



Transforming Patient Care: Aligning Interprofessional Education with Clinical Practice Redesign

Proceedings of a conference chaired by
Malcolm Cox, MD and **Mary Naylor, PhD, RN, FAAN**

January 2013 | Atlanta, Georgia

June 2013

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Atlanta, Georgia | January 2013

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PREFACE

GEORGE E. THIBAUT, MD

The idea for this conference grew directly from work the Macy Foundation has supported in the last several years and from observations we have made in visiting medical centers and academic institutions across the country. There is now a significant body of work that has demonstrated the feasibility and short-term success of interprofessional education (IPE) in many different settings and with learners at many different levels. At the same time healthcare delivery systems around the country are working to transform themselves to provide more efficient, more reliable, and more patient-centered care, employing team-based approaches. Yet rarely are the educational innovations connected to the practice redesign efforts. In April 2012, we convened all of our Macy grantees working on IPE,¹ and Don Berwick, our Keynote Speaker, challenged us to explicitly link our IPE efforts with achieving the “Triple Aim” of better care, better health, and lower costs.

Educational enterprises and healthcare delivery systems have evolved with different structures, incentives, and cultures. There have been insufficient opportunities for them to work and plan together, and it has not been as clear as it should be that both have the same goals— better patient outcomes and better health for society. Since there is so much change going on at this time and there is so much at stake, we thought this was a propitious time to convene educators and practice leaders around the themes of IPE, collaborative practice, and improved patient care. We charged them to address the question of what actions should be taken to more closely link educational reform and practice reform.

We commissioned a “frame-setting” paper and five case studies to create a platform for discussions by outstanding leaders from a variety of health professions, institutions, geographies, and perspectives. There were some differences of opinions, but common ground was found around the centrality of the patient and the community in defining the goals of a unified education and delivery system that could best serve them. Consensus emerged in the five domains that resulted in the recommendations, which were based on a common vision of a “health system in

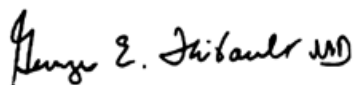
which learners and practitioners across the professions are working collaboratively with patients, families, and with each other to accomplish the Triple Aim.”

The recommendations are wide-ranging, and the conferees acknowledged that “we do not underestimate the magnitude of the changes in culture that will be required to accomplish all of these recommendations.” At the same time everyone felt great urgency in acting now at this critical moment if the evolving health care system is to accomplish the Triple Aim.

We are heartened that many of these recommendations resonate with those made at earlier Macy Conferences on IPE,² graduate medical education,^{3,4} and primary care⁵ and with the report of the recent Lancet Commission on global health professions education.⁶ We also are heartened that there is so much positive change going on already in health professions education and healthcare delivery. We believe much can be accomplished now at the local level, while simultaneously working on more comprehensive changes.

The conference and the recommendations benefited from the extraordinary leadership of the Co-Chairs, Drs. Naylor and Cox, and an extremely dedicated and talented planning committee. All the conferees made important contributions to the discussions and to the writing of the report.

We are looking forward to working with these colleagues, with the new National Center for Interprofessional Practice and Education, and with many other public and private organizations nationally to bring this vision to reality. Our goal is to create a health care system in which “all participants learn, all teach, all care, and all collaborate.”

A handwritten signature in black ink that reads "George E. Thibault MD". The signature is written in a cursive style with a small circle at the end of the last name.

George E. Thibault, MD

President, Josiah Macy Jr. Foundation

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INTRODUCTION

MALCOLM COX, MD
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CONFERENCE CO-CHAIRS

While islands of innovation persist, and some even flourish, the past 40 years is littered with failed efforts to deploy interprofessional education (IPE) throughout the health professions and across the learning continuum. Given this checkered history, how can we be sure that the current resurgence of interest in IPE is not just another fad that will wither in the crucible of health system reform? We would argue that this time we have gotten it right, arguably for the first time, in part by emphasizing the linkage between workforce reform and delivery system redesign and in part by emphasizing the role of patients, families, and communities in identifying the best path forward. These two themes dominated deliberations at the Conference and are strongly reflected in the recommendations for action.

We believe that health professions education and clinical practice are linked in a positively reinforcing “learning/caring” feedback loop. In fact they are continuously interacting variables, so that changes in one inevitably influence the other. Efforts to enhance the US health system by tackling either education or practice independently have been and will remain challenging. System-based improvements will only be fully realized when the potential impact of changing one or the other is given careful, proactive consideration. At each level of this complex adaptive system, myriad processes are subject to influence, analysis, and improvement. In a very real sense, these interactions were the “stuff” of the Conference, often being scrutinized in considerable detail. However, the participants kept returning to one central concept: the inextricable linkage between education reform and practice redesign.

Likewise, we believe that caring for and about patients, families, and communities should be the primary arbiter of efforts to improve and sustain individual and population health. Not, you may notice, “health care” but the much broader

construct, “health.” Putting patients at the center of all we do as clinicians and educators plays to the professionalism so deeply rooted in all health disciplines. And it provides real meaning to efforts to reform the clinical workforce, enhances effective and efficient delivery of care, and promotes health. Conference participants used this construct as the fulcrum for discussion and debate, never losing sight of the needs and expectations of patients, families, and communities, and placing the people served by our health system at the very center of the “learning/caring” feedback loop.

The Conference opened with a vision of a future in which the patient is an integral member of a team dedicated to the provision of high-quality and efficient services that match each individual’s and community’s healthcare goals. This was followed by a series of case studies, presented as exemplars of interprofessional care and learning, and focused on two reciprocal questions. How should interprofessional educational programs be designed to best meet the needs and expectations of patients, families, communities, clinical practices, and health delivery systems? And what changes in clinical practice and healthcare delivery systems are necessary to enable IPE? These presentations and the accompanying discussions set the scene—and the tone—of the Conference.

What finally emerged were the central elements of a new vision for collaborative care and learning. Five major recommendations, each with several enabling strategies, support this vision. They represent consensus, but not necessarily unanimity, on every point. From the beginning the goal was to provide an overall framework for action rather than detailed action plans. In formulating this framework, we concentrated on the importance of the alignment of IPE with collaborative care in health system redesign. General issues impacting education or practice, while important, were put aside in favor of issues and opportunities specific to the interprofessional theme of the Conference. Each of the recommendations stands by itself, but all are unified by the overall goal of linking IPE and delivery system redesign.

A work product of this scope would have been impossible without the active participation of the conferees, the thoughtful preparation and guidance of the planning committee, and the support of the Foundation itself. We are proud to

showcase their collective wisdom in this monograph. Most of all we hope that their efforts will transcend artificial distinctions across the health professions and focus leadership on the important task ahead.



Malcolm Cox, MD
Conference Co-Chair



Mary Naylor, PhD, RN, FAAN
Conference Co-Chair



CONFERENCE AGENDA

THURSDAY, JANUARY 17 EVENING

- 3:00 – 6:00** Registration
6:00 – 7:00 Welcome Reception
7:00 – 9:30 Dinner

FRIDAY, JANUARY 18 MORNING

- 7:00 – 8:00** Breakfast
8:00 – 12:30 **Session 1**
8:00 – 9:00 Opening remarks and brief introduction of participants
George E. Thibault, Mary Naylor, Malcolm Cox
8:00 – 9:00 Discussion of themes from commissioned paper
*Building a Workforce for the 21st Century Healthcare System by
Aligning Practice Redesign and Interprofessional Education*
Mark Earnest, Barbara Brandt
Moderator: David Irby
10:30 – 10:45 Break
10:45 – 12:30 Case Studies 1 & 2
Case Study 1: *Collaborating for Outcomes: Integrating Continuing
Interprofessional Education and Clinical Practice Redesign at
Kaiser Permanente*
Marilyn Chow – Kaiser Permanente
Case Study 2: *Interprofessional Learning and Team-Based Care
During a Primary Care Delivery System Redesign Initiative
at Group Health*
Eric B. Larson – Group Health of Puget Sound
Discussion of Cases: 1 & 2
Moderator: Stephen C. Schoenbaum

FRIDAY, JANUARY 18 AFTERNOON

12:30 – 4:30 Session 2

12:30 – 3:00 Working Lunch: Case Studies 3, 4 & 5

Case Study 3: *VA Boise Center of Excellence in Primary Care Education*

Judith L. Bowen – Oregon Health and Science University
and Department of Veterans Affairs

Case Study 4: *Role of Culture, Resources, Administrative Alignment, and Finances in a Model of Interprofessional Education and Practice: A Nexus Failure (University of Minnesota)*

Frank B. Cerra – University of Minnesota

Case Study 5: *Transforming Patient Care: Aligning Interprofessional Education with Clinical Practice Redesign (Geisinger Health System)*

Bruce Hamory – Geisinger Health System

Discussion of Cases: 3, 4 & 5

Moderator: Linda Headrick

3:00 – 3:30 Break

3:30 – 4:30 General Discussion of Themes of the Day

Mary Naylor, Malcolm Cox

4:30 Adjourn

FRIDAY, JANUARY 18 EVENING

6:30 – 9:30 Reception & Dinner at The Carter Center

SATURDAY, JANUARY 19 MORNING

- 7:00 – 8:00** Breakfast
- 8:00 – 12:30** **Session 3**
- 8:00 – 8:45** Brief recap of Day 1 and Charge to Breakout Groups
Mary Naylor, Malcolm Cox
- 9:00 – 11:00** Five breakout groups:
- Breakout 1
Culture: Different values, priorities, language, and patterns of communication
Facilitator: Linda Headrick
- Breakout 2
Accountability: Different accountability structures and measures of success
Facilitator: Stephen Schoenbaum
- Breakout 3
Resources: Different sources and uses of resources; obstacles and constraints to unify these
Facilitator: Frank Cerra
- Breakout 4
Vision: Aligning vision, goals, and expectations
Facilitator: Marilyn Chow
- Breakout 5
Roles: Achieving clear role definition and appropriate flexibility
Facilitator: Linda Cronenwett
- 11:15 – 12:15** Report out from breakout groups
Moderator: David Irby

SATURDAY, JANUARY 19 AFTERNOON

- 12:30 – 1:30** Lunch
- 1:30 – 4:30** **Session 4**
- 1:30 – 4:30** Breakout groups reconvene
- Breakout 1
Patient, Family, Community Engagement
Facilitator: Linda Headrick

Breakout 2

Professional Development and Leadership

Facilitator: Stephen Schoenbaum

Breakout 3

Resources, Finances, and Incentives

Facilitator: Frank Cerra

Breakout 4

System Redesign

Facilitator: Marilyn Chow

Breakout 5

Regulations

Facilitator: Linda Cronenwett

4:30

Adjourn

SATURDAY, JANUARY 19 EVENING

6:30 – 9:30

Reception & Dinner at Davio's

SUNDAY, JANUARY 20 MORNING

7:00 – 8:00

Breakfast

8:00 – 11:45

Session 5

Conference Conclusions and Recommendations

George E. Thibault, Mary Naylor, Malcolm Cox

11:45 – 12:00

Summary Remarks

George E. Thibault

12:00

Adjourn

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CONFERENCE CONCLUSIONS AND RECOMMENDATIONS

TRANSFORMING PATIENT CARE: ALIGNING INTERPROFESSIONAL EDUCATION WITH CLINICAL PRACTICE REDESIGN

Rapid redesign of healthcare delivery, stimulated in part by the Affordable Care Act, is occurring alongside, but independently of, health professions educational reform. On the delivery side, change is being driven by three simultaneous aims: improving the patient's experience of care, improving the health of individuals and populations, and reducing the per capita cost of health care (the "Triple Aim"). On the education side, there is growing awareness of the importance of achieving team-based clinical competencies as an essential public good. Key to these efforts is the recognition that health care today involves professionals working together in collaborative, interdependent care systems and in partnership with the people served by these systems.

Missing from these many laudatory and innovative efforts is the ability to connect practice redesign with interprofessional educational reforms. Historically, health professions education and healthcare practice have developed and functioned separately, with little recognition that the two are inextricably linked.

In recent years, the Josiah Macy Jr. Foundation has promoted change in health professions education, focusing particularly on interprofessional education. This work is based on the belief that healthcare professionals who learn about, from, and with each other will be more likely to develop the competencies needed to work effectively together to care for patients and communities. The Foundation believes that this educational reform effort must be coordinated with related efforts to redesign healthcare delivery to be team-based and responsive to individual, family, and community needs. The two realms should not be changed in isolation.

Educational reform must incorporate practice redesign, and delivery system change must include a central educational mission if we are to achieve enduring transformation.

Making this important linkage between interprofessional education and collaborative practice will create an environment within which all participants learn, all teach, all care, and all collaborate. It invites recognition that better outcomes for individuals and populations; better quality, safety, and value within healthcare systems; and better education, training, and life-long professional development of healthcare workers are all connected. It also expresses the responsibility of all healthcare professionals to meet the needs of the individuals, families, and communities they serve as their highest goal, by developing and sustaining a culture of mutual respect between and among the different health professions.

In January 2013, the Foundation brought leaders in health professions education and healthcare delivery together to discuss how they might align their efforts to connect great learning and great practice. Conference participants discussed a commissioned paper that lays out a vision for a high-functioning healthcare system with empowered patients and engaged teams of practitioners and learners. They also discussed case studies featuring interprofessional education and collaborative practice efforts currently underway.

During the conference, participants reached a consensus vision for the joint future of healthcare education and practice: **We envision a healthcare system in which learners and practitioners across the professions are working collaboratively with patients, families, and communities and with each other to accomplish the Triple Aim.** Participants agreed that this vision is achievable if all sectors of the education and practice communities work together with mutual respect and professionalism.

Based on this shared vision, conference participants crafted recommendations for immediate action in five areas:

1. Engage patients, families, and communities in the design, implementation, improvement, and evaluation of efforts to link interprofessional education and collaborative practice.

2. Accelerate the design, implementation, and evaluation of innovative models linking interprofessional education and collaborative practice.
3. Reform the education and life-long career development of health professionals to incorporate interprofessional learning and team-based care.
4. Revise professional regulatory standards and practices to permit and promote innovation in interprofessional education and collaborative practice.
5. Realign existing resources to establish and sustain the linkage between interprofessional education and collaborative practice.

The recommendations in each of these areas are presented below. They are interdependent and of equal importance; each one necessitates the others. While many more recommendations to improve the education and practice of health professionals were proposed and considered during the conference, we present only those that are directly related to achieving the linkage of interprofessional education and practice. We do not underestimate the magnitude of the change in culture that will be required to accomplish all of these recommendations. However, conference participants agreed that these steps must be taken if we are to achieve the Triple Aim of better care, better health, and lower costs.

Furthermore, because of the rapid changes already taking place and the constraints on further growth in healthcare costs, there is great urgency in meeting this need. While full implementation of these changes will involve actions beyond the scope of each educational institution or healthcare system, much can be accomplished today at the local level by the engagement of educational and healthcare delivery leaders in the spirit of this report. We urge everyone in a position of responsibility to take steps within their own areas of jurisdiction now, while also participating in the more general recommendations outlined.

RECOMMENDATION I

Engage patients, families, and communities in the design, implementation, improvement, and evaluation of efforts to link interprofessional education and collaborative practice.

If the alignment of education and practice is to be successful, it must be informed by the needs and preferences of the patients, families, and communities it serves. All of us — patients, families, communities, clinicians, faculty members, students, healthcare leaders, policymakers, and society at large — are part of the same healthcare system. And we all share the benefits when our healthcare system is aligned with and responsive to individual and collective needs.

A growing body of evidence demonstrates that incorporating patient preferences contributes to higher-value health care. Value also is enhanced when patients, families, and communities assume increased responsibility for factors influencing health. Thus, the future of health care should be one in which we all learn, all teach, all care, and all collaborate at every level of the healthcare system — from the development of policies to the daily interactions of patients and providers. This is a future first and foremost characterized by greater engagement.

Engagement refers to deliberate and consistent efforts by all healthcare professionals and healthcare systems to advance the central role of patients, families, and communities in defining what matters to them; to promote informed and shared decision making regarding plans of care; to foster shared accountability for actions related to these plans; and to assure reciprocal and respectful relationships. The ultimate goal is to assure that patient, family, and community perspectives inform system-level design of health professions education and patient care. Achieving this goal will require changing expectations for health professional competencies, accreditation standards, and the measurements used to gauge success.

1. Convene a national group to identify effective methods for patient, family, and community engagement in the design and evaluation of models linking interprofessional education and collaborative practice.

A public-private partnership of federal agencies and private foundations would be the ideal convener. The group's deliberations will be informed by the existing work of the Institute for Patient- and Family-Centered Care, the

Centers for Medicare and Medicaid Partnership for Patients, the Institute for Healthcare Improvement, the Patient-Centered Outcomes Research Institute, and local and national healthcare systems with experience in team-based care, such as the Geisinger Health System and the Veterans Health Administration. The group would engage educational institutions, healthcare systems, professional associations, and regulatory organizations in disseminating its results.

2. Ensure that expectations of patients, families, and communities inform the competencies used to guide the development of new models linking collaborative practice and interprofessional education.

Over the past decade, much effort has gone into the delineation of the professional competencies needed to achieve the Institute of Medicine's aims for health care: safe, timely, effective, efficient, equitable, and patient-centered. More recently, the Interprofessional Education Collaborative has defined the competencies most relevant to interprofessional learning and team-based care. Although the competencies reflect considerable professional wisdom, they should be further informed by patient, family, and community needs and expectations.

3. Revise accreditation standards to ensure input from patients, families, and communities.

Evidence that patient, family, and community voices influence the design, implementation, evaluation, and continuous improvement of systems of learning and care should be a prerequisite for successful accreditation. Accrediting bodies for education and healthcare should revise their policies to incorporate standards of patient and community engagement.

RECOMMENDATION II

Accelerate the design, implementation, and evaluation of innovative models linking interprofessional education and collaborative practice.

Innovators already are designing new models linking interprofessional education and collaborative practice. In order to achieve widespread alignment of education and practice redesign, many more approaches must be developed. Robust evaluation tools that can be used to link successful models to improved outcomes and to accelerate the spread of those models also are needed.

These early models should be classified on the basis of their key attributes, learning impact, patient and population health outcomes, and effects on healthcare costs. Successful models could then serve as prototypes for launching and testing additional models. Lessons learned should be rapidly disseminated, so that progressively more sophisticated education-practice partnerships can be developed in the future.

Broadly based coalitions with a shared vision and a common understanding of priorities are needed to advocate for this effort. Creative approaches to patient and community engagement and explicitly designed measures for success are needed. Such coalitions must include academic health centers, large healthcare systems, community health organizations, and advocacy groups.

1. Develop broadly based coalitions to align education and clinical practice.

Broadly based coalitions must help inform the operational design of the education-practice interface. Private-public partnerships among government agencies and foundations can facilitate further creation of these coalitions. The National Center for Interprofessional Practice and Education is the result of such a public-private partnership. The Robert Wood Johnson Foundation's Aligning Forces for Quality initiative also could be a force for linking interprofessional education and practice.

Among the key stakeholders for these coalitions are: patients, families, community leaders, academic health centers and other health professions schools, health systems, community health organizations, public health

and social services agencies, and local chapters of health professional organizations. Students and their local and national professional organizations are powerful forces for change and should be included as well.

The National Center for Interprofessional Practice and Education will be an appropriate locus for some of this work. However, many other initiatives will be needed at the local, regional, and national levels. National professional organizations (such as the Interprofessional Education Collaborative) and national quality organizations (such as the Institute for Healthcare Improvement and National Quality Forum) should provide guidance and assistance.

2. Develop scenarios to advance alignment between interprofessional education and collaborative practice.

The scenario-building process should start with the development of a shared vision around the core values of achieving the Triple Aim through interprofessional education and collaborative practice. Because educational and practice resources will continue to be constrained, it is essential that new, creative scenarios for the education-practice interface be developed without delay. The alignment between education and practice must be explicit and interdependent, and improvement must be viewed as a shared responsibility. The goal is to build new models linking education and practice that bring real and measurable value to individual and population health.

3. Develop metrics to evaluate the impact of models linking education and practice on learning, on patient and population health, and on healthcare costs.

There is a paucity of rigorous measures to evaluate the impact of linking interprofessional education and collaborative practice. There is a need to support new scholarship in this area, including the development of evaluation protocols that go beyond process measures and identify the most effective models, tying them to the Triple Aim outcomes. There also is a need to apply known scholarship in teamwork from other fields, such as business and education, to health care. The Centers for Medicare and Medicaid Services, the National Institutes of Health, the Patient-Centered Outcomes Research Institute, the National Quality Forum, the Health

Resources and Services Administration, and the Agency for Healthcare Research and Quality should all share an interest in supporting this work in partnership with private foundations. Academic institutions and healthcare systems need to recognize the importance of this work in allocating resources and in promotion policies.

RECOMMENDATION III

Reform the education and life-long career development of health professionals to incorporate interprofessional learning and team-based care.

An alliance of education and practice will only be successful if the healthcare workforce is appropriately prepared for collaborative work. This must begin with pre-licensure education and continue for a professional lifetime. Professional development must become a shared responsibility of educational institutions and healthcare delivery systems.

Increasing numbers of healthcare system leaders and policymakers have recognized that achieving the Triple Aim will require more widespread adoption of new models of interprofessional education and collaborative practice. Despite this knowledge, health professions education still inadequately values interprofessional education and learning in team-based care. To change this will require a partnership of teaching institutions and delivery systems to create learning environments and teachers that model interprofessional collaborative practice.

1. Incorporate interprofessional team-based competencies into all health professions education programs.

Adopting or modifying existing interprofessional competencies—such as those issued by the Interprofessional Education Collaborative—should be undertaken without delay. Common language and standards need to be developed and incorporated into policies for professional certification and institutional accreditation across the health professions and across the continuum of education.

Similar work needs to be done by delivery-system accrediting bodies, such

as the Joint Commission and National Committee for Quality Assurance, and incorporated into credentialing and privileging policies and procedures for hospitals, medical homes, and healthcare organizations. Competencies can be revisited periodically as better ways to enhance interprofessional learning and team performance become available.

The National Center for Interprofessional Practice and Education should work collaboratively with the Interprofessional Education Collaborative and other professional and educational organizations to build a repository of robust case studies and implementation strategies for the competencies.

2. Expand faculty development programs to prepare health professionals for effective interprofessional learning, teaching, and practice.

Relatively few health professions faculty have participated in interprofessional education programs. Traditionally trained educators and health professionals, whether in academic health centers or community-based settings, are generally unable to model interprofessional competencies or mentor students in collaborative work across professions.

The Macy Foundation has supported a pilot interprofessional faculty development program, and the Interprofessional Education Collaborative has hosted several faculty development institutes. Broad expansion of these types of efforts will be necessary. Cataloging best models and lessons learned should be one of the priorities of the National Center for Interprofessional Practice and Education.

3. Incorporate interprofessional team-based competencies in performance reviews of health professionals in clinical and academic settings.

Performance feedback should be provided with an eye to interprofessional as well as professional competence. Institutional, professional, and government licensure review processes should all incorporate interprofessional elements in their frameworks. In addition and where appropriate, faculty evaluations should include feedback from both students and patients regarding teaching of team-based competencies.

4. Develop new models of clinical education to prepare health professionals for team-based care.

The clinical education of health professionals is fragmented and discontinuous. Newer educational models that emphasize continuity of patient care over time and across settings should be replicated. Increasing the number of longitudinal, team-based experiences will lead to greater opportunities for students to build relationships with patients, families, teachers, and other clinicians. Wider deployment of such models would increase opportunities for interprofessional training experiences and better prepare students for team-based care.

RECOMMENDATION IV

Revise professional regulatory standards and practices to permit and promote interprofessional education and collaborative practice.

If the alignment of interprofessional education and collaborative practice is a goal of the healthcare system, then professional regulation should reflect that goal. Efficient models of care and education take advantage of significant overlaps in knowledge, skills, core commitments, accountabilities, and professional imperatives of the different health professions. Good teamwork requires team members to understand and agree upon their roles and to encourage each other to function at the highest levels of their education and training.

This currently is not always the case for all health professionals or all healthcare delivery systems. But, when these conditions are met, interprofessional clinical education is possible, and health professionals learn how to contribute their unique strengths to achieve the Triple Aim. When these conditions are not met, professionals learn to function in silos and are less likely to develop the skills needed to collaboratively improve health and health care.

1. Revise accreditation and certification standards to eliminate barriers to efficient and effective team-based care and clinical interprofessional education.

Standards and policies of accrediting and certifying bodies should be revised so that they require interprofessional education and training in collaborative team-based care, promulgate policies that approve the use of interprofessional faculty members and preceptors, and allow acceptance of interprofessional continuing education courses.

Health professionals should be able to teach students based on their areas of expertise and scopes of practice rather than simply on the basis of their professional backgrounds. Learners should be able to accrue credit towards certification and re-certification based on the relevance of the learning experience to their practice, and faculty from all health professions should be able to contribute to the experience of all learners.

2. Revise state and federal laws and regulations to eliminate barriers to efficient and effective team-based care.

Regulatory policies generally lag behind advances in healthcare education and clinical quality improvement methods. Legislators, governors, attorneys general, professional societies, and patient and community advocacy groups, while mindful of their obligation to protect the public, should advocate for regulatory relief so that health professionals receive appropriate training to function in interprofessional teams at the highest levels of their education and training. There is an urgent need for collaboration across the health professions to update state licensure practice acts and scope of practice regulations.

3. Create incentives for institutional privileging policies that support linking efficient and effective team-based care and clinical interprofessional education.

Innovations in interprofessional education and collaborative practice—and ultimately the achievement of the Triple Aim—are often impeded by institutional decisions about professional privileges. Institutional privileging should be based on documented training, certification and licensure, and demonstrated expertise within legal scopes of practice. Restrictions that artificially limit patient (and learner) access to the full variety of health professionals qualified to provide care inhibit innovations in team-based care and interprofessional education.

Institutions may need incentives to open up practice privileges to the full extent of applicable laws and regulations. Accreditors, such as the Joint Commission and insurers/payers, including Medicare and Medicaid, could help by requiring non-exclusionary privileging practices as a part of accreditation or insurance contracts.

RECOMMENDATION V

Realign existing resources to establish and sustain the linkage between interprofessional education and collaborative practice.

The alignment of interprofessional education and practice can take place only if current resources are reconfigured to accomplish this goal. It must become the new way of doing business to achieve the Triple Aim.

Transformation of the US healthcare system will require new financial models and creatively aligned incentives. The resources available for change include financial and human assets provided by government and the private sector. These resources, which currently are widely scattered and poorly coordinated, reside in healthcare delivery systems, educational institutions, health insurance companies, private foundations, and public agencies and the communities they serve, to name but a few.

Creating an effective, efficient, and sustained linkage between interprofessional education and collaborative practice will require that all resources be brought “to the table” and shared in support of the Triple Aim. It will require the development of new incentives, including innovative payment systems, to motivate participants engaged in system redesign. And it will require training and, where necessary, retraining in systems-based practice, performance improvement, and public health – all conspicuously underrepresented in the education of most health professionals today.

Transformative change will require substantive engagement of health system executives, educational leaders, insurers, and professional organizations, as well as students and users of health services. Health system administrators and education

and training program directors should be included, along with clinical professionals, patients, families, and community advocates. Together they will need to negotiate the use of resources across organizational boundaries, redirecting existing resources and identifying new resources where possible.

1. Delineate the resources presently or potentially available for supporting the linkage of interprofessional education and collaborative practice.

Understanding the resources for clinical education will be essential in determining how they might be shared more effectively in the future. At each site, this will require an environmental scan of existing and potential resources. This should include the type, source, and ownership of all relevant resources and whether and how they are being used to promote effective linkages between interprofessional education and collaborative practice.

Health system assets include delivery systems, service lines, facilities, their own education programs, contracting services, information systems, providers, administrators and support personnel, quality improvement systems, and financial resources. Educational system assets include expertise in teaching and learning, evaluation systems, research and reporting, learners in the health professions, clinical faculty expertise, affiliation networks, accreditation linkages, and financial resources. Community and public resources include primary care networks, federally qualified health centers, visiting nurse associations, faith-based organizations, and local health departments.

2. Develop new models of resource sharing among organizations that integrate interprofessional education and practice.

New models of shared governance, organizational management, and accountability must be developed, as well as new approaches to reallocating resources between practice and educational partners and across relevant health professions. New model formation is anticipated to happen predominantly at the local level, but buy-in at organizational and policy levels will be essential as well.

At the local level, educational and practice institutions will need to plan, implement, and evaluate model teams of integrated learners, including

where they are deployed and what will be the expected outcomes for teams and individuals, the evaluative approaches used, and the expected impact on the Triple Aim. Within these new models, incentives for those engaged in care provision and workplace learning need to be aligned to achieve sustainability.

These efforts will need human and financial resources to promote and achieve alignment of incentives, establish sustainable decision making, and provide oversight of the education-practice interface resulting from the overlap between participating practice and educational institutions.

3. Demonstrate a positive value proposition for linking interprofessional education and practice.

Achieving these new models requires each institution to assess the expected value added and create a plan to achieve that value. It requires reallocating resources from programs not adding value, and providing some up-front investment that can be recovered from achieving the Triple Aim. Individual value propositions may vary, but an effective business case, including a positive return on investment and a plan for continuous improvement, is essential. Savings garnered from achieving the Triple Aim need to be reinvested in further enhancing the practice and education interface.





COMMISSIONED PAPER

BUILDING A WORKFORCE FOR THE 21ST CENTURY HEALTHCARE SYSTEM BY ALIGNING PRACTICE REDESIGN AND INTERPROFESSIONAL EDUCATION

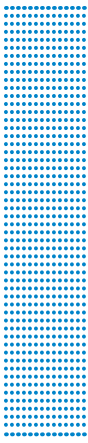
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AMINA AND A VISION OF THE “NEW NEXUS”

Imagine a few years from now, as the sun rises outside, Amina, a young Somali refugee mother with juvenile onset diabetes, pricks her finger. Sitting in her urban apartment in an affordable housing complex, she squeezes the finger and raises a drop of blood that she carefully places on a device to measure her blood sugar. With this act she sets in motion a system of health care and learning that has been carefully constructed around her. Amina doesn't know it, but she is a member of a team of clinicians, university faculty, health professionals-in-training, and members of her community who are continuously working and learning together to keep her healthy so she can care for her young children and thrive in her new country.

The local university and a federally qualified health center (FQHC) that recently integrated into the region's largest health system created a “learning and healthcare delivery” partnership, called “The Nexus,” with the Somali Community Development Alliance (SCDA). Through a shared vision, each partner benefits – meeting goals and needs that none of them could accomplish in isolation. The SCDA receives culturally competent and respectful health care for the Somali community as well as role models and an education pipeline for youth to promote health careers and create a new generation of Somali health professionals. The university is graduating health professionals who are “collaboration-ready” for the transformed healthcare system because they have learned their skills in the community and the closely aligned integrated health system focused on achieving the “Triple Aim”¹ articulated



by the Institute for Healthcare Improvement (IHI). The FQHC, a patient-centered medical home, has exceeded all its performance goals: its cost of care is down 20%, hospitalization rates have plummeted, emergency department utilization is at an all-time low, and most importantly, the community it serves, Amina's community, has health and survival statistics that are indistinguishable from the wealthy suburbs around it.

