The evidence-based practice movement raises questions about the continuing viability of research utilization models. This manuscript describes the updated, practitioner-oriented Stetler Model. First developed in 1976 with Marram, it was refined in 1994 with conceptual underpinnings and a set of assumptions. The model has been further refined on the basis of a related utilization-focused integrative review methodology, targeted evidence concepts, and continuing experience through use of the model with clinical nurse specialists. The revised model continues to focus on a series of judgmental activities about the appropriateness, desirability, feasibility, and manner of using research findings in an individual's or group's practice.

The concept of research utilization (RU) emerged in nursing in the early 1970s. Since that time, several RU models have been incorporated into basic research texts and application of such models have been published in nursing journals. In the 1990s a “new” concept, evidence-based practice (EBP), appeared. Its emergence raises questions about the relationship of RU and EBP. Also, with publication of models for evidence-based nursing, the status and relevancy of traditional RU models need to be addressed.

A frequently cited RU model is the Stetler/Marram Model. Now referred to as the Stetler Model, on the basis of a 1994 refinement, this model reflects a practitioner-oriented approach, that has been updated within the context of EBP. This article outlines model refinements, including an expanded set of assumptions, and affirms its core as a critical-thinking process, whether used by an individual or by individuals operating within a group.

BACKGROUND
RU is the process of transforming research knowledge into practice. There are 2 types of research knowledge, specifically, knowledge regarding the products of research and knowledge regarding the process of research. In turn, there are 2 types of RU, specifically, use of research as a set of products and use of research as a set of processes. Use of research products refers to use of research findings, including validated measuring instruments. Use of research-as-a-process refers to use of individual components of the research method for the purpose of routine problem-solving rather than for the conduct of research. Both research products and research-as-a-process come into play in the Stetler Model of RU, but the model's primary focus is use of research findings.

Evidence-Based Practice
Neither evidence nor EPB is uniformly defined. Although many of the emerging nursing-related models for EBP build on practitioner-oriented definitions from medicine, their focus is usually creation of formal change within an organizational setting for groups of nurses and/or interdisciplinary groups. Nursing at Baystate Medical Center developed an EBP model that de-emphasizes practice based on tradition and instead stresses use of research findings as well as other sources of credible information or data. Other sources include reliable, verifiable data from quality improvement, operational, or evaluation projects; consensus of national or local experts; and affirmed clinical experience. Stetler has clarified this EBP model by further differentiating external and internal evidence. External evidence refers primarily to research findings but also includes consensus of national experts. Internal evidence refers to the aforementioned “other sources of credible information or data.” The credibility of the latter data is enhanced through use of research-as-a-process.

Although the terminology of evidence was adopted, this nursing department's goal was to enhance use of research—both as a product and as a process. The Stetler Model and the Stetler approach to use of research-as-a-process provided conceptual underpinnings for this EBP model. Use of evidence to create formal change for groups of practitioners thus was seen as important but so, too, was use by individual nurses as part of critical thinking and reflective practice.

Relationship of Research Utilization and Evidence-Based Practice
The relationship of EBP and RU is somewhat murky in the literature, especially since nursing's long-term efforts with RU are apparently unknown to the medical profession, which is leading the EBP movement. The 2 concepts are not the same, but their integration, as occurred at Baystate Medical Center, provides an enhanced approach to the overall application of research in the service setting. Figure 1 illustrates this relationship, with RU providing the requisite preparatory steps for research-related actions that, when implemented and sustained, result in EBP. In addition, both EBP as defined
\textbf{EVOLUTION OF THE STETLER MODEL}

Unlike other models, the Stetler Model\cite{1,8} was developed as a prescriptive approach that, again, emphasizes the key role of critical thinking in RU. Specifically, this model formulated a series of critical-thinking and decision-making steps designed to facilitate safe and effective use of research findings.

The 1994 version was based on research on the concept of RU and outlined a set of underlying assumptions that clarified the complex and varied nature of RU. It also included a set of applicability criteria that are used to determine the desirability and feasibility of applying a validated study or studies to an identified issue or catalyst. These criteria are \textit{substantiating evidence; current practice,} which relates in part to the extent of the need or desire to change; \textit{fit,} of the substantiated findings for the targeted user(s) and related setting; and \textit{feasibility,} of implementing the substantiated findings. Feasibility involves, first and foremost, assessment of the degree of risk, as compared to the expected benefit of research-based change. Feasibility also includes determination of the availability of needed resources and, if applicable, the cooperation, support, or readiness of stakeholders. Finally, both versions of the model\cite{1,8} contained the term “evidence,” and the 1994 model used concepts currently identified with EBP, eg, strength of findings and a systematic review.

