

Lessons to Improve Quality in Oncology Practice: Road Map to Fill the Global Gaps

Layth Mula-Hussain, Adele Duimering, Muzahm Al-Khyatt¹, Khalifa AlKaabi, Wilson Roa, Robert Pearcey

Division of Radiation Oncology, Cross Cancer Institute, University of Alberta, Edmonton, Alberta, Canada, ¹Department of Surgery, College of Medicine, Ninevah University, Mosul, Nineveh, Iraq

Abstract

Oncology is a medical branch devoted to the study, diagnosis, treatment, and prevention of cancer. Cancer prevalence is increasing. By 2030, the global cancer burden is expected to grow to 21.7 million new cases and 13 million deaths. Developing as well as developed nations have cancer burden, but there is a gap. Ideally, cancer management involves a multidisciplinary team composed of qualified individuals from different specialties collaborating to optimize the care. This team must follow evidence-based medicine principles, considering three questions: What is the problem? How can we manage it? And why are we selecting this pathway? To fill the gaps in care, we present 10 questions that can help those who are managing patients with cancer globally. We concluded that although there is no “one-size-fits-all” approach, adhering to basic principles can help guide provision of evidence-based patient-centered care and fill some of the gaps in oncology.

Keywords: Oncology, quality, road map

INTRODUCTION

Patients with cancer face large global discrepancies in their access to health-care services, innovative drugs, clinical trials, multidisciplinary care, pain management, palliative care, health-care information, and medical records. These gaps result in suboptimal outcomes and care, and account for the premature or even preventable deaths of thousands of patients today. If every patient with cancer was treated and cared for in accordance with the best standards, much suffering and dying could be prevented.^[1]

On the basis of our literature review and authors' experiences, we compiled lists of lessons that readers should be aware of and categorized them into lessons learned from cancer behavior, cancer epidemiology, and clinical management of cancer. We hope that this article will serve to refresh knowledge about the essential components of quality cancer care for many health-care personnel. If widely applied, these principles should not only improve patients' quality of care but also prevent or at least reduce unnecessary suffering and deaths.

LESSONS FROM BEHAVIOR OF CANCER

Anyone can develop cancer; however, the risk of being diagnosed increases substantially with age in most cancers. All cancers involve the malfunction of genes that control cell growth, division, and death. Most of the genetic abnormalities that affect cancer risk are not hereditary, but instead result from damage to genes (mutations) that occur throughout a person's life. It is estimated that only approximately 5% of all cancers are strongly hereditary. Most cancers evolve through multiple changes resulting from a combination of hereditary and environmental factors.^[2]

Cancer is caused by both external factors (tobacco, chemicals, radiation, and infectious organisms) and internal factors (inherited mutations, hormones, immune

Address for correspondence: Dr. Layth Mula-Hussain, Division of Radiation Oncology, Cross Cancer Institute, 11560 University Avenue, Edmonton, Alberta T6G 1Z2, Canada. E-mail: lmulahussain@aol.com

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conditions, and mutations that occur from metabolism). These causal factors may act together or in sequence to initiate or promote carcinogenesis. The development of most cancers requires multiple steps that occur over many years. It is estimated that more than half of all cancer cases and deaths worldwide are preventable and doing so will lead to improved quality of life and increased longevity; however, it remains to be seen whether a preventative focus will ultimately reduce the number of cancer deaths worldwide. Cancers related to tobacco or alcohol use and obesity are most effectively prevented through a combination of education and social policies that encourage healthy behaviors and discourage unhealthy practices. Cancers that are related to infectious agents, such as hepatitis B virus, human immunodeficiency virus, human papillomavirus, and *Helicobacter pylori*, can be prevented through known interventions, including vaccines, antibiotics, improved sanitation, or education. Some cancers (colorectal and cervical) can be avoided by detection and removal of precancerous lesions through regular screening examinations by a health-care professional. Early detection of cancer is important because it increases the likelihood that the treatment will be successful.^[2]

LESSONS FROM EPIDEMIOLOGY OF CANCER

In economically developed countries, 78% of all newly diagnosed cancer cases occur at the age of 55 years and older compared to 58% in developing countries. The difference is largely because of variations in age structure of the populations: the populations of developing countries are younger and have a smaller proportion of older individuals in whom cancer most frequently occurs. When countries are grouped according to economic development, cancer is the leading cause of death in developed countries and the second leading cause of death in many developing countries (following cardiovascular and infectious diseases).^[2] The five most prevalent cancers globally are those originating from breast, prostate, lung, colon/rectum, and cervix.^[3]

