PROPHET TOOLBOX FACTSHEET#5

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Bottlenecks for the implementation of Personalized Prevention Approaches

PROPHET

a PeRsOnalized Prevention roadmap for the future HEalThcare

Advances in genomics and multi-omics technologies have created new opportunities for prevention tailored to individual biological profiles. Yet, the integration of personalized prevention into healthcare remains limited.

Within the PROPHET project, a **scoping review** of reviews was conducted to map the barriers to the implementation of personalized prevention, **complemented by expert interviews and a stakeholder survey** to further explore how these bottlenecks are perceived across different sectors of the healthcare ecosystem. Together, this work provided an overview of the obstacles affecting personalized prevention, which were organized into key thematic categories, reflecting structural, regulatory, organizational, social, and economic challenges that are highly relevant for policymakers and decision-makers.

Key evidence from the scoping review of reviews

Across 37 reviews, 283 barriers were identified and grouped into six major domains:

- **Organizational aspect:** challenges regarding the integration of personalized approaches into healthcare and the practical translation of personalized prevention in real-world context.
- **Ethical, Legal, Social Issues:** ethical and legal concerns, including privacy, consent, and equity.
- **Financial concerns:** economic hurdles, such as high costs and funding limitations for the implementation of personalized prevention approaches.

- **Research:** factors limiting scientific advancements and robust evidence generation.
- **Healthcare Professionals:** limited training and workload concerns.
- **Public:** limited health literacy among citizens and patients, and skepticism toward personalized prevention.

The first three domains are particularly relevant for policymakers, as they reflect structural and governance challenges that directly affect the integration of personalized prevention across health systems. However, these barriers are closely interconnected with the others and require a systemic approach to ensure equitable, efficient, and sustainable implementation.

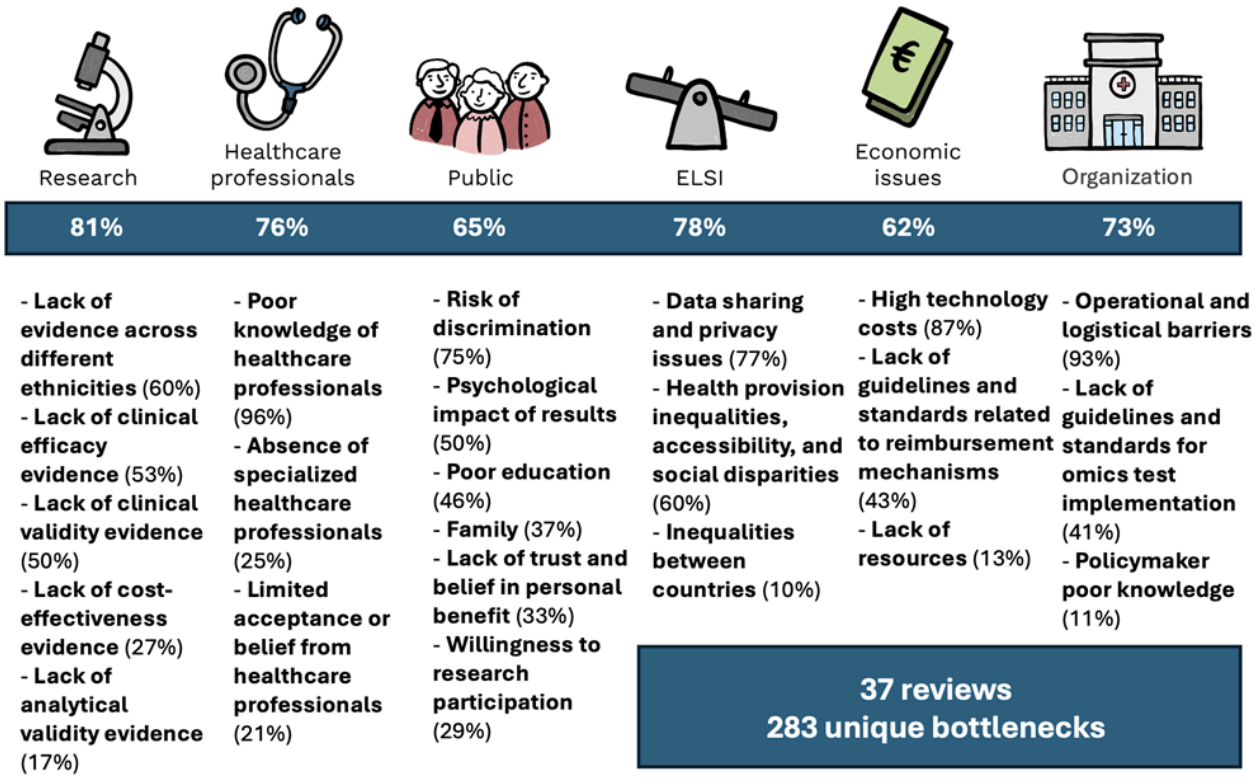

Fig. 1: From the 37 included reviews, 283 barriers were extracted and summarized into six major domains from the thematic analysis.

For those who want to read the paper, it is available at: https://doi.org/10.1371/journal.pone.0335444

Insights from expert interviews and a stakeholder survey

1 *Policymakers' perspectives*

Findings from the PROPHET stakeholder consultation reinforce the relevance of the macro-level barriers most pertinent to policymakers. Their views highlight how organizational, legal, and financial challenges converge into strategic bottlenecks for implementation:

- **Lack of legal and regulatory frameworks:** inadequate rules for sharing and protecting genetic data hinder safe implementation.
- **Absence of economic models:** missing cost–benefit evidence limits investment and policy support for personalized prevention.
- **Low prioritization of prevention:** healthcare systems remain treatment-focused, with limited attention to preventive strategies.
- **Lack of coordinated strategies:** absence of clear national plans and poor cooperation across sectors (health, social, environmental).
- **Resource and workforce shortages:** insufficient infrastructure, equipment, and skilled personnel to operationalize prevention.

2 *Policy priorities and recommendations*

- **Establish robust regulatory frameworks** by creating harmonized legal and ethical standards for omics testing, data governance, and ensuring strong protection of people's rights.
- **Guarantee equity and reimbursement** through fair and consistent insurance coverage and reimbursement systems to prevent unequal access.
- **Invest in data infrastructure** by supporting secure, interoperable, and privacy-compliant data platforms (e.g., *European Health Data Space*).
- **Strengthen the health workforce** through targeted education and upskilling programs in genomics, data science, and personalized medicine.
- **Promote inclusive research** that engages diverse populations and prioritizes the translation of evidence into actionable policy and clinical practice.

Personalized prevention represents a transformative opportunity for healthcare systems but demands structural reform, long-term planning, and shared accountability. By strengthening governance, building equitable frameworks, and investing in sustainable infrastructure, policymakers can translate innovation into practice.

Bibliography

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