Supporting Ethnic Minority populations post COVID-19: **Recommendations from the South Asian Health Foundation.**

In collaboration with:

The Centre for Ethnic Health Research
national centre for tackling health inequalities

SOUTH ASIAN HEALTH FOUNDATION

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Executive Summary

This review provides an overview of evidence on the long-term impacts of COVID-19, and of the disruption to healthcare and economic systems. It also makes much needed recommendations on how best to manage this impact for ethnic minority populations in the short and medium term.

Evidence suggests continued ethnic inequalities in the risk of hospitalisation from SARS-CoV-2 infection in the UK, as well as lower uptake to vaccination. Available data highlights a range of longer-term effects of Long Covid including ongoing COVID-19 symptoms, organ impairments, and new symptoms/illnesses. However, there is a lack of data on Long Covid by ethnic groups.

Although limited, current data also suggest that acute healthcare settings, and non-acute settings including general practice have been negatively impacted by the indirect effects of the COVID-19 pandemic, via reduced access to healthcare, disrupted provision of healthcare services (e.g., fewer cardiac procedures, longer cancer waiting times, negative impact on the diagnosis and routine care of chronic diseases) and reductions in quality of care. Again, there are limited data on healthcare disruption by ethnic group.

Short and medium term recommendations relate to the following: (i) Consideration of equity and cultural adaptation in Long Covid management; (ii) Addressing vaccine hesitancy, particularly among ethnic minorities; (iii) Managing non-COVID-19 healthcare; (iv) Mitigating the impact of healthcare disruption on management of long-term conditions, and ensuring health inequalities do not widen; (v) The need to strengthen healthcare systems; (vi) tackling inequalities in social, economic and educational conditions; and (vii) Key issues related to health and social care research, such as minority underrepresentation.

A wide range of actions implemented across multiple sectors and supported by policy makers are required to ensure the disproportionate impact of COVID-19 does not continue to affect ethnic minority communities and the most deprived in the coming months and years.

Introduction

Since the World Health Organisation declared a pandemic in 2020, Coronavirus disease (COVID-19) has led to disruption of global healthcare systems and economies, and most alarmingly, high levels of excess deaths and hospital admissions. As is now well-detailed, ethnic minority populations have displayed disproportionately higher rates of infection and adverse outcomes (1).

In late March 2020, the UK entered into the first national lockdown, where severe restrictions were introduced to limit the spread of the virus (i.e. limits on travel, ability to leave place of residence, closing of non-essential shops etc.). Due to some suppression of infection and hospitalisation rates, these restrictions were lifted on July 4th 2020. However, restrictions continued in areas such as the multi-ethnic city of Leicester due to a resurgence of cases in June 2020 (2).

Throughout the summer of 2020, other ethnically diverse towns including Blackburn and Oldham also experienced a rapid rise in COVID-19 prevalence. By mid-September 2020, local COVID-19 restrictions were introduced across parts of the North West, North East, Midlands, and West Yorkshire (2), although London was a notable omission. As cases continued to increase nationally, a number of localities were placed into a three-tiered restriction system (Medium, High, and Very High) with varying levels of COVID-19 restrictions (3, 4).

A second national lockdown was implemented on November 5th (2). Again, non-essential businesses were closed, and limits on travel and household meetings etc. were re-imposed. A little under a month later on December 2nd, this lockdown was eased, and a new four tier restriction system was introduced. By December 30th around 75% of England were under Tier 4 restrictions (the most stringent restrictions). A third national lockdown was implemented between January-March 2021(4) due to a rapid rise in COVID-19 cases, and the emergence of several new variants of the disease.

As with the first wave of the COVID-19 pandemic (Spring/Summer 2020), disparities in hospitalisation have persisted in the second wave (Autumn 2020-Present). ICNARC figures from September 1st 2020 to March 25th 2021 show 24,781 patients were admitted to intensive care with COVID-19, of which 72% were White, 16% Asian, 5% Black and 5% from Other ethnic groups (5). This is markedly different when compared to 2011 census ward data (intensive care vs. local population distribution): White – 71.9% vs. 79.8%, Asian – 16.0% vs. 11.2%, Black – 5.4% vs. 5.0%, and Other – 5.2% vs 1.4% (5). For some outcomes disparities improved during the second wave. An analysis of a population level ONS dataset found that Black ethnic groups saw no increased risk of death from COVID-19 compared to White populations. However Pakistani and Bangladeshi groups displayed greater risk (6).

By July 2021, all UK nations had eased infection control measures such as social distancing, restrictions on businesses, working from home, and mask wearing in indoor spaces was no longer compulsory (although some difference existed between UK nations on certain rules). Cases of COVID-19 rose throughout the Autumn of 2021 (7) and in November 2021 a new more transmissible variant named Omicron was detected in the UK. Preliminary data suggest ethnic minority populations in the UK may be more likely to test positive for the Omicron variant compared to White British (8). In response to rising cases in December 2021, the Autumn/Winter vaccination booster programme was accelerated and offered to all adults over 18 (9).

Infection control measures such as mandatory mask wearing and guidance on working from home were re-introduced and remained in place until January 2022. The national vaccination programme was extended to children aged 5-11 years in April 2022, as well as a fourth booster vaccination being made available to over-75s and the most vulnerable.

As described in our previous South Asian Health Foundation COVID-19 report (1), factors that could explain inequalities in COVID-19 outcomes can broadly be categorised into the following: structural (e.g. multi-generational housing, low income, working in health care or key workers roles etc.); biological (i.e. increased prevalence of long-term conditions). These potential explanations must be considered in the full context of the wider determinants of health including structural discrimination.

Due to the implementation of infection control measures described above, the impact on primary and secondary care has been significant. In addition, local economies face rising unemployment and financial hardship, particularly for those who were already socioeconomically deprived (10). Alongside the acute health impacts of COVID-19, there is evidence that even in mild illness, COVID-19 can have multiple longer-term effects (known as 'Long Covid') (11,12).

While efforts such as culturally adapted public health messaging, and test and trace have been made by government and public health bodies (13), there is concern that despite the introduction of a mass vaccination and booster programme in the UK, the easing of infection control restrictions has again placed the most vulnerable (e.g. deprived, ethnic minority populations, older adults) at high risk (2,14). Particularly as large data analyses show lower vaccination rates in ethnic minorities compared to White populations in England (14,15).

There are, as yet no published recommendations that distil how to protect and manage short-term and future risk from COVID-19 (and Long Covid), and associated health and socioeconomic impacts in ethnic minority populations. This report provides an overview of the evidence on the long-term impacts of COVID-19, and of the disruption to healthcare and impacts on health inequalities. Recommendations on how best to manage this impact for ethnic minority populations in the short and medium term are provided.

Long Covid

Most research to date has sought to characterise the acute impact of SARS-CoV-2 infection, or on hospitalisation, ITU admission and mortality rates (16). An NIHR review suggested there is a prevailing discourse that assumes people either die, get admitted to hospital or recover after two weeks (17). However, it is now evident that even in mild cases, COVID-19 can have multiple longer-term effects.

