Anticoagulation Control in NHS Highland: a new DAWN?
‘Contents’

- Background to our service
- Changes that were enabled by change to version 7.6 and limitations we have found.
- IDL letters at discharge
- Plea for enhanced functionality.
Background

- NHS Highland is geographically the largest Health board in the UK.
  - 41% of area of Scotland including A&B CHP
  - Approx 400,000 population but generally very dispersed
  - Approx 240,000 in ‘north Highland’
# UK Comparison

The English are the densest population in Europe

(and they also have the most people per square kilometre)

<table>
<thead>
<tr>
<th>Region</th>
<th>Population/Km²</th>
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<tbody>
<tr>
<td>England</td>
<td>377</td>
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<tr>
<td>Wales</td>
<td>140</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>124</td>
</tr>
<tr>
<td>Scotland</td>
<td>64</td>
</tr>
<tr>
<td>Highland</td>
<td>8</td>
</tr>
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</table>
One hour travelling time
Inverness
Aberdeen
Dundee
Highland Haematology Statistics

- North Highland = 30,000 km² / ‘Size of Belgium’
- 240,000 population
- Up to $3^{1/2}$ hrs by road to Inverness (Leeds to London)
- 40% of population live more than 1 hour from Inverness.
- Population older than Scottish average
An archaic anticoagulant system!

- Just over 2500 oral anticoagulant patients in ‘north Highland’
- 2350 controlled by Raigmore based postal and hospital clinic dosing service
  - Only between 130-150 patients attend a face to face clinic
  - all still dosed by Haematology medics!
  - This despite the GPs being paid to dose patients!!!!!
- No systematic point of care service in community!
- No daily van service to remotest areas thus samples sent by post – can take 3 days to arrive!
- A few GP practices have gone ‘rogue’ (i.e. dose their own patients but not linked to regional dosing system. No QA of POCT where used) – but GP contract permits this action!
- In-patients not dosed via DAWN at present

- Averaging 184 postal INR samples per day – about 3.5 hours
v6 to v7.6 before and after

- Change to v7.6 live 23/2/2009
- Can’t use induction module – patient samples don’t arrive on due dates!
- IDL link
- Letters to patients GPs
- Next of kin
- Print on authorisation versus batch print later – all or none!!
- Patient e-mails (and issues relating)
- Pas link for demographics but need a useful pas link
- In patient dosing
v6 working

- **Dosing process**
  - INR result sent via interface to v6 DAWN AC running on a laptop. Request forms passed to dosing medic.
  - Couldn’t use induction module.
  - Once dose determined the dose instruction and retest date +/- comments were manually typed into the main laboratory IT system.
  - The lab IT system then generated a printed report and an electronic report that could be accessed by clinicians.
  - Only INR results greater than 5.0 phoned to requester
  - Some GP practices would await arrival of printed report at practice (up to 4 days) before contacting patient (even for new/unstable patients!)

- **Administration processes**
  - Record creation/alterations in DAWN entirely manual.
  - Referral forms(any patient correspondence needed to be archived in paper form.
  - Only DNA and annual review letters created via DAWN.
V7.6 working

- **Administrative processes**
  - Referral receipt/’questionnaires’/clarifications
  - Record creation/demographics updating
  - DNA handling
  - Annual reviews/Due to Stops
  - Archiving

- **Dosing/Communication processes**
  - Dosing process & ‘bridging therapy’
  - Dose instruction, interfacing, printing, e-mailing
Record Management

• Record creation still a manual, non-intuitive, error prone process.
  – Now either electronic referral via hospital discharge letter system or paper
  – When incomplete referral or contradictory information received can now use DAWN to generate requests for full information or clarification

• Once a record is created we now have a partially useful interface to hospital PAS
  – can update patient demographic details and advise of inpatient versus outpatient status
  – Would wish to be able to ‘pull in’ all demographic/GP details from PAS interface after national number entry into DAWN to avoid error and make process more efficient

• Big benefit is ability to scan documentation and add to patient record in DAWN
  – thus avoiding large paper based archive
  – Electronic referrals can be ‘pasted’ into DAWN document system.

• DNA management – ‘smart letter’ creation. Now only one process required no matter the number of times a patient has DNA’d nor at which clinic
  – Logic within message production process tailors letter as needed

• Annual review/Due to stop letter creation now very simple
Dosing

- Still can’t use induction module but..
- ‘Bridging’ therapy setting allows us to separate new patients from the ‘maintenance’ crowd until stabilised
- Coded comments very useful.
- Logic in report production can be used to replace the dose instruction with the contents of certain coded comments
  - Used when insufficient information received to allow us to make a dose recommendation
Dosing instruction communication

• At end of dosing run – **batch** production of:
  – Printed dose instruction/request form to patients
  – Interface message to lab IT system and onwards to results reporting system
  – E-mail reports to GPs
  – E-mail report to patients
  – Next of Kin letters/e-mails
### Patient Name & Address