This partnership was initiated when university faculty members formed an institution-wide health science curriculum committee that included all stakeholders: faculty from all health professions, health system leadership, policymakers, students, and community members. The university senior leadership's charge, incentivized with resources, was to redesign and consolidate the health science curricula to meet the IHI Triple Aim. Today, from the first day of their professional programs, students across the university learn together in courses, rotate through communities in interprofessional teams, use state-of-the-art learning technologies, and are assessed for their team performance throughout their entire curriculum. By graduation, among other requirements, students must demonstrate the four Interprofessional Education Collaborative (IPEC) competencies for interprofessional collaborative practice: values and ethics, roles and responsibilities, communication, and teamwork.²

Amina is benefiting from the "Community as Curriculum" component of the program embedded in her FQHC. Over the course of their academic program, students now complete their experiential rotations in one integrated system of care that incorporates acute care settings, ambulatory clinics, transitional care units, patient-centered medical homes, and community settings. This carefully planned learning system allows them to experience a system's improvement cycles longitudinally, follow individual patients and populations to build healing relationships and understand the role of data in health, be immersed in diverse cultures, coordinate care across a variety of care environments, work with non-traditional care providers such as community health workers, and incorporate families into care. The team of students who will work with Amina today, integrated with the care team, are on their community rotation with a nurse practitioner as the preceptor of record. The FQHC's nurse practitioner can serve as the team preceptor of record because of "interchangeable precepting." This concept was made possible because licensure and maintenance of certification are now based upon point-of-care learning and demonstrated performance in team-based practice rather than the former system of profession-specific accreditation, certification, and licensure processes.^{3,4}

The medical, nursing, pharmacy, and occupational therapy students are completing their fifth rotation as a team, and are working closely with the graduate trainees in nursing, pharmacy, and medicine who are a part of the same practice. Like all rotations, the students are required to complete an online orientation to the FQHC and its care processes to free the clinicians and staff from this routine but time-consuming task. During rotations, their days are structured so they work in teams and independently with their profession-specific FQHC mentors. Amina's morning glucose reading has set in motion another opportunity for them to learn together.

As Amina begins preparing breakfast for her family, her glucometer transmits her blood sugar reading to her FQHC, where a computer analyzes it. The computer identifies that this reading, like those of the last few days, deviates significantly from her usual pattern of control and from the safe boundaries established for her. In response, the computer creates an alert that it sends simultaneously to her electronic health record, to inform her care team, and to the app on her mobile device purchased for her by the SCDA. A previous student team worked with the SCDA and the university health informatics program to translate common alerts for diabetes into the Somali language for the app. While Amina is walking her youngest child to preschool, the alert informs her in her native language that she will be receiving a call from the FQHC, and she may need to adjust her daily routine to take the call.

At 9:00 a.m., the nurse preceptor at the FQHC is scanning the morning's alerts with the team. After receiving Amina's alert, the learning team reviews her electronic health record (EHR) and begins to develop a plan together. With guidance from the team's nurse, the pharmacy student is designated to document the team meeting in the EHR and to engage the FQHC's Somali community health worker. The community health worker reviews the Somali cultural issues about diet and family, Amina's English proficiency level, and the notes from the last diabetes group meeting with the pharmacy student to prepare her for the call with Amina.

Later that morning, Amina answers her phone and begins a conversation with the pharmacy student and the community health worker, who is also a trained interpreter. The student introduces herself and informs Amina that she is working with the nurse practitioner preceptor whom Amina knows by sight and by name. Together, they review the events of the past few days—her diet and activity, changes in how she feels, new symptoms, changes in her medication regimen, and new stressors. After a few minutes, they reach conclusions as to why her diabetes control may have gone awry. Together, facilitated by the interpreter, Amina, the pharmacy student, and the nurse discuss a plan.

As Amina goes about her day, the pharmacy student, under the guidance of the nurse, documents their discussion and forwards it to Amina's primary care provider (PCP), in this instance a nurse practitioner, for review. Forty-five minutes later—well under the one-hour goal the clinic's medical director, a physician, has challenged them to meet in responding to alert-driven messages—the PCP reviews the message. She scans Amina's record, looking at all previous alerts, the goals set during their last visit, and the changes in her regimen that have occurred in the last few months. The PCP adds a few orders to the list generated by the pharmacy student and sends the note back to the team to contact Amina and close the loop.

Later that morning, after picking up her child, Amina stops by the FQHC lab just a few blocks away to leave a urine sample and have her blood drawn—a 20-minute round trip. A few hours later she receives another call from the pharmacy student who shares the results: Amina has a urinary tract infection. The student asks a few more questions to clarify the severity of the infection. She confirms her medication allergy, her pharmacy of choice, and the follow-up plan. Making certain that Amina understands the plan, the pharmacy student, as coached, asks her to repeat it to her. Within a few hours, Amina has taken her first dose of an antibiotic, and her case is documented in the EHR.

At the 4:00 p.m. team huddle, the pharmacy student discusses Amina's case and what has transpired throughout the day. She reflects upon Amina's history of hospitalizations, the costs of Amina's medications, Somali culture, Amina's family responsibilities, the role of the PCP, and her partnership with the team nurse. At the same huddle, the students and graduate trainees report on the FQHC's diabetes care goals and their participation in gathering and reviewing data on care processes and outcomes of the diabetic patients. Mirroring the requirements for clinicians, students are required to keep an electronic learning portfolio documenting their competency achievement. So, at the end of the day, each student is required to report one of their daily team leader encounters in their electronic learning portfolio.⁵ That portfolio will become their continuing professional development record to maintain professional certification throughout their careers. At the end of three rotations, each portfolio is assessed by a team of faculty, practicing clinicians, and community members based upon the interprofessional mapped competencies.⁶

The following day, Amina receives a text message from her learning team inquiring about her symptoms and noting that her blood sugars that morning were back in line. By the end of the week, Amina has had three consecutive days of normal blood sugars and receives a final message on her mobile device reminding her of

the health goals she set for that month and recommending that, unless anything changes, she should return for her previously scheduled group visit at the end of the month. Her community health worker will contact her prior to the scheduled visit to ascertain any concerns Amina has about coming for the visit.

For Amina, none of this is particularly remarkable or unusual. Although calls from the FQHC are not that common, she regularly receives reminders from the practice as texts in her native language, her preferred means of communication. The content of the messages vary: reminders of the goals she's set for herself, notification that she is due for a pap smear or a flu shot, links to information on cooking or exercising for diabetes, or a reminder that a prescription will soon expire. For Amina, hospitalization and emergency care, formally a frequent occurrence, have not been necessary even once since the FQHC began its diabetes monitoring and communication program. Amina is pleased with the care she receives from her patient-centered medical home, but it is really no different than the care she received from her obstetrician's office during her complicated pregnancies or the hospital nearby when she delivered her children. The only apparent difference is that, in those instances, the choreography of care involved more participants, but it was no less seamless and tailored just as closely to her choices and preferences. Through every episode of care, each step seemed planned and each person she encountered seemed to know exactly what had happened before and what needed to happen next.

Amina's Current Realities

While the narrative of Amina and her care is a work of fiction, it is not a work of fantasy. The type of care that she received—patient-centered, team-based, and data-driven—can be found today in a growing number of innovative healthcare practices and systems scattered across the United States. Similarly, you could visit a number of educational institutions and find students from different health professions working and learning with, from, and about each other in highly innovative curricula and authentic patient-care experiences. Unfortunately, such exemplars of care and educational innovation are still too rare and the systematic integration of the two—interprofessional education (IPE) and interprofessional collaborative practice—would be difficult to find. A quick scan of most academic health centers and other health professions schools today would reveal a collection of siloed health professions educational structures and processes working in parallel to each other and to a number of affiliated practice organizations with little dialogue, integration, or collaboration between them.

The need for change is well-documented. Health care in the United States is exorbitantly expensive, fragmented, unreliable, reactive, and does little to improve population health or attenuate shocking and ubiquitous disparities in health status and life expectancy. Higher education in the health professions is similarly criticized for its high cost, inefficiencies, and outcomes poorly aligned with the needs and expectations of patients and communities. Specifically, health professions education produces individuals with high degrees of technical competence, but with little understanding of each other, the systems in which they work, or the complex ecologies around them that do much more to determine the health of their patients than the clinical enterprises in which they will spend their careers.

Given today's realities, Amina's case would more likely look very different than the one portrayed. Support systems to help her understand the complex and confusing US system of care would be difficult to find. A community clinic that accepts her Medicaid card might be miles away from her apartment, and she would have to navigate the public transportation system to receive care from her health providers. Appointments with her various health providers and for laboratory testing would not be coordinated and might be scheduled on separate days to accommodate the clinic personnel schedules. Many, if not all, of her appointments would occur without a professional Somali interpreter. More likely, her neighbor's young daughter would accompany her to interpret for her. The clinic's limited hours would force other choices as well. Will she be allowed to miss work? Does she need to take her child out of school because she may not be home from the clinic in time to meet her bus?

The costs of her care would be prohibitive. She would check her glucose sporadically and might ration her insulin to make it last. In a year, she would have to make frequent use of the emergency department and would be hospitalized for preventable events because her clinic was too hard to access and because details of her care frequently would fall between the cracks. She would be confused by the letters marked "This is not a bill" that arrive in the mail, and the clinic's social worker, straining with an enormous workload, would struggle to sort through the social issues that contribute to her declining health status.

When Amina did visit the clinic, she would encounter a series of unfamiliar students asking her the same questions, often multiple times on the same day. The clinic administrator, constantly struggling to recruit providers to compensate for the high clinician turnover rates in the clinic, would seek to sustain the clinic's teaching commitment, mostly in hopes that someday a few of the students would choose to practice there. The clinic would host students from multiple schools and programs

with varying levels of preparation for their rotations. Students who are state residents matriculating in an out-of-state online degree program would be calling the clinic for rotation placement as well. Each student's program has different expectations, training manuals, and syllabi for the students. Managing all the requests would pale in comparison to the time spent managing the regulatory requirements for students, such as individualized HIPAA training, EHR training, immunization records, criminal background checks, etc. The clinic administrator would need to hire a new staff member just to manage student placement, while clinicians in the background would complain about the drain teaching places on their relative value units (RVU) productivity. Everyone would be unhappy: Amina, the clinicians, the staff, and the students.

Why is this Care the Best that Amina is Likely to Find?

The status quo exists for a reason. Current models of health professions education and clinical practice systems are the natural evolutionary product of the cultural and historical forces from which they arose. At the dawn of the twentieth century, the promise of modern medicine lay clearly in the explosion of scientific discoveries that revealed the biological basis of disease and led to a growing armamentarium of drugs, devices, and techniques used to treat those diseases. The challenge for health professions education was to move away from the historical tradition of idiosyncratic coursework and apprenticeships often driven by folklore and tradition into a standardized and modern model that is grounded in science. Health professions education evolved to reliably produce scientifically grounded, technically competent practitioners, capable of advancing their fields and evolving the state of the art. Practices and health systems evolved under the same pressures and to meet the demand of a public growing in affluence and in the faith that biomedical progress held the keys to so many of the threats and fears about health that they faced. Over several decades, hospitals and practices steadily grew from a cottage industry, often based in physician's homes and church annexes, into complex systems with annual revenues in the billions.

As the complexity of biomedical understanding grew, so did the complexity of training and practice. The challenges of mastering the explosion of knowledge and moving discoveries from innovation to the standard of care led to increasing specialization. A steady stream of new specialties and even new professions appeared, only to fragment further into new subspecialties. Each profession, specialty, and subspecialty had a sovereign domain. Each had to establish professional standards, formalize and standardize education and training processes,

negotiate licensure, and jostle amongst each other to define the scopes of practice that would determine not only their professional stature but, in many ways, their market share. A vast complex machine evolved as a collection of self-designed parts, often with little consideration of, or consultation with, adjacent components. To paraphrase Don Berwick, it was a system built around the question “What do I do?” rather than “What am I a part of?”⁷

Health professions education and health practice systems today both face a revolutionary moment. They evolved under a different set of imperatives than the ones they currently face. The shining promise of biomedicine has lost some of its luster as the sole answer to health. Technical competence is insufficient to produce health and is not carefully and systematically choreographed, monitored, and directed toward a shared purpose. Furthermore, the exponential growth of healthcare costs that occurred in the twentieth century can no longer be sustained. Like a malignancy, any additional resources the health system takes will come at the expense of the whole, starving the education and social services sectors that may ultimately do more to promote health than health care can do. Practices, practice systems, and the education enterprises that support them cannot succeed in the coming century unless they respond to the new imperative, which is best summed up by the Triple Aim: to continually improve the experience of care, population health, and lower costs.¹

Since the 2000 and 2001 landmark Institute of Medicine reports focusing on patient safety and quality, health systems have been driven to transform by a variety of drivers and incentives such as payment, self-insured employers, policy, and accreditation, among others.^{8,9} On the other hand, over the past decade, health professions education has been changing based upon a different set of more fragmented and disconnected levers, such as real and perceived workforce shortages, market forces, demand for health careers in a floundering U.S. economy, state and federal policies, maintenance of certification, IPE initiatives, and accreditation. In the United States, most of these efforts across professions in practice and education are as yet unconnected. Therefore, as demonstrated in Amina’s current situation, the fractures in the healthcare system are magnified many fold when considered against the backdrop of the uncoordinated educational system that has been haphazardly overlaid upon it. Educators and health systems need to stand back and ask together, “What are we a part of?”

Given the current situation, it is imperative to collaboratively create a “Triple Aim” at the intersection of the healthcare and education systems in order to create a bold

“new nexus” by connecting many dots. What are the consequences of not doing so? Perhaps this new connection, portrayed in Amina’s vision case, should be called “The Triple Aim for Alignment” and set as its goals:

1. Reducing costs and adding value for the alignment of the education system with the health system,
2. Reframing quality for the patient and learner experience by creating a integrated practice and education system to incorporate key stakeholders,
3. Accepting shared responsibility for population health and learning for the end goal of people- and community-centered health outcomes in a transformed system.

HOW DO WE GET TO THE “TRIPLE AIM FOR ALIGNMENT”?

Ensuring that the type of care Amina experienced in the visionary scenario is commonplace and that learners are fully integrated into that care requires a sea change. In health care, practices must be redesigned and integrated into larger systems. Systems must be reorganized and held accountable for population as well as individual level outcomes. Without a financial structure that supports proactive, population-based, and team-based care, practices can never afford to provide the type of care Amina received in the “New Nexus.” Without a different financial and regulatory structure, a system’s bottom line will suffer if they are too successful in keeping people like Amina out of their hospitals and emergency departments. Health systems need to create learning organizations that enable the current workforce to adapt to the new realities. A feedback loop needs to be created with health professions education and their accreditation agencies to ensure that educational programs are true partners with evolving health systems. Reaching this goal requires new models of IPE, in which students from different professions master these new competencies together, and it will require considerable coordination and integration between and across professional schools, communities, and health systems and practice communities to meet mutually agreed upon goals.

To be successful, change must occur at each of three levels: practice/classroom (micro), system (meso), and policy/regulatory (macro) for both healthcare practice and education. While some change is occurring independently at all three levels,

sustainable and transformative system changes will not occur without connected changes at every level. The policy, financing, and regulatory environments must be restructured to create the processes and incentives to enable this redesign and encourage enduring partnerships between academic health centers, other higher education institutions, practices and practice systems, and communities with patients, communities, and learners—where all benefit in a truly symbiotic fashion.

Transforming the Point of Care and Education – Micro-Level Change

Tradition and inertia anchor in place the current, physician-centric, piecemeal, fee-for-service practice model with the growing burden of the educational overlay. Changing the model will require leadership and vision as well as incentives and performance expectations. It will also require new data systems that document health and learner information along with the expertise to interpret and respond to them; neither is widely available at the present time. Few practitioners have knowledge or skills in quality and process improvement or in new models and methods of care. Virtually no system improvement thinking has been applied within academia or a practice-education interface. Few appreciate how they might link their efforts with available resources in public and community health; and few have experience with new technologies like computer-generated communication methods. Practices will need help, and the answer may lie in the under-leveraged educational system. For example, in Amina’s “New Nexus,” university health informatics students created the mobile app collaboratively with her community organization to deliver email texts in her native language. Using a systems approach such as this, many stakeholders benefit.

Practices, especially those that teach, will need consultants and coaches, and they will need each other as they negotiate and coordinate the work of caring for a community linked to education. Individual practices and educational programs will need to function together as a learning community, sharing innovation and best practices and aligning their efforts in order to produce the rapid cycles of data-driven improvement that will be necessary to move the process forward.

Practices often are reluctant to embrace learners or new methods of engaging those learners when so much of their energy is focused on meeting productivity demands, let alone reforming the practice. Few existing teaching practices are ready for IPE. In many cases this simply represents the reality of the practice model employed. In other cases, where practices are transforming, health systems are

rethinking their commitment to the teaching mission as too costly and burdensome to continue. Practitioners on the ground often are stressed with the significant health system change and transmit negativity to their health professions students. These realities highlight the need to marry practice redesign and faculty development for IPE. It also highlights the challenge of injecting learners into practices that are absorbing the fiscal and human costs of change. Nevertheless, with challenges come opportunities.

Alignment of education and practice at the community-clinic (or micro) level could be achieved by increasing the value and lowering the costs of students in practice settings. To begin with, students need to learn and demonstrate IPE competencies before entering the clinical environment and come to it with the ability to contribute, even in small peripheral ways. When in the clinical setting, a significant portion of the recurring costs of teaching students lies in the churn and turnover of the current rotation model. Much of the effort in both teaching and learning is orientation and meeting federal and state regulations. Longitudinal rotations can reduce these costs and allow the learners to become a part of the practice rather than just “tourists” passing through. Similarly, the transaction costs of student placement can be reduced by coordinating the process across programs and professions.

Today’s reality is that learners from a variety of professions, on widely varying schedules, and with different levels of preparation spend short periods of time together in a practice. Few are prepared before placement to understand the practice microsystem, the interprofessional skills they need to learn, and how they can contribute to the site. As a result, today the students who Amina encounters do not know her or each other. Even if the students are intentionally taught interprofessional competencies in the classroom, they will not have the opportunity to practice them to achieve deep learning that comes with meaningful and authentic learning in practice. For individual and team growth, students need to stay in a practice for longer periods to provide time for feedback and reflection in order to master communication skills, patient-centeredness, social determinants of health, shared decision making, systems improvement processes, and cultural competence.

Students should come to practice sites prepared with appropriate general collaborative and systems-based competencies including skills in the use of the EHR and practice site informatics resources. Faculty in health professions programs who have never been taught or routinely use these new health systems competences will need to develop new skills themselves to be able to teach them to their students, and be able to work effectively with faculty from other professions and practice sites.

Teaching programs and practice partner systems can collaboratively develop shared patient and learning data, which can be facilitated centrally. As in transforming practices, faculty and clinical partners can set metrics together to achieve learner and patient population goals. For example, students in multiple affiliated primary care sites can have a single “Quality, Processes, and Learning” preceptor who can oversee the work they do in collaborative practice and process improvement in multiple sites.

In a planned system, students can also add considerable value to practices. They can gather data on practice performance and process and analyze care flow. They can research care processes and guidelines and bring this information into the practice for consideration. If appropriately prepared and supervised, students can be more active liaisons between the practice, their patients, and the community. However, this can only be achieved if the students have enough continuity with the practice to accomplish the work and a supervisory structure that links their learning with the practice’s improvement goals.

Creating and Facilitating Systems – Meso-Level Change

In Amina’s “New Nexus,” the systems leaders, specifically the university senior administration and health systems leadership, set the vision and provided resources to create the educational program appropriate to the healthcare system needs. They were willing to have courageous conversations that engaged other meso-level stakeholders such as the health and human service commissioner, state policymakers, and professional association leaders, among others who could create the drivers to enable a sustainable micro-level program. Leadership set the tone, encouraged and supported change, and transformed both education and patient care.

While both education and health systems are under pressure to change, the awareness of the external drivers is most urgently felt in health systems where economic realities are forcing change at an unprecedented pace. Most health systems built their business plans around a fee-for-service model that is unlikely to survive. New demands for transparency in price and performance and new penalties and incentives seem to crop up daily. In communities and regions with multiple health systems, this only heightens the competition between systems and increases the urgency for change. The imperatives of the Triple Aim are new to most health systems and their educational partners. To achieve it in practice, healthcare administrators and clinician leaders need to move beyond traditional

modes of thinking and toward knowledge management of integrated health systems as learning organizations.¹⁰ Redesigning care to lower cost, continually improve the experience of care, and enhance population health is not what their current workforce was trained to do. Doing this work requires preparing and retraining their own workforce for new roles, and many health systems are making significant investments to develop this capacity—without academia. True accountability for population health also requires new relationships with patients and their communities.

Health professions education is under similar pressure to lower costs and align outcomes with the needs and expectations of patients and communities in order to demonstrate its value to society. In the midst of this, the practice systems that hire their graduates are complaining that these new hires are not prepared for the new realities of transformed practice using team-based care and practice improvement. Faculty need to develop new skill sets to transform health systems and teaching/learning practices. This includes becoming facile with self-directed learning, online learning, flipped classrooms, deliberate practice, and the use of mobile devices and social media. Rethinking the learning paradigm challenges traditional faculty roles and requires faculty development.

The business models of health professions education linked to practice also are threatened. Students are shouldering unbearable tuition costs, research dollars are declining, and the cross-subsidy to education from clinical practice is increasingly uncertain. Educational system leaders need to find new cost efficiencies while adding value in the educational system connected to practice. One example of a cost efficiency would be a state or regional electronic management system for student placements that could provide schools and practice systems a single point of contact for clinical rotations rather than the current chaotic, time-intensive process of negotiating with each school and clinic separately.

For both healthcare and education systems to create the “Triple Aim for Alignment,” the way forward is *together*. To achieve benefits for multiple stakeholders as demonstrated in Amina’s “New Nexus,” educators and health systems need to work together to define the training needs of students in workforce competencies, and then repurpose existing resources to meet shared needs. To do so successfully, all stakeholders, including patients and community members, will need to be engaged. Dialogue is critical. Success may require whole new models of ways to merge teaching and practice.

Enabling Needed Change – The Macro Perspective

Accountability for health outcomes is the force driving reform. Health systems cannot meet their obligations to population health outcomes without a close, collaborative partnership with health education systems—a partnership that health education systems will require in order to meet their obligations to society as well. As education and health systems face increasing accountability for the health of populations, other factors come into sharper focus: workforce and payment reform, as well as accreditation, licensure, and certification reform. Sustainable, effective change, linking education and practice in mutual accountability for health outcomes, requires broad changes in policy from the government, licensing and accrediting agencies, and payers.

At a most basic level, the nation must complete the work of the Patient Protection and Affordable Care Act in order to ensure health coverage for every American. Beyond that, a critical issue at the macro level is finding the right incentives to do so. Until recently, cost control was thought to be in direct conflict with improving quality and outcomes. Lowering costs meant one thing: doing less. Fortunately, we have ample evidence to the contrary. We can lower costs, improve care, and enhance population health while adding value, but only when the right incentives are in place. Payers have a critical obligation to develop and implement incentives so that the three arms of the Triple Aim are achieved simultaneously. Promising work in this area is moving forward across the country, catalyzed by the Center for Medicare and Medicaid Services Innovation Grants, collaborative projects between payers and providers, and local community efforts.

The need for comprehensive planning, incentives, and investment in workforce development is urgent. Challenges abound and numerous questions will need to be answered. What models of care are the most effective and efficient? How are the models staffed and what changes in training capacity will be needed to accommodate these new models? These questions can only be answered through ongoing research and dialogue between stakeholders, including health systems, educators, communities, and policymakers. This work will require reconsideration of existing investments in the workforce. Current outlays for graduate medical education (GME) funding should be aligned with strategic workforce goals directed at the Triple Aim.

Regional manpower needs also will need to be considered and aligned with accreditation processes. For example, the advent of online degrees creates a

number of challenges for regional workforce planning and development, where a student may pay tuition to an institution far from their home but rely on local resources to bear the burden of their clinical training; thus straining and undermining local efforts to manage a scarce resource and prepare a workforce ready for interprofessional collaboration. The U.S. Department of Education requires practitioners and the public to be involved in accreditation teams and councils. Accreditation processes would benefit from even greater diversity and inclusivity. Accreditation agencies for different health professions, writing new standards, should align their processes and requirements to enable IPE and collaborative practice. They should account for new practice and education models and needs in these processes.

Individual states can do a great deal to create a policy environment that facilitates IPE and collaborative practice. Practice acts for the different health professions should be rewritten in concert. Developed appropriately, practice acts would account for the interdependence of professions and ensure the formal and informal arrangements between professions necessary to weave together disparate scopes of practice into seamless tapestries of care. If state practice acts were written with Amina in mind, they would enable the sort of team-based care she received, allowing her pharmacist and nurse practitioner to work to the full limit of their scopes of practice while ensuring a robust articulation between their care and the care she would need from other professions should her needs exceed their ability to meet them. Practice acts could also enable the alignment of health education with practice redesign by explicitly enabling interprofessional supervision of learners.

Fortunately, discussions are underway and considerable independent, although uncoordinated, groundwork has been laid across multiple sectors including the professions, health systems, educators, payers, regulators, government, foundations, and consumer groups. Examples include recent reports on GME reform,^{11,12} the American Council on Graduate Medical Education Next Generation accreditation standards,¹³ the American Board of Medical Specialties' Maintenance of Certification Portfolio program,¹⁴ and the Institute of Medicine Global Forum on Innovations in Health Professions Education¹⁵ that involves many US associations as well as many collaborative practice demonstration projects, such as the Veterans Affairs Centers of Excellence in Primary Care initiative,¹⁶ the Robert Wood Johnson Foundation-funded Campaign for the Future of Nursing Champion for Action housed at the American Association of Retired Persons (AARP),¹⁷ the Centers for Medicare and Medicaid Innovations programs,¹⁸ Institute for Healthcare Improvement Open School,¹⁹ and the American Board of Internal Medicine Foundation's Choosing

Wisely Campaign,²⁰ among many others.

A shared vision of IPE and interprofessional collaborative practice is growing. For example, the American Association of Colleges of Nursing, the American Association of Colleges of Osteopathic Medicine, the American Association of Colleges of Pharmacy, the American Dental Education Association, the American Association of Medical Colleges, and the Association of Schools of Public Health have formed the Interprofessional Education Collaborative (IPEC). IPEC's 2011 release of consensus core competencies for interprofessional collaborative practice represented a major milestone, providing a critical guiding framework in which to consider the training needs of a new workforce.

In September 2012, the Health Services and Research Administration of the US Department of Health and Human Services awarded a cooperative agreement to the University of Minnesota to establish The National Center for Interprofessional Practice and Education, providing another opportunity to harmonize and align the efforts necessary to move forward. The Josiah Macy Jr. Foundation, the Robert Wood Johnson Foundation, the Gordon and Betty Moore Foundation, and The John A. Hartford Foundation have collectively committed up to \$8.6 million in grants over five years to support and guide the Center. Nevertheless, much work still needs to be done to ensure that tomorrow's workforce is prepared to care for Amina and her family in the manner necessary to ensure their maximal opportunity for health.

CONCLUSION

Like generations before her, Amina immigrated to the US for the opportunities found here. The nation that has welcomed her and her family was founded on the revolutionary principle that all were created equal. That nation's currency carries a motto testifying that from the diversity of many comes a stronger unified whole. Standing beside this hinge in history, it is clear that realizing America's promise to Amina and the millions of other families on these shores requires us to create a stronger whole from the disparate parts of our healthcare and education systems. These distinct threads must be woven together into a tightly knit cloth that will wrap around Amina and her family and guarantee the maximal opportunity for health in all its dimensions.

The history of health care in the US is a complex story with stunning and unimagined successes interwoven with unfathomable failures. Like all stories of progress, the

plot is not linear, and like all histories, the outcome is not pre-ordained. Progress is always the result of visionaries and leaders who, in critical moments of need and opportunity, seized the initiative and charted a way forward. A century hence, this moment will clearly stand out as one ripe with both need and opportunity. The question we are urged to answer is what will we do with it? The stakes are high. Amina and her children are depending on us to get it right.

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CASE STUDY 1

COLLABORATING FOR OUTCOMES: INTEGRATING CONTINUING INTERPROFESSIONAL EDUCATION AND CLINICAL PRACTICE REDESIGN AT KAISER PERMANENTE

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BACKGROUND AND IMPETUS

Kaiser Permanente Overview

Kaiser Permanente is committed to helping shape the future of health care. Recognized as one of America's leading healthcare providers and not-for-profit health plans, Kaiser Permanente's mission is to provide high-quality, affordable healthcare services and to improve the health of its members and the communities it serves. Kaiser Permanente's vision is to be the leader in total health by making lives better. In the past year, Kaiser Permanente has received national recognition for its hospital safety and effectiveness of care from the Leapfrog Group, National Committee for Quality Assurance, and Medicare's Five-Star Quality Rating.

The journey toward excellence in quality, safety, and service began with a leadership commitment to invest in aspirational goals and to develop the needed infrastructure to achieve those goals. In 2008, Kaiser Permanente's hospital leadership set the target of being the best hospital system in the country. In the process, Kaiser Permanente invested heavily in several macro-system level initiatives, including developing a performance improvement infrastructure to train Unit-Based Teams (UBTs) as part of its Labor Management Partnership (LMP).

Within Kaiser Permanente, more than 174,000 employees—including over 49,000 nurses and 16,500 physicians—work at 37 hospitals and medical centers providing acute care and nearly 600 medical offices offering ambulatory care to nine million members in nine states and the District of Columbia. Recognizing the roles that communication and collaboration must play among all of Kaiser Permanente’s healthcare professionals in achieving its goals, the “Collaborating for Outcomes” (C4O) initiative was launched in 2009.

Internal Opportunities Identified

One challenge Kaiser Permanente faces has been enduring communication breakdowns among healthcare professionals. At times, the lack of communication and collaboration has led to conflict and medical errors. These ongoing communication challenges largely fall under the categories of different visions and expectations and different cultures between physicians and nurses. They play out mostly at the micro-system level among healthcare professionals caring directly for patients, but have implications at the meso- and macro-systems levels as well.

Nursing leaders had long been aware of concerns among nurses that communications with their colleague physicians were far from optimal. At a Kaiser Permanente quality conference in late 2008, a breakout session on physician-nurse communication was presented to a standing-room only audience. There a short survey found that communication breakdowns were common but perspectives varied widely between the professions. Physicians wanted outcomes—for example, they expected accurate patient information on time—while nurses wanted to build and maintain strong relationships. Neither group was getting what it wanted.

At the same time, the organization was making headway on national macro-system level initiatives toward excellence, but leaders felt they had reached a plateau and could not get to the next level without addressing interprofessional communication, which kept coming up in root cause reviews of medical issues. Also, their Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores were lower than they should have been. Senior executive support for the C4O program can be traced to presentations and meetings with Southern California leaders, who shared the data from the survey conducted at the quality conference and discussed the correlation between physician-nurse communication problems and the organization’s larger efforts. Relying on external and internal evidence, as outlined below, they specifically pointed out that communication among health professionals was tied to quality of care, financial stability, and patient satisfaction scores.

Kaiser Permanente National Patient Care Services provided assistance to explore the physician-nurse communication issue region-wide and to report findings. What followed were a series of interviews, focus groups, and a survey at Kaiser Permanente's Southern California medical centers. Perhaps not surprisingly, in answering the question, "How important is the nurse-physician relationship to: quality, safety, service, and affordability?" responding physicians and nurses rated it 4.77 on a 1 – 5 scale with 5 being high. Other findings were more sobering and provided additional evidence of poor working relationships between physicians and nurses:

- While 80% of both nurses and physicians strongly agreed that nurses and physicians should treat each other as professionals with courtesy and respect, only 20% of nurses felt that physicians treated them with respect.
- In qualitative interviews and focus groups, physicians reported general concerns of nurse performance and skill level (for example, orders not being carried out correctly or in a timely manner and ill-timed calls to physicians).
- Both nurses and physicians indicated that general communication breakdowns led to misunderstandings, errors, and ongoing conflict.

