British Medical Bulletin, 2024, 1–10
https://doi.org/10.1093/bmb/ldae002

OXFORD

Invited Review

Mind the implementation gap: a systems analysis of the NHS Long Term Workforce Plan to increase the number of doctors trained in the UK raises many questions

Una Geary[†], Martin McKee[†,*], and Katie Petty-Saphon[‡]

[†]Department of Health Services Research and Policy, London School of Hygiene & Tropical Medicine, London, WC1H 9SH, UK, and [‡]Medical Schools Council, Woburn House, 20 Tavistock Square, London, WC1H 9HD, UK

*Correspondence address. Department of Health Services Research and Policy, London School of Hygiene & Tropical Medicine, 15-17 Tavistock Place, London WC1H 9SH, UK. E-mail: martin.mckee@lshtm.ac.uk

Editorial Decision 18 January 2023; Accepted 23 January 2023

Background: The National Health Service (NHS) in England is facing a workforce crisis. A new Long Term Workforce Plan (LTWP) seeks to address this, setting out ambitious proposals to expand and reform domestic medical education and training in England. However, there are concerns about their feasibility.

Sources of data: In September 2023, over 60 individuals representing medical education and training in the UK participated in an exercise run by UK Medical Schools Council by using systems theory to identify risks.

Areas of agreement: The UK does need more 'home grown' doctors, but the LTWP has important gaps, including lack of attention to postgraduate training, absence of reference to the need for more educators and capital investment and risk of inadequate clinical placement capacity, particularly in primary care settings.

Areas of controversy: There are unresolved differences in the understanding of a proposed medical apprenticeship model and no scheme has, as yet, been approved by the General Medical Council. Participants were unable to determine who the beneficiaries of this scheme will be (apart from the apprentices themselves).

Growing points: While the LTWP represents a welcome, although overdue, commitment to address the NHS workforce crisis, we identified significant gaps that must be resolved.

Areas timely for developing research: First, the development of the LTWP provides a case study that adds to literature on policymaking in the UK. Second, while we only examined the expansion of medical training, the method could be applied to other parts of the LTWP. Third, a prospective evaluation of its implementation is necessary.

Key words: medical education, health workforce, health policy

Introduction

In her foreword to the Long Term Workforce Plan (LTWP) for the English National Health Service (NHS), its Chief Executive, Amanda Pritchard, described its publication, in June 2023, as 'one of the most seminal moments in our 75-year history' and 'the first time the government has asked the NHS to come up with a comprehensive workforce plan'.[1]

The LTWP responds to the moral and practical imperative to grow the health workforce in a sustainable way. It proposes training more health workers domestically instead of relying on international recruitment. The current situation is unsatisfactory because it is exploitative, exacerbating brain drain from poorer countries, while leaving the NHS vulnerable to fluctuations in an increasingly competitive international market for health workers.[2]

The LTWP sets out a series of ambitious proposals to reform and expand medical education and training in England. Key among them is to double the number of new doctors to 15 000 by 2031–32. This is envisaged to be achieved by expanding existing medical schools, establishing new medical schools and developing an alternative path to a medical qualification, an apprenticeship. The last is seen as an alternative route into medicine and one that can widen participation, attracting individuals from under-represented backgrounds.[1] The LTWP further proposes shortening the standard undergraduate medical degree by a year to 4 years. However, concerns have been raised about the risks associated with certain elements and the ability of the Plan to achieve its stated aim.[3]

Medical schools will play a critical role in this process, and they and others have many unanswered questions about the proposals.[4–6] In September 2023, the Medical Schools Council, which represents all schools in the UK, convened the key players involved in medical education and training in the UK, with representatives of relevant parts of government, the NHS, universities, regulators and others, to discuss how the new system of medical training would work in practice and to analyse, using a systems thinking lens, the feasibility of implementing the proposals. In this paper, we describe the process and results from this systems analysis exercise.

