Assessing Health Professional Education: Workshop Summary

ISBN
978-0-309-30253-1

160 pages
6 x 9
PAPERBACK (2014)

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ASSESSING HEALTH PROFESSIONAL EDUCATION

WORKSHOP SUMMARY

Patricia A. Cuff, *Rapporteur*

Global Forum on Innovation in Health Professional Education

Board on Global Health

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

THE NATIONAL ACADEMIES PRESS
Washington, D.C.
www.nap.edu

THE NATIONAL ACADEMIES PRESS 500 Fifth Street, NW Washington, DC 20001

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This activity was supported by contracts between the Academic Consortium for Complementary and Alternative Health Care, the Academic Council of the American Physical Therapy Association, the Academy of Nutrition and Dietetics, the Accreditation Council for Graduate Medical Education, the Aetna Foundation, the Alliance for Continuing Education in the Health Professions, the American Academy of Family Physicians, the American Academy of Nursing, the American Association of Colleges of Nursing, the American Association of Colleges of Osteopathic Medicine, the American Association of Colleges of Pharmacy, the American Association of Nurse Anesthetists, the American Association of Nurse Practitioners, the American Board of Family Medicine, the American Board of Internal Medicine, the American College of Nurse-Midwives, the American Congress of Obstetricians and Gynecologists/American Board of Obstetrics and Gynecology, the American Dental Education Association, the American Medical Association, the American Occupational Therapy Association, the American Psychological Association, the American Society for Nutrition, the American Speech-Language-Hearing Association, the Association of American Medical Colleges, the Association of American Veterinary Medical Colleges, the Association of Schools and Colleges of Optometry, the Association of Schools and Programs of Public Health, the Association of Schools of the Allied Health Professions, the Atlantic Philanthropies, the China Medical Board, the Council of Academic Programs in Communication Sciences and Disorders, the Council on Social Work Education, Ghent University, the John A. Hartford Foundation, the Josiah Macy Jr. Foundation, Kaiser Permanente, the National Academies of Practice, the National Association of Social Workers, the National Board for Certified Counselors, Inc. and Affiliates, the National League for Nursing, the National Organization of Associate Degree Nursing, the Physician Assistant Education Association, the Robert Wood Johnson Foundation, the Society for Simulation in Healthcare, the Uniformed Services University of the Health Sciences, and the Veterans Health Administration. The views presented in this publication do not necessarily reflect the views of the organizations or agencies that provided support for the activity.

International Standard Book Number-13: 978-0-309-30253-1
International Standard Book Number-10: 0-309-30253-6

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Printed in the United States of America

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Suggested citation: IOM (Institute of Medicine). 2014. *Assessing health professional education: Workshop summary.* Washington, DC: The National Academies Press.

"Knowing is not enough; we must apply.
Willing is not enough; we must do."
—Goethe

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This workshop summary has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making its published workshop summary as sound as possible and to ensure that the summary meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the process. We wish to thank the following individuals for their review of this workshop summary:

Lesley Bainbridge, The University of British Columbia
Lisa Conforti, American Board of Internal Medicine
Jennifer R. Kogan, University of Pennsylvania School of Medicine
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Although the reviewers listed above have provided many constructive comments and suggestions, they did not see the final draft of the workshop summary before its release. The review of this workshop summary was overseen by **Mary O'Neil Mundinger,** Columbia University. Appointed by the Institute of Medicine, she was responsible for making certain that an independent examination of this summary was carried out in accordance with institutional procedures and that all review comments were carefully considered. Responsibility for the final content of this workshop summary rests entirely with the rapporteur and the institution.

Acknowledgments

After 2 short years of working together, our Global Forum is making its mark on health professional education. In 2013, the Interprofessional Education for Collaboration workshop summary report was among the top 10 most popular reports at the National Academies as noted by the National Academies Press. Webcast viewers of our workshops have ranged from 200 to 270 for our most recent workshop with viewers logging in from such countries as Japan, Pakistan, Sudan, Sweden, and Turkey. In addition, the activities of the Global Forum are regularly described on the Health Professionals for the 21st Century website; and the listserv of interested individuals following the activities of the Global Forum now numbers more than 1,100 persons.

Although interprofessional education remains high on the list of topics for many of our Forum members, we are now exploring other critical areas of health professional education such as innovative technologies for learning across the education-to-workforce continuum, social accountability, health disparities, and community-based learning opportunities for health professional training. This workshop summary report, *Assessing Health Professional Education*, is an initial foray into many of these topics, and as Co-Chairs of the Forum, we are extremely grateful to all those who worked tirelessly to make this event a resounding success.

Our sincere thanks go to the workshop planning committee co-chairs, Darla Spence Coffey and Eric Holmboe, along with the planning committee members: Carol Aschenbrener, Meg Gaines, Catherine Grus, Lucy Mac Gabhann, Lemmie McNeilly, and Pat Hinton Walker. It goes without saying that the workshop would not have been possible without the adept skills of

the Institute of Medicine (IOM) staff—Patricia Cuff, forum director; Rachel Taylor, associate program officer; and Megan Perez, research associate. And special thanks go to Patrick Kelley for his leadership in directing the IOM's Board on Global Health, which oversees the Global Forum on Innovation in Health Professional Education. Finally, we would like to acknowledge our deep appreciation to the 45 sponsors and 61 members of the Global Forum that make it possible for us to host events like the workshop described in this report.

Jordan Cohen, *Forum Co-Chair* Afaf Meleis, *Forum Co-Chair*

Contents

Acronyms and Abbreviations

AACN	American Association of Colleges of Nursing
AAMC	Association of American Medical Colleges
ABIM	American Board of Internal Medicine
AHRQ	Agency for Healthcare Research and Quality
ANPF	American Nurse Practitioner Foundation
ASPPH	Association of Schools and Programs of Public Health
CAHPS	Consumer Assessment of Healthcare Providers and Systems
CIHLC	Canadian Interprofessional Health Leadership Collaborative
DMIC	Dartmouth Microsystem Improvement Curriculum
DoD	U.S. Department of Defense
FAIMER	Foundation for Advancement of International Medical Education and Research
HRO	highly reliable organization
IDCOP	Idealized Design of Clinical Office Practices
IHI	Institute for Healthcare Improvement
IHPE	Innovation in Health Professional Education (the Forum)

IOM	Institute of Medicine
IPA	interprofessional professionalism assessment
IPC	Interprofessional Professionalism Consortium
IPE	interprofessional education
IPP	interprofessional practice
LIC	longitudinal integrated clerkship
MOOC	massive open online course
NCQA	National Committee for Quality Assurance
NLN	National League for Nursing
PCMH	patient-centered medical home
SYMLOG	System for the Multiple Level Observation of Groups
TeamSTEPPS	Team Strategies and Tools to Enhance Performance and Patient Safety
THEnet	Training for Health Equity Network
T-TAQ	TeamSTEPPS Teamwork Attitudes Questionnaire
T-TPOT	Trauma Team Performance Observation Tool
VA	U.S. Department of Veterans Affairs

Background[1]

The workshop described in this summary report is an activity hosted by the Institute of Medicine's (IOM's) Global Forum on Innovation in Health Professional Education (IHPE), which is the largest Forum at the National Academies. With 61 members from 8 high-, middle-, and low-income countries, who represent multiple sectors drawn from 18 different health professions involved with education and practice, the Forum provides an excellent platform on which to incubate new ideas that might only be produced from such a diverse membership. For this workshop, subject matter experts presented to the Forum members their extensive research and experiences relating to assessment in the context of health professional education. These presentations added significantly to the richness of the discussions.

Like all forums and roundtables at the IOM, IHPE is not designed to provide consensus recommendations, so any advice that may be construed from this report is that of individuals whose views do not necessarily represent those of the IOM. It might also be noted that as a summary report, the information provided includes only what was discussed at the workshop and may not be representative of all views on assessment in health professional education; however, the report does provide some interesting examples and highlights some key principles that were expressed during the workshop.

[1] The planning committee's role was limited to planning and convening the workshop. The views contained in the report are those of individual workshop participants and do not necessarily represent the views of all workshop participants, the planning committee, or the Institute of Medicine.

Each of the Global Forum workshops is webcast and open to the public. The purpose of these events is to build coalitions with global partners over how to improve health professional education by sharing experiences and ideas with other members. Through this open, online system of information sharing, different types of collaborations are formed that can positively affect local education by learning from global partners. The workshop and its subsequent summary report is one example of the types of activities undertaken by this Forum.

Topics selected for more in-depth exploration are chosen by the Forum members themselves after considerable consultation concerning needs and gaps within the area of health professional education. One identified area of concern is the lack of uniformity among educators and health professionals in the area of assessment. Without greater standardization of practices used to assess learners and educators, spreading best practices becomes a challenge. The same is true in practice environments where assessments are not commonplace, and those that do occur are typically ad hoc events. This issue was touched on at a previous Forum workshop on interprofessional education (IPE). At that workshop, Scott Reeves, the editor of the *Journal of Interprofessional Care*, emphasized the importance of measuring the impacts of IPE collectively, which would necessitate a common parlance so different IPE experiences could more easily be compared. He began with a distinction between assessment and evaluation, which is also relevant to this report:

> Assessment is done to determine the level of understanding by a learner, while evaluation is a tool to determine how well a program or an educator teaching a course is conveying messages. For assessment, he says, there needs to be a meaningful analysis of how the individual learns, not just in the short term but in the long term as well. For evaluation, thoughtful consideration is needed to determine how well the program is conveying the desired messages and information. (IOM, 2013)

Also evident at that workshop was the members' view that education and practice are a continuous learning cycle with the patient (or person) at the center of the learning process. This particular perspective was similarly expressed in this 2-day, Forum-sponsored workshop that explored assessment of health professional education. At the event, Forum members shared personal experiences and learned from patients, students, educators, and practicing health care and prevention professionals about the role each could play in assessing the knowledge, skills, and attitudes of all learners and educators across the education to practice continuum. This was looked at from the perspective of assessing individual as well as team performance and individuals' work as team members. In this regard, particular atten-

tion was given to assessing IPE, team-based care, and other forms of health professional collaborations that emphasize the health and social needs of communities. These various viewpoints are reflected in the following workshop objectives that were used to design the agenda:

- To look at the current state of assessment competencies in three areas, including IPE; team-based care; and patient/person centeredness
- To discuss challenges and opportunities of assessment within these three areas
- To encourage new linkages among professions that lay the foundation for interprofessional interactions that better engage consumers, communities, and/or business leaders

These objectives were developed by a eight-person planning committee led by co-chairs Darla Coffey, Council on Social Work Education, and Eric Holmboe, American Board of Internal Medicine, who structured the workshop based on the Statement of Task shown in Box B-1. The agenda for this workshop that took place on October 9–10, 2013, in Washington, DC, is found in Appendix A.

KEY ASPECTS OF THE WORKSHOP

The content covered at the workshop and captured in this summary report involves assessing core competencies particularly within IPE and health professional collaborations that include patient-centered health care teams. For the purposes of this workshop it may be noted that *competency* is not the same as *competence* because according to Holmboe, the ultimate goal of a competency-based educational system is expertise, not competence (Talbot, 2004; Holmboe et al., 2010). And in this regard, assessment measures whether a learner can demonstrate competencies have been achieved and is therefore capable of practicing those competencies.

Discussions at the workshop helped describe these competencies and explored the challenges, opportunities, and innovations in assessment across the education-to-practice continuum. Through facilitated discussions and moderated panel presentations, Forum members explored the challenges to effectively assessing individuals and groups while also considering potential opportunities for improving assessments across the education-to-practice continuum. Such opportunities might directly involve patients and other users of the health care system in assessments of health systems and the continuing education of health professionals. It might also involve communities for assessing health professional students' involvement in wellness activities that benefit the targeted community. Discussions within these content areas led to descriptions of the importance of institutional or organizational

BOX B-1
Statement of Task

Better use of existing assessment methods and new innovative tools are needed to assess the kind of competencies health professional students will need to adapt to a "new professionalism" that is interprofessional and that focuses on health improvement and the triple aim of improved patient care and experience, improved population health, and reduced costs. In an era of evolving technology and changing health and health care environments, creative thinking is needed to consider assessment methods and tools that have a positive impact, are affordable, are easily integrated into education, and assess competencies at micro-, meso-, and macro-levels (individual, team, organization). The impact could be measured by (1) improvements in population health outcomes, (2) better patient care, (3) more interprofessional collaboration/understanding, and (4) maximum value of services at lower costs.

To address these issues, an ad hoc committee of the IOM will plan and conduct a 2-day public workshop titled "Assessing Health Professional Education." The committee will develop a workshop agenda that will attempt to elucidate such challenging issues as noted below, select and invite speakers and discussants, and moderate the discussions:

- What is currently being assessed and how might the outcomes be used (i.e., enhanced patient-centeredness, greater social accountability, promotion by media, learner skills, faculty development)?
- How can different disciplines be assessed such that the data inform a "new professionalism"?
- Which kind of assessment will lead to a new professionalism?
- What is the role of peer assessment?
- What is the role of patients in assessment?
- What is the role of work-based assessments?
- How might learners and practitioners be prepared for a lifetime of assessment?

culture change in the form of faculty development, role modeling, and experiential learning opportunities for promoting new thinking and the development of new competencies. The idea that assessment could help to drive such culture change was key.

Many of these ideas are presented and described within the five chapters of this workshop summary report, but more specifically:

Chapter 1 highlights the goals of assessment that can be viewed somewhat as catalysts for learning. It also discusses criteria for a good assessment and delves more deeply into the value of formative and summative assessments by differentiating assessments *of* learning and assessments *for*

learning. The roles of peers, patients, and direct observation in assessment are also considered.

Chapter 2 focuses on the role of education in teamwork, describes methodologies to teach teamwork, and presents some of the approaches to and challenges for assessing teamwork. This chapter also describes a tool to assess professionalism and elements of the interprofessional environment. Finally this chapter describes education in teamwork using simulation. These three presentations highlighted the challenge or tension of evaluating teams versus the members of the teams, aggregating scores, and evaluating stable teams versus fluid teams.

Chapter 3 presents different challenges to assessing various aspects of IPE and interprofessional practice based on examples that were drawn from around the world. The examples addressed the following:

- How to assess collaborative and transformative leadership;
- Deficiencies in organizational cultures that limit a collaborative atmosphere;
- Strategies for assessment in low resource settings (i.e., 360-degree evaluations, use of clinical outcomes);
- How to better use faculty development for promoting interprofessional practice and education; and
- Strategies to motivate faculty to embrace interprofessional practice.

Chapter 4 describes three ways in which technology has been leveraged for health education of patients, nursing students, and the general public through the Leading Reach Patient Engagement Mobile Platform, the University of Illinois College of Nursing's simulation activity, and the Khan Academy's open platform for medical education, respectively. Emphasis was on how each technology might be used for assessing interprofessional teams, promoting IPE and learning, and engaging patients without worsening disparities among disadvantaged populations.

Chapter 5 focuses on expanding high-quality assessments with strategies focused on the policy (macrolevel), the institution (mesolevel), and the individual (microlevel). Assessments focused on the interprofessional learner, measuring the effectiveness of new technologies and methods for teaching IPE, opportunities for assessing teams and collaborations in and with the community, and strategies for expanding the role of the patient voice in assessment from education to practice.

REFERENCES

Holmboe, E. S., J. Sherbino, D. M. Long, S. R. Swing, and J. R. Frank. 2010. The role of assessment in competency-based medical education. *Medical Teacher* 32(8):676-682.

IOM (Institute of Medicine). 2013. *Interprofessional education for collaboration: Learning how to improve health from interprofessional models across the continuum of education to practice: Workshop summary*. Washington, DC: The National Academies Press.

Talbot, M. 2004. Monkey see, monkey do: A critique of the competency model in graduate medical education. *Medical Education* 38(6):587-592.

1

Setting the Stage

Key Messages

- Both summative and formative assessments are critical components of a competency-based system. (Holmboe, Norcini)
- Understanding why the assessment is being conducted and how the purpose aligns with the desired outcomes is key to undertaking an assessment. (Holmboe, Norcini)
- By combining a demonstration of knowledge with acquisition of skills, and by testing for an ability to apply both knowledge and skills in new situations, a message is sent to learners that knowledge, skills, application, and ability are all important elements for their education. (Holmboe, Norcini)
- Too little time is spent on formative assessment. (Holmboe, Norcini)
- There is a need for greater faculty development in the area of assessment. (Aschenbrener, Bezuidenhout, Holmboe, Norcini, Sewankambo)
- Although it is a useful tool, most individuals are not good at self-assessments. (Baker, Holmboe, Norcini, Reeves)
- Regardless of how well learners are trained, dangerous situations leading to medical errors will persist if there is no support of the larger organizational structures emphasizing the need for a culture of safety. (Finnegan, Gaines, Malone, Palsdottir, Talbott)

In setting the stage for the workshop, John Norcini from the Foundation for Advancement of International Medical Education and Research (FAIMER) described assessment as a powerful tool for directing learning by signaling what is important for a learner to know and understand. In this way, he said, assessments can motivate learners to acquire greater knowledge and skills in order to demonstrate that learning has occurred. The summative assessment measures achievement, while formative assessments focus on the learning process and whether the activities the learners engaged in helped them to better understand and demonstrate competency. As such, both summative and formative assessments are critical components of a competency-based system. A competency-based model directs learning based on intended outcomes of a learner (Sullivan, 1995; Harris et al., 2010) in the particular context of where the training takes place. Although it is outcome oriented, competency-based education also relies on continuous and frequent assessments for obtaining specific competencies (Holmboe et al., 2010).

THE PURPOSE OF ASSESSMENT

According to Norcini, assessment involves testing, measuring, collecting and combining information, and providing feedback (Norcini et al., 2011). Understanding why the assessment is being conducted and how the purpose aligns with the desired outcomes is key to undertaking an assessment. Norcini posed a list of potential purposes of the assessment in health professional education, which might include some or all of the following:

- Enhance learning by pointing out flaws in a skill or errors in knowledge.
- Ensure safety by demonstrating that learning has occurred.
- Guide learning in a particular direction outlined by the assessment questions or methods.
- Motivate learners to seek greater knowledge in a particular area.
- Provide feedback to the educator or trainer that benchmarks progress of the learner.

Highlighting the fourth bullet, Norcini emphasized that a purpose of assessment is to "create learning." In order to learn, one needs to be able to retrieve and use the information taken in. To underscore this point, Norcini cited an example involving students who took a test three times and ultimately scored better on that test than students who read a relevant article three times (Roediger and Karpicke, 2006). This is known as the "testing effect" where it is believed that tests can actually enhance retention even when those tests are given without any feedback. Norcini described

the testing effect hypothesis that assessments create learning because it forces not only retrieval but also application of information and signals to students what is important and what should be emphasized in their studies and experiential learning.

Forum Co-Chair Afaf Meleis from the University of Pennsylvania School of Nursing questioned whether there is a danger in using assessments that direct studying toward the assessment tool rather than opening new ways of critical thinking. Norcini responded in the positive, saying that because the risk is always present, the assessment tool must be carefully selected. Historically, tests have been designed around fact memorization. Roughly 20 to 25 years ago, the standardized patient was introduced into assessments that moved beyond the simple memorization–regurgitation model. By combining a demonstration of knowledge with acquisition of skills, and by testing for an ability to apply both knowledge and skills in new situations, a message is sent to learners that knowledge, skills, application, and ability are all important elements for their education.

Assessment Outcomes and Criteria

As might be expected, said Norcini, the *most* important outcome of an assessment differs based on one's perspective. Students are concerned about being able to demonstrate their competence, educators and educational institutions are interested in producing competent health professionals who are accountable, and regulatory bodies are mainly focused on accountability and maintenance of professional competence. Users of the health system are also concerned that health professionals are accountable and competent, but in addition, they want to know if providers are being efficient with their resources.

Desired outcomes of an assessment differ not only based on perspective as noted above, but also based on the context within which the assessment is being conducted. And although there are certain characteristics of a good assessment, Norcini emphasized that no single set of criteria applies equally to all assessment situations. Despite all of the diversity in reasons for conducting assessments and the settings within which the assessments are conducted, Norcini reported on how participants at the Ottawa Conference were able to come together to produce a unified set of seven criteria needed for a good assessment (Norcini et al., 2011). These conference participants also explored how these criteria might be modified based on the purpose of the assessment and the stakeholder(s) using it. The criteria were presented to the Forum members for discussion at the workshop and can be found in Table 1-1.

In considering the criteria outlined by Norcini, Forum Co-Chair Jordan Cohen from George Washington University asked if it is possible to use

TABLE 1-1 Criteria Needed for a Good Assessment, Produced at the Ottawa Conference

Elements of a Good Assessment	Describing the Assessment Element	Further Information
Validity or coherence	Is there a body of evidence that "hangs together" and supports the use of a test for a particular purpose	Is a property of the inferences drawn from a test, not the test itself; Is a matter of degree; Requires the ongoing collection of data
Reliability or reproducibility	Scores of examinees will be the same if retested	Test–retest reliability; Alternate form reliability; Split-half reliability; Reliability index
Equivalence	Different versions of an assessment yield equivalent scores or decisions	A challenge for assessment in the workplace
Educational effect	The test motivates those who take it to prepare in a fashion that has educational benefit	How do students prepare for the test?
Catalytic effect	The assessment provides results and feedback in a fashion that enhances learning	A requirement for formative assessment
Feasibility	The test is practical, realistic, and sensible, given the circumstances and context	
Acceptability	Stakeholders find the assessment process and results to be credible	

SOURCE: Norcini et al., 2011.

these principles of assessment for assessing how well teams function and work interprofessionally. Norcini responded with a resounding affirmation that the principles apply regardless of the assessment situation, although the challenges increase dramatically. This is an area, he said, that is a growing area of research. For example, the 360-degree assessment is one way to measure teams, and there is considerable work under way in using simulation to assess health professional teams.

Assessment as a Catalyst for Learning

Warren Newton, representing the American Board of Family Medicine, asked about Norcini's use of the term *catalyzing learning*. Norcini responded that it is one thing to tell a student what is important to learn and another thing to provide students with feedback based on the assessment that drives their learning. The latter is a much more specific way of signaling what is important, and it is used to create learning among students. Newton then asked about the activity costs of assessment versus other kinds of activities. He pointed out that many of the Forum members manage both faculties and clinical systems; this prompted the question, how much time should be spent in assessment as part of the overall teaching role? Norcini responded by looking at the types of assessments, saying that far too much time is often devoted to summative assessment and too little time is spent on formative assessment; he added that formative assessment is the piece that drives learning and the part that is integrated with learning. Furthermore, assessments can be done relatively efficiently, especially if the assessors collaborate with partners across the institution. Norcini believes there could be greater sharing of resources across institutions, which would lead to better and more efficient assessments. Another advantage is the cost savings that can be achieved by spreading the fixed costs across institutions; these costs typically represent the largest expenses associated with assessments.

Assessment's Impact on Patients and Society

Forum member and workshop co-chair Eric Holmboe from the American Board of Internal Medicine (ABIM) moderated the question-and-answer session with John Norcini, and brought up assessment from a public perspective. He asked the audience what the return on investment would be if the assessment were not in place—if health professionals were licensed who are insufficiently prepared, and allowed to practice throughout a 30-year career? The cost to society would be much less if time was spent, particularly on the formative side, to make sure health professionals acquire the competence needed to be effective. Holmboe said that often assessors look at the short-term costs and the time costs without recognizing that not putting in sufficient effort comes at a heavy cost over time. And, there has not been a strong concerted effort to embed assessment into daily activities, like bedside rounds; this might be a form of observation and assessment that could be more effectively exploited. There are also a number of multisource tools that are relatively low tech and involve a series of observations; however, what is lacking in these tools is how to make them sufficiently reliable so appropriate judgments and inferences can be extracted.

Forum and workshop planning committee member Patricia Hinton

Walker from the Uniformed Services University of Health Sciences followed Holmboe's lead and asked about including the public on the health team and how an assessment might be conducted that includes not just patients but students as well. Norcini responded again by emphasizing the value of multisource feedback for team assessments as well as other opportunities, such as ethics panels that can make use of the patient's competence in a particular area. He went on to say that the assessment process would lack validity if patients were not involved in the assessment. But in follow-up, Walker commented that students are somewhat separated from patients and families. Norcini pointed out this is an area of keen interest with researchers in the United Kingdom who are incorporating patients into the education of all health care providers through family interviews. Holmboe also brought up the longitudinal integrated clerkships (LICs) where students are assigned a group of patients and a family to follow over all 4 years of their training. The families play a major role in the assessment and feedback process of the trainees, said Holmboe. Although it is a resource intensive model, there are data from Australia, Canada, South Africa, and the United States looking into using LICs as an organizing principle (Norris et al., 2009; Hirsh et al., 2012). The Commonwealth Medical School in Scranton has actually moved to an entirely LIC-based model so every student at Commonwealth will be in an LIC-type model for their entire medical education.

Walker also wanted to know Holmboe's and Norcini's views on "high-stakes assessments." In Holmboe's opinion, there needs to be some form of public accountability through a summative assessment (Norcini agreed). At the ABIM, Holmboe views the certification exam as part of their public accountability as well as an act of professionalism. But for him, the bigger issue is the inclusion of more formative assessments during training and education rather than relying so much on summative examinations. Norcini added that he sees formative assessment as a mechanism for addressing trainee errors at a much earlier stage than waiting until the end for the summative assessment.

Jacob Buck from the University of Maryland School of Social Work, who joined the workshop as a participant, asked what the target of the assessment should be—is it to have healthier individuals and populations, or is it to graduate smarter health providers? In response, Norcini took apart the goal of the assessment. If the goal is to take better care of patients, then the focus would be on the demonstration of the skills in a practice environment and likely not a multiple choice test. In his opinion, the triple aim of improving health and care at lower costs may be the desired outcome from education, so an assessment could be designed to achieve that goal. Forum member Pamela Jefferies from Johns Hopkins University did not disagree, but she asked how one might measure interprofessional education (IPE) in the practice environment while patients are involved. Holmboe responded

that this gets at some of the complexities of assessing experiential learning acquisition of a learner. Holmboe also raised the complexity of finding training sites where high-quality interprofessional care can be experienced so the learners can be assessed against a gold standard. It is not surprising that learners who do not experience high-quality, interprofessional care are not well prepared to work in these environments. Jeffries suggested that interprofessional clinical simulations could help bridge the gap for learners who are not trained through an embedded IPE clinical or related work experience.

STRUCTURE AND IMPLEMENTATION OF ASSESSMENT

Looking at the assessment from a different lens, Forum member Bjorg Palsdottir, who represents the Belgian organization Training for Health Equity Network (THEnet), wanted to know more about who is doing the assessing and how that person might prepare to undertake this role. Norcini acknowledged the need for greater faculty development in this area because health professionals are not trained in education or assessment. Forum member and workshop planning committee member Carol Aschenbrener from the Association of American Medical Colleges agreed, but also felt that the shortage of modern, clinical practice sites in which to embed the learner is another major impediment. In her opinion, it is the clinical sites that need greater scrutiny and that, if pushed toward modernization through assessment, could be the lever for greater, more relevant faculty development. According to Holmboe, measuring practice characteristics unfortunately remains difficult although the tools are improving, particularly with the introduction of the Patient-Centered Medical Home (PCMH). For example, the National Committee for Quality Assurance (NCQA) PCMH developed the NCQA 2011 Medical Home Assessment Tool that providers and staff can use to assess how their practice operates compared to PCMH 2011 standards (Ingram and Primary Care Development Corporation, 2011). This tool looks mostly at structure and process, said Holmboe, but researchers are beginning to embed outcomes into the assessment that might make it a good starting place for measuring practice characteristics that could be then be applied in education.

Another example Holmboe described is the Dartmouth Microsystem Improvement Curriculum (DMIC). This is a set of tools that incorporates success characteristics associated with high-functioning practices (The Dartmouth Institute, 2013). It uses action learning to instruct providers on how to assess and improve a clinical work environment in order to ultimately provide better patient care. The Idealized Design of Clinical Office Practices (IDCOP) from the Institute for Healthcare Improvement is yet another tool (IHI, 2014). It attempts to demonstrate that through

appropriate clinical office practice redesign, performance improvements can be achieved that respond to patients' needs and desires. Goals of the IDCOP model are better clinical outcomes, lower costs, higher satisfaction, and improved efficiency (IHI, 2000). Holmboe acknowledged that these examples are clinically oriented, and he would be interested to learn about other models (although no other models were offered by the participants).

Assessing Cultural Competence

Afaf Meleis asked how one might assess the social mission of health professional learners and design a tool that assesses cultural competence. Neither Norcini nor Holmboe knew of any good models to assess either of these areas, but Holmboe repeated that work within social accountability and professionalism can only be assessed if learners actually experience a work environment that has role models in these areas—and it is the responsibility of the professionals to create these opportunities. Norcini agreed with Meleis, saying that cultural competence is a critical issue to assess. He added that it is absolutely essential that assessors scrutinize the methods used and the results obtained to ensure no one is disadvantaged for cultural reasons. Meleis encouraged Norcini to add *multicultural perspective* to his list of criteria needed for a good assessment.

Assessment by Peers

Forum member Beverly Malone from the National League for Nursing questioned the role of peer assessment in formative and summative assessments given the inherent challenges associated with this type of assessment. Norcini responded that peer assessments are underutilized particularly when it comes to the assessment of teachers, although a set of measures is being developed for assessing teachers that includes peer assessment. Norcini added that another way to assess teachers is to look at the outcomes of students. Holmboe pointed out that one of the risks to using student outcomes as assessment tools of educators is when the experiences are not well designed so interactions with peers, patients, or others are brief or casual. Attempting to assess learners' knowledge, skills, or ability in these types of brief and casual encounters are simply not useful, said Holmboe.

Assessment by Patients

The next question changed the focus of the conversation from the learner to the patient: a patient encounter is a one-time event, so what methodologies are in place to ensure equivalence when incorporating the patient's very particular set of experiences? Norcini admitted that there are

biases so, in order to counter those, he samples the patient population of a provider as broadly as possible to include different patients on different occasions. In his opinion, there are at least three reasons for including patients in the assessment of providers:

1. Patients are reluctant to criticize their provider so when they do, the provider has a major issue that should be addressed.
2. Patients can be used to compare providers with their colleagues.
3. Patient feedback makes a major difference in provider performance.

Time-Efficient Assessments

Another comment made during this question-and-answer session was a personal example from Forum member Joanna Cain, representing the American Congress of Obstetricians and Gynecologists and the American Board of Obstetrics and Gynecology, who described how her colleagues in the operating room (OR) use a time-efficient model of formative assessment. In their model, every operation ends with a "60-second" gathering of the team to discuss what did and did not go well. Holmboe applauded their use of formative assessment, but he cautioned against using time limitations as an excuse for not engaging in a complete assessment process. In his view, assessment is a professional obligation that demonstrates the return on investment. With that caveat, Holmboe reported that multiple 2- to 3-minute shared observations can be a rich source of information, and more opportunities for such assessments would be useful. In fact, as the OR example showed, quick assessments are attractive to many health professionals who keep busy schedules. Quick assessments can drive culture as colleagues observe the value in this form of individual and peer assessment, information sharing, and team building.

Self-Assessment

In hearing the previous discussion, Jordan Cohen commented that self-reflection is a potentially important tool. Norcini partly agreed, because although it is a useful tool, most individuals are not good at self-assessments. Holmboe added to the response that self-directed assessment defined by Eva and Regehr (2011) as *a global judgment of one's ability in a particular domain* is as Norcini described. The real value is found when self-assessors seek comments and feedback from others, especially those outside their own profession or discipline (Sargeant, 2008). But despite the valuable information this form of assessment can provide, it is not used as often as other forms of assessment.

MAKING ASSESSMENT MEANINGFUL

Following the orienting discussion, Forum members engaged in interprofessional table discussions to delve more deeply into the value of formative and summative assessments. Each table in the room included Forum members, a health professional student representative, and a user of the health care system. The purpose of engaging students and patient representatives was to enrich the discussions at each table by infusing different perspectives into the conversations. Students identified by members of the Forum were invited to attend the workshop and represented the fields of social work, public health, medicine, nursing, pharmacy, and speech, language, and hearing. Forum member and workshop co-chair Darla Coffey from the Council on Social Work Education led the session. Coffey suggested that communication might be a focus of the discussions about assessment. One person from each group was designated to present to the entire group the summary of the discussions that took place at his or her table. The results of these discussions can be found in Table 1-2 (value of summative assessments) and Table 1-3 (value of formative assessments). The responses were informed by group discussion and should not be construed as consensus.

The Challenge of Uneven Power Structures

In addition to the points listed in the Tables 1-2 and 1-3, Forum member Richard Talbott, representing the Association of Schools of the Allied Health Professions, brought up challenges associated with assessing supervisors or others who may be possess greater power than the assessor, due to fear of reprisal. He believes that the first goal within communication is to dismantle the power structure so anyone can feel comfortable in speaking up. In this type of setting, individuals may feel more comfortable giving honest assessments. This would include patients and caretakers, and it would create positive role models for learners to emulate. Bjorg Palsdottir then discussed the hidden curriculum and how negative role models have an ability to imprint negative experiences on learners regardless of the educational training received in the classroom.

This comment was underscored by yet another Forum member, who cited an example of an aggressive attending physician. Their program director confronted the physician about his aggression by emphasizing the risk to safety, saying, “If you are intimidating people, you are not a safe practitioner.” One needs to understand how to navigate potentially delicate situations created by uneven power structures when one is challenging the hierarchy, said the Forum member. It takes practice, but it can be done. Workshop planning committee member Meg Gaines from the University

TABLE 1-2 Summative Assessment Discussion Question: From the Perspective of Assessment of Learning, What Do You Think Makes a Good Assessment Tool/Measure?[a]

Underappreciated Elements of a Good Assessment	Description of Element	Workshop Participant
Knowing the context	Who the communication is with; who it is between; and for what purpose	Carol Aschenbrener
Standardized metrics	Include assessment of mutual respect, empathy, compassion, and professionalism across the different professions	Patricia Hinton Walker
Standardized tools	Indirect observation assessments	Nelson Sewankambo
Safety	Use clinical simulation to assess safety but be cognizant of embedded biases	Meg Gaines
Hawthorne effect with assessments in simulation	People act differently knowing their performance is being watched	Scott Reeves
Identify the educational goals	Align assessments with current educational goals	Carol Aschenbrener

[a] This table presents opportunities discussed by one or more workshop participants. During the workshop, all participants engaged in active discussions about opportunities. In some cases, participants expressed differing opinions. Because this is a summary of workshop comments and not meant to provide consensus recommendations, the workshop rapporteur endeavored to include all opportunities discussed by workshop participants as presented by the group leaders who were informed by the group discussions. This table and its content should be attributed to the rapporteur of this summary as informed by the workshop.

of Wisconsin Law School took this point a step further, saying that it was an ethical imperative to speak up.

