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# Improving the patient booking service to reduce the number of missed appointments at East London NHS Foundation Trust Community Musculoskeletal Physiotherapy Service

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## ABSTRACT

The East London National Health Service Foundation Trust (ELFT) Community Musculoskeletal (MSK) Physiotherapy Service had reported a high rate of non-attendance at scheduled appointments. This was leading to delayed access to treatment for patients and a reduced capacity for service users, as well as a waste of clinical resources. The aim of this quality improvement project was therefore to reduce the percentage of missed appointments within this department. This study was undertaken by the ELFT community MSK service, with support from the ELFT Quality Improvement team. To begin with, patient complaints were explored; these indicated that the main reason for missing appointments was due to issues with the patient booking service. Baseline data were initially collected for both new referrals and follow-up patients. The proposed changes were then introduced, which included text message reminders, first via a manual platform and then via an automated system. Ongoing data were recorded to note the effectiveness of these changes. Following the intervention, non-attendance of newly referred patients reduced by 43.35% (23.76%–13.46%) after both cycles. Non-attendance of follow-up patients reduced by 44.14% (23.74%–13.26%) after the second cycle alone. By listening to the opinions of service users, it was possible to improve the patient booking system and the flexibility of appointments. This resulted in a reduction in the percentage of appointments missed. These changes will continue to be monitored within this department to ensure sustainability but there is also now potential for similar interventions to be trialled in other health service departments.

## PROBLEM

In the East London National Health Service (NHS) Foundation Trust (ELFT) Community Musculoskeletal (MSK) Physiotherapy Service, a large proportion of appointments were recorded to have not been attended by patients. The service offers approximately 21 000 appointments per year, thus averaging 400 patients per week, with each appointment lasting 30 min. Baseline data identified that 23.76% of newly referred patients did not attend their first appointment and 23.74% of current patients failed to attend their follow-up appointment. The National Schedule of Reference Costs[1] reports the cost of non-specialist MSK rehabilitation at £187/patient. Therefore, an average of 96 patients (~24%) per week not attending their appointment equates to a financial loss of approximately £18 000/week for this service.

The MSK service had received many complaints from patients regarding the appointment booking system, which they claimed led to their non-attendance. The main complaints included not receiving appointment letters far enough in advance of their appointment and being unable to change the appointment if they could not attend, as there was no automatic telephone system in place. There was one telephone line at reception and if this was busy, patients were unable to alter their appointment in advance and would therefore not attend their appointment.

This project was therefore designed to alter this difficult system, to improve the experience and engagement of service users from the front end of the MSK service. This involved working on multiple factors relating to communication, responsiveness and the booking system. The high number of complaints and non-attendance was viewed as representing a poor service for patients and a source of waste for the team of administrative staff and clinicians. It therefore seemed beneficial to investigate this further and to find potential solutions to this problem.

