

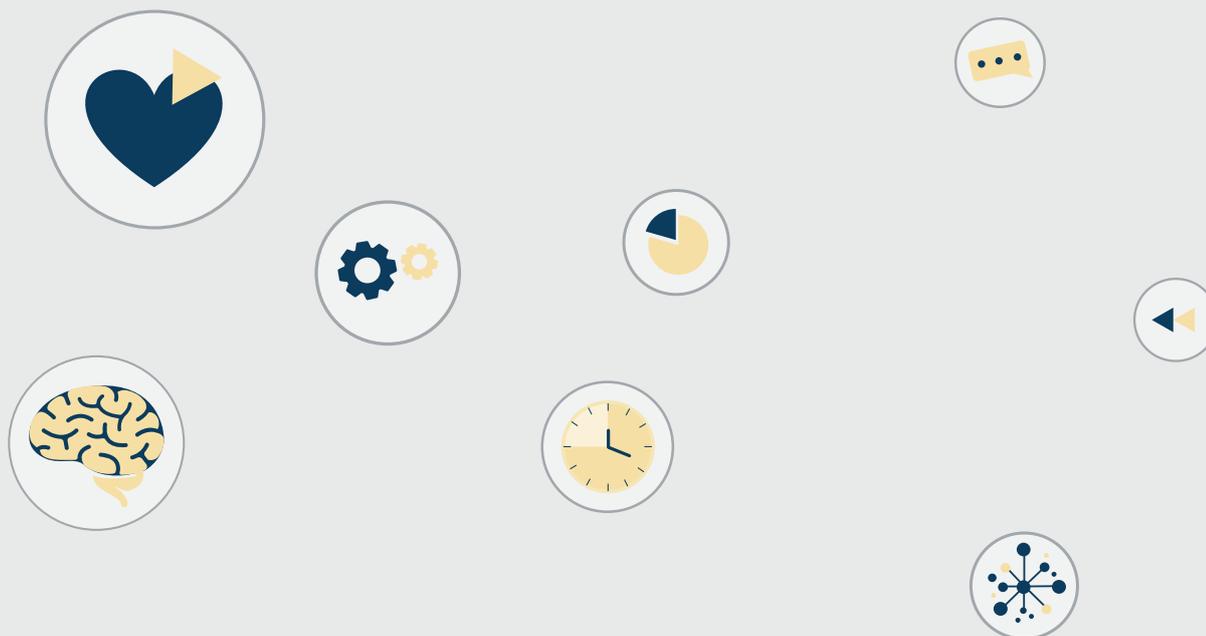


Royal College
of Physicians

Double or quits:

a blueprint for expanding
medical school places





The Royal College of Physicians

The Royal College of Physicians (RCP) plays a leading role in the delivery of high-quality patient care by setting standards of medical practice and promoting clinical excellence. The RCP provides physicians in over 30 medical specialties with education, training and support throughout their careers. As an independent charity representing 39,000 fellows and members worldwide, the RCP advises and works with government, patients, allied healthcare professionals and the public to improve health and healthcare.

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Royal College of Physicians
11 St Andrews Place
London NW1 4LE
www.rcplondon.ac.uk

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Foreword



It almost goes without saying that 2020 has been a year like no other in recent history. The need to respond to the COVID-19 pandemic has required us all to work at a frantic pace.

The long-term implications of COVID-19 are unknown, but the immediate and medium-term challenges are becoming clearer. In some cases, such as the model for outpatients, reforms have been accelerated by the pandemic. In others, the need to respond has slowed progress.

The constant is the hard work, professionalism and determination of NHS staff. They entered this challenge already stretched, but hopeful about the future of the service following the significant £20 billion of additional funding announced by the last government.

We have seen like never before the impact of ageing infrastructure and a limited bed base. These are challenges which the UK government is responding to with commitments for 20 new hospitals and upgrades, and immediate additional capital funding for this winter.

Yet commitments to invest significantly in the NHS workforce have been held back by the government's choice to consider it as part of the postponed comprehensive spending review. While understandable, this has put major decisions about the future of the NHS workforce on hold.

The pandemic has inspired a new generation to pursue careers in the NHS, and we welcome the UK government lifting the cap on medical school places in England this year. While made in the heat of the moment, it should act as a catalyst for a larger planned expansion of places.

That planning should not be put off though; we need to make the most of the new interest in medical careers to finally place the UK on track to train the doctors it needs. We need to offer more places next year, and even more the year after that.

We know that 2020 will be a year to remember, for many and varied reasons. We want 2021 to be the year we took the opportunity to invest much more in a homegrown medical workforce.

Professor Andrew Goddard

RCP president

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Executive summary

The challenges facing the NHS workforce are significant. Even with decisive action, it is going to take at least a decade to get the NHS workforce back on a sustainable footing. It is vital that we now take stock and plan for the next 10 years. We need to consider and respond to the immediate challenges, but also look over the horizon.

In 2018 the RCP called for the number of medical school places to be doubled. In this report, we look at how to implement such an expansion. We provide a blueprint for growth covering the model of provision, the costs, challenges and opportunities.

Alongside efforts to improve public health and social care, expansion will help reduce the pressure on the current workforce. It will also create the opportunity for governments, medical schools and the NHS to ensure that medical school programmes are aligned with the needs of the UK's health and care system.

We know that some regions and specialties are facing bigger workforce shortages than others. Expansion will provide an opportunity to ensure that provision helps meet these system-wide challenges.

We hope this report will provoke discussion and debate about the future of medical student training in the UK. While its focus is on undergraduate medical education in England, at times it draws on data and considers what is happening in Wales, Scotland and Northern Ireland.

There is no one-size-fits-all approach and we are not suggesting that there should be. But we do believe there is a need across the country to realign the graduate attributes of medical school students with the needs and realities of the health and care system. We should take the opportunity to do just that.

**Expansion
will help
reduce the
pressure on the
current workforce.**



Recommendations

The UK government should:

- > double the number of medical school places from 7,500 to 15,000 per year, at an annual cost of around £1.85bn
- > ensure that an expansion of places and the process of allocating places incentivises an increased focus on widening participation in medicine
- > build on the successful work of the previous expansion to provide medical school education across the whole of England
- > undertake further detailed work to fully understand the potential undergraduate applicant pool, asking UCAS to carry out research with potential applicants to medical school and other science subjects to understand the appetite for places and the perceptions of the entry process to medicine
- > consider an increase in undergraduate foundation years for medicine as part of a strategic approach to NHS workforce planning.

The UK government and regulators should:

- > ensure that expansion proposals are informed by the Selection Alliance reports, which provide a wealth of insight into the areas that need a greater focus
- > consult with medical schools about moving towards an apprenticeship-style final year of medical school when developing expansion plans.

The NHS should:

- > address the challenges and opportunities facing the clinical academic workforce in the people plan, including year-on-year growth and the development of clear clinical academic career pathways to create a sustainable pipeline to meet future demand
- > widen the pool of clinical educators to facilitate expansion.

Medical schools should:

- > review their curricula to ensure they create cohorts of doctors with a broad base of skills, able to develop into specialists as their careers progress.

Introduction

The challenges facing the NHS workforce are significant. Even with decisive action, it is going to take at least a decade to get the NHS workforce back on a sustainable footing.