This topic resonated with the Forum's public health representative John Finnegan from the Association of Schools and Programs of Public Health (ASPPH), who was reminded of the 2005 Joint Commission report that cited communication failures as the leading root cause for medical errors (Joint Commission Resources, Inc., 2005). This does not mean the wrong information was always transmitted; rather, oftentimes nothing was said due to a fear of retribution. Regardless of how well learners are trained, said Finnegan, dangerous situations leading to medical errors will persist if

TABLE 1-3 Formative Assessment Discussion Question: From the Perspective of Assessment *for* Learning, What Do You Think Makes a Good Assessment Tool/Measure?[a]

Underappreciated Elements of a Good Assessment	Description of Element	Workshop Participant
Role models in practice environment	The hidden curriculum can undo all education	Bjorg Palsdottir
Safety	Assess communication for safety rather than personality	Susan Skochelak
Informed self-reflection	Seek feedback from peers to inform self-reflection	Eric Holmboe
Feedback	Needs to be clear, directive, and timely, and assesses team and individual contributions	Cathi Grus
Nonverbal communication	Assess beyond spoken communication	Cathi Grus
Bedside manner	Assess for empathy	Connie Mercer

NOTE: Connie Mercer participated in a table discussion as a user of the health care system.

[a] This table presents opportunities discussed by one or more workshop participants. During the workshop, all participants engaged in active discussions about opportunities. In some cases, participants expressed differing opinions. Because this is a summary of workshop comments and not meant to provide consensus recommendations, the workshop rapporteur endeavored to include all opportunities discussed by workshop participants as presented by the group leaders who were informed by the group discussions. This table and its content should be attributed to the rapporteur of this summary as informed by the workshop.

there is no support of the larger organizational structures emphasizing the need for a culture of safety.

Assessment as a Driver for Change

Darla Coffey then asked the members and the students and patient representatives to consider how assessments could be a catalyst for change in the educational and health care systems. Much of the discussion revolved around the idea of better integrating education and practice; Forum member George Thibault from the Josiah Macy Jr. Foundation was a vocal advocate for rethinking health professional education and practice as one system. Forum member Lucinda Maine, the representative from the American Association of Colleges of Pharmacy, thought this could possibly be accom-

plished within her field by improving the assessment skills of their volunteer instructors and preceptors. In her view, this would make it easier to suggest changes in practice environments that could strengthen relationships within the continuum of education to practice. But, said Aschenbrener, for there to be any benefits to health professional education, assessments need to be reviewed at least annually for their alignment with the predetermined educational goals and the set level of student achievement.

The representative from the Association of American Veterinary Medical Colleges, Chris Olsen, felt that for assessment to drive change, it would need to be part of the expectation. Too often, assessments are carried out without taking the critical last step of using the information to drive change. Individual participants at the workshop provided their thoughts on how assessments in the context of education could drive changes in the practice environment. For example, workshop planning committee member Lucy Mac Gabhann, a law student at the University of Maryland, suggested that in a community setting, student assessment might influence policy. And Forum member Jan De Maeseneer from Ghent University in Belgium thought that students exposed to resource-constrained neighborhoods would develop a sensitivity to the social inequalities in health. However, others expressed doubt that assessments could affect change when the organizational culture is based on hierarchy and imbalances in power structures that are perpetuated through the hidden curriculum and role modeling. Beverly Malone pointed out that such a culture puts patients at risk when open and honest communication is avoided due to a fear of reprisal. John Finnegan fervently agreed, saying that communication in an organizational setting is strongly influenced by that culture, and no matter how much one tries to educate around it, the larger organizational framework will prevail. That must change, he said; there has to be a safe culture where communication is not feared in order for assessment to drive change in education and practice.

Yet another view was expressed by George Thibault, who pushed for health professions education and health care delivery to be taken as one unit with one goal. In this way, the impact of assessments is considered on both education and practice simultaneously. The educational reforms are informed by the delivery changes, and the delivery changes are informed by the education changes. If education and practice continue to be dichotomized, he said, valuable learning opportunities across the continuum will be missed. Workshop planning committee member Cathi Grus from the American Psychological Association commented on the opportunity for learning from assessments that are bidirectional. To her, such learning meant engaging patients in the design of the feedback that would be provided to students, and as such could send a powerful message to the learner of what is important to the end user of the health system. What is

important, said Grus, is that all involved have an understanding of the goals of the assessment in order to maximize its impact.

REFERENCES

The Dartmouth Institute. 2013. *Dartmouth microsystem improvement curriculum: Microsystem action learning series*. http://clinicalmicrosystem.org/materials/curriculum (accessed January 6, 2014).

Eva, K. W., and G. Regehr. 2011. Exploring the divergence between self-assessment and self-monitoring. *Advances in Health Sciences Education* 16(3):311-329.

Harris, P., L. Snell, M. Talbot, and R. M. Harden. 2010. Competency-based medical education: Implications for undergraduate programs. *Medical Teacher* 32(8):646-650.

Hirsh, D., E. Gaufberg, B. Ogur, P. Cohen, E. Krupat, M. Cox, S. Pelletier, and D. Bor. 2012. Educational outcomes of the Harvard Medical School-Cambridge Integrated Clerkship: A way forward for medical education. *Academic Medicine* 87(5):643-650.

Holmboe, E. S., J. Sherbino, D. M. Long, S. R. Swing, and J. R. Frank. 2010. The role of assessment in competency-based medical education. *Medical Teacher* 32(8):676-682.

IHI (Institute for Healthcare Improvement). 2000. *Idealized design of clinical office practices*. Boston, MA.

IHI. 2014. *Idealized design of the clinical office practice (IDCOP): Overview*. http://www.ihi.org/offerings/Initiatives/PastStrategicInitiatives/IDCOP/Pages/default.aspx (accessed January 6, 2014).

Ingram, D. J., and Primary Care Development Corporation. 2011. *NCQA 2011 Medical Home Assessment Tool*. http://www.pcdc.org/resources/patient-centered-medical-home/pcdc-pcmh/pcdc-pcmh-resources/PCDC-PCMH/ncqa-2011-medical-home.html (accessed January 6, 2014).

Joint Commission Resources, Inc. 2005. *The Joint Commission guide to improving staff communication*. Oakbook Terrace, IL: Joint Commission Resources.

Norcini, J., B. B. Anderson, V. Burch, M. J. Costa, R. Duvivier, R. Galbraith, R. Hays, A. Kent, V. Perrott, and T. Roberts. 2011. Criteria for good assessment: Consensus statement and recommendations from the Ottawa 2010 conference. *Medical Teacher* 33(3):206-214.

Norris, T. E., D. C. Schaad, D. DeWitt, B. Ogur, and D. D. Hunt. 2009. Longitudinal integrated clerkships for medical students: An innovation adopted by medical schools in Australia, Canada, South Africa, and the United States. *Academic Medicine* 84(7):902-907.

Roediger, H. L., and J. D. Karpicke. 2006. The power of testing memory: Basic research and implications for educational practice. *Perspectives on Psychological Science* 1(3):181-210.

Sargeant, J. 2008. Toward a common understanding of self-assessment. *Journal of Continuing Education in the Health Professions* 28(1):1-4.

Sullivan, R. S. 1995. *The competency-based approach to training*. Washington, DC: U.S. Agency for International Development.

2

Practical Examples of Health Professional Education Assessment

Key Messages

- It is not enough to assess the product of a team process; one needs to also observe how the decision gets made in order to give feedback to the team about how to improve. (Baker, Zierler)
- Although the design of the scale is important, what really matters is how the assessors are trained to observe. (Baker)
- Communication is the most single important patient safety issue. (Zierler)
- Assessing teams and assessing communication are very difficult to do. (Baker, Zierler)
- There is no one-tool-fits-all for interprofessional education (IPE). The assessment instrument needs to be tailored based on the curriculum objectives, the goals, and the setting in which the interprofessional experience will take place. (Baker, Zierler)

As the moderator of the session on practical examples, Forum and workshop planning committee member Carol Aschenbrener from the Association of American Medical Colleges (AAMC) opened with remarks emphasizing comments made by workshop speaker John Norcini, that when health professional learners are tested using real-life situations, they go to the bedside to learn. The following are three examples of existing as-

sessments that would prompt students to go to the bedside to learn because the answers to these questions cannot be found in a textbook.

David Baker, who is the senior vice president for health at IMPAQ International, was the first speaker. He focused on general observational tools for assessing team skills in the clinical setting. The next speaker was Jody Frost, who is the lead academic affairs specialist at the Association of Physical Therapy. She is also the lead on the Interprofessional Professionalism Consortium (IPC), and she focused on an emerging instrument to assess a special interprofessional skill—interprofessional professionalism. The third speaker was Forum member Brenda Zierler. Zierler is the co-director of the Center for Interprofessional Education, Research and Practice at the University of Washington Health Science Center. She talked about the system of assessments used at the University of Washington to assess both the learners and the program.

TEAM-BASED CARE AND COMMUNICATION

David Baker, IMPAQ International

Baker began his talk by framing the way he thinks about teamwork within four separate categories: (1) the components, (2) the elements, (3) the measures that relate to those components, and (4) the challenges (see Table 2-1).

Components

Baker broke the components of teamwork down into knowledge, skills, attitudes related to team performance, and outcomes.

Knowledge

For a team to reach its goal, members need to know (knowledge) the roles and responsibilities of each team member and how individuals' roles and job assignments fit in with the rest of the team members' roles and jobs. Accomplishing a shared goal assumes the team has a shared understanding or a shared mental model of the work of the team. For example, both knowing the plan of care and when the goal has been reached need to be understood by all of the team members in order to accomplish the overall goal.

Skills

In terms of skills, Baker referred to the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) curriculum

TABLE 2-1 Baker's Teamwork Framework: Components, Elements, Measures, and Challenges

Components	Elements	Measures	Challenges
Knowledge	• Roles/ responsibilities • Shared mental model	• Knowledge test • Knowledge structures	• Too easy • Too complex
Skills	• Leadership • Communication • Situation monitoring • Mutual support	• Self-report • Observation	• Too easy to fake • Necessary evil
Attitudes	• Importance of teamwork • Mutual trust	• Self-report	• Too easy to fake
Outcomes	• Accuracy • Timeliness • Safety • Performance	• Number correct • Time to … • Error counts • Complication rates • Mortality	• Neglects the "how"

SOURCE: Baker, 2013.

published by the Agency for Healthcare Research and Quality (AHRQ). TeamSTEPPS is an evidence-based system designed for health care professionals to improve safety through better teamwork (AHRQ, n.d.). Their strategies and tools to enhance performance and patient safety can be divided into four areas, which are the basic learnable skills for teamwork. The four skills are leadership, communication, situation monitoring, and mutual support. Leadership, communication, and monitoring can be taught, and knowing the roles and responsibilities of each team member allows for assessment of whether or not individual members are performing up to expectations. Mutual support involves a different cultural context than the other three elements, and it fosters a climate of assistance and support for obtaining a high level of patient safety.

Attitudes

The importance of teamwork and mutual trust is emphasized under the attitudes element. TeamSTEPPS is designed to influence an individual member's attitudes toward teamwork by improving skills and increasing knowledge about the effectiveness of teams. It is assessed through the TeamSTEPPS Teamwork Attitudes Questionnaire (T-TAQ) that was

designed to measure individual attitudes related to the core components of teamwork (i.e., leadership, mutual support, situation monitoring, and communication) (Baker et al., 2008).

Outcomes

Outcomes of teamwork is the last category Baker described. While Baker considers knowledge, skills, and attitudes to be part of the formative assessment, he considers outcomes to be part of the summative assessment. The summative assessment of outcomes could include measuring a team's accuracy, timeliness, safety, and performance.

Measures and Challenges

Baker then looked at measures that align with these process and outcome elements and some of the challenges to each of these components. In terms of assessing knowledge, one could administer knowledge tests through multiple-choice exams that test how much the learner knows about teamwork in general, about specific teams, and about the roles and responsibilities of individual team members. However, these exams tend to be too easy; most people know how to act within teams and how to communicate. An alternative would be to develop a test that looks at knowledge structures, like how one organizes information and thinks about the roles and responsibilities of those on a team. But, such tests are fairly complex, and Baker is unconvinced about their usefulness.

When looking at skills and attitudes, self-reporting is an area that receives considerable attention. The problem, as pointed out during the introductory session, is that the truth may not always be apparent to oneself. A more accurate way to assess is to rely more on outside observers for assessing skills; although the process can be a painful one, the likelihood of an honest assessment is much greater than with self-assessments.

Observational assessments are also a good way to measure outcomes because they are observable and easy to measure, said Baker. The downside to that is outcomes do not explain how the result was obtained.

Baker provided an example of an assessment scale known as the Trauma Team Performance Observation Tool (T-TPOT) to pull the entire framework together. Box 2-1 shows the leadership section of the observation tool that culminates with an overall team performance rating. Looking specifically at the leadership subdomains, he noted that the behaviors are very specific and observable. And although the instrument may be a bit outdated, it is a tool that is available and could be adapted for use in other studies. Continuing with the framework and how he views it, Baker then

BOX 2-1
Trauma Team Performance Observation Tool (T-TPOT)

Leadership—The Team Leader	Rating
Conducts a brief prior to patient arrival (e.g., identifies self, assigns members roles and responsibilities, discusses initial plan based on current information, anticipates interventions [chest tube, OR, etc.])	
Continually renders plan of care to team	
Feedback provided to team members is constructive Ensures task prioritization (e.g., important tasks performed first, ABCs and survey sequence are being completed)	
Asks nonresponse team members to leave when they are distracting	
Overall Rating	

The T-TPOT was used to assess trauma team performance using simulation and in the trauma bay.

SOURCE: Capella et al., 2010.

provided some practical guidelines that he characterized in terms of the what, the how, and the where.

Starting first with determining which team element to observe, Baker commented on the extreme difficulties with team observations. An assessor would have to focus on and understand explicit skills and behaviors that could be observed, which he thought was extremely difficult to do. The example he used was "mutual trust," which is not very observable from a behavioral concept. One would have to be able to see it to be able to assess it. Additionally, Baker said that one needs to think beyond what is being observed and consider why it is being observed. It is not enough to assess the product of a team process; one needs to also observe how the decision gets made in order to give feedback to the team about how to improve.

How observers are trained and the tools used to assess through observation come in a wide variety of choices. For example, there are different rating scales and different checklists depending on what is valued and what is needed in a given scenario. That scenario could be an on-the-job

observation or a simulated experience. Observations capturing on-the-job assessments will likely rely more on generic instruments than observations conducted in a controlled environment, like simulation.

Baker underscored the importance of proper training for observers, saying that although the design of the scale is important, what really matters is how the assessors are trained to observe. Training in how to rate is by far more important than scale design; teaching observers to rate and observe from the standpoint of a common frame of reference is key to the reliability of the assessment, he said. However, the location of the observation also influences the assessment. Baker used the examples of an assessment of teams in the trauma bay and in simulation. For the real-life scenario, a trauma rater effect was noted because the observers are standing in the trauma bay during the study. Behaviors change, as noted by Forum member Scott Reeves from University of California, San Francisco; he brought up the Hawthorne effect with assessment using simulation, but it also exists in trauma bay assessments. With simulation, Baker noted an effect because people have tacit knowledge about how to behave so are often on their best behavior, which may or may not reflect their usual performance.

The positive aspect of simulation is that it allows more control over the test, unlike the on-the-job tests that may not offer an opportunity to express a desired behavior. In these cases, the scenario or the simulator can make sure the behavior is elicited and give people multiple times to try to perform it. If an opportunity for a formative assessment in a real-life situation is missed, it may not present itself again.

In summary, Baker says there is no escaping observation in team assessments, and properly training the observers significantly improves the value and accuracy of the assessment. For learning purposes, one should focus on process over outcomes. But numerous tools have been developed over the past 10 years that focus on both formative and summative assessments of teamwork and are published in the literature (see Appendix B for a description of the tools that were discussed at this workshop). This rapidly growing body of evidence is available and should be used by health professional educators to more effectively assess teamwork in a variety of education and practice settings.

ASSESSING INTERPROFESSIONAL PROFESSIONALISM

Jody Frost, Interprofessional Professionalism Collaborative (IPC)

The IPC is a collaborative representing 14 different professions that come together for the purpose of developing a valid and reliable assessment instrument that illustrates the desired elements of professionalism in an interprofessional environment. According to Jody Frost, who leads the IPC, this tool measures behaviors and is intended to be used by educators across

BOX 2-2
Definition of Interprofessional Professionalism

Consistent demonstration of core values evidenced by professionals working together, aspiring to and wisely applying principles of altruism, excellence, caring, ethics, respect, communication, accountability to achieve optimal health and wellness in individuals and communities (Stern, 2006).

all the health professions (IPC, n.d.b). In developing the tool, Frost and her IPC colleagues reached out to professionalism and education experts on four different continents for their input on the content and structure of the tool. The outcome of their efforts is the IPC's interprofessional professionalism assessment (IPA) tool that is designed to measure observable behaviors of professionalism in learning and practice environments.

This tool identifies 26 observable behaviors that are divided into six categories (communication, respect, altruism and caring, excellence, ethics, and accountability) based on the definition of interprofessional professionalism found in Box 2-2.

Within each of the six categories is a minimum of four observable behaviors. Table 2-2 shows examples of the sorts of interprofessional professionalism behaviors identified in the IPA. The complete list will be published in 2015 following the close of the pilot study.[1]

The instrument was designed for a five-point Likert scale that ranges from strongly disagree to strongly agree. There is also a category for "no opportunity," indicating the behavior could not be observed in the particular environment where it is being used.

Forty-nine academic institutions across the United States are participating in the pilot study including up to 13 different health professions. To qualify as a pilot site, the institution must be involved in IPE or have their students engaged in a collaborative practice. Students completing their final practice experiences prior to earning their professional degree are eligible to participate. In the pilot, the preceptor is asked to watch the students throughout the interprofessional experience and assess them at the end. At the same time, the students receive an email to conduct a self-assessment of their behavior using the same list of behaviors provided to their preceptor.

The goal of this pilot is to collect 750 to 1,000 preceptor-student dyads across these 13 health professions. This final sample will be randomly split

[1] See http://interprofessionalprofessionalism.weebly.com/assessment.html for more information (accessed April 18, 2014).

TABLE 2-2 Examples of Interprofessional Professionalism Behaviors Identified in the IPC's IPA

Category	Examples of Interprofessional Professionalism Behaviors
Communication	Communicates with members of other health professions in a way that they can understand without using profession-specific jargon.
Respect	Demonstrates confidence, without arrogance, while working with members of other health professions.
Altruism and caring	Places patient/client needs above own needs and those of other health professionals.
Excellence	Contributes to decisions about patient care regardless of hierarchy/profession-based boundaries.
Ethics	Reports or addresses unprofessional or unethical behaviors when working with members of other health professions.
Accountability	Accepts consequences for his or her actions without redirecting blame to members of other health professions.

NOTE: IPA = interprofessional professionalism assessment; IPC = Interprofessional Professionalism Collaborative.
SOURCE: IPC, n.d.a.

into subgroups in order to cross-validate the results. Through exploratory and confirmatory factor analysis, Frost intends to test how well the 26 behaviors fit within their assigned categories. In addition, metric calculations will be performed for convergent and discriminate validity and construct reliability.

Frost also intends to look at the variance between the preceptors and the students on the observed and self-assessed interprofessional professionalism behaviors, and how well preceptors feel the students are exhibiting the 26 interprofessional professionalism behaviors. This is intended to provide insight into how well preceptors model certain behaviors.

Once finalized, this instrument is expected to provide multiple benefits because it

- Measures interprofessional professionalism construct through observable behaviors in practice situations;
- Was piloted with different health professions, students, and preceptors from academic institutions with IPE to practice settings engaged in collaborative practice;
- Can be used to connect higher education with health care environments;

- Can be used to connect interprofessional professionalism with quality care, patient safety, and patient/family-centered care; and
- May improve how students and practitioners are educated and assessed with respect to interprofessional professionalism.

One identified gap in the tool, as noted by Frost, is the lack of input from the patient and care provider community. The plan is to modify the language so this assessment could be used to gather information from those who access the health care system. These patients, care providers, and others could provide valuable data for assessing providers' interprofessional professionalism based on their own personal experiences.

The IPA instrument is expected to be released in 2015 as part of a tool kit being developed by the IPC members. It will provide information about how to use the IPA in education and practice, and its relevance in different environments. Frost directed participants to the IPC website for updates on the development of the IPA tool.[2]

ASSESSING IPE TEACHING AND LEARNING PERSPECTIVES

Brenda Zierler, University of Washington

In her presentation, Forum member Brenda Zierler described the team training she and her colleagues at the University of Washington developed to teach health professional students how to work together in a clinical environment using simulation. They were also charged to pilot a team-based simulation model that could be scaled up and used by others in similar educational settings.

Zierler added to her checklist throughout the 5-year project all the efforts they undertook to assess their team-based training approach (see Box 2-3). This was an iterative process as she and her colleagues developed and adjusted the curriculum then assessed the effects of these changes on learners and faculty.

The first step in developing a learning environment for a team approach to patient safety was to come up with a conceptual framework (see Box 2-4). Zierler and colleagues based their framework on the work of TeamSTEPPS[3] described previously by David Baker in his talk. Zierler and her team adapted the TeamSTEPPS communication strategies to their simulation laboratory.

They elected to use simulation as the IPE learning activity because it

[2] See www.interprofessionalprofessionalism.weebly.com for more information (accessed April 18, 2014).

[3] TeamSTEPPS is a training system designed to maximize institutional collaboration and communication within teams in order to improve patient safety (AHRQ, 2008).

BOX 2-3
IPE Assessment—Checklist Presented by Zierler

✓	Conceptual framework
✓	IPE learning activity (intervention)
✓	Learning objectives and outcomes (mapped to IPE competency statement(s) and associated behavior indicators)
✓	Approach/pedagogy
✓	Participants
✓	Assessment plan (including methods and tools)
✓	Feedback
✓	Other—faculty development

provides a safe environment for students and faculty to learn about team-based care and to improve their communication skills.

Zierler wrote objectives for their training module and mapped the competency statements with the competencies that were available at that time from Canada (Canadian Interprofessional Health Collaborative, 2010). Zierler and her team then spent a year developing a simulated case with students and faculty. The final product was based on an actual situation

BOX 2-4
Framework for Simulation Training

Interprofessional collaboration and communication → effective teamwork:

- Communication
- Leadership
- Mutual support
- Situational monitoring
- Team structure

that occurred in a high-stakes environment. And although their focus was on communication, Zierler felt strongly that each student coming to the simulation lab must have the skills needed to perform his or her job. If not, the entire team will fail. The students were also all provided an orientation to simulation to be sure they all had the same level of understanding about simulation.

Curriculum

Their simulation curriculum included an online pre- and post-training about TeamSTEPPS, as well as an in-person team building exercise with health professional students set up in interprofessional teams. Following a brief introduction and acquaintance period, the students are provided a short but intensive information session on communication and teamwork before being presented with three simulated cases. These cases are brought to life by human patient simulators, a standardized actor, or both. The 4-hour curriculum concludes with closing remarks by the organizers.

Content

Certain skills were the focus of the curriculum and helped form the structure of the case studies that were designed to force students to practice those skills (see Table 2-3). In this way, it was possible to assess whether or not the students learned and could demonstrate the acquired various teamwork and communication skills.

Assessment

Although the initial assessment plan was mostly unstructured, Zierler and her colleagues soon developed a strategy, based on previously tested tools, where students provided feedback to each other and to the faculty,

TABLE 2-3 TeamSTEPPS Skills Integrated into Simulated Cases

Communication Skills	Team Skills
Brief	Huddle
Callout	Sharing the plan
Check-back	Situational awareness
SBAR*	
Handoff	

* SBAR = Situation, background, assessment, recommendation. It is used to communicate information about patients in a structured format.
SOURCE: Zierler, 2013.

and faculty provided feedback to the students. All of their discussions were about communication.

Through repeated simulation opportunities, students improved their skills as they practiced working as a team. The intermediate outcome of these experiential exercises was to improve the knowledge and skills around the attitude of working together in a team. Knowing that communication is the most single important patient safety issue, the long-term outcome was to improve communication among and across teams.

Their work was not set up to assess whether the skills acquired in the academic simulation lab transferred into practice, although it is a critical area for assessing the effect of this training.

Assessment Plan

From the onset, Zierler and her colleagues anticipated that their assessment plan would need to be flexible and responsive to their changing curricular needs. For example, the instructors stopped students in the middle of their simulation exercise if something was not working as they had envisioned. They would change the exercise on the spot and get students' feedback about the alteration before continuing with the simulation. As the curriculum changed, the assessment of learners and faculty also changed in order to keep the assessment relevant to the training.

Both students and faculty benefitted from the assessments that took place halfway through the training. Students were assessed on teamwork and communication, and faculty were observed for how they facilitated the clinical case and communicated with students. Faculty could coach students on the clinical aspects but not on their ability to communicate. This was done so students learned from faculty about providing good care, but could use the "safe environment" to make mistakes in communication in order to learn.

The assessments consisted of self-evaluations and peer evaluations. The selected peer evaluators were given objective questions to impartially determine whether there was an appropriate handoff. This entails accurately and effectively transferring information from one care team to another, which, if done well, can decrease medical errors. Peer evaluators also looked at whether the teams huddled when they encountered a difficult situation, whether there was a briefing to different groups who entered into their exercise, and whether each member felt mutually supported within their team.

Zierler found it interesting that the evaluators who observed their peers in the initial case simulation actually performed better than the other students when they engaged in the third case. Although still analyzing the data, Zierler believed the students' improved performance was the result

of knowing what the instructors were measuring and therefore had greater knowledge about what aspects were important and should be focused on.

Not only did students learn from their preceptors and from each other, but faculty also heard from students regarding their level of coaching and learned whether they intervened too much or not enough. There were also surveys completed by faculty and students, followed by a structured debriefing. Although students were eager to talk about all that went wrong during the exercise, they were forced to follow a set format where students and faculty discussed what went well, what could have gone better, what is the one thing that they took away from the exercise, and what each person learned from the entire experience. One additional tool included in the assessment portfolio was a video recording of the case exercises. This was set up by a doctoral student doing her dissertation on the psychometrics of the simulated case tool to see whether it was possible to measure teamwork in individuals who are learning together for the first time.

Lessons Learned

Zierler closed her talk by describing the lessons she learned from their work on developing a patient-safety curriculum using simulated case studies. First, the context is vitally important. There is no one-tool-fits-all for IPE. The assessment instrument needs to be tailored based on the curriculum objectives, the goals, and the setting in which the interprofessional experience will take place. If it is a high-stakes environment that is uncertain and highly complex (like the one Zierler set up), it is going to have different requirements that will need to be adaptable because each experience will be different.

Another discovery was that assessors often want to measure all aspects of IPE, but focusing on what the exercise is set up to teach will better link the assessment to the goals of the educational activity. Also, everyone on the team needs to be clear about the purpose of the team's work, which often required a discussion about language. Zierler found they needed to talk about communication barriers, such as profession-specific definitions and jargon, to be sure team members were speaking the same language.

Strategies to enhance learning were also important. Because human patient simulators would not always be readily available, Zierler's group also made use of actors so students could be exposed to both teaching modalities. Regardless of the educational tool, it was the instructional strategies and the design of the unfolding case that were the critical components.

Zierler also talked about the dose and timing of interprofessional training. It is not currently known how much IPE students should receive. For example, is a single exposure to IPE adequate, or does IPE need to be repeated throughout the student's education? It is similarly not known

when students should be trained interprofessionally. Should the exposure take place early in students' education, or all throughout their curriculum? From Zierler's perspective, how much IPE a student requires in order for the student to demonstrate proficiency differs with each individual and is based on the individual's personality; some students naturally collaborate well before even entering their health professional specialty.

For this exercise, it was important that each student came with the same knowledge base so the didactic session and online training about teamwork and communication was key to ensuring an equal understanding of the issues.

Finally, from doing the different types of assessment, Zierler learned that assessing teams and assessing communication are very difficult to do. The team might perform well, but there may have been one individual who did not communicate well, which complicates the assessment process. But, as Zierler pointed out, that is real life. She and her colleagues are providing a safe environment where students can experience such real-life situations so that when they are confronted with similar scenarios in practice, decisions can be made that decrease the likelihood of medical errors.

THE MESSINESS OF ASSESSING TEAMS

Forum Co-Chair Jordan Cohen from George Washington University began the question-and-answer session by asking about the unit of accountability; his understanding is that it would be the individual's skills that are involved in communication and interprofessional teamwork. The assumption, he said, is that if those skills are learned and adequately assessed, the team will perform its appropriate functions when it comes together, and this would lead to the better outcomes—namely, better patient care. He then asked whether or not that assumption is validated; that is, are there ways to assess the team performance in terms of how the team actually produces the desired outcomes?

Baker responded that measuring team skills are clearly more complicated than measuring individual skills. For example, in assessing team leadership, there is an assumption that the physician is the leader, but when raters were trained using the T-TPOT (their assessment tool for their trauma study using simulation to measure patient outcomes), they found that leadership could be evidenced by any team member. For their study, they looked at the team's plan of care. The plan may change and might even require continuous updating; Baker then asked, is this the responsibility of the team leader, or can any team member update the care plan? He added that in his work, they trained raters to focus on the behavior of the team and not the individual.

Raters of Teamwork

Baker's point raised the issue of how the rater is trained to interpret all these elements on the assessment scale. Interestingly, said Baker, in TeamSTEPPS, teamwork skills are taught to individuals because individuals are always changing in health care teams. New sets of skills are required for each team situation. A goal could be to have everyone trained with a common frame of reference so a common foundation frames subsequent alterations in the team responsibilities within different settings.

Raters of teamwork may find it difficult to aggregate a team score when the team contains, for example, one person who communicates well and two others who do not. This is one reason why the training of the raters is critical so they understand how to interpret certain observable behaviors. Baker admitted that assessing teams is difficult, particularly when they are assessed in actual care settings. In his opinion, there will need to be some level of acceptance of the "messiness;" these sorts of assessments will not meet equal standards that a written test can meet.

Metrics for Understanding Teams

Carol Aschenbrener picked up on a point raised by Baker that multiple observations of team members will provide more in-depth information about the team because some members may not communicate in one scenario but might be the lead communicator in another situation. This led to a question about the large number of metrics emerging from all the work being done in this area, and whether there might be a consensus emerging on what might be a common set of metrics that will have some comparability and transferability to different settings. Such an assessment would lead to a better understanding of teams across institutions and across health care systems. Baker was somewhat apprehensive about the development of one measurement tool for all situations. There is fairly good consensus about the core knowledge, skills, and attitudes that define team performance and the behaviors at a generic level that represent those constructs. However, what one team does in one domain is going to be somewhat different from how those generic behaviors are represented in those different situations. But, he speculated, one could create a mapping of teamwork in all the different settings and situations to show commonality but there would be challenges with slightly different interpretations of the team domain itself. So, he believes it is possible.

Jody Frost suggested that a team could do a 360-degree assessment. Referring specifically to the topic of her presentation, members could assess each other's individual performance around the interprofessional professionalism behaviors to get a sense of how well are they doing as a team

within certain key areas like communication. This would also provide insight into how well their design keeps patient needs at the center of their work. In this regard, Frost suggested that patients could perform the same assessment as the health professionals on the team, which could reveal interesting information as to how well patients believe team members are exhibiting certain desirable behaviors and whether the patients value the care they are receiving.

Uncovering Fundamental Teamwork Skills

Carol Aschenbrener gleaned from the presenters' responses to the questions that it is one thing to assess a team that is reasonably stable, like an operating room team or a trauma team, but in reality, teams form, then dissolve, and then form again. She wondered whether there was some way to measure an individual's ability to enter a new institution and join a team and then, 2 days later, join another team.

Forum member Mattie Schmitt from the American Academy of Nursing agreed that there are different kinds of teams. Some of the teams are relatively stable and work together over a period of time, such as palliative care teams that share a cohort of patients, while other teams come together then disband. This suggests that regardless of the team make-up and structure, there is a set of fundamental teamwork skills that are necessary for all teams to function effectively, and uncovering these skills would provide the basic elements for assessing members' teamwork skills. Another important element for assessment of teams is identifying how high-functioning teams develop over time. Using the group development model and a measurement framework called SYMLOG (System for the Multiple Level Observation of Groups)[4] in her research, Schmitt was able to look empirically at how people move physically over time and assess shared leadership.

Overcoming Power and Hierarchy

Drawing from the sociological literature, said Schmitt, there are some frameworks for understanding what it takes for groups of individuals to come together and work as a high-functioning team. Often, groups reach a high-functioning state when the issues of power and hierarchy are resolved. From her perspective, what is needed is a better understanding of how high-functioning teams have resolved the common obstacles within the context of their work.

Scott Reeves agreed with Schmitt in terms of needing to better assess power and hierarchy within teams, but he then questioned whether a group

[4] See http://www.symlog.com for more information (accessed April 28, 2014).

of clinicians working in the same space can be called a team. In his experience, which spans years of assessments of all types of health care teams in three countries, there is a lot of rhetoric about teams but little evidence that teamwork is actually taking place. Despite calling themselves a team, Reeves is finding what he refers to as "parallel play." In other words, individuals are coming together very briefly over an activity that ends, and then another one begins with new players. Although those involved believe they are engaging in excellent teamwork, it is actually more of a fragmented, transient interaction with different professions rather than true interprofessional teamwork.

The Department of Defense: Examples of Team Assessment

Forum and planning committee member Patricia Hinton Walker from the Uniformed Services University of Health Sciences commented that the U.S. Department of Defense (DoD) has been using TeamSTEPPS for quite some time. In her experience, it translates well in obstetrics, the operating room, and the emergency room, where there is more consistency in the members, the work, and the decision-making process. The new situations present challenges in performing high-level assessments; these situations include, for example, assessment across teams (a major area in patient safety) and measurement of diverse teams, like the DoD's large medical-surgical units. Newer challenging areas for the DoD, she said, are how to assess teamwork in their patient-centered medical homes and in their virtual encounters, where teams may not be speaking face to face.

Walker then talked about two other initiatives that are beginning to be integrated with the DoD. The first involves emulating design principles of highly reliable organizations (HROs)[5] to reinforce the roles of team members and work that draws on an established evidence base. The second is the Partnership for Patients. This initiative addresses the role of the patient, family member, or community on that team. Often these three initiatives—TeamSTEPPS, HROs, and Partnership for Patients—are seen as separate, but increasingly the DoD is trying to bring them together so the work of one can inform the other. Walker acknowledged that Schmitt's point about power and hierarchy is indeed a challenge, which is compounded in the military due to a built-in hierarchical structure outside of health care.

[5] HROs are found within industries like airlines and nuclear power that rely heavily on specified design principles to avoid accidents and catastrophes that might be expected due to the complexity of the environment within which they function.

Working Toward the Triple Aim

Walker's comments were later followed by remarks from Forum member Malcolm Cox of the U.S. Department of Veterans Affairs (VA). He believed all initiatives and interventions should strive to progress toward the triple aim[6] as the measurement goal. Though looking at the formation of teams or the effectiveness of teams is very important, it is not the primary goal, he said. Cox stated that goals are to improve the health of individuals and populations and to bend the cost curve so the savings can be reinvested productively in other enterprises such as education. Cox harkened back to Forum member George Thibault's comments that education and practice should be thought of as one system so learning is assessed based on delivery system outcomes.

