



Norwegian Centre for
E-health Research

Multidose i e-resept

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Nasjonalt senter for e-helseforskning





Hva finner vi?

Kvalitet og avvik i legemiddellistene

Forskrivningskvalitet

- 27 % av multidosebrukerne har minst en problematisk forskrivning
- 60 % har legemiddelinteraksjoner

Dette er før innføring av multidose i e-resept

Et betydelig forbedringspotensial

RESEARCH ARTICLE

Open Access



Potentially inappropriate prescribing to older patients receiving multidose drug dispensing

Anette Vik Josendal^{1,2*}, Trine Strand Bergmo¹ and Anne Gerd Granas^{1,2}

Abstract

Background: Multidose drug dispensing (MDD) is an adherence aid that provides patients with machine-dispensed medicines in disposable unit bags, usually for a 14 day period. Previous studies have suggested that the quality of prescribing, with time, is lower for MDD users, compared to patients receiving prescriptions dispensed as usual. This study aimed to examine the quality of prescribing to Norwegian elderly home care service patients receiving MDD.

Methods: A cross-sectional study comprising 45,593 MDD patients aged ≥ 70 years was performed. The proportion of potentially inappropriate medications (PIMs) was assessed using the Norwegian General Practice Criteria, and drug-drug interactions (DDI) were investigated using the Norwegian Medicines Agency database.

Results: On average, patients were prescribed 10.6 drugs (SD = 5.0), of which 6.1 were dispensed via MDD. Men used on average fewer drugs than women (10.7 vs 11.1). Twenty-seven percent of patients used at least one PIM. Concomitant use of three or more psychotropic drugs (10.8%), and prescribing of diazepam (6.4%) was the most commonly identified inappropriate prescribing. DDIs affected 59% of the patients, however, only 2.7% had serious interactions. Women were more frequently exposed to both PIMs and DDIs than men, with an odds ratio of 1.50 (95% CI: 1.43–1.58) and 1.43 (95% CI: 1.37–1.50), respectively.

Conclusions: Polypharmacy is common in elderly Norwegian patients using MDD. About one-fourth of the patients were exposed to PIMs, and over half were exposed to DDI.

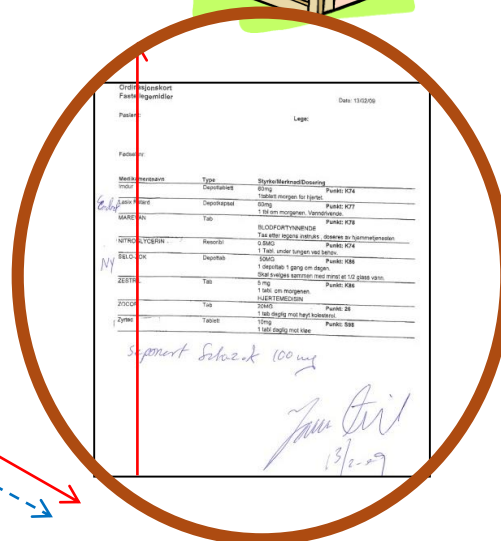
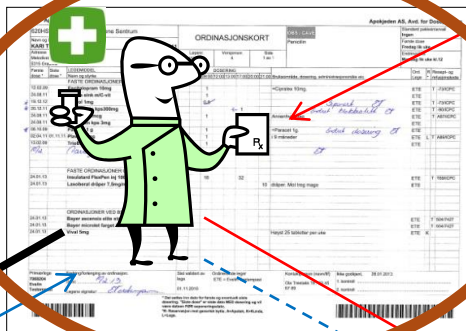
Keywords: Multidose drug dispensing, Inappropriate prescribing, Elderly, Norway, Home care services, Drug-drug interactions

Background

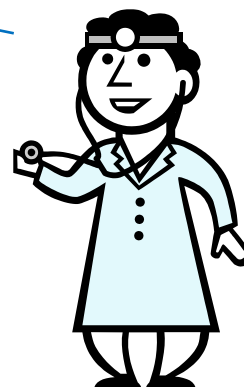
Multidose drug dispensing (MDD) is an adherence aid that provides patients with machine-dispensed medicines in disposable plastic bags, usually for 14 days. The MDD bags are labeled with the patient's name, the drug names and the time the medicines should be taken. Tablets and capsules can be dispensed via MDD, while medicines such as mixtures, inhalators, topical formulations,

etc., are dispensed in their original packaging. However, all medicines are usually issued on the same prescription as the MDD medicines, including other regular medication, pro re nata (p.r.n) medications, and dietary supplements.

