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Implementation and Refinement of a Research Utilization Course for Oncology Nurses

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Purpose/Objectives: To describe the implementation and refinement of a yearly research utilization (RU) course for oncology nurses.

Design: Formative program evaluation.

Sample: 22 oncology nurses selected based on competitively reviewed project proposals.

Methods: The one-day RU course was held five times prior to the annual fall Oncology Nursing Society conference. The course consisted of brief didactic sessions on RU, project presentations by participants, faculty reviews, and discussions of practical issues related to project implementation.

Main Research Variables: Course content, usefulness of course components.

Findings: Based on immediate postcourse, 6-month, and 12-month feedback, refinements were made to the course. A major change (in year three) was the addition of a "preparation packet," which contained resources about RU and directed students to accomplish specific precourse goals, and access to a faculty mentor. Evaluation scores were good to outstanding for the content and usefulness of the course presentations, critiques by faculty, and discussion sessions. Interviews with participants indicated that a majority completed or were working on their projects within four years of completing the course.

Conclusions: RU and some of its components (pursuing a literature search, making a practice change) are not processes that most nurses are familiar with, but these processes can be taught to nurses with focused clinical concerns.

Implications for Nursing: An RU course with a low faculty-to-student ratio, adequate course materials, and systematic instruction can lead to research-based changes in practice.

Key Points . . .

- ➤ Applying research findings to current work settings is not a simple accomplishment for nurses.
- ➤ A course with a low faculty-to-student ratio can assist nurses in implementing research-based practice changes.
- ➤ Pursuing a literature search may be a daunting task for most nurses.
- ➤ Practical information about implementing and maintaining changes in clinical settings can aid nurses in successful completion of evidence-based practice changes.

Research-based findings do not always make it to the patient's bedside. For example, the diffusion of pain management research into oncology nursing practice still has not occurred in many settings (Dooks, 2001; Hollen, Hollen, & Stolte, 2000; McMillan, Tittle, Hagan, & Laughlin, 2000; Weissman, Griffie, Gordon, & Dahl, 1997). Once changes based on research are implemented, they may not be maintained over time (DuPen et al., 2000; Howell, Butler, Vincent, Watt-Watson, & Stearns, 2000). Recently, awareness of substantial variations in practice and gaps in treatment (Krumholz & Herrin, 2000) has led to multidisciplinary interest in evidence-based practice (EBP), a movement that began outside the United States. Several iterations of definitions for EBP exist, but its essence is care delivery that is based on knowledge that integrates current best scientific evidence with practitioner expertise (Madigan, 1998). Skills required in EBP include literature retrieval (usually from computerized databases such as MEDLINE® and CINAHL®), appraisal and critique of studies, "sophisticated techniques to synthesize information" (Jennings & Loan, 2001, p. 121), and application of findings to changes in clinical practice. The outcome from EBP is enhanced clinical decision making.

Although definitions of evidence-based medicine include knowledge of pathophysiology and patient preferences as pieces of evidence (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996), the emphasis in medicine has been on identifying and appraising studies and synthesizing or translating results into practice changes. In nursing, a movement that preceded EBP was research utilization (RU) (Barnard, 1986; Cronenwett, 1995; Donaldson, 1992; Funk, Tornquist, & Champagne, 1989; Horsley, Crane, Crabtree, & Wood, 1983; Rutledge & Donaldson, 1995; Stetler, 1994; Titler et al., 1994). RU involves the use of scientifically based knowledge in nursing practice. It differs from the conduct of research. The systematic RU process incorporates components of planned change. Pertinent findings from research studies are translated into a practice protocol (standards of care), which then is implemented and evaluated (Rutledge, 1995). Although RU focuses on research as its principal source of knowledge, EBP in nursing uses knowledge from wider sources

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such as clinical expertise, scientific principles, theory, pathophysiology and psychosocial theories, and patient preferences (Rutledge, 2002; Titler, Mentes, Rakel, Abbott, & Baumler, 1999). Some have narrowly labeled research as only randomized clinical trials (RCTs) (Long & Harrison, 1996; Robinson, 1995). However, evaluating only RCTs negates the importance of using other evidence to change the way that people and events are considered (Sandelowski, 1997) and restricts the utility of EBP in nursing. In fact, although nurses are conducting more clinical trials now than in the past, nursing's scientific tradition builds knowledge for practice through the results of descriptive, correlational, experimental, and qualitative studies.

