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Implementation of Clinical Practice Guidelines
FINDING THE EVIDENCE

You bring up your Web browser and go to your favorite search engine, Google.com. You enter the term “practice guidelines,” and the first item on the results list is “National Guideline Clearinghouse” at http://www.guideline.gov/. This looks promising because the server is sponsored by the Agency for Healthcare Research and Quality (AHRQ), a US government agency formerly known as the Agency for Health Care Policy and Research (AHCPR), which, you recall, created a series of guidelines using formal evidence-based guidelines methodology.1

After linking to the Clearinghouse, you enter the terms “falls,” “prevention,” and “elderly” in the search box, which yields 16 guidelines. The fourth one on the list seems promising: “Guidelines for the prevention of falls in people over 65.” The guideline is summarized on the Clearinghouse site and has been published in the peer-reviewed literature.2 You click on “Complete Summary” and print the text that appears. You also note that the guideline summary is linked to the full text of the article in BMJ, so you link there and print the entire article. You look forward to reading the material, although with some concern, because you are aware that some guidelines are poorly constructed.3,4

In this chapter, we focus on evaluating and implementing clinical practice guidelines. Practice guidelines, or “systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances,”5 represent an attempt to distill a large body of health care knowledge into a convenient, readily usable format.6-10 Like systematic reviews, practice guidelines gather, appraise, and combine evidence. Guidelines, however, go beyond systematic reviews in attempting to address all the issues relevant to a clinical decision and all the values that could sway

CLINICAL SCENARIO

Preventing Falls in the Elderly: Can a Clinical Practice Guideline Help?

You are a nurse manager in the local health department in a community where many seniors live. You have recently been assigned to a new program that focuses on healthy aging in the community. You have a team of enthusiastic public health nurses who have many years of experience in working with the elderly. You have been meeting with these nurses regularly to review the existing services they provide and to identify unmet health care needs in this population. The nurses are concerned about the number of falls that occur among elderly clients and share their frustration about whether they are doing enough to prevent falls. Your team agrees that prevention of falls in this population is a high priority. Various interventions are suggested at the meeting, such as in-home assessment of risk of falls, exercise programs for the general elderly population, and targeted exercise and balance interventions. The team is unsure about how to proceed. One of the nurses notes that a number of nursing organizations have recently become involved in the development of best practice guidelines and wonders whether a guideline exists on prevention of falls in the elderly. You volunteer to find out.
a clinical recommendation. Guidelines refine clinical questions and balance trade-offs between benefits and risks. Guidelines make explicit recommendations, often on behalf of health organizations, with a definite intent to influence what clinicians do.

Guideline development can include up to eight steps (Figure 10-1). In step 1, guideline developers select a topic and frame a well-developed decision-making question. In step 2, they search appropriate databases for existing guidelines that address the clinical problem; if they locate a suitable guideline, they update it with a literature review; if they do not find a suitable guideline, they conduct an explicit and systematic search

of the original literature to create a guideline. In this case, priority is given to locating high-quality systematic reviews. In step 3, the guideline developers document the consensus process they used to ratify the evidence-based recommendations. During step 4, the guideline is formulated with consideration of clinical modulating factors (e.g., reconciling desirability to maintain conventional practice with strength of guideline evidence for an alternative practice). Step 5 involves an independent review of the guideline and its recommendations. Steps 6 to 8 focus on the implementation of the guideline in a specific clinical setting and involve (1) consideration of clinical, practical, and administrative constraints that need to be addressed to implement the guideline; (2) formal adoption of the guideline by the sponsoring organization; and (3) scheduling of guideline reviews and updates. Occasionally, one may need to reframe the clinical problem, which feeds back into step 1.

