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Background

- Healthcare decision-makers such as health technology assessment (HTA) bodies may use cost-effectiveness analyses (CEA) to help inform resource allocation decisions and assess the value of new health technologies.
- Traditionally, however, benefits have been primarily assessed based on clinical outcomes, while economic aspects rarely considered broader aspects beyond direct treatment and diagnostic costs and/or healthcare resource use. This has been challenged recently with the explosion of publications that reference the “additional” elements of value assessment.
- As a result, expanded (modified) types of CEAs have been proposed which include additional value elements such as health equity in the assessment of new technologies. These modified CEAs can vary considerably in their methodological approach, their assumptions, and analyses. So far, these approaches have only been tested in research with no real implementation in HTAs.

Objectives

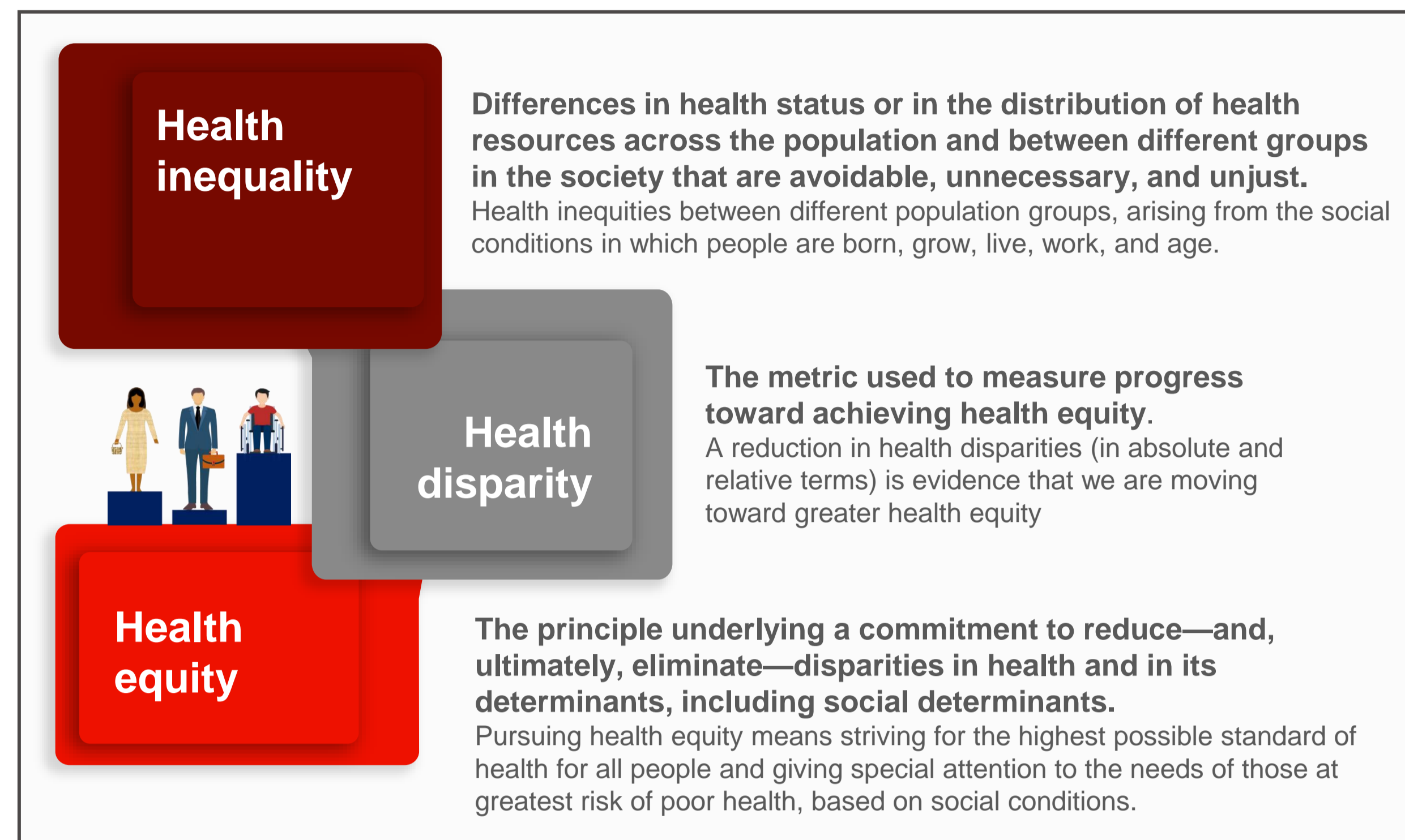
- This study aimed to 1) systematically identify and synthesize evidence on how health equity concepts have been considered in modified types of CEAs by conducting an umbrella review of previously conducted systematic literature reviews (SLR); and 2) summarize the main methodological considerations and challenges when health equity is incorporated in modelling assessments.

