sought additional data from perinatal data collections, performed comparative analyses of home birth and national perinatal death data, and contributed to the paper.

Funding: Data collection was funded by Homebirth Australia with some support from the Consumers' Health Forum of Australia. Review of perinatal deaths and home births 1988-90 was assisted by a grant from the National Health and Medical Research Council. The AIHW National Perinatal Statistics Unit is a collaborating unit of the Australian Institute of Health and Welfare. The views expressed in this article are those of the authors.

Conflict of interest: None.

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(Accepted 5 May 1998)

Routine invitation of women aged 65-69 for breast cancer screening: results of first year of pilot study

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See p 376 and *Editorial* by Werneke and McPherson

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BMJ 1998;317:388–9

Evidence from Sweden shows that screening for breast cancer is as effective in reducing mortality from the disease in women aged 65-69 as it is in women aged 50-64.[1] However, although the British government's Forrest report recognised that older women were more likely to develop breast cancer, it recommended that they should not be routinely invited for screening because of low cost effectiveness from a likely low uptake and shorter life expectancy.[2] Instead women over 64 years are entitled to self refer every three years—although few do so.[3]

A three-centre pilot study was established in which women aged 65-69 are routinely invited for breast screening. This study investigates the problems of extending the programme to this age group, and cost effectiveness. Based on the results a policy decision should be possible.

The East Sussex service started inviting women in May 1996, followed in 1997 by the Leeds and Wakefield, and Nottingham centres. We report on the uptake rate of women invited to attend for breast screening and the cancer detection rate in East Sussex during 1996-7.

Subject, methods, and results

Women aged 65-69 registered with general practitioners in East Sussex, Brighton, and Hove are invited for breast screening over a three year period. They attend two mobile screening units, which are also used for women aged 50-64. The pilot is integrated into the main breast screening programme, which is now in its third round.

The table summarises the results of the first year of the pilot. The results are computed in the same way as the annual statistics submitted to the Department of Health. Only 7.3% (121/1655) of all invited women aged 68 or 69 had their last screen within 5 years; this is the proportion who volunteered for screening three years ago in the second round. Most (59.0%, 976/1655) of the women aged 68 or 69 had their last screen over 5 years ago. They attended when last invited but were too old for a routine invitation three years ago. Of these women, 88% (858/976) attended when invited in the pilot study compared with 92% reattendance in women aged under 65 and 65-67 (10 954/11 945 and 1707/1859 respectively) who attended last time after routine invitations.

The overall uptake was 80% (16 535/20 810) for women under 65, 76% (2386/3153) for those aged 65-67, and 73% (1204/1655) for those aged 68 or 69. The total cancer detection rate in women under 65 was 7.1/1000 (117/16 535), higher than expected, rising to 8/1000 (19/2386) in women aged 65-67. In women aged 68 or 69 the rate was 17.4/1000 (21/1204), reflecting both advancing age and that most had not been screened for six years.

Comment

These preliminary results show that those women who have previously attended for breast screening will continue to do so if invited after age 64, even if they have

not been invited for six years. Yet only 7% (121/1655) of older women had previously self referred, possibly owing to lack of information on entitlement or an assumption that they would continue to be invited if screening were advisable.[3]

It is possible that women currently aged 50-64 may be even more likely to continue to attend after age 65 than the pilot group, because they contain a smaller proportion of those who did not attend after previous invitations, and are therefore less likely to reattend.[4]

The final results from all three pilots, covering about 65 000 women being invited, will not be available until the year 2000. These preliminary results indicate the potential for a high uptake rate and a high cancer detection rate in older women routinely invited for breast screening. Other possible enhancements to the programme are under consideration including taking two views at incident screens or reducing the screening interval. Any national implementation of routine invitations for older women will thus have to compete for resources.

We thank all the staff of the East Sussex Brighton and Hove breast screening programme, especially J Oswald, T Jeyakumar, and C Sonksen.

Contributors: GR and LG initiated the pilot project in Brighton. SM and LG are joint guarantors for the paper. GR and the team at the East Sussex Brighton and Hove breast screening programme ran the project and collected the data. LG, GR, and SM wrote the paper.

Funding: The evaluation is funded by the Department of Health's research and development directorate.

Conflict of interest: None.

