University of Exeter

decision ESMI Evidence Synthesis & Modelling for Health Improvement

Clinical and non-clinical NHS staff experiences and perceptions of workforce reconfiguration during the Covid-19 pandemic: Lessons for future infectious disease outbreaks

Protocol for a qualitative evidence synthesis

Version 4 (Final)

20 May 2025

Produced by	Exeter HS&DR Evidence Synthesis Centre Department of Health & Community Sciences South Cloisters St Luke's Campus Heavitree Road Exeter EX1 2LU UK
Authors	**Zhivko Zhelev** Systematic Reviewer* [1] z.zhelev@exeter.ac.uk **Sian de Bell** Systematic Reviewer* [1] s.c.de-bell@exeter.ac.uk **Alison Bethel** Information Specialist[1] a.bethel@exeter.ac.uk **Jo Daniels** Subject Specialist[2] j.daniels@bath.ac.uk **Jo Thompson Coon** Senior/Academic Lead[1] j.thompson-coon@exeter.ac.uk **Rob Anderson** Senior/Academic Lead[1] r.anderson@exeter.ac.uk *Joint first authors [1] University of Exeter [2] University of Bath
Correspondence to	z.zhelev@exeter.ac.uk
Date completed	20 May 2025
Source of funding	This work was commissioned by the NIHR HSDR programme as a project (project code NIHR175867) within grant number NIHR130538. JTC and AB are also supported by the NIHR Applied Research Collaboration South West Peninsula (PenARC).

Role of funder/institution in protocol creation	The aims and scope of this protocol and the planned work were informed by information provided by and discussions with the Department of Health and Social Care, NHS England and NIHR.
Declared competing interests of the authors	None
Rider on responsibility for document	The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HSDR programme, the NIHR Applied Research Collaboration South West Peninsula (PenARC) or the Department of Health and Social Care. Any errors are the responsibility of the authors.
Registration number (PROSPERO)	CRD420251057872

Table of Contents

1 Background

In their guidance on clinical response to local incidents and outbreaks of infectious disease, NHS (National Health Service) England defines infectious disease outbreaks, also known as epidemics, as:

- "*an incident in which 2 or more people affected by the same infectious disease are linked by time, place, or common exposure*
- *a greater than expected rate of infection compared with the usual background rate for the place and time where the outbreak has occurred*" (p.1) (1).

The NHS in England notes, specifically in relation to pandemics (epidemics occurring worldwide, or over a very wide area) that they are "*usually driven by a novel pathogen (virus, bacteria, fungi or other organism) to which there is no population immunity*" (2). There has been a significant increase in the emergence of infectious diseases over time (3), with this trend likely to continue in the future due to socio-economic, environmental and ecological factors such as urbanisation and climate change (3, 4).

The *Lancet Commission on lessons for the future from the Covid-19 pandemic*, which has informed the UK government inquiry into its preparedness and response to Covid-19,(5) identifies five pillars in the fight against emerging infectious diseases; the third of these is health services, which are essential to "*save the lives of people with the disease and ensure the continuity of other health services, including those for mental health*" (p.1227) (6). The ability of a healthcare system to do this depends on its resilience, whether the system is able "*to prepare for, recover from and absorb shocks, while maintaining core functions and serving the ongoing and acute care needs of their communities*" (p.964) (7). Covid-19 placed severe strain on healthcare systems globally (8), whilst previous infectious disease outbreaks (e.g. Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS)) have highlighted issues with healthcare system resilience (9).

Healthcare workers are key to any response to the outbreak of infectious disease, with issues relating to the healthcare workforce reported as a significant barrier to scaling up access to interventions during the Covid-19 pandemic (e.g. diagnostics and testing, case management) (10). Staffing pressures result from: *acuity demand* – that is, the need to care for patients and maintain essential care not related to the disease outbreak; *volume demand* – which is demand for acute care services due to the number of patients, and; *attrition* due to healthcare workers being ill, quarantined, or having other responsibilities (e.g. family illness, lack of childcare) (11).