In 2012, there were 14.1 million new cancer cases in the world, 8.2 million cancer deaths, and 32.6 million people living with cancer (within 5 years of diagnosis). Of these, 8 million (57%) new cancer cases, 5.3 million (65%) cancer deaths, and 15.6 million (48%) of the 5-year prevalent cancer cases occurred in less developed regions. The overall age-standardized cancer incidence rate is almost 25% higher in men than in women, 205 and 165 per 100,000, respectively. By 2030, the global burden is expected to grow to 21.7 million new cancer cases and 13 million cancer deaths simply because of population growth and aging. The future burden will probably be even larger because of adoption of unhealthy lifestyles, such as smoking, poor diet, and physical inactivity, and a decline in birth rate in economically developing countries.^[2]

Cancer survival is usually measured as the proportion of patients who are still alive 5 years after diagnosis relative to the 5-year survival of people in the general population who are of the same age and sex. Cancer survival rates in a population are affected by a number of factors, most importantly, the types of cancer that occur, the stages at which cancers are diagnosed, and the availability of treatment. For cancers that are affected by screening and/or treatment, such as breast cancer, large survival differences between economically developed and developing countries are reported. For example, 5-year survival rates for breast cancer in the United States are approximately 84% as compared to 39% in Algeria.^[4] In contrast, for cancer sites without early detection or effective treatment, such as esophagus, liver, lung, and pancreatic cancer, survival rates vary little between developing and developed countries. In addition to differences in screening and treatment, international differences in cancer survival rates are also affected by differences in awareness and data quality.^[2]

LESSONS FROM CLINICAL MANAGEMENT OF CANCER

Ideally, cancer management involves a multidisciplinary team (MDT),^[1,5] which is composed of qualified individuals from different specialties collaborating to optimize the care of patients with cancer. In one published study, 153 patients were presented at an MDT tumor board with alterations made in 53 cases (35%).^[6] Major alterations ($n = 13$) predominantly resulted from pathology reassignments, and minor alterations ($n = 40$) resulted from pathology, staging, radiology, and surgical team clarifications. The original authors concluded that these combined regular meetings provide important information for prospective treatment planning and a significant educational opportunity for postgraduate trainees.^[6] In another study, 153 specific, prospective recommendations were made for the care of 97 patients.^[7] Of the implemented recommendations, 16% were for diagnosis, 78% were for therapy, and 5% were for palliation. The original authors concluded that recommendations made at tumor conferences are generally implemented in patient care, and thus such tumor boards play a strategic role in forming the care of patients with cancer.^[7]

The MDT is a site-specific team. In general, it can be composed of a surgical oncologist, radiation oncologist, medical (adult, geriatric, or pediatric) oncologist, oncology nurse, palliative care specialist, otolaryngologist oncologist, orthopedic oncologist, gynecologist oncologist, pediatric onco-surgeon, onco-neurosurgeon, diagnostic onco-radiologist, tumor pathologist, psychiatrist, psychologist, neurologist, clinical social worker, and chaplain among others. The MDT must follow evidence-based medicine (EBM) principles, considering the three “WHW” questions: “What” is the problem and its related issues? “How” can we manage this problem? and “Why” are we selecting this plan (i.e., on what evidence

and what is the power of that evidence)? In fact, since the 1990s, there has been increasing emphasis on EBM. The term itself is debated but has been defined as “the judicious integration of best research evidence with the patient’s values to make decisions about medical care”^[8] and “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients by integrating individual clinical expertise with the best available external clinical evidence from systematic research.”^[8] The aim is to assist clinicians and health-care professionals in developing methods of disease prevention, making proper diagnoses, choosing the best treatment plans, and developing appropriate guidelines that can be used to improve treatment, measure performance, and identify areas for further study and improvement.^[8]

The “continuum of increasing evidence” has several stages: a retrospective, prospective, preclinical, and exploratory stage, during which relevant theory and design issues are explored; then phase I modeling, when the key components of an intervention and its evaluation are developed; a phase II feasibility or pilot study, when components of the intervention and relevant protocols are tested and may be modified; a phase III randomized clinical trial with appropriate statistical power to evaluate effectiveness; and a phase IV level, where we implement an effective intervention in uncontrolled settings over the longer term.^[9] In addition to these aforementioned studies, there are meta-analysis and systematic reviews, which are more powered than the individual studies. On the other side, there are less powered evidences such as the case reports and the expert opinion.

