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PERSPECTIVE

Patient care, public health, and a pandemic: adapting educational experiences in the clinical years

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Abstract

The University of Wisconsin Madison School of Medicine and Public Health rapidly adapted its four-year, three-phase medical doctorate clinical curriculum at the onset of the COVID-19 in Spring 2020. Medical students in clinical rotations, our Phase 2 and 3 of the ForWard curriculum, temporarily stopped face to face care of patients, transitioning instead to online learning. For Phase 2 students, this single 12- week interim course included didactic content from all required integrated blocks and the creation of a new content which taught public health principles in the context of historical pandemics. Phase 3 students were rescheduled into online electives, which course directors had offered in the past and agreed to offer again during this time. All Phase 3 students participated in a Public Health Preparedness course after its rapid redesign for online delivery and scaling for an entire class. Phase 2 students returned in July 2020 to abbreviated 8-week integrated blocks that retained approximately 83% of the clinical time students would have received in the intended 12-week integrated blocks. This was possible through the frontloading of teaching sessions to the interim course and creative scheduling of clinical experiences. The 2015 curricular redesign to the integrated curriculum facilitated effective coordination and teamwork that enabled these thoughtful, rapid adjustments to the curriculum.

KEYWORDS

clinical clerkship, COVID-19, Curriculum, medical students, public health

1 | BACKGROUND

In Spring 2020, as the COVID-19 pandemic was beginning to spread across the country, the University of Wisconsin School of Medicine and Public Health (UWSMPH) was preparing for the graduation of its first cohort of students from the new ForWard curriculum. The 3-Phase, 4-year, ForWard curriculum[1] is designed to promote learning through a high level of integration both within individual courses (known as Integrated Blocks) and across Phases (Figure 1). This includes integration of fundamental sciences with clinical medicine throughout all Phase 1 and Phase 2 courses, with fundamental science weighted more heavily in Phase 1. Additionally, there are 10 designated

[Corrections added on February 22, 2021, after first Online publication: author names were updated to read correctly.]

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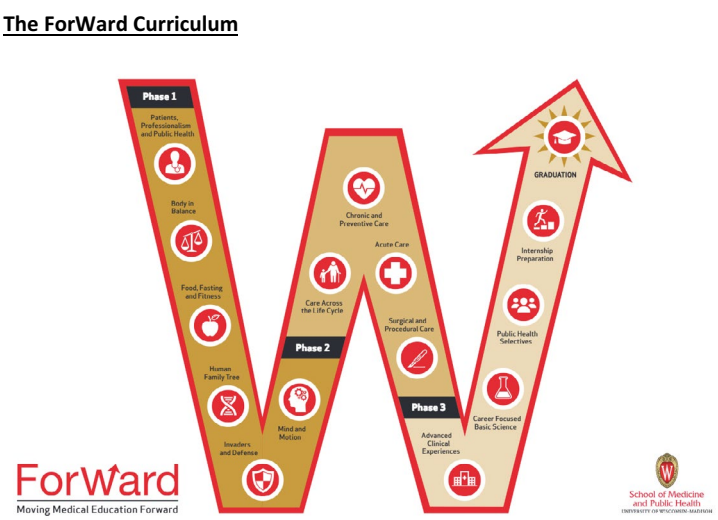

FIGURE 1 The University of Wisconsin School of Medicine and Public Health 3-phase, 4-year, integrated curriculum

domains, known as Threads, which run across all required blocks in all 3 Phases and link to graduation competencies. These threads are public health, ethics, evidenced-based medicine, health information technology, interpersonal and communication skills, interprofessional health and team-based care, patient care, professionalism and lifelong learning, quality improvement, and patient safety and scientific inquiry.

Phase 1 is three semesters and consists of six integrated blocks. Primary teaching modalities have classically included small group, student-led learning based on cases (similar to problem-based learning), faculty taught clinical skills, medium group case-based learning, and large group interactive didactic sessions.

