

## APPENDIX: THE INFORMED DECISIONS TOOLBOX

*This appendix presents the complete version of The Informed Decisions Toolbox. The toolbox is discussed in the article by Rundall and colleagues that appears in the Journal of Healthcare Management, Volume 52, Issue 5, pages 325–342.*

### Six Steps to Consider When Making a Well-Informed Decision (Quick Reference)

<p><b>Step 1: Framing the Question Behind the Decision</b> What is the decision, and what do I really need to know to make a well-informed decision?</p>	<b>EVALUATING THE EVIDENCE</b>
<p><b>Step 2: Finding Sources of Information</b> Have I (or my staff/consultant) looked in all the right places for evidence?</p>	
<p><b>Step 3: Assessing the Accuracy of Information</b> How much of this information is accurate?</p> <ul style="list-style-type: none"> <li>• Is the information valid and reliable?</li> <li>• Is the information comprehensive?</li> <li>• Am I missing important perspectives or aspects of my decision?</li> </ul>	
<p><b>Step 4: Assessing the Applicability of Information</b> Is all of the information applicable to my decision and my organization?</p>	
<p><b>Step 5: Assessing the Actionability of Information</b> Is this information adequate for creating an actual plan?</p> <ul style="list-style-type: none"> <li>• Which recommendations can I implement?</li> <li>• Which findings can I convert into concrete steps for implementation?</li> <li>• Which information provides guidelines about the possible effects of my decision?</li> <li>• What are the expected effects of my decision?</li> <li>• What are the possible unintended effects of my decision?</li> </ul>	
<p><b>Step 6: Determining if the Information Is Adequate</b> When do I have enough information to make my decision?</p> <ul style="list-style-type: none"> <li>• Is there a single best option?</li> <li>• Is there more than one reasonable option?</li> <li>• What should I do if the information I need does not exist yet?</li> </ul>	

## STEP 1: FRAMING THE QUESTION BEHIND THE DECISION

### Background

The first step is to turn the management question into a research question, framing the issue in such a way that will increase the probability of locating useful research studies. This task requires more thought than one might first believe. Often, a very specific management question will have to be broadened to find relevant research, but overly broad, vague, or highly abstract research questions must be avoided.

### Key Points

- Formulating your management decision question is the first step in finding relevant evidence.
- When formulating the management research question, care must be taken to make sure that the question is not overly broad or too narrow.

### Guides and Checklists

When formulating your management decision question, consider the following five issues:

- ☑ Issue 1: A well-defined question will explicitly state the intervention, outcome of interest, type of setting, time frame, and population.
- ☑ Issue 2: Each question should focus on a single information gap. A managerial decision, however, might involve several questions. If so, it is best to keep them separate.
- ☑ Issue 3: Questions should focus on objective criteria rather than on value-based terms. For example, “which option is better?” is a value-laden decision; whereas “which option is more likely to result in greater first-year profit?” focuses on an objective outcome.
- ☑ Issue 4: Some questions also should include information on the regulatory and reimbursement environment.
- ☑ Issue 5: Identifying other important drivers of your decision is also critical. Examples of potentially important decision-making drivers include your market or political environment. Be sure to consider the decision from the viewpoint of other stakeholders.

### Example

Imagine a manager wants to know whether to merge two hospitals:

1. *What is the proposed change or intervention?* Example: The healthcare manager is interested in a merger between two healthcare organizations. Both organizations are hospitals in the same county but different cities (i.e., this would be a horizontal merger between two hospitals).
2. *What are the main outcomes of interest?* Positive changes in these outcomes would represent a successful decision/implementation, whereas no or negative changes could represent poor implementation. Example: The manager wants to know about the impact of the merger on pretax profits and quality of care.
3. *What is the setting for the change?* Think about both the internal organizational context and the broader market environment. Organizational context includes work climate and culture. For example, staff may resist the consolidation of managerial positions that have high institutional value; in other words, it might be difficult to turn two chairs of medicine into one. The market environment might include reimbursement, regulatory, or political concerns. Example: Both hospitals have capitated contracts with three health plans, which account for 80 percent of their admissions. Another

example is that the manager is particularly concerned about integrating the leadership of the two hospitals or concerned that the two hospitals have different missions or orientations (e.g., one is for-profit and the other is not-for-profit).

