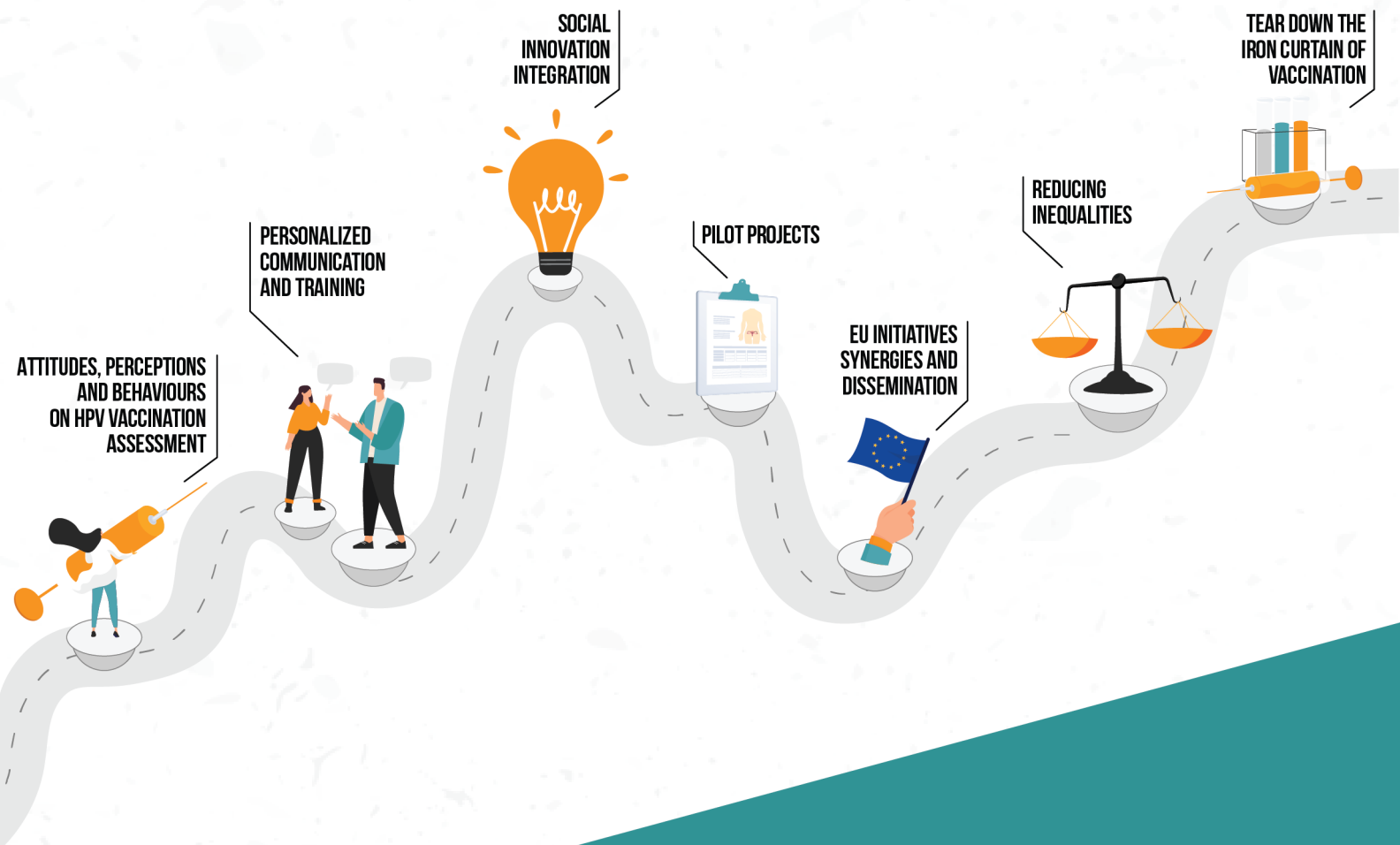Rethink and Reduce inequalities in HPV vaccination through personalized communication and training, based on social innovation and behavioural determinants of health

