IT connectivity in Primary care
Experiences in shared care for INR monitoring

Linda Turner, Point of Care Testing Manager

Gaynor Driver, Specialist POCT Scientist

December 2023

Content

1. Brief overview of INR enhanced service implemented in ABUHB Primary care.

2. IT Connectivity - Scope

3. IT Connectivity - What ?

4. IT Connectivity - Why ?

5. IT Connectivity - How ?

6. Challenges and solutions

7. Where we are now (what we have achieved)

8. Looking forward (problems still to overcome)

Overview

- **I**nternational **N**ormalised **R**atio (**INR**) is used to monitor warfarin therapy
- Dosing of warfarin
- Patient management in ABUHB
- Enhanced Service- what and why?
- Overseen by POCT Dept

Patient experience

Do you prefer Fingerprick to Venous

%	Label
83%	MUCH PREFER
13%	PREFER
2%	SAME
0%	NO
2%	NOT AT ALL
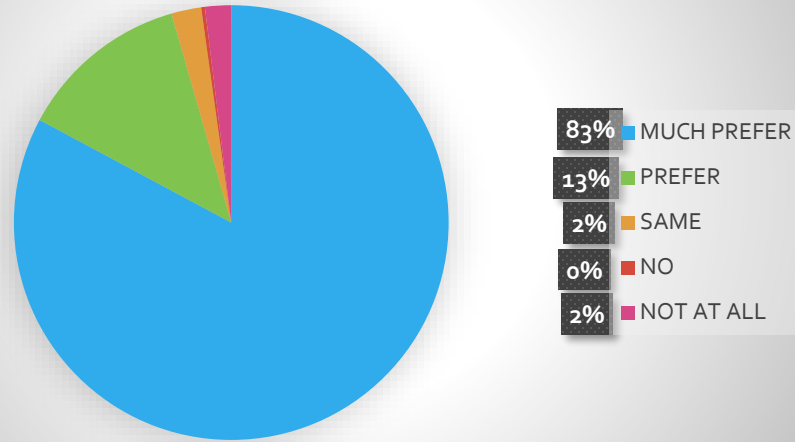
Is it easier to discuss issues when having POC test

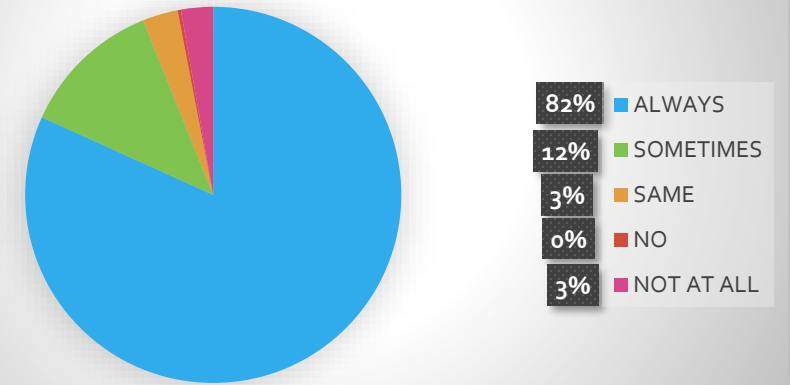| %	Label
82%	ALWAYS
12%	SOMETIMES
3%	SAME
0%	NO
3%	NOT AT ALL

