Complexities and Variations in Pharmaceutical Therapy for Cancer:
Next steps toward achieving quality care
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Executive Summary

Recent reports have addressed problems with the quality of cancer care. Although insufficient information has hindered assessment of pharmaceutical aspects of such care, limited available data suggest that underuse, overuse, and variations in use of curative and palliative agents exist. For example, pain medication is underutilized in palliative care for cancer patients, and the National Cancer Policy Board recently concluded that many postmenopausal women do not appear to be receiving indicated adjuvant chemotherapy and hormone therapy for breast cancer. Thus, recent evidence of inappropriate use of pharmaceuticals in cancer care represents one compelling reason to explore the quality of such care and factors that limit its provision.

Tremendous advances in science have yielded improved cancer treatments. New pharmaceutical products offer the potential for improved survival and quality of life. Yet concern exists that these treatments are not being optimally applied. Health insurance-related issues (e.g., lack of insurance, coverage restrictions), poor patient-provider communication, and insufficient provider knowledge can restrict patient access to these products. Conversely, the desire for a cure, reimbursement issues, and confusion about standards of care raise the potential for unnecessary or excessive care. The slow translation of new knowledge into clinical practice is reflected by surveys evaluating provider knowledge and practice patterns (e.g., Hatzell et al and McFall et al), including those demonstrating low or variable compliance with oncology clinical practice guidelines (e.g., Bennett et al). These findings, coupled with the high morbidity and mortality associated with cancer, constitute another compelling reason to explore and optimize pharmaceutical treatment for cancer.

Advance the Measurement of Quality and Reporting Relevant to Pharmaceutical Care

An important means of optimizing pharmaceutical care for cancer is enhancing the assessment of such care. Factors that have limited quality assessment of pharmaceutical care for cancer include a lack of consensus in defining quality pharmaceutical care, insufficient valid measures of quality, and the absence of information about current prescribing and drug use patterns. Although limited data indicate that some pharmaceuticals are underused or overused in cancer care, the most common finding is variations in use according to factors such as patient characteristics (e.g., age, ethnicity) and provider characteristics (e.g., specialty, professional affiliations), and insurance type (e.g., Mortensen et al). As factors such as patient preferences, comorbidities, and treatment side effects influence treatment decisions, more rigorous assessment is needed to determine the significance of such variations. Other factors that complicate assessing the quality of pharmaceutical care for cancer include gaps in knowledge about certain aspects of care (e.g., transition from curative to end-of-life care), as well as the tendency to avoid publishing examples of negative outcomes or unnecessary care.

Recommendations:

- Seek research funding from public and private sources (e.g., government, pharmaceutical industry) to:
  - Clarify standards and components of quality pharmaceutical care for cancer;
  - Construct, test, and implement quality measures specifically relevant to pharmaceutical care (e.g., appropriateness of regimen, dose, and use of adjunctive therapies; cost-effectiveness; associated patient functional capacity and quality of life);
  - Develop comparative databases that contain current information about drug prescribing and use patterns;
  - Carry out Phase IV-V studies to see how drugs are being used in clinical practice, if they are used in accordance with FDA-approved indications, and whether evidence of underutilization or overutilization exists; and
  - Carry out studies that assess the influence of system and provider factors on the quality of pharmaceutical care for cancer and fill in gaps in knowledge.

- Encourage publication of reports that describe care associated with negative outcomes or potentially unnecessary care.

- Address limitations of existing cancer registries and other databases and encourage the development of new databases. These databases should provide comprehensive information about all aspects of care and offer means for monitoring (to ensure accuracy of data) and linkage to other databases.

Promote the Practice of Evidence-Based Medicine

Most reports about the quality of health care, including cancer care, have addressed the need to promote the practice of evidence-based medicine. Research, clinical trials, clinical practice guidelines (CPGs), and information systems are means of collecting and disseminating new medical evidence.
to facilitate this process. Clinical trials are the means by which new technologies and pharmaceuticals are evaluated against current standards of care and may offer cancer patients access to the best and most promising treatment. However, few adults with cancer participate in clinical trials due to factors including physician under-referral and lack of insurance coverage. CPGs are systematically developed recommendations about some or all aspects of decision making for a particular condition or clinical situation. Despite significant efforts in the development, dissemination, and implementation of oncology CPGs, their success in changing physicians’ perspectives and practice patterns has been mixed. The likeliest reason for a number of oncology CPG failures appears to be failure to implement systems that have a means of holding the provider accountable for his or her performance. Outcome databases and information systems offer a means to encourage guideline adherence by permitting evaluation and comparison of providers’ performance (i.e., a means of ensuring accountability). Yet an obstacle to implementing information systems is the large capital investment required. Other ways in which information systems can improve quality of pharmaceutical care for cancer include supporting continued research and innovation, reducing medical (e.g., medication dosage) errors, and providing a means of disseminating new medical information (e.g., CPGs, evidence reports, technology assessments).

Recommendations:
- Continue educating consumers, providers, and third-party payers about the importance of clinical trials in developing new treatments, and support other efforts to improve third-party coverage of patient costs associated with trial participation.
- Seek funding for research to determine:
  - The true costs of cancer-related clinical trials,
  - Who should bear the added costs (if any), and
  - Factors other than coverage issues contributing to under-enrollment of eligible patients.
- Seek funding for further research to study optimal means of developing, disseminating, and implementing oncology CPGs, including mechanisms to ensure adherence and accountability (e.g., associated outcome databases that provide data for evaluating provider performance).
- Encourage greater public- and private-sector financial investment in the development and implementation of advanced information systems.

Expand and Strengthen the Role of Cancer Patients in Promoting Quality Care
Cancer patients are not always listened to and included in treatment decisions, and the content of physician communication varies with patient characteristics such as age, ethnicity, income, and education level. For example, despite evidence that elderly patients are as likely as young patients to prefer aggressive, lifesaving treatment, some cancer treatments appear to be underutilized in elderly patients because of mistaken assumptions about patient preferences or life expectancy. In addition, many cancer patients are not being provided appropriate psychological support, including diagnosis and treatment of clinical depression. Recently proposed bills of rights (e.g., the Consumer Bill of Rights and Responsibilities, the Oncology Nursing Society’s Bill of Rights for Quality Cancer Care) represent efforts to ensure consumer and patient rights to these and other elements of quality care.

Cancer patients also are seeking an increased role in policy development and decision making related to cancer care. The recently signed Charter of Paris Against Cancer calls for the protection and expansion of patients’ rights, among other directives aimed at improving quality of care (e.g., increased commitment to research, improved patient access to clinical trials). This charter identifies informed patient advocates as “key strategic partners” in the advancement of standards of care and survival and notes that patients are uniquely positioned to focus the overall anticancer effort and the optimal use of resources. Thus, patient input should be obtained in the development of CPGs and clinical trials as well as other mechanisms to advance evidence-based medicine.

Recommendations:
- Educate consumers about patient rights, components of quality care, and what consumers can do to improve the quality of pharmaceutical care for cancer (advocacy).
- Design educational interventions to improve providers’ communication skills, awareness of patient rights, and knowledge of appropriate psychosocial support for cancer patients.
- Support patient rights initiatives and recruit members from the professional community to serve as patient advocates.
- Include patients in the development of mechanisms to advance evidence-based practice and the quality of cancer care.

Conclusion
Reasons to explore the quality of pharmaceutical care for cancer include recent reports of inappropriate care and the potential for optimal pharmaceutical care to improve survival and quality of life. As little is known about many aspects of such care, this paper outlines steps to enhance quality assessment and fill in gaps and knowledge as well as optimize application of pharmaceuticals to cancer care. Critical to the success of these measures is collaboration among the public and private sectors in areas including research, education, advocacy, and database and information system development.

The Charter of Paris Against Cancer was recently signed by international government officials, leading researchers, and patient advocates at the World Summit Against Cancer held in Paris, France, in February 2000.
I. Introduction

Good quality health care has been described as “providing patients with appropriate services in a technically competent manner, with good communication, shared decision making, and cultural sensitivity.” Major shifts in the organization and financing of the health care system, rapid advances in technology, and concerns about access to health care have generated recent concern about the quality of health care. This concern has been heightened by recent reports by public- and private-sector groups describing wide “practice gaps” in the quality of care. Several reports have specifically addressed problems with the quality of cancer care. For example, the National Cancer Policy Board (NCPB) recently concluded, “some individuals with cancer do not receive care known to be effective for their condition.” While the magnitude of the problem is not known, the NCPB believes it is substantial. The President’s Cancer Panel also recently challenged the availability of appropriate care due to the “lack of a professional consensus and considerable public confusion about what constitutes quality of care for the more than 100 types of cancer.” This panel further observed that “efforts to define, implement, measure, and assess quality in cancer care have been stymied by insufficient data, scientific evidence of widely ranging rigor, and competing professional, payer, and patient interests.”

