

Clinical Population Medicine: Integrating Clinical Medicine and Population Health in Practice

Aaron M. Orkin, MD, MSc, MPH,
CCFP(EM), FRCPC¹⁻³

Aamir Bharmal, MD, MPH,
FRCPC^{2,4}

Jenni Cram, MD, MPH, CCFP²

Fiona G. Kouyoumdjian, MD,
MPH, PhD, CCFP, FRCPC^{5,6}

Andrew D. Pinto, MD, MSc, CCFP,
FRCPC^{2,3,6,7}

Ross Uppsur, MD, MA, MSc, CCFP,
FRCPC^{2,8}

¹Schwartz/Reisman Emergency Medicine
Institute, Sinai Health System, Toronto,
Ontario

²Division of Clinical Public Health, Dalla
Lana School of Public Health, University of
Toronto, Toronto, Ontario

³Department of Family Medicine, Faculty of
Medicine, University of Toronto, Toronto,
Ontario

⁴Fraser Health Authority, Surrey, British
Columbia

⁵Department of Family Medicine, McMaster
University, Hamilton, Ontario

⁶Centre for Urban Health Solutions, Li Ka
Shing Knowledge Institute, St. Michael's
Hospital, Toronto, Ontario

⁷Department of Family and Community
Medicine, St. Michael's Hospital, Toronto,
Ontario

⁸Lunenfeld-Tanenbaum Research Institute,
Sinai Health System, Toronto, Ontario



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CORRESPONDING AUTHOR

Aaron Orkin, MD, MSc, MPH, CCFP(EM),
FRCPC

Department of Family & Community
Medicine

Schwartz/Reisman Emergency Medicine
Institute

600 University Avenue
Toronto, Ontario, M5G 1X5
aorkin@gmail.com

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INTRODUCTION

The integration of clinical care and population health is a priority for health planners, researchers, and practitioners. Health care systems are judged against the Triple Aim challenge to improve patient experience and curtail health care expenditures while improving population health.¹ Meanwhile, public health departments and agencies face growing pressures to not only to prevent disease, but to work with health care systems to address growing medical complexity, urgent health inequities, and an aging population.^{2,3} Planners and policy makers have called for "integrators," institutions and practitioners equipped to deliver care that meets the needs of both patients and communities.¹

Some fear that blending population health with health care institutions and patient care imperatives might divert scarce public health resources into burgeoning clinical budgets. Others argue that attending to population health in clinical settings undermines patient-centered medicine, ushering in an era of rationed, bureaucratic care.⁴⁻⁷

Rather than reciting and weighing these already well-rehearsed arguments, this first virtual issue of *Annals of Family Medicine* takes a different approach (<http://AnnFamMed.org/cgi/collection/clinicalpopulationmedicine>). Instead of questioning whether integrators ought to exist, we set out to showcase their successes and unite integrators into a community of practice we call "Clinical Population Medicine" (CPM). CPM is the conscientious, explicit, and judicious application of population health approaches to care for individual patients and design health care systems (Table 1). CPM integrates clinical care and community health by engaging with both patients and populations simultaneously. CPM practitioners are *integrators* from any existing field of practice, who consider and deliver every aspect of their care for the mutual benefit of individual patients and the prevention and treatment of illness in the entire community. Just like public health institutions work outside the health care sector to improve health, influence the determinants of health, and redress health inequities in municipalities, schools, and the built environment, CPM brings this same approach to health care systems, clinical institutions, and bedside clinical care to improve health and diminish health inequities.

CLINICAL POPULATION MEDICINE: INTEGRATORS IN PRACTICE

From the 985 papers in the *Annals of Family Medicine* archives published from 2003, when the journal was established, to May 2016, we identified 127 that fit our definition of CPM (Supplemental Appendix 1, <http://www.annfammed.org/content/15/5/405/suppl/DC1>). We categorized these papers as they apply to the Centers for Disease Control core functions

Table 1. Clinical Population Medicine (CPM): What it Is and What it Is Not

Clinical Population Medicine is the conscientious, explicit, and judicious application of population health approaches to care for individual patients and design health care systems.

Clinical Population Medicine is:

- a deliberate practice applied by practitioners and institutions
- engaged health care institutions that reduce health inequity through improved access, health promotion, and disease prevention
- using patient and population level data to deliver immediate and accessible indicators for clinical decisions and system design that are responsive to changing community health needs
- grounded in the science of epidemiology and medicine, and the practices of public health and clinical care

Clinical Population Medicine is not:

- a threat to patient-centered clinical care through rationing or undermining patient or clinician autonomy
- a substitute for comprehensive, multi-sector public health practice
- limited to partnerships between public health institutions and health care institutions
- a new medical specialty or discipline limited to specially trained practitioners
- the same as health services research or quality improvement

of public health (health assessment, policy development, and assurance) and the Public Health Agency of Canada's essential functions of public health (health protection, health promotion, population health assessment, disease and injury prevention, and health surveillance) in clinical settings (Table 2).⁹⁻¹⁸ We curated this virtual issue by selecting 10 papers to showcase the breadth of CPM practice. These papers might have been developed and presented as research initiatives or commentary, but this virtual issue is an opportunity to consider them together as CPM in practice.