Two recommendations, amongst others, from the Lancet Commission report on learning from Covid-19 were for countries to strengthen their healthcare systems and ensure that national pandemic preparedness plans include training for healthcare workers and the provision of adequate staffing (6). NHS England's 'Framework for managing the response to pandemic diseases' (2), sets out key objectives relating to issues of acuity demand (the need '*to minimise the impact on NHS services*') and attrition (the need '*to maintain and support NHS staff health, safety and welfare at all levels throughout and after the response'*). NHS England also plans for workforce reconfiguration to meet changing demand for healthcare as a result of various types of incident (e.g. those causing mass casualties or exposures to hazardous materials) (12) including pandemics (2).

Workforce reconfiguration mechanisms include:

- enabling staff to work outside of their normal roles (e.g. expanding their job scopes),
- reallocating them to other settings (e.g. moving primary-care workers to emergency care wards or intensive care units (ICUs)), and
- increasing the workforce through recruitment (e.g. of retired healthcare professionals, early transition of medical or nursing students into the workforce) (7).

However, as noted in the NHS England pandemic preparedness framework,(2) pandemics differ from other types of incident (e.g. '*The response to a pandemic is likely to be protracted over several months or even years*'). The probability of another pandemic with the intensity of Covid-19 occurring within an individual's lifetime (100 years) could be as high as 44% based on a statistical model of historical data (13). Whilst a respiratory virus is thought to be the most likely cause of the next pandemic, there are other potential transmission routes: blood and body fluids, direct and indirect contact, ingestion (food and water) and by vectors such as mosquitos (2). There is therefore a need to learn how to prepare and respond to future outbreaks of infectious disease from previous pandemics (4). For workforce reconfiguration, this means understanding not only the effectiveness of different mechanisms for reconfiguration, how best to implement them and any training and support required, but also understanding their impact on clinical and other staff (7).

1.1 Development of the research question

Scoping searches found several previous reviews exploring various aspects of workforce reconfiguration. Most included evidence from the Covid-19 pandemic, or from Covid-19 and previous pandemics (e.g. H1N1), although one included evidence from natural disasters which may be less relevant to a pandemic context (e.g. natural disasters often cause the destruction of infrastructure) (11). A number focused on workforce capacity, in terms of both

mechanisms of redeployment (as described above), and the practicalities of redeployment and training (11, 14-17). Others considered the support needed by healthcare professionals following redeployment (e.g. protecting well-being), usually in conjunction with capacity (14, 15, 17).

Gupta et al. (16) and a 2021 European Observatory on Health Systems and Policies report (14) focused on the systems level, i.e. the policy, legislation, and regulation that needs to be in place nationally and regionally, to increase capacity and provide support to the workforce. Evidence gaps were noted regarding occupational and psychosocial factors affecting healthcare workers' absenteeism and risk of burnout. Other reviews considered the different levels at which initiatives or interventions can be implemented: system, organisation/management or individual (11, 15, 17).

However, of these reviews, not all were systematic (14) or appraised the quality of included studies (11). Some focused only on reconfiguration in specific contexts (e.g. healthcare workers to intensive care units (ICUs) (17)), and where the reviews specifically investigated the effectiveness of initiatives they found few studies (15, 16). Of the 69 studies included in Cavalcante de Oliveira et al. (15), only eight reported outcomes; similarly, only five of the 16 studies included in Gupta et al. (16) assessed the impact of a specific intervention. As Cavalcante de Oliveira et al. (15) note "*The evidence regarding the impact and efficacy of the [workforce capacity] strategies used by countries during the pandemic still requires further research*" (p. 1).

The Department for Health and Social Care (DHSC) in England and NHS England are interested in learning from the evidence available on workforce reconfiguration during the Covid-19 pandemic. Consultation with stakeholders in these organisations identified three main topics of interest:

- increasing the available workforce in preparation for an outbreak.
- practical adaptation of ways of working during an outbreak.
- supporting the workforce during an outbreak.

More detailed questions were also identified within each topic and can be found in Appendix 1. Whilst there was interest in the effectiveness of different mechanisms for reconfiguration, it can be difficult to evaluate this during a pandemic, and, as discussed above, previous reviews have found limited evidence (15, 16). The experiences of healthcare providers and professionals can, however, give valuable information. The views of NHS staff in different roles (e.g. nurses, doctors, care assistants, managers, commissioners) and with different characteristics (e.g. age, gender, ethnicity and religion, caregiving responsibilities) provide insights into the perceived effectiveness of workforce reconfiguration approaches used

during the Covid-19 pandemic, of which there has been no formal evaluation, and the factors that might affect the effectiveness of such interventions.

