



National Audit Office

Report

by the Comptroller
and Auditor General

Department of Health & Social Care

The supply of personal protective equipment (PPE) during the COVID-19 pandemic

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Department of Health & Social Care

The supply of personal protective equipment (PPE) during the COVID-19 pandemic

Report by the Comptroller and Auditor General

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Comptroller and Auditor General
National Audit Office

20 November 2020

This report examines the supply of personal protective equipment (PPE) as part of the Department of Health & Social Care's response to COVID-19 in 2020.

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Key facts

£146m

value of personal protective equipment (PPE) ordered by NHS trusts and NHS foundation trusts in 2019

£15bn

Department of Health & Social Care's budget for PPE in 2020-21

32bn

number of PPE items procured to manage COVID-19, February to July 2020

- 400 million** number of personal protective equipment (PPE) items in the Pandemic Influenza Preparedness Programme stockpile, January 2020.
- 3%** gowns in centrally-held stock on 21 April as a percentage of the estimated daily requirement to manage COVID-19.
- 14%** PPE items distributed to social care providers as a percentage of all PPE items nationally distributed, between 20 March and 31 July 2020.
- 10%** PPE items distributed to social care providers through national schemes as a percentage of their estimated PPE requirement, between 20 March and 31 July 2020. By comparison, trusts received 80% of their estimated requirement.
- £214 million** initial value of orders from two contractors for respirator masks which will not be used for the original purpose.
- 49%** Black, Asian and minority ethnic nurses responding to a Royal College of Nursing survey who reported that they had been adequately 'fit tested' for a respirator (to ensure a sufficient seal), May 2020. This compares with 74% for white British nurses. There were 5,023 respondents to the survey.

Summary

1 Personal protective equipment (PPE) is vital during a pandemic because it protects the wearer or user from catching an infectious disease from contact with other people. PPE can also help protect patients against onward transmission of a disease. Before the pandemic, relatively few workers needed to wear PPE and it was relatively straightforward to acquire. NHS trusts and NHS foundation trusts (trusts) bought much of their PPE from the NHS Supply Chain, a centralised procurement facility, whereas other NHS providers and adult social care providers generally used private sector suppliers.

2 COVID-19 has had an extraordinary impact on global demand for, and supply of, PPE in 2020. Demand for PPE rocketed in England from March, when NHS and care workers, together with key workers in other industries, started to require protection from patients, colleagues and members of the public who potentially had COVID-19. There was also a surge in demand in other countries. At the same time, the global supply of PPE declined as a result of a fall in exports from China (the country that manufactures the most PPE) in February. Some other countries also imposed temporary restrictions on the export of PPE. The result was an extremely overheated global market – a ‘sellers’ market’ – with desperate customers competing against each other, pushing up prices, and buying huge volumes of PPE often from suppliers that were new to the PPE market. The situation was made more difficult as the guidelines for wearing PPE, and the specifications and certifications that different types of PPE must meet, are complex and were updated throughout the pandemic, in particular as understanding of the virus improved.

3 This report examines:

- responsibilities for PPE supply in England (Part One);
- the emergency response to PPE shortages, focusing on the performance of national bodies in obtaining and distributing PPE to local organisations (Part Two);
- the experience of health and social care providers and their workforce (Part Three); and
- the Department of Health & Social Care’s (the Department’s) new PPE strategy (Part Four).

4 This report does not include an examination of the procurement process and controls in place during the emergency. A separate National Audit Office report, published in November 2020, examined government procurement during the pandemic, including the checks carried out into the suitability of new suppliers of PPE, and how offers from suppliers were considered.¹

5 This report contains references to companies where Government is subject to procurement challenge or judicial review. The Government fully reserves its position as regards the judicial review proceedings in relation to some of the contracts referred to in this report.

Key findings

Preparedness for the pandemic

6 The Department redeveloped the NHS Supply Chain (the operating model for central procurement for trusts) in 2018, to prioritise financial savings.

The Department created a new body (Supply Chain Coordination Limited (SCCL)) to manage the NHS Supply Chain in 2018. Before the pandemic, local health and care providers bought PPE either directly from suppliers or through the NHS Supply Chain. Trusts spent around £146 million on PPE in 2019, including £61 million through the NHS Supply Chain. The Department set targets for the NHS Supply Chain to increase its share of NHS procurement and achieve financial savings for the NHS. These were surpassed in 2019-20. However, the Department's performance management regime did not include any targets related to the resilience of supplies to the NHS and the operating model was not designed to respond to a pandemic (paragraphs 1.4 to 1.6, and Figure 2).

7 Before the pandemic, responsibility for managing PPE supply and stockpiles was spread across multiple public bodies and private sector contractors.

The redeveloped 2018 model meant that while SCCL was responsible for the management of the NHS Supply Chain, it contracted out both procurement and distribution of PPE to contractors, which in turn contracted with PPE suppliers. Social care providers bought their PPE directly from PPE suppliers. The Pandemic Influenza Preparedness Programme (PIPP) stockpile, which contained around 400 million items of PPE for use during an influenza pandemic, was owned and managed by Public Health England (PHE) on behalf of the Department (which set the policy for the stockpile). PHE contracted SCCL to manage this stockpile, and SCCL then subcontracted the storage and distribution roles to Movianto, a private contractor. The Department itself managed a smaller stockpile which was held in case of disruption following a 'no deal' EU Exit (paragraphs 1.5, 1.8 and 1.10, and Figure 2, Figure 3 and Figure 4).

¹ Comptroller and Auditor General, *Investigation into government procurement during the COVID-19 pandemic*, Session 2019-2021, HC 959, National Audit Office, November 2020.

8 Government's stockpiles of PPE were intended for an influenza pandemic and they were inadequate for a coronavirus pandemic. Collectively the PIPP and EU Exit stockpiles provided an estimated two weeks' worth, or less, of most types of PPE needed by the NHS and social care during the pandemic. Furthermore, the PIPP stockpile did not include gowns which were later needed during the pandemic (paragraphs 1.8, 1.9 and 1.14 and Figure 4).

The Parallel Supply Chain

9 Government attempted to use its stockpiles to meet demand for PPE but faced distribution problems and a lack of information on local requirements. PHE was responsible for the PIPP stockpile, and contracted SCCL to manage it and provide PHE with advice on logistics and supply chain management. There were difficulties distributing PPE from the stockpile, including physical access to stock and a lack of information on how much PPE each trust needed. The Department brought in the Ministry of Defence to lead a rapid assessment of the situation in March. Following this, the Department decided that the NHS Supply Chain's infrastructure and operations would not be able to cope with the pandemic demand (paragraphs 1.16 to 1.20, and Figure 3).

10 The Department set up a Parallel Supply Chain in late-March to manage the rapidly deteriorating situation. SCCL started to increase procurement of PPE from its existing suppliers in February, but this was not enough and far more PPE was required. Given the soaring levels of demand for PPE, the stockpile and distribution challenges, and disruption in the global market for PPE, the Department created a Parallel Supply Chain. This aimed to urgently source and distribute PPE to trusts and other health and care providers by obtaining PPE through SCCL's existing suppliers, new suppliers and new UK manufacturing. The Parallel Supply Chain included a team of around 450 staff to find and buy PPE, plus a new distribution system (paragraphs 1.14, 1.16, 1.20, 1.21, 2.2 and 2.3, and Figure 5 and Figure 6).

11 Between March and mid-April, the Department developed a full estimate of the PPE required across health and social care, which predicted that massive amounts of PPE would be needed. The Department's estimate of the total PPE required for the next 90 days indicated that a far greater volume of some items of PPE would be required than was held in the PIPP stockpile. For instance, this requirement model showed that nine times more aprons would be needed than had been calculated to be necessary for the PIPP stockpile (paragraphs 2.7 and 2.8).

12 The Department ordered 14.6 billion items of PPE by the end of May.

The first contract to a new supplier was awarded on 22 March and by the end of May the Department, through the Parallel Supply Chain, had ordered 14.6 billion items of PPE worth £7 billion. Of this, 7.3 billion items were from suppliers already on an SCCL framework. Once ordered, suppliers might have needed to wait for their manufacturer to produce the PPE, which was then transported to the UK (with almost all PPE ordered by the Parallel Supply Chain being imported). On receipt, the items needed to be checked before they could be released for distribution to local organisations (paragraphs 2.13, 2.18 and 2.22).

13 Because of the time lag between ordering the PPE and it being available to use, the Parallel Supply Chain could barely satisfy local organisations' requirements.

During April and May, central stock levels for most types of PPE remained negligible despite existing suppliers to SCCL delivering 738 million items in April and May and new suppliers delivering 235 million items over the two months. Trusts and other local organisations relied on getting PPE from a combination of centrally-allocated deliveries, what they could buy directly themselves, and items shared by other organisations with higher stock levels. Towards the end of May, the position was improving and the Parallel Supply Chain reported holding at least one day's worth of stock across all types of PPE for the first time (paragraphs 2.9, 2.22, 2.24, 3.8 to 3.10 and 3.18, and Figure 7 and Figure 12).

14 Until 4 May the Parallel Supply Chain had limited information on the PPE held by local organisations and prior to that it undertook a daily engagement process with stakeholders to inform its distribution of PPE.

Neither SCCL nor any other national body held information on how much PPE local organisations held in stock. The Parallel Supply Chain therefore distributed PPE to trusts and local resilience forums on a 'push' basis, and initially all trusts received the same amounts. However, the Parallel Supply Chain created and refined a process to better inform its distributions. This was based on estimates of the PPE required by local organisations, reflecting guidance for PPE usage and the number of patients. It adjusted these estimates to reflect information from NHS regions, local resilience forums and the National Supply Disruption Response team (a helpline for providing emergency deliveries of PPE to organisations close to running out). This process was continually updated, and from 4 May the Parallel Supply Chain was able to collate data daily from trusts on the PPE they held (paragraphs 2.5 to 2.6 and 3.8).

15 The Parallel Supply Chain's procurement processes were designed to enable rapid procurement, but this meant that some PPE was procured that did not meet requirements, wasting hundreds of millions of pounds. The chaotic nature of the PPE market during the pandemic increased the risks involved in purchasing PPE, including that suppliers might not provide products of the standard required. The Parallel Supply Chain had a process to check suppliers' equipment against government's PPE specifications so that equipment that failed to meet requirements could be placed into quarantine and not issued to local organisations. However, in some cases the Parallel Supply Chain bought equipment that did not meet the specifications. Across two contracts within our audit sample, it ordered 75 million respirator masks, with a total cost of £214 million, that the NHS will not use for the original purpose (although one of these suppliers has since agreed to vary the contract). Tens of millions of respirator masks ordered from other suppliers and some other types of PPE are also likely to have problems being used for the original purpose. The Department told us that 195 million items are potentially unsuitable. We have not been able to verify this figure (paragraphs 2.16 to 2.20).

16 The Department's spend on PPE has been enormous, owing to both higher prices and increased volumes. Between February and July 2020, the Department spent £12.5 billion on 32 billion PPE items.² There have been substantial increases in the unit price paid for PPE compared with 2019, caused by the global surge in demand and restrictions on exports in some countries. These increases ranged from a 166% increase for respirator masks to a 1310% increase for body bags. The Department had to pay such high prices because it was in the position of needing to buy huge volumes of PPE very quickly. Had government been able to buy PPE between February and July 2020 at the same unit prices it paid in 2019, then overall expenditure on PPE would have been £2.5 billion. In July 2020, HM Treasury approved up to £15 billion for spending on PPE in 2020-21, including freight and logistics (paragraphs 2.10 to 2.12 and Figure 9).

² This report has identified that, between February and July 2020, orders for PPE totalling £12.5 billion were made through the Parallel Supply Chain. We recently published *Investigation into government procurement during the COVID-19 pandemic*, which identified that the total value of PPE contracts awarded by government departments between January and July 2020 was £12.3 billion, based on contract data supplied by the Department of Health & Social Care and other departments. The difference is likely to be due to different populations, data sources, time periods, and time the information was obtained.

The experience of front-line workers and organisations

17 NHS and social care representatives criticised government guidance on PPE and how it was communicated. To ensure that they are properly protected, front-line workers in health and social care (and their employers) rely on official guidance on infection prevention and control to understand what PPE is needed, when it is needed and how to use it. In England, this guidance is issued jointly by the Department, PHE and NHS England & NHS Improvement (NHSE&I) and it needed to be updated frequently to reflect an increasing understanding of a new virus. After its publication on 10 January the guidance was changed 30 times by 31 July, including material and relatively minor changes. However, social care representatives, and health representatives to a lesser extent, raised concerns over the guidance, including that the frequency of changes made it confusing, and that the measures outlined were not sufficient to protect workers properly. Social care representatives were concerned that – even when it was labelled as being for social care – much of the guidance was explained for healthcare settings and had not been tailored for social care settings. The British Medical Association was concerned that the guidance at the time did not recommend gowns and eye protection for workers in all healthcare settings (paragraphs 3.2 to 3.7 and Figure 14).

18 At times, many front-line workers in health and adult social care reported not having access to the PPE they needed during the height of the shortages. The NHS provider organisations we spoke to told us that, while they were concerned about the low stocks of PPE, they were always able to get what they needed in time. However, this was not the experience reported by many front-line workers. Feedback from care workers, doctors and nurses show that significant numbers of them considered that they were not adequately protected during the height of the first wave of the pandemic. Member surveys by the British Medical Association, the Royal College of Nursing, the Royal College of Physicians and Unison in April and May 2020 showed that a significant proportion (at least 30%) of participating care workers, doctors and nurses reported having insufficient PPE, even in high-risk settings. From this survey evidence we cannot know how representative these experiences are of the whole workforce, but occurrence of shortages is supported by other qualitative evidence. Directors of Adult Social Care also stated that essential supplies were not getting through to the social care front-line (paragraphs 3.7, 3.8 and 3.17 to 3.19, and Figure 16).

19 Adult social care providers considered that they were not adequately supported by government in obtaining PPE. The Department told us that it took different approaches to providing PPE to social care and trusts during the pandemic. Social care providers, of which there are many and which are mostly private- or voluntary-sector organisations, either obtained PPE from wholesalers (as they did prior to the pandemic) or from local resilience forums and the Department's helpline which it set up to respond to emergency requests. Whereas trusts received PPE directly from the Parallel Supply Chain. The adult social care sector received approximately 331 million items of PPE from central government between March and July (this was 14% of the total PPE distributed and 10% of their estimated need). This compared with 1.9 billion items sent to NHS trusts (81% of PPE distributed and 80% of estimated need) although PPE requirements may differ between different settings. Social care providers and representative bodies told us that the support they received was inadequate. Many social care providers highlighted being extremely close to running out of PPE, which in turn created uncertainty, anxiety and stress. The cost of PPE during the pandemic has also increased financial pressure on the adult social care sector. Government has though allocated additional funding to local authorities to help them deal with the impact of COVID-19 and has committed to provide free PPE to care homes over winter (paragraphs 2.5, 2.23, and 3.10 to 3.15, and Figure 15).

20 Employers have reported 126 deaths and 8,152 diagnosed cases of COVID-19 among health and care workers as being linked to occupational exposure.

All workers in health and care should have had access to appropriate PPE and training both to reduce their own risk of acquiring COVID-19 and the related risk of onward transmission. Employers have reported cases to the Health and Safety Executive where they considered there was reasonable evidence to suggest that infection was caused by occupational exposure. However, it is not possible for us to confirm whether PPE or other infection prevention and control measures played any role in these cases (paragraphs 3.17, 3.22 and 3.23 and Figure 17).

Readiness for future challenges

21 The Parallel Supply Chain and NHS Supply Chain procured 32 billion items of PPE between February and July. Over the same period they distributed 2.6 billion items to front-line organisations. As a result, as at the end of September, the Department reported that it was on course to have stockpiled four months' supply of PPE by November 2020. At that time it had not yet received most of the PPE procured, including some that was still to be manufactured: some 6.6 billion items (21%) had been received and another 5.1 billion (16%) were in the UK but not yet with the Parallel Supply Chain. The Department expected two-thirds of the remainder to be delivered by the end of 2020 (paragraphs 2.10, 2.23, and 2.25 to 2.26).

22 The new PPE strategy aims to secure a resilient supply of PPE but could be challenging to implement.

The Department published a new strategy in September 2020.³ The strategy aims to increase resilience by means of a bigger stockpile, a much larger UK manufacturing base, a better distribution network, and an improved understanding of user needs. There are, however, challenges to overcome, including how to sustain a large UK manufacturing base for PPE that might not be competitive in cost terms (paragraphs 4.2 to 4.6. and 4.10 to 4.12).

Conclusion

23 Government's response saw the Parallel Supply Chain's workforce, and procurement staff in provider organisations on the front line make a huge effort, going far beyond what would usually be expected. The Department and its partners deserve some credit for building at pace a new international supply chain and distribution network. But there are important aspects that could and should have been done much better in supplying PPE.

24 Government initially considered it was well-placed for managing the supply of PPE in a pandemic, with tested plans and a stockpile in place. But neither the stockpiles nor the usual PPE-buying and distribution arrangements could cope with the extraordinary demand created by the COVID-19 pandemic. As a result, government's structures were overwhelmed in March 2020. Once government recognised the gravity of the situation it created a parallel supply chain to buy and distribute PPE. However, it took a long time for it to receive the large volumes of PPE ordered, particularly from the new suppliers, which created significant risks. There were further difficulties with distribution to providers and many front-line workers reported experiencing shortages of PPE as a result. The initial focus on the NHS meant adult social care providers felt particularly unsupported. Government has budgeted an unprecedented £15 billion of taxpayers' money to buy PPE for England during 2020-21. It has paid very high prices given the very unusual market conditions, and hundreds of millions of pounds-worth of PPE will not be used for the original intended purpose. Our recent report on government procurement in the pandemic sets out the findings of our detailed examination of some PPE contracts.