Patients were the first to recognise and raise awareness of persisting symptoms following SARS-CoV-2 infection, and termed their persistent or reoccurring illness as 'Long Covid' (18). Once the medical and scientific community joined patient-researchers, efforts began to define Long Covid and describe and understand symptomology. To-date, Long Covid is not yet fully understood, described or clearly defined. An initial definition from Greenhalgh et al. characterised post-acute COVID-19 as a multisystem disease (19) "extending beyond three weeks from the onset of first symptoms and chronic COVID-19 as extending beyond 12 weeks."

Researchers and public health bodies have defined/categorised persistent symptoms following infection with SARS-CoV-2 either by the number of symptoms, or by the duration of symptoms. For example the NICE guidelines, published in December 2020, categorise SARS-CoV-2 infection and subsequent illness into three time periods: acute COVID-19 up to 4 weeks; ongoing symptomatic COVID- 19 from 4 to 12 weeks; and post-COVID-19 syndrome developing during or after an infection consistent with COVID-19 and continuing for more than 12 weeks (20).

The National Institute for Health Research (NIHR) have produced a series of themed reviews on Long Covid, where they note that people may experience different clusters of symptoms or syndromes. NIHR suggest that there may be a number of distinct syndromes or clusters of symptoms which include: post intensive care syndrome, post viral fatigue syndrome and long-term Covid syndrome (21). While these are deemed as separate clusters of symptoms, it is possible that some individuals can suffer from more than one of these syndromes concurrently.

In relation to prevalence, early estimates in 2020 suggested roughly 10% of patients who test positive for COVID-19 virus remained unwell after more than 3 weeks (19). In early 2021, the REal-time Assessment of Community Transmission (REACT) estimated the overall number of people in England who reported at least one symptom lasting for 12 or more weeks was over 2 million (22). In June 2022 the Office for National Statistics (ONS) estimate 2.0 million (3.1% of the population) people in the UK report experiencing symptoms that persisted for more than 4 weeks after first infection (23).

A number of studies (this is not an exhaustive or comprehensive contemporary list, but illustrative of the rapidly growing evidence base – see Table 1 and below) have examined the longer-term symptoms reported following infection or longer-term physical or mental impacts. Of the studies (and subsequent systematic reviews) that have characterised residual or persistent symptoms in the UK, Italy, France, China and the USA, fatigue, breathlessness, chest pain, palpitations, loss of sense of taste or smell, cough, insomnia, cognitive impairment (loss of concentration or memory) and mental health issues appear to be particularly prevalent residual symptoms.

One study with a long follow-up of symptoms post-admission, surveyed 177 outpatients (9% hospitalised) between 3 and 9 months after the onset of COVID-19. Approximately 30% of the population reported persistent symptoms, with the most common persistent symptoms being fatigue (13.6%) and loss of sense of smell or taste (13.6%) (24).

Another study with a long follow-up of symptoms post-admission (110 days), surveyed 120 patients via telephone and reported the most frequent symptoms were: fatigue (55%), breathlessness (42%), loss of memory (34%), loss of concentration (28%) and sleep disorders (30.8%). There were no differences in symptoms between in patients on the ward or the intensive care unit (25).

A number of studies from England, the UK, Germany, Italy and the USA have described organ impairment in patients in recovery from COVID-19. Cardiac and lung impairment appear to be particular areas of concern.

In a prospective longitudinal study of 201 symptomatic individuals who had recovered from prior SARS-CoV-2 infection (both hospitalised and non-hospitalised), 66% had impairment in one or more organ systems, and 25% showed multi-organ impairment. Furthermore, organ impairment was more common in hospitalised versus non-hospitalised individuals (26).

Two studies have detailed a new or emerging symptom/illness as a consequence of SARS-CoV-2 infection (See Table 1). Case data from children and adults in the UK and USA suggest children and adults with COVID-19 can develop a hyperinflammatory syndrome that resembles multiple inflammatory syndrome. Symptoms include fever and gastrointestinal (digestive) issues, as well as heart problems such as tachycardia (rapid heartbeat). Admission to intensive care appears high.

Of note, in the literature review of hyperinflammatory syndrome case reports in adults by Morris et al.(27), 94% were ethnic minority patients, and of the 95 cases reported by Dufort et al., 40% were Black and 36% Hispanic (28).

A rapid living systematic review of Long Covid (11) included 39 studies (longest mean follow-up was 222 days post infection). From over 60 reported, the most common persistent symptoms (from both previously hospitalised and non-hospitalised adults and children) were weakness (41%), general malaise (33%), fatigue (31%), concentration impairment (26%) and breathlessness (25%) The symptoms ranged across systemic, cardiopulmonary, gastrointestinal, neurological, and psychosocial issues, suggesting Long Covid is a multifaceted condition.

Importantly, Michelen et al. (11) raise the issue that the heterogeneous nature of reported symptoms relating to Long Covid related to the wide variety of methods, study designs and Long Covid definitions employed and the limited reporting in this area.

A systematic review and meta-analysis of 15 studies in adults (hospitalised and non-hospitalised) assessing long-term effects of COVID-19 reported that the five most common symptoms were fatigue (58%), headache (44%), attention disorder (27%), hair loss (25%), and dyspnoea (24%). In addition, it was estimated that approximately 80% of patients that contracted COVID-19 developed one or more long-term symptoms (29).

A systematic review of 57 studies and over 250,000 adults and children with a previous SARS-CoV-2 infection (30) reported that more than half of people (54%) infected with COVID-19 experienced at least one continuing symptoms 6 months after diagnosis/recovery, although the majority of the included population had previously been hospitalised during acute SARS-CoV-2 infection (79%). The most common symptoms (varying timeframe post diagnosis/recovery) were related to functional mobility impairments, pulmonary abnormalities, and mental health disorders. The most frequently reported general symptoms were joint pain (10.0%), fatigue or muscle weakness (37.5%), and flu-like symptoms (10.3%) (30).

Long Covid appears much less prevalent in children and young people aged 2-24 years (0.2-1.9%) (23), although prevalence rates may depend on study size (31). A literature review of 17 studies including 15,250 children and young people (up to age 20 years) with follow-up of 28 to 324 days reported that the most common persistent symptoms were fatigue, insomnia, anosmia and headaches (31).

Impact on healthcare and social and health inequalities

The Health Foundation have suggested COVID-19 has impacted negatively on health and social care in five distinct ways: directly via death and illness, on acute healthcare, on non-acute healthcare including general practice, via the wider impacts of lockdown and social distancing, and finally the longer-term impact on NHS and social care capacity and resilience (32).

A number of analyses have sought to characterise disruptions to acute and non-acute healthcare services. For example, Mohamed et al. (33) examined all major cardiac procedures (n=374,899) in England between January and May for 2018-2020. Compared to monthly averages from 2018 and 2019, there was a deficit of 45,501 procedures in 2020. Importantly it was noted that there were fewer patients of Asian ethnicity during the COVID-19 period among most procedural groups. There was no increase in mortality related to most procedures during the first wave of COVID-19, although ethnicity specific data is lacking. Overall, it was clear that cardiac procedural activity significantly declined across England during the COVID-19 pandemic due to a combination of reduced provision as well as reduced health seeking behaviour as patients 'Protected the NHS' and stayed away from hospital.