4. *What is the time frame for the managerial changes and for the outcomes?* Example: The manager needs to present information on the merger implementation and outcomes after one year to her board of directors.
5. *What are the relevant populations?* Example: The hospitals serve indigent, Medicare, and commercial insurance populations.

**Question:** How does the **intervention** affect the **outcomes of interest** during the **specified time period** for the **target population**, within a **specific environment**?

When this example information is plugged into the question template above, the management decision question becomes:

How does a horizontal merger between two hospitals affect profitability and hospital quality outcomes during the first and subsequent years in a capitated environment with a substantial amount of charity care?

With this question, you can now start to look for evidence related to your intervention. You also can focus your search on evidence that examines comparable outcomes within a similar context. Depending on the amount of available evidence, you might need to narrow or expand your definition of comparable outcomes, time frames, environments, and populations.

The evidence that you find in the example does not tell you whether or not to merge the two hospitals, but it can tell you the likely effects on the two outcomes over the one-year and multiyear time frames. If these are the two most important outcomes for deciding whether the option is “good” or “bad,” then the evidence could indicate that mergers always yield positive outcome changes, always yield negative outcome changes, or produce some positive changes in one outcome and some negative changes in the other outcome for a given time period.

## STEP 2: FINDING SOURCES OF INFORMATION

### Background

Evidence relevant to the management research question can be obtained from a wide array of sources. Colleagues, consultants, and known experts are frequent sources of colloquial evidence. Existing administrative and clinical databases can be tapped for data. Pilot studies can be performed to collect data useful to a major decision.

Healthcare organizations that have made significant investments in knowledge management might have libraries, trained librarians and webmasters, intranet information resources, or an in-house management decision-support system. The vast majority of managers will not have such resources and will be limited to what they can find on the Internet.

The Internet can be used to locate research articles and systematic reviews of multiple research studies. Two general approaches can be used:

- *Searching websites* that provide access to systematic reviews or meta-analyses. For example, the Effective Practice and Organization of Care (EPOC) group within the Cochrane Library might provide insight. A research synthesis of a large number of primary research articles is especially useful to decision makers because the authors of the synthesis have already made an attempt to assess the quality of the evidence and to draw out the conclusions that are supported by the evidence.
- *Searching bibliographic databases*, such as the National Library of Medicine Gateway and Google Scholar for published and unpublished primary studies of relevance to the research question.

### Key Points

- Evidence to assist in decision making can come from a variety of sources.
- Colloquial evidence can be obtained from the experience and judgment of colleagues, friends, customers, suppliers, and others. Information provided in organizational reports, trade journals, strategic planning sessions, offsite retreats, office meetings, and other settings may provide useful colloquial evidence.
- The focus of the Informed Decisions Toolbox is on finding research evidence.
- Research evidence can be generated within the organization either by using administrative and clinical databases or by collecting new data using surveys or other techniques.
- Research evidence may also come from reports of studies conducted in other organizations, often published in academic journals or books.
- Research evidence on industry or environmental data and trends over time may be found in government reports, industry newswires, trade journals, conference proceedings, and other outlets.
- Internet websites sponsored by foundations, research centers, professional societies, publishers, and government agencies are particularly rich and accessible sources of colloquial and research evidence.
- The ability to search for and locate relevant research syntheses is an important competency.