External Drivers

Kaiser Permanente's experience was consistent with national findings documenting the connection between poor communication and bad patient outcomes. For example, in 2008, the Joint Commission found that nearly 70% of sentinel events were linked to communication breakdowns.¹ Pronovost *et al.* identified inadequate teamwork as a critical factor in 32% of deaths and patient harm.² In *High Performance Healthcare*, one of the most comprehensive explorations of the role of communication, Jody Hoffer Gittel, professor at Brandeis University's Heller School for Social Policy and Management, documented a direct positive correlation between what she labels "relational coordination" scores and hospitals' surgical performance indices.³ In a body of additional work ranging from reports from the Institute of Medicine⁴ to studies in the *American Journal of Emergency Medicine*⁵ to popular business guru Collins' *Good to Great*,⁶ and scores of publications in between, one can find additional evidence to back the theory that good communication among healthcare professionals is correlated with good patient outcomes and poor communication, with less favorable outcomes.

Partnering Opportunities and Contributions

To develop the C4O program, Kaiser Permanente strengthened its partnership with the Advisory Board, a private company that provides trainers for custom-designed programs. Kaiser Permanente leaders asked the Advisory Board, with whom it had a long-term contract, to expand and tailor a generic curriculum for a new level of training, which it did. The Advisory Board also provided professionally trained faculty. While Kaiser Permanente does have multiple relationships with academic programs, it did not think of academic faculty or institutions when planning C4O. With few exceptions, it also did not extend training day invitations to students. The topic was felt to be sensitive and internal at the time. C4O was designed to provide an environment for candid sharing of patient experiences that the teams had gone through together, some of which resulted in bad outcomes that would not be appropriate to share with external audiences.

Motivation to Collaborate across Professions and Service Settings

A motivation to develop a training intervention that was designed for an *interprofessional* audience can be summed up in a comment after an earlier course for nurses on nurse-physician relationships: “This is great, but where are the doctors?” It simply did not make sense to teach members of only one side of the relationship how to work better together by jointly exploring root causes of the miscommunications and faulty collaborations, trigger points for breakdowns, or shared responsibility and creativity for solutions. Successful collaboration across professions and service settings in the C4O initiative itself was largely due to the leadership provided at multiple levels and sectors of the organization. All program documentation associated with C4O Southern California lists support by the Chief Nursing Executive, Southern California; the Medical Director of Quality and Clinical Analysis, Southern California Region; and the United Nurses Associations of California/Union of Health Care Professionals (UNAC/UHCP) Secretary, California.

The C4O program further benefitted from participation by a number of constituencies. These included Kaiser Permanente leadership, including National Executive Sponsors; Regional (Southern California) Executive Sponsors; and the Regional Executive Oversight Group. There was also a Steering Committee made up of representatives from the various Medical Center Areas, service settings (ambulatory, labor, continuing care, inpatient), and organized labor. Finally, we noted that interdisciplinary teams at the local level that represented medicine

(Medical Director, Medical Group Administrator), nursing (Chief Nurse Executive), administration (Executive Director), and organized labor were very involved in planning each host-site training.

OVERVIEW OF THE C4O EDUCATIONAL ACTIVITIES

The aim of the C4O program is to improve team and patient communication; service and quality scores; People Pulse (an internal employee satisfaction instrument) scores; and the safety culture. It is meant to be an approach to work and an organizational ethos that is fully integrated and laced into current initiatives and priorities rather than stacked on top as a separate project.

Although the comprehensive C4O program is staffed and informed by regional and national Kaiser Permanente leaders, the core of the program is the local medical center with its associated clinics and home care centers. Collectively, each of these groupings is known as a Medical Center Area, or MCA. Each MCA undertook a number of steps to implement C4O.

Training

First came a set of MCA leadership commitment meetings. Because the C4O program requires that each training intervention be customized to the MCA, leadership at the MCA must meet with each other and C4O project leads to determine which center personnel will attend the one-day training, how survey results will be presented, and which MCA leaders will present the survey results and facilitate part of the training. Because no MCA can shut down operations completely for one day, deciding who will participate is an important responsibility for local leaders. Although details may vary from site to site, general selection criteria include both individuals who could benefit personally from the change program and those who could help lead change at the department, unit, or team level. Interdisciplinary attendance and ample representation from both medicine and nursing are non-negotiable requirements. Kaiser Permanente made tremendous investments of time and money to allow for release time of high-level clinicians and adequate preparation for a well-run and highly attended program.

The second component is the administration of a survey using established instruments to assess employee perceptions of their collaborative environment.

Organizers administer the 10-15 minute online survey four-to-six weeks prior to that MCA's kickoff training day. Respondents are asked to consider one care setting, such as ambulatory, inpatient, or continuing care plus subheading (e.g., Ambulatory-Pediatrics or Inpatient-ICU), as they answer the questions. The survey is primarily composed of three validated and reliable instruments from the literature (i.e., the Jefferson scale; the Baggs Collaboration and Satisfaction About Care Decisions [CSACD]; and the Practice Environment Scale (PES) of the Nursing Work Index–Collegial Nurse–Physician Relations subscale.).⁷⁻⁹ Three items were added to ensure all definitional elements of collaboration were measured: reciprocal respect, mutual trust, and effective conflict management. Finally, one item was added for an overall measure of collaboration: nurse-physician partnerships, which fall on what the Advisory Board conceptualizes as the “Collaborative Curve,” moving from Contentious to Co-exist to Cooperative to Collaborative. The results from this survey provide baseline data that shape content for the training.

The next component of C4O is the champion kickoff. Kickoff trainings are held at host MCA sites and introduced by local leaders and champions. Detailed agendas vary but generally follow a common template. The first half of the day consists of curriculum developed and taught by Advisory Board faculty—as program rollout continued, the curriculum was increasingly customized to Kaiser Permanente’s needs—and the second half is facilitated by Kaiser Permanente facility leadership from medicine, nursing, and organized labor. The day’s organization encourages attendees to engage at a number of different levels and permits learners multiple “a-ha” moments. For example, at each kickoff, leadership from the host medical center shared an incident particular to that site in which communication or collaboration breakdowns led to an adverse or potentially adverse outcome that the medical and nursing staff could relate to. This approach was key to helping participants understand the “why” behind the program.

Throughout the kickoff training day, physician and nurse attendees explore their local positions, documented in data collected through the survey, on the Collaborative Curve. As noted, all sites relied on the same survey instrument. However, presentations of survey results varied among the MCAs, as did the actual results themselves. Individual sites focused on data from some questions over others. Some sites highlighted differences in how different categories of professionals or service settings responded to questions. For example, aggregate differences in how physicians and nurses responded to the same question might be discussed. Some sites looked at region-wide aggregate differences between service settings in their overall placement on the Collaborative Curve, reporting

for example, that continuing care settings had higher collaborative scores than ambulatory ones, which in turn had higher scores than inpatient settings. Still other sites might compare how different shifts (day, evening, night) fall on the Collaborative Curve.

A key part of the day occurs when attendees work in small groups on real life examples of how collaboration may break down at “flashpoints,” which are events that are the culmination of multiple prior incidents signaling tension in the professional relationship. These vary from team to team and from setting to setting. They might have to do with charts or medication orders; patient admissions or transitions; or scheduling and message inbox management. Then participants look at the drivers, such as communication or staff competency, and the components that go into those drivers, such as lack of common vocabulary or need for education. Finally, they discuss new behaviors and approaches that might be chosen to keep professionals on the collaboration track. Using a standard exercise and reporting tool, training participants identify the flashpoint and work through a series of questions that help them uncover the specific drivers that may have led to their flashpoint event. This is where an interprofessional approach to education and practice could be seen. Members of the two disciplines may work together to understand the problems and collectively develop answers.

Next steps happen at two levels. At the local level, each MCA receives tailored follow-up to include the action steps and projects that its employees will pursue based on the survey results and kickoff training day, particularly from the interactive and interprofessional work done on flashpoint drivers that can derail collaboration. To date, and described below, a number of small change tests have been conducted on various flashpoint challenges within different teams and at different sites. At the regional level, the post-training follow-up of the C4O program includes evaluations, assistance with incorporating change at the institutional level, and spread of the program to other sites or regions with modifications, if indicated.

Evaluation

Several evaluation components were built into the C4O program. One is the standard program evaluations conducted by the Advisory Board to provide information that may be used by the Advisory Board, its faculty, or Kaiser Permanente in future iterations of the curriculum in similar or related trainings. Kaiser Permanente conducted post-session debriefs following some kickoff trainings that found that some individuals were missing from the trainings; for example, surgeons

and anesthesiologists were unable to attend. In addition, some sites realized that a great deal of work needed to be done. After the initial kickoff, one site was so excited about the program that it discussed plans to spread this work by holding a future four-hour session for those unable to attend the kickoff because of rigorous surgery schedules.

The program design called for the survey that was administered prior to the kickoff training day to be re-administered to the same respondents 12 – 18 months after the training. However, while one medical center did complete the follow-up survey, chief nursing executives for the region decided, for multiple reasons including but not limited to a plethora of concurrent surveys employees were being asked to complete, that the remaining follow-up surveys would not be conducted at this time.

OUTCOMES

Process Outcomes: Trainings, Survey Findings, Resources, and Tools

Over the course of about 12 months in 2010–2011, C4O interdisciplinary training days were held at 11 Kaiser Permanente medical centers with associated ambulatory care and home care/hospice centers in Southern California. Over 1,100 nurses and physicians participated in the trainings. Based on positive impressions from participants and organizers, Kaiser Permanente plans to launch C4O in Northern California to spread to 21 more medical centers (as this document is being prepared, the initiative has begun but not completed in Northern California). Pending additional information about outcomes from the initial sites, the Northwest Region and Colorado are considering implementation. An internal analysis identified the top ten components that contributed to a successful implementation of the training program, from strong sponsor support to real time practical tools that could be used the day after the training by front line staff. Matrices of suggested ways to deal with likely barriers and to take full advantage of existing enablers were also prepared for future spread of C4O.

The results of the survey administered at the Southern California MCAs prior to the kickoff trainings included several region-wide findings of significance. Notably, physicians across the region perceived higher levels of collaboration between nurses and physicians compared with nurses. This held true at all medical

centers and across inpatient, outpatient, and continuing care service settings. In terms of successful collaboration, continuing care settings reported the highest rates, followed by ambulatory care, and then inpatient care. Also of interest was the finding that nurse-to-nurse, physician-to-physician, and provider-to-patient communication scores tended to follow the same pattern as seen in nurse-to-physician communication. For example, if there were challenges between providers, intra-nurse communication scores in the same medical center tended to be low as well.

As noted above, the site-specific baseline data varied from MCA to MCA; attendees used these data during the training in their own discussions of specific collaboration challenges. They also can be—and, as discussed below, have been—used by individuals and units within those MCAs to tailor efforts to improve collaboration through small-cycle change experiments.

A number of resources and tools have been produced by the C4O program. First is the *Collaborating for Outcomes Handbook*. This internal document, subtitled “Becoming the Best Health Care System by Achieving Healthy Interprofessional Communication,” offers a comprehensive guide to running C4O. The *Alignment Tool Box* creates links between C4O and other Kaiser Permanente programs, including Just Culture, Patient- and Family-Centered Care, and Orientation of New Employees. As part of the online social network on the Kaiser Permanente intranet, the *Ideabook* pages were created to sustain the C4O and collaboration work more broadly. These resources are in addition to the one-day training curriculum jointly developed by Kaiser Permanente and the Advisory Board and the slide decks prepared for each of the MCAs. Finally, external resources have also been developed and shared, including a presentation delivered by Kaiser Permanente leaders at the Institute for Healthcare Improvement (IHI) Ambulatory Care conference in March 2011, as well as at several Kaiser Permanente conferences and meetings.

Substantive Outcomes: Changes at the Unit level, at the Institution, and Beyond

Based on reports to the MCA and regional point people, while some unit-based teams continue to face communication challenges, many Kaiser Permanente teams are smoothly addressing flashpoint issues using the plans they developed at the kickoff training or pursuing other flashpoints identified by the team. They report new understanding and empathy within physician-nurse teams grounded in better

understanding of each other's roles and how better to communicate and avoid collaboration breakdowns. When asked about the essential value of the C4O work, Nancy Tankel, Chief Nurse Executive at Kaiser Permanente Woodland Hills, doesn't hesitate: "People were unaware of the importance of the relationships before we started the work. Now there is intolerance for people who don't want to collaborate at our medical center."

Full integration of the C4O training into daily practice and into all other Southern California Kaiser Permanente initiatives is a work in progress. Although the rollout of training days has been analyzed for success factors, as noted above, analysis of the integration has not been done yet. However, numerous examples of implemented microsystem-level changes at Kaiser Permanente sites after the C4O training have been documented. These are often performance improvement activities that provide motivation for senior leadership to stay involved and are based on sometimes modest but distinct improvements in communication or collaboration. Some of these include:

- A new way of rounding at patients' bedsides—one of the flashpoints explored at C4O trainings—by physicians and nurses jointly was tested at Baldwin Park, a facility in the Los Angeles area. Physician-nurse joint rounding improved communication, collaboration, and care planning; increased patient satisfaction scores; and decreased discharge delays. This test showed improved communication scores for physicians and nurses almost immediately.
- A challenge experienced by the Urgent Care department at Kern County was slow triage time for its members, in part due to poor relationships between nurses and physicians. With physicians and nurses working collaboratively to develop and use a local triage tool to determine member status, the team increased the percent of members triaged within 30 minutes from 71% to 94%.
- A program at South Bay Medical Center that aimed to provide influenza vaccinations to all hospitalized patients was not meeting its goals, and the majority of missed opportunities were post-surgery patients. A collaborative effort between the physician and nurse manager determined that the existing process would not work for these patients so the vaccine was instead added into the pre-surgery process. Dramatic reductions in the number of patients who did not receive the vaccination occurred within two months.

- San Diego Medical Center Labor and Delivery implemented “Safety Rounds”: twice daily meetings that involve obstetric and anesthesia physicians, labor nurses, nurse manager, NICU team, postpartum charge nurse, and OR scrub technicians. After presentations of patients by the labor nurse, the obstetrician adds details and provides the care plan. Pre- and post-implementation surveys conducted of staff found improved perspectives on working as a team and being able to discuss errors.
- San Diego Hospice and Palliative Care physicians and nurses instituted collaboration at the front line staff level by working together to evaluate the admissions cases and making joint home visits to assess and address the needs of complex patients.
- An effort at Woodland Hills Perinatal Services brought physicians and nurses together to improve pain management. After a number of changes made jointly by physicians and nurses regarding medication orders, default orders, communications to patients, and discharge prescriptions were integrated into the practice, pain management satisfaction scores significantly improved.
- Riverside undertook multiple collaboration-improvement efforts to improve communication in the emergency department, improve pain management, achieve Joint Commission certification for advanced management of diabetes, and test physician-nurse joint rounding.

Several activities document institutionalized changes attributable to C4O. The *Medical Center Area Status Report* tracks the status of flashpoint challenges identified by C4O participants at the training days and efforts to address them. In addition, a formal Community of Practice has been established that includes representatives from medicine and nursing; from organized labor and Kaiser Permanente leadership at regional and local levels; and from service settings including ambulatory, hospital, and continuing care. After meeting monthly for a year, it now meets every other month to share best practices and updates on alignment with C4O. The Community of Practice has established subcommittees in areas that include research, education, and host-site management to support collaboration sustainability. Informal yet meaningful exchanges can be found in compliance with a call from the senior C4O staff person for medical center chief nursing officers to report in real time when pertinent events—aligned with collaboration or indicating a collaboration breakdown—occur; much of the interest

and work has focused on small-cycle changes in the handling of flashpoints. The online *IdeaBook* clearinghouse and social media site also serves as a repository for institutionalized changes.

The C4O program may potentially promote care delivery system redesign at a number of levels. The C4O is primarily a grassroots change effort at the micro-level (or point-of-care level). Physicians and nurses are now working together to make various small-cycle changes to improve communication and collaboration. Given Kaiser Permanente's nature as an integrated system, C4O has implications at the meso- and macro-system levels too, particularly since it acknowledges and targets different service lines and their respective workers in the survey and kick-off training. This means that cohorts of professionals from different service settings (inpatient, ambulatory, continuing care) now have common language and tools to approach communication and collaboration. Finally, because of Kaiser Permanente's size and position in the US healthcare market, we envision that all this work may have long-term, big-picture implications for the US healthcare system because others will spread and replicate these efforts when and if the evidence is sufficient to indicate transferability.

LESSONS LEARNED

While the C4O program is still very much a work in progress, multiple lessons can be extracted from the effort so far.

Process can be Improved

Because the training days conflicted with many scheduled surgeries, for example, most C4O kickoff trainings had no surgeons or anesthesiologists in attendance. Many additional physician specialists were missing. Some way must be found to include everyone. In addition, despite plans to conduct post-training surveys, nursing leadership decided not to pursue this step because of an unanticipated overload of staff surveys being conducted at the same time.

Survey and Training Materials Matter

A key takeaway from the C4O program is the value of the pre-training survey and training materials. The data provided current information on which participants could

focus their attention. The use of flashpoints and flashpoint drivers made the lessons about collaboration real and not limited to conceptual or abstract discussions. Physicians and nurses could have honest and hard conversations about actual relationship and collaboration breakdowns in the care of patients whose cases and names they knew.

Include more Professions

While the nurse-physician relationship was the top priority and a major driver in starting the C4O, including the entire unit-based team and all healthcare professionals in the organization's efforts to improve collaboration and communication are part of future plans. Some of the most recent status reports from the MCAs note that other workers have been included in collaborative activities. For example, medical assistants (MAs) were part of the nurse-physician-MA team that worked to improve after-visit summaries in obstetric and gynecological departments; and efforts to increase the enrollment of intensive care unit patients in the mobility protocol included physical therapists, respiratory therapists, social workers, and lift technicians, in addition to physicians and nurses.

Foster Small-Cycle Changes and Assessments

Multiple lessons can also be gleaned from the reports and assessments that were done of practice redesign and changes following the surveys and trainings. In particular, unit-based teams and practice flashpoints differed across centers and service settings. Hospital-based teams might note issues around rounding or night-time orders, while ambulatory care teams might focus on standardized and timely patient chart entries. Changes that worked were very particular to a micro-system-level problem or challenge.

Explore Academic Partnerships and Bring Collaboration Training to Educational Programs

A few nurses brought masters' students with them to the trainings, but there was no formal arrangement to integrate students into C4O. However, giving students from different professions the opportunity to work together at school on problems that are modeled on real life challenges in care delivery settings may improve their working together later with patients. Academic educators might consider using the idea of flashpoints to anchor interprofessional educational programs for health professionals-in-training. Kaiser Permanente leadership has discussed the value of

starting communication and collaboration training earlier, in pre-licensure education, although students and entry-level workers may have communication challenges with more experienced colleagues that differ from the challenges a seasoned team of practitioners with a history of working together might have.

Kaiser Permanente leaders should consider partnering with academic faculty on future iterations to learn from them about how to improve its program. For its part, academia could better understand core interprofessional communication issues. Notes Jerry Spicer, Kaiser Permanente Vice President of Regional Patient Care Services in Southern California: “The Collaborating for Outcomes work was a narrow mission to address an internal issue. We do see the potential to share this with academia so they can start teaching it early on in nursing and medical school. There is a drive for that.”

Maintain Leadership

Kaiser Permanente leaders crafted a new twist on their existing partnership between administrators, practitioners, and an external training entity to jointly create the curriculum, administer the survey, and conduct the training. It would be hard to overstate the importance that committed leaders play in efforts to “hardwire” the C4O approach into the organization’s infrastructure. From their perspective, leaders do not see C4O as a one-time or isolated project, but rather as an ongoing commitment.

CONCLUSION

Within the context of ongoing practice challenges and redesign, Kaiser Permanente has undertaken a unique interdisciplinary and interprofessional education and training initiative for its physicians and nurses. Leadership’s next challenge will be sustainability and expansion of the program to other sites and regions. In the spirit of embedding the micro-level training in everyone’s work through small-cycle changes, C4O is about changing the way work is done.

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CASE STUDY 2

INTERPROFESSIONAL LEARNING AND TEAM-BASED CARE DURING A PRIMARY CARE DELIVERY SYSTEM REDESIGN INITIATIVE AT GROUP HEALTH

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STATEMENT OF THE PROBLEM

How can healthcare delivery systems promote interprofessional learning during delivery system redesign initiatives? "The goal of interprofessional learning is to prepare all health professional students for deliberately working together with the common goal of building a safer and better patient-centered and community/population-oriented US healthcare system."¹

THE CONTEXT

Group Health Cooperative is a consumer-governed, integrated healthcare delivery system established in 1947, serving more than 650,000 people in Washington State and Northern Idaho. Group Health uses an integrated healthcare delivery and finance model. Group Health clinics are diverse in their geographic setting, size, patient mix, staff stability, practice culture, and quality of care delivered. Clinics are in both urban and rural areas. Each clinic serves between 3,500 and 40,000 patients. Patient age ranges differ substantially across clinics: for example, the proportion of enrolled children 14 years of age or younger ranges from 1.4% to 19.0% across sites, and Medicare enrollees range from 12% to 24% of the population served by any given clinic.

In the late 1990s declining membership and revenues led Group Health to implement system reforms to improve access and efficiency of services for patients. These reforms included the ability for patients to make same-day appointments (“advanced access”), productivity-based physician salary adjustments, and an electronic health record that lets patients securely message their providers and view portions of their medical record. Although successful, the reforms increased provider workload and decreased work satisfaction among clinic staff, especially among primary care clinicians. Clinicians reported high levels of burnout and many left the organization. This prompted Group Health to reinvigorate its primary care base by piloting a Patient-Centered Medical Home (PCMH) prototype that would inform system-wide transformation.

The prototype was implemented at one primary care clinic setting in 2007 and 2008. Its key features included four major system-level changes and four components specific to the PCMH. System level changes included: 1) reduced panel sizes for primary care clinicians; 2) changes to clinician schedules to accommodate longer (30-minute) appointments; 3) increased RN and clinical pharmacist focus on proactive care; and 4) more reliance on LPNs and Medical Assistants for pre-visit preparation, follow-up, and outreach. Rapid Process Improvement Work (RPIW) cycles were used to introduce one new PCMH component every 10 weeks during the initial deployment. PCMH components included: 1) virtual medicine (e.g., secure email and scheduled phone visits); 2) chronic disease management; 3) pre-visit preparations and activities; and 4) proactive patient outreach.

Evaluation of the prototype found significant improvements in measures of utilization, staff burnout, patient satisfaction, and quality of care that were sustained 18 months after implementation.² Evaluators found that individuals from different professional backgrounds (e.g., nursing, medicine, pharmacy) truly functioned as a team, as reflected in a shared responsibility for delivering and improving the quality of patient-centered care and improving individual patient and panel outcomes.

In July of 2008, Group Health leadership decided to spread the prototype model across 26 clinics by the end of 2009 and adopted “lean management” principles for this process. The relevant key principles of lean management for this rollout were: 1) creating uniform work processes for key tasks in ways that staff interact with patients and with each other (e.g., “huddles” before each clinic session, where team members review the schedule to anticipate patient needs and plan accordingly); 2) eliminating all types of waste in production processes (e.g., standardized stocking of supplies in exam rooms); 3) a broad focus on quality, including access and

continuity of care; 4) using work place visual displays to monitor goals and targets; and 5) ensuring that work moves smoothly and efficiently between persons and departments.

The implementation plan for all sites included the four major system-level changes and the four PCMH components that had been used in the prototype, as previously described. Again, RPIW cycles were used to introduce one new PCMH component every 10 weeks during the initial deployment. RPIWs were usually repeated after the initial rollout of each component to refine processes. By April 2010, 14 months after the start of the system redesign, all primary care clinics had implemented the four systems and the four PCMH components. However, by late 2010 and early 2011, it became clear that the initial prototype experience with the medical home model had not been fully translated into the other sites. Leadership recognized that the spread effort had been very aggressive and “top down.” Teams had been given only 10 weeks to fully implement each module of the PCMH before moving on to the next one. Staff felt disempowered and local problems that were important to teams, such as how to handle walk-ins and how to get hard copies of prescriptions for narcotics to the pharmacy, were not being addressed.

In addition, although structural and process changes were made to implement the systems and PCMH components, leadership noted that the transformation into true team-based care that is a critical component of the PCMH model was not being realized at many of the clinics. Individuals in some teams continued to function as independent professionals or staff, doing their assigned roles and fulfilling their assigned responsibilities in silo fashion. They were not yet functioning as a team where everyone felt responsible for patient-centered care that improved quality and outcomes for their panel of patients. Leadership knew this was possible because they had seen this phenomenon happen in the prototype model rollout at the pilot site. They also noted that staff were growing dependent as recipients of solutions from the lean management consultants and leadership team rather than developing the capacity to solve problems on their own.

APPROACH TO THE PROBLEM

In response to the problem, primary care leadership implemented Front Line Improvement (FLI) Teams at each primary care clinic. Based on lean management principles, the goal of the FLI process is for front line clinicians and staff to

become responsible for creating, sharing, and adopting improvements as part of their every day work. Within each clinic, the FLI team is made up of five to seven individuals who represent nurses, physicians, medical assistants, professional service representatives, pharmacists, etc. Membership in the team is rotated among all of the staff in each clinic every 12 weeks on a staggered basis. Initially, all clinic managers and medical directors were trained in FLI tools, measures, and processes. Clinic managers and medical directors then selected the first staff members of the team with attention to diversity of roles and professional background. With the support of lean management consultants, training and education in FLI tools, methods, and processes are ongoing. It is integrated into every FLI team meeting, is designed to help the team further its development, and is led by the clinic managers and physician medical directors.

The FLI process is based on the “Plan, Do, Check, Ask” (PDCA) model, with each cycle lasting three weeks. Teams choose the topic that they will tackle, such as a common shared problem they have faced, that other teams are not tackling, and that they can solve on their own with process reengineering and no additional resources such as additional staff or equipment. Examples of topics include how to manage walk-in patients, a streamlined approach to the annual crush of pre-school physical examination forms requested by parents, and a method for getting hard copies of opioid prescriptions to the clinic pharmacy. Although clinic managers and directors often convene and lead the FLI teams, they are not allowed input into selection of the problem or deciding what solutions to implement. This creates autonomy for front line staff.

FLI teams meet weekly. Once the team selects a topic and agrees upon a strategy to test, all clinic staff take part in conducting the experiment and providing feedback to the FLI team about how the experiment is or isn't improving the process. FLI team members are responsible for being local champions in their clinic area for testing the strategy. This clinic-wide implementation requires members of the FLI team to explain the rationale behind the experiment to fellow team members and to help others in different roles understand how the new strategy depends on everyone working together as a team. This has often occurred across professional roles within different work areas in the clinic. The FLI team reviews the results of the experiment and can approve the new process for ongoing use or reject the previous experiment and propose a new one.

There is a 10-minute educational section of each FLI meeting focused on both lean management concepts and subjects specific to the problem the team selected

to address. Although there has been no formal curriculum on teamwork or team-building skills, every six weeks there is an extended team meeting that includes topics such as norming of team roles and processes. Success of an FLI team has been dependent on the team learning together by choosing a problem, making sense out of what is causing the problem, sharing ideas for improvement, and planning and implementing a PDCA experiment until everyone is satisfied that the problem is solved.

In one clinic, the FLI team chose to tackle the problem of how to get hard copy prescriptions to the pharmacy in the same building. Although most medications were e-prescribed, hard copies of opioid prescriptions were required. Key to the “plan” component of the PDCA cycle in the FLI process is to “map the process” and “go see the process in action.” As a result of these activities, the medical director of the clinic set foot inside the pharmacy for the first time in his 20 years at the clinic. The medical director expanded his understanding of roles and responsibilities of pharmacists within his own clinic, learned about resources available for his patients, and developed new collaborative relationships. One FLI participant said “... people often don’t have a shared understanding of what the problem is to start with. By mapping the current process and going to see the process in action, individuals come to a common understanding and better understand the roles and work of other team members.”

In another clinic, the FLI team began its work in 2010. “We pick things that bug us; processes that don’t work out well,” noted one of the medical assistants. The LPN added, “Our pet peeves! We vote on the most important one. It can take a couple weeks to fix it.” The FLI team gets together every week with a very packed agenda to guide their improvement efforts. The nurse practitioner explained, “We walk through the process, break it into steps. We see the waste, and we talk about it. Then we try to make it more usable. We run an experiment in the clinic to see if it works.” Process walks, or “go sees,” involve everyone on the FLI team physically going to all of the places in the clinic where the work is done, talking with the people involved in the process, and observing the actual process by literally walking through it. Afterward, everyone gets a few minutes to think about their ideas for improvement before going around the room to initiate a general discussion.

Several team members relate that the hardest part of the improvement cycle can be representing the rest of their colleagues who are not in the room during FLI sessions. Most recently the team has tackled communication to the patient when the provider is running late. Other projects this team has tackled include: 1) streamlining the

process to get patients' weights and blood pressures within the clinic in a timely manner (patient safety); 2) creating standard work around out-of-office mailbox coverage for physicians (eliminating duplication and improving patient safety); and 3) addressing the problem of patients not completing intake paperwork prior to the start of the appointment.

EARLY CHALLENGES

Turnover among clinicians and staff at some clinic sites initially was high (up to 50% over a one-year period among patient service representatives), making it difficult to maintain the momentum of the FLI teamwork. In addition, there often were "locums" clinicians and temporary assignments of staff to clinics, creating problems with stability of the FLI team membership. Staff members were sometimes reluctant to devote time to an activity not perceived as directly and immediately benefiting their role and patient care responsibilities. Initially, the level of clinician and staff self-efficacy about their ability to make improvements was low and difficult to overcome. There also was considerable "change fatigue" at the start of the FLI effort because the scale-up and spread of the PCMH model had been intense and FLI implementation was challenging for clinics that had only recently completed that process.

Rigid role definitions, especially for RNs and their union agreements, made buy-in challenging during early FLI improvement cycles, especially if the experiments required changes in a health professional's role on the team. Over the prior decade, many of the RNs in the primary care clinics had taken on the role of diabetes educator and expanding this role to use skills they had not used in over a decade was challenging for them. However, once RNs and others on the team became more fully engaged in the FLI process, their reluctance to redefine their role and perform tasks not traditionally within their domain dissipated. Finally, FLI teams were often stymied in their improvement efforts by a lack of ability to change key features and functions within the existing electronic health record.

FLI is still a work in progress. After almost two years of FLI projects, staff members within some clinics are discouraged because the work they have done is not producing a big pay-off. For example, because the scope of a health professional's work is narrowly defined, problems that stretch across settings or departments are perceived as off limits, and it is these larger problems that are often the most

frustrating for staff, clinicians, and patients. Nonetheless, observations from primary care leaders and reports and feedback from front line staff about the FLI process suggest that it has substantially improved interprofessional teamwork.