Are you attending clinic more or less frequently with POC testing

%	Label
19%	MUCH LESS
52%	LESS
22%	SAME
3%	MORE
4%	MUCH MORE
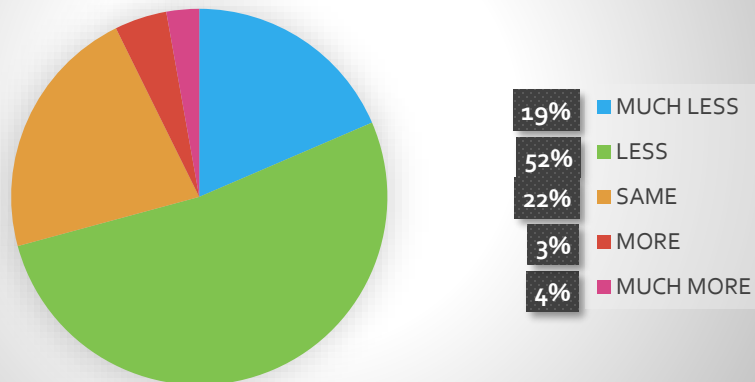
Do you prefer to have your INR result available at the time of testing
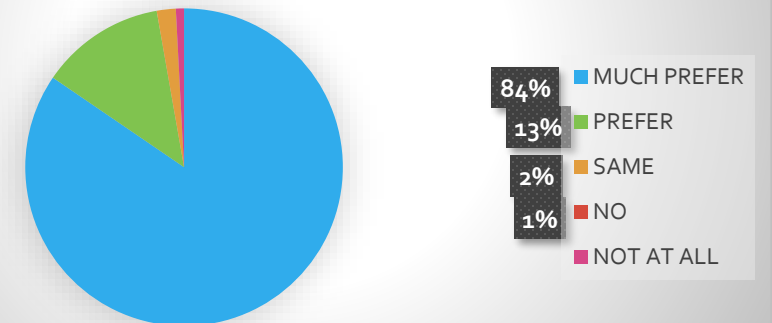
%	Label
84%	MUCH PREFER
13%	PREFER
2%	SAME
1%	NO
	NOT AT ALL

Patient overall experience

How satisfied are you with the changes in Warfarin management since introducing POC testing
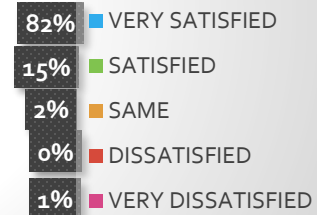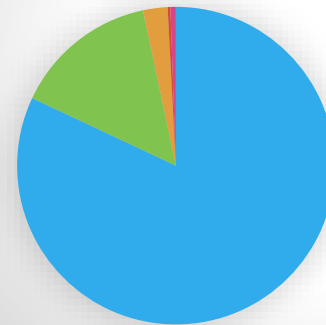
- 82% VERY SATISFIED
- 15% SATISFIED
- 2% SAME
- 0% DISSATISFIED
- 1% VERY DISSATISFIED

IT Connectivity – Scope

- 75 GP surgeries – 68
  - 44 DAWN dosing - 41
  - 24 Non DAWN dosing - 18
  - 9 Not dosing or testing at all
- 25 D/N Bases
- 3 Anticoagulation Clinics
- 1,000 Operators using the devices
- 203 Devices

IT Connectivity – What?

WPOCT

GP Practice 1
POC Device 1
POC Device 2

GP Practice 2
POC Device 3

GP Practice 3
POC Device 4

WLIMS

Welsh Laboratory Information Management System

(TrakCare)

① WPOCT sends HL7 ORU^R01 INR result messages via TCP/IP sockets to port 4041 on the DAWN AC server.

① WLIMS sends HL7 ORU^R01 INR result messages via TCP/IP sockets to port 6001 on the DAWN AC server.

② Outbound dose messages will be sent to WPOCT if the original INR was received from WPOCT

② Outbound dose messages will be sent to WLIMS if the original INR was received from WLIMS

MIRTH Connect

on DAWN AC Server

① When a patient has been dosed in DAWN, an outbound dose message will be generated by DAWN AC. If the INR originated from WPOCT, the message will be sent back to WPOCT, otherwise will be sent to WLIMS.