This systematic review will therefore focus on qualitative research exploring the experiences of healthcare professionals and non-clinical staff of workforce reconfiguration during the Covid-19 pandemic. It is intended to inform the NHS, DHSC, and UKHSA in preparing for future infectious disease outbreaks.

1.2 Research question

What were NHS staff experiences of interventions to increase staff availability and of workforce reconfiguration, in particular practical adaptations to ways of working and measures to support staff, during the Covid-19 pandemic in the UK?

The scope of the review will be broad, including the views of healthcare professionals, and those in managerial and other non-clinical roles, on their general experiences during the pandemic as well as experiences of specific interventions. It will explore:

- any mechanisms relating to, or factors perceived to influence, interventions to increase staff availability, and lessons for the future.
- any mechanisms relating to, or factors perceived to influence, successful workforce reconfiguration approaches, and lessons for the future
- the perceived impact on the study participants' health and wellbeing as well as their perceptions of the effectiveness, efficiency, acceptability and other aspects of specific workforce reconfiguration approaches and interventions to increase staff availability.

2 Methods

To answer the review question, we will produce a systematic review following best practice guidelines (18, 19) and report the results according to the PRISMA guidelines for reporting systematic reviews (20).

2.1 Identification of studies

2.1.1 Searches

The list of databases to be searched is comprehensive to reflect the diversity of the disciplines where there are likely to be relevant studies and therefore locations they might be found.

Health: Medline, Embase, PsycINFO (via Ovid) and CINAHL (via EBSCOhost)

Business: Business Source Complete (via EBSCOhost)

Multidisciplinary: Web of Science (SCI, SSCI, AHCI, CPCI-S, CPCI-SSH, ESCI) and Scopus

UK specific: HMIC and SPP (via Ovid)

Theses: ProQuest Dissertations and Theses (via ProQuest)

The database search strategies will include both free text and any relevant controlled vocabulary terms (e.g MeSH), search terms will be partly derived from the literature and from stakeholders and experts' input. UK specific and qualitative search filters may also be applied. An example search strategy can be seen in Appendix 2.

In addition, the CORE and BASE databases will be searched, to find anything further in the online repositories of UK organisations, and domain searching will be carried out in Google including nhs.uk, gov.uk, ac.uk, osf and zenodo.

Relevant websites will be searched for grey literature, such as:

- NHS Knowledge and Library Hub (https://library.nhs.uk/knowledgehub/)
- NIHR Funding and Awards (http://fundingawards.nihr.ac.uk/)

The reference lists of all included sources will be manually searched for additional titles and forwards citation searching completed using Scopus.

Searches will be limited to English-language texts published since 1st January 2020 (see below).

2.1.2 Inclusion and exclusion criteria

Definition of workforce reconfiguration

For the purpose of this review, we define 'workforce reconfiguration' as any strategy or intervention designed to address escalating NHS workforce demands during the Covid-19 pandemic (21).

Population and participants

All studies reporting on NHS staff experience and perceptions of workforce reconfiguration in the UK will be eligible for inclusion. By NHS staff, we mean both healthcare professionals (e.g. nurses and doctors) and those in non-clinical roles (e.g. human resources (HR) or emergency preparedness managers).

We will include studies with staff from any care setting (e.g. primary, secondary) as well as staff from other settings (e.g. social care, military healthcare personnel) or circumstances (e.g. healthcare students, retired healthcare professionals), if they experienced workforce reconfiguration in a relevant setting, as described below.

Setting

The review will focus on workforce reconfiguration in secondary care settings. Whilst all healthcare settings were impacted by the Covid-19 pandemic, secondary care settings were placed under the most strain as they needed to care for patients with Covid-19 as well as those with other care needs. Studies exploring redeployment to primary or community care, or to meet social care need will be excluded. However, studies including staff from other care settings who were redeployed to secondary care will be eligible for inclusion.

Type of evidence

As explained in section 1.1, publications reporting primary qualitative research will be eligible for inclusion. We will consider all methods of qualitative data collection (e.g. interviews, focus groups) and qualitative methods for data analysis (e.g. thematic, grounded theory).

