SAFE PREscribing & ADMINISTRATION OF MEDICINES IN SCOTTISH HOSPITALS

TUESDAY 1 OCTOBER 2013
RCPE Symposium

Royal College of Physicians of Edinburgh
Representing physicians, maintaining standards.
tweeting? #rcpeSafeMeds13
Single Prescription and Administration Record for Scotland (SPARS) 
Is it needed and can it be done?

Royal College of Physicians of Edinburgh, 1st October 2013

Professor Simon Maxwell 
University of Edinburgh, UK 
s.maxwell@ed.ac.uk
Overview

• Concerns about prescribing quality
• Prescribing documentation as a factor
• SPARS Group aims and objectives
• Evidence for the benefits of unified documentation
• Variations in current charts in Scotland
• Influence of variability on prescribing
• Developing and implementing a new chart
Current prescribing concerns
PROTECT Study Group

Prescribing Outcomes for Trainee doctors Engaged in Clinical Training

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>F1</th>
<th>F2</th>
<th>Other</th>
<th>Unknown</th>
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<tr>
<td><strong>Overall</strong></td>
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<tr>
<td>Number of medicines prescribed</td>
<td>45392</td>
<td>23394</td>
<td>5427</td>
<td>9907</td>
<td>6664</td>
</tr>
<tr>
<td>Number of errors</td>
<td>3209</td>
<td>1638</td>
<td>406</td>
<td>757</td>
<td>408</td>
</tr>
<tr>
<td>Error Rate (%)</td>
<td>7.1</td>
<td>7.0</td>
<td>7.5</td>
<td>7.6</td>
<td>6.1</td>
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<td><strong>Teaching Hospitals</strong></td>
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<tr>
<td>Number of medicines prescribed</td>
<td>25214</td>
<td>12641</td>
<td>3903</td>
<td>4208</td>
<td>4462</td>
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<tr>
<td>Number of errors</td>
<td>2216</td>
<td>1152</td>
<td>308</td>
<td>426</td>
<td>330</td>
</tr>
<tr>
<td>Error Rate (%)</td>
<td>8.8</td>
<td>9.1</td>
<td>7.9</td>
<td>10.1</td>
<td>7.4</td>
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<tr>
<td><strong>District General Hospitals</strong></td>
<td></td>
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<tr>
<td>Number of medicines prescribed</td>
<td>20178</td>
<td>10753</td>
<td>1524</td>
<td>5699</td>
<td>2202</td>
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<td>Number of errors</td>
<td>993</td>
<td>486</td>
<td>98</td>
<td>331</td>
<td>78</td>
</tr>
<tr>
<td>Error Rate (%)</td>
<td>4.9</td>
<td>4.5</td>
<td>6.4</td>
<td>5.8</td>
<td>3.5</td>
</tr>
</tbody>
</table>
Causes of prescribing errors

Systems factors
• Working hours
• Patient throughput
• Professional support from colleagues
• Senior supervision
• Poor knowledge of workplace systems
• Availability of information
• Design of prescription forms
• Distractions
• Decision support

Prescriber factors
• Knowledge
  – Clinical pharmacology
  – Therapeutics
• Skills
  – Obtaining information
  – Communicating
  – Numeracy/calculations
  – Prescription writing
• Attitudes
  – Coping with risk/uncertainty
  – Monitoring of prescribing
  – Checking routines
Prescription and Administration Record (‘drug chart’/‘kardex’)
## Prescription and Administration Record

### Standard Chart

**Hospital/Ward:** [ ]

**Consultant:** [ ]

**Name of Patient:** [ ]

**GHI Number:** [ ]

**D.O.B.:** [ ]

**Height:** [ ]

**If re-written, date:** [ ]

**Discharge Prescription**

**Data completed:** [ ]

**Completed by:** [ ]

(Attach printed label here)

#### Other Medicine Charts in Use

<table>
<thead>
<tr>
<th>Date</th>
<th>Type of Chart</th>
<th>Note</th>
<th>Known</th>
<th>Medicine/Agent</th>
<th>Description of react</th>
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<tbody>
<tr>
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</table>

#### Previous Adverse Reactions

This section must be completed before any medicine is given.