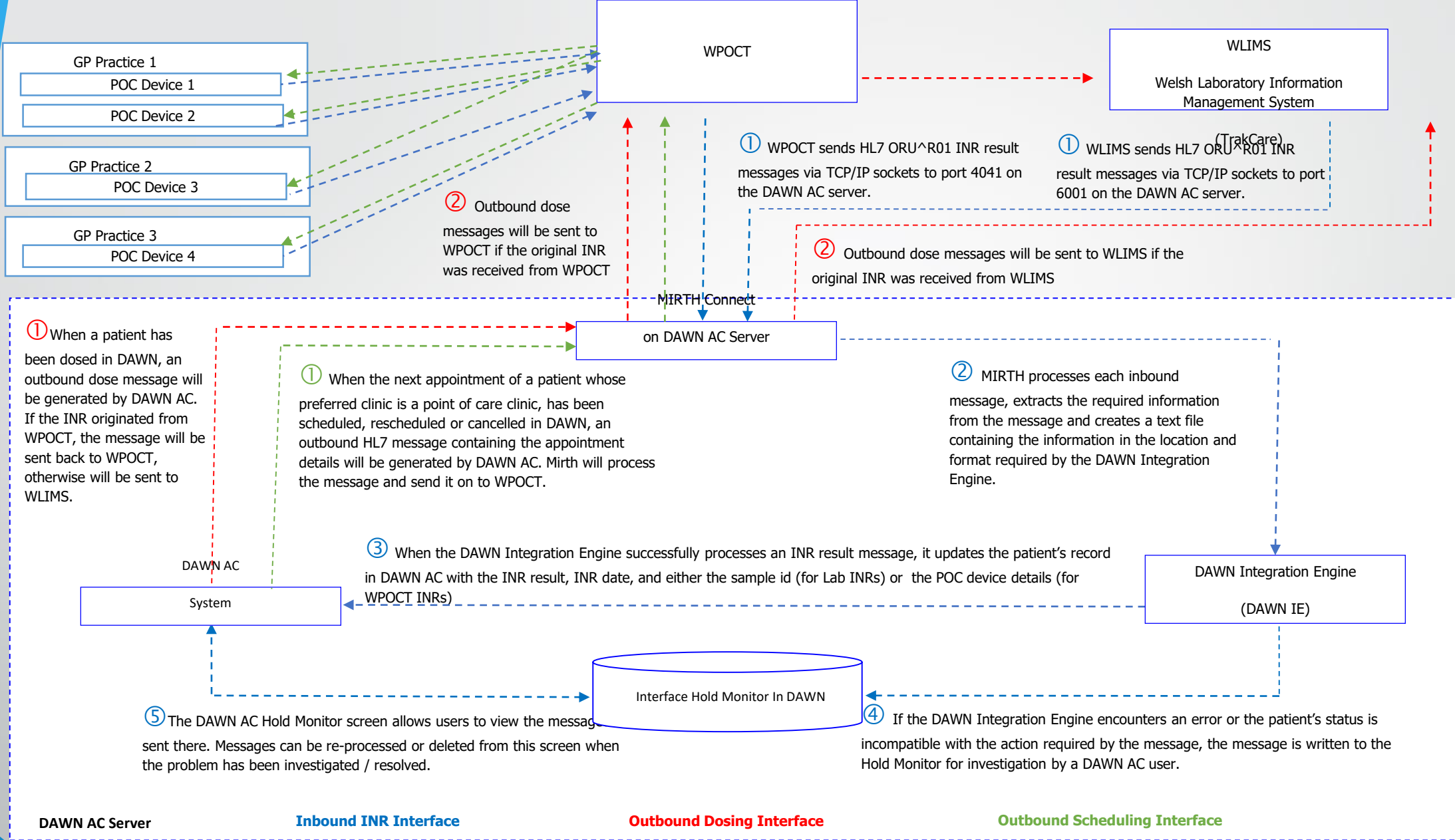① When the next appointment of a patient whose preferred clinic is a point of care clinic, has been scheduled, rescheduled or cancelled in DAWN, an outbound HL7 message containing the appointment details will be generated by DAWN AC. Mirth will process the message and send it on to WPOCT.

② MIRTH processes each inbound message, extracts the required information from the message and creates a text file containing the information in the location and format required by the DAWN Integration Engine.

DAWN AC

System

DAWN Integration Engine

(DAWN IE)

③ When the DAWN Integration Engine successfully processes an INR result message, it updates the patient's record in DAWN AC with the INR result, INR date, and either the sample id (for Lab INRs) or the POC device details (for WPOCT INRs)

Interface Hold Monitor In DAWN

⑤ The DAWN AC Hold Monitor screen allows users to view the messages sent there. Messages can be re-processed or deleted from this screen when the problem has been investigated / resolved.

