



An evaluation of using Scotland's COVID-19 Remote Health Pathway



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1.1 BACKGROUND

Scotland’s Technology Enabled Care (TEC) programme has evolved strong working relationships over the years, and these formed a solid foundation for the COVID-19 pandemic response. A rapid review of relevant literature showed that while most people with COVID-19 recovered, certain groups were at high risk of quickly deteriorating. Indications of deterioration included increased breathlessness and decreased oxygen saturation (SpO₂). Although some people had no obvious symptoms, health outcomes were strongly associated with presenting SpO₂.

The Remote Health Pathway (RHP) COVID-19 Response Group brought together experts from General Practice, Infectious Diseases, Respiratory Medicine, Intensive Care, Emergency Medicine, the Scottish Ambulance Service and NHS24. This Clinical Advisory Group (CAG) developed a national COVID-19 RHP to detect and manage early deterioration, based on evidence that telemonitoring was better than self-monitoring alone. The CAG agreed the trigger signs and symptoms and which groups should be offered the intervention i.e. those over 65 years of age, with underlying health conditions (excluding those with respiratory conditions causing low oxygen saturation) and younger people with presentations of concern e.g. breathlessness, borderline SpO₂.

A more flexible system than the one in use at the time (Florence – Simple Telehealth) was required, so the Inhealthcare platform was procured for the pandemic response. The COVID-19 RHP was built by the supplier and informed by regular CAG review, which meant it went through several iterations until it was ready for use. It was recognised that people using the pathway might also need written information on how to monitor, what the different trigger levels were, and who to contact for advice.

1.2 BRIEF SUMMARY OF THE PATHWAY

The pathway went live on 14th January, 2021, enabling people who had COVID-19 symptoms below the threshold for hospital admission to self-monitor their condition, a new addition to service provision. Those who opted in after an in-person assessment were supported to register with the service and shown how to use a pulse oximeter to measure their oxygen saturation level. They could then remotely respond to questions from the system (via SMS text messages, on-line/app, patient portal, or automated calls to a landline or mobile ‘phone) about their symptoms. Questions continued to be sent twice a day for 14 days, and what was asked and the system response varied according to what they submitted. More details about the pathway can be found in McKinstry et al (2021).

1.3 EXPECTED OUTCOMES

When TEC evaluation options were reviewed (Scottish Government, 2018) the report included a logic model of the expected outcomes for remote health pathways (then called Home and Mobile Health Monitoring). This evaluation framework was to enable an assessment of outcome achievement and was first used for the national HMHM evaluation (Alexander, 2018). In evaluating the COVID-19 RHP, the relevant outcomes to be achieved were:

EXPECTED OUTCOMES	Improved access to services	People have positive experiences of services	Staff feel engaged and supported
POSSIBLE OUTCOMES	<i>Increased population self-management*</i>	<i>Resources used effectively and efficiently</i>	<i>Reduced health inequalities</i>

** This outcome was not prioritised for any Inhealthcare pathway, hence the ‘possible’ status for the COVID-19 RHP*

2. METHODS OVERVIEW

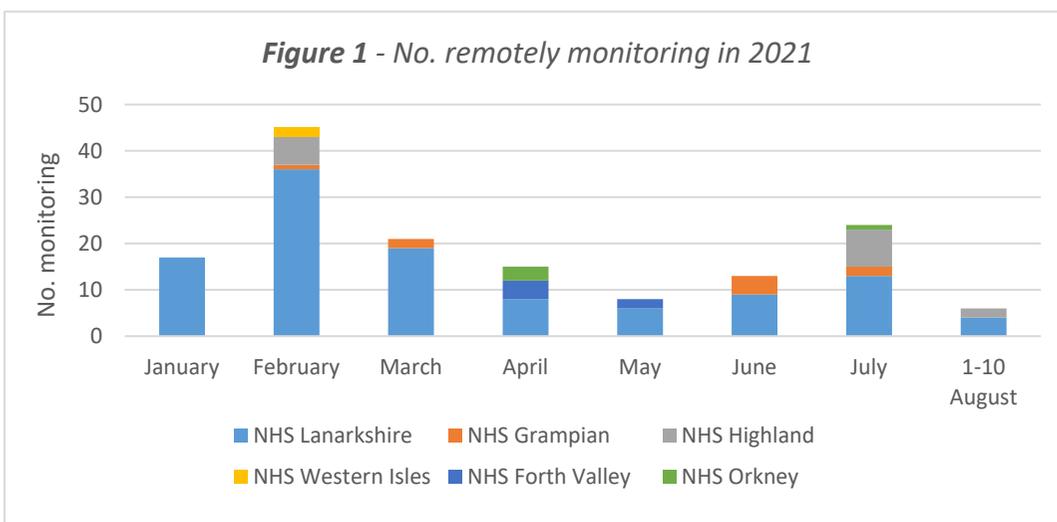
This evaluation used Contribution Analysis (Mayne, 2012) to assemble evidence of outcome achievement, from four main sources of data:

- Patient level reports were obtained from the system supplier (Inhealthcare). They included everyone who used the pathway in the first seven months (14th January to 11th August, 2021) but excluded those who chose to self-monitor without the Inhealthcare system. The reports comprise responses to all the system questions i.e. COVID-19 symptoms (breathlessness, cough, muscle ache, weakness/tiredness, oxygen saturation (SpO₂), pulse, temperature), the standard patient feedback survey, NHS Board of residence and monitoring date and time
- NHS Lanarkshire and NHS Highland patient records were requested for all patients who had signed up to the pathway by 13th April, 2021, and this time included those who did not use the system. CHI linkage to patient management systems allowed any hospital admissions, emergency department attendances, and contact with the COVID-19 assessment centre/out-of-hours service to be matched to any system alerts triggered
- Interviews were conducted with a subset of Lanarkshire and Highland patients who signed up to use the pathway. Verbal consent for the interview was obtained by a nurse from each NHS Board and informed consent was recorded before each telephone interview. The transcripts were analysed and coded to generate the main themes for reporting, along with illustrative quotes
- Staff who had the opportunity to use the pathway were sent a survey to explore their views on its usefulness, safety and system trigger levels

3. RESULTS

3.1 THOSE WHO REMOTELY MONITORED THEIR COVID-19 SYMPTOMS

Between 14th January and 10th August, 2021 a total of 149 people sent COVID-19 remote monitoring readings. Figure 1 shows when they did so and which NHS Board they were from.



High infection rates may explain NHS Lanarkshire making most use of the pathway (Figure 1) in the first seven months (n=112), although good clinical engagement/leadership played an important role. Patients in Highland (n=16), Grampian (n=9), Forth Valley (n=6), Orkney (n=4) and the Western Isles (n=2) also self-monitored their symptoms.

This cohort of 149 monitored for an average of 7.2 days (range 1 to 28) and 67 did so for 7 days or more. The last readings of these 67 were reviewed to explore symptoms at the end of the monitoring period. Any improvements are not evidence of condition control because this pathway was not designed to improve COVID-19 symptoms, simply to enable rapid access to services following deterioration.

3.1.1 Experience of breathlessness

In response to the first question, 'are you feeling breathless', 52 of the 149 people remotely monitoring said they were not. 97 said breathlessness was the 'same or more than before' (n=59) or 'less than before' (n=38). These 97 were then asked if they were breathless at rest and having difficulty completing a sentence (this question is not received by those who were not breathless). Advice to call 999 if breathlessness has worsened since last seeing a doctor/nurse will have been sent to the 13 who said they were breathless at rest and they will then have received no more questions from the system. Of the 67 people who monitored for a week or more (Figure 2), 46 sent final readings saying they were not breathless, 8 reported being less breathless than before, and 13 were the same or more breathless than before. None of them sent readings saying they were breathless at rest.

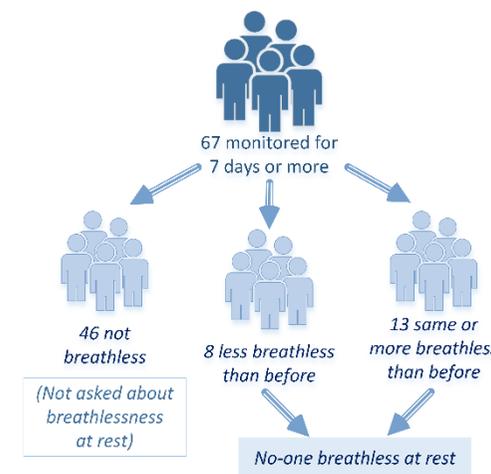
3.1.2 Experience of other COVID-19 symptoms

The 52 not feeling breathless at the start and the 84 not breathless at rest were then sent questions about other COVID-19 symptoms. Table 1 shows that weakness/tiredness was the most common symptom reported at the start (n=55), closely followed by muscles aching (n=47). Only 28 of the 136 said they were coughing more than the previous day. For the 67 who monitored for ≥7 days, the last readings submitted showed most did not report having these three COVID-19 symptoms, although 15 had aching muscles, 11 felt much weaker/tired in the last 24 hours and 7 said they were coughing more than on the previous day.

