EE443

Documenting the Full Value of Vaccination: A Systematic Review of Value Frameworks

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Background

- Economic evaluations of vaccination may not fully account for **broader value elements**, which may influence how decision-makers design, fund, and implement immunization programs

Broader Value Elements
Non-health patient impacts and benefits to families, communities, and society

Omission of broader value elements may reflect:

1. Lack of established methodology for measurement
2. Disagreement on which value elements to include in economic evaluations
3. Lack of consensus on whether value elements should vary by intervention or condition

Objectives

Identify broader value elements for the evaluation of vaccination and catalogue associated measurement guidance

Methods

- **Conducted systematic literature review:** Targeted vaccination-specific and other healthcare-related value frameworks
  - Online databases: Ovid Medline, PubMed, Embase, and grey literature
- **Preformed analysis:** Two reviewers screened search results using Covidence and extracted information on framework development, included value elements, and whether measurement guidance was specified

1. Venhorst, K., SG. Zelle, N. Tromp, and JA. Lauer. "Multi-Criteria Decision Analysis of Breast Cancer Control in Low- and Middle-Income Countries: Development of a Rating Tool for Policy Makers." *Cost Eff Resour Alloc* 12 (2014): 13. https://doi.org/10.1186/1478-7547-12-13.
2. Committee on Identifying and Prioritizing New Preventive Vaccines for Development Phase III, Board on Population Health and Public Health Practice, Board on Global Health, Institute of Medicine, and National Academy of Engineering. "Ranking Vaccines: Applications of a Prioritization Software Tool: Phase Iii: Use Case Studies and Data Framework." (2015). https://doi.org/10.17226/18763.
3. Marsh, K., P. Dolan, J. Kempster, and M. Lugon. "Prioritizing Investments in Public Health: A Multi-Criteria Decision Analysis." *J Public Health (Oxf)* 35, no. 3 (2013): 460-66. https://doi.org/10.1093/pubmed/fds099.

Results

Figure 1. PRISMA flow diagram

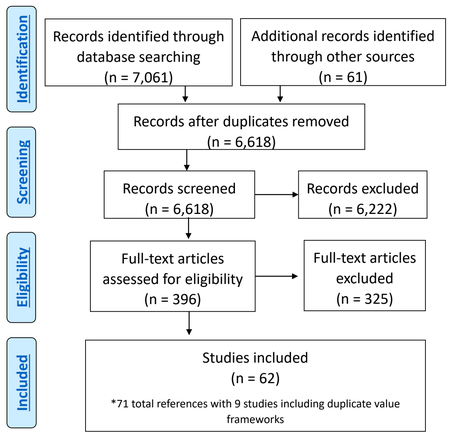
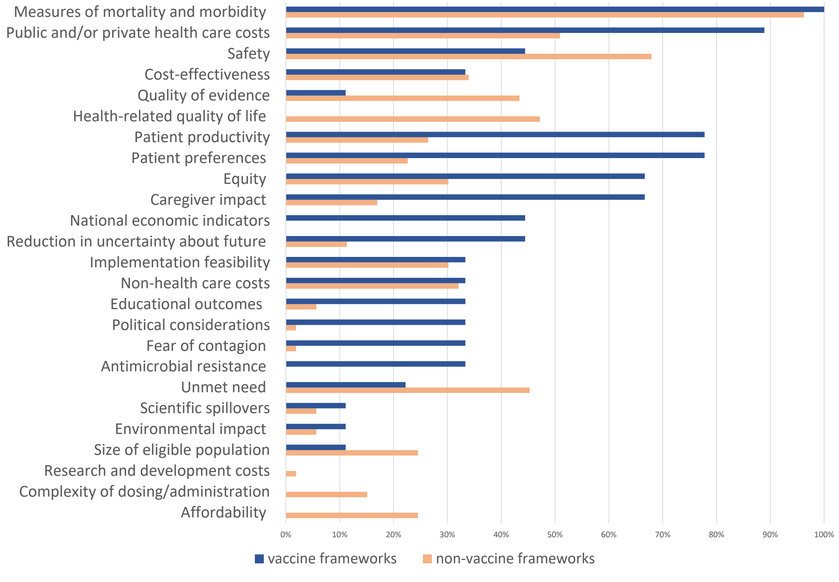


Table 1: Value frameworks characteristics

Geographic Locations, N (%)	
Global or General*	25 (40%)
North America	18 (29%)
Europe	14 (23%)
Asia	2 (3%)
Africa	1 (2%)
Latin America	1 (2%)
The Middle East	1 (2%)
Intervention Modality, N (%)	
General	26 (42%)
Pharmaceutical	13 (21%)
Diagnostic/screening	11 (18%)
Vaccines	9 (14%)
Other	3 (5%)
Framework Quality Assessment, N (%)	
Clearly stated framework objective	58 (94%)
Clearly described methods for framework development	37 (60%)
Provided framework tools or methodological guidance	34 (55%)

*Two frameworks are intended for use in low- and middle-income countries

Figure 2. Frequency of value element inclusion



- Across all framework types, few provide explicit method guidance on how to measure broader value elements

Table 2: Most common forms of framework measurement guidance

1. Ranking or scoring
E.g., Venhorst et al. scores the equity of an intervention based on treatment accessibility[1] **0** not accessible to many patients **1** not accessible to some patients **2** accessible to (almost) all patients
2. Calculations
E.g., SMART Vaccines uses a calculation to measure work productivity gained per year from a vaccine:[2] (50% of highest-incidence disease rates)*(average disease duration)*(average daily wage rate)
3. Referenced data sources
E.g., Marsh et al. references the UK Office of National Statistics as a source for the size of the population eligible for a new intervention

Table 3: Prevalence of broader value element measurement guidance in vaccination and non-vaccination frameworks (n=62)

Broader value element	Frameworks with measurement guidance	Total frameworks capturing the value element
Equity	11	22
Implementation feasibility	7	19
Caregiver impact	3	15
Political considerations	1	4
Environmental impact	1	4
Fear of contagion	1	3
Antimicrobial resistance	0	3

Conclusions

- Value frameworks differ substantially in detailing which broader value elements should be considered for vaccination
- Measurement guidance for broader value elements is lacking in the reviewed literature
- Improving methods to measure broader value elements will ensure that decision makers are able to account for the full benefit of vaccination at the individual, community, and societal level