



British Thoracic Society

COVID-19 Follow Up – Organisational Survey Report Round 2

Follow Up Data Collection Period: 1 December 2020 - 31 March 2021

Survey Submission Period: 12 July 2021- 25 August 2021

Dr David Connell, Dr Tom Bewick, Professor Wei Shen Lim, Dr Philip Molyneux

1. Introduction and Background

This report provides a summary of key findings from surveyed Hospitals, Trusts and Health Boards across the UK on COVID-19 follow up, and service delivery during the pandemic. **The findings of this survey may reflect the maximum level of mitigation possible from UK Respiratory Services during a viral pandemic without the benefit of vaccination and therefore provide a basis for preparedness planning for the next pandemic.**

This survey was conducted in August 2021, as a follow-up to a similar BTS survey sent in 2020 to gather information on changes made to respiratory services in wave 2 (1 December 2020 - 31 March 2021) of the COVID-19 pandemic. Both surveys queried and reviewed data specifically in relation to arrangements for follow up of COVID-19 patients, and a report of findings for the 2020 survey can be found [here](#). Both surveys included questions aligned to the BTS guidance on respiratory follow up of patients with radiologically confirmed COVID-19 pneumonia (1). Data on non-COVID service delivery were also obtained.

The first survey (examining data from 1 March 2020- 30 June 2020) showed that whilst delivering a significant amount of front line care, Respiratory Services across the UK adapted considerably during the first stage of the pandemic, with a rapid expansion in virtual outpatient consultations, and an ability to maintain key services such as those for cancer. However, there was significant variation in the ability of services to manage the large number of patients who required follow-up following COVID-19, and support for clinicians and respiratory teams from organisations appeared to be highly variable.

The second survey expands on these findings, and explores whether there were changes between the two waves. Importantly, this survey covers the first winter of the pandemic, and the last period before widespread vaccination in the UK was available during the spread of the alpha variant wave. As such, it offers specific insights into how Respiratory Services developed longitudinally during the first year of the pandemic following the first wave, and how they prepared for what was subsequently recognised as the period of maximal service stress.

For the 2021 survey, BTS respiratory leads in 216 institutions in England, Scotland, Wales and Northern Ireland were contacted and 74 responses were received (34% of those contacted). The survey questions were provided via an online form and responses were submitted during the period 12 July- 25 August 2021. A copy of the 2021 survey data organised in a tabular and chart format can be found in Appendix 1, while a copy of the 2021 survey questions can be found in Appendix 2. Appendix 3 contains a copy of the 2020 survey questions.

Questions for both surveys were developed by a small working group convened by the BTS Board of Trustees comprising Professor Wei Shen Lim, Dr Tom Bewick, Dr David Connell, and Dr Philip Molyneux. Support from BTS Head Office was provided by Christina Moll, Sally Welham, and Miguel Souto. This published report will focus on the narrative key findings from Survey Round 2.

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2. Response rate

Information was obtained from 41% of Trusts in England, 50% of Health Boards in Scotland, and from 40% of Trusts in Northern Ireland; we received no responses from Health Boards in Wales or from the Channel Islands. The results are based on 74 responses in total (noting that, for example, some Trusts provided responses from more than one hospital in that Trust). The response rate in the second survey was lower than the first survey, which had a total of 90 responses.

3. Summary of findings

Respondents were asked to answer 40 questions on COVID-19 follow up on behalf of their institutions. Most questions from the 2020 survey (which queried respondents on follow up care in relation to the first wave) were used again in the 2021 survey to provide a linear landscape on how institutions across the UK were faring in response to the second wave. The 2021 survey was also expanded to include questions on RSUs (Respiratory Support Units) and Long COVID. A summary of key findings for changes in services, resource limitations, COVID-19 discharge and follow up, respiratory support, Non COVID-19 activity, and Long COVID planning can be found below.

3.1 Key findings for New Services (Question 4) and Already Existing Services (Question 5)

Institutions were asked if specific services were set up in response to the pandemic, and if other aspects of their department were affected by the new models of working (introduced by the BTS guidance on respiratory follow up of patients with radiologically confirmed COVID-19 pneumonia (1)) in wave 2 compared to wave 1 and pre-pandemic levels. With regard to new services (Integrated community respiratory service, Respiratory infection / pneumonia nurse inpatient service, Clinical psychology assessment, Dedicated COVID19 rehabilitation beds, Telephone clinics, Video Clinics, Home spirometry, RSUs, Virtual COVID Ward, and other), surveys for both waves saw the start up of these services occur at the same pace in response to the COVID-19 pandemic. Survey 2 also queried the start up of RSUs and virtual COVID-19 wards as new services since 2020.

Existing services that were majorly impacted in wave 1 (such as face to face outpatient care, bronchoscopy services, and Pulmonary Function Tests (PFTs)), managed to recover significantly by wave 2. Face to face outpatient care for example, dropped from being greatly affected 90% of the time to only 55% of the time, while PFTs went from 89% to 58% and bronchoscopies went from 51% to 19%. However, face to face outpatient care and PFTs were found to still be greatly affected even during wave 2 even with this significant drop. Pulmonary rehabilitation, a new service queried in the 2021 survey, was also found to be greatly affected in wave 2 compared to a pre-pandemic baseline.

3.2 Key findings for Resource limitations (Covid-19) (Question 6)

Survey 2 expanded on COVID-19 specific follow up questions especially in relation to resources, funding, and support. Question 6 asked institutions about clinical resource limitations, with Pulmonary Function Tests (PFTs) still being the most severely limited resource found in both surveys. Survey 2 further expanded this question by asking institutions about their limitations on workforce (to deliver clinics), which, in the main, was found to be split between severely and moderately limited as a resource. Most institutions found that PFTs, CT scans, in person appointments, ILD (Interstitial Lung Disease) referrals, and workforce were all seen to be moderately limited.

3.3 Key findings for COVID-19 Discharge and follow-up (Questions 7 -13)

The 2021 survey found more institutions were provided additional funding for COVID-19 follow up compared to 2020, with 41% of respondents stating that additional funding for follow up was established during wave 2. There was a 7% increase in sites with a named lead for COVID-19 follow up. The following key findings for discharge and follow up services were also found:

- 64% of institutions had a virtual COVID-19 ward/hospital at home services

- 55% of institutions have formal pathways to refer COVID-19 patients on discharge into community physiotherapy/occupational therapy (OT)/psychology services
- 53% of institutions did not have a nurse-led COVID-19 supported discharge scheme

3.4 Key findings for Respiratory Support (Questions 14 -21)

The 2021 survey introduced a new section involving RSUs, as these questions were not asked in 2020. 59 institutions reported that they did have an RSU, but only 36% of RSUs were formed before the COVID-19 pandemic. Other key findings were as follows:

- 36% of sites with a RSU had more than a 1:3 nursing ratio per patient in the RSU, whereas 61% of sites had a nursing ratio of 1:3 or less.
- The majority of RSUs had more than 17 beds available during the peak of the second wave.
- The majority of RSUs/Respiratory HDUs were purely respiratory and were a respiratory based ward

3.5 Key findings for non-COVID-19 activity (Questions 22-32)

Institutions were asked questions regarding their capacity for non-COVID clinics and services. The 2021 survey found that 39% of institutions stated that their Trust or hospital was operating to near normal pre-pandemic activity for chronic non-COVID work compared to 18% of institutions in 2020.

When asked about specific services, routine face to face outpatient care and Pulmonary Rehabilitation were found to be the least open, with 20% and 28% respectively open at less than 25% capacity. Bronchoscopy at 34% was found to be the service most back to normal compared to pre-pandemic activity. However, Survey 2 added an additional option of “services never closed”, in which institutions reported that their lung cancer services (69%), inpatient care services (65%), and pleural services (55%) never closed.

Regarding whole time equivalent (WTE) Respiratory Consultant sessions, the 2021 survey found that almost 50% of institutions kept the same number of sessions, while 28% of institutions increased their baseline number. For 62% of respondents, these sessions were increased permanently and 65% of respondents stated their department would aim to have more WTE Respiratory Consultant sessions but were unable to recruit to these posts.

Institutions were also queried regarding workforce constraints, with unfilled posts and inadequate resourcing for departmental workload being most chosen as issues for reinstating staff to pre-pandemic levels.

3.6 Key findings for Long COVID planning and winter planning (Questions 33-39)

Institutions were queried on if their CCG or Board had commissioned a service to manage patients with Long COVID not admitted to hospital, which 76% of respondents stated yes to. A majority (51%) of institutions stated that responsibility for Long COVID under their CCG/Board fell primarily to Primary Care and/or the Community.

Respondents were then asked if their Trust implemented new strategies over the 2020 winter period to deal with additional pressures due to the pandemic, in which the majority stated yes. Amongst this majority, 56% stated that their Trust was also planning to implement successful pandemic inspired strategies for the coming winter. However, the majority of respondents did not think their organisation had a robust winter plan for 2021/22.