The updated model retains the elements just described but now highlights, as detailed later, the synthesis process and additional concepts of evidence. Other changes in the model include increased specification of the preparatory phase, increased attention to the application and evaluation processes at a group level, and refinement of assumptions on the basis of concepts of evidence and variations in practice. Most refinements to the model are the result of the following:

1. The author’s development, with clinical nurse specialists and other nursing leadership at Baystate, of an in-depth method for utilization-focused integrative reviews.\cite{18}
2. Experience with an alternative model of evaluation\cite{19} for cases in which use is at a group or organizational level.
3. Continuing model experience through use with clinical nurse specialists.\cite{18,20,21}
4. Literature on EBP relative to both individual clinicians and planned organizational change.\cite{22,23}

\textbf{Other changes in the model include increased specification of the preparatory phase, increased attention to the application and evaluation processes at a group level, and refinement of assumptions on the basis of concepts of evidence and variations in practice.}
ASSUMPTIONS AND CONCEPTUAL BASE

The refined set of assumptions underlying the 2001 version is presented in Table 1. As before, a core assumption is that RU is not operationalized only in the form of organizational policies, procedures, or protocols. Rather, research on knowledge utilization and case examples provide evidence of informal use by individual clinicians and managers. Estabrooks has now been listed as an assumption. Although noted in the 1994 narrative, the fact that use can take different forms, often in terms of cognitive changes or enlightenment, has now been listed as an assumption. Estabrooks recently affirmed this multiple use of research findings among a nursing population.

---

**Table 1. Assumptions of the practitioner-oriented Stetler Model of RU**

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The formal organization may or may not be involved in an individual's utilization of research.</td>
<td>Use of research findings can occur informally and routinely at the level of an individual clinician, manager, educator, or other specialist when that individual has relevant competencies and continuously updates his or her knowledge base. Use by individuals can also be directed by the organization through research-based policies, procedures, and additional prescriptive documents or facilitated by organizational education, use of experts, or other strategies.</td>
</tr>
<tr>
<td>2. Utilization may be instrumental, conceptual and/or symbolic.</td>
<td>Use of research findings may be direct and observable or indirect and difficult to identify. Use can change one's way of thinking or influence a direct, observable plan of action. It can be appropriately or inappropriately, be used to persuade others to shift their thinking and behavior.</td>
</tr>
<tr>
<td>3. Other types of evidence and/or nonresearch-related information are likely to be combined with research findings to facilitate decision-making or problem-solving.</td>
<td>Theoretical, experiential, and other forms of information are more likely to be used to supplement research findings than they are to be ignored. Some of this information may take the form of alternative sources of evidence, eg, consensus of national experts (external evidence) or local program data and local consensus per affirmed experience (internal evidence). RU is influenced not only by scientific criteria but also by characteristics of the individual user(s) and the related environment—both local and external to the setting.</td>
</tr>
<tr>
<td>4. Internal and external factors can influence an individual's or group's view and use of evidence.</td>
<td>Findings from research, as well as results from local evaluations, are often expressed in terms of means, standard deviations, or other inferential statistics. Also, at times research explains only &quot;some of the variance.&quot; Such data do not provide unconditional direction for application to all patients in all situations. Targeted individuals' preferences, needs, disease experience, or biologic or cultural status may require reasoned variation from a generally applicable finding.</td>
</tr>
<tr>
<td>5. Research and evaluation provide us with probabilistic information, not absolutes.</td>
<td>Given the complex nature of RU and the often complex nature of practice, the following are essential to effective and safe utilization: knowledge of basic concepts of research; RU knowledge and skills, including use of prescriptive models and utilization-focused appraisal/synthesis; EBP knowledge and skills, including use of EBP models and tables of evidence; knowledge and interpretive skills regarding inferential statistics and the applicability of findings at the individual level, including appropriate vs inappropriate variation; knowledge of the substantive area under consideration; and critical-thinking skills.</td>
</tr>
<tr>
<td>6. Lack of knowledge and skills pertaining to research utilization and EBP can inhibit appropriate and effective use.</td>
<td>Other individuals may be the target of application, such as staff nurses, managers, students, families, administrators, etc.</td>
</tr>
</tbody>
</table>

