President Nixon famously declared a war on cancer in 1971 – with the goal to find a cure by 1976, the US bicentennial year. In 1971, Ann Landers, a friend of Lasker’s, published a column asking, ‘If this great country of ours can put a man on the moon why can’t we find a cure for cancer?’ An election was approaching in 1972, and Nixon felt pressured to find an end to one of two wars: the war in Vietnam or the war against cancer. As Siddhartha Mukherjee alludes to, ‘an end to the war in Vietnam was nowhere in sight, but a campaign against cancer seemed vastly more tractable’ – hence in December of 1971, Nixon signed the National Cancer Act. However, this Act, born of political activism, and expanding the scope and funding of the National Cancer Institute considerably, was greeted with skepticism by a number of scientists at the time. Sol Spiegelman, a Columbia University cancer scientist, stated, ‘An all-out effort at this time would be like trying to land a man on the moon without knowing Newton’s laws of gravity’. Others thought that the metaphor of war would ‘whip up a froth of hype and hope’, for people to inevitably be crushed. Irvine Page, editor of a scientific journal at the time, referred to people being impatient with perceived lack of progress, and commented on this mindset: ‘Having seen what can be achieved by systems analysis, directed research and great coordinated achievements such as the moon walk, they transfer the same thinking to the conquest of cancer all too readily.’

A ‘war’ that began with controversy continues to cause debate today. Have we won this war, a war deemed by so many at the time to be futile? Clearly a ‘cure for cancer’ had not appeared by the aforementioned 1976 (the original indicator of ‘winning the war’) but have enough developments been made to evidence substantial progress against cancer?

In the 1980s and 90s, many sources drew on increases in cancer related mortality rates to conclude that we had in fact lost the war. Between 1962 and 1885, cancer related deaths indeed increased by 8.7%. Bailar and Smith, in an article published in 1986, asserted, ‘We are losing the war against cancer, notwithstanding progress against several uncommon forms of the disease, improvement in palliation, and extension of the productive years of life.’ However, this assessment focused primarily on age-adjusted mortality rates, sparking criticism from many of the fact it didn’t take into account years of life gained, for example by curative treatment of childhood leukaemia. This trend of increasing continued into the early 1990s, as death rates per 100,000 from cancer had increased from 1970 to 1990 in women and men. The Victorian Cancer Registry published figures in 2007 indicating that
from 1990 to 2004, rates of 5-year survival from cancer of any type or morphology had increased. Yet different cancers, affecting diverse organs and with many morphologies, bear profoundly different prognoses since ‘cancer is in truth a variety of diseases’, as Klausner, Director of the National Cancer Institute maintained in 1997. Rates of mortality in Jemal’s study decreased for all the major cancer sites in all age groups – colorectal, prostate, breast and lung. Conversely, rates of death increased for liver cancer in both sexes, oesophageal cancer in men, pancreatic cancer in women and melanoma in men. Likewise Victorian statistics reveal that in 2007, statistics for survival were far more sombering for certain cancers than others, and others much more heartening.

Breast cancer is the most common cancer in women, and projections are that incidence will continue to rise; moreover it is the second most common cause of cancer-related mortality in Australian women after lung cancer, making it a highly topical issue. Despite this rise in incidence, mortality in Australia has been declining since the mid 1990s. In 2006, the 5-year relative survival was 88% for women diagnosed with breast cancer in 2000-2006; this was a vast improvement from 1982-1987 when the 5-year relative survival was 73%. Improvements in survival have been largely attributed to better targeted adjuvant systemic treatment, increasingly effective chemotherapy; the screening program may also have had some impact (introduced in Australia in 1991). In his book, Mukherjee refers to the different expectations women over time may have regarding breast cancer; before the 1900s surgery was the only treatment option – and was often quite brutal in technique. The discovery of X-rays as a treatment modality in the 1900s however offered new hope, and in the 1970s adjuvant combination chemotherapy became widely used. No longer was every cancer viewed as similar, but awareness of hormone receptors allowed use of drugs like tamoxifen. The 1980s brought discovery of the Her-2 receptor, and consequent use of Herceptin. Finally in the 1990s the significance of the BRCA-1 and 2 genes came to light; suddenly women were being categorised regarding whether or not they expressed these genes, and they and their families were screened more emphatically if they expressed the genes. These vast changes in treatment and screening modalities over time reflect veritable progress – but still metastasised breast cancer, breast cancer that is oestrogen receptor negative, or Her-2 negative, or unresponsive to standard chemotherapy carries a similar prognosis to that of the 1700s. Sufferers from these cancers would understandably doubt how far we really have come.

