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CREST Update—Dec 2014

Discounting in Economic Evaluations.

In a forthcoming CRSET Factsheet, we look at the practice of "discounting" in economic evaluations, what it is, why we do it, how it is done, and how we choose an appropriate discount rate. As a preview, economic evaluations involve comparisons of costs and outcomes for interventions over time. When we discount those cost and outcomes we take into account the impact of time (but not inflation) on how they are valued.

But why do we discount? Typically, individuals (society) prefer to consume a product or service now rather than delay that same consumption until sometime in the future. This reflects a positive rate of time preference, or discount rate. The higher the discount rate, the more highly current consumption (or outcomes) are valued relative to future consumption (outcomes). So, one of the main reasons we discount is to reflect that difference in preferences over consumption.

The way we discount is quite straightforward. The present value of future costs or outcomes is estimated by adjusting them using the discount rate, where *X* is the cost/outcome of interest, *r* is the discount rate, and *t* is the number of years into the future *X* occurs:

Present Value = X/(1+r)^t

The further into the future (the larger is *t*) we discount, the lower is the discounted present value of a cost/outcome of a given amount. Similarly, the higher is discount rate (*r*), the lower is the discounted present value of a cost/outcome of a given amount. In most cases, it is standard practice to apply the same discount rate to costs and outcomes, and to keep the discount rate constant over time.

Choosing the right discount rate is important because it can impact on the results obtained you're your economic evaluation. Discounting tends to have a greater impact on cost-effectiveness ratios for evaluations where costs occur upfront but outcomes occur sometime later (such as in cancer screening or vaccination), or where there is a long term stream of benefits (such as paediatric indications).

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Costs of Cancer: Lifting the Veil on "Large" Numbers.

From time to time there are pieces in the media or literature on the costs associated with specific cancers. One such example was a story earlier this year that a woman diagnosed with breast cancer at the age of 35 might expect to be $40,000 worse off over her lifetime due to lost income and out-of-pocket expenses.[1] Such numbers can be very powerful as a call to action, particularly in highlighting the impact of cancer on the patients' ability to earn income and meet expenses not covered by health care insurance (public or private). However, when viewing cost of illness data such as these it is important to consider how they have been derived, and importantly whether there are any unintended consequences from their use.

The $40,000 lifetime financial cost for households for a 35 year old with breast cancer was drawn from a 2006 report by Access Economics commissioned by the Cancer Council NSW. The corresponding household cost per person for breast cancer, regardless of gender and age, was $28,500 (see Table 9-8 of that report). The majority of this cost ($21,300 or 74.7%) was attributable to lost income due to early mortality or long-term employment losses; in short, productivity losses. Health costs accounted for only 12.2% of the estimated lifetime costs.

The inclusion of productivity effects when estimating the costs of cancer, either within a cost-of-illness study or economic evaluation, is often contentious. Not only is there debate over the methods for estimating productivity effects, but it is unclear whether there is a loss to societal production from one individuals' experience of disease.[2] Beyond that, the example above highlights another difficulty with the use of cost data that are largely driven by productivity effects; it is driven by underlying differences in wage levels. This becomes apparent when one considers the reported lifetime costs by gender. The equivalent household lifetime cost for a 35 year old male diagnosed with breast cancer (being in the age group 15-64 years) as reported in those data was $89,800. This is more than double that reported for women in the same age group. This difference is largely attributable to the difference in average weekly earnings used to estimate the productivity effects of cancer; which for 2005 were $1,065 for a 35 year old male and $658 for a female of the same age. This difference in wages results in large differences in household financial costs between men and women for all the cancers listed; by at least a factor of two, and sometimes a factor of three for some cancers (head, neck and thyroid).

The same pattern is observed in the total costs (regardless of who bears that cost); the bulk of the financial costs in each cancer are due to productivity losses, with higher costs for males than females. Is this reasonable? While such costs might well reflect what is paid by employers, it is unlikely that they accurately reflect differences in productivity.

As recent data continue to show, there are large gender pay discrepancies within occupations for Australia (https://www.wgea.gov.au/sites/default/files/2014-03-04-Gender_Pay_Gap_factsheet_website.pdf), suggesting that apparent differences in productivity are an artifact of inequality in gender pay. Allowing such differences to drive differences in the estimated costs of cancer is problematic. In particular, these data might suggest a disproportionate financial burden associated with cancer based on gender, when what they are actually reflecting is an underlying wage discrepancy that does not reflect productivity or merit.[3] So, while attempting to measure productivity is laudable from an efficiency perspective, in this case, the result might be that it promotes existing inequities in the broader system. Not all costs are created equal. It's worth taking time out to understand what they represent and the potential broader implications that might arise from their use.

