

Rapid implementation of Microsoft Teams in response to COVID-19: one acute healthcare organisation's experience

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ABSTRACT

Background COVID-19 presented significant challenges to healthcare organisations, which needed to rapidly remodel their services but were unable to allow staff to meet face to face to minimise infection risk. During this communication predicament, National Health Service (NHS) Digital announced the provision of Microsoft Teams, a digital communication and collaboration tool, which was implemented at Royal Free London NHS Foundation Trust within 2 weeks.

Method Given the need to deploy at scale, rapidly and with minimal resource, an agile decentralised innovation management approach was used, empowering staff to be local implementors.

Results Resulting use cases were highly original and varied, ranging from a COVID-19 Education Programme to coordination of oxygen demand. Analytics showed rapid and persistent adoption, surpassing 500 daily active users within 11 days. Usage continues to increase, consistent with a direct network effect.

Conclusion These findings suggest a high demand for this format of communication and high willingness to adopt it. Further qualitative research into staff perceptions would be valuable to confirm this, and to assess the user experience.

Overall, this has been a radical approach to digital implementation in healthcare, and has so far proved effective in delivering a cost minimal, rapid communication tool at scale in the midst of a global pandemic.

INTRODUCTION

Royal Free Hospital admitted its first COVID-19 positive patient on 9 February 2020. The challenge of the pandemic then grew exponentially. At its peak the Royal Free London National Health Service (NHS) Foundation Trust was seeing 93 patients with a confirmed COVID-19 infection per day requiring up to 689 inpatient beds across two acute hospital sites; with an average staff absence rate of 1282 staff per day, equivalent to over 10% of the organisation's workforce.

In response the organisation rapidly remodelled. Clinicians were reallocated to different

specialities and roles, facilities repurposed to provide new in-patient and intensive care unit (ITU) capacity, administrative staff redeployed, routine elective activity postponed or cancelled and outpatient clinics moved to non-face-to-face modalities.

Typically during such a large organisational challenge, effective communication is paramount. However, this particular crisis had the added complication that staff were instructed to avoid meeting in person and, instead, to work from home wherever possible, to minimise contagion risk. As a result, traditional face-to-face communication methods were no longer available or to be relied on, and existing digital communication tools were not approved for professional use due to information governance concerns. For example, WhatsApp was not felt to be compliant with NHS England's guidelines 'on the use of instant messaging software in acute clinical settings'¹ due to the inability to remotely delete messages or schedule automatic message deletion, and Zoom had come under significant public scrutiny of its data security at the time.²

During these difficult circumstances, NHS Digital announced free provision of Microsoft Teams across the NHS to assist in the COVID-19 response.³ Microsoft Teams is a digital communication and collaboration software tool, available in both mobile and computer application formats, protected and monitored within the NHS Secure Boundary.³ Its headline features include group video calls for virtual meetings, instant messaging and presence, document collaboration and version control, and discussion forums (called 'channels') organised into groups called 'teams'. In light of the pressure on healthcare organisations its use in



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transmitting patient identifiable clinical information was approved.

Coincidentally, prior to the pandemic the organisation had been conducting an options appraisal of digital clinical communication tools, and Microsoft Teams had emerged as a strong preference because of its feature-set and ease of use. Therefore, after its release, there was familiarity and support for this tool at executive level.

The objectives of implementing Microsoft Teams were, first, to support high quality, comprehensive non-face-to-face communication and allow for safe and effective reductions in non-essential face-to-face communication in order to minimise infection risk, to improve staff availability, and to develop or improve the ability and experience of remote interactions for our staff members.

METHODS

The coronavirus pandemic was disruptive of almost all normal organisational functions, with non-clinical teams redeployed to focus on urgent requests, such as absence management, frequent and detailed site reports, new reporting on COVID-19 service critical parameters (such as oxygen usage), and operational support required in reconfiguring clinical areas including the creation of new intensive care beds.

As a result, within the organisation there was minimal resource available to spend on deployment of Microsoft Teams, despite the desire to get this tool into circulation as soon as possible. Therefore, a traditional implementation model with a project programme, specific objectives, steering and implementation groups was not possible. Instead, to minimise resource costs without slowing down the deployment, it was decided to use an agile, decentralised innovation management approach.⁴ Any member of staff was able to request creation of a Team, and they were then empowered as a superuser and owner of that Team to deploy it among their colleagues, administer and be a point of contact for their colleagues who needed support.