Table 1 – Starting symptoms reported

	Yes	No
Coughing more than you were yesterday?	28	108
Are your muscles aching?	47	89
Felt much weaker/tired in last 24 hours?	55	81

Figure 2 – Breathlessness after 7 or more days



3.1.3 Oxygen saturation

The third main question asked people to measure their resting oxygen saturation when seated, using the pulse oximeter they had been given. Only 10 people had SpO₂ readings below 94% at rest, the vast majority being 94% or greater (Table 2). 98 were then sent a request for an active SpO₂ and 74 of these were 94% or more. The 11 people with readings below 94% were advised to call 999 and received no further questions from the system. The 98 were also asked for a starting pulse reading and only four were >100 bpm, which is the level that suggests there may be serious illness and triggers advice to call 111 if still over 100 when repeated. 57 of the 67 monitoring for a week or more submitted a resting oxygen saturation level at the end that was 94% or more, and only 2 were below 94% (both were 93%).

Table 2 – Starting oxygen saturation reported

	<94%	≥94%	Blank
Resting oxygen level when seated	10	121	5
Active – after 1 minute walking or sitting to stand	11	74	13

3.1.4 Temperature

The CAG did not consider temperature to be a crucial component of COVID-19 surveillance and only the 74 people with an active SpO₂ of 94% or more reached the point of being asked to submit it, if they had a thermometer. 32 were able to send readings at the start and all were ≤38.5°C, the trigger level for a one-off fever and advice to call 111.

3.2 IMPROVED ACCESS TO SERVICES

Section 3.1 shows that in the first seven months the majority of people did not have COVID-19 symptoms that put them at risk of adverse events and that any readings of concern triggered advice to call services. What that data does not tell us is whether people acted on the advice received. Monitoring system data for Lanarkshire (n=111) and Highland (n=5) patients up to 13th April, 2021 was matched to health records showing contact with out-of-hours (OOH), COVID-19 assessment centres (CACs), emergency departments (EDs) and hospital admissions. Figure 2 illustrates who they were, what channel they chose for remote monitoring, whether or not they submitted readings, any alerts received, and if they then accessed services.

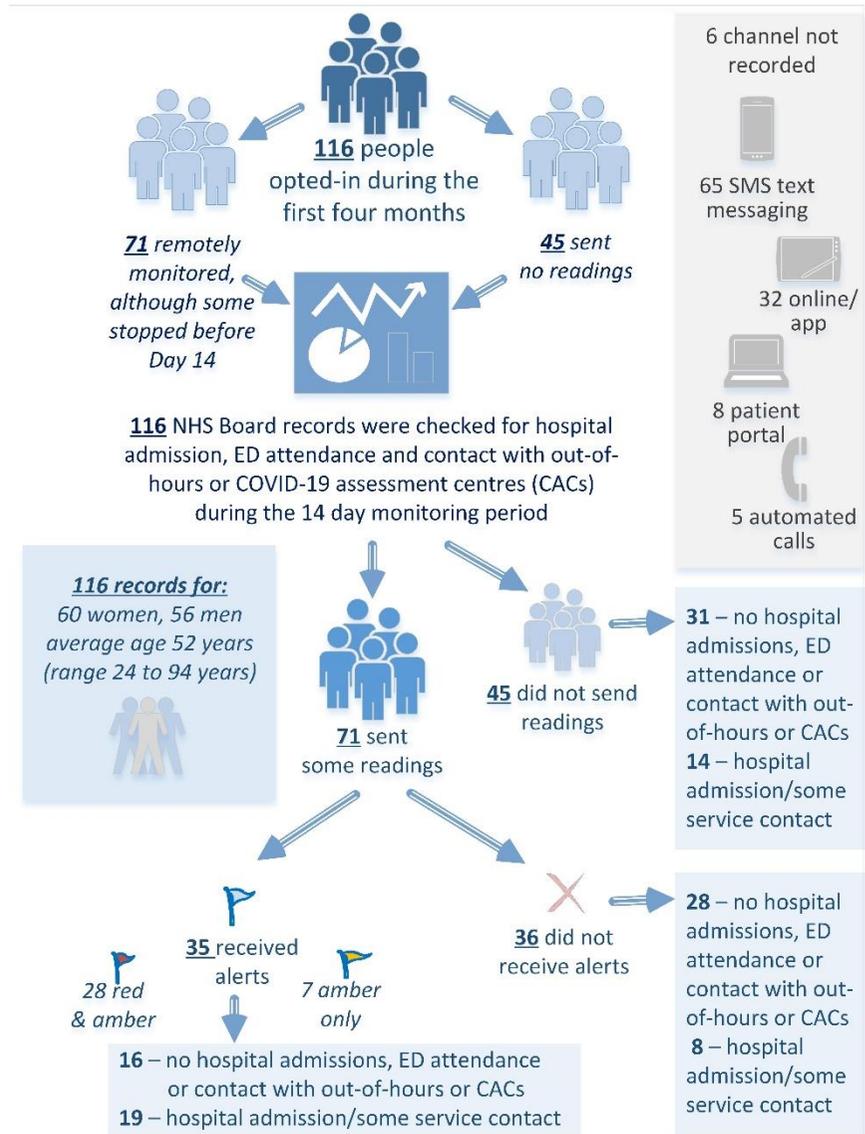
Nearly equal numbers of men and women opted in during the first three months (Figure 3) and their average age was 52 (range 24 to 94). Three fifths sent some remote monitoring readings, whilst two fifths did not use the system. More than half did so via SMS text messaging, with a quarter using the app/online.

