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# Health and Brexit: six years on

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# Contents

	<b>Overview</b>	<b>2</b>
<b>1</b>	<b>Staffing in health and social care</b>	<b>6</b>
<b>2</b>	<b>The supply of medicines</b>	<b>21</b>
<b>3</b>	<b>End of participation in the EU structural funds</b>	<b>36</b>
<b>4</b>	<b>Living standards and their effects on people's health</b>	<b>38</b>
	<b>Conclusion</b>	<b>43</b>
	<b>List of interviewees and roundtable participants</b>	<b>45</b>
	<b>References</b>	<b>47</b>

# Overview

The referendum vote for the UK to leave the European Union in June 2016 marked a watershed in the country's relations to its neighbours, changing relationships, rules, and the flow of goods and people. Ahead of the vote, it was already clear that leaving would mean substantial change for some of the most important building blocks of health. It raised the risk of impairing access to the migrant staff on which the NHS has long relied, and a medicine supply predominantly made up of imports. Its impacts on the globally networked economy also risked affecting living standards and patterns of deprivation, which have a powerful effect on health outcomes.

The Health and International Relations Monitor project is supported by the Health Foundation, an independent charity committed to bringing about better health and health care for people in the UK. The previous report from this project looked at the current issues following the UK's fitful negotiation of exit and trade agreements with the European Union. Somewhat further on from the UK's formal exit from the single market, on 1 January 2021, we now look back to consider the impact of Brexit on health to date in total across these major areas: workforce, medicines, and the economy. We drew on a range of data available publicly and obtained under the Freedom of Information Act, supplemented by targeted interviews and a roundtable for organisations and experts with insight into changes in the NHS workforce.

Across these areas, there is significant evidence suggesting that Brexit is now having negative effects. The worst-case scenarios have been ameliorated by agreements with the EU, planning and preparation for medicines disruption, and an easing of migration rules for non-EU staff. However, problems are distributed unevenly, with some medical specialties for example affected disproportionately by migration slowdowns. In most cases these problems seem likely to continue – potentially even being worsened if the exit and trade agreements are disrupted in the coming months.

Unfortunately, this has come just as the NHS has faced three of the most difficult years in its history. The service was struggling to secure enough

key staff and failing to deliver on waiting lists even as the drama of the EU withdrawal agreement took place. Since then, it has faced by far the largest pandemic in its history, leaving it with a larger backlog of treatment, lower rates of health care activity and exhausted staff; and a war in Ukraine which has driven prices relentlessly upwards. The combination of these factors means Brexit has been another blow to resilience already stretched to breaking point.

## Key points

- Across medicine, nursing and social care, there has been a decline in EU recruitment and registration since the EU referendum in 2016. This trend risks compounding widespread problems associated with the lack of workforce planning, unappealing conditions, and a need for a growing number of staff.
- For the total number of doctors and nurses, a rapid increase in recruitment from the rest of the world has compensated for the slowdown in EU workers. The number of nurses joining the UK register from the rest of the world has risen from 800 in 2012/13 to 18,000 in 2021/22. However, this is not sufficient to make up for ongoing shortages in nursing and cannot be a replacement for adequate workforce planning to recruit and retain staff domestically.
- Some essential professions have been left behind in this general shift from EU and EFTA to rest-of-world recruitment. Several specialties of medicine facing chronic shortages have seen EU and EFTA recruitment drop off without increases from other countries compensating for this. Cardiothoracic surgery has historically been heavily reliant on European staff and saw a 100% rise in the five years before the EU referendum. This has slowed to almost nothing, with no increase in rest-of-world recruitment. Anaesthetics, a large specialty where shortages are having serious consequences, and European staff numbers are very high, has seen EU and EFTA recruitment drop from a rise of over 20% in the years before Brexit to just 5% in the following years. Non-EU recruitment has also fallen.

- The rate of EU and EFTA dentists joining the register has halved since the EU referendum, without a clear increase in rest-of-world registration. Social care has seen a drop in EU and EFTA nationals which has not been compensated by wider recruitment.
- The UK health system is not supposed to actively recruit staff from 'red list' lower and middle-income countries that are identified as experiencing structural workforce shortages. However, recruitment from these countries has increased meaningfully in many English NHS trusts since the UK exited the EU single market and introduced new migration rules. For example, nurse registration from these countries has gone from around 600 a month before the Covid-19 pandemic to close to 1,000 a month in the summer of 2021. This seems difficult to reconcile with the notional policy that only 'passive' recruitment is permissible, where staff apply and arrive without encouragement. It poses important ethical issues related both to the damage incurred by health systems in staff's country of training, and to potential abusive treatment of staff in the UK where recruitment is not adequately monitored.
- There is clear evidence that Brexit is likely to be reducing the incomes of people in the UK relative to a counterfactual of continued membership, through its impact on GDP, investment, and trade. The current economic situation means that this is likely to be an additional reduction on already falling real incomes, rather than slower growth. The link between health and income is well documented, and this is likely to lead to worse health outcomes and higher demands of the NHS.
- Although the UK avoided a catastrophic level of medicine shortages as it left the single market in 2021, multiple indicators from different sources show unusual spikes in shortages since then, and to some extent in the preceding years following the EU referendum. The number of price concessions granted by the government when medicines cannot be found at the usual price has jumped repeatedly since 2016: previously around 20 a month, it has often exceeded 60 since the referendum; began to spike to around 100 during 2022; and has recently soared to record highs. The latest shifts illustrate how drops in the pound due to Brexit and the September 2022 Fiscal Statement appear to make it difficult for the NHS to obtain medicines under the cost controls it has relied on.

- Particular spikes of medicine shortage alerts, price concessions, and emergency protocols permitting pharmacists to use alternatives can be seen in the winters of 2020/21 and 2021/22. These are mirrored to some extent in other countries such as France and Germany, but problems appear to be particularly sustained in the UK, and to precede Covid-19 to a greater degree. Industry and official figures and literature suggest that Brexit has contributed through a drop in sterling, a shortage of goods vehicle drivers, and additional barriers at the border. Other important factors include the disruption Covid-19 caused to manufacturing, and the rise in prices in 2022 associated with the war in Ukraine.
- For other G7 states, medicine imports have risen steadily in total value since 2016: for the UK, they have reversed and fallen back to where they were a decade ago. UK data shows that 2021 was a particularly slow year for imports. This will partly reflect previous stockpiling, but may also be associated with new trade barriers.

# 1 Staffing in health and social care

In our previous reports we have consistently raised concerns over the health and social care workforce after the UK left the EU and its single market. As free movement of people came to an end in January 2021, immigration rules subsequently put workers from the EU and the rest of the world on the same footing by subjecting them to the same entry and professional visa rules.

These changes compound long-standing trends: the UK's low numbers of doctors and nurses per population relative to countries with similar populations and economies,<sup>1</sup> significant shortages in nursing and social care,<sup>2</sup> a very high reliance on EU and other international recruitment,<sup>3</sup> and poor long-term planning to reduce this reliance by ensuring domestic recruitment and retention.<sup>4</sup> As the UK also experienced a succession of travel restrictions in the first year of the Covid-19 pandemic, immigration ground to a halt. Given the UK's continuing dependence on international staffing for short-term surge capacity, this set back domestic plans to deliver on the pre-pandemic promise to drastically increase domestic recruitment in professions experiencing shortage.<sup>5</sup>

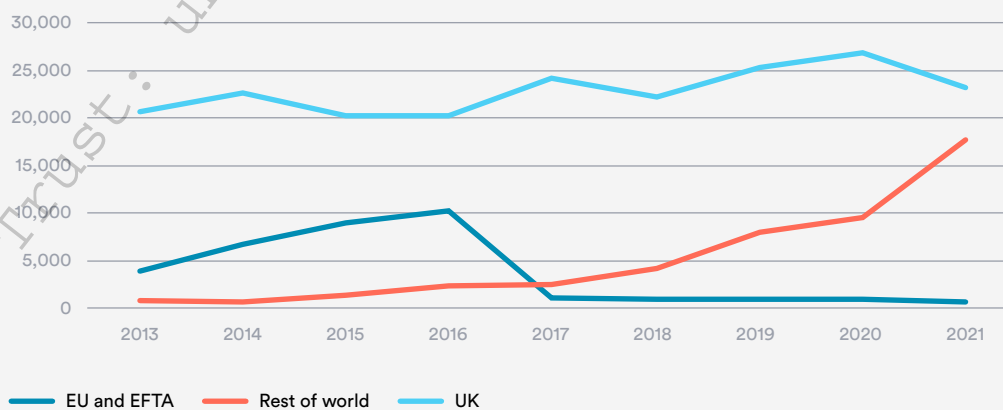
We also heard from our interviews that some EU staff might have qualified for settled status in the UK but let the window for application close, chosen not to return after periods abroad during Covid-19 lockdowns, or not taken up job offers in the UK – and cited Brexit as a reason for their decision. Separately, in NHS England staff surveys, we noted increases in both white and non-white employees citing race and ethnicity as grounds for discrimination year on year since 2016 – which could be symptomatic of a wider hostile climate for international NHS staff following Brexit or, for some individuals, greater confidence in calling out discrimination. This warrants monitoring by organisations specialised in this work.



## Transition to non-EU or EFTA recruitment of international nurses

The latest data confirm the trend whereby nurses from the rest of the world are joining at a greater rate than those trained in the EU and are replacing them as a source of international staff. This could be attributed to the referendum result. It could also be related to the introduction of English language tests, which would favour overseas, English-speaking entrants from beyond the EU.<sup>6</sup> However, it is worth noting that – judging by the General Medical Council’s (GMC’s) figures – doctors trained in English-speaking countries such as the UK will have a tendency to move to other English-speaking countries to work, whereas there is significant inward migration to the UK from non-English speaking countries.<sup>7</sup> Although the new tests were reported to be a problem even for native speakers subjected to them,<sup>8</sup> language might be more of a deterrent for those speaking only English and working abroad, than for those learning English as a second language and coming to the UK. As Figure 1 shows, EU and EFTA nurses and health visitors on the UK register have decreased by 28%, from 38,992 to 28,007 between September 2016 and September 2021, while those from the rest of the world have increased from 67,055 to 97,731 in the same period – this represents a loss of around 11,000 EU nurses, and an increase of around 30,000 nurses from the rest of the world. This appears to have been successful in compensating for the decrease in EU nurses.

**Figure 1: Nurses joining the UK register, by location of training, October 2012–September 2021**



However, first, it does not appear to be accompanied by a suitable strategy to recruit and retain nurses domestically and reduce dependency on non-UK trained staff. Secondly, these numbers are far from sufficient to make up for existing or projected shortages, both in general and specialist nursing. As at June 2022, NHS Digital provisionally estimated that 46,828 nursing vacancies (or 11.8% of posts) were unfilled in England only.<sup>9</sup> A recent study by the Health Foundation predicts that, on the basis of current policies, the nursing shortage would still stand at 36,700<sup>10</sup> full-time equivalent posts by 2030/31. In Scotland, 6,674 (9.8%) posts were vacant as at December 2021,<sup>11</sup> a jump of 1,000 from September the same year. That number was 1,719 in Wales<sup>12</sup> in November 2021, and 2,849 in Northern Ireland in September 2022.<sup>13</sup>

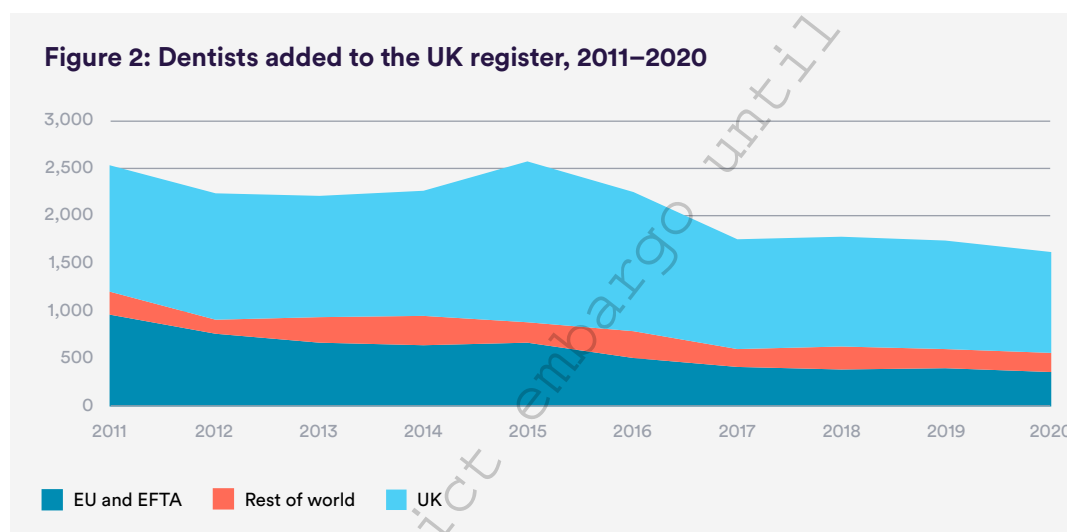
Thirdly, as will be discussed later, the steady increase in nurses recruited from countries on the WHO Support and Safeguard List poses significant ethical problems both in the UK and the countries of recruitment.