To illustrate his point, Cox described the transformation in primary care that has taken place over the past 3 years at the VA with the introduction of patient-centered medical homes. Roughly $800 million was initially invested. After 2 years, the VA has recouped about $600 million of the initial investment and is projected to start making a profit in another 1 to 2 years. Those profits could be used for investments in educating the next generation of health workers and health care providers. He feels strongly that, as educators, there is an urgency to figure out how education will be funded in the future. That funding, said Cox, is going to have to come from the health delivery systems because there is not going to be any new money for this initiative.

REFERENCES

AHRQ (Agency for Healthcare Research and Quality). 2008. *TeamSTEPPS fundamentals course: Module 6. Communication: Instructor's slides*. http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/instructor/fundamentals/module6/igcommunication.html (accessed January 6, 2014).

AHRQ. n.d. *About TeamSTEPPS*. http://teamstepps.ahrq.gov/about-2cl_3.htm (accessed January 6, 2014).

Baker, D. 2013. *Practical guide for assessment: Team-based care and communication*. Presented at the IOM workshop Assessing health professional education. Washington, DC, October 9.

Baker, D. P., K. J. Krokos, and A. M. Amodeo. 2008. *TeamSTEPPS: Teamwork attitudes questionnaire manual*. Washington, DC: American Institutes for Research.

Canadian Interprofessional Health Collaborative. 2010. *A national interprofessional competency framework*. Vancouver: Canadian Interprofessional Health Collaborative.

[6] The Institute for Healthcare Improvement Triple Aim is a framework for health system performance involving (1) better patient care, (2) improved population health, and (3) reduced health care costs (IHI, 2014).

Capella, J., S. Smith, A. Philp, T. Putnam, C. Gilbert, W. Fry, E. Harvey, A. Wright, K. Henderson, and D. Baker. 2010. Teamwork training improves the clinical care of trauma patients. *Journal of Surgical Education* 67(6):439-443.

IHI (Institute for Healthcare Improvement). 2014. *The IHI triple aim*. http://www.ihi.org/offerings/Initiatives/TripleAIM/Pages/default.aspx (accessed January 6, 2014).

IPC (Interprofessional Professionalism Collaborative). n.d.a. *Examples of IPP behaviors*. http://interprofessionalprofessionalism.weebly.com/behaviors.html (accessed January 6, 2014).

IPC. n.d.b. *Interprofessional Professionalism Collaborative homepage*. http://interprofessionalprofessionalism.weebly.com (accessed January 6, 2014).

Stern, D. T. 2006. *Interprofessional Professionalism Collaborative: Measuring medical professionalism*. Vol. 19. New York: Oxford University Press.

Zierler, B. 2013. *Practical guide for assessment of IPE teaching/learning perspective*. Presented at the IOM workshop:Assessing health professional education. Washington, DC, October 9.

3

Assessment as an Agent for Change

Key Messages

- Assessment of organizational culture could be a way to make explicit and bring to the surface many of the issues around the hidden curriculum. (Tassone)
- Although cost effective, one negative aspect to an outcomes assessment is the loss of valuable data by aggregating individuals' roles on the team. (Zodpey)
- Involve the health professional students from the beginning by perhaps sending them to the communities to try and understand what the needs are. This strengthens the link between education and health systems and potentially creates a new generation of socially accountable practitioners. (Palsdottir)
- Asking patients about their experiences in an encounter with health providers from an interprofessional practice perspective could also be a strong motivator for faculty to improve their communication and collaborative skills. (Sewankambo)
- Negative role models run the risk of destroying leadership capacity in students. (De Maeseneer)

In keeping with a goal of the Forum—to demonstrate innovative techniques of learning with and from health professional educators from around the globe and within the Forum membership—members of the Forum

engaged in a World Café. This structure allowed for a series of quick-moving facilitated table discussions related to challenges with assessment of health professional education. The host of the café was Forum member Sarita Verma, who co-leads the Forum's Canadian Interprofessional Health Leadership Collaborative (CIHLC). She began by stating the objective of the session and the role of the participants.

The objective of the World Café was to stimulate discussion and critical thinking about a dilemma faced by partners from around the world who are struggling to assess various aspects of interprofessional education (IPE) and interprofessional practice (IPP). This was accomplished with the help of seven facilitators who each developed a question (see Box 3-1). That question was presented seven times to seven different sets of Forum members, who moved from table to table hearing a 1-minute presentation by the facilitator, followed by 4 minutes of discussion about how the challenge might be overcome. In the end, each facilitator presented his or her individual assessment of the problem and potential solutions.

To orient the members to the questions, Verma referred to the Lancet Commission report *Health Professionals for a New Century* (Frenk et al., 2010). In it, the commissioners described a key weakness of most health systems that results in disjointed patient care stemming from episodic encounters with multiple providers who offer little continuity of care. The opportunities for those providers to actually interrelate with each other, said Verma, is one of the biggest challenges faced by health professionals today. This has major implications for health professional education and interprofessional care as described by Frenk et al. (2010) in their Lancet Commission report problem statement. An excerpt from the statement is noted below and set the foundation for the discussions at the World Café.

Health Professionals for a New Century: Problem Statement

> Professional education has not kept pace with these challenges, largely because of fragmented, outdated, and static curricula that produce ill-equipped graduates. The problems are systemic: mismatch of competencies to patient and population needs; poor teamwork; persistent gender stratification of professional status; narrow technical focus without broader contextual understanding; episodic encounters rather than continuous care; predominant hospital orientation at the expense of primary care; quantitative and qualitative imbalances in the professional labor market; and weak leadership to improve health-system performance. Laudable efforts to address these deficiencies have mostly floundered, partly because of the so-called tribalism of the professions—the tendency of the various professions to act in isolation from or even in competition with each other.
>
> SOURCE: Frenk et al., 2010, p. 1.

This chapter provides a summary of the discussions that took place at each table during the World Café.

TABLE 1 QUESTION: What challenges do we face when trying to assess interprofessional collaboration in people in leadership roles, and how can these challenges be addressed?

Table 1 Leader: Lesley Bainbridge, CIHLC

Lesley Bainbridge from the University of British Columbia in Vancouver, Canada, facilitated the table discussion that looked at assessment of a collaborative leader, the challenges to that, and the potential solutions.

One challenge, she said, is a lack of recognition of collaborative leadership as a legitimate form of leadership. A way to overcome this could be to develop matrix models of organizational structures that embrace interconnectedness and multiple leaders within the overall structure in order to gain greater understanding of the value of collaborative leadership.

Another obstacle is that groups may not be ready for collaborative leadership and therefore are not able to assess a collaborative leader. A solution might be to better prepare groups and learners for collaborative leadership by clearly defining collaborative leadership and building a framework that might highlight core competencies for effective collaborations. Without such a framework or definition, it would be impossible to develop metrics for assessing a collaborative leader, said Bainbridge.

The ideal solution would be to develop both the framework and the definition collaboratively so it is widely accepted, thus making it easier to compare results from various sources. However, she said, if all the personal views of what constitutes a leader are in forming the definition, this adds a layer of complexity because each person might have a different perspective on what constitutes a strong, collaborative leader. Also, it is difficult to measure outcomes of a collaborative leader in a system that values outcomes other than those achieved by a collaborative leader. Because multiple collaborative leaders could be part of one team, there is an additional challenge of how to differentiate the collaborative leaders from the team leader. Bainbridge said that clarification of roles and approaches to leading would help differentiate these types of leaders.

It would be most helpful if collaborative leadership were part of the curriculum of health professional education so the concepts would be well understood by students when they enter fully into a practice environment. Bainbridge added that making a convincing case for collaborative leadership would be key to incorporating the concept into education and practice. But to make a convincing case, one would have to link best practices (as-

BOX 3-1
World Café Discussion Topics and Questions

Table 1 Leader: Lesley Bainbridge, CIHLC
Context: Traditional leadership skills and abilities may not explicitly embrace those needed for collaborative leadership within and among organizations. The CIHLC's current definition of *collaborative leadership* is:

> Collaborative leadership is a way of being, reflected in attitudes, behaviors, and actions, that are enabled by individuals, teams, and/or organizations, and integrated within and across complex adaptive systems to transform health with people and communities, locally and globally.

Question: What challenges do we face when trying to assess interprofessional collaboration in people in leadership roles, and how can these challenges be addressed?

Table 2 Leader: Maria Tassone, CIHLC
Context: Assessment in health professions education often focuses at the individual student, clinician, leader, or team level. What is also needed is a supportive organizational culture in which individuals and teams are enabled to practice and lead collaboratively.

Question: How might we approach assessment of collaboration and collaborative leadership within and across organizations?

Table 3 Leader: Sanjay Zodpey, Indian Country Collaborative
Context: A team usually delivers public health services to beneficiaries as part of public health practice. Within developing countries, such teams face constraints at the workplace while delivering public health services.

Question: How can we assess individual versus team performance at the workplace?

Table 4 Leader: Juanita Bezuidenhout, South African Country Collaborative
Context: IPE is viewed as an additional "activity" in an already overfull curriculum, and some even regard it as yet another discipline silo.

Question: How can we use faculty development in assessment as a covert and overt change management opportunity to promote acceptance of interprofessional practice among clinical faculty?

Table 5 Leader: Nelson Sewankambo, Ugandan Country Collaborative
Context: Faculty require motivation for them to embrace IPP which, if done successfully, will provide students with role models for practicing IPE.

> We work hard in creating a collegial environment where students from different professions learn from and with each other. But despite our best efforts, when students enter the clinical environment they lack appropriate role models demonstrating good interprofessional practice in the way we outlined it.

Question: Based on your experience, are there any incentives within assessment and evaluation that could motivate clinical faculty to embrace interprofessional practice?

Table 6 Leaders: Bjorg Palsdottir, THEnet, Belgium, and Jehu Iputo, THEnet, South Africa
Context: Training for Health Equity Network (THEnet) is a consortium of 11 health professions schools committed to transforming health professions education to improve health equity. THEnet developed an institutional evaluation framework that links education to health system outcomes through the concept of social accountability. THEnet is working with the World Health Organization (WHO) and others to ensure that the framework is relevant and useful for all health professions groups.

Question: How might better linkages between education and practice be assessed?

Table 7 Leader: Jan De Maeseneer, Ghent University, Belgium
Context: Transformational leadership occurs when leaders articulate the purpose and the mission interactively with their group by intellectually stimulating the group, championing innovation, and inspiring group members to become change agents. Transformational leaders are characterized by

- Connecting one's identity to the group identity,
- Being a role model,
- Challenging group members to take greater ownership in the change process,
- Creating trust,
- Empowering group members, and
- Creating a safe environment to make change happen.

Question: Based on this definition, how do you assess transformational leadership in students?

sessed over time) to outcomes in order to fully determine the value of the collaborative leader.

TABLE 2 QUESTION: How might we approach assessment of collaboration and collaborative leadership within and across organizations?

Table 2 Leader: Maria Tassone, CIHLC

Maria Tassone from the University of Toronto and co-lead of the Canadian Collaborative also focused on collaborative leadership, but from an institutional level. She addressed how to approach assessment of collaboration and collaborative leadership within and across organizations.

Her report echoed Bainbridge's with an expression of need for an operational definition of collaboration and collaborative leadership as well as core competencies in this area that could be used in assessments. But, said Tassone, without a sincere commitment and role modeling by senior leaders, the likelihood of success would be low. A suggestion might be to ask employees within an organization to assess their senior leaders based on their sincerity to commit to role modeling collaborative behaviors. This would be a start, but success would also entail establishing strategic goals within and across organizations that could then be used for assessing areas of success. Such analyses would likely need to balance between process and outcomes assessments.

Much of what Tassone described had to do with an organizational culture and how to assess it in order to propose changes. For example, assessment of organizational culture could be a way to make explicit and bring to the surface many of the issues around the hidden curriculum. To do this, it would be critical to bring in people from outside of the organization and outside of the "regular voices" to gain greater insight into the organization's culture, she said. However, external perspectives would be just part of the assessment because self-reflection within organizations and across institutions are also important. The IP-COMPASS[1] is one tool from the University of Toronto intended to improve interprofessional collaboration and interprofessional educational experiences by looking at how the organizational culture influences interprofessionalism in clinical settings. Another tool—network analysis—could provide a better understanding of relationships among the senior team members and others within their organization. And finally, mapping exercises can provide valuable information like frequency of communications, how power is shared, where decisions

[1] See http://www.wrha.mb.ca/professionals/collaborativecare/files/S2-IP-COMPASS.pdf for more information (accessed April 18, 2014).

are made, and how information is shared from a transparency perspective. This would be helpful in assessing collaborative leadership from an institutional level.

TABLE 3 QUESTION:
How can we assess individual versus team performance at the workplace?

Table 3 Leader: Sanjay Zodpey, Indian Country Collaborative

The question Forum member Sanjay Zodpey addressed looked at conducting assessments in a low-resource environment. To begin, he stated that the assessment would be conducted in a public health setting, most likely at the managerial level by the person most responsible for the team. In addition to financial constraints, there would be human resource constraints. These constraints would need to be understood within the context of the community and the country where the assessment would take place. This would likely influence the decision to assess individuals versus the collective team.

For an individual assessment, the specific roles and tasks each team member is responsible for would have to be clearly stated. In this way, team versus individual responsibilities could be delineated. A potential tool is the 360-degree assessment of teams and their outputs. Zodpey was conflicted as to whether this would be too difficult to undertake in resource-limited settings. There is the challenge of getting candid responses, and the time it takes to get the responses could be overly burdensome on the limited staff. Despite these limitations, Zodpey stated that if the questions and the processes were kept very simple, this could be a useful assessment tool.

In the context of the team, providing small incentives to all those who participate in the assessment could boost response rates, particularly when involving the community in the process. It could also be useful to engage other nearby groups that are performing similar services in order to share the assessment tools, the process designs, and the interpretation of the results. Similarly, it may be possible to engage local education institutions to create and validate tools; however, given the limited resources, it would be desirable to maximize their use by creating flexible and adaptable tools so they could be used in a variety of settings.

Another idea is to organize the assessment around a specific subpopulation to pilot test the assessment before committing the limited resources to conducting a full assessment. Understanding what can and cannot be changed in the system before starting the full assessment would save time and money as well as provide insight into the team culture.

Assessing clinical outcomes could be a valuable, inexpensive measure in determining whether the team accomplished its goal, particularly if it is

linked to the strategic plan. Although cost effective, one negative aspect to an outcomes assessment is the loss of valuable data by aggregating individuals' roles on the team. Zodpey stated that such a tool is useful but should not be used exclusively. When using this and other team-related assessment tools, how the team is defined can influence the assessment process. For example, the mix of skilled and unskilled providers and workers would alter the process by which the assessment is conducted.

One final thought Zodpey expressed involved understanding not just the supply side, but the demand side as well. Assessing health workers (supply) is useful, but gathering data from industry (demand) about what it values could offer information as well as potential resources for more in-depth assessments.

TABLE 4 QUESTION:
How can we use faculty development in assessment as a covert and overt change management opportunity to promote acceptance of interprofessional practice among clinical faculty?

Table 4 Leader: Juanita Bezuidenhout, South African Country Collaborative

Juanita Bezuidenhout reported on how faculty development in assessment might be used to embed IPE into curricula so IPE is not separated as its own silo. The importance of top management's involvement is key in this regard, said Bezuidenhout. Providing rewards and recognition for measurements in IPE pushes faculty to learn about IPE assessment and engaging in IPE in order to assess it. As Bezuidenhout stated, "We must measure what we value and value what we measure." In this way, senior management reinforces the importance of IPE. Through faculty development on IPE assessment, champions can be identified who can further promote the IPE agenda.

In her remarks, Bezuidenhout speculated that faculty development workshops on assessment could emphasize IPE, making it an explicit purpose of the meeting. Stacking the room with interprofessional attendees and interprofessional facilitators could build momentum for more IPE opportunities. With such all-around support, the mutual excitement would propel a desire for a longer-term focus on IPE—possibly through a spiral curriculum. In this way, IPE would be introduced and repeated at later faculty development workshops to build on the previously gained knowledge and understanding of IPE set in previous workshops.

Another source of momentum for IPE could be students from various professions demanding IPE, or patients who are invited to the assessment workshops. This might add a component of reality and value to the faculty's discussions around better communication through team-based care

and IPE. Also, during faculty development workshops, examples of IPE assessments of individuals and teams could be presented along with their relevance to specific situations so faculty are exposed to new ways of thinking and problem solving.

Bezuidenhout also encouraged the use of existing tools for pilot studies that could validate their use and make it easier for others to engage in shared assessments. The workload of all faculty is lightened, and the collective data can be used to demonstrate to senior management the value of IPE. This led to Bezuidenhout's final comment on promoting research around IPE-based assessment by persuading more interprofessional teams to publish research that could not only add to the knowledge base of interprofessional work but also increase the visibility and the acknowledgment of the value of educating students interprofessionally.

TABLE 5 QUESTION: Based on your experience, are there any incentives within assessment and evaluation that could motivate clinical faculty to embrace interprofessional practice?

Table 5 Leader: Nelson Sewankambo, Ugandan Country Collaborative

For his report, Forum member Nelson Sewankambo addressed how to develop good role models in IPP to serve as a positive learning environment for students engaging in IPE. Challenged with how to incentivize staff to embrace IPP and IPE, his theory was to use assessment as a driver for incentivizing faculty to do a better job.

Sewankambo considered the engagement of students to participate in the assessment, to contribute suggestions on the assessments, and to participate in the assessment of IPP and IPE; he said that the students' feedback to practitioners and educators could be a very powerful motivator for staff to do a better job. Asking patients about their experiences in an encounter with health providers from an IPP perspective could also be a strong motivator for faculty to improve their communication and collaborative skills.

Another suggestion was to publically recognize and reward good performance in both IPP and IPE so others could learn from positive examples. Ideally, these exemplars would be assessed for their ability to demonstrate the link between clinical outcomes and the interprofessional educational process leading to success. However, Sewankambo recognized that achieving this has been difficult to demonstrate in the past. Regardless, practitioners want to do a good job in improving patient outcomes, he said. Through the assessment process, it becomes clear as to whether teams are achieving positive patient outcomes or not. The assessment can be used to

point out where the teams could have performed better, which would be a motivator for staff to improve the elements that make up strong IPPs.

In his presentation, Sewankambo expressed the value in linking the academic assessment to the clinical assessment so the two are mutually reinforcing in a way that incentivizes faculty to do more and to do better. Impacts on outcomes that are uncovered through the assessment process would be communicated clearly to practitioners in order for them to strive for greater excellence in team-based care. Through this, more role models will begin to form for students to emulate.

He also acknowledged that assessments of teams require assessments of individuals within those teams. It is through the assessment process that one can explore in greater depth why one team succeeds in improving patient outcomes while another team in the same environment does not. Getting at the differences between the teams may require an individual-level assessment to better understand why these teams are functioning differently.

Like Tassone, Sewankambo believed that assessment is a way of exposing the hidden curriculum. The hidden curriculum is important in driving education, but it is rarely assessed. Linking the assessment of learners and their expectations to those of faculty may be one way of assessing the hidden curriculum. He suggested that the same rigor used to assess students could be used in developing assessment tools of faculty within IPE and IPP. In this way, an organizational culture around IPE and IPP could be applied that would expand the number of interprofessional role models and perpetuate a cycle of IPE and IPP.

TABLE 6 QUESTION:
How might better linkages between education and practice be assessed?

Table 6 Leaders: Bjorg Palsdottir, THEnet, Belgium, and Jehu Iputo, THEnet, South Africa

Bjorg Palsdottir, representing the Training for Health Equity Network (THEnet) on the Forum, began her report by describing THEnet. It is a partnership of schools that address health workforce needs and health needs in disadvantaged communities in order to promote socially accountable health-workforce education. When THEnet members came together recently, they developed a framework to measure how well health professional schools are meeting community needs and are moving toward greater social accountability (see Figure 3-1). This framework provided the backdrop for the question Palsdottir posed about linkages between educating health professionals to be socially accountable care providers, how that education affects their work as practitioners, and how that effect could be measured.

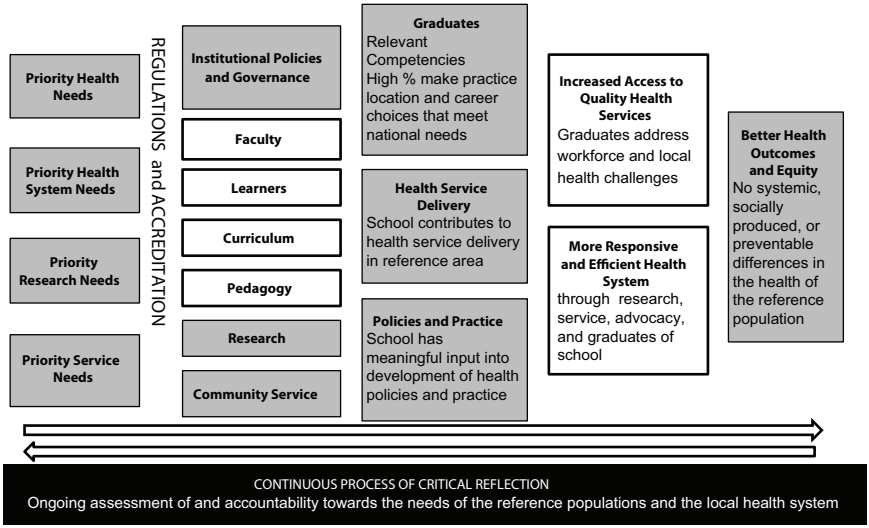


FIGURE 3-1 Institutional Evaluation Framework for Social Accountability.
SOURCE: Adapted from Palsdottir, 2013.

Discussions at Palsdottir's table involved selecting appropriate indicators (1) for measuring whether schools are addressing and meeting the needs of communities within their respective health systems; and (2) for measuring improved linkages between education and service delivery. This can only be accomplished through strong leadership, she said. And collaborative leadership—as highlighted by the first two presenters—is essential for this change to happen particularly at the top levels of education and health systems.

To begin developing a measurement tool linking education and service delivery, one might start by looking at the community needs together with community members and patients, who are the end users of the educational and health systems. Then, one might use patient and community outcomes as the measurement indicator of success. Mapping out who is being served by the health system would be critical information and a useful exercise for all the schools that are involved in the analysis to perform. Another idea is to involve the health professional students from the beginning by perhaps sending them to the communities to try and understand what the needs are. This strengthens the link between education and health systems, and it potentially creates a new generation of socially accountable practitioners.

The ultimate goal of the analysis is to measure educational impacts on patient and community outcomes. But, said Palsdottir, there is important information that could be lost if just a summative analysis is performed.

For example, it would be very beneficial to capture whether a curriculum reflects socially accountable values and if so, whether financial support is provided for such efforts such as training and community engagement. Without funding, the project may look good on paper but be unable to accomplish any of its intended impact.

Tracking graduates was an important element Palsdottir identified for analyzing the effect of education on career choices that value social accountability and community service. To do this, she said, one might follow the zip codes of their graduates. This would provide insight into whether graduates are working in a rural state. More in-depth surveys could follow up on the type of work the graduate is performing that might include working with disadvantaged populations in urban settings. An even more detailed data collection could possibly assess whether graduates are performing work that is reflective of the needs of the communities they serve.

Palsdottir also suggested that other sectors might help inform the analysis. For example, insurance and pharmaceutical companies—who employ the graduates of the health training programs—could be asked about the kind of competencies they require for employment. The same question could also be posed to communities. In this way, it may be possible to determine whether the intended, socially accountable education of health professionals is actually improving the communities they serve.

TABLE 7 QUESTION:
Based on the presented definition of transformational leadership, how do you assess transformational leadership in students?

Table 7 Leader: Jan De Maeseneer, Ghent University, Belgium

In laying the foundation for his report, Forum member Jan De Maeseneer drew on a section of the Lancet Commission report about transformative learning for developing leadership attributes and enlightened change agents (Frenk et al., 2010). Transformative leadership is required for such learning to be incorporated into education, said De Maeseneer, but some may eschew the responsibility if they do not see themselves as leaders. In this regard, it may be more useful to refer to "change agents" rather than transformative leaders. Providing learning opportunities for creating change agents to all, rather than a select few, could perpetuate this thinking that everyone can be an agent of change.

The assessment of transformational leadership in learners will depend on the context where the behaviors would be assessed. For example, there is leadership to gain an individual patient's commitment to change, leadership on interprofessional teams, leadership in communities, and leadership in making policy. Students can be trained at all of these different levels,

although the assessments at each level would differ. What would remain intact regardless of the context or the level is the social mission and the community orientation. Leadership is not only about inward looking, but also about outward looking to the needs of society, said De Maeseneer.

De Maeseneer said that the definition of transformative leadership is important for assessing transformational leadership. It contains certain qualities, including

- Connecting one's identity to the group's identity,
- Being a role model,
- Challenging group members to take greater ownership,
- Pushing for needed process changes,
- Creating trust,
- Empowering group members,
- Establishing safe environments,
- Intellectually stimulating the group,
- Championing innovation, and
- Inspiring group members to become change agents.

Translating these qualities into behaviors would enable an assessment of the learner. This could include both process and outcome measures. Peer assessment was identified by De Maeseneer as an essential feature of both because of the importance of colleagues and peers in identifying and supporting leaders.

Whether leaders are born or produced remains a question for greater debate. And the question still stands, whether institutions have the responsibility to select students based on certain leadership qualities or whether they should be responsible for creating opportunities for transformational leadership skills development. Like Tassone and Sewankambo, De Maeseneer brought up the hidden curriculum, saying that negative role models run the risk of destroying leadership capacity in students. Instead, he embraces curricula that share power and institutional governance with students to prepare them for leadership roles. One example is student-led primary health care services, where students learn to take responsibility to be transformational leaders.

Much of the learning about transformational leadership would be through experiences rather than didactic education, meaning that the assessment would not always be explicit. It would be adaptable, at times implicit, and would contain quantitative as well as qualitative elements. The qualitative piece would no doubt involve a reflective component.

Of significant importance to transformative leadership, said De Maeseneer, are the role models. This raised questions for him over the faculty selection criteria. Often, faculty are hired because of their in-depth knowledge of a

particular subject and not because of their transformational leadership capacity. Such qualities might include strategic thinking, a willingness to take risks, and a visionary outlook. But most importantly, transformative leaders possess a commitment to the social mission. In the end, said De Maeseneer, transformational leadership is about making a difference where it really matters.

REFERENCES

Frenk, J., L. Chen, Z. A. Bhutta, J. Cohen, N. Crisp, T. Evans, H. Fineberg, P. Garcia, Y. Ke, P. Kelley, B. Kistnasamy, A. Meleis, D. Naylor, A. Pablos-Mendez, S. Reddy, S. Scrimshaw, J. Sepulveda, D. Serwadda, and H. Zurayk. 2010. Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet* 376(9756):1923-1958.

Palsdottir, B. 2013. *Institutional evaluation framework for social accountability*. Presented at the IOM workshop Assessing health professional education. Washington, DC, October 10.

4

Technology and Innovation from Education to Practice

Key Messages

- A lackluster in-person presentation is just as uninteresting online. The quality of teaching and education matters, regardless of the medium used to transfer the information. (Desai)
- Some skills are best learned in person and not through the online instruction format. (Desai)
- Given the huge opportunity massive open online courses (MOOCs) offer, it would seem to be an excellent avenue for promoting interprofessional education (IPE). (Gawron, Jeffries)
- As the health system moves more toward technology as the platform for providing care, are we creating even more disparities? (Meleis)

Forum member Jack Kues from the Alliance for Continuing Education in the Health Professions moderated a "flipped classroom" session on technology and innovations in assessment. In the flipped-classroom format, speakers post an online presentation before the workshop, and Forum members and workshop participants are given first exposure to the session material in this format. At the workshop itself, the speakers briefly discuss their presentation and then respond to questions from Forum members and workshop participants. The flipped-classroom structure allows participants to engage more deeply with the speakers to develop a richer understanding of technology and innovation use in learning and assessment.

Kues first provided a brief background to the topic. Many changes have occurred in health care that have prompted changes in how and where health professionals are trained. These changes have been going on for some time. Traditionally, the clinical experience took place in a hospital, which is where most care was given. This is no longer the case. Training has been spread out into the community into all kinds of environments, both clinical and nonclinical.

The educational model, however, is still trying to catch up with the shift in health care. And the educational training of students is still largely episodic, meaning that students in a clinical environment may see a patient once or twice in the course of rotation, which is not consistent with the chronic care model that is emerging.

Another change, said Kues, is that faculty are increasingly pressured to tie more of their work to the bottom line in reimbursement and financial models not only for themselves, but also for the institutions for which they work or teach. That means that busy practitioners, while they may be willing to continue to teach, do not have the same time availability they used to have.

A fortunate change is in the area of technology innovation, which has helped educators and practitioners overcome some the challenges inherent in both educational and assessment models. In this session at the workshop, speakers described how technology is being used for assessment in three different settings: (1) patient engagement, (2) clinical competency, and (3) independent online learning.

AMERICAN NURSE PRACTITIONER FOUNDATION AND THE LEADING REACH PATIENT ENGAGEMENT MOBILE PLATFORM

Margaret Crump, American Nurse Practitioner Foundation

In her presentation, Margaret Crump described a patient engagement mobile platform that is being rolled out by the American Nurse Practitioner Foundation (ANPF). ANPF supports nurse practitioner education, enables innovative research, and provides the tools and resources to develop practice-based, data-driven solutions to public health problems. One such tool was embraced by ANPF in early 2013 and focuses on patient engagement. Known as Leading Reach, this mobile application (app) provides a communication platform designed for touch screen and portable devices like tablets and smartphones (ANPF, n.d.). Through this mobile app, practitioners can send patients accurate health information and administrative issues related to their upcoming clinic visit; however, the greatest value, as it relates to assessment, is the ability for patients to respond to their practitioner using this application, possibly providing patient feedback about practitioner or team performance.

In addition to providing a two-way communication platform, this mobile application also tracks and scores how well practitioners and patients are connecting. It does this by collecting interaction data between patients and practitioners and assigning a score in four specific categories of engagement—new patient information, patient education, patient satisfaction and social media, and referral information. Each category contains specific elements easily customized by the provider, clinic, or health care system to direct health professionals' behaviors around such issues as revenue, cost, time saved, and healthier patients.

Leading Reach has been used in more than 75 countries worldwide and was provided to some of ANPF's nurse practitioners so they could study how well the mobile app connects the nurse practitioners to their patients, whether quality of care is improved, and whether ANPF should make it more widely available to their nurses.

Crump was asked why ANPF decided to use this particular patient engagement app over the other communication device options, why it chose this method for rolling it out, and what is the business case for its rollout. She began her response by citing statistics on what is currently known about the state of health care in the United States:

- Fifty-five percent of doctors do not communicate with their patients between visits (Televox, 2011).
- Seventy-two percent of hospital patients do not schedule a follow-up appointment (Scott, 2012).
- Eighty-three percent of patients do not follow treatment plans (Televox, 2011).
- Seventy-eight percent of U.S. consumers are interested in mobile health solutions (Float Mobile Learning, n.d.).
- Seventy-four percent of U.S. households have Internet access (U.S. Census Bureau, 2012).

Then she explained that within the first 175 days of existence, more than 100 clinics and 800 referring doctors used Leading Reach for processing and generating thousands of referrals and emails that produced more than 75,000 content downloads by their patients.

With that as background, Crump went on to explain that ANPF selected this particular app to increase their scholarship and research grant area by partnering with a group focused on technology. In her opinion, having technology partners at the table and as part of the conversation is key to development. ANPF studied many different technology-based innovations, but it selected Leading Reach because of the ability to link providers to patients on an educational and informational platform and because of

positive experiences expressed by other health professionals already using the system.

In 2014, ANPF will make Leading Reach more widely available to nurse practitioners for free so they can start building a capacity and an understanding of the technology. Crump said ANPF recognizes it does not have all the answers. The pilot study is part of its business model so it can research and better understand how the app is improving patient outcomes and behavior change by studying the communication process.

IMPROVING NURSING SKILLS THROUGH SIMULATION: TOOLS FOR ASSESSING IMPACTS ON PATIENT SAFETY

Barbara Gawron, University of Illinois College of Nursing

Barbara Gawron presented how she and her colleagues at the University of Illinois College of Nursing use simulation to formatively assess the clinical competency of nursing students in an effort to improve patient safety. To do this, data are collected by clinical instructors at the time of the simulation using the Creighton Competency Evaluation Instrument (C-CEI). This is a tool developed at the Creighton University School of Nursing for conducting observational analysis of students in simulated clinical environments (Creighton University, 2013). Structured around the American Association of Colleges of Nursing (AACN) core competencies, it includes 22 behaviors organized into four areas that include assessment, communication, critical thinking, and technical skills. Each clinical instructor completes a form rating how well the student performed during the simulation exercise.[1]

The purpose of collecting these data is to see how students are doing at the time of their simulation. As an example, Gawron shared a video demonstrating a respiratory distress simulation for prelicensure nursing students. In the video, faculty members used their iPads to collect data then discuss their results with the student during the debriefing as a formative assessment. Students who did not meet their learning objectives were brought back into the simulation lab. Because of the assessment tool and the extra time built into the program, faculty were able to immediately correct the student learning to meet the objectives for understanding how to care for a patient in respiratory distress. The data collected in each student's simulation performance were aggregated then analyzed to identify patterns, weaknesses, or gaps in the class's understanding, and enabled faculty to revise the content.

[1] An example of a form can be found at http://www.cod.edu/academics/conted/business/nursing_symposium/pdf/csei.pdf (accessed April 18, 2014). The C-CEI is also included in Appendix B.

This simulation is undertaken by students early in the nursing curriculum. As the learners progress, they have to master 24 different patient safety scenarios that increase in complexity. By graduation, all the nursing students understand their roles and responsibilities as individuals and members of a team. It is during the simulation exercises that students learn to delegate, to collaborate, and to work effectively as a team.

Gawron was asked whether she thought her simulation exercises improved patient safety. She responded that the purpose of collecting these data is to see how students are doing at the time of their simulation, but she does have anecdotal data showing an improvement. In the example she described in her presentation, a student had 5 minutes to introduce herself to the patient and recognize safety concerns that above all included a patient experiencing respiratory distress. The student did not respond to the low oxygen level. This was discussed in her debriefing with an instructor before the student repeated the exercise until she could correctly identify and correct the patient's low oxygen levels. This student passed the simulation exercise and returned from her clinical experience telling Gawron about a patient with a "pulse ox of 88" and how she knew exactly what to do.

In another example, Gawron was asked if she could assist with decreasing particularly high rates of readmission for coronary heart failure patients at a local hospital. In response, Gawron created a translational care program for her students using simulation. She then sent her students out into the community to track the coronary heart failure patients in an effort to identify and correct causes for the high readmission rates. These are two examples where Gawron believes her simulation exercises are having a positive impact on patient care and community health.