Likewise, an analysis of French registry data between February and April 2020 (34), reported a 30% decrease in admissions for acute myocardial infarction following national lockdown, regardless of patient demographics (except age) and regional COVID-19 numbers. Similarly hospital data from England between January 2019 and June 2020, show that from pre-pandemic to during Wave 1 of the pandemic urgent cancer referrals fell by 70.4% and chemotherapy attendances declined by 41.5% (35).

Beyond secondary and acute care, primary care has seen changes not only to practice logistics and consultation strategies, but also to the amount and quality of care offered, as well as rapidly undertaking the Covid-19 vaccination programme in addition to 'routine' care and practice.

A retrospective study (2019 and 2020 data) of 288 primary care practices in Spain, examined impacts of COVID-19 on 34 indicators of care quality covering treatment, follow-up, control, screening, vaccinations and quaternary prevention. The greatest negative effect was seen for screening (e.g., diabetic foot screening) services. Overall, there was a negative impact on 85% of the 34 indicators in March 2020 and 68% in April, in comparison to 2019 (36).

Analysis of electronic health records from nearly 10 million people across the UK (data from 2017-2020) showed primary care contacts for almost all acute physical and mental conditions dropped markedly (compared to pre-lockdown periods) after the introduction of national lockdown restrictions, with limited recovery by July 2020. The greatest reduction in contacts were for diabetic emergencies, depression and self-harm (37). Similarly, an analysis of English NHS hospital activity by the Institute for Fiscal Studies (IFS) that between March and December 2020, there were 17.1 million (21.8%) fewer outpatient appointments compared with the same period in 2019. The reduction in the number of appointments among Asian (23.3%) and white (23.1%) patients were similar, with a larger reduction for black patients (19.6%)(38). While there was also a marked reduction in emergency inpatient admissions, these returned to 2019 levels by summer 2020.

In a global survey of routine care for chronic diseases, 67% of health care professionals rated moderate or severe effects on their patients due to changes in healthcare services during the early stages of the first wave. Diabetes (according to 38% of participating healthcare professionals), chronic obstructive pulmonary disease (9%), and hypertension (8%) were reported as the most impacted conditions due to a reduction in access to care. Six percent of respondents reported that cancer care had been most impacted (39).

An analysis of electronic health records of 14 million patients followed between March and December 2020 shows in England, rates of new type 2 diabetes diagnoses were reduced by 70% in April 2020, and across the UK between March and December, there were around 60,000 missed or delayed diagnoses. Rates of HbA1c testing in type 2 diabetes were also reported to have markedly reduced in England during the month of April (77% reduction) (40, 41). An important limitation of this work is that there was no sub-group analysis by ethnicity.

In addition to affecting provision of healthcare, the pandemic is believed to have altered access to healthcare services, and in some cases disproportionately. Analyses of electronic health records in England have suggested that the number of patients accessing mental health services dropped by 55% in the two months following lockdown in 2020 (42). When referrals increased, they were greater in rate in ethnic minority populations. A survey of cancelled surgical or medical appointments, and the number of care hours received during the UK national lockdown, reported females and those with a chronic illness experienced more cancellations, and that ethnic minorities and those with a chronic illness required a higher number of care hours (twice as likely to require increased care hours than White populations) (43).

The Organisation for Economic Co-operation and Development's (OECD) evaluation of the performance of health systems in OECD countries, published in November 2021 concluded that COVID-19 had particularly disrupted access to health services for non-COVID-19 patients at the beginning of the pandemic. Throughout 2020 in most countries, primary care consultations and hospital admissions and emergency department use fell, and elective surgery waiting times increased (44).

It is now clear that health and social inequalities have interacted to leave some populations (e.g., elderly, ethnic minorities, those living in deprived communities) at markedly increased risk of severe COVID-19 outcome (45). Yet, in addition to increased risk from the disease itself, prevention and control measures introduced by government and public health organisations (e.g., national lockdown, school closures) may have further increased social and health inequalities (27).

Although this report is mainly focused on health and social care, it is worth noting that the COVID-19 Marmot review (27) has detailed several changes to educational infrastructure and delivery during school closures in 2020 that could increase educational disparities for the most deprived children and young people. These include greater loss of learning time in deprived areas, less access to technology and IT equipment for more deprived children, and more deprived children being less likely to receive good quality online teaching. Coupled with this, Marmot reports that for children and young people during the pandemic: food poverty has risen, poverty overall may increase further, mental health has deteriorated, and unemployment is high compared to other age groups (27).

One of the most notable areas of potentially increased inequity is in relation to income and employment, which are closely tied to health and health inequality. Marmot details that low-income groups and part-time employees are the most likely to have been furloughed, which results in a 20% wage reduction. The greatest impact on unemployment or furlough has been seen in young people, some ethnic minorities, women, disabled workers, and low-income groups (27).

Ethnic minority groups, as suggested in on our first COVID-19 report (1), are more likely to work in casual/insecure employment, which has been significantly impacted by COVID-19 containment measures. Bangladeshi and Pakistani groups may be particularly affected, due to high employment levels in the restaurant sector, and in taxi driving (46). In addition, younger workers are more likely to work in shutdown sectors in White and Black ethnic groups, whereas in Bangladeshi and Pakistani populations it is older workers (27).

Although there are no long-term data on the impact of COVID-19 restrictions on health inequalities, the decline in employment levels in the UK, cessation of the furlough scheme, and decline in household earnings (particularly for the those on lower incomes) will negatively influence future health status as the association between economic deprivation and health outcomes is well documented (27). In particular, ethnic minority communities may be most affected as they are more likely to reside in the most deprived areas. In addition, there are indications of increased inequalities in mental ill-health (47,48), and there have been reductions in physical activity (49) and increases in levels of alcohol consumption (27).

Recommendations

Long Covid

In December 2020, guidelines (20) relating to the management of Long Covid were developed and published by NICE, the Scottish Intercollegiate Guidelines Network (SIGN) and the Royal College of General Practitioners (RCGP). These cover the identification, assessment and management of the long-term effects of COVID-19.

We are in agreement with all NICE recommendations, however due consideration of cultural adaptation and competency (e.g. information provision in a variety of languages and formats) will be necessary to ensure equity of assessment and outcome for ethnic minority populations. As part of the recommendations, NICE have completed an equality impact assessment, and they address underserved or vulnerable groups in some of the recommendations (e.g. supporting access to assessment and care).

In addition to the NICE recommendations, we suggest a range of actions that are a priority for ethnic minority populations. In particular it is important to highlight that there may be a Long Covid information and support gap for ethnic minority populations, and a lack of research on the burden of Long Covid in ethnic minorities.

Recommendations

1. Provision of advice and information on the self-management of Long Covid in multiple languages and formats (i.e. written, infographics, videos etc.).
2. Culturally tailored support groups, with consideration of the use of community and faith leaders to lead on this at community and faith sites.
3. Culturally tailored social prescribing.
4. Where possible, all Long Covid research should report on ethnicity data; and in addition, more research on the burden of Long Covid for ethnic minorities is required.
5. Upskilling and education of health and social care staff in deprived areas with high ethnic minority population to understand and deliver a culturally adapted language of consultation in patients with Long-COVID.

