Affordable cancer care 1

Delivering maximum clinical benefit at an affordable price: engaging stakeholders in cancer care

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Cancer costs continue to increase alarmingly despite much debate about how they can be reduced. The oncology community needs to take greater responsibility for our own practice patterns, especially when using expensive tests and treatments with marginal value: we cannot continue to accept novel therapeutics with very small benefits for exorbitant prices. Patients, payers, and pharmaceutical communities should be constructively engaged to communicate medically and economically possible goals, and eventually, to reduce use and costs. Diagnostic tests and treatments should have to show true value to be added to existing protocols. In this article, we discuss three key drivers of costs: end-of-life care patterns, medical imaging, and drugs. We propose health-care models that have the potential to decrease costs and discuss solutions to maintain clinical benefit at an affordable price.

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This is the first in a Series of three papers about affordable cancer care

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Introduction

A reduction in the morbidity and mortality caused by cancer is a global priority, but whether this aim can be achieved at sustainable cost is not known. As populations age, the number of new cancer cases worldwide is projected to increase, rising to 21·4 million in 2030.[1] In the USA, the cost of cancer care is projected to increase by 39% to $173 billion in 2020, simply due to the number of people and ageing.[2] The increasing cost of cancer treatment is not driven exclusively by higher demand for service, or by ageing populations; in the USA, 91% of the rise in costs since 2000 was due to price increases.[3] Cancer care costs worldwide are about 5% of total government health spending[4] and 10% of the total cost of medical expenses for young insured patients.[5] The stretched UK National Health Service spent £5·86 billion—5·6% of its annual budget—on cancer therapy in 2004,[6] similar to the 4–7% spent by other developed countries.[4] Financial toxicity, the burden of out-of-pocket expenses that causes financial distress, has been recognised as a new limiting toxicity.[7]

3 years ago, *The Lancet Oncology* published a Commission to stimulate discussion about how cancer treatment could be sustainable in developed high-resource countries.[8] What has changed in 3 years, and what must still change? In this paper, we aim to show why costs are so high, outline specific steps for what still needs to be done to deliver maximum clinical benefit at an affordable price, and give proposals for how oncologists can change practice for maximum sustainability. The article will be purposefully US-centric because we are most familiar with this system, and because costs are rising faster in the USA than in other countries; however, the issues we discuss are present worldwide. This paper does not include most curative care, paediatric care, or clinical trials because they constitute less than 5% of total costs. We concentrate on treatment of patients with metastatic cancer and not on new surgical or radiation treatments.

Why are costs so high?

There are three categories of rising cancer costs in cancer care. First, are those costs associated with the rising number of cancer cases in an ageing population: increased and longer survival, higher expectations of patients, and rising costs of therapy.[9,10] Similar trends are occurring worldwide. As cancer costs are distributed between pharmaceuticals (24%), hospital care (54%), and physicians (22%),[11] all cancer costs are an issue. Second are costs relating to the use of imaging—eg, in the USA, between 1996 and 2006, the cumulative total cost of cancer imaging increased by 5·1–10·3% every year.[12] And finally, the third major category is the cost of drugs. Drug prices have increased by ten-times over the past 10 years with no relation to whether the drugs are targeted or to their effectiveness.[13–15] For example, sipuleucel-T costs US$93 000 per course of treatment, and gives a median 4·3 month survival benefit in patients with metastatic prostate cancer.[16] Several drugs cost US$6000–10 000 a month, with little relation between the drug's cost and its benefit, as based on measures such as quality-adjusted life-years, overall survival, or cost-efficacy ratios.[17] In 2010, the cost of targeted drugs and biological agents eclipsed the cost of routine chemotherapy, effectively doubling the total cost of care, since routine chemotherapy has not diminished.[18]

How to reduce costs in the three key categories

Improve care at the end of life

We have identified three means by which total cancer care costs could be reduced while causing the least harm: improve end-of-life care, reduce imaging use, and reduce drug prices.