## Left-behind professions which have not found qualified labour beyond Europe

Health and social care do not have a single labour force, but rather a complex assembly of different professions and specialisms. Making migration from beyond the EU and EFTA easier has enabled the UK to continue attracting as many or more doctors and nurses from overseas as it did before Brexit. But the switch in countries means the UK is now accessing very different pools of staff, and they may not contain the same groups of workers as the European labour market did. Unfortunately, there are clear signs that some of the professions and specialties facing profound workforce shortages have been left behind in the shift away from Europe.

The UK's workforce of qualified dentists has been a particular concern. The level of dentists in the UK relative to its population, at around 0.5 per 1,000 people, is lower than any EU country submitting data to the OECD: Germany and Italy, for example, have about 70% more.<sup>14</sup> Workforce shortages, along with the lack of competitiveness of NHS contracts, has driven a crisis in access to NHS dental care where a recent BBC investigation found that 90% of practices are not accepting new patients.<sup>15</sup>

Before the EU referendum, consistently well over 500 dentists trained in the EU and EFTA registered in the UK each year. They made up around a quarter of additions to the workforce. This dropped sharply around the time of the referendum, to around half its previous level, and has never recovered. Apart from Brexit itself, as is the case with nursing, this may have reflected new powers to test dentists' English abilities before adding them to the UK register.<sup>16</sup> Significantly, there is no sign of dentists from the rest of the world rising to compensate for this change, and UK registrants have also fallen back. Total additions to the register have fallen from around 2,500 to around 1,600.



The situation is more concerning still for staff working in social care. So far, available estimates, unlike for nursing, suggest that around 66,000 more full-time equivalent (FTE) employees are now needed to fulfill demand, and that this number could rise to 23,000 on the basis of increasing future need.<sup>17</sup> Skills for Care estimated the average vacancy rate in 2022 at 10.5% of posts, or 165,000.<sup>18</sup>

Care workers from the rest of the world have not made up for a shortfall in EU and EFTA staff. As has been discussed previously,<sup>19</sup> international recruitment virtually stopped from the spring of 2020, and for a part of 2021, causing a significant drop in numbers of care workers. The government approved a recommendation by the Migration Advisory Committee (MAC) to include care workers on the Shortage Occupation List (SOL) on 24 December 2021. This came into force on 15 February 2022 and would enable eligible care workers to apply for a health and care entry visa. The minimum annual salary

for inclusion on the SOL is £20,480. Significant regional variation in pay affects the number of care workers and senior care workers that are above this threshold, with workers in Scotland, London and Southeast England paid more on average, and therefore more likely to be eligible than those in the rest of England, Wales and Northern Ireland, according to the MAC.<sup>20</sup> Recent studies estimated that despite their vital role, over a quarter of residential care workers lived in poverty, with care workers more generally being among the lowest paid in the UK, far below their peers in the NHS.<sup>21</sup> This is exacerbated by the impact of the pandemic and a crisis in the cost of living. While it is too early to fully judge the effect of this measure, these levels of shortages and variation in pay levels meeting the salary threshold suggest that inclusion on the SOL by itself will not come close to closing the shortage gaps. The MAC has also noted the administrative costs associated with using the SOL and health care visa would be unmanageable for the many small and medium enterprises (SMEs) providing care. Multiple reports have repeatedly called for higher pay and improved work conditions as a more sustainable solution to improving the attractiveness of care work.<sup>22</sup> This is valid for UK and for international staff, where we are concerned this would compromise recruitment drives. This suggests that, on balance, changes in immigration rules could have had the overall effect of compounding an already critical situation for social care.

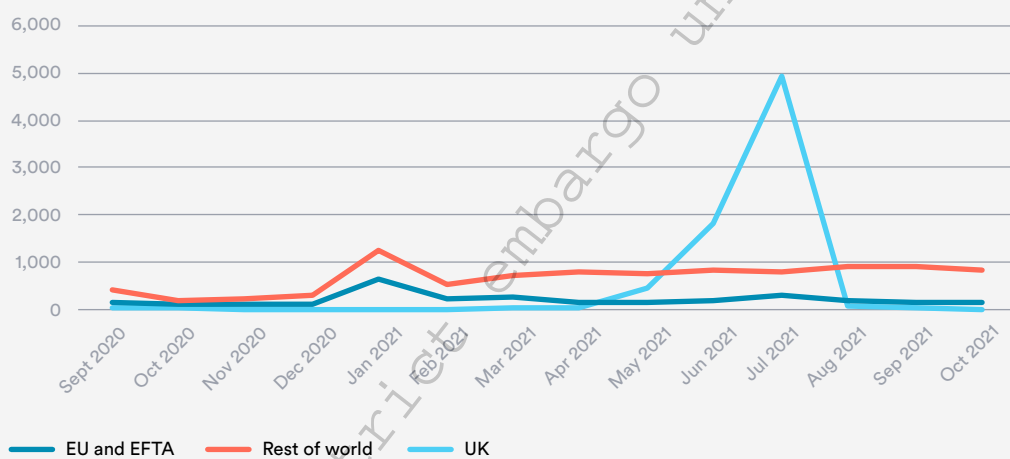
2022 has seen the highest general UK net immigration on record, according to the ONS.<sup>23</sup> However, while this suggests an available labour force does exist, social care often struggles to compete with other sectors due to challenging pay and conditions<sup>24</sup> and Home Office data do not show separately the contribution of social care work visas.<sup>25</sup> Growth was particularly focused on migrants from Ukraine and Hong Kong, who are likely predominantly not to have used work visas.

Among allied professions registered with the Health and Care Professions Council (HCPC) the picture is perhaps less dramatic, but might become a cause for concern. Only speech and language therapists recorded a 26% decrease in overall international staff count, and dietitians a 22% decrease – both down from 141. During this period, for both professions it appears that EU staff fluctuated rather than experiencing a clear decline in numbers.

## A complicated picture for doctors

Over the last year we have observed a continuation of previous trends: migration levels in EU doctors appear to be similar to when they peaked, at the time the UK was a member of the EU. EU or EFTA numbers of doctors remained stable over this same period, while doctors from the rest of the world are joining at a far higher rate. Figure 3 demonstrates this: it also shows the sharp peak in UK registration associated with doctors graduating from medical school each summer.

**Figure 3: Doctors joining the UK medical register for the first time, September 2020–October 2021 (GMC – UK)**



It is unclear whether the increase seen from the rest of the world is a fallback option in the absence of a genuine domestic workforce plan or a conscious strategy; nevertheless, these numbers mask a more complicated reality when individual specialties are taken into consideration. There is significant variation in the reliance of individual specialties on non-UK staff, and EU or EFTA staff especially. In the case of smaller trusts, specialties with a smaller intake, or specialties already experiencing shortages, the loss of these overseas doctors would be felt disproportionately in terms of service delivery.

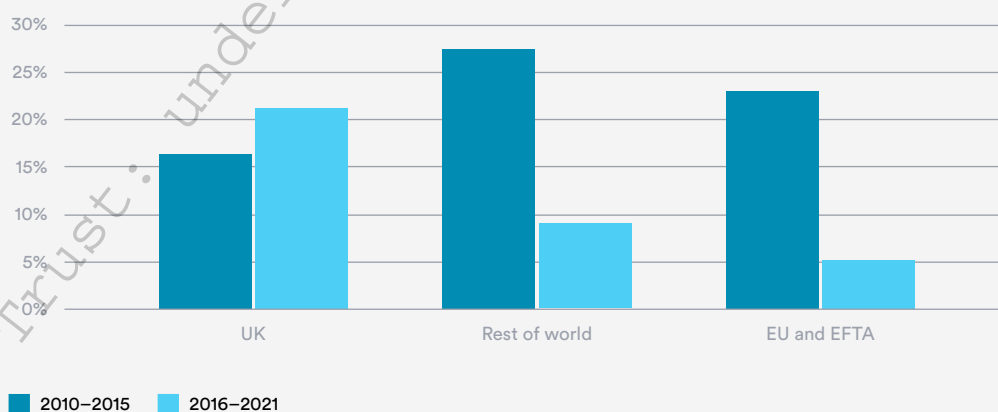
We considered specialties that were both experiencing known shortages (of consultants or support teams) and were employing a significant number (or proportion of) EU or EFTA doctors. Looking at UK registrants with the GMC, we found that in a number of specialties, the number of EU-trained consultants had stagnated or even decreased since 2016, and this had not,

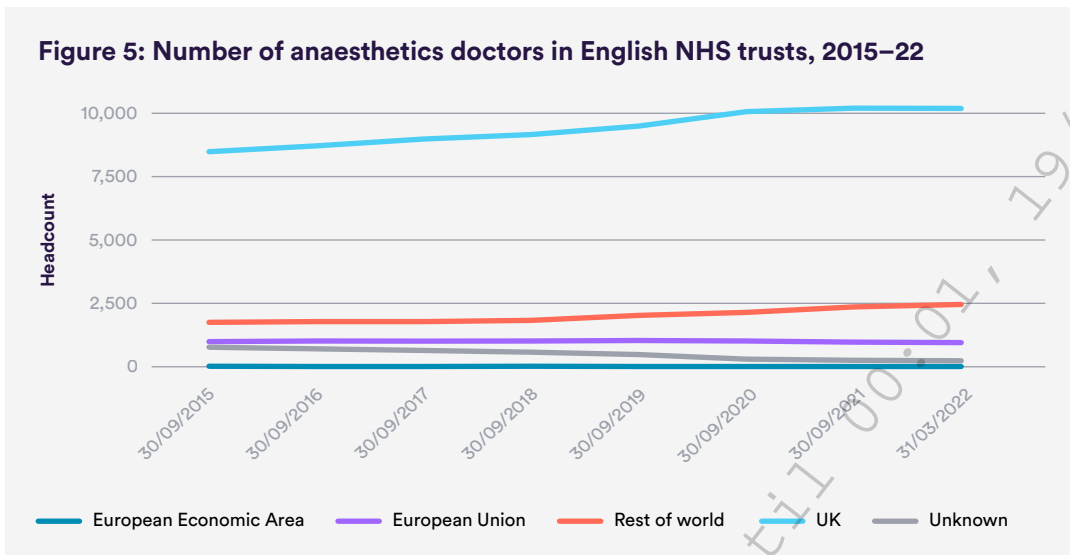
so far, been fully compensated for with doctors from the rest of the world or the UK. As will be discussed, there are multiple complex factors, some better known than others, that are specific to how individual specialties attract and retain domestic and international staff.

In anaesthetics, both trained doctors and training places are in short supply. EU consultant numbers in the UK have been consistently higher than in other specialties.