Half of the 71 who sent readings triggered red (call 999) or amber (call 111) alerts. This is the group most likely to require access to services and more than half of them (n=19) had this, with 11 admitted to hospital. Appendix 1 shows the detail for all 35 who received alerts and since many of the service contacts follow on from these it is likely that the alerts increased access, at least for some people. For example, where SpO₂ was the prompt, they would not otherwise have known to do so. Although some decided not to follow the advice given, they had reasons for this (see section 3.3).

The other half who sent readings did not receive any alerts, meaning they were below the thresholds triggering advice to call 111 or 999. Three quarters of this group did not access any services and only 3 had hospital admissions.

Two thirds of those who chose not to use the system did not have any contact with emergency or out-of-hours services, nor did they have any hospital admissions. Of the 14 accessing services, 7 had hospital admissions and one was admitted on day 1 and died 10 days later (without monitoring).

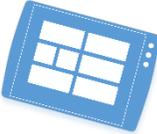
Figure 3 – Monitoring summary for 116 patients



3.3 PEOPLE HAVE POSITIVE EXPERIENCES OF SERVICES

A standard patient feedback survey was included within this RHP, but the questions were only sent to the subset who triggered no red or amber alerts at any stage (n=51 in first seven months). 39 people (76%) completed some or all of the survey and their experiences were overwhelmingly positive (Figure 4).

Figure 4 – Responses to the standard patient feedback survey (n=39)



How do you feel about remote monitoring?
19 liked it, 19 said it was OK, 1 didn't like it

How have you found using the Inhealthcare system?
28 found it easy, 7 said it was OK

Have you had any issues with the system?
5 learning to use it, 3 worry about doing it correctly, 1 poor wi-fi/mobile signal

Have you noticed any changes?
22 reassured I'm OK, 7 learned more about what results mean, 2 more worried about their health

Is there any difference in how you access services?
9 less travelling to appointments, 5 see doctor or nurse less, 1 see doctor or nurse more

Would you use the system again?
26 would use again if needed, 3 unsure, 3 would prefer not to

Although there is inevitably responder bias because this data is from people who chose to remotely monitor, all said it was easy or OK to use and almost all liked it or said it was OK. Nine had encountered some issues using it, but must have overcome these to get to the point of survey completion.

All but two of the changes people noticed were positive, mainly that the system provided reassurance, while others had learned what their results meant. A few had travelled less, others felt they saw a healthcare professional less. Only three out of 32 said they would prefer not to use the system again in future.

After giving verbal consent to be approached, 14 of the 116 whose records had been checked for service use/hospital admission agreed to a telephone interview. These were conducted in April and May 2021 (5 to 8 weeks after signing up for remote monitoring) and lasted an average of 6.5 minutes. 11 had submitted readings, three had not done so.



