Securing a sustainable, fit for purpose UK health and care workforce

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Abstract: Approximately 13% of the total UK workforce is employed in the health and care sector. Despite substantial workforce planning efforts, the effectiveness of this planning has been criticised. Education, training and workforce plans have typically considered each healthcare profession in isolation and have not adequately responded to changing health and care needs. The result is persistent vacancies, poor morale and low retention. Areas of particular concern highlighted in this paper include: primary care, mental health, nursing, clinical and non-clinical support staff, and social care. Responses to workforce shortfalls have included a high reliance on foreign and temporary staff, small-scale changes in skill-mix, and enhanced recruitment drives. Impending challenges for the UK health and care workforce include growing multimorbidity, an increasing shortfall in the supply of unpaid carers and the relative decline of the NHS's attractiveness as an employer internationally. We argue that to secure a sustainable, fit for purpose health and care workforce, integrated workforce approaches need to be developed alongside reforms to education and training which reflect changes in roles, skill mix and multidisciplinary working. Enhancing career development opportunities, promoting staff-wellbeing, and tackling discrimination in the NHS are all needed to improve recruitment, retention and morale of staff. An urgent priority is to offer sufficient after care and support to staff who have been exposed to high-risk and traumatic experiences during the COVID-19 pandemic. In response to growing calls to recognise and reward health and care staff, growth in pay must at least keep pace with projected rises in average earnings which, in turn, will require linking future NHS funding allocations to rises in pay. Through illustrative projections we demonstrate that to sustain annual growth in the workforce at approximately 2.4%, then increases in NHS expenditure

25 at 4% annually, in real terms, will be required. Above all, radical long-term strategic vision is needed
26 to ensure that the future NHS workforce is fit for purpose.

27 **Introduction**

28 Health and care is a heavily service oriented sector, with staff costs accounting for around 60% of
29 NHS provider spending.[1] The NHS in England is the world's fifth largest employer, with around 1.5
30 million employees. [2] In Scotland, the NHS employs around 164,000 staff,[3] in Wales around 95,000,[4]
31 and in Northern Ireland around 67,000.[5] A further 2 million people are employed to deliver social
32 care services,[6] defined as the provision of personal care for children, young people and adults in
33 need or at risk. Together, the health and care labour market accounts for approximately 13% of the
34 UK workforce.[7] In addition, around 9.1 million people in the UK are unpaid (so-called "informal")
35 carers, notably family members, providing unpaid care support.[8] During the COVID-19 pandemic,
36 this has increased to over 13.6 million people.[8] Increasingly, members of the public are being
37 encouraged to take greater responsibility for their health and to perform self-care.[9]

38 As with most other OECD countries, the health and social care workforce in the UK is
39 overwhelmingly female.[10] 77% of the NHS workforce,[11] and 82% of the adult social care workforce
40 are women.[12] However, there are wide disparities in the gender distribution of roles. In 2018 only
41 37% of senior roles in the NHS were held by women (this represents an increase from 31% in
42 2009),[13] and in social care, despite men only comprising 18% of the overall workforce, they occupy
43 33% of senior management positions.[12] A significant gender pay gap exists in the NHS, with the
44 average hourly salary for women being 19% less than that for men.[14] One factor that contributes is
45 that woman make up 80% of those employed on the lowest Agenda for Change pay bands (bands 1-
46 4).[14] The health and social care workforces are ethnically and culturally diverse. As of the last census
47 people from ethnic minorities made up 14% of the population in England and Wales and 40% of the
48 population in London,[15] whilst as of 2019 they made up approximately 20% of the NHS workforce
49 and almost half of all NHS staff in London.[16] Ethnic minority staff are concentrated in lower pay

grades in the NHS with only 6.5% of very senior managers and 8.4% of board members at NHS trusts being from ethnic minority backgrounds.[16] Ethnic minority staff are less likely to be promoted or appointed to jobs they apply for and more likely to experience discrimination, bullying and harassment from both NHS colleagues as well as from patients.[17] The recent COVID-19 pandemic has seen a disproportionate number of deaths in staff from ethnic minority backgrounds, which has increased debate around the role of discrimination and racism in the NHS as a factor contributing to persistent health inequalities between different ethnic groups.[18]

The effectiveness of health and care workforce planning has significant implications for the NHS and social care, and the health and wellbeing of the UK population. A sustainable health and care workforce is one which will be able to meet the needs of the population in the immediate term and for the foreseeable future. To deliver a sustainable and appropriately skilled health and care workforce, a long-term workforce strategy is needed. This should be informed by workforce planning models that consider the necessary mix of skills to meet the changing health and care needs, as well as aspiring towards developing a self-sufficient supply of staff, rather than an ongoing reliance on foreign trained staff. [19,20] The strategy needs to take account of technological developments that have the potential to improve quality of care and productivity. It should also embed life-long learning, promote effective substitution of skills between healthcare professions, and prioritise the health and wellbeing of the workforce itself to improve recruitment and retention.

COVID-19 has exposed weaknesses in the workforce, and the UK has experienced one of the highest rates of excess mortality attributable to the pandemic. The health and care workforce were placed under unprecedented pressure and frequently exposed to high-risk and traumatic situations.[21] The health and care workforce will continue to be put under considerable strain as the NHS seeks to address a growing backlog of unmet need for healthcare services caused by the cancellation or postponement of many elective procedures and routine care.[22] Now, as the UK seeks to rebuild its

75 health and care service and improve resilience against future healthcare shocks, we discuss how to
76 develop, support and sustain the current and future health and care workforce.

77 This paper outlines (1) in brief, the current approach to developing the health and care workforce
78 and the consequences of this approach, highlighting areas where major staff shortfalls exist; (2) the
79 current strategic response to these shortfalls; and (3) future challenges and suggested reforms to
80 ensure the future workforce is sustainable and fit for purpose. The scope of this paper is the UK
81 health and care workforce and, where possible, we refer to UK-wide data. However, when these do
82 not exist, we refer to the best available data which, in many cases, is from England. We have found
83 the inconsistency of data collection between England, Scotland, Wales and Northern Ireland
84 particularly challenging, and the standardisation of health and care data collection across the UK is
85 recommended within the main LSE-Lancet Commission report. [23]

86 **The current approach to education, training and planning for the UK health and care workforce**

87 *Education and Training*

88 Workforce planning for the NHS begins with recruitment to higher education programmes in
89 medicine, nursing, pharmacy, and many other health and care professions. The numbers of publicly
90 funded places on such programmes, apart from a small number associated with private university
91 entry, are determined by bodies including Health England Education (HEE), NHS Education for
92 Scotland (NES), Health Education and Improvement Wales (HEIW), and the Northern Ireland Medical
93 & Dental Training Agency (NIMDTA). Regulatory standards are shared across constituent countries,
94 with the remit of regulatory bodies such as the General Medical Council (GMC), General Dental
95 Council (GDC) and Nursing & Midwifery Council (NMC) being UK-wide. Furthermore, the scope of the
96 medical royal colleges extends across the UK,[24] and they play a crucial role in setting educational
97 standards and issuing guidance.

98 It takes three years for registered nurses and most allied health care professionals, such as
99 midwives, physiotherapists and occupational therapists, to complete undergraduate training. [25]
100 Undergraduate training for physicians and dentists normally takes five to six years, or four years
101 through a graduate programme.[26] Following the completion of a two year foundation programme,
102 further postgraduate training for physicians varies between three to eight years dependent upon
103 specialism.[27] Consequently the training of healthcare professionals is expensive, estimated to cost
104 close to £66,000 to train a registered nurse, £393,000 for a general practitioner (GP), and
105 approximately £516,000 for a consultant (a senior physician who has completed speciality
106 training).[28] The relatively low cost of nurse training reflects to a large extent, the minimal investment
107 in post registration training for nurses. For physicians, around £65,000 is in the form of repayable
108 loans for living costs and tuitions,[29] with the remainder coming from public funds. Repayable loans
109 are lower in Scotland, where Scottish students are not required to pay tuition fees if they attend
110 university in Scotland.[30] For nurses, depending upon their residence status, students may be eligible
111 for a bursary to cover their tuition fees in Scotland, Northern Ireland and Wales.[31] Students in
112 England, however, are required to pay tuition fees, following the removal of bursaries in 2017.[32] In
113 response to concerns about recruitment to nursing, the UK Government has in part, reversed this
114 decision, and all nursing students commencing programmes in England from September 2020 are
115 now eligible for a non-repayable bursary of at least £5000 per year,[33] which covers approximately
116 half of the cost of tuition years. Following the removal of bursaries in England, acceptances to study
117 nursing in England have increased by 2% in 2019 compared to 2016.[34] Over the same period,
118 acceptances to study nursing in Wales and Scotland have risen by 18% and 24% respectively, and in
119 Northern Ireland remained stable.[34] With nursing vacancies increasing, estimated at over 40,000 in
120 England,[35] the House of Commons Health and Social Care Committee has expressed concern about
121 the lack of planning associated with pre and post registered nurse training, stating that this requires
122 urgent attention if future supply is to match demand. [36]

123 The training and development of clinical and non-clinical support staff has received less attention
124 than other staff groups. Comprising approximately 40% of the workforce, [37] this large and diverse
125 group has a significant impact on the efficiency of the health service and on patient experience. This
126 staff group is not clinically trained and people are more likely to be recruited from the generic
127 educational system and labour market. Whilst some members of this varied group, such as NHS
128 managers, have had clear and well regarded career development schemes, many others, such as
129 healthcare assistants, have faced inconsistent provision of training and supervision resulting in
130 varied levels of competence across organisations.[38] This group of staff also attracts less investment;
131 only 5% of the HEE budget is allocated to training clinical and non-clinical support staff.[37] In the
132 wake of the Francis Inquiry,[39] an independent review into healthcare assistants and support workers
133 recognised the relative neglect of this staff group and proposed the 'Certificate of Fundamental
134 Care', a set of minimum standards of competence which need to be achieved before working
135 unsupervised.[38] This also gave rise to the 'Talent for Care' strategic framework,[40] which focuses on
136 the career progression of all support staff in the NHS.

137 Training for support staff who provide social care is even more limited and typically dependent on
138 independent providers responsible for setting pay and facilitating training opportunities. In England,
139 there is a national organisation, Skills for Care, which helps organisations provide education and
140 development opportunities. However, its capacity is highly constrained, with a budget estimated to
141 be more than 200 times smaller than the approximate £5 billion HEE budget.[41] Moreover, a
142 substantial proportion of social care is provided by unpaid carers, often relatives or friends. While
143 some opportunities exist for unpaid carers to undertake training to manage the complex needs of
144 patients, [42,43] the provision of such training is inconsistent throughout the UK.

145 *Workforce Planning*

146 Overall planning for the health and care workforce across the UK is the responsibility of its four
147 constituent countries. However, they each draw on a common labour pool, as UK-wide regulatory

148 and professional standards ensure staff can move from one constituent country to another. The
149 number of training places for healthcare professionals is commissioned by each devolved
150 government. The commissioning objective has been to bring skilled professionals into the workforce
151 at a rate that compensates for those that exit the workforce, adjusting for changes in healthcare
152 delivery models and population needs. [44] Historically, social care has usually been excluded from
153 national workforce planning efforts which have instead typically focused exclusively on the NHS.
154 Workforce planning in the social care sector has also been hampered by poor and fragmented
155 data, although this is improving, for example through the development of the Adult Social Care
156 Workforce Data Set in England.[45]

157 Effective workforce planning must ensure that gaps between the need for and availability of skills
158 are anticipated in time for corrective action to be taken. Given training lead times, this requires
159 reliable and detailed long-term forecasts of expected demand for health care and trends in health
160 care needs on which to base workforce skill mix projections.[46] This is challenging given the size and
161 complexity of the NHS, changing health and care needs and priorities, evolving clinical practice
162 and delivery models, political exigencies, the wider labour market including the private sector,
163 the international market for healthcare professionals, and an NHS governed individually by the
164 four UK constituent countries. Competing conceptual approaches have been developed to estimate
165 future workforce requirements. These can be broadly categorised as 'supply' based approaches that
166 consider factors such as training numbers, recruitment and retention; and 'demand' based
167 approaches, which consider factors such as demography, morbidity, healthcare utilisation and gross
168 domestic product (GDP) (Supplementary Material 1- Table 1).[46] More sophisticated methods
169 combine the analytic frameworks of both supply and demand-based factors to incorporate
170 alternative scenarios reflecting changing forms of care delivery and potential substitution of roles
171 between healthcare professionals. [47] These approaches are data intensive and involves complex joint
172 modelling of many inter-related factors (Table 1). The science of workforce planning continues to

173 evolve, and as with any modelling process there is associated uncertainty when estimating future

174 needs.

175 Table 1: Data Needs for Workforce Planning

Major Supply Side Factors	**Data needs**
Entry to the workforce	*Training Numbers, Attrition Rates, Immigration, Re-entry rates*
Exit from the workforce	*Retirement, Resignation, Emigration, Leave (Maternity, Paternity, Study, Sabbatical, Sickness Leave), Death (including cause of death)*
Workforce characteristics	*Age, gender, ethnicity, religion, part-time working, skill-mix including volunteers, unpaid carers and self-care*
Workforce shortfalls	*Vacancy rates, Urban and regional imbalances*
Major Demand Side Factors	**Data Needs**
Population characteristics	*Age, gender, residence, migration, disability*
Disease epidemiology	*Disease rates, multimorbidity*
Health and care utilisation	*Hospital, ambulatory, primary and long-term care utilisation, average consultation length*
Unmet need	*Inequalities in access to healthcare services between different subgroups of population*
Alternative Scenarios	**Data Needs**
Changing skill-mix	*Empirical evaluations of impact of substitution of roles between healthcare professionals*
Novel models of care	*Empirical evaluations of impact of novel models of care*

Emerging technological advancements	*Empirical evaluations of impact of substitution of roles between healthcare professionals and technology (ie, artificial intelligence and robotics)*

176 Source: Authors based on assumptions contained within international workforce planning models
177 reviewed within Ono et al 2013. [46]
178

179 The present approach to workforce planning in the UK is highly fragmented, localised and not
180 adequately responsive to operational, geographical or population needs. There is a need for strong
181 decisive leadership with clear roles and responsibilities at national and local level and a clear
182 structure of accountability. While all four UK constituent countries have produced workforce plans
183 acknowledging the significance of both supply and demand side factors (Supplementary Material 1 –
184 Table 2), it is not transparent how these are used in projecting the size and composition of the
185 future workforce. Instead, emphasis is typically upon providing guidance for short-term workforce
186 projections to regional health boards or hospitals, such as NHS England's involvement in developing
187 online tools to aid individual Trusts.[48] It is unclear how national strategies plan for changing skill-mix
188 and substitution of roles between healthcare professionals, or to what extent strategy is influenced
189 by lobbying from the individual professional bodies.

190 A positive development can be found in NHS Scotland's latest workforce strategy. This has actively
191 moved away from considering individual professionals in isolation to a whole workforce approach
192 (Supplementary Material 1 – Panel 1). The new strategy's success has yet to be determined,
193 however it represents a decisive move towards the kind of integrated method which is needed.

194

195

196 **Consequences of the current approach to developing the health and care workforce**

197 The UK has fewer practising registered nurses and physicians than other high-income countries
198 (Table 2). This is partly explained by relatively low numbers of nursing graduates each year, while the
199 number of UK medical gradates each year compares more favourably with other high income
200 countries. The UK also has comparatively low numbers of other clinical staff such as dentists,
201 physiotherapists and pharmacists. The relatively low numbers of pharmacists may reflect the nature
202 of the UK market for community pharmacy, whereby economies of scale are gained by the
203 dominance of a few major providers.[49] There is a somewhat higher number of care workers in the
204 UK than other high-income countries. The UK's aggregate health and care employment is close to
205 the mean of EU15 and G7 countries, highlighting the fact that the UK is more reliant on staff trained
206 overseas and on non-clinical staff to deliver health and care services.