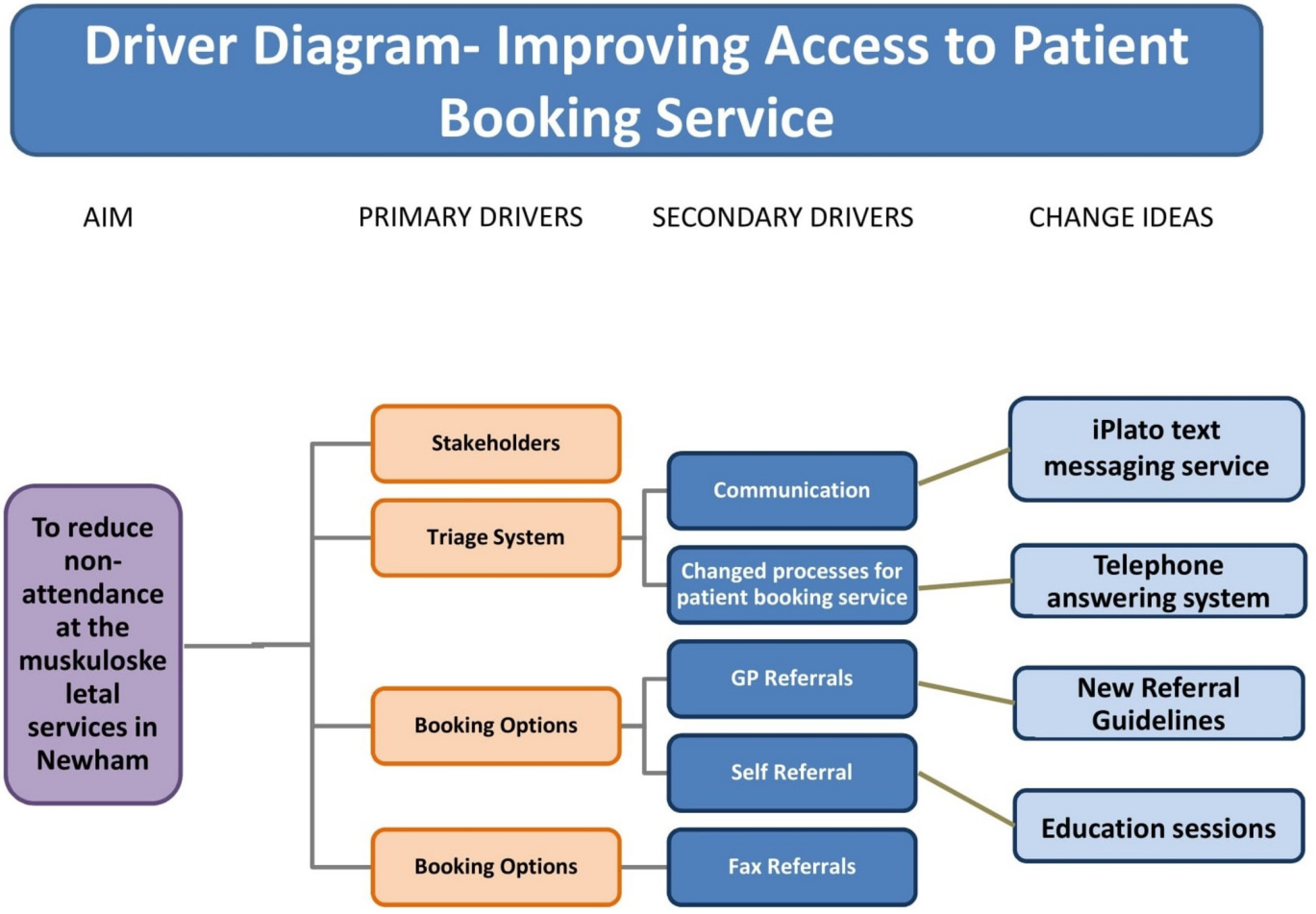


**Figure 1** Driver diagram used for project design. GP, general practitioner.

## BACKGROUND

Appointment non-attendance has been of concern to health service departments for many years. This is due to the resulting waste of clinical resources and finances, increased waiting time for other patients and reduced staff morale.[2]

There are various reasons as to why patients do not attend their appointments.[3] First, there are practical reasons, such as transport limitations or difficulty organising childcare during appointments. Second, there are human factors, including illness, lack of motivation or sheer forgetfulness. Third, there are issues surrounding the appointment time itself, with patients unable to attend due to prior engagements or work schedules. This is not a problem if there is an efficient system in place to change appointments or to remind a patient of their appointment before it occurs. However, if there is no such system, this can result in patients being unable to attend their designated appointments; this was the challenge for the ELFT community MSK physiotherapy service.

The baseline 'did not attend' (DNA) percentage was 23.76% for new patients attending first appointments and 23.74% for follow-up appointments in this department. This is much higher than the national average, which is 6.6% according to The Information Centre for Health and Social Care.[4]

Several methods have already been trialled by healthcare services across the country to try to improve attendance at appointments.[5] The 2013 Cochrane review[6] examined eight randomised controlled trials published prior to August 2012, involving 6615 participants. The authors concluded that text messaging increased attendance at healthcare appointments compared with no reminders or postal reminders. They also reported that telephone voice calls had a positive impact; improving attendance rates more than text messaging alone. Another review[7] in 2015 took this one step further, stating that although text message reminders had been proven effective in reducing non-attendance, there had been no studies investigating whether the actual message content affected their impact. By trialling four different messages, attendance rates improved the most when patients were sent a message stating the specific financial loss to the NHS if they missed their appointment.

The main complaint from patients was not receiving appointment letters in time prior to their appointment and being unable to change their appointment if they could not attend. The concept of text message reminders is therefore to give patients adequate notice of their

appointments, and enough time to change their appointment if it is unsuitable.

