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# Driving HPV Elimination Through Data: Dynamic Vaccine Coverage Rate Reporting

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## Introduction

- Europe's Beating Cancer Plan has committed to a flagship initiative to eliminate cancers caused by HPV by providing EU support for Member States to reach HPV vaccination targets by 2030, including:[1]
  - To vaccinate ≥90% of the EU target population of girls
  - To significantly increase the vaccination of boys
- In the WHO European region, the 2023 vaccination coverage rate (VCR) in females was 35% overall; however, considerable differences between individual programs exist, with VCRs ranging from <5% in Serbia to >90% in Cyprus and Norway.[2,3] The majority of European countries are not on track to achieve 90% VCRs by 2030[4]
- Some EU Member States have centralized, population-based immunization information systems to monitor VCRs, while others have fragmented monitoring. Additionally, some Member States report issues in collecting vaccination data due to the implementation of the EU's General Data Protection Regulation, which can vary among Member States[5]
- In recognition of these considerable differences between regions, the European Commission proposed a Recommendation adopted by the Council to improve monitoring of VCRs and increase availability of data at local and national levels, to inform efficient, data-driven public health action[5]
- Furthermore, the Commission plans to ask the ECDC to showcase national data on HPV and HBV VCRs in EU Member States in a specialized dashboard. This dashboard will also include information on national monitoring methods, as well as the goals and targets set to be achieved[5]
- Recent observations indicate a correlation between the maturity of electronic vaccination registries in European countries and their overall HPV VCR data[6]
- Studies have shown that effective vaccine monitoring and information systems are crucial to achieve high VCRs, and that a dedicated monitoring taskforce comprised of multiple stakeholders is the key to success[7]

## Objectives

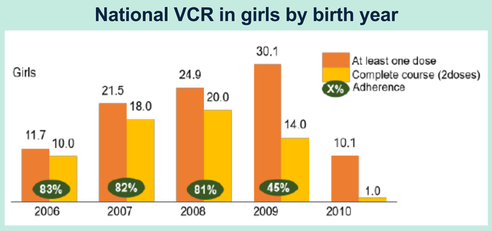
- To improve HPV VCR monitoring across European countries, by forming collaborations between key public and private stakeholders that enable the utilization and visualization of vaccine data across existing healthcare data systems

## Example HPV VCR monitoring solutions

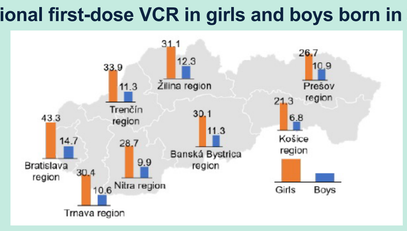
### 1. VCR reports in Slovakia[8]

- Key contributors included: MoH, MoE, PAGs, municipalities, scientific associations, payers, the National Information Center, and OpenSky
- VCR reports provided a summary of the HPV national immunization program performance and identified gaps that needed to be addressed

**National VCR in girls by birth year**

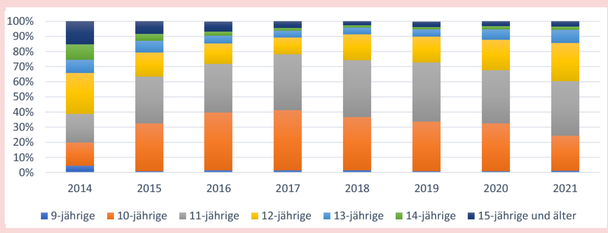



**Regional first-dose VCR in girls and boys born in 2009**




### 2. VCR reports in Austria[9]

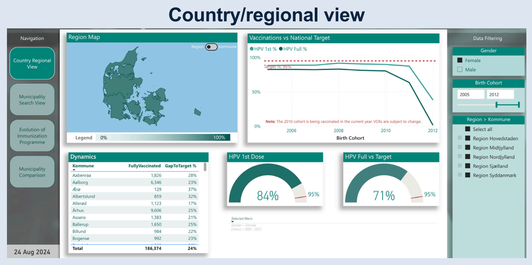
- Key collaborators included: MoH and Technical University of Vienna