Insufficient data and a lack of consensus in defining appropriate care also appear to have thwarted efforts to assess the quality of pharmaceutical aspects of cancer care. Given the evidence that optimal pharmaceutical care for cancer can improve patient survival and quality of life, this issue warrants more detailed examination. The primary objectives of this paper are to delineate and explore what we know to date about the quality of pharmaceutical treatment for cancer and to identify potential limitations in the provision of appropriate cancer care. As insufficient peer-reviewed data have limited prior efforts at assessment, anecdotal data (e.g., survey reports) also are considered in this paper. Additional objectives include (1) sending a call for additional research funding to the cancer community, government, accrediting bodies, and pharmaceutical industry; (2) promoting improved availability of data about cancer drug utilization patterns; and (3) stimulating discussion to facilitate reaching a consensus in defining quality cancer and pharmaceutical care. Only with clear definitions and access to important information about pharmaceutical agents (e.g., patterns of use, outcomes, cost-effectiveness) can the quality of pharmaceutical treatment for cancer be meaningfully assessed and improved. Additional clinical and health services research can facilitate this process by filling in gaps in medical knowledge, improving the means of quality assessment, and delineating mechanisms to ensure quality.

Section II summarizes methods of assessing health care quality and concerns about the quality of health care in general. Section III addresses compelling reasons to explore the quality of pharmaceutical care for cancer, and Section IV follows with specific examples of practice variations and inappropriate care. While a detailed discussion of underlying reasons for disparities in quality is beyond the scope of this paper, Section V outlines next steps to improving the quality of pharmaceutical care for cancer (e.g., research, database improvements).

II. Health Care Quality

Definitions and measurement of quality

What is quality of care?

In defining quality of health care, several sources have relied on the Institute of Medicine’s definition: “Quality of care is the degree to which health services for individuals and populations improve the likelihood of desired health outcomes and are consistent with current professional knowledge.” Identified components of quality care include the presence of technical quality, emphasis on health promotion and disease prevention, informed participation of patients, a scientific foundation or evidence base supporting a specific practice, and efficient use of financial resources. In contrast, poor-quality care has been described as the overuse, underuse, or misuse of health-related services. In this construction, overuse refers to the provision of a service when its risk of harm exceeds the potential benefit; underuse, to failure to provide an effective service when it would have produced a favorable outcome; and misuse, to avoidable complications of appropriate care. Poor-quality care also has been described as “too much care (e.g., unnecessary tests, medications, or procedures, with associated risks and side effects), too little care (e.g., not receiving a lifesaving surgical procedure), or the wrong care (e.g., medicines that should not be given together, poor surgical techniques).”

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* A practice gap is a discrepancy between what would be considered “the best practice” and the “actual practice,” or the care that should be provided and the care received by the patient.
* Pharmaceutical care refers to treatment with curative and palliative products, including cytotoxic antineoplastics, hormone therapies, biological therapies (e.g., biological response modifiers, colony stimulating factors), other adjunct and miscellaneous antineoplastics, and ancillary agents (e.g., analgesics, antemetics).
* Technical quality refers to whether the right diagnostic and treatment decisions are made and whether care is effectively and skillfully provided.
How is quality of care measured?

Quality may be measured at any level of the health care system by expert judgment (implicit review) or systematic reference to objective standards (explicit review). An example of the former is having a clinician review a medical chart and express judgment as to whether the care provided was good or bad. A disadvantage of this method is the lack of prior standards or agreement about the existence of good or better care. In contrast, explicit review uses specific quality measures and a priori criteria to provide a more systematic approach to quality assessment. These quality measures often are based on one or more of the three classic components of quality of care introduced by Donabedian.8,9 These consist of “structural quality,” which refers to provider and health care system characteristics; “process quality,” which refers to what providers do to, for, or on behalf of patients and how well they do it; and “outcomes” or the end results of services in terms of patients’ health and well-being.

Steps involved in explicit review can be summarized as follows:

- Identify which structural components or processes of care are linked to desired patient outcomes by reviewing the literature and soliciting the opinions of experts.
- Develop measures to evaluate the structure, process, and outcomes of care.
- Establish a priori criteria for levels of care (e.g., poor through excellent) to permit qualitative classification of care.
- Apply measures to samples of data (e.g., administrative records, medical records, patient surveys, cancer registry databases) to determine the degree to which effective care is being provided.

Many existing quality assessment systems depend primarily on process measures. However, there is increasing interest in moving toward outcomes measures, which some experts consider to be the most direct measure of the health of a population.1 Clinical status, functional status, and consumer satisfaction are three important types of outcomes. Clinical status refers to the functioning of a patient’s organ systems (i.e., the biological outcome), whereas functional status refers to the patient’s ability to participate in physical, mental, and social activities. A related concept, health-related quality of life, extends the definition of functional status to include a person’s sense of well-being and external factors (e.g., social support).

Who measures the quality of health care?

Interest in assessing the quality of health care is growing. Major reasons for this include the recent health care system restructuring, increasing reports of quality problems, and mounting pressure from both the public and private sectors for increased accountability and information to facilitate health-related decisions (e.g., plan selection, value-based purchasing). Numerous public- and private-sector groups and agencies are involved in the quality assessment and improvement of health care in general (Table 1) and specifically cancer care (Table 2). Tables 1 and 2 list examples of these groups and agencies as well as sources of information about their activities.

Health care system in flux

What factors contribute to concern about the quality of health care in general?

To provide context for this paper’s major objectives, it is useful to examine eight factors that have contributed to concern about the quality of health care in general. These issues and events may be summarized as follows:

- Health care system changes. Recent changes in the health care system include a proliferation of new organizational types, the growing dominance of managed care, and the increasingly fragmented delivery of health care services.10 Contributing to the latter is the growing number of treatment settings and provider types as care shifts from inpatient to outpatient settings.10 Concern about health care quality is related to the potential for “disconnects” in the delivery of care as care shifts between providers and settings.1,10 Frequent changes in the membership of practitioner panels in health plans also may contribute to treatment discontinuities when patients are required to switch providers midtherapy. There is also concern about limited or delayed access to specialists with the shift of responsibility for patient management to primary care providers.3

- Reimbursement strategies. Recently created financial incentives associated with new organizational structures and reimbursement strategies have generated some concern about health care quality.2 These incentives are intended to promote optimal utilization of health care services, but they have been shown to decrease both unnecessary and necessary care.11

- Lack of equal opportunity and access. Access refers to the “timely use of affordable personal health services to achieve the best possible health outcomes.”12 These well-established links12,13 have generated concern about disparities in access to health care services.14 A major cause of diminished access to health care services is lack of health insurance.1,10 It is estimated that one in seven Americans currently lacks health insurance coverage, and this percentage is rising.15 Uninsured individuals face obstacles such as delays in obtaining care, limited choice about providers and facilities, and treatment discontinuities;16,17 as well as higher morbidity and mortality rates.10,18

- Increased health care spending. Despite a decline in the rate of increase in health care costs during the early to mid-1990s,10
national health care spending is projected to double between 1996 and 2007. Increased costs get passed on to group purchasers and consumers as higher premiums and levels of employee cost sharing. High deductibles, copayments or coinsurance, and coverage caps contribute to higher consumer out-of-pocket expenditures, which in turn may influence access to services.

Changing U.S. demographics. Older individuals are constituting an increasingly greater percentage of the U.S. population as life expectancy continues to rise. The number of Medicare beneficiaries is expected to almost double over the next 30 years. In addition, members of racial or ethnic “minority” groups are expected to comprise nearly half of the U.S. population by 2050. These demographic changes are significant given the susceptibility of these and other vulnerable populations (e.g., terminally ill or disabled persons) to problems in using the health care system (e.g., treatment discontinuities, lack of coordination among multiple providers, difficulty receiving approval for uncommon or costly treatments). Communication barriers, reflecting language and cultural differences or a poor state of health, also may adversely influence the quality of care by reducing a patient’s ability to comprehend information, express treatment preferences, provide informed consent, or obtain services consistent with cultural norms.