By combining the literature evidence above with current patient opinions, ELFT MSK service in Newham decided to test and implement these ideas to investigate whether these methods were reliable to reduce non-attendance within this service.

## MEASUREMENT

The outcome measure was the percentage of patients who did not attend their physiotherapy appointment, compared with all those offered appointments by the ELFT community MSK physiotherapy service.

Baseline data were collected by clinical staff between 31 August 2015 and 5 October 2015 for newly referred patients not attending their first appointment. These first 6 weeks showed a non-attendance of 23.76%.

Baseline data were also collected between 31 August 2015 and 18 April 2016 for patients not attending a follow-up appointment. This showed a non-attendance of 23.74%. The baseline data collection period was longer for this group, as the first intervention was implemented on the new patient group alone.

Ongoing data collection then took place until 13 March 2017, to record the impact of changes made to the appointment system on non-attendance.

## DESIGN

This project was developed by the ELFT Community MSK team, with support from the ELFT Quality Improvement team. The identified aim was 'to make access to the physiotherapy service clearer and easier by improving patient satisfaction'.

First, a driver diagram (figure 1) was drawn up to demonstrate the visual theory of change. This incorporated the key drivers and a selection of change ideas, which could be tested and implemented in this project. The change ideas included a new telephone system, improved referral guidelines, better use of technology (iPLATO) and education sessions for GPs, staff and patients.

After discussion between team members, it was decided to test the change idea of text messaging through the following two plan–do–study–act (PDSA) cycles:

1. Manual text message reminders for new referrals (by the patient booking service using a web platform).
2. Automated text message reminders (by the iPLATO system linked to the electronic clinical record and appointment system).

It was thought that by sending text message reminders, patients would be reminded to attend their appointment or to change it if they had not been able to do so after receiving their initial appointment letter.

The manual text message reminders were sent to all new referrals to the physiotherapy department between 1 December 2015 and 24 April 2016. The automated text message reminders via iPLATO were then tested from 25 April 2016 onwards for both new referrals and patients with follow-up appointments.

Staff also encouraged patients to make their own appointments rather than being issued a designated appointment time. This was facilitated by educating GPs with new referral guidelines, asking them to encourage their patients to self-refer to the service (allowing them to book their own appointment), rather than the GP referring and the patient being sent a preorganised appointment.

## STRATEGY

The overall aim of this project was to reduce the percentage of missed appointments within the ELFT community MSK physiotherapy service. To do this, two PDSA cycles were undertaken.

### PDSA cycle 1 (from December 2015 to April 2016)

#### Aim

To test whether text message reminders could reduce the percentage of newly referred patients who did not attend their first physiotherapy appointment.

#### Plan

Send manual text message reminders to new patients before their appointment by the patient booking service/team. The text messages would be sent at the point of booking and a further message sent 2 days prior to the appointment.

#### Prediction

DNA rates would decrease, as patients would be reminded to attend their appointment, or could re-book or cancel it rather than not attending.

#### Do

The patient booking service sent text message reminders using a web platform.

#### Study

Results showed a reduction of 57.1% in new appointments missed (decrease from 23.76% of new appointments in December 2015 to 10.2% in April 2016).

#### Act

Continue to test text message reminders with new referrals but begin preparing for the next intervention, a system for using iPLATO automated text message reminders. Manually sending reminders is burdensome for staff and therefore an automated system could help reduce this workload.

### PDSA cycle 2 (from April 2016)

#### Aim

To test whether automated text message reminders via the iPLATO system could reduce the percentage of patients who did not attend their first appointment or follow-up appointment. This PDSA follows a previous PDSA cycle which involved sending manual (EE/web platform) text