Practice guideline methodology relies on the consensus of a group of decision makers—ideally experts, front-line clinicians, and patients—who carefully consider the evidence and decide on its implications. The guideline developers mandate may be to develop recommendations for a country, region, city, hospital, or clinic. Guidelines based on the same evidence may differ depending on the country (e.g., Philippines or the United States), whether the region is urban or rural, whether the institution is a large teaching hospital or a small community hospital, and whether the clinic serves a poor community or an affluent one. For this reason, however, some people (e.g., the editors of Clinical Evidence; see Chapter 2, Finding the Evidence) believe that we should not provide recommendations, but rather provide only summaries of evidence. They believe that differences in baseline risks, in preferences of individual patients and, in local availability of interventions will always mean that the evidence must be individually interpreted rather than applied universally. For this reason, Clinical Evidence limits itself to the provision of the evidence that readers can use for developing locally applicable clinical practice guidelines.

Thomas and colleagues conducted a systematic review to evaluate the effects of introducing clinical practice guidelines in nursing, midwifery, and other professions allied to medicine. They found 18 studies in which nurses were the targeted professional group and one study aimed solely at dieticians. The behaviors targeted in the studies included management of hypertension, low back pain, and hyperlipidemia. Three of five studies observed improvements in at least some processes of care, and six of eight studies observed improvements in outcomes of care. The reviewers concluded that there is some evidence that guideline-driven care is effective in changing the process and outcome of care provided by nurses.

Practice guidelines can be methodologically strong or weak and thus may yield either valid or invalid recommendations. Numerous instruments for appraising clinical practice guidelines exist. In Table 10-1, we outline our standard approach for using an article from the health care literature that describes a practice guideline. We ask the following questions: (1) Are the results valid? (2) What are the results? and (3) How do the results apply to patient care?

Figure 10-2 presents the steps involved in developing a recommendation, along with the formal strategies for doing so. The first step in clinical decision making is to define
the decision. This involves specifying alternative courses of action and possible outcomes. Often, treatments are designed to prevent or ameliorate outcomes such as pain, pressure ulcers, or urinary incontinence. As usual, we refer to the outcomes that interventions are designed to prevent or ameliorate as target outcomes. Interventions are associated with adverse outcomes such as side effects and inconvenience. In addition, new interventions may markedly increase or decrease costs. Ideally, the definition of the decision will be comprehensive. All reasonable alternatives will be considered, and all possible beneficial and adverse outcomes will be identified. In elderly patients at risk for falls, such as those patients described in the opening scenario, options may include doing nothing, recommending exercise programs or balance training, providing home assessments, or recommending hip protectors. Outcomes may include falls and fractures, increased muscle strength, improved balance, the inconvenience associated with the interventions, and costs to the patient, the health care system, and society.

Decision makers must then evaluate the links between the identified options and outcomes. What will the alternative management strategies yield in terms of benefits and harm?\textsuperscript{13,14} How are potential benefits and risks likely to vary in different groups of patients?\textsuperscript{14,15} Once these questions are answered, making treatment recommendations involves value judgments about the relative desirability or undesirability of possible outcomes. We will use the term preferences synonymously with values or value judgments in referring to the process of trading off positive and negative consequences of alternative management strategies.

Table 10-1 Users’ Guides for an Article Describing Clinical Practice Guidelines

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<tr>
<td>Was there an appropriate specification of values or preferences associated with outcomes?</td>
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<tr>
<td>Is the guideline likely to account for important recent developments?</td>
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<td>Are the recommendations applicable to my patient care?</td>
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**ARE THE RESULTS VALID?**

**Were All Relevant Patient Groups, Management Options, and Possible Outcomes Considered?**

Guidelines pertain to decisions, and decisions involve particular groups of patients, choices for those patients, and the consequences of the choices. Regardless of whether guideline developers are formulating guidelines that apply to prevention, treatment, diagnosis, or rehabilitation, they should specify all relevant patient groups, the interventions of interest, and sensible alternative practices. Treatment recommendations often vary for different subgroups of patients. In particular, those at lower risk for target outcomes are less likely to benefit from the intervention than those who are at higher risk (see Chapter 33, Applying Results to Individual Patients).

