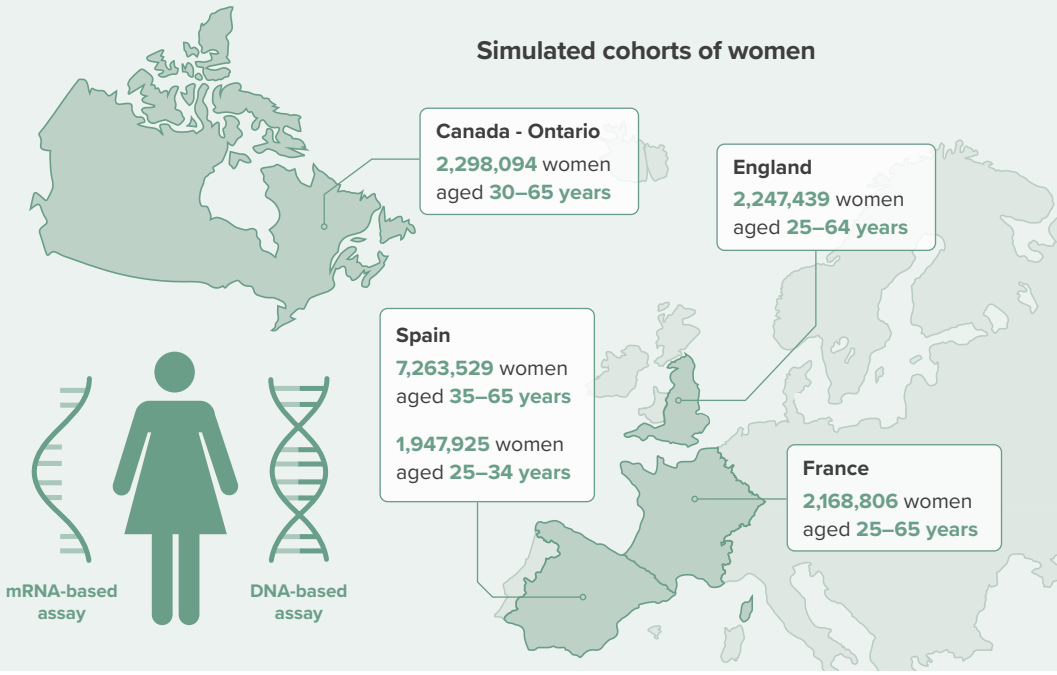
Use of the Aptima® mRNA HPV assay compared to a DNA HPV assay in cervical screening programmes could result in cost savings and fewer unnecessary follow-up tests and procedures

The studies in England, France, Spain and Canada show that using the Aptima mRNA assay in cervical screening programmes could result in significant cost savings compared to DNA-based assays

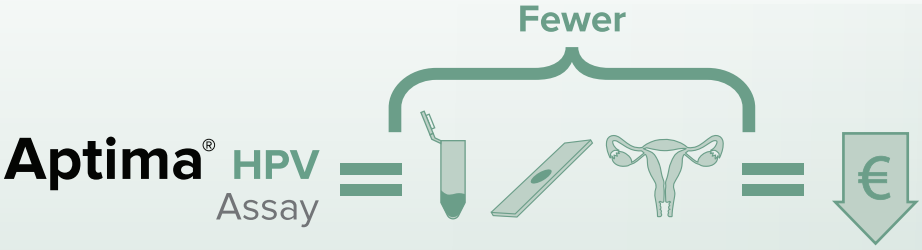
Introduction

- Human papillomavirus (HPV) assay type (mRNA or DNA) in primary HPV screening programmes has an impact on screening costs, unnecessary testing and procedures.
- The mRNA-based Aptima HPV assay has a similar sensitivity and a higher specificity compared with DNA-based assays.[1,2]
- These studies evaluated the cost differences between using the Aptima HPV assay and DNA-based assays for primary screening.