Lessons to be learned

25 Given the human and financial investment required in a response such as this and the continuing risk of further outbreaks, it is essential that lessons are identified, learned and acted on as swiftly as possible. We recently reported on the commercial aspects of certain PPE contracts, and made recommendations for improving procurement. In taking forward its new PPE strategy, the Department will need to identify lessons that can be learned. Specifically:

³ Department of Health & Social Care, *Personal protective equipment (PPE) strategy: stabilise and build resilience*, September 2020.

- a** The Department and its partners had to oversee and take many unplanned and unprecedented actions to obtain PPE during the emergency. Inevitably, some actions were more successful than others. A comprehensive lessons-learned exercise involving all the main stakeholders, including local government and representatives of the workforce and suppliers, would inform the planning for future emergencies. This should include: consideration of whether any issues with PPE provision or use might have contributed to COVID-19 infections or deaths; how to determine the priorities when there are shortages of essential equipment such as PPE; and, how events are recorded during an emergency response to help learn lessons for the future.
- b** Business-as-usual activities within government need to strike the appropriate balance between operational and financial efficiency versus the longer-term need for resilience and capability for dealing with shocks. For PPE, this includes consideration of the cost implications of, and incentives needed for, developing and maintaining a domestic manufacturing base and increasing diversity in international supply.
- c** Emergency plans for dealing with a pandemic must provide for appropriate stockpiles of high-quality PPE together with comprehensive and resilient arrangements for the rapid procurement and distribution of PPE, based on reliable information. Plans need to include distribution of PPE to social care and all parts of the health system. Organisations responsible for maintaining and testing their plans must actively monitor for new threats that might overwhelm their plans.
- d** Effective governance, lines of accountability, and resourcing responsibilities are important for an effective rapid-response in an emergency situation. Developing these arrangements, and ensuring that they remain up to date, should be part of the emergency plan for activation when required.
- e** Clear, timely, two-way information and communication are vital for both providing services at the front-line and for managing the response at the national level. This includes information on national and local PPE stocks and requirements, and feedback loops. Deficiencies in information on, and communication about, PPE can lead to a breakdown of trust, failure to take effective action, and poor value for money.
- f** Despite efforts to integrate them over the years, health and social care have continued to be separate systems. During this crisis the social care sector was hit hard by shortages of PPE, and government needs to understand why national bodies provided more support to hospitals than to social care and how to prevent that happening again.

Part One

Responsibilities for supply of personal protective equipment before, and at the beginning of, the pandemic

1.1 This part of the report explains: what is meant by personal protective equipment (PPE); how it was supplied before the COVID-19 pandemic; the pandemic response arrangements (including a stockpile of PPE); and how government responded to the emerging pandemic.

What is PPE?

1.2 PPE is equipment that protects the wearer against health or safety risks at work. In health and social care, PPE ranges from basic items, such as aprons, gowns and disposable gloves, to specialised items, such as face shields and respirator masks.⁴ In addition to PPE, health and care workers also wear medical devices, such as surgical masks, to protect patients against infection. For the purposes of this report, when we refer to PPE, we include protective medical devices such as masks. Other face coverings for use by the general public are not within the scope of this report.

1.3 Some 1.3 million people provide NHS (or NHS-commissioned) services and an estimated 1.5 million work in adult social care. Their need for PPE will vary because the PPE that is required to care for patients with COVID-19 depends on which treatment (or care) the patient is receiving and where they are being treated. **Figure 1** shows the types of PPE used to manage COVID-19.

⁴ Comptroller and Auditor General, *Readying the NHS and adult social care in England for COVID-19*, Session 2019–2021, HC 367, National Audit Office, June 2020.

Figure 1

Personal protective equipment (PPE) used to manage COVID-19

A range of personal protective equipment (PPE) is used to manage COVID-19, including during the care of patients who do not have COVID-19. Higher levels of PPE are needed for aerosol-generating procedures (AGPs)¹

Type of PPE	Further detail
 Aprons	A single-use apron is used when providing direct care within two metres.
 Body bags	Used by those managing the human remains of COVID-19-related deaths.
 Clinical waste bags	Used across all health and care settings, at all times and for all patients or individuals, for the safe disposal of used PPE.
 Eye or face protectors	These visors or safety spectacles are used during AGPs and otherwise if blood and/or body fluid contamination to the eyes or face is likely.
 Face masks	<p>Non-fluid-resistant face masks (Type II masks) are used by health and care workers when entering a hospital or care setting.</p> <p>Fluid-resistant face masks (Type IIR masks), are used when delivering direct care within two metres of a suspected or confirmed COVID-19 case.</p>
 Gloves	Worn during patient contact where there is a risk of exposure to body fluid.
 Gowns or coveralls	Used (during AGPs and otherwise) to withstand penetration by blood and/or body fluids when an apron provides inadequate cover for the task.
 Hand hygiene	The use of alcohol-based hand rub is part of hand hygiene in all health and care settings, at all times and for all patients or individuals.
 Respirator masks	<p>Respirator masks are used to prevent inhalation of small airborne particles during an AGP.</p> <p>Respirator masks are known as a filtering face piece (FFP) mask. There are three categories of FFP mask (FFP1, FFP2, FFP3).</p> <p>FFP3 masks should be worn when performing an AGP. Workers should first be fit-tested for an FFP3 mask to ensure an adequate seal.</p> <p>In some circumstances FFP2 masks can be used as a safe alternative to FFP3 masks.</p>

Note

¹ An aerosol-generating procedure (AGP) is a medical procedure that can result in the release of airborne particles (aerosols) from the respiratory tract.

How PPE was supplied before the pandemic

1.4 Before the pandemic, local health and care providers bought their own PPE. NHS trusts and NHS foundation trusts (trusts) were the main users of PPE in the NHS. They ordered PPE worth around £146 million in 2019, £61 million of which was through the NHS Supply Chain.^{5,6} **Figure 2** shows the main stakeholders involved in the supply and use of PPE before the COVID-19 pandemic.

1.5 The NHS Supply Chain was created in 2006 to provide trusts with goods. In 2018 the Department of Health & Social Care (the Department) set up a new company, Supply Chain Coordination Limited (SCCL), to manage the NHS Supply Chain. SCCL aims to deliver £2.4 billion of savings to the NHS by 2022-23, and to increase the proportion of trusts' procurement going through the NHS Supply Chain from 40% to 80% by 2022. It operates as a small management function and outsources the procurement of goods and services through 11 specialist buying functions.

The performance of Supply Chain Coordination Limited before the pandemic

1.6 Before the pandemic, SCCL reported it was performing well against its key targets. It reported saving £193 million in 2019-20 against a target of £150 million for the year (29% ahead of its target) and an increase in the share of all eligible goods and services procured by trusts through the NHS Supply Chain to around 56% against a target of 49% (trusts are free to buy through the NHS Supply Chain or directly from suppliers). The resilience of the NHS Supply Chain became an important issue during the pandemic. SCCL's corporate key performance indicators do not include a measure of resilience, and the operating model was not designed to respond to a pandemic. SCCL told us that it does consider the resilience of the supply chain - for example, by reviewing the plans of its contractors to ensure that they consider the sustainability of the market when awarding contracts to suppliers. At the time of the pandemic, nine PPE products were provided by 24 suppliers under SCCL frameworks.

1.7 Trusts held mixed views about the NHS Supply Chain before the pandemic. Several told us that the NHS Supply Chain provided good products and delivered quickly, while others lacked confidence in its products and prices. Some trusts disliked the way the Department funded SCCL's operating costs (by top-slicing the funding for trusts). These trusts felt that they would be financially better off if they received the funding themselves and negotiated with suppliers directly.

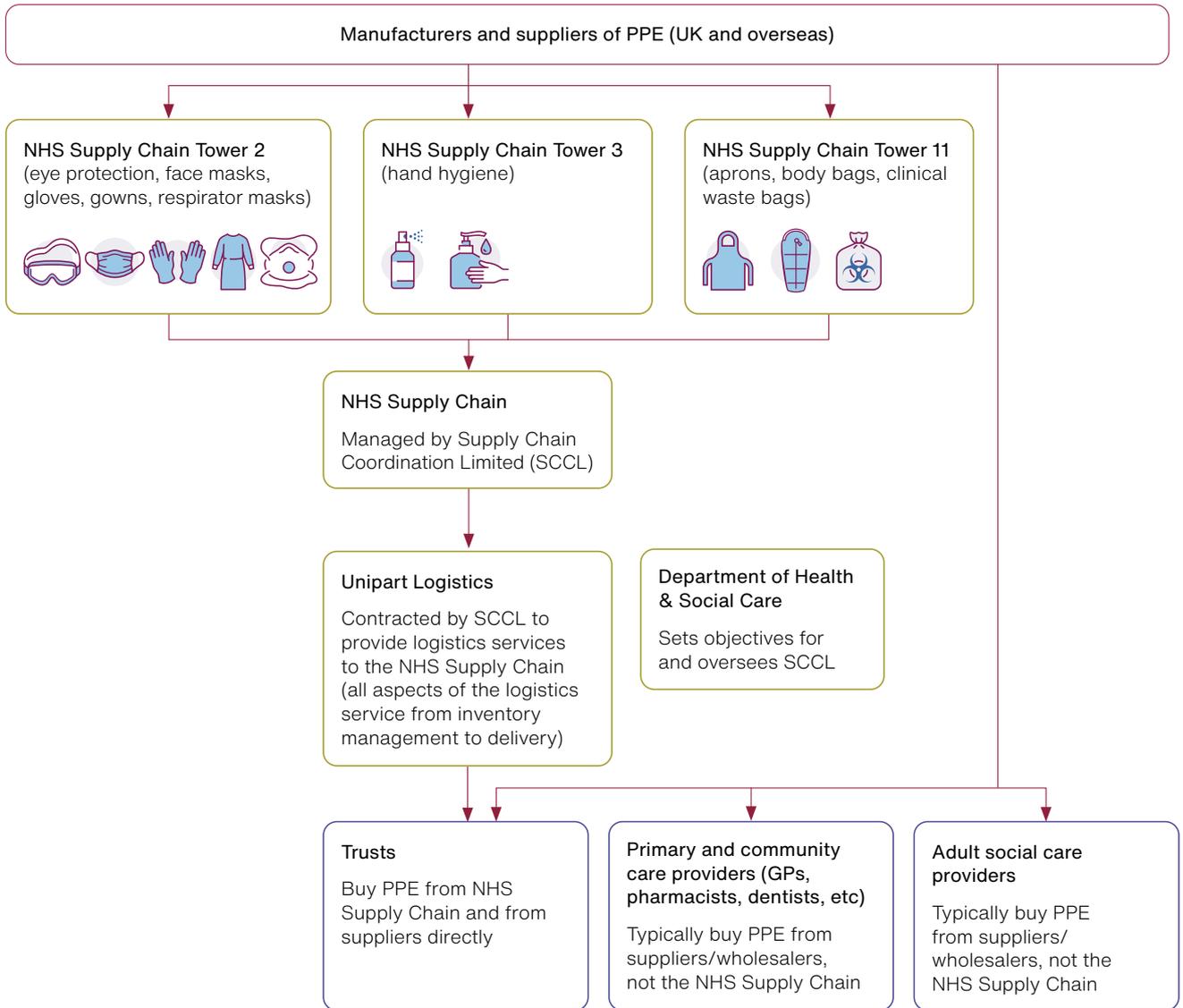
5 The NHS Supply Chain is an operating model which covers the sourcing, delivery and supply of healthcare products, services and food for NHS trusts and healthcare organisations across England and Wales. Supply Chain Coordination Limited manages the NHS Supply Chain. It is a limited company wholly owned by the Secretary of State for Health & Social Care.

6 We received different reports of the value of PPE ordered through the NHS Supply Chain by trusts in 2019. Data provided by NHS England & NHS Improvement (based on purchase orders raised by trusts) shows that trusts ordered PPE worth £111 million through the NHS Supply Chain (and ordered PPE worth £146 million in total). Data provided by Supply Chain Coordination Limited shows that trusts ordered PPE worth £61 million through the NHS Supply Chain.

Figure 2

The supply of personal protective equipment (PPE) before the COVID-19 pandemic

Responsibilities for PPE procurement were spread across many public bodies and private sector contractors



- Suppliers of PPE
- Government bodies and their contractors
- Users of PPE in health and social care

Notes

- 1 The NHS Supply Chain is an operating model that covers the sourcing, delivery and supply of healthcare products, and services for NHS trusts and healthcare organisations across England and Wales. SCCL manages the NHS Supply Chain operating model for the NHS.
- 2 SCCL has appointed seven contractors to run 13 functions of the NHS Supply Chain (11 'category towers' to procure goods and services, plus information technology and logistics functions).

The stockpiles of personal protective equipment

1.8 Prior to the pandemic, the Department's policy was that PPE was held in two separate stockpiles, although neither was intended for a coronavirus pandemic. The Pandemic Influenza Preparedness Programme (PIPP) held stocks of PPE for use in an influenza pandemic. The strategic purpose of this stockpile was to provide PPE for health and care workers in England and for the devolved administrations. It included PPE physically stored in a warehouse, plus 'just in time' contracts to enable Public Health England (PHE) to buy PPE in the event of a pandemic. The second stockpile was held in preparation for the UK withdrawing from the EU without a deal. Several organisations are responsible for approving, maintaining and distributing PPE from the PIPP stockpile (**Figure 3**).

1.9 At the start of the pandemic, the PIPP stockpile did not hold all the PPE it should have held. First, it did not include the full complement of some types of PPE it was expected to hold (based on the estimated requirement), with particular shortages of gloves and aprons (**Figure 4** on page 20). The EU Exit stockpile held few items of PPE other than a large number of gloves. Second, the PIPP stockpile had not been extended to hold visors and gowns. These items had been recommended for inclusion in June 2019 by the New and Emerging Respiratory Virus Threats Advisory Group (NERVTAG). PHE told us that, when the pandemic began, it was undertaking market analysis to determine which gowns it would buy. Its normal approach was to procure stock over a long period of time to help achieve a lower price. For the visors, NERVTAG had recommended a switch from glasses to visors when glasses next required reordering.

The plans for supplying PPE as part of an emergency response

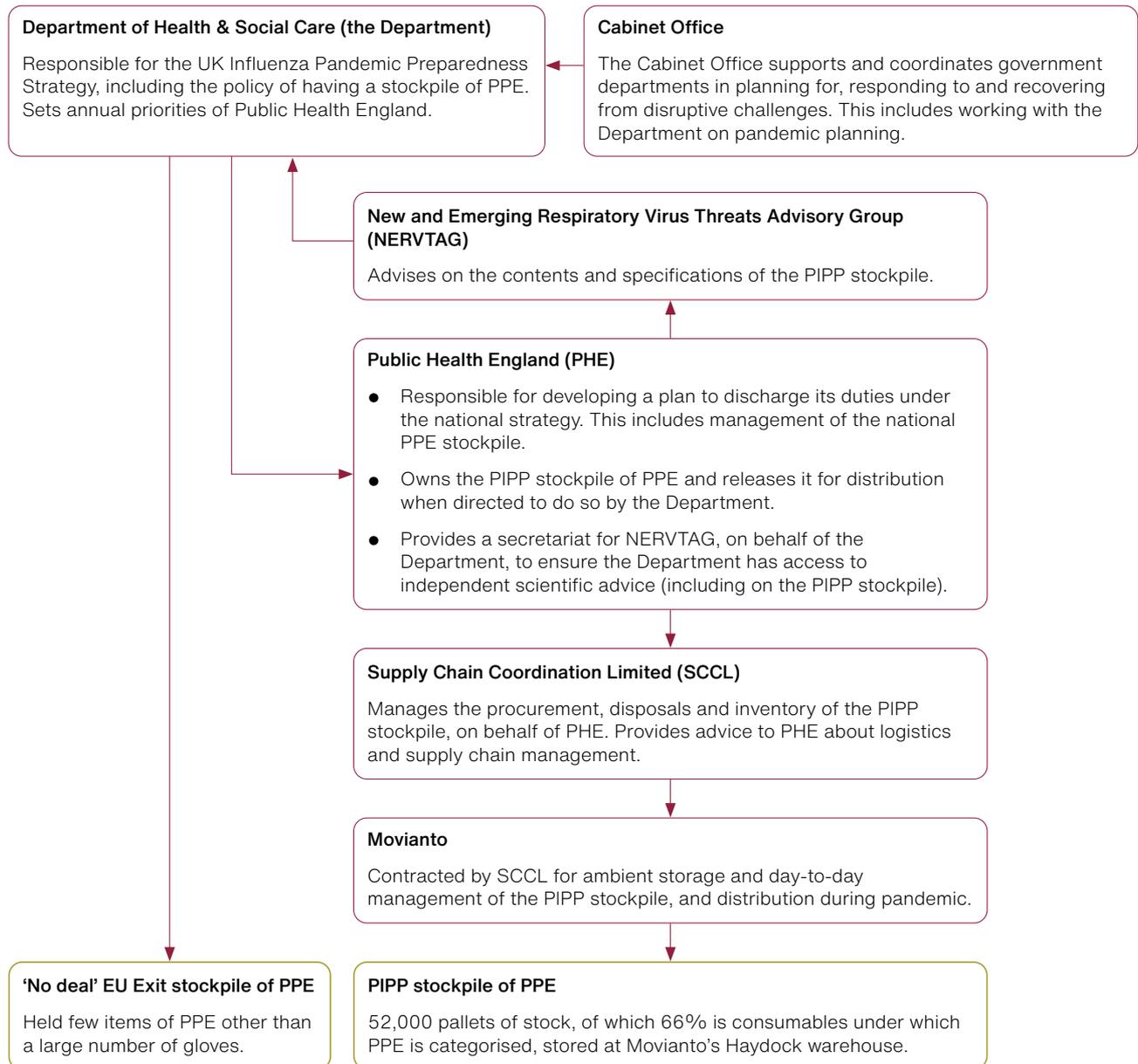
1.10 The contract between SCCL and Movianto, its private sector warehousing contractor for the PIPP stockpile, required Movianto to store the PPE and, when directed by SCCL, to distribute it to health and care providers and other locations. Government and the NHS had plans to help manage an influenza pandemic, but there were no plans for the distribution of PPE other than the Movianto contract to distribute the PIPP stockpile. Wider plans included local resilience forums, which are multi-agency partnerships of representatives from local public services, including the emergency services, local authorities, and NHS bodies. These partner organisations are required, under the Civil Contingencies Act 2004, to plan and prepare for localised incidents and catastrophic emergencies including infectious diseases.⁷ In addition to local resilience forums, NHS England & NHS Improvement (NHSE&I) had an established approach for responding to pandemic influenza through the NHS Operating Framework and its established NHS Emergency Preparedness, Resilience and Response mechanism.