PRIVATE & CONFIDENTIAL

TO OPEN: FOLD ALONG PERFORATIONS AND CAREFULLY REMOVE THE SHAPED AREAS

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**Raigmore Hospital, Inverness: Postal Anticoagulant Control Service**

For advice, please contact your GP practice

**KEEP this section with you & SHOW it to your GP/Dentist/Pharmacist before receiving any treatment/medication**

**CHI Number:** 010260021 **Anticoagulation episode start date:** 01/06/2000

**Forename:** INCREDIBLY **Anticoagulation episode stop date:** 01/06/2000

**Surname:** LONGNAMEOPOULOS

**DOS:** 01/06/264

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<table>
<thead>
<tr>
<th>Date</th>
<th>INR Average daily dose</th>
<th>INR</th>
<th>INR</th>
<th>INR</th>
<th>INR</th>
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<tr>
<td>07/09/2008</td>
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<tr>
<td>30/09/2008</td>
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<td>130.00</td>
<td></td>
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<tr>
<td>14/09/2008</td>
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<td>Unable to dose</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>01/09/2008</td>
<td>3.2</td>
<td>130.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01/09/2008</td>
<td>3.2</td>
<td>130.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**History of just dosing (not for patient use)**

**Please discard this instruction sheet when you receive your new one containing your days of oral dosing.**

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**Please enter the dose of anticoagulant being taken since the last INR test or other dose change below:**

**Number of missed doses (if any):**

**Dose(s) now being taken (milligrams per day):**

**When did the patient start taking this dose:**

**Other messages to the laboratory (e.g. drug changes):**

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**Anticoagulant:**

**Target INR:**

**AC Reason:**

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**Sample type:** blood **Sample taken by:** Name **Lab Use Only**

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**New Address:**

**Telephone No.:**

**Post Code:**

**Other Information:**

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If undelivered please return to:

DEPT OF HEMATOLOGY, RAIGMORE HOSPITAL, INVERNESS, IV2 3UJ

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TO OPEN: FOLD ALONG PERFORATIONS AND CAREFULLY REMOVE THE SHAPED AREAS
Interface message

- Patient demographics, treatment episode descriptors, treatment history x5 and dose instruction data sent to lab ‘ IT system.
- The onwards to electronic Results Reporting system and is thus information is available to all secondary care clinicians as well as to patients’ GP practices
E-mailing

• E-mails to GP practices
  – Even though GP practices have electronic access to lab’ results many would wait for printed report to arrive before contacting the patient. Other practices would lose track of who they had bled vs who had a result confirmed. Thus we introduced INR result/dose instruction e-mailing to GP practices to speed up the process and ensure all patients covered.

• E-mails to patients
  – Even with the above many patients cannot access a result via their GP practice as quickly as they would wish. As there is an increasing number of ‘silver surfers’ we introduced direct patient e-mailing for those who request it.
GP e-mailing

• GPs provided their generic ‘reception’ nhs.net e-mail addresses
  – These addresses are added to the GP ‘organisation’ and ‘HCProfessional’ fields.
  – Mail preference then set to e-mail.
  – Despite the mail preference setting printed letters to GPs can still be sent as we give each message template that needs to be printed a specific ‘printerpapertype’
Patient e-mailing

- Patient completes an e-mail consent form and provides e-mail address.
- Currently 73 patients (3.2%) but growing steadily.
- Patient communication method preference set to ‘e-mail’
  - this allows a dedicated message template (with no ‘printerpapertype’ allocated) to be sent via nhs.net to patients. Done in batches several times a day usually.
    - We have a generic nhs.net e-mail address for the anticoagulant service.
    - This address is entered into DAWN and thus patient sees the e-mail as coming from that address.
  - BUT we still also send a printed dose instruction/next request form questionnaire.
- To permit printing of the dose instruction to ‘e-mail’ patients we have had to create a ‘team member’ for each patient called ‘Raigmore-print always’ that receives ‘all messages’. This by-passes the block on printing that is normally created when setting a patients preferred messaging method to ‘e-mail’
In patient dosing

- Not yet fully developed
- PAS interface identifies admission to an acute hospital and sets patient status to ‘active admitted’ in DAWN
  - at present only for pilot ward in Raigmore, community hospital patients treated as outpatients at present
  - can automatically set to ‘bridging therapy’
  - Only outbound interface message created after INR dosing
  - At discharge PAS interface sets patient status to ‘Discharged’ (would prefer ‘preadmission status’)
Functionality we would like

- PAS link – pull in patient demographics rather than manual entry (even if wizard assisted)
- PAS link that identifies patient’s current location AND alters the communication output from DAWN accordingly (e.g. stop sending dose instruction letter to patients home whilst an inpatient in a community hospital)
- Not just mail versus e-mail choice for patients/NOK/GPs etc – need to be able send either or depending on type of document being sent – thus each custom document should have a specification as to how it is sent.
- More intuitive to reduce training times
- Specific clinic list filter should map to a specific bulk letter to avoid potential generation of wrong output for a given list.
- Print on authorisation for some but not for other clinic types – currently all or nothing.
Thank You

Any questions?