LEARNING OPPORTUNITIES

Opportunities to facilitate interprofessional learning and collaboration within teams may be overlooked during development of healthcare system redesign, scale up, and spread. Although interprofessional collaboration was viewed as critical to the success of the PCMH, the effect of the rollout of the PCMH prototype on interprofessional collaboration and actual performance at the local level was not fully appreciated. A more thoughtful and planned approach to creating opportunities for interprofessional learning to occur within healthcare teams should be integral to system redesign planning and implementation. Ideally, for effective health system redesign to achieve the goal of team-based collaborative care, participants would have already acquired competencies for interprofessional collaborative practice; and the system redesign planning and implementation would facilitate and support opportunities to exercise those competencies.

FLI was initially considered a strategy to counteract the problems of top-down change management. FLI initiated a movement away from clinic staff dependency on outside leadership. Instead of being “recipients” of solutions, they became “developers” of solutions. It also was an attempt to address the heterogeneity across different clinics. By virtue of its rotating membership, FLI draws more people into the process and promotes bottom-up change and a focus on performance. However, though not an explicit goal, it also has encouraged interprofessional collaboration and on-the-job interprofessional skill development and practice reminiscent of D’Amour and Oandasan’s delineation of the concept of “interprofessionality” as “the process by which professionals reflect on and develop ways of practicing that provides an integrated and cohesive answer to the needs of the clients/family/population...it involves continuous interaction and knowledge sharing between professionals, organized to solve or explore a variety of education and care issues....”³ Leadership noted that although the teams had a diversity of staff with different professional backgrounds, as the teams matured, staff did not feel “role-bound” in offering thoughts, insights, and observations. For example, a clinical pharmacist in one team came up with a best approach to dealing with the walk-in problem. In doing so, FLI teams promoted true interprofessional collaboration.

Interprofessional education refers to occasions when individuals from two or more professions learn together with the joint objective of cultivating collaborative teams for providing patient-centered health care. There is growing recognition that delivery of health care is dependent on teams, and that healthcare teams are complex adaptive systems comprised of diverse agents who learn.⁴ When healthcare teams are seen as complex adaptive systems then local relationships and interdependencies among individuals become paramount to the success of any attempt to change or redesign care delivery, because relationships are recognized as a primary source of system functioning.⁵ The relationships among diverse individuals in a team lead to improvisation, self-organization, sense-making, and learning, and these are among the key properties that define these systems.⁶

Yet another opportunity for advancing interprofessional learning with FLI teams would be to include younger, less experienced learners, such as medical, nursing, and pharmacy students. This could be readily accomplished by allowing them to attend the FLI team meetings or to be informed about them by the FLI team members. They could also be involved in the experiments themselves, perhaps by tracking assessment data to bring back to the FLI team for the team to assess the success of their experiment. If one were to make this truly interprofessional, two or three students from different professional backgrounds could be assigned this task and do the work together. This experiential learning experience could be reinforced by explicitly connecting it with more formal acquisition of interprofessional competencies within a preexisting or new curriculum.

During intervention initiatives, individuals and teams often encounter non-routine problems, sudden shifts in roles and responsibilities, difficult decisions, ambiguous and conflicting information, time pressure, and dynamic or unstable conditions. As such, they have to make sense of the intervention and what it means for them and for their role within the organization. Discussion with system and local leadership about the FLI experience suggested that providing teams protected time to problem-solve was critical. They frequently observed people from different professional backgrounds learning what other people on the team do and what skillsets they possess or should possess.

As a result of ensuring time for reflection and conversation, and especially time for the team to “go see” processes in action, team members developed a deeper understanding of their “fit” within the team, respect for the roles of others on

their team, and how they could make the work of those around them easier and more productive by modifying their behaviors. FLI implementation focused on creating structured opportunities for sense-making conversations that promote interprofessional learning. As individuals and teams 'make sense' of intervention initiatives, they act, and by acting, they learn new roles and responsibilities and acquire new knowledge and skills.

Jordan and colleagues spoke of this: "Perhaps one of the reasons we have so much trouble implementing interventions is that it is not a [reliable] transfer problem as we often conceive it to be. There is no sense in bemoaning the lack of fidelity in implementing interventions as originally conceived because a linear mapping between original conception and implementation in any particular context is highly unlikely and thus should not be assumed. Instead of thinking of intervention implementation as a problem of reliable transfer, we would be better off to think of it as a problem of sensemaking and learning."⁶

Lanham and colleagues argued that in scale-up and spread initiatives, "...self-organization, while not completely controllable, can be influenced, and that improving interdependencies [relationships] and sense-making among stakeholders is a strategy for facilitating self-organization processes that increase the probability of spreading effective practices across diverse settings."⁷ The FLI initiative was a response to an aggressive implementation of a medical home prototype that did not fully acknowledge these important factors. By providing time and space for diverse teams to reflect and have a conversation around a problem, supporting them with tools and processes, and allowing them to make sense out of their local context and situation, FLI allowed interprofessional learning and collaboration to occur.

Acknowledgement

Michael Soman

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CASE STUDY 3

VA BOISE CENTER OF EXCELLENCE IN PRIMARY CARE EDUCATION

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AN OPPORTUNISTIC RESPONSE TO AN EXISTENTIAL THREAT

In 2009, a “perfect storm” began to negatively affect clinical training at the Veterans Affairs Medical Center in Boise, Idaho (VA Boise). First, the medicine training program, a track within the University of Washington School of Medicine internal medicine residency, was threatened with closure. By having residents complete their first and third years in Seattle and their second year in Boise, the program was not meeting the Residency Review Committee’s continuity clinic standard. VA Boise had supported the internal medicine residency since 1977, but was now being asked to make significant changes in the face of diminishing faculty resources.

Second, Idaho was experiencing a shortage of primary care and behavioral health providers, and VA Boise was finding it increasingly difficult to compete as an employer of choice. Idaho ranks 48th amongst all states in primary care physicians per capita¹ and 43rd for the number of nurses per 100,000 population.² As the demand for skilled health professionals increased, the State of Idaho sought innovative ways to expand the pipeline of Idaho’s healthcare workforce in medicine, nursing, and other healthcare professions.

Third, the national Veterans Affairs (VA) health system was transforming its primary care system to a “medical home” model, a patient-centered and interprofessional team-based approach to primary care aimed at increasing access, continuity, and coordination of care. Although VA had been shifting resources to outpatient care for many years and already had a national reputation for team-based practice, this new model, called the patient-aligned care team (PACT), was a dramatic shift in a more patient-centered and interprofessional direction as part of a larger effort by VA leadership to reposition the organization as the health system of choice for Veterans in the future US healthcare system.³

To address these issues, VA Boise (in conjunction with the University of Washington and VA’s Office of Academic Affiliations) decided to establish a separate three-year internal medicine residency sponsored by the University but entirely based in Boise. One of the major training sites would be the VA and it would be focused on the training and retention of generalists in Idaho. Already recognized for its innovative approaches to education and practice, VA Boise would utilize the structure and principles of the PACT model to train residents in the delivery of patient-centered, interprofessional team-based primary care.

A LEADER IN TRANSFORMING PRIMARY CARE EDUCATION AND PRACTICE

Together with the national transformation of VA’s primary care delivery system, preparing the future health professions workforce for practice in this new environment was also an agency priority. Traditional training models emphasizing separate, parallel education of health professionals was viewed as incompatible with the PACT practice model. However, PACT had not been specifically designed to address the unique issues involved in integrating trainees into this model of care. VA recognized that health professions trainees placed in these new clinical environments might have difficulty adapting. Clearly, a new way of doing the “business” of clinical education was necessary.

It was equally clear that it would not be possible to change the nature of primary care rotations at VA Medical Centers nationwide in short order—even if the right educational model were known (which it was not). Most training experiences at VA facilities occur in collaboration with academic affiliates that actually sponsor the programs, making it difficult for VA to unilaterally change curriculum structure or

content. New educational strategies were needed to meet the current and future needs of a rapidly evolving healthcare delivery system.

In August 2010, VA issued a request for proposals (RFP) to establish “Centers of Excellence in Primary Care Education,” which would have the primary goal of fostering the transformation of clinical education by preparing health professions trainees to work in and lead patient-centered, interprofessional teams providing coordinated, longitudinal primary care.⁴ The program would fund up to five sites to develop and test innovative approaches to preparing physician residents and medical students, advanced practice nurses and undergraduate nursing students, and associated health trainees for collaborative primary care practice. Funded sites would receive up to \$5 million over five years and additional trainee stipends to establish innovative educational programs with affiliated health professional schools. Physician residents and nurse practitioner students were required participants and would have to spend a minimum of 30% time in team-based learning and practice in the Center.

In their proposals, sites were required to address four core domains of patient-centered care: 1) shared decision making, 2) sustained relationships, 3) interprofessional collaboration, and 4) performance improvement. Each of these is linked to a related foundational element of the PACT model, thereby emphasizing the seminal importance of aligning education reform with practice redesign.

Shared Decision Making links to PACT’s core requirement that health care should be patient-centered. To align clinical care with the values and preferences of patients and their families, trainees need to be introduced to the psychosocial foundations of health management and disease prevention. They must understand the influence of values, preferences, and cultural perspectives on clinical decision making and strive for shared understanding. They must have insight into their own values and preferences, which may bias patient-centered decision making. And they must have the requisite communication and conflict management skills to foster strong patient-provider relationships and promote patient behavior modification and self-management.

Sustained Relationships links to PACT’s core requirement that care should be patient-centered, continuous, comprehensive, and coordinated. For trainees to appreciate the power of meaningful relationships with patients, they must have ongoing experiences with and responsibility for an identified patient population.

Likewise, ongoing experiences with teachers foster formative feedback, effective supervision, and mentoring. Curricular redesign that accommodates true continuity of care and promotes longitudinal learning relationships with both patients and teachers should be foundational objectives of the new curriculum. Related objectives, which also promote continuity of care and longitudinal learning, include effective coordination of primary and specialty care (including care across different venues and in the private sector) and the use of safe hand-offs at transitions of care between individuals, teams, and care venues.

Interprofessional Collaboration links to PACT's core requirement that care should be team-based, efficient, and coordinated. Clinical role models leave indelible impressions on learners and have a critical role in professional identity formation. The development of a strong team ethic requires robust teacher-learner relationships within and across professions. Clinical educators therefore have multiple roles, including cross-professional role modeling for all trainees and team members and direct supervision and mentoring of trainees within their own professions. Trainees must appreciate that varying healthcare professional perspectives influence collaboration, team work, and care planning. They must understand that effective team work requires high-order interpersonal and coaching skills, with leadership based on the particular problem at hand rather than an arbitrary hierarchy. And they must develop ease with a multi-modal array of communication techniques, including face-to-face, telephone, and internet-based communication.

Performance Improvement is a general requirement for all health professional education programs and is also a foundational element of PACT. Clinicians strive to provide safe and effective ("evidence-based") care to individual patients but must also optimize the health of populations. Trainees must be able to assess and manage the health of individual patients as well as an assigned panel of patients and must do so within the larger context of community and public health. Trainees must understand the methodology and importance of process and outcome assessment and continuous performance improvement, including improvement of care at the level of individual providers, teams, practices, programs, and institutions. They must also develop the skills to participate effectively in patient safety activities, such as sentinel event identification and root cause analysis.

VA BOISE: BUILDING THE RIGHT TEAM

Educational leadership at VA Boise had to decide whether to expend the considerable time and effort required to develop a competitive proposal. Potential opportunities included rededication of an innovative residency, new resources, and expansion and improvement of interprofessional training and practice. These had to be contrasted with a low likelihood of success for a relatively small VA, the complexity of collaboration between entities that had little historical precedent to do so (i.e., medical schools and nursing schools), and the considerable effort involved in developing a curriculum that covered the four required core domains of training—all while launching a new residency in internal medicine.

Exploratory conversations were held with in-state nursing schools. However, only one had a nurse practitioner training program and did not respond to requests for discussing a partnership. The nurse practitioner proposed as co-director of the Center had trained at the Gonzaga University School of Nursing in Spokane, Washington, approximately 400 miles from Boise. Like the University of Washington, Gonzaga University had considerable expertise in regional training and distance education. Some of their students had trained with nurse practitioners at VA Boise, so the two institutions already had a formal affiliation agreement. VA Boise leadership met with Gonzaga nursing faculty, and a new collaboration was readily developed. Likewise, Northwest Nazarene University, a local private university, agreed to develop a three-month immersion block at VA Boise for undergraduate nursing students, covering skills such as patient registry management and leading interprofessional huddles.

VA Boise also had an existing affiliation with Idaho State University School of Pharmacy. VA pharmacists had been teaching first-year pharmacy residents for more than a decade and, more recently, had added second-year residents focused on an ambulatory training year. These second-year residents occasionally practiced in the medicine resident continuity clinic, but rarely had more than passing interactions or any shared projects or curriculum. Medicine and pharmacy faculty met and decided that the pharmacy residency would be included. Likewise, the Boise psychology service, which had recently applied to start a new internship program, requested to be added to the proposal. Psychology interns became the fourth core group of trainees for the Center.

In short, the potential for innovation in interprofessional clinical training proved irresistible, and the challenges posed by the RFP were overcome. VA Boise was one of 22 sites invited from a pool of 37 applicants to submit full proposals, and one of only five to be selected to establish a VA Center of Excellence in Primary Care Education. Through a mutual leap of faith, the partnership was born, and on July 1, 2011, VA Boise began a new medicine residency, a new psychology internship, and a new interprofessional training program for primary care. As of this writing, the Center is midway through its second academic year.

GENERAL IMPLEMENTATION ISSUES

The VA Centers of Excellence in Primary Care Education function as a collaborative across five sites, with central coordination by the Office of Academic Affiliations. As befits a demonstration project with an overall goal of informing the educational and practice communities on how best to integrate new models of education with patient-centered and team-based practice, the individual sites were given considerable latitude to innovate. The curriculum at all sites has to address the four educational domains, but training models are locally determined. Although demonstrating educational and clinical practice improvement is necessary, this is not sufficient. Learning what works, and when and how, is equally important.

Patient care in the Center must be at least as good as the PACT model of care generally. However, there is no *a priori* expectation that clinical outcomes will be better. The project is designed to examine how best to integrate trainees into a “medical home” environment, looking for synergies between educational reform and practice redesign, rather than focusing on patient and population outcomes. In essence, how can education inform practice and how can practice inform education? Clinical outcomes are the province of a much larger, ongoing study of the enterprise-wide implementation of the PACT model.

The primary focus of the intervention is the clinical microsystem. However, it was recognized that changes at the point of care alone would be insufficient for diffusion of the innovation across VA or into the private sector. Changes at training program, institutional, and accreditation levels also will be required. Sustainability beyond the five-year demonstration project will depend on how well the innovations promote patient-centered practice both inside and outside VA.

EARLY IMPLEMENTATION AT VA BOISE: OPPORTUNITIES AND CHALLENGES

From its inception, the VA Boise Center established a very visible presence at the facility. Program leaders branded the program, naming it the Regional Enhancement of Ambulatory Collaboration and Health Education (REACHE), which reinforced its objectives for improving training and retention for the Idaho region. A logo was designed to clearly identify the Center on associated literature and on bulletin boards around the facility. Interprofessional teams responsible for the care of a defined cohort of patients chose team names reflecting regional mountain ranges and posted photographs of team members for the benefit of patients and facility staff.

The initial implementation plan for the Center was to create long-term sustainability (beyond the five-year seed funding) through research grants and exportable curricular products. With this in mind, a database manager, biostatistician, and instructional design specialist were added to the original team comprised of physician and nurse practitioner co-directors, a project manager, a PhD nurse researcher, and clinician-educator leads in pharmacy, psychology, nursing, and medicine. Faculty and staff worked together to develop a variety of distinct projects under the umbrella of the Center, such as exploring trust and professional role development.

However, significant challenges soon became evident. Varying perceptions of team leadership and profession-specific differences in prior leadership training led to uncertainty in role clarity and in the balance of responsibilities between the physician and nurse practitioner co-directors and other lead faculty. These issues surfaced in administrative and educational leadership settings as well as in the clinical practice arena. Also, with little time between the receipt of funds, placement of faculty and staff in their new roles, and the arrival of the first cohort of trainees, development of a formal curriculum was delayed.

The nurse practitioner co-director could not be released from full-time clinical duties for six months after award notification, significantly impacting her time to be oriented to a new leadership role and contribute effectively to the early stages of the program. During this time the burden of standing the Center up fell almost entirely on the physician co-director, which further aggravated role clarity and shared leadership. In addition, protected academic time was an accepted tradition in the

medical service but less so in the psychology, pharmacy, and nursing services, which challenged the ability of the new team to work together on implementing the initiative.

As a result, the program initially utilized the existing VA Boise physician residents' ambulatory care curriculum. Though always considered a temporary solution, it was quickly recognized that this curriculum needed to be changed to meet the needs of all learners, not just the physician residents for which it was designed. One of the primary issues was neutralizing physician-centric language and reducing the attention given to discipline-specific skill sets. Trainees from other health professions often felt uncomfortable asking for clarification about specific terms or felt that their perspectives were not valued in the lesson plan. Faculty observed that the varying experiences of trainees could lead to different diagnostic or treatment plans. For example, when asked about the most common cause of an unintended 15 pound weight loss, trainees with predominantly hospital experiences answered "cancer" while those with predominantly outpatient experiences replied "depression." At the same time, faculty realized that such differences could be the basis for interprofessional role exploration.

With trainees working together in teams, it also quickly became apparent that most had little familiarity with the training requirements and skill sets of other professions. For example, medical residents often expressed confusion over the various nursing roles (e.g., NP, RN, LPN) and nurse trainees were unsure about medical resident, intern, or student status. Faculty themselves admitted to being unclear about the clinical abilities of other professions and how to best enable each trainee to perform the more complex tasks within their scope of practice ("working at the top of one's expertise"). This fundamental lack of understanding led to issues with communication and collaboration, and more seriously to a lack of appreciation of the importance of complementary skills and abilities in high-functioning teams.

Physical infrastructure at VA Boise generally proved to be conducive to team-based training. A separate classroom was reserved for the primary care seminars. Suites of exam, triage, and check-in rooms were designated for each team. Dedicated space for psychology and pharmacy residents provided a collaborative environment and allowed for more coordinated patient care. Patients were easily referred to pharmacists and psychologists who were accessible within the clinic rather than necessitating a separate appointment. Nonetheless, it was not always possible to accommodate the increased number of trainees. Meeting patient care needs when

trainees were on academic breaks and other extended absences also required close attention to scheduling logistics and cross coverage.

MID-COURSE CORRECTIONS: ADAPTATION THROUGH REFLECTIVE ACTION

A site visit by VA's Office of Academic Affiliations midway through the first academic year prompted Center leadership to rethink its overall implementation plan and address ongoing leadership issues. Reflection was introduced as a fundamental component of program administration. Meetings were explicitly designated as predominantly operational or predominantly reflective in nature, and were focused on direct problem solving or open-ended discussion about the program and potential opportunities for improvement, as appropriate. Operations, curriculum, evaluation, and improvement workgroups were established, through which natural leaders emerged and roles became more clearly defined.

Throughout the year, the program co-directors engaged an organizational psychologist from the VA National Center for Organization Development who served as a leadership coach—a resource made available to all five sites as part of the overall Centers of Excellence initiative. The co-directors credit this experience with encouraging an environment of trust, psychological safety, and transparency. Difficult conversations were addressed head-on, and both co-directors felt that, by providing deeper insight into their own behavior (often a result of deep professional enculturation), coaching enabled them to better understand each other's perspectives.

Co-director responsibilities, though still not equally balanced, became better delineated and recognized by Center staff. The nurse practitioner co-director, who had been delayed in assuming her role, coordinated and led an off-site retreat aimed at team development. Participants included Center faculty and trainees, primary care clinic staff, and clinic and hospital leadership. Team-building training included Center stakeholders, clinic clerks, nursing staff, and attending physicians. Specific team-based exercises provided opportunities for individuals to learn new “languages” and step out of the comfort zone of their professional identities. As a result of the coaching and retreat interventions, the co-directors were able to present a more balanced leadership to faculty and staff, which resulted in marked improvements in Center functioning.

VA Boise program leadership also came to realize that individual faculty-led projects were not sufficiently integrated with overall education and practice transformation objectives. Accordingly, they began to shift away from the original model of distinct research-focused projects to a broader focus on transforming education within the context of clinical practice. This highlighted the need for additional nurse faculty, which led to a reallocation of funds from a research-focused nurse clinician to a clinician-educator and leader in the Center's clinical practice.

EDUCATION AND PRACTICE OUTCOMES

Feedback from trainees early in the first year corroborated faculty concerns that the curriculum was too physician-centric. As a result, the co-directors engaged a group of interprofessional faculty to co-write and co-teach a curriculum specifically designed for interprofessional team-based learning and practice. Pairs of faculty members assumed responsibility for specific didactic sessions and modified the existing medical curriculum to better reflect the interprofessional educational and clinical environment. Relevant components of all four core educational domains were covered in each of the primary care seminars. Didactic sessions were reproduced in a spiral bound book provided to the trainees. To further reinforce the connection between the lesson and the core educational domain being addressed, clearly identifiable icons for each core domain were used to mark related content in the book.

This new curriculum was designed for flexibility with beginner, intermediate, and more advanced learners in mind. A new didactic session called "Introduction to Clinic" was developed for novice trainees. This session described such fundamental issues as differences between clinic patients and inpatients, guidelines for presenting clinical cases to preceptors, PACT principles, and patient-centered communication. Participating in this writing exercise not only produced a modern PACT-oriented curriculum, but also resulted in faculty knowing the module well enough to teach it and understanding each other's professions better. In essence, this doubles as professional development for the Center's primary care practitioners and over time will likely diffuse beyond the "boundaries" of the Center as well.

One of the most pervasive challenges to improving educational experiences within the practice environment is obtaining protected time for faculty so that all

professions can work and learn together. Through negotiation with departmental leaders and rearrangement of work schedules, Center leaders successfully established dedicated time one afternoon per week when all services make a special effort to have faculty supervisors in clinic at the same time. This “Wednesday PACT” session continues to grow with more consistent faculty attendance and greater structure, and has become an integral part of the training program. The program also has piloted evening clinics and open access clinics, which have positively impacted clinic space limitations and enhanced access to care. Over time, such patient-centered practice patterns will likely impact patient satisfaction as well.

Program faculty and staff identified “situated learning” as an appropriate educational strategy for use within the PACT clinical model. In situated learning, knowledge is co-created through social processes in an authentic, real-world environment. For example, one component of the curriculum (dubbed the “Curriculum of Inquiry”) provides an opportunity for teams of faculty mentors and trainees, with the support of data management, biostatistical, and instructional specialists, to take responsibility for an evidence-based performance improvement project. With each such project undertaken, a subtle but, one hopes, enduring enhancement of performance improvement skills occurs, and the potential for translation of these newly acquired skills to their own (and other) practices is multiplied.

Addressing medication reconciliation or improving chronic pain management, for example, not only are fine examples of workplace learning, but also deal with problems pertinent to the clinical microsystems, institutional culture, and operating processes at VA Boise. Creative trainee-developed approaches to dealing with these types of problems have attracted the attention of clinic, department, and facility leadership, some of whom have even attended Medicine Grand Rounds on one or more of the topics. Blood pressure management and the retrieval of hospital discharge summaries also have benefitted from this approach. Such learning exchanges reinforce the connection between IPE and practice improvement. Over time, we believe that the educational activities of the Center will generate significant inputs to the ongoing enhancement of the PACT practice model. This may be happening already, and whether further amplification of what is an inherently diffuse, iterative process will substantively enhance primary care practice more broadly at VA Boise remains to be seen.

LESSONS LEARNED

The success of an interprofessional initiative such as this, which in essence is dealing with the nexus between education reform and practice redesign, starts with visionary leadership. In the words of VA's Principal Deputy Under Secretary for Health: "The goal of the Centers of Excellence in Primary Care Education is to transform the primary care workforce where healthcare begins... in the systems of teaching and training." Of course it also helps that VA has a statutory mission to "educate for VA and the Nation," which provides good ideas with ready access to capital.

Vision, leadership, and resources aside, what quickly becomes evident "on the ground" is the importance of building the right team. Establishing and maintaining common goals, transparency, and trust between key stakeholders (in VA's case with its academic affiliates; in the private sector between the academy, health systems, and payers) is crucial. Every partnership is different and needs to be tended in different ways.

In VA Boise's case, initial conversations with potential nursing school partners revealed that Gonzaga University had a much more collaborative approach than other nursing schools and had a strong commitment to creating a mutually beneficial partnership with VA Boise and the University of Washington—one that provided the best environment for IPE and practice. Likewise, involving department-level leaders and clinician-educators who sought innovative training models helped drive program development and continuous improvement, especially during the formative stages of the program.

Identifying trainees with the right educational background also proved to be important. Nursing skills gained from critical care experiences in the emergency department or intensive care unit proved to be a good fit with physician residents' predominantly inpatient experiences and clinical skills. Nurse practitioner students at an intermediate or advanced stage of training appeared to acclimate better into the Center's clinical learning model. And the research background of psychology trainees enabled them to contribute significantly to performance improvement projects, which further strengthened their relationship with other trainees and faculty.

To more effectively align new educational models with interprofessional practice, didactic sessions should be both developed and taught in an interprofessional fashion. Trainees and faculty quickly perceived anything less as lacking authenticity.

Furthermore, the curriculum must be pitched to different levels of learners; a “one size fits all” approach will not succeed. Engaging faculty in curriculum revision provided a deeper sense of ownership of the program and helped ensure that the voice of each profession was heard.

Faculty joined the Center with varying degrees of conceptual understanding of PACT principles, but most lacked long-standing experience with this model of practice. Understandably, they felt challenged with crafting appropriate educational and clinical experiences early in the life of the program. The Center co-directors encouraged faculty and staff to embrace challenges as opportunities and to seek input from others, including the perspective of trainees who may not yet be ingrained in a particular professional culture. Over a relatively short period of time, members of the faculty have come to view their participation in the Center as a “learning laboratory,” where they learn through active engagement with other faculty and trainees. Role modeling both teaching and learning behaviors has reinforced flexibility and adaptability, characteristic of a learning organization. Rather than separate, often short-term faculty development programs, faculty now embrace a broader, team-based learning cycle of teaching and learning from other Center faculty, staff, and trainees.

Integration of longitudinal primary care experiences with other professional training requirements is a significant barrier to the successful implementation of continuity of care models such as PACT. Fulfilling the expectations for training in clinical environments other than the ambulatory setting makes it difficult for physician residents to meet all of their patients’ routine and urgent care needs. The structure of nurse training programs does not always facilitate placement of nurse practitioner students. Unlike medical residents who have a structured “match” system, nursing schools typically expect trainees to find and secure their own clinical experiences, which can be a very competitive process. However, VA Boise fully coordinates all clinical experiences for nurse practitioner students, which is yet another draw of this program. Policies regarding supervision also can be problematic, especially in medicine where Internal Medicine Residency Review Committee policies do not permit physician residents to be supervised by nurse practitioners.

Wherever possible, it is beneficial to capitalize on the individual and collective expertise of faculty, staff, and trainees. Optimally, all participants should be engaged in a “learning organization” environment with open dialogue and active reflection. At VA Boise, self-reflection and frank discussions allowed the program

co-directors to be better able to complement each other's skills and work styles. This not only presented an image of unified leadership, but also promoted a culture of psychological safety and organizational learning within the Center.

SUMMARY

Selection as a Center of Excellence in Primary Care Education allowed VA Boise to survive the perfect storm described at the outset of this case study. However, it has brought new challenges in educational leadership, curriculum content and structure, and clinical supervision. The experience emphasizes that developing and implementing an IPE program is an ever-evolving process, not simply a static goal. It takes a concerted, coordinated effort to generate a viable curriculum, to establish protected teaching time, and ultimately to change organizational culture. For trainees, the visibility of interactions by interprofessional faculty during patient care sessions is the true crucible of culture change. Professional boundaries are pushed, stretched, and distorted as individuals learn to offer comments, suggestions, and recommendations to their colleagues in a psychologically safe environment. At the same time, members of the faculty are learning from observations and discussions with trainees, who bring a new perspective to established norms. In order to function as learning organizations, health professions education programs must create opportunities for trainees and faculty to work in the boundary areas between professions so that they can identify novel, sustainable, and generalizable solutions to current deficiencies in education and practice.

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CASE STUDY 4

ROLE OF CULTURE, RESOURCES, ADMINISTRATIVE ALIGNMENT, AND FINANCES IN A MODEL OF INTERPROFESSIONAL EDUCATION AND PRACTICE: A NEXUS FAILURE

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PROBLEM STATEMENT

In a dynamic healthcare marketplace with one university that educates over 70% of the state's advanced practice health professionals such as physicians, advanced nurse practitioners, pharmacists, dentists, public health professionals, and others, how do the health professional education and clinical practice communities: 1) establish a sustainable partnership and infrastructure; 2) jointly work to identify and solve challenges, problems, and paradoxes; 3) create interprofessional education and clinical practice experiences within the context of new, patient-centered care models; and 4) move toward achieving the Triple Aim of improving the patient experience of care, improving the health of populations, and reducing the per capita cost of health care?

The process of change can occur top down, bottom up, or both. Long-term success requires all to be present with a common vision, clear outcomes, defined roles and responsibilities, resources, and a supportive financial model. This case study illustrates what can happen to a successful interprofessional, patient-centered process of care (bottom-up culture change) that achieved its defined patient- and student-learning outcomes, but did not develop senior executive alignment around a vision with shared definitions of success and financial plan (top-down culture change) that would support sustainability.

CASE CONTEXT

The context for the development of this model of interprofessional education and practice is the Minnesota healthcare marketplace. This marketplace is comprised of a highly consolidated group of health systems. The University of Minnesota Academic Health Center (AHC) is the primary producer of advanced practice providers of care for these systems. The marketplace is very dynamic, having moved quickly from traditional care to managed care to provider and care delivery system consolidation and integration to health homes, accountable care organizations, and associated payment reform (global payment with sharing of revenue based on achieving preset goals).

Over the years of managed care, a gap developed between education and clinical practice that has led to a number of interface challenges: 1) workforce shortages and a maldistribution of providers; 2) the need for patient-centered care and improved patient safety and quality; 3) increasing cost of care; 4) the retraining for practice of graduates of health professional schools; 5) a crisis in the financing of education; and 6) a lack of sufficient numbers of sites for experiential education.

All these considerations, in concert with the rapid acceleration of reform of the process of care as a result of the Minnesota Care Reform Act of 2008 and the federal Patient Protection and Affordable Care Act of 2010, have led the AHC, health systems, policymakers, and payers to the realization that education and practice models need to reconnect so that what is taught is also what is practiced. This reconnection requires the joint participation and partnership of both the education and practice communities at all points in the education-practice nexus, including the clinical micro-system, the institutional meso-system, and the regional (and national) healthcare macro-system.

BACKGROUND

The interprofessional education within clinical practice described in this case study had its roots in a small community-based geriatric clinic in which primary care medical residents had a block rotation with community faculty in the late 1990s. The clinic provided interprofessional care with medical, pharmacy, nursing, rehabilitation, social work, and dental staff onsite. In 1998, with a Geriatric Interdisciplinary Team Training (GITT) grant provided by the John A. Hartford Foundation, a core curriculum

was developed and the program expanded to include university faculty and teams of students including those from other disciplines. When the GITT funding ended, the program became financially nonviable. The GITT faculty team proceeded to identify a new site to study the impact of this model on clinical and educational outcomes.

