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EDITORIAL

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The curriculum: The heart and soul of a medical school

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The importance of the curriculum

In medical education, the curriculum is the blueprint for developing competent, ethical and adaptable healthcare professionals who can meet the needs of patients and society. The curriculum defines the structure, content and approach to training and assessing future physicians and how students engage with their learning.

The curriculum is important for a number of reasons: it communicates to stakeholders including students, teachers, patients and the public more generally what can be expected of the education programme; it provides a benchmark for programme evaluation and for accreditation.

If you are a teacher you have a role in designing and implementing the curriculum [1]. Indeed it can legitimately be argued that this is the teacher's most important and challenging role and responsibility.

The curriculum evolution

Over the years, the medical curriculum has evolved in response to changing demands and public expectations, advances in medicine and health sciences, and developments in educational thinking. The transformative changes in health professions education that followed the pandemic and how the medical school of the future will take shape, remain at the forefront of discussion.

It has become clear that the integration of technological advancements including artificial intelligence into health education is not a temporary fix but a crucial step in a lasting and progressive transformation. ChatGPT, as documented in papers cited by Gordon et al. [2], has had an impact on many aspects of health professions education including teaching and assessment. As argued by Masters et al. [3], however, we now need to understand the wider implications of artificial general intelligence (AGI).

At the AMEE 2022 symposium in Lyon, *The Medical School of the Future after COVID-19*, the challenges posed by the pandemic and the unique opportunities to reshape the future of medical schools were explored. Key discussion centred on how health education would evolve in a post-pandemic world and the importance of preparing medical schools for the future with flexible and innovative curriculum frameworks.

The symposium showcased the rapid digital transformation of health education particularly through the expansion of online and distance learning with implications both for teachers and for students. There is a need, it was argued, for greater student/teacher collaboration and greater involvement of the different stakeholders, including teachers, students and patients. This would enable health professions education to play a more strategic role in shaping public health outcomes.

Frenk et al. [4] in The Lancet Commission Report *Health professionals for a new century: transforming education to strengthen health systems in an independent world* argued: 'Professional education has not kept pace with these challenges, largely because of fragmented, outdated, and static curricula that produce ill-equipped graduates.' A follow-up conference in Miami in 2022 [5] revisited the medical curriculum and concluded that institutions need to ensure that their graduates have been trained to respond to change and unexpected upheaval. Students should be grounded in the social determinants of health as well as biomedical science and clinical skills and they should be employable not only on graduation but also into the future.

This special issue

Given the challenges and the pressures we face and the evolving nature of the curriculum in health professions education, suggestions as to how we should proceed are to be welcomed. This special curriculum issue of *Medical Teacher* provides powerful ideas for curriculum development in health professions education that merit consideration, together with a description of how the approaches described have been implemented and embodied in the curriculum in leading medical schools. The papers acknowledge that curriculum development has to be considered in the challenging triangle of increasing demands on the education programme, pressures on staff and an increasing role for students as partners in the process. The articles provide a response to key questions that should be asked about curriculum planning in your medical school:

1. Has sufficient attention been paid to the curriculum as a complex and complicated entity that requires careful and systematic planning if it is to remain as a quality product of which your school can be proud?
2. Has your curriculum adapted to the changing society needs in the 21st century and the important role of

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the other healthcare professions in the delivery of healthcare and in the education programme?
3. Has sufficient attention been paid to the professional and personal development of the individual student as a future medical practitioner? Mastery of the required knowledge and skills is important but not sufficient.
4. Given the pressures and challenges facing medical education, has your school done enough to explore alternative educational strategies which offer a more appropriate education approach for a 21st century curriculum?
5. Are there questions about your school's curriculum which should be addressed but there is a reluctance to challenge what is orthodox and traditional practice?

1. In your school has sufficient attention been paid to the curriculum as a complex and complicated entity that requires careful and systematic planning if it is to be effective and efficient?

At its heart, the curriculum can be defined as a combination of the many interlocking elements that relate to the education programme and how these fit together to provide a meaningful learning experience for the students [6, in press). The curriculum embraces the different teaching and learning methods that facilitate effective and efficient learning, the school's learning environment or climate, the expected learning outcomes and the assessment. Key actors include the clinical and basic science teachers, the course designers, the students, patients and accreditors.

