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# The fungibility of time in claims of efficiency: The case of making transmission of prescriptions electronic in English general practice

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## ABSTRACT

**Objectives:** This paper presents a study of the effects of the implementation of the NHS Electronic Prescription Service (EPS) on time spent on repeat prescribing in English general practice. EPS is a new network service for the electronic transmission of primary care prescriptions, principally between GP practices and community pharmacies. This service is promoted on the basis of the importance of safe and timely supply of medicines, and the level of medicines use by many patients with treatable chronic conditions. The service is also based on presumptions of significant time-savings and efficiency gains for general practices and GPs. Our objective was to assess the time-related changes (including time savings) conditioned by digital transmission of prescriptions, specifically for repeat prescribing activity in primary care practices.

**Methods:** As part of the official evaluation of EPS in the English NHS we undertook a qualitative research design with field studies in four of the first GP practices adopting EPS. This research was based on interviews with clinical and administrative staff, and non-participant observation of repeat prescribing related activities.

**Results:** We found that the use of EPS reduced turnaround time and conditioned changes in the workflow, with time-savings found mainly in relation to administrative tasks. But the use of this technology also created additional tasks and shifted existing tasks and responsibilities. Thus elimination of tasks did not automatically correspond to potential staff savings or cost savings. Tasks that were eliminated and new tasks that were created were not equivalent in terms of time spent, quality of attention required, and roles involved.

**Conclusions:** The wider claim that healthcare information technology saves time and increases efficiency is often based on assumptions of the fungibility of time and people – i.e. that units of time added or saved on different steps of the workflow can be summed up as if they were all of the same kind, and thus reveal any net efficiency gain. But workflow time savings involve changes in the quality of tasks, redistribution of work and responsibility that mean that time can hardly be added or subtracted to obtain ‘efficiency totals’.

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## 1. Introduction

Time is the “rarest commodity” in healthcare [1]. Information technology is often introduced in healthcare settings with the intentions of “accelerating the speed of work and saving time” [2], the implicit assumption being that time is ‘fungible’ – i.e. homogeneous and exchangeable.

The intention to save time with health IT is also seen in primary care. Efficiency and time pressure have remained a concern for primary care and GP practices in England from the founding of the National Health Service (NHS) in 1948 to the present day [3]. General practitioners (GPs) in England provide NHS health care services to registered patients, either as single family doctor clinics, or, more frequently, in partnerships with other GPs and other clinical staff. The GPs and their practices (the clinics, also known as GP surgeries) are independent contractors, regulated by a variety of bodies, such as the General Medical Council and since 2013 the Care Quality Commission; the majority of their income derives from the NHS, under a variety of contracts [4]. In this ‘cottage industry’ [5], concerns for efficiency, workload and time pressure have been in part addressed since the 1970s by the computerisation of patient records (now almost universal in GP practices in England). Thus today the vast majority of prescriptions for medicines are recorded on a computerised patient record and issued through a computer. They are nonetheless then printed out on a standard paper form and carried away by the patient or representative to a high street pharmacy. When compared to handwritten paper based prescribing, the computerisation of prescribing has increased efficiency and legibility and thus safety [6] and enabled primary care to cope with increased numbers of patients and volumes of medicines, not least through the adoption of computerised *repeat prescribing* (explained in [Box 1](#) and [Fig. 1](#)). The Department of Health has in the past decade pushed for further computerisation across the NHS, with several health IT programmes, one of which was aimed at providing electronic transmission of prescriptions between GP surgeries and pharmacies – the Electronic Prescription Service (EPS) [7,8] (we summarise the programme in [Box 2](#)). Among the claimed benefits of EPS [9] is the saving of time in the workload in GP practices, and therefore implicitly costs for both the GP practices and the NHS.

As with other health IT applications, the use of electronic prescribing systems (also known as ePrescribing or CPOE – computerised provider or physician order entry) is often in part justified by their ability to streamline workflows and increase efficiency. The literature on this technology is extensive. A search on OVID Medline database (1996–2013 July week 3) combined for electronic prescribing, or CPOE (in its variations), or e-Prescribing, with and without hyphen, in the title and subject heading retrieves more than 1500 records (search performed in July 2013). A systematic review of reviews found 185 publications, each reviewing literature on the outcomes of electronic prescribing implementations [14]). Research has shown the complexities and unintended consequences of implementation [15–17], but there is also a drive to identify measurable and quantifiable impact, e.g. in terms of safety, or cost savings (e.g. [18–20]). Research on

### Box 1: The repeat prescribing workflow – generic model

The repeat prescribing process starts with the initial consultation with the patient and the identification of the need for a prescription (one or more medicines) to be repeated over a period of time. The repeat of the prescription is authorised by the prescriber, and this authorisation is recorded in the patient record. The authorisation usually comes with a review date and/or the number of authorised repeats. This information is used at the time when the patient (or representative) requests the next issue of the prescription (the next repeat). At this time administrative staff – usually receptionists, or dedicated prescribing clerks – perform an administrative check to verify that the issue can be processed.

For each issue of a repeat the workflows unfolds as follows:

The patient (or representative) requests the next issue (for specific items or all items); the administrative staff performs the administrative check and processes the request; a new prescription is prepared and forwarded to a doctor though not necessarily the doctor who issued the original prescription. This transfer may be through the practice software EPS module (i.e. a new message in the ‘in-box’) or on paper. The doctor performs a clinical check and signs (or not) the new prescription (the signature will be physical in the case of paper or electronic for software-based transfer). The signed prescription is then either filed at reception for the patient (or representative) to collect, or in the case of electronic prescriptions using EPS, sent to the central systems (the NHS Spine) for the appropriate pharmacy to download.

When administrative staff perform their administrative check they will prepare a new prescription for (digital) signing if the items requested meet all of the following conditions:

- all items are in the repeat screen of the patient record (patient is not requesting items that have not been authorised);
- the items requested are not requested ‘too soon’ – i.e. there is no sign of overuse (the ‘last issued’ date is not too recent – the date is close to the date for the next prescription as recorded in the system);
- there is no request for change in dosage, or other changes in the prescription as recorded in the system.

When all these conditions are met, the prescription is considered a *routine* or *straightforward* repeat. When any of the items requested does not meet one or more of the conditions above, the request is considered *non-straightforward* or a *query* requiring extra consideration. These type of prescriptions are treated differently in different practices but in general, to respond to the non-straightforward patient request, a doctor will have to check the patient record and/or contact the patient.

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