



ORIGINAL ARTICLE

Unlocking the power of population health management to strengthen primary health care



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Abstract Population health management (PHM) is a people-centred, data-driven and proactive approach to improving the health and well-being of a defined population, considering the differences within that population and their social determinants of health. By using quantitative and qualitative data insights, PHM helps primary care providers identify population cohorts with similar needs or 'at risk' of a given negative outcome/s. This enables primary care providers to address their needs in a targeted, tailored, proactive and holistic way through coordination with other care levels and sectors. PHM can be summarized conceptually in a cycle of five steps: defining and identifying the population; health assessment and segmentation; risk stratification and impactability; tailored service delivery; and evaluation and improvement. The relationship between primary health care (PHC) and PHM is that of a virtuous circle. PHM helps make PHC more effective and many elements of a strong PHC-oriented model of care are essential for effective PHM.

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PALABRAS CLAVE

Gestión poblacional de la salud;
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El poder de la gestión poblacional de la salud para fortalecer la atención primaria de salud

Resumen La gestión poblacional de la salud (GPS) es un enfoque proactivo, centrado en las personas y basado en los datos para mejorar la salud y el bienestar de una población determinada, teniendo en cuenta las diferencias dentro de esa población y sus determinantes sociales

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de la salud. Mediante el uso de datos cuantitativos y cualitativos, la GPS ayuda a los proveedores de atención primaria a identificar cohortes de población con necesidades similares o «en riesgo» de un/os determinado/s resultado/s negativo/s. Esto permite a los proveedores de atención primaria abordar sus necesidades de forma específica, adaptada, proactiva y holística mediante la coordinación con otros niveles y sectores asistenciales. La GPS puede resumirse conceptualmente en un ciclo de cinco pasos: definición e identificación de la población; análisis de la salud y segmentación de la población; estratificación de la población e impactabilidad; prestación de servicios adaptada, y evaluación y mejora. La relación entre la atención primaria de salud (APS) y la GPS es la de un círculo virtuoso. La GPS contribuye a hacer la APS más eficaz, y muchos elementos de un modelo de atención orientado a la APS son esenciales para la GPS. © 2024 Publicado por Elsevier España, S.L.U. Este es un artículo Open Access bajo la CC BY-NC-ND IGO licencia (<http://creativecommons.org/licencias/by-nc-nd/3.0/igo/>).

Interest in population health management is growing globally

Health systems in the European Region and globally are struggling to respond to several interlinked crises and trends.^{1–3} Multimorbidity has become the norm as societies become increasingly older; health inequalities are widening amid a volatile economic and social context; some elements of traditional models of care are no longer fit for purpose in view of shifting patient needs and expectations; and there is a rapid advancement of technological solutions.^{1–3} This is happening in a context where health systems are not completely recovered from the impact of the COVID-19 pandemic, and where budget constraints for health are increasing due to competing pressures.^{4,5}

Amid this demanding context, health systems are looking for new policy responses and innovative approaches, and population health management (PHM) is one of them. The aim of this article is to discuss the key messages of the recently published WHO Europe's policy paper "Population health management in primary health care: a proactive approach to improve health and well-being".⁶ In the paper, we describe PHM as a people-centred, data-driven and proactive approach to improving the health and well-being of a defined population, considering the differences within that population and their social determinants of health.

Through a data-driven assessment PHM provides valuable quantitative and qualitative insights to proactively identify population subgroups and individuals with similar needs or characteristics and/or "at-risk" of a given negative outcome/s. This orients re-designing care and delivering targeted and tailored interventions for maximum impact and collaboration across levels of care and sectors. PHM helps identify opportunities to improve the efficiency, and quality of existing services, and assess the effectiveness of interventions. It contributes to reverting the inverse care law by adding an equity sensitive and data driven perspective to health planning and delivery so that both processes are based on actual needs (both clinical and social) and not merely on demand.⁷ It provides a deep understanding of population health and its determinants, supporting the adoption of proportionate universalism to tackle health inequalities.¹ By doing so, PHM can support health systems

to achieve the quintuple aim, namely: enhancing the experience of care; improving the health and well-being of the population; reducing health care costs; addressing health and care inequalities; and increasing the well-being and engagement of the workforce.⁸

An increasing number of countries in Europe (e.g. United Kingdom, Germany, Spain, The Netherlands, Portugal, Italy, Belgium) and beyond (e.g. United States, Australia, Singapore, Costa Rica, Brazil) are taking steps towards the adoption of PHM.^{6,9–14} They differ in the strategic objectives and adopt different entry points. These include, for instance, as part of wider reforms towards integrated care, national or regional strategies to address chronicity and multimorbidity, or primary care reforms aimed at improving its proactivity and community orientation. Despite these differences between, or even within, countries, there is a consensus around the key elements on PHM, that countries prioritize to varying degrees.