The term 'system' means a combination of elements that interact to achieve a defined goal.[7] A complex system is characterized by properties such as nonlinearity, unintended consequences and emergent properties (i.e. outcomes or behaviours of the system that are more than the sum of its individual parts, which cannot be predicted solely from the individual elements).[8] This contrasts with a simple system characterized by the linear cause-and-effect relationships with usually predictable outcomes. Healthcare systems are exemplars of complex systems. In contrast to a reductionist approach, a systems thinking approach seeks to understand and address problems in the context of the real-world situation in which they occur.[7] This is appropriate when dealing with a complex system that depends on the operation of many different sub-systems, each involving many different organizations and individuals.

The approach taken in this exercise employed soft systems theory, which is appropriate in

situations such as this where many sub-systems must work together to achieve an intended outcome. For example, a cancer screening programme requires a sub-system for maintaining an accurate population register from which to invite those eligible to be screened.[9,10] It then requires a sub-system for monitoring those attending and taking action if some groups are under-represented, a sub-system to ensure the quality of the screening programme and a sub-system to ensure those identified as having abnormalities receive timely treatment, among others. A system to manage and treat people with diabetes requires sub-systems for procuring insulin and test strips and for providing patient information as well as coordinated primary and secondary care sub-systems.[11] Similarly, the training of doctors requires many different sub-systems to be in place, including those that develop curricula and approve them and provide education and clinical placements and ensure their quality. These involve many different actors such as regulators and employers, each of which will have certain resources and understandings of their roles.

Methods

On September 18, 2023, the UK Medical Schools Council conducted an exercise bringing together key stakeholders across sectors to discuss how the proposed expansion of medical education and training set out in the LTWP can be implemented. It provided a forum for discussion of a series of key questions, which were identified in advance by the organizers and invitees. These included what must be achieved to make this workforce plan work, who has a role to play and whether they all have a shared view of what they are trying to achieve.

The workshop was attended by over 60 representatives of organizations selected purposively to include all key stakeholders involved in medical education and training in the UK, including the NHS England Workforce, Training & Education, NHS Employers, the Department for Health and Social Care, the Department for Education, the General Medical Council (GMC), the British Medical Association, the NHS UK Foundation Programme, the Universities and Colleges Admissions Service, the Nuffield Trust, the Health Foundation and numerous medical schools, among others.

Participants were provided with an explanation of systems theory prior to the exercise. On the day, they were divided into groups of six to eight people and were given questions about the LTWP's proposals to consider, with a designated scribe to note the key points from the discussion and analysis in each group.

The discussions were framed using a systems analysis tool defined using the mnemonic 'CATWOE'.[12] Hence, in addressing the questions put to them, participants were asked to explicitly consider each of the following factors in relation to the implementation of system change:

- Customers—the beneficiaries of the transformation;
- actors—the people involved in implementing changes in the system;
- transformation—the desired change to the system;
- worldview—the perspectives of different stakeholders;
- owners—the ultimate decision-makers;
- environmental constraints—limitations or obstacles to implementing change.

For instance, the proposed expansion of medical education and training is dependent on transformations taking place in separate, but interlinked, sub-systems, including the development of curricula, the creation of systems to implement them, to monitor standards of training, and to provide clinical placements. Each involves different actors, among them universities, some, but not all, of which will currently have medical schools as well as regulators, NHS employers, regulators and others. All these actors are subject to environmental constraints, such as shortages of training facilities or appropriately skilled educators. The owners, defined as those who have the ultimate decision-making power to stop things from happening, might be government departments, employers or regulators, among others. The regulators include the Office for Students (OfS), Office for Standards in Education, Children's

Services and Skills, which will regulate medical apprentices, and the GMC.

The exercise was characterized by an intensive interaction between those present, identifying many gaps in or differing understandings of key issues.

