

The TTO Journey: How Much Of It Is Actually In Pharmacy?

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Summary

This paper:

- describes the long-standing issues that hospital pharmacies face in processing discharge prescriptions
- describes work carried out and breaks down the timings for each stage of the process to generate a dispensed discharge prescription
- indicates that almost 90% of discharge medication processing time takes place before the prescription reaches Pharmacy
- reports that understanding each stage in process changes the focus on discharge medication, from the dispensary to the ward where the biggest gains in efficiency can be made.

Introduction

The issue of discharge prescription - also referred to as To Take Out (TTO) or To Take Home (TTH) - turnaround times and delays at discharge because of processing times in hospital pharmacies, is a long standing issue for many Trusts in the United Kingdom. A recent Care Quality Commission report identified in a national survey that, of the respondents who said that on the day they left hospital their discharge was delayed, most (62%) said this was caused by 'waiting for medicines', which was up from 60% in 2011.¹ While some hospitals have instituted 'lean' processes with significant success,^{2,3} for many this remains a problem. At the Countess of Chester Hospital NHS Foundation Trust, the number of TTOs being turned around

within its internal Key Performance Indicator (KPI) target has significantly improved following the introduction of basic lean concepts, but it remains a thorny issue. Patient feedback to the Trust suggested that their inpatient stay was, on the whole, a positive experience but the Trust failed to continue that through to the day of discharge because they had to wait for medicines. In a number of cases, the patient experience (see Box 1) implies perceived inefficiencies on behalf of the Pharmacy Department but actually reflects inefficiencies in the whole discharge pathway. In many cases, investigations identify that Pharmacy was not the cause of the delay.

Based on feedback from patients, and a continual perception that Pharmacy rather than the whole discharge process was the issue, an audit was carried out to follow the progress of discharge prescriptions and to ascertain how much of the discharge prescription journey was actually spent in Pharmacy.

Objectives

The objectives of the study were to process map the TTO journey from the point at which the patient is told they can go home to the point at which the TTO has been dispensed and to calculate the proportion of time a TTO spends between each point on the process map.

Methods

All TTOs issued during a 5 day working week were followed up and data were collected for each point in the journey; each stage is described in Table 1. The first time point began when the patient reported they had been informed they could go home. Further data points were collected from the electronic prescribing system (Meditech 5.6.4) which holds an electronic record of when:

- the prescription order entry was completed - the system can report the date and time the last prescription item required for that patient was 'flagged' for a TTO

The Trust received feedback that a patient had waited 8 hours for Pharmacy to dispense their prescription. Investigation showed that the patient was told at 8:30am that they could go home that day, and yet the prescription was not received by Pharmacy until mid-afternoon. The prescription was processed by Pharmacy within an hour and returned to the ward on the next portering run. Although Pharmacy had met its turnaround target, the patient's perception was that the prescription had been in the Pharmacy since early morning and it had taken several hours for it to be dispensed. This perception then clearly impacted on the patient's day of discharge experience and on the reputation of the Pharmacy Department.

Box 1: The patient experience

- the prescription was printed – this is printed in the header of the TTO form
- the prescription arrived in Pharmacy – this is electronically recorded in the prescription tracker system
- the prescription was completed and therefore ready to return to the ward – this is manually recorded on the prescription form at the time of the

final prescription check and added to the prescription tracker by the pharmacy receptionist.

Data were entered into and analysed using Microsoft Excel. Ethics approval was not required as this was an observational study of current practice.

Results

Of the 253 TTOs dispensed over the 5 day period, full data were collected for 172 (70%) patients who were due to be discharged from hospital. For the 30% who could not be included, 10 (4.0%) patients were asleep, 33 (13.0%) patients had not been told they were ready for discharge even though their TTO had been written and sent to Pharmacy, and 38 (15.0%) patients were unavailable. Due to the number of outliers, results are presented as the range, inter-quartile range and median in Table 1.

Figure 1, which uses total time data, shows the breakdown of each stage of the TTO journey for all of the TTOs studied during the project as a percentage of overall time. Of the whole TTO journey, only 13% is spent in the Pharmacy Department.

To reduce the influence of outliers, the same breakdown is shown in Figure 2 for the TTOs in the interquartile range. In this figure, 35% of the TTO journey is spent within the Pharmacy Department - almost two thirds of the process takes place before the prescription reaches Pharmacy.

