



Cancer Research Wales aims to reduce the impact of cancer on the people of Wales through supporting world class cancer research and education. Cervical cancer is the leading cause of cancer in young women and is mainly caused by infection with the HPV virus. The government led HPV vaccination programme in school girls is the first public health initiative that seeks to eradicate cancer through the use of vaccines. At Cancer Research Wales we believe it will be important to:

- Gain an understanding of the success of the HPV vaccination programmes in young women to help ensure the protection of women against cervical cancer.
- Learn more about the pathology of the HPV virus to assist with improved prognosis of cervical cancer and help develop new tests that will aid current cytology assessments.



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Cervical cancer is the most common cancer in women under the age of 35. Although cervical screening is estimated to save 5,000 lives annually in the UK, a significant number of women who develop advanced cervical cancer every year will have undergone a previous cervical cytology assessment. Cancer Research Wales (CRW) fund a number of cervical cancer research projects that will have direct benefits for the future of women's health. These aim to:

-  Determine the prevalence of Human Papillomavirus (HPV) infection in Welsh women and its association with the occurrence of pre-cancerous and cancerous cervical lesions. This valuable information will latter inform on the success of the current government HPV vaccination programme in school girls.
-  Creation of a bio-bank of cervical specimens that can be used as a valuable resource for the discovery of much needed biomarkers for prognosis and the prediction of treatment outcomes in HPV related disease.
-  Development and characterisation of technologies that may have clinical utility for the specific detection of HPV genes in cervical specimens.

Cervical cancer is mainly caused by the extremely common, yet usually harmless, sexually transmitted HPV virus. Although there are over 100 different strains of HPV virus, only around 10 are considered high-risk types for the causation of cervical cancer.

National vaccination programmes against HPV in 12-13 year old girls seek to prevent cervical cancer in women before they come into contact with the HPV virus. Two vaccines are currently used that are active against 2-4 of the most common high-risk strains.



The prevalence of different HPV strains in Welsh women will have implications for the effectiveness of preventative vaccination in Wales. At CRW we fund an essential HPV baseline project that seeks to determine the exact infection rates in pre-vaccinated women (20-65 years) attending cervical screening across Wales. The project will fully characterise the occurrence of various HPV strains and the impact these have on disease severity and treatment outcome.

In time, this unique patient dataset will provide an important comparison group, against which the success of the HPV vaccination programme in Wales can be measured. It will also allow the degree of cross-protection, afforded by the current vaccines against other non-targeted HPV types, to be assessed in the Welsh population. This will help identify the possible emergence of other high-risk HPV strains that the current vaccines do not provide protection against.

The use of HPV testing, in order to improve existing screening programmes is of great interest. The base-line HPV project funded by CRW will also establish a comprehensive bio-bank of anonymised cervical tissue for research purposes. These specimens will be used for the discovery of new markers that can accurately identify high-grade disease caused exclusively by HPV infection.

A greater understanding of how HPV integrates within cervical cells to eventually cause cancer is essential for the discovery of new therapies. CRW supports gene profiling studies that assess alterations to HPV genes following infection. This will enable early identification of particular HPV infections that are likely to rapidly progress from a pre-cancerous stage to invasive cancer.