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Questioning medical competence: Should the Covid-19 crisis affect the goals of medical education?

Olle ten Cate^a , Karen Schultz^b , Jason R. Frank^c , Marije P. Hennis^d , Shelley Ross^e , Daniel J. Schumacher^f , Linda S. Snell^g, Alison J. Whelan^h  and John Q. Youngⁱ ; on behalf of the ICBME Collaborators

^aCenter for Research Development of Education, University Medical Center Utrecht, Utrecht, The Netherlands; ^bDepartment of Family Medicine, Queen's University, Kingston, Canada; ^cRoyal College of Physicians and Surgeons of Canada and Department of Emergency Medicine, University of Ottawa, Ottawa, Canada; ^dUniversity Medical Center Utrecht, Utrecht, The Netherlands; ^eCBAS Program in the Department of Family Medicine, University of Alberta, Edmonton, Canada; ^fDivision of Emergency Medicine, Cincinnati Children's Hospital Medical Center and the University of Cincinnati College of Medicine, Cincinnati, Ohio, USA; ^gRoyal College of Physicians and Surgeons of Canada, McGill University, Montreal, Canada; ^hAssociation of American Medical Colleges, Washington DC, USA; ⁱDepartment of Psychiatry, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell and the Zucker Hillside Hospital at Northwell Health, Glen Oaks, NY, USA

ABSTRACT

The COVID-19 pandemic has disrupted many societal institutions, including health care and education. Although the pandemic's impact was initially assumed to be temporary, there is growing conviction that medical education might change more permanently. The International Competency-based Medical Education (ICBME) collaborators, scholars devoted to improving physician training, deliberated how the pandemic raises questions about medical competence. We formulated 12 broad-reaching issues for discussion, grouped into micro-, meso-, and macro-level questions. At the individual *micro level*, we ask questions about adaptability, coping with uncertainty, and the value and limitations of clinical courage. At the institutional *meso level*, we question whether curricula could include more than core entrustable professional activities (EPAs) and focus on individualized, dynamic, and adaptable portfolios of EPAs that, at any moment, reflect current competence and preparedness for disasters. At the regulatory and societal *macro level*, should conditions for licensing be reconsidered? Should rules of liability be adapted to match the need for rapid redeployment? We do not propose a blueprint for the future of medical training but rather aim to provoke discussions needed to build a workforce that is competent to cope with future health care crises.

KEYWORDS

Learning outcomes;
outcome-based; curriculum

Introduction

The 2020 SARS-CoV-2 (COVID-19) pandemic has profoundly affected many sectors of society, including health and education. The adaptations that have taken place in the work processes of students, teachers, programs, and institutions in health care and education and their intersection in health professions education could and, we would propose, should have lasting effects (Lucey and Johnston 2020; Rose 2020; Hauer et al. 2021). Many of the adaptations in medical education – in both classroom and clinical education – have been documented (Goldhamer et al. 2020; Hall et al. 2020). In this paper we do not focus on these adaptations, but rather on how the pandemic has more fundamentally affected our views on medical competence.



In many places, the pandemic has caused redeployment of physicians and other health care workers and has led to calls for various clinicians to assist in the management of patients with COVID-19 in intensive care units (ICUs) and on medical wards. Medical professionals have been required to carry out tasks that some had never expected to perform

Practice points

- The COVID-19 pandemic has had a profound impact on medical education and has stimulated a rethink of concepts around medical competence.
- The COVID-19 pandemic leads to relevant questions at the student and physician (micro) level, the institutional (meso) level, and the state, national, and regulatory (macro) level.
- Issues that emerged because of the Covid-19 pandemic highlight the need for adaptability as an outcome in medical education.

and for which they had not been trained. Some readily engaged with the challenge, while others could not or would not. What underpinned those different responses? And were all those who did engage really competent to do so?

In this paper, we, who are members of the International Competency-based Medical Education (ICBME) Collaborators, discuss how the COVID-19 crisis provides an

CONTACT Olle ten Cate  t.j.tencate@umcutrecht.nl  Center for Research and Development of Education, University Medical Center Utrecht, P.O. Box # 85500, Utrecht 3508 GA, The Netherlands

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Figure 1. Task need and risk as determinants of the suitability of health professionals with varying capabilities to be employed.

impetus for the medical community to rethink foundational issues, including the meaning of the term ‘competent physician’, the very nature of clinical competence, and the implications for how competence can be developed and supported during a crisis.