Study designs in England, Spain, Canada and France

- The studies compared differences in total costs, number of HPV tests and cytology tests when using the Aptima mRNA HPV assay versus the DNA-based HPV assays (Cobas 4800 HPV and HC2).
- A decision tree model[3] was adapted to reflect the screening populations and cervical screening algorithms in Spain[4], Canada[5] and France.[6]
- In the English study, the model used HPV primary screening algorithm for women aged 25-64 years.[3]
- In the Spanish study, HPV testing is used as the primary screening method for women aged 35–65, and was used as the baseline. For women aged 25–34, liquid-based cytology (LBC) testing was used as the primary screening method.[4]
- In the Canadian study, the model used HPV primary screening algorithm for women aged 30-65 years.[5]
- In the French study, the cervical screening programme used HPV triage after abnormal primary liquid-based cytology for women aged 25–29 years, and primary HR-HPV testing for women aged 30–65 years.[6]



Using the Aptima mRNA HPV assay versus a DNA HPV assay would yield cost savings and reduce unnecessary testing and procedures, benefiting cervical screening programmes in England[3], Spain[4], Canada[5] and France.[6]

Results

- The cost of HPV testing represented the greatest proportion of the total costs in all of the studies.[3-6]
- The increased specificity of the Aptima HPV test generated cost savings in all four health economic models.[3-6]
- The cost savings were realised through a reduction in unnecessary cytology tests and colposcopies (Figures 1+2).[3-6]

Figure 1: Primary screening using the Aptima® HPV assay reduced the number of subsequent cytology tests and colposcopies vs. DNA-based testing[3-6]

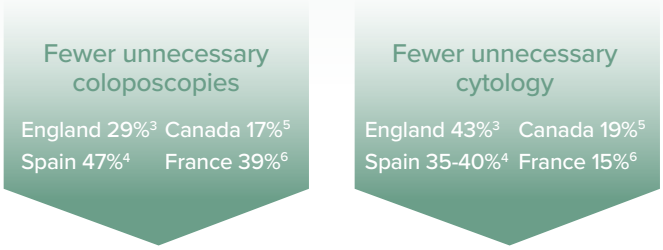
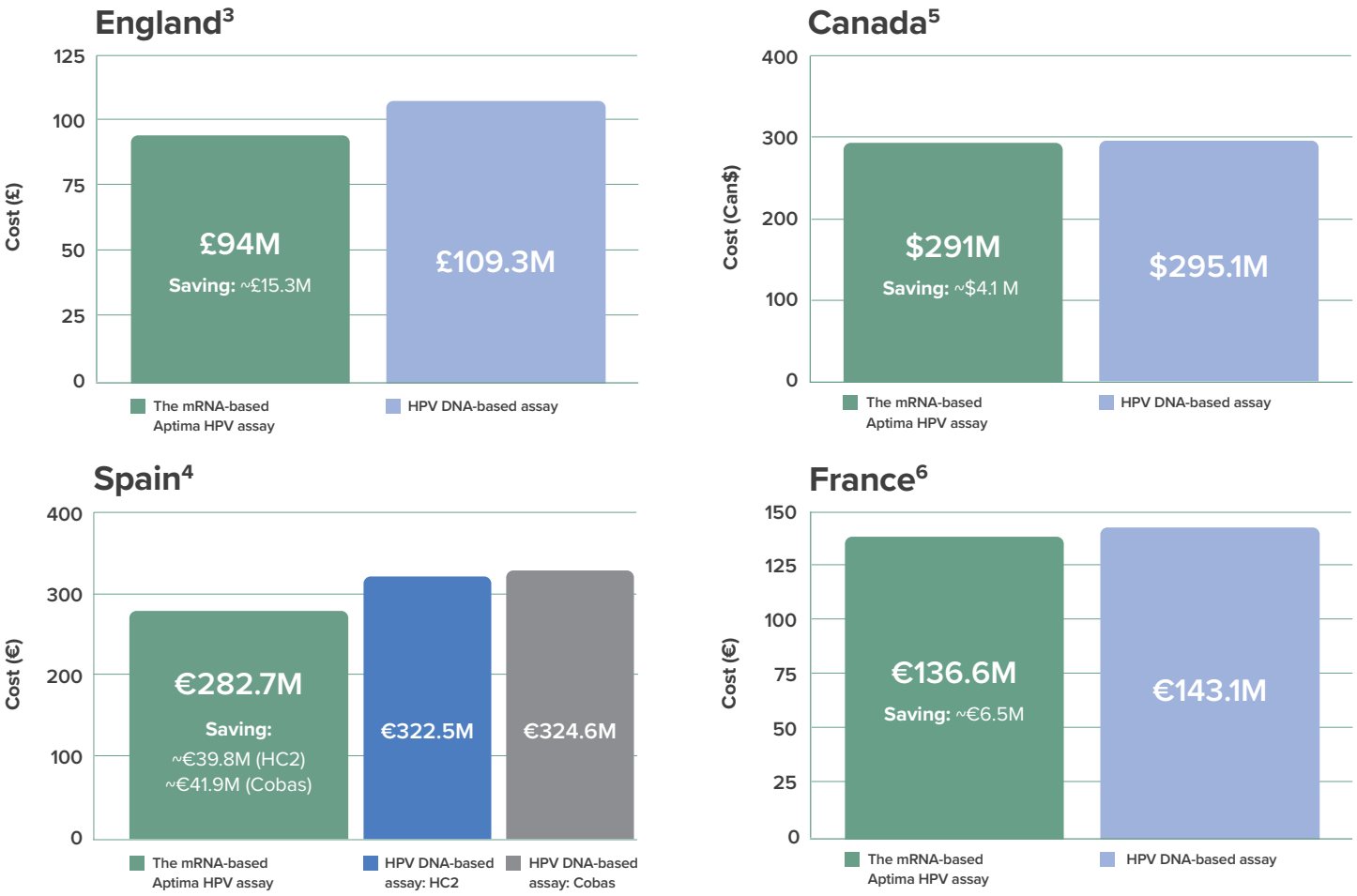


