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RESEARCH ARTICLE

# Exploring the time required by pharmacists to prepare discharge medicine lists: a time-and-motion study

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## Abstract

**Background** Discharge medicine lists provide patients, carers and primary care providers a summary of new, changed or ceased medicines when patients discharge from hospital. Hospital pharmacists play an important role in preparing these lists although this process is time consuming.

**Aim** To measure the time required by hospital pharmacists to complete the various tasks involved in discharge medicine handover.

**Method** Time-and-motion study design was used to (1) determine the time involved for pharmacists to produce discharge medicine lists, (2) explore how pharmacists utilise various software programs to prepare lists, and (3) compare the time involved in discharge medicine handover processes considering confounding factors. An independent observer shadowed 16 pharmacists between 22 February and 12 March 2021 and recorded tasks involved in 50 discharge medicine handovers. Relevant information about each discharge was also collected.

**Results** Pharmacists observed represented a range of practice experiences and inpatient units. Mean time to complete discharges was 26.2 min (SD 13.6), with over half of this time used to check documentation and prepare discharge medicine lists. A mean of 4.0 min was spent on manually retyping and reconciling medicine lists in different software systems. Medical inpatient unit discharges took 4.6 min longer to prepare compared to surgical ones. None of the 50 discharges involved support from pharmacy assistants; all 50 discharges had changed or ceased medicines.

**Conclusion** There is a need to streamline current discharge processes through optimisation of electronic health software systems and better delegation of technical tasks to trained pharmacy assistants.

**Keywords** Hospitals · Medication reconciliation · Medicine handoff · Patient discharge · Pharmacist · Pharmacy

## Impact statements

- Pharmacists spend over half of the time involved in the discharge process on checking and preparing documentation using electronic health software.
- Failure to streamline electronic health software may result in a reduced number of discharge medicine lists being produced, with less patients and primary care clinicians alerted to medicine changes during hospital admission.
- Hospitals may need to review how implementation of electronic health software impacts upon pharmacists' discharge workflow processes.
- Data-entry tasks should be delegated to pharmacy assistants to enable pharmacists to spend more time on clinical tasks as this could impact the quality and safety of patient care.

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## Introduction

Patients who are on regular medicines often have changes to their medicines during hospital admissions [1]. Upon discharge, these changes need to be communicated to patients, carers, general practitioners (GPs), community pharmacies and other relevant primary care providers to facilitate continuity of care [1, 2]. Discharge medicine lists serve as a critical tool to communicate medicine changes made during hospital admission to both patients and primary care providers [3], hence are essential in reducing medicine related harm (MRH) and alleviating the burden on healthcare systems [4]. Delayed, inaccurate or incomplete communication between hospitals and primary care clinicians contributes to increased risk of MRH in the post-discharge period [5, 6]. It is estimated 17–51% of older people experience MRH within 30–60 days of hospital discharge [7], often resulting in hospital readmission. Up to 52% of MRH is preventable by educating patients and ensuring changes are communicated to patients and primary care providers [2]. Research has shown that high quality discharge medicine lists result in a reduction in patient readmission to hospital in the post-discharge period [8].

Hospital pharmacists play a vital role in the quality of medicine handover during patients' discharges, including patient counselling, reconciling medicines, and generating a discharge medicine list [2]. Studies conducted in a large tertiary hospital in England showed that pharmacists' involvement in the discharge medication reconciliation process significantly improved the quality of discharge summaries [9, 10]. A 2015 randomised controlled trial in Victoria, Australia, demonstrated hospital pharmacists' medicine lists were more accurate compared to those prepared by discharging doctors [11]: when doctors completed medicine lists in discharge summaries, at least one medicine error was identified in 61.5% of cases, compared to 15.0% when generated by hospital pharmacists. Retrospective audits in Australian hospitals showed a significantly higher number of medicine changes were documented in medicine lists prepared by hospital pharmacists compared to those prepared by doctors (72.8% vs 31.5%) [12].