### Guides and Checklists

#### The Internet and Literature

When in doubt, start here:

- National Library of Medicine Gateway: (<http://gateway.nlm.nih.gov/>)
- Google: (<http://www.google.com>)
- Google Scholar: (<http://scholar.google.com>)

#### Search Tips

Simply enter key words from your management research question into the search field. For more advanced searches, the following tips will be helpful:

- Start with a narrow topic using exact phrases and keywords addressed in your management question.
- When you find a hit, zoom out to explore citations, similar sources and authors, and links.
- Use those resources to zoom back in to find your answer.

## Additional Tips

- ☑ Phrase “ ”  
Using quotation marks limits the search to the phrase as written.  
Example: “health system merger”
- ☑ Truncation \*  
Using an asterisk will expand the search to all words beginning with those letters.  
Example: insur\* will return “insurance,” “insuring,” “insurer,” and so on
- ☑ Boolean AND, OR, NOT  
Using these words will combine, include, or exclude results.  
Example: health insurance NOT deductible  
*Note:* Some engines, like Google, do not recognize these terms  
In these cases, use + or - instead  
Example: health insurance - deductible
- ☑ Limit search domain using “site:.xyz”  
Using the term “site:.xyz” will reduce all results to the domain .xyz  
Available domains include .edu = academic, .gov = government, .org = organization, .com = commercial, .net = network, .mil = military  
Example: health system merger site:.edu will reduce all results to academic websites

## Existing Websites

Many existing websites provide access to primary research studies or to summaries and syntheses of research that are useful to health services managers and policymakers. Some of the websites are listed here.

- AcademyHealth: <http://www.academyhealth.org/>
- Agency for Healthcare Research and Quality research findings section: <http://www.ahrq.gov/research/>
- Canadian Health Services Research Foundation: <http://www.chsrf.ca/>
- Center for Health Management Research: <http://depts.washington.edu/chmr/>
- Cochrane Collaboration Effective Practice and Organization of Care Group: <http://www.epoc.uottawa.ca/>
- Institute for Healthcare Improvement: <http://www.ihl.org/>
- The Robert Wood Johnson Foundation Synthesis Project: [www.rwjf.org/publications/synthesis](http://www.rwjf.org/publications/synthesis)

## Librarians

Your organization might have a librarian who can help refine searches. If not, first consult a public library or local university library; it may be helpful to develop long-term relationships with these sources. A list of medical and health services libraries is available through the University of Iowa: <http://www.lib.uiowa.edu/hardin/hslibs.html>. In extreme cases, a librarian at the National Library of Medicine may be able to help: <http://www.nlm.nih.gov/contacts/contact.html>.

## Validating Organizations/External Standards

These resources include nationally recognized organizations such as the Agency for Healthcare Research and Quality (<http://www.ahrq.gov>), the Institute for Healthcare Improvement (<http://www.ihl.org>), and the Kaiser Family Foundation

(<http://www.kff.org>). Many of these sites have white papers, position statements, and conference proceedings that can be downloaded.

#### Conferences and Other Professional Exchanges

Talking with colleagues can be a source of colloquial evidence. This evidence is generally not high quality but often is critical to finding further sources. Public administrators might consider contacting similar authorities in nearby states for guidance.

#### Knowledge Brokers, including Consultants

Knowledge brokers often have special skills or resources and can synthesize literature and offer advice. Brokers, including management consultants, may charge significant fees or require confidentiality agreements, which may discourage many from seeking their services.

#### Advocates, Vendors, and Advertisements

Advocates and vendors might have extremely detailed information on a given topic. However, the evidence they produce is generally biased in favor of their organizational mission and sometimes fails to provide a full picture of available options. For this reason, use caution when dealing with these sources.

#### Databases and Internal Feedback

Some organizations have the capacity to collect, structure, and analyze data on organizational processes. These data can directly provide an answer to particular operational questions and offer insight for strategic decisions. Additionally, developing small-scale, short-term pilot studies for a management question acts as a test-run for a proposed intervention. Moderate research design and implementation skills are useful for this step, but even a simple descriptive data analysis using basic mathematics can provide rich information.