External environment

2020 has shown how flexible and adaptable the NHS workforce can be. We have seen final year medical students enter the workforce months earlier than normal. We also welcomed back those who recently left the NHS but wanted to play their part in the COVID-19 response. We should be extremely proud of how our people responded to the crisis.

There are immediate challenges for medical education. We don't know how the next 18 months will pan out, which creates hurdles for undergraduate medical education. As we enter a new academic year, it is vital that the whole system supports medical schools to ensure that we don't inadvertently impede the progress of current medical students.

The challenges don't end with COVID-19. Brexit and the end of the transition period create significant uncertainties. We don't know what our future relationship with the EU will be and there are still a significant number of decisions to make about health and education policy.

We do know that those coming to the UK from the EU will face a very different immigration system.

Health Education England's vision for future doctors articulates how medical education at both undergraduate and postgraduate levels needs to change and adapt:¹



'Key emergent themes for education reform include a stronger bedrock in generalist skills, especially in complex comprehensive care; embracing a culture of stewardship, with a greater understanding of population health and sustainable healthcare; the provision of flexible ways of training and working and evolving medical careers; and breaking down professional silos to enable the transformed multi-professional team and empowering other healthcare professions and roles to benefit patient care.'

‘Although the future of healthcare is unknown, change is inevitable. The current unprecedented experience of the COVID-19 pandemic has highlighted the imperative for change to enable health and social care to adapt to uncertain future healthcare environments.

Maintaining the status quo could not have enabled us to meet the challenges of COVID-19 and will not meet the healthcare demands in the changed future we are now planning for.’

This backdrop and the ever-changing external environment demonstrate just how important it is to seize the moment to ensure that we move to a more sustainable approach to workforce planning.

This report

In this report, we provide a blueprint for medical school expansion. We cover the future model of provision, the costs, challenges and opportunities.

We considered a range of evidence and held discussions with stakeholders from across the system. We set up an expert reference group, bringing together students, patients, system leaders and educators. While its focus is undergraduate medical education in England, at times the report draws on data and considers what is happening in Wales, Scotland and Northern Ireland.

The RCP has already called for the number of places to be doubled, which was echoed by the Royal College of Psychiatrists.¹ In June 2019 Simon Stevens, chief executive of NHS England, publicly recognised the need to expand the number of places.² The Interim NHS People Plan likewise refers to the need to consider a potential expansion in places.³

We know that opinions and analysis on the scale of a future expansion will vary. While that will need careful consideration, there is no doubt that it is needed. To support the development of expansion proposals we have sought to identify the issues that need addressing.

¹www.rcpsych.ac.uk/news-and-features/latest-news/detail/2019/09/27/double-the-number-of-medical-school-places-to-stop-mental-health-services-imploding

We therefore aim for this report to be thought-provoking about the future of medical student training in the UK. There is no one-size-fits-all approach and we are not suggesting that there should be. But we do believe there is a need across the country to realign the graduate attributes of medical school students with the needs and realities of the health and care system. We should take the opportunity to do just that.

The NHS workforce

Working practices are also changing. From 2009 to 2019, the number of consultant physicians working less than full time grew from 14% to 23%.⁴ If the NHS doesn't become a more flexible employer, people will simply leave it. We also need to plan for full-time equivalent (FTE), not headcount, to ensure we train the number of doctors we will need.

As we all know, the NHS is heavily reliant on international staff. The RCP is proud to have called for a 'new deal' for international staff working in the NHS and social care.ⁱⁱ They play a significant and vital role and deserve much more

recognition. While we will remain dependent on them in the short-term, we must consider the ethics of recruiting staff into the NHS from countries which may themselves have workforce shortages.

Alongside efforts to improve public health and social care, expansion will help reduce the pressure on the current workforce. It will also create the opportunity for governments, medical schools and the NHS to ensure that medical school programmes are aligned with the needs of the UK's health and care system.

It is important to recognise that training more medical students does not remove the responsibility to improve the working lives of the current workforce. While we must train more staff, we must also retain, value and recognise those already working in the NHS. In recent years we have seen recognition from the NHS and governments that there is a real need to make the NHS a better place to work. Things are starting to move in the right direction, but there is still a long way to go.

ⁱⁱ www.rcplondon.ac.uk/news/royal-college-physicians-urges-government-create-new-deal-international-nhs-and-social-care

The state of play

The case for an expansion of medical school places is clear. However, an expansion of any size needs to be properly considered and planned. In this section we consider context – the number of medical school places currently available, the demographic of students, location of medical schools and the number of clinical academics.

Medical school places

In 2017/18 there were just under 41,000 medical students in training across the UK's 35 medical schools.

The General Medical Council (GMC) publishes an annual return on medical schools. The 2017/18 annual return provides a breakdown for each medical school in the UK and includes student numbers and demographic information. In 2017/18 the vast majority of medical students (38,112) entered medical school via the undergraduate entry route with a further 2,885 entering via graduate entry routes. 79.7% of places were in England, with 12.3% in Scotland, 4.6% in Wales and 3.4% in Northern Ireland (Table 1).

Medical students by nation

Table 1: Number of medical students by country in the UK for 2017/18*

Country	Total number of students	Total proportion	Number of standard entry students	Number of graduate entry students
England	32,665	79.70%	30,156	2,509
Northern Ireland	1,399	3.40%	1,399	0
Scotland	5,042	12.30%	5,042	0
Wales	1,891	4.60%	1,515	376
Total	40,997		38,112	2,885

*Data from: www.gmc-uk.org/education/reports-and-reviews/medical-school-reports

The number of medical students by year of study

Table 2: Medical school annual return 2017/18**

Year of study	Number of standard entry students	Number of graduate entry students	Total number of students
Year 0 / foundation or pre-entry year (intake)	301		301
Year 1 (intake and existing)	7,321	715	8,036
Year 2	6,969	694	7,663
Year 2 – intercalating	141		141
Year 3	6,634	723	7,357
Year 3 – intercalating	1,264		1,264
Year 4	6,622	753	7,375
Year 4 – intercalating	950		950
Year 5	6,591		6,591
Year 5 – intercalating	129		129
Year 6	1,190		1,190
Total	38,112	2,885	40,997

**Data from www.gmc-uk.org/education/reports-and-reviews/medical-school-reports

Recent expansion

The UK government announced in 2017 that it was going to increase the number of medical places per year by 1,500.ⁱⁱⁱ These places were allocated in March 2018^{iv} and the first 630 additional places were introduced in 2018/19. As part of this expansion, five new medical schools were created: Edge Hill University, University of Lincoln Medical School, University of Sunderland School of Medicine, Anglia Ruskin University School of Medicine, and the Kent and Medway Medical School. Places were also allocated to pre-existing medical schools to allow them to expand.^{iv}

The new places were allocated following a competitive process which was carried out after a consultation. The Department of Health (DoH) sought stakeholders' views on 'How to maximise the benefits

from the increases in medical student numbers'.⁵ The process to assign the 1,500 places was run by Health Education England (HEE) and the Higher Education Funding Council for England (HEFCE).

In addition to the UK government's expansion of places in 2018, the Welsh government announced a small expansion of 40 places a year.^v In the same year, the Scottish government also announced a small expansion of 85 places focused on encouraging more students into general practice.^{vi} In May 2020 the Northern Ireland Executive agreed to establish a graduate entry medical school with an initial intake of 70 students from September 2021.^{vii} These new places mean that over the next 5 years the total number of medical students in training in the UK will grow to approximately 48,500.

