The Specialty Population Health Milestone-Based Curriculum

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INTRODUCTION

Many professional associations and other expert commentators are calling for physicians to effectively manage the health of a defined group of people, whether a geographic community, a clinician's designated patient panel, patients with a particular disorder, or another cohort with some defining characteristics (Maeshiro, R et al. 2010).

If this vision is to be realized, population health needs to be codified among the competencies that physicians are expected to demonstrate by the completion of graduate medical education training. The standards shaping physician GME training now include "milestones" defined by the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS) (Holmboe, Edgar, and Hamstra, n.d). The objective of the work presented here was to identify the population health content within these milestones, in order to:

1. Highlight the importance of population health in medical training.
2. Extract those aspects of population health that are sufficiently important to medical specialties to be considered for inclusion in a core or generic set of population health milestones.
3. Form a basis for mapping potential curricular content and assessment strategies to the generic milestones.

BACKGROUND

The health status of Americans ranks well below that of other developed nations, even as our health care expenditures, as a proportion of Gross Domestic Product, are the highest (US Burden of Disease Collaborators 2013).

The US burden of chronic disease is increasing (Bauer, Briss, and Bowman, 2014) and health disparities remain large (Braveman et al., 2011). Interrelated social conditions, such as poverty, lack of education, and the built environment (e.g., sidewalks, grocery stores) are widely acknowledged to be the most important determinants of health, and are key to substantially improving the impact that quality medical care can have on health status (Frieden 2010). Moreover, chronic conditions (increasingly the major component of health care costs) cannot be addressed solely by the traditional clinical encounter, but require that individuals actively participate in choosing healthy behaviors and optimizing the care of their health conditions on a daily basis, and that their social and physical environments support self-management (Wagner 2010).

To effectively address these issues, clinicians must participate in population health, defined as, "studying and addressing of health outcomes in a meaningful group, including health outcomes and their distribution within the group, the patterns of health determinants, and the policies and interventions and other socioecological factors linking determinants and outcomes" (Kindig and Stoddart 2003). In recognition of this fact, several influential national organizations including the Institute of Medicine, the Centers for Disease Control and Prevention (CDC) , the Association of American Medical Colleges, and the Carnegie and Macy Foundations and the Academic Partnerships to Improve Health (APIH) have recommended that academic health centers align health professionals' education with the needs of the public (Frenk et al., 2011; Kreitzer, Kligler, & Meeker, 2009; New Report 2012; Thibault 2014; http://www.cdc.gov/ophss/csels/dsepd/academic-partnerships).

For over a decade, the ACGME Outcome's Project required that GME program directors teach and assess resident competence in six general dimensions of practice: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and system-based practice. In transitioning to ACGME's next accreditation system (NAS), each medical specialty board together with the ACGME Residency Review Committees (RRCs) defined milestones representing progressive mastery of specific skills within these competency domains typically along a continuum from Level 1 to Level 5. Seven specialties implemented milestones in July 2013. Most of the others started in July 2014, and virtually all of the remaining specialties will implement milestones over the next two years.

Program directors will report resident performance against milestones to the ACGME twice yearly. At the time of program completion it is anticipated (but not yet known) that residents will have achieved mastery of level 4 in most, if not all milestones. Level 4 generally involves being able to work independently and handle complexity. For most specialties, the fifth and final milestone level – often involving leadership or innovation -- is aspirational, to be achieved later during a clinician's career, if at all.

The goal of this project was to 1) Highlight the importance of population health in medical training. 2) Extract those aspects of population health that are sufficiently important to medical specialties to be considered for inclusion in a core or generic set of population health milestones. 3) Form a basis for mapping potential curricular content and assessment strategies to the generic milestones.

METHODS

A group of faculty representing family medicine, community health, pediatrics, internal medicine, and central graduate medical education (GME) independently reviewed the family medicine milestones, and then met to compare their lists of population health-related skills/knowledge in the family medicine milestones, and arrive at a consensus list. Through this process, they developed decision rules reflecting the logic behind the agreements. With this exercise in mind, one GME specialist from the group (board certified in family medicine) then reviewed the milestones for more than 40 medical specialties (posted to the ACGME website as of February 2014) to identify population health content.

The work presented here should not be seen as providing definitive lists of milestones with population health content. Rather it is a starting point to frame a broader discussion.   We acknowledge there are numerous gray areas to this work. For example, should the communication skills essential for a physician to communicate with individual patients be included in population health milestones, since being competent in communicating with an individual is foundational to communicating with a population? Should patient safety and quality milestones be included, since quality improvement efforts and error reporting by their very nature involve populations? Or would these concepts be more generally seen as their own content areas with sufficient attention and resources already directed to them, and not be recognized by others as specifically relevant to population health? Attempting to resolve these and similar issues would not have been appropriate for a small team representing only a small number of institutions and disciplines. Nor was it necessary, given the purposes described above. Rather, what we have to offer is one perspective on population health.