Phase 2 is comparable to the traditional M3 year of core clinical clerkships, but uniquely, also uses an integrated model. Students complete four, 12-week blocks beginning the second semester of their second year. Each clinical block focuses on a theme and core clinical experiences; fundamental sciences and thread content are integrated throughout. The Acute Care (AC) block centers on assessing patients with urgent medical conditions, providing acute inpatient care, and transitions of care. The clinical disciplines of Internal Medicine, Emergency Medicine, Neurology, and Psychiatry are included. The Care Across the Life Cycle (CALC) block concentrates on care of vulnerable patient populations across the life span and patient care skills working with proxy decision makers. The clinical disciplines of Obstetrics and Gynecology, Pediatrics, and Geriatrics are included. The Surgical and Procedural Care (SPC) block attends to the care of adults and children undergoing an operation or procedure, including the perioperative preparation, operative care, and postoperative care. The clinical disciplines of Surgery and Surgical Subspecialties, Anesthesia as well as Interventional Radiology, Cardiology, and Gastroenterology are included. The Chronic and Preventive Care (CPC) block uniquely positions students to identify roles of physicians, interdisciplinary providers, health-care systems and communities in screening, treating, and preventing common and chronic conditions. Students' time is spent in the ambulatory setting and in communities. The clinical disciplines included are Family Medicine, General Internal Medicine, Psychiatry, and Neurology. Each 12-week, Phase 2 block follows the same cadence — including required weekly case-based learning (designed to draw connections between basic science and clinical science principles and to supplement clinical experiences with additional case-based learning and simulated activities); scheduled multiple choice exams (NBME Shelf exams and NBME customized assessment for fundamental science content), as well as an Objective Structured Clinical Exam (OSCE).

The Phase 3 curriculum begins in mid-February of the second semester of third year, after completing USMLE Step 1. This Phase is dedicated to career exploration and preparation for internships. In addition to a required inpatient acting internship, UWSMPH students must complete a required ambulatory acting internship. There are additional requirements for public health and basic science credits, each with multiple options from which students may select to complete these requirements.

Our Phase 2 and Phase 3 curriculum utilizes our statewide campus. We have two specialized programs—the Wisconsin Academy of Rural Medicine (WARM), in which 25 students in each Phase are based at one of three rural campuses, and TRIUMPH in which 16 students in each Phase are based at our Milwaukee campus. Additionally, all our traditional students spend at minimum one of their four 12-week Phase 2 blocks at one of these four regional campus statewide sites.

Yet, as the COVID-19 pandemic began in March 2020, we recognized that though our first cohort of the new curriculum had not yet graduated, yet, another curriculum revision was required and this one would need to occur at a rapid pace. We knew that the deeply integrated nature of our curriculum could serve as a strength as could the relationships and teams formed during the recent implementation of the new ForWard curriculum. We also quickly identified that as a leader in public health, UWSMPH had a unique opportunity to provide just-in-time learning for our medical students. As clinical rotations were suspended, we committed to three goals: 1) ensuring we maximized student learning related to public health, 2) ensuring students stayed on track for meeting graduation requirements, and 3) ensuring maximum future opportunities for clinical learning through front loading didactic learning and compressing assessment time. We describe strategies and innovations by which we worked to accomplish these goals.

2 | RELEVANT AND TIMELY PUBLIC HEALTH CURRICULA

When clinical rotations and in-person electives were suspended in mid-March 2020 due to the COVID-19 pandemic, the Phase 2 and Phase 3 leadership teams planned and implemented next steps for these cohorts of students to restart learning within 2 weeks. Fully online options were planned, while trying to remain flexible to resume clinical rotations as soon as feasible. As public health is a core thread across all Phases of the ForWard curriculum, leadership sought to maximize opportunities for just-in-time learning while meeting UWSMPH core competencies.