⁷ Other local organisations may also be members of local resilience forums but they do not have the same legal obligations.

Figure 3

Responsibilities for maintaining and overseeing the Pandemic Influenza Preparedness Programme (PIPP) and EU Exit stockpiles of personal protective equipment (PPE)

Several organisations were responsible for different aspects of managing the PIPP stockpile



□ Organisation or committee

□ Stockpile

Source: National Audit Office analysis

Figure 4

Personal protective equipment (PPE) required and held in stockpiles, January/February 2020

The Pandemic Influenza Preparedness Programme (PIPP) stockpile did not hold the estimated requirement for some types of PPE. And collectively the stockpiles held no more than an estimated two weeks'-worth of PPE, for four of seven types of PPE needed to manage the COVID-19 pandemic

Type of PPE	Pre-pandemic estimated requirement for PIPP stockpile	Actual PPE in PIPP stockpile (January 2020)	Actual PPE in EU Exit stockpile (February 2020)	Department of Health & Social Care's (the Department's) estimate of how much PPE was required per day, to manage the COVID-19 pandemic (21 April 2020)	Number of days the stockpiles would provide PPE to manage the COVID-19 pandemic
	(m)	(m)	(m)	(m)	(days)
 Aprons	160.6	104.6	2.6	16.5	7
 Clinical waste bags	13.5	1.6	0.1	0.4	4
 Eye protection	26.1	25.7	<0.1	2.9	9
 Face masks	153.9	156.3	0.5	3.9	41
 Gloves	359.9	85.9	245.4	19.6	17
 Gowns	19.3	-	<0.1	0.4	0
 Hand hygiene	0.3	0.4	0.2	-	-
 Respirator masks	26.1	26.3	-	0.4	67
Total	760.0	401.0	248.8		

Notes

- 1 The number of days the stockpiles would provide PPE to manage the COVID-19 pandemic is calculated by dividing the total stock held (in both stockpiles) by the estimated daily requirement.
- 2 The PPE in the PIPP and EU Exit stockpiles (shown in columns 3 and 4) is intended to support the whole of the UK; whereas the data showing how much PPE was expected to be in the PIPP stockpile (column 2) and the Department's estimate of how much PPE would be needed to manage COVID-19 (Column 5) cover England only. Therefore, this table overstates the actual PPE held against the expected PPE for the PIPP stockpile, and also how much PPE was held against the estimated requirement for COVID-19 (column 6).
- 3 The Department did not estimate how much alcohol hand rub it would need to manage COVID-19.
- 4 Gloves are single items not pairs.
- 5 Regarding the PIPP stockpile, Public Health England told us that it received deliveries of approximately 49 million aprons in February and March. It also told us that the requirement for gloves was increased in 2019, and it was planning to increase the stock of gloves accordingly.
- 6 Totals may not sum due to rounding.

Source: National Audit Office analysis of data from the Department

The early days of the pandemic

1.11 The first confirmed cases of COVID-19 in the UK occurred on 31 January. The Department, NHSE&I, PHE, SCCL, the Medicines and Healthcare products Regulatory Agency and their counterparts in the devolved administrations subsequently set up a forum for discussing supply issues, including PPE. Its first meeting was on 3 February.

1.12 Government's independent experts, the Scientific Advisory Group for Emergencies (SAGE) estimated the number of people who would require hospital treatment under a reasonable worst-case scenario. In late February, SAGE estimated that, without any interventions such as social distancing, COVID-19 would lead to more people requiring hospital treatment than an influenza pandemic (3.6 million versus 1.3 million). It also estimated that more people with COVID-19 would require intensive care or ventilation, and that they would spend more time in hospital. Because the PIPP stockpile was based on what would be required in an influenza pandemic under a reasonable worst-case scenario, these estimates should have informed the Department that the PIPP stockpile would not be sufficient to manage the COVID-19 pandemic. The Department stated in its *Personal protective equipment (PPE) strategy: stabilise and build resilience* (September 2020) that COVID-19 has different PPE requirements from those of influenza because it is a coronavirus. However, the methods of transmission for both are similar, and the types of PPE needed are the same, but the volume of PPE required to manage the COVID-19 pandemic has been much higher than the expected volume to manage an influenza pandemic. The higher volume is due to several factors that make COVID-19 particularly challenging, including that an infected person may be infectious before any onset of symptoms.

1.13 In mid- March government still believed that the PIPP and EU Exit stockpiles would provide most of the PPE needed to manage a COVID-19 pandemic, while recognising that more would be needed in future. Therefore, it focused on releasing the PPE in these stockpiles, rather than greatly increasing procurement of PPE. It sold PPE to the devolved administrations on 30 January and then released stockpiled PPE for use by dentists on 14 February, for trusts on 28 February, and to social care and primary care on 3 March. The Department also asked SCCL to buy whatever additional PPE it could during February. However, it subsequently emerged that the stockpiles would be unable to provide the required PPE for more than a few days for some types of PPE (Figure 4). Furthermore, the assumptions underpinning the PIPP stockpile did not include dentists and pharmacists, who also required PPE during the pandemic.

1.14 The demand from trusts for PPE began to challenge the existing supply system from February. During February SCCL ordered 281 million PPE items at a cost of £15 million and in March it ordered 417 million items costing £50 million. This compares with a monthly average of 208 million items at a cost of £5 million in 2019. However, on 31 March the Department reported internally that it had "inconsequential" levels of incoming supply, relative to demand, for FFP3 respirator masks and eye protectors, and "no immediate inbound orders that satisfy demand" for gowns.

Challenges with distributing PPE

1.15 PHE authorised the release of some PPE from the PIPP stockpile in late January and February (see paragraph 1.13). On 8 March PHE, after taking advice from SCCL, authorised the release of funds that would allow Movianto to distribute PPE from the PIPP stockpile on an ongoing basis through business-as-usual routes; that is by providing PPE to the NHS Supply Chain to be sold on to trusts, or by providing PPE to wholesalers to be sold on to dental practices, pharmacies, GPs and social care providers. PPE in the EU Exit stockpile was also distributed through the NHS Supply Chain.

1.16 However, despite the release of the stockpiles in February and March, trusts and other providers experienced difficulties getting enough PPE. Officials identified various factors contributing to the initial difficulties in distributing PPE from the stockpiles, including:

- **Warehousing** - SCCL told us that orders by trusts for PPE and other stock greatly increased in February, which made it difficult for the NHS Supply Chain to distribute it effectively because its warehouse staff were overwhelmed. Furthermore, the PIPP stockpile of PPE was stored in a 'deep storage' warehouse (rather than a distribution warehouse where deliveries are broken down into smaller packages for immediate distribution to trusts), making it difficult to distribute stock rapidly.
- **Logistics** - The PIPP stockpile contract required most of the stockpiled PPE to be distributed four weeks after the notification of a pandemic, so the logistics arrangements were not geared for an immediate response.
- **Quality of stock** - Some PPE had passed its expiry date or did not meet current safety standards. There had been insufficient checks on PPE in the stockpile. This resulted in PHE having to recall or withdraw eye protectors that did not meet the standards.⁸ It also had to test and re-label 6 million respirator masks that had passed their expiry date.

1.17 Furthermore, the pandemic led SCCL to pause its work on a digital transformation in the NHS Supply Chain. SCCL told us that part of its information technology (IT) infrastructure relies on old, difficult-to-support architecture. The response to the pandemic meant that the NHS Supply Chain needed to buy, store and distribute far more stock than usual. But the legacy IT system could not be configured to this new way of working – for example, it was not possible to add new warehouses to the IT system.

8 The Department commissioned the Government Internal Audit Agency (GIAA) to review the procurement and storage arrangements for 16 types of PPE in the PIPP stockpile, after problems were identified with some eye protectors purchased prior to the COVID-19 pandemic. The GIAA concluded that quality assurance processes for the purchase, receipt, storage and issue of PPE were lacking. This included a lack of documentary evidence to demonstrate that PPE in the stockpile had been procured to a defined quality standard. The GIAA also found that there was a lack of evidence of re-checking of PPE when standards had changed following purchase.

1.18 To help manage these challenges, on 19 March SCCL set up new arrangements to focus on distributing PPE from the PIPP stockpile on a ‘push’ basis. That is, initially all trusts were ‘pushed’ the same PPE due to an initial lack of information on local requirements (paragraph 2.6). On the same day, the Department, NHSE&I and PHE held their first meeting to discuss the policy for supplying PPE.

1.19 Officials from the Department, NHSE&I, PHE and the Ministry of Defence told us that SCCL and its logistics contractor, Unipart Logistics, reported being unable to manage overall demand during February and March. Therefore, the Department asked the Ministry of Defence to lead a rapid assessment in March and to provide support under the Military Aid to Civil Authorities arrangements. The assessment found that it was not possible to scale up the existing operation to meet demand. The Department and NHSE&I told us that their officials participated in the assessment, along with SCCL and its contractors, and that all agreed with the conclusion that the Department should assume control. We have been told that there is no report of this assessment, although this might help to identify lessons learned.

Challenges buying PPE

1.20 The Department, with the help of the Government Commercial Function, set up a cross-government Parallel Supply Chain. This included a team tasked with buying new supplies of PPE. The market had become extremely competitive, with large numbers of NHS and care workers (plus key workers in some other industries), requiring protection from patients and other members of the public with COVID-19, and there were similar surges in other countries. At the same time, we were told that the global supply of PPE had declined as a result of a fall in exports from China (the country that manufactures the most PPE) in February. Some other countries also imposed temporary restrictions on the export of PPE in response to increased domestic demand. Consequently, the global market became a ‘sellers’ market’, and we were told that desperate customers bid up prices and bought huge volumes of PPE often from suppliers that were new to the PPE market. It was often difficult to locate reliable suppliers of PPE and, when it was possible, prices were far higher than usual.

1.21 Challenges in procuring new PPE were compounded by the failure of some suppliers contracted with SCCL to deliver the PPE expected as part of the ‘just in time’ contracts, that form part of the PIPP stockpile arrangements (see paragraph 1.8). There were eight ‘just in time’ contracts to provide 6.8 million FFP3 respirator masks and 2.5 million safety glasses. However, none of the contracted suppliers were able to provide the agreed amount of PPE (although one of them belatedly provided 149,000 respirator masks). SCCL told us that this was, in part, caused by foreign governments imposing restrictions on the export of PPE.

Part Two

Responding to the shortages of personal protective equipment

2.1 This part of the report examines government's response to shortages of personal protective equipment (PPE) during the pandemic. It covers the creation of the Parallel Supply Chain, its performance and governance, and the volume and value of the PPE it procured.

Creation of the Parallel Supply Chain

2.2 As discussed in Part One, the Department of Health & Social Care (the Department) created a Parallel Supply Chain from late-March, when it became clear that the NHS Supply Chain could not distribute the stockpiled PPE quickly enough to meet demand. This decision was also informed by emerging information on the scale of the challenges faced, the realisation the stockpiles were insufficient to meet PPE needs, the inability of the existing NHS Supply Chain infrastructure and processes to meet increased demand, and the global market for PPE becoming chaotic. On 10 April, the Department published a wide-ranging plan setting out actions aimed at ensuring that NHS and care workers got the PPE they needed, including a new distribution system.⁹ **Figure 5** on pages 26 and 27 shows key events from January to the end of May.

9 Department of Health & Social Care, *COVID-19: Personal Protective Equipment (PPE) Plan*, April 2020.

2.3 The Parallel Supply Chain was overseen by Lord Deighton, who was appointed by the Government on 19 April to lead the national effort as advisor on PPE to the Secretary of State. The Department appointed a senior responsible owner, supported by a senior official from NHS England & NHS Improvement (NHSE&I) to provide management support, and staffed the Parallel Supply Chain with officials from across government and temporary staff (**Figure 6** on pages 28 and 29). The Parallel Supply Chain performed five key functions:

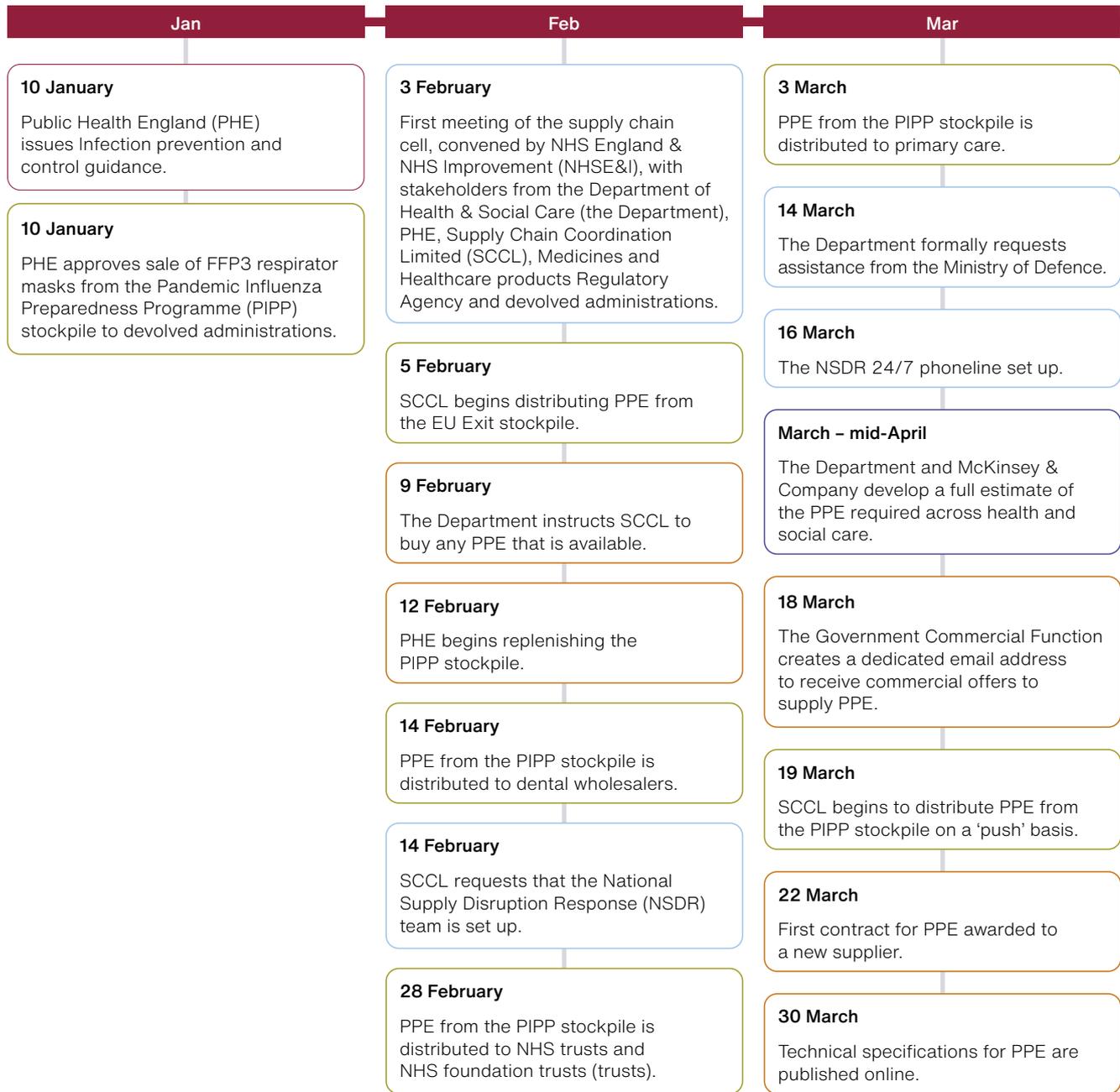
- a Plan:** Gaining an understanding of the PPE needed and the relative priority of different types of PPE, based on requirement models developed by the Department and NHSE&I.
- b Source:** Around 450 staff sourcing PPE from:
 - suppliers already known to the NHS Supply Chain;
 - Chinese suppliers, either identified by the British Embassy in Beijing, or by contacts in the UK passing the information to the Embassy; and
 - new UK suppliers either recommended by individuals, such as government officials and ministers, or those who offered help sourcing PPE through a government online portal.
- c Make:** Encouraging UK-based manufacturers that did not usually make PPE to repurpose their business.
- d Order:** Advising the Department which new suppliers to contract. Existing suppliers to the NHS Supply Chain continued to trade through SCCL.
- e Deliver:** Receiving, storing and distributing PPE to local organisations such as trusts, local resilience forums or wholesalers, (with the latter two providing the PPE to social care providers, GPs, dentists and pharmacies).

2.4 Officials from the Parallel Supply Chain told us that the governance arrangements were developed over time. Until May, efforts were focused on setting up the Parallel Supply Chain and ensuring that it could perform its key functions, but regular board meetings took place and instructions were issued to staff. They subsequently began formalising lines of accountability and, by July, governance arrangements had been documented.