ⁱⁱⁱwww.gov.uk/government/news/1500-extra-medical-undergraduate-places-confirmed

^{iv}www.hee.nhs.uk/news-blogs-events/news/new-medical-schools-open-train-doctors-future

^vwww.wales.nhs.uk/news/48890

^{vi}<https://news.gov.scot/news/record-number-of-student-medical-places>

^{vii}www.belfasttelegraph.co.uk/news/northern-ireland/go-ahead-at-last-for-magee-medical-school-in-derry-huge-boost-for-the-north-west-and-nhs-39216102.html

Medical schools in 2020



Student demographics

Over the past 10 years, medical schools have increased the diversity of students entering their medical degree courses. They have a growing number of students from less socially advantaged backgrounds, black and ethnic minority groups and LGBT communities. Medicine has for many years addressed the gender imbalance of previous generations, and current initiatives include increasing access to people with mental health problems or who are disabled.

It is clear that there is still work to be done, and we must go further to widen entry to medical school. The doctors of tomorrow should represent the communities they serve. COVID-19 has also led to a significant increase in those considering NHS careers and we must harness that interest.

The GMC medical schools annual return provides demographic data for all UK medical students. Demographic data are available for gender, ethnicity and disability. In addition, the Medical Schools Council, via the Selection Alliance, produces an annual report on selection to medicine and widening participation.

Comparing the GMC data⁶ on gender and ethnicity against data held by the Office of National Statistics and Stats Wales on the UK 18–24 population shows that medical school students are not fully representative. This is not an exhaustive exercise, but it does provide some insight into the student demographics at UK medical schools compared with the wider population.

Gender

Of those currently at medical school, women make up 56% of UK medical students while men make up 44%. When compared with Stats Wales demographic data of 18–24-year olds this would indicate that men are slightly underrepresented. However, the Selection Alliance 2019 report highlights how the ‘proportion of male and female entrants selected from their respective applications is very similar ...’⁶

Table 3: Number of medical students by gender in the UK for 2017/18

Gender	Number of students	Proportion	UK 18–24 population*	% difference between students and population
Male	18,052	44.00 %	51.40 %	-7.40 %
Female	22,945	56.00 %	48.60 %	7.40 %
Total	40,997			

*Data from Stats Wales: <https://statswales.gov.wales/Catalogue/Population-and-Migration/Population/Estimates/nationallevelpopulationestimates-by-year-age-ukcountry>

Ethnicity

The Selection Alliance 2019 report shows that there has been an overall increase in the past 10 years of medical students from black, Asian and minority ethnic (BAME) backgrounds. The report also highlights that those from Asian heritage submit the highest number of applications. Additionally, the lowest proportion of entrants to standard entry and graduate entry courses are from black heritage.⁶

There has been an overall increase in the past 10 years of medical students from BAME backgrounds.



▶ 10 years

Table 4: Number of medical students by ethnicity in the UK for 2017/18

Ethnicity	Number of students	Proportion	UK 18–24 population**	% difference between students and population
White British	17,152	41.8%	75.8%	-34.0%
White Irish	149	0.4%	0.5%	-0.1%
White Gypsy or Irish Traveller	2	0.0%	0.1%	-0.1%
White other	6,032	14.7%	5.0%	9.7%
Mixed – white and black Caribbean	156	0.4%	1.4%	-1.0%
Mixed – white and black African	175	0.4%	0.3%	0.1%
Mixed – white and Asian	1,016	2.5%	0.9%	1.6%
Other mixed	684	1.7%	0.7%	1.0%
Asian/Asian British – Indian	4,229	10.3%	3.0%	7.3%
Asian/Asian British – Pakistani	2,103	5.1%	2.6%	2.5%
Asian/Asian British – Bangladeshi	590	1.4%	1.1%	0.3%
Asian/Asian British – Chinese	1,881	4.6%	1.9%	2.7%
Asian/Asian British – other Asian	2,184	5.3%	1.8%	3.5%
Black/black British – African	1,237	3.0%	2.1%	0.9%
Black/black British – Caribbean	238	0.6%	1.1%	-0.5%
Black/black British – black other	71	0.2%	0.5%	-0.3%
Other – Arab	748	1.8%	0.6%	1.2%
Any other	857	2.1%	0.7%	1.4%
Not stated	1,493	3.6%	N/A	N/A
Total	40,997			

**Data from www.ethnicity-facts-figures.service.gov.uk/uk-population-by-ethnicity/demographics/age-groups/latest#age-profile-by-ethnicity

Disability

The 2019 Selection Alliance report notes that in the 5 years since the publication of the Medical Schools Council’s *Selecting for excellence final* report the number of entrants to medical school with disabilities has increased by 33%.⁶ 10.4% of medical students currently declare a disability (Table 5).

Table 5: Number and proportion of students with declared disability

Declared disability	Number of students	Proportion
With declared disability	4,257	10.4%
No declared disability	36,740	89.6%
Total	40,997	

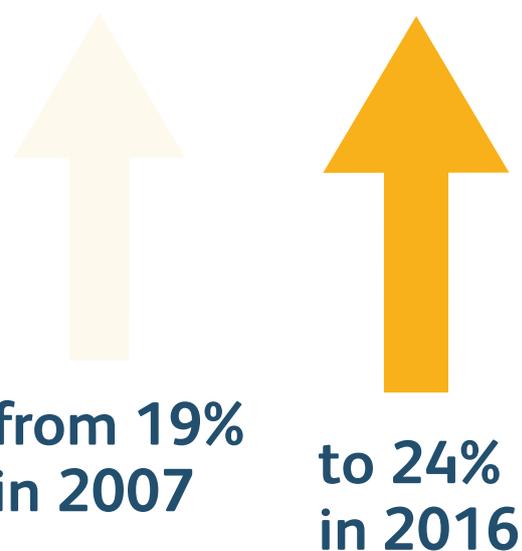
Index of multiple deprivation

Using the indices of multiple deprivations from the four nations, the Medical Schools Council’s *Selection Alliance 2018 report* shows that over the past 10 years the number of entrants to medicine from the most deprived areas (quintiles 4 and 5) increased by only five percentage points, from 19% in 2007 to 24% in 2016.⁷

Schooling

Additionally, the proportion of entrants to medicine programmes from state-funded schools was notably lower than the proportion of all entrants to higher education generally. The 2018 Selection Alliance report notes that between 2007 and 2016 ‘There is little change in the numbers of entrants to medicine from state schools.’ And that ‘Students from independent schools remain over-represented in medicine’.⁷

Over the past 10 years the number of entrants to medicine from the most deprived areas increased by only five percentage points.



UK, EU and international students

The number of international students who can take up places at most medical schools in England and Wales is capped at 7.5%. The 7.5% cap does not apply to independent medical schools such as the University of Buckingham Medical School. Data from the Office for Students shows that, of the 8,615 entrants to UK medical schools for the 2018/19 academic year, 850 (9.9%) paid other fees, indicating that they

were not eligible to pay for home fee status.