4. Narrative Feedback

An option was provided for respiratory leads to mention any other related comments as free text. The 2021 survey had a majority of comments which mentioned a lack of resources, with a minority mentioning additional resources granted by their organisation.

5. Conclusions

This survey collected data for wave 2 of the COVID-19 pandemic, from December 2020- March 2021. This was within the first three months of the start of the COVID-19 vaccine programme – and likely insufficient time for the widespread benefits from vaccinations to impact at an organisational level. If it is accepted that 9 – 12 months from the start of a pandemic is a reasonable time for organisations to adapt (with available resources) to pandemic conditions, then the findings of this survey may reflect the maximum level of mitigation possible from UK Respiratory Services during a viral pandemic without the benefit of vaccination.

In this regard, the differences between wave 1 and wave 2 (as found in question 5) are highly informative. They reflect the disruption that occurs without adequate pandemic preparedness (wave 1) vs the disruption that persists despite ‘maximal’ mitigation (wave2). Progressive remobilisation of services across these waves, despite increasing acute pressure, additional responsibilities (such as RSUs), and continued problems with workforce recruitment highlight the very significant individual and organisational efforts to mitigate COVID and non-COVID pressures during the first pandemic winter. Learning the lessons from this pandemic, and embedding them into healthcare planning may allow faster future mitigation and avoiding the disruption seen particularly in wave 1.

The findings of this survey also highlight deficiencies within respiratory medicine, especially in consideration of how prepared the UK is for future respiratory pandemics. Lung function testing stands out as a service greatly affected by the COVID-19 pandemic, with over 50% of lung function services still at least greatly affected during wave 2. This highlights the need for robust forward guidance and specific lung function planning for future pandemics, amongst other areas. Local leadership was another deficiency highlighted by the second survey, with only over half of trusts having a named COVID-19 lead for follow up. Given this, further consideration is needed on how to promote named leads in future respiratory pandemic or contingency planning. Many sites were also found to not have a robust winter plan, which may reflect a general lack of future planning on behalf of Trusts.

The survey highlighted instances in which Trusts and Health Boards delivered increasingly advanced support where experience was previously limited or developing, especially for organisations with an RSU and no ICU input. For these RSUs, delivering CPAP (continuous positive airway pressure) and HFNO (high-flow nasal oxygen) within a respiratory bed base would have been challenging for respiratory teams, who previously may have had limited experience delivering advanced respiratory support for patients with pneumonia. This emphasises again that for many respiratory colleagues, both waves of the pandemic required quick thinking and execution of novel treatments and care, and their experiences should be considered when shaping the next set of national pandemic preparedness plans on a national level.

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Appendix 1: Graphs and Charts

Question 2: Summary of responses by country:

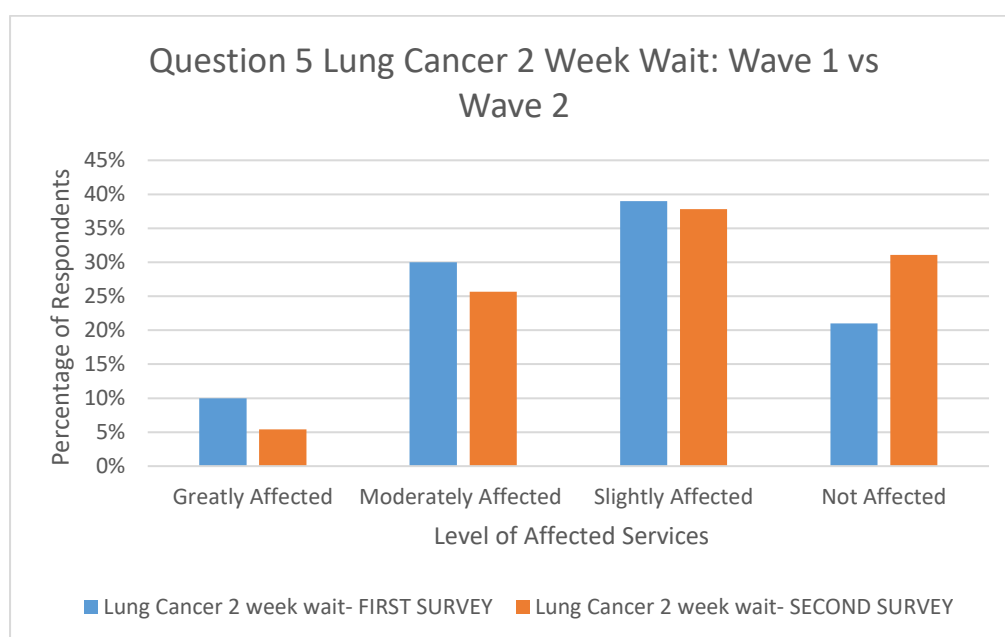
Country	Number of responses	% Trusts/Boards Covered	Number of Trusts (Hospitals) England, NI Number of Health Boards (Hospitals) Scotland, Wales
All	74 responses		
England	63 responses from 58 trusts	41% (58 /141)	141 (181)
Scotland	9 responses from 7 Health boards	50% (7 /14)	14 (26)
Wales	0 responses from 7 Health Boards	0% (0/7)	7 (17)
Northern Ireland	2 responses from 2 Health boards	40% (2 /5)	5 (14)
Channel Islands	0 response from 1 Trust	0% (0/2)	2 (2)

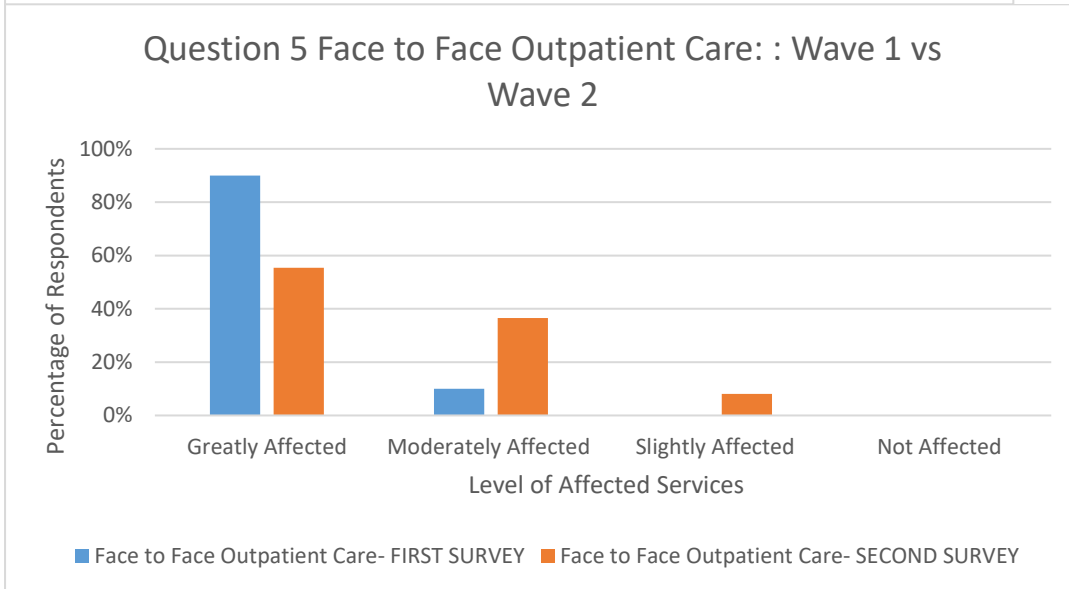
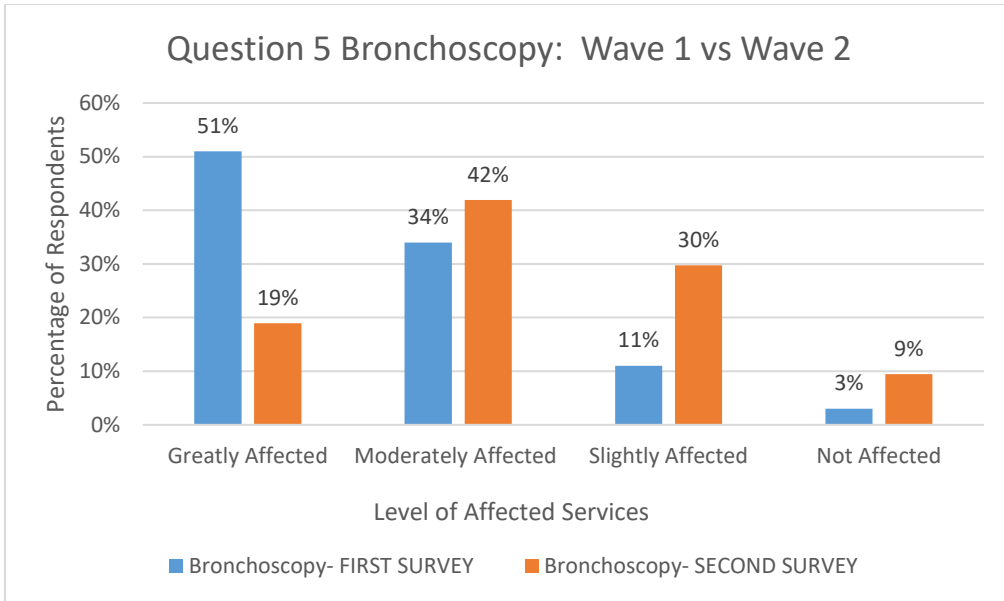
The following questions refer to resources and services

