Improving Wait Times at the Cambridge University Hospitals’ Accident & Emergency Department

Teaching Notes

Author: Joshua Oppenheimer, Jane Davies & Stefan Scholtes
Online Pub Date: January 02, 2018 | Original Pub. Date: 2017
Subject: European Business, Operations Management, Health Care Management
Level: Intermediate | Type: Experience case | Length: 3475 words
Copyright: University of Cambridge, Judge Business School. © 2017. All rights reserved.
Organization: Cambridge University Hospitals | Organization size: Large
Region: United Kingdom of Great Britain, Northern Ireland | State:
Industry: Human health activities

Originally Published in:
Publisher: University of Cambridge, Judge Business School
DOI: http://dx.doi.org/10.4135/9781526439185 | Online ISBN: 9781526439185
Improving Wait Times at the Cambridge University Hospitals’ Accident & Emergency Department
Teaching Notes

Overview

This case describes the impact of the National Health Service’s wait-time target on the performance of Cambridge University Hospitals. The target stipulates that 95 percent of patients presenting to the Accident & Emergency department should be discharged within four hours of arrival. – The case describes the arc of a patient’s journey from arrival to discharge, the way that each patient’s encounter is documented in the electronic medical record, and the hospital’s approach to improving performance on this target.

The case is intended for learners in two settings: management and healthcare. Within a business school, this case could be used in courses on operations, data analysis, or performance improvement. The case could also be used in an executive education program for physicians and healthcare administrators. The case addresses the following themes:

1. Determining which data should be evaluated to understand a problem
2. Exploring the relationship between performance targets and staff behaviour
3. Distinguishing between the emergency department’s overarching goals (optimizing health outcomes and patient experience) and process goals (decreasing waiting, increasing efficiency)

Bonus Appendix Instructions

This case is intended to be distributed in two phases. First, students should receive the case without the bonus appendix. Students should begin their discussion of the case within small groups. The instructor should ask the students, “Do you have enough information to understand wait times in the A&E department? If you don’t, your instructor may be able to provide you with additional information.” After discussing the case and what data they should request, each group may send a representative to request additional data. If a student asks for the distribution of patient wait times among those patients that do not breach the four-hour wait target, they should be given a copy of the bonus appendix, which they can then analyse within the small group.

Suggested Assignment Questions

1. What patient data are the quality improvement committee not currently analysing that would more fully describe patient wait times?
2. How has the four-hour wait-time target affected the culture among the staff? What behaviours has this target incentivized, and what activities has it discouraged?
3. What are the most important goals of the A&E? In what ways are these goals in tension with one another?
4. How should Dr. Mills approach his presentation to the quality improvement committee? What suggestions should he make regarding A&E staff operations? What suggestions should he make regarding the quality improvement process itself?

Analysis of Issues

Context of the four-hour wait-time target within public policy and politics
The starting point of discussion is the NHS’ rationale for the four-hour wait time target. It is notable that this target was not implemented on the basis of clinical data demonstrating that patient safety improves when patients are discharged from the emergency department in under four hours; indeed no such data exists, and policy makers could have selected either three or six hours as a target instead. Improving patients’ service experience is a goal distinct from improving health outcomes. The target emerged from the political imperative of improving patients’ customer service experience in a way that would be measurable, ambitious, and achievable.

Students can also discuss how the NHS’ methodology of assessing wait-time performance is only one of many ways of doing so. The NHS could alternatively adopt many variations on the wait time target, including the three described in the table below, each of which roughly correlate with the stringency of the current policy. Students can propose different ways that the NHS could measure wait-time performance. Students can also propose what criteria should be used to consider the strengths of possible targets. For example, an ideal target would not be heavily influenced by outlier patients; would provide clear expectations for patients about the likely wait times; minimize distortions to staff behavior; and be simple to measure, understand, and discuss for those affected by the policy and those involved in process improvement.

As the below table shows, these criteria are in tension with one another, requiring policy makers to make tradeoffs. To combine positive features of multiple target types, multiple targets could be used simultaneously, though doing so would add complexity that could be confusing for all stakeholders.

