Clinical information systems: tools to boost prescribing safety

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Clinical information systems (CIS) are an important tool in primary care for recording and managing patient information. This article discusses the use of the features within CIS to identify medication risks and promote safe and effective prescribing.

Managing clinical information through accurate documentation is essential for ensuring safe environments within practice. Healthcare staff are being encouraged to record patient information electronically rather than utilising paper, and the use of features within clinical information systems (CIS) can help achieve NHS Digital’s objectives of revolutionising health and social care services through efficient use of technology.

CIS are a type of software used in the day-to-day practice of all sectors of healthcare in order to organise patient demographics and critical data. Data is stored and can be manipulated for the overall care of the patient. The main CIS used in primary care include: SystmOne, EMIS Web and Vision. The basic architecture of these systems allows users to perform key functions in a similar manner. Each system has its own set of enhanced features in order to improve medicines optimisation and to supplement the decision-making process.

Monitoring high-risk medicines
Prescribing and monitoring of high-risk specialist drugs has historically been fulfilled by hospital departments, but the shift of services from secondary to primary care has resulted in GPs managing an increasing number of high-risk medicines.

Practices have developed a number of ways to ensure safe prescribing and monitoring of shared care (amber) drugs. While some have implemented procedures that involve hard copy records, others have made use of features within CIS. An example of this is fulfilling the monitoring requirements of methotrexate. Guidance recommends that the monitoring of clinical parameters such as full blood count (FBC), liver function tests (LFTs), C-reactive protein (CRP) and urea and electrolytes is done on a three-monthly basis once the patient is stabilised. The key challenge is to ensure that there is a robust procedure in place that ensures such monitoring is carried out in a timely manner. Creating a diary entry or adding a three-monthly recall for the monitoring of relevant biochemical data can serve as a reminder to ensure monitoring requirements are fulfilled.

The use of such functions within the CIS is not limited to shared care drugs, but can also range from highlighting vulnerable patients when booking appointments through to aiding reminders for follow-up consultations.
Reminders and recalls

The ‘reminder’ function on SystmOne is an example of how relevant information can be shared with any healthcare professional that accesses a patient’s record – this includes organisations such as hospitals and specialist clinics. When created, the reminder is shown on the home screen and can be classified according to priority (see Figure 1). An example of how reminders can influence clinical decisions is through highlighting important information such as safeguarding issues and patient preferences when choosing appropriate drug therapy.

Recalls are a feature available on SystmOne. The key function of recalls is to notify users of reviews; examples include annual health checks for chronic diseases and follow-up monitoring, eg DEXA scans. A recall can be set up to specify the need for review of a desired attribute, eg monitoring of BP and urea and electrolytes within hypertension. Clinical reports can be created to filter out patients who are overdue a review based on these parameters, and can ensure patients are invited for bloods in a timely manner. Recalls are displayed in a user-friendly manner on the home screen, under the ‘recalls’ tab. Overdue recalls are highlighted in red, recalls pending review are highlighted in amber, and those that are up to date are presented in black. Figure 2 provides an example of the recall monitoring process in medication management.

Enhanced features within CIS

Decision support tools

A growing number of CCGs have been keen to invest in decision support tools (interface systems) such as OptimiseRx and ScriptSwitch, which help promote safe and cost-effective prescribing. These can direct practitioners to local and national guidelines when prescribing medication through the use of in-screen prompts. A ‘pop-up’ message usually displays at the point of prescribing with options to choose the recommended treatment or decline with reason. Figure 4 demonstrates examples of how this support tool is implemented in practice using OptimiseRx.

The advantage of this type of decision support tool is that recommendations are made in ‘real time’ and can aid clinical judgement. The recommendations can be updated by the CCG with new evidence; CCGs are also able to monitor the responses following the recommendations (in order to assess the actions taken by prescribers). Commercial systems are associated with a cost and it is possible to produce pop-up protocols within CIS such as SystmOne.

Pop-up protocols

Pop ups can be written for SystmOne in order to guide clinical practitioners. They usually require a trigger to be activated in order to output necessary information, but unlike interface systems, prescribing medication is not the only trigger for pop ups. Actions such as accessing the patient’s record or starting a consultation entry can also serve as triggers.

