INCREASING THE PERCENTAGE OF BEDSIDE DISPENSING IN ADULT MEDICAL WARDS OF HOSPITAL SULTANAH NUR ZAHIRAH, KUALA TERENGGANU

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Abstract

Bedside dispensing (BD) is one of the clinical services offered by the Pharmacy Department to patients prior to their hospital discharge. Increment in number of BD may improve the patients' discharge process, patients' satisfaction and their medication knowledge. This project aimed at increasing the percentage of BD in adult medical wards of Hospital Sultanah Nur Zahirah (HSNZ). The proposed standard of BD percentage was at least 30% within four months of intervention. The project was conducted from November 2016 to December 2019. The monthly report of pharmacy BD record was analysed to assess the achievement of BD. A pre-interventional retrospective BD data review of discharge prescriptions received throughout 2016 showed that only 8.1% of discharge prescriptions were dispensed at the bedside. A closed-ended questionnaire to evaluate knowledge, experience and perceived contributing factors to the low percentage of BD was distributed to nurses, inpatient pharmacists and ward pharmacists. The main contributing factors identified included time constraint, poor understanding of BD workflow, inadequate staff awareness and lack of cooperation among healthcare providers. Institutional BD workflow was implemented involving the introduction of discharge prescriptions pick-up points at medical wards, and a scheduled timing for prescriptions collection and dispensing during office hours. Three face-to-face educational sessions on overview of BD and its latest workflow were given to staff nurses, inpatient pharmacists at discharge pharmacy unit and ward pharmacists. In 2017, the percentage of BD increased from 8.1% to 28.0% after the implementation of interventions, and subsequently to 60.0% in the latest maintenance phase of January until December 2019. The sustainable implementation of this BD program could be shared and implemented at other facilities with inpatient discharge services to improve healthcare delivery.

KEYWORDS: Bedside dispensing, pharmacist, transition-of-care, meds-to-beds.

Problem

Bedside dispensing (BD) program involves hand-delivering of discharge medications to hospital patients' bedsides by pharmacists (1). This includes counselling on devices and medications that come with special instructions, identification of potential barriers to compliance and finding solutions accordingly (1). Low implementation of BD may lead to ineffective patient care in medication information delivery, delay in patients discharge, reduce patients' satisfaction, polypharmacy and medication wastage. According to the Pharmacy Management Report (PF) 2016 by the Ministry of Health (MOH), only 26.1% of discharge prescriptions were dispensed at the bedside in MOH government hospitals. Terengganu ranked the fourth lowest state, with a mere 11.8% achievement (2). Hospital-wide execution of BD in Hospital Sultanah Nur Zahirah (HSNZ) was the least, at only 5%, followed by Hospital Besut (16.6%) and Hospital Hulu Terengganu (18.8%) (2).

According to the Guidelines by MOH for Inpatient Pharmacy Practice, BD is encouraged to be practiced as an alternative to traditional medication dispensing at pharmacy counters (2). In the Pharmacy Practice and Development Action Plan 2018, MOH set the BD target at 20-25% for main hospitals (including HSNZ), 40-50% for major hospitals with specialists and 70-80% for hospitals without specialists (3). BD priorities are given to patients discharged with devices such as inhalers and insulin pens, newly diagnosed chronic diseases patients, patients who are on many medications, patients on narrow therapeutic index medications and patients who have poor understanding and knowledge on medications usage (1). The re-use of patient's own drugs (PODs) for discharge following medications reconciliation by ward pharmacists is encouraged to prevent wastage and polypharmacy (1).

Pharmacy is one of the critical clinical support units in HSNZ, a state general hospital, situated in the Kuala Terengganu district with a population of 343,284. HSNZ serves as a reference hospital for district hospitals and health clinics throughout Terengganu state, with a population of 1,250,000.