Vaccination

Data from the Office for National Statistics for December 2020 to April 2021, show vaccination rates for the first dose of COVID-19 vaccine (in the over 50's) were higher in the White British population compared to all ethnic minority groups. The lowest vaccination rates were reported in Black Caribbean and Black African (66.8% and 71.2%) groups and people from Pakistani (78.4%) backgrounds (15). Earlier data from the Open Safely Collaboration also showed lower vaccination rates in ethnic minorities. Specifically the overall vaccination rate for the over 80's has been estimated at 41.1%. In the white population this has been reported as 42.5%, with significantly lower rates of 20.5% for people of Black ethnicity, and 29.5% for South Asians, and 27.0% for people of Mixed ethnicity (14). Further analyses based on 24 million adults in England aged over 40 who had received at least one COVID-19 vaccine by June 2021 reported that all ethnic groups had lower age-standardized rates of vaccination compared with the white British population (50). Data up to August 2021 also shows lower vaccination rates in ethnic minority groups across all age groups (except those aged 18-29 years), with the disparity widening over time (December 2020-August 2021) (51). Given the increased vulnerability of ethnic minority groups to COVID-19, there is still a need to prioritise ethnic minority communities for vaccination (and booster vaccination) as per the Joint Committee on Vaccination and Immunisation recommendations (52).

Vaccine hesitancy, which also applies to the ongoing booster vaccination programme of Autumn/Winter 2021/22, is an issue among ethnic minority communities, and there is also data to show that there is hesitancy among ethnic minority health care workers (53,54). We suggest consideration of the World Health Organization's Three C's Framework, which outline Confidence, Complacency, and Convenience as key drivers of vaccine hesitancy (55).

In this model, confidence is defined as trust in the effectiveness and safety of vaccines; and the system that delivers them, including the reliability and competence of the health services and health professionals. In addition, it includes trust in the motivations of the policy-makers who decide on the need for a vaccination programme (55). Efforts should be made to address this vaccine hesitancy by building confidence and trust, and increasing anti-disinformation efforts related to the vaccine, particularly targeted at ethnic minority communities. As with many other COVID-19 prevention measures, there will be a need for culturally tailored (multiple languages, written and graphic form) evidence-based and scientifically robust vaccine messaging (that is easy to understand and with evidence drawn from similar communities), and tailored/flexible vaccine delivery (i.e. to account for people in low income employment working shifts etc.). In addition, trusted community sites should be used for vaccine rollout such as faith and community centres.

Supporting our contention above, a cross-party parliamentary report suggested that the NHS, government and local authorities should "ensure that health advice during the remainder of the pandemic and in any future emergencies should be available in a full range of languages, and that outreach programmes should reflect what is most effective in the cultural context of different communities"(56).

Complacency refers to the perceived risks of the vaccine preventable disease (i.e. COVID-19) being low, and therefore individuals may not see vaccination as a necessary preventive action. This may especially be the case in younger cohorts of the UK population, and therefore we suggest continued efforts to highlight the risks of SARS-CoV-2 infection and longer-term health and social impacts, particularly for ethnic minorities.

Finally, convenience is primarily the impact of accessibility (geographic and affordability) on uptake, and the degree to which vaccination is delivered at a time and place and in a cultural context that is convenient and appropriate. Clearly therefore, access to vaccination sites including opening times are important for all, in particular ethnic minority communities, due to the cost of travel, potential loss of earnings and shift work. We recommend vaccination sites should be located within the community with flexible working hours. The use of faith centers as vaccination sites should be expanded as they inspire confidence and are good for community cohesion. Vaccination during periods of fasting and festivals should continue at the same pace with the support of faith leaders.

Recommendations

1. Culturally tailored vaccine messaging – available in different languages, literacy levels and formats (e.g., written, infographics, videos).
2. Use of community, mobile and faith centres as vaccination sites. These sites need to be accessible, convenient and embedded within the community.
3. Out of hours vaccination sites to accommodate those requiring flexible timings
4. Use of religious and community leaders to provide messaging in religious sermons to encourage worshippers to take the vaccine (Healthcare professional-led education for faith leaders will help ensure an informed message is delivered).
5. Vaccination considerations during periods of fasting and festivals (provide out of fasting timings for vaccination and use of religious centres as vaccination sites).
6. Mobile vaccine options, to take the vaccination programme out into community.
7. Continued efforts to highlight the risks of SARS-CoV-2 infection and longer-term health and social impacts.
8. Countries with high vaccine coverage should support other countries with lower population coverage (e.g. India, Pakistan, Nepal, Bangladesh, Sri Lanka) with vaccine supplies and not stockpile for booster doses.
9. In December 2020, SAGE outlined six recommendations to improve vaccine uptake among ethnic minorities, including the avoidance of stigmatising certain communities if they are prioritised (e.g. older adults) or by undue focus on specific barriers e.g. disinformation spread in faith groups. We also suggest implementation of all recommendations set out by SAGE (57).
10. Ethnic minority representation is low across all COVID-19 studies, including vaccine trials (58). It should be a priority to increase ethnic minority representation in vaccine post-marketing studies.
11. Vaccine research needs to clearly communicate outcomes by ethnicity, in order to demonstrate efficacy of vaccines in all ethnic populations and aid confidence in the vaccines

Managing non-COVID-19 healthcare

The British Medical Association (BMA) have published ten principles on how the NHS should approach managing non-COVID-19 healthcare (59). In relation to supporting health and care workers we would support a number of these being implemented including adequate provision of PPE, measures to protect staff wellbeing, consultation on staff re-deployment. In particular, ethnic minority healthcare workers reported receiving inadequate PPE during the first wave of the pandemic (60), and clear communication and engagement will be required to restore confidence among staff. Organisations should be encouraged to share and learn from each other's good practices.

We also support the use of remote working, where clinically appropriate, and of technology to empower patients. The increased use of technology to support patient care would however, require further thought as for some minority communities, particularly in older adults, there may be a digital divide in comparison to White counterparts (61). In relation to decision making on restoring care, entrusting local clinical and public health teams would ensure that the specific needs of local communities are met. This will also be important in the longer-term. In their recent report on renewing healthcare, The Kings Fund (62), state that health and social care services need to consider meaningful local involvement/engagement with a particular focus on those who experience ill health, disability and inequalities.

The process of re-establishing full healthcare services should not exacerbate existing inequalities, rather, restoration should specifically seek to reduce health inequality. National-level action is needed to ensure that where there is variation in access to non-Covid NHS services, measures are taken to enable access. Patients should be encouraged to seek healthcare in both primary and secondary care, as and when they require it.

Recommendations

1. Risk assessments should continue to be performed with occupational health. Occupational roles should be provided as appropriate to the risk assessments, including the opportunity to provide non-facing roles including remote working and virtual where clinically appropriate.
2. People from ethnic minority groups contribute to frontline key workers and people facing occupations. All frontline key workers require adequate PPE provision, but there should be particular focus on at-risk groups such as ethnic minority populations. MP's have identified the provision of PPE for ethnic minority workers in the NHS and care sectors as an area where government need to set out a more comprehensive strategy (56)).
3. When offering virtual consultations, we should be mindful that not all can afford internet or data connections, access to smartphones or laptops for NHS applications. In addition, some patients may not have the facilities to feel comfortable in 'inviting' a healthcare professional 'into' their home. Therefore there is a need to ensure face-to-face or telephone consultations are available as alternatives with appropriate language barriers addressed (e.g. availability of translator etc.).
4. In restarting healthcare, strategic planning will be required to ensure health inequalities are reduced and not increased. Levelling up requires tangible initiatives.