Among the various definitions of competence, one is ‘the capacity to respond to individual or societal demands in order to perform an activity or complete a given task’ (IGI Global 2021), which, for a medical professional, would be the capacity to respond to challenges faced in clinical practice. These challenges may come with more or less risk for patient safety, may need a more or less urgent response, and may require more or less preparedness and training. The need for redeployment of health care workers, the opportunity for these workers to properly train for new tasks, and the willingness of physicians to engage in novel tasks during the pandemic have depended on the need for action and the risk of the work to both patient and physician, as well as individual clinicians’ perceptions of these needs, the risks, and their personal capabilities. Simplified, the two external conditions – urgency and risk level – lead to four situations (Figure 1).

Care during the COVID-19 pandemic has often sat in the top right corner of Figure 1. At the peaks of the pandemic, emergency physicians, family physicians, infectious disease specialists, intensivists, internists, and pulmonologists were, not surprisingly, called on to attend to patients with COVID-19. However, in many hospitals, too few dedicated specialists were available to cover the care for these patients, so physicians from other specialties assisted, including ones less familiar with inpatient medicine, either because they volunteered or because they were asked to help. Drastic drops in pediatric care volumes, for instance, meant that pediatricians requested to care for critically ill adult patients in pediatric ICUs (Kneyber et al. 2020).

Complicating the challenge posed by the heterogeneous physician workforce, disease trajectories and recommended treatment(s) for COVID-19 were largely unknown early in the pandemic and have rapidly evolved since then. Physicians were forced to care for profoundly unwell

patients with limited, varying, and rapidly changing guidelines, without the option of delaying care to defer to better informed colleagues. This led us, as educators, to consider what is needed to competently care for patients in such situations.

Professionals, medical schools, postgraduate programs, licensing organizations, and the public all have an image of what a competent physician is, but defining this term, or operationalizing those definitions, has always been difficult (ten Cate 2017). Even highly cited, authoritative definitions, such as the one provided by Epstein and Hundert (2002) (‘the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in daily practice for the benefit of the individual and community being served’), leave room for interpretation to some extent as they do not specify *which* knowledge and skills may be expected, and people may not interpret or apply the standards in the same way. This may be due to the fact that competence is, in part, context dependent (ten Cate et al. 2010; ten Cate and Billett 2014; Teunissen et al. 2021). Billett (2017) distinguishes three components or domains of occupational competence: a canonical domain, shared by all similar professionals, a situational domain determined by the context, and a personal domain that explains individual differences, even among competent professionals. In regular circumstances, most physicians work in stable and familiar contexts for which their canonical, professional qualifications, plus contextual support from colleagues, coworkers, and professional societies, provide sufficient guidance to meet all standards and expectations. There is a limit, however, to what can be formally stipulated as required competence. For example, some knowledge is tacit and hard to codify. In a pandemic such as COVID-19, contextual changes require an adaptation of competence, associated with initial uncertainty. Throughout their careers, all physicians face moments of uncertainty: job changes, advances in care with new therapies and procedures, unfamiliar problems, rare diseases, and patients with atypical presentations that are not reflected in canonical clinical guidelines (Colaïanni et al. 2021). These unfamiliar situations require renewed professional judgment, clinical reasoning, actions, and care. Professionals cannot hide behind ‘I apologize, but I did not learn that in school’ (Duijn et al. 2020). The general societal and professional expectation is that all physicians can be trusted, to some extent, to care for patients with health care questions and problems with which they are not familiar, through ongoing self-directed learning. Physicians are expected, in other words, to be adaptable (ten Cate et al. 2021).

The question is: what adaptability limits define reasonable expectations? The COVID-19 pandemic has spotlighted this question. Physicians have always needed to be adaptable, but rarely in such a rapid and expansive way and rarely with so many profoundly sick patients, in a situation in which the health care providers themselves were put at personal risk.