After an increase of nearly one in three (30%) in the nine years leading up to 2016 (from 1,435 in 2007 to 1,859 in 2016), the increase in numbers of EU anaesthetics consultants slowed to 7% in 2020 (an increase to 1,990). This number decreased by 1.7%, or 33, in 2021. In the same period, the number of doctors from the rest of the world increased, but slowed down to a greater extent than for EU doctors, from 1,671 in 2007 to 2,715 in 2016 (a 62.5% increase), and to 2,966 in 2021 (a 9.2% increase). By this time, and perhaps as a combination of these different factors, the Royal College of Anaesthetists estimated its shortfall at 1,400, noting that in 2021, 500 specialists in training had failed to find posts as registrars, and one quarter of the anaesthetics workforce was planning to leave the NHS altogether in the next five years.<sup>26</sup> In England, a similar stagnation of EU and EFTA anaesthetists (including junior doctors) can be observed between 2015 and 2022.

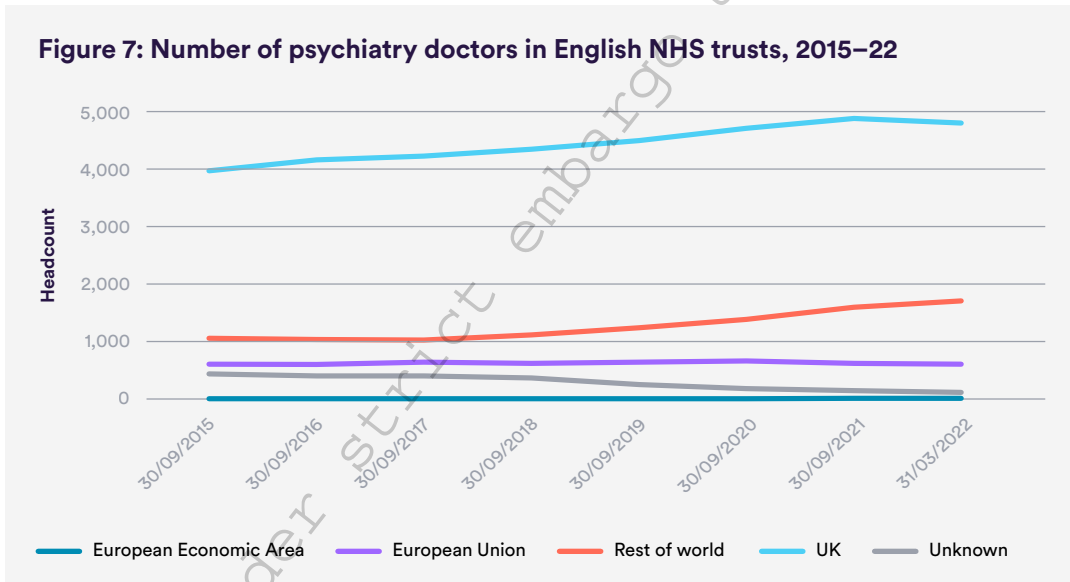
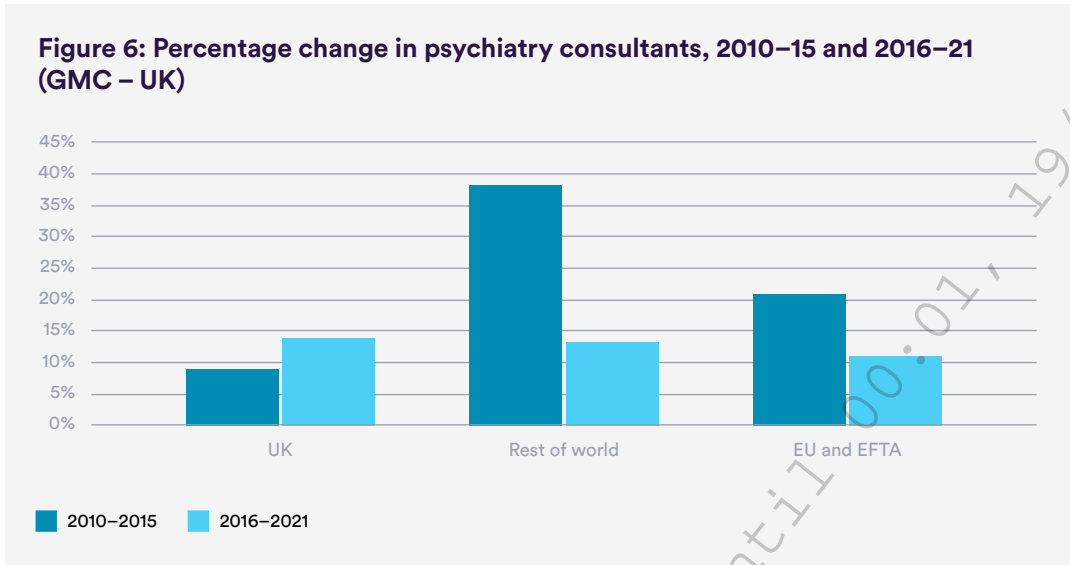
**Figure 4: Percentage change in anaesthetics consultants, 2010–15 and 2016–21 (GMC – UK)**





By September 2021, the Royal College of Psychiatrists estimated that one-tenth of its consultancy posts (568 out of 5,317) remained unfilled, continuing a long-standing shortage.<sup>27</sup> This situation was coupled with cuts in hospital psychiatry beds, and around 1.5 million people were still waiting for treatment. EU and EFTA psychiatry consultants in the UK saw a 43% increase from 878 to 1,257 between 2006 and 2016, slowing down to an 11% increase between 2016 and 2021. This translated into the EU and EFTA proportion of total psychiatrists peaking in 2014 at 13% and decreasing to 12.5% in 2021. Consultants trained in the rest of the world increased by around 95% between 2006 and 2016 (1,658 to 3,239), slowing to a 13% increase between 2016 and 2021 (3,239 to 3,671). In England, the increase in doctors in general psychiatry (including junior doctors) between 2015 and 2022 appears to have been driven primarily by domestic supply – though this tails off in 2022 – and by an increase from the rest of the world, while EU and EEA numbers have plateaued.

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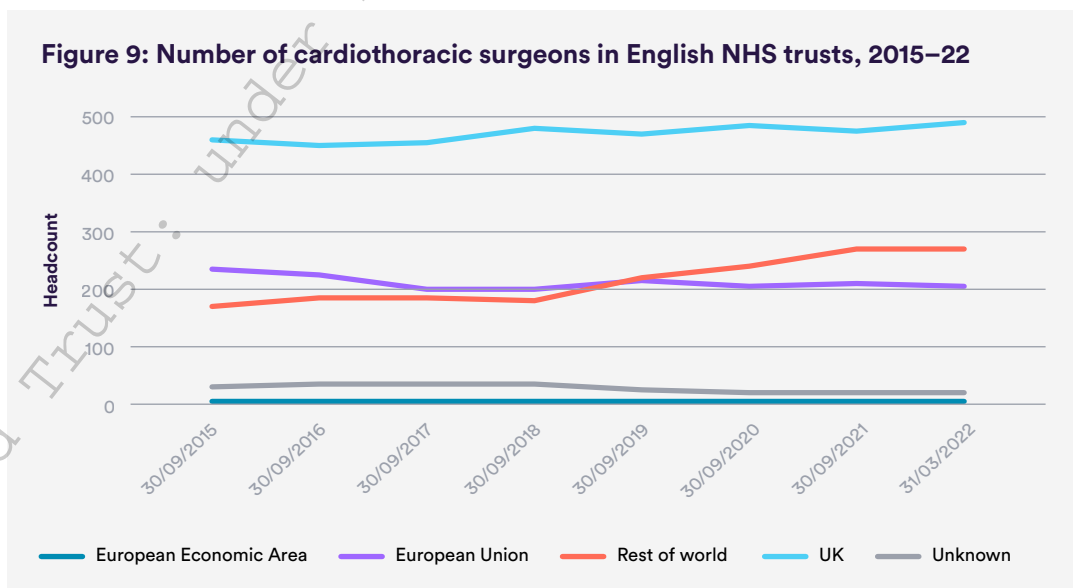
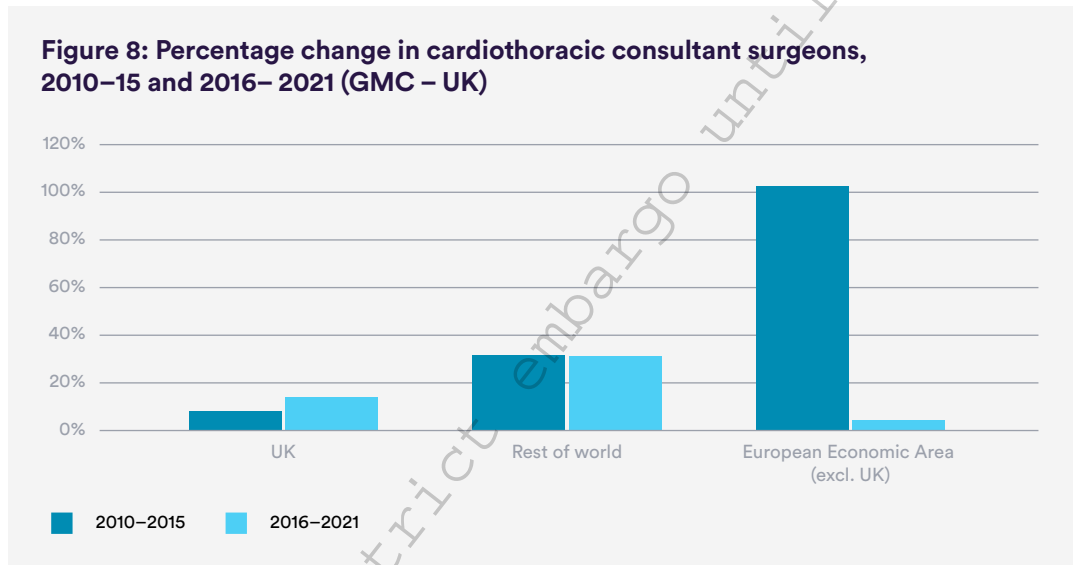
In cardiothoracic surgery, EU and EFTA consultant numbers in the UK almost doubled between 2007 and 2013 (from 113 to 332), overtaking UK-trained staff in 2014 (at 291 compared to 268 from the UK). This was followed by approximately 5% growth in the next five years between 2016 and 2021 (to 348), by which time EU-trained consultants still outnumbered those trained in the UK (at 317). This is equivalent to 43.9% of cardiothoracic consultant surgeons being from the EU or EFTA in 2016, coming down to 40.6% in 2021.

During this period, cardiothoracic surgeons from the rest of the world saw a relatively steady increase from 89 in 2007 to 192 in 2021. Figures provided by NHS England, which include junior doctors, show stagnation for

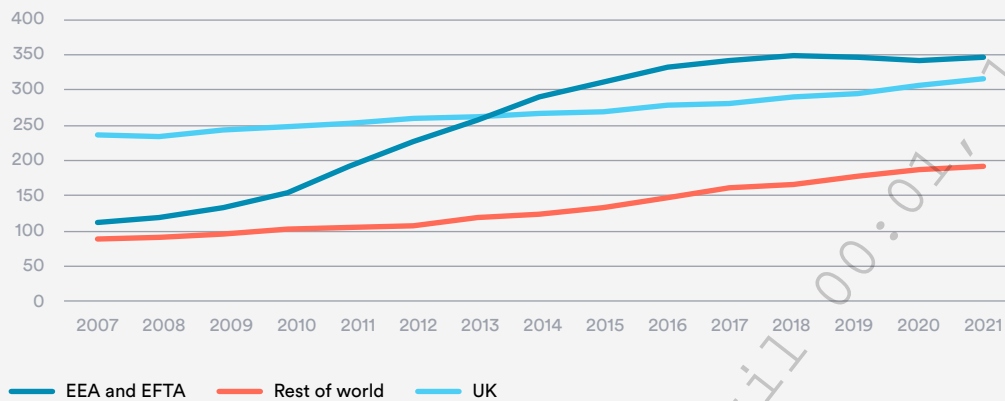


cardiothoracic surgeons from the EU/EFTA and the rest of the world. However, in contrast with consultants, there were fewer EU doctors (at 205) than from the UK (at 490) as of March 2022, while doctors from the rest of the world (270 in 2022) overtook EU staff in 2019. If doctors of unknown nationality (20) are also counted, international doctors outnumber those from the UK.