④ If the DAWN Integration Engine encounters an error or the patient's status is incompatible with the action required by the message, the message is written to the Hold Monitor for investigation by a DAWN AC user.

DAWN AC Server   **Inbound INR Interface**   **Outbound Dosing Interface**   **Outbound Scheduling Interface**

IT Connectivity – What ?

WPOC

Non DAWN surgeries

WPOC

```
┌─────────────────────┐                    ┌─────────────────────┐                    ┌─────────────────────┐
│ DAWN                │     Clinic List    │ WPOCT               │     Clinic List    │ Coaguchek INR       │
│                     │   ───────────▶    │                     │   ───────────▶    │ Meter               │
│ Anticoagulant       │                    │ All Wales POCT IT   │                    │                     │
│ Dosing Software     │                    │ System              │                    │                     │
│                     │                    │                     │                    └─────────────────────┘
│                     │                    │ Poccelerator        │                               │
└─────────────────────┘                    └─────────────────────┘                               │ INR result
                                                                                                  ▼
┌─────────────────────┐   INR result       ┌─────────────────────┐                    ┌─────────────────────┐
│ WPOCT               │   Dose             │ DAWN                │     INR result     │ WPOCT               │
│                     │   %TTR             │                     │   ◀───────────    │                     │
│ All Wales POCT IT   │   ◀───────────    │ Anticoagulant       │                    │ All Wales POCT IT   │
│ System              │                    │ Dosing Software     │                    │ System              │
│                     │                    │                     │                    │                     │
│ Poccelerator        │                    │                     │                    │ Poccelerator        │
└─────────────────────┘                    └─────────────────────┘                    └─────────────────────┘
        │ INR result
        │ Dose
        ▼ %TTR
┌─────────────────────┐   INR result       ┌─────────────────────┐
│ LIMS                │   Dose             │ CWS          WCP    │
│                     │   %TTR             │                     │
│ Pathology Information│  ───────────▶    │ Clinical     Welsh  │
│ management system   │                    │ Work         Clinical│
│                     │                    │ Station      Portal │
└─────────────────────┘                    └─────────────────────┘
        ┌─────────────────────┐
        │ EMIS/VISION         │
        │                     │
        │ GP information system│
        └─────────────────────┘
```

IT Connectivity – Why?

- ABUHB insisted as part of the project to ensure results are in the secondary care patient record.
- Prevent transcription errors

IT Connectivity – How?

- Liaised with DAWN, Siemens, DHCW to create the data flow.
- Created spreadsheet of all the GP locations and identifying codes
- Siemens downloaded this information into WPOCT
- Installed USB driver to PC's in primary Care
- Configured the handheld base units to communicate with WPOCT
- Preparation of devices to be connected via the base units
- Preparation of WPOCT for the devices and the operators

Challenges and solutions

- Covid

- Installation of USB drivers
  - New version of Base units does not recognise the pre- installed USB drivers !!

- Configuring the base units on site was very time consuming.

- Downloading and configuring device information to WPOCT on site was even more time consuming and frustrating
  - Data cleansing the device prior to docking
  - Setting up device in WPOC **before** visiting site
  - Configure patient list in WPOCT

- Time for results to transmit from WPOCT to DAWN !!!

Where are we now?

Connected:

- All 18 NON DAWN GP surgery – 42 devices

- 20 D/N bases – 42 devices

- 3 anticoagulation clinics – 8 devices

40 DAWN dosing surgeries manually entering results into DAWN, but results, Dose , %TTR and next appt date connecting to WPOCT and downstream to LIMS, Clinical Work Station and Welsh Clinical Portal

Looking Forward

- Retirement !!
- Connecting remaining 5 D/N bases - 10 devices
- Connecting all Dawn dosing surgeries devices directly to WPOCT as originally intended – 80 devices
- Connection to the GP surgeries IT systems EMIS/Vision – ideally but a way off.

Thank you

Any Questions?