Managing and planning a curriculum is both complex and complicated. It is complex because of the multiple layers and components and the many different elements that make up the curriculum. It is complicated as a result of the difficulty in understanding the many different elements and how they are intertwined and related. An analogy is a novel where the different characters may be complex like the elements in a curriculum, but the relationship between the characters is complicated.

Hays [7], in his paper *Purposeful design in health professions curriculum development,* argues that, because of its complexity, the health professions curriculum requires a powerful design to produce graduates capable of providing the healthcare that is needed by the communities they serve. For the elements in the curriculum to be constructively aligned, there needs to be a purposeful design and a systematic curriculum approach. Just as with the human body everything is connected, so a change anywhere is likely to have implications for other parts of the curriculum ecosystem. Changes should be strategic and aligned with the vision, mission and graduate outcomes. Hays provides a framework analogous to the human body that facilitates purposeful design of the health professions curriculum.

Rourke [8] also highlights the complicated nature of medical education and curriculum development and the complex interconnected relationships of the curriculum elements. The curriculum, he proposes, can be considered 'the road to success' in medical education and like a good road, the curriculum functions well with all the medical education components working together.

Rourke suggests that contemplating the construction and management of the curriculum as a road to success opens a world of intriguing perspectives and queries. Where does the journey commence? Where does it lead? Is there a road map? Who are the participants in the expedition? What activities do they undertake along the way? Who will provide instructions and guidance? What sustenance and support will there be? Who else will be affected? What does a successful journey look like?

The papers in this curriculum issue of *Medical Teacher* highlight the importance of systematic curriculum planning.

2. Has your curriculum adapted to the changing patient population and societal needs in the twenty first century and to the important role of the other healthcare professions in the delivery of healthcare and in their contributions to the education programme?

In response to the increasing complexity of healthcare and to meet the needs of society, cooperation with other health professions has become more and more necessary [9]. To achieve appropriate patient outcomes, doctors need to work with an effective multidisciplinary healthcare team and utilise a supportive and well-functioning health system.

As a response to the changing scene in health care, interprofessional education is on today's agenda in medical education [10]. Overall, however, the results of interprofessional education and the impact in the curriculum have been limited or even disappointing Magzoub et al. [9] argue, but there is a need to go beyond the currently prevailing curricula focused on the competences of medical students towards a more patient- and population-centred curriculum with greater attention paid to teamwork. Thinking about the medical curriculum, 'inspiration should be found from an analysis of future developments in health and disease, societal and demographic changes and from likely transformations in healthcare delivery' [9].

To achieve these objectives, the medical school should work in a close partnership with the healthcare system, involving as partners in the curriculum, the community and patient organisations. Ideally this would be a unified system with the school merging with the health system as a partner. This would benefit students, patients and the population at large.

A focus on the socio-ecological determinants of health and the need for greater attention to be paid to teamwork and interprofessional collaboration were features of a remarkable and innovative approach to the curriculum at the National University of Singapore, as described in another article in this issue [11]. Starting from 2023 dentistry, medicine, nursing and pharmacy students will take a common set of modules in their first two years, alongside their current individual programmes. This unique feature reflects a strategic alignment with the Singaporean Government's vision of ensuring that educational outcomes meet the evolving needs of the healthcare landscape in Singapore. A core rationale for this unique programme was to foster interactions among students from different academic and professional backgrounds who might not typically engage with one another in traditional settings in a medical school. The curriculum aimed to build mutual understanding of professional roles, cultivate a team-orientated mindset and emphasise the importance of an active approach to healthcare.

The development of a Somaliland national harmonised medical curriculum as described by Chennupati et al. [12] in the final article in the series provides another example of how a curriculum was developed to improve the quality of education and meet local health needs, through collaboration between policy makers, universities and a health partnership.

3. Has sufficient attention been paid to the personal development of the individual student as a future medical practitioner? Mastery of the required knowledge and skills is important but not sufficient.