Table 2: OECD Workforce Data for EU15 + G7 Countries (2018 or latest available) Source: OECD Health Data [50]

Rank (highest to owest)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	EU15 Mean	G7 Mean
Practising nurses per 1,000 population	FIN 14.3	DEU 13.2	JPN 11.8	LUX 11.7	BEL 11.2	NLD 11.1	SWE 10.9	CAN 10.0	DEN 10.0	UK 7.8	AUT 6.9	ESP 5.9	ITA 5.6	GRC 3.4	USA NA	PRT NA	FRA NA	IRL NA	9.3	9.7
Practising physicians per 1,000 population	AUT 5.2	DEU 4.3	SWE 4.3	DEN 4.2	ITA 4.0	ESP 4.0	NLD 3.7	IRL 3.3	FIN 3.2	FRA 3.2	BEL 3.1	LUX 3.0	UK 3.0	CAN 2.7	USA 2.6	JPN 2.5	PRT NA	GRC NA	3.7	3.2
Medical graduates each year per 100,000 population	IRL 25.15	DEN 23.04	BEL 17.6	PRT 17.1	NLD 15.8	AUT 15.2	ITA 15.1	ESP 14.2	SWE 13.1	UK 13.1	GRC 12.4	FIN 11.7	DEU 11.5	FRA 10.9	USA 8.0	CAN 7.7	JPN 6.9	LUX 0	15.5	10.0
Nursing graduates each year per 100,000 population	FIN 85.7	GRC 81.6	USA 61.7	NLD 57.7	CAN 56.1	DEU 52.9	JPN 52.3	DEN 44.7	FRA 40.4	AUT 32.3	BEL 31.2	UK 30.9	IRL 29.3	PRT 25.1	ESP 21.2	ITA 18.9	LUX 10.7	SWE NA	37.1	44.7
% of foreign-trained physicians	IRL 41.4	UK 29.2	SWE 27.9	USA 25.0	CAN 24.5	FIN 19.9	GER 12.5	BEL 12.4	PRT 12.0	FRA 11.5	ESP 9.4	DEN 9.2	AUT 6.0	NLD 2.7	ITA 0.9	GRC NA	JPN NA	LUX NA	15.1	17.5

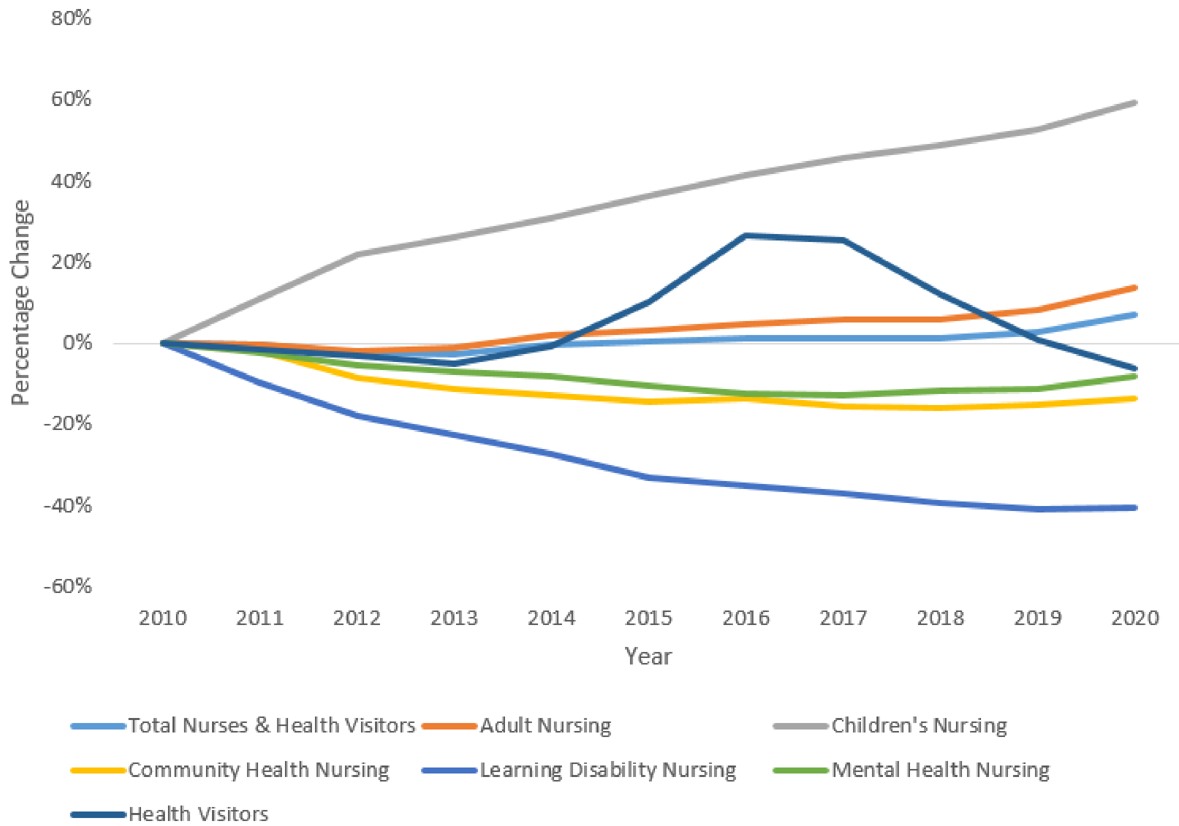
% of foreign-trained nurses	UK 15.4	DEU 8.7	CAN 8.3	USA 6.0	ITA 4.8	BEL 3.9	SWE 3.1	FRA 2.9	GRC 2.5	ESP 2.1	DEN 1.9	PRT 1.8	FIN 1.8	NLD 1.3	AUT NA	IRE NA	JPN NA	LUX NA	4.2	7.7
Practising dentists per 1,000 population	LUX 1.0	DEU 0.9	ITA 0.8	SWE 0.8	JPN 0.8	BEL 0.8	FIN 0.7	DEN 0.7	CAN 0.7	FRA 0.7	AUT 0.6	NLD 0.6	UK 0.5	PRT NA	USA NA	GRC NA	ESP NA	IRL NA	0.7	0.7
Practising pharmacists per 1,000 population	JPN 1.9	BEL 1.3	ESP 1.2	ITA 1.2	FIN 1.1	IRL 1.1	CAN 1.0	FRA 1.0	PRT 0.9	UK 0.9	SWE 0.8	AUT 0.7	LUX 0.7	DEU 0.7	DEN 0.5	NLD 0.2	GRC NA	USA NA	0.9	1.1
Practising Physiotherapists per 1,000 population	DEU 2.3	FIN 2.1	LUX 2.0	NLD 2.0	BEL 2.0	DEN 1.7	SWE 1.4	FRA 1.3	ESP 1.2	IRL 1.0	ITA 1.0	GRC 0.8	USA 0.7	CAN 0.6	AUT 0.4	UK 0.4	PRT 0.1	JPN NA	1.3	1.1
Practising care workers per 1,000 population	FIN 19.5	DEN 16.2	UK 16.2	NLD 13.1	ITA 10.3	ESP 10.2	USA 7.4	CAN 6.2	LUX 6.1	IRL 5.2	DEU 4.9	PRT 3.1	JPN 1.5	AUT 1.2	GRC 0.6	SWE NA	FRA NA	BEL NA	8.9	7.7
Total health and care employment per 1000 population	DEN 89.6	SWE 83.9	NLD 83.1	FIN 77.4	LUX 77.2	DEU 71.7	US 64.7	JPN 64.6	UK 60.7	FRA 58.3	BEL 55.4	IRE 53.3	CAN 52.9	AUT 52.5	PRT 38.9	ITA 33.0	ESP 31.2	GRC 20.8	59.1	58.0

208 There are several components of the health and care workforce that experience persistent staffing
209 shortages, and require additional investment and support. For the purposes of this paper, we
210 highlight the following staff groups; nursing, mental health, primary care, clinical and non-clinical
211 support staff, and social care. We acknowledge there are other staff groups not covered in this
212 paper. Some, including the diagnostic,[51] hospital medicine,[52] emergency care,[53] and public health
213 workforce,[54] are covered elsewhere. We also include a broader discussion of public health capacity
214 within the main LSE-Lancet Commission on "The Future of the NHS".[23]

215 *Nursing*

216 Despite demand for care greatly increasing, the total number of registered nurses (headcount) per
217 1000 has remained largely unchanged over the last decade across the UK (Supplementary Material 1
218 – Figure 1). However, this masks a differential growth rate in the different types of registered nurses.
219 In England, over the last decade adult and children's registered nursing numbers (full-time
220 equivalent (FTE)) increased by 14% and 59% respectively whereas mental health nurses and learning
221 disability registered nurses fell by 8% and 40% respectively (Figure 1). This outcome may have been
222 driven partially by the Francis Inquiry recommendation to increase hospital nursing numbers, thus
223 distorting the employment of nurses to the acute sector at the expense of community health
224 services. [36]

225 Figure 1: Total percentage change in registered nursing numbers (FTE) in England between 2010 and
226 2020



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229 Source: Authors from NHS Digital data[55]

230 Retention is an issue of particular concern with attrition rates during pre-registration training of over
231 20%,[56] and, in England, a registered nurse turnover rate which now averages 10% annually.[57]
232 Vacancy rates are higher in England, approximately 11%,[58] than Scotland, at 6%, [59] and Northern
233 Ireland, at 4%.[60] There are also regional differences, with a vacancy rate of 14% in London and 9% in
234 the North of England.[58] Ideally, turnover and vacancy rates should not be interpreted in isolation,
235 particularly as some degree of turnover can be considered as simply reflecting the mobility of the
236 health and care workforce. Stability, which is a measure of how many staff have stayed, rather than
237 how many have left, is a useful alternative metric.[61] Stability indices reported by NHS Digital, which
238 reflect the number of staff who stay in post over a year, have remained relatively stable for nurses in
239 England between 2014 and 2018 at just under 90%.[62] The NHS England Interim People Plan
240 acknowledges how nurses are integral to the vision of multidisciplinary teams working to address

241 individual patient's needs, particularly in primary care and mental health services.[63] The plan
242 prioritises urgent action to address nursing shortages including increasing training places, promoting
243 alternative routes into the profession such as nursing associates and apprenticeships, and
244 encouraging nurses to return to practice. These are discussed further below in the section on
245 enhanced recruitment initiatives.

246 *Mental Health*

247 The numbers of mental health nurses have continued to drop over the last decade, with numbers
248 falling by 10% (Figure 1). This has been accompanied by a decrease in the FTE number of psychiatry
249 physicians per 1,000 population in England, although this has recently recovered to levels seen in
250 2009 (Supplementary Material 1 – Figure 2).

251 It has proven consistently difficult to recruit physicians into psychiatry, with many core and higher
252 training posts remaining unfilled. The recruitment challenge is compounded by the denigration of
253 professions such as psychiatry and general practice, which begins at medical school.[64] There are
254 significant UK wide variations in 'fill rates' of training posts, with London achieving 100%, Wales 33%
255 and the North East of England only 25%.[65] There is also a high attrition rate of trained psychiatrists:
256 five years after completing specialist training a third of psychiatrists are not working substantively
257 for the NHS.[66] Core psychiatry training has been included in the UK government's shortage
258 occupation list since 2015.[67]

259 The mental health sector relies heavily on other professionals, especially clinical psychologists and
260 other professionals qualified to deliver psychological therapies, occupational therapists and social
261 workers. One of the main objectives of the Five Year Forward View for mental health was increased
262 access to psychological therapies.[68] To achieve this, a large increase in staff trained in psychological
263 techniques is still required. The Psychological Professions Network has indicated that over 6,000 new
264 posts have to be created, alongside over 11,000 new training posts, to make up for attrition of staff
265 trained to deliver psychological therapies.[69] If the numbers of new posts can be realised,

266 psychologists could take on some of the roles traditionally reserved for psychiatrists, partially

267 making up for the shortfall in their numbers.

268 *Primary Care*

269 The NHS England Long Term Plan places a strong emphasis on primary care and there is a growing

270 expectation that some work currently undertaken in hospital settings will take place in primary

271 care.[70] Between 2008 and 2018, Wales and Northern Ireland have seen slight increases in the

272 number of GPs per 1000 population, but Scotland and England have experienced reductions (Figure

273 2). These changes contrast starkly with strong growth in the secondary sector: over the same period,

274 the number of hospital consultants per 1,000 population has increased by approximately 40%

275 (Figure 2).

276 Figure 2: Numbers (headcount) of GPs and Hospital Consultants across the UK per 1,000 population

277 between 2008 to 2018

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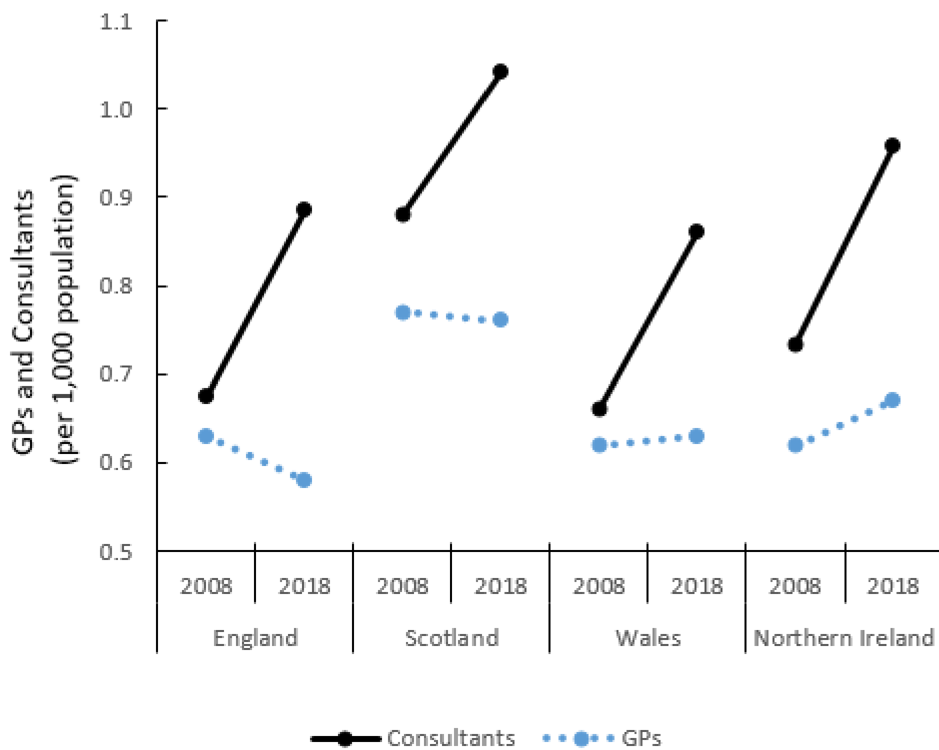

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280 Source: Authors based on data from Nuffield Trust,[71] NHS Digital,[55,72] ISD Scotland,[3] Stat Wales,[4]
281 HSCNI,[5] ONS.[73]

282 This is an inadequate response to the changing needs of an increasingly elderly and multimorbid
283 population that place a high demand on primary care services. The problem is exacerbated by many
284 GPs being aged 55 and over, 23% in England,[72] and that many GPs choose to retire early.[74]
285 Moreover, while England has seen increases in the headcount of GPs over the last decade, the FTE
286 number is largely unchanged, increasing by less than 1% between 2010 and 2020,[72] reflecting an
287 ongoing trend towards more part-time and portfolio working. One contributory factor is a high ratio
288 of female to male GPs, as female GPs are more likely to work part-time than male GPs,[72] although
289 both genders now work fewer hours than five years ago. The latest national GP work-life survey
290 revealed that 39% of registered GPs intended to leave direct patient care within the next five years,
291 and that a further 8.7% intended to leave the UK to work abroad, [75] although these intentions do not
292 always result in future action. Many complex factors are responsible for GPs leaving direct care, such
293 as a lack of professional autonomy, feeling undervalued and concerns about the safety of practice,
294 all of which have a negative impact on morale.[76]

295 The number of practice nurses has remained fairly static over the past few years, and a significant
296 number are nearing retirement age, with around a third of the workforce being over 55.[72]
297 Recruitment into practice nursing is slow. Unlike other countries worldwide, there is no cohesive
298 post-registration training pathway into these roles and results from a survey of student nurses found
299 that many see these jobs as more suitable for mature experienced professionals.[77]

300 To better meet demand, the focus across all constituent countries is converging towards a model of
301 primary care with an expanded multidisciplinary team involving pharmacists, paramedics, physician
302 associates, general and mental health nurse practitioners and social prescribers.[78–81] This model
303 requires appropriate adjustments in undergraduate programmes, investment in upskilling existing

304 qualified staff and thorough evaluation of the effectiveness of implementing these new roles and
305 responsibilities.