Data from the Higher Education Statistics Agency (HESA) allows us to break down the domicile for 26,555 students coded on 'clinical medicine' undergraduate programmes. The HESA data reports 87% as UK domiciled students, with 3% domiciled in the EU and 11% in non-EU countries.^{viii}

Table 6: Domicile of clinical medicine students

Domicile	(A3) Clinical medicine (Undergraduate)	Percentage
England	19,480	73%
Wales	965	4%
Scotland	1,630	6%
N Ireland	1,045	4%
Other UK	60	0%
Total UK	23,180	87%
Other European Union	800	3%
Non-European Union	2,575	11%
Total non-UK	3,370	13%
Not known	0	0%
Total	26,555	

^{viii}www.hesa.ac.uk/data-and-analysis/students/table-22

Clinical academia

One of the barriers to expanding medical school places at the pace needed is the lack of attention that has been given to the clinical academic workforce in recent years. Clinical academics undertake the vast majority of work to develop and deliver the curricula and support students through medical school. Clinical academics also make a vital and world-leading contribution to research (as demonstrated in the academic endeavour to address the current COVID-19 pandemic) and are a crucial element of the workforce.

Expansion of undergraduate medical education will result in the need to expand the number of clinical academics. The total number of full-time equivalent (FTE) clinical academics working in professor, reader and lecturer posts in medical schools has been relatively static for the past 10 years. However, there have been changes to the numbers of the types of posts held with the number of reader/senior lecturer posts reducing by 281.8 FTEs during that time, while the number of lecturer and professor level posts has increased.

Table 7: FTE staffing levels 2010–19*

Posts/ years	Professor	Reader/ senior lecturer	Lecturer	Researcher	Other	Total (professor, reader, lecturer)	Total (all)
2010	1,318.3	1,319.6	536.6	1,262.3	151.8	3,174.5	4,588.6
2011	1,306.5	1,324.1	530.9	1,583	134	3,161.5	4,878.5
2012	1,306	1,286.5	550.5	1,695.5	106	3,143	4,944.5
2013	1,329.1	1,235.7	564.1	1,826	96.9	3,128.9	5,051.8
2014	1,365.1	1,196	552.2	1,882	127.7	3,113.3	5,123
2015	1,350.6	1,164.4	592.1	1,869.3	112.5	3,107.1	5,088.9
2016	1,351.5	1,115.5	592.1	1,877	135.1	3,059.1	5,071.2
2017	1,406.8	1,059.3	628.1	1,840.8	150.5	3,094.2	5,085.5
2018	1,443.7	1,034.2	677.1	1,704.7	197.5	3,155	5,057.2
2019	1,418.4	1,037.8	690.8	1,767.5	187.7	3,147	5,102.2

*Data from: Medical Schools Council: www.medschools.ac.uk/clinical-academic-survey

These posts are funded by universities, the NHS and other sources. In 2019 universities funded 1,513.1 (FTE) posts, the NHS 1,216 (FTE) posts, and 418 (FTE) posts were funded from other sources.

It is noticeable that national workforce planning documents, such as the NHS People Plan,³ make little comment on clinical academics. There is a need for a joined-up, nationally coordinated approach to the future of clinical academia as a career route for all professions. Without a national plan, individual universities and NHS organisations will struggle to manage the significant growth in medical school places needed. The importance of protected time for clinicians to carry out academic activities is key to supporting the development of clinical academic career routes.

Challenges and opportunities

The expansion of medical schools provides an opportunity to consider the make-up and demographics of medical students. An expansion also raises questions about the size of the clinical academic workforce and number of clinical educators.

The GMC annual medical school return and the Selection Alliance annual reports show that medicine programmes still have some way to go to be representative of society.

The government should ensure that an expansion of places and the process of allocating places incentivises an increased focus on widening

participation in medicine. The UK government and regulators should ensure that expansion proposals are informed by the Selection Alliance reports which provide a wealth of insight into the areas that need a greater focus.

The success of schemes such as the extended medical degree programme at King's College London are models which show early promise.^{ix}

Medicine and health are international disciplines and the UK is a world leader in medical education. International medical students already contribute significantly, both through the views and perspectives they bring to their programmes, and economically. In the words of the chair of the Migration Advisory Committee, 'There is no doubt that international students offer positive economic benefit, including cross-subsidising the education of domestic students and research.'⁸

The relatively static number of full-time equivalent clinical academics presents a challenge for a significant expansion of places. The Medical Schools Council 2018 report in clinical academic staffing levels provided four recommendations for the future of the clinical academic workforce.⁹ These focus on improved data collection, the need for funders and employers to develop clear clinical academic career pathways and funding, alongside the need for employers and funders to improve the diversity of clinical academics.

^{ix}<https://russellgroup.ac.uk/policy/case-studies/extended-medical-degree-programme-at-king-s-college-london>

Future iterations of the NHS People Plan must address the challenges and opportunities facing the clinical academic workforce. This must include year on year growth and the development of clear clinical academic career pathways to create a sustainable pipeline to meet future demand. The NHS should also ensure that when addressing the needs of clinical academics, the needs of the wider clinical academic workforce (such as nursing) are also considered and planned together. The development of clear clinical academic career pathways should also support specialty-specific developments.

An example of this is *By choice – not by chance*, a report from HEE and the Medical Schools Council, which highlights the need for specific work to develop general practice academic pathways.¹⁰

In addition to the need for more clinical academics, **an expansion of places will also require the NHS to widen the pool of clinical educators. It is key that education is designed by clinical academics and clinical educators with the clinical and educational expertise to inspire students.**

The clarification of the clinical education provided by NHS workers through Health Education England's tariff^x (and similar funding from the educational funders in the devolved administrations) was very welcome, but it demonstrates the significant time that is needed from NHS clinicians to support medical students. The impact of expansion on job planning for clinicians should be considered in financial planning. Many clinicians

nearing retirement see medical school teaching as something they would want to do after retirement – or something they would delay retirement for if they were able. We should consider how to make the most of this workforce.

The last expansion of medical school places saw the creation of five new medical schools: Edge Hill University, University of Lincoln Medical School, University of Sunderland School of Medicine, Anglia Ruskin University School of Medicine and the Kent and Medway Medical School. These schools will improve provision across England. There is some evidence to indicate that recruiting medical school students from underrecruiting areas may help with filling training posts in these areas.¹¹

A key consideration of a further expansion must be to build on the successful work of the previous expansion to provide medical school education across the whole of England. Expansion of medical school places can also support other agendas such as the UK government's commitment to 'levelling up' and the need to reduce health inequalities across the UK.

'There is no doubt that international students offer positive economic benefit, including cross-subsidising the education of domestic students and research.'⁸

^xwww.hee.nhs.uk/our-work/education-funding-reform/dhsc-healthcare-education-training-tariff

Interest in medical school

Our ambition to double the number of medical school places rightly raises questions about the supply of potential applicants for any new places. In this section, we consider the pipeline of those interested in medicine courses and the grades they achieve.

Applications to medical school

Applications to study medicine for both undergraduate and postgraduate entry are processed through UCAS. Applicants for medicine courses must apply by mid-October every year for entry the following year.

The number of applicants to medicine programmes has outstripped supply every year for the past 10 years. There were 23,710 applications for 2020 entry alone.^{xi} A detailed look at the numbers shows that with one exception over 20,000 applicants have applied for medicine every year since 2011.

These numbers demonstrate a clear appetite from applicants to study medicine. The 2020 applicant numbers show that 1,510 applicants had previously applied for medicine and were reapplying.^{xi}

Medicine application numbers have grown every year for the past 3 years.

