Clinical Education in Transition: Recommendations and Strategies
A Report of the ASAHP Clinical Education Task Force

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The practice models, interdisciplinary team functions, intersecting competencies, economies, and settings of contemporary healthcare are all in flux, demanding that educators reconsider traditional health professions clinical education models and partnerships. The Association of Schools Advancing Health Professions (ASAHP) and Allied Health (AH) deans, collectively and individually, must determine the priorities and strategies to advance AH education. This paper offers five recommendations that stem from a review of literature pertaining to current changes in the healthcare sector and higher education that challenge the availability of AH clinical education. Vetted by AH educators and health system representatives, the recommendations subsume proactive strategies that target factors affecting learning in the clinical environment and aim to meet the needs of patients/clients, employers, students, and educators. The recommendations are: 1) Develop meaningful strategic partnerships with healthcare organizations; 2) Assess and integrate interprofessional competencies for efficient and effective interprofessional practice (IPP); 3) Incorporate effective use of healthcare technology into AH education and practice; 4) Advocate within and among healthcare systems, higher education leadership, accreditation and professional organizations, and governmental agencies to foster and support IPP competencies and effective cross-discipline referrals; 5) Drive excellence in clinical education through promotion of research and scholarly activity. J Allied Health 2019; 48(4):237–247.

RAPID CHANGES in the health services marketplace are challenging traditional approaches to clinical education of the healthcare workforce. Questions facing health professions clinical education led an advisory committee of the Health Resources Services Administration to recommend federal development of a National Center for Clinical Site Development to support student clinical education and to incentivize clinical preceptorships in non-traditional community settings.¹ In the meantime, the pressures caused by this shifting landscape compel Allied Health (AH) educational leaders to reconsider priorities and strategies that are in their means in order to advance the future of AH education and client/patient care.

The Association of Schools Advancing Health Professions (ASAHP) Strategic Plan included a directive that the Clinical Education Task Force (CETF) explore approaches to redirect an impending crisis in clinical education. The growing membership of the CETF since it was established in 2011 is composed of AH deans, educators across several AH professions, and representatives of large healthcare systems with knowledge and investment in pre-employment clinical education of AH professionals. With input obtained from the ASAHP Board, the CETF during monthly conference calls in late 2017 and early 2018 identified several domains critical to understand the opportunities and threats facing AH clinical education. The CETF then tasked workgroups to draft literature reviews to highlight changes in the domains of healthcare environ-
ment, higher education, and AH clinical learning models and practices, and to note trends and gaps affecting AH clinical education in each respective area.

Throughout 2018 and 2019, CETF members across workgroups critiqued and supplemented each draft and, in an iterative process of discussion and manuscript review, extracted the five consensus recommendations and strategies contained herein (Table 1) that provide a framework to approach clinical education issues. The primary authors then consolidated the workgroup drafts to summarize highlights to present the recommendations and action steps found in Table 1. Meanwhile, the Chair presented the recommendations to the ASAHP Board, and the CETF conducted a plenary workshop at the 2018 ASAHP conference introducing them to persons in attendance.

United States Healthcare Environment

The Site of Clinical Education

Major changes in health services delivery and healthcare systems are altering the landscape of medical care in ways that threaten to compromise the availability of clinical education and the development of the workforce. Hospitals, traditionally the major sites of clinical education, are merging, closing, or at risk for closing; hospital closures reduce access to sites where clinical education has occurred. By the early 2000s, the number of inpatient hospital beds saw a decrease of 47% over 25 years, and average operating margins for non-profit hospitals were only 2.5%, while Medicare set a goal to align 50% of payments to value-based care initiatives by the end of 2018. Healthcare personnel have been laid off, as attributed to high technology expenses, lower patient volumes, lower than expected reimbursement, and a host of other issues. Nevertheless, shortages in physician availability and increased reliance on comprehensive team-based care continued, possibly driving why 13 of the top 20 fastest growing professions between 2014 and 2024 are projected to be in healthcare.10

In view of these dynamics, the site of clinical education has necessarily moved beyond traditional hospital placements into community-based sites that include private practice offices, patient homes, long-term care facilities, student-run free clinics, and rural and underserved community clinics. Academic programs in the health professions must, therefore, adapt educational approaches that prepare students optimally for practice in these settings. The shift of clinical education to community sites, however, may introduce further challenges of student costs of transportation and housing, preceptor training, and clinical site support—financial and logistical—for clinical supervisors.1

The above considerations led to Recommendation 1: Develop meaningful strategic partnerships with healthcare organizations to prioritize evolving needs for current and future healthcare. Continual and robust communication between academic programs and healthcare settings is the hallmark of successfully meeting mutual objectives and must be strongly encouraged. Elements of meaningful partnerships are described in the related action strategies for Recommendation 1 that are found in Table 1. Specific action items include intentional outreach to clinical sites beyond traditional acute care settings and, more broadly, constant and close working relationships that collaboratively identify evolving and new types of healthcare professions. Best practices in student preparation for the demands of the current healthcare environment require that clinicians and preceptors be actively engaged in curricular development and review, and engaged with each other around learning objectives, shared expectations, and assessment of outcomes that are meaningful to healthcare practice.

