

Cancer in the workplace: What does the future hold?

Willis Towers Watson 

Article 4 of 7

This series of articles will explore some of the key innovations in oncology that are expected to turn the tide in the fight against cancer. They will also review the impact of these advances on employee benefit plans that often include cancer related coverage.

What the series will cover:

We will start by exploring why innovation is happening in this field and outlining the progress of current breakthroughs, followed by a review of what to expect in the future and the value of new advances in cancer care to insured employee benefits. We will also review the impact of COVID-19 on cancer services including screening, diagnoses and treatment.

Key points

- New innovations in early detection of cancer could shift the tides on cancer mortality and save lives.
- Researchers are continuing to leverage new knowledge to design technology solutions that could bring improved cancer screening to both developed and emerging markets.
- The emergence of 'radio genomics' and artificial intelligence is accelerating opportunities for personalised diagnosis and medicine.
- There is much to learn with how normal human biological systems interact with cancers and could elucidate new approaches to target cancers.

Innovations in early detection

Using liquid biopsies

- Early detection of cancer is vital as it can offer an increased number of available treatment options, improved survival rates and improved quality of life.
- Easily obtainable liquids or fluids such as blood are tested for the presence of cells associated to cancers and using next generation genetic sequencing, DNA in the blood can be profiled to understand the genetic makeup of cancers.
- These biopsies minimise the discomfort that can be experienced with current widespread screening approaches.
- Advancements with liquid biopsies could offer a simpler and more effective approach to early detection by testing for tumour signatures before symptoms arise.
- Population wide testing using liquid biopsies could also be easier to implement outside of clinical settings and require less equipment.
- This could prove beneficial in tackling the impact of local, regional and global crises such as COVID-19 on access to current screening initiatives.
- Equally, the biopsy could offer the potential to test for multiple cancers using a single tube of sample fluid.
- The data generated by these tests could also significantly improve how environmental and lifestyle interventions are designed and used.

Using health tech

- SNIFFPHONE is a handheld device being developed to use an exhalation of breath to provide early identification of potential cancers, bringing together new capabilities in nanotechnology-based chemical sensors and artificial intelligence pattern recognition.
- Researchers at the Rutgers Robert Wood Johnson Medical School created a prototype non-invasive virtual biopsy device that successfully detected skin cancers within 15 minutes. Using a combination of light and sound waves, the device was able to determine if a tumour was malignant and create a 3D map of tumour under the skin.
- These simple and potentially cost-effective solutions could prove invaluable for developing countries and emerging markets, particularly those with under-investment in cancer screening.

Innovations in cancer diagnosis

- Imaging of cancers - x-ray, MRI and CT scans play a vital role in the diagnosis and the staging of cancers. The qualitative interpretations of these images help to determine a suitable treatment pathway for patients.
- Radiomics - can help to quantitatively interrogate images and identify tumour features that would have been unseen by the naked eye. Statistical modelling is then applied to guide clinicians to the best course of treatment and predict prognosis.
- Radio genomics - a further advancement offers the potential for a non-invasive means to correlate image

data with specific genetic mutations that cause tumour tissue growth.

- Combining 'radio genomics' with artificial intelligence pattern recognition capabilities offers cost effective and improved accuracy of diagnosis that is patient specific.
- Personalised treatment pathways - can minimise the likelihood of selecting resistant therapy, managing costs of cancer care more effectively.

Innovations in understanding the human microbiome

- The human microbiome is an area of strong interest. It is the genetic makeup of all the micro-organisms that live within and on a human.
- This sub ecosystem plays a large role in regulating normal bodily functions and systems including the immune system and, therefore, is considered to have an impact on cancer progression and how a patient responds to therapy.
- As such, understanding the intricate interactions between the human microbiome and factors such as diet, drugs and cells within cancerous tissue has been a focus of research in this field.
- However, the direct or indirect link between microbiomes and cancer is yet to be established, and it is hoped that this will help yield new therapies for individuals living with cancer and improve prevention and management guidance.

What to expect in the next article?

- Examples of technological and digital innovations that are improving how cancer services are delivered.
- New opportunities with cancer management in the clinical environment, at home and in the community.
- The effect of COVID-19 on cancer patients



To find out more information and guidance in supporting employees during the coronavirus crisis, please contact your Willis Towers Watson consulting team who can help you.

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