306 *Clinical and non-clinical support staff*

307 Around 40% of the NHS staff are clinical and non-clinical support staff.[37] This relatively neglected
308 body includes healthcare assistants, porters, cleaners, estates and maintenance workers,
309 administrative and clerical staff, receptionists, managers, finance, IT support and human resources
310 staff. It is difficult to determine accurate figures regarding the vacancy rates for support staff in the
311 NHS. However recent data shows that clerical and administrative staff have the second highest
312 number of advertised vacancies in the NHS after nursing staff, accounting for approximately 20% of
313 all advertised NHS positions.[82]

314 Most of these support workers are in the lower paid NHS salary bands 1-4 (£9.03-£12.16 hourly rate
315 in 2019/20),[83] with many constrained by professional regulations relating to the higher qualifications
316 and professional registration required to work at band 5 and above. Moreover, given the regulatory
317 restrictions, career progression is limited, and this reflects a relative lack of investment in training
318 and development for this part of the workforce, many of whom have potential to perform at a much
319 higher level. [84] Furthermore, as they have easily transferrable skills, the NHS is in competition with
320 the private sector in terms of recruiting and retaining staff who work in these positions.

321 *Social Care*

322 The social care workforce primarily consists of care workers (also known as care assistants),
323 registered nurses, social workers and care managers. In England, the overall vacancy rate in adult
324 social care is high, and has risen from around 4% in 2012-13 to around 7% in 2019-20.[12] There is
325 significant variation within England, with vacancy rates in London above 9%, and around 6% in the
326 North East.[12] Turnover is particularly high, amounting to 30% across all adult social care jobs in 2019-
327 20, and 38% for care workers.[12] Data on the social care workforce in the other constituent countries

328 is less detailed, but there is a vacancy rate of around 6% in Scotland [85],Wales,[86] and Northern
329 Ireland.[60]

330 The International Labour Organisation's (ILO) Agenda for Decent Work stipulates that care work
331 should provide a fair income, job security, prospects for personal development, safe conditions,
332 equal opportunities and protection from exploitation.[87] Care workers account for approximately
333 60% of the adult social care workforce in England, and approximately a third of this staff group are
334 on zero-hour contracts, with no guaranteed income. [12] The average hourly pay for care workers in
335 the social care setting is below the comparable average pay in almost all UK supermarkets.[88] The pay
336 differential between care workers with less than 1 year of experience and those with more than 5
337 years of experience is, on average, just £0.12 per hour, reflecting poor occupational development or
338 training.[12] Wages in social care are also significantly less than in the NHS, with most care staff
339 receiving pay close to the minimum wage level. An estimated £1.7 billion of annual investment is
340 needed to address this discrepancy in England.[89] Poor working conditions and unrealistic and
341 excessive workloads further impact problems with recruitment, retention and quality of care.[90]

342 Vacancy rates are particularly high for registered nurses working in the social care sector, at around
343 12% in England in 2019-20. [12] It has been suggested that registered nurses may prefer to work for
344 the NHS, as social care is perceived to give poorer options for career and pay progression.[41] An
345 estimated further 6.8 million of people in the UK are unpaid carers.[91] In England, the provision of
346 respite support for unpaid carers has been restricted, reducing from around 57,000 recorded
347 instances in 2015-16 to 42,300 in 2018-19.[92]

348

349 **Current Response to Health and Care Workforce Shortfalls**

350 *Reliance on foreign staff*

351 The NHS has a long history of a higher reliance on foreign staff than many other high-income
352 countries (Table 1). The percentage of foreign trained physicians and nurses working in the UK has
353 consistently remained at around 30% and 15% respectively. [93] Similarly, for social care, there is an
354 ongoing reliance on foreign staff: in England, 16% of the adult social care workforce had a non-UK
355 nationality in 2020. [12] There is also significant regional variation. For the NHS, 26% of staff are non-
356 UK nationals in London, compared to just 6% of staff in the North East and Yorkshire. [94] For social
357 care, with the percentage of non-UK nationals providing social care amounting to 37% in London,
358 compared to only 4% in the North East, and 7% in Yorkshire[12]

359 The NHS has stated that it is committed to the principles of the WHO Global Code of Practice on the
360 International Recruitment of Health Personnel.[95] These principles state that recruitment of
361 healthcare professionals must adhere to fair and ethical practices. In particular, there should be no
362 recruitment from developing countries facing a shortfall of healthcare professionals, and recruiting
363 jurisdictions should strive to put in place strategies which reduce their reliance on migrant
364 healthcare professionals. Despite this, data collected from OECD countries show that the UK is
365 second only to the United States in being the main destination for foreign-trained doctors and
366 nurses. [93] The largest proportion of foreign-trained doctors in the UK originate from India, with
367 whom the UK government has a formal arrangement.[96] However, a substantial number also
368 originate from Pakistan and Nigeria, countries the UK has committed to not actively recruit from.[93]
369

370 The UK intends to continue overseas recruitment, and from July 2018 the Home Office announced
371 that the tier 2 immigration cap would be lifted for overseas trained doctors and nurses.[97] In
372 accordance with the recommendations of the 2019 Migration Advisory Committee (MAC), all
373 medical practitioners, psychologists, registered nurses, social workers, radiographers, speech and
374 language therapists and occupational therapists have been included on the 2020 shortage
375 occupation list. [67] However, despite a recommendation from the MAC, the government has so far
376 not added care workers to the government's shortage occupation list. [98] While the long-term goal of

377 any health and care workforce strategy should be for the sustainable and self-sufficient supply of
378 staff, in the short-term the UK will need to continue its long-standing tradition of recruiting from the
379 international market.[99] However the UK faces stiff competition from many other countries facing
380 their own health and care workforce crises. Germany, for example, has been projected to have a
381 shortfall of up to 500,000 health and care staff by 2030. The UK's ability to compete in the
382 international healthcare labour market will be dependent upon factors such as favourable migration
383 policies, wage growth, and working conditions. The UKs poor treatment of staff from ethnic minority
384 groups, highlighted by the COVID-19 pandemic may also deter potential international healthcare
385 workers from choosing to work in the UK, particularly as other less hostile options become
386 increasingly available to them.
387

388 *Reliance on temporary staff*

389 The failure of previous workforce planning is evident given the ongoing reliance on temporary
390 "bank" or "agency" staff to address persistent shortfalls. Bank staff are employed by a hospital trust
391 or health board directly, while often simultaneously holding permanent employment contracts.
392 Agency staff are provided by private recruitment agencies. Many healthcare professionals have
393 responded to low pay by turning down permanent positions in favour of working on a temporary
394 basis. Having high levels of agency staff impacts negatively on patient experience, quality of care and
395 staff satisfaction, as well as being detrimental to institutional learning and knowledge acquisition.[100]
396 As agency staff often work across multiple health and care providers, this has created challenges for
397 infection control, demonstrated by early reports of agency staff contributing to the spread of
398 coronavirus in care homes.[101] NHS Improvement notes that, of the approximately 11% of nursing
399 roles vacant, a 'proportion' are filled by bank (67%) and agency (33%) staff. [58] In 2014-15, the
400 government introduced price caps on agency pay rates, which led to some reductions in spend on
401 temporary staff. [58] However, hospital trusts repeatedly submitted applications to exceed these caps

402 to fill their workforce gaps. It has become clear that price caps have not provided a long-term
403 solution because they do not address the underlying problem, a shortage of permanent staff.

404 *Changing skills mix and task shifting*

405 The composition and skill-mix of the workforce need to evolve as health needs change and health
406 technology progresses. There are many examples of attempts to improve the skill-mix from across
407 the UK, and the NHS has been proactive in experimenting with task-shifting, but there is potential to
408 achieve much more. The NHS England Interim People Plan is clear that in order to deliver 21st
409 Century care there is a need for the NHS to achieve a richer skill mix and develop a more flexible and
410 adaptive workforce.[63] Changes in the skill-mix of the health and care workforce can be accomplished
411 in various ways, for example by the substitution of roles between healthcare professionals or
412 technology, the introduction of new roles and by staff working in extended roles such as specialist
413 nurses or non-medical prescribers. To facilitate effective changes in skill-mix, factors to consider
414 include the best way to develop appropriate knowledge and skills sets, overcoming professional
415 boundaries and ensuring the right organisational culture and institutional environment to foster
416 change.[102]

417 A longstanding example of substitution of roles between healthcare professionals is the introduction
418 of non-medical prescribers (NMPs), which the UK introduced in the early 1990s.[103] UK nurses now
419 have access to some of the most extensive prescribing rights globally.[104] The number of NMPs in the
420 UK is not routinely reported, but a 2015 survey estimated there were around 45,000 NMPs in
421 England.[105] Becoming a NMP can improve job satisfaction,[106] free up time for physicians to see more
422 acute cases,[107] and improve access to care.[108] To date there is no evidence to indicate that NMPs
423 make more medication errors than physicians.[109] However, they remain under-utilised; on average it
424 takes 6 months for 15% of NMPs to prescribe their first medication[109], and one study reported that
425 less than 1% of medications prescribed in hospital are by NMPs.[110] Barriers to expanding NMPs

426 include a lack of ongoing education, [106,111] as well as organisational factors such as an imposed
427 formulary, and restricted scope of practice.[111]

428 In primary care, community pharmacists have increasingly taken on additional responsibilities. This
429 has been partly to relieve pressure on GPs, but also to improve access to preventative services and
430 chronic disease management. These measures include the introduction of supplementary and
431 independent prescribing and the delivery of Medicine Use Reviews (MURs), NHS Health Checks and
432 vaccinations in pharmacies.[112] Further developments are planned; in England a new community
433 pharmacy contract has been agreed,[113] including the development of a 'Community Pharmacist
434 Consultation Service' (CPCS), intended to be a first point of contact for certain patients. In Northern
435 Ireland the Minor Ailments Scheme aims to empower patients to self-treat minor illnesses, using the
436 knowledge and skills of their pharmacist, thereby easing pressure on primary care and emergency
437 services.[114] These initiatives point to a need to evaluate the expanding role of community
438 pharmacists, as currently, the available evidence is mixed and inconclusive.[115]

439 Other examples of task shifting include the introduction of new roles such as physician associates,
440 and nurse practitioners. The UK has taken the opportunity to learn from the American and Canadian
441 physician associate and nurse practitioner models to develop these roles. Physician associates work
442 alongside physicians, GPs and surgeons within multidisciplinary teams providing direct patient
443 care.[116] Physician associates can take medical histories, examine and formulate management plans,
444 but they are not able to prescribe or request radiological investigations.[116] Physician associates are a
445 key component of NHS England's strategy to relieve pressure on the primary care workforce, with
446 plans to train 3,000 new physician associates, and the expectation that 1,000 will enter general
447 practice. [117] Major barriers to overcome include equipping physician associates with the knowledge
448 and capability to manage medical complexity and overcoming professional boundaries created by
449 non-prescriber status.[118] However, perhaps the greatest obstacle for physician associates is the
450 absence of formal regulation. A recent consultation suggested that either the General Medical

Council or the Health and Care Professions Council should assume responsibility for the regulation of physician associates.[119]

There is an established history of utilising nurse practitioners to work with an expanded scope of practice remit in both specialist fields such as diabetes, mental health and in first point of contact roles in emergency care and primary care.[120] However, these initiatives have been small scale and determined locally. Expansion of these roles are currently limited by the lack of national policy and investment to underpin the education, training and regulatory changes required. Similar to physician associates, regulatory mechanisms to support nursing practitioners is currently being explored.[121]

At a different level of practice, a nursing associate role has been introduced to address a gap in skills and knowledge between care assistants and registered nurses identified by the Shape of Caring review.[122] Nursing associates will undertake a two year training and work across health and care contributing to the delivery of fundamental nursing care, supporting registered nurses and freeing them up to focus on more complex care. The role will also provide a route to progress to graduate level nursing. In 2018, over 5000 people were recruited as trainee nursing associates, demonstrating significant demand for such a scheme.[123] At the time of writing it is too early to evaluate the effectiveness of this initiative or the sustainability of demand for training posts.

Enhanced Recruitment Initiatives

Enhanced recruitment initiatives have been used by the NHS to attempt to address shortfalls in particular areas such as primary care, mental health and nursing or to improve imbalances in staffing levels between different geographical areas. For example, in 2016 the GP Forward View proposed plans to have an extra 5,000 physicians working in general practice by 2020 and devised a number of incentives to try to achieve this target.[117] These included bursaries, a national and international recruitment drive, fellowships for further training and return to work schemes for GPs not currently practicing.[124] Moreover, England, Wales and Scotland all have a Targeted Enhanced Recruitment

476 Scheme for GP trainees offering a one off salary supplement of £20,000 to physicians willing to make
477 a commitment to train and work in underserved regions.[125] As of April 2019, government-backed
478 indemnity arrangements also came in force,[126] offsetting professional expenses incurred by GPs.
479 Although numbers of physicians in general practice training are increasing, the time-lag for
480 completion of training, the high attrition rate, and the large numbers of qualified GPs opting to work
481 part-time meant that the government did not meet its target.[89] In response, the government has
482 now pledged to recruit an additional 6,000 GPs by 2024-25 by expanding training places, increasing
483 international recruitment, and improving retention.[127]

484 Within mental health, the Royal College of Psychiatrists launched a five-year recruitment drive to
485 psychiatric specialty training between 2006 and 2011 to overcome the noted shortage in this area,
486 but this had mixed results.[128] Persistent and institutionalised negative attitudes towards mental
487 health patients and the staff who treat them are particularly difficult to alter and strongly influence
488 the pursuit of a career in psychiatry. [129] Since 2016, to further improve recruitment, flexible pay
489 premiums have been awarded to physicians choosing to train in psychiatry alongside general
490 practice, emergency medicine, oral and maxillofacial surgery, histopathology and academia,
491 amounting up to £20,000 over the full period of specialty training.[130] It has not yet been possible to
492 assess the impact of this initiative on recruitment levels to these specialties.

493 For registered nurses, all four constituent countries currently operate return-to-practice
494 schemes,[131–134] and associated training fees are fully funded. Additionally, in England £500 is offered
495 towards other expenses, and in Wales a bursary of £1000 is offered for registered nurses and £1500
496 for midwives plus childcare expenses. There are also funded return-to-practice schemes for Allied
497 Health Professionals.[135] While these schemes are a useful lever to increase staff numbers in the
498 short-term, they cannot be relied upon as the primary strategy to address workforce shortfalls, as
499 they typically involve small numbers: for example just 2,400 registered nurses and midwives have
500 enrolled in a return-to-practice scheme in England since 2014.[36]

501 With better investment in schemes to dissuade staff from taking early retirement and that address
502 the needs of ageing staff, return-to-practices schemes would not be required. For example, as the
503 surgical workforce ages, attention is needed to maximise the benefits of additional experience in
504 caring for patients against the potential for impairment in surgical skill.[136] This may require shifting
505 responsibilities of older surgeons to more managerial and patient-facing roles, but guidance in what
506 circumstances and how is needed. Similarly, there is a need for attention on how to best support
507 the ageing nursing workforce to convince them not to retire early. Suggested strategies include a
508 sympathetic approach towards what manual tasks may be less suitable for older nurses as well as
509 facilitating flexible working.[137,138] As thousands of doctors, nurses, midwives, and other healthcare
510 professionals returned to practice, often following retirement, to fight against coronavirus,[139] it will
511 be important to learn from their experiences, and ascertain what incentives or working
512 arrangements could convince some to remain practicing.