Team-Based Care

In this century, the range of influences on health has become more broadly understood, and healthcare has adopted a more community focus. Social determinants of health highlight the preventable nature of most chronic illness and many acute health problems, with about 80% of the etiology attributable to physical environment, health behaviors, and socioeconomic factors. According to a PriceWaterhouseCooper survey, a majority of primary care physicians feel ill-equipped to manage patients’ social needs and want to join specialist providers, nurse practitioners, physician assistants, pharmacists, and consumers to embrace broader primary care teams that may be better suited to address the breadth of patient needs. New models of training are needed to ensure diverse and complementary scopes of practice and effective collaborative skills among professionals who work on these teams.

In concert with the focus on teams and value-based care, PricewaterhouseCooper Health Research Institute concluded that a “dream team designed around the needs of complex, chronic consumers could potentially result in $1.2 million in savings for every 10,000 patients served.” When primary care physicians were asked who would be on their dream teams if cost were not an issue, responses included a vast array of AH professionals including dietitians, mental health providers, home health and community health workers, social workers, and physical and occupational therapists; responses varied based on the age and type of consumers and the types of presenting health issues. An opinion in the Harvard Business Review suggested that efficient delegation of services across a team of diverse professionals that focused on quality and cost would optimize workforce practices.

The necessity to prepare students across professions to function productively on healthcare teams and contribute to value-based care informed Recommendation 2:
TABLE 1. Recommendations and Action Strategies

**Recommendation 1:** Develop meaningful strategic partnerships with healthcare organizations to prioritize evolving needs for current and future healthcare.

Action strategies:
1. Establish recurrent forums for exchange of information with affiliated healthcare systems in order to anticipate and meet changing needs for clinical education access or curriculum.
2. Align educational program objectives, health system objectives, and student learning objectives to ensure that all are consistent with current clinical practice.
3. Engage allied health (AH) clinicians to collaborate on curriculum development for pre-clinical students, as well as practicing clinicians, in communications skills to promote patient self-care education, autonomy, and empowerment.
4. Identify care team competencies specific to targeted populations defined by common diseases or conditions, demographics, or cultures, to inform curriculum development for students and practicing clinicians across disciplines.
5. Expand experiential education into outpatient and community settings and prepare students with competencies matched to the unique needs of treatment teams in each setting.
6. Proactively and systematically set shared expectations among learners, faculty, preceptors, and health systems administrators before placing students in clinical rotations.
7. Conduct professional development opportunities for the existing workforce—especially preceptors—that are co-designed by educators and clinicians to assure currency and relevance to clinicians’ career pathways.
8. Apply metrics that measure value (clinical outcomes, patient satisfaction, staff productivity, cost of care, preceptor professional growth and skill development) to examine the effects of students’ education processes in the clinical setting.
9. Validate tools to assess student outcomes in the clinical setting aligned to the needs of the healthcare system.

**Recommendation 2:** Assess and integrate interprofessional competencies throughout the course of study to meet contemporary competencies required for efficient and effective interprofessional practice (IPP).

Action strategies:
1. Integrate population health, cultural competency and IPP competencies into core AH curriculum.
2. Teach teamwork principles and skills based on informed awareness of their application in clinical education and practice settings.
3. Implement clinical curricula for students and clinicians that empower professionals to work at the top of their scopes of practice, to negotiate roles with transparency and respect, and to delegate responsibilities consistently with workplace values.
4. Develop and teach best practices for intra- and interprofessional delegation of duties to optimize scopes of practice, maintain quality, and reduce cost.
5. Improve fidelity of preceptors’ use of objective assessment of IPP competencies.