Figure 5

Timeline of events relating to personal protective equipment (PPE) guidance, procurement, distribution, modelling and management, between January and May 2020

Events moved quickly between February and May



□ Guidance
 □ Distribution
 □ Procurement
 □ Modelling
 □ Management

Source: National Audit Office analysis

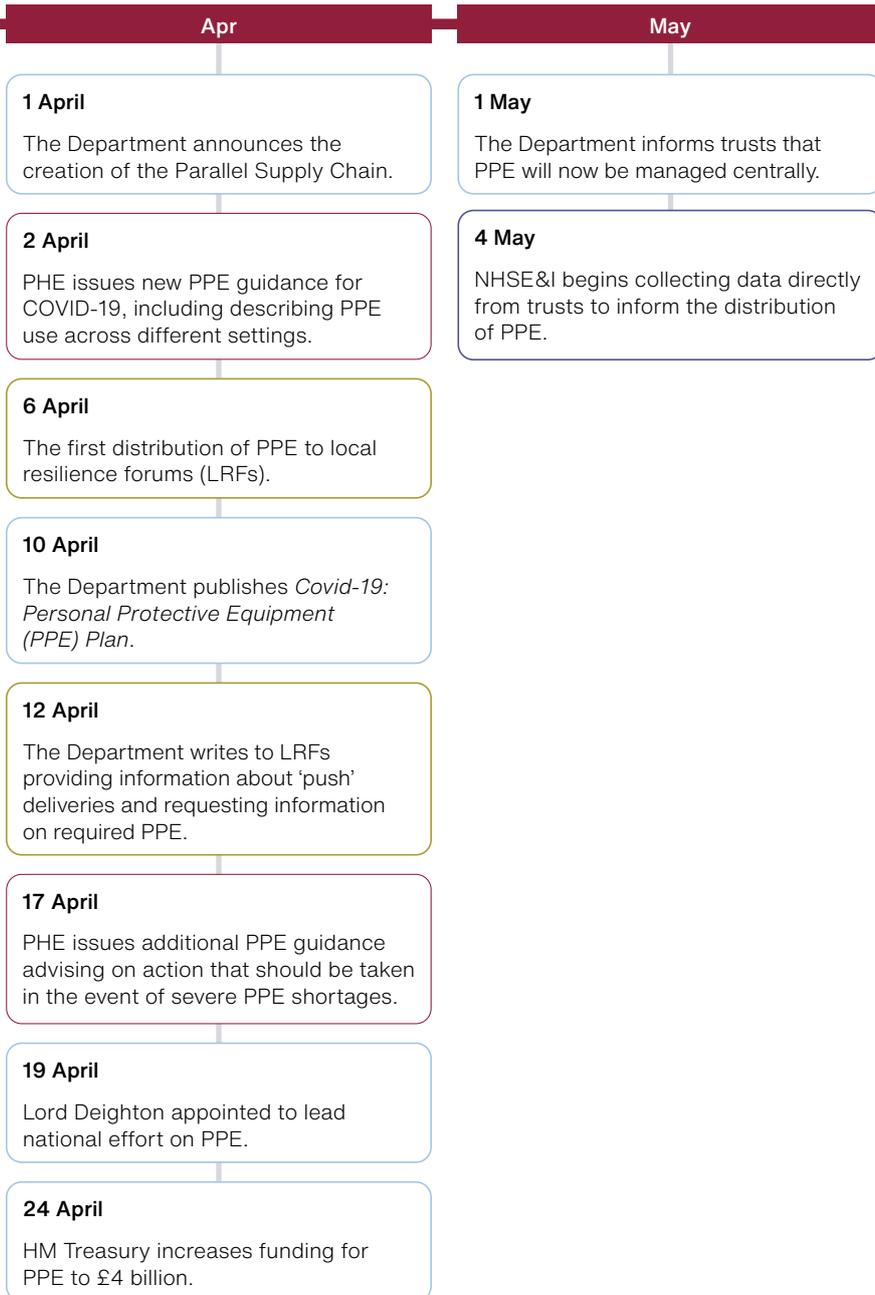
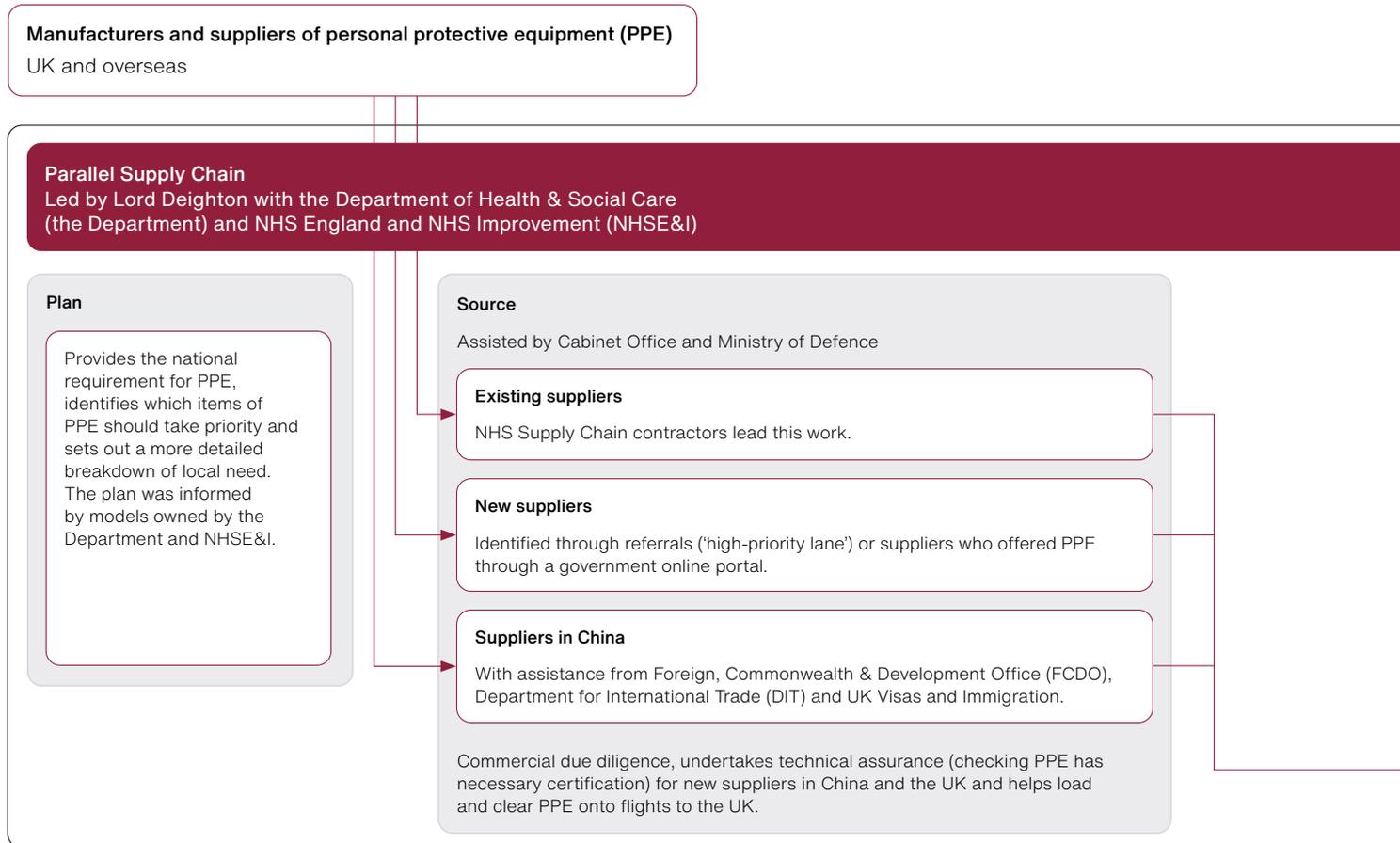


Figure 6
How the Parallel Supply Chain functions

The Parallel Supply Chain brought together different government departments and contractors to perform five main functions

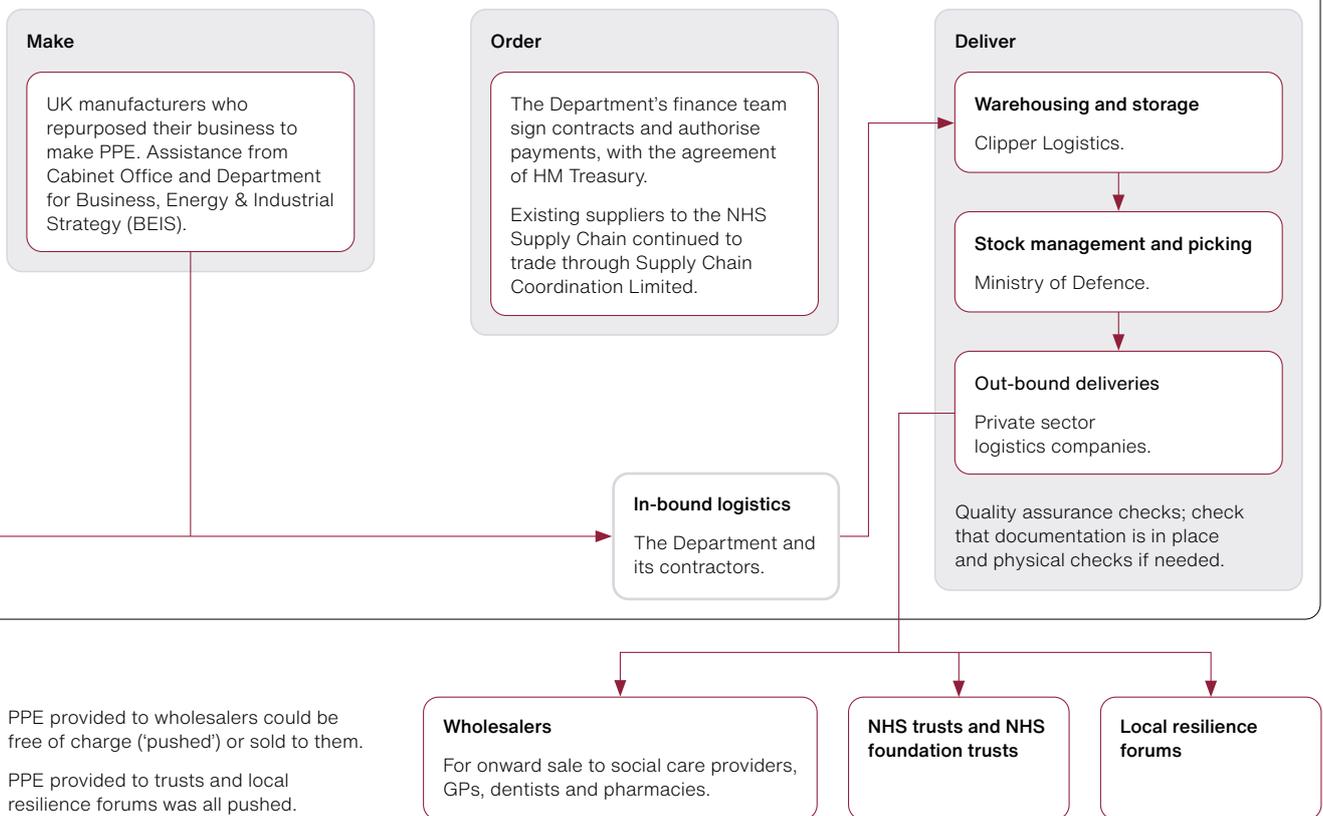


→ Flow of PPE

Notes

- 1 Other government bodies worked with the Parallel Supply Chain including the Health and Safety Executive, the Medicines and Healthcare products Regulatory Agency, and the Ministry of Housing, Communities & Local Government.
- 2 The Cabinet Office provided staff from the Government Commercial Function to assist the Parallel Supply Chain with sourcing ('Source') and contracting ('Order') for PPE.
- 3 The 'Make' team were assisted by BEIS, which facilitated discussions with potential manufacturing companies, helped optimise suppliers' production lines, and supported suppliers to comply with regulatory requirements.
- 4 The 'Source' team were assisted by FCDO and DIT in identifying suppliers and manufacturers overseas, and carrying out initial checks on behalf of the Department.

Source: National Audit Office analysis of information from the Department of Health & Social Care, NHS England & NHS Improvement, Supply Chain Coordination Limited, and Cabinet Office



How the Parallel Supply Chain worked

2.5 Under the Parallel Supply Chain, trusts and local resilience forums received PPE based on their expected need as determined by the Parallel Supply Chain (initially all trusts received the same but, as the process developed, they contributed information to inform these decisions). They did not order PPE and were not charged for the PPE they received. This is known as a 'push model'. Wholesalers received some PPE on a push basis and were sold some PPE. The Department intended that social care providers would receive PPE predominantly through existing arrangements (by buying PPE from suppliers), and, when this failed, that they would receive PPE from local resilience forums or an emergency supply from the Department's National Supply Disruption Response (NSDR) service (a helpline for providing emergency deliveries of PPE to organisations close to running out).

2.6 Initially the 'Plan' function (see Figure 6) did not have information about what PPE was held by trusts. Neither SCCL nor any other national body held information on how much PPE local organisations held in stock. Therefore, the Parallel Supply Chain developed, and continually refined, a process to determine where it distributed PPE. This had two main parts. First, it created an estimate of the PPE required by local organisations, based on guidance for PPE usage in different settings and the number of patients being treated or cared for by the local organisation. This estimate was used to create a 'pick list' to inform which PPE would be delivered to which organisation. Second, a daily engagement process incorporated feedback from NHS regions (who in turn liaised with trusts), local resilience forums and the NSDR service. This feedback was used to refine the pick list during each day. From 4 May, NHS England & NHS Improvement (NHSE&I) was able to collect data from English trusts about the PPE they held, and it used this to refine the Department's requirement model and inform decisions about which PPE should be delivered to which trusts in England.

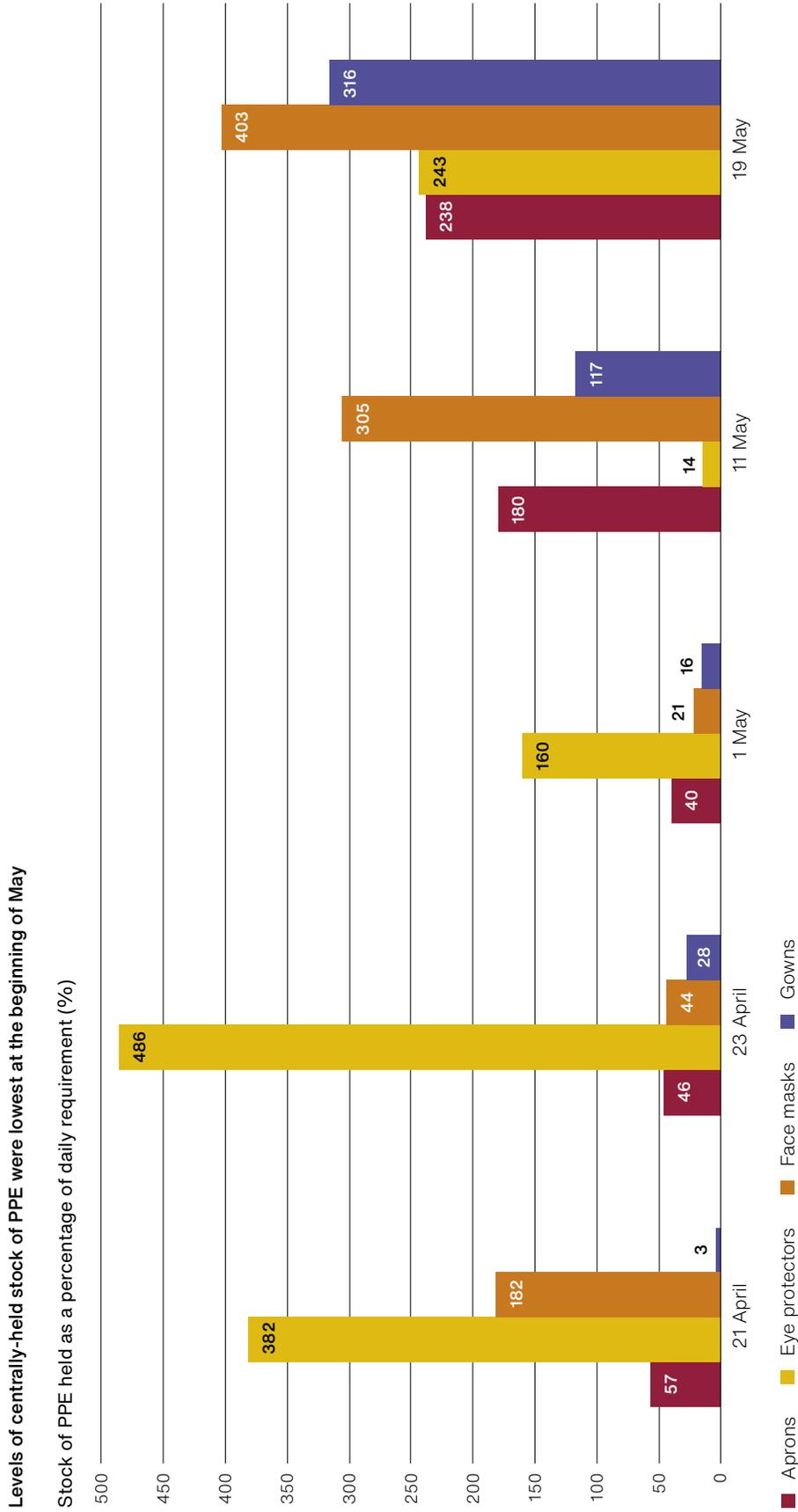
Estimated PPE requirements and the centrally-held stock of PPE

2.7 The Department started to assess the PPE requirement in March. With consultancy support from McKinsey & Company, it produced a full estimate of the PPE that would be required to manage COVID-19 over a 90-day period, based on adherence to government guidance on PPE. By 21 April it had a version that it considered more reliable (although it continued to refine the model). The model anticipated an enormous increase for some types of PPE compared with the calculations for pandemic influenza, with large increases in demand for aprons (820%), gloves (388%) and face masks (125%). The estimate covered critical care, acute care, primary care, community care and social care.

