The Price of Fear: Valuing Fear of Contagion for Vaccine Economic Appraisal - A Targeted Review

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KEY MESSAGE

Fear of contagion (FOC) is a recognized but undervalued component of vaccine economic appraisal. In this targeted review, only 2 of 20 identified studies quantitatively valued FOC. The sole preference-based valuation estimated willingness-to-pay (WTP) to eliminate FOC at $13,046—substantially exceeding conventional COVID-19 vaccine WTP ($237–$319) and incremental net benefit estimates ($170–$340). FOC may represent a significant, under-captured value domain for infectious disease interventions.

BACKGROUND

- Vaccines generate value through direct health benefits and positive externalities, including reduction of fear of contagion (FOC); the anxiety over perceived risk of contracting infectious diseases[1].
- Despite the inclusion of FOC in the ISPOR value flower (2018), vaccination economic evaluations have largely relied on direct costs and quality-adjusted life years (QALYs) for infected individuals, or productivity impacts for a societal perspective. Cost-effectiveness analysis (CEA) with QALYs has been the predominant framework applied to assess vaccine value, and while it is designed to capture externalities when a societal perspective is adopted, the psychological benefits associated with reducing FOC in wider society have not, in practice, been incorporated[3].
- A prior CEA estimated COVID-19 vaccines were not cost-effective at $340,000/QALY for adults aged 18–49 without serious conditions, without accounting for FOC value. Willingness to pay (WTP) for COVID-19 vaccines was estimated at $237–$319 (contingent valuation) and incremental net benefit at $170–$340 in a systematic review of 85 studies, neither value captured FOC[1].
- The ISPOR Special Task Force proposed survey techniques to elicit WTP for FOC, but few studies have attempted this empirical assessment to date[1].

OBJECTIVE

1. To assess the extent to which available literature supports FOC as a quantifiable value domain.
2. To identify published valuations of FOC to understand the potential for its inclusion in vaccine economic evaluation.

METHODS

Study Design

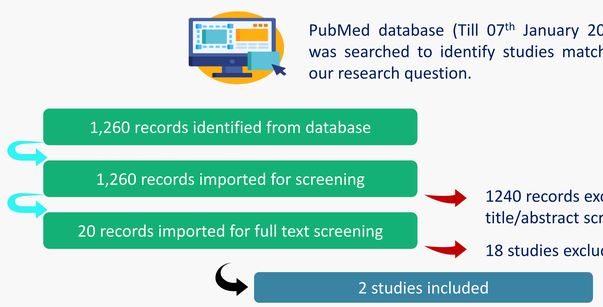
A targeted literature review was conducted on PubMed from inception to 7th January 2026.

Inclusion Criteria

Studies that quantitatively assessed the FOC value of vaccination were included. No restrictions on study design, provided a quantitative measure of FOC or its economic implications was reported.

RESULTS

Figure 1. Study Selection



The search identified 1,260 records from the database, of which 20 were assessed for full-text eligibility and 2 studies were ultimately included in the analysis, as shown in Figure 1.

Poudel et al. 2023 — Discrete Choice Experiment

Objective: To quantify the value of FOC by estimating individuals' WTP to eliminate the risk of future COVID-19 exposure using a discrete choice experiment.

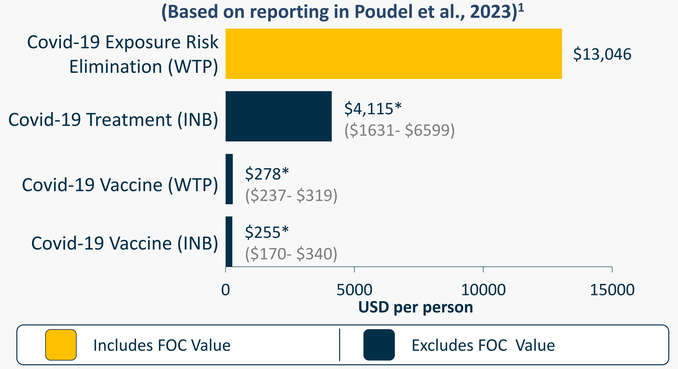
Method: Web-based discrete choice experiment (n=544). Participants chose between hypothetical vaccines defined by seven attributes: chance of infection, chance of severe symptoms, protection duration, mild adverse events, serious adverse events, chance of future exposure, and out-of-pocket cost. A mixed logit model was used to estimate preferences and derive WTP.

FOC Proxy: Chance of future COVID-19 exposure (risk of encountering an infected individual).

Result: Future exposure risk was a key driver of preferences. Participants were willing to pay ≈ $13,046 to eliminate exposure risk.

Key Insight: FOC has a substantial direct economic value, captured through WTP.

Figure 2. Comparing Economic Value Across COVID-19 Interventions by FOC Value (Based on reporting in Poudel et al., 2023)[1]



*Midpoint estimates; ranges in parentheses; WTP = Willingness-to-Pay; INB = Incremental Net Benefit; FOC = Fear of Contagion.

Cypryańska et al. 2020 — Survey Study

Objective: To quantitatively assess how fear-related emotional responses (particularly anxiety) influence preventive behaviours and willingness to incur economic costs during the COVID-19 pandemic.

Method: Nationally representative cross-sectional survey, Poland, March 2020 (n=1,028). Regression and mediation analyses examined associations between perceived threat, anxiety, and economic sacrifice (support for cost-incurring public health policies).

FOC Proxy: Anxiety (activated fear-related emotional response to perceived threat).

Result: Anxiety strongly predicted economic sacrifice (β=0.65, p<.001) and mediated the relationship between perceived threat and behavioural responses.

Key Insight: FOC, via anxiety, drives willingness to incur societal economic costs, demonstrating indirect economic value.

Figure 3. The Functional Role of Anxiety: Transforming Perceived COVID-19 Threat into a Willingness for Societal Economic Sacrifice (Based on reporting in Cypryańska et al., 2020)[2]



DISCUSSION

- Emerging evidence suggests FOC is a distinct, quantifiable value domain with economic relevance.
- Evidence from the discrete choice experiment shows individuals are willing to pay to eliminate future COVID-19 exposure risk, indicating a substantial direct economic value of FOC.
- With robust measurement, FOC could significantly reshape vaccine economic appraisal despite being currently underdeveloped.
- Evidence is currently COVID-19-specific and may not generalise to other infectious diseases or indications.
- Only 2 studies were identified, representing a very limited evidence base.
- Further research is needed to estimate FOC's value across other diseases and to assess its impact within formal economic evaluation frameworks.

CONCLUSION

- The only available preference-based valuation identified in the review estimated WTP to eliminate FOC at **$13,046**, substantially exceeding conventional estimates of vaccine WTP and INB.
- Incorporating FOC into vaccine economic evaluation could allow more comprehensive value assessment of infectious disease interventions. However, further research is needed across other diseases and populations.

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