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HEALTH ECONOMICS (N KHERA, SECTION EDITOR)

Value Based Care and Patient-Centered Care: Divergent or Complementary?

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Abstract Two distinct but overlapping care philosophies have emerged in cancer care: patient-centered care (PCC) and value-based care (VBC). Value in healthcare has been defined as the quality of care (measured typically by healthcare outcomes) modified by cost. In this conception of value, patient-centeredness is one important but not necessarily dominant quality measure. In contrast, PCC includes multiple domains of patient-centeredness and places the patient and family central to all decisions and evaluations of quality. The alignment of PCC and VBC is complicated by several tensions, including a relative lack of patient experience and preference measures, and conceptions of cost that are payer-focused instead of patient-focused. Several strategies may help to align these two philosophies, including the use of patient-reported outcomes in clinical trials and value determinations, and the purposeful integration of patient preference in clinical decisions and guidelines. Innovative models of care, including accountable care organizations and oncology patient-centered medical homes, may also facilitate alignment through improved care coordination and quality-based payment incentives. Ultimately, VBC and PCC will only be aligned if patient-centered outcomes, perspectives, and preferences are explicitly incorporated into the definitions and metrics of quality, cost, and value that will increasingly influence the delivery of cancer care.

Keywords Health economics · Patient-centered care · Value-based care · Cancer care

Introduction

A significant change is happening in cancer care. As the competing forces of increasing cancer prevalence, rising costs of cancer treatments, and finite health care resources intersect, “high-value care” is increasingly being discussed and advocated by policy makers, providers, professional societies, payors and even patient groups [1, 2••, 3, 4]. The monthly cost of cancer treatment has doubled over the past decade, with the total cost of cancer care expected to reach US$158 billion by 2020 in the United States [5, 6]. In addition, the oncology community is facing additional challenges from a declining oncology workforce, healthcare fragmentation, and the increasing complexity of cancer care given an aging cancer population that is living longer with cancer [7]. These issues were underscored in the IOM’s 2013 report *Delivering High-Quality Cancer Care*, which concluded that cancer care is in crisis and emphasized the importance of value-based care [2••, 8].

Since the 2013 IOM report, the concept of value-based care has become more mainstream. In 2015, the American Society of Clinical Oncology (ASCO) published a conceptual framework to aid physicians and patients in making treatment decisions that consider cost in addition to more traditional clinical outcomes [9••]. As well, the Centers for Medicare and Medicaid Services (CMS) has begun to change how hospitals and physicians are remunerated with payments increasingly being tied to quality metrics [10].

At the same time, patient-centered care has been widely advocated by the IOM, patient groups, professional societies, and others [11–16]. Indeed patient-centered care is identified

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by the IOM as one of six core attributes of high-quality health care. Where does patient-centered care fit into this new value-based philosophy of care? How do we ensure that the preferences, goals, and expectations of patients and families are incorporated into the VBC paradigm? We contend that while patient-centered care is implicit to value-based care, in as much as it is a key component of quality, there are important differences in the two philosophies. Moreover, there is a risk that unless we explicitly build patient-centered metrics and flexibility into policy and remuneration models, this facet of quality care may become diluted as we strive to achieve high value cancer care.

What Is Value Based Care?

“Value” has been defined as the quality of care achieved (numerator) divided by the cost of care (denominator) [1]. In pragmatic terms, value can be considered patient health outcomes achieved per dollar spent. As such, value is created through the quality of care delivered to patients, and not purely by the volume of services provided [17]. An understanding of the factors that affect quality and cost is important to assessing how value-based care (VBC) and patient-centred care (PCC) intersect and diverge (Fig. 1).

The IOM’s 2001 report *Crossing the Quality Chasm* identified six elements of high-quality healthcare—safety, efficacy, patient-centeredness, timeliness, efficiency, and equity [11]. Thus, while patient-centred-care is a core component of quality, it is only one of a multifaceted construct. Inherent in the definition of “value” is a need to measure and quantify quality, Table 1. Typically this is achieved through the use of quality measures which can be categorized as systems measures, process measures or outcome measures. Importantly it is challenging for a single measure, or even a panel of measures, to capture the multifaceted natured of quality described by the IOM. In theory, value-based care models can use any number of quality measures to populate the numerator in the VBC framework—some of which may directly assess patient-centred care. In practice, however, VBC frameworks often estimate quality of care with an important outcome measure, such as survival. This strategy has strong face validity, but as discussed in greater detail below, is not necessarily patient-centered care[18].