513 **Future key challenges for the UK health and care workforce**

514 *Increasing Multimorbidity*

515 Demand for health and care will rise in future not only because the population is aging but because
516 people are living longer with multiple long-term conditions. The population in the UK with complex
517 multimorbidity (more than 4 diseases) is set to double by 2035.[140] Patients with multimorbidity are
518 more likely to have unplanned and preventable admissions to hospital,[141] as well as increased risk of
519 clinical errors.[142] To be effective, workforce planning must incorporate projections about the
520 changing multimorbidity profile of the population, which provides a more reliable reflection of need
521 than does age and gender composition alone. A better balance between generalists, who have skills
522 to manage multiple chronic diseases in the same patient, and specialists is needed, instead of
523 continuing a growing trend towards specialisation among many healthcare professionals.[143] Training
524 for all members of the health and care workforce needs to incorporate at least a basic level of
525 generalist skills.[144]

526 To meet the challenge of rising multimorbidity, there will also need to be more investment in
527 integrated care supported by strong community services.[145] This will require more GPs, community
528 nurses, allied healthcare professionals and care assistants. The emphasis will need to be on
529 providing patient-centred care that prevents disease progression, considers mental and physical
530 health needs simultaneously, and allows people to live independent and fulfilling lives.[146] It also
531 requires shifting care closer to home. Significant progress has already been made, as many therapies
532 formerly provided in hospital settings can now be provided at home including chemotherapy,
533 intravenous antibiotics, blood thinning agents, wound care, rehabilitation, and mental health care.[47]
534 The expansion of multidisciplinary teams in primary care will be key to providing the continuity of
535 care needed to better appreciate the evolving multimorbidity in individual patients.Other emerging
536 models are designed to serve as facilitators of integrated care such as primary care networks in
537 England,[78] and primary care clusters in Wales,[147] which involve staff drawn from GP surgeries,
538 community, mental health and acute trusts, social care and the voluntary sector working closely
539 together to care for populations of around 50,000.

540 *Gap in supply of unpaid carers*

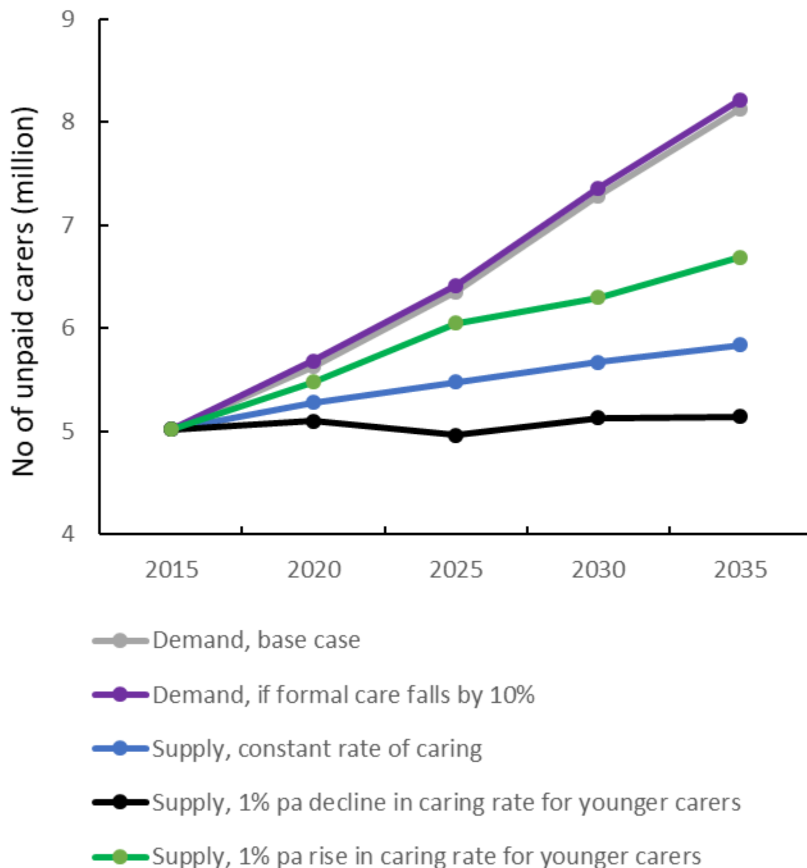
541 There are approximately 9.1 million unpaid carers in the UK, usually family members or friends. [8] As
542 many vulnerable individuals were issued shielding advice during the peak of the COVID-19
543 pandemic, it is estimated the number of unpaid cares increased to 13.6 million people, which is
544 equivalent to one in four adults.[8] The last census of unpaid carers in England and Wales in 2011
545 revealed that 63% of unpaid carers provided less than 20 hours of care per week, 14% provided 20-
546 49 hours of care per week, and 23% provided 50 or more hours per week.[148] 58% of these carers are
547 women and 42% are men.[149] They perform a wide range of tasks, including personal care, emotional
548 and practical support and monitoring of medications. Unpaid carers make a fundamental
549 contribution to the health and care sector, and estimates of the financial value of this contribution in

550 the UK varies from £57 billion to £132 billion.[91] Most carers intrinsically value the opportunities to
551 provide care and may not even self-identify as carers.[150]

552 However, being a carer can have adverse consequences for health, wellbeing and employment.
553 There is significant evidence that the intensity of provision of informal care is associated with poorer
554 physical and mental health. [151] That said, at relatively low intensities (< 10 hours per week), the
555 provision of unpaid care may have the opposite effect and *improve* health and wellbeing.[152] In terms
556 of employment, carers often find they need to reduce their working hours or leave employment
557 totally.[153] The ILO has highlighted the role that unpaid care work has in hampering the employment
558 opportunities of those providing care, in particular women and girls from socio-economically
559 deprived backgrounds.[87] The advent of the COVID-19 pandemic has greatly compounded the
560 challenges experienced by unpaid carers, deepening the socio-economic disadvantage they face and
561 starkly exposing their vulnerabilities.[154]

562 In terms of workforce planning and long-term strategies for the NHS, it is important to consider the
563 likely future scenarios for the supply of and demand for carers, and how these may interact with the
564 wider health and care workforce. Projections of supply and demand by the Personal Social Services
565 Research Unit (PSSRU), now known as the Care Policy and Evaluation Centre (CPEC), under the
566 assumptions that the propensity to provide care and that the disability rates in old age remain
567 constant suggest a widening gap, reaching 2.3 million unpaid carers in England by 2035 (figure 3).

568 *Figure 3: Projected demand for and supply of unpaid carers (headcount) for older people in England*
569 *between 2015 and 2035*



570

571 Source: adapted from Brimblecombe et al (2018).[155]

572 This may be a conservative estimate of the 'carer gap' as these projections do not incorporate
573 expected rising rates of complex multimorbidity and associated needs for care and support in old
574 age.[140] This large gap will inevitably increase demand pressures on NHS and social care services,
575 especially for individuals with high-intensity care needs, where the evidence for substitution
576 between funded services and unpaid care is strongest.[156] Given the strain on public finances caused
577 by the COVID pandemic, it is unlikely that support for unpaid carers, for example in the form of tax
578 breaks or further income support, will be forthcoming.

579 *Brexit*

580 In the UK, the health and care sector is dependent on the supply of EU workers. This has been
581 facilitated by the free movement directive which sets out the rights of EU citizens and their family
582 members to move and reside within EU territory. It is not clear how Brexit will affect EU workers in

583 the UK but it has been agreed in principle that there should be no preference for EU workers after
584 Brexit. [157] To mitigate the impact this may have on recruitment and retention of the health and care
585 workforce, a number of measures have been suggested such as removing the current cap on skilled
586 workers, streamlining certification processes,[158] and 12-month working visas for low-skilled migrants
587 until 2025.[159] Above all, the UK government needs to reconsider its position on immigration. By
588 continuing to pursue a policy of encouraging a "hostile" environment for migrants,[160] the UK will
589 disadvantage itself in the international health and care labour market.

590 The uncertainty of Brexit has already affected the health and care workforce, with some parts of the
591 workforce hit harder than others. For example, around 7,500 fewer registered nurses and midwives
592 from the EEA joined than left the NMC register between 2017/2018 to 2019/2020 (Supplementary
593 Material 1 – Figure 3). Although, this has been compensated by around 16,000 more registered
594 nurses and midwives from outside the UK and the EU/EEA joining than leaving over the same time
595 period. [161] For social care, over the last decade an increase of workers from the EU/EEA has helped
596 compensate for a relative decrease in non-EU care workers in the UK due to restrictions on
597 immigration. [162] Ending free-movement for EU nationals has been estimated to result in 115,000
598 fewer adult social care workers by 2026. [162] Across the UK, Brexit will likely impact different
599 countries or regions differently. Approximately 6% of the health and care workforce in England are
600 from the EEA, compared to 6% in Northern Ireland, 5% in Scotland, and 3% in Wales.[163] Within
601 England, approximately 12% of the health and care workforce in London are from the EU/EEA,
602 compared to 3% in the North East.[163] In Scotland, the NHS has historically recruited dentists from
603 EU/EEA countries, notably Poland, to address access issues.[164] Currently, it is estimated that 1 in 10
604 dentists in Scotland are from the EU/EEA, and it is unclear how Brexit will affect retention.[164] The UK
605 may struggle to continue to compensate for reductions in the recruitment of EU workers by
606 increasing recruitment of non-EU workers in the short-to-medium term as the COVID-19 pandemic
607 continues to restrict the mobility of the global health and care workforce. The UK needs to anticipate
608 the combined impact of these concurrent events on international recruitment and in doing so

609 consider what incentives or policies are necessary to stem the increasing number of EU health and
610 care workers leaving the UK.

611 **Meeting future need by securing a sustainable, fit for purpose health and care workforce**

612 *Integrated workforce planning*

613 Workforce planning in the UK, while highly fragmented, has been dominated by supply-side
614 considerations, neglecting demand-side factors, and controlled centrally by a mix of governmental
615 and professional bodies. At the same time, the recruitment and retention of staff is managed by
616 individual health and care providers. This has led to a mismatch between the determination of
617 workforce levels through centralised supply-side forecasts and the actual employment of the
618 workforce by individual providers responding to local needs. Whilst complex, workforce planning
619 must consider a complete picture of demand side factors including changing demography driven by
620 growing multimorbidity and how this determines local staffing needs. Multimorbidity is a strong
621 predictor for healthcare utilisation,[165,166] and projections of multimorbidity can be utilised to more
622 accurately estimate demand. Approaches which consider diseases or professionals in isolation will
623 not reflect the changing health needs of the population. Integrated workforce planning should
624 consider changing population demands and organizational responses as well as the optimal skill-mix
625 of staff to ensure the right type of staff delivering care in the right setting.

626 *Reforms to training and ways of working*

627 Major reform is needed across the entire health and care education system to meet changing health
628 and care needs. If we are to encourage multidisciplinary working, healthcare professionals should
629 not be trained in isolation, instead collaborative working should begin during training. Training
630 should be more competency-led and community-orientated, and further opportunities should be
631 created to develop new roles as required and facilitate changing skill-mix.[167] The Shape of Training
632 review, Future Hospital Commission and the Parliamentary Review of Health and Social Care in

633 Wales all emphasise the need to implement reforms across the UK which encourage the
634 development of generalist skills needed to treat multimorbid patients with complex needs and life-
635 long learning which allows physicians to change roles and specialties during their careers.[168–170] A
636 similar approach is required for nursing and all other health professional groups. An essential pillar
637 of the re-design of the health professional education system should be higher recognition of the
638 capability and willingness of the public to self-care. All health and care professionals must be
639 equipped with the skills needed to work in collaboration with patients and their families, and to
640 facilitate them to make informed decisions regarding their own health.[171] There have been some
641 recent moves in the right direction with, for example, the publication of the NMC's new Future
642 Nurse standards for registered nurse education which place great emphasis on the promotion of
643 health and the support of self-care.[172]

644 The LSE-Lancet Commission background paper on health information technology highlights how
645 training must adapt to reflect technological advancements.[173] The use of technology has great
646 potential to improve the effectiveness and productivity of the workforce by improving quality of
647 care, patient safety and reducing the administrative burden on staff.[174] Major developments in
648 genomics, digital medicine, artificial intelligence and robotics will result in new roles and the need to
649 re-skill the pre-existing workforce.[175] The appropriateness of educational curriculum and workforce
650 strategies must be regularly reviewed in order to respond rapidly to these developments and avoid
651 slow uptake and diffusion of technology skills.

652 The Future Hospital Commission highlighted the imperative to adapt ways of working to meet
653 changing health and care needs.[169] Services will need to be re-designed around individual patients,
654 with a focus on developing culturally sensitive and flexible services that allow people to navigate
655 seamlessly throughout their patient pathway, avoiding unnecessary contacts with multiple health
656 and care providers. Workforce strategies need to consider how to support these service reforms by
657 encouraging a fundamental shift in ways of working to allow effective integration, better sharing of

information, improved transfers of care and the provision of services outside the hospital such as specialist medical care and ‘hospital-at-home’ teams. Similarly, the Parliamentary Review of Health and Social Care in Wales recommended the development and implementation of models of care which provide care as close to the individual’s home surroundings or community as is practical.[170] This will require maximising the use of digital technology to improve access, rebalancing services currently provided inside hospital, and empowering multidisciplinary teams to work together on strategies to help patients avoid unnecessary admissions to hospital. To generate evidence on new models of care, evaluation must be embedded. To support this, workforce strategies should consider the clinical academic workforce, which has decreased by 2.5% since its peak in 2010.[176] Finally, new ways of working in health and social care, changes to the skill-mix of the workforce and expansion of task-shifting will bring new leadership challenges. The NHS England Interim People Plan highlights how future leadership will need to be ‘*systems -based, cross-sector and multi-professional*’ in order to meet this challenge, and that development of leadership skills should be embedded in the life-long learning of health and care professionals.[63]

Promoting life-long learning

Providing adequate opportunities for career progression is vital to improving job satisfaction, ensuring staff feel valued and to retaining existing staff across all health professions. This is particularly important for support staff, such as healthcare assistants and care workers, who have skills that make them eligible to work in the private sector, with which the NHS must compete to attract and retain the staff it needs. It is therefore vitally important to tap into the intrinsic motivations which stimulate these individuals to seek work in the health sector, and to foster these motivations by providing appropriate opportunities for career progression which allow them to maximise their potential and feel valued. Professionalisation of this part of the workforce would also help improve recruitment and retention.[177] The Cavendish Review introduced the Care Certificate in England, but this is not a mandatory requirement and uptake has been slow.[90] A code of practice and

683 a nationally approved training and accreditation system to nurture talent and recognise skills
684 acquired in informal settings would improve quality of care, and give these workers the value and
685 recognition they deserve.[177]

686 Nurses and allied healthcare professionals may also be convinced to leave the NHS for the private
687 sector, work overseas, or even retrain in alternative professions. To mitigate against these risks and
688 foster more fulfilling and engaging careers, there is a need to significantly invest in more post
689 registration career development opportunities for these groups. Clear links have been shown
690 between career development opportunities and feeling valued and intent to remain in the
691 workforce.[36] This is equally important for physicians, for whom career development is heavily
692 focused on the pathway to becoming a consultant or GP, with less focus on mid-career development
693 opportunities. Alongside measures such as more flexible working and allowing older professionals to
694 opt out of out-of-hours work, improving career development opportunities could be a valuable
695 strategy to prevent early retirement.[178]

696 *Tackling discrimination in the NHS*

697 The NHS rolled out the workforce race equality standard (WRES) programme in 2015, an annually
698 reported set of indicators measuring ethnic inequalities in key outcomes across NHS organisations.[16]
699 These indicators highlight a deep-rooted culture of discrimination in the NHS in which ethnic
700 minority staff are concentrated in lower pay grades in the NHS, face greater barriers in achieving
701 promotions or being selected for jobs for which they are shortlisted. In addition, they are more likely
702 to be formally disciplined and more likely to experience harassment, bullying or abuse from other
703 staff, patients, relatives or members of the public.[16] They are also almost three times as likely to
704 personally experience discrimination at work from a colleagues as compared to their white
705 colleagues.[16] Modest progress has been made on some indicators, but other indicators have actually
706 got worse over the same period, with the number of ethnic minority staff experiencing
707 discrimination at work from a colleague increasing from 14% to 15.3% between 2016 and 2019.[16]

708 This had led to calls for improved accountability for organisations that fail to make progress against
709 these indicators, or when evidence emerges that leadership has failed to take action to rectify
710 discrimination or harassment in the workplace.[179] Treating this group of ethnic minority staff that
711 constitute a fifth of the overall NHS workforce fairly, as well as being a moral obligation, will also
712 allow the NHS to fully benefit from their expertise and unlock productivity in the workforce that is
713 currently being lost to discrimination.

