

BACKGROUND

- The Evidence to Recommendation (EtR) framework was adopted by the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) in 2018 to supplement the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach for developing evidence-based vaccination recommendations and to promote consistency and transparency in the vaccine recommendation process.
- The EtR framework evaluates evidence in 7 categories: problems, benefits and harms, values, acceptability, resource use, equity, and feasibility.
- While preference information is not required, the values and acceptability domains allow for the incorporation of quantitative stated-preference (SP) information in the framework.
- Value evidence is intended to demonstrate that the target population finds value in the outcome under consideration, and acceptability evidence is used to demonstrate that stakeholders find the outcome acceptable.¹
- We reviewed published EtR frameworks to describe how often and what type of SP information is included in the values and acceptability domains.

RESULTS

- Nearly 93% (39 of 42) of published EtR frameworks incorporated information in the values and acceptability domains.
- Of those 39 EtR frameworks, 23 (59.0%) included information from surveys of stakeholder values or acceptability from peer-reviewed publications or that was otherwise available to the public (Figure 1).
- 8 frameworks (20.5%) included quantitative SP information: 7 frameworks included SPs for consumers, and 1 framework included SPs for healthcare providers (HCPs) (Figure 1).
- The number of frameworks with SP information has increased over time (1 in 2020, 3 in 2021, 4 in 2022) (Figure 2).
- In the 8 frameworks, 8 SP studies were cited a total of 15 times, with 4 SP studies cited in more than 1 framework (see Table 1).
 - Of these SP studies, 1 (12.5%) was DCE,³ 1 (12.5%) was BWS,⁴ and 6 (75.0%) were DE.⁵⁻¹⁰
 - 7 of 8 SP studies (87.5%) were peer-reviewed.
 - Types of SP information included were vaccination intentions (cited 10 times), relative importance of vaccine features (cited once), and preferences for changes in vaccine recommendations (cited 4 times).
- SP information has been used in EtR frameworks for pneumococcal and COVID-19 vaccines.
- 4 additional frameworks cited unpublished SP studies. Because the studies were not published, we could not confirm that they were quantitative SP studies. Therefore, the frameworks were not included in our review.

OBJECTIVE

- Review the inclusion of quantitative SP information in EtR frameworks supporting ACIP's vaccine recommendation decision-making.

METHODS

- We reviewed all 42 EtR frameworks published in the *Morbidity and Mortality Weekly Report* from the introduction of the EtR framework in February 2018 through November 2022.
- For each EtR framework, we collected the following information:
 - Whether the values and acceptability domains were populated in the framework
 - Whether quantitative SP information generated using 1 of the following quantitative SP methods was included:
 - Discrete-choice experiment (DCE), best-worst scaling (BWS), threshold technique, or direct elicitation (DE)²
 - The type of SP information referenced in the values and acceptability domains
 - The study population
 - How SP information was used