The former GITT faculty team approached multiple care systems to assess options for developing a new interprofessional practice and educational site. Most inquiries were met with interest but also concern about the potential burden of teaching on the medical practice. After a year of searching, the Walker Methodist Health Care Center in Minneapolis was identified as a viable community partner. Walker is a 450-bed skilled nursing facility that was having difficulty with attending physician coverage for short-term rehabilitation patients on their growing sub-acute/transitional care unit (TCU) and heavily utilized by two participating health systems. Local physician groups had practitioners providing episodic visits to long-term care residents, but because of the level of acuity and complex care needs of patients in the TCU, many physicians were reluctant to take responsibility for these patients. The medical director who had been assuming care for unattended patients was overburdened and declined to continue to provide coverage for the TCU. The nursing home staff provided care for all Walker patients using a team approach consisting of caregivers in nursing, dietary, therapy, social services, therapeutic recreation, and spiritual care.

When the former GITT faculty team approached the Walker administration to explore the TCU as an interprofessional practice and education site, both parties assumed that their specific needs would be met by a partnership. Walker would receive a physician as medical director to assume the care of the TCU, and the former GITT faculty team would be able to continue what they considered a successful practice and education model. The University would benefit from access to a site for geriatric rotations for its students. Walker agreed to establish a University interprofessional teaching site which would allow the medicine, nurse practitioner, and pharmacy faculty members (now called the U-Team) and their students to practice.

The Senior Vice President for Health Sciences assigned the Associate Vice President for Education and the Department Chair of the medical school's Department of Family Medicine and Community Health to manage the project. The university office of the general counsel and the AHC finance team fully supported the U-Team. The partnership was consummated in a memorandum of understanding (MOU) signed by the Walker administration, each of the participating programs, and the AHC administration.

GOALS FOR ESTABLISHING THE INTERPROFESSIONAL GERIATRIC CARE UNIT MODEL

The U-Team established goals to: 1) design, implement, and evaluate a model of interprofessional education and clinical practice in a community-based clinical setting; 2) use the comparative effectiveness approach for evaluating the clinical model by assessing its impact on length of stay and payer reimbursement; 3) integrate the academic program into a community care system; and 4) effectively educate students in the principles of interprofessional team care and geriatrics.

INITIAL FINANCIAL MODEL

The initial financial model was a hybrid from the participating organizations, with an understanding to revisit it following proof of concept. The nursing home was paid as a skilled nursing care facility on a per diem per patient basis. The participating health systems were paid as health maintenance organizations with a monthly per patient capitation payment. Physician and nurse practitioner providers billed separately for their time; there was no third-party reimbursement for the clinical pharmacist or for interprofessional care. Subsidies for the nurse practitioners and pharmacists and the costs of education were assumed by the university. A partial salary was paid by the nursing home to the geriatric physician medical director on the U-Team.

Costs for faculty time ascribed to the Walker mission (beyond that for providing clinical care and AHC student education) included: physician medical director (0.2 FTE); gerontological nurse practitioner for support and education of Walker staff (0.3 FTE); and pharmacist for consultation on non-U team patients, medication cost reduction, regulatory compliance assistance, and staff education (0.3 FTE). The Walker administration was provided physical space for the team offices and teaching conference room, valued at \$15,000 annually.

In the 1990s, Minnesota established the Medical Education and Research Fund (MERF) to offset health professions teaching costs in clinical settings. From 2005 to 2009, the fund supported some of the costs of education through payments to the TCU. However, in 2010, the state legislature reduced the funding for the MERF and there was no longer funding available for the TCU.

PATIENT CARE PROCESSES

The Walker U-Team consisted of a board-certified geriatrician, a gerontological nurse practitioner, and a board-certified geriatric pharmacist. All had participated on the GITT Team and were faculty of the university. The 44-bed TCU was specifically designed to provide post-acute rehabilitative care with a smooth transition to a residential care setting (e.g., home, assisted living, or long-term care).

Patients were admitted to the Walker U-Team service if the patients and their physicians chose that option. Upon admission, the team geriatrician assumed the role of physician of record and did not co-manage patients with their primary care physicians. The U-Team provided service to approximately 25 patients.

The remaining TCU admissions were managed by other physicians as “usual care patients” for whom the traditional model of care was provided; that is, the physician of record, often in collaboration with a nurse practitioner, monitored the patient’s condition, issued patient care orders, and provided oversight to patient care, typically via telephone or intermittent clinical visits. The U-Team provided on-site coverage 24/7/365 to its TCU program, with at least one member of the team at the TCU five days a week. This intense involvement allowed patients to receive more individualized and consistent care than usual care patients.

The team also participated in other activities on the whole TCU, such as weekly wound rounds, daily care conferences, therapy sessions, and unit administration meetings. Their day-to-day activities varied depending upon the patient census, patient acuity, and the decision making required by the interprofessional team model. Team meetings provided members with several structured opportunities for communication throughout the week.

The U-Team attempted to keep the primary care physician in the loop through detailed discharge summaries to facilitate post-discharge care coordination between the patient and the primary care physician. Discharge orders were faxed to the primary care physician on the day of discharge, and full summaries were dictated, transcribed, and mailed as soon as possible so that the primary care physician would have the necessary information prior to the patient’s scheduled follow-up appointment.

INTERPROFESSIONAL EDUCATIONAL ACTIVITIES

Interprofessional educational activities were based on the GITT model. A core curriculum was implemented that covered didactic geriatric topics as well as teaming principles and exercises. Experiential learning activities were intermingled with patient care as well as structured experiences. The U-Team met three times a week with learners in team rounds, including visits to the bedside, to discuss patients of particular interest and acuity (e.g., patients with complex medical needs, new admissions, and patients who exhibited conditions that illustrated important aspects of geriatric assessment and care for the learners).

A management plan, initially developed by the family medicine resident, was formalized after input and discussion by the entire student and faculty team. Team rounds provided the faculty an opportunity to formally demonstrate interprofessional care through their interaction with each other and the learners. The integration of certain clinical activities and the exposure to two somewhat contrasting cultures provided real-time educational opportunities for trainees and staff alike.

The U-Team's geriatric nurse practitioner regularly attended the Walker team's daily meetings and rounds, as well as all discharge planning sessions and family conferences for U-Team patients. The pharmacist provided drug information to the nursing staff on the unit as well as to physicians and nurse practitioners for all of the TCU patients, consultations on medically complex patients and those experiencing potentially medication-related problems, routine drug regimen review for all patients on the unit, and in-services on relevant topics. In addition, the pharmacist provided both formal and informal education on geriatric pharmacology and evolving pharmacotherapy literature to all of the learners and faculty.

OUTCOMES

The program outcomes were evaluated in financial, educational, and institutional categories.^{2,3,4}

Financial Outcomes

AHC administration engaged a health services researcher to study outcomes of patients cared for in the U-Team model compared with those of patients receiving

usual care in the same transitional care unit.² Appropriate approvals for the study were obtained. Selected results of the one-year analysis (April 2003 to March 2004) are illustrated in the table.

	U-Team	Usual Care	All Patients
Total Patients	164 (48%)	175 (52%)	339 (100%)
Male	56 (34%)	58 (33%)	114 (34%)
Female	108 (66%)	117 (67%)	224 (66%)
Average age (years)	76.0	77.5	76.8
Average Length of Stay (days)	20.4	27.0	23.8
Average Total Charges (\$)	12,001	14,298	13,195
Average Daily Charges (\$/day)	588	530	554

The average daily charge for U-Team patients was 11% higher than that for the usual care patients. Patient acuity appeared higher in the U-Team group as judged by a higher rehabilitation resource utilization groups (RUGS) score, a higher proportion of Medicare patients (70% vs. 60%), and a lower proportion of managed care patients (10% vs. 19%). Medicaid and private pay patients were about the same in both groups. A separate analysis demonstrated that hospital readmission rates from the U-Team service were lower than those from the usual care service (13% vs. 19%, respectively).

Educational Outcomes

On average, 11 family medicine residents, 15 pharmacy students, and nine geriatric nurse practitioner students rotated through the site on an annual basis. The rotation was consistently rated in the “excellent to outstanding” range by students in all schools, and was the most highly rated geriatric clinical experience in the College of Pharmacy and the School of Nursing. Attitude assessments demonstrated that students’ appreciation for team-based care and their perceived ability to function as an effective member of a team both increased.

Institutional Outcomes

The average census on the TCU progressively increased during the period of the study. Specialty programs for delirium management and antipsychotic drug reduction were developed and implemented by the U-Team in collaboration with the Walker staff. The average number of state and federally issued quality citations

to the facility diminished during the U-Team's presence on the unit. Staff retention in the TCU improved markedly, and the daily presence of the university geriatric nurse practitioner was frequently cited as a contributing factor to this stabilization.

PROGRAM AND INSTITUTIONAL CONSEQUENCES

Given the length of stay reductions and higher per diem costs incurred by the U-Team, Walker Methodist Health Care Center was losing revenue via the per diem payment system and needed to increase patient flow to maintain census. With the decreased length of stay, the participating health systems benefitted from increased net revenue in the capitated payer system (fixed amount per patient regardless of length of stay) through which they are paid. The university was not able to maintain its level of financial support, both subsidy and personnel, because of reductions in state MERF funding and declining state support of higher education. As a result, the interprofessional care and education program ran an approximate \$200,000/year deficit, after accounting for the clinical care revenue generated by the physicians and geriatric nurse practitioner.

All participants, including the local health systems, acknowledged the value-added (cost-effectiveness) achieved via the U-Team model and were supportive of continuing the program and of doing more comparative effectiveness studies. However, no agreement could be reached on how the cost savings would be shared to support the program.

One health system with approximately half the TCU patients stated that they would not support the education component of the model. This system could not specifically identify a return on investment for support of educational costs and decided to implement the clinical model without an educational component and with their own personnel excluding a pharmacist. Walker did not believe there was a return on investment for its own staff development delivered by the U-Team and did not support the education mission.

The university's Family Medicine and Community Health Department likewise determined that the model was not financially viable without some sharing of the cost-savings. The AHC administration began seeking less expensive models.

CURRENT STATUS OF THE PROGRAM

The nursing home recently informed us that they will not continue the program in 2013, although some direct contracting for services may continue.

SUMMARY AND KEY LESSONS LEARNED

This case study illustrates the successful implementation of an interprofessional, team-based clinical and educational program within a community setting. The team composition and clinical micro-system operations met the Institute of Medicine's infrastructure requirements and dimensions of team effectiveness.^{5,6} The program's initial success was rooted in the faculty's prior experience in, and enthusiasm for, practice in a high-functioning, interprofessional team. Much of the role development and adaptive teamwork had been accomplished previously and allowed the team to focus its efforts on successfully integrating with the community partner at the level of the practice site. Despite tangible benefits to participants at all levels, key elements of the program have been challenged. A major learning was that executive-level alignment and a financial model that supports both care and education are key success factors for sustainable change to occur.

Fragmentation of mission, primarily due to a lack of aligned incentives and mutual definition of "success," arose at multiple institutional levels. Justifying the burdens of education to a community partner concerned about financial viability and not recognizing any return on investment became increasingly difficult as resources became more limited. Neither the educational program nor the community partner has been able to access any of the financial benefits resulting from their joint efforts and captured by the participating health systems.

A shared definition of success by all partners is crucial. In this instance, community partners did not place intrinsic value on education within their walls. The potential payoff seemed too far away and the disruption in day-to-day operations, a burden. The academic institution was perceived as having already "been paid" for all the necessary costs of educating students, and the need for faculty to generate substantial revenue came as a surprise.

Initiating significant culture change with a new process of care requires a bottom-up process for design, implementation, and the demonstration of proof of concept.

An interprofessional team of middle managers is needed to create an infrastructure that supports the care model. Senior management must buy into the vision and proof of concept for a sustainable nexus to develop and support the model.

As noted by the U-Team program director: “Were we to try to establish the program today, I would search out a facility with an already expressed interest in participating in and supporting education as part of their mission. I would bring in a partner with a financial stake in the outcome of care and perhaps the outcome of the education as well. This would likely be a payer or care system. And I would put into place a governing body representing all constituents (including a patient representative) to set goals, trouble shoot, and review progress.”



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CASE STUDY 5

TRANSFORMING PATIENT CARE: ALIGNING INTERPROFESSIONAL EDUCATION WITH CLINICAL PRACTICE REDESIGN

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THE ISSUE WE ADDRESSED

Clinical operations at Geisinger Health System have a long tradition of team-based healthcare delivery, accompanied by a system-wide commitment to quality improvement and patient safety. However, no deliberate and formal education on the concepts of teamwork, quality, and safety existed in the system for either current or future healthcare providers. The prevailing culture assumed that simply working or learning in the healthcare system imparted competence in interprofessional team functioning and quality and safety. Thus, we created a nexus between clinical operations redesign and health professions education reform to address an identified gap between expectations about healthcare delivery and the reality of how clinicians are prepared to function as care providers. Specifically, learners were deliberately integrated into selected clinical operations for the purpose of learning targeted concepts. While education reform occurred at the point of care (i.e., the clinical micro-system), we also more broadly envisioned a reformation of the broader institutional culture of education (i.e., the meso-system).

BACKGROUND AND CONTEXT

Geisinger is an integrated, physician-led health service organization dedicated to patient care, education, research, and community service. The system includes a multidisciplinary group practice with more than 900 primary and specialty physicians,

system-wide aligned goals, successful clinical programs, a sophisticated information technology platform, a robust research program, and an insurance provider, Geisinger Health Plan. Clinical innovation and high-quality and cost-effective care establish Geisinger as a national exemplar for care delivery and financing.¹⁻² A steadfast commitment to quality and safety exemplifies the existing institutional culture.

Geisinger's ProvenCare® model focuses quality and value at the point of care and stimulates innovative clinical practice redesign. ProvenCare®, a collaboration between Geisinger Clinical Enterprise and Geisinger Health System, produces documented reduced mortality, improved clinical outcomes, and reduced hospital readmissions. ProvenCare® is a well-defined process involving interprofessional teams, guided by an electronic health record, that function in routine points-of-contact (e.g., daily team rounding). Physicians, nurses, care managers, and social workers comprise the core of these teams and can be joined by nutritionists, physical and occupational therapists, and pharmacists, with the team goal of discussing current care issues and coordinating discharge needs to aid in seamless transition between care venues. Standards for care include best practices, evidence-based techniques and treatments, reliable and optimized work flows, explicit accountability, and performance-based reimbursement.³⁻⁶

Interprofessional teams routinely function in all clinical settings—inpatient, outpatient, primary, and subspecialty care. The Community Practice Service Line promotes ambulatory team-based care delivery through our advanced medical home model, Proven Health Navigator®. In this model, physicians, nurses, specialized disease management care coordinators, and ancillary staff participate both to effectively manage patients with chronic medical illnesses and to ensure delivery of needed preventive services. Since its inception, Proven Health Navigator® has improved outcomes in many areas, most notably with congestive heart failure (CHF) patients who had 30% decreased readmissions. Similarly, diabetic patients showed increased compliance with diabetes bundle components, resulting in decreased macrovascular complications.⁴⁻⁶

As an established academic teaching center, Geisinger educates allopathic and osteopathic physicians, nurses, advance practitioners (i.e., physician assistants, certified registered nurse anesthetists, and certified registered nurse practitioners), pharmacists, and other allied health professionals. Concomitant with its clinical operations, Geisinger practices innovation-driven education reform to secure

its health professions teaching legacy. Prior efforts reformed the educational environment to provide instruction in quality, safety, and healthcare outcomes. Current reform efforts seek to integrate education into ongoing care delivery, *per se*. That is, we now aim to meaningfully engage learners, at the point of care, with interprofessional teams during routine care delivery.

WHAT WE DID TO ADDRESS THE ISSUE

One mechanism to reform health professions training at the education-practice nexus is the Geisinger Integrated Curriculum. The integrated curriculum has two main content threads covering concepts about innovative healthcare delivery. The first thread is “Modern Healthcare Delivery.” Topics include delivery models and innovations in systems of care, principles of quality improvement and patient safety, and accessing system-wide data (e.g., electronic health record, bundles, registries, and clinical decision information systems). The second thread, “Interprofessional Teams and Therapeutic Communications,” addresses engagement with patients and colleagues, interprofessional teamwork and collaboration, and service and patient satisfaction. The first thread initially was intended for physician learners (i.e., medical students and residents), but proved readily adaptable to other health professions. The second thread was interprofessional by virtue of its design, content, and format.

Development of the integrated curriculum overlapped with funding from the Josiah Macy Jr. Foundation for a 30-month grant to support an educational intervention. The impetus for seeking the grant was to leverage the emergence of an overt academic context for education about quality and safety and interprofessional teamwork, as opposed to funding either clinical operations redesign or research. In an earlier pilot project, we found that successful quality and safety interprofessional teams had a high degree of nurse involvement and a high priority assigned by clinical mid-level managers for this learning event. Thus, the current project goals included (a) gaining institutional management support and (b) facilitating interprofessional collaboration among academic and clinical operations for education purposes. The formation of an advisory board comprised of senior leadership, to vet and advocate for the project, and faculty development of mid-level clinical managers achieved the first goal. The second goal was achieved by direct and ongoing collaboration from individuals representing disparate academic and clinical units to design and implement the intended educational intervention.

We designed and used an educational experience centered on quality improvement (QI) and patient safety as the vehicle to foster interprofessional team development among student learners and healthcare professionals who provided direct patient care. This intervention imparted knowledge and skill on the science and fundamental methods of QI and safety. Further, it facilitated interprofessional team development and functioning by having learners work and collaborate in small groups on a real or simulated longitudinal QI project. Generally, we achieved the twin aims to educate learners about quality and to foster interprofessional teamwork using separate iterations appropriate for two different learner audiences: clinicians who delivered healthcare, *per se*, and students who had supervised exposure to patient care delivery.⁷

The first iteration of the educational intervention trained, over a nine-month period, mid-level residents and full-time direct care nurses to work in teams and address clinically relevant quality and patient safety issues at the clinical micro-system levels where they provided patient care. All enrolled providers had a series of foundational quality and safety knowledge and skill acquisition classroom sessions, followed by sessions focused on team-building skills. The teams developed their own QI projects in their respective clinical work sites and completed them by collaborating outside of the classroom sessions. To assist and guide them, each team had an assigned clinical champion (mentor) and access to specialists from the Division of Quality and Safety/ Quality Institute. Common themes emerged in the QI projects: i.e., patient-centered care, patient satisfaction, interprofessional communication, and discharge processes. Upon completion of the longitudinal intervention, resident-nurse teams presented their QI project storyboard posters at Geisinger's annual resident research day as a required capstone learning experience.

Ultimately, team success varied: two teams were judged as highly functioning, two had mixed effectiveness, and two demonstrated little progress in completing their respective projects. Again, we found that the major factor contributing to team success was the degree to which clinical managers accepted and valued this education for their direct care nursing staff. Such was not the case with the residents, for they participated in the intervention as part of the institutional graduate medical education curriculum and had the support of their program directors.

Trainees cited successful QI project completion and presentation as a major professional achievement, and they gave post-training feedback indicating greater appreciation and valuing of interprofessional collaboration and perspectives.

Despite these positive learning outcomes, we discovered some unexpected shortcomings. Limited flexibility in clinicians' patient care schedules sometimes inhibited them from attending scheduled longitudinal educational activities. Also, some attrition resulted from the approaching end of the residents' academic year, with its major reassignment of clinical responsibilities, and several staff nurses moved into different positions and work settings. Finally, integrating the cohort of residents and nurses into existing system-wide QI teams proved problematic. Inserting new team members into high functioning teams provided only small educational value to the trainees and limited contributions to the teams. In effect, this produced only an observational, rather than a functional, presence for the trainees. Most importantly, we found that residents and nurses reported that opportunities for interprofessional communication actually were rare in the everyday clinical workplace. They valued the formal and informal educational activities as opportunities to share discipline-specific perspectives and gain insight into the clinical workflows and challenges of their peers.

The second iteration of the educational intervention trained successive cohorts of upper-level medical, nursing, and allied health students.⁸ Students basically experienced the identical resident-nurse intervention, although it was customized for the student level, used simulated QI case scenarios, and lasted one academic semester. Directed multidisciplinary student teamwork provided opportunities to learn about quality and safety, interprofessional interaction, and team skills and collaboration. With the exception of the nursing students, the learners came from affiliated institutions to do their clinical training at Geisinger, and they were integrated, appropriate for their training level, into ongoing healthcare delivery as they did their required supervised clinical rotations. The nursing students came from a university BSN program, and their schedules limited them to being at Geisinger for a certain number of educational sessions, plus whatever time outside the classroom their respective teams met to complete assigned tasks. Thus, nursing students' exposure to ongoing clinical operations was limited to infection control audits done as part of the student intervention; they did not participate in direct healthcare delivery.

Educational strategies and resources for student learners included a series of structured classroom sessions with didactic presentations and team-based work led by preceptors who were either Geisinger physicians, nurses, or staff from the Division of Quality and Safety/Quality Institute or the Department of Infection Control. Selected online modules from the IHI Open School for Healthcare

Professionals complemented locally developed instructional materials. All student teams completed a simulated QI project to anchor their didactic classroom sessions and to provide teamwork and collaboration opportunities. This activity used written case scenarios and simulated data as a proxy for a real experiential quality initiative. Students worked in interprofessional teams to discuss and apply the core QI concepts and methods presented in the classroom. They eventually presented their QI storyboards to both an audience of quality experts and at the institution's annual resident research day as a capstone educational requirement. Evaluation of their presentations yielded clear evidence of increased competency in knowing and applying QI fundamentals. Post-training student narratives reflected appreciation of interprofessional learning opportunities. Significantly, we found that none of the student learners would have received any instruction on these topics at their home institutions prior to graduation.

A subset of students requested a second semester to engage in an active clinical operations unit and to complete a mentored quality project that addressed an identified clinical care challenge. The interprofessional student teams pursued projects in pain management, medication review/authorization, and patient hand-offs following cardiac catheterizations. Subsequently, one student team successfully published their work, which has been fully incorporated into the health delivery functioning of the participating clinical service unit.

LESSONS LEARNED

The prevailing assumption at the onset was that competence in quality and safety and interprofessional team functioning was acquired simply by working or learning in the healthcare system. Quality and safety often were addressed at the clinical micro-system level via the Geisinger Quality Institute. While valuable in their own right, such efforts basically were one-offs for small clinical operations teams to solve an immediate clinical issue. From an educational perspective, no aspirations existed for learning transfer and generalizability. Another issue was scalability, as no formal education existed for the large number of current and future clinical providers in the institution (meso-system). Our educational intervention directly addressed these issues, and involving other disciplines as both teachers and learners framed the importance of interprofessional education as a system-wide value.

Our educational intervention resulted in some substantive changes to the practice environment and affected the actual delivery of care. The first iteration with resident-nurse teams at the clinical micro-system level yielded quality projects focused on activities and issues at the point of care. For example, the emergency department team successfully addressed delays in discharging patients from lack of communication between physicians and nurses. The quality project decreased the time from the decision to discharge to when the patient left the hospital by eight minutes. This positively impacted room turnover times, waiting room times, and patient satisfaction. Likewise, the medical-surgical inpatient team implemented a new communication process in the electronic health record to improve nurse identification accuracy of the resident or mid-level provider responsible for patients. The project reduced erroneous pages to multiple providers and decreased potential delays in patient care. While initiated in the team's clinical micro-system, the improved communication process was disseminated across the hospital.

Three interprofessional student teams completed hands-on quality projects in the hospital. The most successful team of nursing, medical, and pharmacy students addressed a patient safety concern about poor handover procedures in the cardiac catheterization lab. This team developed and implemented a standardized checklist that was adopted by the unit and contributed to a reliable process ensuring accurate and timely communication of important patient information.

We also learned several important educational lessons from the intervention. While our core instruction basically proved sound, other issues emerged, as specified briefly and separately below.

1. Clinical operations management clearly influenced the ability of residents and nurses to collaborate on quality initiatives at the point of care. Successful teams had the support of their medical and nursing clinical champions, and they had operational managers that created ways for learners to participate, congruent with clinical education and workplace responsibilities.
2. Opportunities for interprofessional communication actually were rather uncommon in the routine clinical workplace. Residents and nurses expressed surprise when they communicated and learned about the complexity of each other's responsibilities. Collaborative quality initiatives led to shared perspectives and insights into discipline-specific workflows and challenges.

Deeper understandings of peers' clinical responsibilities, more realistic expectations of others, and a greater appreciation of the complexity of each other's workplace role and expectations resulted.

3. The educational model for residents and nurses proved incompatible with the demands of clinical practice at this institution and unsustainable. All involved unanimously perceived it as time- and labor-intensive. The formal educational framework must be refashioned to integrate interprofessional training goals within the constraints of operational structures and demands.
4. Training as residents and working as staff nurses in a high-functioning healthcare system does not guarantee competency acquisition in the basics of quality and safety. Baseline measures revealed that mid-level residents and experienced direct care nurses had low objectively assessed knowledge (e.g., common terminology, fundamental methods [IHI Improvement Model; PDSA Cycle]), and low capability in using core tools (e.g., fishbone diagrams, measurement, run charts). Furthermore, they self-assessed their QI skills as being very low and practically none self-reported prior quality and safety experience.⁷
5. Implementing the student intervention had fewer obstacles than did the resident-nurse iteration and proved completely reproducible and sustainable. Establishing new relationships with local community nursing schools posed some BSN degree-related issues about direct supervision, course credit, and attendance. Scheduling the nursing students to be on-site for instructional events persisted and sometimes limited participation. Future BSN students may receive academic credit to meet requirements for leadership and scholarship.
6. The educational intervention at Geisinger provided medical, nursing, and allied health students their only exposure to quality and interprofessional teamwork prior to graduation from their home institutions. We ascertained this from both curriculum analyses and from student debriefings. Baseline assessments revealed that students only somewhat underperformed, on all measures, mid-level residents and direct care nurses who trained in the first iteration of the intervention. Students recognized the salience of quality and safety. Also, they openly appreciated opportunities to build and engage in interprofessional peer relationships, and they reported high value of engaging in teamwork outside of scheduled classroom

sessions for interprofessional communication and collaboration. On the downside, students consistently noted a lack of dedicated locations and distinct opportunities in the system to promote interprofessional study and discussions. Student evaluations indicated most wanted to do real QI clinical projects (rather than only simulated case scenarios) and were motivated to participate in them if presented with the opportunity.

7. Core quality and safety content areas and materials emerged that persisted across all iterations of the intervention. The core topics required about six hours of in-class time and had utility for learners from many professions. Learners consistently rated the core topics and supporting materials instructionally effective and would recommend them to their peers. Simulated QI projects, with case scenarios and fictitious data, proved effective in providing opportunities to apply didactic concepts and promote interprofessional teamwork for student learners in areas such as central line infections, hospital acquired C-difficile infections, non-emergent surgery without prior consent, and CHF readmission rates.⁸⁻⁹

Moving forward, the educational events we developed continue and will be expanded to other professions and extended to other service regions in the system. For example, we will instruct residents, direct care nurses, and junior attending physicians in interprofessional quality and safety at one of our hospitals about 60 miles distance. A new cohort of 48 medical and nursing students just completed the interprofessional quality and safety course, and about 50% volunteered to pursue clinical quality projects in the hospital. A new expanded resident course now includes advanced practitioners and pharmacy residents. Funding for continuing and expanding education derives from internal support jointly from the Division of Nursing and the Office of Academic Affairs. Annually, all learners from the quality and safety courses may submit clinical projects to the annual resident research day event, which has added a QI storyboard session. This forum allows continued tracking of clinical QI activities by learners.

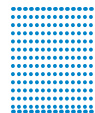
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HIGHLIGHTS FROM THE CONFERENCE DISCUSSION



The first day of the two-and-a-half-day conference, “Transforming Patient Care: Aligning Interprofessional Education with Clinical Practice Redesign,” was dedicated to presentations and discussions of a commissioned paper and five case studies, the full texts of which are included in this monograph. The second day consisted of small group discussions around themes and issue areas of particular relevance. And the third day, a half day, was focused on achieving consensus around conclusions and recommendations that gradually emerged over the course of the conference—essentially answering the question, “Where do we go from here?”

The conclusions and recommendations from the conference—which were summarized and disseminated broadly and also appear as a separate section in this monograph—were the result of thoughtful discussion between and among the experts at the table. Consensus was not reached lightly or easily, and the recommendations could not contain every valuable perspective offered or point made over the course of the conference. Below, then, is a day-by-day summary of the conference discussion, which was derived from the transcript and notes in an attempt to provide a more thorough record of this important meeting.

DAY ONE: FRIDAY, JANUARY 18

Opening Remarks

After welcoming remarks and introductions, Macy Foundation President George Thibault, MD, opened the conference by posing and answering several questions for conference participants:

- What is the problem we are here to discuss?
- Why were you chosen to be here?
- What are the conference process and the expected outcomes?

What is the Problem?

Dr. Thibault reported that, for the past five years, the Macy Foundation has been supporting initiatives to improve health professions education in order to better align it with the contemporary needs of a changing population of patients, and a changing healthcare delivery system. A major theme of that alignment has been interprofessional education (IPE); to change the educational paradigm so that learners from multiple health professions will learn about, from, and with each other in order to prepare them for the kind of teamwork and collaborative care that characterizes a well-functioning healthcare system. At the same time, across the nation, there are creative and conscientious efforts underway to make health care more accessible, more reliable, and more efficient.

What has been apparent, however, is that there is too little connection between educational innovations and practice design innovations. The educators are, by and large, dealing more with controlled environments for learners and less with the “real world,” which they have been unable or unwilling to penetrate with their educational innovations. At the same time, innovators of practice redesign, while often critical of the educators for not giving them products that are ready to function at a high level, are consciously or unconsciously not including learners in their plans, and are not always willing allies in a shared responsibility for producing the optimal healthcare professional workforce. The result, if not corrected, is suboptimal for both sides of this equation, and suboptimal for the patients we serve.

We are here, continued Thibault, to identify the steps to be taken to facilitate a closer alignment of education reform and practice reform now and in the future. All the while, we must be mindful that the goal of all of these activities is to improve the patient experience, improve the health of the community, and improve the efficiency of the system. This is the “Triple Aim” of health care.

Why Are You Here?

Thibault went on to tell participants: You are here because you have been chosen for your expertise as educational innovators, as leaders of practice redesign, and as influential thought leaders in healthcare. In planning this conference, we have sought to have a diversity of professions, geographies, and settings represented. Though each of you plays an important role in an institution or an organization, he said, you are not here representing that institution or organization. The opinions you express

are yours based on your professional experience and your best judgment. You are here to listen, learn, inform others, and contribute to the development of consensus conclusions and recommendations.

Thibault went on: So who is not here? When we put together a group like this of no more than 40 people, representing interests as broad as this topic, it is natural that some points of view won't be in the room. Though we have tried to be inclusive of many health professions, all health professions are not represented. It is a doctor- and nurse-heavy group, which happens to be where most of the Macy Foundation's work has been concentrated and also reflects a bit the dynamic of the healthcare system. But the other health professions represented here have very, very important voices and have a particular responsibility to make sure their voices are heard.

We must acknowledge, he continued, that there are some perspectives that are not here but also need to be considered as we think about the recommendations. For example, the regulators, who regulate licensing, credentialing, and the whole process of approval of institutions and programs, are not here. They perhaps are too numerous to count and would fill the room—and also some might say they might be conflicted in such discussions—but we need to think about their role and their point of view.

What are the Process and the Expected Outcomes?

Thibault then told participants about the conference process, which uses a commissioned paper and case studies as a platform for a discussion of issues. The large group discussions are followed by small group discussions that then bring the participants to a set of consensus recommendations. The conference planning committee will refine the draft recommendations document and give all conferees multiple opportunities to provide feedback. The final product will be a set of actionable recommendations to various stakeholders that will be published and broadly distributed.