In 2022, the severe backlog in NHS heart surgery was partly attributed to the lasting effect of Covid-19, and partly to shortages in heart doctors and nurses.<sup>28</sup> This may include shortages in cardiothoracic surgeons or other surgeons and physicians working closely with them.



**Figure 10: Number of cardiothoracic consultant surgeons across the UK, 2007–21 (GMC – UK)**



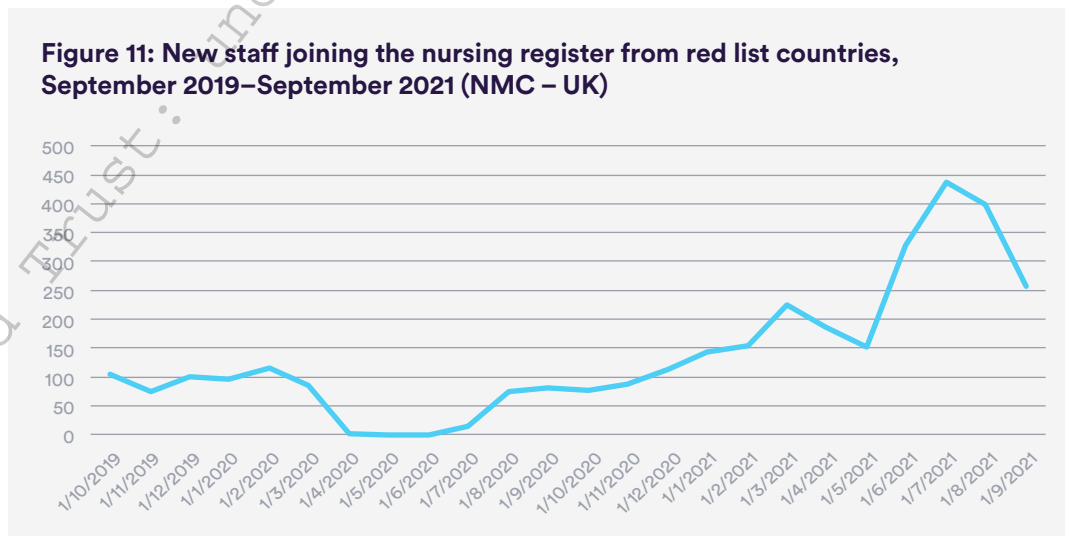
The referendum may have played a role in reversing the initial increase in EU and EFTA cardiothoracic consultant surgeons and junior doctors. However, the gap between domestically trained UK junior doctors and consultants in the field could also imply that domestic factors complicate or disincentivise progression. Here and in the other specialties, gaps might be linked to issues such as long waiting times and shortages in wider medical teams putting pressure on services and worsening the work environment, pay differences between individual specialties, training posts, competition for consultant posts and perceived attractiveness of a specialty. Conversely, individual factors will influence the decision of international staff to work in the UK. These could include availability of and infrastructure for specialty and subspecialty training – both for doctors and their support teams, the perceived quality of life and working conditions, research funding, family and network considerations, and career enhancement, as much as pay and bureaucratic constraints.<sup>29</sup>

## Ethical problems in the new recruitment drive

Relatively early in our project, interviewees signalled a shift from national workforce planning and recruitment drives towards individual agencies and NHS trusts, for overseas workers and especially those from outside of the EU or EFTA. In our latest round of qualitative research, interviewees

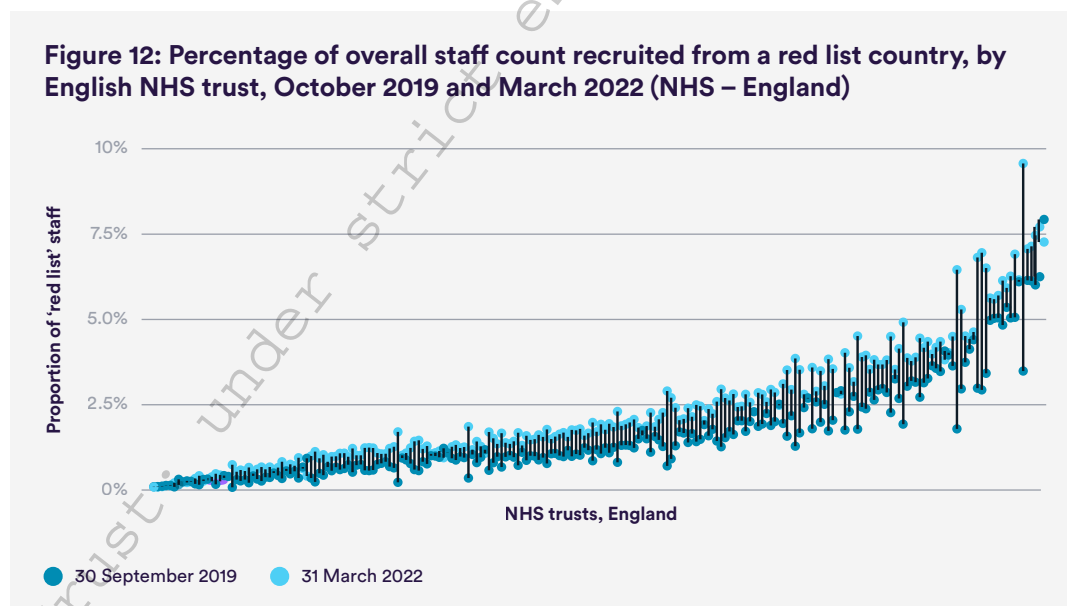
noted a significant increase in recruitment from countries on the Support and Safeguard List (or ‘red list’) from the World Health Organisation’s (WHO’s) Global Code of Practice on the International Recruitment of Health Personnel.<sup>30</sup> The list is replicated in the UK Government’s Code of Practice for the Recruitment of International Healthcare Personnel in England,<sup>31</sup> replicated in Scotland,<sup>32</sup> and is and more generally applied to the UK.<sup>33</sup> The list consists of lower- and middle-income countries which already experience staffing shortages that compromise universal health coverage.<sup>34</sup> The Code stipulates that hiring from any of the 47 countries (formerly over 120) on this list runs the risk of compromising their health care systems. Two exceptions to this practice are ‘passive recruitment’ or ‘direct application’ whereby individuals simply apply to a vacancy posted in a given country, and agreements between two countries that specify the terms for mutually beneficial recruitment. Citing the 2020 State of the World’s nursing report, the International Council for Nurses estimated that the global shortfall in nurses stood at 5.9 million, and 89% of these shortages fell on lower-and middle-income countries,<sup>35</sup> and that this situation would only be aggravated during the pandemic. In light of increasing evidence for wealthier countries ‘fast-tracking’ nurses from these countries to their own health systems, the Council recommended a collective and sustainable approach to recruiting and training nurses.

The UK had fast-tracking agreements in place with Malaysia, the Philippines and Sri Lanka, to which it has now added Kenya (2021) and Nepal (2022). This is borne out across the UK, with numbers of new joiners from those countries increasing steadily from October 2019 to August 2021.



We broke down these figures by individual trusts in England<sup>36</sup> to examine whether they would show small numbers of international health staff applying individually – possibly an indication of passive recruitment. We grouped all English NHS clinical commissioning groups into one as they generally have fewer staff, of which most are administrative. Where mergers of trusts took place between 2019 and 2022, we grouped them under the name of the resulting, merged trust. Where trusts were unmerged, or acquired by separate organisations, we did not group them. This produces single data points in the chart. The figures for red list countries were provided to us as a group rather than by individual country, and were rounded to the nearest 5, in order to avoid identification. The nationality is self-reported, and in some cases can refer to individual countries of birth, or self-identified heritage.

We found clusters of staff from red list countries in a number of individual trusts. Between September 2019 and March 2022, a period where migration rules put applications from all overseas countries on the same footing, the number and the proportion of overall red list staff increased across the board (see Figure 12 below).



International recruits are, and will remain, vital to the UK health system. Individuals will also have valid reasons for applying – such as a probable improvement in pay or work and life conditions, volatile or dangerous situations in their home training country, potential career progression, family circumstances, existing social or professional networks, or the ability to send

remittances back to their country of training.<sup>37</sup> Applicants from former British colonial territories such as Nigeria or Pakistan (both on the red list) who, as a result, have historical links to the UK and will tend to speak English, are over-represented. Some large teaching hospitals, the London region in general, and other large urban areas in England, might have a greater attraction on staff from those countries as a result. These qualitative considerations could influence the figures shown above, by creating communities of recruits from the same country in specific trusts.

However, the sharp increases in a short period of time in specific trusts could also suggest active recruitment drives being organised by the NHS or from agencies it hires, targeted at red list countries. Among the many London-area trusts with high proportions of red list staff, one saw its share of red list staff increase by 265 between 2019 and 2022. Among those outside London, a large trust saw increases in red list staff of around 215, out of a total rounded staff increase of 570, and another in the Midlands of around 225, out of an overall increase of around 380.

The trusts which recruit the highest proportions of red list staff are relatively open about recruitment drives in several of these countries. In some cases, strong onboarding and support on arrival are publicised on official websites alongside announcement of new groups of recruits. This seems to be especially public in the public sector.

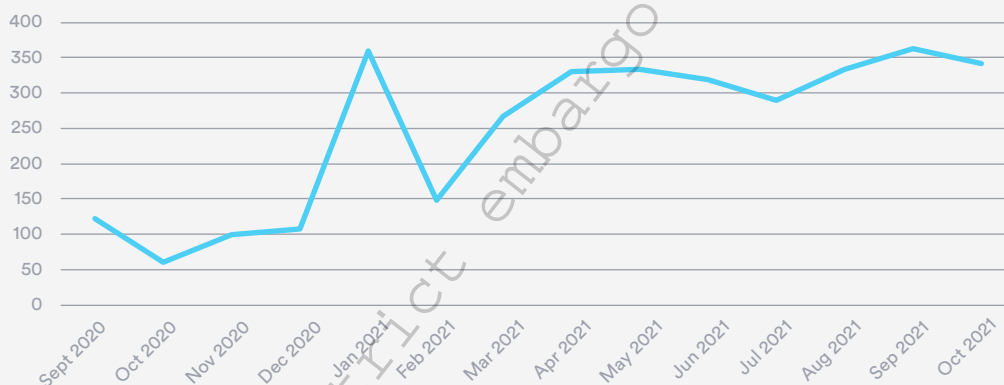
These trends may be poorly controlled by home and host countries, tacitly accepted, or even openly encouraged. This can result in behaviour ranging from lack of oversight of incoming staff to abusive practices, precisely because they are not supposed to be officially taking place. Our interviewees cited examples of cases where social care workers, now on the Shortage Occupation List, were arriving in large numbers from these countries, hired by private firms on the promise of pay, accommodation and family reunion. On arrival, having failed to read the small print on their contracts, they were forced to pay penalty clauses often in excess of £10,000 if they were unable to finish probation and training periods of multiple years. In some cases, they were left in prefabricated accommodation without heating or electricity.