**Recommendation 3:** Incorporate effective use of healthcare technology into AH education and practice.

Action strategies:
1. Invest in and use educational technologies, including simulation, to teach and assess foundational knowledge.
2. Adopt hybrid learning methods including online learning to increase faculty and student access to educational resources and methods and prepare them as conscientious lifelong consumers of electronic educational resources; model these competencies meaningfully in academic and clinical settings.
3. Implement pre-clinical training on electronic communications and electronic health records to develop student competencies in documentation; engage affiliated health systems administrators to inform and teach applicable curricula.
4. Teach data management and analysis techniques and artificial intelligence to meet current and future practice needs in Learning Health Systems environments.
5. Incorporate telehealth education (skills and legal, ethical, and regulatory standards) into curriculum and provide experiential opportunities in practice settings where applicable.

**Recommendation 4:** Advocate within and among healthcare systems, higher education leadership, accreditation and professional organizations, and governmental agencies to foster and support IPP competencies and effective cross-discipline referrals to improve client/patient care.

Action strategies:
1. Convene local, regional, and national meetings with stakeholder groups to influence educational and quality care models that produce competent clinicians.
2. Identify and minimize obstacles to effective IPP in concert with certification and licensure regulations in order to optimize practice with each profession’s full scope of practice.
3. Work with accreditors to foster educational innovations and IPE activities that build meaningful competencies.
4. Reach across levels of higher education (2-year colleges through doctoral programs) to develop and align curricula that teach about AH disciplines and teach intra- and interprofessional negotiation and delegation skills.
5. Investigate and design models for international partnerships that create global health opportunities for student learning.
6. Develop collaborative funding proposals to support a “Learning Health Systems Approach” to care that promotes learning among students, clinicians, and patients/clients.

**Recommendation 5:** Drive excellence in clinical education through promotion of research and scholarly activity.

Action strategies:
1. Evaluate and contrast traditional and innovative clinical models (Table 2), with regard to efficiency, efficacy, and economy of student involvement in healthcare settings, from perspectives of patient/clients, preceptors and students.
2. Evaluate the contributions of didactic, simulation, and clinical experiences to educational outcomes.
3. Develop and validate reliable tools and methods to assess student competencies and clinical reasoning skills in relation to time-based and competency-based clinical education.
4. Develop and validate tools and methodologies to measure how integration of clinical learning impacts value indicators such as healthcare outcomes, patient satisfaction, cost of care, and care of the provider.
5. Design, implement and evaluate curricula to enhance preceptor skills in clinical teaching and assessment.
6. Incorporate student and graduate judgments of clinical experiences and educational preparedness into metrics of continuous quality improvement.
7. Disseminate research, scholarship, and best practices across the ASAHP community.
Adapt integrative didactic and clinical education assessments throughout the course of study to meet contemporary competencies required for efficient and effective interprofessional practice (IPP). The action strategies related to this recommendation reflect an educational commitment to move beyond incidental exposure or discrete interprofessional education (IPE) events toward fully integrated broad themes throughout the curriculum that emphasize mastery related to professional roles and team-based competencies. Curricula should optimize high-impact practices that bring a range of AH students together in simulated or actual patient care with faculty oversight, assisted where possible by clinical partners. AH programs that aspire to develop and assess students’ interprofessional competencies might collaborate with clinical sites to prepare preceptors to model, teach, and critically assess students’ use of effective team-based skills. True acquisition of the healthcare efficiencies and effectiveness made possible through collaborative team approaches should improve patient and institutional outcomes, as well as help achieve educational goals.

**Technological Advances**

Within healthcare, advances in technology occur rapidly while the care experience has not fully kept pace. While retail clinics and urgent care centers proliferate and may grow to integrate technology to screen patients via computers, phones, visual images, or videos, to date only one in three people has used telehealth. The patient/doctor balance is predicted to shift further to patients’ accountability to manage their own health behaviors and outcomes. As technological advances create greater efficiencies with video connections and health communication portals, virtual consults may grow to exceed in-person consultation. Increasingly sophisticated artificial intelligence (AI) and predictive analytics that extract patterns and trends from large volumes of health data will complement clinical judgment, but it is unknown how professionals across the spectrum of health disciplines will learn to access and apply them. Data transfer to and among health providers with due consideration to privacy and confidentiality is in its infancy. In the face of these changes, how to prepare today’s students to become tomorrow’s workforce becomes a daunting prospect for the institutions charged to prepare them and for the healthcare systems that will employ them.

**Recommendation 3** is to incorporate effective use of healthcare technology into AH education and practice. Aligned strategies in Table 1 implicitly underscore the need for close collaboration across academic and healthcare institutions in order to achieve maximum benefit. Curricular models can be jointly developed and delivered to teach the use of electronic health records and technology used for remote expansion of health services. Cooperative access to simulation facilities and AI environments promote integrative learning across classroom and clinical setting, for students throughout the course of study, for residents and other learners, and for health system employees to retain cutting-edge proficiencies.

