



## **Population Health Intervention Research against Cancer: Investing in a " Science of Solutions "**

Bastien Affeltranger, François Alla, Sarah Viehbeck, Cynthia Vinson, Thierry Lang, Jean-Claude M Desenclos, Serigne M Gueye, Harry M Sumnall, Sylvie Dolbeault, Luc Ginot, et al.

### **► To cite this version:**

Bastien Affeltranger, François Alla, Sarah Viehbeck, Cynthia Vinson, Thierry Lang, et al.. Population Health Intervention Research against Cancer: Investing in a " Science of Solutions ". 2017. inserm-01533105

**HAL Id: inserm-01533105**

**<https://inserm.hal.science/inserm-01533105>**

Preprint submitted on 5 Jun 2017

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Population Health Intervention Research against Cancer: Investing in a “Science of Solutions”

Bastien Affeltranger PhD<sup>1</sup>, François Alla MD, PhD<sup>2</sup>, Sarah Viehbeck PhD<sup>3</sup>, Cynthia Vinson PhD<sup>4</sup>, Thierry Lang PhD<sup>5</sup>, Jean-Claude Desenclos MD, PhD<sup>6</sup>, Serigne M. Gueye MD<sup>7</sup>, Harry Sumnall PhD<sup>8</sup>, Sylvie Dolbeault MD<sup>9</sup>, PhD, Luc Ginot MD<sup>10</sup>, Pierre Lombrail MD, PhD<sup>11</sup>, Pierre Arwidson MD, PhD<sup>12</sup>, Louise Potvin PhD<sup>13†</sup>, Hermann Nabi PhD<sup>1,\*†</sup>

1. Department for Research in Social and Human Sciences, Public Health and Epidemiology, Institut National du Cancer, Boulogne-Billancourt, France.
2. National Institute of Public Health Research, Paris, France
3. Canadian Institutes of Health Research – Institute of Population and Public Health, Ottawa, Canada
4. Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD USA.
5. UMR 1027 Inserm - Université Paul Sabatier, Toulouse, France.
6. Institut de veille sanitaire F-94415, Saint-Maurice, France.
7. University Cheick Anta Diop, Dakar, Sénégal.
8. John Moores University, Liverpool, UK.
9. Psycho-Oncology Unit, Supportive Care Department, Institute Curie, Paris, France.
10. Regional Health Agency, Paris, France.
11. Université Paris 13, Bobigny, France.
12. French National Institute of Prevention and Health Education, Saint-Denis, France
13. School of Public Health, University of Montreal, Canada.

**Word count:** abstract = 147; text=2480

† Joint last authors

## \* Correspondence to:

Dr. Hermann Nabi  
Department for Research on SHS, Epidemiology and Public Health,  
Research and Innovation Division, National Cancer Institute (INCa)  
52, avenue André Morizet  
92513 Boulogne Billancourt Cedex

+33 1 41 10 15 03

[Hermann.Nabi@inserm.fr](mailto:Hermann.Nabi@inserm.fr)

## **Abstract**

Internationally, Population Health Intervention Research (PHIR) is increasingly regarded as a field of research that bridges the gap between public health research and practice and as one of the important instruments to move from description of health problems to the identification of effective solutions relevant to various contexts. Capitalizing on some of the experiences and outputs from previous conferences on the subject held in the United States and in Canada, an international conference entitled “*Intervention Research against Cancer: bringing together researchers, policy makers and practitioners*” was held in Paris, France, on November 17-18, 2014. This conference, convened over 200 researchers, decision- and policy-makers, community representatives and local organizations, with the goal to demonstrate and discuss how PHIR can enhance evidenced-base decisions and interventions across the full continuum of cancer control. This commentary presents the main conclusions of the conference, and recommendations for future research and actions.

**Keywords:** Population Health Intervention Research; Cancer; Policy-makers; Practitioners; Researchers; Methods

## **Background**

In recent years, there has been growing international interest in the importance of research in the development, implementation, and evaluation of public health policies and programs and, by extension, to the health of populations. [1]. In its strategy for health research, the World Health Organization (WHO) acknowledges that high quality research and evidence are critical for improving global health and health equity [2] . Population Health Intervention Research (PHIR), “involves the use of scientific methods to produce knowledge about policy and program interventions that operate within or outside of the health sector and have the potential to impact health at the population level”[3]. This field of research is increasingly regarded as a key lever for bridging the gap between research and practice in public health and as one of the important instruments to move from description of health problems to the identification of effective solutions relevant to various contexts [4, 5].