<table>
<thead>
<tr>
<th>Date</th>
<th>Type of Chart</th>
<th>Note</th>
<th>Known</th>
<th>Medicine/Agent</th>
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**Codes for Non-administration of Prescribed Medicine**

1. Present refuses.
2. Patient not present.
3. Medicine not available – CHECK ORDERED.
4. Missed dose / routes.
5. Administration route not available – CHECK FOR ALTERNATIVE.
6. Possible adverse reaction / side effect.

**Once Only**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Medicine (Approved Name)</th>
<th>Dose</th>
<th>Route</th>
<th>Prescriber - Sign &amp; Print</th>
<th>Time Given</th>
<th>Order Br.</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

**Regular Therapy**

<table>
<thead>
<tr>
<th>Medicine (Approved Name)</th>
<th>For use</th>
<th>Dose</th>
<th>Route</th>
<th>Quantity</th>
<th>Start Date</th>
<th>Date</th>
</tr>
</thead>
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</tbody>
</table>

### Prescription

**Patient's Name:** [ ]

**Date:** [ ]

**Time:** [ ]

**Prescriber - Sign & Print:** [ ]

**Pharmacy:** [ ]

**1.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**2.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**3.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**4.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**5.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**6.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**7.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**8.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**9.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

**10.**

**Dose:** [ ]

**Route:** [ ]

**Quantity:** [ ]

**Start Date:** [ ]

**Date:** [ ]

---

**PRN 002**

---
#once only and premedication drugs

<table>
<thead>
<tr>
<th>DATE</th>
<th>DRUG</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>TIME (24hr)</th>
<th>PRESCRIPTOR (PRINT &amp; SIGN)</th>
<th>GIVEN BY</th>
<th>TIME GIVEN (24hr)</th>
</tr>
</thead>
</table>

**Medicines Reconciliation**

Date: [ ]

Discharge Prescription Prepared & Reconciled: [ ]

Date: [ ]

Date and time this form prepared: [ ]

Sheet No: [ ]

2nd Prescription in use: [ ]

DOCTOR'S DECLARATION (If required by Local Protocol)

I authorise nurse/midwife administration of the medicines included in the symptomatic relief policy & local protocol:

[ ]

with the following exceptions:

Print & Sign: [ ]

Date: [ ]

**Community Pharmacy Information**

Name: [ ]

Tel No: [ ]

Address: [ ]

Compliance Aid Details: [ ]

Patient consent to share discharge information: [ ]

Print & Sign: [ ]

**Patient Details**

Hospital Number: [ ]

Height: [ ]

DOB: [ ]

Weight: [ ]

Date of Admission: [ ]

Surface area: [ ]

Consultant Name: [ ]

Word: [ ]

**Oral and Other Drugs: Regular Prescription**

<table>
<thead>
<tr>
<th>DATE</th>
<th>DRUG</th>
<th>DOSE</th>
<th>ROUTE</th>
<th>DATE</th>
<th>TIME</th>
<th>PRESCRIPTOR (PRINT &amp; SIGN)</th>
<th>GIVEN BY</th>
<th>TIME GIVEN (24hr)</th>
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</thead>
</table>

Note: To discontinue a prescription, initial and date appropriate boxes, draw a diagonal line through section & record reason.
### PATIENT LABEL

**Name of Patient:**

**Hospital Number:**

**Date of Birth:**

**Age:**

**CHI:**

**Ward:**

**Date of Admission:**

**Consultant:**

**Weight:**

**Height:**

**Surface Area:**

**KNOWN DRUG SENSITIVITIES**

Circle below

- No-nil known
- Yes - list below

**KNOWN or SUSPECTED ADVERSE REACTION**

Circle below

- No-nil known
- Yes - list below

**REGULAR THERAPY**

**Weight if applicable:**

**Height if applicable:**

*NB. Time must be in 24 hour format*

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<tr>
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<th>Comments</th>
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**START DATE**

**Stop Date**

**Initial**

**Signature**

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</tbody>
</table>
### DRUG PRESCRIPTION AND ADMINISTRATION RECORD

**ALLERGIES**
- Affix addressograph label here
- CHI: [Enter]
- SURNAME: [Enter]
- FORENAME: [Enter]
- DATE OF BIRTH: [Enter]

No known allergies: [Blank]

**CONSULTANT**
- Ward: [Enter]
- Weight: [Enter]
- Height: [Enter]

**INSTRUCTIONS FOR USE**
- Use of this prescription must follow the Code of Practice Medicines.
- Use the Approved Drug name and print each entry LEGIBLY IN CAPITAL LETTERS in indelible ink.
- NEVER alter existing instructions, write a new entry.
- To stop a prescription, score a single line through both drug and administration sections, sign and date.
- When a dose is administered, the person doing so must initial the appropriate box.