ASSESING VIRTUAL LEARNING AND TEACHING THROUGH THE KHAN ACADEMY PLATFORM

Rishi Desai, Khan Academy

Rishi Desai described his work in medical education at Khan Academy, which is a free online platform for education. Khan Academy's website attracts roughly 10 million unique users per month through its four categories of content that include videos, questions and assessments, text, and games. The website content is geared to a variety of audiences, such as patients, students, and health professionals based on the depth of content the user selects. Unlike other courses that begin in March and end in May, Khan Academy provides information that can be accessed whenever and for whatever length of time the user has available. In this way, Khan Academy provides a lifelong resource for lifelong learning for all. It is online, it is

free, and it can be taken offline so information can be extended to those in remote areas that do not have Internet connectivity.

Currently, Khan Academy is partnering with the Association of American Medical Colleges (AAMC) and the Robert Wood Johnson Foundation to develop content for the Medical College Admissions Test so anyone can study for the exam free of charge. Additionally, Khan Academy is partnering with AACN and the Jonas Center to develop content for the National Council Licensure Examination. These are some of the activities Khan Academy has under way at this time, but because education is not static, neither is Khan Academy. For example, if thinking changes around a particular topic, Khan Academy takes information off its website and posts new information. It is a live system that is particularly beneficial to health providers for continuing and supplementing their education.

One of the questions posed to Rishi Desai was how Khan Academy ensures the accuracy of its information. To frame his response, Desai commented that Khan Academy staff increasingly think of their users not just as content consumers, but as content producers. Many of the games Khan Academy uses for educational purposes come from the users of its website. For example, a game was made for Khan Academy explaining what will happen if the myelin sheath—needed for proper functioning of the nervous system—is gone. The game explored complex issues using a fun and engaging approach. It is incredibly instructive having young viewers making games around medicine and health because it teaches them and also teaches the community about important information. To encourage development, Khan Academy sponsors national competitions for video and game development that are open to anyone interested in competing.

To better ensure accuracy of content, Khan Academy is also introducing a peer-review system that Desai believes is a tremendous step forward in quality. This, he says, separates Khan Academy from some of the other massive open online courses (MOOCs) that do not have a quality control mechanism.

EXPANDING QUALITY EDUCATION THROUGH TECHNOLOGY

Following the presentations, Forum members posed a series of questions to the speakers that addressed how technology could expand the quantity and quality of education for all learners, including students, practitioners, laypersons, and patients. The discussions and speakers' responses are detailed in the sections below and address a wide range of issues including the following:

- How might virtual collaborations among health professionals, other professionals, and educators function?
- How might technology empower patients and communities through improved education and communication?
- How might the advancement in technology worsen disparities in health?

Shifting the Focus from the Individual to the Interprofessional

The moderator of the session, Jack Kues, asked the first question: How might the models and methodology presented move from focusing primarily on individuals or individual professions to ones that center on teams and multiple disciplines?

Crump responded first by saying the mobile app she described is being tested as a tool for five different interprofessional teams in central Texas. These teams work in transitional care units for patients with chronic conditions, and they are led by a nurse practitioner. Each team includes a dietitian, dentist, social worker, and in some cases, a physician or physician assistant. The goal of this test is to assess the content and delivery of information from the team to the patient in order to determine how a long-term engagement of patients through a virtual connection affects patients' behaviors.

Gawron then commented that her school is not tied to a medical center. And like other universities in this situation, providing robust interprofessional educational opportunities is a challenge. While she attempts to get more resources to her university, Gawron is using the work of others who have made their interprofessional education (IPE) curricula and assessment sources freely available. Because she does not have access to a medical center, her hope is to develop an IPE curriculum in the community rather than focus on inpatient care for training.

In Desai's response to the question, he noted that some skills are best learned in person and not through the online instruction format set up by MOOCs like Khan Academy. Communication, leadership, and management are necessary elements to work as a team and are probably best taught in person. A common mistake by educators is to fill classroom time with didactic information, he said. Khan Academy is moving the didactic piece online so classroom time can be used for more experiential learning. But it is important that the online experience be engaging because a lackluster in-person presentation is just as uninteresting online. The quality of teaching and education matters, regardless of the medium used to transfer the information.

Promoting IPE

Forum member Pamela Jeffries from Johns Hopkins University School of Nursing commented that their school of nursing recently posted a MOOC for dementia care. Following some high-publicity advertisement, there are now 17,000 students enrolled in this MOOC that has not yet started. Had this same course been taught in the classroom, there may have been anywhere from 50 to 100 enrollees—nothing close to the 17,000 persons who signed up for the MOOC. Given the huge opportunity MOOCs offer, it would seem to be an excellent avenue for promoting IPE, but in her opinion, what is lacking is a more unified agreement over the required content for competency in IPE.

Gawron agreed that educating about IPE through MOOCs would definitely address the needs of smaller academic institutions that have limited capabilities for doing IPE. She speculated that observers could have a defined role in the online simulation activity. For example, other schools might have observers watching the Johns Hopkins IPE simulation activity who would communicate and debrief through online video conferencing. In this way, schools would share resources and innovative practices, and students as well as faculty could become more familiar with technologies used for education and improving communication.

She added that technology keeps young students interested and engaged. In fact, the younger generation is pushing the use of technology in new ways, such as showing patients relevant health care videos on their smartphones. These students are transforming the health care system and breaking down barriers to technology. Transformation and innovation are valued by Gawron and her colleagues, so they are now requiring all their students to have some proficiency of smart technology coming into the classroom. This poses no barrier for most of her younger students, said Gawron, but it does create challenges for some of the older learners coming back for a second career. However, given that education and care continue to move deeper into technology-based innovations, she feels these are critical skills all her students need to be successful at the institutional level now and in the future.

Learning Interprofessionally

Kues commented that increasingly, interprofessional care does not mean that all the professions are physically in the same room. There are a lot of team skills being learned online by people that do not know each other. There are games being played by teams of people that have been working together for years in different parts of the world or different parts of the

country. They become a very good, tight, close team of integrated friends, even though they have never seen each other and probably never will.

Looking at this from an educational perspective, it is often thought that to have team-based education, one needs to figure out how to bring all the different health professional students into the same room at the same time. Those who work at academic health centers know that this does not happen easily. Students of different professions are in different places and have different schedules. One of the biggest challenges is achieving physical presence of all the team members. Using technology, Kues questioned whether it would be possible to develop team-based skills without learners ever seeing each other in person or if physical presence is an absolute requirement for interprofessional education.

At Khan Academy, said Desai, the staff use a tool called HipChat that is fairly well known in Silicon Valley. Essentially, it is a tool for creating virtual teams that can be accessed on a desktop. On his desktop screen, Desai has a tab linking him to a team working on analytics, another for a team working on website content, and a third for the team looking at the overall success of the entire project. Within seconds, Desai can stay connected with all three conversations taking place in the virtual space. Taking this example to a health care setting, Desai could imagine including a patient or including students as part of the virtual teams using a virtual communication device like HipChat. It could custom develop teams corresponding to the different components of the patient's care. This could be especially useful for complicated patients that have several members on their health care team.

In fact, Khan Academy has tested a similar idea using teenage students acting as patients for learning purposes. In one example, Desai's student "received" the drug isonicotinylhydrazine (INH) for treatment of latent tuberculosis. After watching online videos about the disease and the medications to treat it, the student commented that his liver function tests went up, but based on the video, his levels do not meet the threshold for stopping INH. He then guessed his liver function tests would need to be rechecked. According to Desai, this teenager understood the mechanics of his simulated disease and treatment; however, the challenge in a wider audience will be determining how to bridge the gap between the up-to-date scientific information available on PubMed and websites that provide generic information to consumers. Desai believes a site can be created where both health professionals and laypersons can go to obtain quality information.

Engaging Patients

One participant questioned the paternalistic mentality of many health care providers who still believe that patients do not need information about

their own health and health care. And how might one overcome institutional barriers to embracing new technologies?

In response, Crump cited a study by the Pew Research Center that found one in three adults in the United States have used the Internet for diagnosing health conditions over the past year (Fox and Duggan, 2013). Taking control of one's care is certainly laudable, but many providers are frustrated by all the misinformation patients are downloading from the Internet. With the new app that Crump presented, providers control the content and format of the information patients receive, which can be written text or videos. The important piece is that the system is bidirectional, so patients and providers can ask questions. However, this raises several other issues for the provider, like whether all providers want to have that kind of direct connection with their patients. Another potential issue is how the providers may be reimbursed for their time corresponding with the patient, if the length of virtual communication extends the length of the patient visit. Although there are complexities with such a tool, Crump believes it is necessary to at least start the conversation so some of the challenges can be addressed and, it is hoped, improved.

After hearing Crump's response, one participant asked whether the technology was just a communication device or whether it could be used for chronic care management like tracking blood sugar or monitoring blood pressure. If it is just about patient engagement, it still maintains the uneven relationship that was brought up in the previous question. Crump responded that it depends on how the provider or the team decides to use the tool. It is bidirectional, so providers could use it to monitor a patient's condition. And although it could be interfaced with other systems like the electronic patient health record, it is ideally set up to start and maintain conversations around the data (like blood glucose readings) that could be supplied by the patient and shared with the provider or taken at the time of the visit and shared with the patient. What is unique about this system is it is mobile and it records how the team influenced patient care through their dialogue with the patient. Although it was not set up as an educational tool, Crump could see the usefulness of bringing students into the team to learn from the communication skills of professionals working on teams.

Desai was not aware of a tool that put the patient in control of his or her team, but he could envision such an instrument. The example he used was a patient with anxiety or depression. This patient requires a fairly intensive level of support that would not be possible for a busy provider. Instead, the patient could work with a coach to assemble her own virtual team that might include her mother, her husband, her care provider, and her best friend. It would be the patient who determines the team members who would help her follow her care plan, which might consist of meditating, going running every morning, attending yoga class twice a week, and

eating more salads. This, said Desai, could be a step in the right direction toward putting individuals in charge of their own health.

Disparities

With all the discussion about technology, Forum Co-Chair Afaf Meleis from the University of Pennsylvania School of Nursing wondered whether these advances would create or exacerbate the present disparities in health. A large percentage of the population is illiterate, not computer literate, or does not have access to a computer, she said. As the health system moves more toward technology as the platform for providing care, are we creating even more disparities?

Although this is a valid concern, Crump also pointed out that almost 80 percent of U.S. households have Internet access, and this number continues to grow (Miniwatts Marketing Group, 2013). According to the Miniwatts Marketing Group, a similar trend can be found in developing countries where far less than half the population currently uses the Internet, but the percentage of users has grown exponentially since 2000 (see Table 4-1).

Despite these trends toward greater connectivity, Crump admits that

TABLE 4-1 World Internet Usage and Population Statistics: June 30, 2012

World Regions	Population (2012 Estimate)	Internet Users Dec. 31, 2000	Internet Users June 30, 2012	Growth 2000–2012
Africa	1,073,380,925	4,514,400	**167,335,676**	3,606.7 percent
Asia	3,922,066,987	114,304,000	**1,076,681,059**	841.9 percent
Europe	820,918,446	105,096,093	**518,512,109**	393.4 percent
Middle East	223,608,203	3,284,800	**90,000,455**	2,639.9 percent
North America	348,280,154	108,096,800	**273,785,413**	153.3 percent
Latin America/ Caribbean	593,688,638	18,068,919	**254,915,745**	1,310.8 percent
Oceana/ Australia	35,903,569	7,620,480	**24,287,919**	218.7 percent
World Total	**7,017,846,922**	**360,985,492**	**2,405,518,376**	**566.4 percent**

SOURCE: Miniwatts Marketing Group, 2013.

moving into the future will require a variety of platforms to reach all the different populations living in different situations. Forum member Harrison Spencer from the Association of Schools and Programs of Public Health suggested testing the new technologies to see what works in changing educational and health care environments; but, he added, there needs to be greater tolerance for ambiguity as such technologies, like the ones presented, are tested in new environments. Crump agreed, saying that some level of risk has to be accepted; however, there is still a responsibility by the researchers to test those theories that are based on sound knowledge and information.

According to Desai, the mentality at Khan Academy is to be relevant and to get products tested even if they are not perfect. The idea is to change the tool in response to consumer testing. In this way, Khan Academy's work and their products are ever changing and remain relevant to the changing needs of its consumers.

Desai also said Khan Academy is attempting to address some disparities by figuring out ways to get its hardware available in clinics so waiting room time can be used to educate patients. This is often a time when patients or caretakers are motivated to learn about health issues. Because language can be a major barrier, Khan Academy is translating its content into multiple different languages including Arabic, Farsi, and Spanish. Relevant content can be shown to patients during their sick or well-patient visit but also before and after the appointment. Accessing the video after the visit can be especially helpful in maintaining the accuracy of the information that might need to be shared with multiple family members or caretakers who were unable to be at the appointment. Desai admitted that a criticism of using Khan Academy videos for patient education is that their library is not complete. So, for example, a provider can direct her patient to a video on diabetes or asthma but there is not a similar video for arthritis. Staff at the Khan Academy are working on increasing their content but this is an impediment to pushing its use throughout all health systems although pilot studies are underway in a variety of health care settings to better understand the gaps this sort of tool could fill.

REFERENCES

ANPF (American Nurse Practitioner Foundation). n.d. *Patient engagement app*. http://anpfoundation.org/tools-resources/patient-engagement-mobile-app (accessed February 16, 2014).

Creighton University. 2013. *Successful nursing outcomes central to Creighton-developed evaluation tool*. http://www.creighton.edu/publicrelations/newscenter/news/2013/october2013/october102013/nursingsimnr101013/index.php (accessed January 6, 2014).

Float Mobile Learning. n.d. *Is mHealth poised to explode?* http://floatlearning.com/wp-content/uploads/2012/03/mhealth-infographic-float.jpg (accessed February 16, 2014).

Fox, S., and M. Duggan. 2013. *Health online 2013*. http://www.pewinternet.org/2013/01/15/health-online-2013 (April 2, 2014).

Miniwatts Marketing Group. 2013. *Internet world stats: World Internet usage and population statistics: June 30, 2012*. http://www.internetworldstats.com/stats.htm (accessed January 6, 2014).

Scott, R. 2012. *12 surprising facts about patient engagement*. http://www.dorlandhealth.com/dorland-health-articles/12-Surprising-Facts-About-Patient-Engagement (accessed January 6, 2014).

TeleVox. 2011. A fragile nation in poor health: Realities about why so many Americans fail to follow their doctor's orders; strategies for improving patient cooperation. http://www.televox.com/downloads/fragile-nation-in-poor-health-flip/#?page=0 (accessed February 16, 2014).

U.S. Census Bureau. 2012. *Computer and internet trends in America*. https://www.census.gov/hhes/computer/files/2012/Computer_Use_Infographic_FINAL.pdf (accessed June 16, 2014).

5

Strategies for Overcoming Challenges in Measuring Interprofessional Education

Key Messages

- By measuring what is valued, over time, what is measured will be valued because that is where the supportive data will be. (Coffey)
- There is a lack of evidence-based approaches in IPE. (Aschenbrener, Walker)
- Patients and learners could be proactively involved in data collection that assesses teams, which could be used to guide learning in quality improvement. (Gaines)
- Part of the learning process could involve clinicians and educators who work with patients to provide students with experiences that help them understand the patient experience. (Gaines)
- Too often, assessment is thought of as a way of looking back rather than looking forward, and there is a potentially strong role for assessment as a tool for moving innovation forward. (Coffey)

As co-chair of the workshop planning committee, Forum member Darla Coffey from the Council on Social Work Education began the reporting of the breakout groups by emphasizing an important theme that surfaced repeatedly throughout the workshop, which was how one might use

BOX 5-1
Breakout Groups: Topics and Leaders

Group 1: Assessment of the interprofessional learner from education to workplace
Leaders: Catherine Grus, American Psychological Association, and Lucy Mac Gabhann, law student, University of Maryland

Group 2: Assessment of the approaches to interprofessional learning: the role of professional associations in measuring the effectiveness of new technologies, methodologies, and pedagogy
Leader: Carol Aschenbrener, Association of American Medical Colleges

Group 3: Assessment of teams and collaborations in community-based activities and outpatient teams
Leaders: Lemmietta McNeilly, American Speech-Language-Hearing Association, and Patricia Hinton Walker, Uniformed Services University of the Health Sciences

Group 4: Role of health system users (sick and well persons) in assessment of education, community health interventions, and health care
Leaders: Meg Gaines, University of Wisconsin, Madison, and Eric Holmboe, American Board of Internal Medicine

assessment as a tool for changing culture. By measuring what is valued, she said that over time what is measured *will* be valued because that is where the supportive data will be. Coffey then introduced the speakers who led small breakout groups as noted in Box 5-1. The purpose of these breakout groups was to give the Forum members and the public participants a chance to discuss, in a highly interactive setting, what they individually value most about interprofessional education (IPE) and how this might be assessed. Each group looked at IPE in an environment (i.e., education to practice, health professional educational associations, communities, and health care) and considered various perspectives (such as that of student, educator, educational leadership, and health system user).

The leaders organized their groups into four 35-minute rotations. Challenges to and opportunities for assessment in the different areas described above were looked at from policy (macro), institutional (meso), and individual (micro) levels during the first three rotations. In the fourth rotation, Forum members and public participants self-selected one of the groups to attend and discussed strategies on how to overcome previously identified challenges to assessing IPE (see Boxes 5-2, 5-3, 5-4, and 5-5, which appear later in this chapter). The groups then reconvened, and the group leaders

gave presentations of what was covered in their breakout sessions, informed by the group discussions.

The material presented was discussed by one or more workshop participants. During the workshop, all participants engaged in active discussions about opportunities. In some cases, participants expressed differing opinions. Because this is a summary of workshop comments and not meant to provide consensus recommendations, the workshop rapporteur endeavored to include all comments discussed by workshop participants as presented by the group leaders who were informed by the group discussions. The summaries of the breakout group reports should be attributed to the rapporteur of this summary as informed by the workshop.

ASSESSING THE INTERPROFESSIONAL LEARNER FROM EDUCATION TO WORKPLACE

Catherine Grus and Lucy Mac Gabhann focused on assessing the interprofessional learner from education to the workplace. In her remarks, Grus commented that several themes came up consistently across the three levels of opportunities noted in Table 5-1, but there were additional important points she wanted to mention. One was regarding the importance of data collection—in particular, the importance of longitudinal data collection, and how it could be helpful in formative assessments of individual learners and in overcoming obstacles to greater acceptance of IPE. But, she said, for high-quality assessments of the interprofessional learners to be developed and properly used, there would need to be a culture that embraces IPE. Grus said that this is a critical step for moving forward to more advanced discussions, such as how to assess the interface between education and practice. To do this, a more fluid connection between program-level faculty and practice sites would have to be established along with an understanding of the types of assessments being conducted at practice sites.

Mac Gabhann followed up on Grus' remarks by presenting a suggestion for overcoming one identified challenge: how best to assess collaboration on an individual level—along the continuum from training through practice—that is consistent with the triple aim.

The ideas for her suggestion reflected many of the opportunities noted in Table 5-1. Ideally, said Mac Gabhann, the design noted in Box 5-2 would start simultaneously at all levels (macro, meso, and micro); this might not be realistic, however, so she identified two areas for initial efforts at the policy level. The first is to bring IPE and interprofessional practice (IPP) into the accreditation process for professions and for institutions, and the second is to design financial incentives that would encourage individual health professions to embrace IPE. Advocating for change in funding for interprofessional training and assessment could be the impetus for this to

TABLE 5-1 Opportunities for Assessing the Interprofessional Learner from Education to Workplace Outlined by Catherine Grus and Lucy Mac Gabhann (as informed by group discussions)

Opportunities on a Policy Level (Macrolevel)

- Integrate IPE in accreditation—drives hospitals.
- Capitalize on the opportunities offered by health care reform.
- Advocate for legislative policies for higher education.
- Encourage institutional recognition of IPE (e.g., Magnet credential*).

Opportunities on an Institutional Level (Mesolevel)

- Recognize IPE in guidelines for faculty promotion, credentialing of providers, and human resource issues.
- Use electronic health records as a means for collaboration.
- Engage patients and families.
- Mandate faculty development of IPE training and assessment skills.
- Engage in comparative effectiveness and resource/data sharing—across institutions and across practice settings.
- Identify best practices and retro-engineering education from practice.
- Build or align regional centers across professions.
- Collect and share best practices from a global perspective and from low-resource settings.

Opportunities on an Individual Level (Microlevel)

- Mandate faculty development of IPE training and assessment skills.
- Achieve greater professional satisfaction from working collaboratively.
- Develop longitudinal self-assessment skills.
- Engage patients and families.

NOTE: This table presents opportunities discussed by one or more workshop participants. During the workshop, all participants engaged in active discussions about opportunities. In some cases, participants expressed differing opinions. Because this is a summary of workshop comments and not meant to provide consensus recommendations, the workshop rapporteur endeavored to include all opportunities discussed by workshop participants as presented by the group leaders who were informed by the group discussions. This table and its content should be attributed to the rapporteur of this summary as informed by the workshop.

* According to the American Nurses Credentialing Center, the Magnet Recognition Program is designed to identify health care organizations that provide high-quality patient care, nursing excellence, and innovations in professional nursing practice (ANCC, 2014).

happen across the continuum from education to practice. The advocacy could come from health professionals but also from the users of the health system. Such consumers provide a potentially powerful voice for change and are an important source of information for assessing the adequacy of interprofessional collaborations.

BOX 5-2
Ideas Presented by Catherine Grus and Lucy Mac Gabhann (as informed by group discussions)
Overcoming Challenges: Assessment of the Interprofessional Learner from Education to Workplace

Challenge: Assessment of collaboration on an individual level—along the continuum from training through practice—that is consistent with the triple aim

Grus and Mac Gabhann suggested starting at the policy level where accreditation might be addressed along with other high-level incentives for system change such as financing. Following these initial actions, one might then do the following:

- Advocate for change in funding for interprofessional training and assessment.
- Focus on continuing education and assessment of interprofessional practice (IPP) in the current workforce in addition to students and faculty.
- Use the media to engage health system users in partnership for improving IPE and the assessment of IPE.
- Increase awareness of what each credentialing body requires through greater data sharing.
- Train the workforce so opportunities at all levels can be advanced.

THE ROLE OF PROFESSIONAL ASSOCIATIONS IN MEASURING THE EFFECTIVENESS OF NEW TECHNOLOGIES, METHODOLOGIES, AND PEDAGOGY

Carol Aschenbrener led the group looking at the role of professional associations in measuring the effectiveness of new technologies, methodologies, and pedagogy. Her presentation focused on ideas for assessing approaches to interprofessional learning. Many of the opportunities noted by the previous leaders were also pertinent to this topic.

An overriding theme for her was the lack of evidence to support decision making. Generating evidence at the macrolevel begins by influencing accreditors to develop evidence-based regulations and to ease restrictions that limit innovation, she said. The result of this would be two-fold. First, evidence would be collected on the effectiveness of various technologies; and second, the data would separate the most effective technologies from the most convenient ones. This same approach would apply for determining which pedagogies are most effective. In this regard, multiple associations could produce a joint proposal across professions for multisite research funding that would look at specific approaches to learning. This would fill

an identified need for evidence-based approaches in IPE. However, it is very hard to obtain this kind of funding, and likely related to that difficulty, it is difficult to convince multiple associations to do research together—much less multiple professions across associations. But, said Aschenbrener, this could be something that members of the Forum could galvanize together.

A second major theme Aschenbrener presented was the need for assessment approaches that do not rely on live clinical practice sites, due to the shortage of these. The most popular approach currently is simulation. Simulation encompasses a wide variety of approaches and technologies that range from high to very low fidelity.

After discussing overarching issues, Aschenbrener suggested a way to advance opportunities for interprofessional learning and the assessment of such approaches. She included what she views as the most important opportunity at each of the policy, institutional, and individual levels (see Box 5-3). She focused on the mesolevel strategy, which would encourage professional associations to come together and jointly sponsor a massive open online course (MOOC). The MOOC would emphasize an area relevant to interprofessional learning. In her opinion, all of the content that does not require the social context of the classroom, the direct patient experience, or direct observation should be taught outside of the classroom where it can be accessed asynchronously.

BOX 5-3
Ideas Presented by Carol Aschenbrener
(as informed by group discussions)
Overcoming Challenges:
The Role of Professional Associations in Measuring the Effectiveness of New Technologies, Methodologies, and Pedagogy

Challenge: Assessment of the approaches to interprofessional learning

To overcome this challenge, Aschenbrener suggested the following, multilevel approach:

- Macrolevel: Develop joint proposals to secure funding for multisite research to explore the relationship between approaches to IPE and performance in practice and patient outcomes (e.g., National Council of State Boards of Nursing study).
- Mesolevel: Jointly sponsor a MOOC in an area relevant to IPE, and evaluate the effects on different health professions.
- Microlevel: Urge hospitals, health systems, and educational institutions to use simulation centers across all relevant health professions to foster interprofessional skills.

The MOOC would be sponsored and designed jointly, but the impact evaluation could be conducted by each individual profession. The results could then be compared to see whether the learning was as effective with one profession as with another.

Developing the MOOC across health professional associations would in itself add to the collaboration of health professionals. For this to succeed, said Aschenbrener, each institution would have to engage faculty from different professions, which would likely build even stronger collaborations. These collaborations could be used for discussion forums and other collaborative opportunities.

ASSESSMENT OF TEAMS AND COLLABORATIONS IN COMMUNITY-BASED ACTIVITIES AND OUTPATIENT TEAMS

Lemmietta McNeilly opened her presentation by acknowledging the large number of challenges there are to assessing teams and collaborations outside of the inpatient, hospital setting. The difficulty of knowing who to include in the assessment is one example. In outpatient settings, practitioners would almost certainly be included, but for education and training purposes, faculty and students would be part of the assessment, and under all circumstances, the community would be involved. Another challenge is how to actively engage the learner at the policy, institutional, and individual level in collaborative efforts—across the education-to-work continuum—that maintains the community as the focal point. Patricia Hinton Walker then addressed the microlevel opportunities (see Table 5-2) within this area of assessment, and offered suggestions for making the best use of those opportunities.

The overall goal of McNeilly and Walker's suggested approach to overcoming challenges to assessing community-based IPE (see Box 5-4) is to transform curricula and remove barriers so learners can pursue their passions. In doing, students and faculty facilitate change and provide leadership to address such issues as social justice, civic responsibility, and social accountability in communities. The definition of community could be local or global, but the essence of the curricula would remain the same: to provide opportunities and tools for developing leadership skills and agents for change. To create the envisioned change agents, said Walker, the experience would have to go beyond the brief clinical visits that often make up the experiences of health professional students and provide longitudinal, experiential learning opportunities. However, for this to be successful, systems that embrace continued input and participation of learners would need to be designed, said Walker. Letting students help shape the curriculum may be one way to actively engage them. Another way to engage students is to provide credit for service learning projects. These projects could involve

TABLE 5-2 Opportunities for Assessing Teams and Collaborations in Community-Based Activities and Outpatient Teams, Outlined by Lemmietta McNeilly and Patricia Hinton Walker (as informed by group discussions)

Opportunities on a Policy Level (Macrolevel)

- Financial realignment focused on community-centered care.
- Amended accreditation standards related to community members serving as faculty/mentors.
- Support use of technology that engages persons, families, and communities.
- Consider the individual's personal health record (PHR) as the person's electronic health record (EHR)—owned by the "person and family."
- Shift resources to legitimate community members as faculty with investment in faculty development.
- Realignment of financial support for health professions education to more equally support IPE versus just a few disciplines.

Opportunities on an Institutional Level (Mesolevel)

- Consider adopting models such as the One Health Model—linking caring for humans, animals, and the environment to health and health professions education.
- Facilitate citizen-learning models of education in communities instead of stop-in/stop-out visitor models for clinical learning experiences.
- Legitimate service-learning projects with credit versus voluntary projects.
- Engage community members in decision making regarding such areas as admissions, curriculum, and design of community-centered learning activities.
- Facilitate IPE teaching/learning with disciplines/providers and health workers beyond disciplines traditionally in health sciences centers.
- Develop longer-term commitments to service learning in the community such as Penn Nursing LIFE (Living Independent for Elderly) and other longer-term community-centered longitudinal projects (Ghent University) and student-managed clinics.
- Collaboratively address community needs beyond clinical care to addressing needs such as social determinants of health.
- Realign financial incentives to assist community settings in fostering access to patients regularly.
- Collaborate with other universities for development/validation of tools and metrics for team-based, community-based assessments.
- Re-engage learners in social justice, civic responsibility, and reflective praxis.

clinical and community experiences as well as those at the policy level where accreditation issues could be addressed. And finally, making the most of emerging technologies could potentially drive the assessment process that ultimately improves health and continuity of care for individuals, families, and communities. Walker suggested this strategy can be successful, provided that educators and others allow such creative learning approaches to enter into health professional education.

TABLE 5-2 Continued

Opportunities on an Individual Level (Microlevel)

- Provide opportunities and tools for leadership as change agents in the shift from acute to community-centered care.
- Provide tools and remove barriers for learner's commitment to leadership and social accountability.
- Support student engagement in long-term community projects addressing not only health but also social determinants.
- Design systems for continued input and participation from students in design of the curriculum and educational plans (Ghent University).
- Provide credit for service-learning projects in communities (what has previously been volunteer service).
- Encourage innovative projects using emerging technologies designed to improve health and continuity of care for individuals, families, and communities.

NOTE: This table presents opportunities discussed by one or more workshop participants. During the workshop, all participants engaged in active discussions about opportunities. In some cases, participants expressed differing opinions. Because this is a summary of workshop comments and not meant to provide consensus recommendations, the workshop rapporteur endeavored to include all opportunities discussed by workshop participants as presented by the group leaders who were informed by the group discussions. This table and its content should be attributed to the rapporteur of this summary as informed by the workshop.

BOX 5-4
Ideas Presented by Lemmietta McNeilly and Patricia Hinton Walker (as informed by group discussions)
Overcoming Challenges: Assessing Teams and Collaborations in Community-Based Activities and Outpatient Teams

Challenge: Assessing teams and collaborations outside of the inpatient, hospital setting

McNeilly and Walker presented the following ideas for overcoming this challenge:

- Macro: Realign federal, state, accreditation, and private-sector policies to shift health professions education model(s) from acute inpatient care to care across the continuum that focuses on the community.
- Meso: Systematically evolve to socially accountable health professions education by developing curricula, assessments, and activities that facilitate and encourage service orientation for faculty, practitioners, students, and communities.
- Micro: Engage learners (students, faculty, and practitioners) in the transformation of curricula that removes barriers for addressing social justice, civic responsibility, and social accountability in communities.

ROLE OF HEALTH SYSTEM USERS (SICK AND WELL PERSONS) IN ASSESSMENT OF EDUCATION, COMMUNITY HEALTH INTERVENTIONS, AND HEALTH CARE

The final presenter of the small group strategies was Meg Gaines, who focused on working with patients to assess communication among health providers and health professional learners. The specific challenge she presented was to expand the role of patients in assessing communication of a health team. Macrolevel opportunities in this area (noted in Table 5-3) focused heavily on the Agency for Healthcare Research and Quality's

TABLE 5-3 Opportunities for Expanding the Role of Patient Experience to Assess Team Communication Outlined by Meg Gaines and Eric Holmboe (as informed by group discussions)

Opportunities on a Policy Level (Macrolevel)

- Develop a qualitative dimension to CAHPS.
- Develop an expanded participant base for CAHPS to include family members, caregivers, etc.
- Add patients to the certification system.
- Be sure that these added patients are not conflicted (e.g., retired hospital executives).
- Be sure there is diverse representation.

Opportunities on an Institutional Level (Mesolevel)

- Explore use of electronic health records to get input from patients on their care experiences.
- Bring patients together in groups so there is safety in numbers.
- Consider greater use of patient advisory councils.
- Ask clinic patients to assess their care experiences, which could include their perceptions of the workplace climate.

Opportunities on an Individual Level (Microlevel)

- Use the waiting room time to interactively educate patients about how to provide feedback so their responses are most useful to providers.
- Explain to patients the value of sharing their feedback to improve quality, safety, and affordability of their care.
- Use feedback to empower and motivate patients to want to provide accurate and honest information.
- Ensure patient feedback is actually used, possibly for individual learner and system-level improvements.
- Compensate patients for sharing their experience.

NOTE: This table presents opportunities discussed by one or more workshop participants. During the workshop, all participants engaged in active discussions about opportunities. In some cases, participants expressed differing opinions. Because this is a summary of workshop comments and not meant to provide consensus recommendations, the workshop rapporteur endeavored to include all opportunities discussed by workshop participants as presented by the group leaders who were informed by the group discussions. This table and its content should be attributed to the rapporteur of this summary as informed by the workshop.

(AHRQ's) Consumer Assessment of Healthcare Providers and Systems (CAHPS) program. The CAHPS program uses surveys to assess consumers' experiences with health care services in different settings (AHRQ, 2013). One major opportunity would be to develop a qualitative dimension to CAHPS. In this way, important patient narratives that do not fit easily into multiple choice surveys or Likert scales are not lost. Similarly, expanding the participant base for CAHPS to include family members, caregivers, and others would provide a more comprehensive picture of the patient experience. Another policy-level suggestion presented by Gaines was to add unconflicted patients to the certification system who could truly represent the patient voice and are from diverse populations. Gaines acknowledged that although this is a great opportunity to hear from patients, doing it well presents an enormous challenge. For example, engaging new populations, like patients, in assessments likely requires changes in the way the data are collected and analyzed, adjusting how meetings are conducted so they are inclusive of patients' thoughts and opinions, and rethinking how teams that include patients interact.

Opportunities at the mesolevel could involve institutional changes around the use of electronic health records in order to get input from patients on their care experiences. Bringing patients together in groups may create a more comfortable and safe environment for individuals to express their true feelings. Another source of information at the mesolevel could be individual clinic patients for their input on their overall care experiences and perceptions of the workplace climate.

On the microlevel, Gaines thought that waiting room time could be used to interactively educate patients about issues such as how to provide feedback in an assessment. Previous workshop discussions highlighted the crossover effect that engaging patients has on their health care. And likewise, engaging patients in their own health and health care could have a crossover effect of interesting them in how care is delivered, which could be a way of reaching populations who are less engaged in their health and health care.

Regardless of the patient engagement, Gaines felt it is necessary to compensate patients for their time although the actual compensation can vary. It can be a gift certificate, cash, a verbal expression of gratitude, or publication of their suggestion in the organization's newsletter. But most importantly, said Gaines, is to use the information extracted from the patients. There is tremendous exasperation when collected data are not used, so having a plan for using the information to improve the learners understanding of the health system from a patient perspective would be extremely important for current and future efforts in this area.

