The Role of Virtual Health Care and the Pharmaceutical Sector in improving Population Health

Medical Technology Research Group (MTRG), LSE Health
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LSE Health

Outline

- What is population health?
- Why population health for health care systems?
- What role for virtual health care solutions?
- What is the role of pharma?

What is population health and population health management?

No single accepted definition of population health…

Population Health…

… is an approach aimed at **improving the health of an entire population.**

It is about **improving the physical and mental health outcomes** and wellbeing of people, whilst **reducing health inequalities** within and across a defined population. It includes action to reduce the occurrence of ill-health, including **addressing wider determinants of health**, and requires working with communities and partner agencies.

Population Health Management…

…improves population health by **data-driven planning and delivery of proactive care to achieve maximum impact**.

It includes segmentation, stratification and impact modelling to identify local 'at risk' cohorts - and, in turn, designing and targeting interventions to prevent ill-health and to improve care and support for people with ongoing health conditions and reducing unwarranted variations in outcomes.

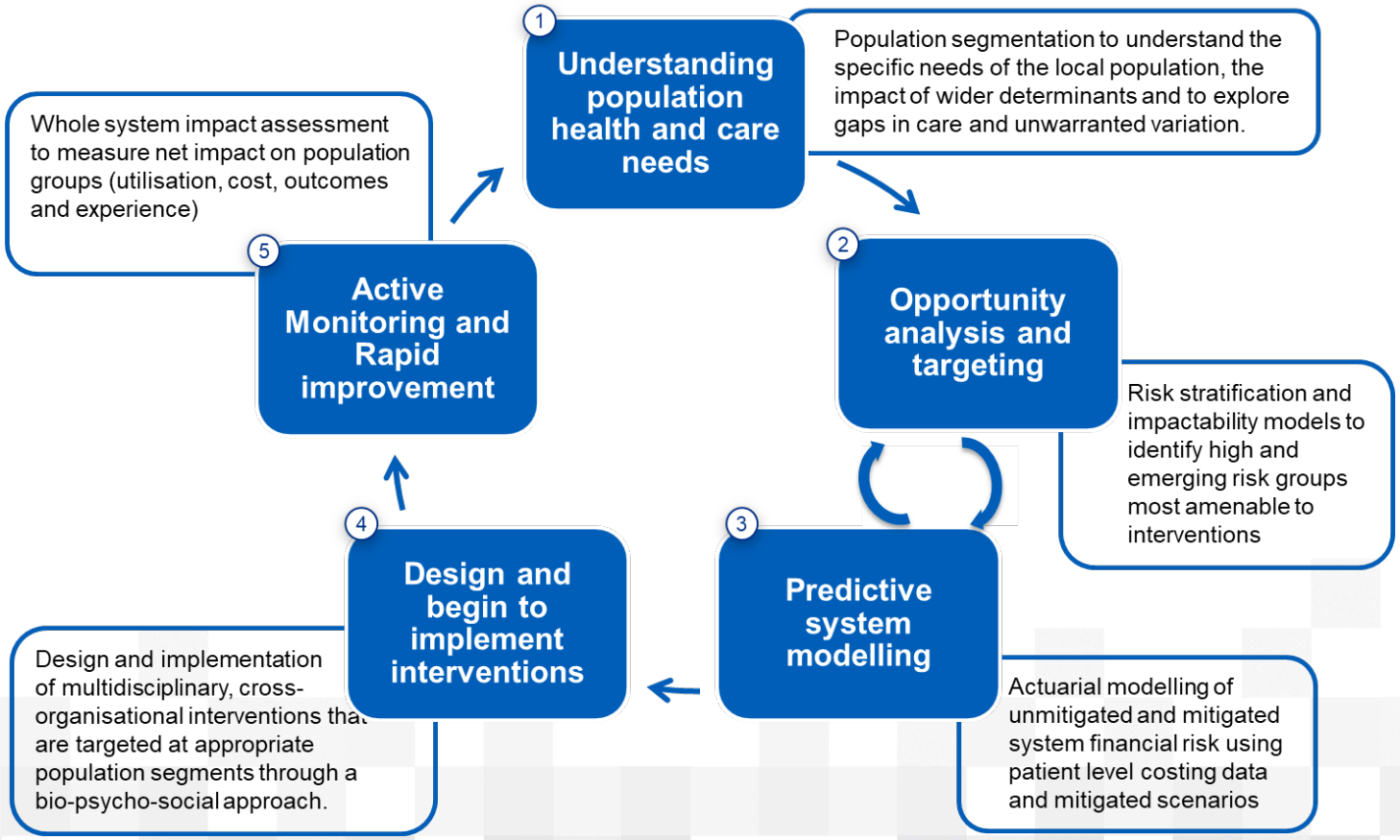
Population Health and VHC:
Working Definitions (I/II)