HSNZ is equipped with 43 wards, and 1,107 beds involving 12 adult medical wards, including two intensive care units with a total of 240 beds. Bed occupancy rate (BOR) in adult medical wards is relatively high, ranging from 53.0 to 103.4%, compared to other wards which has a BOR between 24.2 to 90.6%. Our discharge pharmacy unit receives an average of 470 discharge prescriptions per month from 10 non-intensive care adult medical wards. Patients in these wards often have multiple comorbidities requiring various medications that may come with confusing instructions. Therefore, these patients may benefit substantially from a patient-centered counselling in BD program. Ten ward pharmacists were responsible to conduct the BD program at 10 non-intensive care adult medical wards. Upon identification of patients who were fit for discharge and medications prescribed by medical doctors, ward pharmacist would acquire the discharge prescriptions to have them dispensed at the bedside. These prescriptions would be processed and prepared at the discharge pharmacy unit prior to BD by ward pharmacist. Throughout 2016, our Pharmacy Department received 5,817 discharge prescriptions from 10 adult medical wards, but only 471 (8.1%) of them were able to be dispensed at the bedside. This project aimed to increase the percentage of BD in non-intensive care adult medical wards of HSNZ to a minimum of at least 30% within four months of intervention.

Background

BD program allows pharmacists to explain in detail about the discharge medications, especially to patients who need specific medication instructions, to optimise medication benefits and to prevent medication errors (4). The management of chronic conditions with multiple medication has called for careful monitoring of adverse effects and drug interactions where clinical pharmacists can

play their significant roles in care transition programs, including BD (5–7).

Transition-of-care service of BD is offered to enhance the patient's discharge process. By having pharmacists deliver discharge medications to the patients before leaving the hospital, the program eliminates the need to stop at the discharge pharmacy unit during the discharge process (4).

In Serdang Hospital, a cross-sectional study in 2013 found that despite having 56.0% of inpatients discharged during office hours, the percentage of BD performed by pharmacists was only 13.0% (8). The main causative factors were imbalanced workforce allocation among inpatient pharmacy units, limited space for storage of prepared BD medications at the satellite pharmacies and suboptimal implementation of BD sessions scheduled twice daily (8). Centralisation of discharged medication preparation at a single discharge pharmacy unit, assignment of a pharmacist to monitor BD activities, and increasing the scheduled BD sessions from two to four sessions per day improved the percentage of BD from 13.0% to 64.5% in 2015 (8). In the National Health Service of United Kingdom, interviewing patients regarding PODs during medication reconciliation and preparation of medication a day before the discharge helped increase percentage of patients being discharged before 12 noon, reduced medication error and patients' waiting time (9).

Effective and sufficient human resources were critical to ensure good implementation of BD program. Addition of a transition-of-care pharmacist played a significant role in aiding delivery of BD service. Compared to the control year, there was a significantly lower medication related re-admission rate per month during the transition-of-care pharmacist's involvement in an academic medical center in Southern Arizona (i.e. median rates of 25 vs 27.5) (10). The pharmacist coordinated patient discharge, attended inter-disciplinary discharge coordination meetings, ensured appropriate discharge orders, facilitated the medications preparation and educated patients on discharge medications (10).

The impact of BD program can also be elevated through inter-disciplinary collaboration. Participation in a BD program with a prior inter-disciplinary team rounding in an acute care teaching hospital in California was found to be associated with significant decrease in odds of a 30-day re-admission (OR, 0.50; 95% CI, 0.90-0.84) (11). The inter-disciplinary team rounding helped to better coordinate hospital discharge and communication between different departments including discharge planning, social workers, medical doctors, physical therapists, nursing and pharmacy units (11).

Measurement

The primary outcome of the study was to improve the percentage of BD provided in adult medical wards. It was calculated as the number of prescriptions dispensed at the bedside over the total number of discharge prescriptions received during office hours. Prescriptions received during weekends, public holidays and after operating hours on weekdays were excluded due to there being no on-call pharmacist for BD. Patients with impaired memory, cognitive or conscious level such as post-stroke or demented geriatric patients would have their medications dispensed at the bedside to their caregivers.

The BD numbers were irrespective of the number of discharge medication dispensed per prescriptions. For example, if one discharge prescription consisted of five different medications and they were all dispensed at the bedside, the quantity counted for BD would be one. Data of BD was collected on a daily basis by adult medical ward pharmacists through Clinical Pharmacy Report Form (CP3). Total number of discharge prescriptions received within office hours from medical wards was collected from the Statistics of Discharge Prescriptions Workload at discharge pharmacy unit. A pre-intervention study showed only 8.1% of discharge prescriptions were dispensed at the bedside throughout 2016. Based on human resources availability and pre-intervention achievement factors, the project team proposed a standard of a minimum of 30%

of discharge prescriptions from adult medical wards being dispensed at the bedside. This standard was implemented in HSNZ prior to the introduction of MOH target in 2018 which was 20-25% for main hospitals.