Table 1 Core definitions

Quality: The IOM defines high-quality health care as safe, effective, patient-centered, timely, efficient, and equitable [2••].

Value: Quality of care achieved (numerator) divided by the cost of care (denominator) [1].

Value-Based Care (VBC): Care that maximizes healthcare quality (frequently estimated using quantitative health outcomes) per dollar spent.

Cost: Can refer to *cumulative financial cost* from a particular perspective, or to *total cost*.

A. *Cumulative financial cost* estimates expenses for patients’ care, including hospital visits, medications, ancillary services, and rehabilitation [1]. Cumulative financial cost does not include non-financial costs such as opportunity cost, lost time, anxiety, etc. Cumulative financial cost can be estimated from a number of perspectives: i) *Payer-perspective*: estimates healthcare costs to a payer, usually a third party payer such as an insurer or government agency. ii) *Hospital-perspective*: estimates direct and indirect costs to a hospital or hospital system. iii) *Patient-perspective*: estimates direct and indirect financial cost to the patient.

B. *Total cost* incorporates direct patient and system costs, opportunity costs, and downstream costs from harm (including medication costs, time, anxiety, and clinical harm) [17, 34].

Patient-Centered Care (PCC): Care that addresses multiple dimensions of patient care including patient preference, emotional support, physical comfort, information and communication needs, continuity and transition, care coordination, involvement of family and friends, and access to care [13].

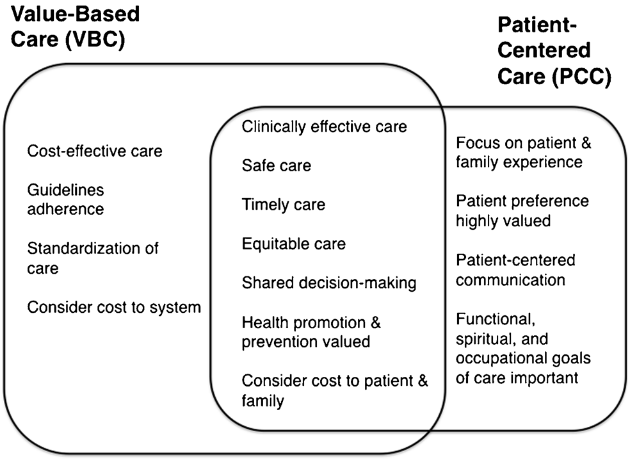

Fig. 1 Overlapping and distinct attributes of value-based care and patient-centered care. Much of PCC is contained within the purview of VBC. However, several patient-centered aspects of care, including patient experience and patient preference, have not traditionally been included in assessments of healthcare value

Cost is the denominator in the “value-based-care” equation. Varying conceptions of cost have been proposed. Porter has defined cost as the cumulative financial cost for all aspects of a patient’s care, including hospital visits, rehabilitation, medications, and ancillary services [1]. In contrast, the Institute for Healthcare Improvement proposes a more holistic definition of cost and describes the “total cost” of care as incorporating direct system costs, opportunity costs, downstream costs from harm, and direct costs to patients, with the latter including non-financial costs such as time, anxiety, and clinical harm [17] (see Table 1). Thus, patient-centeredness can be incorporated into both the numerator (through patient centered measures of quality) and the denominator (by including patient-centered costs). It is important when reading papers or policy statements on value to understand which types of costs are being considered. Not infrequently, cost considerations are limited to an analysis of direct financial costs from a payer perspective.

Several organizations have developed value determination frameworks to assign value to tests and treatments, as opposed to organizations or practitioners. Historically, these assessments have been made to facilitate funding decisions. For instance, in the UK, the National Institute for Health and Care Excellence (NICE) has a long history of completing technology and drug assessments with regard to both clinical efficacy and cost-effectiveness [19]. The Canadian Agency for Drugs And Technologies In Health (CADTH) and its subsidiary the pan-Canadian Oncology Drug Review (pCODR) perform a similar function in Canada [20]. In both systems, there are formal processes to incorporate patient perspectives and concerns; however, advice documents from both agencies suggest that traditional surrogate measures of quality (such as survival) and cost (direct and indirect payer costs) dominate many reviews.