Key elements of population health management

We summarize the key elements of PHM in a cycle of five steps⁶:

1. **Defining and identifying the population:** defining the target population depends on the scope and aims of the PHM process as well as characteristics of the health care organization leading it. These include geographical lists of communities through municipalities, people enrolled with a health insurer, catchment areas of a single provider or provider networks, or discrete sub-populations of individuals with specific characteristics or care needs.
2. **Health assessment and segmentation:** health assessment aims at gathering the information required to understand the differences within a population, and the type of needs to be addressed to improve health with maximum impact. Based on the cross-sectional assessment of needs, through population segmentation, individuals can be grouped in relatively homogeneous

groups (segments), depending on the type of care needed and how often they will need it.

3. **Risk stratification and impactability:** risk stratification is an intentional, planned and proactive process that predicts the probability of adverse events occurring. It assigns an individual a risk status or score. Individuals are typically classified into high-, medium- and low-risk groups where the risk levels correspond to their likelihood to experience negative health outcomes and/or higher rates of unnecessary or preventable health care utilization. Impactability entails several processes to identify, within a given risk stratum, groups of patients that are amenable, impactable or care sensitive to preventative care.
4. **Tailored service delivery:** consists of designing and implementing the interventions to fill the care gaps proactively, tailoring them to each of the different groups or risk strata and to individuals. Interventions resulting from PHM processes entail self-management, disease management and case-management and span the entire continuum of care (e.g. from promoting healthy living to programmes to manage high-risk patients with multimorbidity). They are not necessarily "add on". They often involve redesigning existing care processes and workflows; changing the roles and/or composition of primary care and wider service delivery teams; or looking for health assets active in the community with whom to partner.
5. **Evaluation and improvement:** monitoring and evaluating the process and the intervention/s implemented is a central element of PHM. Evaluation should consider possible bias, stigmatization and ethical issues and impact on health equity.

The aim of the cycle is to provide a conceptual framework. However, when applied, the boundaries between the steps may not be clear-cut (e.g. population segmentation vs stratification); iteration back and forth can happen (e.g. stratified patients can be further segmented); and every step is not always considered (e.g. interventions are directly implemented after population segmentation without stratification). Moreover, health professionals' role in each step is context-specific. Notably, community engagement is not included as a step in the cycle since it is essential for all its steps. This includes getting first hand qualitative insights, identifying erroneous assumptions or conclusions, and shaping and being involved in service delivery.

Widespread applications of population health management

Countries are using PHM at primary care and/or health system level to support different processes that include⁶:

- **Needs-based, data-driven health planning and resource allocation:** e.g. improving economic resource allocation or adjusting primary care team composition and/or numbers in areas of greater clinical and social complexity.
- **Provision of proactive and tailored care** across the care continuum to population subgroups or segments with similar health needs and/or risks: e.g. case finding of patients

for inclusion (after clinician validation) in primary care-led programmes for complex chronic patients.

- **Identification of care gaps and factors driving health inequalities:** e.g. identifying population subgroups with under or over utilization of primary care services and/or the distribution of a given health outcome across different population subgroups.
- **Demand management and prioritization of care:** e.g. prioritizing patients that should be seen by their family doctor in the next 24h or supporting decisions over the service delivery modality (e.g. face to face vs phone-based).
- **Coordination across care levels and identification of levers at local or regional level to improve health, even if these are outside the health system:** e.g. supporting the design of care pathways entailing vertical and horizontal coordination or supporting health asset recommendation or social prescribing initiatives that link patients to non-clinical services in the community.