Following Thibault's remarks, Conference Co-chair Malcolm Cox, MD, of the US Department of Veterans Affairs (VA), made his opening statement. He mentioned the need to frame the conference recommendations with the three broad levels of the healthcare system in mind, including: the clinical micro-system, where patient care occurs; the meso-system, which is the institution in which all points of care are embedded; and the macro-system, which may be a local health system; a national

health system, like the VA, Kaiser, etc.; or the entire US healthcare system. They're not three distinct systems; they're all interrelated.

In her opening remarks, Conference Co-chair Mary Naylor, PhD, RN, FAAN, of the University of Pennsylvania, reiterated that "something is to come from this conference that we all believe can move us forward with actionable opportunities, with players identified who can help assist and address and take us to the next level." She described the next level as being the "marriage that needs to happen between team-based care and education," which currently are two disparate entities. She went on to explain that making such a marriage happen requires conferees to think about the culture of health care, including the cultures of different healthcare organizations as well as different professions; about the need to be accountable for the care provided; and about the resources needed to advance change.

Discussion of Themes from Commissioned Paper

Conference participants then moved to a discussion of a commissioned paper, which was moderated by David Irby, PhD. Irby advised conferees to keep the focus of the conversation "on identifying the big issues, challenges, and opportunities that await us at the nexus between IPE and collaborative practice." The paper's authors, Mark Earnest, MD, PhD, of the University of Colorado Denver, and Barbara Brandt, PhD, of the University of Minnesota, opened the discussion of the paper itself, which lays out a vision for a future in which IPE and collaborative practice are linked. The authors juxtapose that idealistic vision with the challenging realities of today's healthcare system.

Rather than summarize the paper, Earnest suggested two axioms that underlie any discussion of IPE and collaborative practice. One is that, regardless of anything else, change is coming to education, to training, and to health systems. The other is that resources for education and training are not going to increase. He went on to state that, within the "change is coming" category, health systems are going to be held accountable for the Triple Aim, practice models are going to have to change to meet the Triple Aim, and workforce education and training will need to change to accommodate necessary practice and systems changes.

Earnest also offered six corollaries to his two axioms:

1. Today, health systems and practices are dependent on educational institutions for the bulk of their workforce preparation;
2. Practice reform and education reform must be linked if the outcome of practice readiness is to be successfully met;
3. Existing education and training resources must be repurposed, such as the resources in undergraduate training, graduate medical education, continuing education, maintenance and certification, etc.;
4. Education and training can and must cost less than they currently do;
5. Health professions education and training can contribute more value to practice than they currently do; and
6. Aligning practice and education will appear daunting and expensive in the short term, but that expense will be dwarfed by the long-term, overall expense if we are unsuccessful.

Highlights from Discussion of Commissioned Paper

Conference participants then discussed the paper, with a variety of points raised and considered, including the following:

- In linking education and practice, we must engage the community, understand the healthcare needs of the community and the disparities that exist, and link these things back to healthcare quality and accountability.
- Since there will be no new resources for linking education and practice, the practice community needs to think about sharing responsibility for education and training and think openly about redistribution of resources.
- We need to think about how we might educate and train health professionals more generally for a wide variety of potential roles and careers, and the implications of that for students who want to focus on highly technical acute-care specialties. Conversely, we must also be sure to include all types of healthcare workers in efforts to focus on team-based care—including non-professional workers, like community health workers.
- In framing recommendations around this topic, we should think in terms

of the value or return on investment (ROI) that creating a link between education and practice will bring to the American healthcare system. Will this effort enable us to reduce costs by focusing on preventive care, so that the most expensive patients—the “hot spotters”—won’t cost as much in terms of acute care needs?

- At the same time, however, we should be careful not to limit the discussion to primary care; this link between education and practice needs to involve all practice settings and all specialties.
- Can/should we address the time lag between when a student enrolls in health professional school and when he or she is actually practicing? For medical students, in particular, the speed of change is happening so rapidly that the practice world has changed by the time a student is ready to practice. This same point involves faculty as well; we need to consider faculty development in areas like teamwork and communication skills when thinking about linking education and practice.
- We must think in terms of health care being delivered not by a “team of experts,” but by “an expert team.” Another commenter followed this point with a story about her own attempts as a nursing trainee to obtain experience in team-based care. She felt discouraged by her professors, who didn’t appear to understand her interest or see the need for it.
- We need to acknowledge the limits of the “ideal” described in the paper: the paper talks about a system that’s going to deliver the text message to drive the behavior we want, instead of empowering the patient with knowledge about diabetes to make the observation she needs to adjust her own insulin. We have to push the conversation further in that direction because there’s a tone of paternalism that we need to be aware of and instead think in terms of teaching patients self-management.
- We need to bring the “science of education” into health professions education, which means understanding the ways that learners learn best and the ways that teachers teach best, and using that technical knowledge to improve educational outcomes. Another commenter made a similar point regarding the “science of teams and teamwork”—research that is being done in business schools and corporations to understand how best to develop and support high-functioning teams and that could inform health professions education.

- How can we incentivize health professions schools to begin thinking about this type of reform, and what are the levers to move it faster? Another commenter posited that, perhaps, we should not be looking at what will move education toward this new alignment, but instead at what is holding “the unchanged present” in place and maintaining the status quo?
- Perhaps the healthcare system should be focused on a “Quadruple Aim” as opposed to a Triple Aim. In addition to improving the patient’s experience of care, improving the health of individuals and populations, and reducing the per capita cost of health care, the fourth aim would be aligning healthcare education and practice.
- We need to be cognizant of the complexity and difficulty in understanding how health professions education currently is paid for, and also the fact that healthcare payment reforms—such as global fee structures—leave education out of the equation so that it’s not clear where financing for current health professions training will come from in the future, all of which is an argument for creating a business case around the support of education.

Commissioned Paper Discussion Wrap-Up

At the end of the discussion, Moderator Irby wrapped up by highlighting the themes he felt dominated the discussion: We’re all wrestling with the fact that we’re standing on constantly shifting sand, he said. And the challenge is trying to figure out how to prepare our learners for such an uncertain environment. As well as the fact that there is an incredible diversity of environments within which we train them and beyond which we don’t train them for. It’s a serious challenge. It’s clear also that the roles of our trainees will change by the time they get into practice. It is striking that we have a science of learning and a science of organizational development, and yet when you observe how teams function, those teams sometimes understand what they’re doing right, but more often than not, they don’t. It’s a very difficult thing to know and do.

“So we have learning opportunities all over the place,” he concluded, “as we seek to create learning organizations that are more tightly connected. We know that there aren’t good connections right now, and it’s very difficult to trade money across one barrier to another in order to facilitate the whole in a meaningful way, and thus there are lots and lots of dysfunctionalities. We have lots to address and a lot of creative partnerships to create in order to align learning and practice in ways that improve and add value to both.”

Presentation and Discussion of Case Studies 1 & 2

Moderated by Stephen Schoenbaum, MD, MPH, the presentation and discussion of the first two case studies began to give conferees “some real world examples” of ways in which health professions education and practice can be aligned.

Case Study 1

Kaiser Permanente’s Marilyn Chow, PhD, RN, FAAN, presented the first case study, “Collaborating for Outcomes: Integrating Continuing Interprofessional Education and Clinical Practice Redesign at Kaiser Permanente.” Chow began by pointing out that many healthcare delivery systems, like Kaiser, do maintain large educational departments that are now at risk, and there is an opportunity to bridge the gap between those departments that function in practice environments and the pre-licensure educational system.

She went on to briefly describe the IPE intervention called “Collaborating for Outcomes (C4O)” that Kaiser launched and whose goal was to improve team and patient communication, service and quality scores, employee satisfaction, and the safety culture. She pointed out that the intervention had considerable and necessary support at all levels of Kaiser Permanente leadership and that it included an evaluation component that provided some very valuable information, although there were limitations to what could be learned from it.

Case Study 2

The second case study, “Interprofessional Learning and Team-Based Care During a Primary Care Delivery System Redesign Initiative at Group Health,” was presented by Group Health’s Eric Larson, MD, MPH. Larson explained that, like Kaiser, Group Health is a cooperative, but also consists of 26 independent but related ambulatory care medical centers.

Larson went on to provide context for the intervention described in the case study: We went to redesign primary care around the ideas du jour in the early 2000s—which was advanced access—but found that it didn’t improve quality, continuity of care actually went down, and more importantly, it took a large toll on the staff. “The teams were falling apart, the doctors all wanted to take early retirement, and so we made a very concentrated effort to improve primary care,” he said.

According to Larson, “we chose one clinic to do a pilot in, and it’s an interesting choice: do you go with the best clinic who already had good results or do you go with the worst? I would say that often in medicine we’ve looked for the worst, and you can pretty much always bring the worst into something better. But we chose wisely, in retrospect; we chose the best clinic to work with.” Larson went on to describe how the intervention was focused around reinvigorating primary care with a patient-centered, team-based, interprofessional approach. “The bottom line,” he said, “is that, at the end of the day, we had a dramatic result. At two years, the evaluation found that, for every dollar spent, we got \$1.50 in terms of cost savings for hospitalizations and ER visits.”

So it was in this context that Group Health decided to use the patient-centered medical home as its design principle, and the case study, which was not summarized in the presentation, focuses on what happened after that decision was made.

Highlights from Discussion of Case Studies 1 & 2

Moderator Schoenbaum then opened the floor to discussion of both case studies.

- There was a question about the natural predilection of teams to perhaps undertake simpler process changes in lieu of actual cultural changes. Dr. Chow responded, “Our hope, and the intent of the leadership, was to use our intervention here as a culture change, but as we all know about culture change, it takes consistent leadership reinforcement and just being dogged. And people become tired, especially when this isn’t the only thing they’re focused on. But the intent was for culture change, using some process to get there.” Dr. Larson seconded this, saying that there were variations in the amounts and types of changes made across the clinics involved, but that the intervention was intended to take improvement “down to the level where you create culture.”
- One commenter noted a difference in how doctors and nurses communicated in the Kaiser case study, saying that the doctors were looking to nurses to communicate factual details and the nurses were looking to build relationships. The commenter noted the resemblance of this to Dr. Debra Tannenbaum’s work on communications between the genders and wondered if this was taken into account. Dr. Chow responded that the differences held regardless of whether or not a physician was male or female.

- A question was posed about the different choices made by Kaiser and Group Health to bring in outside consultants to help with their interventions. In addition, the point was made that faculty and researchers at health professions schools could be brought in to assist with designing evaluating these types of efforts—thus expanding and strengthening the link between education and practice. Both Chow and Larson commented that there is often a need to bring in outside consultants for several reasons, including the fact that certain expertise may be missing internally or internal experts are already over-committed. Larson also said, “I think it’s much better to work with internal experts when you have them. But there is an attraction that is natural to try and solve problems with somebody else’s skill because you don’t have confidence in your own skills.”
- A commenter shared some advice that he has learned about communication breakdowns: “‘Communication breakdowns’ is a big bucket that doesn’t tell us much about the nature of the breakdown. Such breakdowns usually manifest themselves in cooperation activities, in coordination activities, in conflict activities, and so on. So your information would be much richer if you get more diagnostic about communication breakdowns, not just who they are between, but what they are about, so that you can focus on preventing them.”
- In the evaluation of efforts to improve communication, it can be extremely useful to go beyond noting perceptions of situations to collecting behavioral data to ensure there has been an actual transfer of information. There are “pillars” of transfer that should be in place after an intervention, including: 1) Opportunity to practice the new skills that were taught. 2) Supervisory and leadership support that prioritizes the acquisition of the new skills and that doesn’t undermine them as unnecessary. 3) Reinforcement and incentives to use new skills throughout the organization, making it clear that these skills are valued and practiced. 4) Identifying a champion who sustains the value placed on the skill set as a way to maintain it as the organization changes and evolves.
- Several commenters raised questions or made suggestions regarding evaluation of the types of efforts featured in the two case studies, including the need to explore not just outcomes related to the healthcare professional—such as improved communications—but also what interventions worked best and how and why did they work? Also

it is important to capture outcomes related to patients. How do these interventions impact patient care and patients' experiences?

- A point was made about the fact that there's often an "entrenched conflict" and "baggage that must be unpacked" when health professionals communicate, whether its doctors and nurses or a stem cell researcher and a community doctor. It's about more than just acquiring certain tools or learning basic skills; there also are individual personality and broader cultural components that factor into these relationships.
- A participant asked Dr. Larson to reiterate how the Group Health intervention achieved a cost savings "if you dropped your panel size, and both your population and your capitation rate were relatively constant?" Larson responded: "Actual dollars saved were in forgone emergency room visits and ambulatory care-sensitive hospitalizations." Larson went on to say: "You can't do the patient-centered medical home model under a fee-for-service (FFS) system."
- A commenter made an observation about a "risk for the future" of academic health centers. "We already know the product isn't what's wanted," he said. "We already know that the product is too expensive, and so on, but what has not been said is that academic health centers are heavily dependent on the clinical revenue of its providers. State money is declining; the financial crisis is here, and not recognized, and where we are going will precipitate this as payment systems change."
- A commenter made the point: "We've said you can't do this type of work in a FFS system, but you can, in fact, adopt elements in a FFS system as we're seeing in Medicaid and Medicare and the alternate methods that are achieving the outcomes we want."
- Concerns were raised about the huge, unmet need for health care that is making its way into the system. It would be great to reduce our panels, but we can't reduce the number of people knocking on the front doors. That number is escalating, and it will no longer be a question of creating more business, but of trying to do more with the same resources.
- A suggestion was made that it would be incredibly helpful to have a shared understanding or common language between education and practice about

some of these overarching ideas, including the fact that we need to be increasing the competence of our entire workforce, student bodies, and faculty. Because so many different initiatives are in play in every organization, creating some meta-goals and meta-competencies that we would expect to be elements of every initiative would be helpful, recognizing the need to consider local conditions, which can be so compelling, and the need to engage stakeholders, including end-users who would be the people to receive the benefit of these efforts. Some collective thinking could help us advance scalability, improve efficiency of the resources, and move these initiatives forward.

- A commenter involved in practice redesign efforts noted, “Although we’re a clinical campus for two medical schools, we have been reluctant to involve them heavily in our redesign efforts. They’re too slow and people have many, many other responsibilities, and they are not judged for tenure on the basis of these projects. There are just all kinds of problems. But I think there are ways that our academic colleagues could be more involved, but it will require, in part, the recognition that changes in delivery of health care are a valid area for research, are publishable, and will support tenure. And that means there’s got to be some money available for it, otherwise it won’t happen.”
- Group Health’s Larson responded, “There’s a third element and that’s the fact that the academic center is getting a large share of its revenue from providers, and the chairs are motivated to grow and increase that revenue,” he said. “That doesn’t create a partnership that’s going to be enduring. At best it would be a ‘fly in, fly out’ kind of relationship, but I think the goal should be to have an enduring relationship around the goals that you just said.”
- Observing that his own medical training was a lot of “working alone together”—meaning his work products were not focused on patient outcomes that required teamwork but on individual achievements like test scores and the differential diagnoses—a commenter noted that academia has a challenge to create work products that do require teamwork and collaboration in order to succeed. He went on to explain that, at his medical center, students are continuously evaluating the performance of their teammates, creating a feedback loop that helps students improve their team functioning.

- A commenter raised concerns about the fact that federal health reform will soon bring more patients through the doors of academic health centers and that patients are aging and coming in with more complex needs. All of which makes linking education and practice more urgent, and yet the political will at academic health centers and among policymakers appears to be lacking.

Wrap-Up of Case Studies 1 & 2

Moderator Schoenbaum wrapped up the discussion by pulling out some primary themes, including repeated questions and concerns about scalability and the resources needed to make the link between education and practice happen. He also held up Harvard Business School's case method approach to teaching as something that the health professions could learn from, in terms of understanding the environment in which they are operating. He also raised the idea that the health professions must figure out how to include learners as colleagues and not just observers. Another theme was the "art of healthcare delivery," except, unlike with performers in other arts, health professionals don't continue to receive coaching and feedback over the span of their professional careers.

Presentation and Discussion of Case Studies 3, 4, and 5

Linda Headrick, MD, moderated the next session, which featured presentations and a discussion of case studies 3, 4, and 5.

Case Study 3

The session began with the third case study, "VA Boise Center of Excellence in Primary Care Education," which was presented by Judith Bowen, MD, of Oregon Health & Science University. After presenting background information on VA medical centers and their patient-centered model as well as on the VA Boise medical center becoming a primary care center of excellence, Bowen described lessons learned.

- Despite the interprofessional focus, the backbone of the Center's education-clinical practice system redesign is its physician residency program. This fact has made it challenging to create equality among the other health profession training programs involved.
- Interprofessional leadership is very, very hard. The five VA Centers of

Excellence in Primary Care Education, including Boise, are required to have co-directors, one from the physician-training program and one from the nurse practitioner training program. In all five centers, the physician is the dominant leader between the two co-directors, prompting program organizers to wonder why.

- There is a tension between research and transformation. We keep wanting to ask, “What’s our research question?” That’s that academic frame. But we’re really about transformation, and so Boise has had to let go of the research questions, which they saw as their sustainability plan. If they could get research done, they could potentially get another grant and sustain the work they’re doing, and shift more to the clinical practice side.
- Limited resources may result in more creative problem solving. Boise didn’t, for example, have a pool of nurse practitioners to recruit to the center for both teaching and leadership, which caused more creativity and more adaptability. “Sometimes,” she said, “when you have a lot of resources, you tend to get stuck in the system that you have, and when you have fewer resources, it results in greater creativity.”
- There is tension between education and practice. It takes deliberate work to move from formal classroom instruction into the workplace as a learning environment.

Case Study 4

The fourth case study, “Role of Culture, Resources, Administrative Alignment, and Finances in a Model of Interprofessional Education and Practice: A Nexus Failure,” was presented by the University of Minnesota’s Frank Cerra, MD. He described a small, community-based geriatric clinic that wanted to continue its successful IPE program after a grant ended, so it identified a new partner, the geriatric unit of a larger transitional care facility. Cerra summarized the positive outcomes achieved by the IPE model in the larger facility, including significant reductions in length-of-stay and in total charges per patient per length of stay. He also summarized the various consequences of this success, including the fact that, even though there was sufficient revenue saved to support the program and create a reasonable margin for the health systems, no agreement could be reached to continue the IPE program.

Cerra explained that the case illustrates that interprofessional team-based learning

can be implemented within an active community-based practice setting and can result in significant improvements in the quality and cost of care, but executive-level alignment and a governance and financial model that supports both care and education are critical keys for successful, sustainable change to occur. Further, a business case illustrating the ROI or value added from this approach is essential to connecting education and clinical practice. Ultimately, he said, “significant culture change with a new process of care requires both a ‘bottom up’ and ‘top down’ process with an established nexus between education and practice components.”

Case Study 5

The fifth and final case study, “Transforming Patient Care: Aligning Interprofessional Education with Clinical Practice Redesign,” was presented by Geisinger Health System’s Bruce Hamory, MD. He provided background on Geisinger’s history as both a health system and an educator of health professionals—having long-standing training relationships with 17 schools across a variety of health professions. Geisinger views its interprofessional training programs as an important source of new health professional staff.

According to Hamory, who did not go into detail on the case study, a crucial lesson from this case study is the importance of buy-in and support at both the senior leadership and middle management levels. Both executives and managers communicate and reinforce, in both large ways and small, the importance of this work to the entire organization through their daily words and actions.

Highlights from Discussion of Case Studies 3, 4, and 5

- When the moderator opened the discussion on case studies 3, 4, and 5, the first commenter noted a significant commonality between them: all three seemed to suggest framing this work as developing interprofessional teams whose goal is to improve clinical outcomes and reduce costs, rather than framing it as a way of improving education and integrating learners into the existing system.
- Another commenter questioned the potential for students to disrupt team functioning because their turnover rates are potentially higher. Hamory noted that there was no evidence of that at Geisinger. One commenter suggested looking at health professions trainees as the most junior employees on a healthcare team, as potential employees in development.

Hamory noted that Geisinger has begun a relationship with Temple University in which undergraduate medical students are able to get exposure to working in clinical settings.

- A commenter from academia noted that it is incumbent upon the educational system to ensure that pre-licensure students are “easily insertable” into high-functioning clinical teams instead of being disruptive. A responder mentioned work in Idaho to develop a residency-training program for nurse practitioner students, which the students had been requesting for many years. The commenter went on to say that building programs from scratch is often preferable to modifying existing ways of doing things because there is a level of freedom and creativity. The commenter recommended examining current training programs through the eyes of the trainees themselves, having them do reflective journaling, and then really listening to what they have to say.
- One commenter explained that she is struggling with the value proposition for this work, stating, “What are the core components that we will be able to measure that demonstrate a return on investment for this work? Where do we actually create the business plan that measures the core components that can be part of our index that will show that transformation occurs? I believe there has to be a formula.” Cerra responded that he would refine the question to: “Given the multifactorial nature of reductions in cost and improvements in population health, how do we map it back to say that there’s at least a reasonable likelihood that those outcomes resulted from linking IPE and practice?”
- Another commenter noted, “Quality can’t always be captured in a business plan metric—things like different kinds of highly respectful conversations between health professionals that are getting good clinical care done right there before our very eyes, in ways that have not happened before. How one measures that as part of the ROI escapes me, and I’m hoping that we don’t forget to keep looking qualitatively at what’s really going on, because I think it will lead to less burnout, more joy in work, better relationships, less turnover, and we may see it in reduced recruitment costs. We may see it in people wanting to stay where they’ve trained because they believe in the model.”
- A point was raised about the challenges presented by the organizational

structures within academia: "Our dean of medicine, for example, is also the CEO of the hospital system, reports 50% of his position to the president, and is held accountable for care and training of physicians and outcomes of patients. The other health sciences report to the provost. There's a huge disconnect. I don't know why everybody doesn't report to the president and is held accountable for the delivery of care so there's more responsibility within each school. There needs to be a shared vision regarding the need to connect education to practice."

- The point was picked up and continued: "First, I would frame the Triple Aim as a Quadruple Aim and include education, which suggests the need for including the right players. Second, the shared aim should include agreement on the metrics, which include both quantitative and qualitative feedback about the model. My third point has to do with dynamic developmental financial modeling. We can't separate clinical effectiveness from financial performance, that's an old model. We can't ever do these things except in some kind of bundled way."
- A commenter warned that it's not always the lack of ROI that dooms a successful pilot program. "I've had some experiences where the program has far exceeded expectations and yet we can't get a commitment," he said. "In those cases, it's absolutely not the ROI issue; it's the 'I don't think I want to be a partner with you' issue, where they're willing to risk hundreds of thousands of dollars in savings because they're afraid of whatever the new relationship would mean."
- Stating that "we need to demonstrate measurable improvements and don't need anymore 'one-offs', a participant suggested three shared criteria for Interprofessional Interventions (IPIs): 1) clear, agreed-upon, measurable goals; 2) a business plan; and 3) the need to be scalable.
- Asked to share examples of the qualitative benefits of Geisinger's IPE work, Hamory noted that everyone on the team, whether faculty, staff, or students, learns more about the patient's journey and a lot more about what the other health professions do, both of which have "been very valuable for folks." The comment served as a reminder to the group of the importance of including the patient's experiences as criteria for IPE work.
- A point was raised about how difficult it is to capture the value of the

“continuing education” experience that faculty have when training students, particularly now when so many health professionals are employed by health systems where financial decisions about how care providers spend their time are made by financial managers who aren’t involved in patient care. A follow-up point was made about the four or five competing goals at academic medical centers—grant-funded research, US News & World Report rankings, etc.—that get in the way of patient care, when patient care really should be the goal.

- A commenter asked: Is there a way to create shared financial incentives to align this work? He offered as one example the Comprehensive Primary Care Initiative (CPCI) created by the Center for Medicare and Medicaid Innovation. The CPCI aligns the private and public sectors to pay so much per month per patient, and that money must be used to hire care coordinators, nurse clinicians, other educators, social workers, etc. “So \$20 per patient per month is flowing into the system,” he said, “and we might want to think about that model of shared financial impact and how we could build and support teams, and drive behaviors from that.”
- A commenter brought up the idea of treating faculty teaching time like a community benefit in the same way that law offices are required to underwrite lawyers’ time working on pro bono cases.
- Another commenter recommended two journal articles on the impacts of team training. One is a 2008 meta-analysis of team training research in the journal *Human Factors* that found that team training improved performance by approximately 20%.¹ The other is a 2010 VA study published in the *Journal of the American Medical Association* that “clearly shows that team training reduced mortality by 18% in hospitals.”² These two studies may begin to help build a business case for team training.

Wrap-Up of Case Studies 3, 4, and 5

Moderator Headrick then highlighted several themes from the large group discussion of case studies 3, 4, and 5. The first theme she mentioned was

1 Salas E, DiazGranados D, Klein C, et al. Does Team Training Improve Team Performance? A Meta-Analysis. *Hum Factors*. 2008;50:903-933.

2 Neily J, Mills PD, Young-Xu Y, et al. Association between implementation of a medical team training program and surgical mortality. *JAMA*. 2010;304:1693-1700.

leadership with shared goals and vision. “We’ve heard about the importance of involving middle managers as well as top executives in the shared vision of this work,” she said. She went on to remind the group that problems can arise when assumptions and expectations are not explicit. Other themes were metrics (what do we measure?), money (including how do we create ROI and shared financial incentives?), and teaching (establishing it as a community benefit, having learners add value). Headrick concluded with the following observation, “We heard a tiny bit about patients, and I’d like to hear more, have more conversation about the role of patients in our efforts to redesign care and education.”

General Discussion of Themes of the Day

Conference Co-chairs Cox and Naylor then led a discussion intended to identify the primary themes of the day. Naylor first gave representatives from three foundations who were in attendance as observers the opportunity to provide input into the conversation. The Robert Wood Johnson Foundation’s Maryjoan Ladden, PhD, RN, FAAN, mentioned the increasing need for health professionals to possess cross-cutting competencies and demonstrate flexibility across various provider roles. Marybeth Sharpe, PhD, from the Gordon and Betty Moore Foundation said she was intrigued by several parts of the discussion, including the need to “bring the science of learning and the science of team and what can be learned from other industries into this dialogue.” Finally, Rachael Watman, MSW, of the John A. Hartford Foundation, said that, “As a funder, I was encouraged to hear an endorsement of broadening the definition of team, going beyond medicine and nursing to including pharmacy, dentistry, architecture, etc. We also spent a lot of time today on the financial piece and the need to get buy-in from institutional leaders. I think the idea of hitching the IPE work to the population that as a country we spend the most money on is extremely strategic,” she said.

The Macy Foundation’s Peter Goodwin followed up these comments with a few of his own, speaking as chief operating officer. “I would encourage you to remember that ROI does not always equal a dollar amount,” he said. “I’d rather you think about ROI as value. What is the value that you’re adding and bringing? Is it better care? Better outcomes? A better educational environment? That’s the value that you bring. The money will follow that.”

Mary Naylor then provided her own perspective on the day’s discussion. “The major big lesson for me today,” she said, “is that we are going to need alignment

of recommendations at the micro-, meso-, and macro-levels to create a whole, to accelerate movement.” She talked about focusing recommendations around the ways in which creating alignment between education and practice can help us address challenges in the healthcare system, and she also mentioned the need to include the role of patients, families, and communities in the recommendations. She also talked about the potential to engage learners much earlier and to fully integrate them into clinical practice. She also talked about the value of life-long teaching and learning. She also reinforced the need to continue thinking and talking about value and ROI, about the need to incorporate the science of teamwork and science of education into the discussion, and about the need for aligned leadership and shared vision to ensure success. She concluded by stating that the conversation “helped me to think much more broadly about the wide network of partners we’re going to need in order to have this happen—from patients to payers to providers—because at the end of the day, we are all accountable.”

Malcolm Cox followed with his own synthesis of the day’s discussion. He began by reminding the room that we need to remove the “us” and “them” references from the conversation, stating that we can’t think of academia and clinical practice as separate. “We have to work together on this,” he said, “because if we don’t hang together, we are certainly going to hang separately.”

He went on to say that while he found the conversation rich, he felt it was more “nibbling around the edges, redefining in different words the problems and not focusing enough on the solutions.” And he went on to challenge the group, “What does it take for us to be transformational, rather than simply aspirational?”

He also asked participants: “Why are we not more familiar with, and why do we not take advantage of, the science of teams? There’s lots of data out there, and it seems to me really strange that we’re not taking more advantage of what information is out there, how robust that science is.” Another question he raised: “How do we bring patients and communities into the discussion? We haven’t done a lot of that, it came up many times today.” He also agreed with Naylor that the ROI discussion is critical.

DAY TWO: SATURDAY, JANUARY 19

Overview and Charge to Breakout Groups

George Thibault began the second day by reminding participants of the assumptions that the conference is based on:

- The overall goal is to bring together the education system and the healthcare delivery system in a much more coordinated way using the tools of IPE and collaborative practice.
- The reason to bring education and practice together is to achieve the Triple Aim of better patient care, better community health, and a more efficient healthcare system.
- Resources are severely constrained, and it is likely we will have only the same or diminished resources to provide better care to more patients; therefore, we must think of different ways to do things.

He then explained that participants would be spending the day digging deeper into the discussion by working in small breakout groups facilitated by members of the conference planning committee. Keeping the various pieces of background information in mind—including the commissioned paper, case studies, bibliography for further reading, and conference discussion—each breakout group was asked to address three questions:

1. What are the opportunities for the integration of education reform and practice redesign associated with your focal area?
2. What are the challenges for same?
3. What recommendations would you make for taking advantage of these opportunities and addressing these challenges?

Each of the first breakout groups focused on one of the important components necessary for creating change and supporting the integration of IPE and collaborative practice. These focal areas often are flashpoints that create conflict within and across groups. They are:

1. **Culture:** different values, priorities, use of language, and patterns of communication that form the identity of groups and professions.
2. **Accountability:** different accountability structures, expectations, and measures of success across groups and professions.
3. **Resources:** different sources and uses of resources and power across groups and professions.
4. **Vision:** different visions, goals, and expectations held by members of various groups and professions.
5. **Roles:** different expectations, definitions, and enactment of roles, including flexibility (or lack there of) in their application.

Reports from Morning Breakout Groups

Following the morning breakout group discussions, the small groups reported back to the full group.

Group 1 - Culture: Different Values, Priorities, Language, and Patterns of Communication

The first group's reporter said the group quickly agreed that "culture is equal to our mindset, and that to achieve the Triple Aim, there has to be a new mindset, which should be a shared mindset between the education community and the practice community." The group went on to summarize the mindset as "all care, all teach, all learn, and all collaborate." In this mindset "all" encompasses patients, communities, students, faculty, administrators, and more—everyone involved at the micro-, meso-, and macro-levels of the healthcare system.

Having created language around a shared culture or mindset, the group then turned its attention to the question, "How do we get there?" and identified the following recommendations:

- Identify a place and/or process to bring all stakeholders together to achieve agreement on the new culture grounded in the Triple Aim.
- Create an ongoing, purposeful agenda to explore differences in our cultures and teaching each other about them, making diversity our strength.

- Create a routine way—a dashboard—for education and practice leaders to review a common set of measures relevant to the Triple Aim and professional development.
- Create a collaborative advisor system—such as “debriefnow.com”—to use at the micro-system level to translate tools from organization and human factors science to use in assessing and improving group behavior in health care and education.
- Create a “Community of Practice” for change champions and leadership development opportunities, programs, and resources.
- Create a 20-year vision for what an ideal healthcare learning system looks like.