---

**RU [research utilization] is the process of transforming research knowledge into practice.**

Two other key assumptions relate to the observation that RU is not an activity that necessarily results in the use purely of research findings or even in commonly perceived research results:

- **Assumption No. 3** is a refinement, per the language of evidence, of the original statement that “experiential and theoretical information are more likely to be combined with research information than they are to be ignored.” Available research often does not completely answer relevant questions. Thus, research-related decisions may be made on the basis of a compilation of evidence, including consensus, as well as other information, such as a conceptual framework.

- **Assumption No. 4** (see Table 1) converts the 1994 version’s narrative discussion of environmental inputs and internal throughputs into an added assumption, ie, that factors external to available science can influence utilization decisions. Such factors include an individual’s knowledge, attitudes, and adopter style, as well as environmental and organizational characteristics. A related factor is that research findings are interpreted, and such interpretations are not free from the “documented wide range of weaknesses and flaws in unaided human thought processes.” This is true whether the user is an individual, group, or organization. The next assumption in Table 1, regarding probabilistic information, relates to the necessity of determining the applicability of generalized findings or related recommendations to an individual patient, staff member, or other target of use. As noted in the 1994 version, “Specific intervention characteris-
tics are most often not viewed as determining outcomes but rather as affecting the probability of specific effects.\textsuperscript{28} Two refinements to this assumption are as follows:

- The concept of appropriate, versus inappropriate, variation is introduced. Not all variation in practice from a general research finding is inappropriate; rather, it can indicate reasoned individualization. Appropriate variation is made on the basis of pragmatic reporting by the researcher and skillful reading by the potential user of exclusion criteria and data regarding standard deviations, confidence intervals, or reports of outliers or clinically significant subgroups. Appropriate variation also is made on the basis of the application of findings and related qualifiers\textsuperscript{18,29} by an RU-competent practitioner who understands the need to assess a target’s preferences,\textsuperscript{30} issues of risk versus benefit, and other relevant conditions.\textsuperscript{8} The bottom line of RU, given this assumption, is the application of findings to individual patients, staff members, or other targets through a critical-thinking process. Without such thinking, application of research can become a mechanistic, unthinking task that sometimes leads to inappropriate practice.

- The term “evaluation” is included in the probabilistic information assumption to remind users that internal data, eg, from an RU pilot, usually are derived on the basis of a sample of targeted individuals or units and must be treated with the same caution as research findings.

The final assumption, as with the 1994 version, states the requirement that users of the model have a certain level of competency\textsuperscript{15} or the support of individuals with such competencies. Competencies directly relevant to EBP have been added.

MODEL REFINEMENTS

The 1994 model is provided in Figure 2 for comparison. Those unfamiliar with that version\textsuperscript{8} may find a review helpful because all relevant conceptual details and related examples are not repeated in this article.

The refined visual mode (Figures 3A and 3B) has 2 sections rather than 1. The first is the traditional graphic, which now contains 5 rather than 6 phases. The new section contains, per phase, clarifying information and options, parts of which come from the 1994 phase IV and narrative. Once again, individuals or individuals operating as a group can use the model, and all phases apply to both sets of users. However, specific content within some phases, especially phase IV, now provides alternatives clearly applicable to planned organizational use. There also are certain decisions that are now generically made as the user moves through the model. For example, although highlighted in phase III, the concept of fit is addressed more clearly on multiple occasions.

Phase I Refinements

Initiating RU should be a “conscious, critical thinking process.”\textsuperscript{8} The preparatory phase, therefore, is more specific about the need for clarity of purpose and potential significance of internal or external factors. It reminds the user to consider, upfront, the following:

- External, environmental factors that can influence potential application, eg, politics, an imposed deadline, or the prioritized goals of the organization.

