






Developing and Sustaining an Effective and Resilient Oncology Careforce: Opportunities for Action

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Abstract

Advances in cancer care have led to improved survival, which, coupled with demographic trends, have contributed to rapid growth in the number of patients needing cancer care services. However, with increasing caseload, care complexity, and administrative burden, the current workforce is ill equipped to meet these burgeoning new demands. These trends have contributed to clinician burnout, compounding a widening workforce shortage. Moreover, family caregivers, who have unique knowledge of patient preferences, symptoms, and goals of care, are infrequently appreciated and supported as integral members of the oncology “careforce.” A crisis is looming, which will hinder access to timely, high-quality cancer care if left unchecked. Stemming from the proceedings of a 2019 workshop convened by the National Cancer Policy Forum of the National Academies of Sciences, Engineering, and Medicine, this commentary characterizes the factors contributing to an increasingly strained oncology careforce and presents multilevel strategies to improve its efficiency, effectiveness, and resilience. Together, these will enable today’s oncology careforce to provide high-quality care to more patients while improving the patient, caregiver, and clinician experience.

R.A. is a 67-year-old male with metastatic non-small cell lung cancer. He returns to the oncology clinic for follow-up after his disease progressed on frontline chemoimmunotherapy. His daughter, who is his primary caregiver, accompanies him to the visit, necessitating another missed day of work. One hour after his scheduled appointment time, they finally meet with the oncologist, who relays the results of genomic testing that indicate a neurotrophic tyrosine receptor kinase (NTRK) gene fusion. Given the rarity of this genetic aberration, expert consultation is advised. His oncologist explains that her office will prepare and send records to the consulting oncologist while also initiating the prior authorization process for insurance approval of a new NTRK-targeted therapy. His daughter then reminds him to report his worsening cough and shortness of breath, reiterating concerns previously conveyed to the nurse practitioner weeks earlier. There is no discussion of

his growing feelings of sadness or anxiety. The visit ends after 15 minutes with a tentative plan for treatment with an NTRK inhibitor pending expert consultation and insurance approval. The first available appointment with the expert consultant is in 3 weeks.

The experiences of this patient with cancer, his family caregiver, and their clinicians are not uncommon and reflect emerging trends in cancer care delivery: increasing caseload and complexity of cancer care combined with insufficient growth and adaptation of the cancer workforce to meet burgeoning new demands. These trends have contributed to clinician burnout, compounding a widening workforce shortage. Moreover, family caregivers, who have unique knowledge of patient preferences, symptoms, and goals of care, are infrequently appreciated and supported as integral members of the oncology “careforce.”

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Inspired by the proceedings of a 2019 workshop convened by the National Cancer Policy Forum of the National Academies of Sciences, Engineering, and Medicine (1), this commentary characterizes the factors contributing to an increasingly strained oncology careforce and presents strategies and actions for improving its efficiency, effectiveness, and resilience.

Factors Contributing to a Stressed Oncology Careforce

Demographic and Workforce Trends

Current and projected trends in cancer incidence, survivorship, and mortality, coupled with population-based trends, portend a precipitous rise in the absolute number of patients with cancer in the future. Although age-specific cancer incidence rates have declined over the past 20 years, the growth and aging of the US population, increase in obesity-related cancers, changing screening and diagnostic practices, and improved survival and survivorship are contributing to an increased number of patients living with cancer (2,3). It is estimated that 2.1 million new cancer cases were diagnosed in the United States in 2018, and this figure is expected to grow to 2.7 million by 2030 (4). The absolute number of cancer survivors is expected to grow from 16.9 million in 2019 to 22.1 million by 2030 (5).

Meanwhile, the available supply of cancer clinicians has failed to keep pace with this rapid growth in demand for oncology care. A 2007 study commissioned by the American Society of Clinical Oncology (ASCO) projected a substantial shortage of oncologists by 2020 due to an aging oncology workforce, declining pool of fellowship applicants, and increasing number of patients with cancer (6). This galvanized ASCO's Workforce Implementation Group and a related National Cancer Policy Forum workshop in 2008, whose themes included increased use of nonphysician clinicians, better coordination of care with nononcologists, research in care delivery efficiency, and augmented efforts to train new oncologists (7,8). Although there have been modest improvements in the recruitment of oncologists since then (9), a workforce shortage of over 2000 oncologists is still projected by 2025 (10). This is partly due to the fact that aggregate workforce capacity is defined not only by the supply of clinicians but also by the efficiency of practice—that is, how many cancer patients can be cared for by a clinician or clinical team. Strategies promoting meaningful improvements in efficiency have been lacking.

