

## The impact of the Breast Screen NSW transition from film to digital mammography, 2002–2016: a linked population health data analysis

IN REPLY: We thank Roder<sup>1</sup> for the comment on our article. As reported in our article, interval cancer rates in New South Wales increased by 0.27 per 1000 screens after the shift to digital mammography.<sup>2</sup> We agree the reason for the increase in the interval cancer rate remains unclear and warrants further investigation to understand the underlying factors. Possibilities include: (1) a real increase due to decreased detection of progressive cancers at the time of the change in technology; (2) a real increase due to increasing risk factors; or (3) an apparent increase due to increased detection external to BreastScreen. The interrupted time series analysis found that the transition was associated with an initial decrease in screen-detected invasive cancers and an increase in interval cancers, suggesting that at least some of the additional interval cancers are attributable to the transition to digital mammography missing cancers (ie, false negatives), consistent with possibility number 1 of a decrease in detection of progressive cancers at the time of the change in technology. Subsequently, there was a year-on-year increase in the screen-detected cancer rate accompanied by decreases in the interval cancer rate, suggesting increasing effectiveness in detecting clinically important cancer.

There is also evidence consistent with possibility number 3, with at least some of the apparent increase due to increased detection from new technologies such as tomosynthesis which are used outside of BreastScreen.<sup>3</sup> The increase in interval cancers was attributed in part to ductal carcinomas in situ (DCIS) which rarely presents as symptomatic disease (invasive cancer and DCIS increased by 0.18 and 0.09 per 1000 screens respectively). Further, the invasive interval cancers diagnosed after the transition to digital mammography showed increases in early-stage and smaller cancers (T1c 11–20mm) but decreases in late-stage and larger cancers, compared with those diagnosed following film mammography.<sup>4</sup> About 10% of women aged 40–74 years report attending a private screening outside of BreastScreen.<sup>5</sup> However, how many attend both types of screening (and so could contribute to apparent interval cancer rates) is unknown.

Possibility number 2 is unlikely to explain most of the increase in interval cancers at the specific time point of the transition in mammography technology. Nevertheless, increasing rates of advanced stage cancer in the population suggest that there may be some real increase in the underlying risk for clinically significant disease.<sup>6</sup>

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