Data showed approximately 40% of the 58,378 electronic discharge summaries completed in 2021 at the Gold Coast Hospital and Health Service (GCHHS), South-East Queensland, Australia, included a medicines list prepared by a pharmacist. The time required by pharmacists to complete a discharge medicine list can be complicated and time-consuming. This is due to the need to reconcile medicines (matching the medicines the patient should be prescribed to those that are prescribed [13]) from various sources. These sources include the electronic medical records (EMR) system (locally the integrated electronic Medical Record (ieMR) system) and a separate software system, the enterprise-wide Liaison Medication System (eLMS), which is used to generate lists that comply with national accreditation standards [14]. There are also incompatibilities between the software systems in the recording of patient allergies that can add to the time and complexity of a pharmacist's discharge process.

Time-and-motion methodology with observers shadowing pharmacists and logging task times has been used to explore how pharmacists allocate time to various discharge processes [15, 16]. A time-and-motion study conducted at two tertiary hospitals in Canada between January and August 2011 suggested the most time-consuming subtask of preparing a discharge medicine list was preparing the discharge documentation [2]. The study showed that the discharge medicine list was rarely discussed with the patient or forwarded to their community pharmacy due to time-pressures. Implementation of electronic health platforms that facilitate more efficient medicine reconciliation was recommended as an option to enable pharmacists to spend more time with patients [2]. Other studies showed that improvements in electronic health software positively impacted clinicians' processes over the past decade [17, 18]. However, a 2019 time-and-motion study comparing clinical pharmacists at both English and Australian hospitals showed that implementation of EMR systems was associated with changes in a pharmacists' pattern of work, resulting in a greater amount of time spent on medication review and history taking in both countries [19]. The authors suggested that that entering medication information into EMR system may take longer than with paper charts, and that these systems may increase the quantity of information available for pharmacists to review, meaning they require a larger time commitment to click through multiple screens and locate the necessary information.

The ieMR system was introduced at GCHHS in 2019 and anecdotal feedback from pharmacists indicated that the change has impacted on discharge processes. A need was identified to explore this and the time for inpatient unit pharmacists to prepare discharge medicine lists and perform other discharge handover processes.

## Aim

The aim of this study was to measure the time required by hospital pharmacists to complete the various tasks involved in discharge medicine handover.

### Ethics approval

This study was approved by the GCHHS Human Research Ethics Committee (Reference number: LNR/2020/QGC/72623) on 12 February 2021. Written and informed consent was obtained from all study participants.

## Method

Time-and-motion methodology was used, following similar approaches to previous studies with independent trained observers who observed pharmacists [2, 16, 20]. The STROBE guidelines were followed in the design and reporting of the study [21].

### Study setting

The study was conducted across a variety of inpatient units (IPUs) at GCHHS at both Gold Coast University Hospital (GCUH) and Robina Hospital. GCUH is a tertiary hospital with approximately 750 beds while Robina Hospital has approximately 350 beds.

### Sampling

As this is a descriptive study no formal sample size calculation was undertaken. However, in accordance with the literature on sample sizes for exploratory studies and to obtain data that is approximately normally distributed, the aim was to observe at least 40 discharges [22, 23]. To cover a broad range of clinical settings, IPUs were selected to incorporate all medical and surgical areas. IPUs from certain areas were excluded due to the unique discharge processes involved:

- Women's, Newborn and Children's Health: the discharge handover processes involved with babies and children are different [15] and the majority of maternity patients are on no or a very limited number of medicines, hence the IPU pharmacists complete small numbers of discharge medicine lists.
- Mental Health and Specialist Services: a separate electronic medical record system (the Consumer Integrated Mental Health Application) is used in addition to ieMR for management of mental health patients. Many patients go on 'leave' before being discharged at which stage the pharmacists already prepare leave medicine documentation in eLMS which are later updated to prepare the discharge medicine list.
- Emergency Department: these patients are not admitted, therefore are not classified as inpatients and different discharge processes are followed.
- Oncology Units: a separate medical record system (Charm™) is used in addition to ieMR for the management of oncology patients.

Potential discharges were tracked by referring to a local pharmacist prioritisation dashboard that identified inpatients ready to be discharged. The pharmacist electronic roster was then checked to identify the pharmacist allocated to that IPU. Researchers would invite identified pharmacists to participate via telephone before emailing the participant information and consent form with study details. Participating pharmacists provided written consent. This process was repeated daily throughout the data collection period. Demographic data were collected to ensure pharmacists from a range of experience levels were included.