<table>
<thead>
<tr>
<th></th>
<th>Minimizes effect of outliers on hospital performance</th>
<th>Provides clear expectations for patients</th>
<th>Minimizes distortion to staff behavior</th>
<th>Simple to measure, understand, and discuss</th>
<th>Clinically relevant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Success rate target (current policy):</strong> e.g. wait until discharge is under four hours, excluding the 5 percent of patients with the longest stays</td>
<td>+ +</td>
<td>+ +</td>
<td>− −</td>
<td>+ +</td>
<td>− −</td>
</tr>
<tr>
<td><strong>Average wait target:</strong> e.g. average wait until discharge is under three hours</td>
<td>− −</td>
<td>−</td>
<td>+ +</td>
<td>+ +</td>
<td>− −</td>
</tr>
<tr>
<td><strong>Hybrid target:</strong> e.g. average wait until discharge is 3.5 hours, excluding the 5 percent of patients</td>
<td>+</td>
<td>− −</td>
<td>+</td>
<td>−</td>
<td>− −</td>
</tr>
</tbody>
</table>
with the longest stays

| Clinical target: e.g. initial diagnosis and treatment is under four hours for all patients | − | + | − | − | + | + |

The effect of measurement on organisational culture

The crux of this case is understanding how management toward a target affects operations in a service industry. Even though staff are not individually evaluated based on the hospital’s performance on the four-hour target – let alone motivated by financial bonuses for good performance against the target or threatened with dismissal for poor performance, as is seen in many corporate environments – the four-hour target has permeated the culture of the emergency department, as well as the culture of the quality improvement committee.

The example of the A&E nurse who made a series of phone calls to the hospital ward in an attempt to admit the patient in less than four hours illustrates how the target can come into tension with the primary goals of optimizing patients’ safety and experience. Such behavior not only distracts staff from achieving these primary goals, but also can negatively impact other departments. The A&E nurse’s repeated calls required the time and attention of the hospital ward nurse she was calling, impairing the ward nurse’s capacity to carry out her own patient-related duties.

The intense focus on meeting the four-hour target is even more explicit at the level of the quality improvement committee. While the committee purportedly aims to reduce patient wait times by identifying and implementing process improvements, in practice the committee focuses on the related but distinct goal of increasing the proportion of patients discharged in under four hours. Within this binary framework, the committee seeks to identify opportunities to slightly reduce wait times for those patients who are discharged in just over four hours, but are less likely to engage in efforts to discharge some of the most straightforward patients in two hours instead of three, or, at the other end of the spectrum, attempt to reduce the stays of the most complicated patients from eight hours to six hours, since neither achievement would directly improve the four-hour success rate. The committee’s failure to even examine the distribution of wait times among patients with stays under four hours demonstrates this lack of attention.

The irony of this four-hour myopia is that reducing wait times among patients with stays significantly shorter or longer than four-hours could indirectly improve performance on the four-hour target. Discharging such patients more efficiently would free up scarce resources – clinical staff and emergency department beds – which can be used to decrease wait times for those patients on the cusp of a four-hour discharge.

Priorities of the A&E

What are the highest priorities for the emergency department, from the patients’ perspective? While the length of wait is important, students will note that the quality of care, specifically making accurate diagnoses and implementing life-saving interventions, are higher priorities. Beyond the quality of care, students will also note the importance of patients’ experience, such as staff kindness and clear expectations.
True wait times vs perceived wait times

While the hospital is evaluated based on the actual wait times of its patients, patient satisfaction is more closely tied to perceived wait times. A review of research into the psychology of waiting in the emergency department by Soremekun et al. describes five elements that affect perception of wait time:\(^1\):

1. Service environment design
2. Early interactions during the wait period
3. Occupied vs unoccupied time
4. Uncertain waiting time vs known, finite waiting time
5. Early process initiation

Improving patients’ perception of wait time can generate greater improvement in patient satisfaction than shortening actual wait times. Improving perception of wait times can also be easier to achieve, considering the practical challenges of reducing waiting related to finite staff and hospital beds. Accordingly, while the committee must improve actual waiting time in order to improve performance on the target, it is also worth independently considering approaches that can improve the patient experience.