**Charts in This Booklet**
- Regular Prescriptions
- Thromboprophylaxis
- Oxygen
- As Required Prescriptions

**Additional Charts (Attached)**
- Date: [Enter]
- Date Finished: [Enter]

**Codes for Drugs Not Administered**
- D: drug not available
- R: patient refused
- E: omitted on prescribers instructions
- Z: patient not on ward
- S: patient not capable of taking drug
- O: other should be entered in patients notes

**ONCE ONLY PRESCRIPTIONS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Prescription</th>
<th>Dose</th>
<th>Route</th>
<th>Prescriber's Signature</th>
<th>Time Given</th>
<th>Given By</th>
</tr>
</thead>
</table>

**PRESCRIPTIONS**

<table>
<thead>
<tr>
<th>Dose</th>
<th>Start Date</th>
<th>Reason for Change/Stopping</th>
<th>Notes</th>
<th>Comments</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dose</th>
<th>Start Date</th>
<th>Reason for Change/Stopping</th>
<th>Notes</th>
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</table>

**OTHERS**

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<tr>
<th>Dose</th>
<th>Start Date</th>
<th>Reason for Change/Stopping</th>
<th>Notes</th>
<th>Comments</th>
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**OTHERS**

<table>
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<th>Reason for Change/Stopping</th>
<th>Notes</th>
<th>Comments</th>
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</thead>
</table>
Prescribing documentation

• Variable layout and presentation
• No widely accepted standards
• No widely accepted rules about use
• Fragmented
  – oxygen, thromboprophylaxis, insulin, warfarin

Can/should this situation be rectified?
Support for standardisation

• All Wales Medicines Strategy Group (2004)
• British Pharmacological Society (2006)
• Medical Schools Council (2007)
• General Medical Council/Dornan et al. (2009)
• Academy of Medical Royal Colleges (2011)
Justification for standardisation

• Mobile work force become familiar with one of the essential work tools

• Economies of scale
  – Single set of prescribing rules
  – Single development and update process
  – Single training programme (undergraduate and postgraduate) – doctors, nurses and pharmacists

• There seems no justification for individual charts in different localities

• Most advances in medicine come from standardisation

• Somebody may have the ‘perfect chart’ but their loss is far outweighed by realisation of benefits above
Current drug chart initiatives
Current drug chart initiatives

• All Wales Medicines Strategy Group (2004)
• Academy of Medical Royal Colleges (2011)
• Royal College of Physicians/NICE (2011)
• Ireland (Health Service Executive) (2013)
• Scotland ?
Doctors make plea over prescriptions system

A standard system for prescriptions is urgently needed to reduce errors and improve hospital patient safety, senior doctors have warned.

The Royal College of Physicians of Edinburgh (RCPE) found that during one week, 10% of trainee doctors and 6% of consultants made prescribing mistakes.

The findings support previous studies suggesting that as many as one in nine hospital prescriptions were wrong.

The RCPE said the problem lay in the varied systems used to prescribe.

They have called on the Scottish government to bring in new rules to standardise the system, which can vary from one hospital to another.

In response, a spokesman for the government said extensive systems "were in place to ensure patient safety".

He added: "However, we are not complacent and we are always looking to improve further.

