

## Screening brief

### Radiographic screening for stomach cancer

#### Incidence and mortality

- Mortality varies about eightfold (age adjusted) across different countries. It is still the most common cause of cancer death in some countries (Japan (5% of all deaths), Portugal, Latin America, former Soviet republics). In most Western countries it is about the fourth or fifth most common cause of cancer death, causing 0.5% to 2% of all deaths. Everywhere it is about twice as common in men as women.
- Steady decline in frequency in virtually all countries over the past 50 to 70 years (rates halving in the last 20 years). Important factors are the declining prevalence of *Helicobacter pylori* infection and increasing use of refrigeration for food preservation (in place of salt and smoke).<sup>1-3</sup> A century ago it was perhaps the most common form of cancer throughout the world.
- Adenocarcinoma of the gastric antrum is the most common form. Some recent increase in tumours of the cardia region.<sup>3</sup>

#### Screening test

- x Ray photofluorography with barium meal contrast.

#### Diagnostic test

- Gastroscopy and histological examination of biopsy specimens.

#### Additional screening tests

- Endoscopic screening is practised in Japan on a limited basis (< 10% that of radiographic screening). Its value has not been evaluated.
- Serum pepsinogen testing may be useful: in one study it detected 11 out of 13 gastric cancers detected by endoscopy screening, with a false positive rate of 26%.<sup>4</sup> Testing for *Helicobacter pylori* antibodies is unlikely to be worthwhile because seropositivity is often lost with the development of atrophic gastritis, a precursor to stomach cancer. Faecal occult blood testing is not useful.<sup>5</sup>

#### Effectiveness of radiographic screening

- Uncertain. Although extensively used since 1960 for persons over age 40 in Japan, no randomised trial has been done. A modest increase in incidence/mortality ratios over time in Japan may indirectly suggest an effect.<sup>3</sup> Four case control studies have been done in countries with established screening programmes,<sup>6-9</sup> determining the proportions of persons who died of stomach cancer and of matched controls who had been screened; there is also one cohort study.<sup>10</sup> Results are shown in table 1.

Stomach cancer in screened persons is about half that in unscreened persons (apart from the result in men in the Venezuela study and the cohort study, which was too small to be informative). This could be partly due to selection bias: the uptake of screening was low and those who accepted screening may have tended to be of higher socioeconomic status and therefore less likely to develop stomach cancer. In keeping with this, the studies showed little tendency for those screened more recently (< 3 years) to show lower risk than those screened less recently (> 3 years).

#### Overall assessment

In the absence of a randomised trial it is difficult to interpret the above results. The approximate halving of risk is greater than might easily be explained by selection bias. Despite a recommendation that screening should continue in high risk regions where it is already underway (but should not be established elsewhere),<sup>11</sup> the uncertainty is probably too great to justify population screening in the absence of a trial.

Table 1 Results of control studies and cohort study, showing proportions of people who died of stomach cancer

Country	Type of study	Uptake of screening in controls (%)	Number of cases		Odds ratio (95% confidence interval) screened to unscreened	
			men	women	men	women
Japan <sup>6</sup>	case control	67	53	37	0.60 (0.30 to 1.16)	0.38 (0.16 to 0.89)
Japan <sup>7</sup>	case control	38	126	72	0.32 (0.19 to 0.53)	0.63 (0.34 to 1.16)
Japan <sup>8</sup>	case control	22	527	293	0.37 (0.24 to 0.57)	0.46 (0.26 to 0.80)
Venezuela <sup>9</sup>	case control	12	157	84	1.52 (0.94 to 2.47)	0.77 (0.33 to 1.78)
Japan <sup>10</sup>	cohort	38	27	13	0.72 (0.31 to 1.66)	1.46 (0.43 to 4.90)

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