These practices were compounded by the fact that unionisation in overseas recruits is lower than for the health and social care sector more widely. The

practice extended to nurses who may have needed to join through agencies while they waited for their tests or certificates to be validated in the UK.<sup>38</sup> As has also been reported elsewhere, recruitment drives of red list doctors by UK private agencies take place without government bodies, representative organisations or the agencies themselves claiming collective responsibility.<sup>39</sup>

Our data also show a sharp increase in doctors from red list countries across the UK. Here the concern is more clearly focused on the ethics of removing highly specialised professionals from fragile health care systems, although it is also more likely that they will have higher mobility and would be more likely to apply independently.

**Figure 13: Doctors joining the UK medical register from a red list country, September 2020 to October 2021 (GMC, UK)**



Ethics guidance arguably finds its purpose in ensuring good conduct through difficult circumstances. If the UK Code of Practice is unenforceable in practice, this could pave the way for ethics considerations being deprioritised or ‘parked’ while the UK continues to experience severe shortages.

These findings suggest that, in the absence of hard legal delineations between ‘passive’ and ‘active’ recruitment, at the very least some national monitoring of individual trusts’ overseas recruitment strategies should be undertaken on the basis of available figures.

## 2 The supply of medicines

Disruptions to the supply of medicines were the most immediate operational risk which the NHS across the UK faced ahead of exit from the single market. Addressing them was the subject of intense preparations by teams in government, NHS England, and the devolved administrations. Firms supplying medicines were directed to build up a six-week stockpile,<sup>40</sup> and imports were systematically shifted on to new sea and air routes with government support.<sup>41</sup> The Department of Health and Social Care (DHSC) spent over £75 million in 2020–21, mostly on sea and air freight companies. That financial year covered only the first four months of the UK being outside the single market.<sup>42</sup>

### A time of troubles for medicines supply

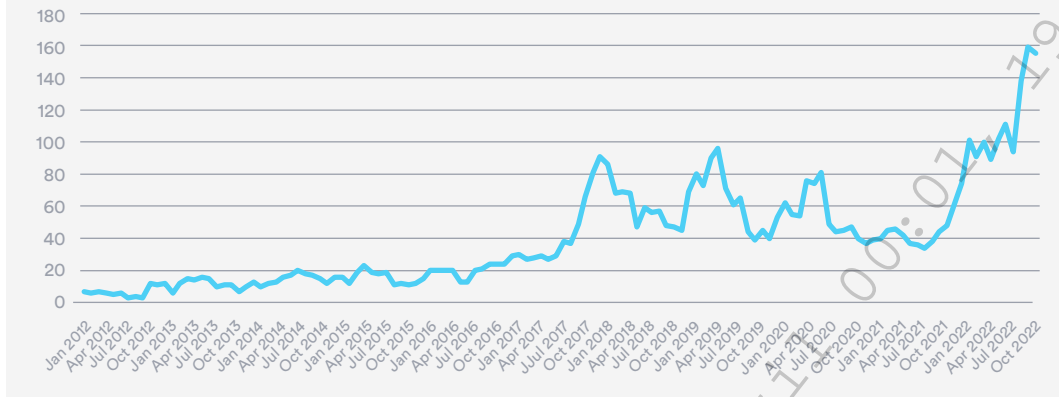
There was no explosive widespread jump in shortages in January 2021 as the UK departed the single market. No policy decisions had to be taken to cancel elective care for this reason, nor was there an immediate sudden jump in indicators of shortage.

But the wider period since 2020, and to some extent 2016 when the EU referendum took place, appears to have seen spikes of elevated medicine shortages on nearly every available metric.

Price concessions are granted by the DHSC when pharmacists are unable to find medicines at the officially set price for NHS prescription dispensing in a given month. As such, they are indicative of pressure on supply, or rising costs.

The period since the EU referendum vote has seen higher and more sharply fluctuating levels of concessions granted. The first half of 2022 saw a particularly marked spike, with the number of concessions around 100 consistently for several months. Since summer, the monthly rate has shot further upwards and at the time of writing had exceeded 150 in both October and November.

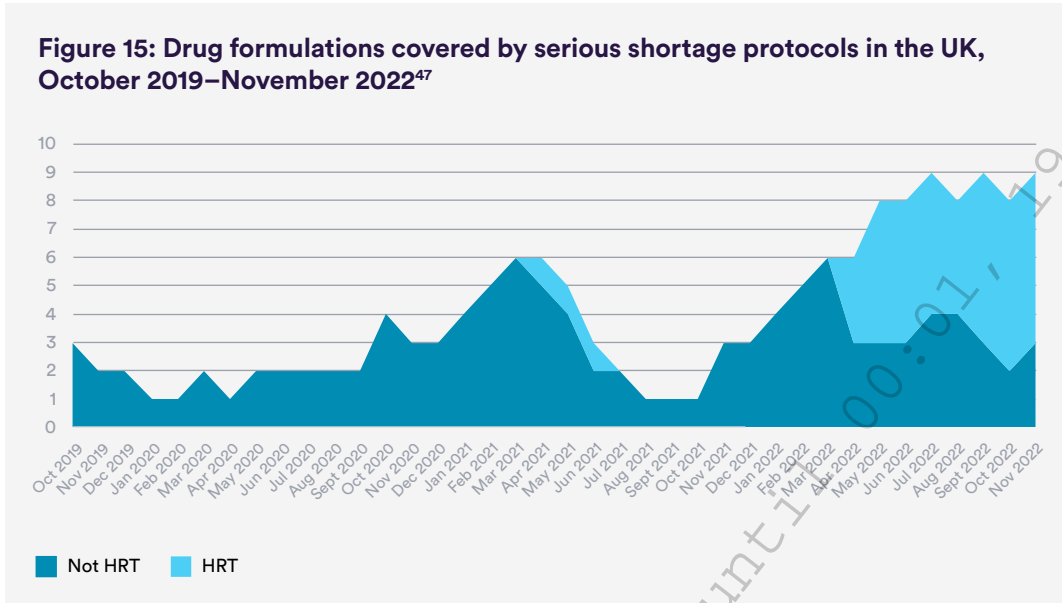
**Figure 14: Price concessions granted by UK government for imported medicines, January 2012–November 2022**



In preparation for potential severe shortages, the government passed a Statutory Instrument in 2019 to create serious shortage protocols (SSPs).<sup>43</sup> These allow the Secretary of State to issue a protocol that pharmacists can follow instead of the prescription a patient has been given. For example, it may allow pharmacists to refuse to give more than a certain number of months’ worth of medicines even if this is what has been prescribed,<sup>44</sup> or to switch patients between a spray and a patch.<sup>45</sup> Ministers told Parliament this would be used “in the exceptional and rare situation when other measures have been exhausted or are likely to be ineffective.”<sup>46</sup>

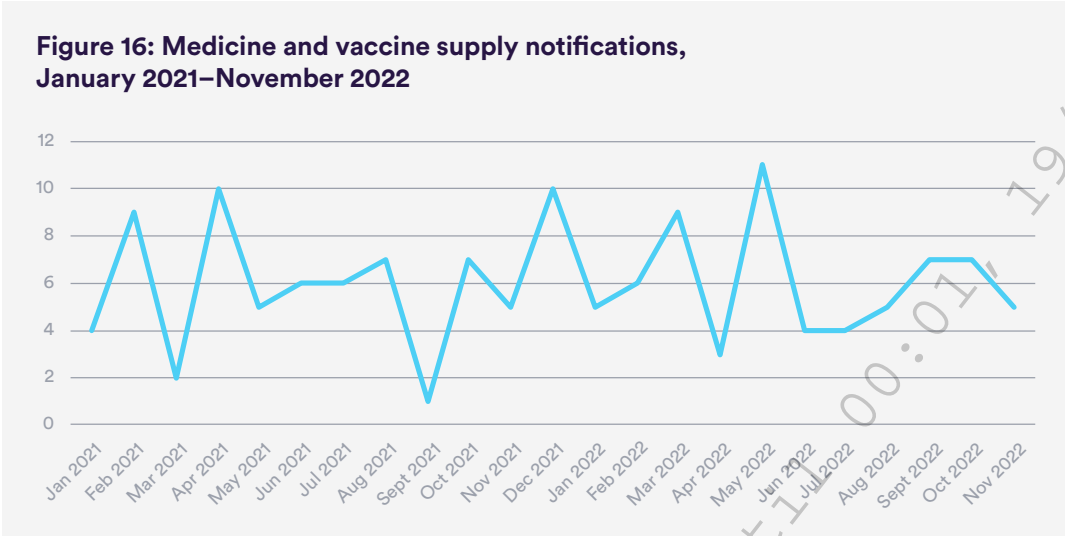
As shown in the graph below, one or more SSP has been in effect in each month since their introduction. The number of formulations that they cover rose to a peak of five around the UK’s exit from the single market in January 2021, and rose again in 2022 to peak at a total of nine in several recent months. Initially, mental health products and in particular fluoxetine (or Prozac) accounted for a large share of SSPs. Hormone replacement products currently account for a very large proportion, although this is a more recent development and did not account for earlier peaks. This graph does not count multiple protocols covering the same formulation separately: for example if one protocol stops prescriptions of over three months for a given product in a given dose and mechanism of delivery, while another allows the same product to be substituted, this is only counted as one formulation being subject to an SSP.<sup>47</sup>



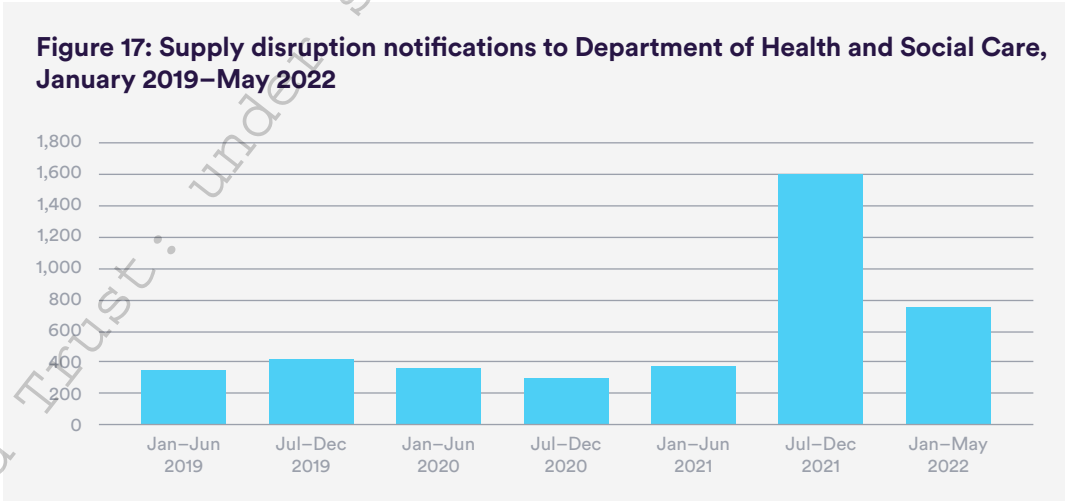


A monthly update of supply issues and discontinued products is circulated to pharmacists and others within the NHS, but is not publicly available. The British Generic Manufacturers’ Association (BGMA), representing suppliers of the unbranded medicines which make up the vast majority of medicines prescribed, publishes running totals of these in a monthly ‘supply issues dashboard’.<sup>48</sup> This shows a similar picture, with over 40 issues consistently identified each month and clear peaks in early 2021 and in 2022.

Medicine supply notifications are also circulated in the NHS for specific updates on problems where there are potential safety implications, graded based on severity. No consistent publicly available list exists before early 2021, when the BGMA began to track these and the Pharmaceutical Services Negotiating Committee (PSNC) began to regularly publish them. However, data for the last two years illustrates that while again particular peaks emerged in early 2021 and in 2022, there have been consistent issues between these as well.



Regulations passed in 2018, ahead of the original date of the UK’s exit from the EU under article 50 of the Treaty on European Union, require holders of marketing authorisations for medicines to notify the Secretary of State if there is “likely to be a supply shortage of the presentation which will have a direct impact on any patient who takes, or may need to take, the presentation”, or if the product is going to be discontinued.<sup>49</sup> While this does not prove that a shortage ultimately did occur, we obtained data under the Freedom of Information Act to obtain the total number of notifications for each six-month period since January 2019 in order to provide a consistent time series across the Brexit process.