What follows are the major findings from our review and a discussion of representative milestones with population health content for several disciplines. They reflect the diversity of how milestones with population content are classified, as each of the four examples reflects a different GME competency: Patient Care, Systems Based Practice, Communication and Professionalism. An appendix to this report provides the milestones identified as including population health content for all of the specialties with published milestones available on the ACGME web site as of February 2014.

Individual specialties can review curricular resources and assessment tools suggested for the Population Health Milestones.

RESULTS
Major Findings

1. When is Population Health, Population Health?

There was lively debate on what should be counted as population health skill or content. Some panel members wished to include all competencies, believing that a physician is probably best equipped to care for a population once they can care for an individual patient. Should individual milestones reflecting the ability to conduct accurate history, physical examination, order appropriate tests, and communication among health team members regarding an individual patient be included as population health? In general our consensus was to identify only those milestones unique to caring for a population.

2. Should patient safety and quality milestones be included since they generally involve a population for whom care is being improved?

This issue, too, brought forward excellent discussion. In general the consensus favored recognizing the content overlap between patient safety and quality and population health.

However nationally there has been far greater faculty and program development around patient safety and quality. Resources, such as the Institute for Health Care Improvement Open School are broadly known and utilized. Similarly, safety and quality are two of the 6 Clinical Learning Environment Review (CLER) focus areas incenting a greater partnership between programs and their sponsoring institutions. There has been much less attention to population health principles beyond safety and quality. The initial analysis of the first round of CLER visits concluded that most "residents and fellows generally report having completed educational programs related to patient safety quality and professionalism. Over 80 percent residents report participation in education on patient safety (Weiss, K & Bagian, J 2014).

3. Are milestones for an individual meaningful in population health, given that providing population health requires the competencies of a team?

Teamwork is both a skill and an intentional strategy required to improve population health outcomes. Individuals must reach specific milestones on a variety of team competencies demonstrating the ability to effectively participate in, and at times, lead teams.

4. Are our proposed levels realistically leveled?

Many believed only a few primary care faculty are at greater than level 1 or 2 as described. The consensus was to describe a full spectrum of performance using a milestones framework and accept that programs and specialties may reasonably set their expectation at the conclusion of residency is only level 1 or 2.

5. Have we identified the right nomenclature?

Are our Milestones which we identified, truly "milestones", "competencies", "competency domains", or even "Entrustable Professional Activites (EPAs)"?

Do they better represent a 7th competency (in addition to patient care, medical knowledge, practice based learning and improvement, systems based practice, interpersonal communication and professionalism) or do they reflect components, concepts or elements embedded within these 6 existing competencies?

With the transition to competency based teaching and assessment there are several frameworks that have been adopted. The Accreditation Council for Graduate Medical Education (ACGME) initiated the outcomes project in 1998 and articulated the concepts of six core competencies in 1999 (Swing 2007). Canada's Royal College adopted the CanMEDS Framework a few years earlier in 1996, which has been adopted by countries on five continents (CanMEDs 2015).

Both ACGME and the Royal College have worked toward implementation of specialty specific milestones to better articulate the behaviors within each competency domain/role.

Entrustable professional activities (EPAs) are more explicit translations of these qualities to clinical practice, and potentially have greater utility in assessment of proficiency. EPAs are "units of professional practice, defined as tasks or responsibilities to be entrusted to the unsupervised execution by a trainee once he or she has attained sufficient specific competence… [they]… are independently executable, observable, and measurable in their process and outcome" (Ten Cate 2013).

We suspect this is a debate the community of users will decide. We have settled on attempting to identify the abilities we believe clinicians should demonstrate to best care for populations, even if only through the lens of the individual in the clinic or hospital.

Interestingly, none of the existing ACGME competencies or newly proposed CanMed roles explicitly identify the physician as caring for a population distinct from caring for an individual.

OUR FOUNDATION

All Physicians Care for Populations

We believe that all physicians care for populations. At the very least, they care for the population represented by the individual patient for whom they provide care. Increasingly their performance in caring for that population is benchmarked and the results widely shared. Performance metrics, including quality, cost, and satisfaction may form the basis for rewards, reimbursement, recognition and promotion. These metrics may be broadly disseminated on public websites and sought out by patients who may use them in part to decide where to obtain care. The extent to which this transparency enhances performance, however, is debatable (Lamb, Smith, Weeks, & Queram 2013; Gray, Vandergrift, Guodong, McCullough, & Lipper 2014).