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Audit of East Sussex Brighton and Hove breast screening programme, 1996-7 (routine invitations only)

Invitation group (age (years))	Invited (%)*	No screened	% Uptake† (95% CI)	Total cancers detected‡ (per 1000 women screened) (95% CI)
A (first invitation in East Sussex):				
<65	5 272 (25.3)	4 086	75.5 (76.4 to 78.7)	31 (7.1, 5.4 to 10.8)
65-69	275 (5.7)	166	60.4 (54.6 to 66.1)	5 (30.1, 12.5 to 72.3)
B (previous non-attenders):				
<65	2 393 (11.4)	640	26.7 (25.0 to 28.5)	7 (10.9, 5.2 to 22.9)
65-69	961 (20.0)	250	26.0 (23.2 to 28.8)	4 (16, 4.0 to 31.6)
C1 (previous attenders: last screen within 5 years):				
<65	11 945 (57.4)	10 954	91.7 (91.2 to 92.2)	72 (6.6, 5.2 to 8.3)
65-67	1 859 (60.0)	1 707	91.8 (90.6 to 93.1)	12 (6.6, 3.8 to 11.6)
68 or 69	121 (7.3)	113	93.4 (89.0 to 97.4)	
C2 (previous attenders: last screen >5 years ago):				
<65	1 200 (5.8)	858	71.5 (69.0 to 74.1)	7 (8.2, 3.9 to 17.2)
65-67	619 (19.6)	495	80.0 (76.8 to 83.1)	17 (12.5, 7.8 to 20.1)
68 or 69	976 (59.0)	858	87.9 (85.9 to 90.0)	
Total invitations:				
<65	20 810	16 535	79.5 (78.9 to 80.0)	117 (7.1, 5.8 to 8.3)
65-67	3 153	2 386	75.7 (74.2 to 77.2)	19 (8.0, 4.5 to 11.4)
68 or 69	1 655	1 204	72.8 (70.6 to 74.9)	21 (17.4, 10.7 to 24.3)

*% is total of age range in invitation group.
†Screened/invited by age and group.
‡Includes ductal carcinoma in situ.

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(Accepted 20 March 1998)

Uranus attacks! Herschel's legacy

The past few years have seen a resurgence of news stories and films with a "danger from outer space" theme. These ranged from last year's films *Independence Day* and *Mars Attacks!* to this year's spate of movies showing the earth threatened by approaching comets, and culminated in reports that the asteroid Toutatis was entering our solar system and threatening to do for us what the last one did for the dinosaurs. Fortunately it missed by three million miles, a close shave in astronomical terms.

Towards the end of the 18th century, the astronomer William Herschel also provoked consternation by observing that a large comet was heading in our direction. He confirmed this with a series of measurements over subsequent weeks showing it increasing in size: from about two seconds of arc on 17 March 1781, to three seconds on 19 March, to four seconds a few days after that, and so on. Clearly something was on its way, but, unlike the asteroid earlier this year, it never arrived. In Herschel's case this was because he had actually discovered the planet Uranus, and it was not approaching the earth, but moving away. Yet Herschel's measurements clearly show the size increasing, and instrument error could not explain the systematic increase in size, night after night. Historian Norris Hetherington has suggested a simple answer: Herschel's strong prior beliefs had overridden his natural objectivity, and his measurements reflected this.[1] Despite careful calculations Herschel simply succeeded in supporting his prior hypothesis that the blob in his eyepiece was a comet.

Herschel's legacy, therefore—apart from discovering the planet Uranus—is a reminder that humans are inherently biased in recording or measuring events, even those as objective as the movement of planets. We are easily led astray by our natural inclinations to see what we want. Naturally this failing does not apply just to astronomers: Schulz and colleagues have pointed out that controlled studies that are not double blinded tend to overestimate effect sizes by 17%.[2] Although this is perhaps not as earth shattering as reporting that a comet is heading towards the earth, it is a useful reminder that as scientists we just cannot help kidding ourselves.

Mark Petticrew, *research fellow, York*

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We welcome articles of up to 600 words on topics such as *A memorable patient, A paper that changed my practice, My most unfortunate mistake,* or any other piece conveying instruction, pathos, or humour. If possible the article should be supplied on a disk. Permission is needed from the patient or a relative if an identifiable patient is referred to. We also welcome contributions for "Endpieces," consisting of quotations of up to 80 words (but most are considerably shorter) from any source, ancient or modern, that have appealed to the reader.