714 *Protecting staff wellbeing*

715 The 2019 Mental Wellbeing Commission report from Health Education England highlighted the lack
716 of emotional and psychological support available to staff, and the fear they have of negative
717 repercussions should they seek help for mental ill health.[180] Those working in health and care are
718 recurrently exposed to distressing events which, for most people, happen rarely. To add to this, over
719 200,000 written complaints are made about NHS staff every year,[181] and an increasingly litigious
720 climate makes many fearful of untoward incidents and investigations. Unsurprisingly, rates of
721 mental health issues amongst healthcare workers are high,[182] and some groups of healthcare
722 workers are known to have much higher suicide rates than the general population.[183] The COVID-19
723 pandemic has exemplified this issue, with many staff exposed to high-risk and challenging scenarios
724 on an almost daily basis,[21] and significant delays and changing guidance around the use of personal
725 protective equipment.[184] The trauma caused by these experiences will have a long-lasting impact on
726 the mental health of health and care staff. The NHS and social care has a moral obligation to
727 implement sufficient after care for these staff including active monitoring to ensure those who need
728 additional support are identified.[21] The Mental Wellbeing Commission makes many welcome
729 recommendations to promote mental health and increase the availability of psychological
730 support,[180] such as improving leadership and accountability for wellbeing at organisational level,
731 improving training in self-awareness and self-care, implementing wellbeing ‘check-ins’ within two
732 weeks of starting placements, the provision of rest spaces during on-call shifts, enhancing peer

733 group support mechanisms and the introduction of a compulsory requirement in every NHS
734 organisation to independently examine the death by suicide of any NHS staff member. The UK can
735 also learn from Germany, which has chosen to introduce specific legislation to support the
736 recruitment and retention of hospital nurses, which includes the introduction of an earmarked fund
737 for workplace health promotion activities.[185] There is a good economic rationale to invest in better
738 pastoral and health care of the workforce, with the estimated return on investment for investment
739 in workplace mental health interventions of £4.20 per £1 spent.[186]

740 *Adequate terms and conditions*

741 Remuneration obviously helps staff recruitment and retention. However, NHS England salaries had
742 an annual 1% cap on pay rises between 2013 and 2017, which was preceded by a freeze on public
743 sector pay between 2011 and 2013.[187] Since 2017, there has been a deviation from the 1% policy. In
744 2018, a pay settlement was agreed for all NHS agenda for change staff, ie all non-medical staff, that
745 granted a minimum cumulative rise in pay of 6.5% over 3 years.[188] In recognition of efforts during
746 the COVID-19 pandemic, an increase in pay of 2.8% for all medical staff backdated to April 2020 has
747 been awarded.[189] However, agenda for change staff, including nurses and allied health professionals,
748 are yet to receive an additional pay award to recognise their efforts during the COVID-19 pandemic.
749 To improve recruitment and retention, adequate pay and terms and conditions of employment are
750 vital. The UK government has announced that NHS staff will be exempt from a planned public sector
751 pay freeze in recognition of their efforts during the pandemic.[190] However, the Commission believes
752 growth in pay should not just stay above inflation, but at least keep pace with average earnings, and
753 this should continue beyond the immediate aftermath of the pandemic to ensure the NHS is a
754 competitive employer. Remuneration policy must take account of the alternative employment
755 options that staff have, as NHS staff may choose to work in other parts of the public sector or wider
756 economy where pay and conditions are better. For nurses and other professions there is the
757 additional lure of working overseas where salaries are significantly higher. To support an

758 appropriate remuneration policy, planning more effectively for the future will require linking NHS

759 funding allocations to projected rises in average earnings (Panel 1).

760 Panel 1: Ensuring NHS pay keeps pace with average earnings– illustrative scenarios

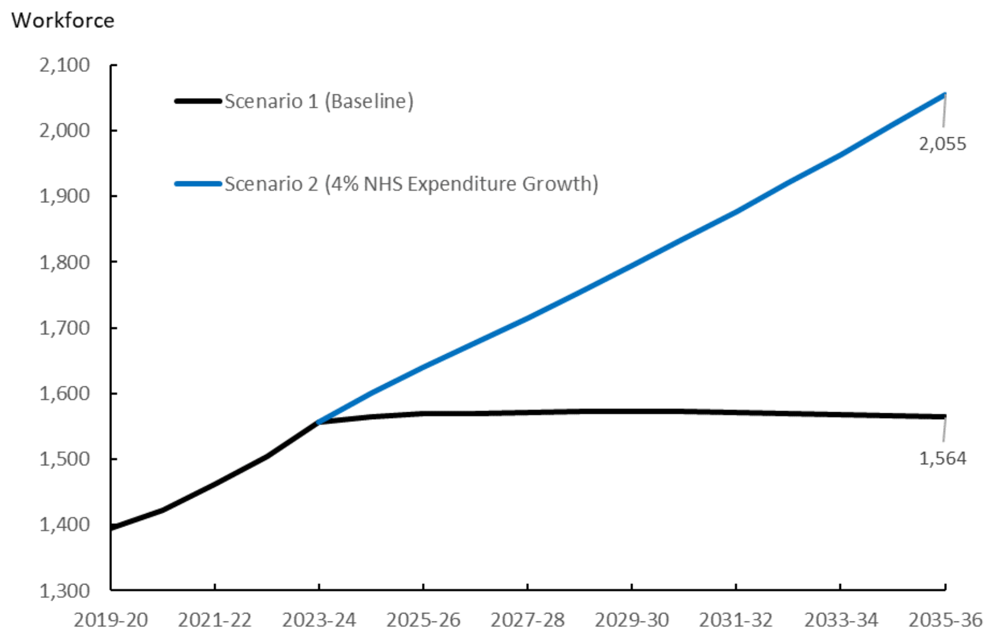
These workforce projections seek to illustrate possible workforce supply under different assumptions for NHS spending. Given that the workforce accounts for approximately 60% of NHS expenditure we believe workforce planning needs to better integrate staffing mix and levels to NHS expenditure plans. Within the LSE-Lancet Commission background paper on health and care funding,[191] it is argued that a long-term spending increase of *at least* 4% per annum, in real terms, is necessary to meet demand and improve upon the current standards of health and care delivery. The OBR,[192] Health Foundation and IFS,[193] have reached similar conclusions. These projections collate the 'Hospital and Community Health Services' workforce (FTE) for the entire UK, but due to inconsistent and incomplete data across the UK, do not project the primary care workforce. These projections also assume wage growth keeps pace with average earnings beyond current pay agreements. The Commission argues this is necessary so that the NHS remains an attractive place to work.

We project the labour force under two scenarios, both scenarios assume wage growth occurs as agreed to 2020-21 under the NHS Terms and Condition of Service 2018,[188] then reverts to OBR forecasts for average earnings beyond that,[194] and NHS real expenditure grows in line with the Summer 2018 NHS settlement estimates until 2023-24.[195]

- **Scenario 1 (Baseline)** Beyond 2023-24 real NHS expenditure grows as the same rate as GDP using OBR forecasts.
- **Scenario 2 (4% NHS Expenditure Growth)** Beyond 2023-24 real NHS expenditure grows at 4% per year.

These projections indicate that between 2018-19 and 2035-36 the workforce could increase by: around 200,000 under scenario 1 (a 15% increase) and around 690,000 under scenario 2 (a 51% increase (Figure 4). There is almost no growth in the workforce past the current funding settlement (2023-24) in scenario 1, whereas workforce growth beyond 2023-24 in scenario 2 is approximately 2.4% per year.

Figure 4: UK NHS Hospital and Community Health Service (HCHS) workforce supply (FTE) under alternative funding scenarios



Source: Author's calculations

These illustrative scenarios require several broad assumptions. The most important is the assumption for wage growth, which is highly uncertain in the current environment. The OBR forecasts of average earnings used in this analysis reflect OBR projections published in November

2020.[194] Whilst the workforce projections for the scenario 1 are relatively robust to changes in wage growth assumptions (as projections of wage growth are dependent on projections of GDP growth), workforce projections in scenario 2 are highly sensitive to changes in average earnings. Our illustrative scenarios also assume that capital-labour substitution and labour-for-labour substitution is neutral, and we make no adjustments for how alternative scenarios may affect retention or recruitment of staff. These scenarios also have methodological limitations. Our short-term NHS expenditure growth is linked to the 2018 NHS funding settlement, [195] which only covers 90% of NHS spending (it doesn't include training, public health and capital), and does not reflect additional NHS funding announced in response to the pandemic. Moreover, we assume NHS expenditure growth is the same for the UK. In reality the Barnett formula allocates a proportionally higher level of funding to Scotland, Wales and Northern Ireland, which we do not account of.[196] As a result, these projections are crude, but they are tied to alternative NHS expenditure growth rates; something that is rarely done.

The central finding of these illustrative projections is that to sustain growth in the NHS workforce and ensure pay keeps pace with average earnings, increases in NHS expenditure above GDP growth will be required. However, workforce growth is also dependent on retaining existing staff by improving morale and enhancing career development opportunities. By adopting the LSE-Lancet Commission's recommendation to increase NHS expenditure by 4% per annum in real terms, under current assumptions, the workforce will be able to grow at approximately 2.4% per year. This is broadly in line with projections of annual activity growth over the next 15 years; estimated to be 2.7% in secondary care.[193]

Source: Authors calculations- see Supplementary Material 2

761

762 Other terms and conditions of employment need to be reformed to improve recruitment and
763 retention. A tapering mechanism that reduces tax relief on pensions for people earning over
764 £110,000 per year led to over 30% of GPs and over 40% of hospital consultants to either take early
765 retirement, reduce their hours or refuse extra shifts.[197,198] While the government has now increased
766 this threshold to £240,000 for 2020/21,[199] it is important the government develops a long-term
767 solution. Furthermore, job plans need to make allowances for flexible working patterns and be open
768 to job-sharing arrangements which may help improve retention, especially for those with school
769 aged children or other caring responsibilities.

770 **Conclusion**

771 To supply a sustainable, skilled and fit for purpose health and care workforce for the UK, radical,
772 integrated, and long-term strategic vision is needed. To date, this has been lacking. Roles and
773 responsibilities for different components of the workforce strategy have been distributed between
774 various national and local stakeholders with no overall ownership or oversight. Workforce planning
775 has been inconsistent and often undertaken in professional silos. The result is fewer health and care
776 staff than many other high-income countries, and major shortfalls in areas such as nursing, mental
777 health, primary care and social care. The current response has been a reliance on foreign-trained
778 and temporary staff and small-scale changes in skill-mix. This is neither desirable nor sustainable.
779 Emerging challenges include rising multimorbidity, a gap in the supply of unpaid carers, an aging
780 workforce and Brexit. To overcome these, there is an urgent need to develop integrated workforce
781 planning, reform education and training and implement new models of care. The highest priority is
782 to improve recruitment, retention and morale by taking action to enhance career development
783 opportunities, promote staff-wellbeing, tackle discrimination in the NHS, and provide good pay and
784 conditions. There is also an urgent imperative to offer sufficient after care and support for staff who
785 have been exposed to high-risk and traumatic experiences during the COVID-19 pandemic. Future

786 funding allocations for the health and care sector must take account of all these issues in order to

787 secure a sustainable and fit for purpose health and care workforce.

788 **Author Contributions**: MA drafted the paper and managed the processes of the working group. CO,

789 JMC, and AS led the working group and contributed to the drafting of the paper. AM and MW

790 undertook projections of workforce supply and contributed to the drafting of the paper. All authors

791 provided critical input into the content and to revisions to the text.

792 **Acknowledgements**

793 The Commission would like to acknowledge the assistance of Josephine Lloyd who contributed to

794 the analysis of health and care workforce strategies in England, Scotland, Wales, and Northern

795 Ireland. We would also like to express our gratitude to all stakeholders who engaged with the

796 Commission throughout our consultation.

797

798 **References**

799 1 UK Government. Department of Health and Social Care Annual Report and Accounts
800 2018-19. 2019.
801 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
802 ata/file/832765/dhsc-annual-report-and-accounts-2018-to-2019.pdf (accessed Nov 22,
803 2020).

804 2 Rolewicz L, Palmer B. The NHS workforce in numbers. Nuffield Trust. 2019.
805 https://www.nuffieldtrust.org.uk/resource/the-nhs-workforce-in-numbers (accessed Nov
806 22, 2020).

807 3 ISD Scotland. NHS Scotland Workforce. 2019. https://www.isdscotland.org/Health-
808 Topics/Workforce/Publications/ (accessed Nov 22, 2020).

809 4 StatsWales. NHS staff by staff group and year. 2019.
810 https://statswales.gov.wales/Catalogue/Health-and-Social-Care/NHS-Staff/NHS-Staff-
811 Summary/nhsstaff-by-staffgroup-year (accessed Nov 22, 2020).

812 5 Northern Ireland Department of Health. Northern Ireland health and social care (HSC) key
813 facts workforce bulletin. 2019. https://www.health-ni.gov.uk/publications/northern-

814 ireland-health-and-social-care-hsc-key-facts-workforce-bulletin-march-2019 (accessed
815 Nov 22, 2020).

816 6 Dolton P, Nguyen D, Castellanos M. Brexit and the Health & Social Care Workforce in the
817 UK. National Institute of Economic and Social Research. 2018
818 https://www.niesr.ac.uk/publications/brexit-and-health-social-care-workforce-uk (accessed
819 Nov 22, 2020).

820 7 ONS. JOBS05: Workforce jobs by region and industry. 2019.
821 https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandempl
822 oyeetypes/datasets/workforcejobsbyregionandindustryjobs05 (accessed Nov 22, 2020).

823 8 Carers Week. Carers Week 2020 Research Report: The rise in the number of unpaid carers
824 during the coronavirus (COVID-19) outbreak. 2020.
825 https://www.carersweek.org/images/CW%202020%20Research%20Report%20WEB.pdf
826 (accessed Nov 22, 2020).

827 9 El-Osta A, Webber D, Gnani S, *et al.* The Self-Care Matrix: A unifying framework for
828 self-care. Self Care Journal. 2019. https://selfcarejournal.com/article/the-self-care-matrix-
829 a-unifying-framework-for-self-care/ (accessed Nov 22, 2020).

830 10 OECD. Women are well-represented in health and long-term care professions, but often in
831 jobs with poor working conditions. 2019. http://www.oecd.org/gender/data/women-are-
832 well-represented-in-health-and-long-term-care-professions-but-often-in-jobs-with-poor-
833 working-conditions.htm (accessed Nov 22, 2020).