MDD users are typically elderly patients with difficulties handling and administering their medicines, in addition to using several regular medicines [1–3]. This puts them at high risk of experiencing side effects, medi-



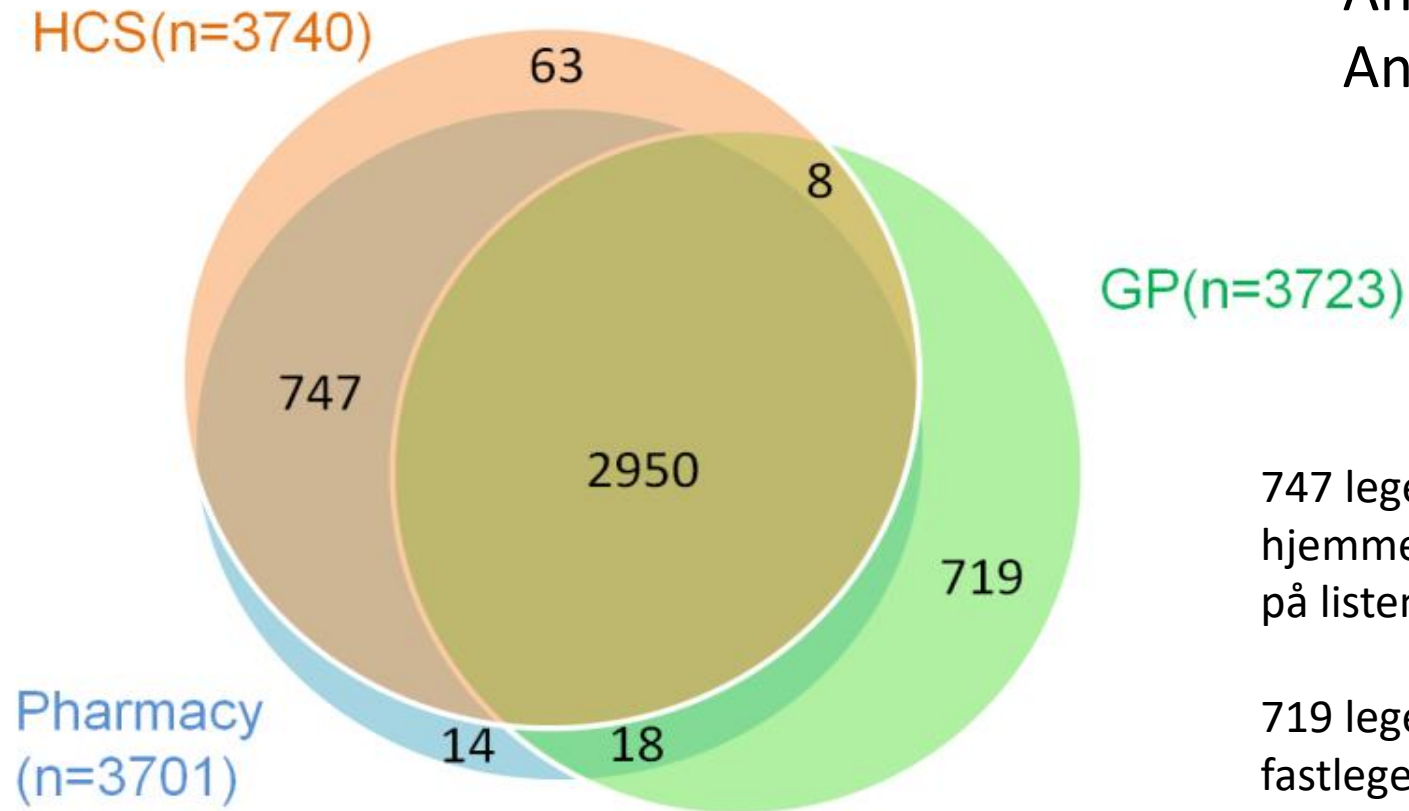
Før: Opptil 90 % av pasientene har uoverensstemmelser i listene sine.