Rapid advances in knowledge and technology. The recent explosion of new health knowledge and technology has produced many new pharmaceutical agents and interventions. In 1999, the Food and Drug Administration (FDA) approved 35 new drugs and 5 biologics, pushing the total number of medicines introduced in the 1990s up to 370. This pace of product approval is expected to increase with the accelerating rate of scientific discovery and treatment advances as well as recent FDA initiatives. The latter have eased and broadened access to investigational drugs and created fast-track pathways to FDA marketing approval. While offering the potential for improved survival and quality of life, these changes place added demands on practitioners who need to be knowledgeable about evolving technologies and able to translate disparate findings into clinical practice.
Physician dissatisfaction and concerns about insurance coverage. Higher rates of physician dissatisfaction correlate with the growth of managed care and have been attributed, in part, to pressure to reduce clinical autonomy. In one survey, 38% of physicians reported a decline in their ability to make decisions and 41% reported a decrease in time spent with patients. Physicians also have expressed concern about lack of insurance coverage for patient services perceived as necessary. In a recent physician survey conducted by the American Medical Association's Institute of Ethics, 37% of physicians reported that patients had requested that they deceive third-party payers (e.g., exaggerate the severity of the patient's condition) to obtain coverage for services sometimes or often within the past year. In addition, 48% of physicians reported suggesting that patients pay out-of-pocket for needed but excluded services, and 31% reported not offering useful services to patients because of health plan utilization rules.

Recent reports describing disparities in health care quality. More substantial and direct evidence of problems with health care quality comes from recent reports by researchers and panels of experts including the National Roundtable on Health Care Quality, the Quality of Health Care in America Committee, and the President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry (see Appendix). These reports summarize evidence of overuse, underuse, misuse, and variations in use of health-related services associated with a number of prominent disease states including heart disease, diabetes, and cancer (Table 3). Schuster et al recently reported that large gaps in care exist for all types of care (preventive, acute, and chronic), health facilities, health insurance types, age groups, and geographic regions. In addition, the Quality of Health Care in America Committee recently concluded that, although there is still much to learn about the types of medical errors that occur in health care, a serious concern for patients exists.

### Table 2.

**Examples of Cancer-Specific Organizations Involved in Quality Assessment and Improvement of Cancer Care**

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<thead>
<tr>
<th>National Cancer Institute</th>
<th>National Comprehensive Cancer Network</th>
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<td><a href="http://www.nci.nih.gov/invtra/intra.htm">http://www.nci.nih.gov/invtra/intra.htm</a> (research)</td>
<td><a href="http://www.nccn.org/outcomes.htm">http://www.nccn.org/outcomes.htm</a> (NCCN Oncology Outcomes Database)</td>
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<td>NCPB 1999 report</td>
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<th>American Cancer Society</th>
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<td>NCPB 1999 report</td>
<td><a href="http://www.natbcc/eduiindx.asp">http://www.natbcc/eduiindx.asp</a> (education)</td>
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<th>Oncology Nursing Society</th>
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<td>NCPB 1999 report</td>
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<th>National Coalition for Cancer Survivorship</th>
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<td>NCPB 1999 report</td>
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<td>NCPB 1999 report</td>
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*This is not a comprehensive listing of all agencies involved in quality assessment and improvement of cancer care. NCPB is the National Cancer Policy Board.*
III. Rationale for Exploring the Quality of Pharmaceutical Care for Cancer

The reports that describe the widespread gaps in health care quality also recommend a number of national objectives for improving health care quality. These include ensuring appropriate access to and use of health services, expanding research on new treatments, and increasing patient participation in care. The President's Advisory Commission specifies that such aims should be “based on criteria that include focusing on common and/or costly conditions, areas where wide variability in practice exists, and improvements that have the greatest impact on reducing morbidity and mortality and improving functional capacity.”

Cancer, its care, and the pharmaceutical products used in its care fulfill these respective criteria. Thus, the quality of cancer care, including associated pharmaceutical treatment, represents an appropriate focus of attention.

Cancer is costly

Cancer is a costly disease. The National Institutes of Health estimates that the overall annual costs for cancer at $107 billion. Of this amount, direct medical costs account for $37 billion, indirect morbidity costs (lost productivity due to illness) account for $11 billion, and indirect mortality costs (lost productivity due to premature death) account for $59 billion. More than half of the $37 billion in direct medical costs is spent on treatment for breast, lung, and prostate cancers. Breast cancer and prostate cancer are the most commonly diagnosed nonskin cancers in American women and men, respectively, and lung cancer accounts for the most cancer-related deaths.

Cancer is also costly in terms of lives. One in every four deaths in the United States is caused by cancer, making cancer the second leading cause of death among Americans. In 2000, about 1.2 million new cases of cancer (excluding skin cancers) are expected to be diagnosed, and approximately 552,000 Americans are expected to die from cancer. Ultimately, cancer will affect one third of individuals in the United States and two thirds of all families.

Wide variability in cancer care exists

Recent reports by expert panels have described wide variations and gaps in cancer care. For example, the 1999 report by the NCPB, Ensuring Quality Cancer Care, describes a “wide gulf between what could be construed as the ideal and the reality of [Americans’] experience with cancer care.” In their 1998 report, Cancer Care Issues in the United States: Quality of Care, Quality of Life, the President’s Cancer Panel describes “marked disparities in treatments provided, in access to can-

Table 3.

<table>
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<th>Source</th>
<th>Underuse</th>
<th>Overuse</th>
<th>Variations in Services</th>
<th>Medical Errors</th>
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<td>President's Advisory Commission report (1998)</td>
<td>Preventative care: immunizations, routine cancer screening, counseling about risky behavior Acute care: beta-blockers after myocardial infarction Chronic care: rehabilitation after stroke or hip fracture, screening for diabetic retinopathy, antidepressant therapy for depression</td>
<td>Some surgeries (hysterectomy, carotid endarterectomy, coronary artery bypass grafting); hospitalizations; prescription medications (e.g., antibiotics for viral illnesses, nonsteroidal anti-inflammatory drugs)</td>
<td>Regional variations in some surgeries (e.g., hysterectomy), medical treatments (e.g., hormone replacement therapy), and hospitalization rates for some conditions (e.g., asthma, diabetes, pneumonia, mental illness)</td>
<td>Missed diagnosis; misinterpretations of laboratory and imaging studies; surgical errors; medication, prescribing, and administration errors</td>
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This is not a comprehensive listing of areas of inappropriate care. Rather, the table presents examples of disparities in health care documented by multiple investigators and listed in the President’s Advisory Commission report.
Prevention and treatment services, and most essentially, in patient outcomes. This group of experts further concluded: “Most people in America are not receiving what might be considered the highest quality [cancer] care.”

These reports include data from the published literature that support these sweeping conclusions. For example, estimates suggest that only 30% and 56% of individuals older than 50 years underwent recommended screening examinations for colorectal cancer and breast cancer in 1992 and 1994, respectively. More recent data from sources including the Behavior Risk Factor Surveillance System (BRFSS) and a 1999 National Cancer Institute (NCI)/Health Care Financing Administration (HCFA) national telephone survey suggest that rates of mammography have since improved. However, BRFSS data and results from the National Health Interview Survey and the Medicare Current Beneficiary Study show that the percentage of women undergoing breast (and cervical) cancer screening decreases with increasing age. These sources of data also show that only 25% of individuals 55 years or older underwent fecal occult blood testing (FOBT) and 45% underwent endoscopy for colorectal cancer screening between 1995 and 1997.

Conversely, overutilization of services also has been observed. Despite evidence that the use of bone scans and other imaging studies does not improve breast cancer outcomes by identifying metastases, 34% of patients received a bone scan and 21% underwent computed tomography, in one study. Similarly, an audit of the medical records of 107 patients with non–small cell lung cancer revealed that 50% of patients had undergone an excessive number of preoperative scans compared with the number recommended by National Comprehensive Cancer Network guidelines.

There is also evidence of practice variations and inappropriate care in cancer treatment. For example, rates of breast-conserving surgery for breast cancer vary according to geographic region, hospital characteristics (e.g., size, case volume), and patient demographics (e.g., age, race, socioeconomic status). It also appears that many women with breast cancer are not receiving appropriate adjuvant (postoperative) chemotherapy and/or hormone therapy. Although the NCPB acknowledged certain limitations of available data (e.g., low volume, outdated information, lack of adjustments for case mix), the panel recently concluded that “serious problems” may exist with the quality of care provided to women with breast cancer in the United States.

Improved cancer care, including pharmaceutical treatment, can reduce morbidity and mortality and improve functional capacity

During the past three decades, significant improvements in cure rates have been accomplished with the incorporation of chemotherapy and radiotherapy into management plans. Tremendous advances in our understanding of the biology of cancer have facilitated the development of new treatments and agents that offer improved efficacy, fewer side effects, novel applications (e.g., prevention), and new means of treating side effects (e.g., colony-stimulating factors [CSFs] for neutropenia). The rapid pace at which pharmaceutical treatment for cancer is evolving is illustrated by the 354 anticancer drugs in development in 1999. This pace is expected to continue with recent FDA initiatives directed toward early access to and accelerated approvals for investigational anticancer drugs. All of these changes suggest the potential for cancer-related mortality, morbidity, and quality of life to be greatly improved.