Following the workshop, a thematic analysis was carried out to analyse the qualitative data gathered in the scribes' notes.[13] An inductive and semantic approach to thematic analysis was employed, whereby the identification of themes was directed by the explicit content of the data rather than being driven by pre-set concepts or research questions as would happen in a deductive or theoretical approach. A semantic approach focuses on identifying themes within the explicit content of the data (i.e. the surface meanings of what participants said) and contrasts with the latent analysis, which explores underlying ideas, concepts and assumptions that underpin the content of what participants have said.

Results

We identified several major gaps in the proposals, including a lack of attention to subsequent postgraduate training places, a failure to consider the need for more educators and capital investment as well as a series of risks to implementation of the plan. These included inadequate clinical placement capacity, potential pitfalls in the bidding process for new medical school places, uncertainty around how the proposed medical apprenticeship scheme will work in practice and potential negative impacts on students of a shortened, and thus a more intensive, medical degree course. It was not possible to determine convincingly whether anyone had a comprehensive view of the necessary future medical workforce and, thus, of the systems necessary to develop it.

We now look at each of the gaps and risks identified in turn.

Lack of consideration of demand for educators and capital investment

Although £2.4 billion has been allocated for the implementation of the LTWP (to cover the entirety of the plan and not only the expansion of medical education and training), doubling the number of medical school places has significant human and capital resource implications. The number of clinical academics has been falling progressively over many years[14] and there will be a need for significant investment in facilities, including lecture theatres and laboratories, a particular challenge at a time when the UK is facing a severe shortage of construction workers following Brexit and COVID.[15] This requires attention to sub-systems involving generation and distribution of financial resources. While it was agreed that there is a need for clarity on what the plan will cost and where the funds are needed, there were differing views on who is responsible for making this happen (actors), given that there will be multiple beneficiaries (customers), including universities and NHS and general practice facilities.

Risk of insufficient clinical placement capacity, particularly in primary care settings

Much medical training is delivered in clinical settings. However, even now, before the next stage of expansion takes place, many medical schools are struggling to find placements for their students. Thus, this is a crucial environmental constraint to the expansion of medical school places. The LTWP gives Integrated Care Boards (ICBs) (statutory NHS organizations responsible for developing plans for meeting the health needs of defined populations) key roles in coordinating and managing the expansion of clinical placement capacity in a range of settings, including primary care, as part of their annual operational plans. Thus, they can be considered as actors in the sub-system for transforming clinical settings into training locations. However, participants questioned whether all ICBs, many still working out their roles, recognized this role and, if they did, gave it sufficient priority or even whether they would be able to do this. Given the relatively small population size they serve (average 1.3 million), there were questions about how coordination at regional and national levels will take place. Participants felt that a national sub-system for managing clinical placement capacity

and allocation would be required, but who the actors involved would be was unresolved.

The LTWP places a strong emphasis on generalist medical education and training in order to care for increasing numbers of patients with multimorbidity. This will require the expansion of placements in primary care settings. The LTWP includes a commitment to increase the primary care placement opportunities for foundation doctors and General Practitioners (GPs) in training. However, this will also be required for medical students, medical apprentices and physician associates. This will require investment in clinical educator staff and facilities in primary care settings, including greater physical space for teaching. It also creates challenges because the sub-systems for training each of these groups may differ. A further challenge is that, at present, the training and supervision capacity of GPs and lack of capital facilities represent significant environmental constraints. There was a broad consensus that medical schools must have a key role as actors in this process. It was not, however, clear what structures would be needed to enable this to happen and who (owners) should create them.

Risk of inefficient allocation process for new medical school places without a regional, collaborative approach to bidding

There was widespread agreement that bidding between medical schools in the last round of expansion of 1500 places in 2016 had many drawbacks. It was resource-intensive, inefficient and divisive in a situation where cooperation was needed to address the shortage of clinical placements. Thus, there was a shared worldview among actors participating in the consultation that a collective, collaborative approach to bidding is needed, bringing together clusters of medical schools. Bids should be 'collectively constructed' and involve other actors, including neighbouring medical schools that share placements, placement providers and ICBs. Again, this would require a sub-system to be created, in this case, with the medical schools the likely owners.