The ideas Gaines presented—to overcome challenges associated with expanding the role of patients in assessing communication of a health team

BOX 5-5
Ideas Presented by Meg Gaines
(as informed by group discussions)
Overcoming Challenges: Role of Health System Users (Sick and Well Persons) in Assessment of Education, Community Health Interventions, and Health Care

Challenge: Expanding the role of patient experience to assess communication of the team

A multilevel approach to overcoming this challenge was presented by Gaines and involved the following suggestions:

- Macro: Charge the members of the Institute of Medicine's (IOM's) Global Forum on Innovation in Health Professional Education to communicate to their constituency a shared vision of the importance of engaging patients in assessment and share some effective models.
- Meso: Use data to proactively engage patients in assessments. Engage learners in data collection and analysis that improves the quality care.
- Micro: Engage clinicians, who understand patients' issues, to be observers, reporters, and interpreters of the "patient experience" in order to help learners understand it, and to guide them through self-reflection in a safe environment.

(see Box 5-5)—drew from the list of opportunities in Table 5-3. A possible starting place for overcoming the challenges could be at the macrolevel where participants of the workshop and members of the Global Forum might communicate to a wider audience a shared vision of the importance of engaging patients in assessment. These advocates of patient engagement could share examples of effective models that demonstrate how patients could be effectively involved. At the meso- and microlevels, patients and learners could be proactively involved in data collection that assesses teams, which could be used to guide learning in quality improvement, said Gaines. Part of the learning process could also involve clinicians and educators who work with patients to provide students with experiences that help them understand the patient experience. This could be done by observing health teams and then reflecting on the experience through group discussions and self-reflection.

LOOKING FORWARD

Following the presentations, a workshop participant wondered how the ideas presented by Gaines differ from those presented previously by

other groups, and how assessment might actually be used as an agent of change? One way they differ, thought Forum member and workshop co-chair Eric Holmboe from the American Board of Internal Medicine, would be if the individual Global Forum members who represent multiple nations, professions, and sectors were to endorse the importance of involving patients in the assessment process. To his knowledge, that has not been done. Forum Co-Chair Afaf Meleis from the University of Pennsylvania School of Nursing noted that the nurse's Magnet Review Credentialing does involve patients in the assessment of organizations, so the process of involving patients in assessments could build on that model.

Forum member Malcolm Cox from U.S. Department of Veterans Affairs (VA) responded very positively to the notion of engaging patients in assessments. In his view, this would be well received by the patient community as well as the VA health system, which has already begun to move in this direction. Other health systems would similarly benefit from such a shift, he added. And although Walker agreed, she also expressed a fear of assessing the wrong aspects that could send the wrong messages about IPE. She echoed Aschenbrener's call for establishing the evidence, but questioned whether it might be possible to assess while innovating? Can different ways of assessing be developed at the same time new methods of learning are created, like within the area of technology? In that same regard, Aschenbrener believed that assessing some aspect of simulation would be key because simulation is a very important tool for the health professions currently. Walker said that a number of tools and materials already exist, like TeamSTEPPS and social and emotional intelligence; the challenge is in figuring out how best to leverage these tools in terms of assessment, rather than trying to create something new. McNeilly built on that idea using the 360-degree assessment as an example. This tool is well known to many and involves input and performance feedback from a full range of sources that could be used in formative assessments from IPE to practice, particularly if students are involved in all aspects of the assessment process. Coffey then closed the session by saying that too often, assessment is thought of as a way of looking back rather than looking forward, and there is a potentially strong role for assessment as a tool for moving innovation forward.

IDEAS FOR FUTURE STEPS

Eric Holmboe led the final session to develop ideas for future steps. To develop them, he instructed each of the small group leaders to speak with other Forum members seated at their table and come up with one important next step that would move one or more of their ideas forward. The small group leaders, whose presentations were noted earlier in this chapter, led

table discussions and reported their ideas to the rest of the Forum members in the room.

Meg Gaines

Meg Gaines spoke first. Her immediate next step involved leveraging the Forum membership to communicate to a wider audience—that includes regulatory organizations and community-based clinician educators—the importance of engaging patients in assessment in ways that have proven effective. The evidence for greater patient engagement in assessment would come from an environmental scan of best practices in this area that could be further expanded through commissioned studies of the topic.

Carol Aschenbrener

Carol Aschenbrener then expressed her thoughts. She wanted to create a MOOC as the first step to implementing the ideas she detailed in her presentation. The MOOC would be focused on core content linked to the interprofessional competencies for the beginning and advanced learner. Potential audiences could be students, faculty, and patients, and it could be used to educate governing boards and accrediting bodies who do not know what IPE is. It would be implemented by a set of motivated representatives from health and health education organizations. They would provide the needed expertise in such areas as faculty development, content, curriculum design, and pedagogic methodologies. Having a relationship with MOOC vendors like Coursera would be advantageous. It would also be crucial to have a lead organization driving the process and coordinating the relationship between the vendor and the interprofessional advisory committee, said Aschenbrener. Because most of the efforts would be virtual and would not be dependent on people coming together physically, there was no reason she could see for delaying the initiation of the activity.

Patricia Hinton Walker

Patricia Hinton Walker suggested a first step that drew ideas from her small group discussions as well as that of the previous two presenters. Like Gaines, Walker called on the Forum members to publicly announce that IPE is a priority, and like Aschenbrener, the message would be based on sound evidence possibly assembled through a future study. Ideally, the study would be informed by a wide array of stakeholders, including patients, families, and communities, as well as learners across the education-to-practice continuum, said Walker. Accreditation bodies from different professions could also be targeted to explore how they identify assessment priorities.

Results of the study could be taken forward by the Global Forum members to encourage institutional faculty and student leadership to become the implementers of innovation and change in IPE and training programs. Evaluation of interprofessional activities would be undertaken in order to identify and learn from the exemplars that emerge through the assessment process. With solid evidence demonstrating the value of interprofessional work and education, Walker believed the Global Forum members would then be in an excellent position to clearly articulate to their colleagues and others the value of interprofessional activities.

Catherine Grus

Catherine Grus' next steps were also quite similar to the other presenters. She started by suggesting a better use of the talent and expertise of the Global Forum members, who would be asked to conduct a gap analysis that identifies what has already been undertaken in the area of assessment of interprofessional activities, and what still needs to be addressed. The analysis would include how to obtain assessment data that are most useful to organizational boards and professional associations. In this way, high-level decisions about interprofessional activities are informed by the evidence and could feed into decisions made by curriculum committees.

Lucy Mac Gabhann

In a related next step, Lucy Mac Gabhann focused on how to drive an evidence-based accreditation process. Data and evidence would be generated by health research institutions on how health professional collaborations might lead to better outcomes. At the same time, Center for Medicare and Medicaid Innovation awardees and grantees would be producing assessment results that might inform those meta-analyses already under way, looking at linkages between IPE and improved interprofessional collaboration and patient care (Reeves et al., 2013). Analyzing all the available data would help identify higher-quality indicators related to teams and collaborations.

Like others before her, Mac Gabhann felt the Global Forum members were in the best position to move this agenda forward while also involving the National Center for Interprofessional Practice and Education. This center was established in part to maximize the use of data in an effort to demonstrate the positive impact IPE and IPP can have on health, health care, and costs. Building coalitions with the National Center and other more global partners around data collection and sharing knowledge of the effects of different types of collaborations could further expand the growing evidence base and lead to greater investment in assessment, as was noted

by some of the workshop participants. And this investment in assessment, suggested Coffey, could be a tool for changing culture by measuring what is valued.

Building Blocks for a Stronger Foundation

In his closing remarks, Holmboe alluded to the workshop and the ideas put forth by individual Forum members as building blocks toward a stronger foundation. Each laid brick improves the base on which to build new and coalesced ideas within assessment of health professionals and the educational systems in which they operate. He challenged the Forum members to think of a specific activity that each could undertake individually or organizationally that would not just add to the foundation but also would increase each member's sphere of influence. In that way, not only would the Global Forum be instrumental in building a house, but given each member's reach, it could potentially be the spark for development of a whole community of houses. The bricks that built the community in Holmboe's metaphor symbolize what can be accomplished when all stakeholders—educators, practitioners, students, patients, caregivers, and others—work together in determining what is most valued and how to assess that so all critical goals are achieved. With that, the workshop was adjourned.

REFERENCES

AHRQ (Agency for Healthcare Research and Quality). 2013. *CAHPS: Surveys and tools to advance patient-centered care, homepage*. https://cahps.ahrq.gov (accessed January 6, 2014).

ANCC (American Nurses Credentialing Center). 2014. *ANCC magnet recognition program*. http://www.nursecredentialing.org/Magnet.aspx (accessed January 6, 2014).

Reeves, S., L. Perrier, J. Goldman, D. Freeth, and M. Zwarenstein. 2013. Interprofessional education: Effects on professional practice and healthcare outcomes (update). *Cochrane Database of Systematic Reviews* 3:CD002213.

Appendix A

Workshop Agenda

ASSESSING HEALTH PROFESSIONAL EDUCATION
A Public Workshop of the Global Forum on Innovation in Health Professional Education
October 9–10, 2013

The Keck Center of the National Academies
Washington, DC 20001

DAY 1: October 9, 2013

Workshop Objectives:

- To look at the current state of assessment competencies in three areas, including interprofessional education (IPE); team-based care; and patient/person-centeredness.
- To discuss challenges and opportunities of assessment within these three areas.
- To encourage new linkages among professions that lay the foundation for interprofessional interactions that better engage consumers, communities, and/or business leaders.
- To propose actionable next steps for Forum members in leadership positions to move assessment forward in health professional education.

9:00am **Welcome and Orientation to the Workshop**
Darla Spence Coffey, Forum Member and Workshop Co-Chair
Eric Holmboe, Forum Member and Workshop Co-Chair

SESSION I: INTERACTIVE "TEACHING SESSION" ON ASSESSMENT

9:15am **General Principles of Assessment Within the Three Domains: A Facilitated Discussion**
Discussant: John Norcini, Foundation for Advancement of International Medical Education and Research (FAIMER)
Facilitator: Eric Holmboe, Workshop Co-Chair

10:00am **BREAK**

10:30am **Small-Table Activity: Making Assessment Meaningful for Health Professional Education**
Facilitator: Darla Coffey, Workshop Co-Chair

Table Discussion Questions:

Question 1:
From the perspective of assessment *of* learning, what makes a good assessment tool or measure? Provide an example of a "good" tool or test to assess learning of communication skills. Why is this a good tool or test?

Question 2:
From the perspective of assessment *for* learning, what makes a good assessment tool or measure? Provide an example of a "good" tool or test to inform the learning of communication skills. Why is this a good tool or test?

Question 3:
In what way might the assessment of learners be a catalyst for change in the health professional education?

Question 4:
In what way might the assessment of learners be a catalyst for change in the health care system?

Webcast Discussants: Maria Tassone, Canadian Interprofessional Health Leadership Collaborative; **John Weeks**, Academic Consortium for Complementary and Alternative Health Care; **Karen Anne Wolf**, National Academies of Practice; **Aliye Runyan**, American Medical Student Association

11:30am **Practical Guides for Assessment**
Moderator: Carol Aschenbrener, Association of American Medical Colleges
- Team-based care and communication
  David Baker, IMPAQ, Health Division
- Interprofessional professionalism assessment
  Jody Frost, Interprofessional Professionalism Collaborative
- IPE from the teaching/learning perspective
  Brenda Zierler, University of Washington School of Nursing

Q&A

12:30pm **LUNCH**

SESSION II: BREAKOUT GROUPS

1:15pm **Breakout Group Instructions and Move to Room**
Darla Coffey, Workshop Co-Chair

1:30pm **Breakout Group Sessions**
Directions: There are four groups in this session. The first three groups last for 35 minutes each. Members will be assigned to rotate through the three groups to discuss "challenges and opportunities" from a policy (macro), institutional (meso), and individual (micro) level. The final group will write a strategy for overcoming one of the challenges from each level.

Outcome: A written strategy for overcoming one identified challenge from a policy (macro), institutional (meso), and individual (micro) level.

1:30 to 2:05—First group
2:15 to 2:50—Second group
3:00 to 3:35—Third group
3:35 to 4:00—BREAK
4:00 to 4:45—Fourth group

Breakout Groups:

1. Assessment of the Interprofessional Learner from Education to Workplace
   Leaders: Catherine Grus and Lucy Mac Gabhann, Workshop Planning Committee Members
2. Assessment of the Approaches to Interprofessional Learning: The Role of Professional Associations in Measuring the Effectiveness of New Technologies, Methodologies, and Pedagogy
   Leader: Carol Aschenbrener, Workshop Planning Committee Member
3. Assessment of Teams and Collaborations in Community-Based Activities and Outpatient Teams
   Leaders: Lemmietta McNeilly and Patricia Hinton Walker, Workshop Planning Committee Members
4. Role of Health System Users (Sick and Well Persons) in Assessment of Education, Community Health Interventions, and Health Care
   Leader: Meg Gaines, Workshop Planning Committee Member, and Eric Holmboe, Workshop Co-Chair

5:00pm **ADJOURN TO RECEPTION**
Greetings and Reflections (5:15pm)
Afaf Meleis, Global Forum Co-Chair
Poster Session (5:30–6:30pm)

DAY 2: October 10, 2013

SESSION III: APPLYING THE KNOWLEDGE

7:30am **BREAKFAST**

8:00am **World Café: Learning from and with Each Other**
Moderator: Sarita Verma, Co-Lead, Canadian Country Collaborative

Table Discussion Leaders:

- Juanita Bezuidenhout, South African Country Collaborative
- Sanjay Zodpey, Indian Country Collaborative
- Nelson Sewankambo, Uganda Country Collaborative
- Maria Tassone, Canadian Country Collaborative
- Lesley Bainbridge, Canadian Country Collaborative
- Bjorg Palsdottir, Training for Health Equity Network (THEnet), Belgium, and Jehu Iputo, THEnet, South Africa
- Jan De Maeseneer, Ghent University, Belgium

8:45am **World Café Leaders' Report Back** (webcast begins)

9:15am **INTERMISSION**

9:25am **Panel Discussion: Technology and Innovations in Assessment**
Objectives: To examine the implications of specific technological assessment for the health professions interprofessional education, faculty development, and patient engagement

Moderator: John (Jack) Kues, Alliance for Continuing Education in the Health Professions

- Mobile app to assess providers' communication from a patient perspective
  Margaret Crump, American Nurse Practitioner Foundation
- Simulation outcomes and assessment and its impact on the curriculum
  Barbara Gawron, University of Illinois College of Nursing
- Optimizing teacher and learner assessment using Khan Academy
  Rishi Desai, Khan Academy

10:40am **BREAK**

11:10am **Small Group Strategies and Overcoming Challenges**
Moderator: Darla Coffey, Workshop Co-Chair

Group 1—Catherine Grus and Lucy Mac Gabhann
Group 2—Carol Aschenbrener
Group 3—Lemmietta McNeilly and Patricia Hinton Walker
Group 4—Meg Gaines and Eric Holmboe

12:00pm **Next Steps for Professional and Educational Organizations**
Facilitator: Eric Holmboe, Workshop Co-Chair

- Each table drafts actionable next steps (30 minutes)
- Tables share their steps with the larger group (30 minutes)

1:00pm **LUNCH AND ADJOURN**

Room 100 will remain open until 5:00pm for networking opportunities.

Appendix B

Models and Tools Discussed at the Workshop

Model or Tool	Description	Source
Directory and Repository of Educational Assessment Measures (DREAM)	DREAM is an effort by the Association of American Medical Colleges (AAMC) to conduct a critical analysis of assessments that are in the public domain that could be relevant to multiple health care institutions. AAMC is publishing each analysis on their website, including a description of the assessment instrument, educational objectives, relevant competencies, the audience, and the instructional methods.	www.mededportal.org/dream
Group Development Model	Tuckman's theory of group development has been applied in health care. The model is made up of three phases that are necessary for teams work together in a cohesive, productive manner.	Tuckman, B., and M. A. Jensen. 1977. Stages of small-group development revisited. *Group & Organization Management* 2:419. Published by Sage Publications.

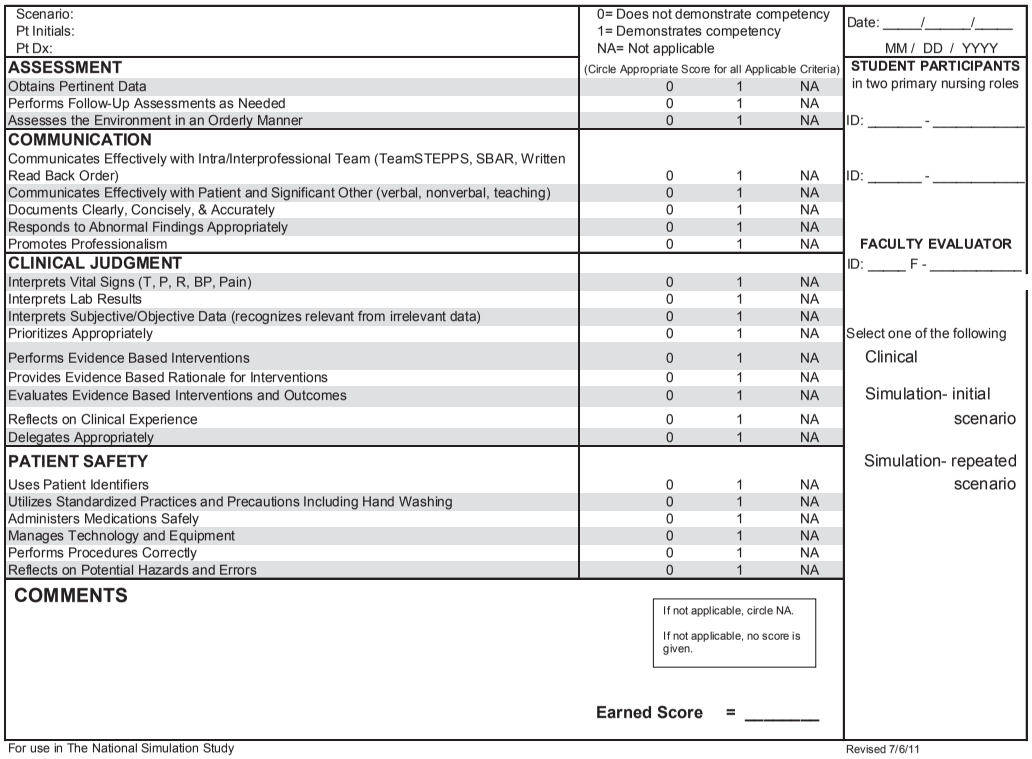
Model or Tool	Description	Source
TeamSTEPPS National Implementation	Six regional training centers are leading the national implementation of TeamSTEPPS, which is a training curriculum to improve patient safety through better communication and teamwork skills among health care professionals. The six centers offer training to establish a national network of master trainers. These trainers then offer TeamSTEPPS training to frontline providers throughout the country.	http://teamstepps.ahrq.gov/aboutnationalIP.htm
On the CUSP: Stop HAI	National Implementation of the Comprehensive Unit-based Safety Program (CUSP) to Eliminate Health Care-Associated Infections (HAI) began as part of the Agency for Healthcare Research and Quality's (AHRQ's) patient safety project to reduce central line–associated bloodstream infections. This pilot is now being taken to scale through Implementing On the CUSP. This effort provides manuals, training modules, and toolkits for building and maintaining effective teams for improved patient safety.	http://www.onthecuspstophai.org
Canadian Interprofessional Health Collaborative (CIHC) Competency Framework	This competency framework for interprofessional collaboration emphasizes knowledge, skills, attitudes, and judgments. It has been used for structuring and evaluating interprofessional education and as a means of assessing collaborative practice.	http://www.cihc.ca/files/CIHC_IPCompetencies_Feb1210.pdf
Collaborative Practice Assessment Tool (CPAT)	CPAT is a 56-item survey designed to assess perceptions of constructs of collaborative practice identified in the literature.	http://www.wrha.mb.ca/professionals/collaborativecare/files/S2-Queen-CPAT.pdf

Model or Tool	Description	Source
Interprofessional Collaborative Organizational Map and Preparedness Assessment (IP-COMPASS)	IP-COMPASS is a quality improvement framework for clinical settings that provides a structured process to better understand the organizational culture thorough assessment that can create an environment conducive to interprofessionalism, safety, and interprofessional education (IPE).	http://www.wrha.mb.ca/professionals/collaborativecare/files/S2-IP-COMPASS.pdf
Interprofessional Collaborator Assessment Rubric (ICAR)	ICAR is a tool for assessing interprofessional collaborator competencies. It can aid in improving the quality of learning experiences and direct instruction, and it directs learners toward targets of proficiency to aim for.	http://www.med.mun.ca/getdoc/b78eb859-6c13-4f2f-9712-f50f1c67c863/ICAR.aspx
High-reliability organization work	Using high-reliability concepts and tools—developed for high-risk industries like commercial aviation and nuclear power—to improve safety, quality, and efficiency in hospital settings.	http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/hroadvice/hroadvice.pdf http://www.jointcommission.org/assets/1/6/Chassin_and_Loeb_0913_final.pdf
Coursera	Coursera is an education company that partners with major universities to offer free online courses in 12 different languages.	https://www.coursera.org
Johns Hopkins University School of Nursing's (JHUSON's) massive open online courses (MOOCs)	JHUSON is offering continuing nursing education credits, at a low cost, through its Coursera MOOCs in the following topic areas: "Global Tuberculosis Clinical Management and Research" and "Care of Elders with Alzheimer's Disease and Other Major Neurocognitive Disorders."	https://www.coursera.org/course/tbmanagement https://www.coursera.org/course/dementiacare

Model or Tool	Description	Source
Khan Academy	Khan Academy is a not-for-profit MOOC that has partnered with AAMC and the Robert Wood Johnson Foundation to produce online tutorials for the 2015 medical college admission test (MCAT) exam.	https://www.khanacademy.org https://www.mededportal.org/icollaborative/about/initiatives/prehealth
	Khan Academy is also partnering with American Association of Colleges of Nursing (AACN) and the Jonas Center to develop free, online resources that help prepare nurses for selected portions of the National Council Licensure Examination.	https://www.khanacademy.org/science/healthcare-and-medicine/NCLEX-RN/nclex-competition/v/nclex-competition-video-announcement
HipChat	HipChat is a computer and mobile application service provider that is set up for companies or teams to create and participate in multiple simultaneous chat rooms, send one-on-one messages, and share files with individuals or groups.	https://www.hipchat.com
Health Catalyst model, in terms of the education	Health Catalyst is a health care data warehouse that facilitates data access, discovery, analysis, and reporting. Groups are now looking into using it for assessments in education.	http://www.healthcatalyst.com/company
Magnet Recognition Program	This program of the American Nurses Credentialing Center formally recognizes health care organizations that provide high-quality patient care, nursing excellence, and innovations in professional nursing practice. Standards for obtaining Magnet Recognition include visionary leadership, nursing structure, professional practice, quality improvement, nursing research and outcomes, quality and safety standards, and the nurses' role in improving care.	http://www.nursecredentialing.org/Magnet.aspx

Model or Tool	Description	Source
360-Degree Feedback	Also referred to as multirater feedback, multisource feedback, and multisource assessment, this is a tool for receiving input from multiple sources that could include colleagues, clients, patients, and community representatives.	Allerup, P., K. Aspegren, E. Ejlersen, G. Jørgensen, A. Malchow-Møller, M. K. Møller, K. K. Pedersen, O. B. Rasmussen, A. Rohold, and B. Sørensen. 2007. Use of 360-degree assessment of residents in internal medicine in a Danish setting: A feasibility study. *Medical Teacher* 29(2-3):2-3. Potter, T. B., and R. G. Palmer. 2003. 360-degree assessment in a multidisciplinary team setting. *Rheumatology (Oxford)* 42(11):1404-1407. http://obgyn.mcmaster.ca/wp-content/uploads/2011/10/360-DEGREE-EVALUATION-Guidelines.pdf http://obgyn.mcmaster.ca/wp-content/uploads/2011/10/360-EvaluationFINAL1.pdf
Patient-centered medical homes	Also known as medical homes, this model of primary care emphasizes coordination and communication that revolve around respecting patients' wants, needs, and preferences with the goal of maximizing health outcomes. This is an underused resource for health professional education.	http://www.hrsa.gov/healthit/toolbox/Childrenstoolbox/BuildingMedicalHome/whyimportant.html
Accountable care organizations (ACOs)	ACOs are based on a delivery of care model where groups of health professionals voluntarily work together in an effort to better coordinate care to the Medicare patients. Reimbursement for care is linked to quality metrics reductions in costs and overall care of patients served.	http://innovation.cms.gov/initiatives/aco

Model or Tool	Description	Source
Bundled Payments for Care Improvement Initiative	Under this initiative, health care organizations in the United States will enter into payment arrangements that reward hospitals and other health systems for improving patient outcomes and providing innovative care delivery that decrease costs. A number of teaching hospitals are participating in this 3-year initiative. The participating organizations will be assessed to determine whether their models resulted in improved patient care and lower costs to Medicare.	http://innovation.cms.gov/initiatives/bundled-payments
Creighton Competency Evaluation Instrument	This is a tool developed at the Creighton University School of Nursing for conducting observational analysis of students in simulated clinical environments (noted in Chapter 4). The tool is included at the end of this appendix (see Figure B-1). For more information about this instrument or to obtain permission for use, please contact Martha Todd at marthatodd@creighton.edu.	http://www.creighton.edu/publicrelations/newscenter/news/2013/october2013/october102013/nursingsimnr101013/index.php http://www.cod.edu/academics/conted/business/nursing_symposium/pdf/ccei.pdf
Sweeny-Clark Clinical Simulation Performance Rubric	This tool uses a five-point Likert scale for grading of health professional students in eight competency categories by observers during simulation experiences. It measures such areas as critical thinking, communication, and assessment.	Gantt, L. T. 2010. Using the Clark Simulation Evaluation Rubric with associate degree and baccalaureate nursing students. *Nursing Education Perspectives* 31(2):101-105.
Student Satisfaction and Self-Confidence in Learning	Produced by the National League for Nursing (NLN), this tool measures satisfaction and self-confidence of students using a scale.	NLN. 2005. *Student satisfaction and self-confidence in learning*. http://www.nln.org



Scenario:
Pt Initials:
Pt Dx:

0= Does not demonstrate competency
1= Demonstrates competency
NA= Not applicable

Date: _____/_____/_____
MM / DD / YYYY

ASSESSMENT	(Circle Appropriate Score for all Applicable Criteria)		
Obtains Pertinent Data	0	1	NA
Performs Follow-Up Assessments as Needed	0	1	NA
Assesses the Environment in an Orderly Manner	0	1	NA
COMMUNICATION			
Communicates Effectively with Intra/Interprofessional Team (TeamSTEPPS, SBAR, Written Read Back Order)	0	1	NA
Communicates Effectively with Patient and Significant Other (verbal, nonverbal, teaching)	0	1	NA
Documents Clearly, Concisely, & Accurately	0	1	NA
Responds to Abnormal Findings Appropriately	0	1	NA
Promotes Professionalism	0	1	NA
CLINICAL JUDGMENT			
Interprets Vital Signs (T, P, R, BP, Pain)	0	1	NA
Interprets Lab Results	0	1	NA
Interprets Subjective/Objective Data (recognizes relevant from irrelevant data)	0	1	NA
Prioritizes Appropriately	0	1	NA
Performs Evidence Based Interventions	0	1	NA
Provides Evidence Based Rationale for Interventions	0	1	NA
Evaluates Evidence Based Interventions and Outcomes	0	1	NA
Reflects on Clinical Experience	0	1	NA
Delegates Appropriately	0	1	NA
PATIENT SAFETY			
Uses Patient Identifiers	0	1	NA
Utilizes Standardized Practices and Precautions Including Hand Washing	0	1	NA
Administers Medications Safely	0	1	NA
Manages Technology and Equipment	0	1	NA
Performs Procedures Correctly	0	1	NA
Reflects on Potential Hazards and Errors	0	1	NA

STUDENT PARTICIPANTS
in two primary nursing roles

ID: _____ - _____

ID: _____ - _____

FACULTY EVALUATOR

ID: _____ F - _____

Select one of the following

Clinical

Simulation- initial scenario

Simulation- repeated scenario

COMMENTS

If not applicable, circle NA.

If not applicable, no score is given.

Earned Score = _____

For use in The National Simulation Study

Revised 7/6/11

FIGURE B-1 Creighton Competency Evaluation Instrument (C-CEI).
NOTE: For more information about this instrument or to obtain permission for use, please contact Martha Todd at marthatodd@creighton.edu. This figure is an updated version of the one presented at the workshop.

Appendix C

October 9, 2013, Poster Session: Abstracts

CONTENTS

C.1
STUDENT PARTICIPATION AS A STRATEGY FOR TRAINING LEADERSHIP AND BECOMING CHANGE AGENTS

Jan De Maeseneer, M.D., Ph.D., Sofie Dhaese, Inge Van de Caveye, Bart Vergauwe, and Sarah Bogaert, M.A.
Ghent University

Background The Lancet Commission report requires medical faculties to train health professionals who have leadership attributes and who can act as change agents. Both the conceptual background of these requirements and the appropriate educational strategies are actually unclear. There is still a lot of debate on the concept of transformational leadership and how it could be learned (see Box C-1).

Aim To assess to what extent the different ways student participation in the medical training at Ghent University contributes to acquiring skills that could be useful for transformational leadership.

Results Medical students are organized via a Student Workgroup on Medical Education (SWME), founded in 1999. Students were very much involved in the fundamental curriculum reform that took place: from a traditional discipline-based curriculum toward an integrated contextual

BOX C-1
Definition of Transformational Leadership

Jan De Maeseneer, Ghent University, and Dawn Forman, Curtin University, proposed the following definition for transformational leadership:

Transformational leadership occurs when leaders articulate the purpose and the mission interactively (Gumusluoglu and Ilsev, 2009) with the group and are intellectually stimulating the group, championing innovation, and inspiring group members to become change agents. Transformational leadership is characterized by connecting the member's sense of identity and self to the project and the collective identity of the organization by being a role model for the group members that inspires them and keeps them interested. Transformational leadership challenges group members to take greater ownership and strategic understanding of the context, the strengths and the weaknesses that have to be addressed in the change process. Transformational leadership creates a climate of trust, a process of empowerment, and guarantees safety so that group members can look beyond their own self-interest (Bass and Avolio, 1994) in order to make change happen.

medical curriculum, organized in "units" and "lines" with a focus on problem and community orientation. Students participate in the committees that built the different "units" and "lines," in the Educational Commission, in the Faculty Council, and in different, broader government structures of the university. SWME organizes monthly meetings, a research symposium, and a yearly seminar, where students spend 1 week of their holidays to study and analyze the actual curriculum and formulate proposals for improvement, presenting a 30- to 40-page report to the Educational Committee. This leads to a high degree of "ownership" of the curriculum by the students. In the recent reform from 7 to 6 years undergraduate training, the students formulated the first proposals for the new curriculum. Student proposals are examined thoroughly and very often implemented partly or totally. Moreover, the students constructed the electronic repository of the learning materials of the whole curriculum, making it searchable for students and teachers.

In a first attempt to assess what could be the effect, an exploratory questionnaire was sent to over 50 students who were active in SWME. A Likert scale (1–5) was used to make the assessment. Four items focused on the function of a physician, and 20 items assessed the extent to which students felt their participation contributed to the development of some transformational leadership competencies.

Students find that it is their responsibility to take initiatives to improve quality of care (4.52) and to improve accessibility of care (4.23). As far as the skills and competencies that the students learned through student participation were concerned, the highest scores were given to "dealing with decision making in an ethical way" (4.25), "defending the view points of the group I represent" (4.34), "formulating compromises when there are different opinions in a group" (4.15), "tackling problems in an effective way" (4.38), "anticipating future developments" (4.18), "developing a vision for the future" (4.30), and "formulating proposals for improvement" (4.33).

From the free-text comments it became clear that students were able to illustrate with concrete examples what those skills and competences meant and how they had been developed. Especially the importance of the SWME meetings, the 1-week SWME seminar, participation in commission and working parties, being involved in curriculum reform, and representing fellow students was illustrated frequently.

From the responses it became clear the students acquired several leadership skills, and they learned to act as change agents.

Conclusion Student participation in the development and quality assurance of the medical curriculum, and the existence of a formal student organization, together with an open attitude of the staff toward student

participation, may contribute to the learning of transformational leadership. It will be important to look how these skills will further develop during specialty training and in professional life.

C.2
TRANSFORMATIVE TEACHING AND ASSESSMENT IN AN INTERPROFESSIONAL APPLIED DECISION-MAKING COURSE

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Objective To explain the innovative model used in an interprofessional education (IPE) course to help students analyze and reflect on complex patient situations.

Background The IPE curriculum at Saint Louis University offers a longitudinal, integrated curriculum across baccalaureate-level degree programs for health care professional students. A three-credit course, Applied Decision Making in Interprofessional Practice, prepares students to demonstrate the tenets of patient-centered care through the engagement of ethical principles in a three-step decision-making model and the development of a caring response as an interprofessional (IP) team member.

Process As part of the course requirements, students complete an analysis and written reflection on case studies that relate to the topics covered by lectures and reading assignments and require the application of patient-centered care and ethical principles. The three-step process consists of an individual analysis of the case, an IP team analysis of the case and a recommended course of action for the team to take, and an individual critical reflection on the case and the team decision-making process.

Outcomes The first two steps in the critical reflection assignment provide students with social interaction and experiential learning in which IP teams discuss options and come to consensus for patient-centered care approaches to real-life cases. The third step in the assignment encourages reflective learning in which students assess changes in their views about the case and consider the impact of this transformation on their future actions.

Implications Students who have participated in this experience report a transformation in their views of the cases and an increased ability to interact with an IP team. Course outcomes and feedback suggest that students are able to assess their responses to ethical situations and the need for communication among the IP team and patients.

C.3
TOTAL HEALTH AND WELLNESS CENTER, A NURSE PRACTITIONER–LED INTERPROFESSIONAL COLLABORATIVE PRACTICE

Margaret Clark Graham, Ph.D., Kristie Flamm D.N.P.(c), M.S.N., Teresa Smith, M.S., Matthew Stone, M.S., Ericia Howard, M.S., R.N., Caroline Graham, M.S.Ed., Julie Kennel, Ph.D., Lori Murphy, M.S.W., and Tiffany Shin, Pharm.D.
The Ohio State University

The purpose of this poster presentation is to discuss the development of the Ohio State University Total Health and Wellness center (OSU THW), a nurse practitioner (NP) led interprofessional collaborative practice (IPCP) health care center that integrates mental health services into primary care. A major focus of the center is to improve the health outcomes of patients, families, and communities by supporting the development and implementation of an innovative IPCP model. This NP-led TEAMcare model is implemented with a collaborative team composed of highly functioning diverse health professionals, including family and psychiatric mental health nurse practitioners, registered nurse (RN) case managers, dietitians, mental health counselors, and social workers. TEAMcare is a care management intervention that integrates collaborative depression care with systematic chronic illness care and treat-to-target interventions designed to improve multiple conditions (diabetes, depression, and coronary heart disease). Key components of the intervention are a patient-centered focus, collaborative goal setting, practical care planning, and consistent targeted patient and multidisciplinary health care team management (McGregor et al., 2011). The NP-led IPCP allows health care professionals and students the opportunity to practice IPCP through the delivery of primary, secondary, and tertiary care to persons throughout the life span. The interprofessional team of health care providers emphasizes health promotion and wellness, regardless of the person's state of health, and focuses on the prevention and management of chronic diseases, the most common and costly of all health problems, affecting one out of every two individuals in the United States (CDC, 2009; Harris and Wallace, 2012). The OSU THW center serves as a site for clinical placement for nurse practitioner, nursing, pharmacy, social worker, and dietetic students. Students participate in weekly TEAMcare meetings in which the disciplines work together to develop treatment plans with input from patients. The weekly meeting is held via a conference call that allows online students an opportunity to be a part of the team. The distance students use telehealth in working with their patients to achieve the patient's treatment goals.