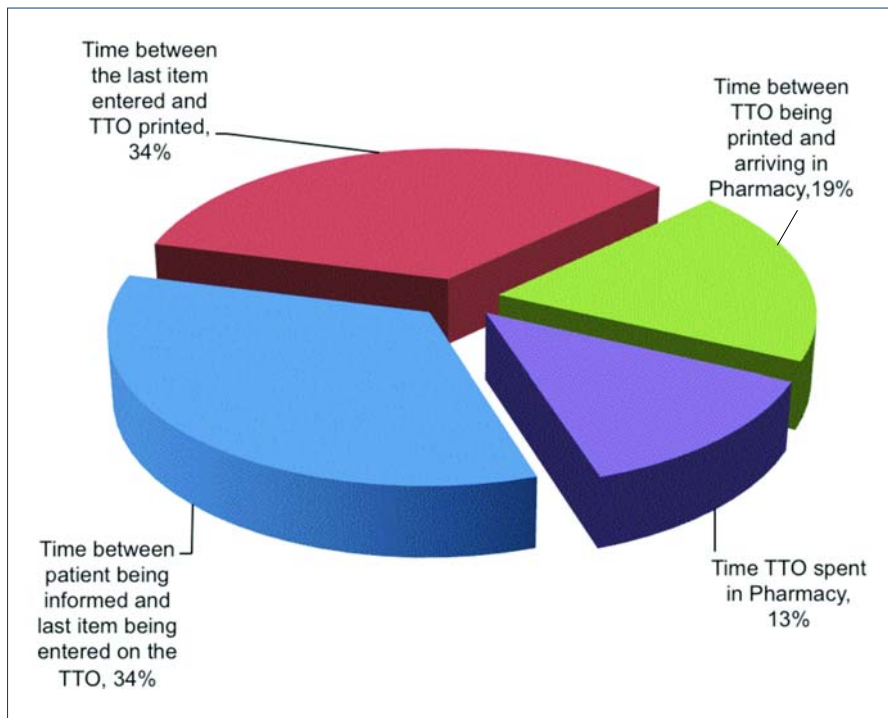


Figure 1: Percentage time TTOs spent in each process of the TTO journey

Process	Range	Inter-quartile range	Median	Total time
Start: patient is informed that they can go home End: last TTO item is entered	-1421 to 1409	10 to 173	64	31311
Start: last TTO item is entered End: prescription is printed	02 to 1431	1 to 42	5	31171
Start: TTO is printed End: arrival in Pharmacy	2 to 1426	12 to 42	22	17327
Start: TTO arrives in Pharmacy End: TTO is completed	02 to 216	38 to 100	60	11943
Overall journey	-4 to 2020	95 to 260	170	91752

1. Some patients were told that they could go home after their prescription had been entered onto the system, thus the range begins at -142 minutes.
2. Some prescriptions did not require any items to be dispensed or were completed on the ward.

Table 1: TTO timing exercise results (n=172). All figures refer to time in minutes.



I wonder why it is taking so long for my discharge medication to be ready?

Discussion

Findings

By studying the end-to-end process for the production of a completed discharge prescription, it is possible to gain significant insight and clarity into which elements of the process are responsible for delays experienced by patients. Our

study clearly demonstrates that the greatest opportunities for reducing these delays lie in the process steps leading up to the arrival of a prescription in the Pharmacy Department. The fact that 13% of the total TTO journey time for all of the TTOs scrutinised is spent in Pharmacy is influenced somewhat by the outliers seen in the three stages preceding arrival in

Pharmacy. However, it is most likely these outliers that generate the majority of patient dissatisfaction.

Step 1: The patient is told they can go home to the last prescription item is entered

The results show that a quarter of patients wait almost three hours to have their discharge prescription written and half wait just over an hour from the time they are told they can go home. Significant delays are generated from this step and the reason lies largely in the traditional operation of a ward round. In many cases the consultant ward round will move from patient to patient, during which time the attending junior medical staff will start collating a list of tasks to complete. In some cases, these will be completed during the round, and in others they may be completed at the end of the round. For morning ward rounds, their length may be such that, immediately afterwards, junior medical staff are required to attend lunchtime teaching sessions during which they are not to be disturbed. This means that some tasks, for example writing TTOs, may not be