Relationship between PHM and primary health care

PHM can contribute to achieve some of primary care's central attributes, including accessibility; comprehensiveness; continuity; coordination; person-centredness and community orientation.⁶ It supports providers moving in four directions:

- from a one-size-fits-all approach to targeted and tailored approaches that account for the needs of different groups within local catchment populations or population clusters with similar needs or health conditions;
- from passive and reactive to proactive care, ensuring that people with different risks are identified and have their care anticipated;
- from a narrow focus on clinical needs to a holistic approach focusing also on psychosocial needs and the social determinants of health;
- from fragmented and poorly coordinated care to better coordination and integration with secondary and tertiary care and partnership with other sectors and actors in the community.

The PHM cycle provides a pragmatic framework for providers to operationalize a number of essential public health functions which are at the core of the PHC approach.^{15,16} These include (1) monitoring and evaluating the population's health status, health service utilization and surveillance of risk factors and threats to health; (2) supporting efficient and effective health systems and multi-sectoral planning, financing and management for population health; (3) promoting the prevention and early detection of diseases, including non-communicable and communicable diseases; (4) promoting health and well-being and actions to address the wider determinants of health and inequity; (5) ensuring community engagement, participation and social mobilization for health and well-being; and (6) assuring the quality of and access to health services.

At the same time, primary care is uniquely positioned to play a central role in PHM due to several reasons.⁶

First, the richness of data generated based on people's encounters throughout their lives with primary care providers, is critical to assess needs and predict health outcomes. Second, primary care key services (i.e. health promotion, disease prevention, holistic disease management) and the aforementioned attributes, are essential for PHM. The coordinating role of primary care within the health system, bringing health and care professionals and providers together around the needs of individuals, is particularly important for PHM. Third, primary care professionals are the most embedded health professionals in the communities, the closest to populations' holistic needs. This allows strengthening PHM through first-hand qualitative information from individuals and communities drawing attention to the social determinants of health. And, fourth, primary care is optimally positioned to partner with community-based assets and initiatives (e.g. civil society organizations, patient organizations, sport and cultural municipal resources) and with other sectors (e.g. education, housing, social care) that may be better equipped to address the wider determinants of health.

Enabling population health management

PHM can be performed in health systems with different characteristics and maturity but it requires concerted action across different levers to generate a PHM-enhancing environment. We identify a set of key enablers that facilitate the successful implementation of PHM.⁶

1. **Support of policy and regulatory agencies:** health ministries, insurance funds and purchasing agencies can support PHM by providing a legal mandate and policy frameworks for PHM with a shared vision and objectives. They can provide training resources, support the establishment and evaluation of pilots, and scale up successful experiences. They play a vital role in promoting an optimal regulatory environment to promote data sharing (while paying due attention to data confidentiality) and digitalization and supporting the adoption of PHM through enough funding and right incentives (see below).
2. **Inclusive, multistakeholder governance structures at local/municipal level:** these can facilitate data-driven discussions on priorities and performance outcomes, identification of care gaps and shared goal setting among primary care providers and other key stakeholders (outpatient and hospital specialists, health care managers, public health agencies, patient and community organizations, social care institutions, local authorities etc.). They are instrumental for planning and delivering interventions in a coordinated way with attention to the social determinants of health.
3. **Comprehensive and systematic data collection:** the quality of PHM processes partly depends on the richness and quality of the data collected, in many cases, by primary care professionals themselves. Improving data recording, diagnostic coding or updating registries in primary care (and elsewhere) improves the accuracy and reliability of the patients' needs and risk scores.
4. **Improving data collection on the social determinants of health and its availability in electronic health records** is essential to inform the community orientation of primary care and community health initiatives, and to enhance segmentation processes and the predictive capacity of advanced risk stratification tools.
4. **Information governance arrangements that promote information sharing within and outside the health system:** PHM relies on data from a wide range of sources, organizations and professionals (within and beyond the health sector). A trust framework is required for securing the flow of information among multiple systems and sites of care which may range from data sharing to data integration and developing large combined data sets.
5. **Fit-for-purpose information systems:** greater digital maturity embodies a major leapfrogging opportunity for PHM. It enables easier data collection and storage, faster and smoother information exchange across dispersed databases and its integration; identification and increased refinement of patient cohorts; more sophisticated segmentation and stratification processes; actionable visualization of PHM results; and better evaluation of interventions. This is supported by a range of digital solutions including multiprofessional and intersectoral electronic health records, patient portals, mobile health solutions for self-monitoring and analytical software.
6. **Data stewardship capacity and skills:** advanced PHM requires the ability to handle large amounts of data, to master sophisticated analytical tools and to guide organizations to adapt their work practices in the context of the digital transformation at all health system levels. New professionals such as data analysts working closely with public health and primary care professionals at regional and local levels can support proper use of the data and focus on data integration, storage, analysis and visualization.
7. **Integration and close collaboration of primary care and public health:** strong coordination between primary care and public health services is key for PHM. Public health services can support the adoption a population perspective in clinical practice through appropriate training; identifying and tackling community health problems by providing actionable population level information including on the social determinants; and designing and delivering health promotion, disease prevention and community health activities through expertise and know how, evaluation frameworks and research support.
8. **Multidisciplinary and Networked PHC models:** small stand-alone primary care practices staffed by family doctors or by family doctors and nurses alone, can struggle to work at the population level required to deliver several elements of PHM. Multiprofessional primary care teams that are underpinned by strong family medicine and advanced nursing roles and include other clinical and non-clinical professionals, can be better equipped to provide coordinated care to meet a wider range of patients' needs. This can be further enhanced if teams are part of coordinated provider networks that include other care levels and social care that support resource sharing, developing care pathways and