Healthcare Disruption and Long-term Conditions

There are concerns that disruption to healthcare may have had detrimental impacts on the management of long-term conditions, which is particularly concerning given that a number of comorbidities are related to increased vulnerability to COVID-19 (e.g. diabetes, heart disease etc.) and that these are more prevalent in ethnic minority groups.

Reports on data collected before and after natural disasters such as hurricanes detail the negative impacts on the management of long-term conditions such as Diabetes (63, 64), as well as exacerbated inequalities in markers of disease (63). Therefore, as noted above, the reintroduction of full healthcare services will need to be implemented in a way that does not exacerbate these inequalities. In relation to the re-establishment of full acute and non-acute healthcare in the management of long-term conditions, we suggest there may need to be a degree of targeting to ensure those at the greatest risk for increased health inequality (e.g. ethnic minorities, people living in deprived communities etc.) are not left behind.

Some recommendations to address the impact of COVID-19 on the management of long-term conditions, such as diabetes have been published (65), but there is need for a clear national long-term strategy to ensure that restarting all non-Covid work does not exacerbate inequalities in long-term conditions for ethnic minority populations.

A cornerstone of a national strategy should be the routine collection and monitoring of data on inequalities in risk factors and medium- and long-term outcomes related to long-term conditions among at risk populations (e.g. ethnic minorities, deprived populations etc.). Such data should be used to inform annual reviews within primary and secondary care to help support risk factor control and self-management, and where appropriate implement intervention.

Within primary care, it would be useful to implement longer term follow-up/tracking of patients with diabetes, CVD, renal disease, and mental ill-health. Non-attainment of the three national targets for Blood pressure, HbA1c and Cholesterol could lead to higher rates of significant diabetes complications such as stroke, myocardial infarction and renal replacement in future. Therefore, screening for complications (urine albumin, retinal screening and foot examination) should be prioritised together with achieving treatment targets. These are: Blood pressure ≤ 140/80 mmHg, HbA1c ≤48 mol/mol (66), Cholesterol < 5mmol/l, and statins for combined prevention of CVD. As well as increasing/starting long-term screening effort for diabetes, CVD, and renal disease from age 25 and above.

Efforts to disseminate culturally appropriate cancer screening information to increase uptake are also warranted due to lower cancer screening rates among ethnic minority groups. In addition, there should be increased focus on mental health services, in particular for ethnic minorities who already faced inequalities prior to the pandemic, and which may have widened due to the direct impacts of the pandemic as well as disruption to mental health services (67). Key actions suggested by mental health experts in the scientific literature include ensuring information and psycho-education packages are available to those with English as a second language, and addressing culturally relevant illness perceptions to alleviate fears around mental health services (67). In addition, there may be a need to maintain flexibility in care packages, and personal relationships with patients from ethnic minorities to continue existing care, and to identify needs of deteriorating mental health (67).

To mitigate the impacts on management of long-term conditions, and to ensure health inequalities do not widen, we also suggest there is a need for increased development of self-management resources for people living with long-term conditions, including print and online educational materials and access to remote support offerings (65). Social prescription could be used to provide remote social support, although more will need to be done to address the deficit in social prescription for ethnic minority patients (68).There is also need for culturally adapted lifestyle counselling with increased focus on tight risk factor control i.e. nutrition, physical activity, smoking, alcohol etc.

Recommendations

1. Routine collection and monitoring of data on inequalities in risk factors and medium- and long-term outcomes related to long-term conditions among at risk populations.
2. Routine data (as above) should be used to inform annual reviews within primary and secondary care.
3. Ethnic minority populations are more likely to have chronic diseases such as diabetes, obesity etc. There is a need to address these health inequalities in ethnic minority groups.
4. Ensure the continued screening of conditions such as diabetes (with the National Diabetes Prevention Programme), CVD and renal disease to meet existing regional and national targets. This should include focusing efforts on health awareness messaging, which should be culturally appropriate and available in different languages and formats. These health education programmes should be delivered in communities, i.e. by using community and faith leaders/centres/groups.
5. Increased focus on mental health services, in particular for ethnic minorities who already faced inequalities prior to the pandemic, and within which mental health issues are not openly discussed.
6. Development of self-management resources for people living with long-term conditions, including print and online educational materials.
7. Culturally adapted lifestyle counselling with increased focus on tight risk factor control. This could be facilitated through social prescription.
8. Monitoring and ensuring new digital technologies (e.g., diabetes technology such as Continuous Glucose Monitoring) are equitably prescribed in ethnic minorities.

Strengthen Healthcare Systems

The pandemic has highlighted the need to increase the resilience of healthcare systems and the roles that both primary and secondary care play in this. The pandemic and subsequent national vaccination programme identified gaps/weak spots in the overall healthcare service. Both primary and secondary care systems need to adapt from the learnings of the pandemic, as well as the changing demands of the population.

In particular, the healthcare systems and the workforce need to focus on how best to understand and reduce health inequalities, and improve equity of care. There is also a necessity for all healthcare systems to ensure that inequalities in ethnic minority health are not widened by the increased use of remote appointments (which many may have difficulty in accessing), a lack of multilingual and culturally competent/sensitive staff, poor coding of ethnicity, and lack of targeted routine monitoring of care and outcomes.

Healthcare systems can contribute to preventing future pandemics through disease surveillance (flu watch) identification of vulnerable individuals and households, coordination of care for long-term conditions, and liaison with public services. Hence there is a need for a healthcare funding formula that takes account of the specific needs of the population.

Recommendations:

1. Develop a healthcare funding formula that is specific to the growing and changing demands of population.
2. Increase provision of interpreters and or multilingual staff within all healthcare systems.
3. Improve the accuracy and extent of the coding of ethnicity within healthcare systems.
4. Implement the routine monitoring of access, care and outcome by ethnicity.
5. Ensure that disparities are not widened for ethnic minorities by the increased use of remote access to healthcare systems.
6. Offer a choice of alternative appointment modes for vulnerable populations where required i.e. face-to-face, telephone, SMS, video, home visits etc.

Inequalities and Wider Social Determinants

The recent Marmot report (27) highlighted a range of actions that could be taken to tackle inequalities in social, economic and educational conditions.

In relation to education, we would endorse a number of actions recommended by Marmot including the funding of catch-up tuition for children in most deprived areas/most at need, and increasing the loan of laptops and required equipment. We would also suggest that a national working group should be formed to address educational inequalities related to the pandemic.
In regard to food poverty, we also endorse the suggestion to extend free school meal provision for children in households receiving universal credit, and increased funding to food banks/food charities.

In our previous COVID-19 report, we also set out a series of long-term recommendations for tackling health, occupational, and housing disparities, as well as structural inequality within the NHS (1). These all still remain a priority in the post-COVID era, and the primary recommendations are detailed below.