Several reviews of major bibliographic sources and research investments [4, 6], revealed low levels of outputs and funding for PHIR. A reduced research capacity combined with a lack of infrastructure and funding to enable this type of research, have been identified as plausible explanations [4]. Following these observations, several initiatives have been launched to build a strong case for this research field; the organization of dedicated scientific international events has been one of them. Since 2009, a series of linked conferences on the advancement of the field of PHIR have been held in the United States and Canada, enabling the participation of a wide range of stakeholders [7, 8].

Capitalizing on some of the experiences and outputs from the three previous conferences in the US and in Canada [9-11], the French National Cancer Institute (INCa) sponsored an international conference entitled “*Intervention Research against Cancer: bringing together researchers, policy makers and practitioners*”. This conference organized in collaboration with several international partners<sup>1</sup> was held in Paris, France, on November 17-18, 2014. Unlike previous conferences, the Paris conference was the first to be dedicated to a specific pathology, namely cancer. One reason for this specificity lies in the content of France’s third Cancer Plan, launched by the French President in February 2014, which set several public health objectives. Intervention research was identified as a tool to achieve some of them such as tackling social inequalities and modifying behavioural risk factors for cancer . Another reason is that cancer is considered a complex disease [12], the prevention of which requires solutions at the population

---

<sup>1</sup> US National Cancer Institute (NCI), Canadian Institutes of Health Research – Institute of Population and Public Health (CIHR-IPPH), European Society for Prevention Research (EUSPR), National Institute for Health Promotion and Education (INPES, France), French Societies for Public Health (SFSP) and Psycho-Oncology (SFPO), and AVIESAN alliance for health sciences.

level [13]. The 2014 conference was endorsed by the INCa's International Scientific Advisory Board (ISAB) as an opportunity to advance the field of intervention research in France and at international level, particularly for cancer control related issues.

### **Objectives, process and brief overview of the conference**

The conference convened more than 200 researchers, decision- and policy-makers, community representatives and local organizations from France and several other countries, with the goal to demonstrate and discuss how intervention research (including community-based and applied research), can enhance the evidence base for cancer control decisions and interventions. Other goals of the conference included: (1) dissemination of innovative intervention research projects; (2) gathering research funders, researchers, decision-makers and practitioners (medical, social, educational) active in the field of cancer control; (3) discussing feasibility and transferability of intervention research projects, and their contribution as decision-support resources. Linking with experience from other chronic diseases and regions (e.g. developing countries) also ranked high on the conference agenda. An interdisciplinary, international scientific committee developed the 2-day conference program, featuring plenary and poster sessions. Plenary speakers and posters were selected through peer review to reflect the broad scope of those designing, implementing and evaluating public health interventions, as well as those funding and using research.

This commentary presents the findings and conclusions of the Paris conference, with the goal of advocating for strong support for the development and deployment of PHIR that would be particularly relevant across the full continuum of cancer control (prevention, screening, diagnosis, treatment, survivorship and end-of life). It also presents the main conclusions of the conference, and recommendations for future research and actions. At the conference, speakers presented research from France, Europe, Africa and North America, specific to cancer, but also from other diseases (such as human immunodeficiency virus, HIV), in order to help identify "best practices" that could be transferred or adapted across settings and diverse contexts. Presentations were on interventions targeting behavioural, social and geographic determinants of health; methodological issues; and the use of research findings to inform public health decisions.

### **Deploying Population Health Intervention Research?**

#### ***Obstacles/Challenges***

Based on the presentations at the conference, it became clear that the diffusion and implementation of PHIR as a field shows noticeable differences across countries – with North

American (United States and Canada for instance) and northern European jurisdictions featuring a wealth of practice and resources. Social and political contexts appear to play a major role on how intervention research contributes (or not) to the success of evidence base in public health policy-making. This influence of cultural dimensions could clearly be observed in France where there still exist obstacles to the deployment of PHIR. First, PHIR is not always well understood or may not be attractive to researchers themselves. Reasons include a limited trust in the robustness of the available methods asserting the internal validity of PHIR results, as well as perceived difficulties for the successful implementation of such studies (e.g.: feasibility issues; limited potential for scientific publication). This is partly explained by the rich epidemiology and surveillance tradition and training in France, with less focus on interventions. Second, strong research and policy /practice connections are often missing, that would facilitate the integration of PHIR results into public health decision streams. Third, actors responsible for intervention implementation – such as community organizations and governments – may have limited knowledge of PHIR methodologies, although such actors are essential to partner with to develop community based intervention research projects. Teaming up with researchers appears to be difficult due to differences in professional cultures.