### Data collection tools

Time taken to complete various tasks were recorded using a smartphone app, aTimeLogger®. This app was customised with icons to capture times taken for the various discharge medicine handover tasks that were developed from a local work instruction document, research team members' experience and input from three expert clinical pharmacists (Table 1).

A paper-based checklist was developed to record additional information, or potential confounding factors [24], per discharge such as: total number of medicines, the number of changed or new medicines [2], whether an import link that pulls medicine lists from ieMR into eLMS was used, availability of a previous discharge medicine list stored on eLMS, need to update the patients' allergies, or whether there were discrepancies in the doctor's discharge reconciliation [18].

### Data collection

Two research students tested the data collection process and tools across two days by observing five discharges. This process involved evaluating the construct validity of the data collection tools [25]. Following this, a final year pharmacy student received training in the study methodology by shadowing pharmacists to become familiar with various IPUs and the activities undertaken by pharmacists and pharmacy assistants. This included an orientation session on how to use the data collection tools, training to recognise the various tasks involved in the discharge medicine handover process and trial recording of simulated discharge tasks for consistency in terms of data entry [25].

Once familiar with these processes, the student commenced data collection by silently observing pharmacists

**Table 1** Discharge medicine tasks and the explanations of these tasks

| Task | Explanation |
|---|---|
| Working in integrated electronic Medical Records (ieMR) only | Use electronic medical records to view or enter the patients' medicine admission history, view doctors' discharge notes and medicine reconciliation, view a patients' laboratory results, check patient's allergies, or write a pharmacist discharge note |
| Working in enterprise-wide Liaison Medication System (eLMS) only | Create a discharge medicine list: Logging into eLMS, entering patient unique identifier, episode of care, and other relevant information (discharge date, IPU, emergency contact, allergies)<br>Using the imported medicine list medicines are individually reviewed or medicines are manually entered. Directions are added, and it is determined whether the medicine is new, changed or unchanged (also ceased). Once complete the medicine list is reordered into therapeutic groups with as necessary medicines listed after regular medicines, and any ceased medicines at the bottom |
| Working in eLMS and ieMR simultaneously | If the pharmacist is actively working in both eLMS and ieMR, this often means they are either manually retyping medicine lists from ieMR into eLMS, and/ or comparing medicine lists between the two software platforms to identify what is 'new', 'changed', or 'ceased' as well as checking for any discrepancies, missed medicines or medicine changes |
| Communicating with hospital clinicians | Any medicine related problems or issues with discharge prescriptions are discussed and rectified with prescribers |
| Communicating with patient/ carer | Counselling new medicines prescribed in hospital (dose, instructions, side effects etc.) and answering any patient questions or concerns. Also explaining any other important information such as medicines that have been ceased whilst in hospital, showing how to interpret the discharge medicine list. Future supply arrangements are discussed |
| Communicating with external healthcare providers | May need to call the patient's community pharmacy and notify of any changes (especially if it is a previous or new Dose Administration Aid (DAA) patient) and fax through the discharge medicine list/ new scripts for the pharmacy to prepare the DAA<br>If aged care facility patient, send integrated Medication Administration Record (iMAR) to aged care facility to allow for administration of medicines prior to them being prescribed/ reviewed by the aged care facility doctor |
| Checking Pharmaceutical Benefits Scheme and the List of Approved Medicines | Checking Pharmaceutical Benefits Scheme and the List of Approved Medicines websites to ensure patient scripts comply with state and national rules |
| Technical tasks | All other technical tasks still related to the current patient discharge, including: walking, printing and sending scripts to pharmacy |
| Idle | Taking a toilet or tea break, answering doctor or nurse enquires that are not related to the current discharge |
| Unknown | The observer is unsure of what subtask is currently being performed. To be discussed with pharmacist after completion of discharge handover process |

ieMR, integrated electronic Medical Records (ieMR); eLMS, enterprise-wide Liaison Medication System

completing discharge processes. Data were collected over a four-week period (22 February–12 March 2021).

Recording of the discharge medicine handover commenced once a pharmacist opened the discharge reconciliation in ieMR or opened the patient's ieMR chart and the discharge was closed off once the pharmacist had counselled the patient/carer or sent the discharge medicine list to external clinicians/healthcare providers, depending on which activity was performed last. The checklist was used to record additional discharge information.