Yet despite these and other reasons for optimism, there is concern that pharmaceutical care for cancer is not being optimally applied. For example, limited published data suggest that some pharmaceuticals may be underused (e.g., adjuvant chemotherapies for some cancers, analgesics). Conversely, anecdotal data suggest that some patients are receiving second- or third-line chemotherapies in clinical situations for which there is little evidence that such treatments are effective. However, the presence and magnitude of these problems are difficult to establish without a universally accepted definition for quality pharmaceutical care, adequate quality measures, and data about drug utilization patterns. Optimizing care requires the ability to adequately assess the quality of care. Thus, given the potential for optimal pharmaceutical care to greatly reduce mortality and morbidity and improve quality of life, these methodological issues warrant closer attention.

Adjuvant therapy refers to additional drug or other treatment (e.g., radiation therapy) designed to enhance the effectiveness of the primary therapy. For example, adjuvant chemotherapy or hormone therapy may be administered postoperatively to patients with breast cancer following breast-conserving surgery.
IV. Pharmaceutical Treatment for Cancer: Practice Patterns, Variations, and Quality

Practice variations or quality problems?
An ideal discussion of the quality of pharmaceutical care for cancer would be based entirely on data from studies in the peer-reviewed literature that used appropriate quality measures and criteria to assess quality of care (i.e., explicit review). However, few such studies exist. Some studies merely report patterns of use of pharmaceuticals. Numerous other studies have compared patterns of pharmaceutical care across various parameters (e.g., patient age, race/ethnicity, geographic region), but without using quality measures or criteria. Other studies consist of surveys that evaluated rates of service utilization among populations but could not reliably assess the appropriateness of care. Exploration of all of these types of studies is useful as they may demonstrate variations in practice patterns suggestive of quality problems. However, further study, using appropriate quality measures and criteria, is needed to permit inferences to be made about the quality of care.1 Process and outcome measures used in explicit reviews take into account how factors such as patient preference and characteristics may influence outcomes. For example, appropriate process measures allow one to determine whether low rates of a service reflect service underutilization (i.e., poor-quality care) or patient preference (i.e., appropriate service was offered but the patient declined). In addition, good outcome measures are case mix–adjusted, thereby allowing one to determine whether low survival rates reflect poor-quality care or factors outside the health care system’s control (e.g., patient age, comorbidities).

Data sources and availability
This section of the paper explores what is known about pharmaceutical care for cancer by considering data from multiple sources (e.g., original investigations, physician surveys, expert reports, cancer registries). These data describe practice patterns and variations in pharmaceutical care for cancer as well as the quality of such care. Although limited conclusions about quality can be made from data describing variations in practice, these data are important for demonstrating areas and directions for future quality assessment.

Individual studies: Multiple cancers and treatments

U.S. General Accounting Office
A 1988 U.S. General Accounting Office study provided some early data regarding patterns of pharmaceutical use for a variety of cancers.4 The objective of this study was to estimate the number of Americans who were clinically eligible for, but did not receive, state-of-the-art cancer treatment over a 10-year span. The investigators used data from the Surveillance, Epidemiology, and End Results (SEER) cancer registry database to examine usage patterns of multiple “breakthrough” cancer treatments between 1975 and 1985. These consisted of (1) adjuvant (postoperative) chemotherapy for node-positive colon cancer and node-positive breast cancer (premenopausal); (2) chemotherapy for limited small cell lung cancer, non-seminoma testicular cancer, Stage IIIB or IV Hodgkin’s disease, and diffuse intermediate or high-grade non-Hodgkin’s lymphoma; and (3) adjuvant radiation treatment for rectal cancer.

All of these treatments had already been proven in controlled experiments to extend survival; in some cases, this knowledge had been available for 10 or more years. Nevertheless, the investigators still found considerable variation in the use of these proven therapies. For example, 90% of eligible patients had received chemotherapy for Hodgkin’s disease in 1985. In contrast, only 6% of eligible patients had received adjuvant chemotherapy for node-positive colon cancer, and 63% of eligible patients had received adjuvant therapy for node-positive breast cancer. Trends consisted of a rising use of radiation therapy for rectal cancer and a declining use of chemotherapy for colon cancer. The NCPB concluded that these results illustrate the “slow rate of diffusion of innovation” in cancer care.1

Kaluzny et al
In 1995, Kaluzny and colleagues demonstrated variations in the use of adjuvant chemotherapy for several cancers according to oncologist affiliation or nonaffiliation with Community Clinical Oncology Program (CCOP).46 Initiated by NCI in 1983, the CCOP links community cancer specialists and primary care physicians with cancer centers and clinical cooperative groups to increase community involvement in NCI-sponsored clinical trials.4 Several studies have compared practice patterns between CCOP affiliated- and non-CCOP-affiliated physicians.46–48 Kaluzny and colleagues compared rates of use of adjuvant therapy for colon, rectal, and breast cancer.
between CCOP-affiliated oncologists and non-CCOP-affiliated oncologists from 1987 to 1990. They found that patients treated by CCOP-affiliated oncologists were more likely to have received adjuvant therapy during this interval.

Mortenson et al
A 1997 report by Mortenson and colleagues provides insight into how health care system factors may influence oncologists' prescribing patterns. Based on increasing anecdotal reports of "hassles" (e.g., payment denials, delayed approvals for recommended services, and administrative bottlenecks) associated with managed care settings, Mortenson et al designed a survey to investigate how these factors influence oncologists' ability to deliver care. Surveys were mailed to approximately 2000 oncologists representing a randomly selected, regionally proportional, national sample. Of 322 respondents, 72% indicated that they had active managed care contracts, mostly consisting of discounted fee-for-service contracts with separate drug reimbursement. Approximately 37% of all respondents reported frequent problems with coverage for clinical trials, and 22%, for terminal or follow-up care. Clinicians with managed care contracts also reported frequent delays in approval of studies and referrals (40%) and reduced reimbursement for chemotherapy (55%). Some oncologists reported feeling hesitant to prescribe treatment for their patients due to these factors. Rates of "hesitation to prescribe" among all respondents were estimated as 26.6% for hospitalizations, 27.5% for expensive chemotherapy (i.e., new therapies), 24.9% for clinical trials, and 13.3% for supportive care. However, these rates were two to five times higher among oncologists providing care for patients under managed care contracts versus fee-for-service plans.

Based on these and other data, the authors concluded that "managed care plans are affecting the practice patterns of oncologists and the care offered to patients." However, restraint on practice is not necessarily a quality problem, and the appropriateness of care is not measurable in a survey. In fact, hesitation to prescribe could lead to better care if the oncologists were overprescribing. Furthermore, the response rate to this survey was only 16%. Thus, rather than definitively reflecting underutilization of services, these results indicate the need for studies that specifically evaluate the quality of care across diverse practice settings and under different reimbursement policies.

Compilations of data

Adjuvant therapy for breast cancer
There are several reasons why systemic adjuvant therapy (chemotherapy, hormone therapy) for breast cancer is a good area to explore. First, the high prevalence of breast cancer has generated active efforts at quality assessment, and thus, some data (i.e., practice patterns and variations) about adjuvant care. In contrast, little is known about the quality of chemotherapy for metastatic breast cancer. Second, randomized clinical trial (RCT) data have shown that adjuvant chemotherapy and hormone treatment significantly reduce the risk of recurrence and mortality from breast cancer. Clinical trials also have provided extensive support for links between process and outcomes for breast cancer, some of which relate to pharmaceutical treatment for breast cancer. This means that it has been possible to establish treatment standards and develop process measures that compare actual care against these standards. In this case, the relevant process measure used by researchers is whether patients with locally advanced breast cancer appropriately received systemic adjuvant therapy.

Practice patterns, trends, and variations in use. Limited evidence suggests that low and varying percentages of patients with breast cancer received adjuvant therapy during the mid- to late 1980s. For example, data from studies by Hillner et al, Osteen, and Hand et al suggest that rates of adjuvant therapy for patients with Stage II breast cancer ranged from 44% to 56% during this period. The U.S. General Accounting Office study revealed that 63% of premenopausal patients with node-positive breast cancer who were eligible for adjuvant chemotherapy received this treatment in 1985. However, data from both the SEER cancer registry and the National Cancer Data Base (NCDB) illustrate temporal trends toward increasing use of adjuvant therapies, as demonstrated by a study by Johnson et al.

Johnson et al evaluated temporal trends in use of adjuvant therapy between 1983 and 1989 to evaluate the effect of a 1988 NCI clinic alert advising physicians of the potential benefits of using adjuvant therapy in patients with node-negative breast cancer. Data were abstracted from samples of patient records at both CCOP and non-CCOP sites. Immediately following the clinic alert, the percentage of women with node-negative disease who received adjuvant therapy increased from 26% to 54%. The percentage of women with node-positive disease who received adjuvant therapy increased from 81% to 90%. One year later, percentages of patients with node-negative and node-positive disease receiving adjuvant therapy were 46% and 79%, respectively. It is not clear whether the clinic alert influenced treatment for node-positive disease.

