

NEXT GENERATION SEQUENCING (NGS) AND COBAS HPV TEST TO ANALYSIS OF HIGH-RISK HPV TYPES IN EUROPEAN AND LATIN WOMEN: PRELIMINARY RESULTS FROM THE ELEVATE STUDY

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Introduction - The main etiological factor of cervical cancer and its precursor lesions is a persistent human papillomavirus (HPV) infection. This virus can be classified into several levels: genus, species, type, subtype, and variants, which can be divided into lineages and sub-strains according to the percentage of genetic similarity. This study aims to identify hr-HPV types in women in Ecuador, Brazil, Portugal, and Belgium with different cytological results.

Methods - The hr-HPV genotyping was performed using Next Generation Sequencing (NGS) (Ampliseq manually and Ion Torrent S5) for the E6/E7 genes, with a workflow developed in the QIAGEN CLC Genomics Workbench 21 platform, in which the alignment was made against the 14 hr-HPV. The Cobas® 4800 HPV Test is used as the gold standard method.

Results - Up to now, the Cobas® 4800 HPV Test was performed in 892 samples: 245 Brazilian, 255 Ecuadorian, 220 Belgian and 177 Portuguese. The positive is 42% and the majority samples is positive to HPV others followed by HPV 16.

In relation to NGS, to date 753 samples have been sequenced: 195 Brazilian, 124 Ecuadorian, 199 Belgian, and 118 Portuguese. These samples correspond to 254 high-grade lesions, 204 low-grade lesions, and 297 normal samples.

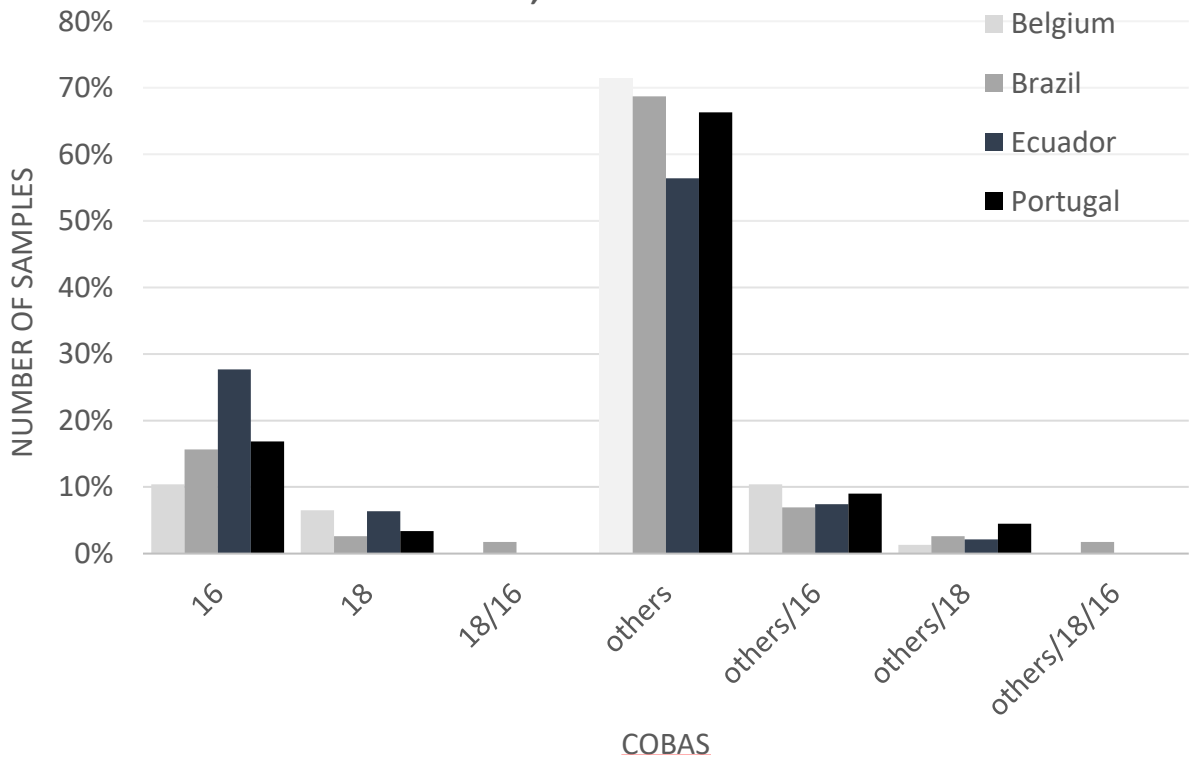
The overall positivity rate is 47%. These samples correspond to 254 high-grade lesions, 204 low-grade lesions, and 297 normal samples, with the positivity of 49%, 31%, and 20% respectively. In 25% of these positive samples, multiple HPV were found: 17% with 2 hr-HPV, 7% with 3 hr-HPV, 1% with hr-HPV and 0,3% with 5 hr-HPV. The most present HPV types were HPV 31 (12%), 16 (10%), 56 and 58 (9% each), and HPV 66 (14%), 16 (13%), 31 and 59 (12%), and HPV 59 (16%), 31 (13%), 16 and 52 (12% each), respectively in high-grade lesions, low-grade lesions and normal samples.