All 11 people who had used the remote monitoring system described it as 'easy' or 'straightforward'. Although three had not uploaded readings, they were clear that the pulse oximeter had been 'a good idea' or 'a comfort' to them. Interestingly, in four cases the monitoring had been done on behalf of the person with COVID-19, either because the patient was unable to (due to dementia or special needs) or because someone else was better able to engage with the technology on their behalf. Being less digitally included was not a barrier to remote health monitoring. All 14 interviewed said remote monitoring provided reassurance or 'stopped you worrying' and they endorsed its use for others in the same position. However, not all of them monitored for the full two weeks, one saying they 'just got scunnered with it'.

Four interviewees had received alerts from the system but elected not to follow the advice received. Two explained that instead of calling 111 or 999 immediately they had waited 10 minutes, taken their readings again, and found they had gone 'back to normal'. One added there was 'nothing to panic about' and the other went on to say, 'I knew I wasn't really needing help'. This was also the prime motivation for the third person (a former healthcare employee) who did not follow the advice received; 'I know myself because I felt OK'. Two of those not following the advice felt the healthcare resources should have been left for someone else 'that does need it'. The decision not to respond to alerts for the fourth person was made by a niece who did the monitoring. She explained that some alerts were triggered by submitting the wrong readings, whilst others were when her aunt was 'really not good'. The niece was clear that on the night after being assessed, 'she wouldn't have wanted it' and they had agreed she would wait to get better.

Although it was more difficult to make contact with those who had chosen not to use the system, three agreed to an interview. They all valued having the pulse oximeter and reported that they had used it, either twice a day (as directed) or more often e.g. 'every couple of hours'. One was still using it six weeks after being given it, and another had found it so useful they had passed it on to other family members who had tested positive for COVID-19.

In terms of the reasons for not uploading monitoring results to the system, one person had clearly mis-understood that they were supposed to do so. They reported that they were 'meant to tell the doctor' and had not been asked to submit results via a mobile, computer or landline phone, although they demonstrated a facility with taking their readings during the interview. The other two who had not submitted results said they had felt too unwell to engage with the system. One valued 'having the meter there' because 'you knew the safe limits and it was a comfort knowing you were within those safe limits' and the other referred to the trigger levels in the leaflet and said, 'if I got to that level, I'd obviously have to call the emergency services'.

In addition to showing they were conversant in SpO₂ levels, many interviewees described how much they appreciated having knowledge of what their monitoring levels should be following their COVID-19 diagnosis. One said it was 'an eye opener' because 'this disease is going after the respiratory system and that's the one we need to watch'. Another who was 'not a medical person' found it interesting 'to understand how things change when you walk about and sit down a wee bit out of breath'. A third had been keen to engage after hearing news about pulse oximeters 'being able to indicate that people were beginning to become more unwell without feeling it' and one suffering from fatigue seven weeks later still checked their levels after being active. Curiously, one interviewee who hadn't responded to their alerts suggested others should behave differently, saying 'I would like to think they would do what it says and respond'. Another said that the reassurance they got from monitoring meant they 'didn't phone NHS24 as much as maybe without it [they] might have' and a third felt more generally that it would 'save a lot of people from phoning 111 or 999 when really it wasn't necessary'.

3.4 STAFF FEEL ENGAGED AND SUPPORTED

To support staff, local TEC teams provided training on the system and an on-line learning resource was created. Their views on the pathway were captured in an on-line survey which 14 professionals completed (9th April to 1st June, 2021); six doctors, six nurses, one administrator and one who did not give their role. Although three had not used the remote monitoring system, one of them commented 'it's a great idea' and went on to explain that the only reason they'd not used it was because they had not seen many adults (they had mainly treated children).



Of the 11 staff who had used the COVID-19 remote monitoring system, six had found it fairly and five very useful. Five thought it was very safe, three that it could be safer, two were not sure and one felt it was too soon to say. All who had on-boarded patients found it very (n=5) or fairly (n=5) easy, and the three who had used the professional user interface thought that was easy. The system therefore appears to support their work with COVID-19 patients and engaging with it does not make excessive demands on their time. One suggested the interface could be made visually simpler, and another wanted to individualise the system parameters for some patients (although it might be expected that the CAG criteria would have precluded that need).