The NCPB concluded that the "proportion of women receiving adjuvant therapy in this study approaches a level one might expect if all women who could benefit from adjuvant therapy were being offered treatment." However, inferences and comparisons regarding the quality of treatment are limited by the authors' failure to distinguish between cases that were from CCOP hospitals, control hospitals, or the SEER registry. The facilities that chose to participate in NCIs CCOP are more likely to have an interest in cancer treatment and adhere to NCI treatment guidelines.
More recent data from the late 1980s through the early- to mid-1990s also suggest improving or high levels of adherence to treatment standards for adjuvant therapy for breast cancer in select patient populations.\(^3\) A notable exception is the underuse of adjuvant therapy in postmenopausal women.\(^3\) Examples of studies that support these conclusions include those by Hillner et al.\(^{35,40}\) and Guadagnoli et al.\(^{41}\)

Hillner et al. used 1989–1991 data from the Virginia Cancer Registry to evaluate the quality of care for 918 patients with Stage I–III breast cancer.\(^{26}\) These patients were 64 years of age or younger and were covered by Blue Cross/Blue Shield insurance. Although the authors were unable to assess the use of adjuvant hormone therapy through claims data, they determined that 83% of the women 50 years of age or younger (and assumed to be premenopausal) had received adjuvant chemotherapy for node-positive disease. These results differ from those reported in their 1996 study (using 1985–1989 data), in which only 44% of patients with positive lymph nodes received any adjuvant therapy and 33%, hormone therapy.\(^{44}\) However, noteworthy differences between these populations included different age groups (patients were 65 years of age or older in the 1996 study) and insurance plans (Medicare vs. private insurance). Thus, it is unclear the extent to which the difference in adjuvant chemotherapy rates reflects improved care versus differences in patient populations and/or insurance type.

Guadagnoli and colleagues provided additional information about the use of adjuvant therapy in premenopausal and postmenopausal women.\(^{41}\) They compared care received by women with Stage I or II breast cancer at 18 Massachusetts hospitals and 30 Minnesota hospitals between 1993 and 1995. Rates of adjuvant chemotherapy in premenopausal women with node-positive disease were 97% and 94%, respectively. However, only 63% of postmenopausal women in Massachusetts and 59% of postmenopausal women in Minnesota with positive lymph nodes and positive estrogen receptor status received adjuvant hormone therapy.

Conclusions and notable gaps in information. Limited available data suggest that rates of use of adjuvant chemotherapy for breast cancer are approaching recommended levels in select populations. These observations are consistent with NCDB data illustrating improvements in diagnosis and treatment for breast cancer between 1985 and 1995.\(^{15}\) However, available data do not tell us (1) whether patients received care consistent with a published regimen, (2) whether patients received the appropriate dose, or (3) whether patients received appropriate pharmacologic support (e.g., antiemetics, CSFs). Apart from RCT data, consultants for the NCDB report could only find one study in the peer-reviewed literature that addressed adherence to combination chemotherapy.\(^{1}\) Schleifer et al. audited the care of 107 women with breast cancer treated by 29 oncologists in three university-affiliated practices from 1988 to 1989.\(^{15}\) Fifty-two percent of patients experienced at least one unjustified dose reduction for factors unrelated to toxicity, with higher rates of regimen nonadherence among the elderly and clinic patients. However, information about total dose intensity was not provided, limiting conclusions about the technical quality of care.

Limited available data also suggest that use of adjuvant therapy inappropriately declines with increasing patient age and may be too low in postmenopausal women. The NCPB recently concluded that many women, perhaps as many as 60%, do not appear to be receiving adjuvant chemotherapy and/or hormone therapy for breast cancer.\(^{3}\) However, they also acknowledged that data need to be interpreted cautiously due to their age (much from the 1980s), unknown accuracy (i.e., cancer registry data), and lack of adjustments for differences in the case mix (e.g., patient comorbidities, age). Also, little is known about how outcomes (especially functional status and patient satisfaction), patient factors (e.g., preferences, tolerance of side effects), and health care system factors (i.e., other than lack of insurance) influence service utilization rates.\(^{3,4}\) Future studies should explore these and related quality issues (e.g., appropriateness of chemotherapy for metastatic breast cancer) by applying explicit quality measures and criteria to samples of recent (i.e., late 1990s) data.

Adjuvant therapy for colorectal cancer

Like adjuvant therapy for breast cancer, adjuvant chemotherapy for colorectal cancer has been shown to have a major impact on survival.\(^{30}\) Improvements in overall and stage-specific survival over the past 20 to 30 years have been attributed to improved surgical techniques as well as the addition of adjuvant chemotherapy.\(^{45}\) Thus, adjuvant therapy for colorectal cancer is now widely accepted as the standard of care for patients with Stage III disease.\(^{26}\) Despite this circumstance, little is known about the current quality of such care.

Practice patterns, trends, and variations in use. An early glimpse of practice patterns came from the previously described U.S. General Accounting Office study. These investigators estimated that only 6% of Americans who were clinically eligible for adjuvant chemotherapy for node-positive colon cancer in 1985 received this "innovative" therapy.\(^{45}\) More recent data from the NCDB suggest that rates of adjuvant therapy improved in the late 1980s and early- to mid-1990s. In 1996, the Commission on Cancer reported that 46% of patients with Stage III colorectal disease nationally received adjuvant chemotherapy between 1985 and 1993.\(^{35}\) In a 1998 report about rectal and rectosigmoid adenocarcinoma, they reported that trends toward earlier diagnosis and improved multimodal therapy for the treatment of Stage II and III disease were continuing.\(^{59}\)

However, another 1998 report suggests that underutilization of adjuvant chemotherapy may be a problem in some patient populations. An HCFA-affiliated Colorado peer review organ-
ization matched cancer registry data with Medicare A and B claims data to assess factors associated with the use of adjuvant therapy for Stage III colon cancer and Stage I and II breast cancer. According to the NCPB, underutilization of adjuvant therapy was found among patients 65 and older, particularly for Stage III colon cancer. Advancing age appeared to be the principal factor associated with failure to use adjuvant therapies and did not appear to be explained by patient comorbidities.

Conclusions and notable gaps in information. Collectively, these data suggest that rates of use of adjuvant therapy for colorectal cancer are improving, but that underuse of adjuvant chemotherapy may exist in some populations (e.g., the elderly). However, further study is needed to determine whether these practice patterns and variations reflect poor-quality care. Rates of utilization tell whether the service was provided. However, they do not address whether the dosing regimen was appropriate, the care was consistent with patient preferences, or the care was withheld for legitimate reasons (e.g., patient preferences, comorbidities). Future studies should explore these issues as well as the potential influence of provider and health care system factors on practice patterns.

Use of pharmaceuticals for pain management
Palliative treatment for cancer is important for relieving symptoms (e.g., pain, nausea), easing distress (e.g., anxiety, depression), providing comfort, and improving quality of life. Yet there is evidence of practice variation and inadequate use of supportive pharmaceuticals (e.g., analgesics, antiemetics) in palliative care. The use of analgesics represents a good area to explore for several reasons: (1) most cancer patients experience pain, (2) published pain management guidelines outline appropriate care, and (3) several studies have evaluated treatment for pain using quality measures and criteria for adequacy of pain control.

Practice variations, underuse, and guideline adherence. Cleeland et al explored the adequacy of pain control in 1308 outpatients with metastatic cancer being treated from 1990 to 1991 at 54 sites affiliated with the Eastern Cooperative Oncology Group. Patients rated the severity of their pain during the preceding week, their degree of pain-related functional impairment, and the degree of relief provided by analgesics. Their treating physicians described factors contributing to the pain and its treatment and also estimated the patient's ability to function. The adequacy of prescribed analgesic drugs was evaluated by using guidelines developed by the World Health Organization.

Sixty-seven percent of the patients (871 of 1308) reported pain that limited their ability to function. Of those with pain who provided sufficient information (n = 597), 42% were found to have received insufficient analgesics. These patients reported less pain relief and greater pain-related functional impairment compared with patients receiving sufficient pain control. Cleeland et al also found that patients treated at centers that mostly treated racial minorities were three times as likely to have inadequate pain management. Other factors associated with inadequate pain control included advanced age (>70 years), female gender, better performance status, and a discrepancy between patient and physician in judging the severity of pain. Based on these results, the authors concluded that “many patients with cancer have considerable pain and receive inadequate analgesia.” Subsequent studies (e.g., Cleeland et al, Levin et al, Levy) have provided data leading to similar conclusions. The 1997 study by Cleeland et al showed that 65% of minority cancer patients did not receive guideline-recommended analgesic prescriptions in a clinic setting compared with 50% of nonminority patients (P < .001).