2.8 The Department (working within the Parallel Supply Chain) used information on the estimated total demand for PPE in health and social care to understand how much PPE it needed to buy, by comparing the estimated need with the stockpiled PPE plus the PPE it had already ordered.

2.9 Comparing the size of the centrally-held stock against the daily estimated requirement (**Figure 7** overleaf) showed a precarious situation in late April and early May, as certain types of PPE were close to running out. For example, there were 13,700 gowns available nationally against an estimated daily requirement of 454,500 (3% of the daily requirement). However, the Department has stated that it did not entirely run out of any type of PPE. In April, Public Health England (PHE) published guidance advising healthcare providers how to manage acute shortages of PPE. This was withdrawn in September as confidence in PPE availability increased. Towards the end of May, the Parallel Supply Chain reported holding at least one day's worth of stock across all types of PPE for the first time and, from 12 June, it considered that the only type of PPE at significant risk of shortage was FFP3 respirator masks.

Figure 7 Centrally-held stock of the most-scarce personal protective equipment (PPE) as a percentage of daily requirement, 21 April to 19 May 2020



Notes

- 1 Stock information is held for aprons, body bags, clinical waste bags, eye protectors, FFP3 respirator masks, type IIR face masks, gloves and gowns. This figure shows types of PPE where the estimated daily requirement was below 100% on any of the above dates.
- 2 This chart shows data for the whole of the UK.

Source: National Audit Office analysis of the Department of Health & Social Care's snapshot summaries of PPE stock

PPE obtained by the Parallel Supply Chain

2.10 Through the Parallel Supply Chain the Department ordered new PPE using framework agreements with existing suppliers to SCCL and by awarding contracts to new suppliers. Between February and July 2020, the Department procured 32.0 billion items of PPE at a cost of £12.5 billion (**Figure 8** overleaf).¹⁰ This compares with 1.3 billion items at a cost of £28.9 million over the same months in 2019. The Department's monthly spend on PPE peaked at £3.8 billion in June before falling to £1.6 billion the following month. More gloves were procured (13.9 billion) than any other type of PPE, while gowns and coveralls represented the greatest proportion of spend (27% of the total) during the period.

2.11 There were substantial increases in the unit cost paid for most types of PPE compared with the same period in 2019, ranging from a 166% increase for respirator masks to a 1310% increase for body bags (**Figure 9** on page 35). Had the Department been able to buy PPE between February and July 2020 at the same unit prices it paid between February and July 2019, then the overall expenditure would have fallen from £12.5 billion to £2.5 billion. However, in spring 2020 the Department was in the position of needing to buy huge volumes of PPE very quickly.

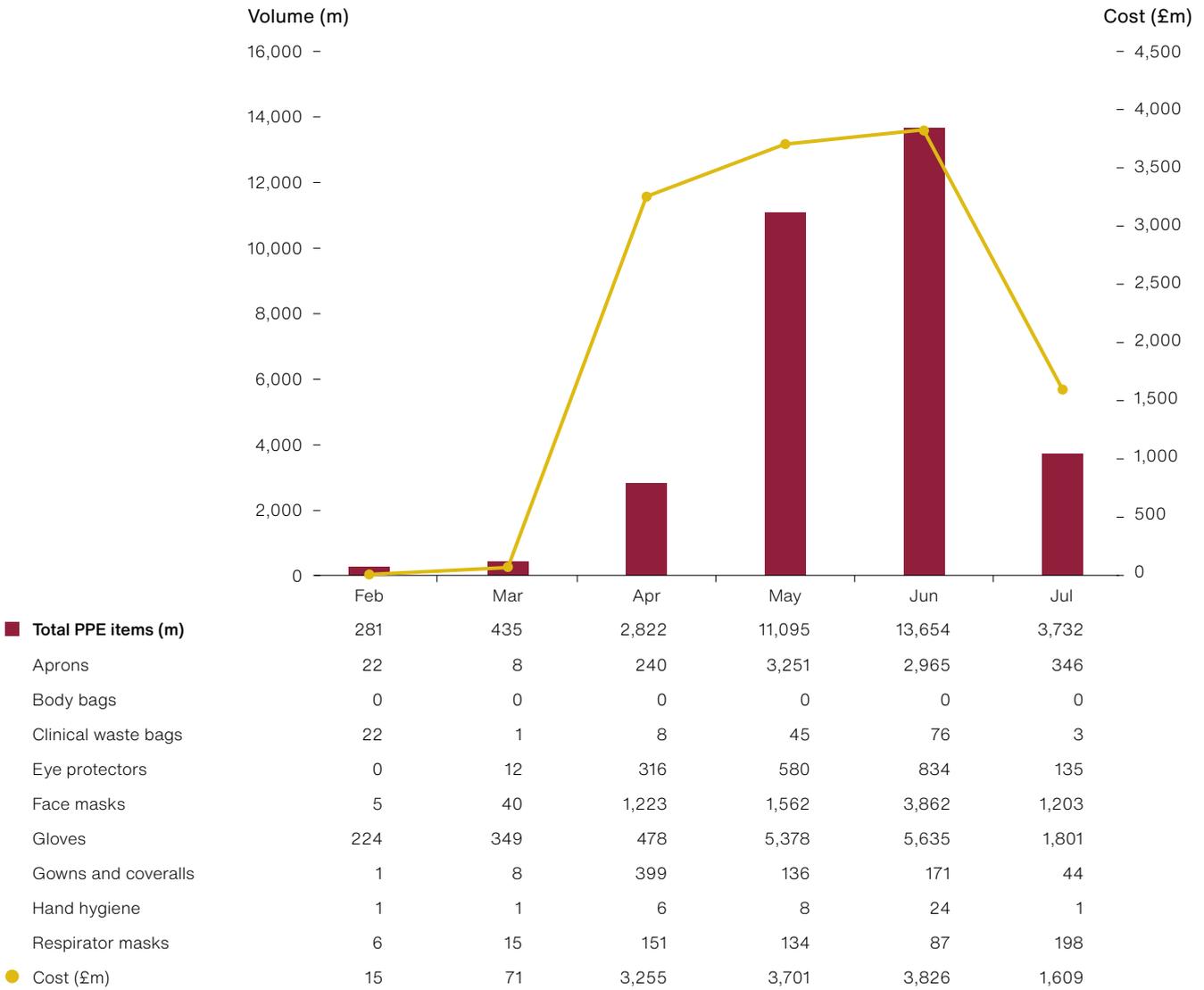
2.12 As it became clear that significant funding would be required to purchase PPE to manage the COVID-19 pandemic, the Department requested additional funds from HM Treasury. In July 2020, HM Treasury approved more than £15 billion for PPE in 2020-21. The Department has allocated £13.8 billion of this to PPE and £1.38 billion to freight and logistics costs.

¹⁰ This report has identified that, between February and July 2020, orders for PPE totalling £12.5 billion were made through the Parallel Supply Chain. We recently published *Investigation into government procurement during the COVID-19 pandemic*, which identified that the total value of PPE contracts awarded by government departments between January and July 2020 was £12.3 billion, based on contract data supplied by the Department of Health & Social Care and other departments. The difference is likely to be due to different populations, data sources, time periods, and time the information was obtained.

Figure 8

Volume and value of personal protective equipment (PPE) ordered by government, February to July 2020

Procurement of PPE grew rapidly in April and May, and peaked in June



Notes

- 1 Data shows the number of PPE items ordered through existing framework contracts or through new contracts awarded, by month, not the date the PPE was received.
- 2 Gloves are single items not pairs.
- 3 Totals may not sum due to rounding.

Source: National Audit Office analysis of Department of Health & Social Care information

Figure 9

Volumes ordered and unit prices of personal protective equipment (PPE), February to July 2019 and February to July 2020

The cost and volume of PPE ordered increased substantially during the pandemic compared with the same period in 2019

Type of PPE	Unit price in 2019 (£)	Unit price during the pandemic (£)	Percentage change in unit price (%)	Volume ordered in 2019 (m) ¹	Volume ordered during the pandemic (m) ¹	Percentage change in volume ordered (%)
 Aprons	0.02	0.05	193	78.4	6,832	8613
 Body bags	1.00	14.10	1310	0.2	1	173
 Clinical waste bags	1.00	0.09	-91	1.2	155	13,026
 Eye protection	0.60	1.82	203	0.3	298	116,160
 Face masks	0.11	0.40	258	6.0	7,895	130,698
 Gowns and coveralls	0.33	4.50	1277	1.4	760	54,433
 Gloves	0.02	0.12	519	1,167.8	13,866	1087
 Hand hygiene	1.12	6.14	450	1.5	41	2633
 Respirator masks	0.94	2.51	166	1.4	591	43,103

Note

- 1 The data show the number of PPE items ordered through Supply Chain Coordination Limited framework contracts in 2019 and 2020, plus new contracts awarded by the Department of Health & Social Care (the Department) in 2020.
- 2 Face visors were not bought in 2019. In 2020, 1,581 million were ordered at an average price of £1.02. These face visors are excluded from the analysis.
- 3 Unit price and volumes ordered in 2019 cover only the months of February to July.

Source: National Audit Office analysis of Department of Health & Social Care data

2.13 Suppliers already on SCCL frameworks accounted for 35% of the total volume of PPE bought between February and July, more than any other sourcing stream. However, new UK suppliers accounted for the greatest proportion of total expenditure at 41% (**Figure 10**). Taken together, UK-based suppliers and manufacturers accounted for 40% of the total volume of PPE sourced during the pandemic, and nearly 50% of the PPE sourced by value. The suppliers already on the SCCL frameworks were especially important in the first months of the response. By the end of May, government had ordered 7.3 billion items of PPE from these suppliers at a cost of £3.1 billion. This accounted for half of all PPE bought by 31 May (14.6 billion items at a cost of £7.0 billion). The first contract with a new supplier was awarded by the Department on 22 March.

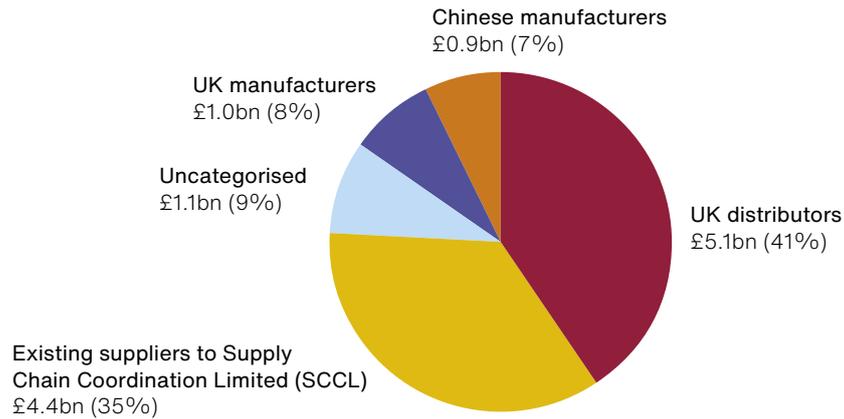
PPE manufactured in the UK

2.14 PPE manufacturing was not a significant UK market before the pandemic, with the high volumes and low margins meaning that it was more suited to production overseas. The Department aimed to identify, mobilise and support companies in the UK that could potentially produce PPE with the intention of increasing the short-term supply. It also told us that it aimed to improve the UK's longer-term resilience and capacity to respond to similar pandemics by building a domestic PPE manufacturing base. Between February and July 2020, the Department bought 3.8 billion PPE items at a cost of £1 billion from UK manufacturers, representing 12% of the total volume and 8% of the total spend. Suppliers' views of the Parallel Supply Chain were mixed. Textile industry organisations we spoke to told us that the initiative to encourage PPE manufacture in the UK had largely gone well because there was enough capacity and capability in parts of the UK. However, some other established suppliers considered they were unable to contribute because of the lack of support received during the procurement exercise.

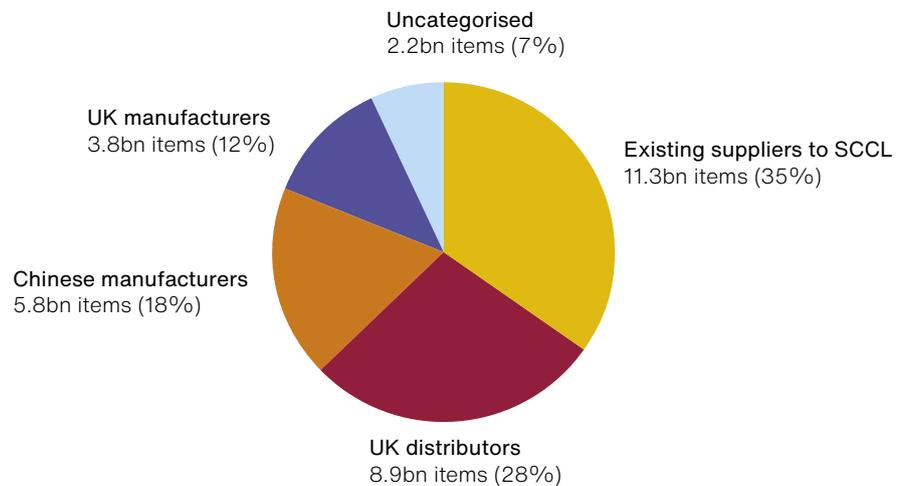
Figure 10

The value and volume of personal protective equipment (PPE) ordered through the Parallel Supply Chain, February to July 2020

£12.5 billion was spent on selected items of PPE from February to July



32.0 billion items of PPE were bought from February to July



Notes

- 1 The data show the number of PPE items ordered through existing framework contracts or through new contracts awarded by the Department of Health & Social Care (the Department), not the date the PPE was received.
- 2 Purchases before April were made by SCCL, or contracts awarded by the Department, both of which subsequently became part of the Parallel Supply Chain.
- 3 It is not possible to compare unit prices using this Figure because the mix of PPE items varies between sources.

Source: National Audit Office analysis of Department of Health & Social Care information

Contracts awarded by the Department through the Parallel Supply Chain

2.15 The media raised concerns over the propriety of some of government's PPE contracts, including over the suitability of supplier companies and potential conflicts of interest. There were also applications for a judicial review of three of the PPE contracts, challenging aspects of their award. We published a separate report in November examining government procurement during the pandemic, including of PPE.¹¹ This report therefore does not consider those aspects of procurement and focuses on how successful government's approach was in ensuring that providers had the PPE they needed.

2.16 Between 22 March and 31 July 2020, the Department awarded 322 new contracts for PPE, with a total value of £8 billion, across 151 suppliers (this does not include the PPE bought by SCCL through suppliers already on its frameworks). **Figure 11** shows the 10 suppliers which were awarded the highest total values of contracts.

2.17 In addition to the new suppliers, some existing suppliers with framework contracts with SCCL provided a lot of PPE. Between March and July 2020, orders of PPE totalling £10 million or more were made with thirty of these suppliers. The three suppliers from whom the highest values of PPE in the period were ordered were:

- Full Support Healthcare Limited (£1,717 million);
- Supermax Healthcare Limited (£366 million); and
- Guardian Surgical (£295 million).

2.18 The combination of volatile global markets and the Parallel Supply Chain's rapid pace of purchasing increased the risks to the quality of the equipment purchased because there were new suppliers that required checks, but less time to complete these checks. The Parallel Supply Chain put controls in place to manage the risk of buying (or distributing) equipment that did not meet the required standards. Items of PPE that could not be shown to meet requirements upon receipt were to be placed into quarantine, rather than issued to providers, until it could be shown that they did meet requirements. Government initially published its specifications for PPE on 30 March 2020, and revised them three times.

¹¹ Comptroller and Auditor General, *Investigation into government procurement during the COVID-19 pandemic*, Session 2019–2021, HC 959, National Audit Office, November 2020.

Figure 11

Suppliers awarded the highest total values of contracts for personal protective equipment (PPE), March to July 2020

The 10 largest suppliers were awarded 45 contracts worth £3.5 billion

Supplier	Number of contracts	Month of first PPE delivery	Type of PPE	Total value of contracts (£m)
Unispace Global	7	June	Face masks, gloves, coveralls	680
Uniserve	7	May	Face masks, gowns, aprons, face shields	489
PestFix	8	May	Respirator masks, face masks, gowns, aprons	350
Yancheng New Cloud Medical Equipment Co.	2	June	Gloves	314
Medicom	1	July	Respirator masks, face masks	307
Saiger	7	July	Goggles, face masks, gowns, gloves, hand hygiene	304
P14 Medical	3	June	Gowns, face shields	276
Worldlink ²	2	July	Goggles	258
Ayanda Capital	1	June	Respirator masks, face masks	253
Purple Surgical	7	May	Respirator masks, face masks, gowns, goggles	225

Notes

- 1 These are the value of contracts awarded. In some cases, the Department of Health & Social Care might not have taken up options within contracts, which could significantly reduce the value of orders placed under these contracts.
- 2 One of the Worldlink contracts was awarded jointly to Worldlink and Cardiatis.
- 3 For all these suppliers, deliveries have been made over several months.

Source: National Audit Office analysis of Department of Health & Social Care data on contracts awarded as part of government's COVID-19 response, up to 31 July 2020

2.19 We examined a small sample of individual contracts, chosen as potentially high risk, and identified two cases (totalling £214 million) in which the PPE will not be used for the original purpose. In both cases, the FFP2 respirator masks ordered and delivered were of the design agreed and complied with the BS EN149 standard. However, the masks did not meet government's published specifications at the time the contracts were signed, as these specifications required head straps. At that time, the specifications did not explicitly state that masks with ear-loops did not meet the requirement but did say that FFP2 masks required straps that could be tied around the back of the head. It may be possible to use the masks for other purposes or to resell them. The Department is in discussions with both suppliers. A lessons-learned report stated that all those involved in procurement must have access to the same set of clear, consistent and unambiguous specification documentation. The two cases we identified were:

- On 17 April, government contracted with PestFix to purchase 25 million FFP2 masks, which had ear-loops, for £59 million. After 600,000 masks had been delivered, the Department became aware of the issue and communicated it to PestFix. In place of the remainder of the order, the Department requested that PestFix instead supply Type IIR masks and PestFix agreed to vary the contract accordingly. PestFix has delivered 69% of this order to date and it is continuing to work with the Department.
- On 29 April, government contracted with Ayanda Capital to purchase 50 million FFP2 masks, which had ear-loops, for £155 million.

