

## BRCA1/2 Population Screening Pilot in Latvia. Lessons to learn.

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**Introduction.** Approximately 80% of *BRCA1/2* positive breast and ovarian cancers are diagnosed at stages II-IV. Despite the availability of modern treatments, the associated morbidity, mortality and costs remain significant. Therefore, the identification of *BRCA1/2* carriers in a presymptomatic stage is the ultimate goal to improve the prognosis for individuals at risk of hereditary breast and ovarian cancer. In many countries family cascade testing is of limited effectivity due to different reasons. The aim of this study is to evaluate the feasibility of implementing a *BRCA1/2* population screening program in Latvia.

**Material and methods.** The Institute of Oncology Riga Stradins University (RSUIO), in collaboration with private companies, conducted a pilot study utilizing the digital engagement tool, Longenesis Engage. Eligible women who had previously consented to participate in breast cancer risk assessment projects on *skrinings.lv* were invited via email, as well as through an email campaign initiated by Lindex. They accessed detailed information on a digital platform and provided consent digitally. Participants, females aged 25-59 without a personal cancer history, completed family cancer history assessments and psychological questionnaires (PHQ9 and GAD-7). Participants then downloaded a laboratory referral form to collect a saliva sample at the nearest private laboratory. Samples were sent to RSUIO for comprehensive *BRCA1/2* testing. Negative results will be communicated digitally after completing follow-up questionnaires. In case of positive result, person will be contacted by phone and invited to visit clinical geneticist with following enrolment in the surveillance programme.

**Results.** Between September 4th and November 7th, 2023, a total of 3 438 invitation emails were sent as part of the research initiative. Of the recipients, 49% (1 686 out of 3 438) opened the email, and within this group, 54% (925 out of 1 686) visited the project's digital platform to access detailed project information. Of those who visited the platform, 79% (730 out of 925) provided informed consent, with the majority (86%) opting for a digital signature. Until May, 31<sup>st</sup>, 2024 476 saliva samples had been received at the laboratory. This yields an overall response rate of 14% (476 out of 3 438) for the initial phase of the project. 160 samples have been tested for *BRCA1* founders so far. In 2/160 cases *BRCA1* pathogenic variants 4035del and 5266dup were identified, Mutation detection rate 1:80.

**Conclusions.** The findings from this research initiative suggest that *BRCA1/2* population screening through digital communication channels is a viable approach. Preliminary results confirm high *BRCA1/2* frequency in the population of Latvia. However, refinement of methodology is mandatory to improve the response rates.

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