Figure 1. Values and Acceptability Information in EtR Frameworks

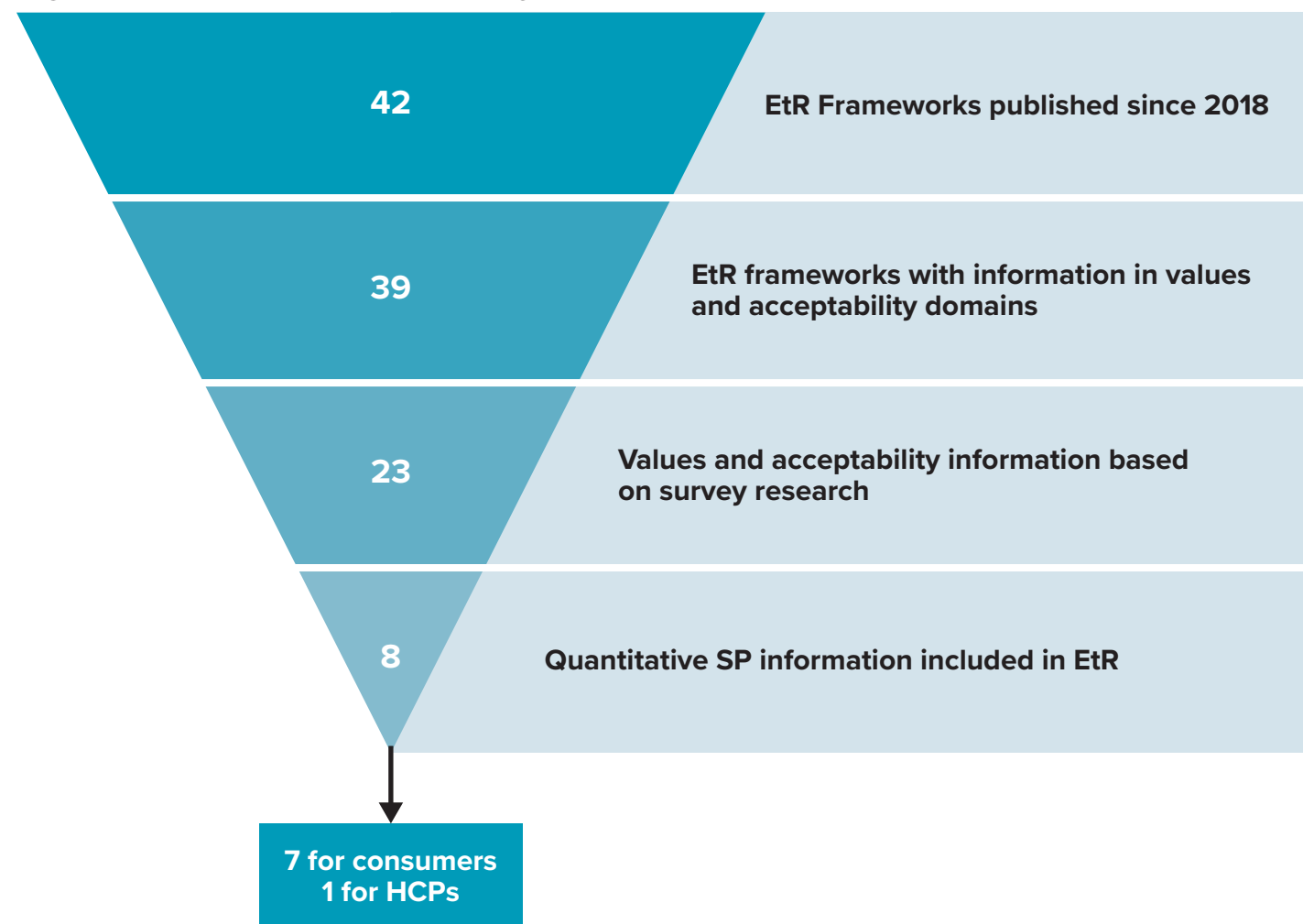
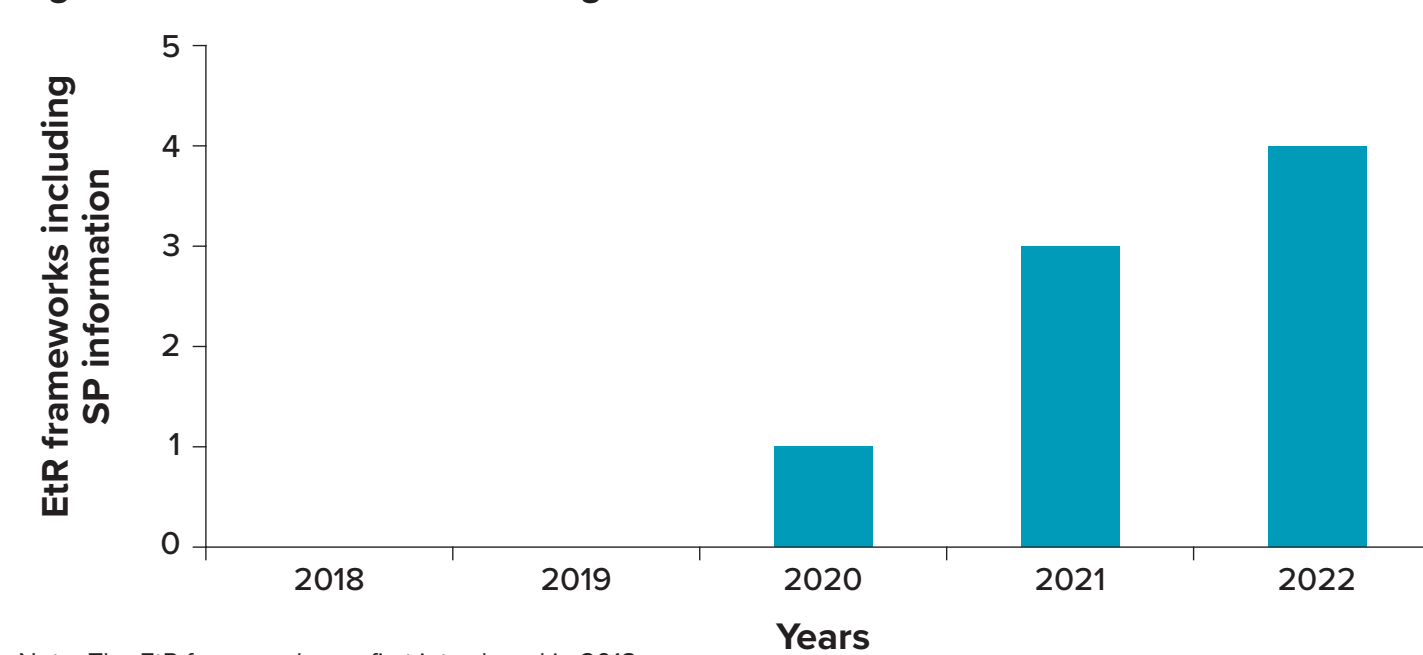