There is no clear pattern to these across 2019 and 2020. Suppliers during this period may have found it very difficult to anticipate when legal changes to the UK's membership of the single market might take place due to multiple delays in Brexit, and last-minute negotiating to avoid a 'no deal' exit. There is a dramatic rise in late 2021, from 300–400 in each period to almost 1,600.

Representatives of government, the NHS and industry at our roundtable event in Northern Ireland suggested that this may have been associated with risks to supply due to the Ireland/Northern Ireland Protocol, explored in our separate briefing.<sup>50</sup> Notably, however, the level of notifications remained elevated in the first five months of 2022 representing the latest date the DHSC supplied us with information, at 750. This was a period when respondents in Northern Ireland felt considerably more certainty had been provided.

## What is driving these patterns of shortage?

Over the course of this project, and including conversations for this report, industry and officials pointed to a number of causal factors for these shortages. These were primarily:

- The Covid-19 pandemic, which caused spikes in demand for certain products.
- Rapidly rising prices for all commodities in 2022, and in particular for the petrochemicals used in transport and medicines manufacturing, due to the Russian invasion of Ukraine, lockdowns in China, and resurgent demand as pandemic measures ended in Europe.
- A surge in prescriptions for the hormone replacement products used to alleviate symptoms of the menopause, almost doubling from 2018 to 2022 in England. This represents changes in patient and clinician behaviour after high-profile campaigns criticized undertreatment of menopause symptoms, and new evidence seemed to address certain safety concerns.<sup>51,52</sup>
- Brexit, identified as having an impact in at least four ways. Firstly, the EU referendum vote caused a sharp fall in the value of the pound, pushing

up the UK price of imports. Secondly, exit from the single market in 2021 meant congestion and extra costs for imports because of new requirements and paperwork at the Great Britain–EU border. Thirdly, regulatory processes in the UK were no longer valid elsewhere, making it a less attractive place to manufacture, introduce and supply medicines. Lastly, the end of free movement and increased bureaucracy at the border contributed to a serious shortage of heavy goods vehicle drivers in 2020 and 2021.<sup>53</sup>

- The mechanisms which the UK uses to control the prices of medicines, in particular the Voluntary Pricing and Access Scheme, which forces firms to reimburse the DHSC if spending on medicines goes too high, and the drug tariff list which partially fixes prices.

Unpicking which of these factors may be behind any individual shortage, or any wider spike, is very difficult. It is not always clear even to people within the medicines industry why the costs of materials or transport have risen.

Two causal factors seem to align quite well in timing to the changes we see. In hindsight, the fall in the value of the pound in 2016 as a result of the EU referendum closely matches the beginning of higher price concessions. A National Audit Office investigation into spending on generic medicines identified this as one of three main probable causes.<sup>54</sup> It is notable that the latter half of 2022, which saw a sharp drop in sterling against the US dollar and the euro due to the September Fiscal Statement, saw price concessions driven still higher. While not conclusive, this suggests exchange values, on which Brexit has had a lasting impact, are an important driver of pressure on supply at a given price.

The sharp rise in general prices at the fastest rate in many decades in the UK and other European countries in 2022, driven by war in Ukraine and a mismatch in supply and demand after pandemic measures ended, seems likely to have influenced the most pressures seen in early-to-mid 2022.

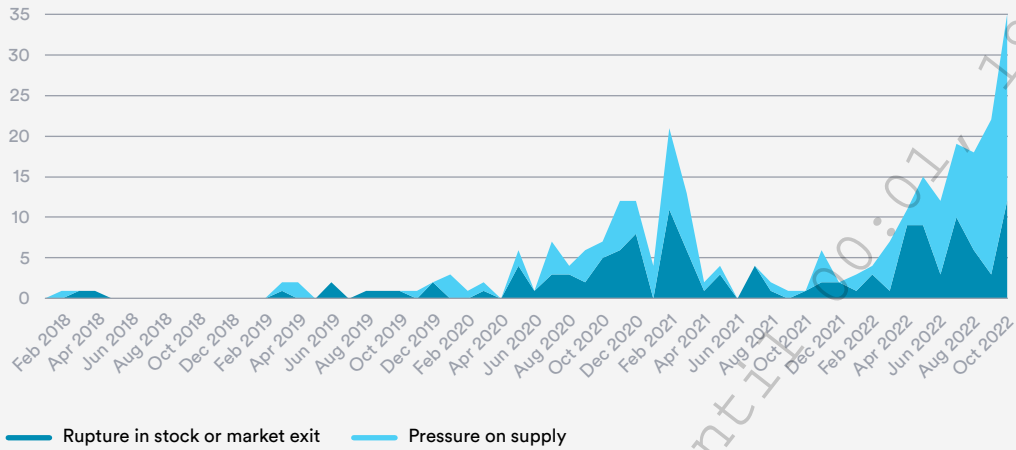
## How large a role does Brexit play?

Comparing UK shortage data to that in similar countries should be a useful way to identify the effects of Brexit, alongside other country-specific factors. But this is challenging, in part because each country identifies shortages in completely different processes, using different definitions and for different purposes. It is also difficult because the UK government has a poor standard of transparency relative to comparable countries like France, Italy and Germany. Each of these openly publishes at least one measure of shortages, with a full archive and exact dates.

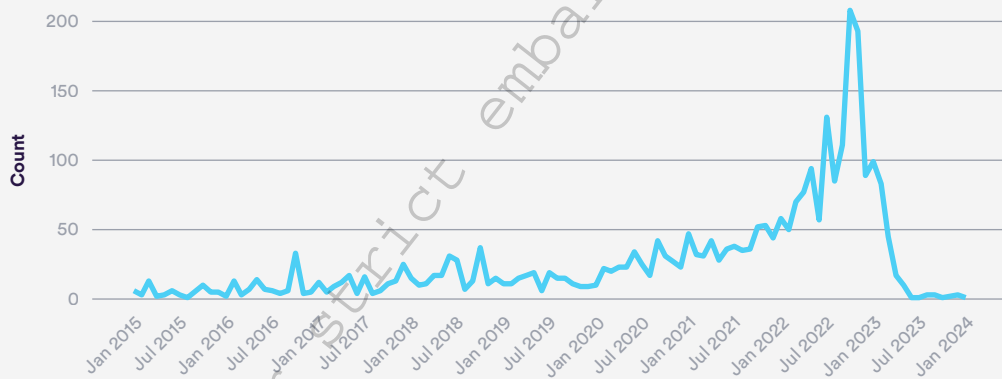
Nonetheless, it is clear that 2020 and 2021 have also seen spikes in shortages in other countries. Data for France, for example, shows spikes in supply alerts issued around the winter of 2020/21 and in spring to summer 2022.

Italy experienced spikes in shortage notifications over the same period. These announcements include the end or estimated end of the shortage, and go into significant detail over the reasons for shortage, such as high demand, problems with production – either unspecified or dealing with contingent distribution, interrupted supply or shortages limited to retail or hospital environments – and temporary or definitive end of commercialisation, regulatory problems, or commercial motivations. As such, the data are not very readily comparable. In Germany, two spikes seem to occur, one more predictably at the height of the pandemic in 2020, and the second in 2018, apparently triggered by shortages of blood pressure medication. Ends of shortages are provided. Again, however, the reasons given for shortage announcements are ‘product problems’ or ‘other’. The charts below should not be seen as giving equivalent data, but they do illustrate that each country has seen spikes in pressure as they define it, which coincide partially with the trends seen in the UK.

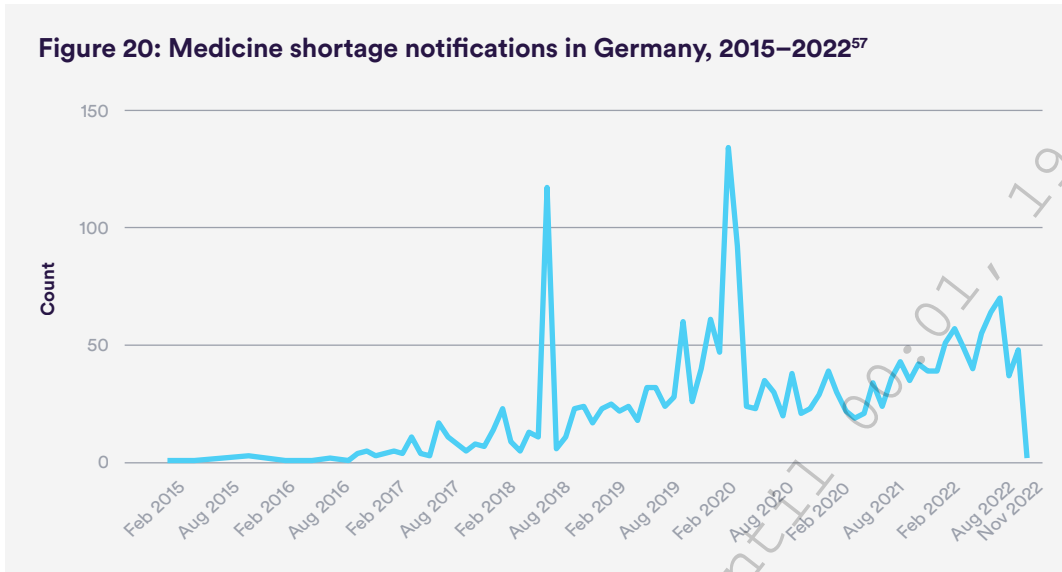
**Figure 18: Medicine supply announcements in France, by status, January 2018–October 2022<sup>55</sup>**



**Figure 19: Medicine shortage notifications in Italy, 2015–2024<sup>56</sup>**



Note: In Italy the system anticipates when a shortage is likely to occur, as well as when it actually takes place, hence the limitations regarding comparability across countries.

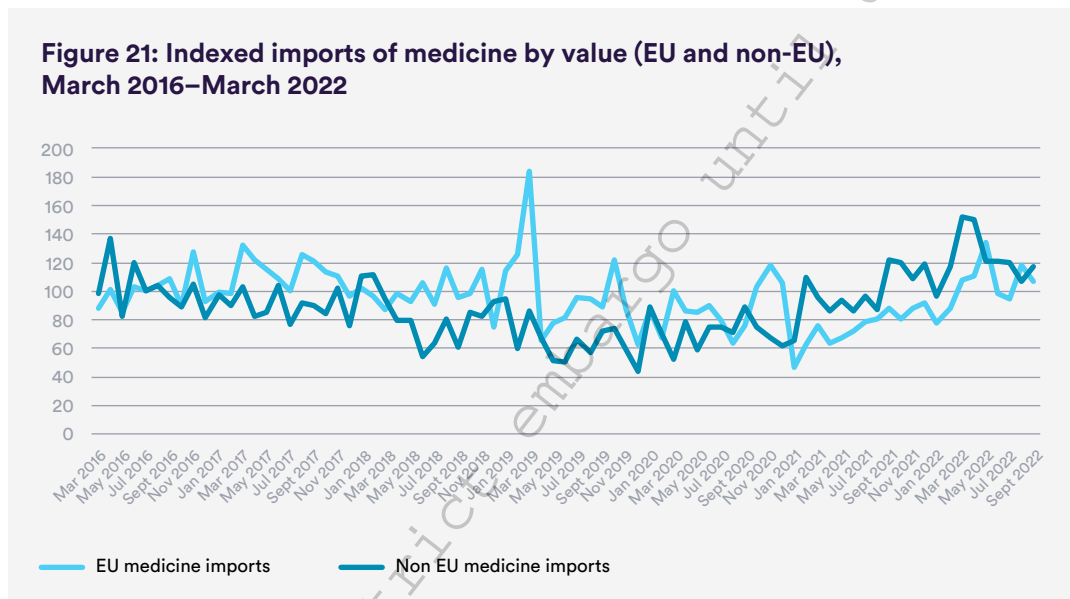


While direct comparisons are not possible, this suggests that non-UK specific factors such as the pandemic and recent inflation have played an important role. An OECD report earlier this year concluded that shortages had become increasingly common across its member states both before and during covid-19, with manufacturing and ingredient disruption the most common reason although root cause analysis was very difficult in part because of the lack of comparable data.<sup>58</sup>

The UK does appear to have a more consistent set of problems than some other countries. Price concession data suggests elevated pressure since the EU referendum; several metrics suggest consistent difficulties ever since 2020, notably medicines supply notifications. Finally, serious shortage protocols, supply notifications to the NHS and notifications by companies all show a pattern where the 2022 spike began quite early in the UK.