- Internal, personal factors that can diminish objectivity, eg, personal beliefs or the intuitive appeal of new interventions. The model now directs users to be conscious of the types of research\textsuperscript{18} to be sought and selected for review. For example, users need to consider whether a specific type of catalyst or specific stakeholders demand use of only experimental research. More likely, for a nursing-related problem, a mix of research will provide valuable insights, at times along with other types of information such as consensus guidelines. In any case, users should clearly differentiate the sources of relevant information identified in a literature search and select appropriately.

Phase II Refinements

The focus of this phase continues to be a utilization-focused versus traditional research critique of each source of evidence.
In a utilization review, as Brown notes, “unlike critiques you may have done in the past, when seeking research-based answers for clinical questions it is the findings that are appraised not the study per se.”

A major revision to this phase is use of a set of utilization-focused review tables, available in a companion publication. Specifically, reference is made to both a methodologic factor table and a utilization factor table, each with a related set of detailed instructions. These instructions deal with probabilistic meanings and the need to “reflect studied relationships or variables in terms that could pragmatically be used in daily activities.” This includes the need to specify caveats or qualifiers for application. The methodologic factor table makes reference to strength of findings and uses the EBP contribution of strength of evidence tables. The utilization factor table integrates the original “statement of findings” concept for individual studies. Over time, advanced practice nurses can integrate table instructions into their critical-thinking processes. However, groups should complete the review tables for each selected study to enhance the decision process and to facilitate group member involvement and understanding of RU.

**Phase III Refinements**

This phase combines the 1994 phases III and IV. It also integrates the 1994 synthesis concept from phase V to better link with substantiation and supplants the integrative utilization review process initiated in 1994 through reference to the newer, more developed method. The 4 comparative applicability criteria still form the core of this phase. However, the synthesis process now is highlighted because it is often a black box, with critical conceptual processes unspoken and integrative interpretations at times seemingly ungrounded.

It is still possible that experts with a specialized, evolving knowledge base can use a single study, but the likelihood is that multiple studies will be reviewed and their findings synthesized. The model also suggests that users seek already published systematic reviews. These too must be critiqued and supplemented with more recent, additional research.

The detailed tables noted in phase II enable users to identify, organize, and thence integrate information readily across multiple studies. Integration, or the “art” of synthesis, ie, the process of organizing, condensing, and deriving meaning from collated information, was noted in 1994 but now is more fully explored through the referenced integrated review article.

Part of the utilization decision is articulation of not only the conceptual but also the pragmatic meaning of synthesized findings, in terms of what the research cumulatively tells us about practice. This may be done mentally by an individual expert for his or her own practice, or it can involve a team of individuals making recommendations regarding the implications of
research for a change in practice. Their recommendations may transform synthesized findings into an action plan or general policy statement\textsuperscript{21} and should include relevant qualifiers.\textsuperscript{21}

Once users complete this synthesis of findings, the strength of that accumulated evidence or derived meaning is explicitly judged through reference to an evidence-related table of recommendations.\textsuperscript{18,21} The overall strength of the reviewed evidence will be affected not only by the types and quality of available research, but also by the degree to which other, supplemental types of evidence, such as consensus and local, affirmed experience,\textsuperscript{15} are considered. As in the 1994 model, well-substantiated evidence is a desired goal, but more limited findings and supplemental sources of evidence may be interpreted to meet an identified need. In either case, reviewers now have a language to enable reflection, designation, and sharing of the explicit basis of RU decisions.

The overall nature of the utilization decision—to use, consider use, or to not use—is still a gestalt process made on the basis of both the preponderance/strength of the evidence and the nature of the other applicability criteria. It is important to note the definitions of these utilization terms because they influence phase IV decision-making. To not use means a decision to reject the findings totally, to use means to accept and thereby use the findings immediately, and to consider use means the final decision to apply the findings is delayed until additional information or internal evidence is obtained by the individual or group. A “consider use” decision is likely when, for example, the change is significantly different from current practice, significant risks are involved, and/or findings are of a low strength.\textsuperscript{15} The outcome of the “consider use” decision, after phase IV evaluation, would be to “not use,” “use,” or “use with modification.”

