MANAGEMENT & TREATMENT

Existing cost-effective interventions such as surgery, radiotherapy, and access to essential oncologic drugs can greatly improve cancer survival worldwide.

Cancer management starts with obtaining a valid diagnosis. However, lack of diagnostic imaging and pathologists are major barriers to receipt of high-quality oncologic care in many parts of the world. **FIGURE 31.1** Indeed, 8 million people die annually due to poor-quality care in low- and middle-income countries (LMICs), including many due to cancer.

Surgery is needed for 80% of early-stage cancer patients, and as a palliative measure for a substantial proportion of late-stage cancer patients. However, surgery is only delivered to one in four eligible patients globally due to infrastructure and workforce limitations, as well as lack of affordability, particularly in LMICs. Furthermore, although specialized surgery performed by an oncologic surgeon is crucial to patient outcomes, due to shortages of these specialists, cancer patients in LMICs usually receive surgery from a general surgeon. As surgery is a key contributor to improving the survival of cancer patients, the inequities in LMICs must be tackled.

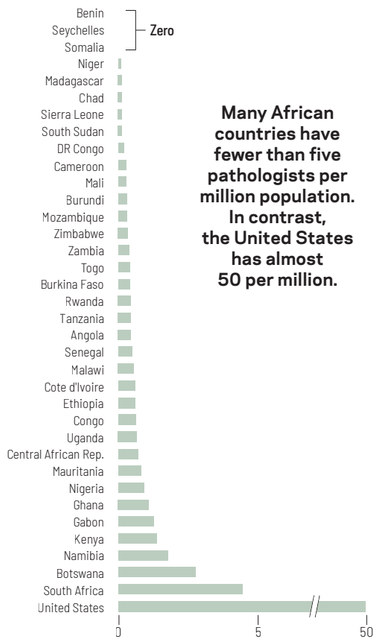
Radiotherapy is indicated for about 60% of cancer patients to relieve symptoms (palliative treatment), shrink tumors before surgery, or kill remaining cancer cells after surgery to avoid recurrence. For example, within 5 years after a diagnosis of cervical cancer, radiotherapy prevents recurrence in 1 in 3 patients and death in 1 in 5 patients. Radiotherapy coverage is less than optimal in many LMICs, with about one-third in Africa, about two-thirds in Asia Pacific, and around 90% in Europe and Latin America. **MAP 31.1** In Ethiopia, for example, a population of nearly 100 million is served by a single radiotherapy center. Newly implementing radiotherapy (mostly in Africa) and scaling up coverage (in South-East Asia) will require financial and human resources as well as continuous technical support.

Systemic therapy has changed over time, from administration of chemotherapy to all patients to personalized approaches considering receptor status, RNA expression, underlying DNA mutations, tumor environment and immunologic responses. Meanwhile, the cost of cancer drugs continues to rise, with over US$100,000 per treatment in many high-income countries. Still there are many low-cost and effective cancer drugs for broad and equitable application in LMICs, which are on the WHO essential drug list. **FIGURE 31.2, 31.3**

Political will and stewardship at the national level, as well as greater awareness and engagement across stakeholders, are necessary to close the cancer divide. This also requires health system improvements critical to addressing the delays in diagnosis and the lack of access to therapy that lead to disparities in premature death and survival between countries. Evidence-based guidelines to perform phased implementation are provided by the National Cancer Control Network according to different geographic regions. **FIGURE 31.4**

FIGURE 31.1

Pathologists per million population, select countries, 2011–2013



Many African countries have fewer than five pathologists per million population. In contrast, the United States has almost 50 per million.

FIGURE 31.3

Cancer therapy included on the World Health Organization essential medicines list, and the proportion of countries including the medication on their national essential medicines list

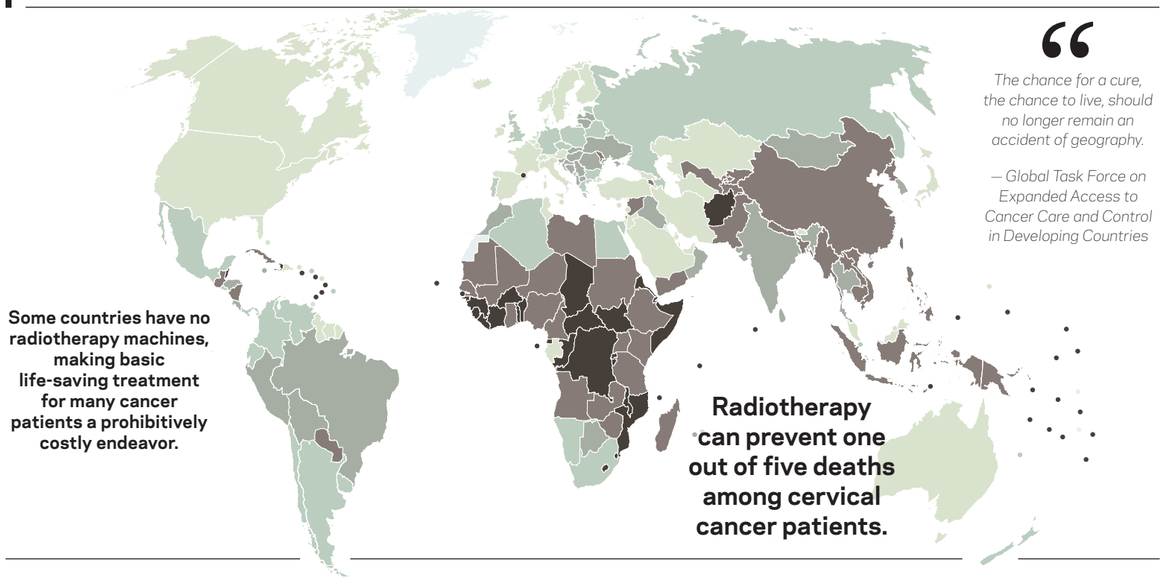
A substantial proportion of countries do not include major cancer therapies on their national essential medicine list.