C.4
TRACKING THE WALTER SISULU UNIVERSITY (SOUTH AFRICA) MEDICAL GRADUATES—WHERE ARE THEY 5 YEARS AFTER GRADUATION?

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Background The scale and depth of the economic and social disparities in health care in South Africa is well documented. To address the issue of social responsiveness, principles such as recruitment from rural and underserved communities, integrated clinical training, and longitudinal rural rotations have been implemented in the physician training program at Walter Sisulu University (WSU). To date there has been no formal evaluation of the effect of these educational strategies on the social responsiveness of the WSU medical graduates.

Aim This paper presents the initial data from an ongoing study about the outcomes of teaching and learning strategies that seek to improve the social responsiveness of health care professionals in South Africa. It explores the career choices and the geographical location of the WSU medical graduates who are certified for independent practice.

Outcomes To date 1,423 doctors have graduated from the WSU program. Eighty-five percent are from rural areas of the Eastern Cape and Kwazulu Natal Provinces of South Africa, 10 percent from large cities, and 5 percent from overseas. Of those graduates, 931 have been certified for independent practice. Of those, 3.6 percent are deceased, 4.2 percent have emigrated, 16 percent are practicing in large cities, and 73 percent are practicing in rural areas of the Eastern Cape and Kwazulu Natal. Seventy-eight percent work within the public sector (either full-time or part-time), whereas 22 percent are in full-time private practice. Sixty percent are in general practice, whereas 35 percent have either specialized or are in specialist training programs. Internal medicine, pediatrics, obstetrics and gynecology, and general surgery are the most favored disciplines.

Conclusions Graduates of the WSU are being retained within the country and more importantly within the deprived rural areas. Most of the WSU graduates practice a primary care discipline. The WSU policy of recruiting locally and training locally has led to higher retention of primary care physicians in the rural areas.

C.5
EVALUATING THE IMPACT OF INTERPROFESSIONAL EDUCATION: MEASURING STUDENT ATTITUDES AND READINESS OUTCOMES RELATED TO HEALTH CARE DELIVERY IN A COMMUNITY-BASED INTERPROFESSIONAL EDUCATION (IPE) PROGRAM

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University of Missouri Kansas City (UMKC)

Background This project created an Interprofessional Collaborative Practice Model (IPCP) at two community-based urban clinics extending classroom IPE experiences. IPE is a growing area of interest in the health care professions, focused on roles and responsibilities, values and ethics, communication, and teamwork (IPEC Expert Panel et al., 2011). The project provided innovative opportunities, placing health professionals and graduate students from the UMKC's Schools of Nursing, Dentistry, and Pharmacy. The objective was improving health outcomes in patient-centered care through IPCP, which provided primary, preventative, and mental health care services to underserved populations. Both clinics are located in a health professional shortage area serving an urban population where 50 percent is living at or below 200 percent of the federal poverty level, and approximately 41 percent of patients are uninsured with 30 percent receiving Medicaid (RWJF, 2011).

Methods Data was acquired regarding students' attitudes and readiness about IPE, and how over time, those attitudes changed as a result of IPCP placement. The hypothesis was that attitudes and readiness become more positive following IPE experiences. A series of pre/post surveys was administered to student participants during semester-long clinical rotations. Pre/post tests included the Attitudes Toward Health Care Teams Scale, Readiness for Interprofessional Learning Scale, Team Skills Scale, and Cultural Competence Assessment with the Team Fitness Test added post-test. Comparison data were analyzed between the pre/post test results.

Results Collected data measured the effectiveness of the IPE activities that resulted in team informed care decisions regarding vulnerable patient populations. A secondary outcome was of improved communication. The project created a platform for open and honest communication and building a culture of trust. This affected both health delivery and desired patient outcomes.

Conclusions This project is ongoing, and survey outcomes will inform future IPE curriculum. Assessment of the survey data will assist additional

curricular content for this cohort, with strategies in preparing future leaders for the health care arena.

Key words Interprofessional education, cultural competence, underserved and vulnerable populations

Learning objectives:

1. Discuss the importance of establishing IP clinical team opportunities for developing IPE community engagement.
2. Develop effective clinical student preparation prior to participation in an IPE clinical setting.
3. Use data from IP clinical teams regarding interprofessional communication as a foundation for improved patient outcomes and health care delivery.
4. Discuss the importance of team preparation in support of the new professionalism in community health clinics.

C.6
NUTRITION EDUCATION IN THE MEDICAL SCHOOL: WHERE DO WE STAND?

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[3]Boston University School of Medicine (BUSM), and
[4]Student Nutrition Awareness & Action Council (SNAAC), BUSM

Most common causes of death in the United States are preventable and related to nutrition. A nutrition vertical integration group (VIG) consisting of faculty (e.g., educators, M.D., R.D.) and students was created in 2007 to assess the curriculum and develop a sustainable model of nutrition medicine education.

The initial objectives were to (1) assess the status of nutrition education in the medical school curriculum and identify areas for improvement, (2) enhance nutrition-related clinical skills of students and faculty, and (3) identify opportunities in postgraduate training at Boston University (BU).

The nutrition VIG developed an educational plan using a novel student-centered model of nutrition medicine education that focuses on mentored

medical student extracurricular activities to develop, evaluate, and sustain nutrition medicine education. Boston University School of Medicine (BUSM) uses a team-based approach focusing on case-based learning in the classroom, practice-based learning in clinics, and extracurricular activities.

Student Nutrition Awareness & Action Council (SNAAC) participants are paired with dietetic interns from Sargent College, conduct surveys, organize seminars, develop training material, and participate in multidisciplinary rotations, community outreach, and advocacy. As a result, medical students have received local and national awards. The medical school course directors indicate that most preclerkship nutrition objectives adopted by the nutrition VIG (the National Heart, Lung, and Blood Institute objectives) are met by the end of the 4-year curriculum, and student U.S. Medical Licensing Examination (USMLE) scores in nutrition have improved. However, students still feel ill prepared to advise future patients on nutrition.

SNAAC is pivotal to the development of professional team work, educational material, and sustainability of the nutrition VIG's goals. There is a need to better define priority areas and competencies in nutrition medicine, especially during the clerkship years. Medical students can play a critical role as nutrition advocates and agents of change across medical schools, while national standards are being developed with the New Balance Foundation.

C.7
THE HEALTH RESOURCES AND SERVICES ADMINISTRATION CHANNELS PROJECT (COMMUNITY, HEALTH, ACCESS, NETWORK, NAVIGATE, LEADERSHIP, SERVICE)

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Background Educating health professionals to deliver safe, patient-centered care in a fast-paced, ever-changing health care milieu requires collaborative teamwork that begins in the classroom and translates to the community. While, fundamentally, it is well understood that team-based care is good for patients, there is a paucity of literature looking at the evaluative effectiveness that collaborative teamwork has, and its future impacts, as we navigate through the daunting land of health care reform.

Goal The Health Resources and Services Administration (UD7-NEPQR) CHANNELS (Community, Health, Access, Network, Navigate, Leadership, Service) Project's goal is to develop nurse leaders and interprofessional teams of students and health professionals to improve outcomes for Maine's immigrant and refugee communities.

Methods CHANNELS is implementing a multifaceted approach that includes the following:

1. Educational activities: Integrated curriculum for eight disciplines in collaborative learning environments
2. Training activities: Expanding a community health outreach worker (CHOW) navigation model, development and rollout of population-focused nurse leader institute
3. Service delivery: Opening a community-based IPC clinic at a local housing authority; conducting a targeted oral health screening, prevention, and treatment program; and community-based health promotion programming

Methods and evaluation The CHANNELS team has developed and begun implementation of a comprehensive evaluation plan. The following program-specific innovations will be measured using reliable and valid tools:

- Educating all health professions students in an IPE environment to cultural sensitivity and health equity
- Introducing patient navigation in the form of CHOW's as critical members of the interprofessional team
- The effects of nurse-led care in community-based population health.

Additionally, all UD7 evaluators are working in concert to develop a standardized evaluation to measure the difference that collaborative team-based care aligned with the Institute for Healthcare Improvement's Triple Aims (population outcomes, patient-centered care, lower costs) has on this population of interest.

Summary To fully capture and embrace interprofessional care as best clinical practice, we must embrace IPE as best educational practice. While discipline-specific formative and summative assessment remains important for developing a practice ready clinician, IPE is an essential integrated weave that addresses (1) values and ethics, (2) roles and responsibilities for team-based care, (3) interprofessional communication, and (4) team-based care and collaborative leadership. The CHANNELS Project brings interprofessional education and interprofessional collaboration (IPE and IPC) from classroom to community by embracing our community of interest the immigrant and refugee communities of Portland, Maine, as natural partners on the collaborative health team.

C.8
EVALUATING COMPETENCIES IN IPE

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Purpose To describe existing assessment methods and new measures used to evaluate student competencies and outcomes of a technology-enhanced IPE program for advanced nurse practitioners (ANPs), family nurse practitioners (FNPs), and dental students focused on the oral-systemic health connection.

Background National and local oral health data indicate disparities exist. Improved oral health care and integration of it with primary health care are critical. The oral-systemic health connection is poorly understood and not reinforced in health professions education. IPE is needed to set the expectation that collaborative practice among all health care disciplines is the standard. In this project, technology supports the delivery of the IPE curriculum focused on the oral-systemic health connection to ANP/FNP and dental students and provides the foundation for documenting clinical care and communication via an electronic health record.

Methods The first portion of the curriculum focuses on IPE core competencies and is delivered in face-to-face seminars along with online, Web-based peer-to-peer problem-based learning exercises for ANP/FNP students in their first year of course work and to sophomore dental students. The Web-based *Smiles for Life: A National Oral Health Curriculum* is also used. Pre/post test measures collected in this phase and at the end of the program include

- A team-developed knowledge assessment questionnaire based on the core competencies of IPE
- Readiness for Interprofessional Learning Scale (McFadyen et al., 2005)
- TeamSTEPPS Teamwork Attitudes Questionnaire (American Institutes for Research, 2008)
- Self-Efficacy in Functioning as a Member of an Interdisciplinary Team Scale (team developed)

Students also take an integrated interdisciplinary physical health assessment course together and work in interdisciplinary teams to practice their skills. Peer evaluation of team member effectiveness is assessed at the end of the course using the Team Member Effectiveness Questionnaire (team developed). Each team member (groups of three to four members)

rates themselves and other members of their team; feedback is provided in aggregate form. Physical assessment skills and competencies in oral communication are evaluated via the Standardized Patient (SP) Program, which uses highly trained educators to portray patients with a wide variety of symptoms and illnesses. Students perform physical examinations on SPs, including an extensive oral, head, and neck exam and take a medical history. Faculty evaluate students' performance in conducting the exams using the Skill in Conducting a Head-to-Toe Checklist, developed by School of Nursing faculty. SPs also give detailed feedback to each student. At the end of each course, students complete standard university course evaluations. They also complete the team-developed Student Satisfaction with the IPE Experience Scale.

ANP/FNP students begin clinical rotations during their second year and document patient health histories, medications, physical assessment findings, and written consultations using the Typhon Group Nurse Practitioner Student Tracking System, LCC; data on dental assessments performed, dental problems identified (ICD-9 codes), and dental referrals made are collected. Oral, written, an electronic presentation of clinical data are assessed by ANP/FNP faculty using the Faculty Evaluation of ANP/FNP Student Clinical Performance in Practice Sites Form (team developed). Additional variables and their measures include

- Number of student practicum experiences in an interprofessional environment in federally funded health care settings and with underserved populations—Typhon Tracking System
- Bureau of Health Professions annual performance data—Office of Student Services data base and Typhon

Results Data from a comparison cohort that did not participate in the program were collected in February 2013, and analysis is in process. Data from the first cohort to participate in the IPE Program (IPE Seminar and Integrated Physical Assessment courses) were collected in May and August 2013 and are currently being entered and 100 percent verified. Data on evaluation of program outcomes and the psychometric properties of scales used will be reported as will recommendations for future methods of assessing competencies in interprofessional education/learning.

Conclusion This technology-enhanced IPE program has the potential to increase quality, access to care, and health care delivery. Our team developed new tools to evaluate competencies of ANP/FNP and dental students. All measures used are in the public domain, are easy to integrate into IPE education, and assess competencies at the individual, team, and organizational levels. The effects of the program and its evaluation methods may

lead to a change in practice patterns to include a thorough oral health assessment that will contribute to recognition of oral-systemic health problems, patient education on the importance of care and need to access oral care, and collaborative management of chronic oral-systemic diseases by nurses and dentists.

C.9
INCREASING THE IMPACT OF ACADEMIC INSTITUTIONS ON THE DEVELOPMENT OF EQUITABLE HEALTH SYSTEMS THROUGH A SOCIAL ACCOUNTABILITY EVALUATION FRAMEWORK

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Training for Health Equity Network (THEnet)

While reducing inequities is complex and requires the involvement of many stakeholders, health professional schools (HPSs) can—and should—play a central role in attaining universal health coverage. HPSs produce the health care providers, scientists, policy makers, and managers that perform the research and interventions that health systems need. They also influence the values, worldview, behaviors, and actions of its graduates with potentially wide-ranging effects throughout the health system. However, few institutions—in high- or low-income countries—hold themselves accountable for producing outcomes aligned with health workforce, health, and health system needs.

Additional research on how to maximize the positive contribution of HPSs to health system development is needed. A small group of HPSs in high- and low-income countries focusing on underserved populations and striving toward greater social accountability founded the Training for Health Equity Network (THEnet) in 2008 to address this need. These schools share a commitment to address the causes of health inequity and support the development of primary care–oriented health systems in their respective regions. Community engagement, hardwired into all aspects of their work, is at the heart of their success.

The schools jointly developed THEnet's Evaluation Framework for Socially Accountable Health Professional Education. It identifies key factors affecting a school's ability to positively influence health outcomes and health systems performance, and develops ways to measure them across institutions and contexts. The Framework, which is context sensitive, includes key components, each linked to a series of aspirational statements, indicators, and suggested measurement tools. It was successfully implemented in different contexts. By unpacking how academic institutions can impact health system development, the Framework opens up promising space for

cross-disciplinary research on how HPSs can and must transform to speed up progress toward greater health equity and universal health coverage.

Key terms Equity, social accountability of health professional schools, evaluation of academic impact, innovation, academic research partnership

C.10
TRANSDISCIPLINARY HEALTH PROFESSIONAL EDUCATION: ASSESSING INTERPROFESSIONAL COMPETENCIES INTO ALCOHOL AND OTHER DRUG USE SCREENING

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Purpose The purpose is to present two grants funded by the Health Resources and Services Administration (HRSA) that assess competencies in interprofessional education and team-based care focusing on the patient-centered problem of alcohol and other drug use. Team-based care, communication across discipline roles, use of simulations, multiple technologies (i.e., Google Hangout, Articulate, Moodle, WebEx, and REDCap), and online user-friendly access were emphasized. Challenges and opportunities to integrate interprofessional education to improve the competencies of health care students and practitioners resulted in more interprofessional understanding and better patient care.

Significance Health care professionals are key providers who can perform an easy, evidence-based practice screen for alcohol and other drug use with all patients across settings. Today's patients are admitted to hospitals with multiple health conditions that are complicated by substance use. More than 23 million individuals in the United States are identified as needing treatment for alcohol and/or other drug problems, however only one in five receive treatment. The American College of Surgeons requires Level I and II Trauma Centers to screen for alcohol use during assessments, and the U.S. Preventive Services Task Force recommends that clinicians screen for and provide brief counseling interventions to reduce alcohol misuse. The University of Pittsburgh School of Nursing and the Institute for Research, Education, and Training in Addictions developed an innovative transdisciplinary educational curriculum focusing on interprofessional practice for students and working health care professionals. IPCP teams were composed of students in nurse anesthesia, dental students and residents, and dental hygiene; and health care professionals in nursing, public health,

and behavioral health. The IPCP provides 8 face-to-face and online hours of modules on substance use, interactive case studies designed to include IPCP content, interprofessional dialogues with site cases, and focus groups. The goal is to improve the capacity of health care providers to work interprofessionally through learning the evidence-based practice of screening, brief intervention, and referral to treatment. Free continuing education units are also provided.

Evaluation and outcomes Using pre- and postintervention survey design, data are collected at five time points. Assessment questionnaires include

- Interdisciplinary Education Perception Scale,
- Readiness for Interprofessional Learning Scale,
- Alcohol and Drug Perception Questionnaires, and
- Client Satisfaction Scales.

Data analysis of a sample of 100 is in progress.

Implications for practice Substance use is a worldwide public health priority. Annually, 2.5 million people die from the harmful use of alcohol with resulting accidents, violent behavior, and other societal costs. Through IPCP, health care professionals can better understand their roles in substance use risk reduction through intercollaborative teamwork.

C.11
HEALTH INFORMATICS AS A BRIDGE TO THE UNDERSERVED: PRIMARY CARE STRATEGY

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In the Institute of Medicine (IOM) workshop summary, Establishing Transdisciplinary Professionalism for Improving Health Outcomes, individual experts characterized transdisciplinary professionalism as "a shared social contract that ensures multiple health disciplines, working in concert, are worthy of the trust of patients and the public" (IOM, 2014, p. 1). Texas Woman's University (TWU) has used informatics and technological advances in health care to create an interprofessional cultural change in the education of graduate students in nursing, physical therapy, occupational therapy, and nutrition science. Historically at TWU, students have been educated primarily within their own discipline. In the HRSA grant project, informatics combined with recent health-promotion technologies were used to develop four new courses and revise two existing courses to

lead the students from data to information to knowledge to collaboration across professions.

Improvements in population health outcomes TWU created interdisciplinary educational cases focused on implementation of informatics and other health care technologies to improve rural and primary care health outcomes. The first assessment, Tiny Town, Texas, is the story of a real clinic in underserved, rural Texas where the sole provider in a radius of 40 miles is an FNP. This FNP was available to the interprofessional teams for interview and visits to Tiny Town. Doctoral students were divided into interprofessional teams who conducted assessments of the micro-, meso-, and macrosystem for Tiny Town, analyzed the workflow of the clinic, assessed patient needs, determined current and future revenue sources, and provided plans to implement services. The first interprofessional cohort to work with the Tiny Town case consisted of 24 doctor of physical therapy and doctor of nursing practice students, with reported change in the value of interprofessional collaboration increasing from 16.7 percent to 41.7 percent. Students indicated that, "A true concept of team was attained with this project." Another student stated, "I have a better understanding of how nurse practitioners can work together with physical therapists in a rural setting."

Value of services at lower costs Cost–benefit analyses of telehealth, electronic health records, physical therapy services, and other health technologies were provided, and project management plans created. The interprofessional teams determined how they would measure possible changes in patient care and assess aggregate population health outcomes. Individual student perceptions were examined to determine the value attained from participation in the interprofessional team and future accountability within each professional's practice. Student ratings indicated that their knowledge of interprofessional practice increased from a mean of 2.4 to 3.9 on a 5-point scale. Tiny Town, Texas, provided a framework for facilitating interprofessional teams of students to determine how to measure population health outcomes, select technological strategies for improvement of care, and perform cost/benefit analyses.

Better patient care with interprofessional collaboration The second assessment within the framework of an interprofessional class focused on technology-enhanced health promotion and telemedicine. This case is the true story of a severely injured fireman's rehabilitation from lengthy hospitalization through attainment of his personal goal to successfully complete an Iron Man competition. Interprofessional teams of students (physical therapy, nursing, health science management, occupational therapy, and

nutrition science) assessed and analyzed the patient's environment. Students applied current technologies and created plans of care, which included selection of the best technological infrastructure to facilitate optimal recovery from injury. At the end of this course, evaluations assess how the students perceive these experiences will affect their future practice. Peer assessment is addressed as faculty members review the student evaluations separately and then again collectively to analyze student understanding of interprofessional collaboration, including implications for curriculum revision.

Preparing learners, faculty, and practitioners with a "new professionalism" Another educational strategy provided students with accelerometer/pedometer devices. Students and faculty documented their own and patient perceptions of these devices. Peer student teams have participated in assessing consumer health care technologies in order to determine which types of applications and education are preferred among the patient populations. Results from faculty and doctoral student research projects will be presented. The "new professionalism" was expressed by one student as, "The courses helped me improve communication with other health care professionals, save time and effort, and improve quality of care. I will really try to create more efficient treatment sessions." Trust building was addressed by one student as, "I know who to contact to ask how to make systems run more smoothly. I can help patients trust the system and use technology to improve their own health." The student and faculty practitioners who participate in TWU *Health Informatics as a Bridge to the Underserved: Primary Care Strategy* exemplify the new professionalism through the skills, understanding, and accountability attained in working as part of interdisciplinary teams solving real-life patient situations.

C.12
ASSESSMENT OF BLENDED LEARNING: TEACHING INTERPROFESSIONAL COLLABORATION TO A HYBRID OF GRADUATE AND UNDERGRADUATE STUDENTS FROM MULTIPLE PROFESSIONAL PROGRAMS USING A WEB-ENHANCED MODEL OF IPE AND TEAMSTEPPS

Susan Schmidt, Ph.D., Judi Godsey, M.S.N., R.N., Lisa Niehaus, M.S.N., R.N., and Debra VanKuiken, Ph.D., R.N.
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Xavier University (XU) launched an IPE program incorporating nine health care professions within the College of Social Sciences, Health, and Education (CSSHE) in Fall 2012. Professional programs included nursing,

athletic training, radiation technology, occupational therapy, health service administration, mental health counseling, special education, doctorate of psychology, and social work. Faculty assessed best practices for preparing undergraduate and graduate students who would be effectively trained upon graduation to collaborate with other professions to improve population health outcomes. Teaching and learning experiences were designed using a technology-rich environment that promotes the development of competent, interprofessional, health care leaders. A comprehensive program of study guided by the four core interprofessional collaboration domains and 38 related competencies outlined by the Interprofessional Education Collaborative (IPEC) was developed (IPEC Expert Panel et al., 2011). The program includes a required 1-credit-hour clinical course, *Applied Interprofessional Collaboration*. This Web-enhanced course uses clinical simulations, Blackboard discussion groups/exercises, case studies, and panel presentations that require students to actively apply the principles of interprofessional collaboration. Eighty-three graduate and undergraduate students and 16 faculty from 9 professional programs took part in the new *Applied Interprofessional Collaboration* course. A variety of professional programs and degree levels was chosen because it mimics the backgrounds and educational preparation of the health professions workforce. Assessment of the learning activities requiring active student collaboration (simulations and case studies) were found to produce "thoughtful learning." This pedagogy was effective for teaching the significant roles and contributions of the health care team in the provision of safe health care delivery. Student evaluations included comments, such as "working with an interprofessional team was very helpful to get many different perspectives" and "I enjoyed the collaboration with individuals from other fields (provided insight)." Students' evaluations of their team's effectiveness (using the TeamSTEPPS Team Performance Observation Tool) revealed high ratings in the areas of team structure, leadership, communication, situation monitoring, and mutual support following simulation exercises.

Faculty development included sending nine faculty members to TeamSTEPPS training. These master trainers subsequently trained 19 additional CSSHE faculty, resulting in a total of 28 faculty from 9 programs certified as master TeamSTEPPS trainers prepared to lead IPE at XU. It is believed this next generation of health care providers will deliver coordinated patient care resulting in improved health outcomes at lower cost. Plans are to continue this program and to conduct longitudinal evaluations of graduates regarding their experiences with interprofessional collaboration and the effect of the IPE program at XU following degree completion and employment.

C.13
EVALUATING THE CIHLC COLLABORATIVE LEADERSHIP EDUCATION PROGRAM

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Université Laval

The Canadian Interprofessional Health Leadership Collaborative (CIHLC) was chosen as one of the four university collaboratives selected by the IOM Board on Global Health to develop leadership programs based on the recommendations of the Lancet commission report on health professional education. The CIHLC is developing a globally adaptable, evidence-based collaborative leadership program through which emerging leaders will develop the capacity for system transformation for context-adaptable, community-engaged, socially accountable improvements in health. The first pilot offering of the program is anticipated in 2014.

The program is based on a systematic review of scientific and gray literature on the concept of collaborative leadership for health systems change, a review of educational programs for the development of collaborative leaders in health care, interviews with key thought leaders in the health and education fields, and an environmental scan of existing programs for the development of collaborative leaders. This review enabled the CIHLC to identify the practices that are required for the collaborative leader of the future. Blended and service learning, principles of enactment, leadership competencies, and ongoing evaluation are critical elements of the program. The program is grounded in the principles of social accountability and community engagement and is embedded in a context of interprofessional and relationship-centered care. This poster provides an overview of how the program will be evaluated.

Using principles of developmental evaluation and the Kirkpatrick framework for the evaluation of professional education, the evaluation of the pilot will provide information on the quality, relevance, and utility of the program and its impact on learners, communities, and health systems.

Mixed methods will be used to ensure that multiple lines of evidence from key stakeholders are brought forward to improve the program, demonstrate how it adds value, and inform future directions. These methods will include evaluation coach check-ins, postmodule surveys (learners and faculty), post-intersession focus groups (learners and mentors), postprogram interviews, Web analytics, reflective journaling, a community engagement survey, and sponsor interviews. The overall evaluation focus will be on quality, relevance, and usefulness; the progress of the action project; the effectiveness of the education program; and the successes, lessons learned, and future directions of the CIHLC Collaborative Health Leadership Program.

The knowledge acquired through the evaluation and other knowledge development work is expected to contribute to the evolving conceptualizations of collaborative leadership, inform pedagogical practices for transformational learning, and provide tools to determine the effect of professional education and collaborative leadership on individuals, communities, and health systems.

C.14
STUDENT PERCEPTIONS OF PHYSICIAN-PHARMACIST INTERPROFESSIONAL CLINICAL EDUCATION (SPICE): INSTRUMENT DEVELOPMENT AND VALIDATION

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Background The IOM published its first report in 1972, which focused on leveraging teamwork to improve health care delivery (IOM, 1972). Contemporary IOM reports have continued promoting team-based health care delivery as the future of health professional education and as a potential answer to looming health care delivery and affordability problems (IOM, 2003, 2008). While these government-sponsored reports raised the stature of IPE, passage of the Patient Protection and Affordable Care Act, which included provisions for IPE, served to cement its importance in place (U.S. Congress, 2010).

While health care reform was being debated, the professional associations representing American colleges and schools of dentistry, medicine, nursing, pharmacy, and public health formed IPEC. IPEC's expert panel report, published in 2011, has been widely adopted by educators as a framework for IPE initiatives (IPEC Expert Panel et al., 2011). Simultaneously, select accrediting bodies have begun incorporating robust IPE language into their standards (Zorek and Raehl, 2013). The Liaison Committee for Medical Education, for example, created a new IPE standard that took effect on July 1, 2013 (Liaison Committee for Medical Education, 2012).

This confluence of governmental, professional, and regulatory interest in IPE raises important challenges for educators within the health professions. Now that the need for IPE has been clearly established and accrediting bodies are beginning to demand accountability from their constituents, educators face the challenge of assessing IPE initiatives to demonstrate compliance. In 2012, the Accreditation Council for Pharmacy Education held an invitational conference that focused on, among other topics, IPE and assessment (Zellmer et al., 2013b). Conference presenters and attendees highlighted the dearth of valid and reliable IPE assessment tools, as well as the need for the academy to focus on their creation (Zellmer et al., 2013a). The Student Perceptions of Physician-Pharmacist Interprofessional Clinical Education (SPICE) instrument was created in an effort to address this important need (Fike et al., 2013).

Methods Faculty members from the Texas Tech University Health Sciences Center Schools of Medicine and Pharmacy generated a pool of 20 items for the SPICE instrument, envisioning a three-factor (i.e., subscale) structure using a 5-point Likert-type response scale (1 = strongly disagree, 5 = strongly agree). Fifteen of the items were original, and five items were grounded in the Scale of Attitudes Toward Physician-Pharmacist Collaboration (SATP^{2}C) (Van Winkle et al., 2011). A sample of 179 medical and pharmacy students completed the instrument. One hundred thirty-three students completed the instrument on a one-time basis. To evaluate the instrument's sensitivity to change, the remaining 46 students were recruited to participate in an interprofessional collaborative practice clinic and were administered the instrument before and after participation. Psychometric properties of the 20-item instrument, including reliability and construct validity, were assessed using confirmatory factor analysis (CFA). The CFA process entailed a priori model specification and evaluated the model based on a variety of statistical indices, including chi-square (X^2, desired value [dv] $p > .05$), ratio of chi-square to degrees of freedom (X^2/df, dv <2), comparative fit index (CFI, dv >.95), and root mean square error of approximation (RMSEA, dv <.06). Parameter estimates including correlation coefficients (dv <.85) and regression weights (dv >.7) were calculated to

determine the relationships of variables within the model. Cronbach's alpha (dv >.7) and composite reliabilities (dv >.6) were calculated to determine instrument reliability.

Initial CFA models based on the 20-item instrument revealed limitations, leading to development of a refined 10-item, three-factor instrument (see Table C-1). The three factors making up the revised structure included Interprofessional Teamwork and Team-Based Practice (Table C-1: items 1, 5, 6, 8, 9, and 10), Roles/Responsibilities for Collaborative Practice (items 2 and 7), and Patient Outcomes from Collaborative Practice (items 3 and 4). Confirmatory factor analysis of the revised instrument was completed.

TABLE C-1 The Student Perceptions of Physician-Pharmacist Interprofessional Clinical Education (SPICE) Instrument

1	Working with another discipline of students enhances my education.
2	My role within the interdisciplinary team is clearly defined.
3	Health outcomes are improved when patients are treated by a team of professionals from different disciplines.
4	Patient satisfaction is improved when patients are treated by a team of professionals from different disciplines.
5	Participating in educational experiences with another discipline of students enhances my future ability to work on an interdisciplinary team.
6	All health professions students should be educated to establish collaborative relationships with members from other disciplines.
7	I understand the roles of other professionals within the interdisciplinary team.
8	Clinical rotations are the ideal place within their respective curricula for medical and pharmacy students to interact.
9	Physicians and pharmacists should collaborate in teams.
10	During their education, medical and pharmacy students should be involved in teamwork in order to understand their respective roles.

NOTE: Responses based on a five-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree).
Composite reliabilities for the Teamwork and Patient Outcomes factors were .851 and .726, respectively. The composite reliability for the Roles/Responsibilities factor was .582, which was marginally below the recommended standard. Administration of the instrument to students before and after the IPE experience demonstrated significant gains in perception scores on all three factors (Teamwork, $p = .003$; Roles/Responsibilities, $p < .001$; Patient Outcomes, $p < .001$).

Results The sample included broad representation by academic discipline (55 percent medicine, 45 percent pharmacy), year in academic program (54 percent third year, 46 percent fourth year), and gender (45 percent female, 55 percent male). The 10-item, three-factor model demonstrated excellent goodness-of-fit characteristics as evidenced by X^2 ($p = .183$), X^2/df (1.22), CFI (.987), and RMSEA (.036). Factor correlations were acceptable, ranging from .31 to .73, providing support for discriminant validity. The majority of regression weights for the 10 items were favorable. Cronbach's alpha for the 10-item instrument was .837, demonstrating good reliability.

Conclusions This study detailed the development and validation of the SPICE instrument, a novel tool intended to assess the impact of IPE experiences on medical and pharmacy students. The SPICE instrument consists of 10 items and three factors devoted to interprofessional teamwork and team-based practice, roles/responsibilities for collaborative practice, and patient outcomes from collaborative practice. This study provided evidence of the soundness of the SPICE instrument's psychometric properties, as well as its sensitivity to change. It may be useful to educational researchers and administrators in assessing the impact of IPE experiences on medical and pharmacy students. Future studies are required to demonstrate the external validity and reliability of the SPICE instrument. Finally, refinements to the instrument, such as the addition of new items to the two factors composed of only two items and elimination of profession-specific language may improve its psychometric properties and broaden its applicability to all health professions.

REFERENCES

American Institutes for Research. 2008. *TeamSTEPPS: Teamwork attitudes questionnaire manual*. Washington, DC: American Institutes for Research.

Bass, B. M., and B. J. Avolio. 1994. *Improving organizational effectiveness through transformational leadership*. Thousand Oaks, CA: Sage Publications.

CDC (Centers for Disease Control and Prevention). 2009. *Chronic diseases. The power to prevent, the call to control: At a glance 2009*. Atlanta, GA: National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention.

Fike, D. S., J. A. Zorek, A. A. MacLaughlin, M. Samiuddin, R. B. Young, and E. J. MacLaughlin. 2013. Development and validation of the student perceptions of physician-pharmacist interprofessional clinical education (SPICE) instrument. *American Journal of Pharmaceutical Education* 77(9):190.

Gumusluoglu, L., and A. Ilsev. 2009. Tranformational leadership, creativity and organizational innovation. *Journal of Business Research* 62:461-473.

Harris, J. R., and R. B. Wallace. 2012. The Institute of Medicine's new report on living well with chronic illness. *Preventing Chronic Disease* 9:120126.

IOM (Institute of Medicine). 1972. *Educating for the health team: Report of the conference on the interrelationships of educational programs for health professionals*. Washington, DC: National Academy Press.

IOM. 2003. *Health professions education: A bridge to quality.* Washington, DC: The National Academies Press.

IOM. 2008. *Retooling for an aging America: Building the health care workforce*. Washington, DC: The National Academies Press.

IOM. 2014. *Establishing transdisciplinary professionalism for improving health outcomes: Workshop summary*. Washington, DC: The National Academies Press.

IPEC (Interprofessional Education Collaborative) Expert Panel, American Association of Colleges of Pharmacy, and American Association of Colleges of Osteopathic Medicine. 2011. *Core competencies for interprofessional collaborative practice: Report of an expert panel*. Washington, DC: Interprofessional Education Collaborative.

Liaison Committee for Medical Education. 2012. *Proposed new accreditation standard ED-19-A*. http://www.lcme.org/new_standard_ed-19-a.htm (accessed August 23, 2013).

McFadyen, A. K., V. Webster, K. Strachan, E. Figgins, H. Brown, and J. McKechnie. 2005. The readiness for interprofessional learning scale: A possible more stable sub-scale model for the original version of RIPLS. *Journal of Interprofessional Care* 19(6):595-603.