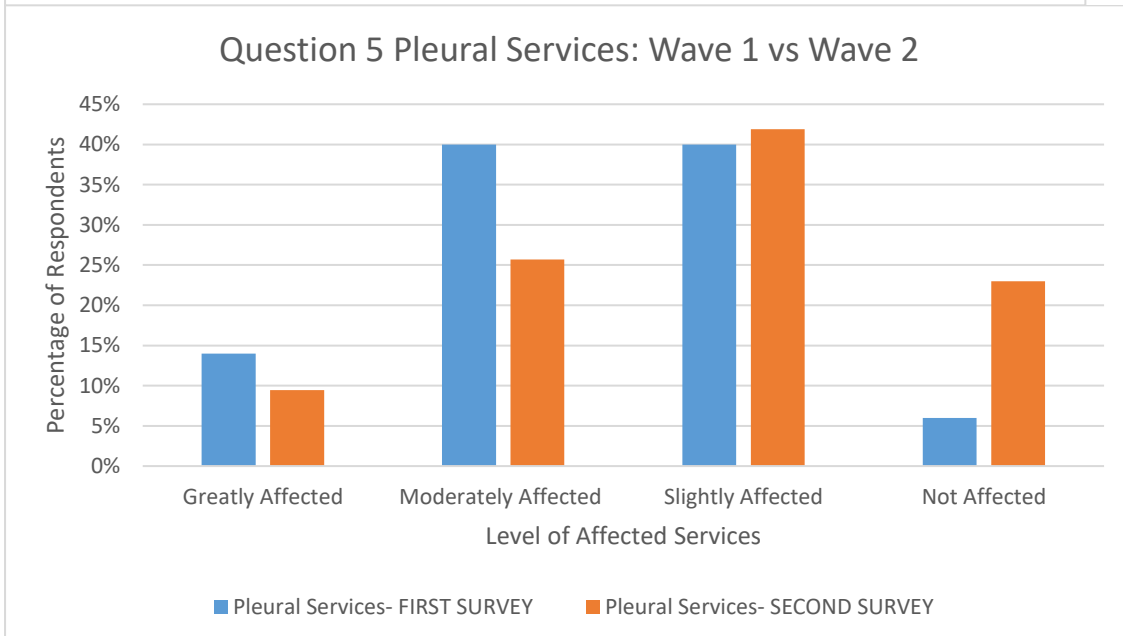
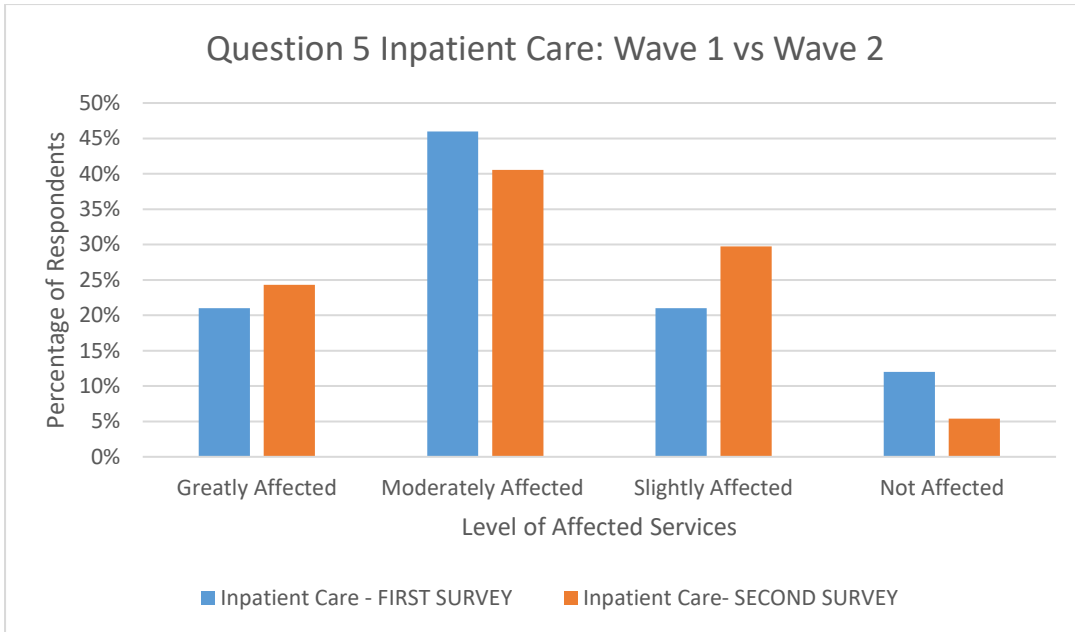
Resources Available	(Survey 2) Question 4: Since the last survey, has your hospital set up any of the following services as new services, specifically in response to the COVID-19 pandemic? Total number of responses: 218	(Survey 1) Question 7: Has your hospital set up services specifically in response to the COVID-19 pandemic? Total Number of responses: 227
Integrated community respiratory service	8 (4% of total)	11 (5% of total responses)
Respiratory infection / pneumonia nurse inpatient service	1 (0% of total)	3 (1% of total responses)
Clinical psychology assessment	8 (4% of total)	16 (7% of total responses)
Dedicated COVID19 rehabilitation beds	5 (2% of total)	6 (3% of total responses)
Telephone clinics	58 (27% of total)	63 (28% of total responses)
Video Clinics (ie Attend Anywhere)	40 (18% of total)	48 (21% of total responses)
Home spirometry (including home/drive through/personalized)	12 (6% of total)	5 (2% of total responses)
RSU (Respiratory Support Unit)	28 (13% of total)	Not Asked
Virtual COVID Ward	42 (19% of total)	Not Asked
Other, please specify	16 (7% of total)	31 (14% of total responses)

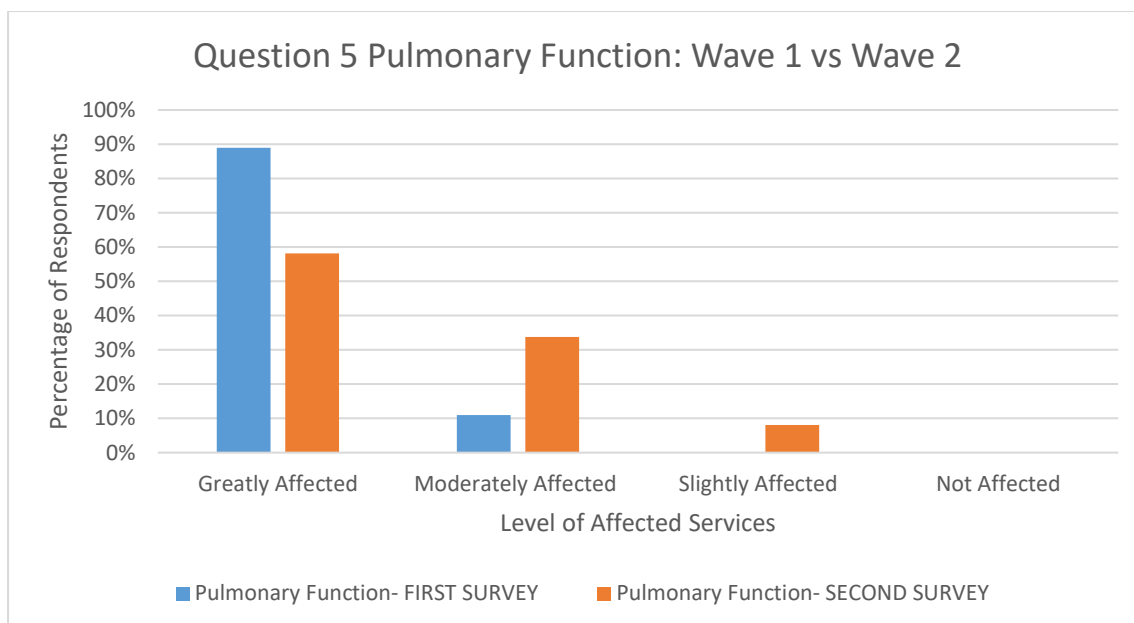
Question 5: Which aspects of the work of your department have been most affected by the new models of working in wave 2 compared to a pre-pandemic baseline? Please complete for each aspect:

Question 5: Which aspects of the work of your department have been most affected by the new models of working in wave 2 compared to a pre-pandemic baseline? Please complete for each aspect:	Greatly affected	Moderately affected	Slightly affected	Not affected
Lung Cancer 2 week wait- wave 2	5%	26%	38%	31%
Lung Cancer 2 week wait- wave 1	10%	30%	39%	21%
Bronchoscopy- wave 2	19%	42%	30%	9%
Bronchoscopy- wave 1	51%	34%	11%	3%
Face to Face Outpatient Care- wave 2	55%	36%	8%	0%
Face to Face Outpatient Care- wave 1	90%	10%	0%	0%
Pulmonary Function- wave 2	58%	34%	8%	0%
Pulmonary Function- wave 1	89%	11%	0%	0%
Inpatient Care - wave 2	24%	41%	30%	5%
Inpatient Care - wave 1	21%	46%	21%	12%
Pleural Services- wave 2	9%	26%	42%	23%
Pleural Services- wave 1	14%	40%	40%	6%
Pulmonary Rehabilitation - wave 2	70%	23%	4%	3%
Specialised commissioned (tertiary) services where applicable- wave 2	20%	26%	18%	36%









The following questions refer to COVID-19 specific follow-up

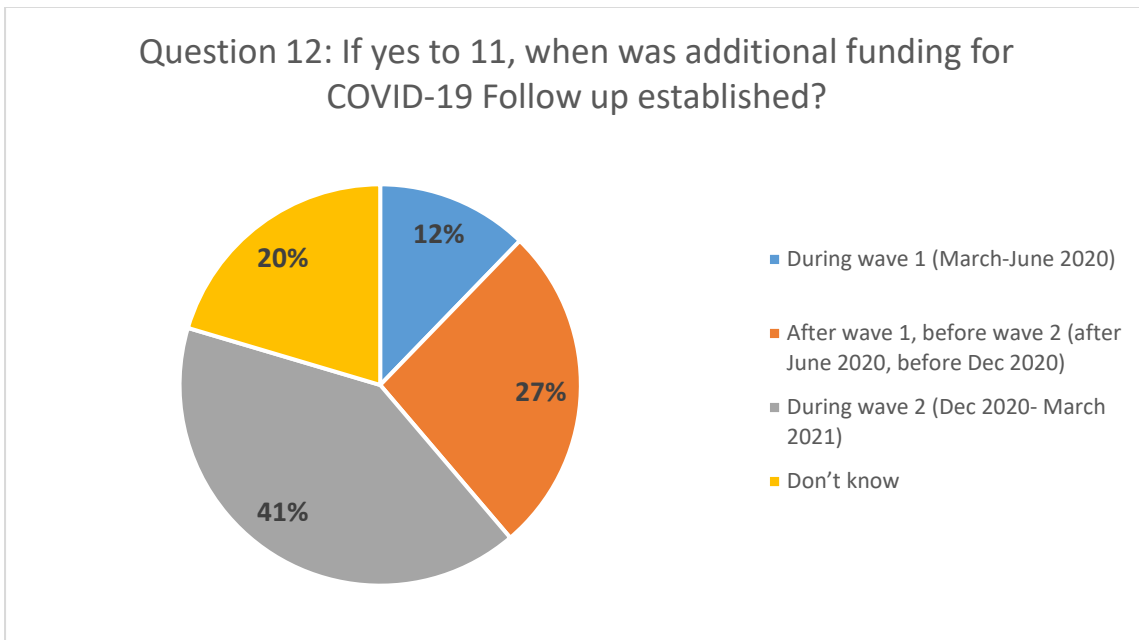
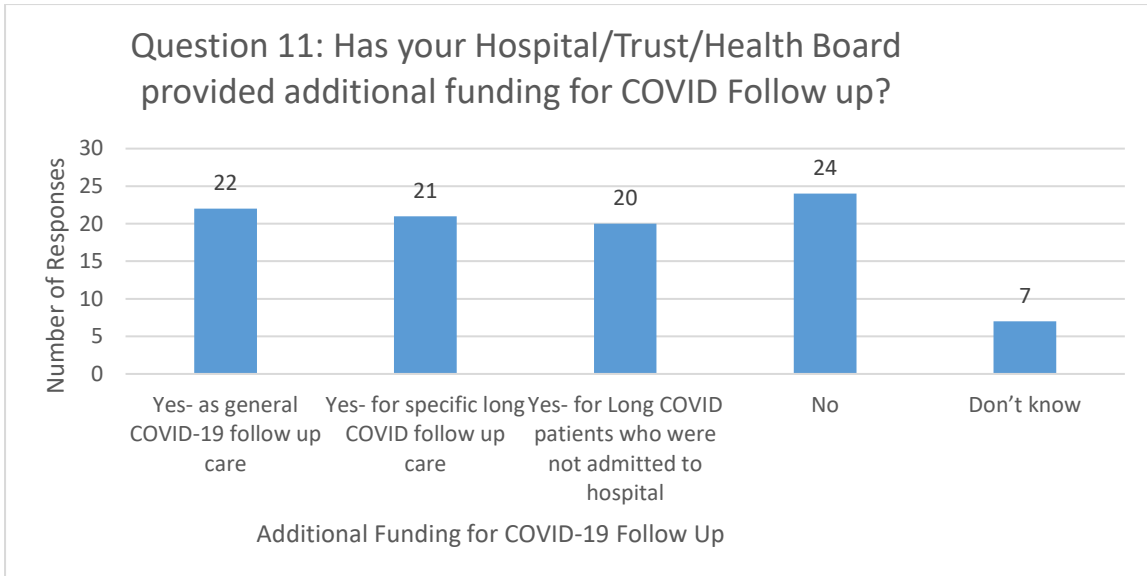
Question 6: In what way, if any, did resource limitation affect the following services in the second wave when compared with the pre-pandemic era?	Severely limited	Moderately limited	Minimally limited	No limitation
Pulmonary function testing	41%	41%	14%	5%
CXR	0%	18%	42%	41%
CT	3%	32%	34%	31%
Necessary in person appointments	18%	39%	30%	14%
ILD (Interstitial Lung Disease) referrals capacity	19%	41%	24%	16%
PVD (Pulmonary Vascular Disease) referrals capacity	9%	20%	32%	38%
Workforce to deliver clinics	34%	36%	26%	4%

	Question 7: Has your Trust put in place a formal pathway or guideline for organizing a follow up Chest X-Ray in every patient with COVID-19 pneumonia?	Question 9: Do you run a virtual COVID-19 ward/hospital at home?	Question 10: Do you have formal pathways to refer COVID-19 patients on discharge into community physio/OT/psychology services?
Yes	74%	64%	55%
No	26%	35%	39%
Don't know	0%	1%	5%

Question 8: Do you offer nurse led COVID-19 supported discharge?	Answers
Yes- phone call	41%
Yes—home visit	3%
Yes- clinic visit	1%
No	53%
Don't Know	3%

(Survey 2) Question 11: Has your Hospital/Trust/Health Board provided additional funding for COVID Follow up? (Total number of responses: 94)	Answers	(Survey 1) Question 10: Has your Hospital/Trust/Health Board provided additional funding for COVID-19 follow-up?	Answers
Yes- as general COVID-19 follow up care	22	Yes	26
Yes- for specific long COVID follow up care	21		
Yes- for Long COVID patients who were not admitted to hospital	20		
No	24	No	48
Don't know	7	Don't know	16

(Survey 2) Question 13: Does your Hospital/Trust/Health Board have a named lead for COVID-19 Follow up?	Answers	(Survey 1) Question 11: Does your Hospital/Trust/Health Board have a named lead for COVID-19 follow-up?	Answers
Yes- as general COVID-19 follow up care	26%	Yes	51%
Yes- for specific long COVID follow up care	32%		
No	38%	No	40%
Don't know	4%	Don't know	9%