#### Legal Resources

Laws and regulations in a given jurisdiction may have consequences for a decision. Legal information can be a valuable guide, but it should always be checked with a counsel before being used. Good introductory resources can be found through the St. Louis University School of Law: <http://law.slu.edu/healthlaw/research/links/index.html>.

#### **Example**

After typing the search terms “hospital,” “merger,” “profit,” and “quality” into the Google Scholar search term box (<http://scholar.google.com/>), a large number of relevant articles and documents were found, including the following:

Conner, R. A., R. D. Feldman, B. E. Dowd, and T. A. Radcliff. 1999. “Which Types of Hospital Mergers Save Consumers Money?” *Health Affairs* 16 (6): 62-74.

Cuellar, A. E., and P. J. Gertler. 2003. “Trends in Hospital Consolidation: The Formation of Local Systems?” *Health Affairs* 22 (6): 77-87.

Lynk, W. J. 1995. “Nonprofit Hospital Mergers and the Exercise of Market Power.” *Journal of Law and Economics* 38 (2): 437-61.

Melnick, G., E. Keeler, and J. Swansinger. 1999. “Market Power and Hospital Pricing: Are Non-Profits Different?” *Health Affairs* 18 (3): 167-73.

Vita, M. J., and Seth Satcher. “The Competitive Effects of Not-for-Profit Hospitals Merges: A Case Study.” [Online article.] [www.ftc.gov/be/workpapers/hospitals.pdf](http://www.ftc.gov/be/workpapers/hospitals.pdf).

By looking on the Robert Wood Johnson Foundation Synthesis Project website (<http://www.rwjf.org/publications/synthesis>), the following research synthesis was found:

“How Has Hospital Consolidation Affected the Price and Quality of Hospital Care?”  
*Research Synthesis*, February 2006

### STEPS 3–5: EVALUATING THE EVIDENCE

#### Background

Not all evidence is of the same quality. Higher-quality evidence should be relied on more than lower-quality evidence. To assess the quality of a study, it is important to begin with an understanding of the study’s design and the general strengths and weaknesses of that design. The following table provides brief comments on the strengths and weaknesses of various study designs that are commonly used in health services research.

Study Design	Comments
Meta-analysis	The most rigorous way of synthesizing information. This approach, however, is limited by the quality of the supporting studies—that is, a meta-analysis does not necessarily change the underlying validity of the studies.
Randomized controlled trial	The strongest study design for eliminating concerns about bias or confounding. The limitation of these studies often is that the study sample is very homogeneous with numerous exclusions, thus limiting the applicability of any study results.
Quasi-experimental study	Can include many of the positive characteristics of the randomized controlled trial but also includes a range of subdesigns. The most rigorous includes concurrent control groups and has multiple measurements over time, both before and after the intervention.
Prospective cohort study	Follows two or more groups prospectively.
Retrospective cohort study	Similar to the retrospective cohort, but collects data afterwards. One major concern is that retrospectively collected data may not be the most desirable measurements or may be inaccurate (recall bias).
Case control study	Useful approach when data collection is expensive. Common in epidemiological studies.
Uncontrolled observational study (no concurrent control)	Without a concurrent control group, the observed outcome changes may be because of other changes in the market (secular changes).
Qualitative study	Very useful for exploring new areas, identifying best practices, or understanding why a change has or has not occurred. These studies have small samples, which might not be similar to your organization. Other notable concerns include the transparency of the methods and potential subjectivity of the approach.

However, beyond the strengths and weaknesses of a study’s design are many other issues that can affect the quality of the study and its findings.

The following segment of the Informed Decisions Toolbox provides some key points to keep in mind when assessing evidence and some guides and checklists for making such an assessment.

### **Key Points**

- Evidence must be accurate, applicable, actionable, and accessible.
- Inaccurate evidence can lead to bad decisions.
- Inapplicable evidence may have little value for your decision.
- Evidence that is not easily actionable will be difficult to use or implement.
- Evidence that is difficult to access can be prohibitively costly to obtain (time or money).
- Evaluating evidence is a critical step in the decision-making process.