Mixed methods studies will be included if they report relevant results based on the qualitative data, as will studies based on surveys which have collected qualitative data (e.g. using free text questions). Quantitative studies reporting on the experiences of NHS staff with workforce reconfiguration during the Covid-19 pandemic will be excluded.

Reports of internal audits or evaluations that collected relevant qualitative data (e.g. interviews with staff), but were not recorded as research, will be included if they (a) had clear and prespecified aims/questions, and (b) provided information on who the sampled participants were and how data were collected and/or analysed.

Country

Only publications of research conducted in the UK will be eligible for inclusion.

Publication language

Studies in English or other UK languages (e.g. Welsh, when not available in English) will be included.

Year of publication

The first reports on Covid-19 reaching an international audience appeared in early January 2020 and the first confirmed cases in the UK were reported on 29th January 2020. To make sure we do not miss studies that focused on preparing for the pandemic before it had reached the UK, we will search for relevant publications from 1st January 2020.

Publication status

Both peer-reviewed papers and grey literature will be included. We anticipate that evaluations and other data (as described in 'Type of evidence') on the many interventions implemented during the pandemic did not take the form of a formal research study. Nevertheless, this grey literature could provide valuable information both on the breadth of the approaches to workforce reconfiguration and NHS staff experiences of them.

2.1.3 Process for applying the inclusion criteria

The results from the database searches will be screened using the following standard process. A random sample (n=100) of hits from the searches will be screened by at least two reviewers. Decisions will be compared and discussed in a group meeting to ensure consistent application of inclusion and exclusion criteria. If necessary, definitions will be updated and explanatory notes added to aid the process.

Two reviewers will then independently apply the inclusion and exclusion criteria to the title and abstract of each identified citation. We will obtain the full text of papers/reports where either reviewer judges it to be a potential inclusion. Two reviewers will assess the full text of

each record independently for inclusion, with disagreements settled through discussion or by a third reviewer.

The study selection process will be described using a PRISMA-style flowchart (20), with the primary reason for exclusion reported for each record excluded after being assessed at full text.

2.2 Data extraction

We will extract contextual and methodological information on the included studies, which will be used to inform the process of analysis and synthesis (22). A data extraction form will be developed, in consultation with stakeholders, and piloted independently by two reviewers on a small sample of included documents. Data will be extracted by one reviewer and checked by a second reviewer. Disagreements will be resolved through discussion. The following data will be extracted:

- Type of publication (e.g. peer-reviewed paper, report)
- Geographic location
- Setting (including clinical service or department, and type of hospital)
- Study aims
- Methods
- Participant characteristics (e.g. role in the NHS, age, gender, ethnicity, and any other PROGRESS-Plus categories reported in the paper (23))
- Findings

Study findings, that is all parts of the research labelled as ‘results’ or ‘findings’, including both quotations from participants and author interpretations (24), will be uploaded into NVivo v14 (QSR International) for data analysis and synthesis (see section 2.4).

2.3 Critical appraisal of included studies

The Cochrane qualitative methodological limitations tool (CAMELOT) will be used to appraise the methodological quality of the included studies (25, 26). The checklist covers a range of domains, such as clarity of research question, data collection and analysis, reflexivity and ethics.

The checklist will be piloted by two reviewers in a small number of relevant studies. Disagreements will be discussed and operational definitions updated to make sure that the tool is used consistently. The methodological quality of each included study will then be

assessed independently by two reviewers and disagreements will be resolved through discussion and, if necessary, arbitration by a third member of the team.

We will not exclude studies based on their assessed quality (27). However, we will consider the methodological quality and the quality of reporting in the interpretation of results.

2.4 Data analysis and synthesis

Data will be analysed using thematic synthesis (24). A combination of inductive (i.e. emerging from the studies) and deductive (based on pre-existing areas of interest identified in consultation with stakeholders, including those listed in Appendix 1) coding will be used to develop our understanding of the primary studies, leading to the development of 'descriptive themes' which bring related codes together. Finally, we will ‘go beyond’ the primary studies, to generate 'analytical themes'. We will follow an iterative process with frequent discussions between the two lead reviewers and within the wider team, to ensure a broad range of perspectives and interpretations are considered and to generate new insights, explanations and hypotheses.