In Belgium, most frequent hr-HPV types found overall are 31 and 66 (16% each), 56 (11%) and in high-grade lesions are HPV 31 (16%), 66 and 56 (12% each). In Brazilian samples, overall, HPV 16 (16%), 59 (15%) and 31 (12%) were most detected; HPV 16 (17%), 31, 35, and 56 (11% each) were most frequently in the high-grade lesions. In Ecuador, HPV 16 (28%), 59 (14%) and 52 (10%) are the types most frequent overall and in high-grade lesions (35%, 10% and 10%). In the Portuguese samples, HPV 51 (16%), 16 and 52 (14% each) were most frequent, with HPV 16 (33%), 66 (20%) and 45 (13%) most commonly found in high-grade lesions.

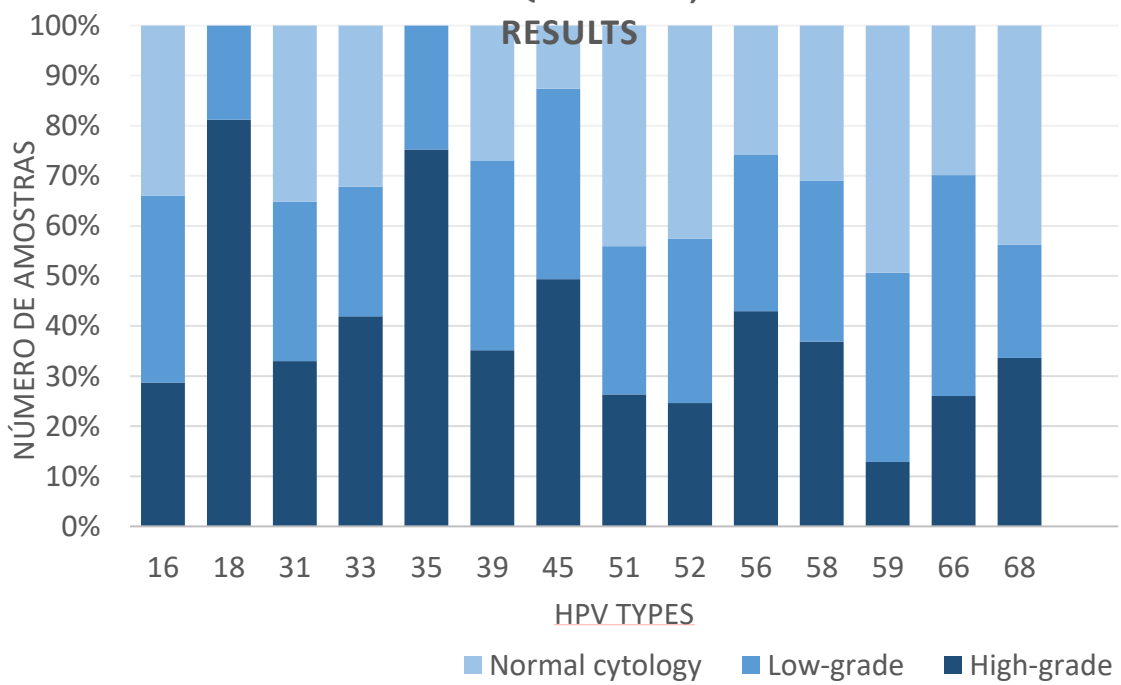
Conclusions - Identification of HPV types present in cervical lesions is important in order to monitor the impact of vaccination and plan further vaccination and screening strategies, considering the different vaccines used in the countries.