Seven staff felt the trigger levels were about right, two weren't sure and two said that alerts were triggered too early. One suggested that the information provided around the levels could be expanded, another had had a problem adding patients if there was no CHI number and a third felt the fact this was self-monitoring should be stressed to patients and relatives. This latter comment highlights the fact that clinicians do not need to see these patients in-person.

3.5 INCREASED POPULATION SELF-MANAGEMENT

Although not one of the main outcomes being evaluated for this RHP, some of the points raised by the patients interviewed suggested they were self-managing in a way they had not before. The definition of this outcome used in previous the previous national evaluation required people to do something in response to remote monitoring, not simply to submit readings. All 14 people interviewed about COVID-19 remote monitoring (including those who had self-monitored without the system) had learned how to use a pulse oximeter, or had someone who could do this on their behalf. Those who had remotely monitored by referring only to the written information provided were keen to demonstrate during interview that they knew how to take pulse oximeter readings, they really valued having the meter, and had used it as directed or more often. They knew the safe limits from the written information provided and in referring to these, one person said they would have accessed services if they had reached the trigger levels.



Amongst the group who did not access services following system alert advice, two explained that they had re-taken their oxygen level after 10 minutes and found it had gone back to normal. Another knew that some of their alerts were triggered by submitting the wrong readings, demonstrating a working knowledge of the safe levels. Becoming conversant in SpO₂ trigger levels was raised by other interviewees, one of whom linked them to COVID-19 'going after the respiratory system' and another still suffering from fatigue seven weeks later continued to check their levels for deterioration after any activity.



3.6 RESOURCES USED EFFECTIVELY AND EFFICIENTLY

There is a little evidence of contribution to this outcome from the staff survey. All the staff felt the system was easy to use, which suggests efficient use of time rather than any added burden. Further efficiencies may be linked to those using it having found it fairly or very useful, presumably to check patient results via the clinician interface or to avoid the need for further in-person contact. Also some of the patients interviewed felt that their use of remote monitoring meant they were not using healthcare resources that others might have greater need of.

Two of them mentioned not needing to phone 111 or 999, either because of the reassurance the system provided or when they knew it was not necessary.

3.7 REDUCED HEALTH INEQUALITIES

It would be useful to routinely capture the postcodes of people remotely monitoring as this is currently only reported for those who complete the patient feedback survey. For the 58 people who did so between 8th March and 29th October, 2021, more than twice as many were from SIMD 1 & 2 (n=31) than SIMD 4 & 5 (n=13). This suggests people from more disadvantaged areas were able to benefit from remotely monitoring their COVID-19 symptoms, but there is not enough data to be confident about this.



In terms of digital inclusion, the patient interviews showed that not everyone did the remote monitoring themselves. Four of the 14 overcame their own barriers (dementia, special needs, lack of familiarity with technology) and found someone else to do the monitoring/submit readings on their behalf.

APPENDIX 1 - Pattern of alerts and any service use by the 35 people whose remote monitoring triggered a system response

