

Guidelines for Verbal Presentations of Medical Decision Analyses

DONALD A. REDELMEIER, MD, MS(HSR), ALLAN S. DETSKY, MD, PhD,
MURRAY D. KRAHN, MD, MSc, DAVID NAIMARK, MD, GARY NAGLIE, MD

Individuals new to decision analysis often have difficulty with oral presentations of original research projects. This article provides general guidelines on how to present effectively. Points include: 1) articulating the research issue, 2) reviewing current beliefs, 3) portraying the study question, 4) listing the main assumptions, 5) presenting the base-case analysis, 6) showing sensitivity analyses, and 7) discussing the implications. The guidelines comment on what to exclude from presentation and how best to handle audience questions. The guidelines do not replace general instruction in public speaking (or rigorous training in decision analysis), but may help students present research projects effectively. **Key words:** decision analysis; verbal presentations; medical education; public speaking; communication skills. (*Med Decis Making* 1997; 17:228-230)

Medical decision analyses are difficult to present verbally because they do not follow the logic and conventions found in other scientific studies. Distinctions between new data (obtained in the study), old data (retrieved from outside sources), and simulation data (created without empiric observation) seem blurred. Final results often require multiple digits, lack measures of precision, and are expressed in unfamiliar terms. Multiple assumptions are necessary, difficult to justify, and impossible to fully discuss.

We have witnessed some ineffective presentations of otherwise important medical decision analyses. One reason this occurs is that proficiency with medicine, research, or another related field is no guarantee of skill in public performance. Poor presentations are particularly damaging to students who have invested extensive time in their work and

paid meticulous care to fine details. Poor presentations are not rare. In this article we detail some particularly important “dos” and “don’ts” (table 1). Instructions for conducting decision analyses appear elsewhere.¹⁻⁵

Introducing the Study

Never leave the audience confused about your study question. We have seen analysts become distanced from the motivation for starting the project after working hard for completion. The audience, in turn, may fail to grasp the importance of the message. We urge all of our students to begin by justifying the importance of the clinical situation and the appropriateness of a decision-analytic approach. In addition to offering information about disease incidence, severity, and costs, a pithy anecdote often works well in the lead.

The next step is to review current beliefs. What is the most important tradeoff at the heart of the decision? We recommend expressing the issue non-numerically and exemplifying the controversy with comments from authorities or statistics on practice-pattern variation. Audiences are generally more attentive if they sense a legitimate struggle and have the opportunity to take sides. This is especially important for those audience members who have strong prior opinions.

The final component of the introduction is a crisp statement of the study question. A vague study question, for example, would be: “How should giant cell

Received November 27, 1995, from the University of Toronto Programme in Clinical Epidemiology and Health Care Research (The Toronto Hospital and Sunnybrook Health Science Centre) and the Departments of Health Administration, Medicine, and Clinical Biochemistry, Toronto, Ontario, Canada. Revision accepted for publication December 12, 1996. Drs. Detsky and Redelmeier are partially supported by Career Awards from the National Health Research and Development Programme and the Ontario Ministry of Health, respectively. Drs. Naglie and Krahn are partially supported by Arthur Bond Fellowships from the Physicians' Services Incorporated Foundation.

Address correspondence and reprint requests to Dr. Redelmeier: Clinical Epidemiology Unit, Sunnybrook Health Science Centre, G-151, 2075 Bayview Avenue, North York, ON M4N 3M5, Canada. e-mail: (DAR@ICES.ON.CA).

arteritis be treated?" A crisp study question would be: "In suspected giant cell arteritis, who should be treated with steroids -all patients, no patients, or just patients with a specific finding?" It's not necessary to mention an a-priori hypothesis, the personal theory of the investigator, or additional goals.

Detailing the Methods

The next task is to portray the study question. One useful technique for decision trees is to build in layers (rather than showing a big mass on the initial view). Even with layers, however, displaying all levels of detail may not be practical. Subtrees and other forms are often helpful, even if they were not used when originally programming the analysis. Check that all labels are self-explanatory: abbreviations familiar to the analyst can befuddle the audience.

Other parts of the methods section tend to fly swiftly. We recommend beginning with assumptions relevant to all decision analyses, such as the time horizon and perspective. Next, specify the base-case criteria. Follow with assumptions relevant to the clinical problem. List the sources for the probability and utility estimates as either a formal meta-analysis, a literature search, new data, or best guess. Mention whether the data are robust or the direction of any clear bias.

Table 1 • Checklist for Verbal Presentations of Medical Decision Analyses

-
1. Start with a title slide
 2. Give appropriate background
Motivation, current beliefs, main controversies
 3. Articulate the study question
Losing the audience here is a disaster!
 4. Show the tree structure
Clearly indicate the available strategies
Show the details in consecutive layers
Emphasize the important tradeoffs
 5. List the important assumptions and data
Pound by meta-analysis, literature review,
new data, or best guess?
 6. Offer the main results
Base case results first, the table of one-way analyses, then
a few two- or three-way sensitivity analyses
 7. State the conclusion
One strategy dominates, a toss-up, or inconclusive
 8. Discuss limitations and directions for future research
 9. Deal with audience questions
Brief, simple, and nonconfrontational
-

Many details are safely omitted, yet students are often unsure about what to exclude. We suggest that there is no need to mention the hardware and software platforms. Don't explain strategies that were not examined unless you can make an important point. Make no attempt to discuss past bugs. Don't mention why you excluded data from dubious sources or disregarded alternative utility measures. Avoid arguing for your approach; instead, try to be clear about the assumptions and return later to controversies.