## Outcome measures

The primary outcome was the time taken to complete discharge medicine handover tasks. Secondary outcomes were the impact of confounding factors on the time required to complete discharge medicine handovers.

## Data analysis

Time spent on tasks were converted to decimals (i.e. 2 min 26 s = 2.4 min) and entered into a Microsoft Excel® spreadsheet along with the checklist information. Prior to analysis the data were examined for data entry errors. Descriptive statistics including means were generated using Excel® algorithms. To calculate the impact of confounding variables whether the patient had an admission history and import function used, the total time of discharges for YES was calculated and divided by the total number of medicines for YES, and then repeated for NO to determine the mean time per medicine. To calculate the impact of variables that did not relate to a specific medicine, namely whether allergies had to be updated and discrepancies corrected, the total time for YES was divided by the number of discharges and repeated for NO to determine the mean time per discharge.

# Results

Sixteen pharmacists participated in the study, with varying levels of experience including between 0.5 and 2 years working with ieMR, between 4 and 16 years of experience as a pharmacist, and with Health Practitioner (HP) levels ranging from 3 to 5 as per the Queensland Health 8 level HP structure (Table 2). All of the pharmacists worked as clinical IPU pharmacists at the time of data collection.

## Discharges observed

A total of 50 discharges were observed, across 12 IPUs from both hospitals (Table 3). The majority of discharges (28%) were observed on the orthopaedics IPU. None of the discharges observed involved IPU-based pharmacy assistants, even though three of the IPUs involved had assistants rostered to support pharmacists with medication reconciliation during patient admissions and discharges. All 50 discharges had changed or ceased medicines.

IPUs incorporated were categorised as:

**Table 2** Pharmacist demographic information

| Pharmacist details | Health Practitioner (HP) Level | | | Full-time equivalent | | | | | Experience with ieMR (years) | | | | Total experience as a pharmacist (years) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HP3 | HP4 | HP5 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 0.5 | 1 | 1.5 | 2 | < 5 | 5–10 | > 10 |
| Number | 9 | 6 | 1 | 0 | 1 | 1 | 3 | 11 | 1 | 2 | 4 | 9 | 6 | 6 | 4 |
| Percentage | 56 | 38 | 6 | 0 | 6 | 6 | 19 | 69 | 6 | 13 | 25 | 56 | 38 | 38 | 25 |

ieMR: integrated electronic Medical Record system

**Table 3** Discharges observed across in-patient units

| In-patient unit | No of discharges | Percentage (%) | Mean discharge preparation time (min) |
|---|---|---|---|
| Robina Hospital | | | |
| Medicinal Assessment Unit | 5 | 10 | 18.51 |
| Orthopaedics | 4 | 8 | 27.35 |
| Gold Coast University Hospital | | | |
| Orthopaedics | 14 | 28 | 20.57 |
| Cardiology | 7 | 14 | 19.66 |
| Medical Decision Unit | 5 | 10 | 44.77 |
| Urology | 4 | 8 | 32.69 |
| Respiratory | 3 | 6 | 28.25 |
| Cardiothoracic | 3 | 6 | 29.37 |
| Surgery | 2 | 4 | 21.72 |
| Neurology | 1 | 2 | 59.13 |
| Neurosurgery | 1 | 2 | 24.08 |
| Gastrointestinal | 1 | 2 | 33.73 |

**Table 4** Pharmacists' time spent on tasks involved in the discharge processes

| | Mean time in minutes (decimals) | SD |
|---|---|---|
| Work in ieMR only | 5.5 | 3.7 |
| Work in eLMS only | 3.7 | 3.0 |
| Work in ieMR and eLMS simultaneously | 4.0 | 2.7 |
| Technical tasks | 4.8 | 4.1 |
| Speaking to patients | 5.6 | 5.3 |
| Speaking to hospital clinicians | 2.4 | 2.5 |
| Speaking to external clinicians | 0.6 | 1.2 |
| Checking PBS/LAM | 0.1 | 0.2 |

eLMS, Enterprise-wide Liaison Medication System; ieMR, integrated electronic Medical Record; LAM, List of Approved Medicines; PBS, Pharmaceutical Benefits Scheme

- Surgical: Orthopaedics, Cardiothoracic, General Surgery and Neurosurgery Units
- Medical: Cardiology, Respiratory and Neurology
- Both surgical and medical: Urology and Gastrointestinal
- Short-term admission (< 24 h): Medical Assessment and Decision Units