834 11 NHS Employers. Gender in the NHS. 2019. https://www.nhsemployers.org/-
835 /media/Employers/Documents/Plan/DIVERSITY-AND-INCLUSION/EQW19/Gender-in-
836 the-NHS-infographic.pdf (accessed Nov 22, 2020).

837 12 Skill for Care. The state of the adult social care sector and workforce in England. 2020.
838 https://www.skillsforcare.org.uk/adult-social-care-workforce-data/Workforce-
839 intelligence/documents/State-of-the-adult-social-care-sector/The-state-of-the-adult-social-
840 care-sector-and-workforce-2020.pdf (accessed Nov 22, 2020).

841 13 NHS Digital. Narrowing of NHS gender divide but men still the majority in senior roles.
842 2018. https://digital.nhs.uk/news-and-events/news/narrowing-of-nhs-gender-divide-but-
843 men-still-the-majority-in-senior-roles (accessed Nov 22, 2020).

844 14 NHS England. Gender Pay Report. 2018. https://www.england.nhs.uk/wp-
845 content/uploads/2018/03/gender-pay-gap-report-march-2019.pdf (accessed Nov 22, 2020).

846 15 ONS. Ethnicity and National Identity in England and Wales: 2011. 2012.
847 https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/ethnicity/articles/
848 ethnicityandnationalidentityinenglandandwales/2012-12-11 (accessed Nov 22, 2020).

849 16 NHS England. NHS Workforce Race Equality Standard: 2019 Data Analysis Report for
850 NHS Trusts. 2020. https://www.england.nhs.uk/wp-content/uploads/2020/01/wres-2019-
851 data-report.pdf (accessed Nov 22, 2020).

852 17 Ross S, Jabbal J, Chauhan K, Maguire D, Randhawa M, Dahir S. Workforce race
853 inequalities and inclusion in NHS providers. King's Fund. 2020.

854 https://www.kingsfund.org.uk/publications/workforce-race-inequalities-inclusion-
855 nhs#:~:text=Despite%20having%20one%20of%20the,they%20have%20experienced%20d
856 iscrimination%20at (accessed Nov 22, 2020).

857 18 Public Health England. Beyond the data: Understanding the impact of COVID-19 on
858 BAME groups. 2020.
859 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
860 ata/file/892376/COVID_stakeholder_engagement_synthesis_beyond_the_data.pdf
861 (accessed Nov 22, 2020).

862 19 Buchan J, Twigg D, Dussault G, Duffield C, Stone PW. Policies to sustain the nursing
863 workforce: an international perspective. *Int Nurs Rev* 2015; **62**: 162–70.

864 20 WHO. The toolkit for a sustainable health workforce in the WHO European Region. 2018.
865 http://www.euro.who.int/__data/assets/pdf_file/0004/375547/WH11_TK_text_AW-
866 2.pdf?ua=1 (accessed Nov 22, 2020).

867 21 Greenberg N, Docherty M, Gnanapragasam S, Wessely S. Managing mental health
868 challenges faced by healthcare workers during covid-19 pandemic. *BMJ* 2020; **368**.
869 DOI:10.1136/bmj.m1211.

870 22. BMA. The hidden impact of COVID-19 on patient care in the NHS in England. 2020.
871 https://www.bma.org.uk/media/2840/the-hidden-impact-of-covid_web-pdf.pdf (accessed
872 Nov 22, 2020).

873 23 LSE-Lancet Commission. 'The Future of the NHS': Relaying the foundations in a post
874 COIVD-19 world. *The Lancet* 2021. (In Press)

875 24 Academy of Medical Royal Colleges. A practical guide to curriculum development. 2019.
876 https://www.aomrc.org.uk/wp-
877 content/uploads/2019/07/Practical_guide_to_curriculum_development_0719.pdf (accessed
878 Nov 22, 2020).

879 25 Royal College of Nursing. Become a nurse: advice on beginning your nursing career.
880 https://www.rcn.org.uk/professional-development/become-a-nurse (accessed Nov 22,
881 2020).

882 26 General Medical Council. Becoming a doctor in the UK. 2019. https://www.gmc-
883 uk.org/education/becoming-a-doctor-in-the-uk (accessed Nov 22, 2020).

884 27 Health Education England. Medical specialty training.
885 https://www.healthcareers.nhs.uk/explore-roles/doctors/medical-specialty-training
886 (accessed Nov 22, 2020).

887 28 Curtis L, Burns A. Unit Costs of Health and Social Care 2018. Personal Social Services
888 Research Unit, University of Kent. 2018. https://www.pssru.ac.uk/project-pages/unit-
889 costs/unit-costs-2018/ (accessed Nov 22, 2020).

890 29 Department of Health. Expansion of Undergraduate Medical Education: A consultation on
891 how to maximise the benefits from the increases in medical student numbers. 2017.
892 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
893 ata/file/600835/Medical_expansion_rev_A.pdf#page=22 (accessed Nov 22, 2020).

894 30 Bolton P. Tuition Fee Statistics. House of Commons Library. 2018.
895 http://researchbriefings.files.parliament.uk/documents/SN00917/SN00917.pdf (accessed
896 Nov 22, 2020).

897 31 Rogers S. NHS bursary. Complete University Guide. 2020.
898 https://www.thecompleteuniversityguide.co.uk/student-advice/finance/nhs-bursary
899 (accessed Nov 22, 2020).

900 32 Department of Health & Social Care. NHS bursary reform. 2017.
901 https://www.gov.uk/government/publications/nhs-bursary-reform/nhs-bursary-reform
902 (accessed Nov 22, 2020).

903 33 UK Goverment. Nursing students to receive £5,000 payment a year. 2019.
904 https://www.gov.uk/government/news/nursing-students-to-receive-5-000-payment-a-year
905 (accessed Nov 22, 2020).

906 34 UCAS. 2019 End of Cycle Report. 2019. https://www.ucas.com/data-and-
907 analysis/undergraduate-statistics-and-reports/ucas-undergraduate-end-cycle-reports/2019-
908 end-cycle-report (accessed Nov 22, 2020).

909 35 Royal College of Nursing. RCN Briefing: Staffing levels in the NHS, Westminster Hall
910 Debate. 2018. https://www.rcn.org.uk/about-us/policy-briefings/br-1218 (accessed Nov
911 22, 2020).

912 36 House of Commons Health Committee. The nursing workforce: Second Report of Session
913 2017–19. 2018.
914 https://publications.parliament.uk/pa/cm201719/cmselect/cmhealth/353/353.pdf (accessed
915 Nov 22, 2020).

916 37 Health Education England. Facing the facts, shaping the future. A draft health and care
917 workforce strategy for England to 2027. 2017.
918 https://www.hee.nhs.uk/sites/default/files/documents/Facing%20the%20Facts%2C%20Sh
919 aping%20the%20Future%20%E2%80%93%20a%20draft%20health%20and%20care%20
920 workforce%20strategy%20for%20England%20to%202027.pdf (accessed Nov 22, 2020).

921 38 Cavendish C. The Cavendish Review: An Independent Review into Healthcare Assistants
922 and Support Workers in the NHS and social care settings. 2013.
923 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
924 ata/file/236212/Cavendish_Review.pdf (accessed Nov 22, 2020).

925 39 Francis R. Independent Report: Report of the Mid Staffordshire NHS Foundation Trust
926 Public Inquiry. 2013 https://www.gov.uk/government/publications/report-of-the-mid-
927 staffordshire-nhs-foundation-trust-public-inquiry (accessed Nov 22, 2020).

928 40 Smith W. The Talent for Care: A national strategic framework to develop the healthcare
929 support workforce. Health Education England. 2014.
930 https://www.hee.nhs.uk/sites/default/files/documents/TfC%20National%20Strategic%20Fr
931 amework_0.pdf (accessed Nov 22, 2020).

932 41 National Audit Office. The adult social care workforce in England. 2018.
933 https://www.nao.org.uk/wp-content/uploads/2018/02/The-adult-social-care-workforce-in-
934 England.pdf (accessed Nov 22, 2020).

935 42 A'Campo L, Spliethoff-Kamminga N, Macht M, Roos R. Caregiver education in
936 Parkinson's disease: formative evaluation of a standardized program in seven European
937 countries. *Qual Life Res* 2010; **19**: 55–64.

938 43 Courtin E, Jemiai N, Mossialos E. Mapping support policies for informal carers across the
939 European Union. *Health Policy* 2014; **118**: 84–94.

940 44 Buchan J, Charlesworth A, Gershlick B, Seccombe I. Rising pressure: the NHS workforce
941 challenge. The Health Foundation. 2017. https://www.health.org.uk/publications/rising-
942 pressure-the-nhs-workforce-challenge (accessed Nov 22, 2020).

943 45 Skills for Care. Discover the Adult Social Care Workforce Data Set. 2020.
944 https://www.skillsforcare.org.uk/adult-social-care-workforce-data/ASC-WDS/Discover-
945 the-Adult-Social-Care-Workforce-Data-Set.aspx (accessed Nov 22, 2020).

946 46 Ono T, Lafortune G, Schoenstein M. Health Workforce Planning in OECD Countries: A
947 Review of 26 Projection Models from 18 Countries. OECD. 2013. https://www.oecd-
948 ilibrary.org/docserver/5k44t787zcwb-
949 en.pdf?expires=1563891488&id=id&accname=guest&checksum=C4B025101064FFAFD
950 F91C8EA9E946793 (accessed Nov 22, 2020).

951 47 Joyce CM, McNeil JJ, Stoelwinder JU. Time for a new approach to medical workforce
952 planning. *Med J Aust* 2004; **180**: 343–6.

953 48 NHS Improvement. Operational workforce planning: a self-assessment tool.
954 https://improvement.nhs.uk/resources/operational-workforce-planning-self-assessment-
955 tool/ (accessed Nov 22, 2020).

956 49 Sukkar E. Community pharmacy in Great Britain 2016: a fragmented market.
957 Pharmaceutical Journal. 2016. https://www.pharmaceutical-journal.com/news-and-
958 analysis/infographics/community-pharmacy-in-great-britain-2016-a-fragmented-
959 market/20201210.article (accessed Nov 22, 2020).

960 50 OECD. OECD Health Statistics 2020. http://www.oecd.org/els/health-systems/health-
961 data.htm (accessed Nov 22, 2020).

962 51 Cancer Research UK. Securing a Cancer Workforce for the best outcomes: The Future
963 Deamnd for Cancer Workforce in England. 2018.
964 https://www.cancerresearchuk.org/sites/default/files/securing_a_cancer_workforce_for_th
965 e_best_outcomes_november_2018_short_report.pdf (accessed Nov 22, 2020).

966 52 Royal College of Physicians. Focus on physicians: Census of consultant physicians and
967 higher specialty trainees 2017–18. 2018.
968 https://www.rcplondon.ac.uk/projects/outputs/focus-physicians-2017-18-census-uk-
969 consultants-and-higher-specialty-trainees (accessed Nov 22, 2020).

970 53 NHS England. Securing the future workforce for emergency departments in England.
971 2017.
972 https://improvement.nhs.uk/documents/1826/Emergency_department_workforce_plan_-
973 _111017_Final.3.pdf (accessed Nov 22, 2020).

974 54 RSPH. Rethinking the Public Health Workforce. 2015. https://www.rsph.org.uk/our-
975 work/policy/wider-public-health-workforce/rethinking-the-public-health-workforce.html
976 (accessed Nov 22, 2020).

977 55 NHS Digital. NHS Workforce Statistics - July 2020. 2020. https://digital.nhs.uk/data-and-
978 information/publications/statistical/nhs-workforce-statistics/july-2020 (accessed Nov 22,
979 2020).

980 56 Jones-Berry S. Why as many as one in four nursing students could be dropping out of their
981 degrees. Nursing Standard. 2018. https://rcni.com/nursing-standard/newsroom/news/why-
982 many-one-four-nursing-students-could-be-dropping-out-of-their-degrees-137661 (accessed
983 Nov 22, 2020).

984 57 NHS Digital. Nurse and Health Visitor joiners and leavers from the NHS. 2018.
985 https://digital.nhs.uk/data-and-information/find-data-and-publications/supplementary-
986 information/2018-supplementary-information-files/leavers-and-joiners/nurse-and-health-
987 visitor-joiners-and-leavers-from-the-nhs_ah2359 (accessed Nov 22, 2020).

988 58 NHS Improvement. Performance of the NHS provider sector for the year ended 31 March
989 2019. https://www.england.nhs.uk/wp-content/uploads/2020/08/performance-of-the-nhs-
990 provider-sector-quarter-4-1819.pdf (accessed Nov 22, 2020).

991 59 ISD Scotland. NHSScotland Workforce Quarter ending 30 June 2019. 2019.
992 https://www.isdscotland.org/Health-Topics/Workforce/Publications/2019-09-03/2019-09-
993 03-Workforce-Summary.pdf (accessed Nov 22, 2020).

994 60 Northern Ireland Department of Health. Northern Ireland health and social care (HSC)
995 workforce vacancies June 2020. 2020. https://www.health-ni.gov.uk/publications/northern-
996 ireland-health-and-social-care-hsc-workforce-vacancies-june-2020 (accessed Nov 22,
997 2020).

998 61 Buchan J. Reviewing The Benefits of Health Workforce Stability. *Hum Resour Health*
999 2010; **8**: 29.

1000 62 NHS Digital. Supplementary information relating to the stability index of HCHS doctors,
1001 nurses and health visitors. 2018. https://digital.nhs.uk/data-and-information/find-data-and-
1002 publications/supplementary-information/2018-supplementary-information-files/stability-
1003 index/supplementary-information-relating-to-stability-index-of-hchs-doctors-and-nurses
1004 (accessed Nov 22, 2020).

1005 63 NHS England. Interim NHS People Plan. 2019. https://www.longtermplan.nhs.uk/wp-
1006 content/uploads/2019/05/Interim-NHS-People-Plan_June2019.pdf (accessed Nov 22,
1007 2020).

1008 64 Ajaz A, David R, Brown D, Smuk M, Korszun A. BASH: badmouthing, attitudes and
1009 stigmatisation in healthcare as experienced by medical students. *BJPsych Bull* 2016; **40**:
1010 97–102.

1011 65 Health Education England. National Psychiatry Recruitment - Fill Rates & Competition
1012 Ratios for CT1 (2017).
1013 https://www.nwpgmd.nhs.uk/national_Psychiatry_Recruitment_Comp_Ratios_Fill_Rates
1014 (accessed Nov 22, 2020).

1015 66 Health Education England. Stepping forward to 2020/21: The mental health workforce
1016 plan for England. 2017.
1017 https://www.hee.nhs.uk/sites/default/files/documents/Stepping%20forward%20to%202020
1018 21%20-%20The%20mental%20health%20workforce%20plan%20for%20england.pdf
1019 (accessed Nov 22, 2020).

1020 67 UK Government. Immigration Rules Appendix K: shortage occupation list.
1021 https://www.gov.uk/guidance/immigration-rules/immigration-rules-appendix-k-shortage-
1022 occupation-list (accessed Nov 22, 2020).

1023 68 NHS England. Implementing the five year forward view for mental health. 2016.
1024 https://www.england.nhs.uk/publication/implementing-the-fyfv-for-mental-health/
1025 (accessed Nov 22, 2020).

1026 69 The Psychological Professions Network. Delivering the Expansion in the Psychological
1027 Professions. 2018. https://www.kss-ppn.nhs.uk/resources/publications/2-ppn-brochure-
1028 june18-online-singlepages/file (accessed Nov 22, 2020).

1029 70 NHS England. NHS Long Term Plan. 2019. https://www.longtermplan.nhs.uk/ (accessed
1030 Nov 22, 2020).

1031 71 Palmer W. Is the number of GPs falling across the UK? Nuffield Trust. 2019.
1032 https://www.nuffieldtrust.org.uk/news-item/is-the-number-of-gps-falling-across-the-uk
1033 (accessed Nov 22, 2020).