The Enhancing transparency in reporting the synthesis of qualitative research (ENTREQ) guidance will be used when reporting the methods and results of the review (26). This will ensure that all relevant information on the conduct of the review is included, enabling understanding of the development of the synthesis (28).

The NIHR-INCLUDE guidelines (29) were used to reflect on Equality, Diversity and Inclusion (EDI) whilst designing the protocol. Some groups of healthcare staff may be more at risk during infectious disease outbreaks (e.g. certain ethnic minority groups were more likely to be infected by Covid-19 and to die from it (30)), or be more likely to be negatively impacted by workforce reconfiguration (e.g. those with caring responsibilities (31)). The impacts of both infectious disease outbreaks, and potential service disruption resulting from them, are also more likely to be felt by some groups within the population, which could exacerbate existing inequalities (32). The Lancet Commission on learning from Covid-19 recommends that “*strengthening of health systems should address inequalities for health-care workers and communities in terms of gender, ethnicity and race, income, and accessibility*” (p.1266) (6). NHS England’s pandemic preparedness framework (2) also contains objectives relating to this:

- restore and recover services inclusively taking equality and health inequalities considerations into account
- identify, consider and mitigate where possible health inequalities, and ensure healthcare equity for all patients and staff, throughout the pandemic.

We will consider differential impacts between groups during the process of data extraction and analysis (e.g. extracting data on PROGRESS-Plus characteristics where reported in included studies) (23, 33). We will use this information to inform the findings and recommendations of the review.

3 Stakeholder and patient/public involvement and engagement

The following stakeholders have already been involved in the development of the protocol and will continue to advise the project:

- DHSC
- NHS England
- NIHR

We will recruit additional stakeholders, who may include:

- Relevant professional organisations (e.g. British Medical Association, Royal College of Nursing, Royal College of Emergency Medicine, Royal College of Anaesthetists, the Faculty of Intensive Care Medicine, Royal College of Physicians)
- Regulators (e.g. General Medical Council, Nursing and Midwifery Council)
- Relevant unions (e.g. UNISON, Unite the Union, Managers in Partnership (MiP))

We will consult stakeholders throughout the review process, to discuss topics such as the focus of the review, analysis and findings, and to identify additional studies, especially grey literature, not captured by the searches. Meetings will be held online (e.g. on Teams) and will be arranged to suit the project progress and stakeholder availability. We will also ask for stakeholder input on dissemination plans and materials as described below.

We will recruit and consult a Patient & Public Involvement and Engagement (PPIE) group throughout the review process. This group will be composed primarily of NHS staff who experienced redeployment during the Covid-19 pandemic, to ensure that feedback and the interpretation of findings are informed as much as possible by lived experiences. We will aim for diversity in the group, in terms of sociodemographic characteristics and job roles. We will also ask the PPIE group for input on specific documents, such as the plain language summary and relevant dissemination materials. The meetings will be held online (e.g. on Teams) and will be arranged to suit the project progress and the PPIE members' availability.

4 Dissemination plans

We will produce a full report on the review which will be made available on our website and Zenodo. We will also publish an open access article reporting the findings in a peer-reviewed journal.

Further materials for dissemination will be finalised after discussion with the project's advisory group. These are likely to include:

- an evidence briefing, giving a plain language summary of the report and its findings (primarily aimed at policy makers and commissioners); and
- presentations at key national and regional meetings.

Outputs will be disseminated via the Exeter HSDR Evidence Synthesis Centre webpage and social media. Additional material may be produced to promote them, such as a blog post (e.g. on the Sifting and Sensemaking blog) based on the evidence briefing and report.

5 References

1. NHS England. Clinical response to local incidents and outbreaks of infectious disease: Commissioning guidance for ICBs. London: NHS England; 2025.

2. NHS England. Framework for managing the response to pandemic diseases 2024 [Available from: https://www.england.nhs.uk/long-read/framework-for-managing-the-response-to-pandemic-diseases/.

3. Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, Gittleman JL, et al. Global trends in emerging infectious diseases. Nature. 2008;451(7181):990-3.

4. Williams BA, Jones CH, Welch V, True JM. Outlook of pandemic preparedness in a post-COVID-19 world. npj Vaccines. 2023;8(1):178.