Showing the Results

Go slow when presenting the results of the base-case analysis. Give the results of each arm of the decision, then state the arithmetic difference between the best choice and the nearest competitor, and then say it again qualitatively. If the difference in outcomes is small, consider supplementary metrics, such as "quality-adjusted life days." In this section of the talk, err towards being redundant rather than terse: it's astonishing how many members of the audience cannot remember the results of the base-case analysis only minutes after completion!

Sensitivity analysis has a different role in verbal presentations than in model development. Decide whether to display results in tabular or graphic format: if in doubt, use a table. A method for displaying one-way sensitivity analyses is shown in table 1 of Part 4 of the accompanying series.⁴ All variables can be shown at once, along with the range of plausible values and whether the optimal strategy is sensitive or robust within that range (denoted S or R, Y or N, bold or plain font). The audience can quickly scan the table and assess the sensitivity and robustness of the analysis.

Showing sensitivity analyses in graphic format provides a fast method for communicating a tremendous amount of complex data. In our experience, however, many presenters move too quickly and overwhelm the audience. For graphs, tell the audience the units for both x-axis and y-axis, the range of plausible values, the location of base-case results, and the meaning of every line displayed. Two-way, three-way, and multi-way sensitivity analyses consume valuable time because they must be explained carefully. In our judgment, it is better to show a few findings carefully than many points hastily.

The results of a decision analysis often seem dull; hence, work hard to maintain audience attention during this section. Consider titles that broadcast the message. Interject comments to interpret surprises. If the results are stable in sensitivity analysis, stress the robustness. If the results vary in sensitivity

analysis, emphasize the need for further research, individualized decisions, or the most important controversies. Choose whether to illustrate clinical relevance by using a single patient example or a general policy calculation.

Discussing the Implications

The discussion section provides the audience with an opportunity to reflect on the study, memorize the main points, and regain their orientation. Begin by restating the base-case results. Select one of three responses; namely, one particular therapy is clearly superior, two or more therapies are a toss-up, or the results are inconclusive. Mention whether the conclusions are at variance or in agreement with previous authorities.

Devote a full section to limitations. Identify assumptions that could reconcile discrepancies between your results and the findings of past studies. Speculate about when better data might be available and which variables merit priority. Highlight any considerations of ethics, economics, or aesthetics. Concluding the talk is usually easy and is often done by restating the main finding: the main decision is whether to represent your conclusion as an algorithm, a flowchart, or a heuristic.

Handling audience questions is challenging. Allow the interrogator to finish what he or she wants to say. Stay brief with responses. Do not answer a question by showing an additional slide; such effort is awkward. Do not answer a question by returning to a previous slide, unless you want groans from the audience. Do not answer a question you do not understand—doing so is unlikely to work. Do not answer a question that is overtly hostile; a defensive response will be ineffective for the interrogator and unnecessary for the audience.

Postscript

In our work, we have found guidelines useful when preparing a verbal presentation. Most points seem obvious, yet all can be forgotten in the rush to prepare. Guidelines are not criteria for performing decision analyses, judging manuscripts, or camouflaging weak science. Nor do they replace mentoring, personal advice, instruction on public speaking, and practice. Our intent is to help inexperienced individuals present decision analyses with clarity and drama.

Why bother to present effectively? First, the act of preparation helps clarify thinking; we believe that mastery of a topic cannot be achieved without the exercise of explaining it to others. Second, a clear presentation is valuable in its own right, given that many audience members will never read the final manuscript. Third, high-quality work generates high-level feedback. Eloquent presentations are worth the effort. Furthermore, the reaction to a verbal presentation often predicts the outcome of the final manuscript.

References

1. Detsky AS, Naglie G, Krahn MD, Naimark D, Redelmeier D. Primer on medical decision analysis: Part 1—getting started. *Med Decis Making.* 1997;17:123-5.
2. Detsky AS, Naglie G, Krahn MD, Redelmeier D, Naimark D. Primer on medical decision analysis: Part Z—building a tree. *Med Decis Making.* 1997;17:126-35.
3. Naglie G, Krahn MD, Naimark D, Redelmeier, Detsky AS. Primer on medical decision analysis: Part 3—estimating probabilities and utilities. *Med Decis Making.* 1997;17:136-41.
4. Krahn MD, Naglie G, Naimark D, Redelmeier D, Detsky AS. Primer on medical decision analysis: Part 4—analyzing the model and interpreting the results. *Med Decis Making.* 1997;17:142-51.
5. Naimark D, Krahn MD, Naglie G, Redelmeier D, Detsky AS. Primer on medical decision analysis: Part 5—working with Markov processes. *Med Decis Making.* 1997;17:152-9.