Recommendations

1. Form a national expert working group to address educational inequalities related to the pandemic (and pre-existing socially graded educational inequalities).
2. Address educational inequalities: fund catch-up tuition/increased loan of laptops and other school equipment.
3. Tackle food poverty: extend free school meal provision, increase funding for food banks.
4. Tackle unemployment.
5. Policy level intervention to reduce the high level of precarious or lower quality employment in ethnic minority communities (from previous report).
6. Ethnic minority-specific national strategy should be developed to identify and remove barriers that constrain entry to higher income occupations; address bias in the recruitment process, and in promotion and pay decisions; report on income and employment inequalities by ethnicity; and provide clear career pathways and development opportunities (from previous report).
7. To protect the most vulnerable members of society, many of whom are ethnic minorities, the government should ensure Universal Credit, benefit systems and housing allowances adequately provide for the most vulnerable families and their needs (from previous report).
8. For disadvantaged communities and ethnic minority populations there is a need for increased investment in new and existing affordable housing and social housing (from previous report).

The implementation of these recommendations could draw on the political leverage of a recent cross-party parliamentary report which stated that the governments ‘Levelling Up’ agenda should have a particular focus on disadvantaged groups such as ethnic minorities (56).

Research

There is a lack of inclusion of ethnic minority populations in COVID-19 studies of all kinds, which mirrors the low participation in clinical trials and in health and social care research in general. Researchers should consult resources such as the Include Ethnicity Framework or the NIHR Toolkit, for guidance on how to consider factors that may influence the involvement of ethnic minority participation in research trials. Where there are evidenced inequalities in health and social outcomes, future research must ensure adequate subgroup representation (be that ethnicity, age, gender etc.) to identify potential differential benefits from an intervention to address inequity.

A large number of clinical trials will have been delayed by COVID-19, and therefore there is also a necessity to assess the delay to these trials and how these could be reworked to continue e.g. using technology-based interventions.

Related to low inclusion, is the issue of the missing or inaccurate coding and reporting of ethnicity in health and social care research (69). We recently set out recommendations for minimum ethnicity coding categories for use in health and social care research (70) and the Government Statistical Service is currently working on harmonised ethnicity standards (71). In addition, the NHS Race and Health Observatory have developed recommendations on maximising the use of current ethnicity data and how to improve underlying ethnicity data in future (72). Complete, useable, accurate and detailed ethnicity data is required for clinicians, researchers and policy makers to further examine and tackle causes of health and social care inequalities for all minority and underserved communities. Having comprehensive and accurate datasets would make population health management strategies equitable as well as targeted.

There is also a need for greater understanding of the medium and longer-term impact of the COVID-19 pandemic on health and social care, and wider determinants of health.

Recommendations

1. Researchers should consult resources/training such as the Include Ethnicity Framework or the NIHR Toolkit, for guidance on how factors that may influence the involvement of ethnic minority participation in research trials.
2. It will be essential to train researchers at all career stages on cultural competency, to ensure the recruitment and retention of ethnic minority participants in research studies.
3. Assess how delayed clinical research trials can be remodeled to continue e.g. via technological solutions where appropriate.
4. Further develop and employ standardised protocols for the collection and coding of ethnicity in health and social care research, and ensure where possible that these can align with international ethnicity data collection/coding standards/norms.
5. Researchers should consult the ethnicity data/coding recommendations developed by the NHS Race and Health Observatory, with a particular focus on reporting standards; and policy and organisational support is required for implementation of recommendations focused on improving the quality of underlying ethnicity source data.

Authors and acknowledgements

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Table 1. key papers detailing long-term impact of COVID-19

Outcome	Author	Design	Population	Key Findings
Persistent Symptoms	Carfi et al. (74)	Not described	Individuals discharged from hospital after recovery (mean 60 days after onset of first symptom) from SARS-CoV-2 infection (Italy)	Poorer quality of life among 44.1% of patients. A high percentage reported fatigue (53.1%), dyspnea (43.4%), joint pain, (27.3%) and chest pain (21.7%).
	Halpin et al. (75)	Service Evaluation	Individuals discharged (mean 48 days post) from hospital after recovery from SARS-CoV-2 infection. Had previous positive SARS-CoV-2 test (UK)	New illness-related fatigue was most common reported symptom by 72% participants in ICU group and 60.3% in ward group. The most common additional symptoms were breathlessness (65.6% in ICU group and 42.6% in ward group) and psychological distress (46.9% in ICU group and 23.5% in ward group).
	Garrigues et al. (25)	Prospective Cohort	Individuals discharged (mean 110 days post-admission) from hospital after recovery from to SARS-CoV-2 infection, and with positive SARS-CoV-2 test (France)	Most frequently reported symptoms were fatigue (55%), dyspnoea (42%), loss of memory (34%), concentration (28%) and sleep disorders (30.8%). No differences in symptoms between ward and ICU patients.
	Tenforde et al. (76)	Not described	Individuals 14-21 days after positive SARS-CoV-2 test (USA)	Median number of symptoms was seven of 17 listed in the interview tool, with fatigue (71%), cough (61%), and headache (61%) the most commonly reported.
	Logue et al. (24)	Longitudinal Prospective Cohort	Individuals 3-9 months after illness onset, and with positive SARS-CoV-2 test (USA)	Approximately 30% of the population reported persistent symptoms, with the most common persistent symptoms being fatigue (13.6%) and loss of sense of smell or taste (13.6%).
	Office for National Statistics (23)	Cross-sectional survey of representative households	297,743 responses to the Coronavirus (COVID-19) Infection Survey (CIS). Respondents from randomly sampled private households from all regions of the UK (Collected over four week ending 5 September 2021).	An estimated 1.1 million people in in the UK reported experiencing Long COVID (symptoms persisting for more than four weeks after the first suspected SARS-CoV-2 infection that were not explained by something else). Fatigue was the most common symptom (56%), followed by shortness of breath (40%), loss of smell (32%), and difficulty concentrating (31%).
	Xiong et al (77)	Longitudinal Cohort	Patients (n=538) discharged from hospital (median 97 days post) following recovery from SARS-CoV-2 infection (China).	Most common clinical sequelae were general persistent symptoms (49.6%), respiratory symptoms (39%), cardiovascular-related symptoms (13%), psychosocial symptoms (22.7%) and alopecia (28.6%).
	Huang et al.(78)	Ambidirectional cohort	Patients (n=1733) discharged from hospital (median 153 days post) following recovery from SARS-CoV-2 infection (China).	Over ¾ of patients (76%) reported at least one symptom at 6 months after symptom onset. The most common symptoms were fatigue, muscle weakness (63%) and sleep difficulties (26%). Anxiety or depression was reported by 23% of patients.
Organ impairment/ dysfunction	Ayoubkhani et al.(79)	Retrospective Cohort	Individuals discharged from hospital following SARS-CoV-2 infection (with confirmed positive test), compared with a matched control group from the general population (UK).	Significantly higher rates of respiratory disease, diabetes, and cardiovascular disease in patients with COVID-19 compared to matched controls. Rates higher in ethnic minority compared to white groups, particularly for respiratory disease.