**Higher Education for Health Professions**

**Transformative Education**

In 2010, *The Lancet* reported that health professions education had failed to address rapid demographic and epidemiological transitions that threaten healthcare worldwide. Transformative change was proposed that would prepare health professionals to function in a globally interdependent world. A global vision emerged that health professionals would be educated to access scientific knowledge, engage in critical reasoning and competent ethical practice, and prioritize systems of both patient-centered care and population-centered health. The realization of this vision will require the development of metrics, evaluation paradigms, and research that promote effective innovations to evolving circumstances.

As the setting for routine and urgent healthcare shifts from acute care hospitals to community clinics, educators are faced with the challenge to prepare students and clinicians for emerging delivery models. Contemporary models demand innovative approaches to educate pre-professionals and retrain the existing workforce, requiring timely collaborations between educators and healthcare systems.

**Recommendation 4** is to advocate within and among healthcare systems, higher education leadership, accreditation and professional organizations, and governmental agencies to foster and support IPP competencies and effective cross-discipline referrals to improve client/patient care. This recommendation extends the focus of Recommendation 2 (IPE) with related strategies that shift from advancing clinical training approaches to advancing fundamental policies, underscoring the contributions needed from educators, healthcare administrators, accreditors, and other industry thought leaders. Educators and healthcare leaders can work with accreditation commissions, licensing boards, and legislators to develop regulatory standards and policies that optimize and support workforce preparation for contemporary healthcare delivery, promote innovative articulation agreements across all levels of higher education, and engage global partnerships to expand educational and practice opportunities. AH academic programs and their healthcare industry partners must be proactive to request funding from professional stakeholder organizations and governmental agencies to realize these crucial transitions to support future clinicians in providing excellent patient care. Successful advocacy, however, also requires increased attention and support for evidence-based research on both educational and practice outcomes.
Need for Evidence-Based Clinical Education

Experiential education that exposes students to clinical experiences and ethical decision-making is central to quality AH professional education and takes varied forms across professions and training sites. Romig and colleagues found common goals among clinical educational models that varied widely in their degree of empirical support for their effectiveness.\textsuperscript{18} Broadly defined, clinical education occurs in the classroom, through simulation and standardized patient activities, and in community and patient care settings.\textsuperscript{18} In their review of relevant research and consensus among ASAHP deans, Romig and colleagues extracted four goals for clinical education that frame the focus on maintaining robust clinical learning outcomes:

Goal 1. Apply theory and didactic learning, coupled with practicing clinical skills and professionalism, into evidence-based, applied safe clinical practice.

Goal 2. Orient students to professional behaviors and attitudes within the clinical workplace.

Goal 3. Develop professional, interpersonal communication skills and functioning within a team to provide patient/client care.

Goal 4. Develop critical thinking, problem-solving and time management skills in the clinical setting.\textsuperscript{18,250}

Recommendation 5 is to drive excellence in clinical education through promotion of research and scholarly activity. This focus underscores the importance of rigorous scientific study with respect to existing experiential education models and innovations. This area of inquiry has received limited attention, yet healthcare economies demand empirically supported clinical education models and practices that yield the most efficient and effective learning outcomes. Specific strategies discuss validation of measurement tools that can reliably assess quality indicators and inform cost-benefit analyses. The comparative benefits and proportional impact of didactic, simulation, and clinical experiences upon student competencies should be explored, and the deliberate inclusion of data from all participants—students, preceptors, patients and families, systems—will strengthen the investigation of outcomes. Efforts to determine best practices in clinical education and to disseminate findings widely can lead to increased collaboration across stakeholder groups and drive clinical education that is in the best interests of all parties.

Clinical Education Past, Present, Future

The prior sections highlighted the considerations underlying five recommendations to transform experiential learning for AH professions. This section reviews related findings from the clinical education literature that, in many cases, informed the selection of strategies aligned to the core recommendations. These considerations include the move toward competency-based education, educational technology including simulation for procedural and interprofessional training, the economy of education in the clinical setting, and the evolution and assessment of clinical education models. Educators and other stakeholders are advised to consider these topics in negotiations with worksites to determine how to transform AH experiential learning across contemporary educational and workplace settings.

