Gastrointestinal cancer screening and surveillance programmes: a worldwide perspective – Part I

JURGEN GERADA

Abstract
Cancer is a leading cause of death worldwide and such deaths are projected to continue to rise, creating significant morbidity and mortality. Devising programmes to detect early cancer, aiming to achieve complete cure, has been high on the agenda of various professional bodies. This paper focuses on the various screening and surveillance programmes around the world, aiming at detecting early gastrointestinal malignancies. Starting with Barrett's oesophagus, we shall see the different surveillance programmes across countries to detect premalignant stages of oesophageal cancer, while at the same time reviewing the only country in the world, China, which has an oesophageal cancer mass screening programme. Moving to gastric cancer, we shall review Japan's screening programme, followed by other countries' measures in surveilling premalignant gastric conditions. Colorectal cancer is the only gastrointestinal cancer where mass screening has been employed in various countries. This will be discussed in detail, with particular emphasis on the British and American systems. We shall also be discussing the surveillance programmes for moderate and high risk patients of colorectal cancer. Finally, we shall also review the different recommendations with regards to screening for hepatocellular carcinoma.

Keywords
Screening programmes, gastrointestinal cancer, surveillance programmes

Introduction
Cancer is a leading cause of death worldwide and such deaths are projected to continue to rise. WHO is estimating cancer-related deaths worldwide to increase to 12 million in 2030. Such figures create significant concerns among policy makers, as such conditions result in significant morbidity and mortality, causing huge financial burden on national health care systems. It is a well documented fact that when a cancer is detected in its early stages, complete cure is possible. For this reason, devising methods and programmes to detect early cancer were always high on the agenda of professional bodies in the past century and will continue to be in the years to come. Various countries have now a 5-10 year experience with various screening programmes such as breast, cervical and bowel, all proving to be successful. In the following text, we will be looking at various screening programmes involving diseases of the gastrointestinal tract and how these vary across different countries. While screening is the terminology used to describe testing healthy asymptomatic large population groups, surveillance is the terminology used to describe periodic testing of individual patients known to suffer from conditions which are premalignant. Such surveillance programmes will be discussed as well.

Oesophagus
Barrett's oesophagus is a premalignant precursor for oesophageal adenocarcinoma. This type of cancer is rising alarmingly and a surveillance programme is recommended by all professional bodies in patients with Barrett's oesophagus, aiming at detecting dysplasia and treating premalignant lesions. On the other hand, the only place where mass screening for oesophageal cancer is carried out is in China. Although surveillance in Barrett's oesophagus is widely practiced worldwide, as indirect evidence suggests benefit, this remains controversial because of lack of randomized trials supporting its value. The appropriate surveillance interval in patients with Barrett's oesophagus depends on the grade of dysplasia. The American guidelines, issued in 2008, suggest that patients with no evidence of dysplasia should have 2 OGDs within the first year, and every 3 years thereafter. Patients with evidence of LGD should have a repeat OGD within 6 months of diagnosis and if no signs of HGD are present, yearly OGD should be carried out until no dysplasia is found on 2 consecutive annual endoscopies. Lastly, since patients with HGD progress to adenocarcinoma in more than 30% of cases within 5 years, such patients require a repeat OGD after 3 months from diagnosis, confirming HGD on both set of biopsies by an expert gastrointestinal pathologist. They should be counseled regarding their therapeutic options including intensive monitoring, local ablative therapies by endoscopic means or oesophagectomy. Four quadrant biopsies at 2cm intervals of Barrett's mucosa are recommended at every OGD, however using histological evidence of dysplasia as a marker for the frequency of surveillance remains problematic as there are issues with sampling, interpretation and concomitant presence of oesophagitis from reflux disease precluding accurate identification and confusing the reading of dysplasia.

The above guidelines differ slightly from the British. In 2005, BSG stated that Barrett's oesophagus without evidence of dysplasia should be surveilled every 2 years, using the same biopsy protocol as the Americans. Patients with low grade dysplasia should be screened every 6 months for as long as it remains stable and the interval can be increased to 2-3 yearly if regression on 2 consecutive...
Cervical Cancer Screening – An Update

In many countries cervical cancer is the commonest gynaecological cancer. In Malta and in the United States, it is the third most common gynaecological cancer. Countries which introduced organised cervical screening programmes saw a dramatic decrease in incidence and mortality from this cancer. In Malta however, its incidence and mortality has remained relatively constant in the last few decades, in keeping with the fact that we lack a national organised call and re-call cervical screening programme. Our cervical screening is largely opportunistic and most of it is carried out in the private sector. Although incidence and mortality has not decreased, our present imperfect screening must however have prevented a significant rise in incidence and mortality, because the detection (and treatment) of premalignant cervical lesions has risen over recent decades, in keeping with increased sexual promiscuity.

Infection with high-risk strains of human papillomavirus (HPV) has been identified as the underlying cause of cervical cancer. However, HPV infection is usually transient and quite common in the general population, with a lifetime cumulative risk of at least 80%. Persistent infection by high-risk HPV (most commonly subtypes 16, 18, 31 and 45) is a prerequisite for development of cervical intraepithelial neoplasia (CIN – premalignant lesion), and subsequent malignant transformation to invasive cervical cancer. HPV is a necessary precursor of CIN but does not act alone – host factors such as age, immune status, history of other sexually transmitted diseases and smoking are cofactors.

CIN lesions are usually diagnosed in women younger than 40 years, which is 10 to 15 years earlier than in women diagnosed with invasive cervical cancer, this age gap indicating a long latency period for malignant transformation. Low-grade CIN is usually diagnosed in women in their 20s, whereas high-grade CIN is usually diagnosed in women aged 25 to 35 years, and invasive cancer is most often diagnosed in women older than 40 years.

About 70% of cervical cancer is caused by HPV types 16 and 18. Vaccines have been developed against both HPV 16 and 18 and against low-risk HPV 6 and 11, the latter two being responsible for the majority of genital warts.

Although it is not clear how long immunity will last after vaccination, the