Recently, in the USA, the American Society of Clinical Oncology (ASCO) has proposed a framework to assess the value of cancer treatments. ASCO's framework focuses on three of the six IOM elements of quality—clinical benefit (efficacy), toxicity (safety), and direct cost (efficiency) [9••]. This framework facilitates shared decision-making between patients and physicians, and juxtaposes the net health benefit (efficacy and safety) with financial cost. The proposed ASCO framework is an important development in oncology because it has brought value considerations into the mainstream, and has provided a concrete tool to assist with incorporating direct costs into treatment decisions. Notably, however, the framework does not incorporate patient-centered conceptions of quality or cost. These considerations were likely excluded because patient-centered outcomes are rarely reported in trials, and because indirect costs are highly variable and difficult to measure.

What is Patient-Centered Care?

The IOM defines patient-centered care (PCC) as care that respects and is responsive to individual patient preferences, needs and values, while ensuring that patient values guide all clinical decisions [11, 12]. PCC is not service-centered or fragmented, and should instead be integrated, with the patient and family at the center of all care. Current conceptions of PCC originate largely from research conducted by the Picker Institute and the Harvard Medical School in the early 1990s. This work identified eight dimensions of PCC which included respect for patients' preferences, emotional support, physical comfort, information/communication needs, continuity and transition, care coordination, involvement of family and friends, and access to care [13]. Subsequent descriptions of PCC have expanded upon these principles. In their position statement, *Toward Individualized Care for Patients with Advanced Cancer*, ASCO emphasizes that patients should be well-informed and provided with opportunities to make their "preferences and concerns regarding treatment and supportive care known" [14]. Similarly, the Institute for Patient- and Family-Centered Care states that patient experiences of care are critical to health care quality and safety, and that care should respect the core concepts of dignity and respect, information sharing, participation, and collaboration [15]. A 2007 report from the National Cancer Institute also emphasizes that patient-centered communication requires consideration of the perspectives and needs of patients, provision of opportunities for participation, and strong patient-clinician relationships [18].

An on-going challenge for the patient-centered care movement is measurement. Numerous tools have been developed to estimate and quantify patient-centered care [21]. However, most of these tools focus on communication, joint decision-making, and patient satisfaction while other elements of patient-centered care such as care-coordination and transitions are less frequently measured. Moreover, there is no consensus regarding how best to measure patient-centeredness, and tools that assess all of the domains of patient-centered care are lacking.

Thus, while value-based care has tended to emphasize standardized clinical outcomes and direct financial costs, outcomes in PCC are more nuanced, more individualized and responsive to the unique physical and emotional stressors experienced by patients. While clinical outcomes such as survival are important, they may not be the preeminent concern for all patients. Instead, patients' priorities may include personal goals including spiritual aspirations, financial considerations, caregiver burden, occupational goals, avoidance of toxicity, fatigue, and sexuality [22, 23] (Fig. 1). These concerns form the basis for the preferences that patients have when making clinical decisions. While an increasing number of patients desire an active role in their care, studies have suggested that clinicians ask for patient preference in medical decisions in only half of patient encounters [24, 25].

Several initiatives have been developed to improve patient-centeredness in oncology care. These have included, but are not limited to, patient education programs, centers for shared decision-making, support groups, and decision aids [26]. However, the practical implementation of such strategies is challenging, and the usage and provision of such patient-centered resources do not integrate clearly with traditional approaches to value-based care.

What Tensions Exist Between PCC and VBC?

What Constitutes Quality?

As discussed above, value-based care is a philosophy that aims to measure and evaluate healthcare performance with regard both to quality and cost, while patient-centered care is a more holistic philosophy of care anchored by values and descriptors. There are important differences in how these two approaches are conceptualized, measured and applied in practice. Within the VBC paradigm, patient-centered care is one aspect of high-quality care. However because of measurement challenges and a relative lack of trials that formally incorporate measures of patient experience, patient-centered care may be overshadowed by other aspects of quality such as efficacy and safety. In particular, sensitivity to patient preference, a core value in patient centered care, may be neglected or even undermined in value-based-care frameworks. Patients' decisions are rarely driven by a single desired outcome. While one patient may prioritize reduction in disease symptom burden, another may aspire to preserve fertility or to continue working. Consideration of the relative importance of these factors is not easily incorporated into value-based metrics.