Risks that shortened, 4-year undergraduate medical degree may increase attrition rates and financial pressures on students

Some British universities already offer 4-year medical degree courses but only to graduates who already have degrees in other subjects. When combined with a year of provisional registration, these degrees met the requirements of EU law in force in the UK until January 2021. Since Brexit, the UK is free to determine its own training standards, but this may have implications for students seeking to move abroad at some point in the future. This will be a particular issue for those medical schools seeking to attract overseas students who pay high fees.

There were concerns that a shortened undergraduate degree course could lead to additional financial pressures for disadvantaged students by reducing the amount of time available to earn money alongside their studies. Further, it is likely to be more intensive and difficult for some students to complete. Again, this raised the question of unintended consequences, as it may lead to higher fail rates and burnout, and thus a greater risk of attrition, both during and after the course, as graduates may feel they need to take a break from training. This could lead to narrowing of participation and increasing failure and dropout rates.

Lack of attention to postgraduate training places

The implied (and to some extent explicit) worldview underlying the LTWP is that increasing medical undergraduate training places will result in more qualified doctors working in the NHS. However, two or three sub-systems, albeit interlinked, are required. These are the transformation of school leavers and others into doctors, of newly qualified doctors into fully trained ones, and retention of those at all stages in their career. Each involves

different actors and owners. Participants highlighted the lack of attention to the latter two sub-systems, with concerns about postgraduate training places and longer term retention. These concerns seem justified by evidence that a third of current medical students plan to leave the NHS[16] and by growing evidence of shortages in specialist training places and competition with physician and anaesthetic associates for training opportunities. Although the LTWP acknowledges that growth in Foundation and specialty training places is needed, it includes no explicit commitments to doing so apart from increasing the GP specialty training places by 45–60% by 2033–34 and public health specialty training places by 13% in 2023–24. Thus, two of the key sub-systems that are critical to achieve the overarching aim (transformation) envisaged for the LTWP, an expansion of the existing medical workforce, seem to be missing.

Significant risks related to uptake of the medical degree apprenticeship scheme

Medical apprenticeships are a particularly controversial element in the LTWP. At the time of writing no scheme has as yet been approved by the GMC. Participants were unable to determine who the beneficiaries (customers) of this scheme will be (apart from the apprentices themselves). For instance, NHS Trusts will not receive much of apprentices' time if they are expected to meet the same educational requirements as medical school students. Further, trusts may lose staff in key groups who decide to retrain as doctors, and such apprentices may prove to be particularly expensive if they secure pay protection. The pilot apprenticeship schemes are revealing quite how unattractive the current funding and regulatory models are for universities. This will need to be resolved if the pathway is to deliver the required number of doctors, but it was not clear who should do this.

As stated in the LTWP, the aim of the medical degree apprenticeship is to 'enable the NHS to attract and recruit from a wider pool of people in local communities and enable individuals from under-represented backgrounds to start medical training who otherwise would not have done so through full-time higher education and training routes'.[1] However, participants felt the scheme will not intrinsically widen participation and benefit its intended customers—additional efforts will be required to ensure it does so, but there is little clarity about what needs to be done (the transformation) and by whom (the actors).

The existence of two quite distinct routes to a medical qualification generated concerns. While those taking the traditional medical school route may graduate with significant debt due to tuition fees, apprentices will not, while also potentially benefiting from pay protection. It will be important to model the impact on the cumulative earnings of the two routes to better understand the financial implications and inform decisions about which route to take. The apprenticeship route would also have implications for subsequent career paths, if apprentices are unable to undertake intercalated degrees, seen as an advantage for those pursuing academic posts. This pointed to the need to consider another aspect of soft systems theory, the complex interaction between different elements, including feedback loops and non-linear relationships creating the conditions for unintended consequences.

Thus, without significant, intentional efforts to ensure the apprenticeship scheme widens participation, there is a risk that it may create structural inequality in training, increase inequity and decrease diversity.

