

Transformation of health systems: contribution of population health intervention research

The growing prevalence of chronic diseases is a major challenge in the sustainability of health systems. There is a need to transform health systems by increasing prevention and by implementing innovative organisations in management of these diseases. This transformation will require development and analysis of research-based and field-based interventions and organisations. Health system transformation also requires the transfer of innovative models into public decisions and practices, and requires these actions to occur across health systems.

Several questions and challenges can be distinguished in this context. How do we assess these innovative models and interventions? How do we scale-up the interventions recommended under experimental conditions? How can sustainability be integrated into the design of innovations? How can transferability of interventions be ensured across diverse settings and populations?

Population health intervention research—the science of solutions which is complementary to the science of problems (ie, study of health determinants)¹—is designed to address these issues. This research is, by nature, contextualised because the results are dependent on both the intervention and the sociocultural and organisational context within which the intervention interacts.² Over the past 20 years, this research area has developed, resulting in projects focusing on new prevention approaches (such as innovative tobacco prevention programmes in schools);³ technological innovation (such as mobile health or mHealth in prevention strategies);⁴ and organisational innovations (such as interprofessional collaboration to

improve professional practice and health-care outcomes).⁵

Despite this development, population health intervention research remains undersized and the findings are not widely used by decision makers and practitioners for several reasons. First, the conduct of intervention research has several obstacles, such as inappropriate designs derived from clinical research into drugs.⁶ In fact, these interventions are generally considered to be complex, meaning that further models and methods are required for evaluation.⁷ Logistical, budget, and regulatory constraints compound these obstacles to intervention. For example, cluster trials are generally needed when investigating collective interventions such as population-based prevention or new health-care organisations. In these trials, individual consent, a fundamental principle of health research, cannot be obtained, which can cause practical difficulties in obtaining authorisation for the research or publication of results. Second, the use of knowledge by practitioners and decision makers is not a simple matter: knowledge produced is not always adapted or usable. Research needs to provide practitioners and policy makers with robust and relevant evidence that takes adequate account of the real-world circumstances.⁸ There is a need to reconsider the production of knowledge within an interacting framework, including all stakeholders. We should also develop practitioners' skills to analyse and transfer innovation into practices and to transform their organisations to facilitate the adoption of innovations.

It is becoming crucial to support the development of intervention research. A general strategy integrating research priorities, financial resources, and infrastructures (such as large databases) should be defined. In France, for example, the creation of a national public health research programme was announced

in August 2017. This programme will include these priorities, with the objective that funded research contributes to the national aims to invest in health prevention, to improve the efficacy and efficiency of the health system, and to reduce health inequalities. This approach should be considered in a broader context of international cooperation.

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- Potvin L, Petticrew M, Cohen ER. Population health intervention research: developing a much needed science of solutions. *Prev Med* 2014; **61**: 114–15.
- Hawe P, Shiell A, Riley T. Theorising interventions as events in systems. *Am J Community Psychol* 2009; **43**: 267–76.
- Campbell R, Starkey F, Holliday J, et al. An informal school-based peer-led intervention for smoking prevention in adolescence (ASSIST): a cluster randomised trial. *Lancet* 2008; **371**: 1595–602.
- Whittaker R, McRobbie H, Bullen C, Rodgers A, Gu Y. Mobile phone-based interventions for smoking cessation. *Cochrane Database Syst Rev* 2016; **4**: CD006611.
- Reeves S, Pelone F, Harrison R, Goldman J, Zwarenstein M. Interprofessional collaboration to improve professional practice and healthcare outcomes. *Cochrane Database Syst Rev* 2017; **6**: CD000072.
- Tarquino C, Kivits J, Minary L, Coste J, Alla F. Evaluating complex interventions: perspectives and issues for health behaviour change interventions. *Psychol Health* 2015; **30**: 35–51.
- Moore GF, Audrey S, Barker M, et al. Process evaluation of complex interventions: Medical Research Council guidance. *BMJ* 2015; **350**: h1258.
- Rutter H, Savona N, Glonti K, et al. The need for a complex systems model of evidence for public health. *Lancet* 2017; published online June 13. [https://dx.doi.org/10.1016/S0140-6736\(17\)31267-9](https://dx.doi.org/10.1016/S0140-6736(17)31267-9).



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For more on the **national public health research programme** see <http://www.gouvernement.fr/conseil-des-ministres/2017-08-30/la-strategie-de-prevention-en-sante>