Attention has focused in the traditional curriculum on the acquisition of knowledge and the mastery of skills. In the three circle model of learning outcomes [13], the inner and middle circles relate to 'doing the right thing' and 'doing the thing right.' The outer circle describes the personal development of the individual—'the right person doing it.' The inclusion of dedicated personal and professional development learning in the curriculum is required, argue Skinner et al. [14] in *Shaping minds and hearts in medical education: embedding and implementing a personal and professional development curriculum*, 'if future doctors are to graduate as compassionate, emotionally intelligent, and socially informed and critically reflective practitioners.'

The authors provide a case study of an Australian medical school's journey through the development and delivery of a personal and professional development curriculum. A range of formative and summative tasks provide continuous feedback and assessment and students must meet satisfactory standards in all components of personal and professional development to advance through the medical course.

Personal and professional development is also the theme of the paper by Maurana et al. [15] - *Advancing Flourishing as the North Star of Medical Education: A Call for Professional and Personal Development as Key to Becoming Physicians*. They argue medical education can be transformed by focusing on the promotion of human flourishing. They define flourishing as 'an aspirational objective enabling one to reach a state of wholeness of being and doing, of realising one's potential and helping others to do the same.' The paper describes the *Kern National Network for Flourishing in Medicine* framework for flourishing. The concept of human flourishing has received increased interest and there is a groundswell of support for integrating flourishing in the training and development of a doctor.

Personal and professional growth is a theme too in the NYU Grossman accelerated 3 year curriculum [16].

4. Given the pressures and challenges facing medical education, has your school done enough to explore alternative educational strategies which offer a more appropriate education approach for a twenty first century curriculum?

In medicine there has been a move to what has been described as an authentic curriculum which has as its priority that learners develop the ability to perform in the workplace as a doctor. Indeed this is at the very heart of medical education. Today medical schools are being pressed to ensure that the doctors trained are able to meet the healthcare needs of the population that they serve. This is the heart of an authentic curriculum and the aim of on-the-job learning [17].

The apprenticeship model has been a time-honoured approach in medicine for hundreds of years, dominating medical education in the seventeenth and eighteenth century, with an emphasis on practical training as an apprentice rather than a university education. The apprentice acquired knowledge and skills through hands-on experience and direct instruction under the guidance of a skilled mentor or master. The method emphasised learning by doing with the apprentice gradually taking on more complex tasks as their confidence increased.

Features of the apprenticeship model include:

- Practical experience: apprentices get hands-on experience by performing tasks and responsibilities under supervision;
- Mentorship: practitioners provide guidance, instruction and feedback to apprentices;
- Incremental learning: apprentices start with basic tasks and gradually progress to more complex and challenging ones as they gain proficiency;
- Contextual learning: learning takes place in real world settings allowing apprentices to understand the practical application of their skills and knowledge;
- Community of practice: apprentices become part of a community of practice where they can learn from observing and interacting with other practitioners.

Apprenticeship learning provides a practical and immersive learning experience that prepares the learner for real world challenges. The Flexner revolution in the early twentieth century moved the education focus to a university-based academic and clinical science model for medical education. More recently, however, the apprenticeship has been reintroduced in the UK. Ahluwalia et al. [18] describe the adoption of the apprenticeship model in one UK school. They describe the reasons for adopting the approach, the challenges encountered and mitigations put in place. In establishing the programme there is a guarantee that the National Health Service (NHS) as employer will pay the learner and that there will be no fees to pay by the student. At least 20% of the apprentice's time will be spent on education and there will be regular assessments to ensure that the apprentice's progress is maintained through close engagement with the employer and the academic provider.

Concerns have been expressed that the programme would not be seen as equivalent to medical training at a traditional school. There was also an issue of fairness in respect of the course being financially supported, with the apprentice receiving a salary while the student on the standard entry programme accumulates significant debt. The adoption of the apprenticeship model as an education strategy merits careful consideration.

5. Are there questions about your school's curriculum which should be addressed but it is reluctant to challenge the orthodox and what is traditional practice?