An assessment of the nonphysician cancer workforce has proven methodologically challenging owing to limitations in identifying oncology-focused nonphysician clinicians. There are currently more than 3 million registered nurses in the United States, and this workforce is expected to grow to 3.9 million by 2030 (11). Variations in geographic and specialty distribution are projected to lead to both regional surpluses and shortages of oncology-focused registered nurses by 2030. Advanced practice providers (APPs), including nurse practitioners and physician assistants, are increasingly important members of the oncology care team. A recent survey identified at least 5350 APPs in oncology (and an additional 5400 who might practice oncology) and found that among 577 survey respondents, the majority (90%) reported satisfaction with career choice and spent the majority (80%) of time in direct patient care (12).

Informal caregivers—family members or friends who spend a substantial amount of time, energy, and costs caring for a loved one with cancer—represent vital members of the cancer

careforce and historically have been underappreciated and unsupported. As of June 2016, there were an estimated 2.8 million informal cancer caregivers (mean age 53 years, 58% female), of whom nearly three-quarters were family members of the recipient of care (13). However, such caregivers are seldom integrated into the care team, formally trained, or compensated for their time and efforts (14–18). Moreover, high direct costs (ie, out of pocket) and indirect costs (ie, lost work productivity) are burdensome for informal caregivers, and their contributions to caregiving are far from optimized (19–23).

Increasing Complexity of Cancer Care

Rapid advances in oncology research, new technologies, and an expanding clinical evidence base have contributed to an increasingly complex landscape of cancer care delivery. Precision oncology necessitates the use of advanced genomic and proteomic tumor profiling to identify and match actionable mutations and other biomarkers with immunotherapies or targeted therapies (24). The number of US Food and Drug Administration (FDA)-approved targeted and biomarker-driven therapies and indications has grown dramatically in recent years, and many more are in development and clinical trials (25–27). In 2017, pembrolizumab received the FDA's first tumor site-agnostic approval, instead requiring evidence of high microsatellite instability and/or mismatch repair deficiency (28). The same year saw the first approvals for adoptive cellular therapies in aggressive childhood leukemias and adult lymphomas (29,30). Although these collective achievements represent remarkable progress, they present unique implementation challenges for clinicians. For example, sophisticated approaches to diagnostic testing and the growing use of precision therapies for cancer treatment will increasingly necessitate collaboration and expert interpretation to inform clinical decision-making (31,32). Strategies to foster multidisciplinary care with integrated teams of pathologists, radiologists, and oncologists will be critical to addressing the increasing complexity of cancer care, particularly within community oncology practices that are often staffed by general oncologists who care for patients with many different diseases and where most patients with cancer receive their care (33,34).

Increasing Administrative Burden

Clinicians and oncology practices also face unprecedented clerical burden—by some estimates consuming up to 25% of their time—in the form of inconsistent electronic health record (EHR) usability, documentation and billing requirements, and prior authorizations (35,36). Over the past two decades, rapid digitization of the health-care delivery system has led to almost all US hospitals and the majority (80%) of office-based practices using certified EHRs (37). Although meaningful EHR adoption has been associated with improvements in quality, safety, efficiency, and mortality (38,39), unintended consequences abound (40–43). In a recent commentary, one physician noted: “I am always multitasking . . . I am entering orders, checking labs, downloading information while I talk to the patient. It requires chronic hypervigilance, which is exhausting” (44).

Experts have argued that EHR documentation to fulfill billing and regulatory requirements is a root cause of suboptimal usability and contributes to clinician burnout (45–47). Excessive and redundant quality reporting requirements add considerable strain to oncology practices. A recent study indicated that