Report on the synergy with JRC on Knowledge Centre on Cancer

ATTITUDES, PERCEPTIONS AND BEHAVIOURS ON HPV VACCINATION ASSESSMENT

PERSONALIZED COMMUNICATION AND TRAINING

SOCIAL INNOVATION INTEGRATION

PILOT PROJECTS

EU INITIATIVES SYNERGIES AND DISSEMINATION

REDUCING INEQUALITIES

TEAR DOWN THE IRON CURTAIN OF VACCINATION

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Authors	
Main author name	Bianca Cucoș (INOMED)
Reviewers	
Reviewer name	Marius Geantă (INOMED)
	Mihai Botezatu (Renasterea Foundation)
	Alexandra Hosszu (Renasterea Foundation)

Innovation and Data - Tackling East-West Inequalities in HPV Vaccination WEBINAR

The webinar **"Innovation and Data: Tackling East-West Inequalities in HPV Vaccination",** hosted on January 21st, 2025, brought together leading experts from the European Commission Joint Research Centre (JRC) to discuss the transformative potential of data-driven strategies in addressing disparities in HPV vaccination rates across Europe. The event provided a platform for dialogue on the insights gathered during the ReThink HPVaccination project and the critical role of the JRC in advancing evidence-based policy and public health innovation.

Overview of the event

The session opened with remarks by **Marius Geantă, MD, PhD**, President of the Centre for Innovation in Medicine, Coordinator of 4P-CAN, and WP lead for the ReThink HPVaccination project. MD Geantă outlined the evolution of public attitudes toward HPV vaccination in Romania, highlighting significant progress since the first vaccination campaign in 2008. Interest in HPV vaccination, particularly in Romania, is at an all-time high, fueled by initiatives such as ReThink HPVaccination, which emphasizes a need for a **personalized communication approach** to overcome vaccine hesitancy.

MD Geantă detailed the project's novel outcomes, particularly the development of the **Personalized Matrix for HPV**, which maps population attitudes and divides individuals into seven distinct groups, from well-informed vaccine advocates to safety-conscious skeptics and anti-vaxxers. The matrix leverages three levels of influence—micro, meso, and macro—and identifies tailored communication channels to engage each group effectively. This shift from a "one-size-fits-all" approach to **personalized engagement strategies** exemplifies the innovative potential of data-informed public health campaigns.

Role of the Joint Research Centre

The event's keynote presentations by **Marta Garcia Escribano** (Project Officer - Disease Prevention) and **Tony O'Grady** (Deputy Head of Unit - Disease Prevention) from the JRC underscored the central role of the organization in supporting the EU's public health objectives. The JRC, as an independent, science-based knowledge provider, is a key driver of Europe's Beating Cancer Plan. Its **Knowledge Centre on Cancer** serves as a hub for disseminating reliable, evidence-based insights to inform cancer prevention, early detection, treatment, and survivorship policies.

Ms. Escribano emphasized the JRC's commitment to patient-centered approaches, relying on systematic reviews, working groups, and an extensive expert network. The use of the **GRADE approach**—a method for grading evidence and deriving recommendations—ensures transparency and scientific rigor in developing public health guidelines. She noted that HPV vaccination is on the agenda for 2026, with plans to adapt and adopt existing recommendations based on emerging evidence and data.

The JRC is organized into thematic units and knowledge centers that focus on specific areas of societal relevance, such as cancer prevention, climate change, energy, and digital innovation. These units

collaborate with external researchers, institutions, and policymakers to ensure that their work reflects the latest scientific advancements and societal needs. Within the context of public health, the JRC's Knowledge Centre on Cancer is a flagship initiative designed to compile, analyze, and disseminate knowledge on cancer prevention, treatment, and survivorship, acting as an independent evidence broker. The JRC also employs structured methodologies, such as the GRADE approach for assessing the quality of evidence and relies on expert working groups and systematic reviews to produce actionable recommendations. By maintaining a cross-disciplinary and collaborative framework, the JRC ensures that its research directly supports EU priorities and delivers societal impact.