2.1 | Phase 2

A 12-week online interim course was created for all Phase 2 students. The content was derived primarily from the required weekly case-based sessions and assignments from all four Phase 2 integrated blocks. This work contributed to the completion of all the Phase 2 didactic curriculum, by shifting non-patient care activities to the interim time with a goal of maximizing clinical time when clinical rotations would resume. In contrast, the community-based health education project and health advocacy projects within the CPC block were not moved to the interim course and instead were considered parallel to clinical care, hence, remaining as part of the clinical rotations, once they resumed.

Recognizing that these rapid changes in societal functioning not only disrupted student learning, but also opportunities for peer interactions, an additional learning activity was designed to focus on public health perspectives of the COVID-19 pandemic while maximizing peer–peer interactions. This activity was integrated into the online-interim curriculum. For one half-day each week, over 6 weeks, students were randomly sorted into small groups of 5–6 students and each group was assigned one of six historic pandemics from a list compiled by the course design team (Table 1).

TABLE 1 Historical pandemics researched by Phase 2 students for the public health curriculum during the Spring 2020 interim course

1889–1890 Influenza pandemic (H2N2/H3N8 virus)
1910–1911 Cholera pandemic (1899–1923)
1918 Influenza pandemic (H1N1 virus)
1957–1958 Influenza pandemic (H2N2 virus)
1976 HIV Pandemic
2014 and 2017 Ebola epidemics

The activity consisted of three components. First, each student independently wrote a paper addressing the group's assigned pandemic and related core public health topics including: (1) Health ethics: balancing personal liberty versus public health interest, (2) Health equity aspects of pandemics/epidemics, (3) Population dynamics and their impact on outbreak control or spread, (4) Global, national, and local aspects of the historic outbreaks, (5) Surveillance and coordination aspects of public health, and (6) Identification of lessons from the past pandemic that apply to the current COVID-19 pandemic. Each student then reviewed a peer group member's paper and provided feedback to the peer using a standardized rubric. This was also submitted to course leadership.

Second, student teams met online to prepare a presentation describing historic information regarding their assigned pandemic, and the public health perspectives from each group member's paper. Each student was required to contribute to the presentation development and take part presenting. Presentations were scheduled such that students were able to hear a group presentation from each of the six historic outbreaks. A faculty member viewed presentations and a single grade (P/F) was provided to each group.

Third, students participated in small group discussions of published approaches to public health concerns. Students completed pre-readings, which addressed best practices related to community health engagement and public health and the published proposals themselves. These proposals were from medical or public health literature but were not related to COVID-19. In the small group discussions, students were tasked with discussing these proposals through the lenses of best practices and stakeholders related to community and public health. Attendance was required.

In addition to meeting core learning objectives related to public health, the methods used intentionally addressed peer–peer isolation through providing multiple requirements for students to actively engage in small group discussion and peer teaching.

Anecdotally, the course was well received by students and teaching faculty. Course evaluation data suggests that the students found this delivery method at least equivalent to the face-to-face format they had experienced for case-based sessions in their first integrated block prior to discontinuation of clinical experiences, rating the effectiveness of the cases a 4.61 (standard deviation 1.32) on a 7-point Likert scale. Data are not yet complete to determine what impact this may have had on learning outcomes.

2.2 | Phase 3

The Phase 3 leadership similarly reviewed the existing curricula and graduation requirements to identify online-only opportunities for the spring while concurrently planning for a staged return of Phase 3 students to face to face clinical care of patients. To allow flexibility given the uncertain timing of a safe return to clinical rotations, online course offerings were scheduled in 2 and 4-week segments. Phase 3 leadership reviewed all course offerings for students to determine which were or could be offered online. Some of the ForWard curriculum's basic science and public health selectives had originally been designed as fully online courses and some others seemed adaptable to this format. These course directors were encouraged to offer their course in an online-only format to meet curricular needs for two 4-week blocks during this time. Several volunteered, and the resulting course offerings included public health, basic science, and a virtual Radiology elective (Table 2). Each course director determined if the course would be delivered over 2 or 4 weeks for one or more of the available sessions. In addition, course capacities were negotiated to ensure sufficient total capacity for 176 medical students.