TEN QUESTIONS TO ASK WHEN MANAGING PATIENTS WITH CANCER

Physicians are sometimes overwhelmed by clinical, academic, and administrative workloads and are subjected

to regulations and limitations. However, regardless of practice environment, oncologists and all physicians managing patients with cancer must universally consider the following 10 questions in approaching each and every case [Figure 1].

What is the differential diagnosis?

Many clinical presentations can be similar, rendering it sometimes challenging to clearly differentiate between etiologies of patients’ symptoms. Any physician must consider the possible differential diagnosis and tailor investigations accordingly to arrive at a diagnosis. A systematic approach to accomplish this is to elicit a thorough history and perform a relevant physical exam, then match the present symptoms and signs with all possible causes using the prioritization principle and aid of investigations to narrow down the possibilities.

Is the diagnosis confirmed pathologically and/or clinically?

An accurate cancer diagnosis is a fundamental first step in patient management. A diagnosis of cancer is suspected based on the history, physical examination, and imaging techniques such as conventional X-ray, computed tomography scan, magnetic resonance imaging scan, positron emission tomography scan, bone scan, and ultrasound. However, confirmation should generally be sought by laboratory testing (tissue biopsy/aspiration, blood analysis, etc.). The treating physician must be as confident as possible in the patient’s diagnosis before making any therapeutic decisions, as many treatment options are based on histopathologic features such as subtype, markers, receptor status, and margin positivity. Treatment on presumptive diagnosis or incomplete workup may result in providing substandard or incorrect management. Furthermore, when the clinical scenario does not fit the pathologic or radiologic diagnosis, treating

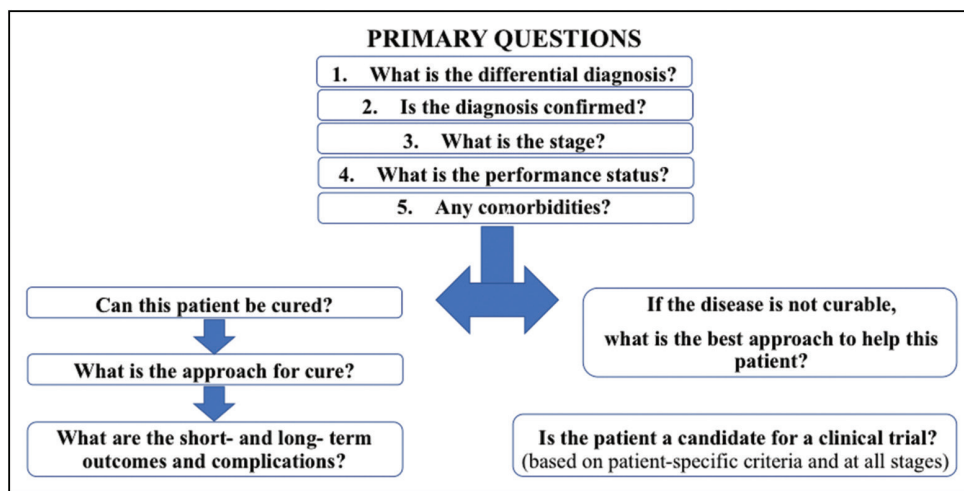


Figure 1: Ten questions to ask when managing patients with cancer

physicians should not hesitate to request a second review of the specimen or images.^[10]

What is the clinical and/or pathological stage of this cancer?

Determining the stage is necessary for two main reasons: management and prognosis. Management of cancer is generally stage dependent with different modalities of care applied for different stages. A surgical approach is often sufficient in earlier stages, and systemic therapy may be the more suitable treatment for advanced stages. Frequently, combined modalities are applied. Outcome is also stage dependent as prognosis worsens with increasing stage. Cancer staging must be based on the international modern standards (such as the TNM classification system in its recent editions, which is based on the extent of the local tumor, T, the extent of spread to the regional lymph nodes, N, and the presence of distant metastasis, M). These staging systems are important in communication and decision-making for both physicians and patients. All attempts should be made to stage the disease properly before offering definitive cancer therapy or discussing prognosis.^[10]

What is the performance of the patient?