Outcome	Author	Design	Population	Key Findings
	Dennis et al. (16)	Prospective, longitudinal, observational	Individuals symptomatic after recovery from acute SARS-CoV-2 infection (England)	Sixty-six percent had impairment in one or more organ systems. Multi-organ impairment in 25% of individuals. Organ impairment more common in hospitalised versus non-hospitalised.
	Raman et al.(80)		Patients (n=58) discharged from hospital (mean 1.6 months post) following recovery from SARS-CoV-2 infection, compared with a matched control group from the general population (UK).	Between 2–3 months from disease-onset, 64% of patients reported breathlessness and 55% reported fatigue. From MRI data, abnormalities were observed in the lungs (60%), heart (26%), liver (10%) and kidneys (29%).
	Puntmann et al. (81)	Prospective observational cohort	Individuals in recovery (median 71 days from diagnosis) from SARS-CoV-2 infection (with confirmed positive test) (Germany)	Cardiac involvement in 78 patients (78%) independent of pre-existing conditions, severity and overall course of illness, and time from original diagnosis. Most prevalent was on-going myocardial inflammation in 60 patients (60%).
	Fumagalli et al. (82)	Case series	Individuals admitted to a respiratory acute care ward with SARS-CoV-2 infection (with confirmed positive test) (Italy).	Compared to baseline (discharge), at 6 weeks pulmonary function improved but forced vital capacity was still significantly lower than lower limits of normality calculated for each patient.
	Patell et al. (83)	Retrospective observational cohort	Individuals discharged (median 30 days post) from hospital following SARS-CoV-2 infection (with confirmed positive test) (USA)	Thirty days post discharge cumulative incidence of: thrombosis (including arterial and venous events) was 2.5%, venous thromboembolism alone was 0.6%, and major hemorrhage was 0.7%.
	Roberts et al. (84)	Not described	Individuals discharged from hospital after medical admission (including after recovery from SARS-CoV-2 infection)(UK)	Greater odds (Odds ratio of 1.6, though not statistically significant) of post discharge venous thromboembolism following hospitalisation with COVID-19, compared with 2019 medical admissions.
New symptoms/ illness	Dufort et al. (28)	Not described	Hospitalised pediatric patients with multisystem inflammatory syndrome and SARS-CoV-2 infection (USA).	Of 95 patients with confirmed multisystem inflammatory syndrome (and 4 with suspected) all presented with subjective fever or chills, 97% had tachycardia, 80% had gastrointestinal symptoms, 60% had rash, 56% had conjunctival injection, and 27% had mucosal changes. 80% were admitted to intensive care, and 2 died.
	Morris et al. (85)	Case Report (literature review)	Hospitalised adult patients with multisystem inflammatory syndrome and SARS-CoV-2 infection (UK and USA)	Of 16 case reports of multisystem inflammatory syndrome (MIS), 75% had fever at time of presentation, all had evidence of cardiac effects and 81% had gastrointestinal symptoms. At time of assessment for MIS 62% tested positive for COVID-19, and 37% negative (of which 4 patients had positive antibody tests when first evaluated).

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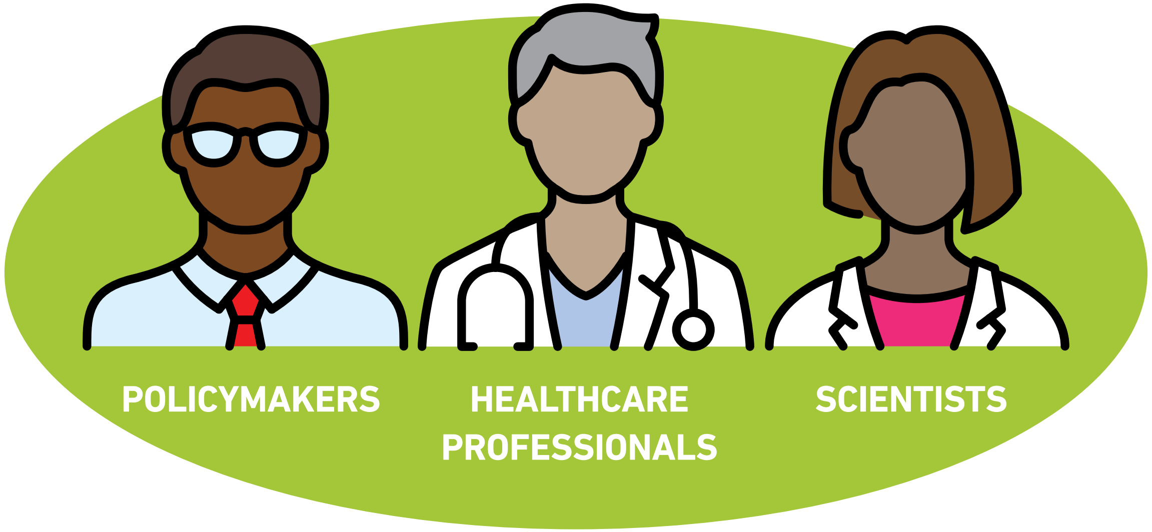
Figure 1. Recommendations to healthcare professionals, policymakers and scientists

Countries with high vaccine coverage should support other countries with low coverage with vaccine supplies and not stockpiling

Address vaccine hesitancy and increase uptake:

- Use culturally tailored messaging and different languages and formats
- Work with community and faith leaders for messaging
- Use community and faith centres as vaccination sites

Develop and provide culturally tailored information on long Covid with support groups and social prescription



Reduce health inequalities in minority ethnic groups including long-term conditions (e.g. diabetes, hypertension, cardiovascular disease)

Use of interpreters when offering medical appointments. Offer virtual consultations but also provide alternative telephone or face-to-face appointments