Table 8: Applications to study medicine 2018–20*

Year	Number of applicants to study medicine
2018	20,730
2019	22,430
2020	23,710

Table 9: Age profile of 2020 applicants (UK wide)*

Age	Applicants
17 and under	660
18	13,130
19	3,260
20	760
21–24	3,930
25–29	1,370
30–34	340
35 and over	280

*Data from UCAS applicant figures: www.ucas.com/data-and-analysis/undergraduate-statistics-and-reports/ucas-undergraduate-releases/applicant-releases-2020/2020-cycle-applicant-figures-15-october-deadline

^{xi}www.ucas.com/data-and-analysis/undergraduate-statistics-and-reports/ucas-undergraduate-releases/applicant-releases-2020/2020-cycle-applicant-figures-15-october-deadline

COVID-19 has also resulted in a significant increase in those considering NHS careers. The Health Careers website received a 78% increase in page views compared with the previous year.^{xii}

Grade and qualification profile of applicants

Medical schools review a range of considerations when making offers. These considerations include A-level results, BioMedical Admissions Test (BMAT) and University Clinical Aptitude Test (UCAT) scores as well as performance at Multiple Mini Interviews (MMIs).

To help understand the pool of applicants to medical school in more detail, the RCP used UCAS's EXACT data service to review the 2019 application cycle of those applying for medicine. The dataset includes those studying in England, Northern Ireland and Wales with at least three predicted A levels at the end of the cycle. This analysis is presented to provide insight into the applicant pool.

An analysis of the dataset shows that, of the 11,310 unique applicants, 5,340 applicants were placed for entry while 5,900 were not. Of those who were not placed for entry, there were a significant number of applicants with strong A-level results (Table 10).

Table 10: A-level results of those applying to study medicine

Achieved A-level grade profile	Total number of unique applicants	Number of applicants who were placed for entry	Number of applicants who didn't get accepted
A*A*A*	960	900	60
A*A*A	820	745	75
A*A*B	30	25	5
A*AA	1,155	1,000	155
A*AB	305	205	100
A*AC	25	10	15
A*BB	90	35	55
A*BC	25	0	25
AAA	1,455	1,160	295
AAB	1,185	650	535
AAC	105	20	85
ABB	1,040	310	730
ABC	400	40	360
ACC	110	5	105
BBB	525	65	460
BBC	630	55	575

^{xii}www.hee.nhs.uk/news-blogs-events/news/huge-jump-visits-health-careers-website-thousands-consider-career-healthcare

Table 10 shows that there were 1,325 applicants who achieved at least two As with a further 1,275 who achieved at least one A who missed out on a place in 2019. Including those who achieved BBB and BBC the total applicant pool came to 3,635. These data do not include subject analysis so only provide insight into the grade profile of applicants who applied to study medicine for entry in 2019.

Challenges and opportunities

With over 23,000 applicants applying for medical school for entry in 2020, interest in medicine remains high. Competition for places is high with 1,325 applicants in 2019 with at least two A grades at A level missing out on a place.

This indicates a clear demand for medical school places over and above the number currently available, and means any expansion of places could provide opportunities for applicants who miss out on a place to secure one in future. Students who apply for other courses may also be encouraged to apply to study medicine if the total number of places was increased.

The UK government should undertake further detailed work to fully understand the potential undergraduate applicant pool, including analysis of the interplay between A-levels, UCAT and BMAT scores. UCAS should be asked to undertake research with potential applicants to medical school and other science subjects to understand the appetite for places and the perceptions of the entry process to medicine.

We must understand how potential applicants view their chances of gaining a place at medical school.

While most entrants to medical schools are school leavers, 8% of entrants in 2016 had already completed a degree in another subject.¹² This highlights the importance of ensuring that an expansion of medical school places considers how to allocate undergraduate vs graduate-entry places. It is key that medical schools and the regulators are involved in these discussions.

Research undertaken by Garrud and McManus, using the UK Medical Education Database to review two cohorts of students (2007 and 2008), concluded that, 'The type of medicine programme has little effect on graduate entrant completion, or EPM or SJT scores, despite differences in student profile. Aptitude test score has some predictive validity, as do sex, age and ethnicity, but not prior degree subject or class. Further research is needed to disentangle the influences of ethnicity.'¹³

An expansion of places also creates an opportunity for individual medical schools to consider their entry criteria. Research from Mwandigha et al suggests that, 'the academic entry criteria should be relaxed for candidates applying from the least well-performing secondary schools. In the UK, this would translate into a decrease of approximately one to two A-level grades'.¹⁴ Doing this would support ambitions to widen entry to medicine courses.

The data from UCAS highlight that **there is merit in a government project to increase medical school places also considering an increase in undergraduate foundation years for medicine. A strategic approach to foundation years and extended medical degrees should form part of NHS workforce planning.**

Costs

To support the development of this report, the RCP commissioned York Health Economics Consortium (YHEC) to provide an estimate of the financial costs associated with medical school education and the foundation programme. In this section, we present the key findings of this work (YHEC's full report is available on the RCP website) and extrapolate the costs based on several different expansion scenarios.

The objectives of the study were to:^{xiii}

- > take a mixed-methods approach to identify and collate relevant costing data from publicly available sources
- > estimate the cost per placement for a 5-year undergraduate medical degree and a 2-year foundation programme
- > estimate the cost of an additional 1,000 new medical school places.

The study provides several indicative estimates that we can use to model a range of scenarios. Due to the number of unknowns – would the student pay tuition fees, would the degree apprenticeship model be used – we have not modelled the impact of changing the final year of medical school to an ‘apprenticeship’ style as laid out in our principles for expansion. This work would need to be done as part of the scoping and consultation.

Cost per medical school place

YHEC estimated the total discounted cost for a 5-year undergraduate medical course in England as £207,418. **The total ‘public’ cost is £192,981** and the total ‘private’ cost is £14,437. The public cost includes the tuition fee loan provided to students and paid to institutions. Analysis by London Economics estimates that medical professionals will repay significant amounts of their student loan over their career.¹⁵

The cost per medical school place comprises the cost for teaching incurred by higher education institutions, the healthcare placement providers and the cost of living to the medical student. The components of these costs are shown in Table 11.

Medical professionals repay significant amounts of their student loan.



^{xiii}Medical school place cost estimates, York Health Economics Consortium, May 2020

Table 11: Cost components for medical school places

Stage	Cost component	Funding applied year	Funding provider
Undergraduate medical school place	Tuition fee loan	Years 1, 2, 3 and 4	The Student Loans Company
	Maintenance loan	Years 1, 2, 3 and 4	The Student Loans Company
	Teaching grant fund	Years 1, 2, 3, 4 and 5	The Office for Students
	Clinical placement – undergraduate	Years 3, 4 and 5	Health Education England
	NHS bursary	Year 5	NHS Business Services Authority
	Reduced maintenance loan	Year 5	The Student Loans Company

The level of funding made available from both public and private perspectives was used as a proxy to determine the cost per medical school place. Public funding consists of two elements: direct funding for teaching and research, and student loans for maintenance and fees. The public bodies that provide financing and funding for higher education in England include the Student Loans Company (SLC), Health Education England (HEE), the Office for Students (OfS), and healthcare placement providers.

To provide an estimate, the cost of living is assumed to equate to the sum of the maximum available public funding that was provided as either a loan, grant or bursary to the medical student to cover living or maintenance costs. Private funding has been estimated as the difference between the maximum available public funding and the average amount of funding provided to a medical student for maintenance and fees.