1. http://www.smh.com.au/national/health/young-women-with-breast-cancer-not-getting-the-help-they-need-20140909-10ecgk.html
2. Sculpher M, "The role and estimation of productivity costs in economic evaluation", in Drummond M & McGuire A (eds.), Economic evaluation in health care. Merging theory with practice. 2001. Oxford University Press, Oxford.
3. Snow Jones A & Frick KD, "Gender bias in economic evaluation methods. Time costs and productivity loss", 2008, *Women's Health Issues*, Vol (18), pp 1-3.

Health Economics Researcher Spotlight: Dr Philip Haywood, PhD Candidate

One of the challenges facing researchers conducing economic evaluations in the field of oncology is the lack of timely economic information about the treatment of patients with cancer. This lack of information becomes problematic when we consider the expected increase in the number of pharmaceuticals becoming available for use in treating cancer patients.

Two key pieces of information about these new treatments are how they are expected to affect patients, and how they will be used relative to other treatments in practice. This considers that often, these newer agents, particularly the newer biological pharmaceuticals, have a different adverse event profile than traditional chemotherapy and that, in practice, cancer treatment is often a sequence of treatments. A lack of relevant information about all the effects and the opportunity costs of sequences of treatment may lead to health practitioners making sub-optimal choices about treatment.

As part of his PhD in Health Economics, Dr Philip Haywood is seeking to explore the impact of adverse effects and treatment sequencing on economic evaluations in oncology. The major aim of his research is to develop models of costs and consequence for sequences of pharmaceuticals used in the treatment of cancer. Currently, this is being undertaken by modelling the consequences (in terms of clinical outcomes, including adverse effects) of increasing the length of cancer treatment through the addition of more therapies. This is being achieved by focusing on three key clinical areas: breast cancer, colorectal cancer and lung cancer.

Dr Haywood's research is supported through a grant from the TCRN, and through his position at CHERE. Look out for findings from this re-

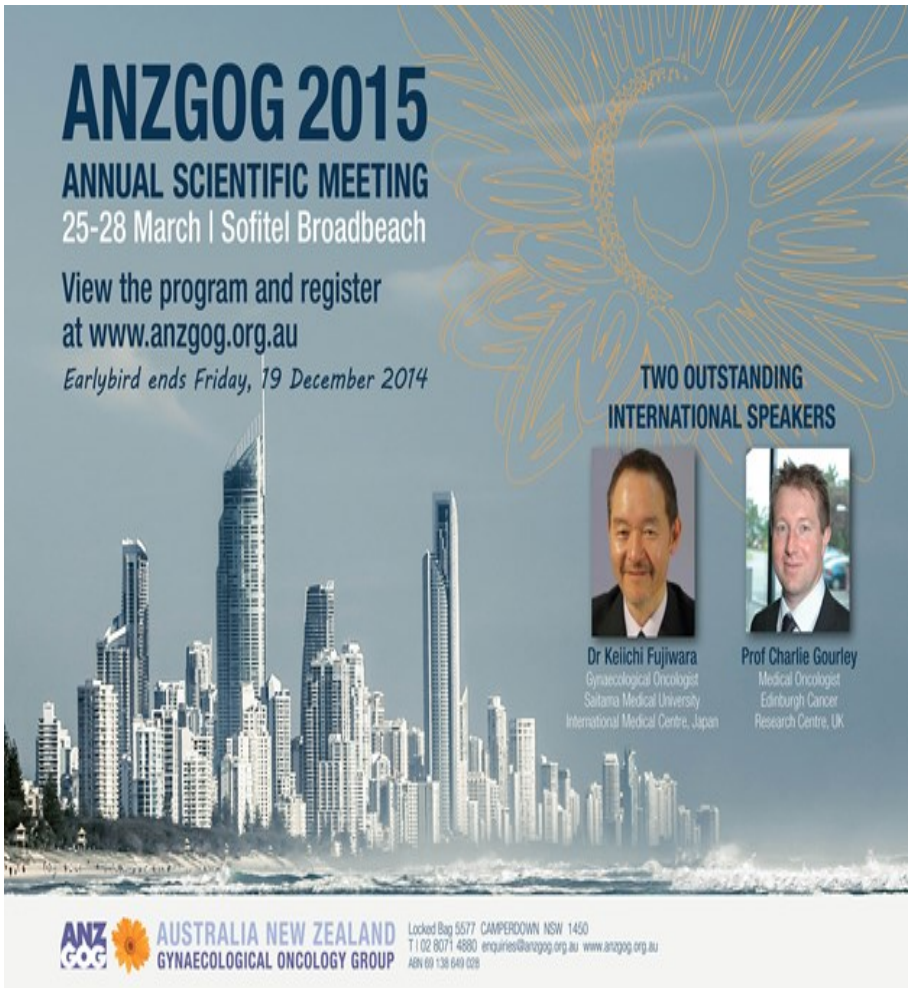
CREST Workshops: Getting ready for 2015.

