

## **A protocol for expert elicitation to inform health care decision making**

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**On behalf of MRC  
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## **MRC elicitation project**

**Aim:** To develop a reference protocol for expert elicitation in health care decision making

**Mixed methods:**

- Review of existing protocols
- Targeted reviews of specific methods choices
- Consideration of constraints for decision making contexts
- Review of applied examples
- Experimental evidence
- Critique of choices
- Evaluation

## Existing protocols/guidance

Sixteen protocols - 11 domain specific and 5 generic

Reference	Domain	Type
(Choy, O'Leary et al. 2009)	Ecology	Review of evidence and/or practice
Classical Model (Cooke and Goossens 2000)	Generic	Review of evidence and/or practice; Reflection on personal practice
EFSA Delphi (European Food Safety 2014)	Food safety	Agency guidance
(EPA 2009)	Environmental protection	Agency guidance
(Garthwaite, Kadane et al. 2005)	Generic	Review of evidence and/or practice
IDEA protocol	Generic	Review of evidence and/or practice; Reflection on personal practice
(Ashcroft, Austin et al. 2016)	Insurance	Agency guidance
(Tredger, Lo et al. 2016)	Insurance	Agency guidance
(Kaplan 1992)	Risk and reliability	Reflection on personal practice
(Keeney and Vonwinterfeldt 1991)	Nuclear	Reflection on personal practice
(Kno, Slottje et al. 2010)	Environmental health	Review of evidence and/or practice
(Meyer and Booker 2001)	Generic	Review of evidence and/or practice
(Kotra, Lee et al. 1996)	Nuclear	Agency guidance
(Budnitz, Apostolakis et al. 1997)	Nuclear	Agency guidance
SHELF (Gosling 2018)	Generic	Review of evidence and/or practice; Reflection on personal practice
(Walls and Quigley 2001)	Risk and reliability	Reflection on personal practice

## Protocol review: the elicitation process



\* Note: These steps are described as post-elicitation in some guidelines.

## Protocol review: Summary of choices

<b>Preparation and design</b>	<ul style="list-style-type: none"> <li>Selecting quantities</li> <li>Methods to encode judgements</li> <li>Managing biases</li> <li>Validation</li> <li>Selecting experts</li> <li>Pilot exercise</li> <li>Training and preparation for experts</li> </ul>
<b>Elicitation</b>	<ul style="list-style-type: none"> <li>Level of elicitation</li> <li>Mode of administration</li> <li>Feedback to experts and revision</li> <li>Opportunity for interaction</li> <li>Feedback from experts on process</li> <li>Rationales</li> </ul>
<b>Aggregation, analysis and post elicitation</b>	<ul style="list-style-type: none"> <li>If/how to aggregate</li> <li>Fit to distribution</li> <li>Adjusting judgements</li> <li>Documentation</li> </ul>

## Critique of choices and evidence supporting these

- Remain lots of choices for which there is no experimental evidence – even outside of HCDM
- Need to assess appropriateness of choices to determine a reference protocol
- Set of principles underpinning the use of SEE to inform HCDM
  - Developed based on the findings from targeted searches, challenges, decision making contexts and quantities
  - Also reflect considerations for SEE as reported by Cooke (1991)
  - Not all principles relevant for each set of choices

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## Principles for SEE in HCDM



Principle 1: SEE to inform decision-making in healthcare should be transparent and reproducible

Principle 2: Elicited information should be fit-for-purpose to be used as an input to further modelling

Principle 3: The SEE needs to reflect the practical and logistic constraints faced by different contexts/decision-making bodies

Principle 4: The SEE should reflect uncertainty at the individual expert level

Principle 5: The SEE should recognise common biases in elicitation

Principle 6: The SEE should be suitable for experts who possess substantive skills, which in HCDM are less likely to be normative

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## Principles for SEE in HCDM



Principle 7: Recognise where adaptive skills are required of experts

Principle 8: Recognise between-expert variation, explore its implications, and attempt to understand why it is present

Principle 9: Enable experts to express their beliefs and promote high performance

## Generating a protocol for SEE in HCDM

- There are many choices in SEE, for which there is no empirical support
  - Makes it difficult to say conclusively which techniques may be most appropriate.
- The specific application and constraints may be a key driving factor in defining the choices for the SEE (principle 3).
- Principles may be unable to provide sufficient justification for discounting particular choices and/or preferring choices above others, e.g. to minimise bias, multiple approaches are available.
- Important to recognise where there are choices that are emerging as ‘best practice’ in HCDM.
  - Focus on translating the evidence generated into set of recommendations that decision makers in HTA can use to develop a protocol.
  - Consider how decision makers outside of this setting determine the suitability of the choices in developing a protocol for their needs.

## Key features for SEE in HTA

Element	Reference methods suggested
Experts	<ol style="list-style-type: none"> <li>1. SEE should pursue diversity – at least 5 experts</li> <li>2. Focus on gathering substantive expertise or experience.</li> <li>3. Minimize and record conflicts of interest among the experts. Include experts external to the SEE task.</li> </ol>
Quantities elicited	<ol style="list-style-type: none"> <li>1. Simple observable quantities should be elicited where possible.</li> <li>2. Dependence between variables should be captured in SEE.</li> <li>3. Wording should be clear and quantities should be decomposed where appropriate.</li> </ol>
Approach to elicitation	<ol style="list-style-type: none"> <li>1. Beliefs should be elicited from experts individually, even if a group interaction follows.</li> <li>2. Interaction will usually be via a Delphi style remote process.</li> <li>2. Between-expert variation should be explored explicitly.</li> </ol>
Method	Both VIM or FIM work well, however decision makers should aim for consistency across applications.
Aggregation	<ol style="list-style-type: none"> <li>1. Statistical distributions should be fitted to experts individually-elicited judgements.</li> <li>2. Following fitting, a summary of the individual distributions should be obtained using linear pooling with equal weighting.</li> <li>3. Any adjustments applied should be to improve coherence and consistency not reduce variability.</li> </ol>
Delivery	<ol style="list-style-type: none"> <li>1. Face-to-face where possible to allow a facilitator to deliver training to the expert.</li> <li>2. Feedback to experts should be given during the SEE. Revision following feedback.</li> </ol>
Training Piloting	<ol style="list-style-type: none"> <li>1. Training is crucial and should focus on avoiding bias and expressing uncertainty.</li> <li>2. Piloting should be undertaken.</li> </ol>
Rationales documentation	<ol style="list-style-type: none"> <li>1. Rationales for how the experts made their judgements should be collected post SEE.</li> <li>2. All methodological choices for the SEE must be documented and justified.</li> </ol>

## Important considerations for decision makers outside of the HTA setting

Element	Reference methods
Experts	May have limited access to sufficient experts. Geographical location may prevent face-to-face Adaptive skills may be required for new technologies
Approach to elicitation	Mathematical, group consensus, Delphi may be most appropriate in some circumstances
Method	FIM may be more appropriate for less normative experts or where training cannot be done face-to-face
Aggregation	Other pooling methods may better reflect expert variability
Delivery	Constraints may dictate remote delivery

## Questions remain...

- Is it possible for SEE to be conducted properly within existing HTA timelines?
  - Better planning for SEE
  - Changing timelines when SEE is crucial to reaching a decision
  - Focus SEE on specific areas of uncertainty
- Is there a need develop generic material to assist in SEE – reduce time to conduct?
  - Software
  - Expertise in conducting SEE - expert panels?
- Will decision makers use (insist) on use of guidance for SEE?
- What will be the impact of this?

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**Forthcoming HTA report, 2019**



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**Poll: Is the MRC protocol useful in your setting?**