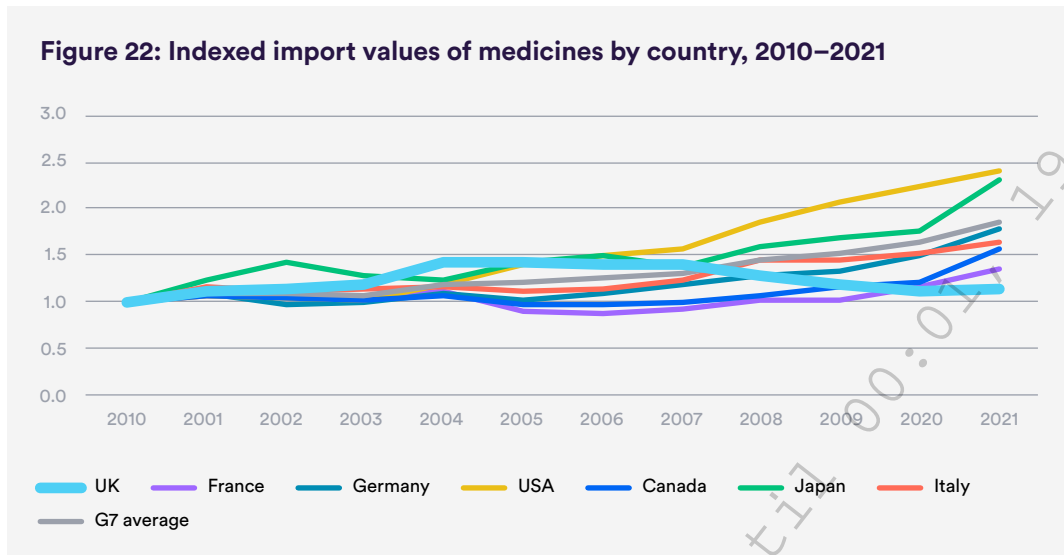
As noted above, trends in price concessions are consistent with the drop in the value of sterling following the EU referendum, and later in 2022, influencing the availability of medicines in the UK at the prices the NHS had been paying over a number of years.

Import data for medicines are consistent with Brexit being one factor during 2021. They show that in that year, the value of medicines imported from the EU dipped immediately to the lowest figure since 2016 before slowly recovering in 2022. Non-EU imports rose much more quickly to their highest level during this period, consistent with a change in supply availability. However, the UK primarily depends on EU imports, and total imports therefore closely tracked EU import trends. Added costs and delays at customs, and the HGV driver shortage, are probable explanations. Earlier trends in 2019 and 2020 illustrate the extent of stockpiling and have been explored in our previous work.<sup>59</sup>



UN data<sup>60</sup> shows that relative to other G7 countries, the UK has seen a remarkably anomalous pattern of medicine imports counted by value since 2016. Before this date, imports to the UK from across the world had risen rapidly. They subsequently declined in the UK, even as every other G7 member saw a substantial rise. By 2021 the UK was importing just 14% more medicines by cash value than 11 years earlier: the smallest increase in another country, France, was 36%.





This trend is not driven by Covid-19 vaccines, and in fact is even more pronounced if vaccines are removed, with the UK actually seeing a 5% decline in non-vaccine medicines. Because this trend begins around 2017, the fall in sterling is an obvious possible factor. This would suggest UK values partly falling because they are worth less converted into US dollars for the UN data, but likely also having a real effect as import prices rise and the NHS cannot compete as well – consistent with the price concessions data discussed above. It is also possible that firms pre-emptively tried to reduce import reliance in some way as they and the DHSC scrutinised their supply chains before possible no-deal Brexit dates, although this is not seen across the economy as a whole.<sup>61</sup>

Another factor unique to the UK may be its robust systems for controlling price and spend. These may mean that when costs increase, suppliers are incentivised to stop supplying drugs or not introduce them to the UK market where in other countries they might increase prices to maintain profits. The Voluntary Pricing and Access Scheme (VPAS) is the latest in a series of agreements with industry to limit the increases on spending on branded medicines, and means that the industry has to refund the government if spending grows by more than a certain percentage each year.<sup>62</sup> The rebate has recently been relatively high, prompting widespread industry complaints and warnings that firms will restrict supply on this basis.<sup>63</sup> It is possible that there is an interaction here where price pressures due to Brexit, the drop in sterling to which it contributed, and other factors are making the deal non-viable,

something we identified as an area of uncertain tension before the UK's exit from the EU.<sup>64</sup>

The NHS in England, Wales, Scotland and Northern Ireland also issues set tariff rates for medicines prescribed. The concession process used as an indicator above is required in order for pharmacists to be reimbursed for paying more.

Whether the right balance is being struck so that the NHS obtains medicines successfully at the cheapest possible price, instead of finding that they are unavailable, is an important question that merits further research. The multiple apparent drivers of increased costs will make it both difficult and crucial to strike this balance in drawing up a successor to VPAS, which runs out in 2024.

The perfect storm of factors associated with shortages in 2020, 2021 and 2022 appears to bear out our previous warnings that leaving the single market during the Covid-19 pandemic risked creating overlapping problems at a difficult time for the NHS.<sup>65</sup>

## Medicines authorisations: drifting apart

Beyond affecting whether medicines can be brought into the country physically, Brexit also raises the prospect of increased divergence in the products which are legally allowed to be sold in the UK. Until 2021, the European Medicines Agency (EMA) approved many innovative drugs once for Europe, including the UK. There were also procedures to transfer medicine approvals from one member state to another. This meant that although national level approvals still happened for less innovative products, the list of medicines available in the UK was profoundly shaped at a European level. While the UK has not diverged significantly in the legal framework it uses to decide whether pharmaceuticals are safe and effective,<sup>66</sup> it has repatriated these previously European routes to work at a national level. Northern Ireland, meanwhile, remains essentially part of the European system as of December 2022.

This raises the question of whether, 18 months on, more products will be available in the larger EU market – or whether the UK has been able to achieve the suggestion of “seizing new opportunities from Brexit with its newfound regulatory freedom” resulting in faster availability.<sup>67</sup>

A comparison of lists of authorised products across the two jurisdictions shows examples of both. While a precise count is difficult because the classification and name format used is different, several medicines have been approved since January 2021 by the EMA’s Centralised Procedure, but not by the MHRA for Great Britain.

Of the 20 drugs most recently authorised by the EMA as of November 2022, nine had not been authorised by the MHRA for Great Britain as of the same month. Many of these are likely to be approved later, while some are accessible for certain patients in Great Britain under the Early Access to Medicines Scheme. Not all are innovative substances. Nonetheless, there is a clear divergence in the portfolios of medicines available for use by health services at a given time. Examples of products recently approved in the EU but not yet Great Britain include:

- Nulibry – this new medicine is used to treat molybdenum cofactor deficiency, a rare disease causing brain damage. Patients were seven times less likely to die in trials.<sup>68</sup> It was approved by the EMA in September, but has not yet been approved by MHRA.
- Vyvgart (Efgartigimod alfa) – a new medicine used to treat myasthenia gravis, an autoimmune disease causing serious muscle weakness. It was approved by the EMA in August.<sup>69</sup>
- Roctavian, a gene therapy product used to treat a type of haemophilia. It was approved by the EMA in August.<sup>70</sup>

Analysis at Imperial College London shared with the *Financial Times* specifically examined novel drugs. It showed that in 2021 the EMA approved more in total – 40, compared to 35 in the UK.<sup>71</sup> These divergences may illustrate either the lesser appeal of the UK as a smaller market, or well-reported capacity constraints at MHRA: a time series we compiled of total

approvals shows that the rate they are issued in the UK has not accelerated since the period before Brexit and the Covid-19 pandemic.

It is difficult to identify products MHRA has approved but that have not been approved in the EU without study of each medicine, as products MHRA approves for Great Britain could be the responsibility of EU member states, not EMA. MHRA's approvals since August 2022, a similar timeframe to the last 20 EMA approvals, showed no clear instances of products not authorised in the EU as of November 2022.

However, there was one example on a longer timeframe: Belzutifan, a medicine made by MSD, is used to treat Von Hippel-Lindau disease, a genetic condition which affects one in around 30,000 people. This was prominently announced in early 2021 as the first medicine to get an 'innovation passport' on the MHRA's new post-Brexit fast-track.<sup>72</sup> However, it did not actually get marketing authorisation until 31 May 2022,<sup>73</sup> some eight months after FDA approval. At this stage, it was available as an authorised product in the UK but not the EU. Its status as an 'orphan drug', however, allowing expanded trial use in the EU, means that there may be less difference in availability in practice.

The MHRA also approved a bivalent Covid-19 vaccine, designed to protect against two different variants, before the EMA.<sup>74</sup> The EMA approved the same product around two weeks later.<sup>75</sup>

Northern Ireland's unique status within the single market is also leading to a different mix of medicines being available compared to the rest of the UK. Even though MHRA remains responsible for authorising products which are not innovative or for certain major diseases covered by the EMA, it has been approving a different set of products on opposite sides of the Irish Sea.

Since 2021 began, 52 products have been granted marketing authorisation in Northern Ireland but not in Great Britain. For example, the Slovenian company Sandoz Farmaceutvska Druzb has introduced multiple painkillers and forms of Naloxone, a product designed to stop people dying from opiate overdoses, to the Northern Irish market, but not elsewhere in the UK.

It is more difficult to provide a precise number for medicines introduced in Great Britain but not in Northern Ireland, as the EMA also has powers to

approve medicines for Northern Ireland where they are innovative and relate to certain major diseases or are biological, and often does so using different naming approaches. However, looking at all of the 597 products MHRA has approved for Great Britain since the start of 2021, only eight were also approved for Northern Ireland under the same name and company, and it seemed that only a minority had been approved by the EMA.

While a case-by-case study would be needed to provide a precise number, this suggests that the number of products now available in Scotland, England and Wales but not Northern Ireland is likely well into triple figures. Recent examples include a generic version of the Parkinson's disease drug Ropinirole produced by Sciecare Pharma Limited, and a generic version of the statin rosuvastatin calcium produced by Aventis Pharma Limited.

Nuffield Trust: under strict embargo until 19/12/2022

### 3 End of participation in the EU structural funds

Brexit brought about the end of UK participation in the EU structural funds, which allocated money for investment, business development and skills in poorer regions. This has implications for health, both because the funds sometimes contributed significantly to life science and advanced treatment initiatives such as the Brain Imaging Centre in Cardiff,<sup>76</sup> and because their role more widely is to improve regional inequalities and deprivation associated with poor health.

The UK government is replacing these with a UK Shared Prosperity Fund (UKSPF), which it states is “delivering on the... commitment to match the average spending of EU structural funds over the previous programme”.<sup>77</sup> In our earlier report we noted concerns in Scotland, Wales and Northern Ireland that the devolved administrations, where responsibility for health sits, had been cut out of the UKSPF model, potentially making it harder to align with health care.