There was minimal internal advertising of Microsoft Teams, instead relying on external advertising by NHS Digital,³ enthusiasm from early technology adopters and word of mouth publicity. The only exception to this was that executive branches of the trust were directly approached to install Microsoft Teams as the organisation's preferred method to host virtual meetings.

New Teams in Microsoft Teams were created and tracked by information management and technology staff, who maintained an overview of the deployment. They were also available to support superusers who were unable to solve technical issues locally and escalate issues to the provider when needed.

Finally, evaluation was conducted by analysing how Microsoft Teams was used, and by monitoring usage statistics within the trust over time, with metrics of daily active users, number of private messages sent, and number of virtual meetings. A survey of users was also considered,

Table 1 Usage analytics of Microsoft Teams by Royal Free London NHS Foundation Trust

Date	Daily active users	Virtual meetings	Private chat messages
18 Mar 2020	7	0	0
25 Mar 2020	448	117	2510
01 Apr 2020	703	227	2888
08 Apr 2020	752	469	3515
15 Apr 2020	810	383	3001
22 Apr 2020	883	402	2599
29 Apr 2020	979	458	2937
06 May 2020	1033	533	3481
13 May 2020	1162	654	3463
20 May 2020	1193	663	3931
27 May 2020	1230	691	3693
03 Jun 2020	1394	858	3995
10 Jun 2020	1427	1014	4391
17 Jun 2020	1512	1091	4604
24 Jun 2020	1525	1141	3886

NHS, National Health Service.

however given the emergency situation there was limited appetite among users to participate in non-essential activities.

RESULTS

Users' adoption of Microsoft Teams was positive, with the following use cases emerging during the implementation:

- ▶ To deliver medical education sessions virtually, avoiding the need to meet in person.
- ▶ To host non-face-to-face multidisciplinary team (MDT) meetings (eg, lung cancer MDT meetings).
- ▶ To host documents that are frequently updated (eg, staff rota).
- ▶ To facilitate large group discussion forums (eg, COVID-19 Journal Club).
- ▶ To edit shared documents collaboratively (eg, research papers).
- ▶ To share data quickly using instant messages (eg, oxygen usage in different wards).
- ▶ To host virtual meetings (eg, board meetings).
- ▶ To broadcast live video streams (eg, chief executive briefings).

In addition, usage analytics showed very quick uptake of Microsoft Teams within the organisation. The tool was released on 19 March 2020,³ and by 31 March 2020 had reached 667 daily active users (table 1). An active user is defined as a unique user who performed an intentional activity in Microsoft Teams, such as starting a call, sending a chat message, or participating in a meeting, and does not include passive actions such as automatic log-in or minimising the application.

Relative to other software deployed in the trust, this degree of uptake within 3 months of release was extremely impressive, and adoption continued to increase over time, exceeding 1000 daily active users on 5 May 2020 (online supplemental data sheet 1).

Moreover, these figures show that the rate of adoption has not slowed during these 3 months. This is consistent with a direct network effect: as more people become regular users of Microsoft Teams, it becomes more attractive to new users to communicate and collaborate with their colleagues, resulting in a self-sustaining increase in use similar to that seen in other Microsoft Teams deployments.⁵

One of the most popular uses of Microsoft Teams is the Trust's COVID-19 Education Programme. So far over 70 teaching sessions have been delivered using virtual meetings, ranging from large group lectures to small group interactive sessions and group reflective practice, which have been watched live over 4000 times.⁶ This was a multi-disciplinary programme taught by healthcare professionals from over 20 specialities.⁶

In addition, these sessions were recorded and uploaded to Microsoft Stream for staff to watch in their own time, with over 500 views so far, also allowing for increased accessibility with features such as automatic subtitles and offline viewing.

DISCUSSION

Given the context of a pandemic, this method of an agile, decentralised implementation of Microsoft Teams allowed the trust to deploy this tool at scale to front-line staff, with minimal resource cost, in a rapid time frame (table 2).