We have described the curriculum as both complex and complicated with the many elements intertwined. Given the conservatism of the medical profession there is often a reluctance in curriculum planning to depart from the *status quo*.

However it is important that established practices in teaching and assessment should be questioned and challenged when planning a curriculum. Education is an evolving field and sticking to tradition can limit innovation and prevent an appropriate response to a new challenge. There are reasons why there is a need to reexamine existing practice, for example:

- To meet different and changing student needs;
- To recognise new insights from cognitive science, psychology and pedagogy;
- To respond to changes in assessment practice;
- To conform to equity, diversity and inclusion;
- To integrate technological developments.

Lewis Elton [19] looked back 35 years to a challenge on examination practices, based on common assumptions at the time. He noted that many, although not all of these assumptions, are still accepted in much of current practice although some have been examined by researchers and found wanting extensively in the intervening time.

When planning a curriculum, questioning established practices is important to ensure that the curriculum remains relevant. Two papers in this issue raise very different questions about the curriculum that merit reflection. The first is concerned with the length of the medical curriculum and whether it could be shortened [16]. The second is about communication skills and learner-supervisor interactions in the curriculum [20].

Concern has been expressed about the length of the medical education programme and the 13 years that it takes for a student to complete undergraduate education, postgraduate education and specialist training. The need to question the duration of the education programme has also been a feature of the move to outcome-based education where what is fixed is the standard achieved and what is variable is the time taken to achieve this.

Since 2013, a number of schools in the USA have developed accelerated programmes that allow medical students to qualify in 3 rather than 4 years. How this can be achieved is described in *Implementing an accelerated three-year MD curriculum at NYU Grossman School of Medicine* [16.) The curriculum was altered to ensure there was adequate content to achieve competency in an accelerated timeline. Precision medical education strategies were a key feature of the programme to enhance personalised learning and coaching and guide continuous quality improvement. Students had the option of adding a 4th year when they could engage in a research project, pursue a Master degree in business administration, public health, bioinformatics or bioethics or use it as flexible time to complete electives or step exams. A review of graduating students provided reassurance that the learning and performance outcomes of accelerated students are similar in medical school and early residency to the traditional four year graduates.

The *Consortium of accelerated medical pathway programmes*, with more than 30 members, is an organisation of medical schools in the United States and Canada that have developed 3- year or other accelerated curricula that will lead to the MD degree [21].

Communication skills are vital in a medical consultation and have been recognised as an important learning outcome for the curriculum. Communication is achieved not only by verbal communication but by a thoughtful combination of verbal and nonverbal cues. In *If instruments could talk: Trace-based communication and its implications for trainee-supervisor interactions* Cristancho et al. [20], invite the reader, in the context of a curriculum, to think about and question approaches to communication between a trainee and a supervisor. Medical education it is suggested has placed a strong emphasis on fostering verbal communication and that this has created a blind spot regarding the potential benefits of nonverbal communication to enhance trainee-supervisor interactions. In some circumstances verbal communication may be impossible, unfavourable or ineffective.

Nonverbal communication encompasses more than just body language and has been defined as 'intentional behaviour that is used to symbolically convey an idea or everything that we do except the words that we use in our face-to-face interactions.' As described by Cristancho et al. [20], trace-based communication refers to the non-verbal communication that is achieved by leaving traces in the environment and other members sensing them and using them to drive their own behaviour. An example in animals is where ants leave pheromones for other ants to smell and know what to do. An example in humans is leaving a coat on a chair to indicate to others that the seat is occupied.

Simulation trace-based communication can be introduced as a pedagogical strategy for trainees and supervisors to become attuned to other team members' efforts. Examining trace-based communication moments during the briefing conversations after a simulation exercise can be instrumental in helping trainees and supervisors develop the ability to both recognise and use this strategy. Making trace-based communication more explicit as a strategy will help supervisors and trainees harness the power of this unique form of communication.

Conclusions

Medical schools deliver a curriculum and are possibly engaging in a curriculum reform for students graduating and completing their undergraduate, postgraduate and specialist training in 2035 and beyond. This special issue of *Medical Teacher* offers readers a collection of papers that address in different ways powerful ideas that merit serious consideration. As health educators we recognise the tremendous opportunities that lie ahead to shape the medical schools of the future and provide students with the highest quality education. With the lessons learned from challenging times, we believe this special issue offers valuable insights and perspectives for readers.