04/02/2021	Day 0	Day 0	Day 1	Day 1	No services							
Female (45)	Breathless	O ₂ 93%	O ₂ 93%	Breathless	No adms.							
11/02/2021	Day 1	No services	<i>This 60 year old woman had low oxygen saturation on the day after she started remote monitoring but triggered no further alerts. She had no contact with services and was not admitted to hospital during the 14 day monitoring period</i>									
Female (60)	O ₂ 90%	No adms.										
11/02/2021	Day 1	No services										
Female (36)	O ₂ 95%	No adms.										
14/02/2021	Day 1	Day 1	Day 2	Day 5 called	Day 5 ED	Day 5 hosp.						
Male (60)	Breathless	O ₂ 92%	O ₂ 93%	OOH	attendance	adm. (4)						
16/02/2021	Day 0	Day 0	Day 0 ED	Day 0 hosp.	<i>This 45 year old woman had low oxygen saturation on the day she started remote monitoring, attended the Emergency Department the same day and was admitted to hospital for 10 days</i>							
Female (45)	O ₂ 93%	O ₂ 92%	attendance	adm. (10)								
16/02/2021	Day 0	No services										
Male (89)	O ₂ 89%	No adms.										
20/02/2021	Day 1	Day 2 called	Day 3 called	Day 4 called	Day 4 ED	<i>This 34 year old woman was breathless on the day after she started monitoring, contacted out-of-hours three times and then attended the Emergency Department</i>						
Female (34)	Breathless	OOH	OOH	OOH	attendance							
23/02/2021	Day 3	Day 3 called	Day 3 ED	Day 3 hosp.								
Female (50)	Breathless	OOH	attendance	adm. (4)								
28/02/2021	Day 1	Day 2 called	Day 2 ED	<i>This 25 year old man had low oxygen saturation on the day after he started remote monitoring, contacted out-of-hours attended the Emergency Department the following day</i>								
Male (25)	O ₂ 93%	OOH	attendance									
28/02/2021	Day 1	No services										
Female (75)	Breathless	No adms.										
27/01/2021	Day 0	Day 1	Day 1	Day 2 called	Day 2 called	Day 3	Day 3	Day 3 ED	Day 4	Day 4 called	Day 4 ED	Day 5 hosp.
Male (61)	Breathless	O ₂ 90%	Pulse 103	OOH	CAC	^temp≥5	Pulse 109	attendance	O ₂ 90%	OOH	attendance	adm. (17)
27/01/2021	Day 3	Day 4	Day 5	Day 5	No services							
Female (56)	Breathless	Pulse 108	Pulse 108	Pulse 105	No adms.							
28/01/2021	Day 0	Day 2	Day 2	Day 3	Day 4	Day 5	Day 6	Day 6	Day 7	Day 7	No services	
Female (46)	O ₂ 94%	O ₂ 91%	O ₂ 93%	O ₂ 95%	O ₂ 93%	O ₂ 95%	O ₂ 92%	O ₂ 94%	O ₂ 91%	O ₂ 94%	No adms.	
31/01/2021	Day 1	Day 2	Day 3	Day 4	Day 4	Day 5	Day 5	Day 6	Day 7	Day 8	Day 8	Day 9
Female (94)	O ₂ 93%	O ₂ 93%	O ₂ 93%	O ₂ 93%	O ₂ 94%	O ₂ 92%	O ₂ 94%	O ₂ 91%	Breathless	O ₂ 93%	O ₂ 93%	O ₂ 93%
	Day 10	Day 10	Day 11	Day 11	Day 12	Day 12	No services	<i>This 94 year old woman triggered numerous alerts , but had no contact with services or hospital admissions</i>				
	O ₂ 93%	Breathless	O ₂ 93%	O ₂ 93%	O ₂ 93%	O ₂ 93%	No adms.					
09/02/2021	Day 1	Day 1	Day 4	Day 4 called	Day 5	Day 5	Day 6 called	Day 6 ED	Day 8	Day 10		
Male (69)	O ₂ 93%	Breathless	O ₂ 94%	OOH	O ₂ 92%	O ₂ 93%	OOH	attendance	O ₂ 95%	called CAC		
19/02/2021	Day 3	Day 3 called	Day 6	Day 7	Day 9	Day 10	Day 11	Day 12	Day 12			
Male (65)	O ₂ 95%	OOH	O ₂ 93%	O ₂ 93%	O ₂ 93%	O ₂ 93%	O ₂ 93%	O ₂ 85%	O ₂ 85%			
19/02/2021	Day 1	Day 2	Day 3	Day 4	Day 4	Day 5	Day 6	Day 7	Day 9	Day 10	Day 10	No services
Male (61)	O ₂ 95%	O ₂ 93%	O ₂ 93%	O ₂ 95%	O ₂ 95%	O ₂ 92%	O ₂ 94%	O ₂ 95%	O ₂ 95%	O ₂ 95%	O ₂ 95%	No adms.
20/02/2021	Day 0	Day 1	Day 1	Day 2	Day 3	Day 4	No services					
Male (72)	O ₂ 93%	O ₂ 94%	O ₂ 93%	O ₂ 93%	O ₂ 94%	O ₂ 94%	No adms.					