The weighted annual costs per student of the various parts are shown in Table 12.

YHEC calculated a weighted cost ‘to account for the variance in maximum available rates for the means-tested bursary, non-means-tested bursary, extra weeks bursary, reduced maintenance loan, and maintenance loan payable to students living away from home in London and outside London.’

YHEC then broke these component costs down into private and public costs. In their report they state, ‘The total public cost was calculated by multiplying and discounting the weighted costs provided [see Table 13] for the years when the cost is applied. For example, the total cost of tuition fee loans was calculated as £9,250 applied annually for 4 years and discounted at 3.5%’.

Table 12: Medical school baseline costs per student 2019/20

Cost component	Weighted annual cost per student	Funding applied year
Tuition fee	£9,250	Years 1, 2, 3, 4 and 5
Maintenance loan	£9,544 £8,976	Years 1, 2 and 3 Year 4
Teaching grant fund	£1,500 £10,000	Years 1 and 3 Years 3, 4 and 5
Clinical placement	£36,353	Years 3, 4 and 5
NHS bursary – non-means tested grant	£1,000	Year 5
NHS bursary – means tested grant	£2,764	Year 5
NHS bursary – extra weeks allowance	£1,964	Year 5
Reduced maintenance loan	£2,601	Year 5

Table 13: Private and public costs

Stage	Cost component	Total public cost	Total private cost
Undergraduate medical school place	Tuition fee loan	£33,976	-
	Maintenance loan	£23,802	£10,760
	Teaching grant fund	£29,003	-
	Clinical placement – undergraduate	£95,076	-
	NHS bursary	£9,616	£2,995
	Reduced maintenance loan	£1,508	£682
	Total discounted cost	£192,981	£14,437

YHEC states: ‘The total public cost was calculated by multiplying and discounting the weighted costs provided [in Table 13] for the years when the cost is applied. For example, the total cost of tuition fee loans was calculated as £9,250 applied annually for 4 years and discounted at 3.5%.

To calculate the total private cost per medical school place, it was assumed that the costs of teaching and research were fully covered under public funding. This applies to the cost of tuition fees, teaching grants, clinical placement costs (both undergraduate and postgraduate) and the provision of a postgraduate salary. The proportions of available funding not covered by public costs were estimated for maintenance loans, NHS bursaries and the reduced maintenance loan to calculate the cost that would need to be covered privately.

The proportion of the maximum funding for maintenance loans (years 1 to 4) was estimated at 68.9%. The weighted maximum available funding for maintenance loans is £9,544 for the first 3 years and £8,976 for the 4th year. The estimated average maintenance loan supplied by the SLC is £6,480 per year [18]. After discounting, the total average spend over four years by the SLC on maintenance loan is £23,802 out of a hypothetical maximum available fund of £34,562. Therefore, the remaining private cost incurred as a result is £10,760.

The proportion of the maximum funding for the NHS means tested bursary, non-means tested bursary, and extra week’s bursary was estimated at 37.9%. The weighted maximum available funding for the NHS bursary (excluding payment of tuition fee) after discounting is £4,823. The average amount of the NHS bursary paid directly to medical students after discounting is £1,828 [19]. Therefore, the remaining private discounted cost incurred as a result is £2,995.

No source could be retrieved for the average spend by the SLC on the reduced maintenance loan. Therefore, the same proportion of 68.9% for the maintenance loan (years 1 to 4) was applied. On that basis, the private discounted cost incurred is £682.’

Table 14: Breakdown of costs by financial provider

Financial provider	Total discounted cost	Cost component [% of discounted cost]
The Student Loans Company	£59,286	Tuition fee loan [57%] Maintenance loan [40%] Reduced maintenance loan [3%]
The Office for Students	£29,003	Teaching grant fund [100%]
Health Education England	£95,076	Undergraduate clinical placement [100%]
NHS Business Services Authority	£9,616	NHS bursaries [100%]
Private funding	£14,437	Cost of living not funded by public [100%]
Total discounted cost	£207,418	
Total discounted cost (- private funding)	£192,981	

Expansion cost scenarios

Based on these estimates, we asked YHEC to model (based on current costs) the total cost for an additional 1,000 medical places to provide indicative costs of expansion. YHEC modelled the introduction of 1,000 new places over 3 academic years following the model which was used for the recent expansion of 1,500 places (Table 15). They estimated that the total cost of 1,000 new places for medical schools would be £207.4million. **£193 million is provided by 'public' sources.**

Total cost of 1,000 new places for medical schools
£207.4million



Table 15: The extrapolated costs for 1,000 new places introduced over 3 years

Financial provider	Total discounted cost of additional medical school places		
	Year 1 (42%)	Year 2 (46%)	Year 3 (12%)
	420	460	120
The Student Loans Company	£24,900,074	£27,271,510	£7,114,307
The Office for Students	£12,181,311	£13,341,436	£3,480,375
Health Education England	£39,931,838	£43,734,870	£11,409,097
NHS Business Services Authority	£4,038,826	£4,423,476	£1,153,950
Private funding	£6,063,428	£6,641,898	£1,732,408
Total discounted cost	£87,115,478	£95,412,190	£24,890,137
Total discounted (minus private funding)	£81,052,050	£88,771,293	£23,157,729

To estimate the costs of larger expansions, we have further extrapolated the costs to look at expansions of 2,500, 5,000 and 7,500 (Tables 16, 17 and 18). We have used the same approach as YHEC to split the expansion over 3 years, using the same phasing – 42% in year one, 46% in year two and 12% in year three. In reality, a

more sizeable expansion is likely to be structured differently, but for the purpose of comparison we have kept it the same. This work has also not considered set-up costs (including potential capital contributions) which may be required if a large expansion is taken forward.

Table 16: The extrapolated costs for 2,500 new places introduced over 3 years

Financial provider	Total discounted cost of additional medical school places		
	Year 1 (42%) 1,050 places	Year 2 (46%) 1,150 places	Year 3 (12%) 300 places
The Student Loans Company	£62,250,300	£68,178,900	£17,785,800
The Office for Students	£30,453,150	£33,353,450	£8,700,900
Health Education England	£99,829,800	£109,337,400	£28,522,800
NHS Business Services Authority	£10,096,800	£11,058,400	£2,884,800
Private funding	£15,158,850	£16,602,550	£4,331,100
Total discounted cost	£217,788,900	£238,530,700	£62,225,400
Total discounted (minus private funding)	£202,630,050	£221,928,150	£57,894,300

Table 17: The extrapolated costs for 5,000 new places introduced over 3 years

Financial provider	Total discounted cost of additional medical school places		
	Year 1 (42%) 2,100 places	Year 2 (46%) 2,300 places	Year 3 (12%) 600 places
The Student Loans Company	£124,500,600	£136,357,800	£35,571,600
The Office for Students	£60,906,300	£66,706,900	£17,401,800
Health Education England	£199,659,600	£218,674,800	£57,045,600
NHS Business Services Authority	£20,193,600	£22,116,800	£5,769,600
Private funding	£30,317,700	£33,205,100	£8,662,200
Total discounted cost	£435,577,800	£477,061,400	£124,450,800
Total discounted (minus private funding)	£405,260,100	£443,856,300	£115,788,600

Table 18: The extrapolated costs for 7,500 new places introduced over 3 years

Financial provider	Total discounted cost of additional medical school places		
	Year 1 (42%) 3,150 places	Year 2 (46%) 3,450 places	Year 3 (12%) 900 places
The Student Loans Company	£186,750,900	£204,536,700	£53,357,400
The Office for Students	£91,359,450	£100,060,350	£26,102,700
Health Education England	£299,489,400	£328,012,200	£85,568,400
NHS Business Services Authority	£30,290,400	£33,175,200	£8,654,400
Private funding	£45,476,550	£49,807,650	£12,993,300
Total discounted cost	£653,366,700	£715,592,100	£186,676,200
Total discounted (minus private funding)	£607,890,150	£665,784,450	£173,682,900

Total 'public' cost

While the exact cost implication would depend on the scale and pace of expansion, it is worth noting that the costs of each scenario fall across several financial years and likely at least two different parliaments. It is also important that the 'actual' public cost is understood.