Initial Assessment of the Problem

A problem analysis chart was developed to analyse the possible contributing factors to the problem (Figure 1). According to the analysis, a few factors contributing to the problem included lack of collaboration between healthcare providers, inadequate awareness among hospital staff, poor BD workflow understanding and time constraint to execute BD. A questionnaire consisting of 10 closed-ended questions were distributed to a total of 41 staff, comprising of ward nurses, inpatient pharmacists and ward pharmacists. This questionnaire assessed staffs' awareness on the BD workflow, perception on inter-disciplinary collaboration for implementation of BD, and main challenges of BD. This survey was conducted before and after intervention, and was implemented to evaluate effectiveness of the intervention.

More than a third of the respondents (39.0%; n=16) were unclear on how BD should be performed. This was caused by the absence of institutional BD workflow prior to the intervention phase. Only 24.4% (n=10) agreed that BD program required inter-professional collaboration between medical doctors, pharmacists and staff nurses. Heavy workload (21.9%; n=9), time constraint (19.5%; n=8) and lack of educational sessions on BD program (17.1%; n=7) were perceived as the key barriers to executing BD.

Our discharge pharmacy unit caters for preparation and counter dispensing for various ward departments in HSNZ. Thus, to better understand the time constraint factor to execute BD, we conducted a retrospective review of discharge prescriptions of multiple ward departments at our discharge pharmacy unit according to receipt timing, between November until December 2016. Out of 4,498 prescriptions, 75.0% (n=3,374) were received after 12 noon, causing planned BD program in adult medical wards difficult to be conducted due to patient congestion at the discharge pharmacy unit, especially towards the end of office hours. Discharge prescriptions for BD were also picked up by ward pharmacists either at patients' beds or ward counters with no specific timing for prescription collection and BD. Our ward pharmacists were also responsible for other tasks including medication history assessment, case clerking, bedside counseling, therapeutic drug monitoring and ward rounds involvement with the medical team.

Strategy

Three interventions were implemented from January until April 2017. Firstly, we devised a BD institutional workflow to support effective planning of the program. The workflow included an addition of two critical steps for BD program (Figure 2). The staff responsible for each step were also included in the workflow to ensure staff awareness on responsibility in each step of BD implementation and to promote staff communication. A specific discharge prescription pick-up point at 10 adult medical wards was also introduced by placing BD Pick-up Boxes in each ward. A scheduled timing for prescription collection (at 11 a.m.) and dispensing (at 12 p.m.) during office hours was set to avoid delay in completing office-hour discharge prescriptions.

Secondly, three face-to-face 30-minute educational sessions were given to ward nurses, inpatient pharmacists and ward pharmacists. A session was conducted among 27 ward nurses who were mostly nurse supervisors (Sisters) and represented the adult medical wards. Four inpatient pharmacists and ten participating adult medical ward pharmacists also received the educational session, contributing to 100% coverage for pharmacy-related staff. These sessions emphasised on the introduction of BD, its benefits and latest workflow of implementation, and received encouraging feedback from the audience, especially in terms of understanding the latest workflow.