Not infrequently adherence to clinical practice guidelines is used as a measure of quality of care [27]. However, most guidelines do not incorporate or search for patient preference data in a systematic manner, and only 25 % of guideline developers regularly involve patients [28]. While clinical outcomes data inform most recommendations from evidence-based guidelines, the incorporation of patient preferences, patient-reported outcomes, and quality of life is inconsistent [29•, 30]. Physicians who empower patients to be actively involved in their care may appear to provide "lower quality" care if patients make decisions that are rational in their own context, but which contradict guidelines. For instance, a concert pianist who develops diffuse large B-cell lymphoma may decide to omit Vincristine from chemotherapy if he determines that the risk of peripheral neuropathy outweighs the benefit of this agent. While this is a rational decision that respects shared-decision-making and preference, the treating physician may appear to be providing low-quality care that contravened guidelines.

The measurement of health outcomes is necessary to assess quality and facilitate improvement [31]. The IOM lists nine types of quality metrics—structure, process, clinical outcomes, patient-reported outcomes (PRO), patients' perspective on care, cost, efficiency, cross-cutting, and disease-specific [2••]. Most clinical trials focus on standardized clinical outcomes such as progression free or overall survival. To date, the number of trials incorporating patient-centered outcomes or measures of patient experience as primary or secondary outcomes has been limited. For example, among the 1958 quality indicators at the National Quality Measures Clearinghouse, less than 2 % are patient-reported outcomes [32••]. Nonetheless, some recent randomized controlled trials demonstrate that incorporating these end-points is feasible, and can be illustrative [33].

What Constitutes "cost"?

The denominator in the VBC equation is cost. Cost can be defined in a manner that is sensitive to patients' perspectives and concerns, or it can be defined from a more narrow, payer perspective. A growing body of literature documents that the financial burden of care, particularly cancer care, is of great concern to patients and that it may even be correlated with worse health outcomes [34, 35]. Thus, incorporating patient-relevant costs into the VBC framework is one way to align with PCC. However, frequently evaluations of cost are completed from a payer's perspective and ignore the relative financial burden of different care pathways to patients and their families [36]. In particular, while the indirect costs of care to payers, such as ancillary medications and admissions to hospital, are frequently incorporated into cost-effectiveness studies, it is rare for indirect costs to patients and families to be included (such as transportation, opportunity costs, etc.). As well, some of the most important harms of treatment such as symptom burden, loss of dignity and others, are difficult to quantitate, and thus are left out of quantitative approaches.

Can VBC and PCC Be Aligned?

Ongoing Development and Usage of Patient-Centered Outcomes

For VBC to be aligned with PCC, patient-centered metrics must be developed that can be measured and incorporated into VBC evaluations. In the research sphere, trialists have attempted to evaluate multiple aspects of care through the measurement of quality of life (QOL). In malignant hematology, an increasing number of clinical studies are incorporating health-related quality of life (HRQOL) measures such as the SF-36 or EORTC-QLQ30 [37, 38]. This is a positive trend which may have implications for both VBC and PCC as QOL measures often include-patient-centred variables, and can be incorporated into the VBC framework. However challenges remain, as QOL scales only capture specific dimensions of patients' experience and can be challenging to interpret. For instance, what degree of change in a QOL scale constitutes a minimally significant difference in quality of life to a patient? Frequently this data is lacking, or where available, it can be difficult to generalize to different patient and disease populations.

The importance of understanding how patients experience care has led to the development of patient-reported experience measures (PREMs), validated instruments used to discern a patient's perception of their experience with health care delivery [39]. A well-established example is the Hospital Consumer Assessment of Healthcare Providers and Systems

(HCAHPS) Survey, developed in 2006 by the CMS and Agency for Healthcare Research and Quality (AHRQ). The HCAHPS measures patient perspectives on several aspects of hospital care, including communication with healthcare providers, responsiveness of hospital staff, and hospital environment [40, 41]. Similarly, cancer providers such as the British Columbia Cancer Agency and Cancer Care Ontario have utilized the Ambulatory Oncology Patient Satisfaction Survey, an instrument developed with the Picker Institute, to demonstrate gaps in patient experience including relative deficiencies in emotional support and provision of information [39, 42]. For PREMs to improve PCC; however, their measurement and improvement must be linked both to incentives in providing quality care and to the design of clinical trials, while integrating them into clinical practice [43]. Evidence from a systematic review of 55 studies has demonstrated a consistent, positive association between measures of patient experience and clinical effectiveness and safety, suggesting that patient experience has potential as a key measure of high-quality care [44].