2.20 The problem of ear-loops on FFP2 respirator masks is likely to apply to tens of millions of similar masks from other suppliers. Most other types of PPE have also had some problems with compliance with technical standards. The Department told us that it had identified 195 million items which were potentially unsuitable, which was equivalent to around 1% of the items it had received to date. However, it has not provided us with sufficient information to be able to verify these figures because, it told us, this would compromise its ability to resell the PPE. We do not know which suppliers delivered this PPE, or whether the unsuitable items we are aware of are included. The Department has not calculated the total value of potentially unsuitable items, but this will amount to hundreds of millions of pounds.

2.21 Outside the Parallel Supply Chain, other bodies have faced issues with PPE compliance with standards. In April, the Royal Free Hospital NHS Foundation Trust placed several orders for gowns made by Turkish and Chinese manufacturers at a time when the supply of gowns to the Parallel Supply Chain was critical. The trust received funding from the Department and ordered the gowns for national stocks. In total, it purchased 1.9 million gowns at a cost of £10.5 million. One of its orders, on 24 April 2020, was for 600,000 gowns, for which it paid half the total price of £3.6 million in advance. There was an issue with 400,000 of these gowns and, once testing is complete, the trust will work with the Parallel Supply Chain and the supplier to reach a solution.

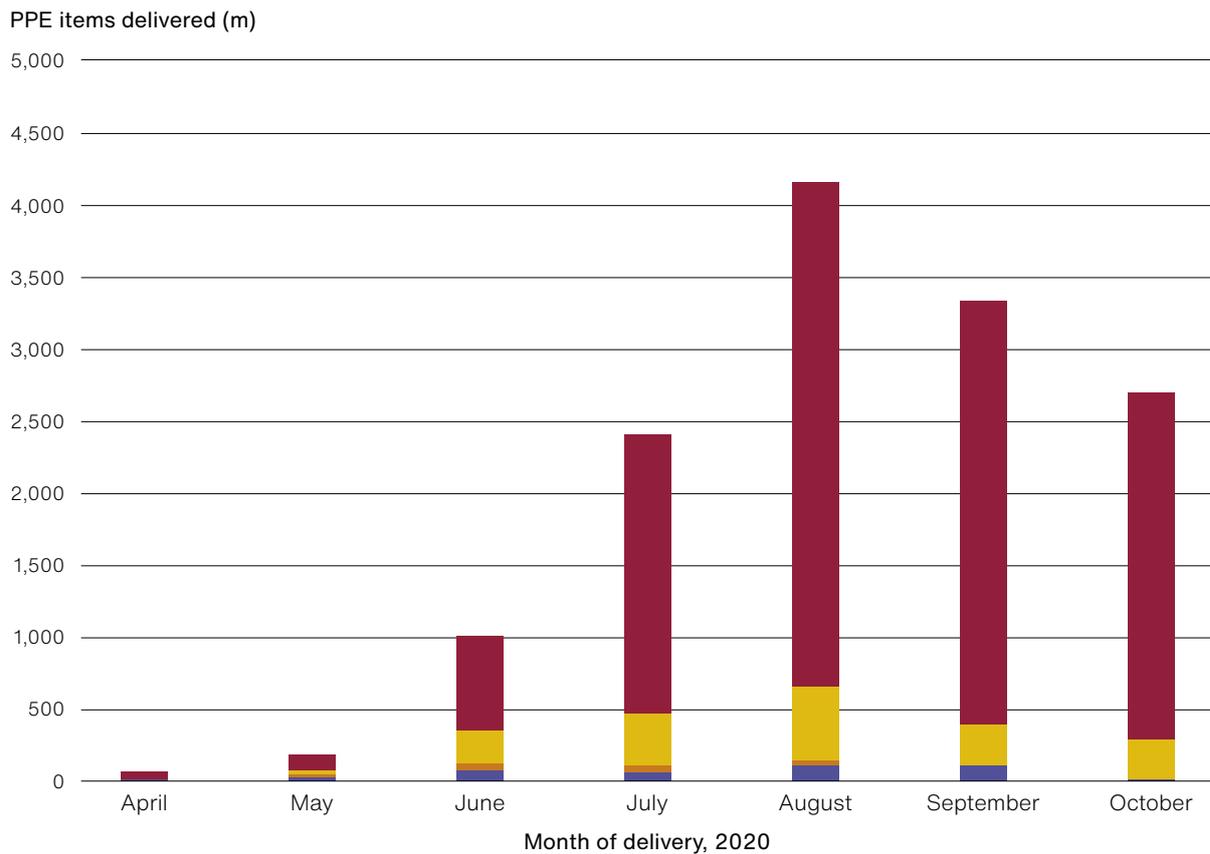
PPE received by the Parallel Supply Chain

2.22 Almost all the PPE was manufactured abroad and had to be shipped, flown or put on a train to the UK. Much of the PPE procured from new suppliers took a long time to be delivered to the Parallel Supply Chain's warehouses. **Figure 12** overleaf shows that new suppliers delivered relatively little PPE in April and May (235 million items across both months) with limited use of air freight in those months (about 14% of all PPE delivered, compared with 67% shipped). This was at the time when the health and social care sector was most critically short of PPE. SCCL's existing suppliers were able to deliver more PPE than new suppliers, amounting to an estimated 738 million items of PPE in April and May.

Figure 12

Items of personal protective equipment (PPE) received by the Parallel Supply Chain from new suppliers, by delivery method, April to October 2020

The Parallel Supply Chain received relatively little PPE (235 million items) from new suppliers in April and May



	April	May	June	July	August	September	October
Total	55	180	1,003	2,402	4,168	3,341	2,688
Sea	49	108	657	1,934	3,517	2,955	2,401
Road	0	27	230	363	517	287	273
Rail	-	17	44	47	28	-	-
Air	5	27	72	58	106	99	13

Notes

- 1 This analysis is based on estimated delivery date and the actual delivery date might have differed.
- 2 Totals may not sum due to rounding.

Source: National Audit Office analysis of Department of Health & Social Care data

PPE distributed by the Parallel Supply Chain

2.23 The Parallel Supply Chain distributed approximately 2.6 billion items of PPE between February and July. It has data on which organisations received PPE from 20 March (accounting for 2.3 billion of the 2.6 billion items). This shows that around 331 million items (14%) were distributed to adult social care by local resilience forums or wholesalers. This compares with 1.9 billion items (81%) sent to trusts (**Figure 13** overleaf).

2.24 The number of patients in hospital for COVID-19 peaked between 6 and 15 April. The Parallel Supply Chain did not have reliable knowledge of local stocks of PPE until 4 May, which in turn meant that its understanding of local need was limited. However, it did distribute PPE in response as part of its 'push' model (see paragraph 2.5) or if trusts informed it that they were close to running out of PPE.

Position for the winter months

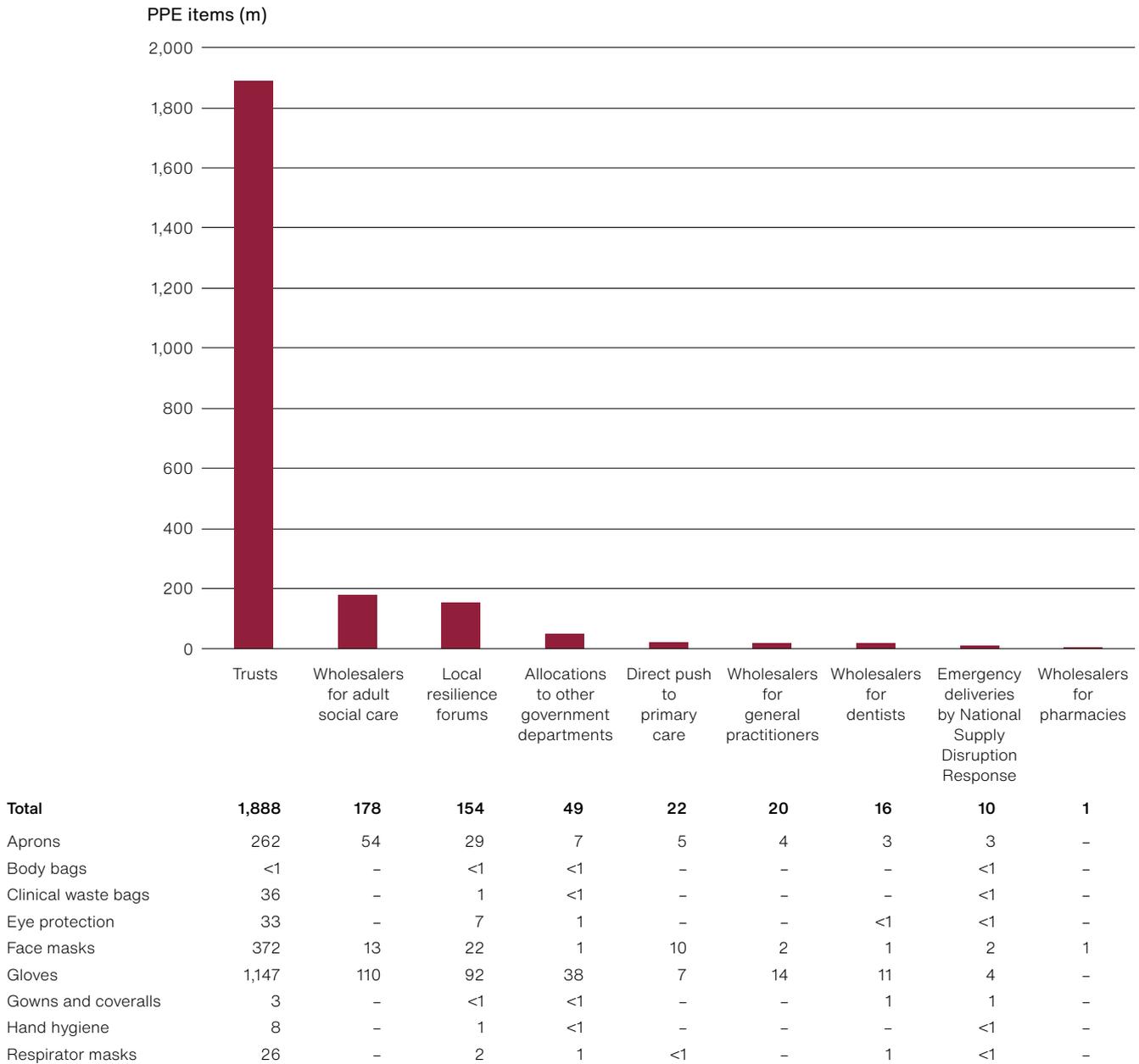
2.25 The Parallel Supply Chain has not yet received much of the PPE it ordered, with some of it not yet manufactured. Of 32 billion items of PPE ordered by the end of July 2020, 6.6 billion items (21%) had been received by 29 September and another 5.1 billion items (16%) were also in the UK but not yet with the Parallel Supply Chain. Two-thirds of items still to arrive in the UK were expected for delivery before the end of 2020. The Department expected large volumes to be delivered to the Parallel Supply Chain in October (3.9 billion items) and November (3.7 billion items). This has meant that the Department has been building up its stock of PPE, and it expects to have four months' worth by November.

2.26 However, the Parallel Supply Chain has ordered PPE that might provide stocks that would last far longer than four months. Between March and July, the volume of PPE that it distributed to front-line organisations averaged about 503 million items per month. There is a lot of uncertainty about future requirements for PPE. However, if this rate of distribution were to continue, then the 32 billion items that had been ordered by the Parallel Supply Chain by 31 July could last around five years (with variations across the different types of PPE). The Parallel Supply Chain's initial estimate of the PPE that would be required nationally anticipated an enormous increase compared with pre-pandemic use, but actual use has been lower than this (although still far higher than pre-pandemic use).

Figure 13

Distributions made by the Parallel Supply Chain between 20 March and 31 July 2020
(millions of items)

Most items distributed by the Parallel Supply Chain were to trusts



Notes

- 1 These data include PPE distributed by the online portal for primary care and social care. It is not possible to show the data separately, but 49 million items of PPE were delivered by the portal (including 48.5 million after 10 May).
- 2 Gloves are single items not pairs.
- 3 Totals may not sum due to rounding.

Source: National Audit Office analysis of Department of Health & Social Care data

Part Three

The experience of health and social care providers and their workforce

3.1 This part of the report considers the impact of personal protective equipment (PPE) shortages on health and social care organisations and their workforce. It also covers the guidance on the use of PPE issued by the Department of Health & Social Care (the Department) and its arm's-length bodies. The effectiveness of government's preparedness, procurement and distribution of PPE in health and care ultimately depends on whether the right PPE is available to protect health and care workers.

3.2 National and local organisations must perform a number of related roles effectively to ensure that the health and social care workforce has the PPE it needs and is trained in how to use it. For example, while the supply of PPE is an employer responsibility, during the pandemic, national bodies released PPE from the pandemic stockpile and (on 1 May) instructed NHS organisations not to procure PPE (unless from new, small, local suppliers). National bodies also issued guidance on PPE requirements and how to put the equipment on and take it off, while training in that guidance would have occurred within local organisations. To better understand health and care worker experience relating to PPE, it is therefore necessary to discuss these related elements together in this part.

Guidance for the use of PPE

3.3 To ensure that they are properly protected, front-line workers in health and social care use official guidance on infection prevention and control to understand what PPE is needed, and when and how to use it. Employers must also understand the requirements because they have a duty to protect the health and safety of their employees and must do whatever is reasonably practicable to achieve this. Guidance on infection prevention and control for COVID-19, which includes the use of PPE in healthcare settings, is issued jointly by the Department, Public Health England (PHE) and NHS England & NHS Improvement (NHSE&I) (and the public health bodies of the devolved administrations). Earlier versions of the guidance were published solely by PHE, with the first version published on 10 January. The guidance would need to be updated regularly, in particular to reflect an increasing understanding of a new virus including the realisation in early April that COVID-19 patients not displaying symptoms could transmit the virus to others. In producing the guidance, authors have access to advice from the Scientific Advisory Group for Emergencies and from the New and Emerging Respiratory Virus Threats Advisory Group. Separate guidance for the use of PPE in social care settings is published by the Department and PHE. By 31 July, the guidance had been updated 30 times – these were a mixture of significant and relatively minor changes.

Concerns over the guidance

3.4 Between January and 19 March, COVID-19 was classed in the UK as a High Consequence Infectious Disease (HCID), which meant that specific infection prevention and control measures were required. It was then declassified as more became known about the virus, in particular its relatively low mortality rate. As a result, the guidance changed from advising that anybody entering the room of an isolating patient wear a gown, long gloves, respirator masks (FFP3) and eye protection to tailoring the guidance to the setting and whether the patient was known or likely to have COVID-19.

3.5 Following declassification of COVID-19 as an HCID in March, some healthcare workers became concerned that the recommended PPE was not sufficient to protect them. The British Medical Association (BMA) warned that the PPE recommended by PHE provided less protection than that recommended by the World Health Organization. Specifically, they felt that workers in all healthcare settings should wear gowns (rather than aprons) and eye protection. PHE said its guidance was informed by clinicians and other experts, and that its long-standing policy was to use aprons and have clinicians 'bare below the elbows' to prevent the spread of hospital-acquired infections. It also said that doctors should make a risk assessment as to whether they needed eye protection.¹²

¹² House of Commons Health and Social Care Committee, *Oral evidence: Preparations for coronavirus*, Session 2019-2021, HC 36, 26 March 2020.

3.6 The Health and Safety Executive (HSE) is the regulator for PPE. After reviewing the evidence on the effectiveness of aprons and gowns, it concluded, “Whilst both aprons and gowns appear suitable for caring for patients with suspected COVID-19 there is weak evidence to suggest that gowns appear to offer more protection”. It also found that there were no published studies on eye protection. Some stakeholders told us that there were some concerns that guidance might have been influenced by the PPE that government was able to provide. And a monthly briefing on PPE stocks, produced by the Department, referred to a planned action to manage shortages of gowns, goggles, and FFP3 respirator masks that was to “reduce demand with policy”. However, PHE and NHSE&I told us that they did not downgrade protection in the guidance to match the PPE available. NHSE&I also said that the guidance went beyond the recommendations of the World Health Organization in some aspects: specifically, it recommended FFP3 respirator masks that offer more protection than FFP2 respirator masks (although in practice the Parallel Supply Chain did buy and distribute FFP2 masks when FFP3 masks were unavailable).

3.7 Stakeholders raised other concerns about the guidance. Representatives of the social care sector, in particular, considered that the guidance did not fully reflect their needs. **Figure 14** overleaf sets out NHS and social care representatives’ views on government guidance.

Organisations’ experience

Trusts

3.8 The Department’s information about the PPE that was required and held by each trust was initially very limited, so it used a ‘push’ model to distribute PPE stock to trusts. Initially, trusts were each given the same amount of PPE. They told us that in April and May they did not know which PPE they would receive and that what they received often did not match what they required. None of the trusts that we spoke to reported that they had entirely run out of any type of PPE. They told us that they still needed to buy substantial volumes of PPE to supplement what was provided by the push supplies, and that local organisations frequently swapped PPE or donated it to other organisations (arrangements known as ‘mutual aid’) to ensure that they had what they needed.