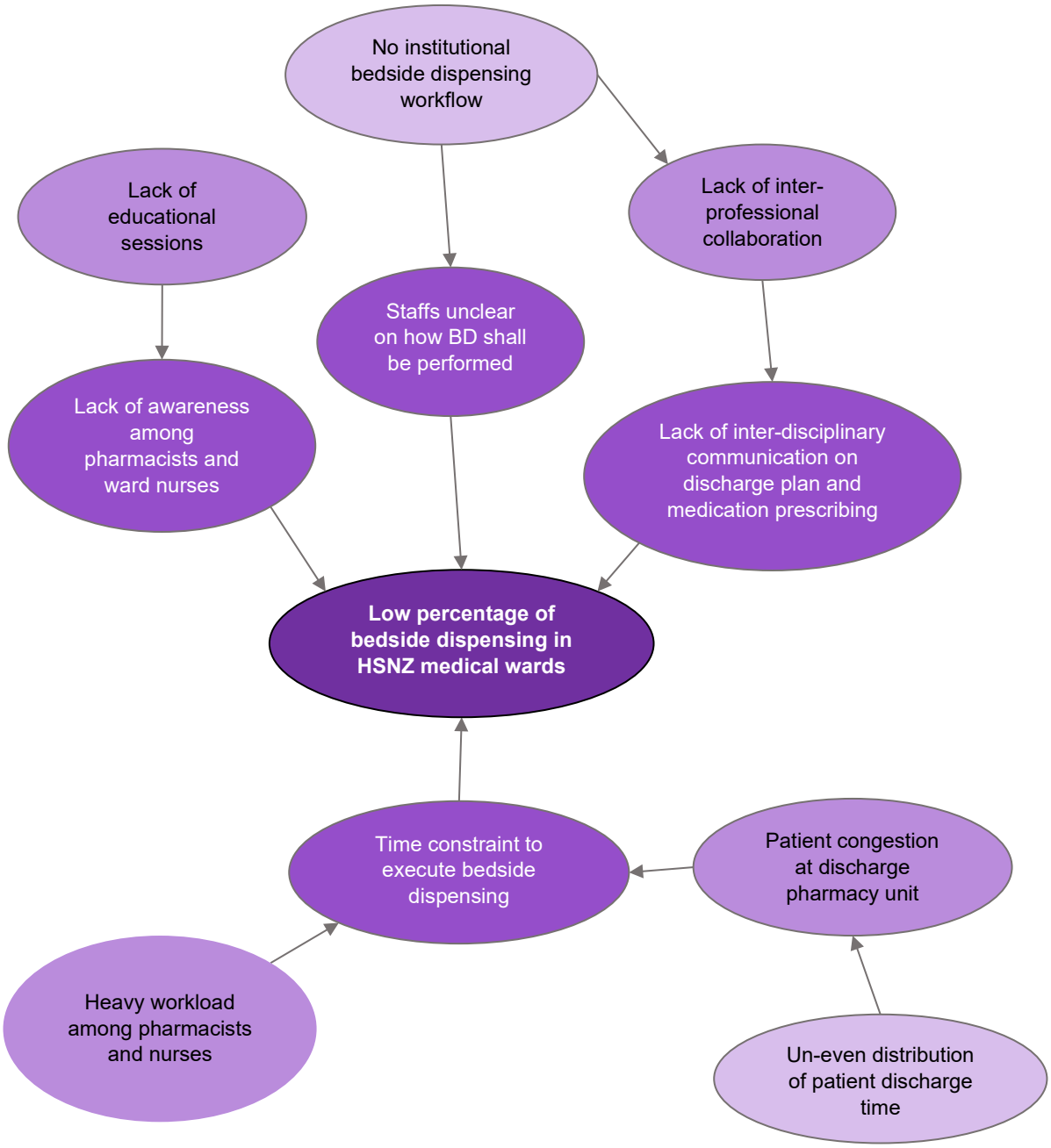


Figure 1. Problem analysis chart of low percentage of bedside dispensing in medical wards of HSNZ

Thirdly, the contributing factors of heavy workload and time constraint were addressed through initiatives by human resources. One of our pharmacists at the discharge pharmacy unit was assigned with a BD role. The BD pharmacist was responsible in assisting the adult medical ward pharmacists in handling discharge orders, medication filling and educating patients on discharge medications during their leave. The Ward Pharmacy team highly welcomed this intervention as it helped improve the quality of discharge medication dispensing.