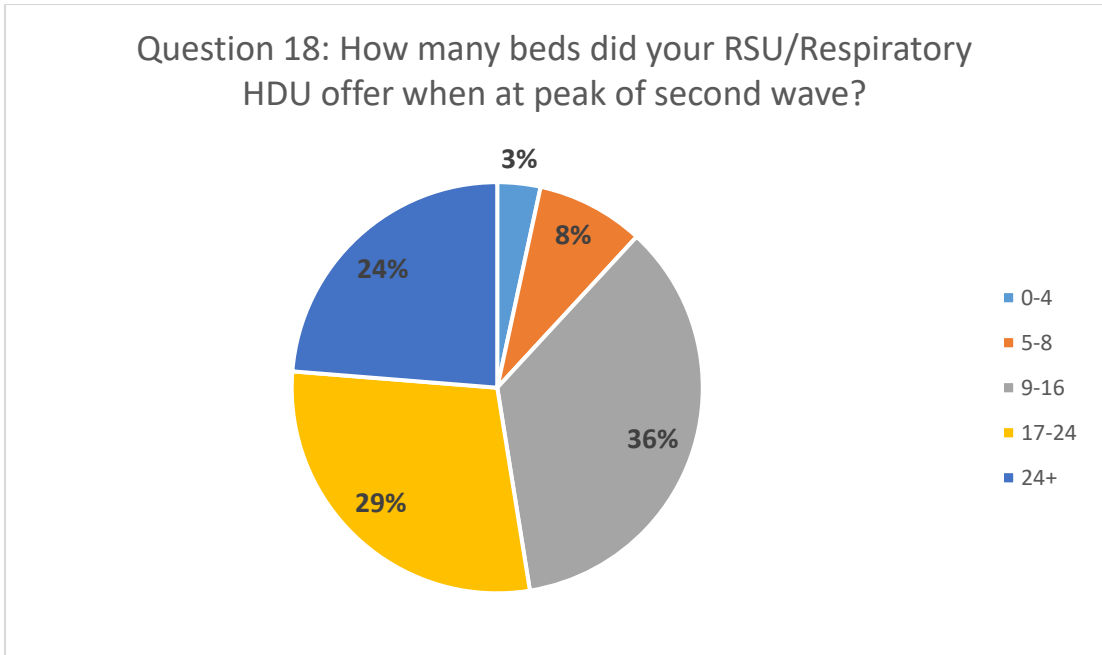
RSU Specific Questions

Question 14: Does your hospital have a unit that provides enhanced respiratory support, such as a Respiratory Support Unit (RSU) or equivalent Respiratory High Dependency Unit?	Answers	Percentages
Yes	59	80%
No	15	20%
Don't know	0	0%

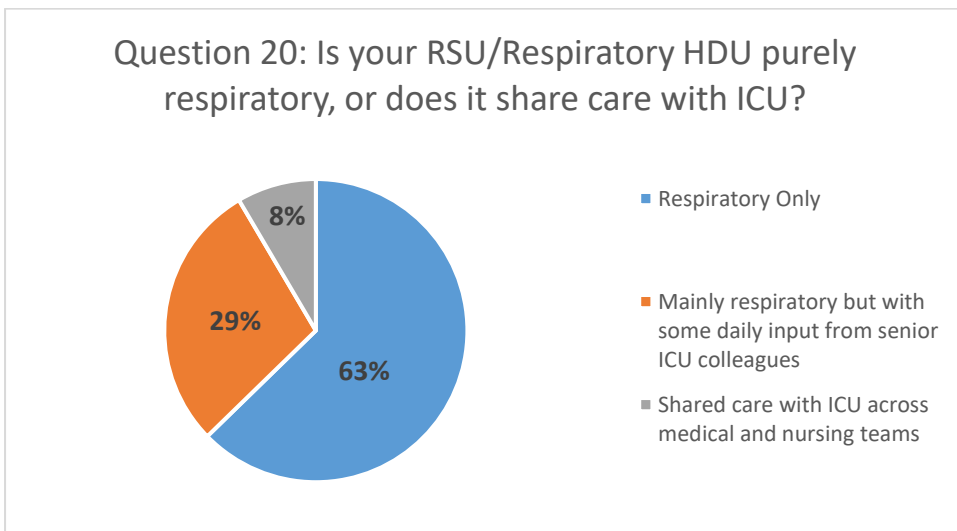
Question 15: If yes, was your RSU/Respiratory HDU:	Answers	Percentages
Set up in response to COVID-19 for COVID-19 patients only	22	37%
Set up in response to COVID-19 and now permanently staffed for COVID-19 and other patients	16	27%
Set up prior to COVID-19	21	36%

Question 16: Does your RSU/Respiratory HDU offer CPAP, HFNO, or both?	Answers	Percentages
CPAP	3	5%
HFNO	2	3%
Both CPAP and HFNO	54	92%

Question 17: How many patients received enhanced pressure support (i.e HFNO or CPAP) from 1 Dec 2020-31 March 2021? (Total number of responses: 56)	Answers
0-20	1
20-50	10
50-100	23
100+	22

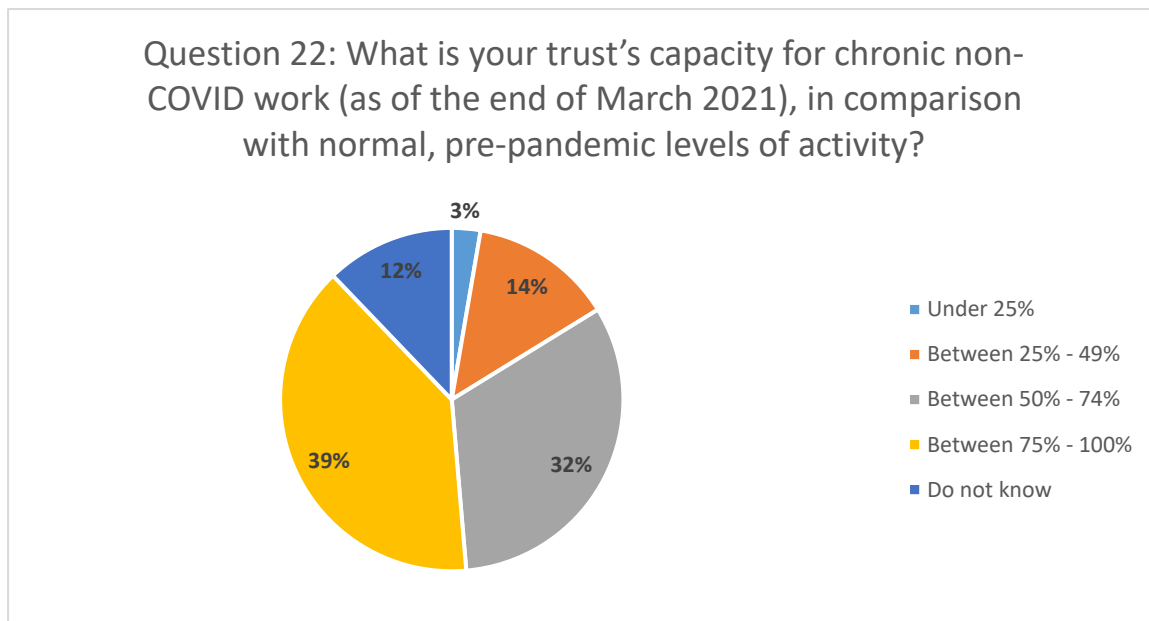


Question 19: What is the nursing ratio per patient in the RSU?	Answers	Percentages
1:1	0	0%
1:2	13	22%
1:3	23	39%
More than 1:3	21	36%
N/A	2	3%



Question 21: Is your RSU/Respiratory HDU Co-located with an ICU or on a respiratory base ward? (Total number of responses: 57)	Answers
Located with an ICU	4
Respiratory base ward	41
Another Location, please specify	12