### ***Opportunities***

In France, the deployment of PHIR is still at an early stage [14] when compared to the UK, US and Canada. Today, two major public health instruments offer opportunities for the deployment of intervention research in France, and a better consideration of evidence-based approaches. On the one hand, the French National Strategy for Health [15] appears to be a game changer for public health in France, wherein until now the focus has been on care rather than prevention. Prevention and action upon the determinants of health constitute the three goals of the most recent strategy. Intervention research is therefore increasingly considered as a meaningful approach to achieve this goal. On the other hand, the Third Cancer Control Plan covering the period 2014-2019, launched in February 2014 by the French President, constitutes a unique opportunity to move intervention research forward in two directions. The first is a stronger contribution of intervention research to the design and assessment of cancer-related strategies. The second is a stronger engagement of decision-makers, intervention practitioners, community members, and patient advocates in the design and implementation of cancer-related research projects.

The INCa's model, as the preeminent national authority on both health and scientific matters in charge of cancer control in France, constitutes also a favorable institutional home to

support and deploy intervention research in the field of cancer prevention and care. Indeed, the INCa is a public interest group which brings together State representatives, large non-governmental organizations (NGOs), health insurance funds, research organizations and hospital federations. These stakeholders share a common goal of reducing the incidence of avoidable cancers and the number of cancer deaths, improving the quality of life of people with cancer during and after their illness, and reducing inequalities related to cancer. Thus, the INCa has the capacity to bring together researchers, experts and decision-makers and act as an interface with patients and their families, healthcare system users and professionals, and the general public.

### ***Models/examples of success***

The conference also pointed to several examples of success for intervention research initiatives, and evidenced-based public health decision-making. For instance the US National Cancer Institute's (NCI) web-based Research-tested Intervention Programs (RTIPs) initiative provides public health decision-makers with a wide range of operational resources such as case studies, training material and contact persons. The Canadian Institutes of Health Research-Institute of Population and Public Health (CIHR-IPPH) identified earlier-mentioned PHIRIC as a success. The Institute generated a number of tools to support the funding, conduct, and use of PHIR, including for example two casebooks about PHIR and the ethics of interventions and related research [16, 17], PHIRIC guidelines for peer-review funding mechanisms as well as promoting the creation of applied public health chairs [18], conferences and workshops [17]. Both NCI and CIHR-IPPH have contributed to increasing intervention research capacities in North America, and to fostering understanding and credibility of evidence-based approaches to public health matters and decisions. While taking stock of these achievements and acknowledging these challenges, the conference did also confirm that the time was right to seize opportunities for PHIR deployment, both in France and in other countries.

### **Directions for future research and actions**

#### ***Advancing in methodology to produce robust and pertinent interventions***

Intervention research projects are conceived of as spaces wherein researchers and their partners can explore innovative approaches, while maintaining scientific rigor. By nature, public health and health services interventions are complex systems in which components interact with contextual conditions to produce expected and/or unexpected outcomes [19]. Given the complex and systemic nature of interventions, research often considers evaluation methods that are different from the “gold standard” approach such as randomized control trial (RCT) [20] or randomized cluster trials. Rather, assessment of PHIR projects should consider issues such as

the intervention's inherent characteristics, delivery and transferability, and contextual conditions [21]. In this respect, assessing the robustness of interventions needs “realistic”, “mixed” or “multilevel” evaluation methods, some of which are similar to those used in natural experiments [22]. These approaches have in common to account for the role of context in intervention implementation and the production of effects and to attempt to open up the intervention's black box, linking mechanisms, processes and outcomes. Therefore, methodological development itself constitutes a burning issue for researchers engaged in population-based interventions. New methodologies are needed, to better understand the determinants of interventions' efficacy, characterize contextual effects, and anticipate the potential for dissemination. Thus, the conclusion of the present conference is in line with that of Toronto's 2010 workshop entitled: *Stimulating Methodological and Theoretical Innovation in Population Health Intervention Research* [11].

### ***Closing the gap between population health intervention research and decision science***

As discussed above, intervention research is often bound to articulate processes and outcomes. This combination of scientific validity and social significance has been identified as one of the most efficient options for decision-support on public health issues [23]. Hence, the deployment of PHIR cannot be separated from a wider reflection on the social value, and outreach of intervention research projects. Considering the above, the perspective of having one or more publications in scientific journals – or in conferences such as this one – may be a desirable output alongside the likelihood of real-world impact on decision-making, transferability or social acceptability. In other words, the rise of PHIR as a basis for a “science of solutions” in public health does not only challenge the way research is designed and implemented (what, how and with whom), it also presents a further opportunity for the translation of research into decision-making. Furthermore, the field of PHIR may present a broader scope for the evaluation of research impact to further the consideration of intervention adaptation to fit the complex reality of the public health environment [24], which goes well-beyond earlier models of basic intervention adoption. As a consequence, partners in PHIR need to better understand the determinants, stakeholders and values involved in the decision-making processes they attempt to contribute to. Doing so, they may better anticipate the future use of their results. This approach also advocates for a careful choice of internal validity evaluation methods. For instance, randomized control trials (RCTs) – with standardized intervention and the individual as unit of randomization – may miss essential contextual determinants of an intervention's outcome. However, cluster trials can accommodate communities, schools or other