Guideline developers must consider not only all relevant patient groups and management options, but also all important outcomes that could be influenced by the management options. Evidence concerning the effects on morbidity, mortality, and quality of life are all relevant to patients, and efficient use of resources dictates attention to costs. Costs can be considered from the perspectives of patients, insurers, the health care system, or society (see Chapter 18, Economic Evaluation). To illustrate, a clinical
practice guideline that makes recommendations regarding pain management must specify the patient groups to whom the recommendations apply (e.g., children, adults, or both; those with acute or chronic pain, or both), the interventions of interest (e.g., inclusion of nontraditional pain control measures), and the outcomes (e.g., pain control, quality of life, and health care costs).

Was an Explicit and Sensible Process Used to Identify, Select, and Combine Evidence?

After the options and outcomes have been specified, the next task for guideline developers is to estimate the likelihood that each outcome will occur. In effect, guideline developers have a series of specific questions. For prevention of falls in the elderly, the initial question is, what is the effect of alternative approaches on the incidence of falls and fractures, quality of life, and health care costs? Guideline recommendations must consolidate and combine all the relevant evidence in an appropriate manner. In carrying out this task, guideline developers must avoid bias that will distort the results. Ideally, they should have access to, or conduct, a systematic review of the evidence bearing on each question. Chapter 9, Summarizing the Evidence Through Systematic Reviews, provides guidelines for assessing the likelihood that collection and summarization of evidence will be free of bias.

Unsystematic approaches to identification and collection of evidence may result in underestimation or, more commonly, overestimation of treatment effects, and side effects may be exaggerated or ignored. Even if the evidence has been identified and collected in a systematic fashion, unsystematic methods of summarizing the collected evidence can result in similar risks of bias. Unsystematic approaches may lead to recommendations advocating harmful interventions or a failure to encourage effective treatment.

Systematic reviews deal with this problem by explicitly stating inclusion and exclusion criteria for evidence to be considered, conducting a comprehensive search for the evidence, and summarizing the results according to explicit rules that include examining how effects may vary in different patient subgroups (see Chapter 9, Summarizing the Evidence Through Systematic Reviews). When a systematic review pools data across studies to provide a quantitative estimate of overall treatment effect, we call it a meta-analysis. Systematic reviews provide strong evidence when the quality of primary study designs is good and sample sizes are large; they provide weaker evidence when study designs are poor and sample sizes are small. Because many of the steps in a systematic review involve judgment (e.g., specifying inclusion and exclusion criteria, applying these criteria to potentially eligible studies, evaluating the methodological quality of primary studies, and selecting an approach to data analysis), systematic reviews are not immune to bias. Nevertheless, in their rigorous approach to identifying and summarizing data, systematic reviews reduce the likelihood of bias in estimating causal links between management options and patient outcomes.

The highest-quality treatment guidelines define admissible evidence, report how it was selected and combined, make key data available for the reader’s review, and report randomized trials that link interventions with outcomes. However, such randomized trials may be unavailable, and the authors of systematic reviews may reasonably abandon their project if there are no high-quality studies to summarize. Persons who produce
guidelines do not have this luxury. For important but ethically, technically, or economically difficult questions, strong scientific evidence may never become available. Because guideline developers must deal with the best (often inadequate) evidence available, they may have to consider various studies (published and unpublished) as well as reports of expert and consumer experience. This means that the strength of the evidence in support of the recommendations can vary widely. Thus, even recommendations that are grounded in rigorous collection and summarization of evidence may yield weak recommendations if the quality of the evidence is poor. Although guideline developers must formulate recommendations, they should be candid about the quality of evidence on which those recommendations are based.

A quality-of-evidence scale can be used to rate different categories of evidence (e.g., research studies or expert opinion) and methods for producing it (e.g., blinded or non-blinded outcome assessment). By applying a systematic approach to the appraisal and classification of evidence, the strength of the evidence in support of the recommendations can be reported.