1034 72 NHS Digital. General Practice Workforce. 2020. https://digital.nhs.uk/data-and-
1035 information/publications/statistical/general-and-personal-medical-services (accessed Nov
1036 22, 2020).

1037 73 ONS. Estimates of the population for the UK, England and Wales, Scotland, and Northern
1038 Ireland.
1039 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populati
1040 onestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland
1041 (accessed Nov 22, 2020).

1042 74 Moberly T. Rise in GPs taking early retirement. *BMJ* 2018; **360**: k1367.

1043 75 Gibson J, Sutton M, Spooner S, Checkland K. Ninth national GP worklife survey. Policy
1044 Research Unit in Commissioning and the Healthcare System. 2018.
1045 http://blogs.lshtm.ac.uk/prucomm/files/2018/05/Ninth-National-GP-Worklife-Survey.pdf
1046 (accessed Nov 22, 2020).

1047 76 Sansom A, Terry R, Fletcher E, *et al.* Why do GPs leave direct patient care and what
1048 might help to retain them? A qualitative study of GPs in South West England. *BMJ Open*
1049 2018; **8**: e019849.

1050 77 Ipsos MORI Research. The recruitment, retention and return of nurses to general practice
1051 nursing in England. 2016. https://www.england.nhs.uk/publication/the-recruitment-
1052 retention-and-return-of-nurses-to-general-practice-nursing-in-england/ (accessed Nov 22,
1053 2020).

1054 78 NHS England. Primary care networks. https://www.england.nhs.uk/primary-care/primary-
1055 care-networks/ (accessed Nov 22, 2020).

1056 79 Scottish Government. The 2018 General Medical Services Contract in Scotland. 2017.
1057 https://www.gov.scot/publications/gms-contract-scotland/ (accessed Nov 22, 2020).

1058 80 Northern Ireland Department of Health. West Belfast to benefit from new GP practice-
1059 based Multi-Disciplinary Teams. 2018. https://www.health-ni.gov.uk/news/west-belfast-
1060 benefit-new-gp-practice-based-multi-disciplinary-teams (accessed Nov 22, 2020).

1061 81 Blewitt N, Brushett M, Lisle S, Matthews E, Owen E, Thomas D. A picture of primary
1062 care in Wales. Wales Audit Office. 2018.
1063 https://www.audit.wales/system/files/publications/picture-of-primary-care-2018-
1064 english_0.pdf (accessed Nov 22, 2020).

1065 82 NHS Digital. NHS Vacancy Statistics: England, February 2015 – March 2019. 2019.
1066 https://files.digital.nhs.uk/92/0B73E4/nhs-vac-stats-feb15-mar19-eng-rep.pdf (accessed
1067 Nov 22, 2020).

1068 83 NHS Employers. NHS Terms and Conditions (AfC) pay scales - Annual. 2019.
1069 https://www.nhsemployers.org/pay-pensions-and-reward/agenda-for-change/pay-
1070 scales/annual (accessed Nov 22, 2020).

1071 84 Skills for Health. The Healthcare Support Workforce: A case for ongoing development
1072 and investment. 2016. https://www.skillsforhealth.org.uk/images/resource-
1073 section/reports/The%20Healthcare%20Suppport%20Workforce.pdf (accessed Nov 22,
1074 2020).

1075 85 Scottish Social Services Council. Staff vacancies in care services 2018. 2020.
1076 https://data.sssc.uk.com/images/StaffVacancies/Staff_vacancies_in_care_services_2018.pd
1077 f (accessed Nov 22, 2020).

1078 86 Data Cymru. Social Worker Workforce Planning 2017-2018: A national report on the
1079 social worker workforce in Wales. 2019. https://socialcare.wales/cms_assets/file-
1080 uploads/Social_Worker_Workforce_Planning_2017_18_eng.pdf (accessed Nov 22, 2020).

1081 87 International Labour Organization. Care work and care jobs: for the future of decent work.
1082 2018. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---
1083 publ/documents/publication/wcms_633135.pdf (accessed Nov 22, 2020).

1084 88 Ward D. Average pay for care workers. Kings Fund. 2019.
1085 https://www.kingsfund.org.uk/blog/2019/08/average-pay-for-care-workers (accessed Nov
1086 22, 2020).

1087 89 Beech J, Bottery S, Charlesworth A, *et al.* Closing the gap: key areas for action on the
1088 health and care workforce. The Health Foundation. The Kings Fund. Nuffield Trust
1089 https://www.kingsfund.org.uk/sites/default/files/2019-06/closing-the-gap-full-report-
1090 2019.pdf (accessed Nov 22, 2020).

1091 90 Dromey J, Hochlaf D. Fair Care: A workforce strategy for social care. Institute for Public
1092 Policy Research. 2018. https://www.ippr.org/files/2018-11/fair-care-a-workforce-strategy-
1093 november18.pdf (accessed Nov 22, 2020).

1094 91 Buckner L, Yeandle S. Valuing Carers 2015: The rising value of carers' support. Carers
1095 UK. 2015 https://www.carersuk.org/for-professionals/policy/policy-library/valuing-carers-
1096 2015 (accessed Nov 22, 2020).

1097 92 NHS Digital. Adult Social Care Activity and Finance Report, England - 2017-18.
1098 https://digital.nhs.uk/data-and-information/publications/statistical/adult-social-care-
1099 activity-and-finance-report/2017-18 (accessed Nov 22, 2020).

1100 93 OECD. Recent Trends in International Migration of Doctors, Nurses and Medical
1101 Students. 2019 https://www.oecd-ilibrary.org/content/publication/5571ef48-en (accessed
1102 Nov 22, 2020).

1103 94 Baker C. NHS staff from overseas: statistics. House of Commons Library. 2020
1104 https://commonslibrary.parliament.uk/research-briefings/cbp-7783/ (accessed Nov 22,
1105 2020).

1106 95 WHO. WHO Global Code of Practice on the International Recruitment of Health
1107 Personnel. 2010.
1108 https://www.who.int/hrh/migration/code/WHO_global_code_of_practice_EN.pdf
1109 (accessed Nov 22, 2020).

1110 96 NHS Employers. Developing countries - recruitment. 2018.
1111 http://www.nhsemployers.org/your workforce/recruit/employer led
1112 recruitment/international recruitment/uk code of practice for international recruitment/list
1113 of developing countries (accessed Nov 22, 2020).

1114 97 NHS Employers. Tier 2 immigration reform. 2019. http://www.nhsemployers.org/your
1115 workforce/recruit/employer led recruitment/international recruitment/immigration rules
1116 and the points based system/tier 2/tier 2 reform and policy changes (accessed Nov 22,
1117 2020).

1118 98 Patel P. Home Secretary letter to the MAC in response to the shortage occupation lists
1119 report. UK Government. 2020 https://www.gov.uk/government/publications/letter-to-the-
1120 mac-on-the-shortage-occupation-lists-report/home-secretary-letter-to-the-mac-in-response-
1121 to-the-shortage-occupation-lists-report-accessible-version (accessed Nov 22, 2020).

1122 99 Buchan J, Charlesworth A. International Rescue. *BMJ* 2018; **361**: k2543.

1123 100 Sizmur S, Raleigh V. The risks to care quality and staff wellbeing of an NHS system
1124 under pressure. The King's Fund, Picker. 2018. https://www.picker.org/wp-
1125 content/uploads/2014/12/Risks-to-care-quality-and-staff-wellbeing-VR-SS-v8-Final.pdf
1126 (accessed Nov 22, 2020).

1127 101 Booth R. Agency staff were spreading Covid-19 between care homes, PHE found in
1128 April. The Guardian. 2020; published online May 18.
1129 https://www.theguardian.com/world/2020/may/18/agency-staff-were-spreading-covid-19-
1130 between-care-homes-phe-found-in-april (accessed Nov 22, 2020).

1131 102 Niezen MGH, Mathijssen JJP. Reframing professional boundaries in healthcare: A
1132 systematic review of facilitators and barriers to task reallocation from the domain of
1133 medicine to the nursing domain. *Health Policy* 2014; **117**: 151–69.

1134 103 Cope LC, Abuzour AS, Tully MP. Nonmedical prescribing: where are we now? *Ther*
1135 *Adv Drug Saf* 2016; **7**: 165–72.

1136 104 Courtenay M. An overview of developments in nurse prescribing in the UK. *Nurs Stand*
1137 *R Coll Nurs G B 1987* 2018; **33**: 40–4.

1138 105 iHealth. Non-Medical Prescribing (NMP) An Economic Evaluation. Health Education
1139 North West. http://www.i5health.com/NMP/NMPEconomicEvaluation.pdf (accessed Nov
1140 22, 2020).

1141 106 Coull A, Murray I, Turner-Halliday F, Watterson A. The expansion of nurse prescribing
1142 in Scotland: an evaluation. *Br J Community Nurs* 2013; **18**: 234–42.

1143 107 Stewart DC, George J, Bond CM, Diack HL, McCaig DJ, Cunningham S. Views of
1144 pharmacist prescribers, doctors and patients on pharmacist prescribing implementation. *Int*
1145 *J Pharm Pract* 2009; **17**: 89–94.

1146 108 Courtenay M, Carey N, Stenner K, Lawton S, Peters J. Patients' views of nurse
1147 prescribing: effects on care, concordance and medicine taking. *Br J Dermatol* 2011; **164**:
1148 396–401.

1149 109 Latter S, Smith A, Blenkinsopp A, Nicholls P, Little P, Chapman S. Are nurse and
1150 pharmacist independent prescribers making clinically appropriate prescribing decisions?
1151 An analysis of consultations. *J Health Serv Res Policy* 2012; **17**: 149–56.

1152 110 Ashcroft DM, Lewis PJ, Tully MP, *et al.* Prevalence, Nature, Severity and Risk
1153 Factors for Prescribing Errors in Hospital Inpatients: Prospective Study in 20 UK
1154 Hospitals. *Drug Saf* 2015; **38**: 833–43.

1155 111 Graham-Clarke E, Rushton A, Noblet T, Marriott J. Facilitators and barriers to non-
1156 medical prescribing – A systematic review and thematic synthesis. *PLOS ONE* 2018; **13**:
1157 e0196471.

1158 112 Mossialos E, Courtin E, Naci H, *et al.* From "retailers" to health care providers:
1159 Transforming the role of community pharmacists in chronic disease management. *Health*
1160 *Policy* 2015; **119**: 628–39.

1161 113 Department of Health & Social Care, NHS England, NHS Improvement, Pharmaceutical
1162 Services Negotiating Committee. The Community Pharmacy Contractual Framework for
1163 2019/20 to 2023/24: supporting delivery for the NHS Long Term Plan. 2019.
1164 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
1165 ata/file/819601/cpcf-2019-to-2024.pdf (accessed Nov 22, 2020).

1166 114 Northern Ireland Health and Social Care. Minor Ailments Scheme.
1167 http://www.hscbusiness.hscni.net/2055.htm (accessed Nov 22, 2020).

1168 115 Mossialos E, Naci H, Courtin E. Expanding the role of community pharmacists:
1169 policymaking in the absence of policy-relevant evidence? *Health Policy Amst Neth* 2013;
1170 **111**: 135–48.

1171 116 Royal College of Physicians. Who are physician associates?
1172 https://www.fparcp.co.uk/about-fpa/Who-are-physician-associates (accessed Nov 22,
1173 2020).

1174 117 NHS England. General Practice Forward View. 2016. https://www.england.nhs.uk/wp-
1175 content/uploads/2016/04/gpfv.pdf (accessed Nov 22, 2020).

1176 118 Jackson B, Marshall M, Schofield S. Barriers and facilitators to integration of physician
1177 associates into the general practice workforce: a grounded theory approach. *Br J Gen*
1178 *Pract* 2017; **67**: e785–91.

1179 119 Department of Health & Social Care. The Regulation of Medical Associate Professionals
1180 in the UK: Consultation Response. 2019.
1181 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
1182 ata/file/777130/maps-consultation-report.pdf (accessed Nov 22, 2020).

1183 120 Laurant M, van der Biezen M, Wijers N, Watananirun K, Kontopantelis E, van Vught
1184 AJ. Nurses as substitutes for doctors in primary care. *Cochrane Database Syst Rev* 2018.
1185 DOI:10.1002/14651858.CD001271.pub3.

1186 121 Mitchell G. NMC considers advanced nurse regulation as part of review. Nursing Times.
1187 2019. Published online June 12. https://www.nursingtimes.net/news/professional-
1188 regulation/nmc-considers-advanced-nurse-regulation-as-part-of-review-12-06-2019/
1189 (accessed Nov 22, 2020).

1190 122 Willis G. Shape of Caring: A Review of the Future Education and Training of Registered
1191 Nurses and Care Assistants. Health Education England. 2015.
1192 https://www.hee.nhs.uk/sites/default/files/documents/2348-Shape-of-caring-review-
1193 FINAL.pdf (accessed Nov 22, 2020).

1194 123 Health Education England. Trainee Nursing Associate numbers continue to grow as
1195 thousands more train to become Nursing Associates. 2019. https://www.hee.nhs.uk/news-
1196 blogs-events/news/trainee-nursing-associate-numbers-continue-grow-thousands-more-
1197 train-become-nursing-associates (accessed Nov 22, 2020).

1198 124 Health Education England. The GP Induction & Refresher Scheme.
1199 https://gprecruitment.hee.nhs.uk/Induction-Refresher (accessed Nov 22, 2020).

1200 125 Health Education England. Targeted Enhanced Recruitment Scheme (TERS).
1201 https://gprecruitment.hee.nhs.uk/recruitment/ters (accessed Nov 22, 2020).

1202 126 UK Government. New indemnity scheme for general practice introduced. 2019.
1203 https://www.gov.uk/government/news/new-indemnity-scheme-for-general-practice-
1204 introduced (accessed Nov 22, 2020).

1205 127 Anderson M, Mossialos E, McGuire A. Health and Social Care. Centre for Economic
1206 Performance. 2019. http://cep.lse.ac.uk/pubs/download/ea053.pdf (accessed Nov 22,
1207 2020).

1208 128 Brown T, Ryland H. Recruitment to psychiatry: a global problem. *BJPsych Int* 2019;
1209 **16**: 1–3.

1210 129 Choudry A, Farooq S. Systematic review into factors associated with the recruitment
1211 crisis in psychiatry in the UK: students', trainees' and consultants' views. *BJPsych Bull*
1212 2017; **41**: 345–52.

1213 130 NHS Employers. Pay and Conditions Circular (M&D) 3/2018. Pay award for hospital
1214 medical and dental staff, doctors and dentists in public health, the community health
1215 service and salaried primary dental care. 2018. https://www.nhsemployers.org/-
1216 /media/Employers/Documents/Pay-and-Conditions-Circular-MD-32018-270918.pdf
1217 (accessed Nov 22, 2020).

1218 131 Health Education England. The return to nursing practice programme.
1219 https://www.healthcareers.nhs.uk/explore-roles/nursing/returning-nursing/return-nursing-
1220 practice-programme (accessed Nov 22, 2020).

1221 132 NHS Wales. Return to practice for Nurses, Midwives and Specialist Community Public
1222 Health Nurses (SCPHNs). http://www.weds.wales.nhs.uk/return-to-practice-for-nurses-
1223 midwives-a (accessed Nov 22, 2020).

1224 133 Northern Ireland Practice & Education Council for Nursing and Midwifery. Returning to
1225 Practice. http://www.nursingandmidwiferycareersni.hscni.net/returning-to-practice/
1226 (accessed Nov 22, 2020).

1227 134 NHS Education for Scotland. Return to Practice: Information and Eligibility for access to
1228 funding. https://www.nes.scot.nhs.uk/education-and-training/by-discipline/nursing-and-
1229 midwifery/careers-and-recruitment/return-to-practice.aspx (accessed Nov 22, 2020).

1230 135 Health Education England. Return to Practice: allied health professionals and healthcare
1231 scientists. https://www.hee.nhs.uk/our-work/return-practice-allied-health-professionals-
1232 healthcare-scientists (accessed Nov 22, 2020).