The high usage statistics described above suggests a high demand for this format of communication and high willingness to adopt it.

However, when assessing this deployment against its original aim of reducing non-essential face-to-face communication, this study is limited, as it is difficult to be sure that Microsoft Teams reduced face to face meetings due to the lack of a comparison group. Instead, it is possible that the face-to-face meetings continued regardless, and Microsoft Teams increased the overall volume of

communication by enabling virtual meetings that would otherwise not have taken place.

Moreover, without a comparison group, it is difficult to be robustly confident that the success of this implementation was solely due to its decentralised model. Examples from South Australia show extremely impressive uptake and reduced face-to-face meetings with a centralised deployment,⁵ suggesting that regardless of the implementation method, there was high cultural willingness of staff to adopt new ways of working in this emergency.

The high usage statistics and multiple use cases do suggest that the regularity and ability of communicating at a distance was improved. However, this evidence would be strengthened with qualitative data to be more confident that this reflects an improvement in staff communication and experience, instead of simply switching from a non-approved messaging service. Further qualitative data are needed to understand the psychological impacts of new and additional platforms, and to ascertain whether they improve or contribute to cognitive overload.

Finally, it should be noted that while this agile, decentralised approach was successful in this context, it does have its drawbacks. First, the lack of a centralised approval process for new team creation has resulted in a wide degree of inconsistency, with some staff requesting one team for an entire division, while others request multiple teams for each project. Second, by relying on local staff to champion and deploy Microsoft Teams in their area, this has resulted in inequity where some departments have a large degree of support, while others have none. Finally, from a governance perspective this approach is more difficult to monitor, and therefore, more difficult to identify problems or lessons learnt.

CONCLUSIONS

The overall lesson learnt from this implementation was to select the best deployment approach for the current context, and to be bold in making use of an approach that is rarely seen in health and social care. The circumstances of: an international pandemic; minimal resources; an urgent need to improve communication lines; and the sudden provision of a well-established communication

Table 2 Context and timeline of Microsoft Teams Deployment at Royal Free London NHS Foundation Trust

9 Feb 2020	First patient with confirmed COVID-19 infection admitted to Royal Free Hospital.
11 Mar 2020	WHO characterises coronavirus outbreak as a pandemic.
19 Mar 2020	NHS Digital announce provision of Microsoft Teams to assist in the COVID-19 response. ²
20 Mar 2020	Royal Free London NHS Foundation Trust redeploys bulk of clinical staff in response to COVID-19 pandemic.
23 Mar 2020	UK government announces restrictions on freedom of movement, enforceable in law.
23 Mar 2020	Microsoft Teams deployed at Royal Free London NHS Foundation Trust.
27 Mar 2020	Royal Free London COVID-19 Education Programme starts delivering teaching via Microsoft Teams.
30 Mar 2020	Over 500 daily active users on Microsoft Teams.

NHS, National Health Service.

tool, combined in this case to suggest that a centralised, conventional model of deployment was not appropriate.

While it could be argued that centralised deployments have proven equally effective elsewhere,⁵ they generally cost more and if the organisational structure is not already in place they may take more time to initiate.⁴

Another lesson learnt was having the confidence to minimise bureaucracy. Having proposed a decentralised and agile implementation of Microsoft Teams, trust executives were confident in assessing the situation and making a quick decision in order to assist the COVID-19 response. This rapid decision making allowed enthusiastic staff to rapidly deploy a new communication tool, redirecting those who had already independently begun to pursue their own solution. As a result, quick decision making in this case avoided a situation of a fragmented, insecure and unprotected collection of communication tools with no executive oversight.

Finally, a number of lessons were learnt from local superusers on how to encourage adoption among front-line staff. Crowdsourcing these ideas together allowed for a far greater degree of optimisation than would have been possible otherwise, with suggestions ranging from exclusively hosting important content (eg, rotas) on Microsoft Teams, to providing deep links to content within the Microsoft Teams application, and copying important regular emails (eg, trust bulletins) into Microsoft Teams. This is a commonly cited advantage of a decentralised innovation management approach.⁴

Given the limitations above, further qualitative research into users' perceptions of Microsoft Teams would be highly desirable, such as surveys of its impact on face to face meetings, the user experience and the impact on other internal communication tools. The organisation plans to continue promoting Microsoft Teams after easing of restrictions, to improve internal communication, collaborate at a distance and improve convenience for staff who work across multiple sites. It is expected that usage of features that replace face-to-face meetings, such as video calls, will plateau or decrease as staff resume meeting in person, but that usage of other features such as instant messages will continue to increase as new users adopt the software.