3.9 PPE ordered by trusts increased sharply in February and peaked at approximately 546 million items, at a cost of £32 million, in March 2020 (this was almost three times the volume they had ordered in March 2019). Trusts subsequently ordered around 364 million items of PPE in April 2020 (a 27% increase on April 2019), but in May they ordered only 130 million items (a 56% decrease on May 2019). This followed an instruction from the Department and NHSE&I that (to prevent competition between NHS bodies increasing prices) trusts should only buy PPE from “new, small, local suppliers”.¹³

¹³ PPE ordered by trusts is based on purchase orders raised by the trusts. The number of items ordered may be understated if trusts erroneously recorded a pack of items as a single item - for example, recording a pack of 30 face masks as one item rather than 30 items.

Figure 14

NHS and social care representatives' views on government guidance for personal protective equipment (PPE)

NHS and social care providers and their workforces were critical of government guidance

NHS representatives

Social care representatives

Availability

Initially there was no guidance for social care.

Communication

Communication of frequent changes to the guidance was poor.

Communication of frequent changes to the guidance was poor.

Changes were made in the evening, or just before/during the weekend, and nobody notified social care providers when important changes were made.

Guidance was sometimes contradictory.

The guidance terminology was tailored to the NHS, not social care, and it was unclear where to turn for advice on implementation.

Content

National bodies treated these changes as a technical exercise without considering the impact on trusts and their workforce.

Concern that the guidance for social care was of a lower standard than for the NHS (in particular that masks and gowns were recommended for the NHS but not for social care) and disagreed with guidance that PPE could be used to care for more than one person.

Clinicians lost confidence, fearing that guidance was changed because PPE was unavailable.

Concern that guidance did not recommend the use of gowns and eye protection in many settings (GPs in the community, accident and emergency departments).

There were gaps in the guidance – information for domiciliary care and learning disabilities was very limited and there was no guidance for those in supported living.

Source: National Audit Office interviews with three NHS representative groups and four adult social care representative groups and a provider

Adult social care

3.10 Before the pandemic, adult social care providers bought PPE directly from suppliers. However, the PPE market stopped functioning normally during the pandemic and providers obtained PPE from suppliers, local authorities and local resilience forums. Adult social care providers at risk of having to suspend their services due to PPE shortages could report this to the Department's National Supply Disruption Response (NSDR) service. The Department then aimed to arrange immediate PPE distributions for emergency requests. Adult social care providers accounted for 43% of these calls for PPE. However, between March and September, almost two-thirds of all calls to the NSDR service by both NHS and social care providers who needed more PPE resulted in them being given information and not PPE. On 10 July 2020 the NSDR service reported that it had taken an average of between two and three days to resolve calls received in the preceding 12 weeks.

3.11 None of the social care providers and their representative organisations we spoke to knew of any adult social care provider running out of PPE completely. However, they noted that, if a provider had run out of PPE, it might be disinclined to admit to that because of the reputational risk. Many providers said they came extremely close to running out, which created uncertainty and stress. Data collected by the Care Quality Commission (CQC) showed that, throughout April and May 2020, more than a fifth of domiciliary care providers had no more than a week's supply of PPE.

3.12 All four of the social care associations and providers we spoke to considered that they had experienced insufficient support from government in obtaining PPE. The adult social care sector received approximately 331 million items of PPE between 20 March and 31 July, compared with 1.9 billion received by trusts, although PPE requirements may differ between settings. Many social care providers reported that it was only due to their own considerable efforts to source PPE that they were able to continue providing services. Providers told us that they often found it difficult to find suppliers that could provide PPE that met standards and, when they did, prices were hugely inflated. Some reported feeling pressured to pay upfront, and we also heard that some suppliers offered PPE that did not meet standards. Providers' views on the support provided by local resilience forums was varied. Some reported that items received through this route were poor quality, while others felt they improved over time.

3.13 The Parallel Supply Chain officials told us that it prioritised trusts initially. This was because trusts' usual route of procuring PPE (the NHS Supply Chain) was unable to provide PPE while other providers could still obtain PPE through their usual routes (private sector suppliers); and because workers in trusts were more likely to come into contact with COVID-19 patients and to perform an aerosol-generating procedure. **Figure 15** overleaf shows the PPE distributed to trusts and social care providers against their required PPE (as estimated by the Parallel Supply Chain), between 20 March and 31 July. Across all types of PPE over the period, trusts received 80% of their estimated requirement whereas social care providers received 10%. The Parallel Supply Chain told us that its estimate was a reasonable worst-case scenario, and therefore the estimated need might be overstated.

3.14 The Local Government Association (LGA) estimated the social care sector would need PPE costing £4.2 billion between April and September, with care homes accounting for three-quarters of this amount and the remainder accounted for by providers of home care and supported living services. This estimate did not take account of payments made to providers by councils or the provision of free PPE.

Figure 15

Personal protective equipment (PPE) distributed to, and required by, trusts and social care providers between 20 March and 31 July (millions of items of PPE)

Trusts received far more of their estimated requirement than social care providers across all types of PPE

Type of PPE	PPE distributed to trusts ⁴	Estimated requirement for PPE across health	Proportion of required PPE distributed to trusts ⁵	PPE distributed to social care ⁶	Estimated requirement for PPE across social care	Proportion of required PPE distributed to social care
 Aprons	262	765	34%	83	1,416	6%
 Body bags ²	<1	<1	157%	<1	–	Not applicable
 Clinical waste bags	36	43	84%	1	–	Not applicable
 Eye protection	33	130	25%	7	260	3%
 Face masks	372	212	175%	35	281	12%
 Gloves ³	1,147	1,154	99%	202	1,416	14%
 Gowns and coveralls	3	28	11%	<1	22	0%
 Hand hygiene	8	–	Not applicable	1	–	Not applicable
 Respirator masks	26	28	93%	2	22	9%
Total	1,888	2,361	80%	331	3,418	10%

Notes

- The figure shows the PPE required for 133 days, based on Parallel Supply Chain's estimated 90-day requirement (as at 21 April) and the actual PPE distributed to local organisations between 20 March and 31 July. The Parallel Supply Chain told us its estimate was a reasonable worst-case scenario, and therefore the estimated need might be overstated. And, for some local organisations their estimated PPE requirements might in part be met by PPE stocks held locally or PPE which they procured themselves.
- Body bags are rounded to <1 but the actual percentage, not based on rounding, is shown in column 'Proportion of required PPE distributed to trusts'.
- Gloves are single items not pairs.
- Distributions to trusts include a very small volume of PPE delivered to other healthcare settings.
- Trusts PPE requirements are included in the estimated requirement across all healthcare settings. Therefore, this table understates the proportion of their required PPE that trusts actually received.
- The actual PPE distributed to social care providers includes PPE provided to local resilience forums and wholesalers for adult social care by the Parallel Supply Chain.
- The Parallel Supply Chain told us that it prioritised trusts initially because: a) their usual route of procuring PPE was unable to provide PPE; b) social care providers could still purchase PPE from their private sector suppliers; and c) trusts' workforces were more likely to come into contact with COVID-19 patients and more likely to perform an aerosol-generating procedure (which can result in the release of airborne particles from the respiratory tract).
- Totals may not sum due to rounding.

Source: National Audit Office analysis of Department of Health & Social Care data

3.15 By September, government had allocated non-ringfenced funding of £3.7 billion to local authorities to support adult social care. In May, government also made £600 million available through its Infection Control Fund. This funding is ring-fenced specifically for care homes and aims to reduce the rate of COVID-19 transmission between care homes and their workforces. The Department has informed stakeholders that the Infection Control Fund is to help care homes manage the additional pressures falling on them from enhanced infection control measures that increase staffing costs but that it did not include costs for PPE. In September, the Department announced an additional £546 million for the Infection Control Fund and free PPE for care homes as part of its plans to protect care homes over winter.

3.16 There are concerns in the sector that falling income and rising costs could affect providers' financial resilience for some time to come. The Office for National Statistics' provisional figures on deaths involving COVID-19 in the care sector show that there were 66,507 care resident deaths in England and Wales between 1 March and 12 June 2020, of which 19,394 involved COVID-19. This compares with 37,431 deaths over the same period in 2019. Stakeholders told us that families of elderly or vulnerable relatives were now less willing to place relatives into care homes because of a perceived increased risk of infection. The LGA estimates that the adult social care sector has foregone £525 million in lost revenue between April and September, while at the same time there have been additional costs in the region of £6.6 billion. It estimates that most of this was for PPE, and that £1 billion was for the cost of staff absence.

Health and care workers' experience

3.17 All workers in health and social care should have had access to appropriate PPE and training for their setting, both to reduce their own risk of acquiring COVID-19 and the related risk of onward transmission. A meta-analysis of studies on the effects of viral epidemics on healthcare workers found that those in contact with affected patients experience greater levels of stress and psychological distress; and that strategies to minimise these negative effects include clear communication, enforcement of infection control and adequate supplies of PPE.¹⁴ It is reasonable to expect that concerns among health and care workers about becoming sick or infecting others would be mitigated by the availability of PPE, consistent communication on PPE guidance and clear training on the safe use of PPE.

14 S. Kisely et al, Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis, *British Medical Journal*, May 2020.

Issues in PPE availability and training

3.18 Concerns about the PPE situation in adult social care in late March were reported to the Secretary of State in a letter from the LGA and the Association of Directors of Adult Social Services. They stated that “we continue to receive daily reports from colleagues that essential supplies are not getting through to the social care front-line. Furthermore, national reporting that equipment has been delivered to providers on the CQC-registered list does not tally with colleagues’ experience on the ground”.

3.19 Insight into the PPE situation experienced by NHS workers in April 2020 was provided by surveys of their members undertaken by the BMA, the Royal College of Nursing (RCN) and the Royal College of Physicians (RCP). Insight into adult social care workers’ experience was provided by a survey from Unison in May. The respondents to these surveys were nurses, doctors and care workers who were members of these organisations and chose to respond. As they were self-selecting, rather than a random sample, we cannot know how representative these experiences are of the whole NHS and adult social care workforce. At least 30% of respondents in each survey (**Figure 16**) reported having insufficient PPE of some description or insufficient PPE training. For example, 39% of doctors (520 out of 1,350) responding to the RCP’s survey reported not always having access to eye protection when in contact with possible or confirmed COVID-19 patients. When these respondents reported that they had insufficient access to PPE, this indicates a real or perceived increased risk of transmission for at least these doctors, nurses and care workers. The survey findings were supported by other evidence and the limitations of the evidence used are discussed in Appendix Two. We also spoke to representatives of both health and care workforces. They reiterated what these surveys reported - that some front-line workers did not have the PPE they needed. Similar evidence was provided by witnesses at a hearing of the Health & Social Care Select Committee on 26 March. During this hearing, the BMA differentiated between shortages of PPE and concerns about the adequacy of PPE, saying both were a concern.

Figure 16

Surveys of front-line workers regarding access to selected types of personal protective equipment (PPE), April and May 2020

British Medical Association (BMA), Royal College of Nursing (RCN), Royal College of Physicians (RCP) and Unison surveys of their members show that at least 30% of respondents experienced problems in at least one aspect of PPE availability or training

		Self-selecting respondents reporting insufficient PPE/PPE training							
		In a high-risk environment:			In an environment with possible or confirmed cases:				
		BMA ¹ (%)	RCN ² (%)	RCP ³ (%)	BMA ¹ (%)	RCN ² (%)	RCP ³ (%)	Unison ⁴ (%)	
	Eye protection	-	22	-	88 (456/516)	30	39 (520/1,350)	32	
	Face mask	-	-	-	62 (320/518)	27	16 (215/1,354)	32	
	Gloves ⁵ (most available type)	15 (74/501)	4	4 (19/509)	23 (119/515)	3	2 (22/1,358)	9	
	Gown	43 (215/503)	30	31 (156/506)	-	-	-	-	
	Respirator mask	54 (271/504)	27	19 (95/505)	-	-	-	-	
	Not fit-tested for PPE	-	-	25 (125/508)	-	-	36 (384/1,063)	-	
	No training on safe donning and doffing	17 (169/974)	34	-	44 (210/481)	46	-	-	

Notes

- The BMA survey of doctors was conducted from 3 to 6 April 2020. Numbers and percentages are given for each question and are of UK respondents. They are respondents to the BMA survey answering “shortages” or “none at all” to the questions “Do you currently have adequate supplies or shortages of the following PPE when working in an AGP (Aerosol Generating Procedure - indicating the highest risk) area?” and “We next want to ask about PPE in other (non-AGP) settings to be used by healthcare workers who are in contact with patients with possible or confirmed COVID-19. Do you currently have adequate supplies or shortages of the following PPE?” And respondents answering “None” to the question “Have you received advice or training on best practice in putting on, correct fitting, and taking off of PPE?” in AGP and non-AGP settings. AGP is an aerosol-generating procedure, a medical procedure that can result in the release of airborne particles (aerosols) from the respiratory tract.
- The RCN survey of nurses was conducted from 10 to 13 April with 4,446 respondents working in high-risk environments and 11,314 respondents working with possible or confirmed cases, and are of UK respondents. They are respondents to the RCN survey answering “There is not enough for me to use” to the question “Has your employer provided you and your colleagues with enough [type of PPE]?”. And respondents answering “No” to the question “Have you received training on donning, doffing and disposing of standard PPE?”.
- The RCP survey of doctors was conducted from 22 to 23 April 2020. Numbers and percentages are given for each question and are of England respondents. Respondents to the RCP survey answering “Sometimes”, “Rarely” or “Never” to the questions “Based on the current PHE PPE guidance are you able to access the following AGP PPE kit when you need it?” and “Based on the current PHE PPE guidance are you able to access the following PPE kit when you need it?”. And respondents answering “No” to the question “Are you able to, or have you been fit-tested for the PPE you are currently using?”.
- The Unison survey was conducted from 1 to 15 May with 1,079 responses from care worker members in England. They are respondents to the Unison survey answering “No” to the question “Has your employer provided you and your colleagues with enough: [type of PPE]?”.
- Gloves were consistently the most available (lowest reported shortage) type of PPE across surveys. They are included in the table to demonstrate the variation in reporting of issues with PPE within individual surveys, and for comparison with the selected types of PPE where reports of unavailability are higher.

Source: National Audit Office analysis of British Medical Association, Royal College of Nursing, Royal College of Physicians and Unison survey data

3.20 Through these surveys, health and care workers reported issues with the availability of PPE, the suitability of the PPE supplied, their confidence in the PPE guidance and the potential links to contracting or transmitting the virus in a hospital. These quotes are from clinicians in different parts of England:

- “We were slow to wear fluid-repellent masks in clinical areas and perhaps for this and other reasons have had people contract COVID-19 in the areas reserved for non-COVID patients. I think early guidance to treat everyone as a possible carrier would have helped limit cross infection. I have seen most of the ward become COVID-19 positive which is very frustrating. Lots of nursing and therapy staff are off sick. A high number of consultants were off sick early on.”
- “Equipment is available to fulfil Public Health England guidance, but from the numbers of staff developing sickness, it would seem that this is not adequate. I do not feel that a surgical mask offers much protection when seeing a coughing patient in an enclosed space.”
- “Don’t think we actually are short of oxygen or PPE but people are trying to use less just in case. It’s very difficult to establish the truth, either locally or nationally.”
- “Although we have sufficient PPE supplies I have had no training at all in its use.”

3.21 The BMA and RCN repeated their surveys, and these suggested that PPE shortages were less of a concern in May. For example, responses to the BMA survey of 14 May showed that 28% of respondents in England reported a shortage of gowns, compared with 43% in the April survey, and 31% reported shortages of eye protection (goggles) in May, compared with 65% previously. Similarly, the RCN survey showed that, by 11 May, the percentage of respondents who reported shortages of eye protection was 12% compared with 30% in April, and reports of shortages of face masks had moved from 27% in May to 11% in April. However, as noted in paragraph 3.19, these surveys were not random samples and so the results should be treated with caution.

Health and care worker deaths

3.22 A number of health and care workers have acquired COVID-19. It is possible that some of these workers contracted the virus through their work, but it is difficult to know where and how the virus was transmitted, and informed judgements need to be made on a case by case basis. In reporting the following information, we do not imply evidence of a link between COVID-19 deaths or infections and PPE. Further work would be needed to better understand any role that PPE, as part of overall infection prevention and control measures, may have played. Employers have a duty to report cases of, and deaths from, diseases that occur in the workplace (including COVID-19) to the HSE. The HSE publishes data based on these reports. This shows there were 8,152 infections of COVID-19 and 126 deaths among health and care workers in Great Britain between April and October 2020, when the employer considered that it was reasonable to expect that a work-related exposure was likely to have been the cause (**Figure 17** overleaf). By 7 October, the NHS and Social Care Coronavirus Life Assurance Scheme, covering deaths of workers in front-line health and care roles in England and Wales, had agreed 167 applications where it was likely that the individual contracted coronavirus in the course of their work.

3.23 The Department's position is that any systemic failures, for example relating to the availability or use of PPE, that contributed to deaths will be highlighted through existing processes. It told us that any work-related deaths of health and social care workers as a result of COVID-19 will be scrutinised by medical examiners and may be referred to the coroner. From July 2020, trusts have been formally directed to ensure the scrutiny of such deaths.¹⁵

Figure 17

Employers' notifications of COVID-19 infections and deaths,
10 April to 17 October 2020

Employers have reported that occupational exposure is reasonably expected as the cause of 8,152 COVID-19 infections and 126 deaths of health and care workers in Great Britain

Industry sector (as reported by employer)	Total COVID-19 notifications	Of which:	
		Fatal notification	Non-fatal notification
Human health activities	4,372	73	4,299
Residential care activities	3,531	49	3,482
Social work activities without accommodation	249	4	245
Total health and care	8,152	126	8,026
All other industries	3,126	36	3,090
Total	11,278	162	11,116

Notes

- 1 Worker COVID-19 disease reports made by employers to the Health and Safety Executive (HSE) and local authorities by disease severity and industry sector, 10 April to 17 October 2020.
- 2 HSE reviewed a sample of reports coded by employers to Standard Industrial Classification 96 (other personal service activities), 55 (accommodation) and 84 (public administration and defence; compulsory social security) and found that many of them should have been recorded under residential care or social care activities.