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References

1. Harden RM, Lilley PM. The eight roles of the medical teacher. Edinburg: Elsevier; 2018.
2. Gordon M, Daniel M, Ajiboye A, et al. A scoping review of artificial intelligence in medical education: BEME Guide No. 84. Medical Teacher. 2024;46(4):446–470. doi:10.1080/0142159X.2024.2314198
3. Masters K, Herrmann-Werner A, Festl-Wietek T, et al. Preparing for Artificial General Intelligence (AGI) in health professions education: AMEE Guide No. 172. Medical Teacher. 2024;46(10):1258–1271. doi:10.1080/0142159X.2024.2387802
4. Frenk J, Chen L, Bhutta ZA, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010;376(9756):1923–1958. doi:10.1016/S0140-6736(10)61854-5
5. Issenberg SB, Chandran L. Proceedings from the international conference on the future of health professions education 2022. Med Teach. 2024;46(4):438–442. doi:10.1080/0142159X.2023.2298757
6. Harden RM, Harden J. Creating a curriculum: key ideas for health professions teachers and trainers. Edinburgh: Elsevier; 2025.
7. Hays R. Purposeful design in health professions' curriculum development. Medical Teacher. 2024;46(12). In press.
8. Rourke J. Curriculum is the road to success in medical education. Medical Teacher. 2024;46(12).
9. Magzoub M, Taha M, Waller S, et al. Going beyond competencies: building blocks for a patient- and population-centered medical curriculum. Medical Teacher. 2024;46(12). In press.
10. Hosny S, Thistlethwaite J, El-Wazir Y, et al. Interprofessional learning in practice-based settings: AMEE Guide No. 169. Med Teach. 2024;2024:1–13. doi:10.1080/0142159X.2024.2352162
11. Samarasekera D, Chong Y, Ban K, et al. Transforming healthcare with integrated inter-professional education in a research-driven medical school. Medical Teacher. 2024;46(12).
12. Chennupati A, Qalib J, Jama AM, et al. Development of Somaliland national harmonised medical curriculum. Med Teach. 2024:2024:1–4. doi:10.1080/0142159X.2023.2289841
13. Harden RM, Crosby JR, Davis MH, et al. AMEE Guide No. 14: outcome-based education: part 5-from competency to meta-competency: a model for the specification of learning outcomes. Medical Teacher. 1999;(6):546–552. doi:10.1080/01421599978951
14. Skinner C, Valentin K, Davin L, et al. Shaping minds and hearts in medical education: embedding and implementing a personal and professional development curriculum. Medical Teacher. 2024;46(12).
15. Maurana C, Fritz J, Witten A, et al. Advancing flourishing as the North Star of medical education: a call for professional and personal development as key to becoming physicians. Medical Teacher. 2024;46(12).
16. Cangiarella J, Rosenfeld M, Poles M, et al. Implementing an accelerated three-year MD curriculum at NYU Grossman School of Medicine. Medical Teacher. 2024;46(12).
17. Harden RM, Laidlaw JM. Essential skills for a medical teacher. 3rd ed. Edinburgh: Elsevier; 2022.
18. Ahluwalia S, Fenton T, Roder C, et al. The Medical Doctor (Degree) apprenticeship programme. Medical Teacher. 2024;46(12). In press.
19. Elton L. A challenge to established assessment practice. High Educat Quart. 2004;58(1):43–62. doi:10.1111/j.1468-2273.2004.00259.x
20. Cristancho S, Seemann N, Taylor T. If instruments could talk: trace-based communication and its implications in the curriculum for trainee-supervisor interactions. Medical Teacher. 2024;46:12.
21. Cangiarella J, Fancher T, Jones B, et al. Three-year MD programs: perspectives from the Consortium of Accelerated Medical Pathway Programs (CAMPP). Acad Med. 2017;92(4):483–490. doi:10.1097/ACM.0000000000001465