Overall, this had been a radical approach to digital implementation in healthcare and has so far proved effective in delivering a cost minimal, rapid communication tool at scale in the midst of a global pandemic.

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1 Supplementary Data Sheet 1

Date	Active Users	Virtual Meetings	Private Chat Messages
18/03/2020	7	0	0
19/03/2020	107	21	609
20/03/2020	174	30	741
21/03/2020	79	6	212
22/03/2020	97	3	313
23/03/2020	322	115	1451
24/03/2020	381	132	1430
25/03/2020	448	117	2510
26/03/2020	475	117	2703
27/03/2020	486	159	1777
28/03/2020	143	12	254
29/03/2020	155	2	286
30/03/2020	642	186	2958
31/03/2020	677	228	2936
01/04/2020	703	227	2888
02/04/2020	698	227	2955
03/04/2020	735	244	3249

04/04/2020	210	7	147
05/04/2020	213	11	294
06/04/2020	746	286	3334
07/04/2020	721	321	3382
08/04/2020	752	469	3515
09/04/2020	735	304	2750
10/04/2020	404	139	1162
11/04/2020	208	27	316
12/04/2020	198	20	368
13/04/2020	431	113	1230
14/04/2020	805	305	2210
15/04/2020	810	383	3001
16/04/2020	805	310	3067
17/04/2020	786	344	3063
18/04/2020	256	20	299
19/04/2020	237	16	373
20/04/2020	825	317	2431
21/04/2020	818	285	2828

22/04/2020	883	402	2599
23/04/2020	878	375	2832
24/04/2020	869	341	2836
25/04/2020	239	10	106
26/04/2020	234	10	78
27/04/2020	853	282	2385
28/04/2020	866	374	2238
29/04/2020	979	458	2937
30/04/2020	923	395	3212
01/05/2020	844	351	2820
02/05/2020	254	25	70
03/05/2020	269	9	249
04/05/2020	969	351	2309
05/05/2020	1027	437	2746
06/05/2020	1033	533	3481
07/05/2020	1015	465	3154
08/05/2020	305	23	211
09/05/2020	222	14	198

10/05/2020	242	12	367
11/05/2020	980	355	2685
12/05/2020	1113	510	2950
13/05/2020	1162	654	3463
14/05/2020	1184	618	3347
15/05/2020	1070	459	3328
16/05/2020	299	9	310
17/05/2020	270	20	207
18/05/2020	1169	555	3358
19/05/2020	1261	691	4009
20/05/2020	1193	663	3931
21/05/2020	1256	640	3916
22/05/2020	1025	449	3307
23/05/2020	312	6	79
24/05/2020	225	18	114
25/05/2020	285	16	128
26/05/2020	1164	607	3042
27/05/2020	1230	691	3693

28/05/2020	1260	630	4254
29/05/2020	1067	453	3489
30/05/2020	270	21	117
31/05/2020	258	26	24
01/06/2020	1214	583	4455
02/06/2020	1331	692	4863
03/06/2020	1394	858	3995
04/06/2020	1386	765	5418
05/06/2020	1277	645	4454
06/06/2020	283	13	140
07/06/2020	408	7	56
08/06/2020	1460	572	4038
09/06/2020	1379	837	4516
10/06/2020	1427	1014	4391
11/06/2020	1443	900	4853
12/06/2020	1284	655	3834
13/06/2020	287	11	198
14/06/2020	275	8	232

15/06/2020	1332	649	4073
16/06/2020	1455	873	4293
17/06/2020	1512	1091	4604
18/06/2020	1426	954	4469
19/06/2020	1270	792	4612
20/06/2020	293	12	80
21/06/2020	268	12	66
22/06/2020	1400	700	3587
23/06/2020	1457	980	5192
24/06/2020	1525	1141	3886
25/06/2020	1469	1000	4125
26/06/2020	1295	814	3780