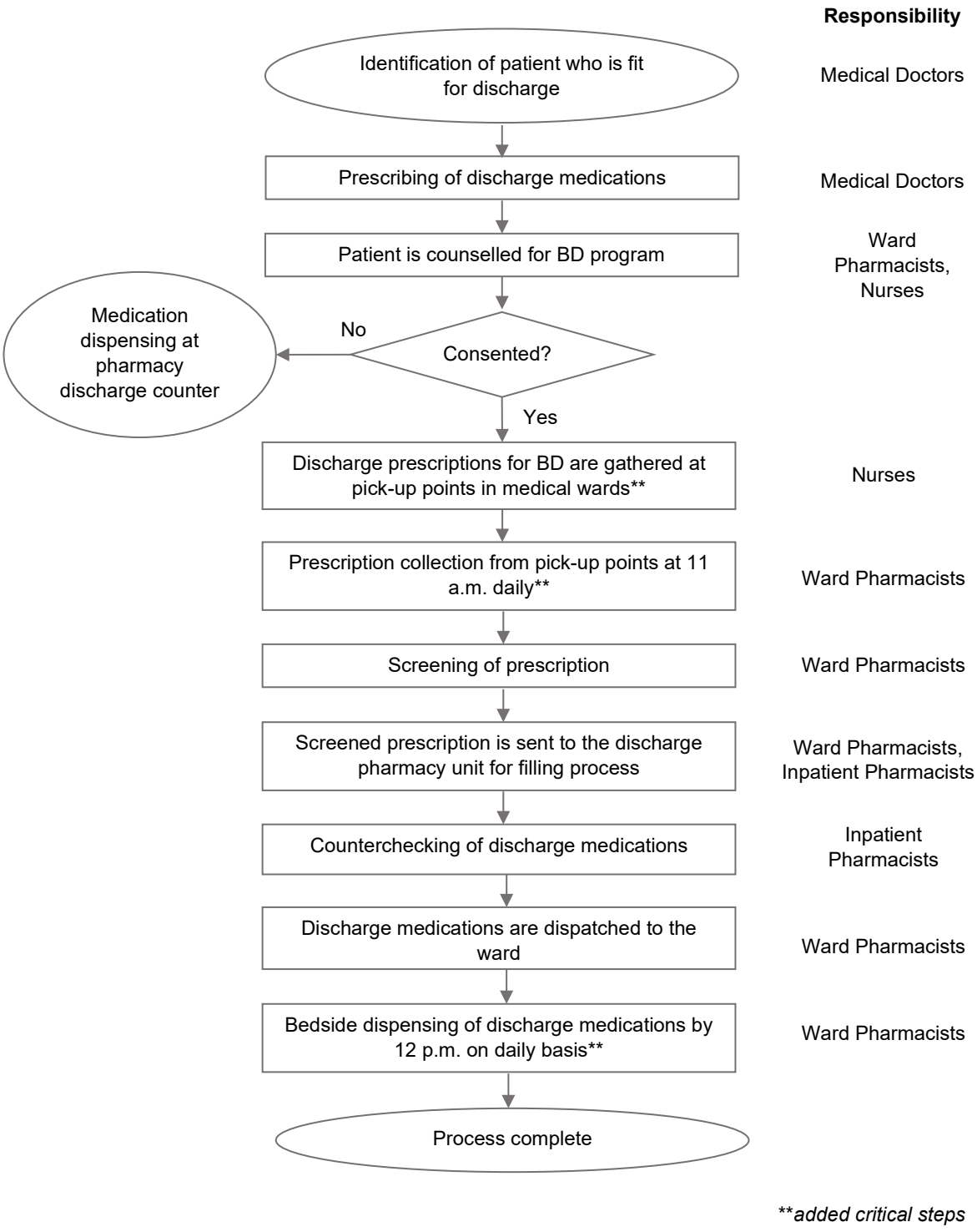


Figure 2. Institutional workflow to increase percentage of BD.

Results

Implementation of each subsequent intervention had a significant effect on the increment of BD percentage. Our main outcome measure was the percentage of BD for discharge prescriptions received from adult medical wards from May 2017 until December 2019.

During the first cycle post-intervention (May until December 2017), the percentage of BD increased to 28.0% (n=1259) out of the total 4,491 discharge prescriptions (Figure 3). The post-interventional monitoring continued until December 2019. BD percentage improved and remained above the standard of 30%, with the latest achievement in the 12-month duration of 2019 showing 60.0% (Figure 3). The level of staff awareness on BD workflow improved after the interventions were implemented. Staffs were requested to answer questionnaire on BD before and after each educational session. Percentage of staff who were clear on how BD should be performed increased from 61.0% (n=25) to 100% (n=41). All of the staff (100%, n=41) also agreed that BD program required inter-professional collaboration, especially with the implementation of institutional BD workflow.

Lessons and Limitations

This study delved in depth into the problem of low BD percentage in our medical wards, its main contributing factors and possible solutions.

Incorporating innovative interventions into the process workflow such as setting up discharge prescription pick-up points and having a scheduled timing for prescription pick-up and dispensing were effective in improving the previous process workflow.