5. Cabinet Office. UK Government Response to the Covid-19 Inquiry Module 1 Report 2025 [Available from: https://www.gov.uk/government/publications/uk-government-response-to-the-covid-19-inquiry-module-1-report/uk-government-response-to-the-covid-19-inquiry-module-1-report-html#introduction.

6. Sachs JD, Karim SSA, Aknin L, Allen J, Brosbøl K, Colombo F, et al. The Lancet Commission on lessons for the future from the COVID-19 pandemic. The Lancet. 2022;400(10359):1224-80.

7. Haldane V, De Foo C, Abdalla SM, Jung A-S, Tan M, Wu S, et al. Health systems resilience in managing the COVID-19 pandemic: lessons from 28 countries. Nature Medicine. 2021;27(6):964-80.

8. Williams GA, Ziemann M, Chen C, Forman R, Sagan A, Pittman P. Global health workforce strategies to address the COVID-19 pandemic: Learning lessons for the future. The International Journal of Health Planning and Management. 2024;39(3):888-97.

9. Nuzzo JB, Meyer D, Snyder M, Ravi SJ, Lapascu A, Souleles J, et al. What makes health systems resilient against infectious disease outbreaks and natural hazards? Results from a scoping review. BMC Public Health. 2019;19(1):1310.

10. World Health Organization (WHO). Third round of the global pulse survey on continuity of essential health services during the COVID-19 pandemic: November–December 2021. Interim report 2022 [Available from: https:// apps. who. int/ iris/ handle/ 10665/ 351527.

11. Coates A, Fuad A-O, Hodgson A, Bourgeault IL. Health workforce strategies in response to major health events: a rapid scoping review with lessons learned for the response to the COVID-19 pandemic. Human Resources for Health. 2021;19(1):154.

12. NHS England. Guidance and framework no date, [Available from: https://www.england.nhs.uk/ourwork/eprr/gf/.

13. Marani M, Katul GG, Pan WK, Parolari AJ. Intensity and frequency of extreme novel epidemics. Proceedings of the National Academy of Sciences. 2021;118(35):e2105482118.

14. European Observatory on Health Systems and Policies, Buchan J, Williams GA, Zapata T. Governing health workforce responses during COVID-19. Eurohealth. 2021;27: 41 - 8. World Health Organization. Regional Office for Europe.

15. Cavalcante de Oliveira AP, Galante ML, Maia LS, Craveiro I, da Silva AP, Fronteira I, et al. Implementation of policy and management interventions to improve health and care workforce capacity to address the COVID-19 pandemic response: a systematic review. Human Resources for Health. 2023;21(1):80.

16. Gupta N, Balcom SA, Gulliver A, Witherspoon RL. Health workforce surge capacity during the COVID-19 pandemic and other global respiratory disease outbreaks: A systematic review of health system requirements and responses. The International Journal of Health Planning and Management. 2021;36(S1):26-41.

17. Vera San Juan N, Clark SE, Camilleri M, Jeans JP, Monkhouse A, Chisnall G, et al. Training and redeployment of healthcare workers to intensive care units (ICUs) during the COVID-19 pandemic: a systematic review. BMJ Open. 2022;12(1):e050038.

18. Centre for Reviews and Dissemination. Systematic reviews: CRD's guidance for undertaking reviews in health care. York, UK: University of York; 2008.

19. Higgins J, Thomas J, Chandler J, Cumpston M, Li T, Page M, et al. Cochrane Handbook for Systematic Reviews of Interventions version 6.5 (updated August 2024): Cochrane; 2024 [Available from: https://training.cochrane.org/handbook.

20. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71.

21. Lal ZZ, Gogoi M, Qureshi I, Al-Oraibi A, Chaloner J, Papineni P, et al. Redeployment and changes in working patterns of healthcare workers during COVID-19 in the UK: a qualitative study. BMC Health Serv Res. 2025;25(1):267.

22. Noyes J, Booth A, Flemming K, Garside R, Harden A, Lewin S, et al. Cochrane Qualitative and Implementation Methods Group guidance series—paper 3: methods for assessing methodological limitations, data extraction and synthesis, and confidence in synthesized qualitative findings. Journal of Clinical Epidemiology. 2018;97:49-58.

23. Cochrane Methods Equity. PROGRESS-Plus no date [Available from: https://methods.cochrane.org/equity/projects/evidence-equity/progress-plus.