**Was There an Appropriate Specification of Values or Preferences Associated With Outcomes?**

Linking treatment options with outcomes is largely a question of fact and a matter of science. In contrast, assigning preferences to outcomes is a matter of values. Clinicians should look for information about who was involved in assigning values to outcomes or who, by influencing recommendations, was implicitly involved in assigning values. Expert panels and consensus groups are often used to develop the guideline recommendations. You should review the names and affiliations of the “expert” panel members and bear in mind that panels dominated by members of specialty groups may be subject to intellectual, territorial, and even financial biases. Panels that include a balance of experts in research methodology, practitioners, and public representatives are more likely to have considered diverse views in their deliberations than panels restricted to content experts.

Even with broad representation, the actual process of deliberation can influence recommendations. Therefore, clinicians should look for a report of methods used to synthesize preferences from multiple sources. Informal and unstructured processes may be vulnerable to undue influence by individual panel members, particularly that of the panel chair. Explicit strategies for describing and dealing with dissent among judges, or frank reports of the degree of consensus, strengthen the credibility of the recommendations.

Knowing the extent to which patient preferences were considered is particularly important. Many guideline reports, by their silence on the matter of patient preferences, assume that guideline developers adequately represent patients’ interests. Although these preferences are reported rarely, it also would be valuable to know which principles, such as patient autonomy (a patient’s control over decisions about her health), nonmaleficence (avoiding harm), or distributive justice (the fair distribution of health care resources), were given priority in guiding decisions about the value of alternative interventions. Excellent guidelines will state whether the guideline is intended to optimize values for individual patients, reimbursement agencies, or society as a whole. Ideally, guidelines will state the underlying value judgments on which they are based.
Is the Guideline Likely to Account for Important Recent Developments?

Guidelines often concern controversial health problems about which new knowledge is actively sought in ongoing studies. Because of the time required to assemble and review evidence and to achieve consensus about recommendations, the guideline may be out of date by the time you see it. For example, in light of the recent studies that have shown a negative association between hormone replacement therapy and coronary heart disease,16,17 guidelines about the use of hormone replacement therapy in postmenopausal women are under revision. You should look for two important dates: the publication date of the most recent evidence considered and the date on which the final recommendations were made. Some authorities also identify important studies in progress and new information that could change the guideline. Ideally, these considerations may be used to qualify guidelines as temporary or provisional, to specify dates for expiration or review, or to identify key research priorities. Usually, however, you must scan the bibliography to obtain an impression of how current a particular guideline may be.

Has the Guideline Been Subjected to Peer Review and Testing?

People may interpret evidence differently and their values may differ, and guidelines are subject to both sorts of differences. Your confidence in the validity of a guideline increases if external reviewers have judged the conclusions to be reasonable and if clinicians have found the guidelines to be applicable to practice. If the guidelines differ from those developed by others, you should look for an explanation. Conversely, if the guidelines meet the first four validity criteria (Table 10-1) and the underlying evidence is strong, rejection by, clinicians or peer reviewers may have more to do with their biases than with any limitation of the guidelines.

If the underlying evidence is weak, clinicians’ confidence in the validity of the guideline will be limited, regardless of the degree of consensus or peer review. The weaker the underlying evidence, the greater is the argument for actually testing the guideline to determine whether its application improves patient outcomes. The question for any such test would be, Are patient outcomes better, or are outcomes equivalent at decreased cost, when clinicians operate on the basis of the practice guidelines?

Weingarten and colleagues18 conducted such an investigation to examine the impact of implementation of a practice guideline recommending that low-risk patients admitted to coronary care units receive early discharge. On alternate months over a 1-year period, clinicians either received or did not receive a reminder of the guideline recommendations. During the months in which the intervention was in effect, mean hospital stay was approximately 1 day shorter, and the average cost of stay was about $1000 less. Mortality and health status at 1 month were similar in the two groups. The investigators concluded that the guideline reminder reduced the length of hospital stays and associated costs without adversely affecting measured patient outcomes. Although the authors used alternate-month allocation, which makes the study weaker than a true randomized trial, a study of this type helps to validate the predicted consequences of guideline implementation for defined outcomes.
Using the Guide

The authors of the guidelines for the prevention of falls in people older than 65 years specified the patient group, management options, and outcomes. The patient group consisted of people aged 65 years or older who were living in the community or in residential care; management options included all interventions designed to minimize or prevent exposure to risk factors for falling or fracture that had been evaluated in randomized controlled trials, except drug or dietary treatments for prevention of fractures; and outcomes included the number of people who had fallen or the number of falls or fractures. The authors did not explicitly consider the effects of the interventions on muscle strength, balance, costs, or quality of life. The effect of the intervention on quality of life, for example, would be important to know because elderly people might not be willing to participate in the intervention if it negatively influenced quality of life.