Although the value of using research in nursing practice is espoused, huge variability exists among healthcare organizations as to actual implementation of research-based practices and protocols. A survey of 1,100 oncology nurses found that when nurses were aware of specific research-based findings, they were likely to adopt them (Rutledge, Greene, Mooney, Nail, & Ropka, 1996). Barriers to RU reported by these nurses included characteristics of the nurse, the organization or work environment, the practice change, and the communication of research findings (Rutledge, Ropka, Greene, Nail, & Mooney, 1998). For oncology staff nurses, barriers rated highest tended to be organizational (e.g., lack of time to read research, other staff not supportive of implementation) or with the research communication (e.g., statistical analyses not understandable, relevant literature not in one place). For nurse managers and advanced practice nurses, the highest barriers tended to be with the nurse adopter (not seeing the value of research for practice, not capable of evaluating the quality of research) or the organization (Rutledge et al., 1998).

As with any planned change, a systematic approach to EBP or RU is likely to enhance the effectiveness of outcomes. Educational deficits have been found among nurse clinicians related to using research in practice (Walczak, McGuire, Haisfield, & Beezley, 1994). The current study's authors determined that among abstracts accepted for the 1996 Oncology Nursing Society (ONS) Congress that described RU projects, 27% failed to use an identifiable systematic approach or model to guide the process. Of abstracts describing the 30 EBP projects that were accepted for presentation at the 2002 ONS Congress, 47% failed to mention systematically searching the literature and 16% did not evaluate clinical outcomes. Most projects in 2002 used an EBP or quality improvement framework, with only two calling their projects "RU." Educational efforts have been successful in assisting nurses in using research findings (Rosswurm & Larrabee, 1999; Rutledge & Donaldson, 1995). However, difficulties in finding and synthesizing the research base for practices in oncology nursing have not been addressed.

The Oncology Nursing Society–National Cancer Institute Short Course Grant

Course Focused on Research Utilization

In 1996, the authors proposed offering an RU Short Course modeled after the very successful Research Short Course that had been offered concurrently with the ONS Congress since 1985. The RU course was designed to assist nurses in the systematic application of research findings in a particular practice setting. It preceded the yearly ONS Fall Institute (now called the ONS Institutes of Learning). Specific efforts were made to address many of the barriers to RU that had been found in the earlier survey of oncology nurses (Rutledge et al., 1998).

Overall aims of the course: The RU course was developed to assist in expanding the scientific foundation for the nursing care of individuals with cancer. Specifically, a goal of the course was to evaluate the systematic process of research knowledge utilization in competitively selected papers describing specific projects for the application of research findings to the care of patients with cancer.

Course content: The one-day course brought together nurses proposing research-based practice changes involving patients with cancer and faculty experts in RU methodology. In the course, didactic content included information about RU models and techniques of computerized database searching. Each course participant presented the proposed project, and a discussion of project strengths and weaknesses by two faculty members followed. Figure 1 shows selected project topics submitted by participants. The majority of projects related to symptom assessment and management, whereas fewer dealt with care delivery and technology issues.

Course implementation: Initially, applicants submitted a five-page abstract of their proposed project in the summer before the fall course (see Figure 2 for the guidelines). Projects could be proposed or already in progress but not completed. Applicants had to assume major responsibility for the project. After being accepted to the course, students submitted a 12-page or less "update" of the proposal about one month ahead of the course. At the course, each participant was allotted 25 minutes to present his or her proposed project.