Although not surprising, we identified at least one milestone for each specialty that we believed reflected population health. Some specialties had population health content distributed over a dozen milestones although only a minority of specialties explicitly used the terms population or population health. In this example from the Family Medicine milestones, Level 2 emphasizes behavioral and social determinants of health; Level 3 emphasizes linking the patient with the community, and Level 4 focuses on tracking and monitoring disease prevention and health promotion for the practice population. Level 5 requires integrating practice and community data explicitly to improve population health; and partnerships with the community to improve population health.

Family Medicine Milestones Patient Care-3

PC-3. Partners with the patient, family and community to improve health through disease prevention and health promotion.

Level 1	Level 2	Level 3	Level 4	Level 5
Collects family, social, and behavioral history Demonstrates awareness of recommendations for health maintenance and screening guidelines developed by various organizations	Collects family, social, and behavioral history Demonstrates awareness of recommendations for health maintenance and screening guidelines developed by various organizations	Explaining the basis of health promotion and disease prevention recommendations to patients with the goal of shared decision making Describes risks, benefits, costs, and alternatives related to health promotion and disease prevention activities. Partners with the patient and family to overcome barriers to disease prevention and health promotion Mobilizes team members and links patients with community resources to achieve health promotion and disease prevention goals.	Tracks and monitors disease prevention and health promotion for the practice population Integrates disease prevention and health promotion seamlessly in the ongoing care of all patients	Integrates practice and community data to improve population health Partners with the community to improve population health

Primary care specialties might be expected to include population health content. However, the following example from Plastic Surgery indicates that all physicians, not just those in primary care or treating chronic disease, recognize their care for populations.

Plastic Surgery Milestone-Systems Based Practice

Resource Allocation — Systems-based Practice				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Describes practice variations in resource consumption, such as the utilization of diagnostic tests	Describes the cost implications of using resources and practice variation	Participates in responsible use of health care resources seeking appropriate assistance	Practices cost-effective care (e.g., managing length of stay, operative efficiency)	Designs measurement tools to monitor and provide feedback to providers/teams on resource consumption to facilitate improvement

Beyond the individual patient, the physician is part of the aggregate care experience for all patients with that same condition, and physicians are increasing evaluated on the care provided for that population. Sometimes evaluation takes the form of publicly reportable measures. The physician may even be paid for performance. The surgical site wound infection rate for a given surgeon, for example, may be compared with all other surgeons within a hospital, within the hospital's health system, within the state, or even the entire United States or internationally.   Moreover, the treatment decisions of all physicians have an impact on the aggregate health care systems' costs. This Plastic Surgery milestone in Systems Based Practice recognizes the critical importance of physicians developing skills in recognizing practice variability and developing an awareness of cost.

Undersea and Hyperbaric Medicine is one of the smallest specialties. Yet their milestone within "Interpersonal and Communication" identifies the communication skills physicians require for individual patients and the public as well as vulnerable populations.

Undersea Hyperbaric Medicine Milestones-Interpersonal and Communication Skills

Patients, Families, and Public – Interpersonal and Communication Skills				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
Recognizes the importance of effective communication with patients, families, and the public across a broad range of socioeconomic and cultural backgrounds	Demonstrates effective communication with patients, families, and the public Engages in shared decision making when obtaining informed consent	Educates patients and the public regarding issues related to diving and hyperbaric medicine Effectively communicates with vulnerable populations, including patients at risk and their families	Communicates with patients and families regarding confidential medical information Educates the public regarding environmental risks (e.g., safe diving practices, toxic gas exposure)	Consults on undersea and hyperbaric issues outside of the local health care environment, such as with regional and national health care agencies

Orthopedic Hand Surgery is another small and very specialized discipline. Nonetheless, in the following example from that specialty, a Level 3 "Professionalism" milestone requires that their fellows "understand the beliefs, values, and practices of diverse and vulnerable patient populations and their impact on patient care"; Level 4 requires that fellows "develop a mutually agreeable plan" when patient and physicians values and beliefs when conflict; and Level 5 requires that fellows "develop programs to ensure equality of care in diverse vulnerable and underserved populations."