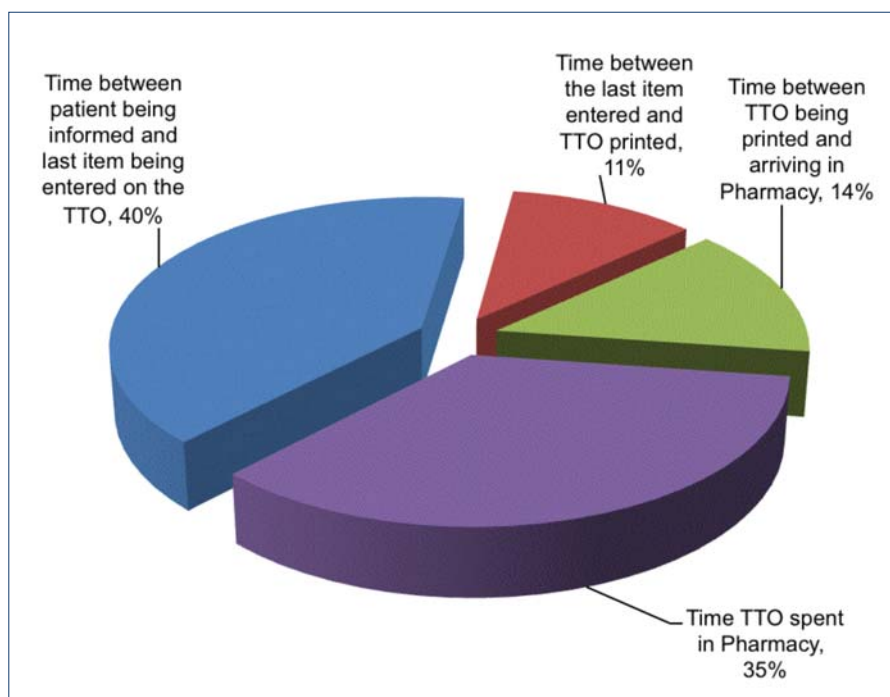


Figure 2: Percentage time TTOs spent in each process of the TTO journey - interquartile range

commenced until the early afternoon despite the patient's expectation that their prescription is in Pharmacy. Clearly, it might be considered good practice for junior medical staff to generate TTOs as part of the ward round and at the time the patient is told they can go home. This also allows for a discussion with the patient and clinical team if there are any medicines related issues that need a post-discharge plan, for example titration of heart failure medicines or setting up Outpatient Parenteral Antibiotic Therapy. From a lean perspective, the vast majority of time taken up by Step 1 of this process could be categorised as one of the 7 lean wastes⁴ – 'waiting'. It would be oversimplistic to suggest that once patients are told they can go home, their discharge medication should also be finalised. For example, a patient's warfarin dose, duration of antibiotic prescription or titration of ACE inhibitor may need to be finalised closer to the point of discharge - this has been reported by others looking to improve the availability of discharge medication.⁵ There is therefore a trade-off between getting the patient's prescription ready as early as possible once a discharge decision has been taken and not requiring last minute changes that would require a prescription to be re-dispensed, which would generate waste. Many

hospital pharmacists attend ward rounds and may complete TTOs as required while the ward round progresses but this can require significant resources across a whole hospital and a targeted approach may be required. In some hospitals, the preparation of discharge prescriptions is a role taken on by ward technicians. In others, ward pharmacists working with ward technicians, as illustrated in Box 2, can work with ward based medical teams to get TTOs ready independently of ward rounds.

Step 2: The last prescription item is entered – prescription is printed

The results show that a quarter of patients' TTOs are printed almost 45 minutes after the last item was entered while for at least half of the TTOs studied this was completed in five minutes or less. In terms of the practical process this is probably because it is a natural progression for the prescriber to print the prescription at the same time as entering the last item while they are using that part of the prescribing system. This is reflected in a median of 5 minutes for this measure and a comparatively narrow inter quartile range. Ideally, the prescription would be transmitted electronically to Pharmacy once prescribed and completed.

However, in our Trust and others, the prescribing system (Meditech 5.6.4) and the dispensing system (JAC) are not integrated or connected via an interface and thus a paper prescription is required. Again, from a lean perspective, time spent in this process is entirely regarded as 'waiting' waste.