Methods

- A targeted search was conducted in MEDLINE (via Ovid) for articles published in English since 2013 for SLRs reporting on the incorporation of health equity considerations in CEAs. Searches were originally conducted on January 10, 2023 and were updated on March 27, 2023.
- Keywords included: economic evaluation, equity, equality, and related synonyms.
- Screening of titles/abstracts and full-text articles was carried out by a single reviewer with a second, senior reviewer conducting a quality check of 15% of excluded articles.
- Eligible SLRs were required to be publicly available articles and discuss health equity issues in the context of CEAs.
- Data extraction of included SLRs was carried out in a pre-specified template by a single reviewer and validated by a second reviewer. The results were synthesized narratively following identified themes.

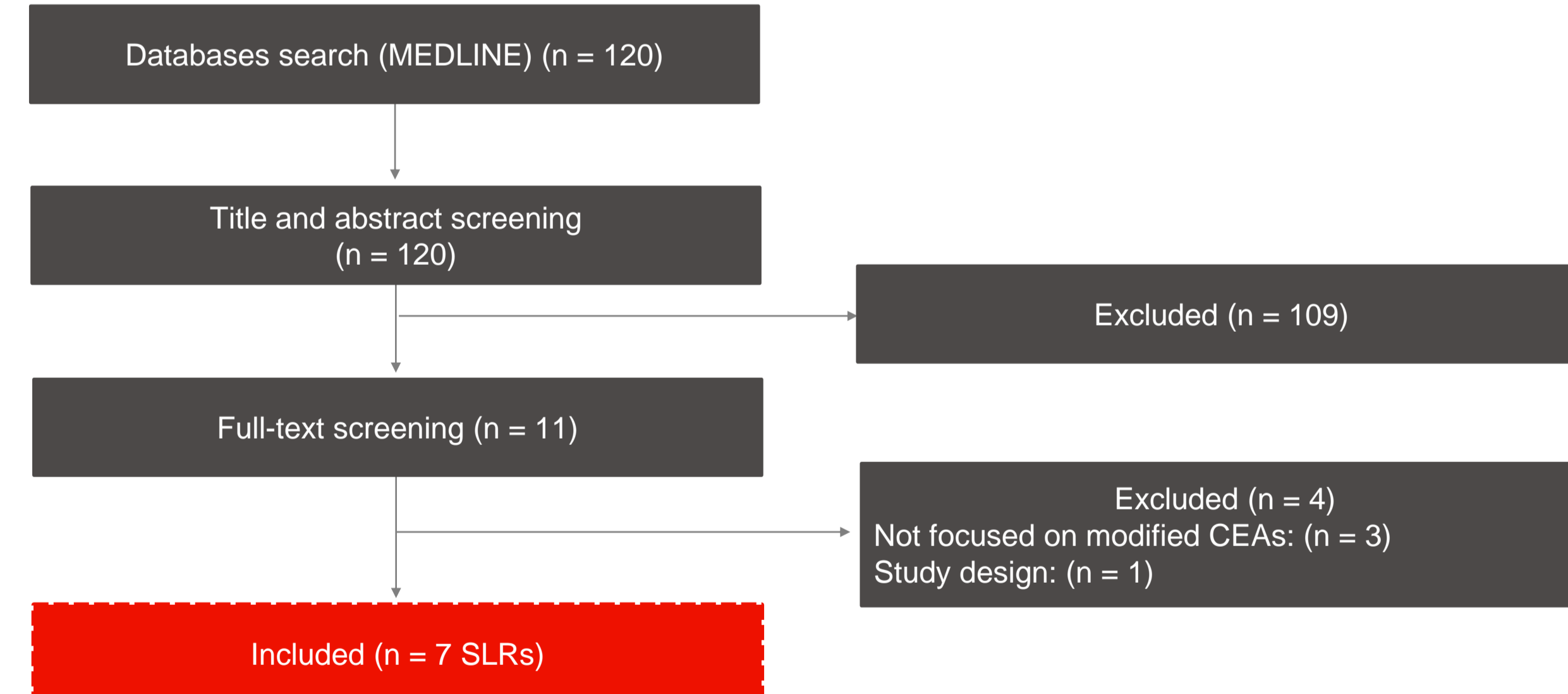
Results

Figure 1. Key terminology^{1,2}



- Seven SLRs were included in this umbrella review (Figure 2).

Figure 2. PRISMA³ flow diagram