The authors used an explicit and sensible process to identify and select evidence. They updated two previous systematic reviews to identify any new evidence. They searched MEDLINE for all randomized controlled trials and systematic reviews by using the terms “falls,” “accidental falls,” “fracture,” “elderly,” “aged,” “older,” and “senior.” They followed up relevant references in articles and contacted researchers for information about other trial evidence and about studies from journals not catalogued by the National Library of Medicine. The guideline development group assigned a methodology quality score to trials according to the criteria used for the related Cochrane review with the addition of sample size. Evidence statements were graded according to the quality score and sample size. The grade of evidence was based on three categories: A, consistent findings in multiple randomized controlled trials or a meta-analysis; B, single randomized controlled trial or weak inconsistent findings in multiple randomized controlled trials; and C, limited scientific evidence, cohort studies, flawed randomized controlled trials, or panel consensus.

With respect to considering the relative value of different outcomes, members of the development group included two general practitioners, a social worker, a falls prevention researcher, a district nurse, a physician specializing in care of the elderly, a community nurse manager, and a guidelines facilitator. The authors noted that the absence of a physical therapist or exercise specialist in the development group was partly mitigated by their inclusion on the review panel. There did not appear to be a lay representative of the elderly population on the panel. There was little discussion about how patient preferences were considered (e.g., willingness to attend exercise sessions), although the authors did mention that compliance with wearing hip protectors was a problem for patients.

The guideline developers considered the importance of recent developments. They explicitly stated that they had updated two previous reviews to include any new evidence up to March, 1998. The guideline was published in an October 2000 issue of the BMJ; however, the authors stated that because the prevention of falls in older people is an active research area, they recommended that their guidelines be revised by March, 2001.

The authors identified an external review panel, which comprised a public health nurse for the elderly, a physician specializing in care of the elderly, a general practitioner, falls researchers, and an exercise physiologist, to review the guideline. To test the
WHAT ARE THE RESULTS?

Once you are confident that the clinical practice guideline addresses your clinical question and is based on a rigorous up-to-date assessment of the relevant evidence, you can review the recommendations to determine how useful they will be in your patient care.

Were Practical, Clinically Important Recommendations Made?

To be useful, recommendations should give practical, unambiguous advice about a specific health problem. For guidelines about managing health conditions, you should determine whether the intent is to prevent, screen for, diagnose, treat, or palliate the disorder. For guidelines about the appropriate uses of health interventions, the recommendations should include a definition of the intervention and its optimal role in patient management.

To be clinically important, a practice guideline should convince you that the benefits of following the recommendations are worth the expected harms and costs. You should consider both the relative and absolute changes in outcomes. A 25% reduction in the relative risk of death from a disease is more compelling if it involves a reduction in the proportion of deaths from 40 of 100 to 30 of 100 (an absolute risk reduction of 10 in 100) than if it involves a reduction from 4 of 100 to 3 of 100 (an absolute risk reduction of 1 in 100).19

Did the Authors Indicate the Strength of Their Recommendations?

Multiple considerations should inform the strength or grade of recommendations: the quality of the sources contributing to the systematic review or reviews that bring together the relevant evidence, the magnitude and consistency of the intervention effects in different studies, the magnitude of adverse effects, the burden to patients and the health care system, the costs, and the relative value placed on different outcomes. Thus, recommendations may vary from those that rely on evidence from a systematic review of randomized controlled trials that shows large intervention effects on important patient outcomes with minimal side effects, inconvenience, and costs (yielding a strong recommendation) to those that rely on evidence from observational studies showing
a small magnitude of intervention effects with appreciable side effects and costs (yielding a weak recommendation).