types of groups, and have a long history of successful application in evaluating the effectiveness of social interventions [21]. Assessing the quality of evidence in complex public health interventions may then require a combination of evaluation methodologies; some more quantitative and other more qualitative [25]. Thus, the appropriate level of evidence may not always be the best scientific one, but, rather, a combination of the most relevant one available in time for decision-making in a specific population and social context.

## **Conclusions**

Over the past few years, intervention research has been gaining momentum in France and this is a tangible output of the initiatives launched in countries such as the US, the UK and Canada. This type of research is increasingly recognized as a key means for developing evidence-based programs and supporting decision with regard to a wide range of public health issues. This interest in intervention research also coincides with a widespread demand formulated by policy- and decision-makers seeking successful interventions that may be transferred across populations with similar or distinct social, economic, cultural characteristics. The Paris conference, from which this report emerged, represented an effort of the French National Cancer Institute (INCa) and its partners to promote the visibility, understanding, decision-support potential and overall outreach of PHIR in France. The wealth of expertise and know-how, that is readily available in research communities, should be capitalized upon. The concept of PHIR, however, does remain relatively new to many stakeholders. It will take continuous investment in research education and training, for the ownership of population-based approaches to develop. This investment should for instance focus on methodological aspects of PHIR projects, as this is a pre-condition to the scientific validity of research results, and to the credibility of its contribution as a decision-support resource. Innovative methods are therefore needed, that better articulate validity and credibility in intervention research. This is also a prerequisite for an improved commitment to that type of research, by non-research stakeholders. The investment should also address enabling, systemic conditions, to make it possible for intervention research to develop, capitalize and disseminate. The partnership between researchers and those involved in deploying health promotion and prevention programs is also essential. In that respect, there is a wealth of lessons to be learned from PHIR type of projects conducted in relation to diseases other than cancer, and in countries other than France. These lessons include dimensions such as: policy framework, funding capacity and scientific partnerships as well as institutional and decision-making cultures.

## References

1. Diem G, Brownson RC, Grabauskas V, Shatchkute A, Stachenko S: Prevention and control of noncommunicable diseases through evidence-based public health: implementing the NCD 2020 action plan. *Global health promotion* 2015;1757975914567513.
2. WHO: The WHO strategy on research for health. [http://www.who.int/phi/WHO\\_Strategy\\_on\\_research\\_for\\_health.pdf](http://www.who.int/phi/WHO_Strategy_on_research_for_health.pdf). Accessed August 7, 2015.
3. Hawe P, Potvin L: What is population health intervention research? *Can J Public Health* 2009, 100(1):I8-I14.
4. Di Ruggiero E, Rose A, Gaudreau K: Canadian Institutes of Health Research support for population health intervention research in Canada. *Can J Public Health* 2009, 100(1):I15-I19.
5. Potvin L: Population Health Intervention Research: A Fundamental Science for NCD Prevention. In: *Global Handbook on Noncommunicable Diseases and Health Promotion*. edn.: Springer; 2013: 205-216.
6. Sanson-Fisher RW, Campbell EM, Htun AT, Bailey LJ, Millar CJ: We are what we do: research outputs of public health. *Am J Prev Med* 2008, 35(4):380-385.
7. Trickett EJ: Community-based participatory research as worldview or instrumental strategy: is it lost in translation (al) research? *Am J Public Health* 2011, 101(8):1353.
8. Riley B, Harvey J, Di Ruggiero E, Potvin L: Building the field of population health intervention research: the development and use of an initial set of competencies. *Prev Med Rep*. 2015, 2:854-857.
9. CIHR: Proceedings of the International Conference to Advance a Population Health Intervention Research Agenda. 2012a. <http://www.cihr-irsc.gc.ca/e/13789.html>. Accessed February 15, 2015.
10. CIHR: Symposium on Accelerating Population Health Intervention Research to Promote Health and Health Equity - Summary Report. 2010b. [http://www.cihr-irsc.gc.ca/e/documents/ipph\\_symposium\\_sum\\_report\\_2010\\_e.pdf](http://www.cihr-irsc.gc.ca/e/documents/ipph_symposium_sum_report_2010_e.pdf). Accessed October 28, 2015.
11. CIHR: Stimulating Methodological and Theoretical Innovation in Population Health Intervention Research - Workshop Summary Report. 2010a. <http://www.cihr-irsc.gc.ca/e/13789.html>. Accessed February 15, 2015.
12. Willett WC: Balancing life-style and genomics research for disease prevention. *Science* 2002, 296(5568):695-698.
13. Wild CP, Bucher JR, de Jong BW, Dillner J, von Gertten C, Groopman JD, Herceg Z, Holmes E, Holmila R, Olsen JH: Translational cancer research: balancing prevention and treatment to combat cancer globally. *J Natl Cancer Inst*. 2015, 107(1):dju353.
14. Cambon L, Ridde V, Alla F: Réflexions et perspectives concernant l'évidence-based health promotion dans le contexte français. *Rev Epidemiol Sante Publique*. 2010, 58(4):277-283.
15. Touraine M: Health inequalities and France's national health strategy. *The Lancet* 2014, 383(9923):1101-1102.
16. CIHR: Population and Public Health Ethics: Cases from Research, Policy, and Practice. University of Toronto Joint Centre for Bioethics: Toronto, ON, 2012.
17. CIHR: Population health intervention research casebook 2011. <http://www.cihr-irsc.gc.ca/e/43472.html> Accessed December 20, 2015.
18. CIHR: 2014 Applied Public Health Chairs. 2014. <http://www.cihr-irsc.gc.ca/e/48898.html> Accessed Janvier 4, 2016.