Abbreviations: CEA, cost-effectiveness analysis; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; SLR, systematic literature review

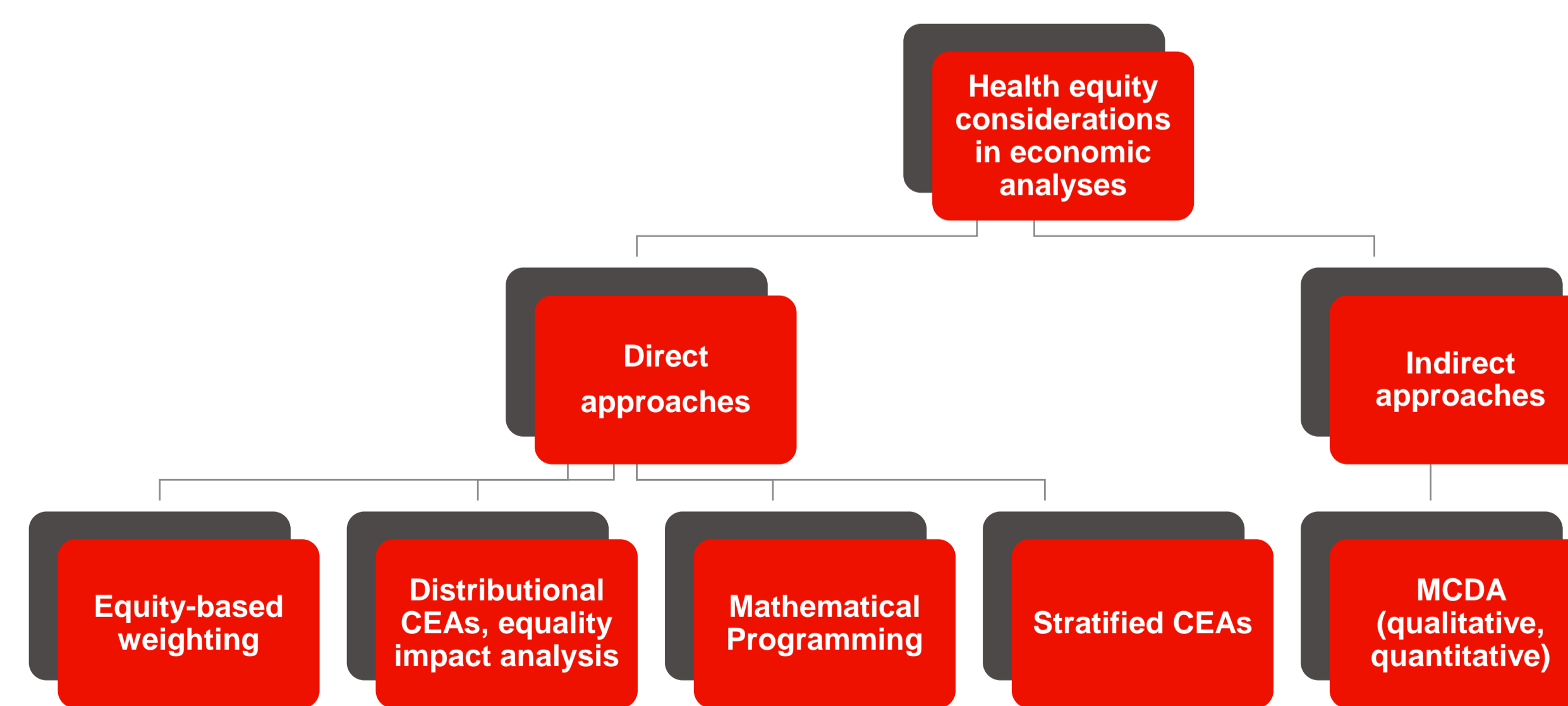
- Table 1 presents the main characteristics and findings across the identified seven SLRs; three SLRs aimed to summarize evidence from expanded CEAs in healthcare but included different search inclusion criteria (e.g., one SLR⁴ only included DCEAs, whereas two others^{5,8} considered any type of CEAs).
- One review¹⁰ focused only on health equity issues in economic evaluations for low- and middle-income countries, one⁹ only summarized economic analyses including health equity for public health policies, and another⁶ focused on European HTAs.
- One SLR⁷ took a broader aspect of health equity by presenting evidence on integrating social justice concerns into economic evaluations.
- There were two main ways to integrate health equity concerns in economic analyses: direct approaches in CEAs (e.g., equity weighting and distributional CEAs) and indirect approaches (e.g., expanded MCDAs) (Figure 3).