Discussion

The process and culture of policy development in the UK has long been criticized for its failure to engage with those who will have to implement policies and those who will be affected by them. The book, 'The blunders of our governments', by two of the country's leading political scientists, catalogues many examples of such failures.[17] In the decade since it was published, there have been many more, some with tragic consequences such as the Grenfell Tower fire, where those with a stake in housing policies

were not listened to.[18] The UK's COVID-19 Inquiry is shining a rare light on the reasons for such failures in policy development. Even before it took evidence, it was clear that, even when exercises to test policies had been undertaken, lessons were not learnt.[19]

The NHS faces a potentially existential workforce crisis. The LTWP is, arguably, the last chance to avert it. Yet as others have noted,[3] and we have identified, it has many gaps. One is a lack of clarity about funding, pointing to the need for a comprehensive economic analysis that considers the need for capital investment and the revenue consequences and an almost complete absence of discussion about retention of staff once they have been trained, arguably a much greater threat than recruitment, given new evidence that up to one in three medical students plans to leave the NHS after qualifying.[16] The problems are symbolized by doctors' strikes,[20] which it has been argued should be seen as 'never events', signifying severe problems with a health system.[21] It is therefore essential that the plan's proposals are scrutinized by those who must implement them.

Our exercise had some inevitable limitations. Given the number and seniority of those attending, it was not realistic to ask them to spend more than half a day participating in the exercise, although they were given detailed instructions in advance on the approach being taken and questions to be discussed. We did not undertake any new analyses of the LTWP to inform the discussion as we expected those involved, among them the authors of such analyses, to bring them to the table. For example, the Health Foundation has raised serious concerns about whether the medical school numbers proposed are realistic, as they would require an estimated one in six of new enrolments in universities to be taking health qualifications.[22] This is another example of something that could have profound potential for unintended consequences, including the distribution of resources, and thus influence, among disciplines within universities. It is not completely inconceivable that some might decide that they would specialize almost entirely on educating health professionals, raising questions about the meaning of the term 'university'. We also only looked at one element of the LTWP—the expansion and reform of medical education and training. There are others that have given rise to considerable concerns and require a similar analysis, such as the increasing numbers and expansions of roles of physician and anaesthesia associates, with consequences for patient safety and postgraduate training opportunities.[23] However, we hope that our findings will encourage NHS England to adopt our approach to identifying gaps in the plan in similar exercises.

By using a systems thinking lens that required participants to explicitly consider the key factors represented by the CATWOE mnemonic in relation to implementation of system change, we created a framework that allowed key stakeholders involved in the system of medical education and training in the UK to identify major gaps in the LTWP and risks to its implementation. In many cases, it was not clear who was ultimately in charge (the owner) of bringing about the proposed transformations, but rather, there seemed to be a hope that somehow those involved would find a solution. Nor was it always clear if actors had the ability, whether in terms of formal responsibility or resources, to deliver the transformations required. There were many environmental constraints identified, such as shortages of educators, teaching facilities and clinical placement capacity, with little clarity on how these would be overcome. In some cases, there were competing worldviews as to what the future NHS workforce would look like. The proposed medical apprenticeship scheme was a particular cause for concern, and those considering investing time and effort in this idea should proceed with caution.

Recommendations

Based on the findings of this exercise, and as noted by others,[24] there is a need for collaboration and coordinated planning between all partners, involving medical schools in particular, in order to successfully implement the proposed expansion of medical school places and other proposals in the LTWP. Ferreira has already made a series of valuable suggestions for things that medical schools can do,[24]

including greater student engagement, with regular surveys of their views, as happens in some other countries, changes to the curriculum and innovative mentorship plans. However, the LTWP also requires actions by others so, based on the findings of this exercise, we recommend that:

1. The Treasury and spending departments plan for and adequately fund the increase in human and capital resources that is needed to expand medical school places while maintaining the quality of education and training. However, this will depend on NHS England and universities providing clarity on the cost implications of the plan, possible funding sources and how much funding needs to be allocated to different parts of the system. It is recommended that an in-depth economic analysis of the financial feasibility of the LTWP be carried out to answer these questions.
2. NHS England set out how they will establish additional postgraduate training places, both Foundation and specialty places, in a phased manner, in line with the increase in medical school places;
3. NHS England publish their proposals to create additional clinical placement capacity, particularly in primary care settings, in line with the increase in medical school places, and develop a national system to manage and allocate clinical placements. The LTWP includes a commitment to increase primary care placement opportunities for foundation doctors and GPs in training. However, this will also be required for medical students, medical apprentices and physician associates. In line with the recommendation above, this will require investment in clinical educator staff and capital facilities in primary care settings, including greater physical space for teaching.
4. NHS England set out in detail how they propose to ensure that the medical degree apprenticeship scheme widens participation, given the risk identified that it may create structural inequality in training, increase inequity and decrease diversity and does not threaten the reputation of medical education internationally.

The worldview underlying the LTWP is that increasing medical undergraduate training places, shortening medical degrees and introducing medical degree apprenticeships will result in more qualified doctors working in the NHS. Evaluation of the long-term impact of these proposals on the NHS workforce is needed to establish whether this worldview can be achieved. Evaluation is also needed to monitor the impact of these proposals on the quality of medical education and training. As noted by Ferreira, it is crucial that such research be conducted before, during and after implementation to continually monitor the impact of the changes and enable action to be taken promptly if results indicate a decline in education quality.[24] Prioritizing quantity over quality, doing things on the cheap and adopting short-term fixes are not the way to resolve the NHS workforce crisis.

Acknowledgements

The authors would like to acknowledge all those who participated in the exercise and, especially, those who took notes.

Conflict of interest statement

M.M. is the Past President of the British Medical Association and K.P.-S. is the Chief Executive of Medical Schools Council.

Contributors and sources

On September 18, 2023, the UK Medical Schools Council (MSC) ran a workshop to bring together key stakeholders across sectors to discuss how the proposed expansion of medical education and training set out in the NHS LTWP can be implemented. (More detail on the workshop and attendees is provided in the article text.) The workshop was chaired by Professor Martin McKee and MSC Chief Executive, Katie Petty-Saphon. The over 60 attendees were split up into small groups, and a facilitator/scribe took notes of the key discussion points for each group. Una Geary (NHS Public Health Specialty Registrar) was a facilitator/scribe and subsequently collated the

notes of the other scribes, identified the key themes that emerged and drafted the final report and this analysis, both of which the other authors revised. Key findings from this workshop in relation to the risks identified by stakeholders for implementation of the LTWP are presented in this analysis.

Data availability

The data generated and analysed in support of this review consisted of the scribes' notes of the key discussion points from each group. These are available on request to the authors.

