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Conventional Cancer Screening Versus CitiScreen: A comparative Analysis

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The U.S. Preventative Services Task Force release cancer screening recommendations on a regular basis. These recommendations include a mammogram every 2 years among women aged 50-74, a Pap test every 3 years among women aged 21-65 without a hysterectomy, or a Pap test plus human papillomavirus (HPV) test (co-testing) every 5 years among women aged 30-65 without a hysterectomy. These recommendations also include a Pap test every 3 years among women aged 21-65 without a hysterectomy. In addition, they recommend a home blood stool test every year, a sigmoidoscopy or a computed tomography (CT) colonography every 5 years, a colonoscopy every 10 years, or a fecal immunochemical test (FIT)-DNA test every 3 years among adults aged 50-75.

Data from a 2018 annual survey of a sample of civilian, noninstitutionalized U.S. population was used to examine up-to-date breast, cervical, and colorectal cancer screening recommendations. Information about these tests was collected from one randomly selected adult per family (final sample adult response rate was 53.1%). Respondents were asked whether they had ever received each test and when they had received their most recent test. This survey was used as a base for a morbidity and mortality weekly report (MMWR) and it concluded that compliance with screening tests for breast, cervical, and colorectal cancers was below national targets. Based on the fact that cancer screening is underutilized, and cancers are caught later, the number of cancer cases globally with an indication for surgery will increase by 5 million procedures (52%) between 2018 (9 065 000) and 2040 (13 821 000) [1,2].

Conventional cancer screening programs are non-efficient, largely outdated and often conducted by health care providers with insufficient training and expertise. CitiScreen project was developed to upgrade and improve cancer screening results. The goal of CitiScreen is to put together screening algorithms for the following cancers: lung, ovary, breast, prostate, cervix, thyroid, colorectal, pancreas, and skin, among others. Individual screening algorithms combine ultrasound MRI, CT imaging, genetic and tumor markers, as well as other technologies. Screening starts with obtaining family, personal and social history as well as demographics for the identification of risk factors for various malignancies [3].

Citi Screen uses the latest achievements in cancer prevention research. CitiScreen provides potential patients with updated information and gives patients more choices in screening

procedures. In selecting cancers for screening, we used World Health Organization's principles (modified Wilson and Jungner criteria).

Almost 40 years ago, WHO commissioned a report on cancer screening from JM Wilson, then Principal Medical Officer at the Ministry of Health in London, and Jungner, then Chief of the Clinical Chemistry Sahlgreen's Hospital in Sweden. The report was published in 1968 and was entitled: Principles and practice of screening for disease and it has since become a public health classic.

There have been many technological advances in medicine since Wilson and Jungner wrote their report, making cancer screening a topic of growing importance and controversy. With the recent sequencing of the human genome, there is a renewed interest in cancer screening [4,5]. Therefore, the initial step of CitiScreen is hereditary cancer testing. We use Myriad Genetics (Salt Lake City, UT), but similar companies can be used as well. Women with a BRCA1 or BRCA2 gene have risks of up to 87% for developing breast cancer and 40-60% developing ovarian cancer by the age of 70. Mutation carriers previously diagnosed with cancer also have an increased risk of a second primary cancer. BRCA gene analysis requires a blood test or an oral rinse sample. A genetic melanoma test measures the expression of 23 genes by qRT-PCR methodology and distinguishes melanoma from nevi with a sensitivity of 90-94% and a specificity of 91-96%. A melanoma test measures 23 genes for which expression patterns differ between malignant melanoma and benign lesions [6].

Genetic testing of colon, prostate and pancreatic cancer is also available. Information on genetic screening along with family history, demographics and personal history is then loaded into the CitiScreen algorithm. CitiScreen then produces an individual program for screening which is updated on a yearly basis, taking into consideration new advances in cancer screening. CitiScreen is designed to screen and detect still treatable cancers in motivated individuals. CitiScreen can be used as a guideline for cancer screening by health care professionals and patients themselves.

Conclusions

CitiScreen Inc. has many advantages over conventional cancer screening:

1. It's not subjected to bureaucratic government health policy

regulations and limitations

2. It's tailored to the needs of the individuals rather than general high-risk groups
3. It's constantly updated along with new advancements in the field
4. It allows for choice of screening tools.

One limitation of Citiscreen is the lack of insurance coverage for some procedures since it often goes beyond the health department's recommendations [7]. The second limitation is that Citiscreen can best work with motivated individuals who are interested in long-term enrollment.

References

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