At the time we write this (winter 2020), our societies have experienced multiple waves of the pandemic. Although the situation is improving in some countries, case counts are rising in other countries, with new variants of the virus surging. While a few treatments have emerged,

the options remain limited. More waves of COVID-19 are predicted even as vaccines roll out worldwide. Experts also predict that other new infectious diseases will emerge in the future, and given global interconnectedness, these will present serious threats to public health. Added to these predictions is the likelihood of changes to long-established treatment approaches to disease in general as, for example, antibiotic resistance grows. In other words, provision of health care will probably require physicians to adjust to new conditions with more agility and adaptability than many would have expected when they were trained, but the awareness is growing. An example of this phenomenon is the national redesign of the training structures for allied health professions in the Netherlands, using transdisciplinary entrustable professional activities (EPAs) for a more flexible workforce (CZO Flexlevel [date unknown]).

We set out to explore questions raised by the pandemic and the massive redeployment of medical and other health professionals to fight this disease for the conceptualization of medical competence through the lens of adaptability. We consider questions concerning medical students, residents, and practising physicians as well as educational and regulatory institutions.

We pose educational and organizational questions, rather than providing answers, at the micro, meso, and macro levels, to raise awareness about health professionals' preparedness and adaptability for the inevitable diversity of future work, be it for third and subsequent waves of the COVID-19 pandemic, the next pandemic, or other national and global health crises (Figure 2).

The micro level: Reconsidering medical competence from the perspective of individual trainees and practising physicians

Competence, of course, is the ability to perform specific tasks. Professional competence then pertains to professional tasks, those expected to be performed by professionals, often called experts because they are regarded or consulted as an authority on account of special skill, training, or knowledge (Oxford English Dictionary [date unknown]). Experts are expected to perform not only tasks with which they are highly familiar because they have completed them many times, but also tasks they have rarely or never previously performed if those tasks fall within their expected scope of practice (Ward et al. 2018). All medical graduates should be trusted and expected to cope with unfamiliar tasks to a certain extent (ten Cate et al. 2021), but the question is to what extent, both within and outside of an expected scope of practice. This leads to several questions across the medical career cycle, from selection for medical school through established practice:

- i. Coping with unfamiliar issues and uncertainty requires adaptability and creative problem-solving, which in turn require energy and initiative. Should applicants' attributes associated with adaptability and willingness to work in uncertain circumstances be assessed in medical school selection processes, and/or should schools work to develop these attributes in their students? Can initiative and creativity become an

expectation, and should that be communicated to students when they start medical school?

- ii. Altruism and courage: Is providing care in a setting of high need with many unknowns not only a skill set but a (moral) attitude as well? As per Figure 1, calls for redeployment will occur in high-need situations where need overwhelms the available resources. Situations of high need and low risk (top left box Figure 1) may call for altruism (e.g. providers may need to be away from family for extended periods of time; low-risk providers may need to free up time for high-risk providers by taking over the care of their patients who do not have the disease in question; providers may need to do additional clinical work, with or without pay, to meet needs or demands). Situations of high need and high risk, for patients, physicians, or both, may also require courage. These are represented by the top right box of Figure 1, where health care providers are working outside of their comfort zone, but reasonably within the scope of their abilities, with or without supports, in stressful, uncertain circumstances. Health care providers will respond in a spectrum of ways in such circumstances, from being unwilling to engage even though they have sufficient competence, to taking on substantial risk in terms of either patient safety or the safety of their team or themselves. Both ends of the spectrum are problematic. The middle ground is where our questions lie. Being a physician involves a commitment to service – to patients and to public health – but how far does this extend? To state the obligatory element more directly: Can you be a physician but choose to refuse to work in an unfamiliar, challenging, or high-risk setting? And if so, what are the ethical boundaries for such decisions, such as level of personal risk compared with possible patient outcome benefit, or the competence gap compared with what is clinically needed. Can you, or indeed should you, insist on support, supervision, adequate protection, and further training before engaging? What are the basic thresholds of public health (i.e. extent of population threats), clinician safety (e.g. availability of adequate protective equipment), and a clinician's competence (e.g. adequate combination of prior experience, focused training, and support) that determine whether there is an obligation for any physician to serve? Can this type of altruism or courage be expected, and should medical students be told at the start of their training that during their career they may be called on to act in such circumstances? And should this individual courage, altruism, and risk-taking be justified only if leaders at the meso and macro levels take responsibility to support, educate, and safeguard health care providers in such circumstances?
- iii. Can learners be trained for adaptability (Cutrer et al. 2017). Master adaptive learner features, such as having the right curiosity, motivation, mindset, and resilience, have been suggested (Cutrer et al. 2018). Are these fixed personal attributes or can education foster skills in adaptive self-regulation? Exposing learners to unfamiliar cases and problems, carefully chosen to