In addition to the above factors, patient beliefs and fears as well as insufficient or no health insurance coverage can influence the adequacy of pain control. However, provider awareness, beliefs, attitudes, and behaviors are considered the greatest barrier to effective analgesia in cancer patients. Therefore, several studies have assessed rates of practice guideline adherence. For example, Rischer and Childress evaluated hospital adherence to guidelines after widespread dissemination of the 1994 Agency for Health Care Policy and Research (AHCPR) pain management guidelines. They used process measures to evaluate treatment for pain at seven acute care Utah hospitals before and after a guideline dissemination intervention. Most process measures of care improved postintervention. However, the absence of a control group precluded determining whether this improvement was attributable to the intervention. In 1997, an HCFA-affiliated Minnesota peer review organization evaluated hospital adherence to AHCPR and American Pain Society cancer pain management guidelines by reviewing the medical records of 271 cancer patients. Ninety-three percent of the hospitals had documented some form of a patient's initial self-assessment of pain. However, only 26% had used effective means of communicating pain intensity and pain reassessment was inconsistent.

Conclusions. Available data suggest that many cancer patients—especially the elderly, women, and members of ethnic and racial minority groups—are not receiving adequate pharmaceutical therapy for pain. Data also suggest that a discrepancy between patient and physician judgments about the severity of the pain contributes to inadequate pain management and, potentially, so does inconsistent use of pain management guidelines. Future studies need to examine these issues using more recent data and also explore other factors.

* The Agency for Health Care Policy and Research is now known as the Agency for Healthcare Research and Quality (AHRQ).
thought to influence physician prescribing rates for narcotics (e.g., concerns about side effects, patient tolerance/dependence, and regulatory scrutiny).46

Unnecessary or excessive utilization of pharmaceuticals in cancer care

Many of the data described thus far have addressed practice variations and potential underuse or misuse of chemotherapy. However, there is also concern about unnecessary or excessive use of pharmaceutical products, especially for cancers in which chemotherapy is thought to have a limited effect on survival. Interestingly, consultants for the NCPB report could find no studies in the peer-reviewed literature that addressed such quality problems with objective data (i.e., survey studies).6 The President's Cancer Panel recently noted that exploration of unnecessary care (e.g., third-line chemotherapies, unneeded or marginally efficacious surgeries) is difficult because such care is “seldom studied, published, or publicized, and negative outcomes are rarely reported.”6 Therefore, this subsection differs from the above subsections in several respects. First, it is largely guided by expert opinion, derived from surveys, commentaries, and personal communications. Second, this subsection considers potential reasons for excessive or unnecessary pharmaceutical care to clarify the scope of this potential problem.

Guideline development. Some information about potential overuse of pharmaceuticals in cancer care comes from examining areas of care associated with recent clinical practice guideline development. For example, the American Society of Clinical Oncology (ASCO) issued guidelines for the use of hematopoietic growth factors in 1994 due to concerns that growth factors were being used inappropriately and excessively (e.g., administered to patients with febrile neutropenia in whom growth factors do not improve outcomes).19 In 1997, ASCO issued guidelines for the treatment of unresectable non–small cell lung cancer due to marked variations in practice according to geography and physician specialty and training.3,20

Expert opinion. Several commentaries published in the peer-reviewed literature provide expert opinions about the issue of overuse. For example, Weissman et al recently expressed some concerns about “how the use of chemotherapy has evolved and seems to define our specialty.”44 These oncologists acknowledged that the use of chemotherapy has produced some “dramatic gains in cancer medicine.” However, Braverman expressed concern about unnecessary chemotherapy in a series of observations about oncology care upon entering the 1990s.71 Braverman also acknowledged a series of breakthroughs with pharmaceutical treatments, but observed that “many medical oncologists recommend chemotherapy for virtually any tumour.”

Potential reasons for excessive or unnecessary use of pharmaceuticals. Potential reasons for inappropriate care include the desire to do well for the patient, reimbursement policies, lack of knowledge, and patient-driven forces. For example, Weissman et al noted that “oncologists desperately want to do ‘well’ for their patients, to help them live and ‘beat’ their cancers or the symptoms of these cancers.”44 Consistent with this perspective, Benner et al recently concluded that the frequent use of second-line regimens for metastatic breast cancer by Maryland oncologists likely reflects efforts to accommodate patients who desired further, albeit less optimal, chemotherapy.72 However, Eisenberg has reported that physician practice patterns are guided by both concern for patient-related factors (i.e., financial situation, clinical status, expectations, preferences) and “various costs and benefits to themselves” (e.g., economic benefits, need for peer approval, convenience).73 Chassin74 and others also have noted that compensation on a per-procedure basis creates a financial incentive to provide more care. The potential for overuse of chemotherapy certainly exists given that a significant portion of a typical medical oncologists income stems from the administration of chemotherapy in the office setting.75

There is also the potential for provider confusion about appropriate standards to lead to inappropriate care. For example, McFall et al classified judgments about adjuvant chemotherapy for Dukes' B2 (Stage II) and Dukes' C (Stage III) colon cancer among 1138 general surgeons, internists, and family practitioners.48 Data were collected shortly before the 1990 NIH Consensus Development Conference, during a period of “considerable uncertainty” about the relative role of surgical and adjuvant therapeutic approaches to colon cancer. McFall et al found that only 24% of surgeons and 16% of nonsurgeons endorsed the NIH consensus position: adjuvant therapy recommended for Dukes' C (Stage III) colon cancer, but not Dukes' B2 (Stage II) outside of clinical trials (experimental therapy).48 This response was more common among surgeons, CCOP-affiliated physicians, and older physicians. Thirty-eight percent of surgeons and 50% of nonsurgeons considered adjuvant chemotherapy experimental for both cancer stages, whereas 29% of surgeons and 22% of nonsurgeons rated adjuvant therapy as common/accepted practice for both stages of colorectal cancer. Thus, lack of clarity about standards of care has the potential to adversely influence care.

Conclusions and notable gaps. Anecdotal evidence suggests that unnecessary and excessive use of pharmaceuticals in cancer care does exist and that the genesis of the problem may be multifactorial. However, there are limited data about such quality problems obtained through carefully controlled studies. What is needed are studies that apply quality measures and criteria to national samples of data to determine the extent of this problem and underlying factors.
Implications of findings

The above-described studies permit some conclusions about the quality of pharmaceutical care for cancer in certain clinical situations. Yet conclusions are limited by the caveats and methodological weaknesses associated with many of these studies. A number of these limitations reflect factors outside of an individual researcher’s control, including (1) the absence of a comprehensive source of current information about drug prescribing and use patterns, (2) the absence of a universally accepted definition for quality pharmaceutical care for cancer, and (3) the associated insufficiency of valid quality measures. The presentation of these results, however, does serve several purposes. First, these data indicate areas that need more rigorous assessment. Second, they illustrate what needs to be done to permit such assessment. Section V of this paper proposes next steps to improving the quality of pharmaceutical care for cancer patients, including means of facilitating quality assessment.

V. Next Steps Toward Achieving Quality Pharmaceutical Care for Cancer

Given the paucity of information about the quality of pharmaceutical care for cancer, a detailed discussion of barriers to quality care would be based mostly on conjecture. Therefore, this section explores factors that have raised concern about the potential for inappropriate care and identifies areas that need further assessment, development, and/or corrective action. Seven areas that require further attention have been identified.

Advance the measurement of quality and reporting relevant to pharmaceutical care

The quality of pharmaceutical care for cancer cannot be adequately assessed, nor optimized, without clear standards for quality pharmaceutical care, valid quality measures, and data about pharmaceutical prescribing and usage patterns. Thus, consumers, providers, and payers must reach a consensus about what constitutes appropriate pharmaceutical care for individual cancer types. This consensus will lay the groundwork for the development, testing, and implementation of quality measures specifically relevant to the pharmaceutical care (e.g., appropriateness of regimen, dose, and use of adjunctive therapies; associated patient functional capacity and quality of life; cost-effectiveness). Applied to appropriate samples of data, these measures will yield information about quality that then can be broadly disseminated. Additional clinical and health service research can facilitate these processes by clarifying research findings, improving measurement systems, and identifying mechanisms to disseminate quality-related data.

The cancer community could:
- Promote greater financial investment in quality-of-care research by the public and private sectors, including the government and pharmaceutical industry.
- Encourage and consider input from all health care participants in defining appropriate pharmaceutical care, constructing and implementing relevant quality measures, and selecting means to disseminate quality-related data.