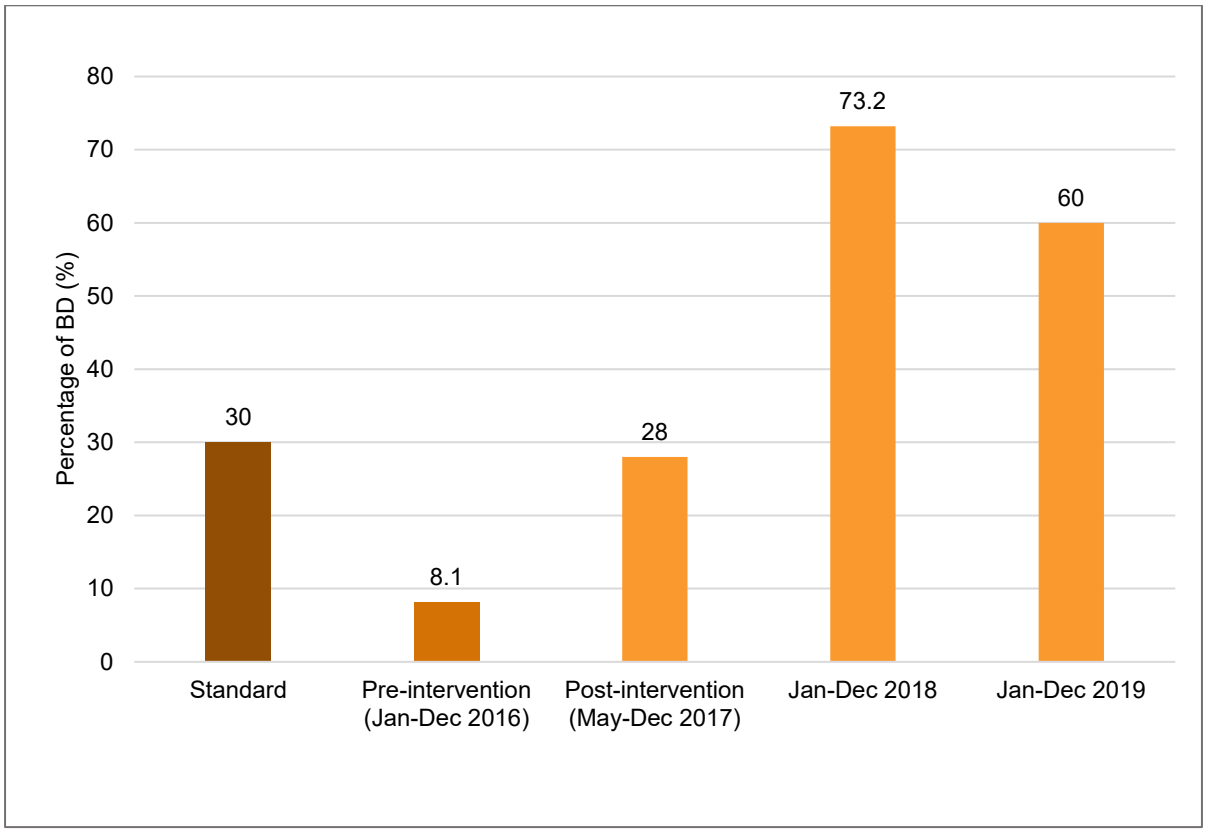


Figure 3. Percentage of BD in adult medical wards (n=10 wards) of HSNZ from January 2016 until December 2019.

Multiple benefits were gained, including less travelling of patients between wards and discharge pharmacy unit, reduction of workload to ward pharmacists and better time management among staff. This project also highlighted the importance of staff adherence to the improvised workflow process for BD to achieve its optimal effect.

The group consensus of our study standard in 2016 was made prior to the MOH target, which was only released in 2018. This explained the dissimilarity between our QA standard (30%) and the MOH target (20-25% for main hospitals).

Conclusion and the Next Steps

This study explored multiple contributing factors that caused a low percentage of BD. Interventions were planned and conducted to tackle each factor. These included discharge prescription pick-up points, scheduled timing of dispensing, educational sessions and appointment of inpatient pharmacist devoted to BD. Although we were unable to achieve the QA standard of BD percentage during the first cycle of post-interventional period, a sustainable continuous improvement enabled achievement of the target in the subsequent cycles. Nonetheless, we managed to surpass the MOH target of at least 20% since the early interventions were already in place.

The project team appointed an inpatient pharmacist in discharge pharmacy unit as the champion for regular audit management and promotion of BD to sustain this improvement. The workflow will also be internalised into the institutional inpatient pharmacy standard operating procedure. Subsequently, our team plans to expand educational interventions to the medical doctors. The outcome assessment in terms of patients' satisfaction, waiting time at discharge pharmacy unit, medication understanding, compliance level and medication-related re-admission rates will be evaluated in the future to determine the patient-specific outcome of BD program. The improvement strategies in this study can be shared and implemented at other facilities with inpatient discharge service to improve the efficiency of healthcare delivery.

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Conflict of Interest

None.

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