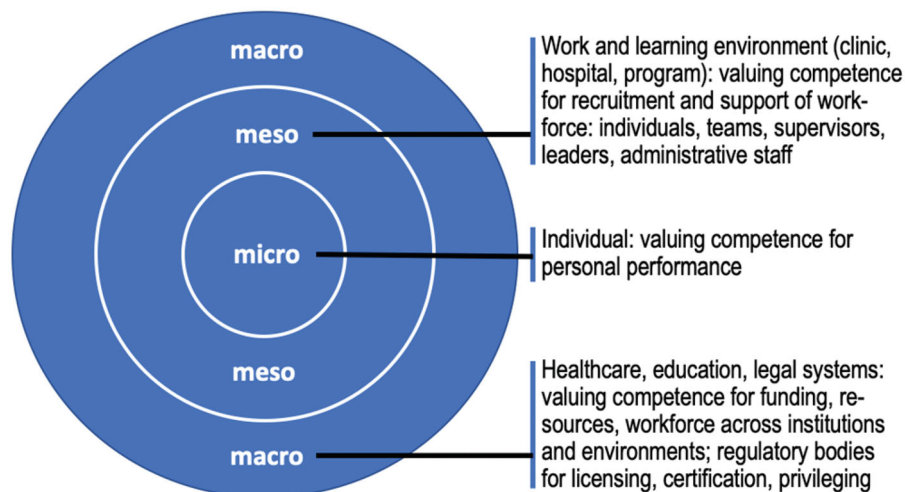


Figure 2. Valuing medical competence during a health crisis from three perspectives: individual, program and institution, and regulatory and societal systems.

challenge them within reason and to enable them to deliberately build problem-solving skills to deal with uncertainty, may serve to develop adaptive skills. Such approaches to capture, reinforce, and assess adaptive skills have been tried with some success (Wijnen-Meijer et al. 2013; Kalet et al. 2017).

- iv. What support is needed if a medical professional is asked to work outside their current scope of practice? To ease a transition from familiar to unfamiliar practice, a 'zone of proximal development' may be identified. Vygotsky (1978, p. 86), who coined this term, defined it as 'the distance between the actual developmental level, as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers'. Guidance, or supervision, by more advanced experts or peers can bridge the gap and ensure not only safe practice but also that an individual learns to practise without supervision. Within this zone, learners or professionals have 'conditional competence', (i.e. competence only if there is guidance and supervision available). Putting professionals back in the position of learners being supervised and assessed will require humility and the skill to work effectively in a team. Should these attributes be included in medical school selection processes and reinforced or built during training and professional practice?

Previously attained skills may decay after an individual has been in practice for many years (Choudhry et al. 2005; Norcini et al. 2017). What can be expected of very experienced, but very specialized medical experts in areas where they previously trained but no longer practise? Can these professionals refuse a request that they rebuild these skills and assist with tasks requiring skills they once possessed but no longer have mastery over, or can they insist on receiving proper education and assessment of competence before they take on these activities? The social contract between the medical profession and society may implicitly include this obligation, but clearly the *primum non nocere* principle (first, do no harm) sets limits on what can be asked. Questions that arise include the following: Can

medical experts be called on to use long-forgotten skills that can be relearned in a short time? Can experts be asked to acquire skills that have never been in their scope of practice but that may be learned and applied with an acceptable level of risk to the practitioner or the patient? When is that acceptable and when is it rather advisable for a physician to refuse to work or train outside their normal scope of practice?

The meso level: Reconsidering medical competence from the perspective of local programs and institutions

Virtually all medical schools in the world have been forced to adapt their educational processes since the start of the pandemic. Face-to-face education has been suspended, classroom teaching has turned into online education, and clinical rotations have been temporarily postponed or significantly curtailed (Goldhamer et al. 2020; Lucey and Johnston 2020; Wayne et al. 2020). But at the same time, some medical schools enabled students to graduate early (Barzansky and Catanese 2020; Cole 2020; Flotte et al. 2020) to meet the demand for health care workers where the need was highest. These institutional measures implicitly redefined the competence needed for medical licensing or refined the assessment of competence to certify that students who had attained the goals of training before their previously set graduation time could be licensed. Carefully constructed curricula, programmatic assessment framework requirements, and examination rules suddenly became flexible. The argument that competency-based medical education, if defined by more variability in time against fixed graduation standards (Frank et al. 2010), is not possible in undergraduate education, seems to have been refuted. The COVID-19 crisis has required undergraduate medical programs, postgraduate programs, and institutions to think of adapting curricula and assessment, leading to several questions.