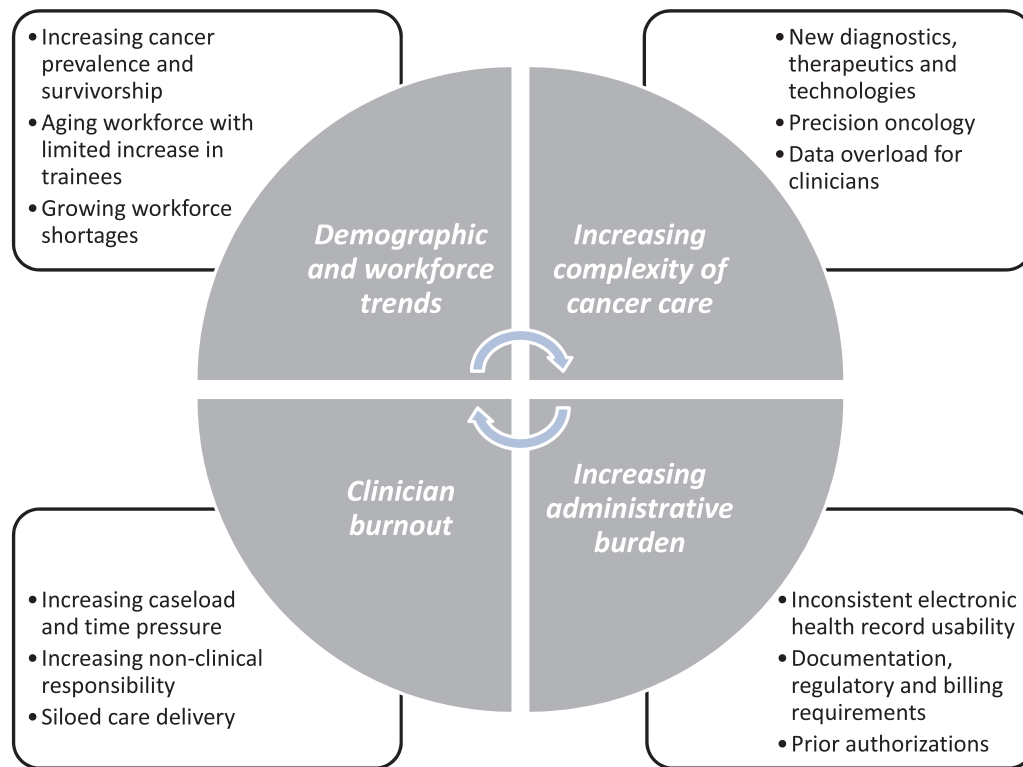


Figure 1. Factors contributing to a strained oncology careforce. **Figure 1** depicts mutually reinforcing factors contributing to workforce and caregiver (“careforce”) stress. These include rising demand for oncology care services, inadequate growth in workforce supply, increasing complexity of cancer care, increasing administrative burden, and clinician burnout. Together, these create a vicious cycle of careforce strain.

physicians in four common specialties spend, on average, 785 hours per physician and more than \$15.4 billion dealing with the reporting of quality measures each year (48). A 2015 Institute of Medicine consensus report similarly concluded that the surfeit of quality metrics in use today are contributing to burdensome data collection, unclear prioritization of measures, and suboptimal effectiveness in improving health (49).

Recent evidence also suggests that the burden of prior authorizations in oncology practices is growing (50). Although intended to curb inappropriate resource utilization, prior authorizations often result in increased clerical load and care delays. In a 2017 ASCO census survey completed by 395 practices, nearly two-thirds (58%) identified payer strains as the top pressure in their daily practice, driven first by prior authorizations and second by coverage denials (51). More recently, an American Society for Radiation Oncology survey of 3882 radiation oncologists indicated that nearly all (93%) of the 620 respondents believed prior authorizations were associated with delayed receipt of life-prolonging therapies in addition to contributing to patient stress and wasted physician time (52).

Clinician Burnout

These conspiring workplace factors have contributed to clinician dissatisfaction and burnout (35). Burnout is a work-related stress syndrome, most commonly defined by emotional exhaustion, depersonalization, and decreased personal accomplishment (53). It is estimated that roughly one-third to one-half of oncologists experience burnout during their careers (54,55), which is comparable with the average rate of burnout among US physicians (56). Despite high job satisfaction relative to their physician colleagues,

APPs experience comparable levels of burnout (57). Among oncology nurses, a recent meta-analysis found a burnout prevalence of approximately 30% (58). Such profound rates of burnout create a vicious cycle: limiting the clinical capacity of an already strained workforce, exacerbating existing shortages, and threatening the delivery of high-quality cancer care (59) (Figure 1).