In addition to these offerings for the first and third 4-week blocks, a decision to require two 2-credit online courses, each of which would run over a 4-week period. One of these was an existing highly rated online course, Clinical Therapeutics. The second was a new offering, modified from a preexisting course, Public Health Preparedness. An educational design expert and prior course director, now emeritus professor of Population Health Sciences, paired to provide just-in-time learning regarding pandemics and emergency preparedness via an online format to 150 Phase 3 medical students. The broad course goal was to teach students how organizations and government prepare for and respond to public health emergencies, disasters, and infectious outbreaks. Students were exposed to methods used by public health officials, public health practitioners, state and local health department staff, national agencies, health-care personnel, and emergency responders to plan for and respond to the impact of public health emergencies and outbreaks. Students were required to: 1) describe involved organizations and disciplines as well as current methods for disaster planning, preparedness and response, public health threats, and contingency plans; 2) examine the impacts of emergencies, disasters, and outbreaks to our systems, health, and society; 3) identify the role of the physician as provider and partner in disaster planning, preparedness, and response; and 4) discuss ethical challenges and considerations in public health emergency and response.

The revised course included a combination of presentations, case studies, and assignments to guide students in meeting the objectives of the course. The course was divided into seven online modules with a final project where students researched past epidemics and compared them to COVID-19 culminating in an online video and poster gallery walk. While the majority of the course was asynchronous, there were several synchronous activities incorporated that featured experts involved in the local and state public health response to the COVID-19 pandemic to engage students in thinking about ethical dilemmas, equity issues, the role of the clinician, criteria and legal standing for stay-at-home orders, surveillance, testing, contact tracing and recovery.

Students generally appreciated the opportunity to engage in such a timely and relevant topic. On a 7-point Likert scale (1=strongly disagree, 7=strongly agree), students gave a mean 6.1 rating to "Overall this was a good learning experience."

TABLE 2 Public health, basic science, and other course offerings for Phase 3 student electives/selectives during the Spring 2020 interim course

Public Health	Basic Science
• Patient Education as a Strategy for Advocacy • Climate Change Medicine • Global Health • Health Informatics • Outbreak! Epidemics, Migration, and Global Health	• Neurology • Diet and Neurological Disorders • Science of Cutaneous Disease • Infectious Disease Detectives • Pathology for Surgeons • Transfusion Medicine • Applied Physiology: Mechanical Ventilation • Genomics, Proteomics, and Metabolomics
Other	
• Radiology Elective	

3 | MAXIMIZING CLINICAL LEARNING

Overall, UWSMPH planned a staged return to clinical rotations, with about half of the Phase 3 students (approximately 80) returning 1 month ahead of all Phase 2 and remaining Phase 3 students. Phase 3 scheduling procedures were modified to prioritize student needs for letters of recommendation and key rotations prior to residency applications. Instead of a scheduling lottery, departments mentored students based

TABLE 3 Modifications to the Phase 2 integrated clinical blocks during the SARS-CoV-2 Pandemic, Spring 2019–2020 and Fall 2020–2021

