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Editorial

EDITORIAL

The Future Is Prosperous

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See the Notes section for the author's affiliation.

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"Every disadvantage has its advantage" (*elk nadeel heb z'n voordeel*), says Johan Cruijff, the Netherlands' greatest soccer player, in one of his most famous quotes. Every time completeness and accessibility of follow-up data in screening evaluation are in play, I am extremely conscious of this quote. It was under Napoleon Bonaparte, actually, that a population registry started in the Netherlands, in the same process by which he conquered large parts of Europe while leaving behind a path of destruction and death. On the positive side of this legacy, current registry systems that uniformly cover 100% of the actual population allow us to approach each individual and link follow-up data to them. Among other things, they help ensure high-quality cancer screening.

In cancer screening, equity and an optimal balance between harms and benefits can only be achieved with the most complete reach or coverage of the population possible, as well as informed choice for participation and adequate follow-up of positive screenings and outcomes. Cancer registries and population registries, therefore, play a fundamental role in all of these steps. Such registries will be even more important when future screening programs tackle specific risk groups, such as lung cancer screening, more so than age groups alone. This is also true for when prevention programs become more precision strategies, tailoring tests by specific intervals to earlier individual results. Notwithstanding the many difficulties in achieving these goals (1), such registries have been crucial in European screening programs.

Policymakers and analysts in the United States have often struggled with the lack of such rich uniformly available data sources, while Europeans have sometimes questioned evaluations in more decentralized systems. Shapiro and others were one of the first to try to assemble and compare metrics across countries (2). In vain, it seemed, given the limited amount of comparative papers (3). But citizens and policymakers need benchmarking, as colorectal cancer (CRC) screening is being gradually implemented, different tests are being used throughout the world, and new testing technologies are emerging, such as breast tomosynthesis and human papilloma virus testing. Citizens may ask: Do I get maximum benefits versus limited harm? Or should I refrain from too much testing? Policymakers may ask: Is this program ideal? Should we introduce or make the newest test available?

Providing a uniform centralized data source was exactly what Barlow et al. (4) intend to do in this issue of the Journal. The Population-based Research Optimising Screening through Personalised Regimens (PROSPR) consortium, comprised of 10 research centers across the United States, reflects the diversity of US health-care delivery models. They provide performance metrics across different cancer types, using a noteworthy framework. They assess the important downstream steps in the screening process over the 2010–2014 period by analyzing screening data from health information systems, cancer outcome data from Surveillance, Epidemiology and End Results and statewide cancer registries, as well as tumor and pathology records.

Their findings of those "being tested up-to-date" were 63.5% in breast screening for women aged 40–74 years and approximately 67% for those aged 50–74 years; 84.6% in cervical screening for women aged 21–64 years and approximately 87% for those aged 30–64 years; and 77.5% for colorectal cancer screening for individuals aged 50–75 years, with 85.9% for those aged 65–75 years. These percentages include those receiving testing regardless of indication and those not in need of screening based on testing in prior years. These results can be seen as important achievements in the US health-care system. Although they do compensate for the difficulty of taking appropriate screening interval recommendations into account, they do not provide answers to the debate about the most appropriate interval to consider here. Some of these percentages could perhaps still include overtesting, according to other standards (5,6).

Referral rates varied between 4.1% and 5.4% in CRC and 2.4% and 6.2% in cervical cancer (CC) but were highest in breast cancer with 8.2% and 14.6%. Barlow and co-authors (4) do not report predictive values of positive tests. Many women and men will

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ask, what is the probability of me having cancer after getting a referral? The correct answer is that we cannot yet tell at the individual level, but for groups as a whole, it ranges from 0.39% in CC to 3.2% in CRC and 5.3% in breast cancer. Admittedly, some preneoplastic lesions in CC and CRC should be counted here too. Such metrics are not easy to interpret given the differences in health-care systems, but at first glance, the referral rates do seem important reductions compared to earlier single institution reports.

Whether these referrals and especially detection rates are appropriate benchmark values is even more difficult to grasp and evaluate. A very rough measurement to apply could be the cancers per 1000 screens, or the detection rate, compared to the "underlying incidence rate," as a gauge of the earlier diagnosis by screening. If we were to take, with caution but possibly incorrectly, cancers per 1000 persons in the population off the table, we would get estimates between 1.8 and 2.4. These could perhaps contribute interesting additional raw figures, also when comparing age categories.

The advantage of European linkable one-to-one registries, after consent, is perhaps still seen in Barlow's definition of cancer diagnosis (4), including all incidents of cancers detected within 1 year of a screening test among those who had at least 1 year of follow-up. For the more rapidly growing cancers, such as breast cancer and lung cancer, these estimates seem to include possible interval cancers, that is, diagnosed cancers in the 1 year after a negative screen result. These are a crucial measurement of performance and test sensitivity and need specific linkages (7).

With few reports of metrics for cancer screening that follow a target population from risk assessment through cancer diagnosis, this PROSPR initiative is very important and timely, given the future of new screening tests and cancer screening programs. Barlow et al. (4) start their paper with a preamble warning that population-based cancer screening can be achieved only if there is high participation by screen-eligible individuals coupled with appropriate and timely follow-up of abnormal findings. I think it would be appropriate to end by stressing three additional metrics for PROSPR's future: treatment parameters, interval cancers, and informed choice. I am certain the future of cancer screening evaluation in the United States and PROSPR is bright, as Barlow and colleagues' paper is indicative of metrics to come. Or should I say, "every cloud has a silver lining."

Notes

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