One example from the case that is particularly salient is the patient who was waiting in the waiting room with untreated pain. From the perspective of this patient, reducing the time to treatment (i.e. providing pain medication) was far more important than reducing the time to discharge. Additionally, for patients in distress, uncertainty about wait times can amplify anxiety.

The missing data from the patient wait time distribution

Securing the right data is often the most difficult and most important step in conducting data analysis. At its weekly meeting, the quality improvement committee was presented with the distribution of patient wait times among only those patients who had breached the four-hour wait-time target (Figure 6). The committee’s reason for analysing these data seems reasonable at first, but does not withstand scrutiny. Since the committee wanted to understand how to improve wait times among those patients who breached the four-hour target, the committee examined the wait times of these patients. The problem with this approach, as some students will deduce, is that those patients who waited longer than four hours are a subset of the broader group of all patients. The subset of breached patients was not differentiated from patients with stays under four hours at the beginning of the process, but only became a distinct subset after the fact. In order to best understand patients’ journeys through the emergency department, the committee should consider relevant data from the full group of patients.

Once students are able to see the full distribution of patient wait times (Bonus Appendix), discussion will turn to what the distribution shows. Several points are evident when examining this distribution:

1. The distribution provides a richer view of patient wait times than the original chart (Figure 6), which only shows those patients with waits greater than four hours.
2. Relatively few patients are discharged in under 3 hours 30 minutes. There are two possible explanations, either or both of which would be consistent with this finding.
First, it could be the case that it is extremely difficult to complete the full journey in under 3 and a half hours. Second, it could be the case that staff do not prioritize completing a patient’s visit until the four-hour mark approaches.

3. A very large proportion of patients are discharged between 3 and a half and 4 hours which is consistent with attempts to discharge patients under 4 hours.

4. There is a dramatic drop in the number of patients discharged between 4 and 4 hours 30 minutes, compared with those discharged between 3 hours 30 minutes and 4 hours. This could be due to mobilization of staff to ensure that patients on the cusp of a four-hour discharge meet the target. It could also be amplified by staff clicking discharge orders on the electronic record just before four hours for some patients whose stays are actually slightly longer, in order to meet the target.

5. There is an increase in patients who are discharged between 4 hours 30 minutes and 5 hours, compared to those discharged between 4 hours and 4 and a half hours. This is consistent with some patients being discharged in less than four hours due to increased staff effort and/or data manipulation for patients on the cusp of four hours, as discussed above. This is also consistent with potentially decreased staff effort to complete discharges for patients who have already missed the four-hour target.

Are the available data accurate?

When considering any data, a fundamental question that is often overlooked is whether the data are accurate. The process element timestamp data set (Figure 5) is a good example of data that do not provide actionable insights due to their poor quality. As described in the case, the electronic record captures timestamps upon completion of each process element. These timestamps, however, bear little resemblance to the underlying activities in the A&E. For example, clinicians frequently complete a clinical evaluation of a patient long before writing the patient note. This means that the electronic record will often suggest that the evaluation took longer than it did in reality.

One proposal to improve the quality of data would be to change the process of data recording by existing staff, such as by having nurses record when a clinician evaluates a patient. Since additional recording requirements invariably increase staff workload, this can lead into a valuable discussion about the tradeoffs between capturing better data for quality improvement purposes versus keeping processes as simple as possible for staff.

A second proposal would be to hire external consultants or researchers to meticulously record process data for a limited time period in order to gather accurate data for analysis. This approach might provide more actionable data without overburdening staff, but there are also several drawbacks: direct cost might make this difficult for the committee to implement; consultants would have to return in the future to evaluate process improvement over time; and staff members may behave differently when they know they are being observed.