RCPE has called for a standard system for prescriptions

Related Stories

Rural drugs row takes fresh twist

Free prescription plans 'on hold'

Prescription charges drop to £3
Single Prescription and Administration Record for Scotland (SPARS)
SPARS: Aims and objectives

• To develop consensus amongst relevant stakeholders within Scotland around the **attributes of an ideal prescription and administration record** for adult hospital in-patients drawing on national and international examples of best practice

• To undertake a **survey of current in-patient documentation** looking for concordance with the standards identified above and significant variations that might cause confusion

• To **create an example of such a chart** that might be adopted as a Scottish national prescription and administration record

• To seek to **develop an education package** that would support good practice in prescribing

• To form **links with other groups** within Scotland and elsewhere who are doing similar work
SPARS: Membership

- Doctors (including junior doctors)
- Pharmacists
- Nurses
- Scottish Patient Safety Programme
- NHS Education Scotland
- Healthcare Improvement Scotland
Welcome

Welcome to the home page of the Single Prescription and Administration Record for Scotland (SPARS) project.

The SPARS Working Group was convened by the President of the Royal College of Physicians of Edinburgh with the overall objective of enhancing patient safety in relation to prescribed medicines. The SPARS project is being supported by Healthcare Improvement Scotland and NHS Education Scotland. The main aims of the project are:

- To develop consensus amongst relevant stakeholders within Scotland around the attributes of an ideal prescription and administration record for adult hospital in-patients drawing on national and international examples of best practice
- To undertake a survey of current in-patient documentation looking for concordance with the standards identified above and significant variations that might cause confusion
- To create an example of such a chart that might be adopted as a Scottish national prescription and administration record
- To seek to develop an education package that would support good practice in prescribing
- To form links with other groups in Scotland and elsewhere who are undertaking similar work

This website enables you to understand the background to the SPARS project, see who is involved, review some of the documentation that is currently used in Scotland, comment on draft documentation that is being developed, see some of the research work that has been undertaken so far and get in contact with the SPARS Group.

News

24 June 2013

A draft SPARS prescription chart has been circulated to each NHS Board, doctors in training, and Directors of Medicine, Pharmacy and Nursing for feedback to help refine the chart before testing it in a clinical setting.

If you would like to participate in the consultation, please download a PDF of the draft chart and complete our feedback survey at: http://svy.mk/14LW5dM.

The feedback survey will close at 10AM on Monday 15 July 2013.

http://spars.rcpe.ac.uk
SPARS: Work programme

- Evidence synthesis
- Establishing drug chart standards (*consultation*)
- Variability of current Scottish charts
- Impact of variability on prescribing
- Design of a new SPARS chart (*consultation*)
- Creating standards for using the chart
- Education support
- Piloting
- Implementation
SPARS: Work programme

• Evidence synthesis
• Establishing drug chart standards (*consultation*)
• Variability of current Scottish charts
• Impact of variability on prescribing
• Design of a new SPARS chart (*consultation*)
• Creating standards for using the chart
• Education support
• Piloting
• Implementation
• Observational audits of prescriptions before and after introduction of the standard medication chart in five sites in public hospitals in Queensland

• Review of around 1,500 patients (20,000 medication orders)

• **Prescribing error rate** decreased from 20.0% of orders per patient before to 15.8% after (Mann–Whitney U test, \( p = 0.03 \))

• **ADRs not documented** fell from 19.5% of 185 patients before and 11.2% of 197 patients after (\( \chi^2, p = 0.032 \))

• **Selection of a drug to which a patient had had a previous ADR** decreased from 11.3% of patients before to 4.6% after (\( \chi^2, p = 0.021 \))

• **INRs > 5** decreased from 1.9% of 14,405 INRs in the 12 months before to 1.45% of 15,090 INRs after (\( \chi^2, p = 0.004 \))

• **Conclusion**: A standard revised medication chart significantly reduced the frequency of prescribing errors, improved ADR documentation and decreased the potential risks associated with warfarin management.
SPARS: Work programme

- Evidence synthesis
- **Establishing drug chart standards** *(consultation)*
- Variability of current Scottish charts
- Impact of variability on prescribing
- Design of a new SPARS chart *(consultation)*
- Creating standards for using the chart
- Education support
- Piloting
- Implementation

Royal College of Physicians of Edinburgh
Standards for the design of hospital in-patient prescription charts

A report prepared for Sir Bruce Keogh, NHS Medical Director, from the Academy of Medical Royal Colleges in collaboration with the Royal Pharmaceutical Society and Royal College of Nursing