Table 1. Main characteristics and findings of SLRs

Steijger 2023 ⁴	Avancena, 2021 ⁵
Study aim: to identify empirical studies on DCEA in healthcare and outline the challenges and limitations Included studies: 18 Economic evaluation types discussed: DCEA Equity criteria discussed: age, SES, gender/sex, geography, race/ethnicity	Study aim: to catalog and describe published applications of equity-informative CEAs Included studies: 54 Economic evaluation types discussed: DCEA, ECEA, MCDA Equity criteria discussed: age, SES, gender/sex, geography, race/ethnicity, disease severity
D'Ausilio, 2022 ⁶	Dukhanin, 2018 ⁷
Study aim: to determine how and in what European countries “equity” has been included in HTAs beyond the standard CEA approaches Included studies: 28 Economic evaluation types discussed: MCDA Equity criteria discussed: age	Study aim: to describe methodological solutions suitable for integrating social justice concerns into economic evaluation and describe the challenges that those solutions face Included studies: 26 Economic evaluation types discussed: DCEA, ECEA, EBW, MCDA, MP, stratified CEA Equity criteria discussed: social justice
Ward, 2022 ⁸	Lal, 2018 ⁹
Study aim: to review analytical methods that enable the incorporation of equity concerns within economic evaluation Included studies: 68 Economic evaluation types discussed: DCEA, ECEA, EBW, MCDA, MP Equity criteria discussed: age, SES, disease severity	Study aim: to assess current approaches to inclusion of equity in economic analysis of public health interventions and to recommend best approaches and future directions Included studies: 31 Economic evaluation types discussed: DCEA, ECEA, EBW Equity criteria discussed: gender/sex
Yang, 2022 ¹⁰	
Study aim: to investigate how much health inequalities have been considered in economic evaluation of health interventions in LMICs, and what demographic or socioeconomic characteristics were used to define equity relevant subgroups Included studies: 12 Economic evaluation types discussed: DCEA, ECEA, MCDA Equity criteria discussed: age, SES, gender/sex, geography	

Abbreviations: CEA, cost-effectiveness analysis; DCEA, distributional cost-effectiveness analysis; EBW, equity-based weighting; ECEA, extended cost-effectiveness analysis; HTA, health technology assessment; LMIC, low- and middle-income country; MCDA, multi-criteria decision analysis; MP, mathematical programming; SES, socioeconomic status

