Lumanity

Intermediate

How to: Bridge Evidence Gaps and Address Uncertainty with Structured Expert Elicitation

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In this installment of our "How to" series, our experts explore how conducting a structured expert elicitation (SEE) can be used to provide defensible evidence when empirical data is limited, using a methodology recommended by health technology agencies.

What is structured expert elicitation?

Structured expert elicitation (SEE) is a rigorous method for translating expert knowledge into quantifiable, defensible evidence. It captures uncertainty around specific parameters by expressing expert judgment as probability distributions.

Unlike standard data analysis, which measures variability within existing datasets, SEE addresses a different challenge: estimating unknown quantities where empirical data is limited or unavailable. It draws on subjective probability, a Bayesian approach that combines available evidence with informed expert judgment.

> **Greater uptake of structured expert elicitation would improve the methodological rigour, in particular ensuring that expert uncertainty is quantified and reported.**
>
> NICE DSU TSD26: Guidance on Structured Expert Elicitation for Survival Outcomes in Technology Appraisals

The result is a transparent, reproducible process that transforms clinical expertise into inputs suitable for health economic models, health technology agency submissions, and strategic decision making.

SEE can be conducted using a range of established protocols, such as the Sheffield Elicitation Framework (SHELF), Structured Expert Elicitation Resources (STEER), or Cooke's Classical Model, each offering different approaches to structuring and aggregating expert judgment.

Why undertake SEE?

Accelerated approvals mean greater uncertainty

Global trends toward earlier access are increasing uncertainty at the point of decision making. SEE provides a systematic, transparent way to characterize and use expert judgment to address this uncertainty.

Recommended by health technology agencies

The National Institute for Health and Care Excellence (NICE), Zorginstituut Nederland (ZIN), and other health technology organizations recommend structured methods to elicit expert evidence and reduce bias.

Strengthens cost-effectiveness models

When data are incomplete or unavailable from publicly available sources, expert judgment can provide defensible inputs for economic models.

Supported by guidance from the Professional Society for Health Economics and Outcomes Research (ISPOR)

In 2024, ISPOR published recommendations on SEE protocols for healthcare decision making; this reinforced SEE's role as a credible methodology.

Situations where SEE is particularly valuable

SEE is a valuable strategy in the following situations:

- Limited or immature clinical evidence (e.g. oncology and rare diseases)
- Advanced therapy medicinal products (ATMPs), where evidence generation can be non-traditional
- Precision medicine with sparse or emerging data
- Health technology assessment (HTA) submissions comparing new therapies to standard of care
- When key economic model inputs are not available from published sources (or are inconsistent across sources)

When would you use SEE?

SEE is most valuable when the available evidence base is insufficient to support robust decision making. This includes situations where clinical data are limited or immature, due to time constraints, constrained project budget or small treatment populations. SEE is particularly relevant:

- In oncology, where the race to market is intense, and data are often immature
- In rare diseases with small patient populations where robust datasets are unlikely to exist
- For novel therapies with no direct comparators, including ATMPs and precision medicines

SEE can also address gaps in published literature where key model inputs are unavailable or conflicting and can generate localized or market-specific inputs where global data does not reflect regional clinical practice. When time-sensitive decisions are required and primary research is not feasible, SEE provides a structured, transparent way to generate defensible evidence and quantify uncertainty.

How can Lumanity help?

Lumanity has extensive experience designing and delivering SEE studies across a wide range of therapeutic areas, including oncology, rare diseases, ATMPs, and precision medicine. We also understand the practical challenges that can derail even well-designed studies, from recruitment and contracting delays to misalignment on what is being measured.

Our approach emphasizes early planning and clear parameter definition. We work closely with compliance and legal teams to streamline expert recruitment, and we develop robust evidence summaries that provide panelists with the context they need to provide informed judgments. This groundwork reduces delays and strengthens the credibility and usability of the results.

In 2023, Lumanity collaborated with the University of York and the University of Exeter to develop practical SEE resources, including methodological guidance, adaptable R code for analysis, and Excel-based tools for elicitation exercises. These resources reflect our commitment to making SEE accessible, rigorous, and fit for purpose.

Whether you need support with protocol design, facilitation, analysis, or reporting for HTA submissions, Lumanity can help you generate defensible evidence when traditional data sources fall short. Get in touch to discuss how SEE can support your next project.

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