Terms of reference
The Academy of Medical Royal Colleges was asked by Sir Bruce Keogh, the NHS Medical Director, to work closely with the Royal Pharmaceutical Society and the Royal College of Nursing to develop standards for the design of in-patient prescription charts, using expert opinion and evidence where available.
Issues considered and raised

- Oxygen, warfarin, heparin, IV medicines, infusions
- Indications for medicines
- Cut away for single patient details visibility
- Medicines reconciliation (new, old, discontinued)
- Pharmacy review spaces
- Space ‘once-only, ‘regular’, ‘as required’ medicines
- Codes for administration decisions
- Patient details
- Patient height, weight, SA
- Recording of special circumstances (e.g. renal or hepatic failure, pregnancy)
- Allergies and sensitivities
- Supplementary charts
- Colour/black & white
- Lansdcape/portrait
- Number of pages
- Paper/material

165 consultation responses
SPARS: Work programme

- Evidence synthesis
- Establishing drug chart standards (*consultation*)
- **Variability of current Scottish charts**
- Impact of variability on prescribing
- Design of a new SPARS chart (*consultation*)
- Creating standards for using the chart
- Education support
- Piloting
- Implementation
Variation in the design and content of in-patient prescription records. An audit across Scottish hospitals.

- **Objective**: To compare the design characteristics and content of existing hospital prescription records across Scotland’s 14 health boards and quantify the variance in current documentation.

- **Methods**: We designed a new prescription record assessment tool and used it to objectively assess 20 hospital prescription records against a series of detailed criteria and parameters.

- **Results**: Prescription records had some similarity in general layout and content. However, there was considerable heterogeneity in the details required for the prescription of a medication, patient information and ID codes for non-administration.
Figure 3: The percentage occurrence of pre-defined chart sections within Scottish prescription charts (n=20)

Prescription chart sections

- Allergies drug sensitivities
- Patient information
- Non administration codes
- Once only medication
- Regular medication
- As required therapy
- General instructions for use
- Thromboprophylaxis
- Warfarin Chart
- O2 therapy
- Infusions
- Subcut Injections
- Insulin Administration
- Nurse administration record
- Pharmacy information

Number of charts (%)
Figure 4 - Scatter graph illustrating the trend in the relative order of common sections within Scottish prescription charts (n=20)

Positioning of chart section, percentage through the document relative to other sections (%)
Figure 7: Percentage inclusion of different categories within the patient information section of Scottish prescription charts (n=20)
Figure 8 - The percentage allocation of the front page of Scottish prescription charts for the four most common sections displayed on this page.

<table>
<thead>
<tr>
<th>Mean areas for chart sections</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient information:</strong></td>
</tr>
<tr>
<td>%: 8.7%</td>
</tr>
<tr>
<td>(cm²): (53.8cm²)</td>
</tr>
<tr>
<td><strong>Supplementary charts:</strong></td>
</tr>
<tr>
<td>%: 4.2%</td>
</tr>
<tr>
<td>(cm²): (26.2cm²)</td>
</tr>
<tr>
<td><strong>Adverse Drug Reactions:</strong></td>
</tr>
<tr>
<td>%: 3.5%</td>
</tr>
<tr>
<td>(cm²): (22cm²)</td>
</tr>
<tr>
<td><strong>Once Only Medication:</strong></td>
</tr>
<tr>
<td>%: 36.4%</td>
</tr>
<tr>
<td>(cm²): (225.6cm²)</td>
</tr>
<tr>
<td><strong>Rest of the page:</strong></td>
</tr>
<tr>
<td>%: 47.1%</td>
</tr>
<tr>
<td>(cm²): (292cm²)</td>
</tr>
</tbody>
</table>

The rest of the page often included the general instructions or non-administration codes, the chart title and governing body logo.
Figure 11- Regular Medications: Specific categories included within this drug prescription section in Scottish prescription charts (n=20)
Figure 13: Box and whisker plots illustrating the area (mean, range and interquartiles) given to the prescriber for filling in key boxes for medication prescription across Scottish prescription charts (n=20)

<table>
<thead>
<tr>
<th>Mean values for the area of prescribing boxes as illustrated above (including standard deviations)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine Name</td>
</tr>
<tr>
<td>Medicine Name</td>
</tr>
<tr>
<td>Dose</td>
</tr>
<tr>
<td>Route</td>
</tr>
<tr>
<td>Prescriber’s signature</td>
</tr>
</tbody>
</table>
Figure 14: ID Codes for non-administration used throughout Scottish prescription charts (n=20)
SPARS: Work programme