Source: HSE, *Management information: Coronavirus (COVID-19) disease reports*, published 26 October, accessed 5 November 2020

Disparities in risks and outcomes

3.24 PHE published its report on *Disparities in the risk and outcomes of COVID-19* in June, highlighting that once people were diagnosed with COVID-19 there were disparities in outcomes within categories such as age, sex, deprivation and ethnicity.¹⁶ PHE's analysis found higher age-specific mortality rates for males than females, higher mortality rates in more-deprived areas when compared with less-deprived areas, and higher mortality rates for people of Black, Asian and minority ethnic (BAME) groups when compared with white ethnic groups.

3.25 All workers in health and care should have access to appropriate PPE and PPE training to reduce their own risk of getting COVID-19. If they do not, then there is a risk of adverse outcomes for themselves and others because of potential onward transmission. PHE's report highlights that the risk of adverse outcomes for individuals getting COVID-19 varies depending on their characteristics. Additional barriers to people accessing appropriate PPE, relating to these characteristics, will increase the COVID-19 risks for these individuals.

3.26 An RCN survey of 5,023 nurses (of whom 82% were from a white background and 14% from a BAME background) conducted in May 2020 found differences, by ethnicity, in the experience of accessing appropriate PPE. Proportionately, workers from BAME groups reported having less access to PPE (49% of BAME nurses reporting an adequate fit-test for a respirator) than did white respondents to the same survey (74%). An RCP survey, also from May 2020, found that, of 1,241 respondents, 33% of BAME respondents felt that they did not have the PPE they needed compared with 14% of non-BAME respondents. The respondents to these surveys are self-selecting, and there may be differences such as location which would affect the findings of this survey.

3.27 PHE's stakeholder engagement to better understand the impact of COVID-19 on BAME groups reported deep concerns about the support that BAME workers in health and care settings received, stating that "it was recognised that a lot has been done since the start of the pandemic to improve access to PPE and mitigate risk, but concerns were expressed that these safeguards were not applied equally across ethnic groups."¹⁷ It is essential that PPE is available equally across workers in the same environment.

¹⁶ Public Health England, *Disparities in the risk and outcomes of COVID-19*, June 2020.

¹⁷ Public Health England, *Beyond the data: Understanding the impact of COVID-19 on BAME groups*, June 2020.

Part Four

PPE strategy – risks and practical concerns

4.1 In September 2020, the Department of Health & Social Care (the Department) published its PPE strategy.¹⁸ Much of the document is the Department's description of how events unfolded earlier in 2020. This Part of our report does not look at the past, but instead describes the plans within the new strategy for the period September 2020 to March 2021 and identifies some risks and concerns which the Department will face in implementing it.

The Department's PPE strategy

4.2 Under the strategy, the Department will provide PPE to all health and social care providers. The strategy describes government's preparation for a potential second wave of COVID-19, or other concurrent pandemic, alongside the expected winter pressures on health and care. It states that the Department is confident that it has enough PPE for this winter and that it can distribute it effectively. It aims to ensure a resilient security of supply of PPE for a second wave of COVID-19. It has four components (paragraphs 4.3 to 4.6).

Supply

4.3 The Department intends to further develop its understanding of the PPE volume requirement in health and care through its requirement modelling. It will build up the central stockpile to hold four months' supply by 1 November 2020. Local resilience forums have been provided with up to a week's supply of FFP3 respirator masks and a month's supply of other types of PPE in the event of disruption to distribution. It expects these changes to result in a substantial reduction in the number of calls from providers to the National Supply Disruption Response hotline.

¹⁸ Department of Health and Social Care, *Personal Protective Equipment (PPE) Strategy: Stabilise and build resilience*, September 2020.

Distribution

4.4 The Department will distribute PPE directly to NHS trusts and other government departments, and to other health and care settings in England (when demand is greater than their business-as-usual requirements), via the PPE portal.

UK manufacturing

4.5 The Department is intending to increase the resilience of its supply chain, reducing its dependence on PPE manufactured in China. Its actions to achieve this include a mix of UK manufacturing and developing stronger relationships with other overseas markets.

User needs

4.6 The Department wants to better reflect user need and preference in PPE provision. For example, NHS England & NHS Improvement (NHSE&I) has launched a project to better understand individual requirements for FFP3 respirator masks. These did not fit different face shapes or account for staff with religious headwear or facial hair. Subsequently, NHSE&I has set up a group to work with manufacturers to design FFP3 respirator masks to improve mask fit.

Long-term risks to supply resilience

4.7 We have conducted a desk-based review of the PPE strategy to consider the long-term risks to supply resilience (post-March 2021) and the immediate ongoing practical concerns.

4.8 The Department is yet to determine the approach beyond March 2021, so the strategy contains a list of open questions about the appropriate form of any future PPE supply-chain organisation, how to incentivise a UK manufacturing base for PPE, and how to ensure long-term resilience through being able to scale-up supply. It will have to develop governance and accountability arrangements and decide on the appropriate organisational form and resourcing.

4.9 The context for the long term is that the scope for massive demand for all types of PPE will continue as long as COVID-19 can spread exponentially, and for specific types of PPE will continue as long as COVID-19 results in people needing intensive care in hospital. Other factors determining demand will be the extent of any longer-term immunity for people previously infected, the efficacy of any vaccine and, ultimately, whether it will be possible to globally eradicate the virus.

4.10 With these factors in mind, we have identified three main long-term risks to supply resilience:

- The strategy states that UK-based supply is anticipated to meet 70% of forecasted demand in England in December for all types of PPE excluding gloves, up from just 1% before the pandemic, and the Department has confirmed that 'UK-based supply' is synonymous with manufacturing in the UK. However, it is not transparent what the forecast level of demand for PPE is in December and how this compares with the peak of the pandemic in April 2020. Furthermore, if the amount of stockpiled PPE does last for years (paragraph 2.26), then that will limit the domestic market that new UK manufacturers can sell into.
- The likely high prices of UK-manufactured PPE compared with global market prices might be a challenge to the Department and providers buying PPE beyond the contracts awarded during the pandemic. There might be a trade-off between the relative risks of COVID-19 and other novel infectious diseases or pandemic influenza, and any increase in costs. The Department told us that its price analysis suggests that across almost all types of PPE, UK manufacturing of it can be competitive and will reach parity with imported prices.
- If the procurement model returns to a decentralised system after March 2021, the Department will need sufficient incentives in place for NHS trusts and other providers to buy UK-manufactured PPE. It is possible that state-aid rules, which are intended to prevent distortion of trade and competition, will constrain the Department's ability to develop such incentives.

Immediate practical concerns

4.11 It is unclear whether there are sufficient actions in the strategy to properly learn from health and care workers infected during the first wave of COVID-19, when it was estimated that at least 10% of infections in England were among patient-facing healthcare workers and resident-facing social care workers.¹⁹ The strategy refers to women and black, Asian and minority ethnic (BAME) individuals having reported practical difficulties when using some PPE, and actions to start to address this with manufacturers (paragraph 4.6). These individuals make up a substantial part of the workforce, which makes this a major problem. For example, women make up 89% of NHS nurses, 84% of adult social carers and 46% of NHS doctors. And BAME individuals make up 42% of NHS doctors, 25% of NHS nurses and 22% of adult social carers.

19 Royal Society, *Scoping Report on Hospital and Health Care Acquisition of COVID-19 and its Control*, July 2020.

4.12 Given the risk of serious consequences for individual health and care workers (or other people who directly acquired COVID-19) because of insufficient amounts of PPE, PPE that did not fit or insufficient training, the effectiveness of the Department's response would likely be enhanced by proactive attempts to identify PPE failures that have occurred and to learn from them (paragraph 3.23). Furthermore, in the event of future emergencies that require acute shortages guidance to be reinstated, understanding how guidance was applied the first time may help the Department and its arm's-length-bodies to develop more effective guidance and plans. We also note that, in a health emergency, providers might have disincentives to report a lack of PPE – for example, to avoid consequences such as the requirement to cease providing services.

4.13 We have previously highlighted the importance of high-quality information in government and that data systems are often inadequate to inform evidence-based decisions.²⁰ However, the strategy does not refer to systematic actions to use information to develop a better understanding.

²⁰ Comptroller and Auditor General, *Challenges in using data across government*, Session 2017–2019, HC 2220, National Audit Office, June 2019.

Appendix One

Our audit approach

1 This audit examined the supply of personal protective equipment (PPE) as part of the Department of Health & Social Care's response to COVID-19 in 2020. It reviewed:

- the roles and responsibilities for managing PPE stockpiles, and for supplying the NHS and social care sector with PPE before the pandemic;
- government's preparations for managing PPE between the pandemic emerging in other countries and arriving in the UK;
- government's response when problems arose with PPE supply and the cost of this response; and
- the new PPE strategy.

2 Our audit approach is summarised in **Figure 18** on pages 63 and 64 and our evidence base is described in Appendix Two.

Figure 18

Our audit approach

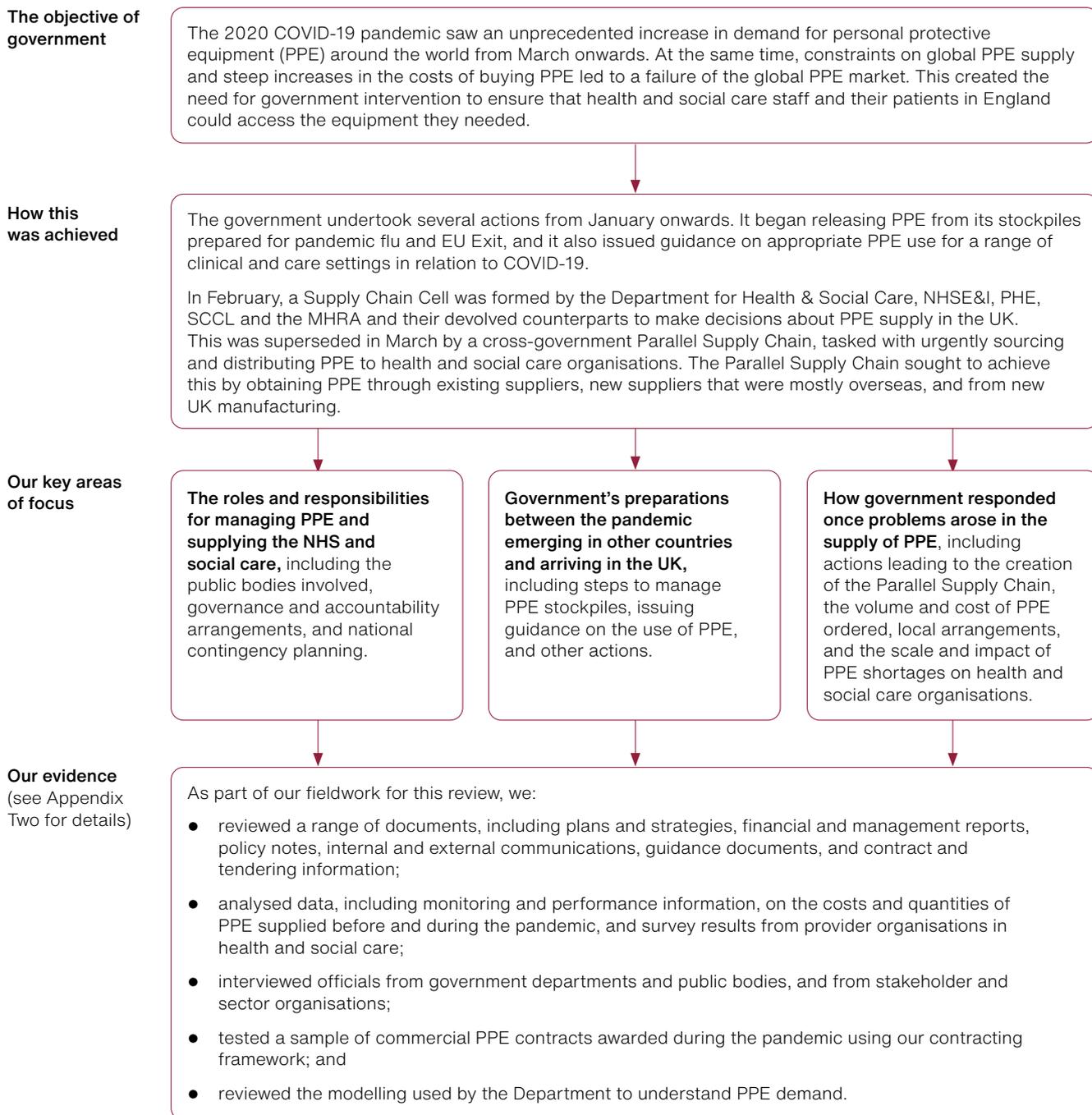


Figure 18 *continued*

Our audit approach

Our conclusions

Government's response saw the Parallel Supply Chain's workforce, and procurement staff in provider organisations on the front line make a huge effort, going far beyond what would usually be expected. The Department and its partners deserve some credit for building at pace a new international supply chain and distribution network. But there are important aspects that could and should have been done much better in supplying PPE.

Government initially considered it was well-placed for managing the supply of PPE in a pandemic, with tested plans and a stockpile in place. But neither the stockpiles nor the usual PPE-buying and distribution arrangements could cope with the extraordinary demand created by the COVID-19 pandemic. As a result, government's structures were overwhelmed in March 2020. Once government recognised the gravity of the situation it created a parallel supply chain to buy and distribute PPE. However, it took a long time for it to receive the large volumes of PPE ordered, particularly from the new suppliers, which created significant risks. There were further difficulties with distribution to providers and many front-line workers reported experiencing shortages of PPE as a result. The initial focus on the NHS meant adult social care providers felt particularly unsupported. Government has budgeted an unprecedented £15 billion of taxpayers' money to buy PPE for England during 2020-21. It has paid very high prices given the very unusual market conditions, and hundreds of millions of pounds-worth of PPE will not be used for the original intended purpose. Our recent report on government procurement in the pandemic sets out the findings of our detailed examination of some PPE contracts.

Appendix Two

Our evidence base

1 Our examination of personal protective equipment (PPE) supply was based on evidence collected between June and November 2020. Our audit approach is outlined in Appendix One.

Document review

2 We reviewed a range of documents to understand the background to the supply of PPE. This included plans and strategies, briefing papers, select committee reports, financial and management reports, policy notes, internal and external communications, contract and tendering information, guidance documents, and media reports.

Data analysis

3 We analysed data from several different sources, including on the cost and quantities of PPE supplied before and during the pandemic, trusts' own spend on PPE, performance and monitoring information contained in regular management reports, and survey results from health and social care membership organisations. We were not always able to validate the data used, and in some areas we received inconsistent data. In the latter cases we had to assess which data were the more robust.

4 We did not carry out an analysis of whether prices paid for PPE represented value for money. Because of a lack of suitable information, nor were we able to compare unit prices paid for PPE, or quantities bought, by the UK Government with prices paid or quantities bought by other countries.

Interviews

5 We carried out an extensive programme of structured interviews with officials from several government departments involved in supporting the supply of PPE to health and social care during the pandemic. This included the Department of Health & Social Care (the Department), NHS England & NHS Improvement, Supply Chain Coordination Limited, Public Health England, Cabinet Office, the Ministry for Housing, Communities & Local Government, Care Quality Commission, the Department for International Trade, the Foreign, Commonwealth & Development Office, the Department for Business, Energy & Industrial Strategy, and the Health and Safety Executive.

6 We consulted stakeholders and sector organisations to understand the impact of PPE shortages on end-users and their patients, including the Association of Directors of Adult Social Care, the British Medical Association, Care England, Carers UK, NHS Providers, the Royal College of Nursing and the Royal College of Physicians. We also spoke to social care providers, NHS trusts, the British Safety Industry Federation (BSIF), the Professional Clothing Industry Association Worldwide (PCIAW), and suppliers and manufacturers of PPE. We issued a call for evidence, and received submissions, from members of BSIF and PCIAW.

Sample testing of commercial PPE contracts

7 We sample tested seven commercial PPE contracts tendered during the pandemic to understand the procurement process and due diligence that was applied. These contracts were reviewed against a COVID-19 contracts framework based on our contracting framework, with assistance from our contracts and commercial team.

Model review

8 We undertook a time-limited review of the requirement models used by the Department to understand demand for PPE across different sectors, settings and locations. We met with the Department's modelling specialists, and we attended teach-ins and demonstrations on how the models were developed and used. However, due to the limited time available to us on receipt of the models, we did not undertake a full review of them, and did not carry out any formal quality assurance. For example, we did not assess the design and construction of the models against good practice, validate the inputs or outputs or verify the data entry and management within the models.

Limitations of the evidence

9 The evidence on guidance, organisational experience, workers' experience and particular concerns about Black, Asian and minority ethnic (BAME) workers' experience about PPE is based on survey and qualitative evidence. For example, we are reporting the views of membership organisations and providers based on our interviews with them, or of workers' experience through self-selecting surveys carried out by membership organisations. From this evidence, we cannot know how representative, or not, these views are of the whole workforce.

10 Additionally, we quote information from the Health and Safety Executive when COVID-19 infections and deaths are reasonably expected to have been the result of occupational exposure, but we must be clear that it is impossible for us to confirm or deny whether infections or deaths are in any way related to PPE availability, fitting of PPE or training in the use of PPE. It is not possible for us to confirm where those individuals acquired COVID-19. We quote the information on infections and deaths to demonstrate the scale of the overall issue relating to control and prevention of COVID-19, and we provide appropriate caveats to be clear that we are not implying a direct link to PPE. We also state that further work is needed to better understand any role that PPE, as part of overall infection prevention and control measures, may have played in these infections and deaths.

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