21/02/2021	Day 0	Day 1 ED	Day 1 hosp.	Day 3	Day 3	Day 4	Day 4 ED	Day 6	Day 6	Day 7	Day 9	Day 10
Male (66)	^temp≥5	attendance	adm. (1)	Breathless	^temp≥5	O ₂ 93%	attendance	^temp≥5	O ₂ 92%	O ₂ 91%	O ₂ 76%	O ₂ 93%
	Day 11	Day 11	Day 12	<i>This 66 year old man reported a range of symptoms while remotely monitoring, attended the Emergency Department twice and had one overnight stay in hospital (on Day 1)</i>								
	O ₂ 93%	O ₂ 93%	Pulse 103									
21/02/2021	Day 2	Day 3	Day 7	Day 8	Day 11	Day 11	No services					
Female (49)	O ₂ 95%	O ₂ 92%	O ₂ 93%	O ₂ 86%	O ₂ 90%	O ₂ 92%	No adms.					
26/02/2021	Day 8	Day 11	Day 12	No services								
Female (31)	O ₂ 95%	Breathless	O ₂ 92%	No adms.								
26/02/2021	Day 1	Day 2	Day 2	Day 11	No services							
Female (57)	O ₂ 92%	O ₂ 94%	O ₂ 94%	O ₂ 94%	No adms.							
27/02/2021	Day 0	Day 1	Day 2	Day 2	Day 3 called	Day 3 ED	Day 3 hosp.	<i>This 54 year old woman had low oxygen saturation on the first three days of remote monitoring, then contacted out-of-hours, the Emergency Department and was admitted (not kept overnight)</i>				
Female (54)	O ₂ 91%	O ₂ 94%	O ₂ 94%	O ₂ 94%	OOH	attendance	adm. (0)					
12/03/2021	Day 0	Day 1	Day 5 called									
Female (52)	O ₂ 95%	Breathless	OOH									
13/03/2021	Day 1	Day 5	No services	<i>This 48 year old man had low oxygen saturation on the day after he started remote monitoring and felt breathless on Day 5. He had no contact with services and was not admitted to hospital during the 14 day monitoring period</i>								
Male (48)	O ₂ 93%	Breathless	No adms.									
02/03/2021	Day 2	Day 11	No services									
Female (71)	O ₂ 92%	Tiredness	No adms.									
24/03/2021	Day 0	Day 0 called	Day 0 ED	Day 1 hosp.	<i>This 34 year old man had low oxygen saturation on the day he started remotely monitoring, contacted OOH and attended the ED that day and was admitted to hospital the next for two days</i>							
Male (34)	O ₂ 88%	OOH	attendance	adm. (2)								
24/03/2021	Day 1	Day 1	Day 2	Day 2 called	Day 2 ED	Day 2 hosp.	Day 8 called	Day 8 ED	Day 8 hosp.			
Female (38)	O ₂ 94%	O ₂ 93%	O ₂ 90%	OOH	attendance	adm. (3)	OOH	attendance	adm. (4)			
02/04/2021	Day 0	Day 0 called	Day 1	Day 2	Day 2 called	Day 2	Day 2 ED	Day 3 hosp.	Day 4			
Male (60)	O ₂ 95%	OOH	Pulse 108	Pulse 108	OOH	called CAC	attendance	adm. (1)	O ₂ 93%			
26/01/2021	Day 1	Day 3	Day 7	Day 7	Day 9 called	Day 9	Day 9 ED	Day 9 hosp.				
Male (41)	Pulse 125	Pulse 105	Pulse 175	Pulse 180	OOH	called CAC	attendance	adm. (2)				
02/02/2021	Day 1	Day 1 called										
Female (43)	O ₂ 95%	CAC										
12/02/2021	Day 2	Day 2	Day 3	Day 3	Day 4	Day 4	Day 5	Day 5	Day 6 ED			
Male (64)	^temp≥5	O ₂ 95%	^temp≥5	^temp≥5	^temp≥5	^temp≥5	O ₂ 95%	^temp≥5	attendance			
10/03/2021	Day 0	Day 1	Day 1	Day 2	Day 2	Day 3	Day 4	Day 4 called				
Male (47)	O ₂ 95%	O ₂ 95%	O ₂ 95%	^temp≥5	O ₂ 95%	O ₂ 95%	O ₂ 94%	OOH				
01/03/2021	Day 1	Day 1 called	Day 2 called	Day 2 ED	Day 2 hosp.							
Male (55)	O ₂ 95%	OOH	OOH	attendance	adm. (0)							
20/03/2021	Day 0	Day 1	Day 2	No services								
Male (39)	O ₂ 94%	O ₂ 94%	O ₂ 94%	No adms.								

KEY	Red alert tel 999
	Amber alert tel 111
	Out of Hours
	COVID-19 Assessment Centre
	Emergency Department
	Hospital admission