
Prescription drugs that are not dispensed

SHORT REPORT

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BACKGROUND

The summary care record receives a copy of all electronic prescriptions and their dispensing by Norwegian pharmacies. Some electronic prescriptions expire without being dispensed, in whole or in part. The purpose of the study was to ascertain how many electronic prescriptions passed their expiry date without being dispensed, and what type of prescriptions these were.

MATERIAL AND METHOD

All electronic prescriptions and dispensations for the period 1 March 2016–1 March 2018 were extracted anonymously from the summary care record. The number of prescriptions that expired without being dispensed was added up and classified according to the drug prescribed. The percentage of uncollected prescriptions was calculated for each drug.

RESULTS

Of 47 771 233 registered electronic prescriptions in the period, 5 934 589 (12 %) expired without having been dispensed. The proportion of non-dispensed electronic prescriptions varied within the individual drug groups from 4 % for Z-hypnotics to 49 % for glucagon.

INTERPRETATION

The study indicates that several reasons exist for the non-dispensing of prescriptions.

Main findings

Twelve per cent of all electronic prescriptions that were issued in the period 1 March 2016–1 March 2018 were never dispensed by pharmacy. The proportion of expired prescriptions varied from 4 % (z-hypnotics) to 49 % (glucagon).

The summary care record electronic service stores a complete medication history for all patients. This history consists partly of copies of all electronic prescriptions, and partly of dispensing reports from pharmacies. Dispensing reports are received for both paper-based (including those received by telephone and telefax) and electronic prescriptions. When the summary care record receives a dispensing report for an electronic prescription, the dispensed medication is linked to the prescription and any remaining amounts are calculated.

According to current regulations, with some exceptions, most prescriptions expire after one year. Most electronic prescriptions in the summary care record that are older than one year are thus expired and can no longer be dispensed by pharmacies. The summary care record is an opt-out solution, meaning that all those who have not actively opted out will have a summary care record. As of March 2019, somewhat less than 0.1 % of the population had opted out. The summary care record stores prescription data for three years, but the starting date is set to the day when the patient's summary care record was established. The summary care record was introduced in 2013 but did not encompass the entire population until the spring of 2017.

When a quality check of the summary care record was undertaken, it was noticed that a relatively large number of electronic prescriptions had expired without having been dispensed. We therefore wished to take a closer look at what kinds of prescriptions these were, in order to try to understand why the patients failed to collect these prescriptions.

Material and method

In March 2019, an anonymised retrieval was made of electronic prescriptions that were more than one year old. The extraction included prescriptions from the two-year period 1 March 2016–1 March 2018. The retrieval was approved by the administration of the summary care record in the Norwegian Directorate of eHealth and assessed and approved by the data protection officer in the Norwegian Directorate of eHealth. We counted the number of prescriptions in each drug group and the number of prescriptions that had not been dispensed. The prescriptions were then reviewed for each drug. All drugs which had been prescribed at least once during the two-year

period were registered, but it was decided to set a limit of 10 000 prescriptions in each drug group for inclusion in the analysis. The choice of this limit was discretionary in order to avoid random variations in groups comprising few prescriptions.

The results are presented descriptively as numbers, proportions, averages and standard deviations.

Results

In the period 1 March 2016–1 March 2018, the summary care record received 47 771 233 electronic prescriptions. Of these, 5 934 589 (12 %) were never dispensed.

The drug that had the relatively highest proportion of non-dispensed prescriptions was glucagon, for which 10 621 of 21 699 (49 %) were never dispensed. Table 1 shows the ten drugs with the highest proportion of non-dispensed prescriptions and Table 2 shows the ten drugs whose prescriptions most frequently remained non-dispensed, sorted by absolute figures.

Table 1

The ten most frequently non-dispensed electronic prescriptions registered in the summary care record in the period 1 March 2016–1 March 2018, sorted by relative frequency.

Drug	Total number of electronic prescriptions	Non-dispensed prescriptions	% non-dispensed
Glucagon	21 699	10 621	49
Lactulose	52 222	21 339	41
Varenicline	60 585	22 208	37
Local anaesthetics, combinations (creams/ointments)	11 077	4 039	36
Ferrous glycine sulphate	27 412	9 986	36
Alginic acid	12 182	4 356	36
Expectorants, combinations	13 706	4 851	35
Sodium picosulphate	31 469	10 817	34
Ispaghula	13 191	4 456	34
Ferrous sulphate	18 341	56 447	32

Table 2

The ten most frequently non-dispensed electronic prescriptions registered in the summary care record in the period 1 March 2016–1 March 2018, sorted by absolute figures.