In oncology, we are not treating the disease independently from the body. Rather, we are treating a human body harboring a cancer, and we must keep this in mind at all times. The disease *per se* can be curable but if the body carrying that “curable” disease is unable to tolerate the proposed treatment, suffering and death may be hastened. As such, patient performance status (PS) is one of the most critical factors in cancer care. It plays roles both in shaping prognosis and in determining the best management option. PS is a measure of the patient’s ability to perform certain activities of daily living (ADLs) without the help of others. These ADLs include basic activities such as getting dressed, eating, and bathing, as well as more complex activities such as cleaning the house and working a regular job. There are two widely used scales for PS. The most commonly used is typically referred to as the Zubrod or Eastern Cooperative Oncology Group scale. This scale ranges from 0 to 5, with 0 being fully functional, 4 being bedridden, and 5 being dead. The other scale sometimes used is the Karnofsky scale. This scale ranges from 10 (moribund) to 100 (no limitations). These scales of PS are often included in physician’s assessments of patients, eligibility criteria for clinical trials, and guidelines for standard treatment recommendations.^[11]

Does the patient have comorbidities?

Chronic diseases are more common among the elderly than younger adults, and most are not life-threatening in the short term. Consequently, many people live with, rather than die from, chronic health conditions.

Cancer itself may be a chronic disease with long-term consequences for health and quality of life, and cancer is more prevalent among older people. Comorbidity among patients with cancer is therefore common.^[12] Comorbidity and its consequences pose a major clinical challenge in the treatment of cancer. As comorbidities may adversely affect an individual’s access to and the effectiveness of major cancer treatments, it is also a significant prognostic factor for long-term survival from cancer. Comorbidity affects survival, both through direct mechanisms related to the increased physiological burden of disease and through indirect mechanisms related to the effects comorbidity has on treatment choice, timeliness, and/or effectiveness.^[13] Accordingly, physicians must consider comorbidities in all cases, as they may considerably alter management, in some cases prompting shifts from a radical curative to palliative management intent.

Can this patient be cured?

This is the most important question for a treating physician to keep in mind, as cure is the ideal outcome of any treatment. It is known that the best chance to make a difference in outcome in the patients with cancer is at first chance. Therefore, physicians should take full advantage of upfront treatment, keeping in mind the concept of that “when in doubt, give your patient the benefit of doubt.” So, if a physician cannot confirm that a patient has an incurable disease, curative treatment should be offered, presuming that the perceived benefits outweigh the risks. In summary, the “culture of cure” should be promulgated among oncology professionals through training, education, and practice.^[10]

What is the approach for cure?

As highlighted earlier, decision-making in cancer care has transitioned from an individual to MDT-based approach. After the treating physician has answered the preceding six questions, he/she is faced with making a decision regarding the best management approach. This should be based on best evidence. Next, the treating physician would ideally discuss the case at a MDT meeting to solicit input and arrive at a consensus recommendation. Education must be provided to the patient (and his/her loved ones), and their decisions must be respected.

If the disease is not curable, what is the best approach to help this patient?

If the answer to the sixth question is no, alternative goals of care must be considered. Reviewing available management options with patients and discussing cases with other specialists will help to establish the goals of care and devise management plans accordingly. Risk–benefit assessment and patient values play key roles in this process. The often-used phrase “nothing can be done” when cure is not attainable should be replaced by

“much can be done” in the palliative realm with an aim to alleviate symptoms and improve quality of life. Referral to palliative care should be considered as early as possible.^[10]

What are the short- and long-term outcomes and complications?

Every step of cancer diagnosis and management comes with benefits and risks. The benefits may be durable or short-lived, and the toxicities may be acute and transient or cause long-term impairment. All information must be fully presented to the patient and his/her loved ones before proceeding with the management, that is, informed consent must be obtained.

Is the patient a candidate for a clinical trial?

Many advances in clinical oncology are made as a result of clinical research involving phase I, II, and III clinical trials. If the patient is eligible for a clinical trial, they should be offered the opportunity, but not coerced to participate. Besides potential direct benefits, there may be altruistic satisfaction in contributing to bettering treatment for those to come.

DOWN THE ROAD IN THE ONCOLOGY PRACTICE

As research progresses, improvement in cancer prevention, early detection, and treatment will impact oncologic care. Patients and their families will be inquiring about genetic tests for risk determination. New molecular diagnostics will be introduced for early cancer detection. New chemopreventive agents will be available to high-risk individuals. New cancer genomic profiles will provide prognostic data for cancer progression, predictive information on treatment outcomes, and a tool for surveillance.^[14]

In conclusion, the science and practice of oncology are becoming ever complex and demanding. We believe that the approach we have outlined will remind oncologists to remain grounded in the basics, to better face the challenges of contemporary oncology practice, and to address the gap of oncology outcomes globally. Oncology educators should demystify the field so that physicians can more easily translate knowledge into practice. There is no “one-size-fits-all” in oncology. We must seek inspiration

from our clinical cases, continue research pursuits, collaborate, and advocate to ensure the best outcomes for not only our patients, but those to come, globally.

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