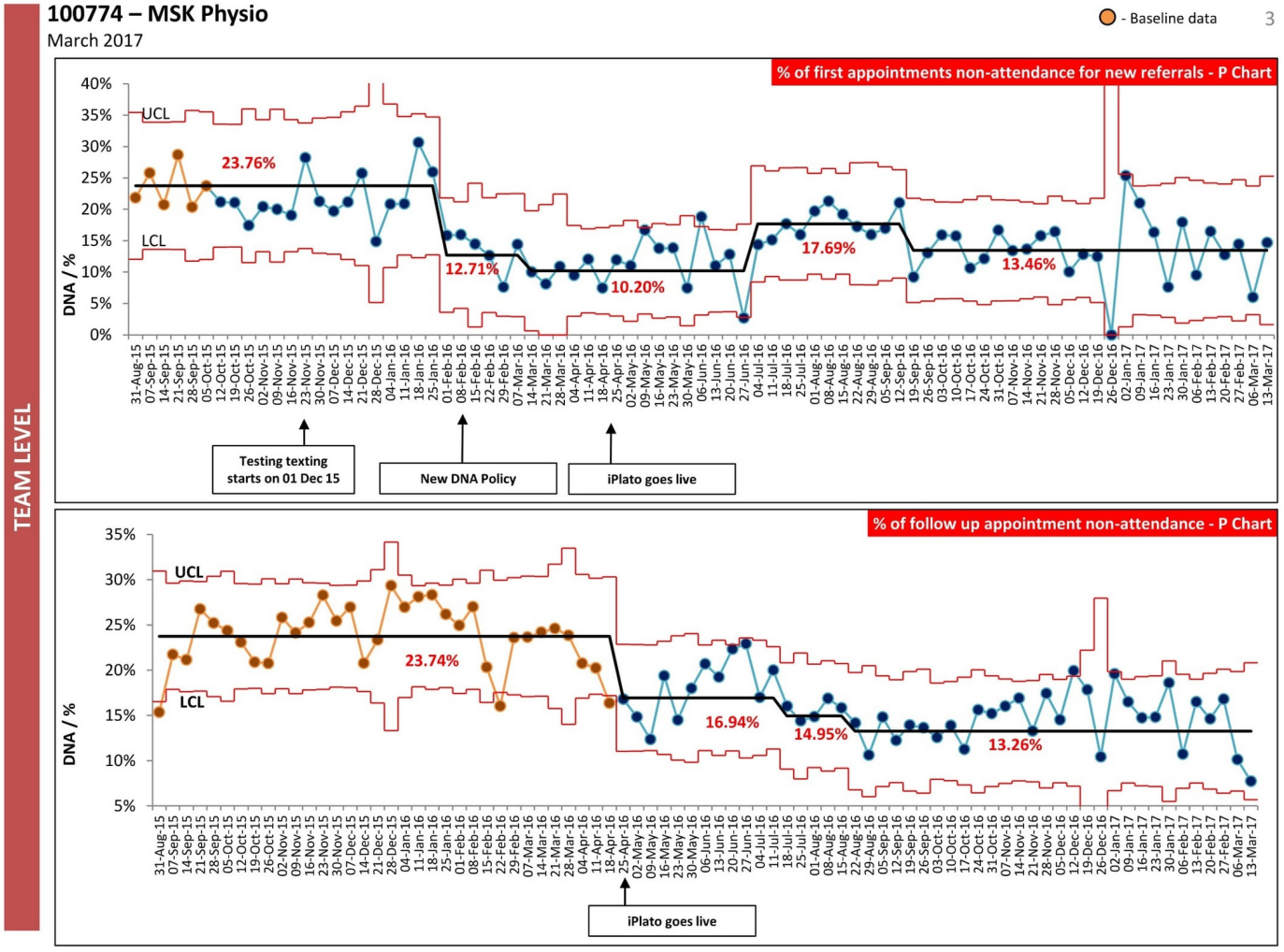


**Figure 2** Effect of interventions on % appointments not attended. DNA, did not attend. UCL, upper control limit. LCL, lower control limit.

message reminders tested with only new referrals not follow-up appointments.

### Plan

Send reminders via an automated text message reminder system (iPLATO) with all appointments booked with the MSK Physio service from 25 April 2016. This text message reminder system will generate and send messages based on the information on RiO. The text messages would be sent at the point of booking, and a further message sent 2 days prior to the appointment.

Data on new referrals and follow-up appointments would be analysed separately.

### Prediction

Following the introduction of automated text message reminders, the service will sustain their improvements in new referral DNAs and achieve a reduction in follow-up appointment DNAs.

### Do

iPLATO was tested on both new referral appointments and follow-up appointments.