Drug	Total number of electronic prescriptions	Non-dispensed prescriptions	% non-dispensed
Paracetamol	1 498 104	211 662	14
Salbutamol	812 079	129 049	16
Diclofenac	816 181	121 660	15
Cetirizine	719 413	102 548	14
Cholecalciferol (vitamin D ₃)	372 579	91 387	25
Pantoprazole	697 468	89 849	13
Metoprolol	837 688	86 078	10
Desloratadine	607 788	85 036	14
Tramadol	959 584	82 408	9
Levothyroxine sodium	722 340	80 953	11

The groups with the lowest proportion of non-dispensed prescriptions included the z-hypnotics, zopiclone and zolpidem, both with 4 % non-dispensed prescriptions.

For all types of antibiotics, an average of 9.6 % (standard deviation 1.6 %) of the prescriptions were not dispensed. The antibiotic with the highest proportion of non-dispensed prescriptions was methenamine, with 13 %.

Discussion

In the period 1 March 2016–1 March 2018, altogether 12 % of all electronic prescriptions registered in the summary care record were never dispensed by a pharmacy. Why are prescriptions not collected? This study cannot answer this question with any certainty, but the figures suggest some factors that may be the cause.

Many of the drugs in the non-dispensed prescriptions are available *without* prescription. It is likely that the patients – despite higher prices in some cases – choose the prescription-free alternative instead of having their prescription dispensed.

The second group that stands out includes drugs to be taken as needed or for bouts of illness. Some patients may want to have a prescription 'on standby', but failed to have it dispensed before the expiry date.

Some patients discontinue their medication themselves and thereby do not collect their prescription, and sometimes the patient is told by their doctor to stop using a drug without the prescription being withdrawn.

Lack of compliance with medication regimes is another possible cause. It is a well-known fact that some patients fail to comply with their doctors' recommendations for medication use. In a Danish study from 2014, it was found that 9.3 % of the patients who started drug-based therapy in general practice failed to collect their prescriptions (1). In a similar study from Iceland, which compared the number of prescriptions

written by GPs with the number dispensed, it was found that 6.2 % of the prescriptions were never collected (2). However, some possible explanations can also lie with the prescribing doctors.

The administration department for electronic prescriptions has studied the quality of the national database Reseptformidleren and found that approximately 15 % of the patients were registered with duplicate prescriptions (3). In some cases this is undoubtedly correct, but it may also happen that a therapist makes changes to a drug-based treatment plan and sends a new prescription to the database without withdrawing the old one. A valid prescription therefore remains registered with an old dosage that the patient is not to use. It is not inconceivable that some of the prescriptions that appear in this study as non-dispensed are such duplicates.

Another possible cause of non-dispensed electronic prescriptions is the use of the paper-based multidose form. When patients transition to multidose, a requisition form is sent to the pharmacy. This form functions as a paper-based prescription for up to one year. In the summary care record it has been observed that many doctors issue electronic prescriptions for drugs that are supplied in multidose packages. Since the pharmacy dispenses the drugs based on the paper-based requisition form, the electronic prescriptions are registered as non-dispensed. Some of the electronic prescriptions that appear in this study are likely to be for such multidose drugs.

Limitations

Since the summary care record was not fully implemented until the spring of 2017, the sample does not include 100 % of the prescriptions that were issued during this period. However, there is no reason to believe that the relative relationship between issued and non-dispensed prescriptions is affected by this to any appreciable extent. The summary care record had been implemented in all health regions at that time, although there were some isolated areas in the north, south and east of the country that had not yet adopted it. In the same period, paper-based prescriptions accounted for slightly more than 10 % of the total. This assessment applies only to electronic prescriptions, but it is hard to imagine that the relationship is significantly different for paper-based prescriptions.

The article has been peer reviewed.

LITERATURE

1. Pottegård A, Christensen R, Houji A et al. Primary non-adherence in general practice: a Danish register study. *Eur J Clin Pharmacol* 2014; 70: 757–63. [PubMed] [CrossRef]
 2. Linnet K, Halldórsson M, Thengilsdóttir G et al. Primary non-adherence to prescribed medication in general practice: lack of influence of moderate increases in patient copayment. *Fam Pract* 2013; 30: 69–75. [PubMed][CrossRef]
 3. Kvalitet i e-resept. Forprosjektrapport IE-1004. Oslo: Direktoratet for e-helse, 2017. <https://nhn.no/media/2623/kvalitet-i-e-resept-2017.pdf> Accessed 9.7.2020.
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