


Chapter 17

Comparative Study of Oncology Information Systems for Better Patient and Provider Outcomes

Muhammad Nadeem Shuakat

Epworth HealthCare, Australia

Nilmini Wickramasinghe

 <https://orcid.org/0000-0002-1314-8843>

Swinburne University of Technology, Australia & Epworth HealthCare, Australia

ABSTRACT

Cancer is among the top three chronic diseases both in developed countries as well as underdeveloped countries. The diagnosis, medication, and treatment for cancer is extremely costly. Typically, cancer treatment involves surgery, radiotherapy, and chemotherapy. Owing to the extremely high price of medicine and treatment along with cytotoxicity of medication, cancer treatment warrants extraordinary care in treating cancer patients. Oncology information systems (OIS) provide an all-in-one solution for such problems. The OIS can integrate different treatment protocols and update change in dose and treatment in real time.

BACKGROUND

Cancer is considered as one of the leading causes of death among other chronic diseases (AIHW, 2017, Torre et al., 2016, Pesec and Sherertz, 2015, Torre et al., 2015). In Australia, it was found that by the age of eighty five, one in two Australians is detected with cancer whereas cancer will be the cause of death for 20% of population (1 out of 5) . Cancer is affecting more males (approximately 53.8%) than females (approximately 45.6%) (AIHW, 2017). Around 33% of males while 20% of females are diagnosed with cancer by the age of 75 (2017). It was estimated that in 2017 around 134,174 people were identified as cancer sufferers and it appears that by the year 2020 there will be 150,000 people suffering from cancer (AIHW, 2017).

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Figure 1.

Source: Australian Institute of Health and Welfare

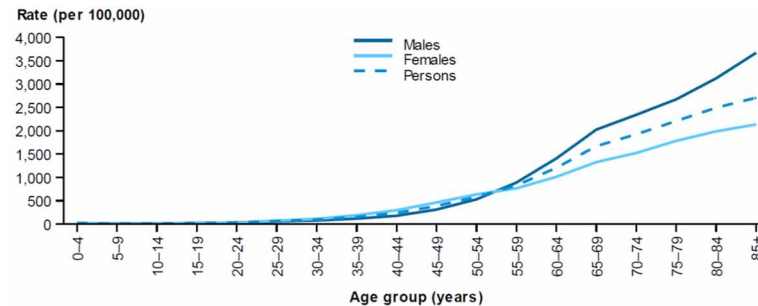


Figure 1, shows the age specific pattern in the Australian population (Connell, 2017). As can be easily seen, below the age of 30, the pattern is almost the same in both males and females while it shows a change in pattern over 30 (ibid), more females are found to suffer than males until it reverses around 54, where the male population seems to suffer from cancer more prominently than females (ibid). In general, people living in Australia have a better chance of survival than people living in other parts of the world (2017). This is attributed to better awareness and improved clinical care (Crawford, 2013). The overall reduction in cancer incidences in Australia is primarily due to decreased number of cases in prostate cancer in men (2013). This decline in cancer trends could be associated to increased awareness and prostate specific antigen (PSA) testing in males (2017). For a cancer patient surgery, radiation and chemotherapy are considered as a generalized treatment (Crawford, 2013), which are expensive treatments (Paul et al., 2017, Paul et al., 2016); fortunately, for Australians, the healthcare system pays most of the cost which is estimated around \$4.5 billion (AIHW, 2017). As cancer treatments involve utilization of radiation and cytotoxic doses, critical control over the amount and time duration for procedure is very critical so as to avoid any damage to the healthy cells (Wickramasinghe et al., 2015).

What is OIS (Oncology Information System)?

Thanks to new innovative technologies and their non-traditional employment in disease detection and treatment, we have better health outcomes and improved survivor rates (AIHW, 2017). We are living in the age of information technology and have effortless access to new research findings being conducted in any corner of the world. This influx of information through electronic and print media serves to improve health and wellbeing (Duckett and Willcox, 2015). In general, people are living longer and demand better disease management, which stretches the overall healthcare budget of global healthcare systems (Nutbeam, 2008). This situation becomes critical when we are dealing with cancer treatment which is already expensive and can lead to fatal consequences with tiny mistakes in treatment, records or failing to get to a scheduled appointment, consequently wasting resources and time for such a costly treatment in already stretched healthcare system is a key problem (Berwick, 2003).

To increase the efficiency and usefulness of healthcare, providers have started using medical information systems which reduce errors and keep up to date information regarding patients' medication, electronic health records and their test results all in one place (Sulaiman and Wickramasinghe, 2014, Wickramasinghe and Schaffer, 2010). These electronic healthcare records (EHR) aid in better management

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