	12-week ForWard Integrated Blocks (pre-COVID−19)	**Consolidated 8-week Integrated Blocks and additional modified plans in response to pandemic**
Acute Care	Learning Activities: • 6 weeks Medicine • 2 weeks Neurology inpatient • 2 weeks Psychiatry inpatient • 2 weeks Emergency Medicine • 4 hours/week formal didactics Assessments: • 1–2 Shelf exams • 1 CSE • 1 OSCE	Learning Activities: • 4 weeks Medicine • 2 weeks Neurology inpatient • 2 weeks Psychiatry inpatient Assessments: • 1 Shelf exam
Care Across the Life Cycle	Learning Activities: • 4 weeks Pediatrics • 4 weeks Ob/Gyn • 2 weeks Geriatrics • 2 weeks Choice elective • 4 hours/week formal didactics Assessments • 2 Shelf exams (Pediatrics, OB/Gyn) • 1 CSE • 1 OSCE	Learning Activities: • 4 weeks Pediatrics • 4 weeks OB/Gyn Assessments • 1 Shelf exam
Chronic and Preventive Care	Learning Activities: • 8 weeks Ambulatory Medicine/Family Medicine • 2 weeks Neurology • 2 weeks Psychiatry • 4 hours/week formal didactics • Community Health Engagement Project Assessments • 1–2 Shelf exams • 1 CSE • 1 OSCE	Learning Activities: • 4 weeks Ambulatory Medicine/Family Medicine • 2 weeks Neurology • 2 weeks Psychiatry • Community Health Engagement Project Assessments • 1 Shelf exam
Surgical and Procedural Care	Learning Activities: • 4 weeks General Surgery • 6 weeks Surgical subspecialty • 2 weeks Anesthesiology • 4 hours/week formal didactics Assessments • 1–2 Shelf exams • 1 CSE • 1 OSC	Learning Activities: • 4 weeks General Surgery • 4 weeks Surgical subspecialty • 2 weeks Anesthesiology • 4 hours/week formal didactics Assessments • 1 Shelf exam
COVID Interim Course	--	Learning Activities: • Formal didactics for all blocks • Public health, pandemics curriculum Assessments • 3 Shelf exams
Post-Phase assessments		Assessments • Comprehensive CSE • Comprehensive OSCE

on intended residency specialty, and then, all departments participated in a mass collaborative effort to manually create student schedules through September. Clinical experiences resumed with minor modifications as needed, such as the inclusion of telehealth experiences or adjustments to utilized clinical settings. UWSMPH is not permitting students to participate in the care of COVID-positive patients or patients under investigation for possible COVID disease.

The Phase 2 students were out of scheduled clinical experiences for a total of 14 weeks. This reduced the number of Phase 2 clinical weeks from 48 weeks to 34 weeks, with 10 weeks completed prior to the sudden halt of clinical rotations in March 2020 and 24 weeks remaining after the students' return on July 6th. The 12-week integrated blocks were all reduced to 8-weeks to allow students to complete the Phase on time. Additional modifications were required to these abbreviated 8-week blocks to ensure completion of all remaining Phase requirements. Moving the required, weekly case-based learning sessions to the interim course allowed for 33 half days to be refocused on clinical care of patients when students could reenter clinical settings. Substantial alterations were made to the assessment plan as well. Students must pass seven NBME subject exams throughout Phase 2 and were encouraged to complete three of these exams during the interim course. This included one exam from the 10 weeks of clinical experience they completed pre-pandemic (January-mid-March) and two exams of their choice based on didactic content in the interim course. Additionally, the required five station block OSCE is being replaced by a comprehensive end of Phase 2 OSCE following the conclusion of Phase 2 rotations. Similarly, the 50 question NBME customized fundamental science assessment associated with each block is being replaced by a single comprehensive fundamental science exam (100 questions) to be completed at the end of Phase 2. These assessment changes allowed for an additional 6 half days of clinical experience for each student. Additionally, adjustments to typical student schedules incorporated more evening, overnight, and weekend clinical assignments where possible.

The clinical schedules themselves also needed modifications to ensure adequate exposure to core experiences and to meet departmental and campus scheduling needs. Informed by block learning objectives, LCME requirements,[2] and AAMC data on clerkship length,[3] block leaders reviewed and adjusted the components and duration of clinical block schedules. This was done with consideration to allow sufficient flexibility for regional campus sites with different clinical resources. For example, the Care Across the Life Cycle (CALC) block emphasizes care of vulnerable populations and working with proxy decision makers and is typically scheduled as 4 weeks of Pediatrics, 4 weeks of Obstetrics and Gynecology, 2 weeks of Geriatrics, and 2 weeks of student's choice in similar fields (e.g., a pediatric subspecialty, additional obstetrics experience with clinical nurse midwives, or a related field such as Child and Adolescent Psychiatric or Pediatric Neurology). The abbreviated 8-week schedule omits Geriatrics and the 2 weeks of "student choice" to include 4-weeks each of Pediatrics and Obstetrics and Gynecology. Each block made similar edits, and ultimately the experiences removed also included Emergency Medicine (AC), Anesthesia and 2 weeks of "student choice" surgical subspecialty (SPC), and 2 of 6 weeks of Family Medicine/General Internal Medicine (CPC) (Table 3).