We have since heard additional concerns that based on sums announced for the first three years of UKSPF, the commitment to match the average spending of EU structural funds is not being upheld. Wales, for example, is set to receive £585m over the three-year period, less than £200m a year.<sup>78</sup> However, under the EU funds it received close to £400m each year.<sup>79</sup>

This discrepancy seems to be accounted for by the UK government counting EU funds allocated during the 2014–2020 period but spent in the next three years towards the total – creating a period of overlap. This is not a fair baseline. Unlike the UK’s cash-based government budgeting, the EU commits all the funds for multi-year investment at in a single year, and then pays them out over the lifetime of the project. This means that UK local authorities are still receiving payments for EU funding decisions made before the UK left the EU. If the UK government’s commitment to match funds is counted at the point

of committing funds, then the UK government would need to match total EU funding from the start, as the EU will currently be allocating money under its new multi-year period, and money committed earlier is not relevant. If, on the other hand, it is counted at the point of spending, then the UK government should take into account further spending from the current EU multi-year period as an increase in the counterfactual baseline. In practice, the result of the UK government's approach is a net reduction in funds to local areas.

In terms of the aims of the UKSPF, there is some degree of commitment to improving health – or more specifically healthy life expectancy, with a twin aim of narrowing the gap in healthy life expectancy between the best and worst by 2030, and raising healthy life expectancy by five years by 2035<sup>80</sup> – though this is likely to be hard to achieve.<sup>81</sup> However, the NHS is noticeably absent from the list of relevant stakeholders to involve. A key challenge in making use of the EU structural funds for health was how to balance the European character of the funds and their priorities with national responsibility for health services. The shift to a national funding system was therefore an opportunity to remove that division and fund local development that was integrated with the NHS. This is a vital shift to make, given that across the UK, health providers are typically one of the largest local employers and crucial to local economies.<sup>82</sup> There is thus great scope to build on the central role of the NHS in the UK's society and economy as an anchor for integrated strategies on local and regional economic development. However, the UKSPF seems instead to be, if anything, deepening the division between local economic development and the health service which existed under the EU structural funds.

## 4 Living standards and their effects on people's health

The link between poverty and health had been explored long before Brexit. The Marmot '10 years on' review noted that, a decade after its first bill of health for England, health outcomes had deteriorated. Progress in health outcomes has slowed down in the past decade and prior to Brexit, and the report places the blame squarely on a decade of economic austerity. Gaps in both life expectancy and healthy life expectancy had increased between the most and least deprived areas, and overall life expectancy had plateaued across the country around 2015, even decreasing in more deprived areas.<sup>83</sup> We have written elsewhere about the impact of economic slowdown on state investment in public health.<sup>84</sup> The deterioration in life expectancy appears to be replicated in Scotland.<sup>85</sup> In Wales, while the healthy life expectancy gap has not increased, overall life expectancy and life expectancy gaps have.<sup>86</sup> In Northern Ireland, improvements in amenable mortality and in life expectancy continued, but at a slower rate.<sup>87</sup>

This section sets out how the economic impact of Brexit more specifically might affect the health of populations in the UK. Some elements, such as short-term economic impact, are already being felt. Other studies model future income to Brexit-related economic developments. Given the complexity of factors under consideration, we have consulted with specialists in economics, trade policy and social epidemiology and reviewed the selected academic literature. We summarise three broad emerging themes: the existing and projected economic impact of Brexit; adverse distributional impacts of trade shocks; and the link between lower income and health in individuals. With each element in the chain being increasingly well evidenced, the correlation between Brexit, standards of living and health seems to be reasonably strong.



It is worth noting that other factors will impact individual health and income. They are likely to be compounded by low living standards and pressures on health services. Such factors include, among others, existing structural inequalities and discrimination impairing people's access to care, as reported widely in the past few years,<sup>88</sup> or those living with pre-existing long-term conditions (for example related to mental health or care needs) being reliant on services that were already under considerable strain prior to the referendum.

## The economic impact of Brexit

We initially reported on the difficulty of disentangling the effects of Covid-19 and of Brexit on the UK economy – especially when prolonged lockdowns curtailed the movement of goods and people. However, the recovery of economic output to pre-pandemic levels – well before further disruption from the Russian invasion of Ukraine – has given a better opportunity to test shorter-term reports and longer-term forecasts.

Research focusing on the shorter term confirms an overall economic downturn following the referendum. It observes that due to a drastic shift in investor behaviour, a sharp currency depreciation followed the referendum.<sup>89</sup> Separately, a study benchmarked the trajectory of the UK between 2009 and 2021 against countries with a similar performance in specific areas (goods trade, GDP, gross capital formation and service trade). Over this period, the UK showed a comparative decrease in GDP (5.2%), investment (13.7%) and goods trade (13.6%) between the 2016 referendum and 2021,<sup>90</sup> with a point of inflexion at the referendum. This stands in contrast to high average growth in the years before the referendum, which has continued for other G7 countries.<sup>91</sup> This slump continued through the pandemic, in spite of the UK rolling out its vaccine earlier than countries with similar economies and therefore theoretically being able to start recovering earlier. Increasingly, analyses also converge on a long-term outlook, with predicted falls in GDP of around 4%, imports between 8.1% and 15%, and exports between 7% and 15%<sup>92</sup>).

These developments have an impact on people's incomes: currency depreciation led to inflation. Consumer prices increased by up to 2.9% as

consumers spent a greater share of their income on imports<sup>93</sup>), amounting to an additional cost to the average household of £870 per year, and a general decrease in disposable income.<sup>94</sup>

New and significant factors are already interacting with these forecasts and are likely to compound them – such as the government’s response to an ongoing and severe cost of living crisis compounded by the war in Ukraine. Nevertheless, a clearer picture emerges of ongoing and anticipated adverse economic impact, with direct implications for individual incomes in the UK.

## Anticipated inequality of economic impact

A more established literature considers the distributional impact of economic shocks in an international setting. Recent work by Dani Rodrik for the Institute for Fiscal Studies notes that economic shocks brought on by trade have an unequal impact – and disproportionately affect more vulnerable segments of labour that are exposed to direct foreign competition.<sup>95</sup>

This would apply to Brexit in two ways: the first is the UK’s exit from the EU, the end of free movement, and the rise of ‘non-tariff barriers’ such as additional bureaucratic costs associated with control and regulation of goods for import and export at the border. Levell and Davenport have modelled the impact of changes primarily in the form of non-tariff barriers on real wages across the UK, and in a range of scenarios, from a softer Brexit with greater alignment with the EU to no deal. These show that, in all cases, the harder-hit areas are those where EU businesses either had physical premises or imported products that were necessary intermediaries for UK final products (indirect imports). These areas were the North East and the Midlands in England, Eastern Scotland and South Wales. In terms of demographics, men were more likely to work in manufacturing jobs that were more vulnerable to these new barriers, and were therefore more likely to be adversely affected. This is especially problematic in cases where age may work against their chance to retrain.<sup>96</sup> Another study noted that inflation after the referendum had affected households across all income levels; however, people in Scotland, Northern Ireland and Wales were hit harder than those in London.<sup>97</sup> The connection between impact and occupation appears to be strong and

accepted in research, although regional differences would also need to be monitored, especially in light of the UK government's pledges to level up and its repatriation of EU structural funds.

The second relates to the unequal distributional impact on the domestic economy of economic competition through new trade deals<sup>98</sup>), such as those the UK is seeking to strike in the near and more distant future. To an extent, the governance of negotiations for these deals can influence aspects both directly related to public health and health services (such as tobacco or food regulation) and the economic determinants of health.<sup>99</sup> We will explore this aspect in further detail in future briefings on trade.

These studies suggest that trade shocks arising from exiting a single market and trade expansion towards less regulated countries will have both an overall adverse economic impact and a more severe, differential impact on incomes, with implications for health.

## Income and health

The link between health and income is very well documented: Case and Deaton noted a dramatic increase in 'deaths of despair' in individuals working in segments of the US economy subject to wage decreases or stagnation<sup>100</sup> – racial disparities were partly related but more structurally entrenched.<sup>101</sup> Another study showed that health and household income are positively correlated in children, with the relationship becoming more pronounced as they age.<sup>102</sup>

In the UK, the connection between poverty and health is officially acknowledged by health agencies across the four constituent nations.<sup>103</sup> Separate studies by the Health Foundation show the very high correlation between self-reported poor health and low income in England. Low income is associated with 'allostatic load', or the stress produced by constraints of low wages such as caring, housing or access to healthy food and clean environment. This will have an impact on health; conversely, poor health has an impact both on the ability to gain and retain employment and on income available once the additional care-related expenditure is factored in.<sup>104</sup>

As discussed previously, the UK health system and health outcomes in general have been dealt a blow by prolonged austerity predating Brexit. The current cost of living crisis appears to be overshadowing other economic upheavals – with government repeatedly attributing causality to Covid-19 and the war in Ukraine. Others have correctly pointed out that UK energy policy and privatisation stretching back to the late 1980s, as well as ongoing decisions on future investment in renewables, play an important part in the current situation and how it will evolve. Regardless of cause, a clear connection can be drawn between fuel poverty in individual households and poor health, for instance due to poor housing conditions or the tradeoff between heating and eating – eventually leading to strain on the NHS and higher numbers of avoidable deaths.<sup>105</sup>

The initial currency depreciation, inflation and decrease in disposable income in the UK compared to peer countries following the Brexit referendum suggests at the very least a contribution to the overall decline in living standards. Further forecasts of economic downturn are so far on track for being confirmed. If they do materialise in the long term, given the known association between poverty and ill-health, we can say with reasonable confidence that the resulting decrease in real wages will both lead to an overall decline in health and aggravate existing health inequalities. This will likely occur through shifts in consumer patterns and the significant strain of living on a limited income, and also through the feedback loop of poor health on the ability to retain income and employment, or access timely care.

# Conclusion

Leaving the European Union was always likely to present difficulties to an NHS which had built up reliance over decades on being in a single market and under joint institutions. The interaction of some of these changes with other longstanding and recent difficulties has, however, caused particular problems. The fragilities of a system which has long struggled to find the money or political support for long-term resilience were exacerbated by this shift in how the UK relates to its neighbours.

On workforce, the English NHS had been drifting along with unsuccessful or non-existent domestic planning for some time. By 2016, EU migration had become one of its greatest relief valves, serving the same purpose for social care where poor pay and conditions, and a lack of reform, was causing growing problems. Largely shutting it off has caused complex issues. The primary response of the system has been to recruit aggressively from other sources of migration, but this is fraught with multiple problems: finding the same types of staff for whom reliance on the EU had been built up, ethical concerns about recruiting migrants with fewer rights from poorer countries, and the practical issue of migration rules which still bar many social care staff.

In medicines and medical devices, the NHS and the wider health sector had struck two crucial balances before 2016. The UK remained a research and pharmaceuticals hub despite the industry often being annoyed by the health service's slowness to adopt new products and its rectitude about cost containment. The health service was able to secure products at cheap prices by relying heavily on generic medicine imports, and device distribution networks across Europe. Both are threatened by trade barriers operating differently in Great Britain and Northern Ireland; by the difficulty in joining EU research funding systems described in our earlier reports; and the need for a newly separated regulatory system.

In finance and the economy, unequal and stagnant living standards were already associated with a flatlining of life expectancy, while a drive to control state spending had shaped a decade of austerity for the NHS. Both problems

are being exacerbated by Brexit, and at the same time to a perhaps even greater extent by Covid-19 and the cost of living crisis linked to war in Ukraine.

There is still much within the UK's power to address these problems. It is not inevitable that the NHS has to require migration to a much greater extent than other health systems: it would be possible to have better success in attracting staff domestically and dealing with the rates of early retirement and leaving the workforce. For medicines and devices, a combination of facing up to the likely need to keep accepting decisions from other countries and using the narrow opportunities the UK has for competitive advantages would probably be optimal, and there is some development in this direction. Funding remains a political choice, as does the distribution of resources. Currently, however, it appears that Brexit has largely added to the long list of troubles facing health in the UK.

Nuffield Trust: under strict embargo until 19/12/2022

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