- v. Will more individualized curricula be needed to qualify learners more on the basis of their competence rather than solely on the basis of their completion of a

preset duration of training (Santen et al. 2020)? One approach may include entrustable professional activities (EPAs). EPAs are units of professional practice that learners can be trusted to perform as soon as they have demonstrated the required competence (ten Cate 2005; ten Cate and Taylor 2020). A physician's scope of practice may be envisioned as an individualized portfolio of credentialed EPAs, which is gradually built during training, and which is maintained or adapted by practitioners throughout their working life (ten Cate and Carraccio 2019). In addition to potentially individualizing times of graduation, this approach may also prove useful in addressing crises such as COVID-19. EPAs for the work needed to deal with the crisis can be articulated, training can be provided (the nature and extent of which would vary depending on the individual and their existing skill sets), and assessment can be organized. Ventilator management, for example, could well be shaped as an EPA (Hester et al. 2020). Digital badging, a formalized and externally retrievable recognition of competence in an area, has recently been recommended to create a more individualized profile of competence (Norcini 2020; Noyes et al. 2020), a development that would perfectly fit with the use of EPAs (Mehta et al. 2013).

- vi. Should schools, institutions, professional organizations, and working groups create 'rapid deployment' modules or bootcamp activities and offer them when needed (Hester et al. 2020)? Should there be a repository where such curricula can be shared nationally or internationally around emerging topics? Should hospitals in collaboration with medical schools create rapid-deployment teams, regularly updating their emergency skills, in analogy with the military reserves, to respond to crises directly, while simultaneously redirecting and/or training a larger workforce? Where is the sweet spot between crisis preparedness and resource needs for routine care?
- vii. Should institutions maintain an inventory of the skill sets of their workforce such that in times of crisis, dedicated bespoke teams whose skill sets collectively match the needs of the crisis can be quickly assembled? Are there foundational skills that all teams would need during times of crisis that should be intermittently reinforced?

The macro level: Reconsidering medical competence from a broader regulatory, systems, and societal perspective

Many societies and their governments hold obligations to protect and foster their population's health. This is usually done through regulatory bodies responsible for the licensing of health care providers in their jurisdiction, which is an act of permission to treat patients and reflects a recognition of their competence. It also involves securing a competent workforce and providing access to care for citizens, either through a constitution or in subsequent amendments or laws. As the pandemic has highlighted, it is also the responsibility of organizations to protect and support that competent workforce to mitigate risk to a tenable level. The COVID-19 crisis has once again brought to the

forefront the responsibility of governments to fight pandemics and to secure and support care, in a dialogue with medical and scientific experts. Their decisions have a profound impact on population morbidity and mortality.

When the need is high, such as in situations in which a surge of patients require acute care, qualifications for organizational-level permission to participate in health care may become flexible out of necessity. Licensing requirements may sometimes be an obstacle. Foreign medical specialists coming to most countries face the requirement of national examinations at the level of medical licensure, which may be difficult to meet for subspecialists who completed their own licensing requirements decades ago in another country. At the same time, those same subspecialists may have recent experience in the subdomain of interest (e.g. intensive care) that would be helpful in the management of the crisis.

- viii. Should regulators and lawmakers rethink the conditions for licensing physicians, for example, with restricted licences for a smaller scope of independent practice if needed? Could this happen with advanced medical learners? As seen in the COVID-19 pandemic, sudden health disasters can result in hospitals needing to recruit health professionals without the usual training. In meeting this need, the dimensions included in Figure 1 must be considered: (a) the urgent need for extra hands (in quality and quantity), (b) the danger of the work (i.e. the risks of adverse events during care for both patients and health care workers) and (c) the level of experience of those available for redeployment. All three dimensions have scale values and may be low or high, and a thoughtful combination may determine the acceptability of deployment (or, if you will, formal entrustment with a license).
- ix. What are the reciprocal obligations of local, state, and federal authorities when requesting redeployment of health care workers, such as adequate infection control policies, sufficient personal protective equipment, training opportunities, and reward structures (Antommaria 2020)? Should liability rules be adapted if a disaster demands (or a regulator requires) physicians to work beyond their current scope of practice, to protect these scarce workforces from legal repercussions?
- x. What happens after the health crisis has passed, and the need for health care professionals returns to normal requirements? Does the emergency licensing done in response to the crisis persist? Or does it have an expiry date? Can crisis experiences be credentialed in any way? And how do we use the lessons learned to better prepare for the next crisis?