Strategies to Build an Effective and Resilient Oncology Careforce

In response to these ominous trends in cancer care delivery, a 2019 National Cancer Policy Forum workshop convened a broad spectrum of stakeholders—including leadership from oncology physician and nursing societies, cancer care practitioners, researchers, payers, policymakers, and patient advocates—to discuss multilevel strategies to support and sustain an effective and resilient oncology careforce. There was agreement that solutions should be patient-centered, enhance both the patient and clinician experience, and improve the overall efficiency and quality of care delivery rather than simply augment workforce recruitment and supply. Moreover, there was agreement that optimizing the use of technology in routine care delivery should reinforce proposed solutions.

Strategies Focusing on Patients

Workshop attendees identified two strategies aimed primarily at improving the patient experience—enhancing patient navigation services and augmenting the patient voice in routine cancer care delivery—each with anticipated careforce benefits. The use of patient navigators seeks to improve the patient’s

interaction and integration into the cancer care process, overcoming barriers to optimal care delivery. Navigators increase access to care across the cancer continuum and also serve as important liaisons and advocates, helping to streamline care. A recent review outlined numerous benefits of oncology patient navigator programs, including improved screening rates, adherence to recommended treatment, and timeliness of cancer care (60). Particularly when paired with enabling screening technologies and clinical pathways, patient navigator programs have the potential to improve both patient outcomes and practice efficiency (61), though additional research on the effects on workload and clinician well-being is warranted (62).

Once a patient initiates the cancer care process, growing evidence supports the routine collection and use of patient-reported outcomes (PROs), that is, reports of health status taken directly from patients without interpretation or amendment by clinicians or others (63). PROs capture the patient voice and experience in structured form and represent a vital data element within learning health-care systems (64). Systematic PRO collection has been associated with reduced acute care utilization, improved health-related quality of life, and lengthened overall survival among patients with advanced solid tumors (65–67). Despite their potential, PROs have not been widely implemented or adopted across oncology practices, in part due to concerns regarding detrimental impact on clinical workflows and clinician information overload (68–70). Workshop attendees emphasized the importance of making PRO data meaningful and actionable to clinical teams and in conducting further investigation of optimal implementation strategies.

Low-cost, technology-based approaches such as text messaging have shown promise as sustainable and scalable strategies for remote patient monitoring and engagement in oncology care (71,72). With advances in artificial intelligence, machine learning, and natural language processing, so-called “conversational agents”—systems that mimic human conversation using text or spoken language—have also entered the digital health landscape (73,74). These allow for real-time communication between patients and clinical teams and may assist teams in detecting symptoms and adverse effects earlier in their course, enabling proactive management. Preliminary data from the University of Pennsylvania on the use of a text-based conversational agent to support symptom management and oral anticancer agent adherence illustrate the potential of novel digital approaches to act as virtual adjuncts to the traditional care team, potentially improving both the quality and efficiency of care (75).

As new communication technologies are deployed, health-care organizations and oncology practices need to ensure they do not inadvertently perpetuate clinician burnout, practice inefficiencies, and patient or clinician dissatisfaction. Engaging clinicians and patients in the development of these tools, applying human-centered design principles, and optimizing implementation within clinical workflows will be critical to advancing progress (76).

Strategies Focusing on Informal Caregivers

Workshop attendees also identified opportunities to optimize the contributions of informal caregivers to the oncology careforce. These included formally recognizing them as central members of the care team, offering capacity assessment and skills training (eg, in symptom monitoring and management), and developing quality measures that reward team-based care centered on the patient and family caregivers. The Veterans Health

Administration’s Program of Comprehensive Assistance for Family Caregivers—which has offered over 40 000 caregivers core curriculum training and direct financial assistance—could serve as a national model for caregiver support (77–80). For those with employer-sponsored insurance, insurance redesign (eg, lifetime patient cost-sharing caps) and improved workplace policy benefits (eg, paid family leave) could help address the direct and indirect financial hardships associated with informal caregiving.

The Symptom Care at Home (SCH) program (81) of the University of Utah’s Huntsman Cancer Institute illustrates the promise of dually engaging patients and family caregivers. The SCH program consists of electronic daily monitoring of 11 common patient symptoms and five indicators of caregiver well-being. Reports trigger automated, pathway-driven coaching to improve patient symptom management and caregiver well-being as well as automated alerts to clinicians. Preliminary results from randomized evaluation of the SCH program suggest a benefit to patients and caregivers alike, with reduced symptom burden and improved caregiver resilience compared with usual care (82,83). Moreover, the improvement in caregiver resilience and well-being was found to mediate the reduction in patient symptom burden, supporting the hypothesis that a caregiver’s health and well-being are integrally tied to patient outcomes.