Analysis of student loan repayments by medical professionals indicates that they are likely to repay their loans in full across their careers. London Economics' analysis suggests that men will make £142,000 in

nominal repayments over the repayment period.¹⁵ This is equivalent to £79,000 in real present value terms.¹⁵ Leading to the loan and accumulated interest being repaid in approximately 19 years after graduation. Women are estimated to make £190,000 in nominal repayments equivalent to £87,000 in real present value terms over approximately 27 years post-graduation.¹⁶

Table 19 shows the total costs of various expansion scenarios, including the total 'public' costs and excluding loans provided by the Student Loans Company.

Table 19: Total costs of different expansion scenarios

Scenario size	Total cost	Total 'public' cost	Total 'public' cost (excluding student loans provided by SLC)
1,000	£207,418,000	£192,981,000	£133,695,000
2,500	£518,545,000	£482,452,500	£334,237,500
5,000	£1,037,090,000	£964,905,000	£668,475,000
7,500	£1,555,635,000	£1,447,357,500	£1,002,712,500

During the first wave of the COVID-19 pandemic in early 2020, the NHS utilised 3,300 final year medical students as FY1 grade doctors. This scheme was a great success¹⁶ and may well be the template for future final year placements at medical school. Such roles will provide additional public service benefit to the NHS, reducing the overall 'cost' of clinical placements.

Foundation programme costs (including contribution to service)

In addition to looking at the costs associated with medical school education, we asked YHEC to estimate the costs associated with the 2-year foundation programme. During the 2-year foundation programme, foundation doctors provide substantial service to the NHS and this cost includes salary.

Due to the service element of the foundation programme, the costs associated with the programme should be considered separately to the cost of medical school. These costs will, of course, need to be considered as part of wider workforce planning, as an expansion of medical school places will also require an expansion of the foundation programme. The cost including salary for the 2-year foundation programme is estimated at £125,318.

Assuming 10% of the students who enter medical school do not go on to foundation training, that is a foundation programme cost of just under £846 million for an additional 7,500 places. Added to the cost of medical school places, we arrive at a grand total of around £1.85bn, or 1% of the government's health budget.

Table 20: Cost components of the foundation programme

Stage	Cost component	Funding applied year	Funding provider
Foundation programme	Clinical placement – postgraduate	Years 6 and 7	Health Education England
	Postgraduate salary	Years 6 and 7	Health Education England and NHS trusts (50:50)

Table 21: The baseline foundation programme costs per foundation year doctor 2019/20

Cost component	Weighted annual cost per student	Funding applied year
Clinical placement	£13,204	FY1 and FY2
Foundation salary	£60,851	FY1
	£69,588	FY2

Table 22: The total discounted estimate costs for the 2-year foundation programme per foundation doctor

Stage	Cost component	Total public cost	Total private cost
Foundation programme	Clinical placement – postgraduate	£21,120	-
	Postgraduate salary	£104,198	-
	Total discounted cost	£125,318	

Model

The current model of medical school education has not served all students equally well. There is increasing recognition of the attainment gap,^{xiv} lack of diversity in the curriculum and faculty,^{xv} and frequent incidents of discrimination.^{xvi} Schools are addressing this^{xvii} and ongoing work will be required in the long term in medical schools and the NHS.

Medical schools face competing priorities when designing and delivering their courses. It is not unusual to hear calls for the length of medical school courses to be shortened, while the same commentators ask yet more of our junior doctors.

Medicine isn't just a university course, it is an apprenticeship that lasts a lifetime. As such, it needs a strong foundation so it is cause for concern that an increasing number of foundation doctors report not feeling ready for practice.

UK medical education remains among the best in the world.^{xviii} To keep it that way we need to adapt, placing greater emphasis on how we prepare medical students to be trainee doctors. Much progress has been made in recent years, meaning medical students are exposed to a wider range of clinical settings. But we need a more strategic approach if we are to begin to address the workforce challenges we face.

A career in medicine

Medical schools play a vital role in creating the doctors of the future. As the world around us changes we must reflect on whether the current model is appropriately preparing students for their careers. Students who graduate this year may well end up with a 60-year career.^{xix} Medical schools have no easy task, and different stakeholders want different graduate attributes from students. The National Student Survey (NSS) shows that medical students are generally positive about their university experience. Over 86% of them report that, 'Overall, I am satisfied with the quality of the course'. Over 94% of medical students report that the 'Course is intellectually stimulating'.^{xx}

We know that for most medical school students the next stage in their careers will be the foundation programme. This is because at present the point of registration with the General Medical Council (GMC) follows the completion of the first year (FY1) of the foundation programme. As part of the GMC national training survey, FY1 doctors are asked a series of questions about how well they feel that their medical school education prepared them for the foundation programme.

^{xiv} www.gmc-uk.org/education/standards-guidance-and-curricula/projects/differential-attainment

^{xv} <https://blogs.bmj.com/bmj/2018/10/18/diversifying-and-decolonising-the-medical-curriculum/>

^{xvi} www.gponline.com/bame-medical-students-undermined-racism-warns-bma/article/1673894

^{xvii} www.medschools.ac.uk/news/an-update-on-medical-schools-work-to-tackle-racism-and-inequality

^{xviii} www.timeshighereducation.com/student/best-universities/best-universities-medicine

^{xix} www2.deloitte.com/us/en/insights/focus/human-capital-trends/2017/learning-in-the-digital-age.html

^{xx} Medicine and dentistry: www.officeforstudents.org.uk/advice-and-guidance/student-information-and-data/national-student-survey-nss/sector-analysis/

While most new graduates report feeling prepared for foundation programme, the GMC reports that this satisfaction is gradually declining.¹² Since 2016, the number of FY1 doctors who feel adequately prepared has fallen by around 5%.¹² In 2019 one in every eight trainees reported feeling unprepared for their first FY1 post. This suggests there needs to be a greater focus on ensuring that new graduates feel prepared and ready to undertake FY1. The experiences of this year's interim FY1 doctors will provide insights to help reshape the final year of medical school.

Knowledge and graduate attributes

As life expectancy has improved, there has been a growth in patients who have two or more medical conditions.¹⁷ This presents a challenge for medical education at all levels. Medical education and pathways have become increasingly specialised at a time when our patients need doctors 'who are capable of providing general care in broad specialties across a range of different settings'.¹⁸

Professor Sir David Greenaway's independent report into the structure of postgraduate medical education clearly stated the need for a rethink of aspects of postgraduate training routes.¹⁸ In response, the physician training model has changed with the Joint Royal Colleges of Physicians Training Board introducing the new internal medical curriculum and associated training routes.