Step 3: The prescription is printed – the prescription arrives at Pharmacy

The results show that a quarter of prescriptions arrive within the Pharmacy Department within 15 minutes of being printed and almost half within 20 minutes. The time associated with the need to print prescriptions and send them to Pharmacy is a process issue which arises from having a separate e-prescribing system and Pharmacy stock control and dispensing system. It is also exacerbated by the, in our view correct, approach Pharmacy takes to screening prescriptions on wards to ensure that they are correct before sending them to the Pharmacy Department. At ward level, the ward pharmacist is able to check the prescription for clinical issues and make appropriate endorsements where necessary. This is particularly important as dealing with errors in the dispensary remotely from the patient is both more difficult and impairs flow of work through the dispensing process. Similarly, the ward technician is able to assess the patient's own medicines supply and make endorsements regarding what is required or not required from the pharmacy dispensary. A prescription can be delivered to Pharmacy by a number of routes – air delivery tube, hand delivered by ward staff or as part of a scheduled porter's run. Although this step delays the arrival of the prescription in Pharmacy, the delays are proportionately small in comparison to steps 1 and 2. However, an integrated e-prescribing system, which can be verified at ward level, and electronically dispatched to a dispensing point, be that at ward level or in the main pharmacy dispensary, will largely remove this stage of the process.

On the maternity ward at COCH, a pharmacist and ward technician have an allocated cupboard on the ward which contains stock for dispensing discharge prescriptions. The Pharmacy and ward staff work as a team such that each morning, discharge prescriptions are prepared by the medical team, and these are then checked by the pharmacist and dispensed by the technician. The prescriptions rarely need to go to Pharmacy at all, the pharmacist is on the ward and can quickly tackle clinical queries and the ward technician can confirm with the patient if supplies of medicines are required.

This means that the prescriptions are processed quickly and from a 'lean' perspective there is little time in the process where the prescription is either waiting or being transported. Patients on the maternity ward then have their prescriptions ready early in the day, and this means they can take their new baby home at a time that suits them.

Box 2: The patient experience

The Trust's main electronic hospital management system is due for replacement in the next few years, and integration between the e-prescribing and pharmacy system and allowing prescriptions to be sent electronically to Pharmacy for dispensing will be high on the agenda.

Step 4: The prescription arrives in Pharmacy – the prescription is complete

The results show that a quarter of TTOs are processed in Pharmacy within 40 minutes and half within an hour. The pharmacy dispensary operates in the traditional manner – prescriptions are received by a clinical pharmacist who approves them for dispensing; prescriptions checked by a pharmacist on wards bypass this stage and go straight through for dispensing. The prescription is then dispensed by a technician or dispensing assistant technical officer, and then checked by either a pharmacist or an accredited checking technician. Although value is added at each of these stages, there is also an element of waste again through the prescription 'waiting' between each stage. This waiting time is exacerbated by problems which impair flow in the dispensary 'production line', for example, stopping the clinical pharmacist check process because of an error that requires them to contact the prescriber, work arriving in large batches or having to locate or order missing stock.

Limitations

The study does not include time taken to deliver TTO prescriptions back to wards. This was because of the number of difficulties of tracking prescriptions via a number of delivery routes. Due to the complexity and logistics of data collection, not all patients were included in the study. However, a large data set, representing 70% of TTOs processed during that week, should give a reasonably robust indication of the issues raised by the TTO process. Finally, the study relied on the patient accurately reporting when they were told they were ready for discharge and it is possible that, in some instances, this may not have been the case and they may have reported it inaccurately.

Conclusion

In order to understand the efficiency of a process and identify opportunities for improvement, it is important to do so with data and a deep understanding of the processes and steps involved. The production and processing of TTOs is no different. It is clear that once a patient has been told that they can go home, their expectations of an imminent discharge from hospital are raised and it is important to understand the whole TTO journey and how, added together, this can contribute to patients having a somewhat negative experience of their last day in the hospital. This audit has

highlighted that discharge delays relating to availability of medicines at discharge result from a combination of events, not solely and not primarily within Pharmacy. Most of the significant opportunities to reduce the delays in delivering discharge medication to patients lie between the point at which the patient is told they can go home, and their discharge prescription either being ready on the ward for the pharmacy team to process or in being delivered to the pharmacy dispensary. Based on experience to date, it is unlikely that leaving this problem in the hands of medical staff will significantly improve the process of generating TTOs. Pharmacy teams need to be properly resourced to take ownership of the TTO process from the moment it is decided that a patient can go home. Having pharmacists and pharmacy technicians linked in to ward rounds with a view to prescribing, transcribing and dispensing discharge prescriptions when needed will significantly reduce the time patients wait for medicines, improve their experience, reduce errors⁶ and help patient flow through the hospital system. Hospital managers must, however, resist the temptation to make TTOs the ward pharmacy team's sole focus – medicines reconciliation and medicines optimisation remain hugely important aspects of the pharmacy team's role.

Declaration of interests

- None.

“... discharge delays relating to availability of medicines at discharge result from a combination of events, not solely and not primarily within Pharmacy.”

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