Group 2 - Accountability: Different Accountability Structures and Measures of Success

Believing that divisive “we” and “they” language should be avoided, the “Accountability” group proposed a new name for a combined education-practice system: Nexus One. This system has three components: better outcomes for individuals and populations, better professional development, and better systems performance. This system would be accountable to entities that include patients; communities; society; students; alumni/preceptors; clinicians and practice clinicians; faculty; and organizations, which in turn are accountable to others.

The path forward, the group’s reporter said, is to clearly define the new Nexus One system in terms of shared goals as well as its criteria and characteristics. The group identified informatics as an enabling factor as it is recognizing that the culture of change is already happening in the healthcare system, but not in the educational system. The group also noted that it is the leaders of healthcare systems—executives and senior leadership—who have to lead their systems in this direction and identified underutilized affiliation agreements as mechanisms for bringing education and practice together. The group also identified current and future students—those who will be practitioners—as catalysts for this change. And the group identified the importance of faculty development in aligning the healthcare workforce with the Triple Aim.

Group 3 - Resources: Different Sources and Uses of Resources; Obstacles and Constraints to Unify These

This group began by identifying five categories of resources: human, financial, infrastructure, institutions, and assets. The group developed principles and recommendations, including:

- Most linkages between education and practice will be created at the local level. We need to develop and mock-up models that work at the local level. These models need to contain approaches to creatively shift/reallocate resources. Also, within the models, incentives among the engaged participants need to be aligned to achieve a sustainable approach to positively impacting the Triple Aim outcomes.
- Education and practice need to share control of resources to achieve the vision. This will require creating shared resource models, developing principles and strategies for resource allocations in sharing, and understanding the consequences of sharing resources.
- The value of the vision must be established. This includes developing business case models to enable resource sharing. Relevant outcomes need to be established for redesign of education and care delivery with the latter focusing on the Triple Aim.
- The array of resources should be expanded. This could be achieved in any number of ways, but involves the types of activities that would broaden the base of stakeholders.
- Some of the resources to support the transformation of education and practice will come from the redirecting of current funds. This means any cost savings realized will not leave the education-practice system but will be reinvested in support of the system.
- Appropriate resource allocation will help fulfill the health potential of individuals and communities, encourage their engagement, and create a valuable asset.
- There must be individual accountability for health and the use of healthcare resources.

Group 4 - Vision: Aligning Vision, Goals, and Expectations

This group talked about the need to bring all stakeholders to the table to create a shared vision around aligning education and practice to achieve the Triple Aim. The group's reporter mentioned the need for every stakeholder involved to place their self-interested agendas on the table—to be open about their own agendas so that common ground can be identified. The group also recommended that the shared vision be nimble and responsive to change and that it be patient-care, population-health focused.

The group also discussed the need to create shared values and vision along the continuum of education, from early education experiences through professional development and continuing education. The group also expressed the need for urgency around the development of this shared vision, and opportunities for beginning the work should be identified immediately. The group went on to suggest that local models, or scenarios, for aligning accountable care and education be developed, supported, and promoted.

Group 5 - Roles: Achieving Clear Role Definition and Appropriate Flexibility

The "Roles" group recommended that accrediting bodies recognize the importance of IPE by being flexible in some of its requirements, including allowing faculty from other health professions to serve as preceptors for all types of health professions students and to base accreditation decisions, in part, on a program's commitment to IPE. The group said the same types of criteria should be used in professional development and continuing education programs. The group's second recommendation is to develop shared foundational knowledge among the health professions, including in teamwork, patient safety, quality improvement, human factors, organizational psychology, systems-based thinking, patient- and population-centeredness, business skills, and communication strategies. The group referred to this shared curriculum as the "Foundations of Healthcare."

The group's third recommendation is that future leaders of health professions education and practice learn about and develop commitments across education and practice. This would address the gap while fostering strategic partnerships. The fourth recommendation is to change the criteria for admissions into health professions education, focusing on communication, collaboration, culture, teamwork, and community engagement from a humanitarian approach. The group's

fifth recommendation is to align reimbursement with the skill set of the new health professional student, which will focus on team-based competencies. The group's sixth and final recommendation is to align regulatory and oversight requirements to support IPE and collaborative practice.

Breakout Groups Reconvene and Report

On Saturday afternoon, the full conference group reconvened to receive its charge for the afternoon: to refine and further focus the deeper discussions happening in the breakout groups. The five afternoon breakout group topics were chosen based on the major themes that emerged from the morning breakout groups. It was felt that these themes could provide the headlines and organizational framework for the recommendations to come.

The five afternoon breakout groups, each of which met for three hours, were:

- Patient, Family, and Community Engagement;
- Professional Development;
- Finances, Resources, and Incentives;
- System Redesign (models for linking interprofessional education and collaborative practice); and
- Regulation

Recommendations from Afternoon Breakout Groups

Group 1 - Patient, Family, and Community Engagement

This group stated an underlying core principle for its recommendations, namely that patients, families, and communities share equitably in the outcomes and benefits of the newly integrated system of care and learning. The group's recommendations included:

- Create a national work group to describe effective methods for patient, family, and community engagement. This will include examining and making visible successful existing models, and the work group will include patients

and/or family members. The work will be informed by expertise in the Institute for Patient- and Family-Centered Care and others.

- Health professional competencies should reflect patient, family, and community input.
- Accreditation (in both health care and health professional education) depends on evidence that patients, families, and communities are effectively involved in the design, implementation, evaluation, and continuous improvement of systems of care and learning.
- Patients, families, and communities inform the system's metrics of care and learning.

Group 2 - Professional Development

Within its recommendations, this group referenced the work of an expert panel sponsored in May 2011 by the Interprofessional Education Collaborative (IPEC), which issued an important set of competencies for interprofessional collaborative practice. This group's recommendations are:

- The IPEC competencies should be enhanced to reflect the entire nexus of education and healthcare delivery so that they are applicable to all who are engaged and will be engaged in these activities. The enhanced competencies might include, for example, items such as reflection; collection of data that can be used to refine the competencies over time; and specific roles and responsibilities in relation to achieving the Triple Aim outcomes.
- Embed training and lifelong professional development of all who work or will be working in the nexus of education and healthcare delivery in existing vehicles such as curricula, programs, continuing education, and continuing professional development activities; and develop new programs where needed. Also, create more longitudinal experiences within the educational process.
- Identify institutions engaged in education and healthcare delivery where interprofessional practice and education are occurring now. Highlight instances where students are important contributors, and identify instances

in which organizational leaders have taken on a leadership role in fostering the nexus of IPE and healthcare delivery. Develop case studies and lessons learned, and share them broadly with interested sites and programs. Track implementation in new sites and focus on those that have adopted rapid cycle improvement.

- Implement regular performance review of capabilities of educators and health professionals based on the interprofessional competencies and professional competencies. The reviews should include input from patients, colleagues, learners, supervisors, and others as appropriate. There should be feedback of information from the reviews with an eye to professional and interprofessional improvement; and organizations/institutions in which the reviews are occurring should create opportunities for improvement.

Group 3 - Finances, Resources, and Incentives

This group stated that the linking of education and practice provides a framework for the appropriate use of resources and the development of new financing models and incentives to enhance the Triple Aim. This group's recommendations are:

- Identify models for sharing resources, including conducting an environmental scan of where resources are and how they're being used, and convene stakeholders to explore dissemination of these models and to stimulate the formation of such linkages. Also develop state and federal models of financial support.
- Demonstrate the value added that comes from linking care and education, which includes aligning payment incentives with the Triple Aim.
- Develop patient accountability for their health, including development of tools to further engage people in achieving and maintaining good health.

Group 4 - System Redesign (Models for linking interprofessional education and collaborative practice)

Noting that innovative models for linking education and practice are occurring around the nation, this group made the following recommendations regarding systems redesign:

- By 2014, create between 10–20 community-based coalitions to align accountable care and education. Existing coalitions can be leveraged or modeled with the purpose of designing and operationalizing an integrated care and learning system whose goal is 20% reduction in cost and 20% improvement of key health outcomes measures.
- Adopt approaches within the health professions education system to increase efficiency and quality, lower costs, and improve value, which are responsive to and tightly aligned with practice.
- Integrate education as a “life-time continuum” from novice to expert to create a true healthcare learning system.

Group 5 - Regulation

This group based its recommendations on several assumptions, including the fact that regulatory barriers that inhibit the integration of care and learning should be removed. This group’s recommendations are:

- Accrediting and certifying bodies should a) require IPE and practice as a standard and b) promulgate policies that accommodate interprofessional teachers, interprofessional preceptors, and interprofessional continuing education courses for the maintenance of certification.
- Eliminate barriers to patient-centered care, access to care, or efficient and effective team-based care in state and federal laws and regulations, for instance, related to scopes of practice, telehealth, the need to see licensed professionals to obtain access to medication or medication adjustment and preventive tests, and the ability of all professionals to practice to the full extent of their education and training.
- Institutions should take full advantage of the broadening certification and scopes of practice to implement institutional privileging policies and procedures for certifying competence to perform certain roles that support interprofessional learning and practice and ultimately improve the quality and access—while lowering costs—of care.
- Each profession, including the associations that represent them, has a responsibility to serve the best interests of patients, communities, and

society by maximizing support for innovation and evaluation of new models of education and practice.

The output of the five afternoon breakout groups was used by the Conference Planning Committee to write a first draft of a conclusions and recommendations document, which was distributed overnight to all conference participants for review prior to Sunday morning's full-group discussion.

DAY 3: SUNDAY, JANUARY 20, 2013

Conference Conclusions and Recommendations

The conference concluded Sunday morning with a full-group discussion—facilitated by Malcolm Cox and Mary Naylor—of the draft “Conclusions and Recommendations” document.

Large Group Feedback on Draft Document

Here is a summary of the substantive comments made by conference participants.

- Tone is important. We are seeking to improve an established system that has done significant good, rather than implying that we want to fix a failing system. Also system redesign is a mechanism for achieving a vision for creating value and sustainability, not an end in itself.
- Recommendations should convey a sense of urgency. Everyone in health care—education and practice—is standing on a “burning platform” in terms of the rapid and seismic shifts happening. We are discussing a long-term, iterative, permanent response that should begin immediately. Also, we should be careful not to view system redesign as an end point or goal because systems should continually evolve.
- Faculty are the glue that binds the link we want to create between education and practice; be sure to place faculty development as a necessary requirement up front. Also, we must remember that faculty are also learners in this and sometimes students and patients are the teachers; the usual hierarchy doesn't apply.

- We should be careful to acknowledge the extensive work already being done on the practice side to reduce costs and improve quality. This effort is not to set new goals around that, but to link the outcomes of healthcare education and training to the goals of healthcare delivery.
- Rather than talking about this in terms of reducing costs or increasing efficiency, we should stress value—that creating a link between education and practice is a value-based proposition.
- Concerns were raised about the order of the recommendations, with most agreeing that system redesign is an overarching goal from which the rest of the recommendations should flow. Concerns were also raised about getting the specificity of the recommendations right, creating a credible balance between being realistic and ambitious.
- One commenter asked: “Are we talking about redesigning the educational training process to accommodate a new model of healthcare delivery, or are we doing it as a forcing function to instill a new model of healthcare delivery?” To which at least one participant answered, “We’re doing both.”
- Another commenter made the point that it should be neither academia nor delivery systems that should be driving this change, but rather the needs and preferences of patients and communities—they should have a strong voice in this effort.
- A commenter noted that the majority of conference participants are from academic health centers, but that many healthcare professionals and educators are not, and their voices/input should be incorporated. Additional comments were made regarding the need to identify the broad range of stakeholders that need to be brought into this process.
- Regarding patient, family, and community engagement, we should consider adding a discussion of health disparities and the potential for linking education-practice to help identify and reduce them.
- Moderator Cox reminded participants that we need to be careful to keep the focus explicitly on connecting healthcare education and practice and that the recommendations “can’t be an encyclopedic approach to how to reform a healthcare system.”

- Regarding professional development, a commenter suggested that the recommendations “should include groups other than the classic medical, nursing, and allied health professionals.” This could be workers in many other professions that are not currently engaged or as engaged as they should be, including psychology, sociology, social work, and engineers, as well as healthcare paraprofessionals like home health aides, medical assistants, etc.
- A suggestion was made that the group consider advocating in the recommendations for development of admissions criteria that assess applicants’ capacity for working in teams.
- We should broaden the concept of professional development to think also about workforce development, in particular, addressing attrition in primary care practice and developing the workforce that will be needed for the future. A follow-up suggestion was made to use the term: “workforce education and development.”
- Using as an analogy the fact that military helicopters often are flown remotely from control rooms rather than by experienced pilots, a point was made about the need for the health professions to think broadly about role changes and teamwork as the probability increases that many patient care tasks could and/or should be performed by others. “The decisions about who does what for patients will not be driven by our professional sense of training and experience,” the commenter said, “but by society saying what it values.”
- Several points were made about the need to incorporate the concept of an individual’s accountability for his or her own health, but also institutional and corporate accountability for the health of their communities. We need to educate decision makers who think mostly about profit and market share about the Triple Aim and linking education and practice. Education also is needed for hospital and health system board members, for university presidents and other administrators, and for trade associations, like the American Hospital Association and others.

Closing Remarks

Following this discussion, the Macy Foundation's George Thibault offered closing remarks that not only described the process for revising and finalizing the conference conclusions and recommendations, but reminded participants why the conference was necessary in the first place. "We came together with an idea," he said. "The idea was that there are good things going on in the healthcare system, there are good things going on in the education system, but we're not fully optimizing by getting them to work together."

He went on to say, "The people here represent those entities we are trying to change. We're not outsiders throwing stones at somebody else. We are seeking change with the most heartfelt affection for those entities because they are what made us who we are.

"But we need to remind ourselves how incredibly difficult the change process is. If we don't approach it with passion and in a way that gets people's attention, the forces to keep things in place are enormously powerful, so with all due respect and affection, we have to bring passion or we won't get people's attention. And with that passion must come good ideas, new ideas, original thought that leads the way to constructive change."

Dr. Thibault concluded, "We need to make our healthcare system work better, we need to make our educational system work better, and make them work better together. That is how we will realize the full potential of all the wonderful people who are part of our systems, and that is how we ultimately will serve the public, which is the reason we exist. I leave here reenergized, believing that we're on the right course, that the cause that we have is the right cause, that the idea we have is the right idea. We have some of the elements of the roadmap to get there, but only some of them. Now we need to go out and make our case and finish this work."

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BIOGRAPHIES

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Her research focuses on stress and cardiovascular disease in black Americans. Her current work explores the underlying hemodynamic determinants of hypertension, particularly sleep blood pressure, sleep total peripheral resistance, and the cortisol awakening response. Funded by the National Institutes of Health, the study is entitled Hypertension in Black Americans: Environment, Behavior, and Biology. She is a member of the Steering Committee for the UNC-CH Center for Health Promotion and Disease Prevention and the School of Nursing's Biobehavioral Laboratory Scientific Advisory Board. Dr. Barksdale has more than 20 years of NP experience and has been an NP in urgent care, primary care, home care, and care of the underserved. She currently practices as a volunteer at the Robert Nixon Clinic for the homeless in Chapel Hill.

Paul B. Batalden, MD, is professor emeritus of Pediatrics, Community, and Family Medicine and director of the Dartmouth Institute for Health Policy and Clinical Practice at the Geisel School of Medicine at Dartmouth College and guest professor of Quality Improvement and Leadership at Jönköping University in Sweden. He

teaches about the leadership of improvement of health care quality, safety, and value at Dartmouth; the Institute for Healthcare Improvement (IHI); and the Jönköping Academy for the Improvement of Health and Welfare in Sweden. He chairs the Improvement Science Development Group of The Health Foundation in the UK and the Leadership Preventive Medicine Residency Advisory Committee at Dartmouth. He is a member of the Board of Advisors, Armstrong Institute for Patient Safety and Quality, Johns Hopkins Medicine; the National Advisory Board, Active Aging Research Center, University of Wisconsin; External Advisory Council, Anderson Center, Cincinnati Children's Hospital and Medical Center; and the Research and Education Board of Health Partners in St. Paul, MN; and serves as senior fellow and governing board advisor for the IHI. Previously he founded, created, or helped develop the IHI; the US VA National Quality Scholars program; the IHI Health Professions Educational Collaborative; the General Competencies of the ACGME; the Center for Leadership and Improvement at Dartmouth; the Dartmouth Hitchcock Leadership Preventive Medicine Residency; the annual health professional faculty development "summer camp;" the SQUIRE publication guidelines for the improvement of health care; and the Improvement Science Fellowship Program of The Health Foundation in the UK. He is a member of the Institute of Medicine of the US National Academy of Sciences and is currently interested in the multiple knowledge systems and disciplines that inform the improvement of health and health care.

Amy V. Blue, PhD, is assistant provost for Education and professor of Family Medicine at the Medical University of South Carolina (MUSC) in Charleston, South Carolina. As assistant provost, she is responsible for the university's interprofessional education initiative, Creating Collaborative Care (C3). Dr. Blue holds a doctorate in Medical Anthropology from Case Western Reserve University and completed a NIMH post-doctoral fellowship in Behavioral Science at the University of Kentucky. She has been involved in medical and health professions education for more than 19 years and served as the associate dean for Curriculum and Evaluation at the MUSC College of Medicine for nearly seven years before moving to her current position. Dr. Blue has published extensively in the health professions education literature. She is a founding member of the American Interprofessional Health Collaborative, a collaborative for leaders in interprofessional education and practice, and is an associate editor of the Journal of Interprofessional Care. Dr. Blue served as a member of the Interprofessional Education Collaborative Expert Panel that wrote the Core Competencies for Interprofessional Collaborative Practice Report in 2011. At

present, she is working with colleagues at the American Board of Internal Medicine on a project funded by the Robert Wood Johnson Foundation examining evaluation and assessment approaches in interprofessional education.

Judith L. Bowen, MD, FACP, is professor of Medicine at the Oregon Health and Science University (OHSU) School of Medicine in Portland, Oregon, where she serves as a special advisor to the provost on Interprofessional Education. She is the physician education consultant for the Office of Academic Affiliations, Veterans Health Administration Centers of Excellence in Primary Care Education. Dr. Bowen's leadership roles in medical education have included chair of the education committee for the Association of Program Directors in Internal Medicine (APDIM) (1996-1999) and director of APDIM pre-courses (1996-2003); APDIM Council member (1996-1999); APDIM representative to the national faculty development program for teaching in ambulatory settings (1996-2000); internal medicine residency program director for Virginia Mason Hospital (1991-1996) and associate residency program director for primary care internal medicine (OHSU, 1998-2009); elected member (2001-2005) and chair (2004-2005) of the Association of American Medical Colleges Research in Medical Education conference committee; education director for the Academic Chronic Care Collaboratives (national ACCC, 2005; California ACCC, 2007); and advisory panel member for the Carnegie Institute for the Advancement of Teaching and Learning 'Preparation of Physicians' Professions project (2006). Dr. Bowen was the director of the Society of General Internal Medicine (SGIM) Patient-Centered Medical Home Education Summit (March 2011) that addressed preparation of internal medicine physicians for teaching and working in patient-centered medical home practices. Her scholarship focuses on diagnostic reasoning, interprofessional faculty development, and educational reform. Dr. Bowen has received numerous teaching awards including the regional SGIM Clinician-Teacher Award of Excellence (2002) and the national SGIM award for Scholarship in Medical Education: Scholarship in Educational Methods and Teaching (2003). She was elected to Alpha Omega Alpha in 2006. In 2009, Dr. Bowen received the Dema C. Daley Founder's Award from the Association of Program Directors in Internal Medicine.

Barbara F. Brandt, PhD, has served as associate vice president for Education and professor, Pharmaceutical Care and Health Systems at the University of Minnesota Academic Health Center since 2000. She has served as the principal investigator and the director of the Minnesota Area Health Education Center statewide network, an interprofessional workforce development program for rural and urban underserved

Minnesota. Dr. Brandt is responsible for implementing the University of Minnesota Academic Health Center 1Health initiative in interprofessional education in allied health, dentistry, medicine, nursing, pharmacy, public health, and veterinary medicine.

In September 2012, University of Minnesota was selected as the National Center for Interprofessional Practice and Education. Dr. Brandt serves as the Director.

Dr. Brandt holds a Master of Education and a Doctor of Philosophy degree in Adult and Continuing Education with a specialty in continuing professional education from the University of Illinois at Urbana-Champaign. She completed a Kellogg-sponsored post-doctoral fellowship for faculty in adult and continuing education at the University of Wisconsin-Madison.

Dr. Brandt is active nationally in advancing the field of interprofessional health education. In 2007, she co-chaired the first Collaborating Across Borders conference held in Minneapolis.

Valentina Brashers, MD, FACP, FNAP, is professor of Nursing, Woodard Clinical Scholar, and attending physician in Internal Medicine at the University of Virginia (UVA). After completing her residency in internal medicine and fellowship in pulmonary disease, she practiced in a rural general medical clinic and in the UVA emergency room. Dr. Brashers has been a full-time faculty member of the Schools of Nursing and Medicine for more than 20 years, where she teaches pathophysiology, immunology, pulmonary assessment, physical examination, and chest x-ray interpretation to graduate and undergraduate nursing students, medical students, and health professionals. She is a founding member of the UVA School of Medicine Academy of Distinguished Educators and is the first physician to be elected as an honorary member of the UVA Nursing Alumni Association. She is the first professor to win the UVA All University Outstanding Teaching Award twice, and has received the Excellence in Teaching Award from both the UVA School of Nursing and School of Medicine.

Dr. Brashers' scholarship is focused on interprofessional education and collaborative practice. She served for many years as the vice president for Interdisciplinary Care for the National Academies of Practice where she received the Nicholas Cummings Award for Contributions to the Interprofessional Healthcare Field. Dr. Brashers is the founder and co-chair of the UVA Interprofessional Education Initiative, which

provides leadership and oversight to more than 25 interprofessional education experiences for students and faculty at all levels of training. She currently is the principle investigator for several intra- and extramural interprofessional education grants and serves as a presenter, workshop leader, and consultant in many educational and professional settings.

Frank B. Cerra, MD, MCCM, has served on the faculty of SUNY Buffalo from 1975 to 1981 and on the faculty of the University of Minnesota from 1981 to present. Dr. Cerra practiced and taught general surgery, trauma, and critical care for more than 30 years to students, residents, and fellows. His research interest is in multiple organ failure after trauma and sepsis, with a particular interest in liver failure and metabolic support of the liver. Dr. Cerra has served as department head, dean, and senior vice president for Health Sciences at the University of Minnesota. He stepped out of this position in January of 2011 and now serves as professor of Surgery, McKnight Presidential Leadership Chair, and special advisor to the Director of the National Center for Interprofessional Practice and Education. Dr. Cerra's major administrative focus has been in promoting and practicing interdisciplinary research, education, and clinical care.

Marilyn P. Chow, PhD, RN, FAAN, is vice president of National Patient Care Services at Kaiser Permanente, where she works to enable the delivery of the highest quality and safest patient-centered care. She has made significant contributions to nursing through her scholarship, leadership, and civic involvement. She is recognized for her expertise in innovation, regulation of nursing practice, and workforce policy. Dr. Chow is committed to incorporating innovation and technology to reduce waste and improve workflows within the healthcare industry. She was the driving force in conceptualizing and creating the Sidney R. Garfield Health Care Innovation Center, Kaiser Permanente's living laboratory, where ideas are tested and solutions are developed in a hands-on, simulated clinical environment. She is currently chair of the Institute of Medicine's (IOM) Standing Committee on Credentialing Research in Nursing, and in 2003, she participated in the IOM Committee that produced the report, "Keeping Patients Safe: Transforming the Work Environment of Nurses." Dr. Chow has received several awards, including the prestigious national Nurse.com 2011 Nursing Excellence in Advancing and Leading the Profession. She also was selected as one of the distinguished 100 graduates and faculty of the University of California, San Francisco School of Nursing for the Centennial Wall of Fame.

Malcolm Cox, MD, is chief academic affiliations officer for the Department of Veterans Affairs (VA), where he oversees the largest health professions education program in the United States. Previously, he has served as chief of medicine at the Philadelphia VA Medical Center, associate dean for Clinical Education at the University of Pennsylvania, and dean for Medical Education at Harvard Medical School.

Over the past six years, Dr. Cox has led a major expansion of VA's medical, nursing, and associated health training programs and an intensive re-evaluation of VA's educational infrastructure and affiliation relationships. At the same time, he has repositioned the VA as a major voice in health professions workforce reform and educational innovation.

Dr. Cox currently serves on the VA National Academic Affiliations Council, the Strategic Directions Committee of the National Leadership Council of the Veterans Health Administration, the National Advisory Committee of the Robert Wood Johnson Foundation Clinical Scholars Program, the National Board of Medical Examiners, the Accreditation Council for Graduate Medical Education, and the Global Forum on Innovation in Health Professions Education of the Institute of Medicine.

Dr. Cox is the recipient of numerous honors and teaching awards at the University of Pennsylvania and Harvard Medical School. He has been the principal investigator or co-investigator of grants from the American Heart Association, the National Institutes of Health, the Department of Veterans Affairs, the pharmaceutical industry, the US Department of Health and Human Services, the Robert Wood Johnson Foundation, and the Josiah Macy Jr. Foundation. His scholarly interests include diseases of the kidney, medical education, and health policy.

Linda Cronenwett, PhD, RN, FAAN, is the co-director of the Robert Wood Johnson Foundation's Executive Nurse Fellows program and former leader of the national initiative Quality and Safety Education for Nurses, which recently completed its fourth phase of funding from the Robert Wood Johnson Foundation. She is also the Beerstecher Blackwell Term Professor and former dean of the School of Nursing, University of North Carolina at Chapel Hill. Dr. Cronenwett currently serves as chair of the North Carolina Center for Hospital Quality and Patient Safety and as a member of the Board of Directors of the Josiah Macy Jr. Foundation and the North Carolina Institute of Medicine.

Dr. Cronenwett is an elected fellow of the American Academy of Nursing, the National Academies of Practice, and the North Carolina Institute of Medicine. Past service includes terms of office on the National Advisory Council for Nursing Research at the National Institutes of Health, the board of directors of the Institute for Healthcare Improvement, member of the Special Medical Advisory Group on Veterans Affairs, and editorial advisory boards for Applied Nursing Research, Online Journal of Knowledge Synthesis for Nursing, and the Joint Commission Journal of Quality Improvement. She has held numerous offices in professional associations, including president of the New Hampshire Nurses Association and chair of the American Nurses Association's Congress of Nursing Practice. In 2012, Dr. Cronenwett received the American Nurses Association's Jessie Scott Award, acknowledging her contributions to advancing nursing practice, education, and research. She earned her master's degree in parent-child nursing from the University of Washington and her undergraduate and doctoral degrees in nursing from the University of Michigan.

Susan Dentzer is senior policy adviser at the Robert Wood Johnson Foundation, the nation's largest philanthropy devoted exclusively to health and health care, and an on-air analyst on health issues with the PBS NewsHour. She was formerly editor-in-chief of *Health Affairs*, the nation's leading journal of health policy, and also previously led the NewsHour's health unit, reporting extensively on-air about health care reform debates. She is an elected member of the Institute of Medicine and the Council on Foreign Relations, and a fellow of the National Academy of Social Insurance and the Hastings Center. Ms. Dentzer graduated from Dartmouth, is a trustee emerita of the college, and is the only woman to date to have chaired the Dartmouth Board of Trustees, which she did from 2001 to 2004. She currently serves as a member of the Board of Overseers of Dartmouth Medical School and is an Overseer of the International Rescue Committee, a leading humanitarian organization. She is also on the board of directors of Research!America, an alliance working to make research to improve health a higher priority.

Patricia M. Dieter, MPA, PA-C, is PA division chief and professor of Community and Family Medicine at Duke University. She received a Diploma in Nursing from Hahnemann Hospital, a physician assistant certificate from Hahnemann Medical College and Hospital, and a master of public administration degree from Pennsylvania State University. She is a member of Pi Alpha, the national physician assistant honor society, and a distinguished fellow of the American Academy of

Physician Assistants. She served on the Accreditation Review Commission on Education for the Physician Assistant for 12 years, including two years as chair of the Commission. Ms. Dieter is a long-time interprofessional education advocate and served on the Executive Committee, Board of Directors of the International Association for Interprofessional Education and Collaborative Practice. She was the author of an APTA grant proposal that resulted in the first required interprofessional course at Duke (Introduction to Prevention) and has presented nationally and internationally on interprofessional education topics.

Mark Earnest, MD, PhD, FACP, is professor of Medicine at the University of Colorado's Anschutz Medical Campus in Aurora, Colorado, where he teaches and practices internal medicine. Dr. Earnest is director of Interprofessional Education at the University of Colorado Anschutz Medical Campus where he oversees the Realizing Educational Advancement in Collaborative Health Program (REACH). REACH involves students from all the health professions programs on campus in a longitudinal curriculum designed to improve quality and safety of care through more effective interprofessional collaboration and teamwork. The program is funded by grants from the Josiah Macy Jr. Foundation and the Colorado Health Foundation. Dr. Earnest is a former Soros Advocacy Fellow, serves on the Board of the American Interprofessional Health Collaborative, and also founded and directed the Leadership Education Advocacy Development Scholarship (LEADS) track program—a track within the School of Medicine that develops leadership skills with an emphasis on service to the community and civic engagement.

He obtained a bachelor's degree from Wake Forest University, a medical degree from Vanderbilt University, and a doctoral degree in Health and Behavioral Sciences from the University of Colorado. He has been on the faculty since 1993.

Margaret Flinter, PhD, APRN, FNP-BC, FAANP, is senior vice president and clinical director of the Community Health Center, Inc., (CHC) a statewide, federally qualified health center serving 130,000 patients across Connecticut, and is the founder and director of CHC's Weitzman Center for Research and Innovation in Community Health and Primary Care. A board-certified family nurse practitioner, she has served as primary care provider, executive leader, health policy advocate, and innovator for more than 30 years. Dr. Flinter is the founder (2007) of the country's first post-graduate residency training program for new primary care nurse practitioners and is working nationally to replicate the model in community health centers. Since 2009, Dr. Flinter has co-hosted a WNPR weekly radio show, Conversations on Health

Care, devoted to health care reform and innovation. She also is currently serving as the national co-director of the Robert Wood Johnson Foundation's Primary Care Teams: Learning from Effective Ambulatory Practices, a national study identifying innovations in the use of the primary care workforce.

Dr. Flinter earned a bachelor's degree in Nursing from the University of Connecticut, a master's degree in Nursing from Yale University, and a doctoral degree from the University of Connecticut. She was a RWJF Executive Nurse Fellow, 2002-2005.

Terry Fulmer, PhD, RN, FAAN, is professor and dean of the Bouvé College of Health Sciences at Northeastern University. She received her bachelor's degree from Skidmore College, her master's and doctoral degrees from Boston College, and her Geriatric Nurse Practitioner Post-Master's Certificate from New York University. She is an elected member of the Institute of Medicine and currently serves as vice chair of the New York Academy of Medicine. Dr. Fulmer is nationally recognized as a leading expert in geriatrics and is best known for her research on the topic of elder abuse and neglect, which has been funded by the National Institute on Aging and the National Institute for Nursing Research.