Related to PREMs are patient-reported outcome measures (PROMs), whereby patients report directly on perceptions of their own health, without clinician interpretation [45]. The Patient-Reported Outcomes Measurement Information System (PROMIS), funded by the National Institutes of Health, is an example of a large-scale effort to standardize HRQOL reports across different malignancies [46, 47•]. This initiative has enabled the development of cancer-specific metrics of patient experience, with items regarding sleep-wake function, sexual function, and psychosocial impact of disease. For example, the PROMIS Fatigue Scale was used to evaluate fatigue in the COMFORT-I trial of Ruxolitinib in myelofibrosis [33]. The development of validated PRO instruments has enabled their incorporation into the design of clinical trials, providing essential patient-centered data about the impact of interventions. Other scales used to elicit and quantify patient-reported outcomes in clinical care include the Memorial Symptom Assessment Scale (MSAS) and Edmonton Symptom Assessment System (ESAS), which have both been used and validated in patients with cancer [48, 49].

In addition to using patient-reported data in clinical trials, it will be important to explicitly use patient-reported data in assessments of value. As reimbursement becomes increasingly tied to value, how value is defined will ultimately drive improvements in care. To this end, patient representatives have been included in International Consortium of Health Outcomes Measurement (ICHOM), a group working to standardize outcome reporting [32••]. For PCC to be aligned with VBC, the definitions of value must include patient-centered outcomes, which may be in the form of PRO, and must also involve engagement of patients and families in the planning and assessment of value.

Improved Integration of Patient Preference

Cancer care can only truly be patient-centered if patient preferences are incorporated into all aspects of care. The most familiar example to clinicians is the process of facilitating shared decision-making during physician-patient interactions, ensuring patient engagement and consideration of their needs, values, and preferences [50, 51]. For PCC to be aligned with VBC, patient preferences must be included and accounted for at many other phases of care as well.

Firstly, it will be important to incorporate patient preferences explicitly into clinical practice guidelines. Most guidelines currently do not include published evidence about preferences or incorporate patient perspectives into their development [29•, 30]. The inclusion of preferences into guidelines may be possible if authors search systematically for preference-related evidence, which may include HRQOL, health utility data, and qualitative studies. For example, the ACCP Antithrombotic Therapy guidelines include a systematic review of patient values and preferences around anticoagulant therapy, and acknowledge that values and preferences differ between patients [52]. If a role for patient preferences is outlined within guidelines, this enables physicians to elicit and incorporate patient perspectives while being adherent with guidelines.

With improvements in the ascertainment and incorporation of patient preferences into guidelines and clinical care, it will be important to allow for variations in clinical practice based on patient preference. While the need for standardization in high-performing health systems is clear, PCC can only be aligned with VBC if these systems are flexible enough to accommodate the values and priorities of patients (Fig. 1).

Innovative Models of Care

New models of care have been developed to improve care coordination and quality, while reducing inefficiencies to decrease cost. These models, which include accountable care organizations (ACO) and oncology patient-centered medical homes (OPCMH), have the potential to facilitate the alignment of PCC and VBC.

ACOs were introduced in the 2010 Affordable Care Act as a method of driving quality improvement while reducing cost. They attempt to incentivize the provision of high-value care by aligning reimbursement with patient outcomes through capitated or aggregate payments [53•]. Clinicians and providers who join the ACO assume responsibility for patient outcomes, and share savings if they meet quality and cost performance benchmarks. As compensation is driven by patient outcomes, ACOs report on 33 quality measurements to the CMS annually. They are also expected to improve efficiency by augmenting coordination of care and integrating health information technology. While ACOs have been introduced largely in the primary care setting, an oncology-specific ACO has been developed in Florida that may serve as a model for other organizations [54]. Similarly, the Cancer Clinics of Excellence have developed a shared savings model of oncology care that achieves value through coordination, appropriate end-of-life care, and encouraging adherence to care pathways [2••]. While the benefits of these models have not yet been proven, they are promising innovations in the delivery of cancer care.