Figure 2: Cost difference between using the Aptima HPV assay vs. DNA-based assays in England, Spain, Canada and France[3-6]



Conclusion

- Using the Aptima mRNA HPV assay versus a DNA-based HPV assay could yield cost savings and reduce unnecessary testing and procedures, benefiting cervical screening programmes in England, France, Spain and Canada.

Reference: 1. Arbyn M, Tommasino M, Depuydt C, Dillner J. Are 20 human papillomavirus types causing cervical cancer? J Pathol [Internet]. 2014 Dec 1 [cited 2018 Nov 27];234(4): 431–5. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/path. 4424. **2.** Meijer CJLM, Berkhof J, Castle PE, Hesselink AT, Franco EL, Ronco G, et al. Guidelines or human papillomavirus DNA test requirements for primary cervical cancer screening in women 30 years and older. Int J Cancer 2009:124(3):516–20. Available from: https://doi.org/10.1002/ijc.24010. **3.** Weston G, Dombrowski C, Harvey MJ, Iftner T, Kyrgiou M, Founta C, Adams EJ. Use of the Aptima mRNA high-risk human papillomavirus (HR-HPV) assay compared to a DNA HR-HPV assay in the English cervical screening programme: a decision tree model based economic evaluation. BMJ Open. 2020 Mar 8;10(3):e031303. doi: 10.1136/bmjopen-2019-031303. **4.** Ibáñez R, Mareque M, Granados R, Andía D, García-Rojo M, Quílez JC, Oyagüez I. Comparative cost analysis of cervical cancer screening programme based on molecular detection of HPV in Spain. BMC Womens Health. 2021 Apr 26;21(1):178. doi: 10.1186/s12905-021-01310-8. **5.** Weston G, Dombrowski C, Steben M, Popadiuk C, Bentley J, Adams EJ. A health economic model to estimate the costs and benefits of an mRNA vs DNA high-risk HPV assay in a hypothetical HPV primary screening algorithm in Ontario, Canada. Prev Med Rep. 2021 Jun 10;23:101448. doi: 10.1016/j.pmedr.2021.101448. **6.** Dombrowski CA, Weston GM, Descamps PP, Izopet PJ, Adams EJ, Adams E. Health economic evaluation of an mRNA high-risk human papillomavirus (HR-HPV) assay versus a DNA HR-HPV assay for the proposed French cervical screening programme. Medicine (Baltimore). 2022 Jul 22;101(29):e29530. doi: 10.1097/MD.0000000000029530.

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