• Evidence synthesis
• Establishing drug chart standards *(consultation)*
• Variability of current Scottish charts
• **Impact of variability on prescribing**
• Design of a new SPARS chart *(consultation)*
• Creating standards for using the chart
• Education support
• Piloting
• Implementation
The contribution of prescription chart design and familiarity to prescribing error: a prospective, randomised, cross-over study

Victoria R Tallentire,¹ Rebecca L Hale,² Neil G Dewhurst,³ Simon R J Maxwell⁴

ABSTRACT
Purpose of study Initiatives to standardise hospital paper-based prescription charts are underway in various countries in an effort to reduce prescribing errors. The aim of this study was to investigate the extent to which prescribing error rates are influenced by prescription chart design and familiarity.

Study design In this prospective, randomised, cross-over study, Foundation Year 1 doctors working in five Scottish National Health Service (NHS) Boards participated in study sessions during which they were asked to prescribe lists of medications for five fictional patients using a

INTRODUCTION
In UK hospitals, prescribing errors are common. The General Medical Council commissioned EQUIP study (an indepth investigation into causes of prescribing errors by foundation trainees in relation to their medical education), published in 2009, detected a prescribing error rate of 8.4% among Foundation Year 1 doctors (FY1s).¹ FY1s are newly qualified doctors who are undertaking their 1st year of postgraduate training; they are the most frequent prescribers in a hospital setting.¹ Another recent UK study found 14.7% of

Scottish drug chart comparison study

Study design

- **Aim**: To determine whether design and familiarity with a drug chart increase accuracy of prescribing.

- **Method**: Direct comparison of five drug charts in use across Scotland – Lothian, Greater Glasgow and Clyde, Tayside, Highlands and Grampian.

- **Subjects**: Foundation Year One (FY1) doctors (N=72) from five different regions

- **Design**: One-hour study session with 10 FY1s (two groups of five). Each presented with a ‘prescribing task booklet’, a bundle of drug charts and a standard set of instructions. Randomised order.


5 patient medication lists including one ‘once-only’ drug, one ‘as required’ drug, and one prescription requiring a specific instruction such as ‘with meals’ and one regular drug will be given at non-standard times (e.g. for Parkinson’s disease).
Scottish drug chart comparison study

**Results - Errors**

- Maximum number of errors that could be made was 64 per chart (6 patient information, 58 prescription) = total 320 errors possible
- Mean total error rate was 0.17 (SD=0.22)
- Mean time for completion was 407 s (SD=129)
- No difference in error rate according to medication list ($F_{4,355}=0.62$, $p=0.65$)
- Errors for each prescription chart showed a significant difference ($F_{4,359}=11.96$, $p=0.001$) – errors more frequent on some chart designs
- **Prescribing speed** significantly predicted the error rate between participants ($F=4.38$, $p<0.05$) - those who took longer made fewer errors
- **Chart familiarity** did not predict error rates ($F=1.81$, NS)

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Scottish drug chart comparison study

Results - Usability

It is easy to ...........

Complete patient details and allergies
Locate each section of the chart
Prescribe an individual drug

SPARS: Work programme

• Evidence synthesis
• Establishing drug chart standards (*consultation*)
• Variability of current Scottish charts
• Impact of variability on prescribing
• **Design of a new SPARS chart** (*consultation*)
• Creating standards for using the chart
• Education support
• Piloting
• Implementation
SPARS CHART (September 2013)

- Familiar layout – drawing on commonest approaches
- Black and white
- Booklet style (12 A4 pages)
- Ten numbered boxes to aid communication, guidance and education
- Option for long stay version
- Space of clinical pharmacists to record reviews if required
- *Portrait orientation*
- *No ‘cut away’*

313 consultation responses
Box 1  Patient details

- **Co-morbidities**
- **Size of addressograph labels**
- **Constant visibility of details**
- **Date of admission**

<table>
<thead>
<tr>
<th>Box 1  PATIENT DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHI / D.o.B</td>
</tr>
<tr>
<td>Relevant co-morbidities</td>
</tr>
</tbody>
</table>