Process Mapping

One option for a classroom activity is to create a detailed map of the processes involved in ushering a patient through the emergency department. Students can create process maps individually, within small groups, or as a full group. This case offers an opportunity to practice the skill of process mapping, but more importantly it opens a discussion of how the tool can be used within process improvement efforts. The map provides a framework to:

1. understand the underlying process’ elements
2. determine what data need to be measured in order to identify bottlenecks
3. redesign the process to improve outcomes

Below is an example of a simplified process map derived from the case:

Students may notice that this process map is more detailed than the process map posted in the emergency department waiting room for patients (Figure 3). The two maps have different functions: A process map created for process improvement helps break down a complex process into discrete components; a process map created for communication with patients and families helps simplify a process to clarify expectations. Process maps with different functions can and should present the same underlying information in different ways.
Capturing all voices in process improvement

In addition to discussing how the quality improvement committee analyses patient data and how the committee encourages management to the target, students may also raise suggestions for how the quality improvement committee itself could better function and better incorporate staff feedback.

Possible suggestions include:

1. The committee meets at a time when the data analysts compiling the report are not available to attend the meeting. This could be addressed by simply moving the weekly meeting to a time of week that is less busy for the data analysts. More ambitiously, in order to address the underlying problem of the weekend data backlog itself, the data analyst position could be staffed all seven days of the week – reflecting the reality that demand for the emergency department does not diminish on weekends – or the position could continue to be five days per week (avoiding a cost increase), but the off days could be split (e.g. Sundays and Thursdays off) to reduce the magnitude of backlogs created by off days.

2. The committee does not incorporate feedback from all staff positions. The security guard, as a prime example, observes process flow in the waiting room as part of his primary responsibility, yet he is not asked to share these observations with the quality improvement committee. Similarly, receptionists and other ancillary staff do not serve on the committee.

3. The committee does not review direct feedback from patients and their families as part of its weekly meeting, removing the customers’ voices from the conversation.

Gathering qualitative insights from all available perspectives is an inexpensive way of improving the committee’s understanding of emergency department operations, while simultaneously holding the potential to improve staff morale and customer satisfaction by demonstrating an interest in these stakeholders’ views.

Perception of bed availability

Figure 5 clarifies the extent to which scarcity of available hospital ward beds delays the transfer of patients from the A&E to the wards. Staff members believe that bed availability is a major cause of four-hour breaches. The data are not consistent with this assumption. For those patients with a documented bed delay, the time from senior review to discharge is indeed 50 minutes longer, on average, than for those without documented bed delays (105 minutes for those with bed delays vs 55 minutes for those without). However, students may note that the total wait times among patients with documented bed delays is 370 minutes, which is well beyond the four-hour wait target.

Even if the bed delay problem were to be solved (imagine that the time from senior review to discharge were reduced from 105 minutes to 55 minutes), the average wait time would be 320 minutes, which is still 80 minutes longer than the four-hour target. This finding provides evidence that bed delays exacerbate delays among patients with the longest stays, which is a serious problem worth addressing. This finding also shows, however, that it is unlikely that many patients breach the four-hour target due to bed delays alone.

The reason that only those patients who have breached the four-hour target are included in this table is that staff do not typically document reasons for delays in those patients who do
not breach the target. Collecting reasons for delays among all patients would also be a useful step for improving the quality improvement process.

Electronic medical record

Students may wish to discuss ways in which the electronic medical record could be changed to reduce patient waiting time. For the protagonist of the case, a chief resident, implementing changes to the electronic medical record is not within his scope.

The initiation of the electronic record correlated precisely with worsened performance against the four-hour target (Figure 7). Students may discuss why the electronic record worsened delays and how change management approaches such as piloting can minimize such disruptions to operations.

One key insight from an operations-management perspective is that exogenous stresses to a system can exacerbate its underlying weaknesses. As such, the culture in which wait-time durations are considered either successes or failures was amplified when performance against the target worsened. At a time when effective operations are most crucial, the distractions associated with the four-hour target might cause the most damage to performance.

Note


http://dx.doi.org/10.4135/9781526439185