### **Guides and Checklists**

The four As of useful evidence are Accurate, Applicable, Actionable, and Accessible

#### **Accurate**

- ☑ Establishes causal relationship: “not expert opinion”
- ☑ Provides a complete, balanced viewpoint: “good, bad, and ugly”
- ☑ Provides information on relevant statistical properties without necessarily eliminating data based on arbitrary standards of precision: “I do not think that management decisions [need to be] 95% [in terms of certainty]. I would be happy with 70-80%.”
- ☑ Provides information on limitations
- ☑ Credible source: unbiased support (funding) and implementation
- ☑ Transparent process: how data are collected and how findings follow the data
- ☑ Based on observational studies and tacit information
- ☑ Robust
- ☑ Empirical
- ☑ Valid

#### **Applicable**

- ☑ Research is relevant to the decision maker’s question
- ☑ Research states in which situations it is applicable
- ☑ Information is applicable to the decision maker’s organization and environment

#### **Actionable**

- ☑ Fits into the time frame of original decision
- ☑ Information on what needs to be done
- ☑ Provides information on a complete set of implications, including costs, overall importance, and values
- ☑ Identifies best practices
- ☑ Measurable quality indicators
- ☑ Portrays expected vs. actual outcomes
- ☑ Should evaluate usefulness of technology
- ☑ Considers context, including other available information (e.g., includes tacit information)

#### **Accessible**

- ☑ Easy to obtain: at our fingertips
- ☑ Presentation framing consistent with decision maker’s needs

## Examples

The Robert Wood Johnson Foundation Synthesis Project website report, prepared by William B. Vogt and Robert Town, provides an assessment of the evidence on hospital consolidation. The following points are made regarding two example questions often asked about hospital consolidation.

### *Example 1: What are the effects of hospital consolidation on the quality of care?*

A slight majority of published studies found that increases in hospital consolidation reduced the quality of care. Of the 10 studies that examined the relationship between market concentration of hospital beds and quality of care, five studies found that market concentration reduced quality for at least some procedures; four reported quality increases for at least some procedures, and three studies reported no effect. Importantly, the studies with the strongest research designs confirmed the negative effect of market concentration on quality of care.

The substantial minority of studies that found positive or no effects of hospital concentration on quality, suggests that the findings from this group of 10 studies must be interpreted with caution. Methodological procedures and the nature of a given study sample may influence the study results. The strongest studies used national samples of hospitals and examined the effects on quality of changes in market concentration over time, and these studies consistently found that increasing hospital concentration decreased quality. However, the nature of competition in hospital markets may also have important effects on quality. Kessler and McClellan (2002) found that in markets with high HMO penetration, hospital consolidation decreased quality; in areas with low HMO presence, there is no relationship between consolidation and quality.

### *Example 2: What are the effects of hospital consolidation on the cost of providing inpatient care?*

The majority of published studies found that (1) hospital consolidation produced some cost savings, and (2) the amount of savings increased when hospitals more completely consolidated their services. But not all studies demonstrated these effects. For example Gaynor and Anderson (1995) and Dranove and Lindrooth (2003) found increasing returns to scale for merged hospitals, but another somewhat older study by Vita (1990) did not.

Two caveats are important when interpreting these research findings. First, the phrase “cost savings” refers to savings in cost to the hospital. Savings to patients, payers, or to society are typically not incorporated in these research studies. Second, there are two ways in which hospital consolidation can occur: (1) ownership consolidation in which two hospitals come to be owned by the same firm but continue to offer the same services they did before consolidation, and (2) actual consolidation of services achieved through closure of one of the merged hospitals or consolidation of specific services provided by hospitals under single ownership.