Mr. O'Grady reinforced the importance of **social science data** in complementing traditional biomedical research, particularly in understanding vaccination behaviors, attitudes, and socioeconomic factors. He highlighted the JRC's openness to leveraging diverse datasets to enrich policy-making processes. Moreover, he introduced the potential of **Large Language Models (LLMs)** to analyze and interpret complex data, opening avenues for more dynamic and responsive public health interventions.

The importance of data from ReThink HPVaccination

One of the key themes of the discussion was the **value of data generated during the ReThink HPVaccination project** in shaping public health strategies. The project's focus on **social sciences**—exploring human behaviors, perceptions, and attitudes—offers a critical lens to understand the barriers and facilitators of vaccine uptake. By segmenting populations and tailoring communication strategies, the data provides a framework for **personalized interventions** that can address vaccine hesitancy more effectively than generic campaigns.

Tony O'Grady acknowledged the broader implications of this work, noting that while biomedical data often receives more attention, **social science data is equally vital** to inform comprehensive, human-centered strategies. He also emphasized the importance of making datasets openly accessible and integrating diverse data sources (e.g., socioeconomic, behavioral, and demographic data) to foster a more nuanced understanding of public health challenges.

The Role of Large Language Models (LLMs) in public health innovation

A forward-looking discussion explored how **Large Language Models (LLMs)**, such as GPT-like AI systems, could complement existing approaches to data analysis and public health strategy development. LLMs could be instrumental in:

- **Synthesizing large datasets**: Automating the analysis of complex, multidimensional datasets from projects like ReThink HPVaccination.

- **Improving communication strategies**: Generating tailored messaging for diverse population groups, informed by behavioral and attitudinal data.

- **Policy development**: Supporting policymakers by rapidly summarizing evidence and generating draft recommendations based on systematic reviews.

By harnessing the power of LLMs, researchers and policymakers can scale personalized communication approaches, ensuring the "right message reaches the right person at the right time."

Key takeaways and implications

The webinar underscored the following key points:

1. **Data-driven innovation**: The insights generated from the ReThink HPVaccination project demonstrate the transformative potential of leveraging social science data for personalized public health interventions.

2. **JRC's pivotal role**: The JRC's Knowledge Centre on Cancer and its use of evidence-based methodologies like GRADE provide a robust framework for addressing public health challenges such as HPV vaccination disparities.

3. **Importance of social sciences**: Understanding human behavior and societal factors is essential for designing effective public health strategies. This complements biomedical data and ensures holistic solutions.

4. **Emerging technologies**: Tools like Large Language Models can revolutionize how data is processed, interpreted, and applied to public health, making initiatives more efficient and scalable.

The webinar **"Innovation and Data: Tackling East-West Inequalities in HPV Vaccination"** provided an excellent platform for fostering collaboration, sharing knowledge, and exploring innovative solutions to improve HPV vaccination rates across Europe. By integrating data-driven approaches, social sciences, and advanced technologies like LLMs, the EU can continue to lead the way in addressing health inequalities and advancing cancer prevention.

Next steps and recommendations

- **Expand data collection**: Encourage the collection of additional social science data from other EU member states to identify trends and disparities.

- **Leverage AI tools**: Pilot the use of LLMs for public health messaging and strategy development in HPV vaccination campaigns.

- **Disseminate findings**: Share the outcomes of the ReThink HPVaccination project widely through the JRC's Knowledge Centre on Cancer to inform EU-wide strategies.

- **Promote collaboration**: Strengthen partnerships between researchers, policymakers, and technology developers to ensure that evidence-based innovations are effectively implemented.

For further exploration, participants and stakeholders are encouraged to engage with the JRC's Knowledge Centre on Cancer and the ReThink HPVaccination project to maximize the impact of these critical public health efforts.