McGregor, M., E. H. Lin, and W. J. Katon. 2011. Teamcare: An integrated multicondition collaborative care program for chronic illnesses and depression. *Journal of Ambulatory Care Management* 34(2):152-162.

RWJF (Robert Wood Johnson Foundation). 2011. *County health rankings & roadmaps*. http://www.countyhealthrankings.org (accessed May 20, 2014).

U.S. Congress, House of Representatives, House Office of the Legislative Council. 2010. *Compilation of Patient Protection and Affordable Care Act including patient protection and Affordable Care Act health-related portions of the health care and education reconciliation act of 2010, as amended through May 1, 2010*. 22nd Congr., 2d Sess. May 24.

Van Winkle, L. J., N. Fjortoft, and M. Hojat. 2011. Validation of an instrument to measure pharmacy and medical students' attitudes toward physician-pharmacist collaboration. *American Journal of Pharmaceutical Education* 75(9):178.

Zellmer, W. A., R. S. Beardsley, and P. H. Vlasses. 2013a. Recommendations for the next generation of accreditation standards for doctor of pharmacy education. *American Journal of Pharmaceutical Education* 77(3):45.

Zellmer, W. A., P. H. Vlasses, and R. S. Beardsley. 2013b. Summary of the ACPE consensus conference on advancing quality in pharmacy education. *American Journal of Pharmaceutical Education* 77(3):44.

Zorek, J., and C. Raehl. 2013. Interprofessional education accreditation standards in the USA: A comparative analysis. *Journal of Interprofessional Care* 27(2):123-130.

Appendix D

Summary of Updates from the Innovation Collaboratives

The Institute of Medicine's (IOM's) Global Forum on Innovation in Health Professional Education is complemented by the work of four university- or foundation-based collaborations in Canada, India, South Africa, and Uganda. Known as innovation collaboratives (ICs), these country-based collaborations characterize innovators in health professional education through their demonstration projects that require different health professional schools to work together toward a common goal. The four ICs were selected through a competitive application process. By being selected, these collaboratives receive certain benefits and opportunities related to the forum that include

- The appointment of one innovation collaborative representative to the Global Forum,
- Time on each workshop agenda to showcase and discuss aspects of the IC's project with leading health interprofessional educators and funding organizations,
- Written documentation of each collaborative's progress summarized in the Global Forum workshop summaries published by the National Academies Press, and
- Remote participation in Global Forum workshops through a video feed to the collaborative's home site.

Each collaborative is undertaking a different 2-year program of innovative curricular and institutional development that specifically responds to one of the recommendations in the Lancet Commission report or the

2011 IOM report *The Future of Nursing*—reports that inspired the establishment of the Global Forum. These on-the-ground innovations involve a substantial and coordinated effort among at least three partnered schools (a medical school, a nursing school, and a public health school). As ad hoc activities of the Global Forum, the ICs are amplifying the process of reevaluating health professional education globally so it can be done more efficiently and effectively, and it is hoped it will increase capacity for teamwork and health systems leadership. The work of the collaboratives is detailed below.

CANADA
PROGRESS REPORT FOR THE INSTITUTE OF MEDICINE

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Introduction

The Canadian Interprofessional Health Leadership Collaborative (CIHLC) is a multi-institutional and interprofessional partnership whose goal is to develop, implement, evaluate, and disseminate an evidence-based program in collaborative leadership that builds capacity for health systems transformation. The CIHLC work is grounded in the principles of social accountability and community engagement and is embedded in a context of interprofessional and relationship-centered care. The program will be targeted at emerging health care leaders who are in positions that enable them to create sustainable change with their communities.

The CIHLC lead organization is the University of Toronto partnered with the University of British Columbia, the Northern Ontario School of Medicine, Queen's University, and Université Laval. The project is supported by the five universities as well as the Ontario Ministry of Health and Long-Term Care (MOHLTC).

In the past year, CIHLC investigators completed the foundational research to understand the concept of collaborative leadership and design an educational program to develop collaborative leaders. The research involved

- A review of scientific and gray literature on the concept of collaborative leadership for health systems change,
- A review of educational programs for the development of collaborative leaders in health care,
- An environmental scan of existing programs for the development of collaborative leaders, and

- The completion of key informant interviews with thought leaders in health and education.

Across these four streams of research, the unique elements of collaborative leadership (e.g., transformational leadership, social accountability, collaborative decision making) were identified. In addition, there was found to be broad consensus that collaborative leadership is needed to support transformational system change within the health system to better meet the needs of patients, care providers, communities, and health system sustainability.

Through the foundational research, the CIHLC discovered that Canada contained a small number of leading collaborative leadership education programs for health care professionals. To reduce system redundancy and enhance existing opportunities, the CIHLC decided to partner with the University Health Network's (UHN's) Collaborative Change Leadership (CCL) Program for the 2014–2015 cohort to offer and evaluate an advanced program aimed at senior and high-potential leaders in health care and health education. This Integrated CCL Program 2014–2015 (the program) will be the CIHLC proof of concept.

Over 9 months (May 2013 to December 2013), the CIHLC

- Designed the CIHLC education program and Capstone Project components;
- Partnered with the CCL Program to create the Integrated CCL Program 2014–2015;
- Commenced recruitment of learners for the program through email blasts, website advertising, and targeted emailing of eligible individuals and organizations by members from the five partner universities and the UHN partners;
- Co-developed and implemented a recruitment and communication strategy for the 2014–2015 program, including the launch of a website and brochure;
- Begun to develop the modules for in-class and online learning; and
- Conducted a process evaluation of the CIHLC project to ensure that next steps are conducted efficiently and effectively.

The CIHLC in conjunction with the CCL is in the process of creating

- An Integrated CCL Program curriculum for the 2014–2015 cohort,
- A Learning Management System (LMS) for program delivery,
- A knowledge dissemination and knowledge transfer strategy for CIHLC scholarship, and
- An evaluation framework to measure program quality and impact.

Key Developments: May 2013 to December 2013

Design of the CIHLC-CCL Integrated Program

Through an iterative process the CIHLC in partnership with the UHN's CCL Program has designed the Integrated CCL Program for 2014–2015. The Program targets senior and high-potential leaders in health care and health education who have completed general leadership courses and are looking for advanced specialized training in collaborate leadership founded on community engagement and interprofessional practice. The Program combines face-to-face and online learning, and includes a Capstone Project.

Grounded in leadership, change and social accountability theories, processes, and practices, this Program is designed for leaders who are driven to engage communities in a meaningful way and to create and sustain system changes that enhance the health of underserved populations. The Capstone Project teaches learners to develop, implement and evaluate a community-centered project that meets the needs of an underserved priority population, which includes frail elderly, aboriginal peoples, mental health, noncommunicable diseases/chronic illness, youth and women, and lower socioeconomic status. The focus of the Project is on, but is not limited to, interprofessional care and education, quality and safety, and patient/family/community-centered care.

Feedback from learners participating in the 2014–2015 cohort will ensure that the modules continue to evolve to maximize quality and impact.

Learning Management System (LMS) for Program Delivery

Taking into account the various modalities of course delivery and learner needs, the CIHLC has organized the course structure through the Blackboard LMS. This multilingual, internationally available platform will allow the Integrated CCL Program 2014–2015 to provide distance education through online tools such as webinars, act as a depository for multimedia and interactive resources for the learners, and provide online assessment tools for educators.

Knowledge Dissemination (KD) and Knowledge Transfer (KT) Strategy

The CIHLC has developed a comprehensive KD and KT strategy and has established a wide online and offline presence through various social media outlets and print. Currently, information about the Integrated CCL Program can be obtained through press releases (http://cihlc.ca/news), Facebook (www.facebook.com/cihlc), LinkedIn (http://www.linkedin.com/company/3200229), Twitter (https://twitter.com/cihlc), and the official

Integrated CCL Program brochure available on the website. The official CIHLC project website (http://cihlc.ca) provides information on project activities and collaborative members. It is also being used to recruit, register, and direct learners to the Program, provide information on instructors and learning resources, and facilitate on-going engagement of alumni in the years following the first cohort of the Program.

The CIHLC has been presenting its research and work nationally and internationally by way of a workshop at the Canadian Conference on Medical Education (CCME); a keynote speech at the Academic Consortium for Complementary and Alternative Health Care (ACCAHC); and posters at the Canadian Association of Occupational Therapists (CAOT), Collaborating Across Borders IV (CAB-IV) and the IOM Global Forum conferences. For the most recent IOM Global Forum, the CIHLC created a poster titled *Evaluating the CIHLC Collaborative Leadership Education Program.*

Members of the CIHLC have also presented a workshop and poster on "Transforming Health Systems through Collaborative Leadership: Making Change Happen!" at the 5th International Symposium on Service Learning (ISSL) in South Africa in November 2013, and have led a workshop at the "Network for Unity in Health" conference in Thailand in November 2013. The CIHLC is preparing several papers for publication, and a comprehensive publication strategy that will ensure dissemination of CIHLC research in prestigious journals.

Evaluation Framework

The CIHLC is using a developmental evaluation approach to guide the development of the program and assess its quality and impact. Learners participating in the 2014–2015 cohort of the Integrated CCL Program will be asked to provide on-going feedback which will be used to improve the Program to better meet the needs of the learners and support system transformation. As part of its own reflective processes, the CIHLC recently conducted a process evaluation to provide greater insight on the CIHLC team functioning. Results showed that supporting the development of relationships and fostering innovation leads to a valued Collaborative.

Next Steps

Over the next fifteen months, the CIHLC collaborative in partnership with the CCL Program will complete the development, implementation, and preliminary evaluation of the Integrated CCL Program 2014–2015 that will serve as the proof of concept for the CIHLC collaborative. Feedback from participants and continual scanning of the literature will be used to refine and enhance the Program and knowledge dissemination and knowl-

TABLE D-1 CIHLC Program Overview

Session	Dates
Session 1 – Discovering What Is	April 11–12
Session 2 – Imagining the Possibilities	May 30–31
Session 3 – Designing & Implementing	September 19–20
Session 4 – Sensing, Evaluating and Adapting	December 5–6
Session 5 – Accomplishments, Reflection and Adaptation	January 30–31, 2015
Capstone Project	Session 1–Session 5

edge transfer strategies will be implemented throughout. The Program overview is included in Table D-1, with additional information available through the Program brochure and on the website: http://cihlc.ca/learners/education-program.

INDIA
BUILDING INTERDISCIPLINARY LEADERSHIP SKILLS AMONG HEALTH PROFESSIONALS IN THE 21ST CENTURY: AN INNOVATIVE TRAINING MODEL PROGRESS REPORT (APRIL 2012 TO DECEMBER 2013)

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Background

The Lancet Commission report (Frenk et al., 2010) on *Education of Health Professionals for the 21st Century* discusses three generations of global educational reforms. It elaborates on transformative learning, focusing on development of leadership skills and interdependence in health education, as the best and most contemporary of the three generations. The purpose of this form of education reform is to produce progressive change agents in the field of health care. *The Future of Nursing* report (IOM, 2011) also strongly focuses on transformative leadership, stating that strong leadership is critical for realizing the vision of a transformed health care system. The report recommends a strong and committed partnership of nursing professionals with physicians and other health professionals in building leadership competencies to develop and implement the changes required to increase quality, access and value and deliver patient-centric care.

Leadership is a complex multidimensional concept and has been defined in many different ways. In the field of health care, leadership serves

as an asset to face challenges and is an important skill to possess. In order to reach this goal, common leadership skills must be looked for among students applying for health professional education, including medical, nursing, and public health professionals (Chadi, 2009). The Lancet Commission report's recommendations are targeted at a multidisciplinary and systemic approach toward health professional education. In India, the lack of and need for professional health care providers has been discussed for the past many decades. The education system for health professionals in India is strictly compartmentalized and there are strong professional boundaries and demarcations among the various health professions (medical, nursing, and public health); there is recognized need for integrating these three streams. Moreover, the current health professional education system in India focuses minimally on the development of leadership competencies to address public health needs of the population.

Rationale for the Initiative

Health professionals have made enormous contributions globally to health and development over the past century. The demand of 21st-century health professional education is mainly transformational, aiming to help the professionals strategically identify emerging health challenges and innovatively address the needs of the population. The need of the hour in India is to amalgamate the skills and knowledge of the medical, nursing, and public health professionals and to develop robust leadership competencies among them. This initiative proposed to identify interdisciplinary leadership competencies among doctors, nurses, and public health experts necessary to bring about a positive change in the health care system of the country.

Objectives of the Initiative

1. Identification of interdisciplinary health care leadership competencies relevant to the medical, nursing, and public health professional education in India.
2. Conceptualization of and piloting an interprofessional training model to develop physician, nursing, and public health leadership skills relevant for the 21st-century health system in India.

Partners of the Innovation Collaborative

The Innovation Collaborative is a partnership among the following three schools:

- Public Health Foundation of India, New Delhi: public health institute;
- Datta Meghe Institute of Medical Sciences, Sawangi, Wardha: medical school; and
- Symbiosis College of Nursing, Pune: nursing school.

These schools teamed up to further the objective of the Innovation Collaborative. Table D-2 provides basic information of the three schools.

Innovation Collaborative Activities—Update

The three partner institutes collaborated to address the major objectives of this initiative. A formal approval of the proposal was obtained by the IOM, following which the team members conducted various outlined activities.

TABLE D-2 Innovation Collaborative Partners

Name of School	Address	Administrative Point of Contact	Members of Working Group
Public Health Foundation of India	Public Health Foundation of India, ISID, 4 Institutional Area, Vasant Kunj, New Delhi 110070, India	Prof. Sanjay Zodpey	Dr. Preeti Negandhi Ms. Kavya Sharma Dr. Himanshu Negandhi Ms. Ritika Tiwari
Jawaharlal Nehru Medical College–constituent college under Datta Meghe Institute of Medical Sciences (Deemed University)	Paloti Road, Sawangi Meghe, 442004, Wardha District, Maharashtra State, India	Pro-chancellor Dr. Vedprakash Mishra	Dr. Abhay Gaidhane Dr. Zahir Quazi
Symbiosis College of Nursing–constituent of Symbiosis International University	Symbiosis College of Nursing (SCON) Senapati Bapat Road, Pune, 411 004, Maharashtra (India)	Col. Jayalakshmi N.	Dr. Rajiv Yeravdekar Mrs. Meenakshi P. Gijare

1. Constitution of the collaborative

A team was formed including members from all three partner institutes. Professor Sanjay Zodpey, Director-PHE, PHFI represents the Collaborative as the National Program Lead along with Col. Jayalakshmi N., Principal, Symbiosis College of Nursing, and Dr. Vedprakash Mishra, Pro-chancellor, Datta Meghe Institute of Medical Sciences as Regional Program Leads. The team also included other member representatives from each partner institute.

2. Constitution of a Technical Advisory Group (TAG)

The TAG was formed, comprising renowned experts in the field of health professions education. All these members were contacted for seeking their consent to be a TAG member to oversee and provide guidance to the activities of the Collaborative. Regular meetings were held with the TAG members and their guidance was sought on various aspects of the project.

3. Identification of interdisciplinary health care leadership competencies

The initial activity undertaken by the Collaborative was an exhaustive literature search by the working group under the guidance of the Program Leads to understand need for and genesis of leadership competencies as a part of education of health professionals. Published evidence, both global and Indian, was included in the literature search to look for key interdisciplinary leadership competencies, the need for an interdisciplinary training of health professionals, and the current scenarios in interprofessional health education. The literature search strategies included journal articles from electronic databases, medical journals, grey literature, newspaper articles, and papers presented in conferences. The search was not restricted by the period of publication or language. The electronic search was complemented by hand searching for relevant publications/documents in their bibliographies. A process of snowballing was used until no new articles were located.

4. Expert group meetings

Once the literature search was complete, the working group summarized the findings of the search and prepared a formal report. This report was reviewed by all senior members and finalized. This was followed by a consultation with experts from various disciplines of health professional education, where the findings of the literature search were presented.

5. Development of training model

The next activity of the project was the development of the training model for the pilot. The training model was conceptualized based on the findings of the literature search and the recommendations of the expert group at the consultation. A training manual was developed for use in the trainings by the working group along with the team leaders.

The trainings are aimed at health professionals across the country from the medical, nursing, and public health fields. The long-term objective of this training model is its integration into the regular curriculum of the medical, nursing, and public health students, with an aim to develop interdisciplinary leadership skills among them.

To align with the objectives of the Innovation Collaborative, the training model was pilot-tested on some in-service professionals and students across the three streams. For this, a detailed agenda and the training material were prepared based on the content of the training manual.

6. Piloting the training model

The pilot trainings commenced in April 2013 and were completed in the first week of May 2013. These trainings were conducted in batches at three different sites:

- State Institute of Health Management and Communication, Gwalior (SIHMC),
- Indian Institute of Public Health, Bhubaneswar (IIPHB), and
- Datta Meghe Institute of Medical Sciences, Sawangi (DMIMS).

The duration of each training batch was 3 days. Resource faculty from the three partner institutes actively trained the participants. IIPHB had 25 participants for the training, while SIHMC and DMIMS had 16 and 25 participants, respectively. The average age of the participants across all the three batches was 32 years. The total number of males in the three batches was 40, while there were 26 females.

The group for each batch of the training workshop was mixed, with participants from different disciplines. The training was aimed at bringing the three disciplines (medical, nursing, and public health) together to build interdisciplinary leadership skills. Details of participants are mentioned in Table D-3.

The pilot training workshops included didactic sessions as well as group discussions. The didactic sessions were aimed at giving the trainees an understanding of leadership skills and their importance in health care. The aim of the group discussions was to train them to innovatively apply interdisciplinary leadership competencies in their local health care settings.

TABLE D-3 Participants at Training Workshop

Name of Institute	Participants from Medical, Nursing, and Public Health	Total Participants
Indian Institute of Public Health Bhubaneswar (IIPHB)	14 medical, 2 nursing, 9 public health	25
State Institute of Health Management and Communication, Gwalior (SIHMC)	11 medical, 4 nursing, 1 public health	16
Datta Meghe Institute of Medical Sciences, Sawangi, Wardha (DMIMS)	14 medical, 8 nursing, 3 public health	25

At the end of the pilot trainings, the trainees were asked to fill out a feedback form about various aspects of the training. Positive responses from the participants were many, ranging from good coordination of the training, suitable content, good pedagogy, to friendly atmosphere. A few negative points, such as short duration of the training, more theoretical, less group discussions/practicum, were also emphasized.

Following the pilot trainings, a formal report was prepared by the working group and shared with the Global Forum at the IOM.

7. Revision of the training model

Based on the feedback of the trainees, the training model was revised. The duration of the training was increased to 4 days. Certain topics—such as ethics of leadership, advocacy, conflict resolution, negotiation, and interpersonal communication—were added to the program. The program was revised to include group discussions and role plays wherever necessary.

This revised model was shared with members of the TAG for their inputs and accordingly finalized. A copy of the final training model is enclosed herewith.

Prospective Activities Planned

1. The activities undertaken as part of the Innovation Collaborative will be published in a peer-reviewed journal (see Table D-4). A draft of the manuscript is under way and will be submitted to a suitable peer-reviewed journal soon.
2. The Collaborative will also present the findings of the initiative to the Global Forum on Innovation in Health Professional Education.

TABLE D-4 Innovation Collaborative Activities—Update Summary

Activity	Current Status	Remarks
Constitution of the Collaborative	Completed	Team formed comprising of members from three partner institutes
Constitution of the Technical Advisory Group	Completed	Regular meetings held and advice sought from members regarding project
Conducting a literature review	Completed	Report has been shared with the IOM
Expert group meetings and consultation	Completed	Inputs taken from experts from the field
Developing training model	Completed	Training manual has been shared with the IOM
Piloting the training model	Completed	Trainings were completed in May 2013
Preparation of report based on pilot findings	Completed	A formal report was prepared and shared with the IOM
Finalization of training model	Completed	The training model has been revised to incorporate the changes suggested by the participants of the pilot trainings and inputs of the TAG members
Manuscript submission to peer-reviewed journal	On-going	

SOUTH AFRICA

Marietjie de Villiers, Ph.D., M.B.Ch.B., M.Fam.Med., and
Stefanus Snyman, M.B.Ch.B., DOM
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Background

The Interprofessional Education and Practice (IPEP) strategy of the Faculty of Medicine and Health Sciences (FMHS), Stellenbosch University (SU) (South Africa), was developed in 2010 and 2011 by a working group of representatives from all undergraduate programs at the FMHS, as well

as postgraduate nursing. In keeping with findings of Frenk et al. (2010), the IOM (2011), the IPEP (2011), and the WHO (2010), the revised strategy considered the pivotal role IPEP can play in equipping students as agents of change to effectively address the health needs of individuals and populations.

By integrating IPEP rather than it being a loose-standing curriculum, the working group sought to develop health professionals as "competent collaborative patient-centred practitioners" (Oandasan and Reeves, 2005, p. 46) who can reform health systems. To institutionalize a culture of IPEP, three focus areas were identified (see Figure D-1):

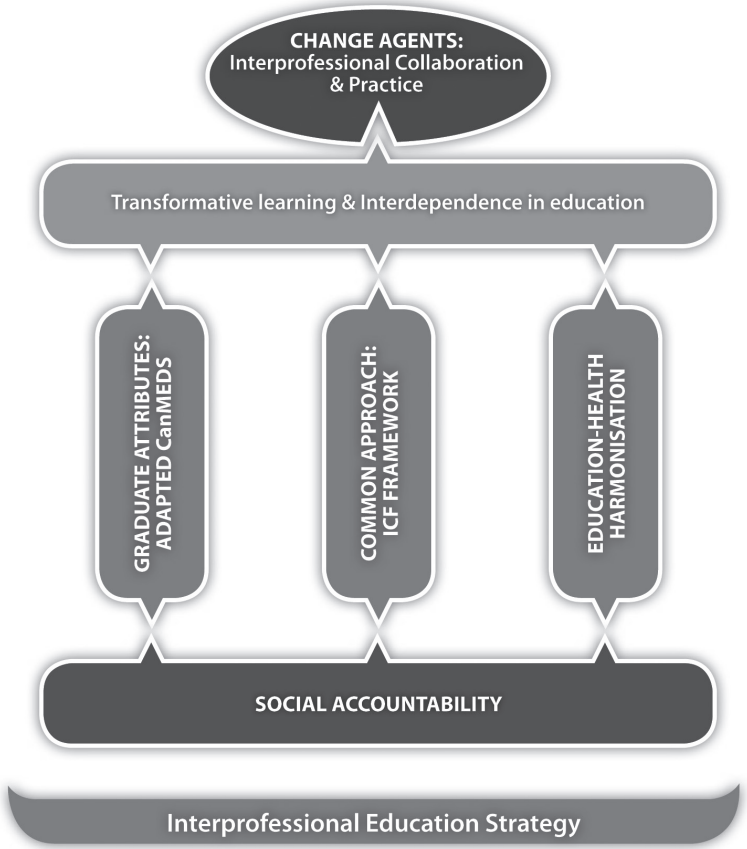

FIGURE D-1 The interprofessional education and practice strategy at the Faculty of Medicine and Health Sciences, Stellenbosch University.
NOTE: ICF = international classification of functioning, disability, and health.
SOURCE: De Villiers et al., 2014.

- Development, integration, and assessment of core competencies in curricula (Stephenson et al., 2002), based on the CanMEDS roles (Frank, 2005) and the core competencies for interprofessional collaborative practice (IPEC Expert Panel et al., 2011).
- Promotion of an interprofessional care and collaboration framework, based on the International Classification of Functioning, Disability and Health (ICF) as common language between professions at individual, institutional, and social levels (WHO, 2001; Allan et al., 2006; Tempest and McIntyre, 2006; Dufour and Lucy, 2010; Cahill et al., 2013). See Figure D-2.
- Cultivation of interdependence (harmonization) between two key stakeholders in HPE: higher education (university) and service providers (provincial and district health departments and community-based organisations). The aim was to develop trust relationships and build capacity among faculty and service providers in modelling interprofessional practice (Clark, 2004; Lawson, 2004; Steinert, 2005; Craddock et al., 2013).

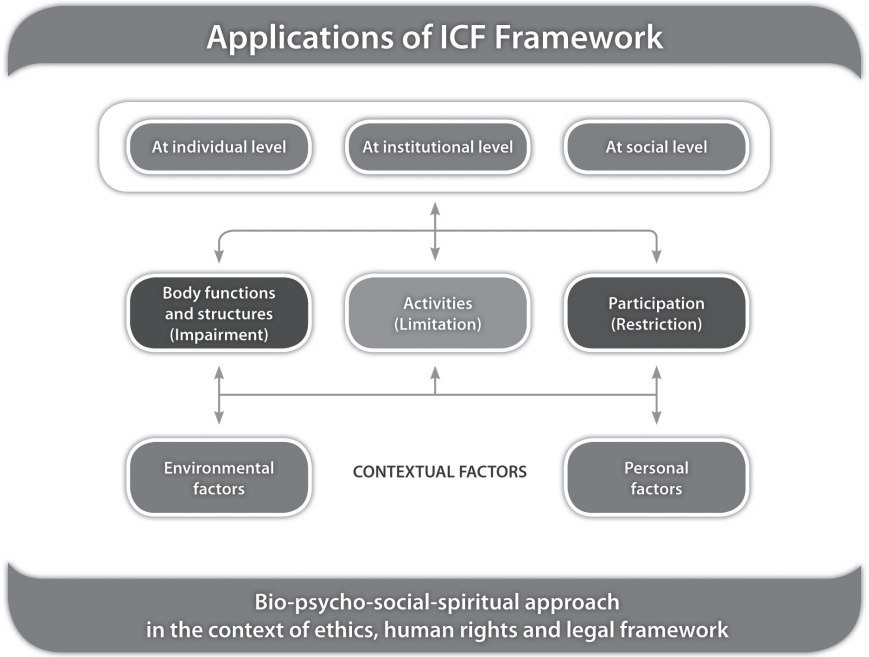

FIGURE D-2 The ICF as interprofessional care and collaboration framework (adapted from WHO, 2001).
SOURCE: De Villiers et al., 2014.

The gradual implementation of this strategy commenced in the undergraduate community-based modules at SU's Ukwanda Rural Clinical School, where disciplinary silos were perceived to be less entrenched and where learning activities were being experienced as more flexible than in the tertiary environment and therefore open to creative innovation (De Villiers et al., 2014). Despite this, typical challenges of IPE were prominent, e.g., the short duration of rotations, shift incompatibility, issues of profession-specific supervision, and claims that accreditation requirements by professional boards are not flexible enough to allow for IPEP (Lawson, 2004; Freeth et al., 2005; Oandasan and Reeves, 2005; Jacobs et al., 2013; Thibault and Schoenbaum, 2013). There were logistic challenges such as medical students were placed for a 2-week rural clinical rotation in one of nine sites in a 150-kilometer radius from the medical school. Students from the other aforementioned undergraduate programs were only sporadically present at three of these sites. For these challenges to be solved an alternative approach was adopted.

Facilitators were appointed at each site to facilitate IPEP between students and the various health professions and to build the capacity of local health professionals to model interprofessional collaboration and practice. During their rural rotation, medical students worked with these health professionals in managing their patients interprofessionally. A local interprofessional team assessed students as they presented their patients using the ICF framework. These assessments included peer discussions, where formative feedback was provided.

A study was conducted to establish how using the ICF in IPEP was experienced by medical students, preceptors (student placement supervisors), and patients. The results of this study were reported to the Global Forum in October 2012.

Progress During 2013

1. The findings of the study were presented at the annual conferences of the South African Association of Health Educationalists (SAAHE), the Association of Medical Educators in Europe (AMEE), and the Council for Social Work Educators (CSWE) (plenary).
2. A full-day preconference workshop was held at the 5th International Service-learning Symposium exploring how the pedagogy of service learning (in combination with the IPEP) can facilitate transformative learning in health professions education.
3. Contributions to two chapters in different WHO publications on the value of the ICF in IPEP and community-based education were published:

- WHO (World Health Organization). 2013. *How to use the ICF: A practical manual for using the International Classification of Functioning, Disability and Health (ICF). Exposure draft for comment. October 2013. Chapter 3*. Geneva: World Health Organization.
- De Villiers, M. R., H. Conradie, S. Snyman, B. B. Van Heerden, S. C. Van Schalkwyk. 2014. Chapter 8: Community Based Education in Health Professions: Global Perspectives. In *Experiences in developing and implementing a community-based education strategy—a case study from South Africa,* edited by W. Talaat and Z. Ladhani. Cairo: WHO Regional Office for the Eastern Mediterranean.

4. A total of 892 undergraduate health professions students at SU and the University of the Western Cape were trained during 2013 to apply the ICF framework as interprofessional approach to patient care and public health.
5. The University of KwaZulu-Natal (SA) and the Northwest University (SA) indicated that they want to join our collaborative. Further negotiations will be conducted during the first semester of 2014.
6. Ethical clearance for a more comprehensive study in the application of the ICF in IPEP was obtained. The first round of data was collected and is currently being analyzed.
7. Stellenbosch University and the University of the Western Cape will start with a two monthly IPE World Café in 2014 involving medicine, physiotherapy, occupational therapy, speech-language and hearing therapy, social work, natural medicine, pharmacy, dental hygiene, dentistry, and nursing.
8. A total of 172 health professionals (doctors, psychologists, social workers, dental assistants, physiotherapists, occupational therapists, nurses, speech therapists, and dieticians) were trained in using the ICF as approach to IPP in the Cape Winelands District Municipality, Cape Metro (Cape Town), eThekwini (Durban), and the University of KwaZulu-Natal.
9. The Western Cape Provincial Health Department incorporated parts of the ICF as part of its discharge summary in hospitals.
10. The Collaborative forms part of a new initiative of the Functioning and Disability Reference Group of the WHO to develop a mobile application for using the ICF as catalyst for interprofessional collaboration and practice.
11. The initiative was a poster presentation winner at the WHO's Family of International Classifications annual meeting and conference in Beijing (October 2013) and subsequently requested to present

to a joint sitting. Twenty-six international collaborators signed up to participate in this project.

Mobile Application to Capture Patient Information

The relevance of the ICF has been demonstrated in community-based rehabilitation (CBR) and community-oriented primary care (COPC) and IPEP. However, the pivotal role of data on functioning and context are often overlooked in mobile applications designed to capture patient information.

Currently, no mobile applications incorporate the ICF. It is envisaged that the mICF, in providing a means to collect and transfer ICF-related information, could support continuity of care. The aim of this project is to develop an ICF mobile application (mICF) to

- ensure accurate and efficient capture of functional status and contextual information;
- convey information securely between service providers in different service settings consistent with ethical and privacy principles in relation to data sharing, e.g., among health professionals;
- facilitate clinical decision making by making person-centred data readily available;
- facilitate administration and reporting through data aggregation; and
- minimize the need for repeat data collection.

It is envisaged that the mICF could provide a means to collect and transfer ICF-related information; add value to interprofessional collaborative practice; improve continuity of care; and contribute to more efficient and cost effective health systems.

UGANDA

Nelson Sewankambo, M.B.Ch.B., M.Sc., M.D., F.R.C.P., L.L.D. (HC)
Makerere University

Defining competencies, developing and implementing an interprofessional training model to develop competencies and skills in the realm of health professions ethics and professionalism.

Innovation and Motivation for Selection of Innovation

This project is a major innovation aimed at contributing to improvement in the quality of health service. Although there is a lot of discussion

about the need to improve professional ethics and professionalism in low- and middle-income countries, there has been very little attempt to develop competency-based IPEPs to address the challenges. Professionalism is defined in several different ways (Wilkinson et al., 2009). The Royal College of Physicians (2005) has defined professionalism as "a set of values, behaviors, and relationships that underpin the trust the public has in doctors." This definition can be extended to embrace all types of health workers.

Overall Aim: To prepare a future workforce committed to practicing to a high degree of ethics and professionalism and performing effectively as part of an interprofessional health team with leadership skills.

Specific Objectives

1. To define competencies and develop a curriculum for interprofessional education of health professional students (nursing, medicine, public health, dentistry, pharmacy, and radiography) in order to develop their skills in the realm of ethics and professionalism.
2. To pilot a curriculum for interprofessional education of health professional students (nursing, medicine, public health, dentistry, pharmacy, and radiography) to develop their skills in the realm of ethics and professionalism.
3. To develop curriculum for interprofessional education for health workers and tutors in ethics and professionalism and pilot its implementation in partnership with the regulatory professional councils.

Approach to Implementation of the Project

Instructional Reforms

A critical element of this project will be the engagement of major stakeholders, including the Ministry of Health, patients, hospitals and health centers, private practitioners, professional councils, educators, students, alumni, and consumer rights groups nationally. This engagement will ensure the participation of stakeholders in the implementation and the commitment of local resources to support this effort. Through this engagement, the collaborative will define the extent of the problem (unethical and unprofessional practices among nurses, doctors, public health workers, and other health professionals) and identify the necessary interventions, including the required competencies and interprofessional training approaches that will address the gaps as well as the necessary post-training support to ensure the institutionalization of ethics and professionalism among health profes-

sionals in Uganda. Stakeholders will participate in the implementation of training and mentoring trainees at their respective places of work. Of particular importance are the students who have initiated the formation of a student ethics and professionalism club. They are advanced in the planning process and will be supported through this project and contribute to the whole process of this project. Right from the beginning, the collaborative plans to align this educational project with the needs of Uganda's population. Concerns have been raised about ethics and professionalism among health professionals in Uganda, largely by the media. There are, however, only limited, brief reports in publications in the recent past in peer-reviewed literature on the issue of ethics and professionalism among health workers in Uganda (Hagopian et al., 2009; Kiguli et al., 2011; Kizza et al., 2011).

Some national reports highlight the challenges in this area, but few formal studies have been conducted to document the extent of the problem, the contextual factors, and possible interventions (UNHCO, 2003, 2010). Because of the lack of comprehensive evaluations and evidence, the collaborative plans to initiate this project with a systematic needs assessment. The needs assessment will involve the participation of representatives from several key partners mentioned previously. Data will be collected through an analysis of key documents from the professional councils, which are statutory units charged with the responsibility of investigating reports and cases of professional indiscipline among doctors, dentists, nurses, pharmacists, and others. The collaborative will undertake limited surveys and key informant interviews among the above-named groups.

Development and Implementation of the Curriculum

Results from the needs assessments will be used to inform the curriculum development process, which will employ a six-step approach (Kern et al., 2009). Prior to curriculum development, interprofessional competencies will be defined through stakeholder engagement and suggestions, building on the five competencies defined by the 2003 IOM report *Health Professions Education: A Bridge to Quality*. Trainees will learn not only competencies related to ethical practices and professionalism but also competencies of interprofessional collaboration and leadership (IPEC Expert Panel, 2011). Stakeholder discussions will be held to get a clearer understanding of society's needs and the challenges of ensuring high standards of ethics and professionalism. This will be followed by a consensus process to arrive at an agreed-on set of competencies to be acquired during an interdisciplinary course for the students who are the next generation of leaders.

A curriculum will be developed for students and for teachers based on the needs assessment results and the defined competencies.

