Swiss Re Institute

Life & Health Trend Spotlight

An overview of cancer screening; What's new, what's coming and what you should consider

Cancer is a moving target for insurers and we, as an industry, must be ready and able to keep up with the dynamic changes it presents. One of the biggest areas of change – and potential impact – is screening. With the many advancements in cancer screening, insurers are continually presented with new and sometimes conflicting evidence that could affect underwriting, claims and risk selection. Faced with this avalanche of data and public policy developments, it's wise to remember a line from the Hippocratic oath, "Do no harm." Before making any decisions about underwriting standards, policy wordings and claims protocols, it's imperative our industry tread carefully with thoughtful observation and a balanced approach.

This year, our medical experts and researchers will dive deeper into screening developments on breast, colon, cervix and prostate cancer and refresh with the latest on liquid biopsy and evolving screening tests. In the meantime, this article provides an overview of some of the key considerations around existing and emerging forms of cancer screening. As always, the most current research and considerations to help you make informed, confident underwriting decisions in this space can be found in Swiss Re's Life Guide.

Governments and public health organisations have recommended various screening programs in the last few decades; some involve cancers of the breast, prostate, cervix and colon, although not all reduce mortality. Clinical researchers continue to develop new ways to identify cancer cells at an early stage when treatment plans are simpler and survival outcomes are better.

Did you know?

Most effective cancer screening tests[1]:

- Colorectal
- Cervical
- Breast
- Lung

384,000 – 614,000
Prevented breast cancer deaths since 1988 due to mammography[2]

The **pap smear** was first proposed for cervical cancer screening in **1928** by George Papanicolaou. It only gained popularity after **1943**.

Benefit vs harm

Cancer screening has had a positive effect on statistics over the years. Since the National Health Service in the UK began offering breast cancer screening to women in 1988, 1,300 breast cancer deaths have been prevented each year due to early detection. Invasive breast cancer incidence showed a steady increase, but age-standardised incidence of carcinoma in-situ increased almost 200% during a 20-year period to 2016[3]. Overdiagnosis was also acknowledged as a contributor to the increased numbers.

The benefits of screening are difficult to determine because treatment changes over time and many cancers may never progress to mortality. Also, accuracy varies, and false-positive results often lead to unnecessary medical investigations and psychological tension.

It's important to weigh the benefits and disadvantages of cancer screening when setting public health policy and modifying clinical guidelines. For example, until 2008 many doctors in the US recommended an annual Prostate Specific Antigen (PSA) screening test for men over 50. However, PSA tests can be elevated due to non-cancerous problems, and prostate cancer is slow-growing and often found in elderly patients in an indolent state. The United States Preventive Services Task Force recommends screening of only selected patients based on individual circumstances[4]. Despite this, some doctors and commercial laboratories still advocate the PSA test. Insurers still use PSA screening for high sum-insured male applicants or critical illness policies, but a negative result may be more useful as a positive test often raises more questions than it answers. In South Korea, thyroid ultrasound screening guidelines caused a ten-fold increase in thyroid cancer incidence[5]. In 2015, the Korean Committee for National Cancer Screening Guidelines recommended against this screening approach and since that time incidence has been fairly flat.

Access to screening and challenging the status quo

The public can access cancer screening tests in different ways. Some tests take place in medical facilities (e.g. mammogram and cervical smear) and some like colon cancer require only a simple blood and stool test which can be purchased from online shops without a prescription and done at home.

The British Medical Journal published an amended clinical practice guideline on colorectal cancer in October 2019[6]. Many public health authorities have conducted colorectal cancer screening for people above 50 with faecal occult blood, faecal immunochemical testing and colonoscopy. A recent paper which is the first of its kind to challenge the status quo on colorectal cancer screening recommended the use of the QCancer® calculator[7] to analyse colorectal cancer risk and only screen subjects with cancer risk above 3%. This has already generated debate, but it is too early to detect any shift in practice.

Liquid biopsy and future view

Liquid biopsy identifies cellular and sub-cellular molecules such as circulating tumour cell, cell-free tumour DNA, exosomes and mRNA, helping oncologists monitor response to treatment and detect relapses. Research is underway to detect if any of these tests are accurate enough for screening cancers from apparently asymptomatic subjects. See our Trend Spotlight with more on liquid biopsy.

Significant progress has been made in multi-cancer detection techniques. In September 2019, a scientific paper[8] was presented at the European Society for Medical Oncology conference which discussed preliminary results of a blood test on 20 cancer types by analysing the methylation pattern of cell-free DNA. The overall test specificity (true positive rate) was 99.4% but sensitivity (true negative rate) was only 54.7%, with slightly better rates when the cancer type was pre-specified[9]. Cancer types included in the study are breast (hormone-receptor negative), colorectal, oesophageal, gallbladder, gastric, head and neck, lung, lymphoid leukaemia, multiple myeloma, ovarian and pancreatic cancer.

Over the next decade, we may see hospitals using liquid biopsies in diagnostic testing, leading to changes in cancer incidence trends. Swiss Re closely monitors this topic, as developments here may necessitate changes to our definition of "what is cancer".

Cancer incidence

Lung 11.6%
Colon 10.2%
Stomach 5.7%
Liver 4.7%
Oesophagus 3.2%

Prostate 7.1%

Breast 11.6%
Cervix uterine 3.2%

Other cancers account for 42.9%

Source: https://www.who.int/cancer/PRGlobocanFinal.pdf

What is the impact?

Underwriting

- Anti-selection is a growing risk, especially when consumers can purchase tests online or from commercial laboratories.
- Underwriters should review recommended screening programs in their market and how relevant these are to an applicant's medical history. Underwriting questions should address medical testing outside of clinical facilities.
- Underwriters should stay current on and be able to interpret medical developments. Cancer screening tests may become sufficiently advanced to use in a standard testing panel, when there's a family history of cancer, or as a rating factor for cancer survivors.

Claims

- Early cancer claims should be monitored carefully, and increased frequency investigated. Non-disclosed self-service screening results may be difficult to obtain, especially with heightened protection of personal and sensitive data.
- The conventional minimum requirement for histopathological proof of a malignant tumour must be clearly defined in policy definitions. When cancer screening becomes more sophisticated and accessible, policies must be unequivocal, otherwise product pricing assumptions will not align with the incidence of cancers.
- Claims professionals should stay up to date on medical developments so they can hold informed conversations with claimants and doctors to obtain necessary details required for payment of valid claims.

Pricing

- Understanding the true prevalence and incidence of cancers in the market is a fundamental necessity for properly pricing an insurance product. An increase in cancer screening accelerates diagnosis, which, in turn, increases incidence. An increase in screening also potentially reveals "over-diagnosed" cancer which otherwise wouldn't have become symptomatic.
- A knowledge of current and future changes in medical practice is important, particularly in regions such as Asia, where a mixture of Critical Illness products with various staged products are popular.
- Pricing alone may not be sufficient to mitigate over-diagnosis risk. Product design and claims definitions must be aligned to reduce exposure to cancers subject to over-diagnosis, via exclusions or partial benefits. As seen in previous examples, a reliable and popular screening program can change the pattern of cancer diagnosis, especially the proportion between different cancer stages.

References

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Questions?
Contact your local Swiss Re representative to discuss more on the topic.

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