting checklists and general overview guidance. Producers highlighted measurement of resource use and sampling selection as key gaps in existing guidance.

Discussion

There are a large number of publications addressing costing methods, in both published and grey literature form. Many publications are on single issues, however they are largely targeted towards a high-income country audience. Guidance targeted to an audience in LMIC settings largely reference costing for economic evaluation purposes. There is a solid foundation of evidence in some areas to guide collecting cost data, however there is still a clear need for improving availability and accessibility of this guidance for LMIC audiences.

 **Declaration on potential conflicts of interest**

No conflicts of interest

**Funding sources for research**

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**Paper Title: A Reference Case for Global Health Costing**

We developed a Reference Case with the goal to improve the relevance, use and quality of cost estimatesfor global health**.** The Reference Case provides a guide that helps ensure that the process of cost estimation is transparent and clear, so that those using cost data can interpret the findings properly and assess their quality (accuracy, precision, generalizability and consistency). The Reference Case aims to provide a framework for analysts to formally consider how methods may influence the quality of their estimates. It aims to do this in a way that is not onerous and does not discourage innovation in the development and application of cost estimation methods. The reference case is intended for use by multiple constituencies, including both decision-makers and economic analysts who support them.

The Reference Case was developed by a core team from the Global Health Costing Consortium, however has benefitted substantially from the input and participation of multiple users and producers of global health cost data. The Reference Case was circulated to a list of technical advisors and stakeholders for review on multiple occasions. In November 2016, a meeting was held to discuss the reference case. The meeting did not aim to formally reach consensus, but all participants were asked to comment on the principles and suggest amendments. All suggestions were incorporated. Small groups met to discuss methodological specifications. In this case, some of the suggestions were incorporated, but where there was not agreement or methods specified then further working groups were established, and further guidance will be developed over the next two years.

In line with the Reference Case on Economic Evaluation, the technical content of the Reference Case content provides costing principles, methodological specifications and reporting standards. However, the approach differs, as the Reference Case for Global Health Costing is developed according for a range of ‘costing purposes’ including financial planning, economic evaluation, efficiency analyses and budget impact assessment. For each of these purposes principles are defined that provide a set of rules which are sufficiently broad to gain consensus and apply in multiple settings. Thereafter a set of methodological specifications are provided as a non-exhaustive set of options that enable the analyst to adhere to the principles. The reference case also includes a reporting checklist for both users and producers of cost estimates to support the transparency, quality and generalizability of cost estimates.

The Reference Case is divided into four sections. The first sections provides guidance on study design including defining interventions, study perspective and timeframe. It is also provides guidance on defining ‘unit costs’ with specific details provided for tuberculosis and HIV interventions. Thereafter there is a section on resource use measurement providing guidance on areas such as how to allocated shared costs and service use estimation. The third section concentrates on valuation and pricing. The final section provides guidance on presenting results. The Reference Case as an instrument for study and methods design has been piloted in 2017.

**Declaration on potential conflicts of interest**

No conflicts of interest

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