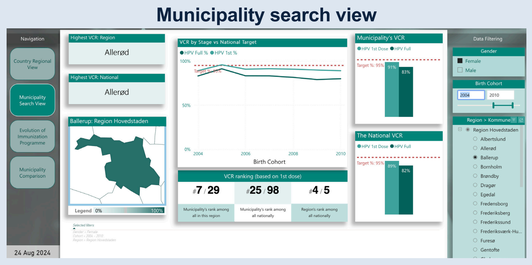

### 3. Publicly available dynamic VCR tracking in Denmark[10]

- Key contributors included: MoH, Statens Serum Institut, and OpenSky
- Publicly available VCR tracking, with granular data updated every 6–8 weeks; captures VCR data by region, municipality, gender and age

**Country/regional view**

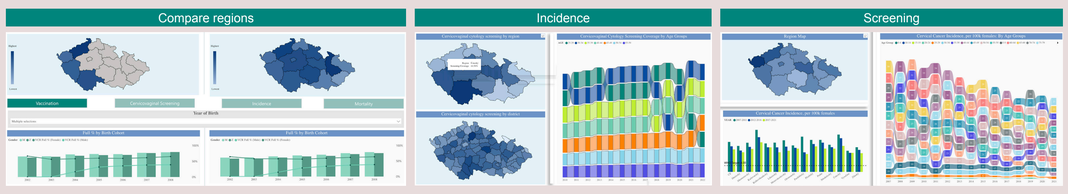



**Municipality search view**



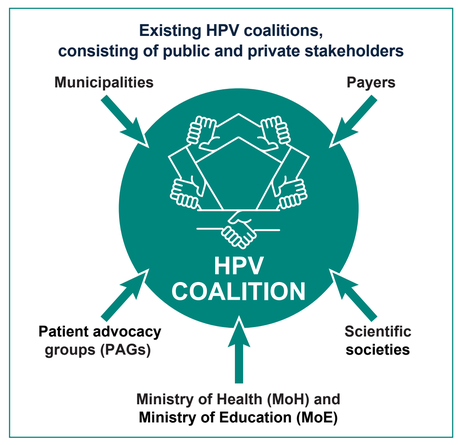

### 4. Elimination dashboard, the Czech Republic[11]

- Key contributors included: OpenSky. Dashboard presented at the Chamber of Deputies of the Parliament of Czech Republic.
- Elimination dashboards are dynamic platforms bringing together HPV VCR statistics alongside data from other key elimination objectives (e.g. cervical cancer screening and treatment rates). As such, they can be used to monitor progress towards HPV-induced cancer elimination goals




## Methods

- The Data Systems team at MSD, in collaboration with an external partner, OpenSky, set out to leverage public and private partnerships and implement innovative, tailored data system solutions, with the aim of improving VCR transparency in European countries
- To provide continuously updated, accurate insights into VCRs, a dynamic real-time VCR reporting method was used, which integrated real-time data from Electronic Vaccination Registers (EVRs) and health information systems
- A range of solutions were implemented, including:
  - Identification and utilization of fragmented vaccination data available across existing health data systems
  - Creation and/or improvement of mechanisms for effective data capture and sharing
  - Development of HPV VCR monitoring platforms including, but not limited to:
    - ✓ VCR reports
    - ✓ Dynamic VCR dashboards
    - ✓ Elimination dashboards, which integrate dynamic VCR statistics with data on cervical cancer diagnosis and treatment




## Case study: increased levels of VCR transparency in Slovakia

- Prior to 2022, public HPV VCR data were not available in Slovakia and, consequently, data were not accessible to the WHO[3]
- The accelerated progress in HPV monitoring, resulting from the release of VCR reports and other activities supported by the coalition, was followed by multiple interventions implemented by the MoH and other public stakeholders, including:[8]

Automatic reminders and recall programs for parents of adolescents

Mass vaccination events in several key municipalities with VCRs lower than the national average

Increased communication on prevention, and awareness-raising campaign at the national level

Initiation of discussions on expanding reimbursement to multi-age adolescent cohort