24. Thomas J, Harden A. Methods for the thematic synthesis of qualitative research in systematic reviews. BMC Medical Research Methodology. 2008;8(1):45.

25. Camelot. Cochrane qualitative methodological limitations tool no date [Available from: https://camelotapproach.wordpress.com/.

26. Munthe-Kaas HM, Booth A, Sommer I, Cooper S, Garside R, Hannes K, et al. Developing CAMELOT for assessing methodological limitations of qualitative research for inclusion in qualitative evidence syntheses. Cochrane Evidence Synthesis and Methods. 2024;2(6):e12058.

27. Carroll C, Booth A, Lloyd-Jones M. Should we exclude inadequately reported studies from qualitative systematic reviews? An evaluation of sensitivity analyses in two case study reviews. Qual Health Res. 2012;22(10):1425-34.

28. Tong A, Flemming K, McInnes E, Oliver S, Craig J. Enhancing transparency in reporting the synthesis of qualitative research: ENTREQ. BMC Medical Research Methodology. 2012;12(1):181.

29. National Institute for Health Research. Improving inclusion of under-served groups in clinical research: Guidance from the NIHR-INCLUDE project. UK: National Institute for Health Research; 2020.

30. Oskrochi Y, Jeraj S, Aldridge R, Butt J, Miller A. Not by Choice: The Unequal Impact of the COVID-19 Pandemic on Disempowered Ethnic Minority and Migrant Communities. London: Race Equality Foundation; 2023 [Available from: https://raceequalityfoundation.org.uk/wp-content/uploads/2023/07/Not-by-choice.pdf.

31. Morgan R, Tan H-L, Oveisi N, Memmott C, Korzuchowski A, Hawkins K, et al. Women healthcare workers' experiences during COVID-19 and other crises: A scoping review. International Journal of Nursing Studies Advances. 2022;4:100066.

32. Rasanathan K. How can health systems under stress achieve universal health coverage and health equity? International Journal for Equity in Health. 2024;23(1):244.

33. O'Neill J, Tabish H, Welch V, Petticrew M, Pottie K, Clarke M, et al. Applying an equity lens to interventions: using PROGRESS ensures consideration of socially stratifying factors to illuminate inequities in health. 2014(1878-5921 (Electronic)).

Appendix 1 Results of stakeholder consultation

The following are topics and areas of interest regarding healthcare workforce reconfiguration identified by stakeholders from DHSC, NHS England and NIHR.

Increasing the available workforce in preparation for an outbreak

- What are the levers and mechanisms for increasing the availability of the workforce. For example:
    - Flexibility in regulation
    - Engaging the retired workforce
- What core staff capabilities facilitated transitions to different roles, including clinical and technical.
- What do we know about the barriers to a) redeployment/reconfiguration and b) bringing in new staff, and the perceived impact of this?
- Can we use the information we have to forecast staffing models required?
- How were decisions made about the configuration of the workforce, and at what level?
- What do we know about staffing configuration and reconfiguration in relation to a) clinically vulnerable b) those in highest risk specialties.
- What do we know about the specific configuration of the workforce e.g. in terms of nursing vs doctors

Practical adaptation of ways of working during an outbreak

- What do we know about adaptations that leveraged delivery of care by optimising ways of working?
    - Spaces used e.g. nightingale wards, hubs, remote working
    - Flexibility in roles
    - Flexibility in working practices
    - Fluid or flexible deployment
    - Flexible working models e.g. remote working, altered patterns or contracts
    - What technology was used to deliver services
- What were blocks and enablers around how decisions were made regarding practical adaptions?