Just as postgraduate medical education has begun to respond to this challenge, so too must undergraduate education. However, this is not the only challenge to which medical schools must respond. A week rarely goes by that there isn't an

innovation in health, whether in clinical research, improving technology or changes to NHS systems. Medical schools have the challenging task of developing programmes which will best prepare students for a career in the changing landscape that is medicine. Solid scientific foundations are required to ensure that their graduates are well-positioned for changes to the delivery of care which frequently come down the line.

The high prevalence of mental illness means that future doctors in all specialties will need to be equipped to provide appropriate support to people with mental illness.¹⁹ The next generation of doctors needs to be made fully aware of the importance of mental health in their future career, regardless of the specialty they ultimately choose.

The RCP's work on advancing medical professionalism highlighted seven aspects of professional practice.²⁰ Doctors as a healer, patient partner, team worker, manager and leader, learner and teacher, advocate and innovator. These seven characteristics demonstrate the range of attributes, skills and experiences which doctors in training need to be supported to develop.

While postgraduate training must support doctors to develop these different characteristics, undergraduate education also has a key role. We know that since 2014, 3,595 complaints have been made to the GMC which fall within the 'communications, partnership and teamwork' good medical practice domain. Of these 3,595 allegations, 1,790 were against those whose primary medical qualification is from the UK.^{xxi}

^{xxi}Data taken on 27 February 2020 from: <https://data.gmc-uk.org/gmcdata/home/#!/reports/Fitness%20to%20Practise/Volumes/report>

Medical schools play a key role in ensuring that our future doctors have the ‘soft skills’ that patients and their colleagues will expect of them. They act as one of the major gatekeepers to a successful career as a doctor, with responsibility for selecting the applicants and then developing them during their time as students. This is a major responsibility, with medical schools ultimately supplying the pipeline of future doctors for the NHS. This responsibility also extends beyond medical school and soft skill development must form a key part of postgraduate medical education.

It is not uncommon to hear policymakers query the length of training for doctors. Everyone involved in training the doctors of the future must effectively explain the expectations that the NHS and patients have of medical students, and how meeting these expectations requires a comprehensive undergraduate education. With competing demands for medical education to cover an increasingly broad range of issues, increased exposure to a variety of clinical settings, and competing time demands associated with specialism vs generalism, there is little room for manoeuvre.

Preparedness for practice

As the data from the GMC national training survey show, FY1 doctors are continually reporting that they don’t feel prepared for FY1. Health Education England’s Postgraduate Medical Foundation Programme Review highlighted the role that an apprenticeship style year in the final year of medical school can have on helping FY1 doctors feel prepared for practice.²¹

A Severn Foundation School FY1 induction survey in 2018 asked trainees how prepared

they felt for the role. It found that medical students who spent a significant proportion of their final year in an apprenticeship felt the best prepared for their role as an FY1 doctor.²¹

The importance of ensuring that medical students feel prepared for FY1 is highlighted by the GMC’s analysis of the national training survey. It shows that doctors who felt unprepared for FY1 were more likely to have long-term negative views of their training environment and experience issues with wellbeing and burnout.¹²

Several medical schools have already adopted the model of an apprenticeship-style final year. Students spend a significant amount of their final year in clinical settings. For this model to work well the learning outcomes and expectations must be clear. This model also has the benefit of freeing up undergraduate teaching capacity in medical schools, meaning the teaching and learning load would move into clinical settings.

Early feedback from FY1s who have graduated earlier than normal to support the NHS COVID-19 response indicates that they have had a positive experience. It will be key to ensure that learning from this experience is applied to the development of an apprenticeship-style final year.

At present, the arrangements for increased clinical setting experiences in a student’s final year vary. We encourage governments, medical schools and the regulators to explore the formalisation of a final year apprenticeship model. It is key that students and trainee doctors are involved in these discussions to understand and avoid any potential pitfalls.

The growth of degree apprenticeships could provide a model for this final year, in which students could be employed and introduced to the responsibilities of being an employee. As part of this approach, students would have to demonstrate that they are developing their human factor skills.

If this model were to be adopted, it would be important to consider the responsibilities of medical schools and employers. Consideration would need to be given to the settings to which students were exposed – primary, secondary or community. Resources would need to be allocated to clinical settings to allow them to support and develop students during this final year period.

Technology and innovation

As technology improves, medical education will develop to support the doctors of the future to make the best use of technology. Technology may change how medicine is practised, but it is unlikely to reduce demand for health services.

Medical schools will need to place a greater emphasis on equipping students with the ability to adapt to changing technologies. As the Topol review makes clear, ‘Adoption of digital healthcare technologies requires an effective culture of learning at every level that enables the workforce to reframe their knowledge within an increasingly technology-driven world.’²² Medical schools will also need to ensure that students are prepared for how technology may change their practice, such as the impact of increased use of video consultations on the clinician–patient dynamic.

Students’ adoption of and confidence with technology during their degrees is linked to the exposure that they receive both in university and clinical settings. Therefore, wider NHS plans for the adoption of technology are critical. This is particularly true of primary care settings where access to funding and estate spaces for simulation and new technology are limited.

Challenges and opportunities

Expansion of medical school places provides medical schools, governments and regulators with an opportunity to reflect on how medicine programmes prepare the doctors of the future for a career in healthcare. It is clear that there is a service need for doctors to have both generalist and specialist knowledge. Medical schools and the foundation programmes play a role in supporting students and junior doctors to consider their postgraduate medical education pathways.

It is a cause for concern that FY1 students are increasingly reporting that medical school is not preparing them for their first experiences as a junior doctor. We know that some medical schools have responded to this trend through the inclusion of ‘apprenticeship periods’ during the final year of medical school. Data from the GMC suggest it leads FY1s to feel more prepared for practice. An apprenticeship final year model would also support the development of so-called soft skills and allow for a more supportive transition into working for the NHS.

^{xxi}Data taken on 27 February 2020 from: <https://data.gmc-uk.org/gmcdata/home/#!/reports/Fitness%20to%20Practise/Volumes/report>

We recommend that governments and the regulators consult with medical schools about moving towards an apprenticeship-style final year of medical school when developing expansion plans.

The development of a final year apprenticeship model will need to consider how to support students to gain an understanding of a range of clinical settings, including primary, secondary and community care. As well as the split of responsibilities between medical schools and placements, it will be important to consider the ability of placements to have a greater role in undergraduate education. This includes the scale of the current clinical educator workforce. Risk aversion within the NHS needs to be addressed and student registration with the GMC in their final year might offer a way forward.

The debate about the merits of specialism and generalism in medicine is a long-running one, but the direction of travel in HEE's future doctor vision for the 'T-shaped future doctor' is clear.¹ Medical schools need to create cohorts of doctors with a broad base of skills, able to develop into specialists as their careers progress.

Medical schools should be encouraged to review their curricula in line with this vision.

In addition to a greater focus on generalist skill sets there is a need to ensure that medical students and those in the foundation programme are exposed to a range of clinical settings. This will help students to better understand how all aspects of the health and social care system work together. This responsibility sits across medical schools, the GMC and the foundation programme.

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Contact: policy@rcplondon.ac.uk

Website: www.rcplondon.ac.uk

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