Although students were out of clinical rotations for 14 weeks in Phase 2 (nearly 30% of the academic year), the net effect of these modifications allowed students to maintain 83% of the clinical time for which they were originally scheduled.

Several schedule challenges remained in these abbreviated clinical blocks. The eliminated elements of the typical ForWard Phase 2 integrated blocks helped alleviate some of these challenges with additional scheduling flexibility as students returned to clinical experiences. For example, although Geriatrics is not currently being used in the abbreviated 8-week version of CALC, that capacity was able to be "lent" to the Chronic and Preventive Care (CPC) block. CPC primarily utilizes Family Medicine and General Internal Medicine ambulatory clinics for student experiences, including private-practice, community-based preceptors. However, many clinics are still operating at reduced capacity and some preceptors were unable to resume taking students immediately. Shifting existing Geriatrics capacity to the CPC block helped provide opportunities for all students. It is also desirable to keep willing preceptors engaged in the ongoing teaching efforts for the long-term sustainability of the curriculum when these integrated blocks return to their pre-pandemic 12-week structure.

Our regional campus sites were able to continue to accommodate all the special program, WARM and TRIUMPH students, with the clinical reentry plan. However, only 2/3 of our traditional students were able to have one of their four clinical blocks at one the statewide regional campuses. These students were accommodated at the Madison campus for their entire Phase 2 clinical experience.

The clinical environment to which students returned in July includes much more telehealth than before. The medical school convened a workgroup which developed best practice guides to be referenced by students and faculty for including students in telehealth visits. Representatives from this group worked closely with the health-care system to ensure students had appropriate training and access to the telehealth platform. Workspace within the medical school was set aside for students who could not perform telehealth encounters from their homes due to connectivity or privacy concerns.

Students received detailed information regarding changes to the learning environment, including rules not to be

involved in face-to-face care of patients known to be COVID-19 positive. Students received specific instructions on use of personal protective equipment (PPE). Each of our health systems locally and around the state provided PPE for students, so that what they were using matched the PPE being used by other members of patient care teams. Central university guidance and support was provided for testing, quarantine, and contact tracing related to medical students, regardless of the location of their clinical experience.

4 | PANDEMIC LESSONS/FUTURE PLANS

Looking at the adjustments that have been made during this time, it is interesting to consider which of them may actually be improvements that should be maintained going forward. Some curricular content and learning methodologies are being actively considered for retention.

The Phase 3 Public Health Preparedness course described above was very well received by students. Scaling the online course to accommodate higher enrollment creates new opportunities for future SMPH students. This content could be made available to students annually to help fulfill their graduation requirement for public health credits. The online format could also be leveraged to provide students scheduling flexibility, for example, during interview season. The school has another example of a high-capacity/high-enrollment online elective that is offered annually during interview season which has been very successful.

We have been forced to overcome previous barriers related to quality connectivity between our regional campus sites for remote learning, with direct student access to online learning platforms replacing prior institutionally based web-conferencing technology. The use of online platforms for didactics decreases travel time at all our regional and local sites and may be retained as a strategy to maximize clinical time on rotation in the future. This could help maximize faculty capacity to teach, by decreasing their travel time and allowing for faculty to participate regardless of numbers of students at their specific statewide location. This would also help alleviate some long-standing practical challenges likely faced by many medical centers, such as limited parking for faculty and students alike. The Phase 2 interim course also utilized standardized patients in some of the online case-based learning sessions, a practice which will continue.