Strategies Focusing on Clinicians

Faced with growing demand for cancer services and increasing care complexity, workshop attendees looked to other sectors for inspiration on how to organize the oncology careforce optimally. Whereas cancer care is typically delivered by groups of siloed health-care professionals, each acting independently and contributing individual expertise (ie, within the confines of the so-called “multidisciplinary team”), there was acknowledgment that such groups frequently fall short of true team-based standards. Instead, attendees envisioned a future in which cancer care was delivered by “high-performance teams.” (84) Such teams would be internally and externally recognized as such, committed to a shared vision and team-level objectives, and would regularly reflect on ways to improve team-level processes and outcomes. Additionally, high-performance teams would operate in a fully integrated manner, with shared respect, trust and accountability, high emotional intelligence, and strong lines of communication.

In 2016, the National Cancer Institute and ASCO launched the Teams in Cancer Care Delivery project with the goal of applying team science (85) to oncology care delivery. More than 20 teams participated in the inaugural workshop, engaging in iterative feedback with team scientists and exploring the application of team principles to problems in oncology. The results of subsequent team-based care initiatives were published in a themed issue of the *Journal of Oncology Practice*, highlighting numerous benefits to high-performance teams in oncology, including enhanced productivity and high satisfaction among team members (86–88). Most importantly, this served as proof-of-concept that groups could intentionally develop and cultivate attributes of high-performance teams through the application of team science principles.

An important characteristic of high-performance teams is having well-defined (yet flexible) roles and responsibilities among members. In the context of oncology care, this implies utilizing team members to the maximum extent of their ability and training. This can take many forms: shared clinical encounters, independent APP- or pharmacist-led visits, and effective