### Phase IV Refinements

The translation/application phase now focuses on the how-to’s of implementation of the synthesized findings or recommendations, including cases in which planned change is required. It starts with confirmation of type, method, and level of use (Figure 3B) and then requires review of the operational details of application. For example, who should do what, when, and how? With some findings and expert individual users, little if any translation is required. For example, the articulated findings may be concrete and easy to implement. On the other hand, research may provide only some of the details required to create a guideline, detailed procedure, policy, or plan of action. As indicated in 1994, users may have to “fill in some of
the blanks”8 with consensus, theoretical information, or expert judgment. In that case, some aspects of the resulting document or action may be research-based, whereas others are not. As a consequence, the model suggests designation of the actual and differential levels of evidence within a set of actions, as well as “a clear understanding of how far from the scientific base the ... (user) ... is going or how much the findings are being ‘adapted,’ rather than adopted.”8

Another aspect of translation/application, when relevant, is development of plans for formal organizational change. Such plans should reflect RU in terms of evidence-based strategies for dissemination of translated findings and facilitation of behavioral change in targeted users.19,22,23,32 A component of these formal change plans is evaluation, and thus the lines between phases IV and V have become blurred.

**Phase V Refinements**

As in the 1994 version, a contingency approach to evaluation is provided, given the fact that use varies according to different levels, types, and methods. An individual clinician still should evaluate his or her application of findings and, if considering use, “obtain additional practical information (through) observation/evaluation, consensus, (or) an action test.”8 However, in the revised model, planned change evaluation relevant to the “use” decision is differentiated from the evaluative implications of a formal “consider use” decision. The latter option requires a pilot test of the findings’ application. Such “consideration” is distinguished from the formal “use” decision. The former may be research-based, whereas others are not. As a consequence, the model suggests designation of the actual and differential levels of evidence within a set of actions, as well as “a clear understanding of how far from the scientific base the ... (user) ... is going or how much the findings are being ‘adapted,’ rather than adopted.”8

The formal “use” decision leads to alternative forms of evaluation. Evaluation might be integrated into routine mechanisms, eg, after evidence-based removal of a skin product or drug from the formulary where alternative products are available and in use. However, an alternative “use” decision, eg, on the basis of strong evidence and a high level of need, might involve a highly complex organizational change. In this case, formal evaluative data are needed but become part of the process of a goal-directed, iterative implementation and a dynamic evaluation.15,19 This involves a deliberate, systematic, and continuous evaluation process, during which internal evidence is identified, collected, fed back to users, and used to enhance application of translated findings. Multiple refinements in the implementation plan or the translation products may be needed over time to obtain continuous, unit-to-unit improvement and ultimate achievement of the targeted organizational goal.

With either formal approach to RU evaluation, the model now notes 2 types of evaluative information. First, formative data are needed to provide information on the integrity of the innovation, ie, whether the findings are in fact being used as intended. Then, summative data are needed to assess outcome or goal achievement.15 RU-as-a-process provides direction to these evaluative efforts. Lastly, formal evaluation requires adherence to an organization’s standards for approval for such RU activity. Some organizations require only administrative approval, whereas others might see any formal evaluation as an issue for an Institutional Review Board.

**SUMMARY**

Kim34 categorized the Stetler Model as an individual assimilation model because of its individual practitioner focus. The model now provides more explicit direction both for individuals and for individuals operating within groups responsible for RU/EBP. This direction, as before, is in the form of a series of critical-thinking steps designed to buffer the potential barriers to objective, appropriate, and effective utilization of research findings.

The 2001 version of the Stetler Model of RU describes its relationship to EBP. The term “evidence” was actually incorporated into the model in 1976, and related concepts were described in 1994. Now, the term and concepts of evidence have been fully integrated, and the RU model can be said to facilitate EBP.

The enthusiasm and feedback of many clinical nurse specialists and other nursing leaders made this revision possible. The editorial input of Kristina Engstrom was also invaluable.■

**REFERENCES**


Availability of Journal Back Issues

As a service to our subscribers, copies of back issues of Nursing Outlook for the preceding 5 years are maintained and are available for purchase from Mosby until inventory is depleted. Please write to Mosby, Subscription Customer Service, 6277 Sea Harbor Dr, Orlando, FL 32877, or call 800-654-2452 or 407-345-4000 for information on availability of particular issues and prices. If unavailable from the publisher, photocopies of complete issues are available from Bell & Howell Information and Learning, 300 N Zeeb Rd, Ann Arbor, MI 48106-1346, (734) 761-4700.