## Cited Works

- Dranove, D., and R. Lindrooth. 2003. “Hospital Consolidation and Costs: Another Look at the Evidence.” *Journal of Health Economics* 22 (6): 983-97.
- Gaynor, M., and G. F. Anderson. 1995. “Uncertain Demand, the Structure of Hospital Costs, and the Cost of Empty Hospital Beds.” *Journal of Health Economics* 14 (3): 291-317.
- Kessler, D. P., and M. B. McClellan. 2002. “The Effects of Hospital Ownership on Medical Productivity.” *The RAND Journal of Economics* 33 (3): 488-506.

Vita, M. G. 1990. "Exploring Hospital Production Relationships with Flexible Functional Forms." *Journal of Health Economics* 9 (1): 1-21.

### STEP 3: ASSESSING THE ACCURACY OF INFORMATION

#### Checklist Questions for Quantitative Evidence: Do I Have Accurate Information?

Are the research findings valid?

- Does the study provide interpretable information about its sample definition and size, including the specific inclusion and exclusion criteria?
- Do these criteria exclude any groups or subjects that would make the findings less valid or interpretable?
- What was the study design? Is it a strong design (see previous table – Study Design)?
- Does the study provide interpretable information about its context and setting?
- Do the study results indicate that the intervention led to the outcome changes (i.e., a causal relationship)?
- Are the methods for collecting data transparent and clearly presented?
- Are the measurements reliable and valid? Is there a gold standard for these measurements?
- Is the association between the findings and the results (data) clearly defined?
- Does the study control for other concurrent changes that could influence the outcome (concurrent control groups and adjustment for potential confounders)?

Does the evidence provide a complete and balanced viewpoint, "the good, bad, and ugly?"

- Does the study address all of the important options and outcomes?
- Does the study list its limitations?
- Does the study discuss its findings within the context of other previous studies, tacit knowledge, or original expectations?

Was the analysis appropriate (correct use of statistics)?

- Does the study state how the analyses were performed?
- Does the study examine whether the assumptions behind the analytic methods were correct?
- Does the study perform sensitivity analyses to assess the impact of its assumptions?
- Does the study discuss alternative explanations that it was not able to measure (unmeasured confounders)?
- What were the best estimates of the intervention effects? The point estimates generally are the best assessment of the "true" effect.
- How precise were the results? The *p*-values or confidence intervals provide information about whether these estimates of the intervention effect could have been to the result of chance. Often, managerial studies have limited power (i.e., less precision of its estimates) to detect changes. In this situation, the point estimates remain the best assessment of the "true effect." Whether the level of precision is adequate for your decision requires you to weigh the available evidence. In other words, "statistically insignificant" results could still be useful for your decision. Conversely, "statistically significant" results do not mean that these are operationally meaningful, especially if the intervention appears to have a small effect (operationally insignificant effect size).

Is the source credible?

- Who conducted the study? Does the study list any potential conflicts of interest for the investigators?
- Who paid for the study?
- Did any group other than the investigators have the ability to censor or modify the study results?
- Did any group other than the investigators have the ability to censor or modify the study interpretation (conclusions)?

#### Checklist Questions for Qualitative Evidence: Do I Have Accurate Information?

Understanding the Context:

- Is the context of the study adequately described?
- Are the research aims/objectives/questions clearly defined and focused?
- Are the methods used appropriate to the research question?

Understanding the Sample Selection:

- How does the study select its sample? Qualitative studies often use a small, “purposeful” sample. Is this approach clearly presented?
- Is the study sample sufficient to understand the study context and population?
- Was the sampling predetermined, or did it evolve as the fieldwork progressed?
- Who was selected, and why (consider gender, age, ethnicity, marital status, professional role)?
- Is it clear why some participants were not selected?

Understanding the Data Collection Process:

- How were data collected?
- Were data-collection tools pilot tested?
- How were the data recorded, and why (e.g., by tape recording, note taking)?