- Improving cancer care through research utilization: Implementing disease management for oncologic care
- Defining, supporting, and defending the role of the radiation oncology nurse
- Development of a research utilization program in a cancer research and treatment center
- Blood sampling from a venous access device
- Development of a nursing policy and procedure for management of venous access device occlusions
- Developing a standard of care for the assessment and management of fatigue in oncology patients in an ambulatory setting
- An oral mucositis prevention/treatment protocol for blood and marrow stem cell transplantation: A research utilization project
- Utilization of nursing interventions for breathlessness in the postsurgical ambulatory patient with lung cancer
- Use of a verbal pain scale to improve the assessment of pain in outpatient oncology care
- Development of a research-based practice for the management of dyspnea
- Assessment and management of cancer-related fatigue
- Standardizing screening for fatigue in oncology patients who are receiving chemotherapy
- Best practice in the palliative care setting: Dyspnea
- Prevention protocol for opioid-induced constipation in patients with cancer
- Implementation of a multidimensional pediatric pain assessment tool
- Development of a protocol for the management of pain with mucositis secondary to high-dose chemotherapy
- Care of patients with radiation-induced skin alteration
- Establishing safe and cost-effective neutropenic precautions

Figure 1. Select Topics Submitted for the Research Utilization Short Course

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- Title of project
- The clinical problem that led to the research utilization project
- Specific aims of the research utilization project and desired outcomes
- The research utilization and knowledge framework or model being used for the project
- A critical review of background literature related to the problem, process, and outcomes
- Project plan (organizational or individual, who will be implementing what parts of the research utilization process, estimated time lines, procedures to be followed during implementation, evaluation plan)
- Significance to cancer nursing and quality cancer care
- Appendix could include reference list of cited publications; letters of support from faculty sponsors or advisors, when appropriate; and any pertinent prior work such as abstracts, publications, and newsletter articles.

Figure 2. Contents of the Five-Page Project Narrative (Years One Through Two)

The faculty was chosen from doctorally prepared oncology nurses in clinical or educational settings. All had an expressed interest or had known expertise in the RU process. Course faculty evaluated submitted proposals in a blind review process (Figure 3 contains the review criteria) and assisted in the process of choosing selected participants. Once participants were chosen, proposals were assigned to specific faculty for critical evaluation either as primary or secondary reviewers. At the RU course, faculty serving as reviewers presented a 25-minute review of strengths and weaknesses of the proposed project. Following the course, primary and secondary reviewers sent a written discussion paper to participants and course codirectors within one week of the course.

Throughout the day of the course, director-led discussions brought out themes and similarities across projects (e.g., difficulties gaining access to literature) and emphasized practical ideas about implementation and evaluation of proposed practice changes. Aims of these discussions were to

1. Clarify imprecise points regarding the RU project.
2. Assist participants in strengthening projects by suggesting tightened-up processes such as the literature review, protocol development, implementation plan, and evaluation.
3. Review methods for critiquing and synthesizing literature.
4. Engender practical ideas from the group regarding feasible ways to increase the likelihood that the proposed practice change would occur and be maintained over time.

- Patient care problem described clearly and concisely, with a statement of purpose
- Relevance to cancer nursing explicitly addressed
- Specific knowledge, research utilization framework, or model to be used identified and discussed
- Literature search strategies described
- Inclusion of criteria to be used in evaluating the scientific merit of the literature and plan for evaluating clinical applicability or feasibility of the literature
- Plans for synthesis of the nursing and health literature findings discussed
- Inclusion of plan for implementation, including identification of key players or stakeholders, approval processes, resource utilization, education of staff and others, time lines, and maintenance strategies
- Inclusion of evaluation plan for both process (compliance) and clinical outcome criteria

Figure 3. Review Criteria for Research Utilization Course Applications

Incentives for participants: To reward clinicians who participated, incentives included feedback from faculty experts, payment of all travel expenses, a four-day per diem for lodging and meals, and registration for the ONS Fall Institute (or Institutes of Learning). Because busy clinicians may find that writing proposals is difficult, the requirements for the course application minimized busy work and emphasized utility (e.g., participants were encouraged to use existing institutional data to document the need for a practice change).

Course Refinement

In response to the yearly evaluations and ongoing communication with previous students, the authors continually tried to improve the course. Based on the applications from the first year, a one-hour didactic class about RU as a component of knowledge utilization was added in the morning to give the class a broad perspective. Faculty also described key components of several major RU models, giving participants exposure to more than one RU framework.