19. Moore GF, Audrey S, Barker M, Bond L, Bonell C, Hardeman W, Moore L, O’Cathain A, Tinati T, Wight D: Process evaluation of complex interventions: Medical Research Council guidance. *BMJ* 2015, 350:h1258.
20. Victora CG, Habicht J-P, Bryce J: Evidence-based public health: moving beyond randomized trials. *Am J Public Health*. 2004, 94(3):400-405.
21. Rychetnik L, Frommer M, Hawe P, Shiell A: Criteria for evaluating evidence on public health interventions. *J Epidemiol Community Health*. 2002, 56(2):119-127.
22. Craig P, Cooper C, Gunnell D, Haw S, Lawson K, Macintyre S, Ogilvie D, Petticrew M, Reeves B, Sutton M: Using natural experiments to evaluate population health interventions: new Medical Research Council guidance. *J J Epidemiol Community Health*. 2012;jech-2011-200375.
23. Brownson RC, Chiqui JF, Stamatakis KA: Understanding evidence-based public health policy. *Am J Public Health* 2009, 99(9):1576-1583.
24. Ogilvie D, Craig P, Griffin S, Macintyre S, Wareham NJ: A translational framework for public health research. *BMC Public Health* 2009, 9(1):116.
25. Campbell M, Fitzpatrick R, Haines A, Kinmonth AL, Sandercock P, Spiegelhalter D, Tyrer P: Framework for design and evaluation of complex interventions to improve health. *BMJ* 2000, 321(7262):694-696.

## Abbreviations

CIHR-IPPH: Canadian Institutes of Health Research-Institute of Population and Public Health

INCa: French National Cancer Institute

NCI: National Cancer Institute

PHIR: Population Health Intervention Research

RCT: Randomized control trial

WHO: World Health Organization

## **Acknowledgements**

Partner organizations are, by alphabetical order: the US National Cancer Institute (NCI), the Canadian Institutes of Health Research – Institute of Population and Public Health (CIHR-IPPH), the European Society for Prevention Research (EUSPR), the National Institute for Health Promotion and Education (INPES, France), the French Societies for Public Health (SFSP) and Psycho-Oncology (SFPO), and the AVIESAN alliance for health sciences. INCa is grateful to these partners for their contribution to the conference scientific committee, conference presentations and discussions, as well as for their support in disseminating event-related information. Sarah Viehbeck's involvement in this project was enabled through funding from the Canadian Institutes of Health Research-Institute of Population and Public Health (CIHR-IPPH). The views expressed in this paper are those of the authors and do not reflect those of CIHR.

## **Funding**

INCa, the French National Cancer Institute, provided funding and project management manpower to make this conference happen

## **Availability of data and materials**

Data sharing not applicable to this article as no datasets were generated or analyzed.

## **Authors' contributions**

BA, LP and HN drafted the manuscript. All authors revised and approved the final manuscript.

**Competing interests**

The authors declare that they have no competing interests.

**Consent for publication**

Not applicable.

**Ethics approval and consent to participate**

Not applicable.