References

1. NHS England. NHS Long Term Workforce Plan. London: NHS England, 2023. Available from: https://www.england.nhs.uk/publication/nhs-long-term-workforce-plan/ accessed 16th October 2023.
2. Zapata T, Azzopardi-Muscat N, McKee M, et al. Fixing the health workforce crisis in Europe: retention must be the priority. *BMJ* 2023;381:947. https://doi.org/10.1136/bmj.p947.
3. Ferreira T, Collins AM. The NHS long term workforce plan: An ambitious leap or a misstep? *J R Soc Med* 2023;116:368–70. https://doi.org/10.1177/01410768231198373.
4. Campbell D. Plans to shorten medical training put quality of NHS care at risk, doctors say: The Guardian. 2023. Available from: https://www.theguardian.com/politics/2023/jun/30/plans-to-shorten-medical-training-put-quality-of-nhs-care-at-risk-doctors-say accessed 16th October 2023.
5. Rimmer A. Physician associates: RCP will meet to discuss concerns. *BMJ* 2023;383:2375. https://doi.org/10.1136/bmj.p2375.
6. Oliver D. David Oliver: the welcome for the NHS workforce plan should come with some challenging questions. *BMJ* 2023;381:1513. https://doi.org/10.1136/bmj.p1513.
7. Peters DH. The application of systems thinking in health: Why use systems thinking? *Health Res Policy Syst* 2014;12:51. https://doi.org/10.1186/1478-4505-12-51.
8. Rutter H, Savona N, Glonti K, et al. The need for a complex systems model of evidence for public health. *Lancet* 2017;390:2602–4. https://doi.org/10.1016/S0140-6736(17)31267-9.
9. Turnbull E, Priaulx J, van Ravesteyn NT, et al. A health systems approach to identifying barriers to breast cancer screening programmes. Methodology and application in six European countries. *Health Policy* 2018;122:1198–205. https://doi.org/10.1016/j.healthpol.2018.08.003 [published Online First: 20180824].
10. Turnbull E, Priaulx J, de Kok I, et al. Results of a health systems approach to identify barriers to population-based cervical and colorectal cancer screening programmes in six European countries. *Health Policy* 2018;122:1206–11. https://doi.org/10.1016/j.healthpol.2018.08.005.
11. Hopkinson B, Balabanova D, McKee M, et al. The human perspective on health care reform: coping with diabetes in Kyrgyzstan. *Int J Health Plann Manage* 2004;19:43–61. https://doi.org/10.1002/hpm.745.
12. Augustsson H, Churruca K, Braithwaite J. Re-energising the way we manage change in healthcare: the case for soft systems methodology and its application to evidence-based practice. *BMC Health Serv Res* 2019;19:666. https://doi.org/10.1186/s12913-019-4508-0.
13. Maguire M, Delahunt B. Doing a thematic analysis: a practical, step-by-step guide for learning and teaching scholars. *AISHE-J* 2017;9:3351–33514.
14. Medical Schools Council. Medical schools voice concerns over the drop in the clinical academic workforce. 2023. Available from: https://www.medschools.ac.uk/news/medical-schools-voice-concerns-over-the-drop-in-the-clinical-academic-workforce accessed 14th December 2023.
15. Maqbool R, Rashid Y, Altuwaim A, et al. Coping with skill shortage within the UK construction industry: scaling up training and development systems. *Ain Shams Eng J* 2024;15:102396. https://doi.org/10.1016/j.asej.2023.102396.
16. Ferreira T, Collins AM, Feng O, et al. Career intentions of medical students in the UK: a national, cross-sectional study (AIMS study). *BMJ Open* 2023;13:e075598. https://doi.org/10.1136/bmjopen-2023-075598.
17. King A, Crewe I. *The Blunders of our Governments*. London: Simon and Schuster, 2014.
18. McKee M. Grenfell tower fire: why we cannot ignore the political determinants of health. *BMJ* 2017;357:j2966. https://doi.org/10.1136/bmj.j2966.
19. McKee M. The UK government tested the response to a coronavirus-why are we only discovering this now? *BMJ* 2021;375:n2485. https://doi.org/10.1136/bmj.n2485.
20. Deakin M. Doctors' strikes: the NHS faces its toughest test yet. *BMJ* 2023;382:2143. https://doi.org/10.1136/bmj.p2143.

21. Weil LG, Nun GB, McKee M. Recent physician strike in Israel: A health system under stress? *Isr J Health Policy Res* 2013;2:33. https://doi.org/10.1186/2045-4015-2-33.
22. Shembavnekar N, Kelly E, Charlesworth A. *How Feasible Are the NHS Long Term Workforce Plan Commitments on training?* London: Health Foundation, 2023. Available from: https://www.health.org.uk/about-the-health-foundation/our-people/directors-team/anita-charlesworth accessed 8th November 2023.
23. Nicholl D. Medical associate professionals: we need calm heads and a pause. *BMJ* 2023;383:2789. https://doi.org/10.1136/bmj.p2789.
24. Ferreira T. Beyond government accountability: the role of medical schools in addressing the NHS workforce crisis. *J R Soc Med* 2023;116:395–8. https://doi.org/10.1177/01410768231209021.