Comments in evaluations from the first year expressed the importance of breaking the ice between students and faculty. Thus, an annual reception was held the evening before the class for faculty, participants, and ONS leadership who were on-site for Fall Institute or Institutes of Learning activities. Participants stated that this encounter with the faculty made the next day much easier. Each year, the authors held this night-before reception and made a point to decrease participants' anxiety levels and address their initial concerns about presentations and other factors.

The first year's marketing efforts for participants brought a limited response. This was attributed to the novelty of the course, and the authors believed that this problem would be alleviated in future years. Additional marketing efforts for the next four years increased the potential pool slightly. The application process for the course requires a beginning understanding of the RU process. After talking with the students and other advanced practice nurses, the authors believe that this systematic process is not yet common in practice. Nurses are beginning to understand the important of using research-based evidence, but their inexperience and, sometimes, the lack of administrators' appreciation for RU's potential may be barriers to applying to a course such as this.

From 1999–2001, the authors also included a participant from a prior course who presented his or her completed or ongoing project to the participants. Discussion focused on how the past participant dealt with barriers or setbacks during the project. This modeling of success was well received by the participants and assisted them to better prepare for introducing practice changes into their own clinical settings.

After the course was presented for the third year in 1999, the authors decided that several problems merited major changes in what was expected from the participants. One problem was the inherent difficulty of performing an adequate literature search when trying to plan a research-based practice change. The inability to complete the project because of the overwhelming nature of implementing change or lack of support from the work site also was noted. In a meeting following the 1999 course, faculty and directors brainstormed about what to do to address these problems.

Table 1 describes specific changes made to the course and the rationale behind each change. To assist with the literature search, students were offered the resources of the ONS librarian and a

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Table 1. Rationale for Changes Made to the Course in 2000

Change	Rationale
Data or anecdotal evidence documenting a clinical problem	If participants sought change for a documented problem, their efforts would be more successful.
Applications required a letter of support from at least one immediate supervisor or team member in a nonequivalent position to the applicant.	If institutional support was sought and documented, projects were more likely to be supported and carried out.
A signed contract from accepted participants indicated that they agreed to complete several outcomes between the acceptance date (late August or early September) and six weeks after (mid-October). Outcome activities (minimal) included 1. A literature search of at least one major concept, list of terms searched and databases used, list of years searched, critique tool used, and a table of evidence with a minimum of three manuscripts described 2. A list of project team members and dates of meetings 3. A beginning table of implementation strategies 4. A description of pilot test of intervention (e.g., What unit? How many and what type of patients? Actions needed to get pilot off the ground).	A need existed to specify the expected outcomes of the course and to assist participants in focusing on these.
A packet of information was sent to accepted participants. This included articles describing several research utilization models, tools for literature critique, examples of tables of evidence, examples of tables of implementation, and published examples of research utilization projects.	A packet of information could help students gain specific knowledge needed to do research utilization.
Accepted participants were paired with a designated faculty mentor for a "directed" six-week precourse experience.	Offering an optional experience with faculty guidance might help participants focus their efforts before the course.
Participants were encouraged to use the resources of the Oncology Nursing Society librarian for computerized database searching.	Literature searching for some past participants had been a barrier because of a lack of library or librarian resources.

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packet that included information about searching the literature was mailed to them. To address the ability of participants to complete the project, a required letter of support from a coparticipant or immediate supervisor also was required. To assist participants in getting off to a good start, as part of the application process, a contract was designed that specified outcomes that were to be completed prior to attending the one-day course. Participants also could speak with a faculty mentor who was available as a resource for six weeks prior to the course. The class size was maintained at five students based on the need for high faculty-to-student ratios during the class itself and to fully integrate the new six-week mentorship process.