1233 136 Katlic MR, Coleman J, Russell MM. Assessing the Performance of Aging Surgeons.
1234 *JAMA* 2019; **321**: 449–50.

1235 137 Uthaman T, Chua TL, Ang SY. Older nurses: A literature review on challenges,
1236 factors in early retirement and workforce retention. *Proc Singap Healthc* 2016; **25**: 50–5.

1237 138 Storey C, Cheater F, Ford J, Leese B. Retention of nurses in the primary and
1238 community care workforce after the age of 50 years: database analysis and literature
1239 review. *J Adv Nurs* 2009; **65**: 1596–605.

1240 139 NHS England. Thousands of former NHS staff are back on the front line in the NHS
1241 fight against coronavirus. 2020. https://www.england.nhs.uk/2020/04/thousands-of-
1242 former-nhs-staff-are-back-on-the-front-line-in-the-nhs-fight-against-coronavirus/
1243 (accessed Nov 22, 2020).

1244 140 Kingston A, Robinson L, Booth H, Knapp M, Jagger C, MODEM project. Projections
1245 of multi-morbidity in the older population in England to 2035: estimates from the
1246 Population Ageing and Care Simulation (PACSim) model. *Age Ageing* 2018; **47**: 374–80.

1247 141 Payne RA, Abel GA, Guthrie B, Mercer SW. The effect of physical multimorbidity,
1248 mental health conditions and socioeconomic deprivation on unplanned admissions to
1249 hospital: a retrospective cohort study. *CMAJ Can Med Assoc J* 2013; **185**: E221–8.

1250 142 Panagioti M, Stokes J, Esmail A, *et al.* Multimorbidity and Patient Safety Incidents in
1251 Primary Care: A Systematic Review and Meta-Analysis. *PLOS ONE* 2015; **10**: e0135947.

1252 143 Watt G. The subversive challenges of multimorbidity. *Br J Gen Pract* 2017; **67**: 280–
1253 1.

1254 144 Making more of multimorbidity: an emerging priority. *The Lancet* 2018; **391**: 1637.

1255 145 Albreht T, Dyakova M, Schellevis FG, Van den Broucke S. Many diseases, one
1256 model of care? *J Comorbidity* 2016; **6**: 12–20.

1257 146 Hasardzhiev S, Mendão L, Nolte W, Aben B, Kadenbach K. Managing
1258 multimorbidity: how can the patient experience be improved? *J Comorbidity* 2016; **6**: 28–
1259 32.

1260 147 Health, Social Care and Sport Committee. Inquiry into Primary Care: Clusters. National
1261 Assembly for Wales. 2017. https://senedd.wales/laid%20documents/cr-ld11226/cr-
1262 ld11226-e.pdf (accessed Nov 22, 2020).

1263 148 ONS. 2011 Census analysis: Unpaid care in England and Wales, 2011 and comparison
1264 with 2001. 2013.
1265 https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthcaresy
1266 stem/articles/2011censusanalysisunpaidcareinenglandandwales2011andcomparisonwith20
1267 01/2013-02-15 (accessed Nov 22, 2020).

1268 149 Carers UK. Facts and figures. https://www.carersuk.org/news-and-campaigns/press-
1269 releases/facts-and-figures (accessed Nov 22, 2020).

1270 150 Carduff E, Finucance A, Kendall M, *et al.* Understanding the Barriers to Identifying
1271 Carers of People with Supportive and Palliative Care Needs in Primary Care. *BMJ Support*
1272 *Palliat Care* 2014; **4**: A17–A17.

1273 151 Roth DL, Fredman L, Haley WE. Informal Caregiving and Its Impact on Health: A
1274 Reappraisal From Population-Based Studies. *The Gerontologist* 2015; **55**: 309–19.

1275 152 Brown RM, Brown SL. Informal Caregiving: A Reappraisal of Effects on Caregivers.
1276 *Soc Issues Policy Rev* 2014; **8**: 74–102.

1277 153 Pickard L, King D, Brimblecombe N, Knapp M. Public expenditure costs of carers
1278 leaving employment in England, 2015/2016. *Health Soc Care Community* 2018; **26**: e132–
1279 42.

1280 154 Lorenz-Dant K. International examples of measures to support unpaid carers during the
1281 COVID-19 pandemic. International Long Term Care Policy Network. 2020.
1282 https://ltccovid.org/wp-content/uploads/2020/05/International-measures-to-support-
1283 unpaid-carers-in-manage-the-COVID19-situation-20.05.20-complete-3.pdf (accessed Nov
1284 22, 2020).

1285 155 Brimblecombe N, Fernandez J-L, Knapp M, Rehill A, Wittenberg R. Unpaid care in
1286 England: future patterns and potential support strategies. Economics of Health and Social
1287 Care Research Unit. 2018.

1288 http://eprints.lse.ac.uk/90215/1/Brimblecombe_Fernandez_Knapp%20et%20al._Unpaid%
1289 20care%20in%20England_Author%20_%202018.pdf (accessed Nov 22, 2020).

1290 156 Pickard L. Substitution between formal and informal care: a 'natural experiment' in
1291 social policy in Britain between 1985 and 2000. *Ageing Soc* 2012; **32**: 1147–75.

1292 157 Migration Advisory Committee (MAC). EEA migration in the UK: Final report. 2018.
1293 https://www.gov.uk/government/publications/migration-advisory-committee-mac-report-
1294 eea-migration (accessed Nov 22, 2020).

1295 158 Fletcher E, Sansom A, Pitchforth E, *et al.* Overseas GP recruitment: comparing
1296 international GP training with the UK and ensuring that registration standards and patient
1297 safety are maintained. *BJGP Open* 2019; **3**. DOI:10.3399/bjgpopen18X101640.

1298 159 UK Government. The UK's future skills-based immigration system. 2018.
1299 https://www.gov.uk/government/publications/the-uks-future-skills-based-immigration-
1300 system (accessed Nov 22, 2020).

1301 160 Webber F. On the creation of the UK's 'hostile environment'. *Race Cl* 2019; **60**: 76–
1302 87.

1303 161 Nursing & Midwifery Council. Registration data reports. https://www.nmc.org.uk/about-
1304 us/reports-and-accounts/registration-statistics/ (accessed 22 Nov, 2020)

1305 162 Global Future. 100,000 Carers Missing. 2018.
1306 https://ourglobalfuture.com/reports/100000-carers-missing/ (accessed Nov 22, 2020).

1307 163 ONS. International migration and the health care workforce. 2019
1308 https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internati
1309 onalmigration/datasets/internationalmigrationandthehealthcareworkforce (accessed Nov
1310 24, 2020).

1311 164 NHS Education for Scotland. The Dental Workforce in Scotland 2018. 2018.
1312 https://www.nes.scot.nhs.uk/dental-workforce-2018.html (accessed Nov 22, 2020).

1313 165 Bähler C, Huber CA, Brüngger B, Reich O. Multimorbidity, health care utilization
1314 and costs in an elderly community-dwelling population: a claims data based observational
1315 study. *BMC Health Serv Res* 2015; **15**. DOI:10.1186/s12913-015-0698-2.

1316 166 Zulman DM, Chee CP, Wagner TH, *et al.* Multimorbidity and healthcare utilisation
1317 among high-cost patients in the US Veterans Affairs Health Care System. *BMJ Open*
1318 2015; **5**: e007771.

1319 167 Frenk J, Chen L, Bhutta ZA, *et al.* Health professionals for a new century:
1320 transforming education to strengthen health systems in an interdependent world. *The*
1321 *Lancet* 2010; **376**: 1923–58.

1322 168 Greenaway D. Securing the future of excellent patient care: Final report of the
1323 independent review. Shape of Training. 2013.
1324 https://www.shapeoftraining.co.uk/static/documents/content/Shape_of_training_FINAL_R
1325 eport.pdf_53977887.pdf (accessed Nov 22, 2020).

1326 169 The Royal College of Physicians. Future Hospital Commission. 2013.
1327 https://www.rcplondon.ac.uk/projects/outputs/future-hospital-commission (accessed Nov
1328 22, 2020).

1329 170 Hussey R. The Parliamentary Review of Health and Social Care in Wales. 2018.
1330 https://gov.wales/sites/default/files/publications/2018-01/Review-health-social-care-
1331 report-final.pdf (accessed Nov 22, 2020).

1332 171 Mulley A, Trimble C, Elwyn G. Patients' preferences matter: Stop the silent
1333 misdiagnosis. Kings Fund. 2012. https://www.kingsfund.org.uk/publications/patients-
1334 preferences-matter (accessed Nov 22, 2020).

1335 172 NMC. Standards of proficiency for registered nurses. 2018.
1336 https://www.nmc.org.uk/standards/standards-for-nurses/standards-of-proficiency-for-
1337 registered-
1338 nurses/#targetText=The%20Future%20Nurse%3A%20Standards%20of,for%20safe%20an
1339 d%20effective%20practice. (accessed Nov 22, 2020).

1340 173 Sheikh A, Anderson M, Albala S, et al. LSE-Lancet Commission 'The Future of the
1341 NHS': Leveraging Health Information Technology and Catalysing Digital Innovation to
1342 Create a National Learning Health and Care System. *Lancet Digital Health.* 2021. (In
1343 Press)

1344 174 Wachter RM. Making IT Work: Harnessing the Power of Health Information
1345 Technology to Improve Care in England.
1346 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
1347 ata/file/550866/Wachter_Review_Accessible.pdf (accessed Nov 22, 2020).

1348 175 Topol E. The Topol Review: Preparing the healthcare workforce to deliver the digital
1349 future. Health Education England. 2019. https://topol.hee.nhs.uk/wp-
1350 content/uploads/HEE-Topol-Review-2019.pdf (accessed Nov 22, 2020).

1351 176 Medical Schools Council. Survey of Medical Clinical Academic Staffing Levels. 2018.
1352 https://www.medschools.ac.uk/media/2491/msc-clinical-academic-survey-report-2018.pdf.
1353 (accessed Nov 22, 2020).

1354 177 Lara Montero A, Baltruks D, Hussein S. Investing in the social services workforce.
1355 European Social Network. 2017. https://www.esn-
1356 eu.org/sites/default/files/publications/Investing_in_the_social_service_workforce_WEB.p
1357 df (accessed Nov 22, 2020).

1358 178 Smith F, Lambert TW, Goldacre MJ. The characteristics and views of early retirees
1359 compared with doctors still in work: views of the UK -medical graduates of 1983 surveyed
1360 in 2016. *Future Healthc J* 2018; **5**: 192–7.

1361 179 Naqvi H. It's no longer enough to know, we must act: workforce race inequality in the
1362 NHS. Kings Fund. 2020. https://www.kingsfund.org.uk/blog/2020/07/workforce-race-
1363 inequality-nhs (accessed Nov 22, 2020).

1364 180 Pearson K. NHS Staff and Learners' Mental Wellbeing Commission. Health Education
1365 England. 2019.

1366 https://www.hee.nhs.uk/sites/default/files/documents/NHS%20%28HEE%29%20-
1367 %20Mental%20Wellbeing%20Commission%20Report.pdf (accessed Nov 22, 2020).

1368 181 NHS Digital. Data on Written Complaints in the NHS. 2018.
1369 https://files.digital.nhs.uk/5B/D86467/Data%20on%20Written%20Complaints%20in%20t
1370 he%20NHS%202017-18%20Report.pdf (accessed Nov 22, 2020).

1371 182 Harvey S, Laird B, Henderson M, Hotopf M. The Mental Health of Health Care
1372 Professionals: A review for the Department of Health. King's College London. 2009.
1373 http://www.champspublichealth.com/writedir/8265The%20Mental%20Health%20of%20H
1374 ealth%20Care%20Professionals%20-
1375 %20A%20Review%20by%20the%20DH%20(June%202009).pdf (accessed Nov 22,
1376 2020).

1377 183 Gerada C. Doctors and suicide. *Br J Gen Pract* 2018; **68**: 168–9.

1378 184 Majeed A, Molokhia M, Pankhania B, Asanati K. Protecting the health of doctors
1379 during the COVID-19 pandemic. *Br J Gen Pract* 2020; **70**: 268–9.

1380 185 Gerlinger T. Germany: Improving staffing and workforce availability in healthcare and
1381 long-term care. 2018. https://ec.europa.eu/social/BlobServlet?docId=20534&langId=en
1382 (accessed Nov 22, 2020).

1383 186 Wagner SL, Koehn C, White MI, *et al.* Mental Health Interventions in the Workplace
1384 and Work Outcomes: A Best-Evidence Synthesis of Systematic Reviews. *Int J Occup*
1385 *Environ Med* 2016; **7**: 1–14.

1386 187 Pyper D, McGuiness F, Brien P. Public sector pay. House of Commons Library. 2018.
1387 https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-8037#fullreport
1388 (accessed Nov 22, 2020).

1389 188 NHS Employers. Framework agreement. 2018. http://www.nhsemployers.org/pay
1390 pensions and reward/2018 contract refresh/framework agreement (accessed Nov 22, 2020).

1391 189 Review Body on Doctors' and Dentists' Rumuneration. Review Body on Doctors' and
1392 Dentists' Remuneration: Forty-Eighth Report 2020. 2020.
1393 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_d
1394 ata/file/902465/CCS0320352414-003_DDRB_2020_Executive_Summary_Accessible.pdf
1395 (accessed Nov 22, 2020).

1396 190 Swinford S. Four million public sector workers to have pay frozen. 2020; published
1397 online Nov 23. https://www.thetimes.co.uk/article/four-million-public-sector-workers-to-
1398 have-pay-frozen-dkh575r2s (accessed Nov 23, 2020).

1399 191 Charlesworth A, Anderson M, Donaldson C. LSE-Lancet Commission 'The Future of the
1400 NHS': What is the right level of spending needed for health and care in the UK? *Lancet.*
1401 2021. (In Press)

1402 192 Office for Budget Responsibility. Fiscal risks report. 2019.
1403 https://obr.uk/docs/dlm_uploads/Fiscalrisksreport2019.pdf (accessed Nov 22, 2020).

1404 193 Charlesworth A, Johnson P. Securing the future: funding health and social care to the
1405 2030s. Institute of Fiscal Studies, The Health Foundation. 2018.
1406 https://www.ifs.org.uk/publications/12994 (accessed Nov 22, 2020).

1407 194 OBR. Economic and fiscal outlook: November 2020. 2020.
1408 http://cdn.obr.uk/CCS1020397650-001_OBR-November2020-EFO-v2-Web-
1409 accessible.pdf (accessed Nov 25, 2020).

1410 195 UK Government. Prime Minister sets out 5-year NHS funding plan. 2018.
1411 https://www.gov.uk/government/news/prime-minister-sets-out-5-year-nhs-funding-plan
1412 (accessed Nov 22, 2020).

1413 196 Keep M. The Barnett formula. House of Commons Library. 2020.
1414 https://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7386 (accessed
1415 Nov 22, 2020).

1416 197 Bostock N. Pension taxes force one in three GPs to cut back work or refuse shifts. GP
1417 Online. 2019. https://www.gponline.com/pension-taxes-force-one-three-gps-cut-back-
1418 work-refuse-shifts/article/1584932 (accessed Nov 22, 2020).

1419 198 Salt H, Walmsley D, Docherty S. Report to NHS Employers: Research into the impact of
1420 pensions tax in the NHS. First Actuarial LLP. 2019. https://www.nhsemployers.org/-
1421 /media/Employers/Publications/Reward/Pensions-tax-in-the-NHS---Full-report.pdf
1422 (accessed Nov 22, 2020).

1423 199 Beard J. Chancellor delivers pensions boost for high earners (with a sting in the tail for
1424 the most wealthy). The Telegraph. 2020; published online March 11.
1425 https://www.telegraph.co.uk/money/consumer-affairs/chancellor-delivers-pensions-boost-
1426 higher-earners/ (accessed Nov 22, 2020).

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1430