Pop ups can be set up relatively easily by a member of practice staff (although training is required to create more complex pop ups). They can be applied to a range of areas, eg alerts for initiation of statin prophylaxis, flu jab reminders, and choice of inhaler therapy (see Figure 5). They can also be shared between different organisations such as general practices and managed (updated or removed) centrally by the host organisation.

Formularies

Formularies are another feature that are available to users of CIS and can help...
Advantages

Can be run to identify potentially inappropriate medications.

Once set up as a repeat, they do not rely on human input to supersede tasks.

The scheduled task cannot be viewed on the main screens until the due date; unable to run a report on tasks to obtain a patient list.

Recalls/diary entries

Visible on home screen and searches can be run to identify patients who have a recall that is due/overdue.

Once the review has taken place and monitoring requirements fulfilled, the recall/diary entry must be manually updated by staff at each interval.

Reports

Can be run to identify specific patient groups, eg patients taking drugs with specific monitoring, eg blood results.

Tends to be a reactive approach rather than a proactive approach.

### Table 1. Advantages and disadvantages of functions within clinical information systems

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<thead>
<tr>
<th>Function</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
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### STOPP START Toolkit

The STOPP START resource is a toolkit designed to manage inappropriate prescribing in elderly patients over the age of 65 years. It encompasses potentially inappropriate medication (STOPP criteria) and potential prescribing omissions (START criteria). STOPP is an acronym for Screening Tool of Older People’s potentially inappropriate Prescriptions, and START is an acronym for Screening Tool to Alert doctors to Right, ie appropriate, Treatments. The use of these criteria has demonstrated the high number of inappropriate medications that are prescribed to elderly patients. This prevalence of inappropriate prescribing has been shown to be the cause of one in four hospital admissions. Thus, this has led to the development of toolkits to support prescribers when undertaking medication reviews in primary care.

STOPP consists of 80 clinically significant evidence-based inappropriate drugs and START comprises 34 evidence-based prescribing recommendations for commonly encountered conditions in the elderly population. Figure 6 gives examples of STOPP and START criteria.

The STOPP START toolkit can be used to support medication reviews as it is a comprehensive screening tool that enables clinicians to appraise elderly patients in the context of their co-morbidities. In SystmOne, the ‘STOPP’ actions can be embedded within the clinical system so that the screening tool can be run when a patient’s record is accessed. CIS users can run reports on the individual STOPP START criteria when undertaking medication reviews. The evidence of benefit can be demonstrated within each criterion; for example, the initiation of anticoagulation therapy (eg warfarin) in a patient who has atrial fibrillation would significantly reduce the associated stroke risk.

Electronic frailty index

Frailty has been linked with increased morbidity, therefore in the current climate of an ageing population, being able to manage frailty is more important than ever. The electronic frailty index (eFI) recognises and grades the severity of frailty and thus identifies patients at high risk of hospital admissions. In general practice, read codes are used to categorise and record patient characteristics such as social demographics, disease history and test results. The 36 different deficits used to grade frailty in the eFI are shown in Table 2.

Scores are assigned to patients ranging from 0 to 1, dependent on the number of deficits present. For example, if a patient presents with 18 deficits, a score of 0.5 will be calculated. eFI categories range from ‘fit’ (0–0.12 = no or few long-term conditions) to ‘severe frailty’ (>0.36 = patients suffering from multiple conditions and dependent on carers).

The eFI tool has been embedded into CIS and although relatively new, the potential of categorising frailty will hopefully ensure that making clinical decisions, planning caseloads, and applying the STOPP and START criteria.
will improve patient care through better targeting of staff time and skills.

**Taking advantage of features and toolkits within CIS**

NICE recommends that organisations should be using computerised clinical decision support systems to undertake medication reviews. Clinical systems do not replace professional judgement and careful consideration should be taken when applying toolkits. If utilised effectively, CIS can enhance the care of patients as well as provide users with confidence that systems are robust. Primary care pharmacists are well placed to set up and manage CIS to help aid medicines optimisation and also to ensure standards of care are maintained for all patients, by all healthcare professionals, at all times.

**References**


**Declaration of interests**

None to declare.

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