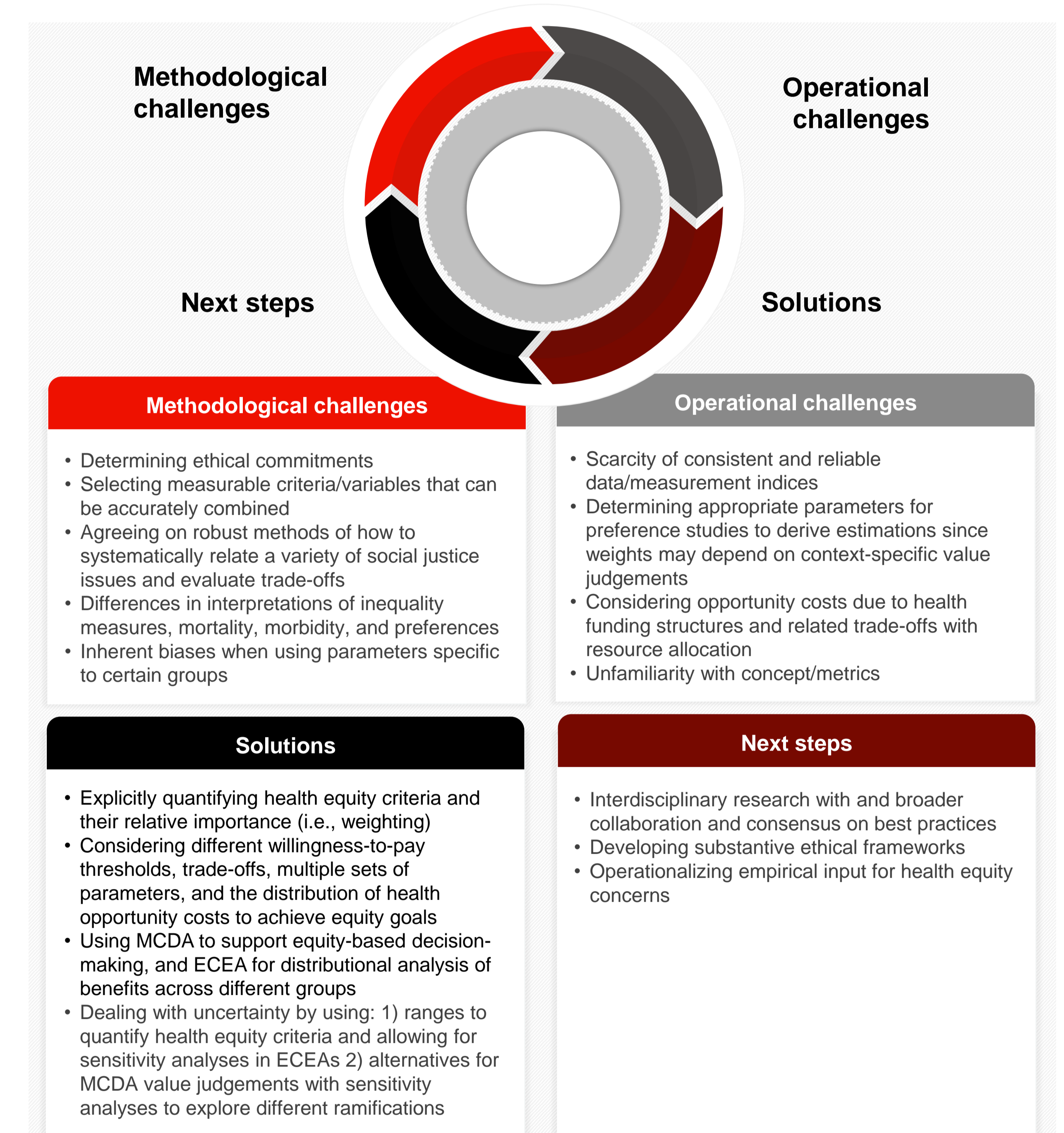
Figure 3. Methods for incorporating health equity criteria



Abbreviations: CEA, cost-effectiveness analysis; MCDA, multi-criteria decision analysis

- There are methodological and operational challenges when health equity criteria are explicitly incorporated in economic modelling methods; these are summarized in Figure 4 along with proposed solutions and what is needed as next steps.

Figure 4. Challenges and future directions



Abbreviations: DCEA, distributional cost-effectiveness analysis; ECEA, extended cost-effectiveness analysis

Conclusions

- The number of equity-informed economic analyses in healthcare decision-making is rapidly increasing, putting health equity high in research priority agendas for decision-makers.
- The proposed, expanded approaches to traditional economic modelling methods have both opportunities and challenges; the overall conclusion is that incorporating health equity elements is feasible and can unravel the additional value of a health technology for specific subgroups defined by health equity criteria.
- Decision-makers' familiarity with the application of these methods and associated challenges in measurement and application of health equity concepts will be needed to set up guidance in this area.