Evolving Pedagogies in Clinical Learning: Competencies, Educational Technology, and Teamwork

Accrediting organizations are in a position to champion advances in competency-based curricula that best meet patient/client needs and that encourage clinical education based on effective partnerships among educators, patients, families, and communities.\textsuperscript{19,25} A recent National Academies Workshop proposed that accreditation agencies and professions reach agreement on common core competencies to align in education and practice.\textsuperscript{21} Two major competencies proposed refer to IPE and the Quadruple Aim in healthcare. The Quadruple Aim amends the Triple Aim of improved population health, enhanced patient experience, and reduced cost of care, by adding a fourth aim: work-life quality of healthcare providers.\textsuperscript{22} A 2015 Josiah Macy Jr. Foundation conference observed a trend toward longer courses of study for health professions to accommodate added competencies, despite increasing workforce demands to accelerate introduction of new graduates into the workforce. While stressing the importance of life-long learning, they recommended that healthcare education become more efficient and flexible, using on-the-job experience to shorten the time to practice.\textsuperscript{23}

Schools of health professions increasingly employ technology in curriculum delivery, such as distance learning (synchronous and asynchronous) and simulation training for clinical procedures. Technology is expected to improve reliability and efficient assessment of knowledge and skills gaps and to support learning through collaboration among educators and clinicians. Readers are referred to a Macy Foundation monograph on educational technologies for recommendations to maximize effective use of technology.\textsuperscript{23}

Educators implement technology to improve student outcomes and in response to increased competition for limited clinical placements. Clinical educators also incorporate blended learning,\textsuperscript{24} peer coaching,\textsuperscript{25} interdisciplinary structures,\textsuperscript{26,27} and simulation.\textsuperscript{28,29} Such varied pedagogies are proposed to reduce the training demand on clinical partners and, importantly, to build upon well-received learning opportunities.\textsuperscript{23} Simulation learning, in particular, is growing in popularity.\textsuperscript{23} Students often request clinical training that incorporates simulation and educational technology experiences, in
recognition that these approaches help build and evaluate their professional and clinical behaviors. Low- and moderate-fidelity simulation and critical event training are employed to enhance communication across teams, minimize procedural errors, and optimize patient safety in complex care; facilitated debriefing exercises for these learning modes are essential to help teach appropriate assertion, use of clear and critical language, and situational awareness. Simulation has also been combined with IPE to advance competencies in team building, which are heightened when clinicians from different backgrounds participate.

Despite its documented benefits, simulation can be time consuming and expensive. In a given learning scenario, careful attention is required to determine whether low- or high-fidelity simulation is more suitable for the particular learning objectives. In general, less sophisticated technology such as computer-aided instruction or virtual patients can offer novice students meaningful learning, while curricula that employ high-fidelity manikins and simulated patients enhance technical skills for advanced learners. Selectively, simulation and other technologies that are well-integrated into learning experiences can provide quality learning experiences with improved efficiency and productivity to justify the cost.

Implementing IPE curricula can be expensive, although no generalizable data on cost exist, as for clinical education in general, and the methods and investment to understand the economics of IPE are lacking and require greater focus and support. Nevertheless, when interprofessional teamwork is included in clinical education focusing on competencies, student awareness improves regarding the professional contributions and value of all team members, fulfilling the intention to develop more collaborative skills in the healthcare workplace. Students appreciate IPE experiences as a means to improve patient care, advance their careers, and satisfy curiosity about related disciplines and healthcare reform initiatives.

Action strategies in Recommendations 2, 3, and 4 identify ways to address technology and IPE. AH academic programs have the opportunity and the responsibility to drive innovation in clinical education through the use of best practices in interprofessional collaboration, combined with cutting-edge technology and creative relationships with clinical training sites. The focus on IPE competencies must begin with development of professional identity and related understanding that enhanced health outcomes are achieved through meaningful contributions to collaborative teams that create synergy to improve client care. The appreciation of that approach in practice can be enriched through interdisciplinary activities, such as case studies and grand rounds, augmented by technology to expand the range of learning opportunities. The interdisciplinary learning

Clinical Education Costs

It is broadly assumed that educating health professions students in clinical settings is expensive for healthcare systems, but cost-benefit methodologies designed to quantify the economics of clinical education have met with limited success. Some clinicians cite time demands and decreased productivity when supervising students, as well as stress due to supervisory responsibility and work with inadequately prepared or poorly motivated students. Clinical teaching sites for nursing and medical students, as well as AH professions’ students, express concern about the range of monetary and non-monetary costs associated with hosting student clinicians. Preceptors cite that lack of compensation for the teaching role is an added stressor, leading the Advisory Committee on Interdisciplinary Community-Based Linkages to recommend that the Health Resources and Services Administration collaborate with federal and private sources to develop incentives for clinical preceptors.