[Image: Addressograph]
Box 2  Drug allergy and sensitivities

- Eye-catching colour
- More space required
- Should be visible from all pages

<table>
<thead>
<tr>
<th>Box 2  DRUG ALLERGY AND SENSITIVITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>No known allergy ☐</td>
</tr>
<tr>
<td>Previous known reactions (drug/reaction/signature/date)</td>
</tr>
</tbody>
</table>
Box 3  Other medicines charts

- **Choices of charts**
- **Symptomatic relief**
- **Syringe driver charts**
- **Gentamicin and vancomycin**

<table>
<thead>
<tr>
<th>Previous main charts</th>
<th>Start date</th>
<th>Stop date</th>
<th>Start date</th>
<th>Stop date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticoagulation</td>
<td></td>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulin</td>
<td></td>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemotherapy</td>
<td></td>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient-controlled analgesia/epidural</td>
<td></td>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syringe driver</td>
<td></td>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Box 4 Medicines reconciliation

- Not necessary
- Need more space
- More sources

Would you like to see medicines reconciliation included in the SPARS chart?

Box 4  MEDICINES RECONCILIATION

Admission medication history from

- Patient
  - GP
  - GP10
  - None available
- Carer
  - EKIS
  - NH/RH
  - Other

Admission medicines reconciled

<table>
<thead>
<tr>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
</table>

Medicines changed

Discharge prescriptions reconciled

<table>
<thead>
<tr>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
</table>
Box 5  Thromboprophylaxis

- *Pre-printed VTE box*
- *Stickers*

<table>
<thead>
<tr>
<th>Box 5  THROMBOPROPHYLAXIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrombosis risk factors</td>
</tr>
<tr>
<td><strong>Specify</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Bleeding risk factors</td>
</tr>
<tr>
<td><strong>Specify</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Thromboprophylaxis decisions</td>
</tr>
<tr>
<td>Date</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Box 6  Once-only medicines

- Total once-only medicines slots per chart = 12
- ‘Pharmacy box’ not required

<table>
<thead>
<tr>
<th>Date</th>
<th>Time to be given</th>
<th>MEDICINE</th>
<th>Dose</th>
<th>Route</th>
<th>Prescriber</th>
<th>Administration</th>
<th>Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Name</td>
<td>Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>


### Box 7: OXYGEN

<table>
<thead>
<tr>
<th>Target SpO2</th>
<th>90-96%</th>
<th>94-96%</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>Continuous</td>
<td>As required</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prescription</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Box 8: REGULAR MEDICINES

<table>
<thead>
<tr>
<th>MEDICINE</th>
<th>06</th>
<th>08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosage</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Route</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start date</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Prescriber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review date</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comments/Indication</th>
<th>Pharmacy</th>
<th>How was admission?</th>
<th>Continue at discharge?</th>
<th>Duration</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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</tbody>
</table>

<table>
<thead>
<tr>
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<th>08</th>
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<td>14</td>
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<tr>
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<td></td>
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<td>20</td>
</tr>
<tr>
<td>Prescriber</td>
<td></td>
<td></td>
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<tr>
<td>Signature</td>
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<tr>
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<td>20</td>
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</table>

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<th>Continue at discharge?</th>
<th>Duration</th>
<th>Date</th>
<th>Signature</th>
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<tr>
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<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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</tbody>
</table>

<table>
<thead>
<tr>
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<th>08</th>
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<td>14</td>
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<tr>
<td>Route</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start date</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Prescriber</td>
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<td></td>
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<tr>
<td>Signature</td>
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<tr>
<td>Review date</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comments/Indication</th>
<th>Pharmacy</th>
<th>How was admission?</th>
<th>Continue at discharge?</th>
<th>Duration</th>
<th>Date</th>
<th>Signature</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MEDICINE</th>
<th>06</th>
<th>08</th>
</tr>
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<td></td>
</tr>
<tr>
<td>Start date</td>
<td>18</td>
<td>20</td>
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<tr>
<td>Prescriber</td>
<td></td>
<td></td>
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<td>Signature</td>
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<tr>
<td>Review date</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comments/Indication</th>
<th>Pharmacy</th>
<th>How was admission?</th>
<th>Continue at discharge?</th>
<th>Duration</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Pharmacist clinical screening record:**