## Conclusions

- Close collaboration between public and private sectors led to the efficient and rapid deployment of HPV VCR monitoring solutions across selected European countries (Slovakia, Austria, Denmark and Czech Republic)
  - This was successful even in countries where vaccine registries were fragmented or non-existent. In Slovakia, detailed HPV VCR reporting prompted multiple interventions by local authorities, including targeted vaccination campaigns and expansion of vaccinated cohorts[7]
- Other European countries have also taken initiatives to promote transparency in HPV VCR rates. For example, Germany, Poland, and Montenegro recently created their own Dynamic VCR Dashboards, now publicly available[12–14]
- As shown in the Slovakia case, the VCR monitoring solutions discussed here, which leveraged existing data sources and data processing capabilities, have led to accelerated advancements in the HPV-related data systems of the countries that adopted them
- The successful long-term operation of HPV vaccination programs is dependent on robust monitoring of program performance to identify possible gaps and support evidence-based interventions

## References

1. Europe's Beating Cancer Plan. Available at: https://health.ec.europa.eu/system/files/2022-02/eu_cancer-plan_en_0.pdf.
2. Strengthening HPV vaccination coverage, data quality, and communication in Europe with project PERCH. Available at: https://www.hpvworld.com/public-health/articles/strengthening-hpv-vaccination-coverage-data-quality-and-communication-in-europe-with-project-perch/.
3. WHO HPV vaccination data by country. Available at: https://immunizationdata.who.int/global/wiise-detail-page/human-papillomavirus-(hpv)-vaccination-coverage.
4. Gountas I. et al. *Expert Rev Vaccines*. 2024. doi: 10.1080/14760584.2024.2402535. Epub ahead of print.
5. European Commission Council Recommendation, Available at: https://health.ec.europa.eu/document/download/a2ba1fde-a65f-4575-8187-e44c5a4c2573_en?filename=com_2024_45_1_act_en.pdf.
6. Opensky. Available at: https://www.openskydata.com/blog/new-research-uncovers-link-between-evrs-and-vaccination-coverage-rates.
7. Felsher M, et al. *Hum Vaccin Immunother*. 2024;20:2319426.
8. HPV vaccination coverage of children in Slovakia (2023). Available at: https://www.health.gov.sk/Zdroje?/Sources/dokumenty/IZA/hpv-vaccination-coverage-of-children-in-slovakia.pdf.
9. HPV model description, Austria (2023). Available at: https://www.dexhelpp.at/site/assets/files/2456/hpv_modellbeschreibung_2023-04-27.pdf.
10. HPV Immunization Dashboard, Denmark. Available at: https://www.hpv-dashboards.info/DK-Dashboard.html.
11. HPV Elimination Cockpit, Czech Republic. Available at: https://www.hpv-dashboards.info/CZELIM-Dashboard.html.
12. HPV infant, child and adolescent vaccinations, Germany. Available at: https://public.data.rki.de/t/public/views/VacMap/HPV_Impfspez_Dashboard-Templatev2?%3Aembed=y&%3AisGuestRedirectFromVizportal=y.
13. HPV Vaccination Report, Poland. Available at: https://ezdrowie.gov.pl/portal/home/badania-i-dane/raport-o-szczepieniach-przeciwko-wirusowi-brodawczaka-ludzkiego-hpv.
14. HPV vaccination in Montenegro. Available at: https://app.powerbi.com/view?r=eyJrIjoiYzVmNGMyMzUtOGVhYi00NjUyLWFiOTYtN2UzZTNmMDMwZjkwIiwidCI6IjY2YjlxYzRmLTNjMGEtNDhlMC1iODQ3LWZkZjgxNTAyYzA1NSIsImMiOjI9.

All online content accessed October 2024.

CGM, CompuGroup Medical; ECDC, European Center of Disease Prevention and Control; EU, European Union; EVR, electronic vaccination registers; HBV, hepatitis B virus; HPV, human papillomavirus; MoE, Ministry of Education; MoH, Ministry of Health; PAGs, patient advocacy groups; VCRs,vaccine coverage rates; WHO, World Health Organization.

**Disclosures:**
Andrea Morani, Eugenia Karamousouli, Stefano Valente, and Shay Nahum are employees of MSD. William Flanagan and Tudor Pitulac are employed by a company (OpenSky Data Systems) that received funding from MSD to conduct this project. Giovanna Elisa Calabro is an external consultant for the development and review of the poster, with no compensation nor transfer of value.

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