Assessing the Analysis:

- Who conducted the research and how were they selected?
- Were the researcher’s skills and motives discussed?
- Is it clear how the researcher processed the raw data to arrive at the stated results?
- Were the categories and themes identified in advance or derived from the data?
- Are all data taken into account in the analysis?
- Are responses/experiences compared or contrasted across different groups/individuals/study sites?
- Did more than one person identify themes and code transcripts?
- Did the researcher check to see whether the coding approach was consistent across multiple coders (reliability of the coding)?

Assessing the Validity of Findings:

- How did the researcher assess whether the methods were valid?
- Does the study look for examples that do not fit its findings (counterfactual examples)?
- Did the researcher review the study’s findings with the original subjects to assess the accuracy of the interpretation?

- Does the study present information on the actual data?
- Does the study provide a credible link between the presented data and the stated results?
- Does the study provide a credible link between the stated results and the main conclusions?

#### **STEP 4: ASSESSING THE APPLICABILITY OF INFORMATION**

##### Checklist Questions for Applicable Evidence

- Is the study sample comparable to your population?
- Is the study setting comparable to your organization?
- Is the study context comparable to your organization's environment and market?
- Is the study intervention comparable to your intervention?
- Are the study outcomes comparable to your outcomes of interest?
- Is the time frame of the study outcomes comparable to the time frame of your outcomes of interest?
- Does the study indicate when the findings are applicable?

#### **STEP 5: ASSESSING THE ACTIONABILITY OF INFORMATION**

##### Checklist Questions for Actionable Evidence

- Is there information on what needs to be done?
- Are there examples of best practices?
  - Is there information on a complete set of relevant implications, including costs, user perceptions, and impact on revenue?
- Is there information on how to do it?
- Is there a discussion of implementation process?
  - Is there information on who needs to do it?
- Is there information on how to monitor whether it is working?
- Are there measurable indicators?
  - Are these indicators feasible for your organization?

#### **STEP 6: DETERMINING IF THE INFORMATION IS ADEQUATE**

##### **Key Points**

- Given your organization's needs, values, and context, the evidence might indicate that (1) one option is clearly desirable or undesirable; (2) more than one option may be reasonable depending on how the organization values the likely effects (i.e., there are trade-offs); or (3) none of the options have adequate information for the decision.
- If one option is clearly desirable (or undesirable)—that is, it is the dominant strategy given your organization's needs, values, and context—then you have a definitive answer. This situation occurs infrequently.

- If more than one option is reasonable, but each has different strengths and weaknesses, then you may have a series of trade-offs. With these specified options and delineated trade-offs, you can now start your decision-making process.
- If none of the options are reasonable or have adequate information, then you need to decide how important collecting this information would be.
- Often the available research evidence is most useful in specifying and informing the trade-offs associated with the decision option. This approach can help improve the organization's understanding of the underlying question/problem, encourage communication between stakeholders, help managers develop new solutions, or anticipate future effects (enlightenment process).
- Given multiple reasonable options requiring trade-offs, a deliberative process is one useful approach (e.g., Evidence Assessment Process).

### Guides and Checklists

Checklist Questions for Using Evidence: Do I have adequate information for this decision?

#### General

- What are your decision options?
- Do I have a complete list of options?
- What does the available credible evidence indicate about each of your decision options?
- Is there a dominant option? More than one option involving trade-offs? Inadequate information?

#### Single Option: Dominant Strategies

- Is there a single decision option that dominates all of your outcome criteria?
- Is this option always better than the other options with respect to your criteria?
- Is this option always worse than the other options with respect to your criteria?

#### Multiple Options: Trade-offs

- Is there more than one viable option after reviewing the available credible evidence?
- Do these options have different strengths and weaknesses with respect to your outcomes and decision-making criteria?
- What are the trade-offs associated with each option?

#### Uncertain Options: Inadequate Information

- Is there more than one remaining decision option after reviewing the available credible evidence?
- Do these options have uncertain strengths and weaknesses with respect to your outcomes and decision-making criteria?