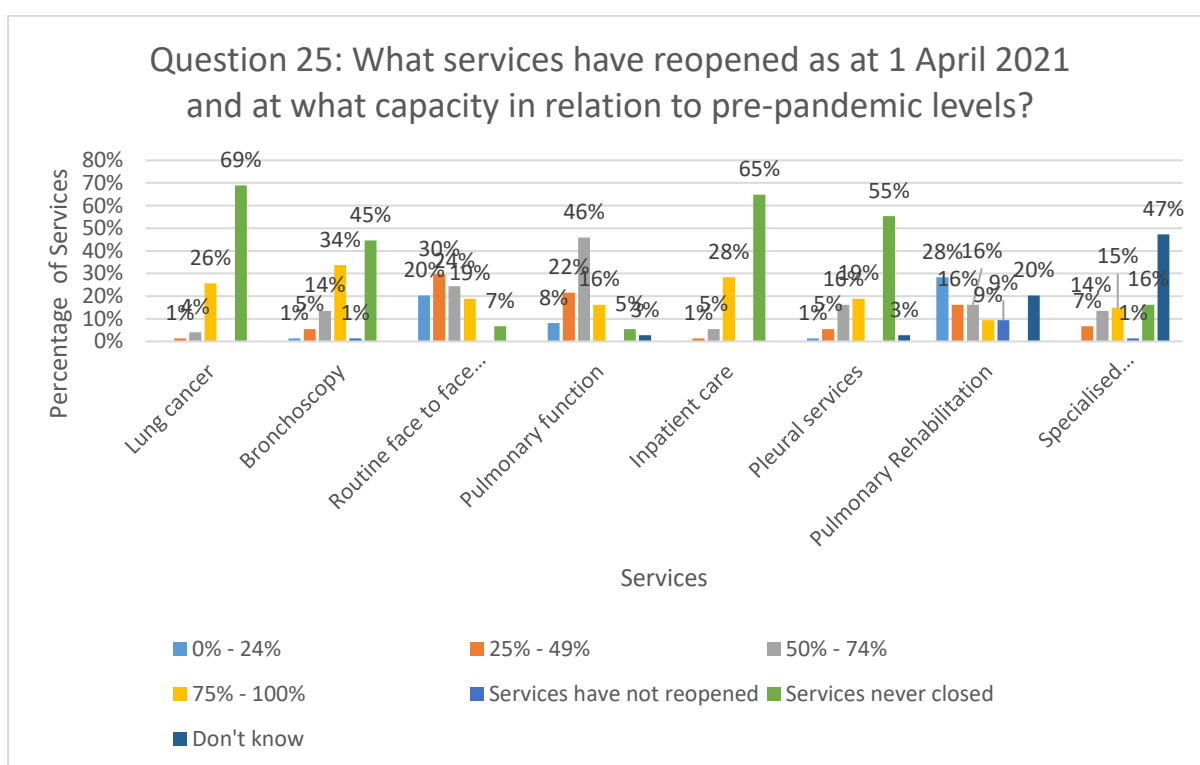
Non COVID-19 Specific Follow Up Data



	Cancelled respiratory outpatient clinic appointments	Respiratory outpatient clinic appointments switched to virtual
	(Survey 2) Question 23: Please estimate what proportion of respiratory outpatient clinic appointments were cancelled from 1 December 2020 - 31 March 2021:	(Survey 1) Please estimate what proportion of respiratory outpatient clinic appointments were cancelled from 1 March 2020 - 30 June 2020
	(Survey 2) Question 24: Please estimate what proportion of respiratory outpatient clinic appointments were switched to virtual outpatients (either telephone or video) from 1 Dec 2020- 31 March 2021:	(Survey 1) Please estimate what proportion of respiratory outpatient clinic appointments were switched to virtual outpatients (either telephone or video) from 1 March 2020 - 30 June 2020
Under 25%	38%	19%
Between 25% - 49%	20%	19%
Between 50% - 74%	23%	22%
		36%
		18%

More than 75%	9%	36%	32%	66%
Do not know	9%	4%	4%	1%

(Survey 1) Question 16: What proportion of your department's face-to-face clinics have been cancelled over the past month? (July/August depending on survey completion date)	Responses	Percentage out of total
Under 25%	9	10%
Between 25% - 49%	10	11%
Between 50% - 74%	18	20%
Between 75% - 100%	48	53%
Do not know	5	6%



Question 26: When compared to pre-pandemic, does your department have more/the same/fewer WTE Respiratory Consultant sessions?	Answers	Percentages
More	21	28%
The Same	36	49%

Fewer	17	23%
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Question 27: If your department created more WTE Respiratory Consultant sessions, when were these sessions implemented?	Answers	Percentages
Between wave 1 and December 2020	10	48%
After December 2020	11	52%

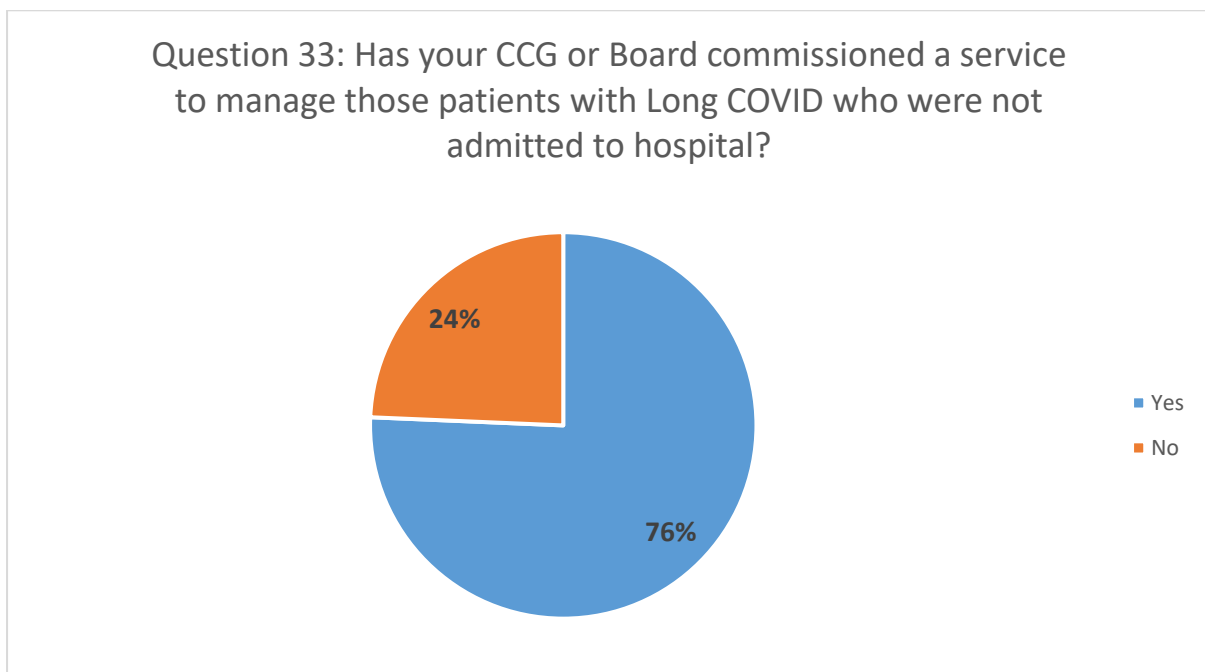
Question 28: Are these WTE Respiratory Consultant sessions permanent or temporary?	Answers	Percentages
Permanent	13	62%
Temporary	8	38%

Question 29: Would your department aim to have more WTE Respiratory Consultant sessions, but are unable to recruit to these posts?	Answers	Percentages
Yes	48	65%
No	21	28%
Don't Know	5	7%

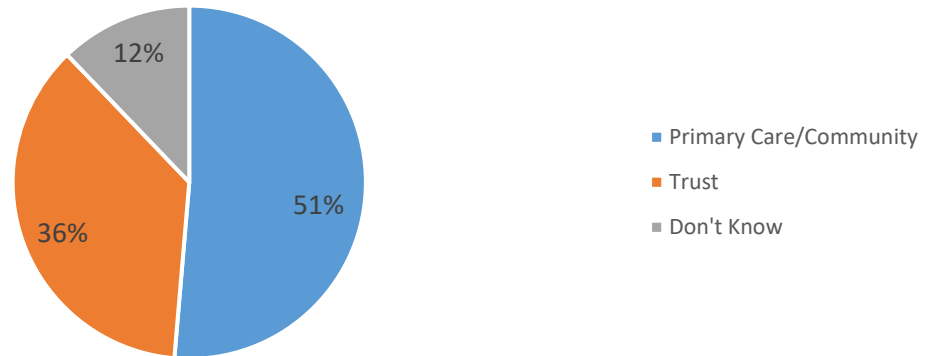
Question 30: In what way have the following changed to facilitate the reinstatement of services after the second wave? Tick all that apply.	Increased	Stayed the same	Decreased	Don't know
Number of available medical staff	18	37	18	1
Number of nursing staff	11	44	14	5
Number of physiology staff	5	59	7	3
Number of other AHPs	6	56	5	7
Amount of clinic space/rooms	5	36	32	1
Equipment for virtual consultations	36	32	1	5
Enhanced infection control processes	59	12	0	3

Question 31: (For Second Wave Only) If your department has had any issues reinstating staff to pre-pandemic levels, is this due to (tick all that apply) Total number of responses: 140	
Unfilled Posts	33
Inadequate resourcing for departmental workload	38
COVID-19 related illness among staff	23
COVID-19 related shielding by staff	22
Does not apply- no issues with staffing levels	10
Other, please specify	14

The following questions refer to service planning/future service planning for Long COVID:



Question 34: For your CCG or Board, are services for Long COVID primarily under the responsibility of hospital/trusts, or the community/primary care?