Prior to joining Northeastern, Dr. Fulmer served as the Erlene Perkins McGriff Professor of Nursing and founding dean of the New York University College of Nursing. She has held faculty appointments at Boston College, Columbia University, Yale University, and the Harvard Division on Aging. She is currently a visiting professor of nursing at the University Of Pennsylvania School Of Nursing.

Dr. Fulmer's clinical appointments have included the Beth Israel Hospital in Boston, the Massachusetts General Hospital, and the NYU-Langone Medical Center. She is a fellow in the American Academy of Nursing, the Gerontological Society of America, and the New York Academy of Medicine. She completed a Brookdale National Fellowship and is a Distinguished Practitioner of the National Academies of Practice. She has served as the first nurse on the board of the American Geriatrics Society and as the first nurse to serve as president of the Gerontological Society of America. She is currently a member of the Geriatrics and Gerontology Advisory Committee for the Veteran's Administration. She is a board member of Bassett Hospital, Skidmore College, and the Institute for Healthcare Improvement.

Bruce H. Hamory, MD, FACP, is executive vice president and managing partner in Geisinger Consulting Services for Geisinger Health System. He leads Geisinger's

efforts to extend its innovations in healthcare delivery and payment to other groups and health systems. He is a nationally known speaker on care redesign for value and improved quality.

As Geisinger's System Chief Medical Officer from 1997 to 2008, he led the growth of a 535-physician multi-specialty group practice to 750 physicians in 40 locations serving 41 counties and the three Geisinger hospitals. He oversaw the installation of an advanced electronic health record, led the development of a physician compensation model incorporating pay for performance, and directed a reorganization from discipline-based departments to a service line operating structure. Other responsibilities included compensation, quality and performance improvement, credentialing, clinical operations, and capital planning, as well as education and research for the health system.

Before joining Geisinger, Dr. Hamory was professor of Medicine and associate dean for Clinical Affairs at Penn State. He was executive director of Penn State's University Hospitals and chief operating officer for Penn State's Milton S. Hershey Medical Center.

Dr. Hamory serves on the Board of Blue Cross Blue Shield of Massachusetts. He has served on the Board of Directors for American Medical Group Association and currently serves on several national committees and panels concerned with improving the quality of medical care and use of information technology in healthcare.

Linda A. Headrick, MD, MS, FACP, is Helen Mae Spiese Distinguished Faculty Scholar, senior associate dean for Education, and professor of Medicine at the School of Medicine, University of Missouri in Columbia, Missouri. She leads a dean's office team that supports all aspects of medical education, from pre-admissions through continuing medical education. In that role, she has enhanced the medical school's internationally recognized curriculum by emphasizing quality improvement and teamwork. Her academic work focuses on quality improvement in health care and health professional education, with an emphasis on preparing new health professionals to improve care as part of their daily practice. In 2009–2010, Dr. Headrick was the national faculty lead for Retooling for Quality and Safety, an Institute for Healthcare Improvement initiative supported by the Josiah Macy Jr. Foundation. Retooling for Quality and Safety engaged six competitively-selected school of medicine and school of nursing partners in implementing innovative

methods to integrate health care improvement and patient safety content into required curricula; a paper summarizing the results was published in *Health Affairs* in December 2012. Currently, Dr. Headrick is the chair of the Association of American Medical College's Teaching for Quality (Te4Q) initiative, with the goal of ensuring education in quality and patient safety (including interprofessional education) for the next generation of physicians. Dr. Headrick received her AB in Chemistry at the University of Missouri-Columbia, MD at Stanford University, and MS in Epidemiology and Biostatistics at Case Western Reserve University.

David M. Irby, PhD, is professor of Medicine, member of the Office of Medical Education, and former vice dean for Education at University of California, San Francisco (UCSF). He was a senior scholar at The Carnegie Foundation for the Advancement of Teaching, where he co-directed a national study on the professional preparation of physicians titled *Educating Physicians: A Call for Reform of Medical School and Residency*. While at the University of Washington and later at UCSF, he conducted research on faculty development, clinical teaching, and curriculum change. For his research, leadership, and service to academic medicine, he has received awards from the Karolinska Institutet in Stockholm, the Association of American Medical Colleges, the American Educational Research Association, and the National Board of Medical Examiners among others. Dr. Irby earned a doctorate in education from the University of Washington, a master's of divinity degree from Union Theological Seminary, and completed a postdoctoral fellowship in academic administration at Harvard Medical School.

Robert L. Jesse, MD, PhD, is principal deputy under secretary for Health in the Department of Veterans Affairs; he leads clinical policies and programs for the Veterans Health Administration (VHA), the United States' largest integrated healthcare system.

Prior to this appointment, he served as VHA chief consultant for Medical Surgical Services and national program director for Cardiology, where he implemented broad reforms in the delivery of specialty, sub-specialty and emergency care that have improved the quality of care across the VA healthcare system.

Dr. Jesse received his undergraduate degree in Biochemistry from the University of New Hampshire in 1974 and worked as a research associate at the Harvard School of Public Health. In 1980, he earned his doctoral degree in Biophysics followed by his medical degree in 1984 at the Medical College of Virginia, where he subsequently

completed a residency in internal medicine and a fellowship in cardiology. He is now a tenured professor in Internal Medicine/Cardiology at Virginia Commonwealth University Health System, where he has received multiple teaching awards. Dr. Jesse is a diplomate of the American Board of Internal Medicine with specialty boards in Cardiovascular Medicine, and is a Fellow of the American College of Cardiology and of the American Heart Association.

Kathleen Klink, MD, FAAFP, is a family physician, and the director of the Bureau of Health Professions Division of Medicine and Dentistry at the Health Resources and Services Administration (HRSA) in the US Department of Health and Human Services.

The Bureau of Health Professions provides national leadership in the development, distribution, and retention of a diverse, culturally competent healthcare workforce that provides high-quality care for all Americans. Dr. Klink's efforts are focused on the Bureau's initiatives to improve access to primary care and oral health services through workforce and educational infrastructure development.

Prior to joining HRSA, Dr. Klink was the director of the Columbia University Center for Family and Community Medicine and chief of service for Family Medicine at NewYork-Presbyterian Hospital.

She received her medical degree from the University of Miami in 1985 and completed her residency training at Jackson Memorial Hospital in family medicine in 1988.

Richard D. Krugman, MD, is the first vice chancellor for Health Affairs for the University of Colorado Denver. In this role, he supports the deans of Dental Medicine, Nursing, Pharmacy, Public Health, and the Graduate School for the Anschutz Medical campus and oversees all clinical programs of the University at its five affiliated hospitals. Along with clinical programs, the Center on Aging, the Center of Bioethics and Humanities, Colorado Area Health Education system (AHEC), and Risk Management all report to Dr. Krugman. Dr. Krugman became dean of the University of Colorado School of Medicine (CU School of Medicine) on March 1, 1992, after serving as acting dean for 20 months. A professor of pediatrics, he served as director of the C. Henry Kempe National Center for the Prevention and Treatment of Child Abuse and Neglect from 1981-1992, and has gained international prominence in the field of child abuse. He is also president of University Physicians, Inc., the CU School of Medicine faculty practice plan. Dr. Krugman is a graduate of

Princeton University and earned his medical degree at New York University School of Medicine. A board-certified pediatrician, he did his internship and residency in pediatrics at the CU School of Medicine. Following a two-year appointment in the early 1970s with the Public Health Service at the National Institute of Health and the Food and Drug Administration, Dr. Krugman joined the CU faculty in 1973. He went back to the Washington area in 1980 as a Robert Wood Johnson Health Policy Fellow and served for a year as a legislative assistant in the office of US Senator Dave Durenberger of Minnesota.

At CU, Dr. Krugman has held a variety of administrative positions, including director of admissions and co-director of the Child Health Associate Program; director of the University's SEARCH/AHEC program; vice chairman for clinical affairs, Department of Pediatrics; and director of the Kempe Center. He has earned many honors in the field of child abuse and neglect, and headed the US Advisory Board of Child Abuse and neglect from 1988–1991. He is a past chair of both the Association of American Medical Colleges (AAMC) and the Council of Deans of the AAMC (2001-2002). Dr. Krugman is a member of the Institute of Medicine and is currently on the boards of University of Colorado Hospital and The Children's Hospital of Denver, among others. Dr. Krugman has served on the boards of Princeton University, Denver Health, and Hasbro Children's Foundation. He has authored over 100 original papers, chapters, and editorials; and four books; and recently stepped down after 15 years as editor-in-chief of *Child Abuse and Neglect: The International Journal*. Dr. Krugman was recently named University of Colorado Distinguished Professor.

Gerri Lamb, PhD, RN, FAAN, is the principal investigator on a two-year grant funded by the Josiah Macy Jr. Foundation to develop an interprofessional primary care curriculum for graduate programs in nursing, medicine, pharmacy, and social work for two of Arizona's state universities and their clinical partners. She is a new member of the Board of Directors of the American Interprofessional Health Collaborative and represents Arizona State University (ASU) on the Innovation Incubator for the National Center for Interprofessional Practice and Education. Dr. Lamb has extensive experience teaching interprofessional courses for healthcare professionals, architects, and engineers at Emory University, Georgia Institute of Technology, and ASU, where she holds a joint appointment in the Colleges of Nursing and Health Innovation and The Herberger Institute for Design and the Arts. She is currently working on an implementation plan for the primary care curriculum with her Macy grant team and on several publications about interprofessional studio courses and collaborative learning environments. In September 2012, Dr. Lamb and

her teaching partner at Herberger's Healthcare Initiative, James Shraiky, took 18 graduate students from four healthcare and design programs to Africa to develop a new design for Rwanda's rural community health centers. In a recent newsletter, the Robert Wood Johnson Foundation noted the opportunity to engage non-traditional disciplines, like architecture, in interprofessional education and practice and cited ASU's work.

Dr. Lamb is actively involved in several national groups developing measures and educational programs to improve care coordination, an area of emerging practice that plays a major role in the national quality strategy and one with significant implications for interprofessional education and practice. She co-chaired both of the National Quality Forum's Steering Committees on care coordination and plays an active role in the American Academy of Nursing's and the American Board of Internal Medicine's care coordination initiatives.

Eric B. Larson, MD, MPH, MACP, is vice president for Research, Group Health and executive director of the Group Health Research Institute. A graduate of Harvard Medical School, he trained in internal medicine at Beth Israel Hospital in Boston, completed a Robert Wood Johnson Clinical Scholars and master of public health program at the University of Washington, and then served as chief resident of University Hospital in Seattle. He served as medical director of University of Washington Medical Center and associate dean for Clinical Affairs from 1989–2002. His research spans a range of general medicine topics and has focused on aging and dementia, including a long-running study of aging and cognitive change set in Group Health Cooperative—The UW/Group Health Alzheimer's Disease Patient Registry/Adult Changes in Thought Study. He has served in many and diverse national leadership positions including as president of the Society of General Internal Medicine, chair of the OTA/DHHS Advisory Panel on Alzheimer's Disease and Related Disorders, regent on the Board of Regents of the American College of Physicians (1998–2006) and its chair (2004–05), a commissioner of The Joint Commission (1999–2010) and two terms as chair of the HMO Research Network Board of Governors. He is an elected member of the National Academy of Sciences Institute of Medicine.

Theodore (Ted) Long, MD, is originally from Los Angeles, California. He attended college at Yale University, where he majored in American Healthcare Policy and founded the *Yale Journal of Medicine and Law*. During college, he worked for the California Medical Association as well as the Los Angeles Department of Mental Health.

After graduating from Yale, he returned to Los Angeles to attend medical school at the Keck School of Medicine at the University of Southern California (USC). While at USC he continued to pursue his interest in public service by founding the medical school's first student-run free health clinic.

Ted is currently finishing his Internal Medicine residency at Yale-New Haven Hospital. He is a member of the Center of Excellence in Primary Care Education at the West Haven VA Hospital. His research pursuits while in residency have included a strong interest in readmissions among the urban underserved. He will be starting his fellowship with the Robert Wood Johnson Clinical Scholars program in June 2013.

Ted lives in New Haven with his wife, an orthopaedic surgery resident, and his golden retriever named Tiger.

Lucinda L. Maine, PhD, RPh, serves as executive vice president and chief executive officer of the American Association of Colleges of Pharmacy (AACP). As the leading advocate for high-quality pharmacy education, AACP's vision is that academic pharmacy will work to transform the future of health care to create a world of healthy people.

Dr. Maine previously served as senior vice president for Policy, Planning, and Communications with the American Pharmacists Association (APhA). She served on the faculty at the University of Minnesota where she practiced in the field of geriatrics and was an associate dean at the Samford University School of Pharmacy.

Dr. Maine is a pharmacy graduate of Auburn University and received her doctorate at the University of Minnesota. Her research includes projects on aging, pharmacy manpower, and pharmacy-based immunizations. Lucinda has been active in leadership roles in the profession. Prior to joining the APhA staff she served as speaker of the APhA House of Delegates and as an APhA Trustee. She currently serves as president of the Pharmacy Manpower Project and as a board member for Research!America.

J. Lloyd Michener, MD, is professor and chairman of the Department of Community and Family Medicine, director of the Duke Center for Community Research, and clinical professor in the Duke School of Nursing. He is a member of the board of the Association of Academic Medical Colleges, co-chair of the NIH's Community

Engagement Steering Committee, a member of the CDC Foundation Working Group on Public Health and Medical Education, and director of the Duke/CDC program in primary care and public health of the American Austrian Foundation – Open Medical Institute. Dr. Michener was appointed to the National Institutes of Health Council for Complementary and Alternative Medicine, and the National Academy of Sciences Institute of Medicine Committee on Integrating Primary Care and Public Health. He was selected for membership on the newly formed National Academic Affiliations Advisory Council for the Department of Veterans Affairs, and is a member of the North Carolina Institute of Medicine. His primary interest is in redesigning health care to improve community health outcomes, and in rapidly transforming healthcare delivery systems, with a focus on finding ways of making health care work better through teams, community engagement, and practice redesign. Dr. Michener graduated from Oberlin College in 1974 and from Harvard Medical School in 1978. He was a resident in family medicine at Duke from 1978–1981, receiving the national Mead Johnson Award in Family Medicine his senior year. He was a Kellogg Fellow in Family Medicine from 1981–1982, after which he joined the Duke faculty. In 1994, he was named Professor and Chairman of the Department.

Mary D. Naylor, PhD, RN, FAAN, is Marian S. Ware Professor in Gerontology and director of the New Courtland Center for Transitions and Health at the University of Pennsylvania School of Nursing. Since 1989, Dr. Naylor has led an interdisciplinary program of research designed to improve the quality of care, decrease unnecessary hospitalizations, and reduce healthcare costs for vulnerable community-based elders. Dr. Naylor is also the national program director for the Interdisciplinary Nursing Quality Research Initiative, a Robert Wood Johnson Foundation program aimed at generating, disseminating, and translating research to understand how nurses contribute to quality patient care. She was elected to the National Academy of Sciences, Institute of Medicine in 2005. She also is a member of the RAND Health Board, the National Quality Forum Board of Directors, and the immediate past-chair of the Board of the Long-Term Quality Alliance. She was appointed to the Medicare Payment Advisory Commission in 2010.

Samuel Nussbaum, MD, is executive vice president, Clinical Health Policy, and chief medical officer for WellPoint, Inc. He is the key spokesperson and policy advocate for WellPoint. In addition, he oversees corporate medical and pharmacy policy to ensure the provision of clinically proven, effective care. Dr. Nussbaum collaborates with key leaders in the industry—physicians, hospitals and national policy and

healthcare organizations—to shape an agenda for quality, safety, and clinical outcomes and to improve patient care for WellPoint’s 34 million medical members nationwide. In addition, Dr. Nussbaum partners with WellPoint’s Consumer Business Unit to advance WellPoint’s international business and with HealthyCare Solutions, the strategic area focused on improving customers’ access to innovative healthcare services.

Dr. Nussbaum currently serves on the Boards of the National Quality Forum (NQF), the OASIS Institute, and BioCrossroads, an Indiana-based public-private collaboration that advances and invests in the life sciences. He is professor of Clinical Medicine at Washington University School of Medicine and serves as adjunct professor at the Olin School of Business, Washington University.

Dr. Nussbaum has served as president of the Disease Management Association of America, chairman of the National Committee for Quality Health Care, as chair of America’s Health Insurance Plans (AHIP) Chief Medical Officer Leadership Council, as a member of the AHIP Board, and on the Secretary of Health and Human Services Advisory Committee on Genetics, Health, and Society. Dr. Nussbaum received the 2004 Physician Executive Award of Excellence from the American College of Physician Executives and *Modern Physician* magazine.

Prior to joining WellPoint, Dr. Nussbaum served as executive vice president, Medical Affairs and System Integration, of BJC Health Care, where he led integrated clinical services across the health system and served as president of its medical group. He earned his medical degree from Mount Sinai School of Medicine. He trained in internal medicine at Stanford University Medical Center and Massachusetts General Hospital and in endocrinology and metabolism at Harvard Medical School and Massachusetts General Hospital, where he directed the Endocrine Clinical Group. As a professor at Harvard Medical School, Dr. Nussbaum’s research led to new therapies to treat skeletal disorders and new technologies to measure hormones in blood.

Herbert Pardes, MD, is executive vice chairman of the Board of NewYork-Presbyterian Hospital. Nationally recognized for his broad expertise in education, research, clinical care, and health policy, he is an ardent advocate of academic medical centers, humanistic care, and the power of technology and innovation to transform 21st century medicine.

Under his leadership, NewYork-Presbyterian became one of the most highly regarded and comprehensive healthcare institutions in the world. The Hospital is

top-ranked in the New York metropolitan area and is consistently ranked among the best academic medical institutions in the nation, according to *US News & World Report*.

An outspoken proponent for academic medicine, children's health education, mental health issues, access to care, and information technology in medicine, Dr. Pardes is a regular guest on national television news programs and contributes opinion pieces appearing in the *Wall Street Journal* and other newspapers. He is active at the state and federal level, supporting legislation to help hospitals provide quality health care while balancing today's economic realities with making the best possible medical care available to all who need it.

Prior to joining the Hospital in 1999, Dr. Pardes served as vice president for Health Sciences at Columbia University and dean of the Faculty of Medicine at Columbia University College of Physicians and Surgeons. A noted psychiatrist, he served as director of the National Institute of Mental Health and US Assistant Surgeon General during the Carter and Reagan administrations, and was also president of the American Psychiatric Association. He received his medical degree from the State University of New York in Brooklyn and completed his residency in psychiatry at Kings County Hospital in Brooklyn, with additional psychoanalytic training at the New York Psychoanalytic Institute.

Russell G. Robertson, MD, is vice president for Medical Affairs and dean of the Chicago Medical School (CMS) at Rosalind Franklin University of Medicine and Science. He was recruited from Northwestern University Feinberg School of Medicine where he served as professor and chair of the Department of Family and Community Medicine and chair of Family Medicine at Northwestern Memorial Hospital. He joined the Chicago Medical School's leadership in March 2011 and the Feinberg School's leadership in October 2005. He holds a bachelor's of arts in elementary education from Michigan State University and medical degree from Wayne State University. He completed his family medicine residency in Grand Rapids, Michigan, before joining the Medical College of Wisconsin (MCW) in Milwaukee. He was recruited from MCW, where he had served as interim chair of the Department of Family and Community Medicine and most recently as the associate dean for Faculty Affairs. He began his professional career as an elementary and junior high school teacher in suburban Detroit.

Dr. Robertson was one of 17 physicians nationwide appointed to the Council on

Graduate Medical Education (COGME) by the US Secretary of Health and Human Services in 2003. Now chair of the Council since 2008, Dr. Robertson and his fellow members advise Congress and the Department of Health and Human Services on issues related to physician supply and distribution. In this capacity, he has been invited to serve on a number of national and international workforce bodies. Dr. Robertson completed his term on COGME in March 2012.

Dr. Robertson's interest in medical education has evolved to an international level. He was the director for Global Education for Northwestern's Center for Global Health and looks forward to supporting CMS students with interests in global health. He also served as president of the Board of Hillside Healthcare International, which supports a clinic in Punta Gorda, Belize.

Dr. Robertson also holds a certificate of added qualification in geriatrics.

Eduardo Salas, PhD, is University Trustee Chair and Pegasus Professor of Psychology at the University of Central Florida where he also holds an appointment as program director for the Human Systems Integration Research Department at the Institute for Simulation and Training. Previously, he was a senior research psychologist and head of the Training Technology Development Branch of Naval Air Warfare Center Training Systems Division for 15 years. During this period, Dr. Salas served as a principal investigator for numerous research and development programs that focused on teamwork, team training, decision making under stress, and performance assessment. Dr. Salas has co-authored over 450 journal articles and book chapters and has co-edited 25 books. His expertise includes assisting organizations on how to foster teamwork, design and implement team-training strategies, facilitate training effectiveness, manage decision making under stress, and develop performance measurement tools. Dr. Salas is a past president of the Society for Industrial/Organizational Psychology, fellow of the American Psychological Association, current president of the Human Factors and Ergonomics Society, and a recipient of the Meritorious Civil Service Award from the US Department of the Navy. He is also the recipient of the 2012 Michael Losey Lifetime Achievement Award given by the Society for Human Resource Management, and the 2012 INGRoup Joseph E. McGrath Award for Lifetime Achievement on the study of groups and teams.

Stephen C. Schoenbaum, MD, MPH, is special advisor to the President of the Josiah Macy Jr. Foundation. He has extensive experience as a clinician,

epidemiologist, and manager. From 2000–2010, he was executive vice president for Programs at The Commonwealth Fund and executive director of its Commission on High Performance Health Systems. Prior to that, he was the medical director and then president of Harvard Pilgrim Health Care of New England, a mixed model HMO delivery system in Providence, Rhode Island.

He is currently a lecturer in the Department of Population Medicine at Harvard Medical School, a department he helped to found, and the author of over 150 professional publications. He is vice chairman of the Board of the Picker Institute; former president of the Board of the American College of Physician Executives; chair of the International Advisory Committee to the Joyce and Irving Goldman Medical School, Ben Gurion University, Beer Sheva, Israel; and an honorary fellow of the Royal College of Physicians.

Elena Speroff, MSN, NP-C, WHNP-BC, is a nurse practitioner (NP) at the Veteran Affairs Connecticut Healthcare System Primary Care Center of Excellence in Primary Care Education (COEPCE) in West Haven, Connecticut. She received her master's of nursing at the Yale School of Nursing and was in the first graduating class of the Primary Care Center of Excellence Adult Nurse Practitioner Fellowship program. Upon graduation, she advanced to COEPCE core nurse practitioner faculty, educating medical residents and nurse practitioner fellows. Elena is active in the development of interprofessional primary care education curriculum and was an invited member of a panel at the Josiah Macy Jr. Foundation Conference on Interprofessional Education in April 2012. Elena also presented a summary of her experiences as an NP fellow at the 2012 Connecticut APRN Annual Conference. Her experience training and practicing with medical residents has shaped her firm belief that interprofessional education and collaboration are key components to quality patient-centered care.

George E. Thibault, MD, became the seventh president of the Josiah Macy Jr. Foundation in January 2008. Immediately prior to that position, he had been vice president of Clinical Affairs at Partners Healthcare System in Boston and director of the Academy at Harvard Medical School. He was the first Daniel D. Federman Professor of Medicine at Harvard Medical School, where he is now Federman Professor, Emeritus. For nearly four decades at Harvard, Dr. Thibault played leadership roles in many aspects of undergraduate and graduate medical education, including the New Pathway Curriculum and the new Integrated Curriculum reform. His research has focused on the evaluation of practices and outcomes of medical

intensive care and variations in the use of cardiac technologies. Dr. Thibault serves on the President's White House Fellows Commission, and he chaired the Special Medical Advisory Group for the Department of Veterans' Affairs. He has long been a visiting professor at the Institute of Medicine and at Harvard's Kennedy School of Government and at many schools in the United States and abroad. He is a member of the Institute of Medicine.

Donna Thompson, RN, MS, joined Access Community Health Network (ACCESS) as chief operating officer in 1995. She was very familiar with the difficulties patients faced because they lacked access to primary and preventive care. For more than 30 years, Ms. Thompson has been on the front-line of patient care delivery. Now CEO of ACCESS, a post held since 2004, Ms. Thompson demonstrates daily how a focused commitment to high-quality community health care can save lives, revitalize communities, and preserve the possibility of a healthy life for hundreds of thousands of patients of all ages and backgrounds.

By mission, ACCESS provides high-quality, comprehensive community-based health care in communities that might otherwise lack these resources. In her eight years as CEO, Ms. Thompson has led ACCESS to become one of the largest federally qualified health care (FQHC) organizations in the country. ACCESS serves more than 200,000 patients annually, 60,000 of whom are uninsured, in 43 health center locations across the greater Chicago area including suburban Cook and DuPage Counties. In FY 2013, with a \$116 million budget and 300 medical providers, ACCESS is projected to provide its patients with over 560,000 medical visits and deliver close to 3,200 babies.

Under Ms. Thompson's leadership, ACCESS has developed a model of health care that helps patients navigate the gap between community-based care and other resources, both those in hospitals and in other community agencies. ACCESS providers offer more than 20 specialty care services. ACCESS operates four school-based health centers; five ACCESS centers are co-located with other organizations such as the Illinois Eye Institute, the Anixter Center, and the DuPage County Health Department to better address patient concerns comprehensively. ACCESS has been continuously accredited by The Joint Commission since 2000, and was recognized by the United Way.

Ms. Thompson was named a Robert Wood Johnson Foundation Executive Nurse Fellow in 2003. She received the 2007 Chicago Athena Award for her leadership

in developing community health and was recognized as one of Chicago United's 2007 Business Leaders of Color. In 2008, Ms. Thompson received the Chicago National Organization for Women's 2008 Outstanding Community Leader Award. Ms. Thompson serves on Boards of Directors of the Illinois College of Optometry and The Chicago Network. She is a 2010 graduate of the Kellogg School of Management's CEO Perspectives program.

Henry H. Ting, MD, MBA, is professor of Medicine in the Division of Cardiovascular Diseases at Mayo Clinic in Rochester, Minnesota. His clinical practice includes interventional cardiology and outpatient clinic. Dr. Ting currently serves as medical director for Mayo Clinic Quality Academy and associate dean for Quality for Mayo Clinic College of Medicine. Dr. Ting earned a bachelor's of arts degree in Chemistry from Cornell University and a medical degree from Harvard Medical School. He received training in Biostatistics and Epidemiology from the Harvard School of Public Health Clinical Effectiveness Program. He completed residency in Internal Medicine and fellowships in Cardiovascular Diseases and Interventional Cardiology at Brigham and Women's Hospital. He completed a master's in business administration degree from the University of St. Thomas and received formal training in quality improvement and management science including Lean Thinking, Six-Sigma, Value Network Analysis, and Baldrige Model.

Dr. Ting's scholarly activities focus on outcomes research including surveillance (what are the gaps in care?), discovery (what new strategies can improve these gaps in care?), translation (how can we best apply these strategies to practice?), and dissemination (how can we spread what works?). Dr. Ting also does research in patient-centered shared decision making to enhance knowledge transfer and empower patient choice and preferences. Dr. Ting has successfully led quality improvement initiatives at the local, regional, and national levels. Dr. Ting has more than 100 publications in peer-reviewed journals including *New England Journal of Medicine* and *Journal of the American Medical Association*. He has been a keynote and plenary speaker at national and international conferences on quality of care and outcomes research. Dr. Ting serves on multiple national committees for the American Heart Association, American College of Cardiology, and American Board of Internal Medicine.

Sarita Verma, LLB, MD, CCFP, is professor in the Department of Family and Community Medicine, deputy dean of the Faculty of Medicine and associate vice provost in Health Professions Education at the University of Toronto. She is

a family physician who originally trained as a lawyer at the University of Ottawa (1981) and later completed her medical degree at McMaster University (1991). She has been a diplomat in Canada's Foreign Service and worked with the United Nations High Commissioner for Refugees agency (UNHCR) in Sudan and Ethiopia for several years. Dr. Verma is the 2006 recipient of the Donald Richards Wilson Award in Medical Education from the Royal College of Physicians and Surgeons of Canada and the 2009 co-recipient of the May Cohen Gender Equity Award from the Association of Faculties of Medicine in Canada. Along with colleagues at McGill University, University of British Columbia, and the University of Toronto, she was the lead consultant for the Future of Medical Education in Canada Postgraduate (FMEC-PG) project on the Liaison and Engagement Strategy and the Environmental Scan Scientific Study. At present she is the co-lead for the Canadian Interprofessional Health Leadership Collaborative (CIHLC) at the Institute of Medicine's Global Forum on Innovation in Health Professions Education.

Heather M. Young, PhD, RN, FAAN, is associate vice chancellor for Nursing, founding dean of the Betty Irene Moore School of Nursing at University of California (UC), Davis, and professor of internal medicine.

Dr. Young is a nurse leader, educator and scientist, and a nationally recognized expert in gerontological nursing and rural health care. Her research and clinical interest is the promotion of healthy aging with a particular focus on the interface between family and formal healthcare systems. Her research has focused on medication management and safety in rural, assisted-living settings; technological approaches to promoting medication safety in rural hospitals; and community-based strategies, including telehealth, to promote health for rural older adults. Dr. Young also collaborates on a number of interdisciplinary projects, including the Initiative for Wireless Health and Wellness at UC Davis involving faculty from nursing, medicine, engineering, and the Center for Information Technology Research for the Interest of Society (CITRIS). She is also co-director of the Latino Aging Research Resource Center.

She serves at both the national and state levels in supporting the implementation of the recommendations of the landmark Institute of Medicine report, "The Future of Nursing: Leading Change, Advancing Health." She serves on the Robert Wood Johnson Foundation's Strategic Advisory Committee that guides the national campaign, as well as the California Action Coalition executive committee, which leads the statewide activities.

Dr. Young earned a master of science in nursing degree with a specialty in gerontology and holds a doctor of philosophy degree from the University of Washington in Nursing Science.

Brenda K. Zierler, PhD, RN, FAAN, has done research that explores the relationships between the delivery of health care and outcomes—at both the patient and system level. Her primary appointment is in the School of Nursing at the University of Washington (UW), but she holds three adjunct appointments—two in the School of Medicine and one in the School of Public Health. As co-principal investigator (with Dr. Brian Ross) of a Josiah Macy Jr. Foundation-funded study, Drs. Zierler and Ross lead a group of interprofessional faculty and students in the development of a simulation-based, team-training program to improve collaborative interprofessional communication both within teams and with patients. Dr. Zierler is also the co-principal investigator (with Dr. Leslie Hall) of a second Macy Foundation grant focused on faculty development for interprofessional education and collaborative practice. She currently leads two Health Resources and Services Administration (HRSA) training grants: one focusing on faculty development in the use of technology across a five-state collaborative and the second focusing on technology-enhanced interprofessional education for advanced practice students. Dr. Zierler was the co-planning lead for the Collaborating Across Borders (CAB) III meeting in Tucson, Arizona, (November 2011) and is a member of the planning committee for the 2013 CAB Interprofessional meeting in Vancouver, BC. Dr. Zierler is the co-director for the UW Center for Health Sciences Interprofessional Education, Practice and Research and associate director of the UW Institute for Simulation and Interprofessional Studies (ISIS) in the School of Medicine. Dr. Zierler is a board member of the American Interprofessional Health Collaborative, a member of the IOM Global Forum on Innovation in Health Professional Education, and is on the Advisory Committee for the RWJF New Careers in Nursing Program. She was a fellow in the RWJF Nurse Executive Program (2008–2011).











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