Nevertheless, attempts to operationalize the value of supervisors’ time, number of patients seen by learners, staff time devoted to student education, and student use of equipment and supplies have been rare and inconclusive. A rigorous British effort to cost out expenses for clinical training devised a methodology that considered myriad cost components, while rigorous, the methodology’s philosophy and approach have been questioned with regard to the assumptions, including that no undergraduate students’ time on site is allocated to service delivery, but rather all their time is attributed to receiving training, that the degree of faculty oversight distinguishes whether an activity counts as learning or as service, and that a fixed percentage of the clinical preceptor’s time is required for training whenever a student is present for a clinical service. The application of disparate methodologies and analytics—some rigorous and others not—has complicated comparisons across studies but has not definitively clarified the relative costs and benefits to healthcare systems of integrating clinical education.

Strategies related to Recommendation 5, promotion of research and scholarship, are tied to approaches that examine the cost and value of clinical education. Academic and clinical educators increasingly understand
that investigations of the effectiveness of varying training models are needed to justify current approaches and to adopt innovations that demonstrate promise to improved efficiency and outcomes. Given the range of AH disciplines, diverse needs for clinical training, and complexity of clinical settings, data that can inform effective pairings of specific models to discrete learning circumstances should help drive the evolution of clinical education to meet current demands.

**Clinical Educational Models**

A review of the clinical education literature found no consensus for a “gold standard” or superior model of clinical education; further, substantial variability exists among professions for preferred models. Table 2 summarizes 11 clinical education models found in the AH and health science literature, and benefits and challenges to their use. These are not mutually exclusive models but illustrate how various professions describe overlapping approaches to clinical education. Distinguishing features among the models pertain to supervisory approaches with and among students, use of technology and related modalities, sites for clinical placement, and learning opportunities with allied professions.

Wetherbee and colleagues determined five standards in clinical practica: format and length of experience, breadth of experience, expected outcomes and assessment of student performance, standards for clinical instructors, and standards for clinical education sites. Models tend to emphasize the importance of engaged and supportive clinical supervisors who direct the education process. The dominant one-to-one model promotes strong student learning that is resource intensive. Other supervisory models include a two-learners-to-one-supervisor collaborative approach, multiple mentoring across clinicians, peer coaching among students, and a student-clinician-faculty triad. A coaching model, rather than a supervisory style, seems to foster greater student independence. Most models support the necessity to provide consistent and reliable student assessment, goal setting, reflection on clinical experiences, and debriefing to facilitate learning.

Across all models, the primary focus is positive student outcomes. Assessed outcomes are many and varied, including enhanced learning and skill development, an increased sense of belonging, reduced anxiety, increased reflection and satisfaction, positive professional relationships and emotional connections, and patient-centered attitudes. Various components of clinical competency have been proposed and piloted including communication skills, critical thinking, stress management, and team skills. Student outcomes include realistic perception of work environment, use of evidence-based practice, appreciation and understanding of other professions’ clinical roles, and familiarity with and access to multiple clinical practices.

**Assessing Clinical Education Models**

The attention of academic professionals to ongoing assessment of clinical education models is critical. To address best practices, some disciplines have called for a national dialogue to determine standards that produce the most competent clinicians. The benefits of clinical education are presumed without rigorous attention to which elements account for learning. A 2012 systematic review of AH clinical education found improvements in learning outcomes but could not conclude what components of training contributed to beneficial outcomes. With increased development of innovative models, researchers are just beginning to develop methodologies to document success. Health professions schools are advised to collect and analyze student and graduate feedback on educational preparedness, clinical experiences, and effectiveness of learning methods to close the gap between classroom learning and clinical experience. Continued innovation in clinical education, coupled with assessment of effectiveness and efficiency, should promote that educational strategies keep pace with students’ need to acquire the competencies to enter the changing healthcare marketplace.

The focus on student outcomes in higher education must include assessment of benefits and challenges of clinical education in relation to clinical partners. In general, development of student competencies is restricted when access to placements, preceptor time, and clinical resources are limited. Clinical education can be described as “education by random opportunity” unless students reliably obtain a suitable variety of patient experiences and other approaches to assure optimal learning. Some models increase placement capacity and proactively develop faculty clinical knowledge and management skills, while other models increase administrative workload. Models that support longer clinical experiences limited to a single setting may improve depth of training and decrease administrative workload, but may also limit exposure to the breadth of medical conditions otherwise found across multiple sites. Careful evaluation of costs, benefits, and efficiencies for clinical sites is essential to assure clinical readiness of graduates and maintain the viability of sites that commit to clinical training. Strategies contributing to Recommendation 5 focus on these issues.