- No universal definition that is agreed upon globally related to digital technologies in health care
- **VHC** (Virtual Health Care) - "*healthcare delivery approach across the whole consumer well-being lifecycle, including before and after any care episodes*"
- VHC encompasses all aspects of care including (not limited to):
  - Physician-patient relations
  - Data monitoring and transmission
  - Digital therapeutics
  - Service navigation and delivery
- Digital technologies for health can be divided by their use spatially (in-person or across distance) and temporally (real-time or not in real-time).
- VHC can be segmented intro three core categories:
- (1) Telehealth; (2) Digital therapeutics, and (3) Care navigation

The 6 Critical Components of Population Health

- **Data Aggregation**
  - *Data warehouse approach bringing together sources*
- **Patient Stratification**
  - *Identify needs of different patient groups*
- **Care Coordination**
  - *Both 'outlier' and 'inlier' focus*
- **Patient Engagement**
  - *Providers and community partners to create personal relationships with patients*
- **Performance Reporting**
  - *Focus on data analytics to showcase benefit*
- **Administrative/Business**

PH and PHM can be illustrated as an ongoing cycle of "intelligence-led" care design



Managing Population Health: There are four core capabilities for Population Health Management

Infrastructure

- Integrated **data architecture** – primary, secondary and social care
- System wide **Information Governance** arrangements
- Digitised health & care providers and **common health and care record**

Intelligence

- Advanced **analytical tools** and multi-disciplinary analytical teams
- **Actionable insights** supporting providers focus on population health

Interventions

- Design and delivery of **new care models** and **anticipatory care interventions** which support an integrated approach to physical, mental and social care for target patient groups.
- Building and utilising strong partnerships with the voluntary and community sector, with a specific focus on **reducing health inequalities**
- **Workforce and incentives** development based on population health analysis.

Impact

The ability to track risk and predict outcomes will enable the provision of optimal and value-based solutions as well as risk sharing among stakeholders

Population Health Management – potential for efficiency gains in health care

Inform care approaches with evidence

Prevention

Educate and engage to modify behaviours to reduce health risks

Examples

- Run effective public health programmes
- Increase health literacy and self-awareness
- Encourage individuals to manage health risks

Early intervention

Promote routine screening and healthy lifestyles to defer disease onset and manage risk, early intervention, secondary prevention of high risk populations

- Predict disease onset to intervene earlier
- Support for smoking cessation, alcohol dependency, increased activity, dietary advice, but also cardiovascular disease secondary prevention, diabetes monitoring

Care Management

Deliver the right care services in a coordinated way to maintain quality of life and optimise resources

- Prevent admissions and readmissions through alternative care pathways
- Provide proactive support for rehabilitation
- Ensure effective and compassionate end of life care for elderly with frailty and dementia

Project Methodology I/II

- Review of literature and synthesis of available evidence
- Thematic scope = diabetes and cardiovascular disease
- Three health system archetypes:
  - UK - Tax-based
  - Germany – Social insurance-based
  - USA - predominantly privately funded system with multiple insurers and significant public funding
- Case study analysis – 6 digital technologies from a wider pool of 48 (across the 3 study countries) were identified for review based on:
  - Application or receipt of reimbursement or approval decisions
  - Primary country in which the digital technology is in use
  - Primary users and/or stakeholders
  - Type of intervention
- Analytical framework developed to scrutinise contribution that each case study can make to population health and identify remaining gaps