**Grades of Recommendation**

The strength of recommendations in practice guidelines can be formally graded. The Canadian Task Force on the Periodic Health Examination proposed the first formal taxonomy of levels of evidence focusing on individual studies. Since then, numerous hierarchies for ranking levels of evidence and grades of recommendation have been developed. In Chapter 35, Interpreting Levels of Evidence and Grades of Health Care Recommendations, we review and describe these hierarchies and outline the most recent system currently under development by the Grades of Recommendation Assessment, Development and Evaluation (GRADE) Working Group.

For the purposes of this chapter, we describe an existing framework that has been modified to reflect the fact that practice guidelines should ideally be based on systematic reviews that bring together evidence from the best available individual studies (Table 10-2). The letter grades in Table 10-2 (A, B, C+, and C) reflect a hierarchy of methodological strength that ranges from systematic reviews of randomized trials with consistent results to systematic reviews of observational studies with inconsistent results. Systematic reviews of randomized trials yield the strongest evidence (grade A). Because inferences about the health effects of interventions are weakened when there are unexplained major differences in effects in different studies, guidelines based on systematic reviews of randomized trials are stronger when the results of individual studies are similar (grade A), and guidelines are weaker when major differences between studies (i.e., heterogeneity) exist (grade B). Recommendations from observational studies yield weaker evidence (grade C). If the evidence linking interventions and outcomes comes from systematic reviews of original studies, clinicians can apply the criteria for a valid systematic review and the schema in Table 10-2 to decide on the strength of evidence supporting specific recommendations.

The numbers 1 and 2 under Grade of Recommendations in Table 10-2 reflect the balance between the benefits and risks of an intervention. If the benefits clearly outweigh the risks (or vice versa), and virtually all patients would make the same choice, the recommendation is designated as grade 1. When the balance is less certain, and different patients may make different choices, the recommendation is designated as grade 2. Numerous factors may contribute to the uncertainty in the balance between benefits and risks, including variation in patient values and a wide range of confidence intervals around estimates of benefit and risk (see Chapter 35, Interpreting Levels of Evidence and Grades of Health Care Recommendations).

If recommendations are developed based on systematic reviews of observational studies or if the estimate of the magnitude of the intervention effect is imprecise, clinicians can conclude that the recommendations are relatively weak. Investigators can deal with this weakness in recommendations by testing the effect of the guideline on patient outcomes in real-world clinical situations.

Guidelines on hormone replacement therapy demonstrate the limitations of recommendations based on weak evidence. To date, these guidelines have been based largely on observational studies (which would be characterized as 2C in the schema presented in Table 10-2) and have suggested that hormone replacement therapy reduces coronary
Table 10-2  An Approach to Grading Treatment Recommendations Based on Systematic Reviews of the Relevant Evidence