Institutional Reforms

A number of institutional reforms will be needed as the instructional reforms are implemented. These include a careful review of the linkages and collaboration between the university and the aforementioned stakeholders, and the recognition and the reward system for excellence in demonstrating the desired high standards of ethics and professionalism among both students and staff.

REFERENCES

Allan, C. M., W. N. Campbell, C. A. Guptill, F. F. Stephenson, and K. E. Campbell. 2006. A conceptual model for interprofessional education: The international classification of functioning, disability and health (ICF). *Journal of Interprofessional Care* 20(3):235-245.

Cahill, M., M. O'Donnell, A. Warren, A. Taylor, and O. Gowan. 2013. Enhancing interprofessional student practice through a case-based model. *Journal of Interprofessional Care* 27(4):333-335.

Chadi, N. 2009. Medical leadership: Doctors at the helm of change. *McGill Journal of Medicine* 12(1):52-57.

Clark, P. 2004. Institutionalizing interdisciplinary health professions programs in higher education: The implications of one story and two laws. *Journal of Interprofessional Care* 18(3):251-261.

Craddock, D., C. O'Halloran, K. McPherson, S. Hean, and M. Hammick. 2013. A top-down approach impedes the use of theory? Interprofessional educational leaders' approaches to curriculum development and the use of learning theory. *Journal of Interprofessional Care* 27(1):65-72.

De Villiers, M. R., H. Conradie, S. Snyman, B. B. Van Heerden, and S. C. Van Schalkwyk. 2014. Chapter 8. Community based education in health professions: Global perspectives. In *Experiences in developing and implementing a community-based education strategy: A case study from South Africa.*, edited by W. L. Talaat and Z. Cairo: World Health Organization (WHO) Regional Office for the Eastern Mediterranean.

Dufour, S. P., and S. D. Lucy. 2010. Situating primary health care within the international classification of functioning, disability and health: Enabling the Canadian family health team initiative. *Journal of Interprofessional Care* 24(6):666-677.

Frank, J. R., and Royal College of Physicians and Surgeons of Canada. 2005. *The canMEDS 2005 physician competency framework: Better standards, better physicians, better care*. Ottawa, Ontario: Royal College of Physicians and Surgeons of Canada.

Freeth, D. S., M. Hammick, S. Reeves, I. Koppel, and H. Barr. 2005. *Effective interprofessional education: Development, delivery and evaluation*. Edited by H. Barr. Vol. 5. Oxford, UK: Blackwell Publishing.

Frenk, J., L. Chen, Z. A. Bhutta, J. Cohen, N. Crisp, T. Evans, H. Fineberg, P. Garcia, Y. Ke, P. Kelley, B. Kistnasamy, A. Meleis, D. Naylor, A. Pablos-Mendez, S. Reddy, S. Scrimshaw, J. Sepulveda, D. Serwadda, and H. Zurayk. 2010. Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet* 376(9756):1923-1958.

Hagopian, A., A. Zuyderduin, N. Kyobutungi, and F. Yumkella. 2009. Job satisfaction and morale in the Ugandan health workforce. *Health Affairs* 28(5):863-875.

IOM (Institute of Medicine). 2003. *Health professions education: A bridge to quality.* Washington, DC: The National Academies Press.

IOM. 2011. *The future of nursing: Leading change, advancing health*. Washington, DC: The National Academies Press.

IPEC (Interprofessional Education Collaborative) Expert Panel, American Association of Colleges of Pharmacy, and American Association of Colleges of Osteopathic Medicine. 2011. *Core competencies for interprofessional collaborative practice: Report of an expert panel*. Washington, DC: Interprofessional Education Collaborative.

IPEC Expert Panel. 2011. *Core competencies for interprofessional collaborative practice: Report of an expert panel.* Washington, DC: Interprofessional Education Collaborative.

Jacobs, J. L., D. D. Samarasekera, W. K. Chui, S. Y. Chan, L. L. Wong, S. Y. Liaw, M. L. Tan, and S. Chan. 2013. Building a successful platform for interprofessional education for health professions in an Asian university. *Medical Teacher* 35(5):343-347.

Kern, D., P. Thomas, and M. Hughes (Eds.). 2009. *Curriculum development for medical education: A six-step approach, 2nd edition*. Baltimore, MD: The Johns Hopkins Press.

Kiguli, S., R. Baingana, L. Paina, D. Mafigiri, S. Groves, G. Katende, E. Kiguli–Malwadde, J. Kiguli, M. Galukande, M. Roy, R. Bollinger, and G. Pariyo. 2011. Situational analysis of teaching and learning of medicine and nursing students at Makerere University College of Health Sciences. *BMC International Health and Human Rights* 11(Suppl 1):S3.

Kizza, I., J. Tugumisirize, R. Tweheyo, S. Mbabali, A. Kasangaki, E. Nshimye, J. Sekandi, S. Groves, and C. E. Kennedy. 2011. Makerere University College of Health Sciences' role in addressing challenges in health service provision at Mulago National Referral Hospital. *BMC International Health and Human Rights* 11(Suppl 1):S7.

Lawson, H. 2004. The logic of collaboration in education and the human services. *Journal of Interprofessional Care* 18(3):225-237.

Oandasan, I., and S. Reeves. 2005. Key elements of interprofessional education. Part 2: Factors, processes and outcomes. *Journal of Interprofessional Care* 19(Suppl 1):39-48.

Royal College of Physicians. 2005. *Doctors in society: Medical professionalism in a changing world*. London, UK: Working Party of the Royal College of Physicians of London.

Steinert, Y. 2005. Learning together to teach together: Interprofessional education and faculty development. *Journal of Interprofessional Care* 19(Suppl 1):60-75.

Stephenson, K. S., S. M. Peloquin, S. A. Richmond, M. R. Hinman, and C. H. Christiansen. 2002. Changing educational paradigms to prepare allied health professionals for the 21st century. *Education for Health (Abingdon)* 15(1):37-49.

Tempest, S., and A. McIntyre. 2006. Using the ICF to clarify team roles and demonstrate clinical reasoning in stroke rehabilitation. *Disability and Rehabilitation* 28(10):663-667.

Thibault, G. E., and S. C. Schoenbaum. 2013. *Forging collaboration within academia and between academia and health care delivery organizations: Importance, successes and future work*. Commentary, Institute of Medicine. Washington, DC. http://www.iom.edu/forgingcollaboration (accessed July 26, 2013).

WHO (World Health Organization). 2001. *International classification of functioning, disability and health*. Geneva, Switzerland: World Health Organization.

WHO. 2010. *Framework for action on interprofessional education and collaborative practice*. http://www.who.int/hrh/resources/framework_action/en/index.html (accessed February 5, 2013).

Wilkinson, T. J., W. B. Wade, and L. D. Knock. 2009. A blueprint to assess professionalism: Results of a systematic review. *Academic Medicine* 84:551-558.

UNHCO (Uganda National Health Users'/Consumers' Organisation). 2003. *Study on patient feedback mechanisms at health facilities in Uganda*. Kampala, Uganda: UNHCO.

UNHCO. 2010. *Establishing incidence of health provider absenteeism in Bushenyi District*. Kampala, Uganda: UNHCO.

Appendix E

Speaker Biographical Sketches

Carol A. Aschenbrener, M.D., M.S., joined the Association of American Medical Colleges (AAMC) in 2004, after nearly 30 years as a medical school faculty member and administrator. After serving for 2 years as vice president of the Division of Medical School Standards and Assessments and Liaison Committee on Medical Education (LCME) Secretary, she assumed leadership of the Division of Medical Education. In 2007, she was appointed to the new role of executive vice president and chief strategy officer. In 2011, she assumed leadership of the newly defined Medical Education Cluster with the goal of developing and implementing a strategy to facilitate transformation of medical education toward a true continuum of formation grounded in the health needs of the public. She has extensive executive experience including 9 years in various Dean's Office positions at The University of Iowa College of Medicine and 4 years as Chancellor of the University of Nebraska Medical Center. Before joining AAMC, she spent 7 years as a consultant to academic health centers. She has served on a variety of professional and civic boards and has held leadership positions in organized medicine at the state and national levels, including terms as appointed member of the LCME, Accreditation Committee for Continuing Medical Education, Accreditation Committee for Graduate Medical Education and elected member of the Iowa Medical Society board, the American Medical Association Council on Medical Education, Educational Commission on Foreign Medical Graduates, and elected chair of the National Board of Medical Examiners. Dr. Aschenbrener holds a bachelor of arts degree in psychology from Clarke College in Dubuque, Iowa (1966) and a master of science in neuroanatomy from The University of Iowa (1968). She received

her M.D. degree from the University of North Carolina (1971) and completed residency training in anatomic pathology and neuropathology at The University of Iowa Hospitals and Clinics (1974).

Lesley Bainbridge, M.Ed., Ph.D., holds a bachelor's of physical therapy, a masters of education, and an interdisciplinary Ph.D. She is the director of interprofessional education in the Faculty of Medicine and Associate Principal College of Health Disciplines at the University of British Columbia (UBC) in Vancouver. She acted as head of the physical therapy program and interim director of the School of Rehabilitation Sciences prior to her current positions. Her areas of special interest are interprofessional education (IPE), collaborative practice, and other areas related to IPE such as rural health and underserved populations. She has been principal or co-investigator on several Teaching and Learning Enhancement Fund grants from UBC, co-lead on Health Canada's "Interprofessional Education for Collaborative Patient Centred Practice" project in British Columbia, and co-investigator on several other research grants related to IPE, health human resources, and shared decision making. Dr. Bainbridge served as president of the Accreditation Council of Canadian Physiotherapy Academic Programs (ACCPAP) from 2001 to 2009 and is currently a past president. She represents ACCPAP on a national committee developing accreditation standards for IPE and is co-chair of a working group developing a national competency framework for interprofessional collaboration. She received a Killam Teaching Prize at UBC for excellence in teaching and the Enid Graham Memorial Lecture Award for leadership in the profession by the Canadian Physiotherapy Association.

David P. Baker, Ph.D., is senior vice president of the Health Division at IMPAQ International, LLC. The IMPAQ Health Division conducts program and impact evaluations and provides technical assistance to federal agencies such as the Centers for Medicare & Medicaid Services, the National Institutes of Health (NIH), and the Agency for Healthcare Research and Quality (AHRQ). Previously, Dr. Baker served as director of the Health Services Research Institute at Carilion Clinic and also held appointments as an associate professor on the founding faculty for the Virginia Tech Carilion School of Medicine and with the American Institutes for Research (AIR). For the past 10 years, Dr. Baker has been actively involved in AHRQ's efforts to develop and deploy Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) training for health care professionals. Dr. Baker has led or contributed to the Program Evaluation of Medical Team Training in the Department of Defense (DoD); Development and Testing of a Rapid Response Team Training module within the TeamSTEPPS Curriculum; Support of the DoD Health Care Team Coordination Program

to Evaluate TeamSTEPPS; the TeamSTEPPS Collaborative; the National Implementation of TeamSTEPPS; and Implementing TeamSTEPPS in Primary Care Settings. In addition to his work for AHRQ and the DoD, Dr. Baker has completed a number of projects for the Federal Aviation Administration, the National Aeronautics and Space Administration (NASA), U.S. Navy, and U.S. airlines over the course of his 20-year career. These projects all center on understanding, training, and measuring the performance of teams. Dr. Baker is a fellow of the American Psychological Association. He holds a Ph.D. in industrial and organizational psychology from the University of South Florida.

Juanita Bezuidenhout, M.B.Ch.B., M.Med., Ph.D., is a professor of anatomical pathology and deputy director, research, in the Centre for Health Professions Education, Faculty of Medicine and Health Sciences, Stellenbosch University and National Health Laboratory Service, South Africa. She is involved in service, under- and postgraduate education, and research in the university and nationally. She is a Foundation for the Advancement of International Medical Education Research (FAIMER) fellow and co-director of the Sub-Saharan Africa FAIMER Regional Institute, focusing on capacity development in health professions education in sub-Saharan Africa. She is deputy editor of the *African Journal of Health Professions Education* and a regular reviewer for both pathology and health professions education journals. She is an active member of the South African Association of Health Educationalists.

Darla Spence Coffey, M.S.W., Ph.D. (*Forum Member*), assumed the duties of Council on Social Work Education (CSWE) president in July 2012. Prior to her appointment as president, she served as professor of social work, associate provost, and dean of graduate studies at West Chester University. She was a member of the social work faculty at West Chester University beginning in 1998, where she contributed to the initial accreditation of the M.S.W. program in 2000 and served as the director and chair of the university's undergraduate social work program from 2002 to 2005. Since 2005, Dr. Coffey has served in senior university administrative capacities, providing leadership for academic program development, curriculum, academic policies, assessment of student learning, transfer articulation, accreditation, and faculty development. During the 2008–2009 academic year, she served West Chester University as interim provost/vice president for academic affairs. Dr. Coffey has an extensive background in social work practice in the areas of mental health, substance abuse, and domestic violence. As a long-time member of CSWE, she has served on the Council on Leadership Development and the Commission on Educational Policy. Dr. Coffey is a member of the National Association of Social Workers and the Association

of Baccalaureate Social Work Program Directors, where she served on the Executive Committee from 2005 to 2009. She has also served on numerous community boards that provide services to women and children, and is currently a national advisor to the Institute for Safe Families in Philadelphia, Pennsylvania. Dr. Coffey received her bachelor's degree from Eastern College, her M.S.W. from the University of Pennsylvania, and her Ph.D. from Bryn Mawr College Graduate School of Social Work and Social Research.

Margaret Crump, M.P.H., joined the American Nurse Practitioner Foundation (ANPF) in April 2010. Mrs. Crump works to manage general operations and is responsible for execution of organizational programs and activities. Prior to joining ANPF, Mrs. Crump most recently worked for the University of Tulsa Department of Nursing and served as Senior Vice President of Community Initiatives and Advocacy at the American Lung Association of Central States. Before that, she implemented health care software and worked in corporate wellness for the Cooper Institute for Aerobics Research. She specializes in strategic planning, program implementation, consolidation of operations, and development. Mrs. Crump is a graduate of Oklahoma Baptist University with a bachelor of science in exercise science sports medicine. She earned her M.P.H. from the University of Oklahoma Health Science Center.

Jan De Maeseneer, M.D., Ph.D., FRCGP (Hon) (*Forum Member*), earned his M.D. from Ghent University in Belgium in 1977. He has been working part-time as a family physician in the community health center Botermarkt in Ledeberg, a deprived area in the city of Ghent. Since 2008, De Maeseneer has served as vice-dean for strategic planning at the Faculty of Medicine and Health Sciences. He is a board member of the Interuniversity Flemish Consortium for vocational training of family medicine and he chairs the working party for family medicine of the Belgian High Council for medical specialists and family physicians. Professor De Maeseneer chairs the Educational Committee (since 1997) and directs a fundamental reform of the undergraduate curriculum (from a discipline-based toward an integrated patient-based approach). In 2004, Professor De Maeseneer received the WONCA award for excellence in health care: the Five-Star Doctor at the 17th World Conference of Family Doctors in Orlando (USA). In 2008 he received a Doctor Honoris Causa degree at the Universidad Mayor de San Simon in Cochabamba (Bolivia). In 2010, he received the prize De Schaepdrijver-Caenepeel for developmental work from the Royal Flemish Academy of Medicine.

Rishi Desai, M.D., M.P.H., is currently a medical educator at the Khan Academy, a free online education platform and nonprofit organization. As

the team lead for medical partnerships at the Khan Academy, Dr. Desai brings his expertise in pediatric infectious diseases and public health to the Academy's roughly 7 million unique users per month. Dr. Desai has worked with multiple medical schools to implement online video-based content directly into their curriculum. Dr. Desai is a pediatric infectious disease physician who has mentored trainees at every stage of his career. He has been awarded numerous teaching accolades and his passion for teaching eventually brought him to the Khan Academy. In his early years, Dr. Desai had an accelerated early education, completing high school and receiving his B.S. in microbiology from the University of California, Los Angeles (UCLA), by the age of 18. He completed his medical training at the University of California, San Francisco (UCSF), and went on to work at prestigious medical centers including those affiliated with Harvard University, Boston University, the University of Southern California, and Stanford University. He returned to UCLA to earn his M.P.H. in epidemiology, and then spent 2 years at the Centers for Disease Control and Prevention (CDC) as an Epidemic Intelligence Officer investigating disease outbreaks.

Jody S. Frost, P.T., D.P.T., Ph.D., is the lead academic affairs specialist and program director, Education Leadership Institute Fellowship, in the Department of Academic Services at the American Physical Therapy Association. Dr. Frost is responsible for facilitating physical therapist academic/clinical education, professionalism, interprofessional education (IPE), and higher education leadership initiatives. She has been involved in facilitating initiatives including the development of Normative Curricular Models of Physical Therapist (PT) and Physical Therapist Assistant (PTA) Education, Clinical Instructor Education and Credentialing Programs, Clinical Performance Instruments for PT and PTA students, Clinical Site Information Form Web, Professionalism in Physical Therapy: Core Values, online physical therapy professionalism module series, Interprofessional Professionalism Collaborative, and interprofessional education. She received her doctor of physical therapy degree from Marymount University, her Ph.D. from Temple University, her master's in counseling and personnel studies from Glassboro State College, and her bachelor's in physical therapy from Ithaca College. Dr. Frost was formerly an assistant chair/faculty member at Temple University and a clinical manager, teacher, and practitioner in pediatric and orthopedic/sports medicine facilities. She has presented at numerous conferences on academic and clinical education, professionalism and interprofessional professionalism, performance assessment, mentoring, strategic planning and facilitation, and IPE. She also provides consultation as an expert facilitator for strategic planning and consensus building. Her published works focus on interprofessional professionalism, professionalism, clinical education assessments, academic and clinical teaching, and mentoring.

Martha (Meg) Gaines, J.D., L.L.M., is the associate dean for academic affairs and experiential learning at the University of Wisconsin Law School, where she has served as a clinical professor of law for 25 years. She is also founding director of the interdisciplinary Center for Patient Partnerships, which trains future professionals in medicine, nursing, law, health systems, industrial engineering, pharmacy, genetic counseling, and other disciplines that provide advocacy services to patients with life-threatening and serious chronic illnesses. Ms. Gaines teaches courses related to consumer issues in health care advocacy to graduate students pursuing various health professions and law. Following her graduation from law school, she served as a law clerk to the late Honorable Thomas Tang, 9th Circuit Court of Appeals, and as a trial attorney for the Wisconsin State Public Defender.

Barbara Gawron, R.N., D.N.P., CHSE, is a nursing educator with a concentrated focus in simulation instructional methods for prelicensure students for the past 7 years. She is currently the director of Simulation Learning Experiences and a faculty member at Saint Xavier University College of Nursing working with prelicensure and Nurse Practitioner students. Her current research addresses the assessment methods for simulation evaluation and its impact on the cognitive level of learning. In May 2013 she became a Certified Healthcare Simulation Expert by the Society of Simulation in Healthcare.

Catherine L. Grus, Ph.D., is the deputy executive director for education at the American Psychological Association (APA) and has been on the staff of the APA since 2005. Dr. Grus received her Ph.D. in clinical psychology from Nova University in 1993. She completed a doctoral internship at the University of Miami School of Medicine and a 2-year postdoctoral fellowship at the University of North Carolina at Chapel Hill. Dr. Grus works to advance policies and practices that promote high-quality education and training at the doctoral, postdoctoral, and postlicensure levels. She serves as a liaison to numerous national, interorganizational, and interprofessional education and training groups. Areas of focus for Dr. Grus include the development of models and tools for competency assessment in professional psychology, supervision, and primary care psychology practice.

Eric Holmboe, M.D. (*Forum Member*), a board-certified internist, is chief medical officer and senior vice president of the American Board of Internal Medicine (ABIM) and the ABIM Foundation. He is also professor adjunct of medicine at Yale University, and adjunct professor at the Uniformed Services University of the Health Sciences. Previously, he was associate program director, Yale Primary Care Internal Medicine Residency Program, and director of Student Clinical Assessment, Yale School of Medicine. Be-

fore joining Yale, he was division chief of general internal medicine at the National Naval Medical Center. His research interests include interventions to improve quality of care and methods in the evaluation of clinical competence. Dr. Holmboe is a consultant for the Drug Safety and Risk Management Subcommittee of the Pharmaceutical Science Advisory Committee for the U.S. Food and Drug Administration. He is a Fellow of the American College of Physicians and an honorary Fellow of the Royal College of Physicians in London. Dr. Holmboe is a graduate of Franklin and Marshall College and the University of Rochester School of Medicine. He completed his residency and chief residency at Yale-New Haven Hospital, and was a Robert Wood Johnson Clinical Scholar at Yale University.

Jehu E. Iputo, M.B.Ch.B., Ph.D., is the director of the School of Medicine at Walter Sisulu University (WSU) in South Africa where he has taught for more than 25 years. He studied human medicine at Makerere University and physiology at Trinity College in Dublin. Prior to taking up his current post, he was professor of physiology and chairman of the Department of Physiology and Medical Biochemistry at WSU. Dr. Iputo has played a pivotal role in the establishment of the problem-based and community-based medical training program at WSU, one of the leading innovative programs in sub-Saharan Africa. He has been involved in medical and nursing curricula reform in Ghana, South Africa, and Uganda. Dr. Iputo is a member of THEnet and of the Network-Towards Unity for Health. He has published on medical education and has served on the editorial boards of several journals, including the *South African Medical Journal*. He has consulted for the World Health Organization (WHO) on medical education and served on the WHO Technical Committee on Transformative Medical Education.

John (Jack) R. Kues, Ph.D., M.A. (*Forum Member*), graduated with a B.S. degree in psychology and a B.A. degree in sociology from Northern Kentucky University. He earned his M.A. degree in sociology and Ph.D. in social psychology from the University of Cincinnati (UC). He is associate dean for Continuous Professional Development and professor emeritus at the University of Cincinnati Academic Health Center where he is responsible for continuing medical education and continuing interprofessional education. He is also the project evaluator for the UC Clinical and Translational Science Award (CTSA) from NIH. Dr. Kues is currently the president of the Alliance for Continuing Education in the Health Professions. He is a past president of the Society for Academic Continuing Medical Education (SACME), where he has also chaired the Research Endowment Council, the Research Committee, and the Communications Committee. He is a past chair of the CME Section of the AAMC Group on Educational Affairs. Dr. Kues has been an active volunteer for SACME, the Alliance,

the Accreditation Council for Continuing Medical Education, and other organizations.

Lucy Mac Gabhann, J.D., M.H.S., is an attorney with the U.S. Department of Health and Human Services, Office of the General Counsel (HHS OGC), where she practices in the area of government contracts. She obtained her law degree at the University of Maryland Francis King Carey School of Law where she also received a Certificate in Health Law and Policy. During law school she interned at HHS OGC, as well as the U.S. House of Representatives, the Mississippi Center for Justice, and the University of Maryland Global Health Resource Center in Malawi. As part of the interdisciplinary research team in Malawi, she collaborated with students and faculty from the Schools of Dentistry, Medicine, Nursing, Pharmacy, and Social Work to investigate health care access and utilization in a rural, malaria-endemic area. Prior to entering the field of law, Ms. Mac Gabhann worked for 10 years in domestic and international vaccine development and production, first as a researcher in academia in enteric diseases, then as a project manager in biodefense vaccines for the Department of Defense (DoD) and HHS. She earned a B.S. in zoology from Louisiana State University and an M.S. in international health from the Johns Hopkins University School of Hygiene and Public Health.

Lemmietta G. McNeilly, Ph.D., CCC-SLP, CAE (*Forum Member*), serves on American Speech-Language-Hearing Association's (ASHA's) Facilitating Team as the chief staff officer, Speech-Language Pathology, and is responsible for the following units: Governmental Relations and Public Policy, Speech-Language Pathology Practices units (Clinical Issues, Health Care, and School Services), Special Interest Groups, and International Programs. She is a fellow of the ASHA and a Certified Association Executive. She serves as chair of the American Society of Association Executives International Section Council and a Diversity Executive Leadership Scholar. She also serves as Secretary/Treasurer of the National Coalition of Health Care Professionals Executive Board and member of the Executive Committee. She serves as the ex-officio for ASHA's International Issues Board, Health Care Landscape Summit, and the Speech-Language Pathology Advisory Council. Previous appointments include serving as the founding chair of the Department of Communication Sciences and Disorders at Florida International University.

Afaf I. Meleis, Ph.D., Dr.P.S. (Hon), FAAN (*Forum Co-Chair*), is the Margaret Bond Simon Dean of Nursing at the University of Pennsylvania (Penn) School of Nursing, professor of nursing and sociology, and director of the school's WHO Collaborating Center for Nursing and Midwifery

Leadership. Before going to Penn, she was a professor on the faculty of nursing at University of California, Los Angeles and University of California (UCLA), San Francisco for 34 years. She is a Fellow of the Royal College of Nursing in the United Kingdom, the American Academy of Nursing, and the College of Physicians of Philadelphia. She is a member of the Institute of Medicine (IOM), the Robert Wood Johnson Foundation Nurse Faculty Scholar National Advisory Committee, the George W. Bush Presidential Center Women's Initiative Policy Advisory Council; a trustee of the National Health Museum; a board member of CARE, the Josiah Macy Jr. Foundation Macy Faculty Scholars program, and the Consortium of Universities for Global Health; and chair of the IOM Global Forum on Innovation for Health Professional Education. Dr. Meleis is also President and Council General Emerita of the International Council on Women's Health Issues and currently serves as the global ambassador for the Girl Child Initiative of the International Council of Nurses. Dr. Meleis graduated magna cum laude from the University of Alexandria (1961), earned an M.S. in nursing (1964), an M.A. in sociology (1966), and a Ph.D. in medical and social psychology (1968) from UCLA.

John J. Norcini, Ph.D., is president and chief executive officer of the Foundation for Advancement of International Medical Education and Research (FAIMER). FAIMER has an active research program on international health professions education and physician migration, global fellowship programs for faculty from health professions schools, and databases of recognized medical schools around the world. For the 25 years before joining the Foundation, Dr. Norcini held a number of senior positions at the American Board of Internal Medicine. His principal academic interest is in the assessment of physician performance. Dr. Norcini has published extensively, lectured and taught in many countries, and is on the editorial boards of several peer-reviewed journals in educational measurement and medical education.

Bjorg Palsdottir, M.P.A., co-founded Training for Health Equity Network (THEnet) in 2008. Ms. Palsdottir served as a consultant to organizations, governments, and institutions such as The Bill & Melinda Gates Foundation, the National Academy of Sciences, and the World Bank. She co-founded and was associate director of the Center for Global Health at New York University School of Medicine, established in 1998. Prior to working for the center, Ms. Palsdottir worked for the International Rescue Committee, an emergency relief and development organization, first at headquarters in New York, then as a Regional Coordinator for East and Central Africa. She holds a bachelor of the arts in economic journalism, a master's degree in public administration and nonprofit management from New York Univer-

sity's (NYU's) Wagner School of Public Service, and a certificate in training and organizational development from NYU.

Aliye Runyan, M.D., is an education and research fellow at the American Medical Student Association (AMSA). She graduated with honors in literature and biology from Eckerd College, and is a 2012 graduate of the University of Miami-Miller (UM-Miller) School of Medicine. Runyan has held national coordinator positions within the Humanistic Medicine, Wellness and Student Life, Medical Professionalism, and Medical Education action committees at AMSA, and was immediate past National Chair of the Medical Education team. She is the founder, and director from 2008 to 2011, of the AMSA Medical Humanities Scholars Program. With guidance and inspiration from her leadership roles, she successfully implemented the Ethics and Humanities Pathway at the University of Miami with students and faculty, and coordinated the first ever Florida medical school-wide ethics and humanities student conference this past May at the University of South Florida (USF), in partnership with USF and UM-Miller faculty. She was her class president for 2 years in medical school, and sat on the Board of Trustees for the University of Miami as a student representative.

Nelson K. Sewankambo, M.B.Ch.B., M.Sc., M.M.Ed., FRCP Doctor of Laws (HC) (*Forum Member*), trained in general medicine and internal medicine at Makerere University (MU) in Uganda and later graduated with a degree in clinical epidemiology from McMaster University, Canada. He is a fellow of the Royal College of Physicians, United Kingdom, a professor of medicine at MU, and is the principal (head) of Makerere University College of Health Sciences. He was dean of the MU Medical School for 11 years (until 2007). He contributed to the seminal work of the Sub-Saharan African Medical Schools Study (2008–2010). As co-chair of the education/production subcommittee of the Joint Learning Initiative, he contributed to the landmark report titled *Human Resources for Health; Overcoming the Crisis*, which had a major influence on the World Health Organization's 2006 report *Together for Health*, which focused on the global crisis of health workers and the need for urgent action to enhance health of populations.

Maria Tassone, M.Sc., B.Sc.P.T., is the inaugural director of the Centre for Interprofessional Education, a strategic partnership between the University of Toronto and the University Health Network (UHN). She is also the senior director of health professions and interprofessional care and integration at the UHN in Toronto, a network of four hospitals comprising Toronto General, Toronto Western, Toronto Rehab, and Princess Margaret. Ms. Tassone holds a B.S. in physical therapy from McGill Uni-

versity and an M.Sc. from the University of Western Ontario, and she is an assistant professor in the Department of Physical Therapy, Faculty of Medicine, University of Toronto. Ms. Tassone was the UHN project lead for the coaching arm of the Catalyzing and Sustaining Communities of Collaboration around Interprofessional Care, which was recently awarded the Ontario Hospital Association international Ted Freedman Award for Education Innovation.

Sarita Verma, L.L.B., M.B., CCFP (*Forum Member*), is a professor in the Department of Family and Community Medicine, deputy dean of the Faculty of Medicine, and associate vice provost for health professions education at the University of Toronto (U of T). She has been a diplomat in Canada's Foreign Service and worked with the Office of the United Nations High Commissioner for Refugees 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, the University of British Columbia, and U of T, she has been the lead consultant for the Future of Medical Education in Canada–Postgraduate Project on the Liaison and Engagement Strategy and the Environmental Scan Scientific Study. As deputy dean, Dr. Verma leads strategic planning and implementation as well as communications and external relations. In addition, she is responsible for integrated education across the health sciences and liaison with affiliated partners.

Patricia Hinton Walker, Ph.D., R.N., FAAN (*Forum Member*), has held national prominence as leader in the health care and health sciences education for more than 25 years as a school of nursing dean, chief nursing officer in hospital and community-based care, and in the Health IT/Technology and Policy arenas. She serves as Senior Advisor to the TIGER (Technology Informatics Guiding Education Reform) Initiative Foundation. She is currently Vice President for Policy and Strategic Initiatives at the Uniformed Services University of the Health Sciences where she previously served as Dean. In 2001, she was Senior Scholar in Residence at the Agency for Healthcare Research and Quality (AHRQ) focusing on cost and quality outcomes, as well as patient safety research. Currently she serves as an internal coach and consultant on Patient Safety and TeamSTEPPS to the DoD Patient Safety Program within Tricare Management Activity (a component of the Military Health Care System). In addition to her professional nursing career, Dr. Hinton Walker became President and Founder of Hinton Walker Associates in the 1980s and has recently added a coaching practice and teaching in an International Coaching Federation approved program for

health professionals to this already established organizational development, educational consultation business.

John Weeks has been involved in the integrative health care movement for 28 years in various capacities as writer, organizer, speaker, and executive. He has consulted on integrative projects with such organizations as the American Heart Association/Health Forum, National Institutes of Health, Institute for Health and Productivity Management, and Washington State Office of the Insurance Commissioner, and with integrative medicine programs at the universities of Arizona, Maryland, Stanford, and Washington. Also in the academic realm, Weeks served in the 1980s as a vice president for what is now Bastyr University, directed the 12-profession National Education Dialogue to Advance Integrated Care: *Creating Common Ground* (2004–2005), and cofounded and presently directs the Academic Consortium for Complementary and Alternative Health Care. Since the mid-1990s, Weeks has produced the principal newsletter on policy and business of integration, now via the *Integrator Blog News & Reports* (www.theintegratorblog.com). He produces related columns for IntegrativePractitioner.com, *Integrative Medicine: A Clinician's Journal, The Pain Practitioner* (American Association of Physicists in Medicine), and the *Huffington Post*. Weeks attended Stanford University for 3 years, studying history. He has twice been granted honorary doctorates for his work.

Karen Anne Wolf, Ph.D., R.N., is chair of the National Academies of Practice-Nursing Academy, and served as the chair of the Interprofessional Standards Task Force. Currently a professor and coordinator for faculty development at Samuel Merritt University in Oakland California, Dr. Wolf is a 2011–2012 fellow in the Stanford University ethnogeriatrics faculty development program and a faculty member in the University of California, Berkeley, Interdisciplinary Team Training Course. Dr. Wolf is an advanced practice nurse (nurse practitioner and clinical nurse specialist) with over 30 years of practice in the care of older adults and vulnerable populations in community primary care, home care, and long-term care settings. An advocate for open access and use of technologies to reach nursing and health care providers, she was a consultant to such media projects as the *PeRX* project on safe prescribing, *Community Voices*, *OurBodiesOurselves Website,* and *Nursetogether*.

Brenda Zierler, Ph.D., R.N., FAAN (*Forum Member*), is professor 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. Dr. Zierler's research explores the relationships between the delivery of health care and outcomes—at both the patient

and system levels. She is the Inaugural UW Health Science's IPE Faculty Scholar (2013–2015). Dr. Zierler is co-PI of a Josiah Macy Jr. Foundation grant focused on faculty development for interprofessional education and collaborative practice. She currently leads two Health Resources and Services Administration training grants, one focusing on faculty development in the use of technology across a five-state collaborative and the second grant focusing on technology-enhanced IPE for advanced practice students. She is 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 in the School of Medicine. Dr. Zierler was a fellow in the RWJ Foundation Nurse Executive Program (2008–2011).

Sanjay Zodpey, M.D., Ph.D. (*Forum Member*), presently works as director of public health education at the Public Health Foundation of India (PHFI), New Delhi, and holds a leadership role as director at Indian Institutes of Public Health (IIPH), Delhi. Professor Zodpey also served as director of Indian Institute of Public Health, Gandhinagar and Bhubaneswar. He earlier worked as professor of preventive and social medicine and vice dean at Government Medical College, Nagpur. By training, he is a physician, public health specialist, and epidemiologist. Professor Zodpey completed his medical education—MBBS, M.D., and Ph.D. (preventive and social medicine)—from Government Medical College, Nagpur, India. He has also acquired postgraduate qualifications in sociology, public administration, and economics. He has been awarded a fellowship of the Indian Public Health Association and the Indian Association of Preventive and Social Medicine. Professor Zodpey is involved in designing several capacity development initiatives, including long-term academic programs at PHFI. He is currently leading the project supported by the U.S. Agency for International Development for designing human resources for health policy for the Government of Jharkhand (India). He is also providing leadership to Technical Assistance Project of Madhya Pradesh (India) for creating a public health cadre in the state. He has recently authored two monographs related to education of health professionals in India. He also leads the Cluster for Health Workforce (with focus on education of health professionals) established at PHFI (IIPH, Delhi) in 2010.