### Study

Results showed an initial increase (10.2% in April 2016 to 17.69% in July 2016) before a steady decrease to 13.46% by March 2017 in DNAs in new referrals, and a decrease in DNAs in follow-up appointments by 44.14% (23.74% in April 2016 to 13.26% in March 2017).

### Act

Continue with the same PDSA using automated text message reminders to see if improvements are sustained in both new referral and follow-up appointments.

## RESULTS

A baseline period of assessment was carried out from August 2016 to collect data prior to any interventions. There was then ongoing data collection following this period, as the PDSA cycles were undertaken. DNA rates fluctuated throughout the data collection period, however run charts enabled averages to be drawn up to see the overall impact of the PDSA cycles (figure 2).

The first PDSA cycle resulted in an initial reduction of DNAs of newly referred patients by 57.1%

(23.76%–10.2%). These rates were relatively sustained following the second PDSA cycle (10.2%–13.46%). This therefore showed an overall reduction of DNAs in newly referred patients of 43.35% (23.76%–13.46%)) over the course of 19 months.

Follow-up appointment DNA rates were also reduced by 44.14% following implementation of the second PDSA cycle alone (23.74%–13.26%).

The data were visualised on a She what (control) chart and analysed using standard healthcare rules.[8]

## LESSONS AND LIMITATIONS

The aim of this project was to reduce the percentage of appointments not attended by patients. There was no specific target percentage but the aim was for a generalised overall reduction. The main strength therefore of this project was that the changes implemented did fulfil this objective as shown by the results. Further strengths included PDSA cycles which were simple to execute and understood by all members of staff. Furthermore, the data were collected thoroughly and accurately to produce the desired results.

A key lesson learnt from this project is that it is important to listen to service users to understand the weaknesses in a system and targets for improvement. The main complaint from patients was in regards to the patient booking system, and therefore by focusing on improving this, it was possible to reduce the rate of appointments missed.

However, there were also several limitations to the study. One limitation is that the study has so far only been implemented for 19 months. It is important to continue this into the future to see if non-attendance rates are sustained, fall further or begin to increase again. Between June and July 2016, there was a slight increase in DNA rates of new referrals; this is likely to be an anomaly. However, continuing the study would allow us to determine whether the changes this study has made are sufficient to ensure permanent change or whether further PDSA cycles are needed to embed the changes.

Another limitation is that not all appointments missed were due to problems with the appointment booking system; there may also be human factors affecting results. For example, over the Christmas and New Year holiday period, there are two anomalous results. The first is a low percentage of DNAs for new referrals. This may be explained by the service booking fewer new patient appointments around the holiday period as people are often away or busy; it is important to begin engaging well with a new patient. Conversely, there is a high percentage of DNAs for follow-up appointments during the same holiday period. This may be because follow-up appointments are booked a designated time apart and therefore the holiday season is not always considered. Limitations related to human factors such as this cannot be solved by the changes implemented in this project alone and there is therefore potential for further methods to be explored.

As detailed above, previous publications have described the use of telephone voice calls and altering the text message content to improve attendance rates. Neither of these methods were trialled in this project and therefore this could be the next step to improve results further.

## CONCLUSION

Missed appointments have been a challenge for health services for years. This project aimed to reduce non-attendance at appointments at this MSK service by implementing two main changes to the patient appointment booking system: manual text messaging and automatic messaging. The time lag between the text message and appointment meant patients were given adequate notice of their appointment before the date and gave them enough time to change their appointment if it was unsuitable.

Following the implementation of these changes, it can be concluded that there was a marked reduction in the percentage of appointments missed by patients.

The reduction in non-attendance achieved by the service equates to 56 appointments a week which patients are now attending. This is an improvement in efficiency and productivity of 23 hours per week. The improved attendance has also released capacity for service users, as fewer repeat appointments are now required for those who did not attend their original appointment.

Data will now continue to be collected by the team to determine whether this reduction is permanent or whether further work still needs to be done. Nevertheless, these interventions have thus far produced good results in keeping with previous research, showing potential for them to be used by other health departments both nationally and internationally.

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**Contributors** ET: designed and conducted the project analysis and write-up. AS: was involved in supervising the project and the write-up. MH: was the project lead. WDS: was the deputy project lead. CC, MO, MS and MM: were involved in designing and implementing the project. AC and EB: are members of the central QI team who provided coaching to the project team.

**Competing interests** None declared.

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