Discussion

Triggered by the COVID-19 pandemic, we have offered questions rather than answers around the issue of what contemporary medical competence means, and whether this concept should be refined. Until now in the 21st century, and most of the 20th century, we have not faced a similar global health crisis, but longer history has witnessed

many epidemics and pandemics. For ages, physicians were the ones to whom individuals turned when they had health problems, without established approaches and cures. Now, with the existence of evidence-based medicine and specialists in many subareas of health care, care guidelines and protocols abound and liability if a patient is negatively affected if the standard of care is not provided is a genuine concern. Physicians and educators in the industrialized world may have moved to think of medical competence in a predictable direction. The COVID-19 crisis has revealed to the general public how a new disease creates many challenges and how recommendations for management can change over a period of months. This highlights how even 'competent physicians' do not always know what is best and can be overwhelmed with uncertainty. In a crisis like the current one, the question comes up: How can we optimize the workforce to respond?

The general conclusion of our observations and questions is that physicians, as well as health institutions and regulatory bodies, should be prepared, individually and collectively, to adapt when the health needs of society call for adaptation. This has implications for the conceptualization of standards of medical competence. The COVID-19 crisis has made us aware that these standards may be less static than we previously believed.

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Notes on contributors

Olle ten Cate, PhD, is a professor of medical education and a senior scientist at the Center for Research Development of Education, University Medical Center Utrecht, The Netherlands.

Karen Schultz MD, is a professor in the Department of Family Medicine, Queen's University, associate dean of postgraduate education, Queen's University, Kingston, Ontario, Canada, and chair of the Certification Process and Assessment Committee at the College of Family Physicians of Canada.

Jason R Frank, MD, MA(Ed), is director of specialty education, strategy and standards at the Royal College of Physicians and Surgeons of Canada and vice chair of education in the Department of Emergency Medicine, University of Ottawa, Ottawa, Ontario, Canada.

Marije P. Hennis, MD, PhD, is a pediatric intensivist and program director of pediatric intensive care fellowship, University Medical Center Utrecht, Utrecht, the Netherlands.

Shelley Ross, PhD, is an associate professor and director of innovation and research, CBAS Program in the Department of Family Medicine, University of Alberta, Edmonton, Alberta, Canada, and is the president of the Canadian Association for Medical Education.






Daniel J. Schumacher, MD, PhD, is an associate professor of pediatrics in the Division of Emergency Medicine, Cincinnati Children's Hospital Medical Center and the University of Cincinnati College of Medicine, Cincinnati, Ohio, USA.

Linda S. Snell, MD, is a professor of medicine and health sciences education, McGill University, Montreal, Canada, and a senior clinician educator, Royal College of Physicians and Surgeons of Canada.

Alison J. Whelan is the chief medical education officer at the Association of American Medical Colleges, Washington DC, USA.

John Q. Young is a professor and the vice chair for education, Department of Psychiatry, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell and the Zucker Hillside Hospital at Northwell Health, Glen Oaks, NY, USA.

ORCID

Olle ten Cate  <http://orcid.org/0000-0002-6379-8780>
 Karen Schultz  <http://orcid.org/0000-0003-0208-3981>
 Jason R. Frank  <http://orcid.org/0000-0002-6076-0146>
 Marije P. Hennis  <http://orcid.org/0000-0003-1508-0456>
 Shelley Ross  <http://orcid.org/0000-0001-9581-3191>
 Daniel J. Schumacher  <http://orcid.org/0000-0001-5507-8452>
 Alison J. Whelan  <http://orcid.org/0000-0001-7661-148X>
 John Q. Young  <http://orcid.org/0000-0003-2219-5657>

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