Window on the Science - The Power of Early Detection

Early detection of disease

A timely and accurate diagnosis is crucial to effective disease management. Early detection means identifying a condition in its earliest stages, often before symptoms are present or noticeable, enabling earlier and more effective intervention. However, many diseases go undiagnosed in these early stages due to the limitations of current diagnostic tools. This is particularly true for chronic and complex diseases, where early symptoms are silent, subtle, episodic or masked by other health issues. Government-led screening programs have demonstrated the power of early detection to improve outcomes and reduce disease burden. There is a growing need for innovative diagnostic tools that enable earlier action by both patients and clinicians, before disease progression occurs.

The success of early disease detection

The National Cervical Screening Program (NCSP), introduced in 1991, is an example of a successful early disease detection program aimed at reducing illness and death from cervical cancer in Australia. The program invites women aged 25 - 74 to have a human papillomavirus (HPV) test every five years. Persistent HPV infection in the cervix is shown to cause up to 95% of cervical cancers[1] by triggering abnormal cell changes. When detected early, these pre-cancerous cell changes are easily treatable, preventing progression to cervical cancer.

Since its implementation, the NCSP has halved the incidence of cervical cancer[2] and has placed Australia on track to become one of the first countries in the world to eliminate cervical cancer as a public health problem by 2035[3].
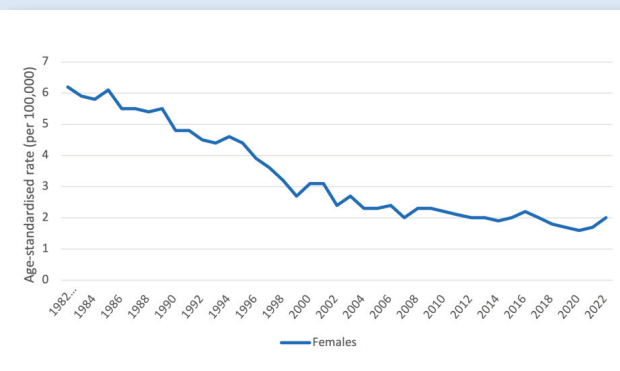

Figure: Over a 50% reduction in the incidence and mortality of cervical cancer since the beginning of the National Cervical Screening Program in 1991.

Source: Cervical cancer in Australia statistics, Cancer Australia, Australian Government, March 2025

The development and adoption of innovative diagnostic technology is critical to improving early detection and is advancing in other diseases, including:

Breast Cancer

BRAC1/2 Gene Testing

Associated with breast and ovarian cancer, identification of this gene enables high-risk individuals to create care plans before cancer develops.

Lung Cancer

The National Lung Cancer Screening Program

Launched in July 2025, the program aims to detect lung cancer earlier in long-term smokers using routine low-dose CT scans.

Heart Disease

Wearable Devices and Cardiovascular Health

Wearable biosensors like smartwatches offer a non-invasive way to continuously monitor heart rhythms and detect abnormalities linked to stroke.

Dementia

Alzheimer Blood Tests

A blood test for Alzheimer's is in development which would use proteins linked to the disease to aid in early detection and diagnosis.

Growing precision diagnostics market driven by demand and technology advances

Global demand for preventative healthcare, combined with innovations in diagnostic technologies, is driving global growth in the early disease detection, precision diagnostics sector. Valued at US $76 billion in 2023, the precision diagnostic market is projected to reach US $270 billion by 2033, growing at a compound annual growth rate (CAGR) of 13.5%[4].

As investment and innovation in this field continue, precision diagnostics is set to transform healthcare pathways across a broad range of chronic and complex conditions. Proteomics International is at the forefront of this transformation, developing world-first diagnostic tests that address areas of high unmet clinical need.

Proteomics International – Innovating in early disease detection

Proteomics International is applying precision diagnostics to enable early disease detection. Working across multiple disease areas, these tools aim to provide patients and clinicians answers they need sooner, enabling better disease management and treatment outcomes.

Diabetic Kidney Disease Promarker®D

Type 2 diabetes affects up to 10.5% of adults globally[5], and around half will develop chronic kidney disease (CKD)[6]. Often called a 'silent killer', CKD typically goes undetected with current standard of care tests until irreversible kidney damage has occurred. PromarkerD predicts the onset of CKD in type 2 diabetes up to four years in advance, helping to delay or prevent outcomes such as dialysis or kidney transplant.

Esophageal Cancer Promarker®Eso

Up to one in five adults in Western cultures has chronic reflux (GERD)[7], with global prevalence rising[8]. GERD is associated with esophageal adenocarcinoma (EAC)[9], a cancer often diagnosed at a late stage, when five-year survival rates drop below 20%[10]. The current standard for EAC diagnosis is endoscopy with biopsy, which carries risks of missed diagnosis and treatment delays. PromarkerEso aims to reduce unnecessary and costly invasive procedures by providing a blood test to rule out EAC in patients.

Endometriosis Promarker®Endo

Endometriosis is a chronic disease affecting 1 in 9 women and girls, with an average diagnostic delay of seven years[11]. The current gold-standard for diagnosis is laparoscopy, an invasive surgery with biopsy preformed under general anaesthesia. PromarkerEndo aims to transform the diagnostic pathway by providing a non-invasive blood test to support faster diagnosis and earlier access to care.

References
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