## Time spent on discharge tasks

Table 4 displays the mean times spent on discharge handover tasks. The mean total time per discharge was 26.2 min (SD 13.6), the shortest discharge 5.5 min and the longest 72.9 min (this discharge list involved 18 medicines). Pharmacists spent the majority of time for each discharge using electronic health software including verifying notes and recording documentation in ieMR, eLMS or both simultaneously. The total mean time working in software systems was 13.2 min (SD 6.3). Of this, 4.0 min were to manually retype and reconcile medicine lists in different software systems.

The mean time to speak to patients was 5.6 min (SD 5.3); eight discharges (16%) did not involve speaking to patients with four of those patients being discharged to an aged care facility. All discharges involved technical tasks, 41 discharges speaking to GCUH clinicians, ten speaking to external clinicians and six checking prescribing criteria (Pharmaceutical Benefits Scheme or Queensland Health List of Approved Medicines).

Using the data from the IPUs categorised as surgical and medical, total discharge time was found to be non-normally distributed through plotting of histograms and the Shapiro–Wilk test. The median discharge time of the surgical IPUs were 21.6 min (25% and 75% IQ range: 17.0 and 27.6 min) whilst the median of the medical IPUs were 26.2 min (25% and 75% IQ range: 12.8 and 41.7 min). Although a Mann–Whitney test showed a p value of 0.7930, therefore no statistical difference between the two categories, there was a time difference of 4.6 min between surgical and medical IPUs with medical IPU discharges requiring more time on average to complete.

**Table 5** Number of discharges with confounding factors that increase discharge preparation time

| Factors increasing discharge time | No of discharges | Percentage (%) |
|---|---|---|
| Changed or ceased medicines | 50 | 100 |
| New medicines | 45 | 90 |
| No previous eLMS could be used | 35 | 70 |
| ieMR import function not used | 36 | 72 |
| Allergies updated | 10 | 20 |
| Discrepancies in the discharge reconciliation | 19 | 38 |
| No pharmacist admission history note | 20 | 40 |
| Pathology results checked | 37 | 74 |
| Observations checked | 34 | 68 |
| Clinical notes checked | 48 | 96 |
| New discharge prescriptions checked | 47 | 94 |
| Patients' own medicines checked | 50 | 100 |
| Adding discharge note in ieMR | 15 | 30 |

eLMS: Enterprise-wide Liaison Medication System; ieMR: integrated electronic Medical Record

## Mode used to generate discharge medicine list

The import link between ieMR and eLMS was utilised in 14/50 discharges (28%) whilst pharmacists manually entered medicines into eLMS in 21/50 discharges (42%). Pharmacists were able to access a medicine list from a previous episode of care in eLMS in 15/50 discharges (30%).

## The impact of confounding variables

The 50 discharge medicine lists involved 491 medicines in total with 162 medicines that were changed or ceased and 144 new medicines. Table 5 is a summary of the confounding factors that impacted on the discharge preparation times. All 50 discharges had changed or ceased medicines and patients' own medicines to be checked, and in 47 (94%) discharges, the pharmacists had to verify new hospital discharge prescriptions, equating to 120 prescription medicines identified as new items. Table 6 summarises the impact of some confounding factors on the total discharge time. If a patient had a pharmacist admission history, this resulted in a mean saving of 1 min/medicine compared to if a patient did not have a pharmacist admission history. Editing a previous discharge through eLMS resulted in a mean time saving of 0.7 min/medicine and the import function designed to reduce

**Table 6** Impact of confounding factors on total discharge preparation time

| | Pharmacist admission history completed | Previous eLMS copied and edited | ieMR import link used | Allergies updated | Discrepancies in doctors' discharge reconciliation |
|---|---|---|---|---|---|
| Yes | 2.3 min/medicine | 2.2 min/medicine | 2.5 min/medicine | 27.7 total minutes | 26.3 total minutes |
| No | 3.3 min/medicine | 2.9 min/medicine | 2.7 min/medicine | 25.6 total minutes | 25.1 total minutes |
| Difference | 1.0 min/ medicine | 0.7 min/medicine | 0.2 min/medicine | 2.1 total minutes | 1.2 total minutes |

eLMS: Enterprise-wide Liaison Medication System; ieMR: integrated electronic Medical Record

the need for data entry resulted in a very small time saving of 0.2 min/medicine.