Etter:
Færre uoverensstemmelser mellom listene etter innføring av multidose i e-resept. Samsvar mellom legemiddellistene går fra 65% til 93%. *Ikke publisert ennå*



Avvik i listene før innføring av multidose i e-resept (antall unike medikamenter)



Antall pasienter 367
Antall lister 1101

747 legemidler som står på listene i hjemmetjenesten står ikke på listene til fastlegene (17 %)

719 legemidler som står på listen hos fastlegen står ikke på listene i hjemmetjenesten (16 %)

$$\text{Congruence} = 2950/4519 = 65\%$$



Oppstartsfasen

Samstemmingsprosessen og den første listen

- Størst utfordring
 - Tidkrevende
 - Mange feil
-
- Både timing for samstemming og kommunikasjonen rundt den må forbedres
 - Samme teknologi skal brukes til pasientens legemiddelliste
 - Hva skjer med tilliten til systemet hvis listen er feil?

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How Discrepancies in Medication Records Affect the Creation and Trust in a Shared Electronic Medication List in Norway

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Abstract

A shared electronic medication list is being piloted in Norway. By use of interviews and comparing medication records, we investigate how errors in current paper-based medication lists affect the creation of the shared electronic list. Of 367 patients, 88 % had discrepancies in their records between the GP, the home care service and dispensing pharmacy prior to start-up. Though the GPs experienced the medicines reconciliation and creation of the shared list very time consuming, the home care service and the pharmacy reported many errors in the first list created. Increased communication during the start-up will probably facilitate the trust in and use of the shared electronic medication list with further implementation.

Keywords

Patient safety, Medication reconciliation, Shared medication list, Multidose drug dispensing

1 INTRODUCTION

Medicines play an important role in the treatment and prevention of disease. However, medication errors, low adherence to prescribed treatment and adverse drug events

medication list when comparing the list in the GPs electronic medical journal and the list at the home-care-services [12-16]. When PLL is implemented, the PLL will be unloaded electronically to the Norwegian Prescription



Erfaringer helsepersonell

Hjemmesykepleierne og apotekansatte:

- Mer tidkrevende og mer ansvar
- Økt pasientsikkerhet

Legene:

- Arbeidskrevende i oppstarten
- Opplevs mer effektivt og mer sikkert enn papir og fax

Article

From Paper to E-Prescribing of Multidose Drug Dispensing: A Qualitative Study of Workflow in a Community Care Setting

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Abstract: E-prescribing is now widespread and, in some countries, has completely replaced paper prescriptions. In Norway, almost all prescribing is electronic, except for multidose drug dispensing (MDD), which is still sent to the pharmacy by fax or ordinary mail. MDD is an adherence aid used by one-third of all patients receiving home care services. In this paper, we present results from a qualitative study evaluating the introduction of e-prescribing for MDD in a community health care setting. The focus is on the work and workflow for the pharmacists and nurses involved in the medication-handling process. We used the pragmatic process evaluation framework and the systematic text condensation method to analyse the data. We conducted 12 interviews with 34 nurses and pharmacists. This study shows that the e-prescribing of MDD led to greater integration between systems, both within the existing MDD system and across care levels, potentially improving patient safety. However, the structured prescriptions increased the need for clarifications, resulting in an increased overall workload. A greater understanding of the roles and responsibilities of the different professionals in the medication management chain and their needs would improve the workflow of the nurses and pharmacists involved.

Keywords: e-prescribing; multidose drug dispensing; community care; interviews; nurses; pharmacists; work; workflow; collaboration

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Farmasøytintervensjoner

- Større behov for avklaringer mellom farmasøyt og lege ved bruk av multidose sammenlignet med vanlige resept.
- Problemer i 11% av reseptene (ordinasjonskort).