Supporting the workforce during an outbreak

- What do we know about support needed and offered to support staff, in terms of:
    - Physical health (e.g. PPE, vaccination and treatment)
    - Mental wellbeing (what is necessary to support them to deliver their role)
    - Educational/training needs due to interruption of training
    - Logistic challenges of being separated from families and preventing transmission
    - Health inequalities in terms of the impact on different groups within staff, relating to race, gender, clinical vulnerability

Appendix 2 Example search strategy

Ovid MEDLINE(R) ALL <1946 to May 14, 2025>

1 ((redeploy* or reconfig* or relocat* or capacity or deploy* or alloca* or reallocat* or assign or reassign* or surge or distribut* or redistribut* or reshape* or volunteer*) adj4 (work* or staff* or personnel*)).tw. 35377

2 health workforce/ or exp health personnel/ 669116

3 (redeploy* or reconfig* or relocat* or capacity or deploy* or alloca* or reallocat* or assign or reassign* or surge or distribut* or redistribut* or reshape* or volunteer*).tw. 2683430

4 2 and 3 40125

5 ((redeploy* or reconfig* or relocat* or capacity or deploy* or alloca* or reallocat* or assign or reassign* or surge or distribut* or redistribut* or reshape* or volunteer*) adj3 (nurse* or health* or physician* or student* or surgeon* or trainee* or doctor*)).tw. 154540

6 1 or 4 or 5 216741

7 SARS-CoV-2/ 194652

8 COVID-19/ 294699

9 (corona* adj1 (virus* or viral*)).ti,ab. 4330

10 (CoV not (Coefficien* or "co-efficien*" or covalent* or Covington* or covariant* or covarianc* or "cut-off value*" or "cutoff value*" or "cut-off volume*" or "cutoff volume*" or "combined optimi?ation value*" or "central vessel trunk*" or CoVR or CoVS)).ti,ab. 136613

11 (coronavirus* or 2019nCoV* or 19nCoV* or "2019 novel*" or Ncov* or "n-cov" or "SARS-CoV-2*" or "SARSCoV-2*" or SARSCoV2* or "SARS-CoV2*" or "severe acute respiratory syndrome*" or COVID*2).ti,ab. 472903

12 7 or 8 or 9 or 10 or 11 483020

13 6 and 12 7623

14 exp Qualitative Research/ 104669

15 interview*.tw. 518245

16 px.fs. 1290431

17 qualitative*.tw. 437207

18 exp Health Services Administration/ 3990189

19 (experience* or survey*).tw. 1550767

20 (focus adj2 group*).tw. 76605

21 (mixed adj2 method*).tw. 59241

22 mixedmethod*.tw. 18

23 (mixed adj2 design*).tw. 11358

24 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 6374927

25 13 and 24 4139

26 exp United Kingdom/ 405018

27 ("national health service" or nhs).ti,ab,in. 311529

28 (english not ((published or publication* or translat* or written or language* or speak* or literature or citation*) adj5 english)).ti,ab. 143998

29 (gb or "g.b." or britain or (british not "british columbia") or uk or "u.k." or united kingdom* or (england not "new england") or northern ireland* or nothern irish* or scotland* or scottish* or ((wales or "south wales") not "new south wales") or welsh*).ti,ab,jw,in. 2671016

30 (bath or "bath's" or ((birmingham not alabama*) or ("birmingham's" not alabama*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle* or "carlisle's" or (cambridge not (massachusetts* or boston* or harvard*)) or ("cambridge's" not (massachusetts* or boston* or harvard*)) or (canterbury not zealand*) or ("canterbury's" not zealand*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina* or nc)) or ("durham's" not (carolina* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds* or leicester or "leicester's" or (lincoln not nebraska*) or ("lincoln's" not nebraska*) or (liverpool not (new south wales* or nsw)) or ("liverpool's" not (new south wales* or nsw)) or ((london not (ontario* or ont or toronto*)) or ("london's" not (ontario* or ont or toronto*)) or manchester or "manchester's" or (newcastle not (new south wales* or nsw)) or ("newcastle's" not (new south wales* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worcester not (massachusetts* or boston* or harvard*)) or ("worcester's" not (massachusetts* or boston* or harvard*)) or (york not ("new york*" or ny or ontario* or ont or toronto*)) or ("york's" not ("new york*" or ny or ontario* or ont or toronto*))))).ti,ab,in. 1946169

31 (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in. 79158

32 (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia*) or ("perth's" not australia*) or stirling or "stirling's").ti,ab,in. 286354

33 (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in. 38482

34 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 3428537

35 (exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp oceania/) not (exp great britain/ or europe/) 3576075

36 34 not 35 3211286

37 25 and 36 720

38 (redeploy* or reconfig* or relocat* or deploy* or alloca* or reallocat* or reassign*).ti. 27253

39 12 and 38 1162

40 37 or 39 1899