Health Assessment

Trachtenberg et al used population health assessment approaches to investigate socioeconomic variables and their impact on hospitalization.¹² They examined the association between socioeconomic status and respiratory hospitalizations in administrative data, finding that disparities in income could not be explained by differences in demographics, ambulatory care utilization, or physician characteristics. They conclude that policy makers and clinicians must look beyond the health care system and toward the social determinants of health to reduce hospitalizations in the poor. Likewise, Naessens et al used population health assessment to investigate risk factors for persistently high use of the primary care system.¹¹ Their findings suggest that high users have underlying social problems that are not addressed by conventional medical approaches.

Sloane et al and Williamson et al demonstrate the enormous potential of clinical records for health surveillance. Using administrative data, Sloane et al showed that surveillance systems can be built directly within office practice settings to improve both individual patient care and community health.¹⁰ Williamson et al validated the use of electronic health record systems for chronic disease surveillance through the Canadian Primary Care Sentinel Surveillance Network.⁹ In continuing practice, CPM could translate these research findings into ongoing assessment and

surveillance systems to guide health care planning and implementation.

Policy Development

We identified several pieces related to policy development, especially efforts to mobilize and evaluate community partnerships to identify and solve health problems. Thom et al conducted a randomized controlled trial demonstrating that an office-based health promotion program involving peer health coaching can extend the capacity of primary care and improve patient outcomes.¹³ Mainous et al described a community-based intervention led by a department of family medicine to decrease antibiotic self-medication among Latino adults, demonstrating that clinical interventions can play a role in addressing health hazards and affecting the uptake of potentially harmful behaviors.¹⁴ These integrators have delivered CPM programs and influenced policies that empower and educate individuals and mobilize communities toward shared health goals. These approaches can address vexing health problems like antibiotic stewardship, where community health benefits can come into conflict with individual patient care. Similarly, Rosenblatt's commentary urges physicians to use their influence to impact the ecologic determinants of health by shaping community economic activities and influencing policies on reproduction options, locally and globally.¹⁵

Assurance

Kiran et al found that a pay-for-performance incentive was costly and did not impact cancer screening rates in Ontario, Canada.¹⁶ Roetzheim et al conducted a randomized controlled trial to study the impact of an office-based method to increase cancer screening services for low-income populations.¹⁷ They found their office kit and chart organization system improved cancer screening uptake. These findings highlight the value of rigorous program evaluation, as well as targeting interventions to underserved populations.

Jerant et al conducted a study where patient-reported attributes of primary care access were linked to mortality data.¹⁸ The authors determined there was an association between the patient-centeredness, comprehensiveness, and accessibility to primary care and lower mortality.

Findings like these can translate directly into systems that drive mortality reductions by linking patients to appropriate health care services.

CLINICAL POPULATION MEDICINE: WHAT IT IS AND WHAT IT IS NOT

CPM brings public health core functions into health care—health assessment, policy, and assurance—often with the deliberate goal of improving health equity. Taken together, the papers in this issue demonstrate that the expertise and innovation exists to integrate clinical care and population health. The papers in this virtual issue show how these promising and important initiatives serve both patient and community health, and are shaping a form of practice

that enhances both patient-centered clinical care and population health.

Some might wonder whether clinical population medicine represents a threat to patient-centered clinical care and independent public health agencies, or question CPM as an unwelcome new discipline in the already overspecialized landscape of health professions. There is nothing in the selected papers to support the idea that CPM threatens the values of patient-centered care or the good work of existing public health institutions. Jerant and colleagues provide explicit support for patient-centered care by demonstrating a clear association between the patient-centeredness of medical care and mortality. Other papers in this issue show how CPM practice might augment the core work of public health agencies in areas ranging from chronic disease surveillance to antibiotic stewardship. We see CPM emerging not as a new medical specialty, but as a way of practicing, applicable to any existing health profession or discipline. Though CPM is perhaps most apparent in the ideas presented in a leading primary care journal,

Table 2. Characterizing Clinical Population Medicine (CPM) Articles to the CDC Public Health Core Functions and PHAC Essential Functions of Public Health

