

Gastric cancer screening in Europe: where are we now?

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Gastric cancer (GC) incidence rates are highest in Eastern Asia and Eastern Europe, whereas rates in Northern America and Northern Europe are generally low (1). When a population-based GC cancer screening program is implemented in a given country/region, several factors must be considered, especially the age-standardized incidence rate (ASR) and the impact on the mortality. For GC, three risk areas can be determined: 1) High-risk areas: ASR ≥ 20 per 100,000 (e.g., Japan, Korea, and China); 2) Intermediate risk areas: ASR ≥ 10 and <20 per 100,000 (e.g., Portugal, Lithuania, Romania, and Slovenia); 3) Low-risk areas: ASR < 10 per 100,000 (e.g., the USA, UK, Sweden, and Germany) (2).

Currently, GC screening is offered to healthy asymptomatic individuals in 3 Eastern countries with a high disease incidence (ASR ≥ 20 per 100,000), namely Japan, South Korea and China. In Japan, Upper Gastrointestinal Series (UGIS) or Upper GI Endoscopy (UGIE) are both first-line options for asymptomatic individuals ≥ 40 years old. The National Cancer Screening Program for GC in South Korea offers biennial UGIS or UGIE to individuals ≥ 40 years old. In China screening through UGIE is available in high-risk areas, for individuals aged 40–69 years old (3). Two meta-analyses showed that GC screening is associated with significantly lower GC mortality rates, either through endoscopic screening or UGIS (3, 4). Comparing GC screening methods, UGIE was associated with higher diagnostic yield, while UGIS and Serum Pepsinogen (PG) tended to higher adherence rates. Screening uptake was predominantly impacted by recruitment

strategies independently of the adopted method (3). Even in high-risk countries where GC screening is well-established, significant challenges arise, namely insufficient endoscopy services, availability of qualified endoscopists and budget constraints (2).

In European countries, the current role of endoscopy in GC early detection represents that of a surveillance tool for pre-defined high-risk individuals, according to MAPS II recommendations, in the setting of opportunistic prevention rather than a screening modality to address the general population (5). The European Society of Gastrointestinal Endoscopy (ESGE) position statement on the role of endoscopy in digestive cancer screening argues that for intermediate-risk regions, endoscopy may have a role for primary screening if cost-effectiveness is proven in the particular country (6). This strategy is supported by a European cost-utility analysis that concluded that endoscopic GC screening every 5 years was cost-effective if combined with a screening colonoscopy in individuals between 50–75 years presenting a positive fecal occult blood test (FOBT) (7). A recent meta-analysis showed that there is an appreciable prevalence of upper gastrointestinal cancers and other clinically significant lesions in FOBT positive subjects, regardless of the presence of colonic pathology (8).

Serological biomarkers (e.g., serum pepsinogen (PG) I and II, gastrin 17, serum anti-*Helicobacter pylori* IgG antibody) poses as an alternative screening method for GC. Despite most studies on the utility of serologic testing originate from high-risk areas for GC,

European studies have been evaluating its role in GC screening (3). A Slovenian study used serologic biomarkers in a population of FOBT positive patients, to identify those with gastric preneoplastic conditions, eligible for further endoscopic screening and found a combined accuracy of 87.5% (9). Similarly, a study from Germany, concluded that patients with a high-risk GC profile according to the Operative Link of Gastritis Assessment (OLGA; stages III and IV) could be identified by a serum PG assessment, and suggested that serological GC screening could be combined with a CRC-screening program, and individuals with a positive PG test should be offered an additional UGIE in addition to a screening colonoscopy (2). Despite the interest in serological testing, the GISTAR study from Latvia found that the low sensitivity of the PG panel may be a limit its use in a population-based screening setting (2).

It is well known that eradication of *H pylori* infection is associated with reduced incidence of GC and the benefits of eradication vary with baseline incidence rates (10). Data on cost-effectiveness of mass screening and eradication from Asian countries show that only in the setting of intermediate to high GC incidence rates and high *Helicobacter pylori* infection rates it is advisable (10). In high GC incidence countries, this strategy is more cost-effective when the starting age of screening is at 20–30 years than at older age (10).

A cross-sectional assessment of ongoing gastric cancer screening programs was performed in 2022, and despite the low response rate (22%), only 2 European countries (Sweden and Serbia) reported opportunistic GC screening in high-risk individuals.

GC screening is well established in Eastern countries, namely Japan, Korea, and China and evidence on screening outcomes largely arises from high-risk populations. Data on population-based screening in European countries/regions is scarce (3), and to date, outside opportunistic screening setting, no program has formally been implemented. In Europe, for intermediate-risk populations endoscopic GC screening combined with a screening colonoscopy may have a role

for primary screening if cost-effectiveness is proven. A population-based *H. pylori* test and treat program may be cost-effective pending on GC incidence and *Helicobacter pylori* infection rates. European health policies for GC screening have recently been revised and supported pilot programs to further reinforce the need for GC screening implementation.

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