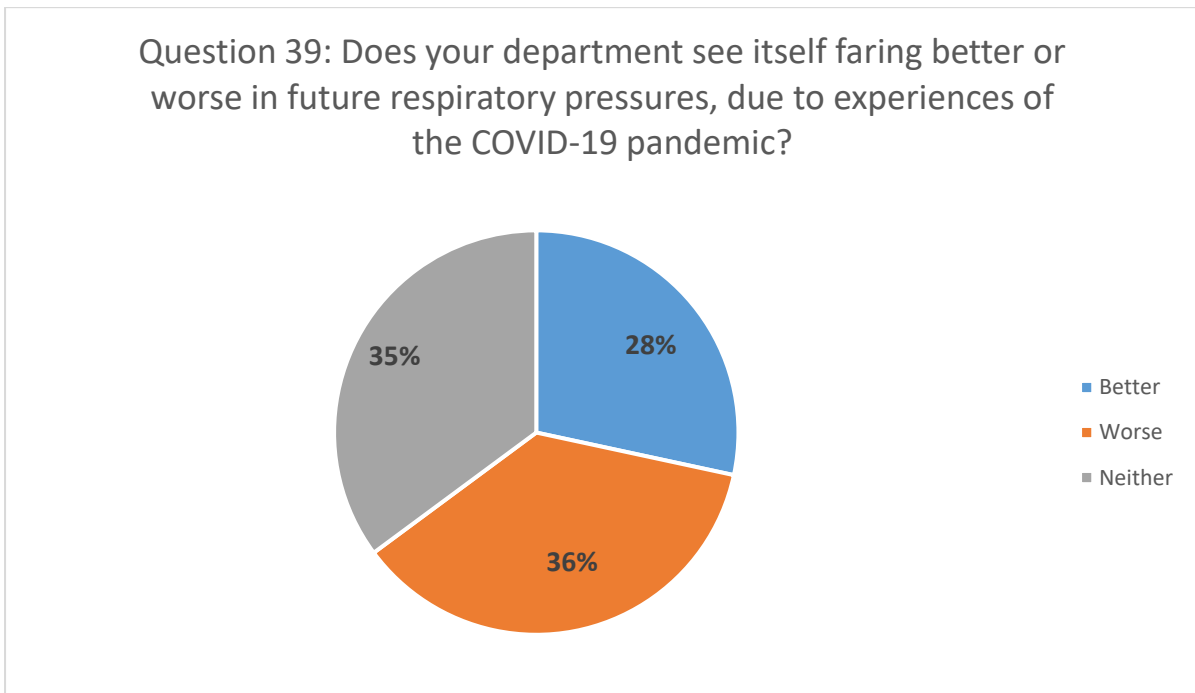
Question 35: Did your trust implement any new strategies over the past winter period to deal with additional pressures as a consequence of the COVID pandemic? (If yes, please share details in question 41)	Answers	Percentages
Yes	45	61%
No	29	39%

Question 36: If yes, does your trust plan on implementing successful COVID-inspired strategies for the coming winter?	Answers	Percentages
Yes	25	56%
No	1	2%
Don't Know	19	42%

Question 37: Does your organisation have a robust winter plan for winter 2021/22?	Answers	Percentages
Yes	17	23%

No	24	32%
Don't Know	33	45%

Question 38: If yes, as part of your organisation's winter plan, will there be: (tick all that apply) Total responses: 25	Answers
Increased respiratory resources	9
Increased non respiratory resources	10
Increased community support	6



Appendix 2: Survey Questions from Round 2

1. Please tell us:
 - a. Your name
 - b. Your email address
2. Where are you based?
 - a. England
 - b. Scotland
 - c. Wales
 - d. Northern Ireland
3. Please tell us:
 - a. Hospital name
 - b. Trust/Health Board name

The following questions refer to resources and services

4. Since the last survey, has your hospital set up any of the following services as new services, specifically in response to the COVID19 pandemic? Tick all that apply.
 - a. Integrated community respiratory service
 - b. Respiratory infection / pneumonia nurse inpatient service
 - c. Clinical psychology assessment
 - d. Dedicated COVID19 rehabilitation beds
 - e. Telephone clinics
 - f. Video Clinics (ie Attend Anywhere)
 - g. Home spirometry (including home/drive through/personalized)
 - h. RSU (Respiratory Support Unit)
 - i. Virtual COVID Ward
 - j. Other, please specify
5. Which aspects of the work of your department have been most affected by the new models of working in wave 2 compared to a pre-pandemic baseline? Please complete for each aspect: Greatly Affected, Moderately Affected, Slightly Affected, Not Affected
 - a. Lung Cancer 2 week wait
 - b. Bronchoscopy
 - c. Face to Face Outpatient Care
 - d. Pulmonary Function

- e. Inpatient Care
- f. Pleural Services
- g. Pulmonary Rehabilitation
- h. Specialised commissioned (tertiary) services where applicable

The following questions refer to COVID-19 specific follow-up

6. In what way, if any, did resource limitation affect the following services in the second wave when compared with the pre-pandemic era? Severely Limited, Moderately Limited, Minimally Limited, No Limitation
 - a. Pulmonary function testing
 - b. CXR
 - c. CT
 - d. Necessary in person appointments
 - e. ILD (Interstitial Lung Disease) referrals capacity
 - f. PVD (Pulmonary Vascular Disease) referrals capacity
 - g. Workforce to deliver clinics

7. Has your Trust put in place a formal pathway or guideline for organizing a follow up Chest X-Ray in every patient with COVID-19 pneumonia?
 - a. Yes
 - b. No
 - c. Don't Know

8. Do you offer nurse led COVID-19 supported discharge?
 - a. Yes- phone call
 - b. Yes—home visit
 - c. Yes- clinic visit
 - d. No
 - e. Don't Know

9. Do you run a virtual COVID-19 ward/hospital at home?
 - a. Yes
 - b. No
 - c. Don't Know

10. Do you have formal pathways to refer COVID-19 patients on discharge into community physio/OT/psychology services?
 - a. Yes
 - b. No
 - c. Don't Know

11. Has your Hospital/Trust/Health Board provided additional funding for COVID Follow up?
 - a. Yes- as general COVID-19 follow up care
 - b. Yes- for specific long COVID follow up care
 - c. Yes- for Long COVID patients who were not admitted to hospital
 - d. No
 - e. Don't know

12. (If yes to 11) When was additional funding for COVID-19 Follow up established?
 - a. During wave 1 (March-June 2020)
 - b. After wave 1, before wave 2 (after June 2020, before Dec 2020)

- c. During wave 2 (Dec 2020- March 2021)
- d. Don't know

13. Does your Hospital/Trust/Health Board have a named lead for COVID-19 Follow up?
- a. Yes- as general COVID-19 follow up care
 - b. Yes- for specific long COVID follow up care
 - c. No
 - d. Don't know

The following questions refer to RSUs

14. Does your hospital have a unit that provides enhanced respiratory support, such as a Respiratory Support Unit (RSU) or equivalent Respiratory High Dependency Unit?
- a. Yes
 - b. No
 - c. Don't know
15. If yes, was your RSU/Respiratory HDU:
- a. Set up in response to COVID-19 for COVID-19 patients only
 - b. Set up in response to COVID-19 and now permanently staffed for COVID-19 and other patients
 - c. Set up prior to COVID-19
16. Does your RSU/Respiratory HDU offer CPAP, HFNO, or both?
- a. CPAP
 - b. HFNO
 - c. Both CPAP and HFNO
17. How many patients received enhanced pressure support (i.e HFNO or CPAP) from 1 Dec 2020-31 March 2021?
- a. 0-20
 - b. 20-50
 - c. 50-100
 - d. 100+
18. How many beds did your RSU/Respiratory HDU offer when at peak of second wave?
- a. 0-4
 - b. 5-8
 - c. 9-16
 - d. 17-24
 - e. 24+
19. What is the nursing ratio per patient in the RSU?
- a. 1:1
 - b. 1:2
 - c. 1:3
 - d. More than 1:3
 - e. N/A
20. Is your RSU/Respiratory HDU purely respiratory, or does it share care with ICU?
- a. Respiratory Only

- b. Mainly respiratory but with some daily input from senior ICU colleagues
 - c. Shared care with ICU across medical and nursing teams
21. Is your RSU/Respiratory HDU Co-located with an ICU or on a respiratory base ward?
- a. Located with an ICU
 - b. Respiratory base ward
 - c. Another Location, please specify

The following questions refer to non-COVID specific follow-up

22. What is your trust's capacity for chronic non-COVID work (as of the end of March 2021), in comparison with normal, pre-pandemic levels of activity?*
- a. Under 25%
 - b. Between 25% - 49%
 - c. Between 50% - 74%
 - d. Between 75% - 100%
 - e. Do not know
23. Please estimate what proportion of respiratory outpatient clinic appointments were cancelled from 1 December 2020 - 31 March 2021:
- a. Under 25%
 - b. Between 25% - 49%
 - c. Between 50% - 74%
 - d. More than 75%
 - e. Do not know
24. Please estimate what proportion of respiratory outpatient clinic appointments were switched to virtual outpatients (either telephone or video) from 1 Dec 2020- 31 March 2021:
- a. Under 25%
 - b. Between 25% - 49%
 - c. Between 50% - 74%
 - d. More than 75%
 - e. Do not know
25. What services have reopened as at 1 April 2021 and at what capacity in relation to pre-pandemic levels?
Answer choices: 0% - 24%/25% - 49%/50% - 74%/75% - 100%/Services have not reopened/Services never closed/Don't know
- a. Lung cancer
 - b. Bronchoscopy
 - c. Routine face to face outpatient care
 - d. Pulmonary function
 - e. Inpatient care
 - f. Pleural services
 - g. Pulmonary Rehabilitation
 - h. Specialised commissioned (tertiary) services where applicable
26. When compared to pre-pandemic, does your department have more/the same/fewer WTE Respiratory Consultant sessions?
- a. More