Another benefit of the need to frontload "classroom" teaching, is the resulting uninterrupted clinical experiences. This is being actively appreciated by both students and faculty. At least one of the Phase 2 blocks, Surgical and Procedural Care, is considering a similar modification going forward. Instead of returning to a 12-week schedule where 1 half-day per week is for non-face-to-face educational activities, this block will deliver all the didactics in a 2-week consolidated block to allow 10 weeks of uninterrupted clinical time. We have also seen positive impact of being forced to more creatively schedule students' clinical time. For example, to ensure sufficient capacity for students on Labor and Delivery, while maintaining physical distancing efforts, fewer students were scheduled at one time and shifts were shorter. Not more than two students are scheduled for a consistent 6-hour shift on the service each day compared to prior schedules when 3–4 students were scheduled across two shifts per day. Limiting each shift to two students has resulted in more direct mentoring with the supervising residents and faculty. Having students scheduled on shifts around the clock created new opportunity to develop skills for structured patient handoffs.

Future program improvement work will look at the impact of some of the Phase 2 assessment changes. For example, we knew pre-pandemic that the transition to this integrated curriculum and change in the USMLE step 1 exam timing to after Phase 2 of the curriculum We knew that pre-pandemic, [these things] significantly improved our students' mean performance on USMLE Step 1. This has paralleled outcomes published by other institutions.[4] After this year, we can consider the impact on USMLE step 1 score of this COVID cohort's single cumulative NBME customized fundamental science exam to the prior integrated curriculum's spaced NBME customized assessments. Similarly, we are curious about the comparative impact of a single end of Phase OSCE to the prior spaced block-specific OSCE assessments. An additional assessment question relates to the NBME subject exams, and whether there is a difference in performance correlated with whether these are taken in conjunction with versus independent of the corresponding clinical experience.

The forced shortening of time for core clinical experiences in Phase 2, while maintaining the same required experiences, expectations, assessments, and outcomes, has provided an opportunity to test the waters of moving away from time-based education to competency-based education. We will continue to follow this impacted cohort of students through their required Phase 3 advanced clinical requirements to determine if there are any notable changes in clinical performance. We will also be able to compare measures of preparedness for residency with prior cohorts from UWSMPH through standing program director surveys and surveys of graduates one year out.

Despite the ongoing stresses maintaining high-quality medical education throughout the pandemic, this experience has redemonstrated the scope of possibility from work of the committed teams that have built and now adapted the new ForWard curriculum. The initial building of a highly integrated curriculum forced the creation of necessarily collaborative teams. Having centralized so many of our educational processes also streamlined coordination with the healthcare institutions where UWSMPH

students train across the state of Wisconsin, allowed for system-level solutions, rather than each course and department independently working to develop online curriculum and adapted clinical experiences. Without the preexisting collective mindset and dedication of individual faculty and staff of this medical school, these creative yet rapid adaptations may not have been possible. Though it is premature to determine success of these efforts, to the extent that faculty, staff, and student morale are a measure, we are poised for positive outcomes.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

AUTHOR CONTRIBUTIONS

Dr. Nackers made substantial contributions to the conceptualization and design of the manuscript, drafting the manuscript, and critically revising it. Ms. Becker made substantial contributions to the conceptualization and design of the manuscript, drafting the manuscript, and critically revising it. Dr. Stewart made substantial contributions to the conceptualization and design of the manuscript, drafting the manuscript, and critically revising it. Dr. Beamsley made substantial contributions to the conceptualization and design of the manuscript, drafting the manuscript, and critically revising it. Dr. Aughenbaugh made substantial contributions to the conceptualization and design of the manuscript, drafting the manuscript, and critically revising it. Dr. Chheda made substantial contributions to the conceptualization and design of the manuscript, drafting the manuscript, and critically revising it.

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