Care at the end of life is expensive and sometimes ineffective; changes could actually improve quality and reduce costs. The amount spent on care in the last year of life is about 25% of Medicare total costs,[19] with about 40% of this figure—10% of the total Medicare budget—spent in the last month of life.[20] Most people do not want to die

in hospital, but in most countries, many still do.[21] To use the USA's Medicare cancer population aged 65 years and older as an example, 60% of patients are admitted to hospital in their last month of life (25% in intensive care units); 30% die in hospital; and only 54% ever use a hospice, with a median length of stay of 8 days.[22] End-of-life care has become more intensive, not less, in the past 10 years.[10]

The amount of chemotherapy given in the last month of life can be reduced, especially when the cancer has progressed, or when Eastern Cooperative Oncology Group (ECOG) performance status is two or higher.[23] For many cancers, performance status of two, three, or four indicates a survival prognosis of less than 6 months, and also implies that treatment has probably not improved survival.[24] Chemotherapy use in the last month of life is similar worldwide (table 1), with some possible explanations. First, perhaps oncologists are not good at assessing prognosis, and give chemotherapy to well people who subsequently die from their disease, treatment-related toxicities, or both. Second, perhaps some patients have a very different perspective, and are willing to accept major toxicity for a small benefit.[25] Or, third, perhaps oncologists everywhere have difficulty having conversations that transition patients from chemotherapy to hospice care.[26–28]

Changing financial incentives and providing direct practice-based feedback to practitioners has been shown to reduce chemotherapy given near the end of life. When chemotherapy profits fell, chemotherapy use in the last 14 days of life decreased in private practice offices, suggesting a strong link between profit (or loss) and use.[29] After physicians got feedback on their centre's high use of end-of-life chemotherapy, the number of patients receiving chemotherapy in the last month of life fell from 50% to about 20%.[30] Structured discussion of dying 2 months before death, rather than the usual 1 month before death, was associated with a reduction of in-hospital deaths from 50% to 19%.[31] Since chemotherapy in the last month of life seems to be highly correlated with hospital admissions, high treatment costs, and poorer quality of care compared with those with less aggressive care, chemotherapy reductions should be a high priority for oncologists.[32]

	Patients with cancer receiving chemotherapy in last month of life (%)	Reference*
Sweden	23%	Nappa, 2011
Italy	14–23%	Andreis, 2011; Magarotto, 2011
Portugal	13–37%	Braga, 2007; Goncalves, 2011
South Korea	30%	Keam, 2008
Australia	18%	Kao, 2009
US Medicare	15%	Earle, 2004
US private practice	43% of patients with lung cancer	Murillo, 2006
US Veterans	18% (increase since 2002)	Gonsalves, 2011
US Medicare national	5–20%	Morden, 2012[22]
ASCO Quality Oncology Practice Initiative target	<10%, no explicit goal stated, but lower is better	Neuss, 2013

ASCO=American Society of Clinical Oncology. *References in appendix.

Table 1: **Chemotherapy use at the end of life**

See Online for appendix

Hospice and palliative care provide better overall care at a smaller cost than hospital care (cost being reduced partly through reductions in hospital admissions).[33,34] Hospice care also improves symptoms, reduces caregiver distress, and saves US$2700–6500 per person as compared with care that does not actively involve a hospice.[35] Strikingly, patients cared for by hospices have equal[36] or better[37,38] survival outcomes than those treated in hospitals.

Clinicians do not recognise patients who are eligible for hospice care—of 608 hospital decedents, 229 were eligible for hospice care on their penultimate visit, but only 17 were approached about it.[39] Of the 14 of 17 patients who enrolled, only seven were readmitted to hospital (1 day at a mean cost of US$4963); of the 229 patients never approached about hospice care, 222 were readmitted (10 days at a mean cost of US$52 219).[40] 5% of patients discharged from hospital with arranged hospice care were readmitted to hospital, as compared with 20–25% of patients discharged without such arranged care.[41] When in-patient consultation about palliative care was provided to patients in hospitals, the proportion of patients discharged with hospice care arrangements in place increased from less than 3% to more than 30%,[42] and reduced hospital readmissions by about half.[43] Implementation of required situation-specific or disease-specific consultations about palliative care compared with usual care doubled the number of consultations from 41% to 82%, reduced 30 day readmission rates from 22% to 14%, and increased the proportion of deaths that occurred at home.[44]

Reduce medical imaging costs

Medical imaging costs have increased without attendant changes in mortality from metastatic disease. Even for lymphoma (a disease with an especially successful salvage chemotherapy) the cure rate from salvage chemotherapy is just as good if the disease is diagnosed from clinical findings[45] as from a routine surveillance PET scan.[46] The second of five Choosing Wisely recommendations from American Society of Clinical Oncology (ASCO)[47] includes the recommendation to "avoid using positron emission tomography…as part of routine follow-up care to monitor for cancer recurrence… unless there is high-level evidence that such imaging will change the outcome". The administrative solution is clear: limit expensive imaging to situations in which there is strong evidence of benefit. The clinical solution is more nuanced. There are physicians and patients who