Does it Look Like Evidence? Assessing the Stated-Preference Evidence-Base for Inflammatory Bowel Disease

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STUDY OBJECTIVE

To undertake a proof-of-concept study that assesses the feasibility of achieving a consensus on risk-tolerance estimates from the available body of evidence on treatment preferences for inflammatory bowel disease (IBD), including Crohn's disease (CD) and ulcerative colitis (UC).

STUDY MOTIVATION

- The maturation of health-preference research is indicated by the large number of published studies that have accumulated in some therapeutic areas.
- It is now possible to begin thinking of preference data in terms of evidence bases, similar to clinical data.

POSSIBLE USES FOR DATA SYNTHESIS

- Deriving weight-of-evidence results from combining multiple studies
- Using existing research to transfer existing research to new context
- Using existing research to inform design of future studies

METHODS

Evidence Base

- Identified 18 published IBD discrete-choice-experiment (DCE) studies
- Obtained access to 7 original DCE datasets from 4 studies for data fusion ***(Table 1)***

Fusion Model Specification

- Harmonized definitions across studies
  - Symptom severity
    - For all but Bewtra et al (2020), improvements were or were assumed to be relative to moderate-to-severe IBD symptoms.
    - Only Bewtra et al (2020) explicitly estimated separate severity utilities.
  - Annual risk of serious infection
  - Remission in months
  - Linear continuous specification for all variables
- Pooled 7 original DCE datasets to estimate a scale-controlled latent-class mixed logit model using Latent GOLD
  - Estimated two classes plus a task non-attendance class
  - Remission months and annual serious infection risk parameters constrained to be equal across studies to fuse data
- Conducted sensitivity analysis by eliminating one dataset at a time to evaluate its impact on all-study maximum acceptable risk (MAR)

For a **50%** effective treatment, risk-tolerant IBD patients would accept a **22%** chance of serious infection based on 22,574 choice questions.

QR CODE

Table 1. 7 Datasets from 4 Studies for Data Fusion

Study and Dataset		Sample Size	Symptom Definition	Infection-Risk Levels	Other Attributes
Bewtra et al (2015)	CD	131	Months to next relapse (2 to 120)	0 to 40% per 10 years	Lymphoma Risk
	UC	74	Months to next relapse (2 to 120)	0 to 40% per 10 years	Lymphoma Risk
Boeri et al (2019)	UC	200	Probability of remission at 12 months (0.9% to 50%)	1 to 5% per year	Occasional Steroids Mode of administration
Bewtra et al (2020)	CD	811	Months with symptoms and with remission (0 to 12)	0 to 10% per year	Steroid duration Cancer risk Surgery risk
	UC	476	Months with symptoms and with remission (0 to 12)	0 to 10% per year	Steroid duration Cancer risk Surgery infection risk J-pouch ostomy
CCFA	CD	187 (adults)	Months to next relapse (2 to 120)	0 to 40% per 10 years	Steroid duration Cancer risk Surgery risk
	CD	90 (parents)	Months to next relapse (2 to 120)	0 to 40% per 10 years	Steroid duration Cancer risk Surgery risk

CCFA = Crohn's & Colitis Foundation of America, CD = Crohn's disease, UC = ulcerative colitis.

RESULTS: Risk-tolerance Estimates

The Fusion Model contained pooled data from 1,969 respondents and 22,574 choices.

Figure 1. Maximum Acceptable 1-Year Infection per Month of Remission

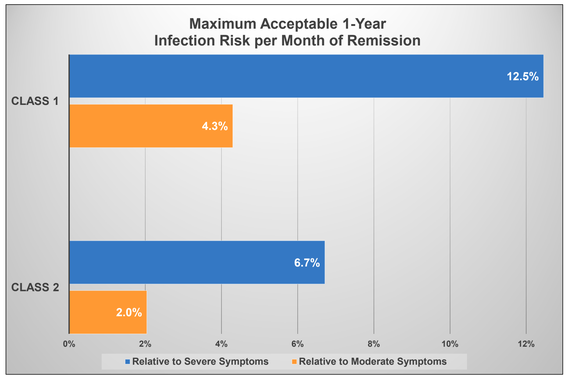
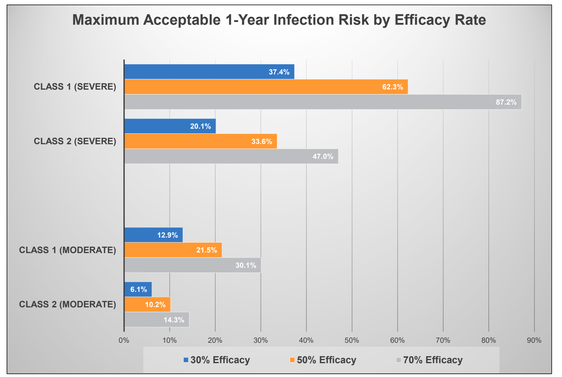


Figure 2. Maximum Acceptable 1-Year Infection Risk by Efficacy Rate



Scale Heterogeneity

Dataset	Scale Parameter
Bewtra et al (2020) – CD	1.00
Boeri et al (2019) – UC	0.67
Bewtra et al (2020) - UC	0.17
CCFA – CD parents	0.08
CCFA – CD adults	0.06
Bewtra et al (2015) - CD	0.05
Bewtra et al (2015) - UC	0.05

Sensitivity Analysis

- Only Bewtra et al (2020) – CD had a large impact on all-study MAR.
- Bewtra et al (2020) – UC had a very large impact on UC MAR.

IMPLICATIONS: What will the weight-of-evidence be used for?

- Benefit transfer: Individual models
  - Bewtra et al (2020)
    - Well-funded study, but designed for time equivalents not risk tolerance
    - Clearly defined difference between severe and moderate disease as reference condition
    - Clinical-trial patients with "moderate-to-severe" disease
  - The other 3 studies reflected ambiguity of reference condition in the trial data.
    - CCFA obtained preferences from both adult patients and caregivers.
    - CCFA and Bewtra et al (2015) offered long-term efficacy; other studies limited to 12-month outcomes.
- Regulatory decisions and health-technology assessments: Fusion model
  - Consensus estimates of MAR aggregated across studies
  - Adjusted for study-specific scale differences

CONCLUSIONS: Stated-preference evidence base in well-studied therapeutic areas can

- Help establish consensus values for risk-tolerance measures
- Increase credibility for using stated-preference data to inform regulatory and clinical decision making
- Enable leveraging previous research for benefit transfers to provide values in in the absence of sufficient time and funding for original studies
- Inform efficient, targeted new studies to fill identified gaps in the existing literature

REFERENCES & DISCLOSURES

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