Throughout 2014, CREST hosted four health economics focused workshops. As well as the regular offering of *Understanding Health Economics in Cancer Research* (held in Melbourne), for the first time this year workshops were offered tailored specifically at consumer representatives of the CTGs. Two workshops were held; one in Sydney and the other in Melbourne. Through the *Health Economics in Cancer Research – A Consumers' Guide*, participants were able to gain an insight into how health economics fits with clinical trials and the role it plays in making health care available, in particular pharmaceuticals and medical services. Participants heard from two current members of the Pharmaceutical Benefits Advisory Committee, as well as the CREST team, about the use of health economics advice in the reimbursement of health care and the role of consumers in providing and shaping that advice. The workshops also provided participants with an opportunity to meet with representatives from other CTGs and to share their experiences about participating in the trial development process. The fourth CREST workshop held was in the development and application of economic models in cancer care. 20 participants, ranging from cancer clinicians, to trial group executive officers and clinical trial researchers attended the two day

(*continue***Workshops Continued…**

workshop for hands on experience in developing economic models for use in economic evaluations of cancer care.

This program of workshops is set to continue in 2015. It kicks off with the introductory workshop *Understanding Health Economics in Cancer Research,* to be held in Perth on 20th March. Other offerings throughout the year include a consumer workshop in May, a joint quality of life workshop in August, an economic modelling workshop in October, and with plans for a preference valuation workshop at years' end. Look out for specific dates and details for the workshops in the new year, and a registration flyer for the March workshop soon.



Look What They've Done to my Grant!!!

Whether you believe in the man in the big red suit, or the Grinch that humbugged all over your latest grant application, it's time to be thinking about the next round of NHMRC funding applications. Here at CREST we are ready to help with your forthcoming applications by providing assistance in a number of ways:

- Conduct a CREST audit (a written review) of your protocol, focusing on whether it is suitable for an economic evaluation, and making suggestions about your trial design and the potential inclusion of an economic evaluation component.
- Provide ad-hoc advice (either via phone or e-mail) on a protocol in development.
- Participate in protocol development discussions/workshops or challenges.

We are happy to provide this advice without any expectation that our team members would be involved in the trial (that is a matter for you and your trial team, and further ongoing involvement by CREST may or may not be appropriate).

Our aim is to provide you with timely and meaningful advice when preparing your NHMRC applications. If you would like to use CREST for health economics input to your protocol prior to submitting an application to the NHMRC, either contact your trial group Executive Officers, or contact Richard De Abreu Lourenço at CREST directly at: Richard.deabreulourenco@chere.uts.edu.au.

TROG Cancer Research Report

Researchers from the Trans-Tasman Radiation Oncology Group (TROG) have launched the international SAFRON II trial to investigate whether an emerging radiotherapy technique can result in long-term survival for lung cancer patients.

SAFRON II trial participants will receive a new form of cancer treatment called Stereotactic Ablative Body Radiotherapy (SABR), instead of chemotherapy, which is the current standard treatment for patients with metastatic disease to the lung. In the future, it is hoped that stereotactic radiotherapy treatment will be made available as an alternative to removing lung tumours by surgery, or given to those patients who are unable to have surgery.

Lead researcher, Dr Shankar Siva, said the aim of the trial was to quantify the benefit of SABR in patients with secondary tumours spread to the lung, measure the cost-effectiveness of the treatment and understand the patient's experience and quality of life after treatment.

"Currently patients with cancer that has spread from the primary to the lung are not expected to have a long-term survival. Patients are typically treated with chemotherapy or other systematic drugs without expectation for cure," he said.

"SABR offers the opportunity to eradicate these secondaries in the lung, and may offer the potential for long-term survival. This is particularly important in those patients who are not suitable for more invasive treatments like surgery.

"In general, we expect SABR to be highly effective at controlling cancer - more than 90%. We expect the rate of side-effects to be relatively low and we think that SABR may be able to assist in kick-starting the patient's immune system into fighting any remaining cancer cells."

The randomised, phase II trial will be opened in hospitals in Australia and New Zealand from January with researchers hoping to recruit close to 100 patients to the study over the next three years, with results to become available in five years.

What Has CREST Been up to?

There has been a flurry of activity in the last quarter:

Trial Group Collaborations:

- Commencement of a structured training opportunity looking at the use of PET for staging of para-aortic nodes in women with cervical cancer.
- Conduct of trial protocol reviews/audits, and provision of advice on the use of health economic data (quality of life and cost information) for forthcoming trials.
- Attendance and participation in two ANZUP concept development workshops: Prostate Germ Cell (5 November 2014), Bladder & Renal Cell (21 November 2014).
- Attendance and participation at the PC4 CDW (24 September 2014).
- Presentation to the ALLG ASM (12 November 2014).

Other Activities:

S Goodall attended the ACORD Workshop, 14-20 September 2014, as a facilitator.

Ongoing meetings with the Clinical Trial Group Executive Officers.