CDC Core Function and Definition	CPM Exemplars in This Virtual Issue	PHAC Essential Function
Assessment <ul style="list-style-type: none"> • Monitor health status to identify and solve community health problems • Diagnose and investigate health problems and health hazards in the community 	Williamson et al, 2014. Validating the 8 CPCSSN case definitions for chronic disease surveillance in a primary care data base of electronic health records ⁹	Health Surveillance
	Sloane et al, 2006. Syndromic surveillance for emerging infections in office practice using billing data ¹⁰	Health Surveillance
	Naessens et al, 2005. Predicting persistently high primary care use ¹¹	Population Health assessment
	Trachtenberg et al, 2014. Inequities in ambulatory care and the relationship between socioeconomic status and respiratory hospitalizations: a population-based study of a Canadian city ²	Population Health Assessment
Policy Development <ul style="list-style-type: none"> • Inform, educate, and empower people about health issues • Mobilize community partnerships to identify and solve health problems • Develop policies and plans that support individual and community health efforts 	Thom et al, 2013. Impact of peer health coaching on glycemic control in low-income patients with diabetes: a randomized controlled trial ¹³	Health Promotion
	Mainous et al, 2009. A community intervention to decrease antibiotics used for self-medication among Latino adults ¹⁴	Health Promotion
	Rosenblatt, 2005. Ecological change and the future of the human species: can physicians make a difference? ¹⁵	Disease and Injury Prevention
Assurance <ul style="list-style-type: none"> • Enforce laws and regulations that protect health and ensure safety • Link people to needed personal health services and assure the provision of health care when otherwise unavailable • Assure competent public and personal health care workforce • Evaluate effectiveness, accessibility, and quality of personal and population-based health services • Research for new insights and innovative solutions to health problems 	Kiran et al, 2014. Effect of payment incentives on cancer screening in Ontario primary care ¹⁶	Disease and Injury Prevention
	Roetzheim et al, 2004. A randomized controlled trial to increase cancer screening among attendees of community health centers ¹⁷	Health Protection
	Jerant et al, 2012. Primary care attributes and mortality: a national person-level study ¹⁸	Population Health Assessment

CDC = Centers for Disease Control and Prevention; PHAC = Public Health Agency of Canada.

we see it thriving in other areas ranging from surgery to radiology, perinatology to palliative care.¹⁹⁻²² The papers in this virtual issue distinguish CPM from conventional clinical practice and the work of existing public health agencies. CPM may share methods with health services research and quality improvement, but is equally distinct from these nonclinical practices. CPM is a way of practicing in medicine and delivering care, but is neither a new medical specialty nor a redundant expression of existing concepts (Table 1).

Whether or not clinical practice and population health ought to be more closely aligned, and whether or not clinical institutions ought to be concerned with population health, the papers in this virtual issue show that numerous integrators are already at work developing initiatives that merge clinical medicine and population health. CPM has moved beyond rhetoric and into practice. The remaining question is how to support and enhance CPM so that serving patients together with communities becomes part of regular practice.

NEXT STEPS

Achieving ongoing effective CPM practice will require leadership with the will and skill to express population health priorities deliberately in health care institutions and practice.

Accountable Care Organizations and emerging Accountable Care Communities in the United States are incentivized to improve the health of the population within their jurisdiction.^{4,6} Regional health authorities in some Canadian settings include population health and health equity in their mission and vision statements.²³ Globally, health services built on the principles of community-oriented primary care draw local epidemiology and community needs into clinical services.²⁴ These are essential steps to define health systems with the impetus and mission to marry clinical practice with population health.

A skilled CPM workforce can emerge only if clinical practice and population health are embedded and integrated deliberately in both clinical and health administrative educational programs. The existing parallel but largely segregated education streams for public health professionals and clinicians cannot achieve this goal. The Lancet Commission on transforming education identified this kind of integrative capacity as a critical gap in existing pedagogy.

Health professionals should be educated to participate in population-centered health systems.²⁵ These professionals must be positioned to lead the implementation of CPM practice within health organizations, ranging from local primary care clinics, to academic hospitals, and up to regional and national health care

systems. They must also be supported through a community of practice suited to refine and advance CPM, while making CPM skills and practice available to all patients and institutions. Health care organizations can prompt these innovations by positioning practitioners with CPM skills among their leadership team.

Creating departments of CPM within hospitals and health institutions is an additional opportunity to develop a community of practice among professionals working in this area, and to ensure that CPM capacity is available to serve. CPM leaders can direct the delivery of population-based preventive and health promotion services, to champion population health approaches in health systems design, and to develop intersectoral partnerships for population health.^{23,26}

Conclusions

It is time to move beyond debates about whether clinical practice and population medicine should be more closely aligned. This virtual issue offers a glimpse into the extraordinary opportunities and expertise already available in CPM. The question is not whether CPM should exist, but rather how to create and support the integrator practitioners and institutions that can deliver CPM expertise, and how to use them to serve our patients, health systems, and communities. With the right support and community of practice, CPM can spark innovations and solutions to the urgent problems at the interface of population health and clinical practice.

To read or post commentaries in response to this article, see it online at <http://www.AnnFamMed.org/content/15/5/405>.

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