Improve availability of data about drug prescribing and usage patterns

Data from the literature and cancer registries have allowed investigators to determine the extent to which some pharmaceutical treatments for cancer are being used and factors that may influence these rates. However, the absence of specific data about drug prescribing and usage patterns often has prevented investigators from determining whether such care was appropriate. That is, were the regimen, dose (± reduction for toxicity), and use of supportive therapies consistent with current standards of care? Was the planned treatment completed or appropriately altered for disease progression? Furthermore, reports of negative outcomes or unnecessary care are seldom published, and existing cancer databases (as well as medical records) are associated with limitations (e.g., incomplete or inaccurate data). Therefore, it is difficult to assess the validity of concerns about inappropriate use of pharmaceuticals in cancer care.

In addition to the literature and cancer registries, another major potential source of data about drug prescribing and usage patterns is the pharmaceutical industry. In 1997, Amgen initiated a retrospective chart review program, Project ChemolInsight®, to collect information about adjuvant therapy for breast cancer.76,77 This program has recently been expanded to review chart information for patients with non-Hodgkin’s lymphoma. Their comparative database tracks adjuvant therapy for breast cancer across more than 800 sites and provides information about dose intensity, dose delay, dose reduction, drug combination, and febrile neutropenia (some sites) in more than 18,000 patients.76,77 This database is considered an important tool for evaluating physician practice patterns, as it permits anonymous comparisons of care at both the individual and group practice level.
suggest that cancer care in managed care and fee-for-service settings is consistently lower than in other settings, due to restrictions imposed by managed care organizations on referrals to specialists and use of some pharmaceuticals, despite concern about MCO restrictions on referrals to specialists. For example, methodologies limitations of many of these studies make the significance of these observations unclear. There is also concern about the patient demographics, case mix factors, condition, treatments, and outcomes; treatment settings; provider’s specialty; type of delivery system; (2) a means for monitoring to ensure accuracy of data; and (3) a means for being linked to other databases.

The cancer community could:

• Encourage the government and pharmaceutical industry to develop comparative databases for pharmaceutical care.
• Ask the government and pharmaceutical industry to support Phase IV–V studies to see how drugs are being used, whether they are being used in accordance with FDA-approved indications, and whether evidence of underutilization or overutilization exists.
• Promote publication of studies (apart from RCTs) with sufficient information about pharmaceutical treatment to permit assessment of technical quality of care.
• Encourage publication of reports that describe care associated with negative outcomes or potential unnecessary care.
• Continue upholding the standard that research by all groups be carried out in an autonomous manner.
• Address limitations of cancer registries and other databases and encourage the development of new databases. Ideally, databases should be automated and provide (1) comprehensive information about all aspects of care (e.g., patient demographics, case mix factors, condition, treatments, and outcomes; treatment settings; provider’s specialty; type of delivery system); (2) a means for monitoring to ensure accuracy of data; and (3) a means for being linked to other databases.

Further explore practice variations, potential quality problems, and gaps in knowledge related to pharmaceutical care for cancer

Limited available data suggest that utilization rates of pharmaceuticals vary with various patient, provider, and health care system factors. However, methodological limitations of many of these studies make the significance of these observations unclear. There is also concern about the patient demographics, case mix factors, condition, treatments, and outcomes; treatment settings; provider’s specialty; type of delivery system; (2) a means for monitoring to ensure accuracy of data; and (3) a means for being linked to other databases.

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Improve enrollment rates for adults in cancer clinical trials

For a number of kinds and stages of cancer, RCTs can provide access to the best available and most promising new treatments. Thus, despite the status of RCTs as “experimental” therapy, many individuals in the cancer community consider access to them to be an important component of quality cancer care (e.g., the Oncology Nursing Society [ONS],78 the National Coalition for Cancer Survivorship [NCCS],79 American Federation of Clinical Oncologic Societies80). However, it is estimated that fewer than 2% of cancer patients 50 years of age and older participate in cooperative clinical trials sponsored by the NCI.81 This is in stark contrast to the more than 70% of children with cancer who participate in RCTs.82 As studies have linked poor access to care to poor health outcomes, many are concerned about poor access to RCTs.83

A variety of reasons have been proposed for the underenrollment of patients in cancer RCTs. Physicians are thought to under-refer patients to clinical trials because of concerns about the patient’s age, health status, ability to travel, and potential time demands.82,83 Studies also have shown that patient demographics influence enrollment rates. For example, under-representation of African American patients and women in clinical trials led to federal mandates about the recruitment of these populations.84 Hutchins et al recently reported significant under-representation of patients 65 years and older in Southwest Oncology Group treatment trials conducted from 1993 to 1996.84

Most insurers (e.g., Medicare, most state Medicaid, most MCOs) limit or deny coverage of the costs of participation in RCTs for policy reasons. This is a major reason for under-referral of patients to RCTs by physicians.82 For example, 37% of the oncologists surveyed by Mortensen et al reported “frequent problems” with coverage of RCTs.83 Approximately 25% of respondents reported that they “hesitate to prescribe” RCTs...
The cancer community could:

- Continue education of consumers, providers, and third-party payers about the important role of RCTs in developing new treatments as well as offering promising state-of-the-art treatments for many patients.
- Encourage research to determine the true cost of clinical trials and address who should bear the added costs, if any.
- Develop a comprehensive, readily accessible (e.g., online) source of information about all cancer clinical trials for both public and professional use. This could include integration of existing online sources of information.
- Support other efforts to improve third party coverage of patient costs associated with clinical trials.
- Explore underlying reasons for potentially high nonenrollment rates by eligible patients apart from coverage issues (e.g., fears or concerns about the experimental nature of RCTs, fear of placebos).
- Explore concerns that eligibility criteria for clinical trials are too rigid.

Increase investment in information systems

Advanced information systems offer a number of means by which pharmaceutical care can be monitored and improved. For example, information systems offer the potential to advance evidence-based health care; improve coordination of care (e.g., scheduling of chemotherapy); reduce medical (e.g., dosing) errors; facilitate comparison of performance of practitioners, plans, and facilities; and support continued research and innovation. Information systems also offer a potential means of simplifying coding and providing reminders for clinical documentation. Collectively, these features can encourage quality care by decreasing the likelihood of treatment discontinuities and medical errors, improving efficiency, reducing administrative demands on clinicians (i.e., more time to devote to patient care), and facilitating performance comparisons as a basis for continuous quality improvement. The major obstacle to implementing advanced information systems is the significant financial investment required.

The cancer community could:

- Encourage, via education, greater financial investment in development and implementation of information systems by both the public and the private sectors.
- Fund research to identify feasible methods and strategies for development of quality monitoring systems and evaluate the cost-effectiveness of such systems.
- Promote development of a national cancer quality monitoring system to ensure collection of timely and meaningful information about cancer care.

Improve development, dissemination, and implementation of clinical practice guidelines

Some people have suggested that lack of information is the main reason for serious quality problems in health care. Most reports about the quality of health care have concluded that a stronger commitment to evidence-based medicine is needed. One means of translating new evidence into clinical practice is through CPGs. However, the success of CPGs in changing physicians' perspectives and practice patterns has been mixed. For example, Hatzell et al recently found little evidence that an NCI guideline-based educational initiative did much to heighten rural primary care physicians' awareness of state-of-the-art colorectal and breast cancer therapies. On a postintervention survey, 70% of the physicians failed to acknowledge chemotherapy as experimental for Dukes' B colon cancer; 25% failed to recognize a combination of surgery, chemotherapy, and radiation as a standard treatment for rectal cancer; and 67% failed to indicate that adjuvant therapy was an accepted practice for treating Stage I breast cancer. The low levels of awareness of NCI guidelines were further reflected by low breast-sparing surgery rates for women living in the intervention region. In addition, Bennett et al found that the response of oncologists to the 1994 ASCO hematopoietic colony-stimulating factor guidelines was mixed. Although decreased and more appropriate use of CSFs was documented in 1997, CSFs were still being used in some clinical situations (e.g., febrile and uncomplicated febrile neutropenia) despite guideline recommendations against such therapy.

Failure of CPGs to change oncology practice has been attributed to a variety of factors, including problems with development, dissemination, and implementation. Guidelines considered the most likely to succeed are those with features such as (1) internal development (input from local providers) or development by a respected group, (2) dissemination accompanied by specific educational interventions, and (3) implementation plans including patient-specific reminders at the time of consultation. However, as illustrated by Hatzell and colleagues, even dissemination of CPGs via educational initiatives does not ensure success. In fact, failure to implement
systems with a means of holding providers accountable for their performance is the likeliest reason for a number of oncology guideline failures. Thus, experts also consider an essential element of successful CPG implementation to be a system or mechanism to ensure adherence. Systems for ensuring CPG adherence represent the most logical target for further investigation to improve the success of CPGs in changing oncologists’ practice patterns.