- b. The Same
 - c. Fewer
27. If your department created more WTE Respiratory Consultant sessions, when were these sessions implemented?
- a. Between wave 1 and December 2020
 - b. After December 2020
28. Are these WTE Respiratory Consultant sessions permanent or temporary?
- a. Permanent
 - b. Temporary
29. Would your department aim to have more WTE Respiratory Consultant sessions, but are unable to recruit to these posts?
- a. Yes
 - b. No
 - c. Don't Know
30. In what way have the following changed to facilitate the reinstatement of services after the second wave? Tick all that apply.
Answer choices: Increased/Stayed the same/Decreased/Don't know
- a. Number of available medical staff
 - b. Number of nursing staff
 - c. Number of physiology staff
 - d. Number of other AHPs
 - e. Amount of clinic space/rooms
 - f. Equipment for virtual consultations
 - g. Enhanced infection control processes
31. (For Second Wave Only) If your department has had any issues reinstating staff to pre-pandemic levels, is this due to (tick all that apply)
- a. Unfilled Posts
 - b. Inadequate resourcing for departmental workload
 - c. COVID-19 related illness among staff
 - d. COVID-19 related shielding by staff
 - e. Does not apply- no issues with staffing levels
 - f. Other, please specify
32. Do you have any other comments in relation to workforce or service development issues in relation to the follow-up of COVID-19, especially between wave 1 and wave 2?

The following questions refer to service planning/future service planning for Long COVID:

33. Has your CCG or Board commissioned a service to manage those patients with Long COVID who were not admitted to hospital?
- a. Yes
 - b. No
34. For your CCG or Board, are services for Long COVID primarily under the responsibility of hospital/trusts, or the community/primary care?*

- a. Primary Care/ Community
 - b. Trust
 - c. Don't know
35. Did your trust implement any new strategies over the past winter period to deal with additional pressures as a consequence of the COVID pandemic? (If yes, please share details in question 41)*
- a. Yes
 - b. No
36. If yes, does your trust plan on implementing successful COVID-inspired strategies for the coming winter?
- a. Yes
 - b. No
 - c. Don't Know
37. Does your organisation have a robust winter plan for winter 2021/22?*
- a. Yes
 - b. No
 - c. Don't Know
38. If yes, as part of your organisation's winter plan, will there be: (tick all that apply)
- a. Increased respiratory resources
 - b. Increased non respiratory resources
 - c. Increased community support
39. Does your department see itself faring better or worse in future respiratory pressures, due to experiences of the COVID-19 pandemic?*
- a. Better
 - b. Worse
 - c. Neither
40. Do you have any comments on any long term changes your trust will be making in light of COVID-19?

Appendix 3: Survey Questions from Round 1

1. Please tell us:
 - a. Your name
 - b. Your email address
2. Where are you based?
 - a. England
 - b. Scotland
 - c. Wales
 - d. Northern Ireland
3. Please tell us:
 - a. Hospital name
 - b. Trust/Health Board name

Part 1: General Questions on COVID-19 Cases

4. How many adult patients in total were admitted with COVID-19 in your trust for coronavirus with pneumonia (from 1 March 2020-30 June 2020)?
Note: Where clinical codes are available, please use: J12-18 (community-acquired pneumonia) AND U07.1 (COVID positive) or B97.2 (Coronavirus as cause of the pneumonia 0-50). If coding is not available please include number of patients admitted with a pneumonia in your total number.
 - a. 0-99
 - b. 100-499
 - c. 500-999
 - d. 1000+
 - e. Not known
5. How many adult patients with COVID-19 have been discharged and will fall under follow up care in your trust (with their discharge dates between 1 March 2020-30 June 2020)?
 - a. 0-99
 - b. 100-499
 - c. 500-999
 - d. 1000+

- e. Not known

Part 2: Resources and Services

6. Does your hospital have access to the following pre-existing services that are being used as part of COVID recovery? Tick all that apply.
 - a. Integrated community respiratory service
 - b. Respiratory infection / pneumonia nurse inpatient service
 - c. Clinical psychology assessment
 - d. Pulmonary rehabilitation
 - e. Post-ICU follow up clinics
 - f. Telephone clinics
 - g. Video Clinics (e.g. Attend Anywhere)
 - h. Home spirometry
 - i. Other please specify

7. Has your hospital set up services specifically in response to the COVID19 pandemic? Tick all that apply.
 - a. Integrated community respiratory service
 - b. Respiratory infection / pneumonia nurse inpatient service
 - c. Clinical psychology assessment
 - d. Pulmonary rehabilitation
 - e. Post-ICU follow up clinics
 - f. Dedicated COVID19 rehabilitation beds
 - g. Telephone clinics
 - h. Video Clinics (e.g. Attend Anywhere)
 - i. Home spirometry
 - j. Other – please specify

8. Which aspects of the work of your department have been most affected by the new models of working? Please complete for each aspect:

Scale: Greatly affected, Moderately affected, Slightly affected, Not affected

- a. Lung Cancer 2 week wait
- b. Bronchoscopy
- c. Face to Face Outpatient Care
- d. Pulmonary Function
- e. Inpatient Care
- f. Pleural Services

COVID-19 specific follow up:

9. Was there a resource limitation in delivering COVID-19 related follow-up testing and referrals in the following areas, in the period since 1st June?
Scale: Severely limited/ Moderately limited/Minimally limited/no limitation

- a. Pulmonary function testing
- b. CXR
- c. CT
- d. Necessary in person appointments
- e. ILD (Interstitial Lung Disease) referrals capacity

- f. PVD (Pulmonary Vascular Disease) referrals capacity
10. Has your Hospital/Trust/Health Board provided additional funding for COVID Follow up?
Yes/No/Don't know
11. Does your Hospital/Trust/Health Board have a named lead for COVID-19 Follow up?
Yes/No/Don't know

Non-COVID specific follow up:

12. What is your trust's capacity for chronic non-COVID work (as of the end of June), in comparison with normal, pre-pandemic levels of activity?
- a. Under 25%
 - b. Between 25%-49%
 - c. Between 50%-74%
 - d. Between 75%-100%
 - e. Do not know
13. Please estimate what proportion of respiratory outpatient clinic appointments were cancelled from 1 March 2020- 30 June 2020:
- a. Under 25%
 - b. Between 25- 49%
 - c. Between 50-74%
 - d. More than 75%
 - e. Do not know
14. Please estimate what proportion of respiratory outpatient clinic appointments were switched to virtual outpatients (either telephone or video) from 1 March 2020- 30 June 2020:
- a. Under 25%
 - b. Between 25- 49%
 - c. Between 50-74%
 - d. More than 75%
 - e. Do not know
15. What services have reopened as at 1 July 2020 and at what capacity in relation to pre-pandemic levels?
Scale: 0-24%, 25-49%, 50-74%, 75-100%, Services have not reopened
- a. Lung Cancer
 - b. Bronchoscopy
 - c. Routine face to face Outpatient Care
 - d. Pulmonary Function
 - e. Inpatient Care
 - f. Pleural Services
16. What proportion of your department's face-to-face clinics have been cancelled over the past month?

- a. Under 25%
- b. 25%-49%
- c. 50%-74%
- d. 75%-100%
- e. Do not know

17. Has your department encountered any of the following in relation to reinstating services compared to pre-pandemic levels (i.e before March 2020)? Tick all that apply.

- a. Lack of medical staff
- b. Lack of nursing staff
- c. Lack of physiology staff
- d. Lack of other AHPs
- e. Lack of clinical space
- f. Lack of equipment for virtual consultations
- g. Enhanced infection control processes
- h. Other

18. If your department has had any issues reinstating staff to pre-pandemic levels, is this due to (tick all that apply):

- a. Unfilled posts
- b. Inadequate resourcing for departmental workload
- c. COVID-19 related illness among staff
- d. COVID-19 related shielding by staff
- e. Does not apply- no issues with staffing levels
- f. Other (text box)

19. Do you have any other comments in relation to workforce or service development issues in relation to follow up of COVID-19?

References:

- 1) British Thoracic Society (BTS), 2020. *British Thoracic Society Guidance on Respiratory Follow Up of Patients with a Clinico-Radiological Diagnosis of COVID-19 Pneumonia*.
<https://www.brit-thoracic.org.uk/covid-19/covid-19-information-for-the-respiratory-community/>