- Initial: [ ]
- Time: [ ]
Box 7 Oxygen

- *Space too tight*
- *Not enough spaces to change the prescription*

**Box 7 OXYGEN**

<table>
<thead>
<tr>
<th>Target SpO2</th>
<th>94–98%</th>
<th>88–92%</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>Continuous</td>
<td>As required</td>
<td></td>
</tr>
<tr>
<td>Prescriber</td>
<td>Signature</td>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Review and sign regularly</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
</tr>
<tr>
<td>06</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>14</td>
</tr>
<tr>
<td>18</td>
</tr>
<tr>
<td>22</td>
</tr>
</tbody>
</table>
Box 8 Regular medicines

- Medicines reconciliation options
- Total regular medicines slots per chart = 35
- *14 days is too short / a longer stay version is required*
- Administration times
- Separate area for parenteral medicines

---

<table>
<thead>
<tr>
<th>Box 8 REGULAR MEDICINES</th>
<th>Circle / enter times below</th>
<th>Enter dates below</th>
<th>Month:</th>
<th>Year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDICINE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>06</td>
<td></td>
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<td>08</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Dose</td>
<td>Route</td>
<td>Start date</td>
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<tr>
<td>Prescriber</td>
<td>Signature</td>
<td>Review date</td>
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</tr>
<tr>
<td></td>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments/Indication</td>
<td>Pharmacy</td>
<td>New on this admission?</td>
<td>Continue on discharge?</td>
<td>Duration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes ☐ No ☐</td>
<td>Yes ☐ No ☐</td>
<td></td>
</tr>
</tbody>
</table>
Box 9  As required medicines

- Total as required medicines slots per chart = 12
- *Differentiate more clearly from regular medicines*

<table>
<thead>
<tr>
<th>MEDICINE</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Route</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max freq</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Start date</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Route</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prescriber</td>
<td></td>
<td></td>
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<tr>
<td>Signature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Review date</td>
<td></td>
<td></td>
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<tr>
<td>Given</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional instructions/Indication</td>
<td>Pharmacy</td>
<td>New on this admission?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

**PATIENT NAME:**

**Date of Birth/CHI No.:**
Box 10 Infusion prescriptions

• Total infusion prescription slots per chart = 15
• With to bring prescribing wherever possible onto a single chart (supported by many in consultation)
• Problems with certain drug infusions and TPN
Have we got it right?

• Who has got the perfect chart?
  – Almost no data on what is right or wrong

• Consultation responses highlight competing or incompatible wishes including
  – Layout: portrait v. landscape
  – Complexity: large generic v. specialist sections
  – Content: separate charts v. combination

• All charts are in evolution
SPARS: Work programme

- Evidence synthesis
- Establishing drug chart standards (*consultation*)
- Variability of current Scottish charts
- Impact of variability on prescribing
- Design of a new SPARS chart (*consultation*)
- Creating standards for using the chart
- Education support
- Piloting
- Implementation
Guidelines for completion (back page)

- A general guide visible to all users if necessary although they will have been trained
- Too small
- Too wordy
- Non-administration codes need to be clearer
SPARS: Work programme

• Evidence synthesis
• Establishing drug chart standards (*consultation*)
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• Design of a new SPARS chart (*consultation*)
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SPARS: Work programme

- Evidence synthesis
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- Variability of current Scottish charts
- Impact of variability on prescribing
- Design of a new SPARS chart (*consultation*)
- Creating standards for using the chart
- Education support
- **Piloting**
- **Implementation**
Where do we go from here?

• Final changes in response to consultation

• Piloting of the SPARS chart
  – NHS Highland, NHS Western Isles, and NHS Tayside
  – Small scale under careful supervision

• Controlled drug chart comparison study

• Implementation (?)
Summary

• Prescribing remains an area of concern
• Variable documentation is one of several system factors that might contribute to problems
• There is emerging consensus on standards
• Drug charts in Scotland are very variable
• Variation may influence the chances of error
• An initial SPARS chart has been created but considerable challenges remain before a Scottish drug chart can be implemented
• The potential benefits of standardisation are great