**Priorities for Clinical Education Leaders**

Continued improvement of clinical education in the current healthcare environment requires significant and timely attention to two complementary priorities: clinical sites must provide the organizational structure for students’ immersive engagement in healthcare teams, and academic programs must prepare students proactively to capitalize on all available learning opportunities while meaningfully contributing to their
In light of these priorities and the more detailed review, the CETF identified the aforementioned overarching recommendations and action steps aligned to each that can be implemented by clinical education stakeholders. Stakeholder groups are encouraged to create alliances, discover synergies, and share resources to activate these suggestions. The CETF further encourages researcher and clinical collaborations that design methodologies to assess learning and healthcare outcomes aligned to clearly articulated models of clinical education. Such collaborations can establish the empirical base to justify the resources educational leaders and healthcare professionals need to produce the coming generations of health professions experts.
**Recommendations, Action Strategies, and Research Parameters**

The five recommendation and action strategies in Table 1 are derived from the literature and experience of AH educators to strengthen clinical education and relationships among academic and clinical partners, with the goal to improve educational delivery that leads to better patient care. Table 3 (online) proposes parameters for research questions and scholarly activities to advance an empirical base for clinical education and also suggests variables that can be operationalized to quantify components of research metrics and methods. The table uses the classical PICO model (population/problem, intervention, comparison and outcomes) to identify researchable components of training that contribute to good student, preceptor, client, and program outcomes.

The sustainability of a healthcare system that can propel the nation into the future depends on the recruitment and effective preparation of the next generation of learners who will create scholarship and provide clinical service. This paper aligns broad considerations and practical recommendations designed to vitalize clinical education and spark dialogue. Educational leaders need strategies and resources to assure that all levels of healthcare learners can access and capitalize on the mounting body of evidence-based science about clinical treatment, collaborative practice, and health management systems. The collaborative investment of all stakeholders is critical to accomplish these aims, because the economics, content, and methods of curriculum delivery in higher education are all in flux, especially in health professions education. To determine the future of healthcare practice, academic and healthcare systems must create dynamic local and national collaborations that leverage our mutual knowledge; the economies of these systems will flourish only in a spirit of integrated needs and resources. A shared vision of seamless client-centered interprofessional practice that optimizes the skills of each profession requires educational experiences that allow learners to acquire safe and effective clinical competencies. This vision further requires that healthcare systems welcome students and graduates as essential to their mission, and value and promote their skills throughout their careers.

Multiple converging issues cause AH deans, educators and practitioners to reconsider clinical education priorities and strategies to strengthen the national approach to clinical education. Success relies on research and dissemination of findings about various models of clinical education, including simulation training and technological approaches to student acquisition of clinical competencies across professions, to optimize learning opportunities that produce competent practitioners. These approaches should inform the implementation of more efficient and effective learning systems than the traditional models, providing value to stakeholders across educational and healthcare arenas.

The present recommendations (Table 1) are offered in this spirit and suggest actions to meet these ends.

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Some tables for this paper are available online at www.ingentaconnect.com/content/asaahp/jah, see vol. 48, no. 4, Winter 2019 issue.
TABLE 3. Sample Research Parameters for Clinical Education Scholarship Organized by PICO Model

<table>
<thead>
<tr>
<th>Population/Problem</th>
<th>Intervention Model(s)</th>
<th>Comparison Model(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem to be studied may be identified in relation to any of these populations:</td>
<td>Alternative clinical education (CE) model(s) (Table 2) that supplement or substitute for part of CE:</td>
<td>CE model(s) currently in place in the school/site</td>
</tr>
<tr>
<td>• Students</td>
<td>• Simulations, avatars, and standardized patients</td>
<td></td>
</tr>
<tr>
<td>• Preceptors/systems/sites</td>
<td>• Virtual patients rather than clinical patients</td>
<td></td>
</tr>
<tr>
<td>• Clients/patients</td>
<td>• Telehealth care</td>
<td></td>
</tr>
<tr>
<td>• Academic faculty/schools/programs</td>
<td>• Alternate sites, such as outpatient and student-run clinics</td>
<td></td>
</tr>
</tbody>
</table>