One mechanism of promoting CPG adherence that appears promising is the National Comprehensive Cancer Network (NCCN) Oncology Outcomes Database. This outcomes database measures adherence of NCCN clinicians to NCCN guidelines and provides clinical and other outcomes data to evaluate provider performance (i.e., quality of care). Such systems and databases represent a promising continuous quality improvement (CQI) method that could be complemented by communication of the guidelines to patients in a format that is helpful to them. The American Cancer Society (ACS) and NCCN are currently collaborating on a project in which NCCN guidelines intended for oncologists are being translated into an understandable format for patients. Patient guidelines for breast cancer and prostate cancer were introduced by the ACS and NCI in 1999. ASCO also has introduced patient guidelines for follow-up care for breast cancer and advanced lung cancer treatment.

Although guidelines from multiple sources (e.g., NCCN, ASCO) cover many cancer types, there is still a need to expand the number of oncology CPGs to include areas of care not currently covered. For example, CPGs could be developed to guide the appropriate use of chemotherapy in the palliative setting, especially second- and third-line chemotherapies. Other potential areas of guideline expansion include cancer detection, ancillary problems, supportive modalities, and long-term psychosocial and economic concerns.

The cancer community could:

- Seek funding for further research to study optimal means of developing, disseminating, and especially, implementing oncology CPGs. This research should include exploration of mechanisms to ensure adherence and accountability, including the use of outcomes databases. There is also a need for more information about why providers do not comply with CPGs.
- Expand the number of CPGs to include guidelines for cancer types and areas of care not currently covered by CPGs.

**Strengthen the hand of the consumer in health care**

Consumers are seeking greater rights and a stronger role in their health care, as exemplified by the recently proposed Consumer Bill of Rights and Responsibilities. The ONS has developed a similar bill specifically for cancer patients, and the NCCS has outlined 12 principles to promote quality care for cancer. In February 2000, the Charter of Paris Against Cancer was signed at the World Summit Against Cancer in the New Millennium. Its 10 major directives include those directed at protecting and expanding patients' rights; increasing the commitment to research; improving access to cancer clinical trials, prevention, and screening programs; and addressing patients' quality-of-life issues. Thus, patients’ rights have emerged as a pressing issue in cancer care.

One aspect of patients’ rights relates to the interpersonal quality of care. Evidence suggests that patients are not being included in medical decision making, listened to, and provided appropriate psychosocial support—all of which constitute basic patient rights. For example, 27% of the women who underwent mastectomy in one study reported that their surgeons had not discussed the option of breast-conserving surgery with them. In a survey of terminally ill patients, 41% reported that they had not discussed their prognosis or wishes regarding resuscitation with their providers. The Charter of Paris Against Cancer emphasizes the right all patients have to equal access to information concerning the disease and treatment options, as well as open and collaborative communication with health care professionals and scientists.

Patients with cancer face major psychosocial challenges. These include adapting to personal consequences of cancer (e.g., facing loss of a body part or function, relationships, or financial security), adjusting to social consequences of cancer (e.g., facing the stigma of cancer, overcoming obstacles to job security and insurability), and navigating the health care system. Yet surveys conducted at Memorial Sloan-Kettering Cancer Center suggest that far less than 10% of the 20%–35% of cancer patients with significant levels of psychosocial distress are referred to appropriate resources for help. Passik et al reported that, in their study, physicians only identified 13% of their cancer patients who manifested symptoms of moderate to severe depression. Thus, headway needs to be made in improving psychosocial support for cancer patients.

In addition to these basic rights, cancer patients and consumers are seeking a more active role in global decision making and policy development related to cancer care. The Charter of Paris Against Cancer acknowledges that individual and constituency-based patient advocacy has “directly and favorably impacted the war against cancer” when “rooted in an understanding of and commitment to quality science and evidence-based medical practice.” It notes that the patient is “uniquely positioned to focus the overall anti-cancer effort on eradication of disease and the optimal use of resources.” Article VII of the charter calls for the medical research, industry, and policy communities to “guard informed patient advocates as key strategic partners in all aspects of the fight against cancer care, including the advancement of standards of care and survival.” It also calls for the professional medical community to recognize the benefit of an informed and active
public and to facilitate popular commitment to the scientific process and evidence-based practice. Thus, consumers should be included in the development of clinical trials and CPGs and join the cancer community in promoting the practice of evidence-based medicine.

Important means of ensuring patients' rights are via education, advocacy, and research. Future educational initiatives directed at providers should address communication and interpersonal skills and outline specific patient rights. Education directed at consumers should clarify consumer rights and responsibilities as well as how consumers may obtain, interpret, and use quality-related data in medical decision making. Consumers also should be educated about how they can play a role in improving health care quality (advocacy). Additional health service research can facilitate these processes by identifying means of presenting information to consumers in an easily understood format and exploring consumer-friendly and cost-effective means of disseminating this information.10 There is also a need for research related to psychosocial issues and outcomes. Other means by which care could be improved for patients include (1) obtaining input from patients in developing quality measures; (2) developing databases of patient-based, condition-specific information about quality of life and other outcomes to facilitate medical decision making; (3) expanding interactive systems that allow patients to communicate with other patients105; and (4) recruiting members from the professional community (e.g., oncology nurses, ACS volunteers) to serve as patient advocates.

The cancer community could:
- Educate consumers about patient rights, components of quality care, and what consumers can do to improve quality of care.
- Develop educational initiatives targeting provider communication and interpersonal skills and knowledge of supportive care and patient rights.
- Support health service research to (1) develop patient-focused quality measures (e.g., measures of interpersonal quality, patient satisfaction, quality of life); (2) develop quality and outcomes databases; and (3) determine optimal means of disseminating quality-related information to consumers.
- Support research to assess psychosocial issues, including outcomes research (e.g., health-related quality of life, effectiveness of psychotherapeutic interventions), exploratory studies (e.g., long-term psychological sequela of cancer, impact of burden on family caregivers), and comparative/intervention studies (e.g., evaluation of psychosocial and educational interventions, clinical trials for reducing symptom distress).102
- Recruit members of the professional community (e.g., oncology nurses, ACS volunteers) to serve as patient advocates.
- Support other efforts directed at increasing patients' rights (e.g., ONS Patient Bill of Rights for Quality Cancer Care, Treaty of Paris Against Cancer).

Conclusion
Little is known about many aspects of pharmaceutical care for cancer. The above-described steps outline concrete actions intended to fill gaps in knowledge, enhance quality assessment, and optimize application of pharmaceuticals to cancer care. Critical to the success of these measures is collaboration between the public and the private sectors. Such collaboration should include, but not be limited to, areas such as research, education, advocacy, and database and information system development.
Appendix

National Roundtable on Health Care Quality
As part of a 1994 initiative, the Institute of Medicine (IOM) assembled the National Roundtable on Health Care Quality to measure, monitor, and improve health care in the U.S. After reviewing the available data, this group of consumers, health care experts, clinicians, and representatives from business, government, and managed care organizations concluded that “serious and widespread quality problems exist throughout American medicine.” Their consensus statement, describing “large gaps between care people should receive and care they do receive,” was published in the Journal of the American Medical Association in 1998.

President’s Advisory Commission on Consumer Protection and Quality in the Health Care Industry
The President’s Advisory Commission (PAC) also reviewed the literature as part of their mission to promote and ensure consumer protection and health care quality. Similar to the National Roundtable panel, this commission concluded: “While most Americans receive high-quality care, too many patients receive substandard care.” Their final (1998) report, Quality First: Better Health Care for All Americans, describes four types of quality problems: underuse, overuse, and variations in use of services, and medical errors.

Committee on Quality of Health Care in America
In 1998, the IOM assembled the Committee on Quality of Health Care in America to develop a strategy that would result in a threshold improvement in health care quality over the next 10 years. Their 1999 report, To Err Is Human: Building a Safer Health System, addresses issues related to patient safety, a subset of overall quality-related concerns, and lays out an agenda for reducing errors in health care and improving patient safety. While the committee believes there is still much to learn about the types of errors committed in health care and why they occur, they believe enough is known to recognize that a serious concern exists for patients. Two large studies, one conducted in Colorado and Utah and another in New York, found that adverse events occurred during 2.9% and 3.7% of hospitalizations, respectively. In both studies, more than half of the adverse events occurred because of preventable medical errors. Total national costs of preventable adverse events (medical errors resulting in injury) are estimated to be between $17 billion and $29 billion and medication errors alone are thought to account for more than 7000 deaths annually.

RAND
A 1998 RAND study, “How Good is the Quality of Health Care in the United States?,” synthesized results from 48 articles describing services delivered to half a million people for a broad range of conditions and across many settings. These researchers concluded that large gaps in care exist (1) for all types of care (preventive, acute, and chronic); (2) in different types of health facilities; (3) for different types of health insurance; (4) for all age groups; and (5) across the whole country as well as in individual locations.
Executive Summary References

References