ACOs may help to align PCC and VBC in several ways. Firstly, amongst the 33 quality metrics chosen, seven concern patient/caregiver experience, including physician communication, shared decision making, and health/functional status [53•]. The incorporation of patient preference, in particular, will be encouraged by measures of shared decision making. While quality measures for an oncology-specific ACO have not yet been established, the incorporation of such patient-centered metrics may encourage physicians to maximize performance in these areas. ACOs are also incentivized to improve coordination of care to improve efficiency, and this may improve patient experience and communication with healthcare providers. ACOs may also augment the involvement of palliative care in cancer care. End-of-life and palliative care, as they are sometimes employed, may not be aligned with patient priorities as they may not be introduced in a timely fashion. While resource utilization increases at the end of life, this may be incongruent with patient preference. Randomized studies of palliative care interventions have shown improved quality of life and greater patient satisfaction, while potentially reducing costs through reductions in aggressive treatment strategies [55, 56]. As such, the increased use of palliative care within ACOs would potentially improve VBC while incorporating patient-centered values [57, 58].

The Oncology Patient-Centered Medical Home (OCPMH) is another model of care that may help reconcile VBC and PCC. In OPCMH, a comprehensive team of providers—oncologists, primary care physicians, nurses, pharmacists, and others—work together to coordinate care in a sustained manner [59]. The Agency for Healthcare Research and Quality has stated that the medical home should encompass principles of comprehensive care, patient-centeredness, coordinated care, accessible services, and quality and safety. While PCMH was first implemented in primary care, the first oncology-specific PCMH was recognized in 2010. This group, the Consultants in Medical Oncology and Hematology (CMOH), demonstrated reductions in hospital admissions, emergency department visits, and length of stay [60]. Meanwhile, a systematic review of PCMH in the primary care setting has demonstrated positive effects in patient experience, suggesting that a sustained partnership with the healthcare team in PCMH may improve patient satisfaction [61]. While ACOs and OPCMH have only recently been implemented, these two models of care are promising, and provide methods of aligning PCC and VBC through their incorporation of patient-centered metrics into their value determinations.

Future Directions

Further work is needed to determine how best to employ validated patient-reported experience and outcome measures in both research and clinical domains. The very act of incorporating these measures into clinical practice has a role in promoting physician-patient communication and patient satisfaction [62, 63]. However, more data is needed in discerning what constitutes a meaningful change in these scales for different disease sites. In other words, while a specific intervention may cause a statistically significant improvement in the Role Functioning scale of the EORTC QLQ-C30, at what *degree* of change do patients begin functioning better? The answer may vary depending on disease and patient-specific factors. Additional work is also required to elucidate how PREMs and PROMs can be leveraged to improve care in real time.

Finally, more emphasis is needed in developing policies and practice guidelines that specifically reference and incorporate patient preference and experience into recommendations. For example, the GRADE system of classifying the strength of recommendations advocates a transparent approach to developing evidence-based guidelines that incorporates patient values and preferences while acknowledging uncertainty [64]. The importance of developing preference-sensitive guidelines is increasingly being acknowledged; however, it will be important to keep patients at the center of the writing, development, and interpretation of guidelines [65].

Conclusions

Two overlapping, but differing patient care philosophies have evolved recently in healthcare—value-based care (VBC) and patient-centered care (PCC). Despite overlapping goals there are tensions between the two philosophies, and it is possible that PCC could be overshadowed in a VBC model. In order to align VBC with PCC, patient-centered determinations of both quality and cost must be incorporated into our assessments of value. While efforts have been made to include patient-centeredness into value metrics, this will not happen automatically and requires explicit attention. It will be critical to continue to develop metrics that incorporate patient-reported outcomes, to enable their measurement and facilitate improvement in patient-centered cancer care. Ultimately, it is incumbent on the oncology community to discover what matters most to our patients, and for our system to tolerate practice variation and outcomes in order to fully respect patient preference.

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Compliance with Ethical Standards

Conflict of Interest Eric K. Tseng and Lisa K. Hicks each declare no potential conflicts of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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