Recruit and retain minority ethnic groups in research studies

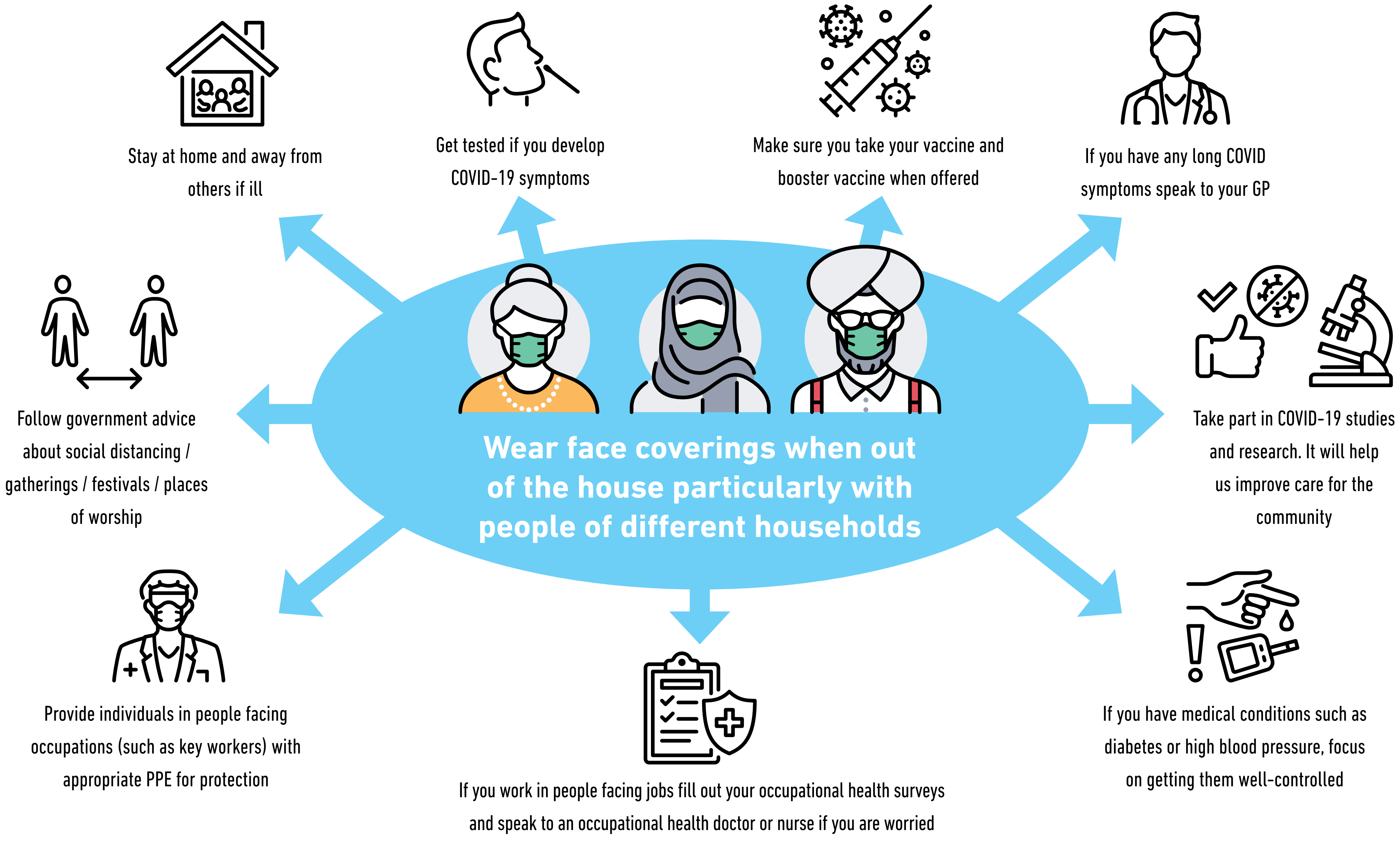
Address structural and social inequalities

Those frontline key workers and people facing occupations should be provided with adequate PPE (personal protective equipment)

Accurate ethnicity coding and recording

Ensure all in people facing roles, complete occupational health assessments

Figure 2. Preventing COVID-19 infection and reducing risks from infection



Wear face coverings when out of the house particularly with people of different households

Stay at home and away from others if ill

Get tested if you develop COVID-19 symptoms

Make sure you take your vaccine and booster vaccine when offered

If you have any long COVID symptoms speak to your GP

Follow government advice about social distancing / gatherings / festivals / places of worship

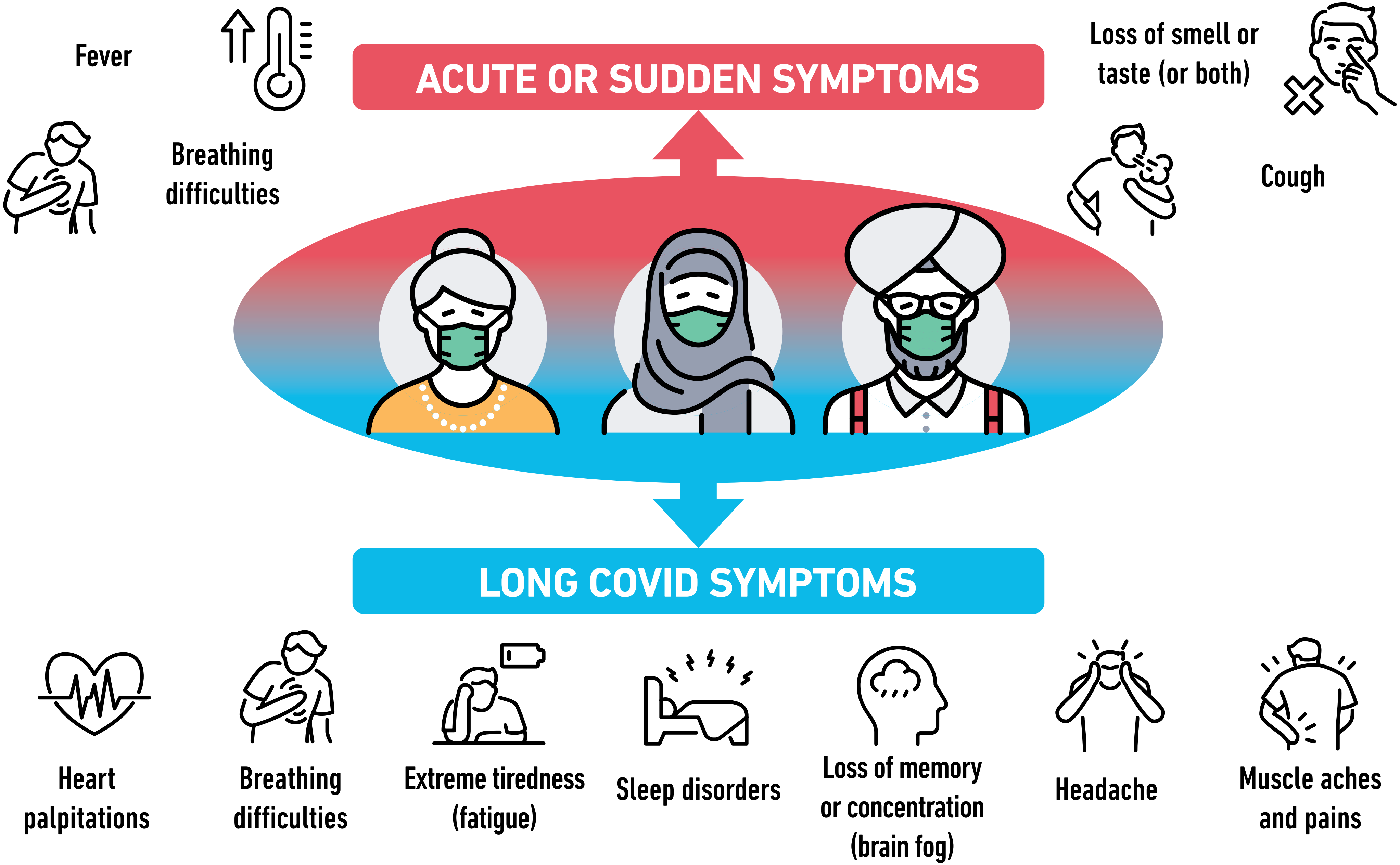
Take part in COVID-19 studies and research. It will help us improve care for the community

Provide individuals in people facing occupations (such as key workers) with appropriate PPE for protection

If you work in people facing jobs fill out your occupational health surveys and speak to an occupational health doctor or nurse if you are worried

If you have medical conditions such as diabetes or high blood pressure, focus on getting them well-controlled

Figure 3. Acute symptoms of COVID-19 and symptoms of Long Covid



ACUTE OR SUDDEN SYMPTOMS

- Fever
- Breathing difficulties
- Loss of smell or taste (or both)
- Cough

LONG COVID SYMPTOMS

- Heart palpitations
- Breathing difficulties
- Extreme tiredness (fatigue)
- Sleep disorders
- Loss of memory or concentration (brain fog)
- Headache
- Muscle aches and pains

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