MEDICINE	PERCENT (OF 135 COUNTRIES)	USED FOR THE FOLLOWING CANCERS
Methotrexate	95%	Breast, bladder, leukemia, sarcoma
Cyclophosphamide	89	Breast, lymphoma
Tamoxifen	83	Breast
Vincristine	82	Lymphoma, acute leukemia, sarcoma
Fluorouracil	81	Breast, gastrointestinal
Doxorubicin	73	Breast, lymphoma, sarcoma, bladder
Cisplatin	72	Lung, head & neck, ovary, osteosarcoma, cervix
Bleomycin	70	Germ cell tumor, Hodgkin lymphoma
Cytarabine	65	Acute leukemia
Hydroxycarbamide	65	Chronic myeloid leukemia
Mercaptopurine	64	Acute lymphocytic leukemia
Calcium folinate	62	Colorectum
Chlorambucil	62	Chronic lymphocytic leukemia
Etoposide	62	Lung, ovary, germ cell tumor

MAP 31.1

Number of radiotherapy machines per 1,000 cancer patients

Zero | 0.01–0.50 | 0.51–0.75 | 0.76–1.00 | 1.01 or more | No data



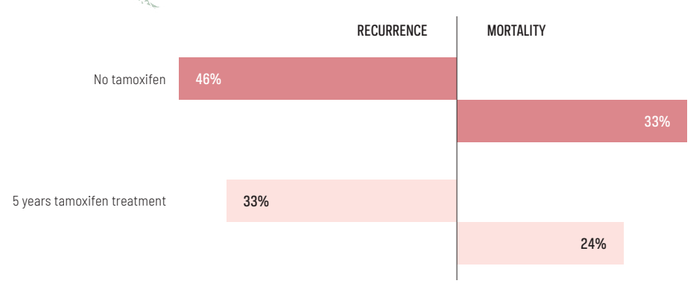
Some countries have no radiotherapy machines, making basic life-saving treatment for many cancer patients a prohibitively costly endeavor.

Radiotherapy can prevent one out of five deaths among cervical cancer patients.

> *The chance for a cure, the chance to live, should no longer remain an accident of geography.*
>
> *— Global Task Force on Expanded Access to Cancer Care and Control in Developing Countries*

FIGURE 31.2

Breast cancer recurrence and mortality (%) with and without 5 initial years of tamoxifen treatment, 15 years after diagnosis



Certain cancer therapeutics have greatly improved cancer outcomes. For example, tamoxifen endocrine therapy for hormone receptor-positive breast cancer patients substantially reduces local recurrence and disease-specific mortality.

FIGURE 31.4

Initiatives to improve access and quality of cancer care in low- and middle-income countries

NATIONAL CANCER CONTROL NETWORK (NCCN)

Resource stratified guidelines help to define appropriate treatment pathways based on available resources—Basic, Core, Enhanced, and NCCN Guidelines®—and deliver a tool for healthcare providers to identify treatment options that will provide the best possible outcomes given specific resource constraints.

Regional guidelines are targeted regional resources created as part of a collaborative effort to combat skyrocketing cancer rates and unique care circumstances. They represent both the optimal care that low- and mid-resource countries aspire to provide, and pragmatic approaches that provide effective treatment options for resource-constrained settings.

DISEASE CONTROL PRIORITIES 3: CANCER

Disease Control Priorities provides a periodic review of the most up-to-date evidence on cost-effective interventions to address the burden of disease in low-resource settings. This textbook provides evidence for investments in cancer control, from prevention to treatment, worldwide.

THE NATIONAL ACADEMIES OF SCIENCES, ENGINEERING, AND MEDICINE

The report "Crossing the Global Quality Chasm: Improving Health Care Worldwide" examines the global impacts of poor-quality health care and recommends measures to improve quality while expanding universal healthcare coverage, particularly in low-resource areas.

LANCET JOURNAL COMMISSIONS

Responding to the Cancer Crisis: Expanding Global Access to Radiotherapy: This Commission presents research that quantifies the worldwide coverage of radiotherapy services by country, also providing evidence that investment in radiotherapy not only enables treatment of large number of cancer cases to save lives but also brings positive economic benefits.

Global Surgery: This Commission describes the role of surgical and anesthesia care in improving health and economic productivity. It presents findings on the state of surgical care in LMICs, as well as recommendations, indicators, and targets needed to achieve the vision of universal access to safe, affordable surgical and anesthesia care when needed.