Ethics and Values — Professionalism

Level 1	Level 2	Level 3	Level 4	Level 5
Understands basic bioethical principles and is able to identify ethical issues in hand surgery	Recognizes ethical issues in practice and is able to discuss, analyze, and manage common ethical situations	Analyzes and manages ethical issues in complicated and challenging situations	Uses a systematic approach to analyzing and managing ethical issues, including advertising, billing, and conflicts of interest	Leads institutional and organizational ethics programs
Demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families	Demonstrates behavior that shows insight into the impact of one's core values and beliefs on patient care	Understands the beliefs, values, and practices of diverse and vulnerable patient populations, and the potential impact of these on patient care	Develops a mutually- agreeable care plan in the context of conflicting physician and patient values and beliefs	Develops programs to ensure equality of care in diverse, vulnerable, and under-served populations
Understands and manages the issues related to fatigue	Demonstrates management of personal emotional, physical, and mental health	Identifies and manages situations in which maintaining personal emotional, physical, and mental health is challenged	Recognizes signs of physician impairment, and demonstrates appropriate steps to address impairment in self and in colleagues	Develops institutional and organizational strategies to improve physician wellness
Exhibits professional behavior (e.g., reliability, industry, integrity, and confidentiality)	Recognizes individual limits in clinical situations and asks for	• Understands conflicting interests of self, family, and others, and their effects on the delivery of medical care	Prioritizes and balances conflicting interests of self, family, and others to optimize medical care	

At a minimum ACGME expects residents receive performance "feedback" regarding the resident's own population or practice. The annual ACGME resident survey can be used to benchmark a program's performance in providing these data compared with other programs in their specialty and institution

It contains a question on whether residents receive feedback on their practice habits. The expectation is that "residents should be provided with information such as surveys or comparative data to promote self-monitoring and to improve their clinical skills." For example, residents may be regularly provided information on their own population of patients compared to their peers, or their faculty/division/department. In some cases benchmarking to a national database is possible, such as for post-heart catheterization outcomes, for interventional cardiology fellows, (Tcheng & Sketch, personal communication) or surgical outcomes compared with the American College of Surgery NSQIP profiles. Some programs use pertinent CMS measures.

These reports may include information on volume: such as the number of tests/diagnostic images ordered, patient safety surveys, most common diagnoses or patient' demographics, adherence to disease-specific standard protocols, and productivity (such as number of patients seen or number of procedures performed). Surgical and other procedural specialties frequently employ case logs to document residents are acquiring sufficient experience with key procedures. Frequently benchmarked to national standards. This helps Programs proactively adjust resident experience, for example assigning patients with diabetes to an internal medicine resident's panel if they lack appropriate patients with chronic disease.

In the 2013-2014 ACGME resident survey, this was the lowest rated by the over 113,000 resident respondents. Only fifty nine percent of residents indicated they were provided data about proactive habits (By comparison, residents reported adherence to ACGME expectations from 59-100 percent; the next worst area was reported at 71 percent.)

A Program should review their residents' answers to this ACGME survey question and benchmark to their institution and to programs nationally to identify opportunities for improvement. (ACGME 2013-2014 Resident Survey)

The Clinical Learning Environment Review (CLER) with its 6 focus areas including efforts to reduce health disparities are another opportunity for resident integration into population health (ACGME 2013; ACGME 2014). CLER may be especially valuable in benchmarking GME involvement with the sponsoring institution related to health care disparities, and approaching disparities as a healthcare quality measure.

Core Population Health Competencies

In May of 2014, participants at a workshop at the annual meeting of the Society for Teachers of Family Medicine took the first step in developing a set of generic population health milestones using the four population health competency domains delineated by Kaprielian et al (2013): public health, community engagement, critical thinking, and team/leadership skills. These milestones are currently being revised by a small team – including the authors of this report -- through an iterative process involving feedback from a variety of stakeholders from public health, multiple medical specialties, non-physician clinicians, and others. Reviewing the population health content in the existing specialty milestones highlighted, for example, the importance of including the following in these generic milestones:

1. Engage patients, families, collaborators/stakeholders on population health improvement.
2. Recognize and address the needs of vulnerable populations, including those with inequitable health outcomes.
3. Appreciate the role of and/or practice advocacy in a variety of arenas, ranging from community programs to federal policymaking.
4. Analyze and reduce practice variation through understanding the drivers of health care costs.

CONCLUSION

There have been many calls to incorporate population health into future medical training. Our review of the ACGME milestones as of February 2014 indicated that population health is recognized -- to varying degrees -- across all specialties and across multiple competency domains, even if the term "population health" is not explicitly used. This review particularly highlighted the importance of including the following content in population health for all physicians: engagement/communication skills, understanding of vulnerable populations and health disparities/inequities, advocacy, and an awareness of practice variation and the drivers of health care costs.