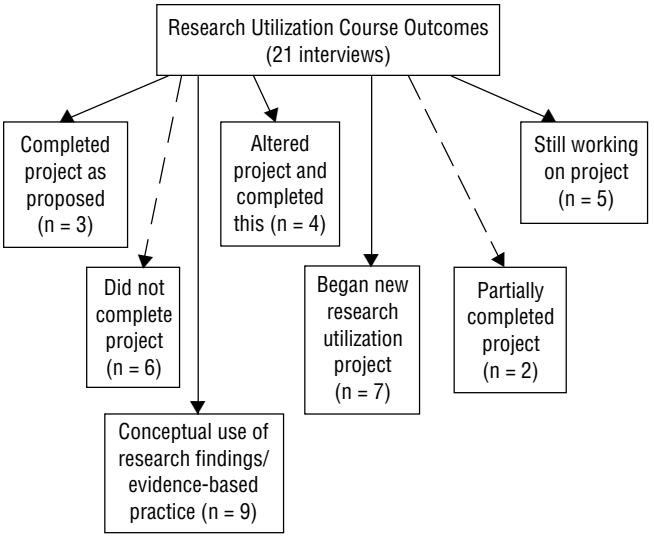
Course Evaluation

From 1997–2001, 22 nurses participated as students, all but one from clinical settings. The majority of participants (57%) were master's prepared oncology nurses with either a clinical specialist or nurse practitioner focus. The rest of the participants included one doctorally prepared nurse educator, one doctorally prepared nurse researcher, and eight participants who were not master's prepared.

Evaluation of the course came from immediate postcourse feedback, 6- and 12-month feedback, and telephone interviews with participants conducted in spring and summer 2002. Feedback from immediate postcourse evaluations remained fairly constant over the five years. Faculty and participants rated the course from 1 (minimal) to 5 (outstanding) as good to outstanding for content and usefulness of course presentations, critiques by faculty, and discussion sessions. Several participants noted that they believed that the small size of the course was a strength. Subsequent to course changes made following the 1999 course, participants in the 2000 and 2001 courses indicated high scores for the precourse mentored experience with a designated faculty person ($\overline{X}$ = 5.0 in 2000, 4.3 in 2001) and the preparation packet ($\overline{X}$ = 5.0 in 2000, 4.5 in 2001). The course format itself was evaluated highly ($\overline{X}$ [first 3 years] = 4.45), especially the last two years of the course ($\overline{X}$ = 5.0). Participants and faculty unanimously supported the continuation of the course in the future.

During spring 2002, calls to past participants in the course led to a better understanding of course outcomes. Figure 4 displays the potential outcomes related to the original proposed RU project. Participant-identified barriers to project completion predominately related to lack of support in the clinical environment, including staffing changes, lack of administration support, increases in patient loads or acuity, competing time commitments, and the difficulties of "unlearning" for staff involved in the practice change. Job changes by participants also were identified as reasons that projects were not completed. Facilitators identified were institutional and peer support, multidisciplinary support, nursing research department in work setting, autonomy in role, knowledge gained by the course, and resources gained from the course.

One-third of past participants already had begun new RU projects. Two of these nurses had completed the original and a new RU project and had a third project under way. Of the past participants who were contacted, nine directly mentioned using research-based findings in their thinking about patient care, which is referred to as conceptual use of research (Stetler, 1994), or using EBP as a practice model for care delivery. Five RU course students have published papers about their projects, the literature review for their projects, or the RU models that they have introduced at their cancer centers (Brown & Yoder, 2002; Payne, 2002; Robinson et al., 2000; Rummel, Donnelly, & Fortenbaugh, 2001; Wilson, 2002). Two students have presented their projects at the annual ONS Congress (Brown, 2002; Payne, 2001), and another student reported that a physician colleague on her team presented the fatigue tool that they developed from the research review at an



Note. One participant determined the research base for her project to be inadequate and turned her idea into a research project, for which she received internal funding from her work setting. Of the nurses who did not complete a project, two went on medical disability, three left their positions, and one worked on a unit that was restructured, altering her job responsibilities.

Figure 4. Potential Outcomes Related to Proposed Research Utilization Project

American Society of Clinical Oncology meeting. One student became a work team member involved in implementing the ONS Evidence-Based Practice Online Resource Center (http://onsopcontent.ons.org/toolkits/ebp/index.htm). In addition, three students went on to participate in research studies when they discovered that research findings were not available to address a clinical problem.

Discussion

As was stated in the grant application to the National Cancer Institute, effective RU is not a simple accomplishment. Each year, the authors learned a lot from the proposals submitted by ONS nurses. The major learnings are synthesized in the following paragraphs.