Conversely, if a pharmacist was required to update patient allergies, this increased the mean discharge time by 2.1 min. Correcting discrepancies in the doctors' discharge reconciliation increased the mean discharge time by 1.2 min.

## Discussion

This study quantified hospital pharmacists' time to complete discharge medicine handovers. Time-and-motion methodology was used with an independent observer that recorded 50 discharges completed by 16 pharmacists. The mean time taken to complete tasks involved in the discharge medicine handover process was 26.2 min per discharge. Pharmacists spent over half of this time, 13.2 min, utilising electronic health software to check documentation and generate a discharge medicine list. Medical IPU discharges took 4.6 min longer compared to surgical IPU discharges.

The strengths of this study included use of an independent observer, comprehensive observer training, testing of data collection tools and the variety of IPUs and pharmacists observed. Our study also had limitations including a small sample size at a single time point. While data were collected across a large variety of IPUs, the majority of discharges were observed in orthopaedics IPUs. This is partly due to fragmented discharge processes taking place in some of the general medicine IPUs and referral to a transit pharmacist, which has been shown to improve discharge time [26]. Another limitation was the checklist used to record the variables only included a single yes/no measure to record whether pharmacists used the import link. This did not allow documenting how many medicine items were imported per discharge via the import link and a mixed method of data entry may have been used. Although the findings of this study are largely influenced by utilisation of ieMR and eLMS software, the current prescribing software used by Queensland Health, the discharge process is common to hospital pharmacists across Australia. All observational studies are susceptible to the "Hawthorne effect" [27, 28], whereby participants alter their behaviour due to the nature of observation. Additionally, the pharmacists' discharge process is quite complex for observers to follow as different pharmacists may develop their own processes and complete tasks in a slightly different order.

Of the time spent utilising electronic health software, an average of 4 min was spent working in ieMR and eLMS systems simultaneously. This implies pharmacists spent this time transferring information from ieMR to eLMS to generate discharge medicine lists. Although the import link between ieMR and eLMS can be used to reduce the need for manual re-typing, our data showed that most pharmacists did not use this option. In the 14 discharges where pharmacists utilised the import link, this did not appear to contribute to any meaningful time saving with data entry. These issues highlight the need to improve the integration between the various medical record software systems. Additionally, the lack of integration between software systems added an additional 2.1 min for retyping and reconciling allergy lists during the discharge process.

Studies showed ineffective technological issues can cause time-consuming data-entry, increase selection error, decrease patient interaction and worsening standards of documentation [18, 29]. Therefore, although electronic health software has many advantages, implementation requires careful planning and integration between systems is crucial. Our data showed a need to improve the integration between electronic systems used by pharmacists to prepare discharge medicine handovers. Addressing these issues are important to increase information exchange [17, 30, 31], decrease demands on staff by reducing time spend on data entry and reduce the amount of unintentional medicine errors [32, 33].

In the 50 observed discharges, no pharmacy assistants were utilised in the discharge handover process. Staffing issues related to the Covid-19 pandemic impacted on the availability of assistants to support IPU pharmacists with discharge handover activities. Our data showed a need to increase the role of pharmacy assistants in supporting pharmacists with the preparation of discharges. The increased utilisation of pharmacy assistants has been shown to result in higher numbers of discharge medicine lists [34, 35] whilst also enabling pharmacists to spend more time on other clinical activities [36–38]. This is an area that needs ongoing evaluation, with international studies showing the involvement of ward-based assistants also reducing the time needed by nursing staff on medication-related activities [39].

## Conclusion

This study provides insights into current discharge medicine handover, showing a need to streamline processes through better integration and optimisation of electronic health software systems and delegation of certain tasks to pharmacy assistants. Pharmacists spent most of their time during the discharge medicine handover process generating discharge medicine lists, emphasising the importance of reviewing processes to identify and address inefficiencies in electronic health software. Better integration between electronic systems and delegation of administrative tasks to pharmacy assistants is needed to reduce the amount of time pharmacists spend on data entry and hence have more time to spend on clinical tasks.

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**Conflicts of interest** The authors have no conflict of interest.

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