Figure 2. EtR Frameworks Including Stated-Preference Information Since 2018



Note: The EtR framework was first introduced in 2018.

Table 1. Summary of Stated-Preference Information in EtR Frameworks

Framework	Year	ACIP recommendation	SP citation	Method	Study population	Preference information	EtR domains	How it was used
1. Evidence to recommendations for PCV20 use among adults 19-64 years ¹¹	January 2022	PCV20 was recommended for adults aged 19-64 years with underlying conditions	Vietri et al., 2021	BWS	Healthcare providers	Relative importance of possible ACIP recommendations	Acceptability	PCV13 use based on shared clinical decision-making is confusing (age ≥ 65 years) There was a preference for a simplified pneumococcal vaccine recommendation
2. Evidence to recommendations for PCV20 use among adults ≥ 65 years ¹¹	January 2022	PCV20 was recommended for adults aged ≥ 65 years						HCPs prefer ACIP to continue recommending PCV use in series with PPSV23
3. Evidence to recommendations for PCV15 use among adults 19-64 years ¹¹	January 2022	PCV15 was recommended in series with PPSV23 for adults aged 19-64 years with underlying conditions						
4. Evidence to recommendations for PCV15 use among adults ≥ 65 years ¹¹	January 2022	PCV15 was recommended in series with PPSV23 for adults aged ≥ 65 years						
5. ACIP Evidence to recommendations for use of an additional COVID-19 vaccine dose in immunocompromised people ¹²	October 2021	Moderately-to-severely immunocompromised persons aged ≥ 12 years (Pfizer-BioNTech) or ≥ 18 years (Moderna) should receive an additional COVID-19 vaccine dose at least 28 days after completion of primary vaccination	Garcia et al., 2021	DE	Patients on dialysis	Preference heterogeneity	Values	Patient characteristics related to vaccine hesitancy
6. ACIP Evidence to recommendations for use of Janssen COVID-19 vaccine under an emergency use authorization ¹³	March 2021	Janssen COVID-19 vaccine is recommended for prevention of COVID-19 for persons aged ≥ 18 years in the US under the FDA's Emergency Use Authorization	Malik et al., 2020	DE	Consumers	Likely vaccine choice Preference heterogeneity	Values	Consumer characteristics related to vaccine choice
			Szilagyi et al., 2021	DE	Consumers	Likely vaccine choice Preference heterogeneity	Values	Consumer characteristics related to vaccine choice
			Langer Research Associates, 2020	DE	Consumers	Likely vaccine choice Preference heterogeneity	Values	Consumer characteristics related to vaccine choice
7. EtR framework for use of Moderna COVID-19 vaccine under an emergency use authorization ¹⁴	January 2021	Moderna COVID-19 vaccine is recommended for prevention of COVID-19 for persons aged ≥ 18 years in the US under the FDA's Emergency Use Authorization	Kreps et al., 2020	DCE	Consumers	Predicted vaccination choice probability	Values	Likelihood of vaccination increases with vaccine effectiveness
			Reiter et al., 2020	DE	Consumers	Likely vaccine choice Relative importance Preference heterogeneity	Values	Provider recommendation increases likelihood of vaccine choice Consumer characteristics related to vaccine choice
			Head et al., 2020	DE	Consumers	Likely vaccine choice Relative importance	Values	Provider recommendation increases likelihood of vaccine choice
			Malik et al., 2020	DE	Consumers	Likely vaccine choice Preference heterogeneity	Values	Consumer characteristics related to vaccine choice
			Langer Research Associates, 2020	DE	Consumers	Likely vaccine choice Preference heterogeneity	Values	Consumer characteristics related to vaccine choice
8. ACIP evidence to recommendations for use of Pfizer-BioNTech COVID-19 vaccine ¹⁵	December 2020	The Pfizer-BioNTech COVID-19 vaccine is recommended for people aged ≥ 16 years under FDA's Biologics License Application (BLA)	Malik et al., 2020	DE	Consumers	Likely vaccine choice Preference heterogeneity	Values	Consumer characteristics related to vaccine choice
			Szilagyi et al., 2021	DE	Consumers	Likely vaccine choice Preference heterogeneity	Values	Consumer characteristics related to vaccine choice

FDA = Food and Drug Administration; PCV15 = 15-valent pneumococcal conjugate vaccine/Vaxneuvance, Merck & Co., Inc.; PCV20 = 20-valent pneumococcal conjugate vaccine/Prevnar 20, Pfizer Inc.; PPSV23 = 23-valent pneumococcal polysaccharide vaccine/Pneumovax23, Merck & Co., Inc.; US = United States.

Note: Several frameworks not listed also cited SP information. However, this information was not yet published and was not included.

DISCUSSION

- The EtR framework allows for the incorporation of stakeholder preferences within the information ACIP considers when making vaccine recommendations.
- Quantitative SP study results have been used to support the values and acceptability domains of the EtR, and the frequency of their use has increased since the introduction of the EtR in 2018.
- Different types of preference information, such as relative importance and predicted vaccination choices, and preference heterogeneity have been incorporated into EtRs.
- The incorporation of quantitative SP information into the EtR allows for more systematic and transparent consideration of stakeholder (including consumer and healthcare professionals) preferences to inform ACIP vaccination recommendations.

CONCLUSION

- The EtR framework facilitates the use of stakeholder preferences in vaccination recommendation decisions.
- While most frameworks include stakeholder value and acceptability, the number using SP information has been increasing.

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CONTACT INFORMATION

Christine Poulos, PhD
Senior Economist and Vice President
Health Preference Assessment

RTI Health Solutions
Phone: +1.919.541.7130
Email: cpoulos@rti.org