A nurse's initial success in implementing an RU project can lead to future use of research findings, both conceptual (e.g., as a way of thinking) or instrumental (e.g., changes in policies or procedures) (Stetler, 1994). This demonstrates the success of the RU course to affect research use by clinicians on an ongoing basis. Also, the course led to participants' enhanced confidence in understanding of RU as shown by the multiple presentations, publications, and other ways of disseminating knowledge. Barriers to success seemed to be related mostly to the context in which the change was being implemented, a component now identified as essential in EBP (McCormack et al., 2002). Nursing managers and administrators need to provide a supportive environment because even the best-designed research-based protocols cannot be implemented in settings with too much chaos or lack of support and resources.

RU is hard to market. In the initial grant proposal, the authors had letters of support for the RU course from most of the nurse executives at the National Cancer Institute-delegated council and comprehensive cancer centers. However, a small number of students came from these settings. Despite mass media broadcasting (e.g., flyers to select ONS Special Interest Groups, ONS Chapter presidents, and deans of schools of nursing; flyers in ONS Congress packets; announcements on the ONS Web site; *ONS News* articles; half-page advertisements in the *Oncology Nursing Forum*; visits to Special Interest Groups at Congress by course directors; personal invitations; calls to directors of nursing research in clinical settings), the authors did not receive the number of applications for the course that they had hoped to get. The authors believe that the current EBP environment will enhance the receptivity of nurses and their administrators to the value of having research-based practice. The authors also believe that every participant from the RU Short Course will become a role model and have a positive effect within his or her own environment, raising awareness about RU and EBP.

Nurses do not have a good grasp of what RU is and do not know about different models of RU, such as Stetler's model, the Conduct of Research Utilization in Nursing, and the Iowa Model. Although RU may be a component of baccalaureate education, the students (all but one of whom had a baccalaureate degree in nursing) tended to have a limited understanding of how the models worked. Every year, at least 30–45 minutes were spent at the beginning of the course discussing the different models to familiarize participants with their similarities and differences. Content about the models also was added to the introductory course packet. Evaluations indicated that this didactic content was valuable to most participants.

Pursuing a literature search may be a daunting task for most nurses. Some nurses could not focus their computerized database searches (finding thousands of "hits," which led to printouts of reams of paper) and some focused too much (finding three to four articles for problem areas that should have had many more). The addition of the preparation packet to the course helped many participants to approach their literature searches systematically and aided to their success in identifying the scientific basis for a proposed practice change.

Many nurses are naive about the process of making practice changes. Despite some knowledge about change theory, many of the nurses lacked practical information about implementing and maintaining innovations in clinical settings. They were enthusiastic until they met their first organizational barrier; rather than expecting barriers and working the project around them, they were stopped. However, framing practice changes in an RU model aided these participants to systematically plan to make research-based changes.

Most nurses attending this course were anxious about having to present their projects in front of doctorally prepared faculty. Each year, several participants commented that they anticipated that giving the project presentations would be stressful because of the nature (e.g., doctorally prepared, nationally known) of the faculty and director audience. Intervening with the precourse reception assisted in lowering participants' anxiety.

Conclusion

This national RU course has been successful in expanding the scientific foundation for the nursing care of individuals with cancer. A number of barriers remain that must be overcome to

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successfully implement RU into clinical oncology practices. Two important barriers that have been identified while offering this program include a lack of mainstream adoption of RU as an everyday component of oncology clinical care and a lack of organizational support for nurses who endeavor to implement RU changes. However, despite limited backgrounds in the process of designing RU projects, several participants have been able to carry out successful practice innovations. They have published or presented these projects and have gone on to begin new RU projects. Thus, a successful participant experience increased confidence and skill and formed the foundation for a commitment to RU in the future. This, after all, is the ultimate goal: that individuals with cancer will benefit from the new knowledge generated by research.

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- ONS Evidence-Based Practice Resource Area
  http://onsopcontent.ons.org/toolkits/ebp/index.htm
- New York University Nursing Tutorial: Research Utilization and Evidence-Based Practice
  www.nyu.edu/library/bobst/info/instruct/Nursing/researchutlization.htm

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