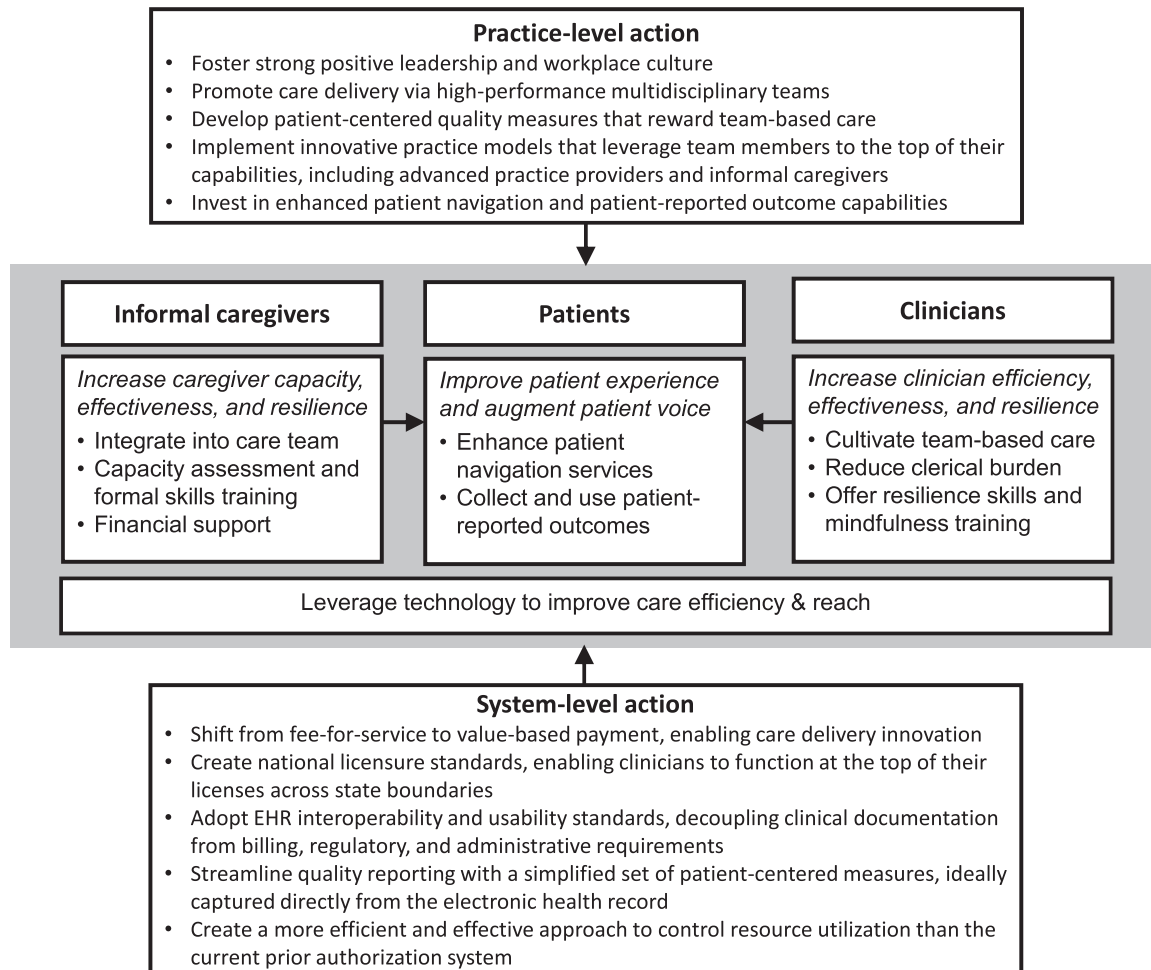


Figure 2. Multi-level strategies to sustain an effective and resilient oncology careforce. **Figure 2** illustrates a conceptual model stemming from the National Cancer Policy Forum 2019 workshop proceedings, highlighting multi-level strategies to improve careforce capacity, effectiveness, efficiency, and resilience, as well as opportunities for action at the practice and system levels. EHR = electronic health record.

collaborations among oncology care and primary care practices. Paired with individualized patient risk assessments, this also creates an opportunity for dedicated clinics provided by the service most suited to the intensity of patient needs. This is an extension of precision health care in which delivery structures themselves are tailored to the precise needs of patients. Examples include APP-led, risk-adapted survivorship and palliative care clinics (89,90), demonstration projects of the oncology medical home concept (91), and remote specialist consultation (92–94). Such models hold great promise for improving team effectiveness and efficiency.

Workshop participants also discussed strategies for reducing administrative burdens and practice inefficiencies. First, attendees advocated for EHR usability and safety standards and for decoupling clinical documentation from billing, regulatory, and administrative requirements as has been advocated by the American Medical Informatics Association (95). Second, attendees stressed the importance of streamlined quality measurement and reporting, using a consolidated set of measures consistent with the vision of the Core Quality Measures Collaborative (96). Ideally, such measures would be collected directly from the EHR, eliminating the requirement for manual data entry and enabling real-time performance measurement and quality improvement within a learning health system (97). Finally, attendees proposed

eliminating prior authorization requirements and processes for therapies that are evidence-based and pathway-driven, such as those endorsed by the National Comprehensive Cancer Network, and streamlining the approval process for off-pathway therapies.

Implementation of these strategies would dramatically improve the work lives of cancer clinicians while allowing teams to care for more patients with cancer. But efforts targeting clinician burnout and supporting careforce resilience are critical adjuncts. For example, mindfulness programs designed to promote professional well-being have shown benefit for primary care physicians (98), and their use in oncology and palliative care practices is under investigation (99). Moreover, strong organizational leadership committed to promoting positive workplace culture has been associated with increased professional satisfaction and decreased burnout and should be purposefully cultivated (100,101).

Conclusion: Opportunities for Action

Considering the widening gap between the number of patients needing cancer care and the limited capacity of the current workforce to meet these demands, a crisis is looming, which will hinder access to timely, high-quality care if left unchecked. Because recruiting and training more cancer clinicians is

unlikely to solve this problem alone, we posit that the most critical and feasible solution is to improve the efficiency with which cancer care is delivered, leveraging the strategies described above. Organizations should embark on practice-level changes to improve the effectiveness and resilience of their workforces, but system-level changes are also urgently needed and will require national will and coordinated efforts from regulatory agencies, payers, and practitioners. Stemming from the 2019 National Cancer Policy Forum workshop proceedings, we propose multilevel strategies focusing on patients, caregivers, and clinicians as well as practice- and system-level opportunities for action (Figure 2). Together, these will allow today's oncology careforce to provide high-quality care to more patients while improving the patient, caregiver, and clinician experience.

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Notes

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