<table>
<thead>
<tr>
<th>Grade of Recommendation</th>
<th>Balance of Methodological Strength</th>
<th>Implications</th>
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<tbody>
<tr>
<td>1A</td>
<td>Clear RCTs without important limitations</td>
<td>Strong recommendation; can apply to most patients in most circumstances without reservation</td>
</tr>
<tr>
<td>1B</td>
<td>Clear RCTs with important limitations (inconsistent results, methodological flaws*)</td>
<td>Strong recommendations; likely to apply to most patients in most circumstances</td>
</tr>
<tr>
<td>1 C+</td>
<td>Clear No RCTs directly addressing the question, but results from closely related RCTs can be unequivocally extrapolated, or evidence from observational studies may be overwhelming</td>
<td>Strong recommendation; can apply to most patients in most circumstances</td>
</tr>
<tr>
<td>1C</td>
<td>Clear Observational studies</td>
<td>Intermediate-strength recommendation; may change when stronger evidence is available</td>
</tr>
<tr>
<td>2A</td>
<td>Unclear RCTs without important limitations</td>
<td>Intermediate-strength recommendation; best action may differ depending on circumstances or patient or societal values</td>
</tr>
<tr>
<td>2B</td>
<td>Unclear RCTs with important limitations (inconsistent results, methodological flaws*)</td>
<td>Weak recommendation; alternative approaches likely to be better for some patients under some circumstances</td>
</tr>
<tr>
<td>2C</td>
<td>Unclear Observational studies</td>
<td>Very weak recommendation; other alternatives may be equally reasonable</td>
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*These situations include RCTs with both lack of blinding and subjective outcomes in which the risk of bias in measurement of outcomes is high, and RCTs with large losses to follow-up. Because grade B and C studies are flawed, it is likely that most recommendations in these classes will be level 2. The following considerations will bear on whether the recommendation is grade 1 or 2: the magnitude and precision of the treatment effect, patient risk of the target event being prevented, the nature of the benefit and the magnitude of the risk associated with treatment, variability in patient preferences, variability in regional resource availability and health care delivery practices, and cost considerations. Inevitably, weighing these considerations involves subjective judgment. RCT, Randomized controlled trial.
events. A recent randomized controlled trial, however, found that women who received estrogen plus progestin had a greater incidence of total cardiovascular disease than did women who received placebo. Clearly, clinicians should be cautious in their implementation of grade C recommendations.

Table 10-3 presents a schema for classifying the methodological quality of treatment recommendations and emphasizes three key components: a systematic summary of the evidence, consideration of all relevant options and outcomes, and an explicit or quantitative consideration of societal or patient preferences. For example, if a practice guideline is based on a systematic summary of evidence, considers all relevant options and outcomes, and explicitly considers values, the rigor of recommendations will be high. When any of these three components are missing, the rigor of the recommendations will be reduced.

### Using the Guide

The authors made a series of practical recommendations related to each of the interventions designed to minimize or prevent exposure to risk factors for falling or fracture in people aged 65 years or older. However, it is difficult to evaluate the clinical importance of the recommendations because no information was provided about the relative or absolute changes in outcomes. Recommendations were graded, incorporating the strength of evidence with the additional considerations of applicability to, and feasibility within, health and social care in the United Kingdom. Grading of recommendations ranged from one to three stars. A one-star recommendation was directly based on grade C evidence (limited scientific evidence, cohort studies, flawed randomized controlled trials, or panel consensus) or was extrapolated from grade A or B evidence; a two-star recommendation was directly based on grade B evidence (single randomized controlled trial or weak inconsistent findings in multiple randomized
Using the Guide—cont’d

controlled trials) or extrapolated from grade A evidence; a three-star recommendation was directly based on grade A evidence (consistent findings in multiple randomized controlled trials or a meta-analysis).

The recommendations were based on 21 trials. The authors summarized the evidence for each intervention (exercise alone, multifaceted interventions, community-based assessment, and residential setting–based interventions) and provided separate evidence statements for the unselected population and a selected group that included women who were older than 80 years of age, followed by separate recommendations for each of these groups. The authors provided two three-star recommendations:

1. With the possible exception of training in balance (t’ai chi), exercise programs for prevention of falls in unselected older people living in the community should not be established.

2. Programs for prevention of falls should be multifaceted.

They also provided seven two-star recommendations:

1. Individually tailored exercise programs administered by qualified professionals targeted at persons older than 80 years of age should be established.

2. T’ai chi classes with individual instruction should be offered to unselected older people living in the community.

3. Multifaceted programs should prioritize correction of postural hypotension, rationalization of drug use, and interventions to improve balance, transfers, and gait.

4. A structured, interdisciplinary medical and occupational therapy program should be established for older people who have presented to emergency departments for a fall.

5. Nonselective exercise programs for prevention of falls should not be implemented in residential settings.

6. Residents in residential settings who have had at least one fall should be offered a risk assessment program, with referral to their primary physician for specific preventive measures if necessary.

7. All residents of nursing homes should be offered hip protectors.

HOW CAN I APPLY THE RESULTS TO PATIENT CARE?

Is the Primary Objective of the Guideline Consistent With My Objective?