Project Methodology (II/II)
Analytical Framework

Thematic area	Endpoints
Design and set-up	1. Type of intervention 2. Intended user(s)/Target population 3. Ownership / stakeholders (e.g. public/private participation or ownership) 4. Regulatory approval
Costs and funding	5. Funding 6. Cost and payers 7. Reimbursement status and cost-sharing arrangements 8. Cost-containment/efficiency savings/cost optimisation
Clinical and health outcomes	9. Intermediate clinical outcomes and likely health improvement(s) (control of blood pressure, LDL-C, HbA1C, BMI) 10. Changes in the use of hospital and other health care (e.g. changes in admissions, length of stay, specialist care over time) 11. Evidence on the use of process indicators (e.g. check-ups, diagnostic/lab tests, eye tests)
Experience	12. Changes in patient experience 13. Changes in provider experience
Security, technology, data and ethics	14. Integration/interoperability 15. Security standards and measures 16. Data storage / sharing and privacy and confidentiality issues 17. Regulatory review of data or security issues 18. Ethical conflicts

Case Studies

	Intervention				User of intervention		
	App	**Device**	**Platform**	**Description**	**Patient**	**Insurer**	**Health system**
Gesundes Kinzigtal			✓	Organized care across all health services; population-based integrated care approach with systemwide EHRs	✓	✓	✓
Kaiser Permanente			✓	Insurer with extensive electronic health record system and in-house research department to visualize data	✓	✓	✓
KardiaMobile	✓	✓		Mobile app with personalized ECG monitor	✓		✓
Livongo			✓	Chronic condition management programs incl. a meter and test strips	✓		
MySugr	✓	(✓)		Mobile app with optional blood glucose monitor	✓		
Nujjer	✓	✓		Personalized diabetes prevention with activity sensitive wristband and smartphone application	✓		

Case studies
Key evidence on costs and funding

Cost-containment / savings

- Identified evidence suggests potential for cost savings across all case studies, including apps, devices, and integrated care efforts
- Difficulty in generalizing these findings to whole systems, as actual savings will depend real-world efficacy and penetration of interventions
- Reviews conducted by regulatory bodies (NICE), external/academic bodies (such as the Wessex Academic Health Science Network), or companies themselves (e.g. Livongo)

Case studies
Key evidence on health outcomes

- Identified evidence suggests positive impact on clinical outcomes and hospital use
- Evidence is often generated by external/academic bodies, journal articles by authors potentially affiliated with companies, or companies themselves
- Some interventions are still awaiting results from trials (e.g. RCT conducted for Nujjer in the UK)

Case studies
Key evidence on experience

Patient experience

- App scores for app interventions are generally high
- NPS scores are generally high
- Retention rates are positive for Gesundes Kinzigtal, Kaiser Permanente, MySugr and Livongo
- Evidence comes from companies in some cases, with conflicting evidence presented by other sources

Provider experience

- Limited evidence available primarily for integrated care efforts, as staff satisfaction, cooperation, and retention

Discussion Key Points
Barriers/bottlenecks - PHM

- **Health system nuances** – i.e. paternalistic aspect of NHS removes patient responsibility (VHC could support patient engagement and facilitate self-management of health and care here)
- **Difficulties with coordination of care** – geographical, system fragmentation (USA), fragmentation between primary and secondary care professionals
- **Lack of embedded focus on *prevention*** of chronic conditions (CVD, diabetes). Shift in approach required

Discussion Key Points
Barriers/bottlenecks - VHC

- **Outdated regulatory procedures** not equipped to respond to rapid technological advancement
- **Variation in regulatory and reimbursement rules** within countries (USA) can confuse patients regarding what is reimbursable
- **Technical barriers** – lack of knowledge, data security and privacy issues, basic technical issues (lack of bandwidth) due to lack of investment
- **'Outdated mindset'** – reluctance to embrace technology and lack of patient trust in VHC

Discussion Key Points
The Role of Pharma

- **Key offering**: expertise, data information on population groups
- Well-placed at **boundary between care services**
  - Facilitate transitions between self-management and primary care, and between primary/secondary care
  - Offer knowledge of products and patient outcomes to support patients with health literacy and education
- **Facilitate digital health technologies and serve populations that are underserved**, eg due to stigma, by targeting health inequalities, serving less developed health systems, or supporting behavioural changes
- **Explore opportunities with professional**, voluntary and public sector partners to establish trusted and accepted platforms for providing certain types of preventive and therapeutic care
- Must be combined with **sensitivity to local and national health sector variations**
- Some **concerns**:
  - Data confidentiality & security; potential for data to be used in ways that users are not aware of
  - Concern at system level about data and platforms being controlled by third parties

Population health team

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