Keywords: HPV, next generation sequence, NGS, cervical cancer

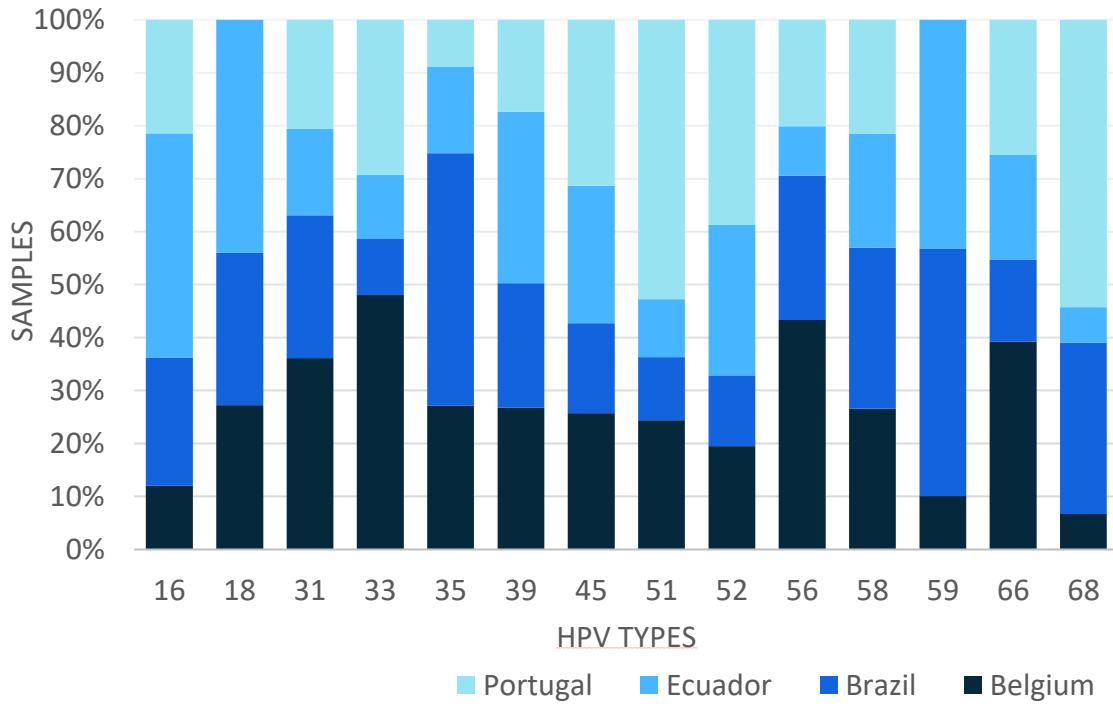
HPV TYPES FIND IN CERVICAL SAMPLES THROUGH COBAS, BY COUNTRIES



HPV TYPES FIND IN CERVICAL SAMPLES THROUGH NEXT GENERATION SEQUENCING, BY CYTOLOGICAL RESULTS



HPV TYPES FIND IN CERVICAL SAMPLES THROUGH NEXT GENERATION SEQUENCING, BY COUNTRY



HPV TYPES FIND IN HIGH-GRADE LESION THROUGH NEXT GENERATION SEQUENCING, BY COUNTRY