Outcomes Targeted to Populations

<table>
<thead>
<tr>
<th>Students:</th>
<th>Preceptors:</th>
<th>Clients/Patients:</th>
<th>Faculty/Schools/Programs/System:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Self-reported competence and confidence</td>
<td>• Satisfaction with CE model and responsibilities</td>
<td>• Satisfaction with provided care</td>
<td>• Student satisfaction with program/CE</td>
</tr>
<tr>
<td>• Self-reported satisfaction with CE model</td>
<td>• Stress and workload levels</td>
<td>• Perceptions of value related to student presence in healthcare activities</td>
<td>• Student competency and readiness for entry-level</td>
</tr>
<tr>
<td>• Knowledge for practice and use of evidence</td>
<td>• Assessment skills</td>
<td>• Facility-reported length of stay, length of treatment</td>
<td>• Control of costs</td>
</tr>
<tr>
<td>• Learning in real time</td>
<td>• Professional skills in CE practice</td>
<td>• Client outcomes in terms of safety and knowledge and skills to foster health</td>
<td>• Faculty workload in clinical education</td>
</tr>
<tr>
<td>• Competency for practice</td>
<td>• Professional skills in clinical practice</td>
<td>• Willingness to try health changes</td>
<td></td>
</tr>
<tr>
<td>• Entrustable professional activities</td>
<td>• Value of student assistance and service</td>
<td>• Cost of care</td>
<td></td>
</tr>
<tr>
<td>• Interprofessional skills: understanding of values/ethics, roles/responsibilities, interprofessional communication, teams/teamwork</td>
<td>• Predictors of preceptor productivity with students present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cultural competency</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Global experience</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Cost of education</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Measurements

<table>
<thead>
<tr>
<th>Measured outcomes:</th>
<th>Reports from preceptors, academic faculty and/or clients:</th>
<th>Student self-report on outcomes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Blinded assessment of competencies</td>
<td>• Observation</td>
<td>• Surveys</td>
</tr>
<tr>
<td>• Reliable and validated tools</td>
<td>• Presentations</td>
<td>• Reflection</td>
</tr>
<tr>
<td>• Pre-clinical skills evaluation as compared to workplace competency</td>
<td>• Projects, quality improvement, research, evidence analysis reviews</td>
<td>• Debriefing</td>
</tr>
<tr>
<td>• Workload variability</td>
<td>• Interprofessional interactions</td>
<td>• Self-efficacy</td>
</tr>
<tr>
<td>• Ability to conduct quality improvement</td>
<td></td>
<td>• Professionalism</td>
</tr>
<tr>
<td>• Time to competency</td>
<td></td>
<td>• Ethical learning</td>
</tr>
<tr>
<td>• Retraining workforce, job satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Transfer of learning to onboarding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Preceptor efficiency and effectiveness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

continued on next page
### TABLE 3. Sample Research Parameters for Clinical Education Scholarship Organized by PICO Model (continued)

<table>
<thead>
<tr>
<th>Recommendation 1</th>
<th>P</th>
<th>Is the academic program current with changes in healthcare?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Regularly scheduled working sessions (2–4 times a year) among healthcare system and academic administrators, preceptors and program director/clinical coordinators targeted to review and develop curriculum aligned to current healthcare staffing and delivery models.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Status quo annual meetings reporting program outcomes to Program Advisory Committee consisting of broad range of constituents (1–2 times a year).</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Employer performance reviews of graduate performance (knowledge, skills and/or attitudes) 3 months after employment.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommendation 2</th>
<th>P</th>
<th>Are students prepared for team communication and IPE/P collaboration?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Integrated simulation or IPE experiences in preclinical curriculum aligned to knowledge of interprofessional roles and communication competencies.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Limited exposure to interprofessional roles and team communication.</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Preceptor ratings of student interprofessional communications and team skills.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommendation 3</th>
<th>P</th>
<th>Are students learning profession-specific aspects of health care technology (EHR, telehealth, apps)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Teach health care technology modules in collaboration with prospective preceptors prior to CE.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Limited exposure to technologies prior to assignment to CE sites.</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Time required at clinical site for preceptors to train students in site-specific technology, or time for students to reach competency thresholds at clinical site.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommendation 4</th>
<th>P</th>
<th>Are cross-discipline referrals occurring in the clinic that optimize clinical services across staff scopes of practice?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Conduct staff training on resources available through related professions and services, and track frequency and latency of referrals tied to recommended protocols.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Collect data on referrals in year prior to intervention as well as post-intervention.</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Clinical outcomes aligned to time to referral, client satisfaction, or staff/student ratings of importance of adherence to referral protocols.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommendation 5</th>
<th>P</th>
<th>Do learners in hospital service lines reliably identify evidence-based protocols that are aligned to clients’ diagnoses and needs?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Provide coaching to learners on each of three services lines related to evidence-based protocols for the five most common diagnoses.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Frequency of adherence to system-recommended referrals to evidence-based protocols in three other service lines with similar morbidity and volume for which training has not been implemented.</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>Client outcomes based on personalized care or client satisfaction, staff/preceptor ratings of improved student performance, or faculty assessments of student knowledge pertaining to application of designated evidence-based practices.</td>
<td></td>
</tr>
</tbody>
</table>