Article

The Practice Guidelines for Multidose Drug Dispensing Need Revision—An Investigation of Prescription Problems and Interventions

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Abstract: Multidose drug dispensing (MDD) is an adherence aid used by one-third of patients receiving home care services in Norway. The system can increase patient safety by reducing dispensing errors and increase adherence, however it has also been criticised for unclear routines and distribution of responsibilities. We investigated prescription problems which pharmacists have detected, and the responsibilities they adopt regarding MDD. For two consecutive weeks, 11 pharmacies used a self-completion form to register prescription problems identified with MDD. Of the 4121 MDD prescriptions, problems were identified on 424 (11%). The most common issues were expired prescriptions (29%), drug shortages (19%), missing prescriber signatures (10%) and unclear/missing medication names or strengths (10%). Compared to ordinary prescriptions, the pharmacist took on additional responsibility for renewing MDD prescriptions. However, because these patients received their medications via the home care service, there was limited patient counselling during dispensing. To increase the efficiency and patient safety of the MDD system, the roles and responsibilities of the pharmacist, GP, and home care nurses in the MDD system should be clearly defined. This seems most urgent for the renewal of prescriptions and patient counselling, where the responsibilities and work practice seem to differ from ordinary prescriptions.

Keywords: multidose drug dispensing; prescribing errors; pharmacy practice; pharmacist interventions; Norway



Citation: Josendal, A.V.; Bergmo, T.S.; Granas, A.G. The Practice Guidelines for Multidose Drug Dispensing Need Revision—An Investigation of Prescription Problems and Interventions. *Pharmacy* **2021**, *9*, 13. <https://doi.org/10.3390/pharmacy9010013>



Innføringsprosess

Faktorer som forenkler innføring:

1. Teknologien må fungere fra dag én
2. Informert om at det er tidkrevende å lage første elektroniske LIB-listen
3. Ha noen å kontakte ved problemer
4. God opplæring

Factors easing the transition from paper to electronic prescribing of multidose dispensed drugs (MDD)

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Abstract

Multidose dispensed drugs (MDD) is a machine-dispensed system packing drugs in unit-of-use disposable bags. MDD is still prescribed using paper and fax. There is now an ongoing national effort to introduce e-prescribing of MDD similar to ordinary e-prescriptions. In this paper, we analyse how some of the first GPs, nurses and pharmacists who started using the system in 2018 experienced the start-up. We found four factors affecting the transition. These were technical readiness; sufficient time to make the first medication list; appointed contact persons for support and questions; and, sufficient information and training in using the new system prior to start-up.

Keywords

Multidose dispensed drugs, e-prescribing, shared medication list

1 INTRODUCTION

One in three of the community-dwelling elderly have been exposed to errors and potentially inappropriate medications [1]. Lack of access to accurate information on patients' medicine use increases the risk of medication errors [2]. Medicine-related problems (MRP) such as side effects, inappropriate use and errors is a serious threat to patient safety. MRPs reduce quality of life, cause morbidity, death and increase health care costs [3, 4]. Ten percent of all hospital admissions to medical wards in Norwegian hospitals are due to medicine errors. This amounts to 490,000 additional bed-days and approximately 1000 deaths per year [5, 6].

To improve safety and effectiveness in the medication management process, multidose dispensed drug (MDD) have been implemented in Norway over the last two decades [7]. MDD is a machine-dispensed system packing the drugs in unit-of-use disposable bags, one unit for each dose occasion, usually covering a 14-day period. The MDD bags are labelled with the patient's name and



Figure 1 Multidose dispensed bags (Apotek 1).

and less than 5% have a private arrangement and pay for the MDD themselves [13]. Most MDD patients are elderly multi-medicine users that have difficulties managing their own drugs. This makes them at high risk of experiencing side effects, medication errors and other adverse drug reactions. MDD patients are even more likely to be exposed to MRPs than patients using ordinary dispensing [14-16].

Over 90 % of prescriptions in Norway are sent to the



Områder vi ser på fremover

- Hvilke erfaringer har fastlegene?
- Hvilke erfaringer har pasienten med multidose og multidose i e-resept?
- Gir multidose i e-resept endring i forskrivningsmønstre?

Ny utprøving i Bergen

Studere multidose i e-resept og pasientens legemiddelliste sammen

Samhandling med sykehuslegene

Større fokus på implementeringsprosessen