synchronizing expertise in areas such as information governance and data analysis.

9. **Financial incentives that support early detection and condition management, task profile expansion and coordination and integration across providers and levels of care:** supporting PHM requires payment mechanisms that enhance primary care's capacity and reduce excessive hospital activity as well as moving from traditional fees for services towards capitation and value-based payment models. Revising incentives so that they reward for continuous, coordinated, and proactive care is key.
10. **Community engagement:** successful models of PHM engage partners across their communities to better understand its culture, perceptions of needs and priorities, and are key to informing service provision. Primary care providers are uniquely positioned for driving this. Engaging communities and promoting social participation can help moving away from biomedical focused solutions to more holistic ones that consider the social determinants of health. It can help fine-tuning population segmentation and risk stratification processes with local intelligence.

Final considerations

- **PHM requires a cultural and a mindset change and putting people and their needs at the centre.** PHM is intrinsically a collaborative endeavour that entails connecting people, building relationships and new ways of working, overcoming professional silos and the gravity of 'business as usual', and reaching out to the community. Fostering a culture of using data insights to improve care provision, planning and performance monitoring is key. Winning the hearts and minds of health professionals by making a clear case on how PHM can improve their daily work is paramount for successful PHM implementation.
- **Effective implementation of PHM requires balancing top-down with bottom-up approaches.** PHM can't be deployed effectively by using a population stratification tool as an 'off-the-shelf' product that a health service purchases and implements top-down. Balancing their information with clinician judgement, qualitative data and local knowledge from a range of stakeholders, and testing and using those algorithms locally, is critical. Increasing the acknowledgement of the potential benefits that adopting PHM can bring to clinical practice can facilitate the engagement of primary care and other health professionals. Peer-to-peer networks of PHM champions and enthusiasts can support this.
- **PHM is a data-driven approach but there's no such thing as "perfect data".** Improving data quality is an ever evolving process that can be triggered by starting to look at and use existing quantitative and qualitative data differently. It can also be enhanced by bringing different stakeholders together for data-driven discussions on population health needs and outcomes. Qualitative data are essential to understand a population's needs and preferences, experience of care, and to identify needs related to the social determinants of health.

In summary, the relationship between PHC and PHM is that of a virtuous circle. PHM helps make PHC more effective and many elements of a strong PHC-oriented model of care are essential for effective PHM. PHM is a collaborative approach that requires an entire health system effort and coordination with other sectors and stakeholders (e.g. social care and municipalities). PHM offers a powerful methodology for helping tackle some of the greatest challenges faced by many health systems. Its successful adoption often requires a paradigm-shift in approach, and even organizational culture, to adopt data-driven transformation and integration. By supporting primary health care oriented systems reaching out to those that may be left behind and addressing health inequalities, PHM can strengthen their contribution to building healthier, safer and more cohesive societies and then towards building well-being economies.

Ethical considerations

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Conflict of interest

None.

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