In determining whether to apply the recommendations of a clinical practice guideline to your patients, ask yourself (1) is the purpose of the guideline consistent with the question I am asking? and (2) is the guideline intended for use by clinicians in my type of setting? For example, guidelines that have been developed for use in a primary care setting may not be relevant to other types of settings.

Are the Recommendations Applicable to My Patient Care?

Having established that the clinical practice guideline is valid, you must consider the extent to which the recommendations may apply to the people in your community or the patients in your care. For instance, if the patients in your setting have different
prevalences of disease or risk factors, the recommendations may not apply. The flexibility of the recommendations may be indicated by patient or practice characteristics that require individualizing recommendations or that justify departures from the recommendations.

You should consider whether information must be obtained from and provided to patients and how to elicit patient preferences. It is important to consider whether the values assigned (implicitly or explicitly) to outcomes could differ enough from the preferences of patients in your setting to change a decision about whether to adopt a recommendation.

**Clinical Resolution**

You bring a copy of the article by Feder and colleagues to the next team meeting with the public health nurses in the healthy aging program. You note that the guideline developers clearly specified the patient population, interventions, and outcomes to which their recommendations would pertain. They used a comprehensive strategy to locate all relevant evidence on which to base their recommendations, and they rated the quality of the evidence using an established scale. The guideline development panel included representation from numerous relevant disciplines. The authors were careful to ensure that the guidelines were current by updating two previous reviews and specifying a date after which the guidelines should be revised. They asked an external panel to review the guidelines and pilot tested them in numerous settings. You note that the guideline development process could have been strengthened by the following:

- Assessment of the effects of drug and dietary treatments on falls
- Inclusion of additional outcomes such as muscle strength, balance, quality of life, and costs
- Inclusion of a lay representative of the elderly population on the development panel
- Explicit consideration of patient preferences and values
- Presentation of data on relative and absolute changes in outcomes
- Provision of more details about the results of pilot testing.

You add that the authors explained in their conclusion that none of the trials included an economic evaluation and that exercise was not well defined in the trials and could include several different elements, such as muscle strengthening and balance training.

You then review the recommendations with the team and pay special attention to the grading of the recommendations. To ensure that you have the most up-to-date information, you have also brought along a copy of the Cochrane review on interventions for preventing falls in elderly people (latest update July 2003). There are several similarities between the recommendations in the guidelines and the interventions shown to be beneficial in the systematic review. However, because the guideline developers did not examine the effects of drug and dietary treatments on falls, there is additional information in the Cochrane review that could inform the public health nurses’ practice. The nurses decide that a small group will review the guideline recommendations in conjunction with the Cochrane review and return to the next team meeting with suggestions for changes in practice.
IMPLEMENTATION OF CLINICAL PRACTICE GUIDELINES

Implementing clinical practice guidelines is recognized as a significant process of change for an organization, particularly if current practice differs from guideline recommendations. Systematic reviews suggest that clinical practice guidelines are most likely to be adopted in practice when dissemination and implementation strategies incorporate several features, such as involvement of end-user clinicians in guideline development, active involvement of learners in the educational intervention, and integration of the guideline into the process of care (e.g., restructuring of medical records). A multifaceted dissemination and implementation strategy is more likely to increase the probability of uptake in practice than is reliance on a single intervention. DiCenso and colleagues developed a toolkit for implementation of clinical practice guidelines, which is available on the Internet (www.rnao.org). The toolkit is based on a conceptual model that depicts five essential components of guideline implementation:

1. Selection of a high-quality, up-to-date, evidence-based guideline
2. Identification and engagement of key stakeholders who can influence implementation success
3. Assessment of environmental readiness for guideline implementation
4. Use of multiple proven implementation strategies (e.g., interactive education sessions and reminder systems; see Chapter 11, Changing Nursing Practice in an Organization)
5. Evaluation of guideline implementation.

To ensure successful guideline implementation, an organization must be willing to provide the necessary human, physical, and financial resources. Because this toolkit was developed only recently, its effectiveness and utility in facilitating guideline implementation requires validation by empirical research.

REFERENCES