As with breast cancer, bowel cancer screening has changed the landscape regarding the disease, especially since during colonoscopy polyps can be removed at a pre-cancerous stage; therefore screening can in fact decrease incidence. 5-year survival in Victoria in 1990 was 47%, as compared to 63% in 2004. Additionally, better treatment and multi-modality treatment have contributed to these improvements. Paediatric leukaemia perhaps represents one of the greatest success stories of the twentieth century; in the 1950s the overall survival was about 10% - now it is 80-90%. But still the stories of relatively poor outcomes from cancer dominate many people's assessments – for example, survival for lung cancer remains poor. Even though the major aetiological factor of lung cancer has been validated, and mortality has thus decreased, the survival rate once one is diagnosed with the disease hasn’t drastically changed. The 5-year survival for Victorians with pancreatic cancer in 2004 was still a mere 5%, confirming that the disease generally presents at a stage too advanced for curative treatment.
One could question, and many have, why we can eradicate smallpox and polio, but not cancer. In the 1960s a battle against smallpox began, and 10 years later with 300 million dollars having been invested, the disease was a thing of the past. Likewise, polio, after 21 years and 18 billion dollars, became a nightmare we no longer had to worry about. In 2009, the War on Cancer had already cost 100 billion dollars. Reduction in cardiovascular disease death rate had been far greater, at 64%, dwarfing progress made in the War on Cancer. The natural question to ask is: why can’t the same level of advancement be seen in cancer?

Rehemtulla implies that the sheer complexity of cancer makes such rapid advances impossible; ‘the more we study cancer the more complex it appears.’ He also alludes to the relatively new knowledge regarding cellular and molecular biology tools to interrogate tumour cells – without this knowledge our fight was far less meaningful. Cancer research, he maintains, ‘can also be distracted by fads and political agendas that come and go over time’. As early as the 1940s, Mary Lasker was working on this principle – that scientific advances will depend heavily on government involvement and funding.

John Cairns, a Harvard biologist, referred to the difference between eradication of cancer and eradication of infectious disease in 1985:

‘The death rates from malaria, cholera, typhus, tuberculosis, scurvy, pellagra and the other scourges of the past have dwindled…because humankind has learnt how to prevent these diseases…to put most of the effort into treatment is to deny all precedent.’

Richard Klausner stated that it is ‘unlikely we will soon see a magic bullet’. Regardless of whether prevention or treatment is the key, one point seems relatively certain: the War on Cancer declared by Nixon in 1971 was exceedingly ambitious. Progress has certainly been made over the years in cancer knowledge and treatment, even though it hasn’t matched the hope of a cure by 1976. In the 1890s, a ‘radical mastectomy’ involved slicing through the collarbone, reaching for lymph nodes beneath it, if not cutting through the pectoralis major, leaving women deformed. This operation was done without any concept of staging, even to women who would now just have a lumpectomy. These radical mastectomies were also done to women whose cancers had metastasised, even though as early as 125 AD, Galen (a physician) referred to the problem of removing cancers surgically being that ‘black bile’ would flow right back – it was everywhere. He thought cancer was the result of a systemic malignant state, an overdose of black bile. The differences in knowledge now from the 1890s, and the time of Galen, are astounding. We now know how to stage cancer; some may be removable through surgery, but some may be associated with the ‘black bile’ Galen referred to, in essence metastatic.

Furthermore, considerable improvement has been made in mortality and survival for many of the common cancers since Nixon’s war was declared. A number of cancers have not progressed nearly so much, but as Klausner stated, the problem with declaring a war on cancer in general was that it ignored the existence of cancer as a variety of diseases, rather than one entity. The war was also widely acknowledged to be a premature fight, prompted by advances in entirely different fields, such as space travel. With the prematurity and complexity of the war taken into account, Mukherjee suggests that perhaps in order to ‘win’ the war on cancer we should redefine victory. He states that ‘we do not know the biological basis for cancer’s heterogeneity…what is certain, however, is that even the knowledge of cancer’s biology is unlikely to
eradicate cancer fully from our lives.’ 2 Therefore, although we haven’t won the war in the terms stipulated by Nixon in 1971, perhaps we have won a more reasonable fight in having come as far as we have. In 2003, Dr Andrew von Eschenbach, the director of the National Cancer Institute (US), made a challenge to ‘eliminate the suffering and death from cancer’ by 2015. 9 This would be a far more reasonable aim than Nixon’s, and is one with which we have already made significant progress. It will be the task of the doctors of the future to continue in this battle against cancer, and the most important means of doing this will be to adequately integrate clinical with laboratory research; in 2010 Brennan et. al maintained that ‘without better integration across clinical research and laboratory research questions may remain about where we stand in the war on cancer.’ 1 Furthermore, as Mary Lasker realised in the mid-1900s, our fight will be futile without the support of leaders of our respective countries. Forthcoming doctors should not be discouraged by our failure to ‘cure’ cancer by 1976, and should instead focus on relieving ‘suffering and death from cancer’, as Eschenbach eloquently promoted.
References:


