

# ePrescribing Masterclass

6th February 2019





# Masterclass 6th February 2019

# Agenda

1pm *Introduction* 

Ann Slee, NHS England

1.05pm Using ePrescribing to Support Palliative Care

Simon Guilfoyle, Jonathan Hindmarsh, City Hospitals, Sunderland

1.30pm Learning from an ePMA Implementation Case Study

Denis Duigan, Health Innovation Network London

1.55pm *Summary, next steps and close* 

Ann Slee







Part of: South Tyneside and Sunderland Healthcare Group

# Using ePrescribing to Support Palliative Care

Simon Guilfoyle (Informatics Pharmacist)

Jonathan Hindmarsh (Palliative Care Pharmacist)



# Continuous Subcutaneous Infusions (CSCIs)

- The administration of drugs by CSCI occurs primarily in palliative care, for patients in whom swallowing medications orally has become difficult or impossible.
  - A syringe driver typically delivers such infusions over 24 hours for round-the-clock treatment of distressing symptoms (such as: pain, breathlessness, nausea, vomiting and agitation).
- Prescriptions for CSCIs are, however, multifaceted and thus difficult to replicate in an electronic format. Variables with CSCIs include:

There is a vast array of agents that can be incorporated in to CSCIs, and these can be included in ways that allow up to 5 medications to administered simultaneously in

os

No single diluent can be used exclusively, water for injection or 0.9% sodium chloride are typically used, but the choice will vary depending upon the physiochemical compatibility of the drugs that are to be mixed within the same syringe driver and/or if



The solution for infusion must be made up to a specified volume, which will vary depending on the syringe driver device used and if a more substantial dilution is required to overcome physico-chemical incompatibility.



It is therefore easy to appreciate that due to so many variables and software limitations, most NHS trusts, despite having implemented EP systems, use additional 'workarounds' for the prescribing of CSCIs, such as the use of supplementary paper charts, or "free text" electronic prescriptions. Neither of which allow for full software functionality or integration.





### **NHS Foundation Trust**

- At the time:
  - Utilising an integrated EP system that had widely replaced the use of paper prescriptions throughout the trust
  - However, CSCIs were prescribed on supplemental paper charts due to software limitations
- **Problem:** Prescriptions for a single patient would exist in two different formats (i.e. electronic and paper)
  - Workaround: patients receiving CSCIs would, therefore, have a uncoded, "free text" entry added to their electronic record indicating the use of a paper chart
- Problem: The CSCI prescription exists on paper and discharge paperwork, medication labels and stock debits can only be issued from electronic orders.
  - Workaround: The medications and diluent contained within the CSCI would have to prescribed as individual electronic entries to produce a labelled supply of medication and generate an accurate discharge letter



# The consequences of

## "Warkaraunde"



# **Paper Charts:**

Errors of omission present on **75**% of kardexes

Total volume, diluent and route of administration commonly omitted



## **Administration:**

Average time to 1st CSCI administration was 3.5 hours



# **Discharge turnaround:**

Average time for pharmacy to process a discharge was 90 minute



# **Discharge letter compliance:**

Pharmacy generated discharge letters only contained approx . 40% of the required information



# **New functionality**

- Enhanced IV functionality with Meditech upgrade (version 6.07):
  - Large volume IVs
  - IV piggybacks
  - Pre-mixed IVs





# **New functionality**

- Enhanced IV functionality with Meditech upgrade (version 6.07):
  - Large volume IVs > "order strings"
  - IV piggybacks
  - Pre-mixed IVs
- Order strings dictionary allows:
  - Grouping together large volume entries
  - Order by rate/duration, not dose
  - Attach additives/medications to the fluid





# Order strings – practical applications

Manage Order List						
□ Order	SCH	Status	Start/Stop	T <sub>T0</sub>		
Sodium Chloride Infusions						
☐ Sodium Chloride 0.9% 500 ML@ STAT (NEW)	STA					
☐ Sodium Chloride IV 1,000 ML @ 4 HRLY	SCH					
☐ Sodium Chloride IV 1,000 ML @ 8 HRLY	SCH					
☐ Sodium Chloride IV 1,000 ML @ 12 HRLY	SCH					
☐ Sodium Chloride IV 50 ML @ 1 HR	SCH					
☐ Sodium Chloride IV 100 ML @ 1 HRLY	SCH					
☐ Sodium Chloride IV 100 ML @ 2 HRLY	SCH					
☐ Sodium Chloride IV 100 ML @ 4 HRLY	SCH					
☐ Sodium Chloride IV 250 ML @ 1 HR	SCH					
☐ Sodium Chloride IV 250 ML @ 2 HRLY	SCH					
☐ Sodium Chloride IV 250 ML @ 4 HRLY	SCH					
☐ Sodium Chloride IV 500 ML @ 1 HRLY	SCH					
☐ Sodium Chloride IV 500 ML @ 2 HRLY	SCH					
☐ Sodium Chloride IV 500 ML @ 4 HRLY	SCH					
☐ Sodium Chloride IV 500 ML @ 6 HRLY	SCH					
☐ Sodium Chloride IV 500 ML @ 8 HRLY	SCH					
☐ Sodium Chloride IV 500 ML @ 12 HRLY	SCH					
☐ Sodium Chloride IV 1000 ML @ 1 HRLY	SCH					
☐ Sodium Chloride IV 1000 ML @ 2 HRLY	SCH					
☐ Sodium Chloride IV 1000 ML @ 6 HRLY	SCH					
☐ Sodium Chloride IV 1000 ML @ STAT	STA					





# Order strings – practical applications

Edit Order							
Order Sodium Chlorid	e IV 1,000 ML @ 12 HRLY		Start/Stop Wed 30 Jan after 1 bag	14:40	Status New		
* IV Fluid Sodium Chloride 0.9% [Sodium Chloride 0.9% 1000 Ml]					er Bag Units ml		
	Additive/Medication &	Ar	nount	Units			
Total Volume Unit	1,000 ml						
Titrate *Rate *Units Duration Infusion Site *Route Pending	O Yes	*Start Date *Start Time Stop Date Stop Time Days Hours Bags/Bottle Total Vol To	02:39	) 31 Jan 9			



# Other applications? ... CSCI?

- Order strings functionality allows multiple additives/medications within a single order entry
  - No separate prescriptions needed
  - Could use coded-drug entries as opposed to free-text
- Initially tried a fully customisable single CSCI order string entry
  - Prescriber determines diluent, volume, rate, device
  - Wasn't practical solution
- Therefore changed approach to pre-define fields
  - Standard volumes for specific devices
  - Rate set up for continuous infusion over 24 hours
  - Options for WFI or NaCl 0.9%





# **Prescribing processes**

 Search for "palliative care syringe driver" via medication lookup menu

Current Orders History							
New Orders   New Meds   New Sets   0 Queued							
Favourites Category Name							
Medications by Name							
a b c d e f g h i j k l m n o p q r s t u v w x y z							
1 2 3 4 5 6 7 8 9 0 - = [ ] \ / . , ' ; ` List							
Del Clear Shift Starts With Any Word							
Medication palli							
Palli							
☐ ★ Palliative Care Syringe Driver (**check drug compatibility**)							



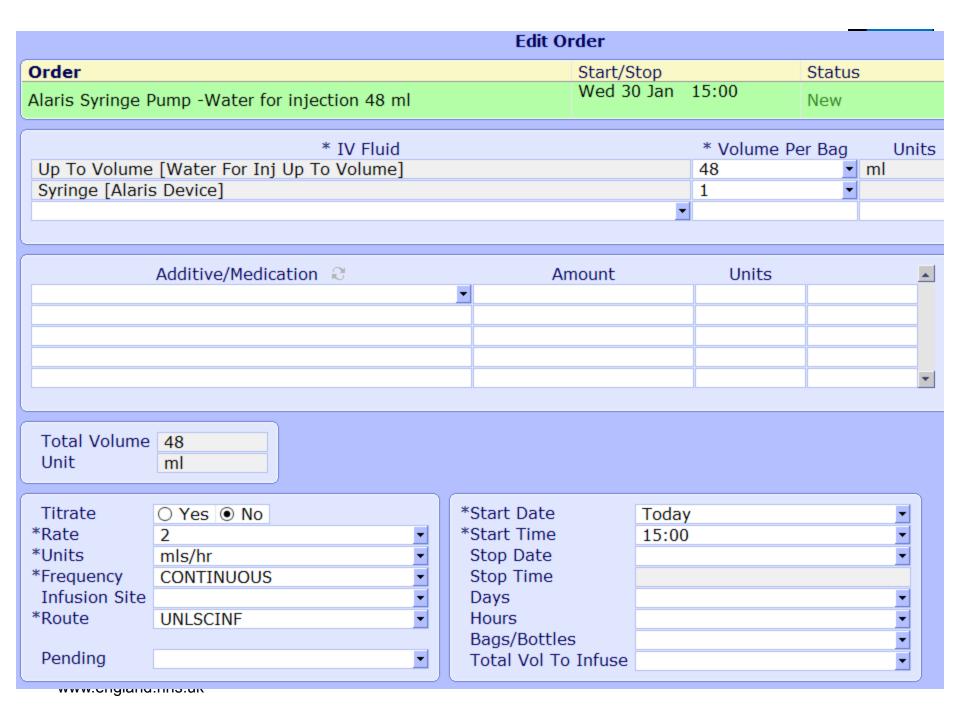


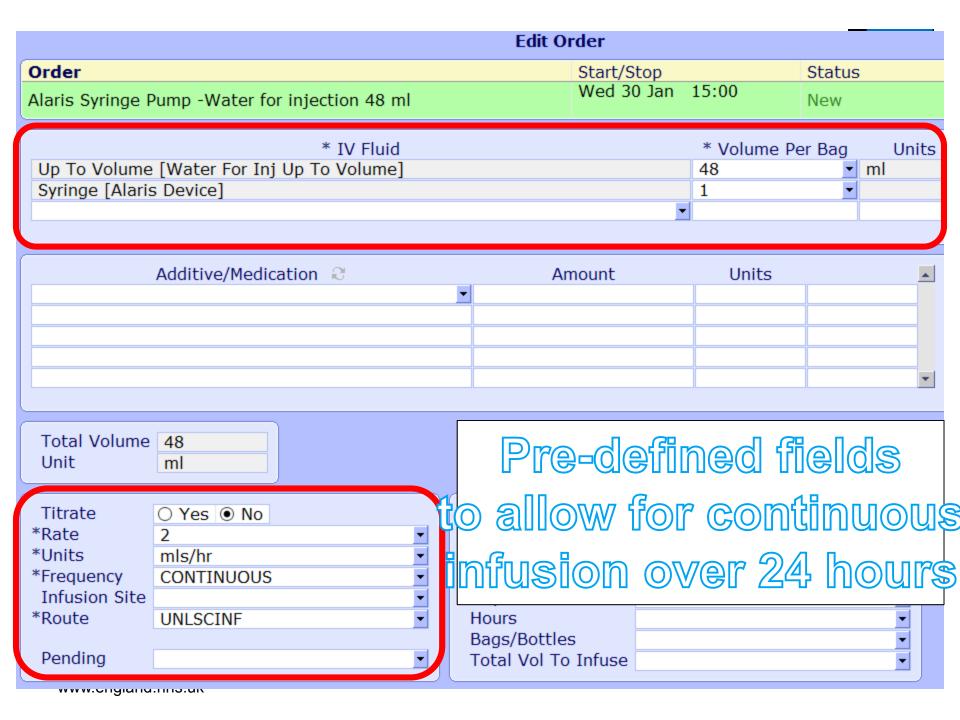
# **Prescribing processes**

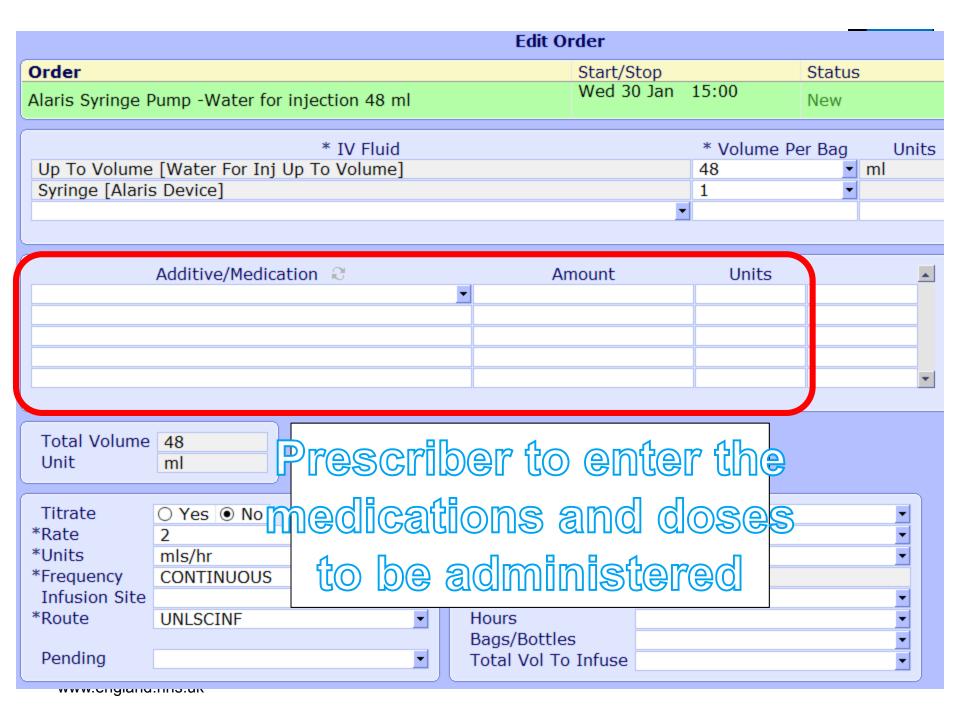
Choose appropriate device/volume/diluent

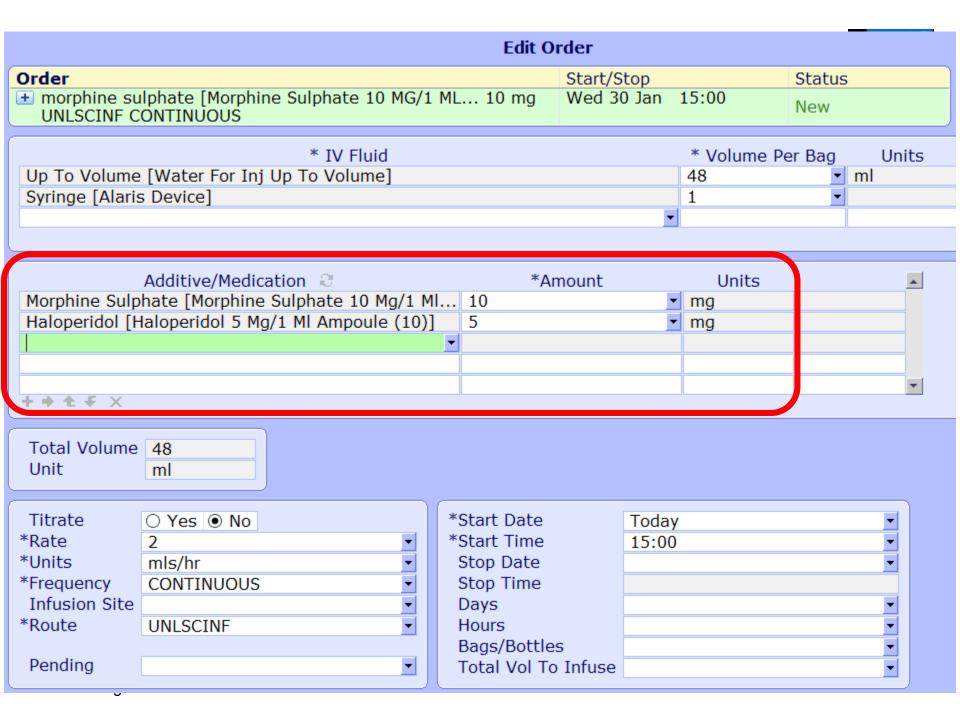
List
Status













# **Pharmacist verification**

<u> </u>	0	rders with Ac	tivity 🚹 🏻 🖪	Review	In	structions		Sta	atus	Source	æ
	∍ mo	orphine Sulphat orphine sulphate 105551439 IVINI	10 MG, halop	eri3		O Bag	£2.90	Unverif	ied	OM Guilfoyle, Simon	
			48 M	IL UNI	LSCINF CONT	TINUOUS SCH	@ 2 MI	LS/HR			
				rug			Ordered Dose Amount			mount	
		Morphine Sulphate 10 MG/1 ML Ampoule(morphine sulphate)							10 MG		
		Haloperidol 5 MG/1 ML Ampoule (10)(haloperidol)					5 MG				
		in									
		water for inj up to volume(UP TO VOLUME) water for inj up to volume							48 ML		
		Alaris Device(Syringe) Alaris Device						1			
		Review Activity Date - Time User						Source			
		Conflicts Found	30/01/19 - 1	513 I	PHA BKG						
		Unsupplied	30/01/19 - 1	513 I	PHA12GUIS						J

 All information available to the Pharmacist to perform clinical cl of the syringe driver and it's components



Nursing administration

Morphine Sulphate 10 mg /1 ML Ampoule 10 MG Haloperidol 5 mg /1 ML Ampoule (10) 5 MG In water for inj up to volume 48 ml In Alaris Device 1 @ 2 mls/hr UNLSCINF CONTINUOUS SCH

Bag Volume: 48 mls Duration: 24 hr

Generic: morphine sulphate haloperidol Up To Volume

Syringe

Rx#: 005049916

M 🏈 🕞 SI 🖟

### Label Comments:

Syringe Driver containing:

Drug 1: Morphine Sulphate 10mg

Drug 2: Haloperidol 5mg

To be made up to volume with water for injection and administered by continuous subcutaneous infusion

over 24 hours, as per local

protocol.

15:00 -18m

- Combined prescription entry on MAR
- All medications (and doses), device, diluent, volume and rate all clearly defined.



# Discharge communication

MEDICATION			WHEN AND HOW MUCH TO TAKE
SYRINGE DRIVER CONTAINING			
Morphine Sulphate 10 MG/1 MI.	10	MG	B'fast   Lunch   Teatime   Bedtime
Haloperidol 5 MG/1 ML Ampoule	5	MG	
UNLICENSED-SUBCUT INFUSION			
			Why am I taking it?

Syringe Driver containing:

Drug 1: Morphine Sulphate 10mg

Drug 2: Haloperidol 5mg

To be made up to volume with water for injection and administered by continuous subcutaneous infusion over 24 hours, as per local protocol.





# Discharge communication

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UNLICENSED-SUBCUT INFUSION					
			Why am I taking it?		

Syringe Driver containing:

Drug 1: Morphine Sulphate 10mg

Drug 2: Haloperidol 5mg

To be made up to volume with water for injection and administered by continuous subcutaneous infusion over 24 hours, as per local protocol.

Device and total volume not stated to facilitate continuity of care



# Discharge communication

Discharge letter automatically generates the combined prescription order:

morphine sulphate [Morphine Sulphate 10 MG/1 ML Ampoule], 10 mg, haloperidol [Haloperidol 5 MG/1 ML Ampoule (10)], 5 mg, Up To Volume [water for inj up to volume], 48 ml, Syringe [Alaris Device], 1, UNLICENSED-SUBCUT INFUSION continuous infusion

- Frequency of infusion (ie. over 24 hours)
- Indications for each medication
- Quantities of medication supplied
- Date/time of last dose change(s)



# The Impact of electronic CSCI prescribing



Pre-electronic prescribing	Outcome:	Post-electronic prescribing
29%	Prescription completeness and legality	100 %
4 hours and 23 minutes	Average time taken to administer a patient's first syringe driver	1 hour and 19 minutes
7 hours and 40 minutes	Average time spent prescribing syringe drivers (over an 8 week period)	1 hour
59 minutes	Average time taken to process a discharge (including prescriptions and discharge letter)	23 minutes
40%	Discharge letter compliance, with regard to essential syringe driver information	80%
> 13 %	The percentage of syringe drivers that contained incompatible	0 %

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- Prospective data was collected over a 4 month period
- 100 syringe driver prescription assessed prior to EP rollout.
- 102 prescriptions assessed post-implementation of EP build.
- Improvements were demonstrated with regards to patient safety and service efficiency.



# Benefits of electronic CSCI prescribing

- Fully paperless > no supplementary charts
- Coded-drug entries > allergy/conflict checking
- Combined prescription > clear what medications are to be mixed in CSCI
- Screening tool for palliative patients
- Fully auditable
  - records of drugs/doses prescribed
  - any changes to CSCI highlighted to pharmacy
- Standardised prescribing practice
- Efficient discharge process











Felix Vaal

ICT Project Manager, Imperial College Health Partners

Denis Duignan

Head of Technology, Health Innovation Network



## Project context





Imperial College Healthcare NHS Trust (ICHT) is a Global Digital Exemplar Trust that is internationally recognised for delivering exceptional and efficient care through the use of world-class digital technology and information.

Following the implementation of an Electronic Health Record system in 2013, funded in part by the NHS National Programme for IT (NPfIT), Imperial decided to implement electronic Prescribing and Medicines Administration (ePMA) in 2015.

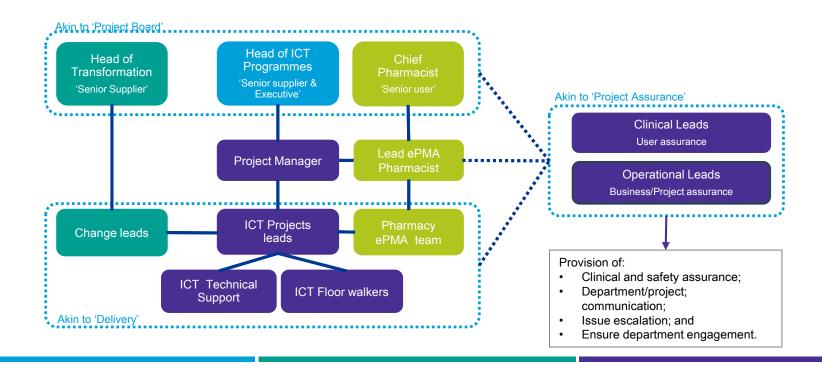
The main aim of an ePMA system is to improve patient safety by reducing medication errors, increase the use of healthcare services and create additional cost to the NHS.



# Project approach





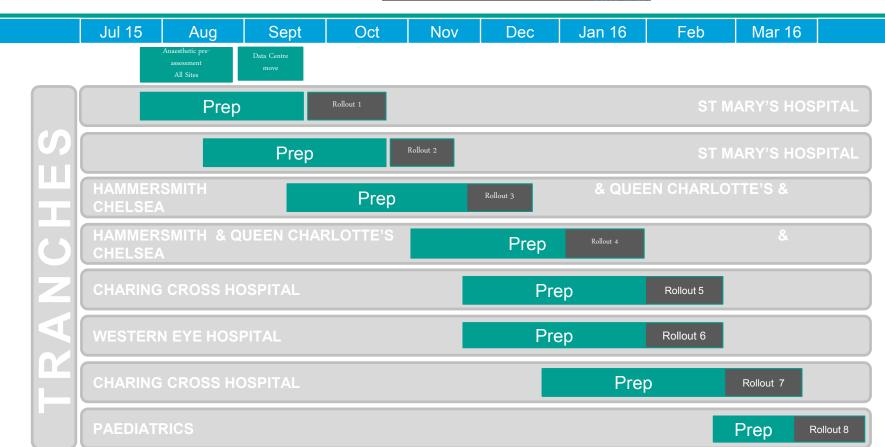




# Project approach





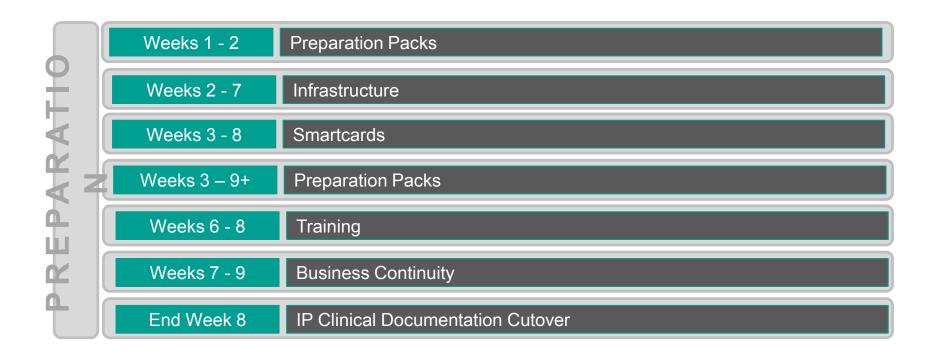




# Project approach











# Lessons





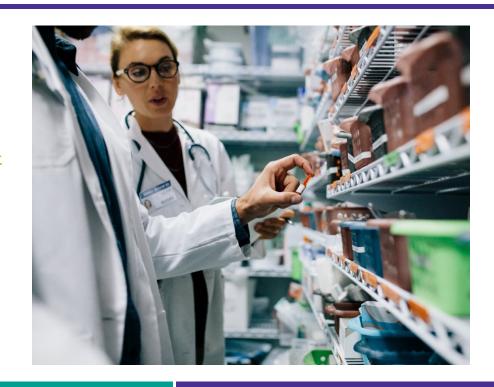
# Pharmacy





"The hardest part of the implementation of the ePMA system was the transcription of medication charts. It required accuracy and consequently took a very long time."

**ePMA Pharmacy Lead**Imperial College Healthcare NHS Trust









### Planning

Infrastructure and hardware planning was affected by the *limited physical size of some rooms* and infection prevention regulations.

### Coding

Medication coding was challenging. By default, medications were coded by their *pharmacological name* and not by their branded name, which caused confusion for clinical staff when searching for medicines.

### Stabilisation

During the stabilisation phase, the main issues that arose centred around *smart* cards and *system access*.



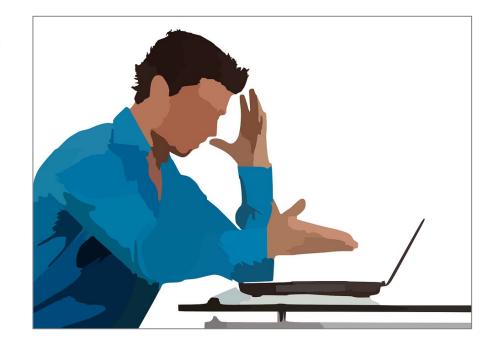






"Initial complaints were mostly around computers being slow etc. things that could be resolved easily. The queries containing the real issues with ePMA use were not received until two or three weeks down the line."

ICT Project Lead Imperial College Healthcare NHS Trust









### Infrastructure

Ensuring that *cables of the right length* are available for carts and that there is adequate *power socket availability* via an infrastructure assessment.

### Hardware

**Powered PCs** are the recommended hardware of choice over the use of laptops.

### **Understanding Technical Requirements**

To best understand the technical requirements of a ward, the *Technical Support*Team should be involved in the initial needs assessment.









### **Key Success Factors**

- Providing floor-walkers with *sufficient training*, supported with resources at pre-implementation.
- Meticulously *planning the floor-walker rota* o that all hospital shifts would be covered by at least one floor-walker.
- Planning for additional floor-walker support at 'go-live'. This is when extra support is most required.
- Assigning each floor-walker to an ICT Project Lead to whom they would escalate issues beyond their remit.









## Change Team

**Pre-implementation consultations** were held with all *relevant stakeholders* to *understand clinical workflows*, and the *impact* that the implementation of the ePMA system would have on them.

**Kick off meetings** with each department were held in a single room with *all potential users* to show the *benefits* of ePMA and its implementation process.

Those who were **most positive towards ePMA** were identified and encouraged to act as *'champions'* for the ePMA system.

**Key information** of the *new processes and workflows* was communicated to users by way of *posters* placed at the wards.





#### Physician





The Clinical Lead was seen as a 'super user' of the ePMA system, able to hand-hold the ward through the implementation process, providing support to ward staff whenever needed.

Alongside their role of supporting ward staff, they were also pivotal in *convincing consultants* of the benefits of the ePMA system, *securing their 'buy in'*.

"The biggest challenge I faced was getting the buy-in from the medical staff."





## Key Messages

Undertake a comprehensive pre-implementation needs assessment to identify key responsible individuals and the technical requirements of individual wards.



Ensure sufficient time is allocated for the transcription of medication charts. It requires accuracy and consequently can take a significant amount of time.

ePMA implementation is a hospital-wide initiative. Time is required to effectively communicate and attain the 'buy-in' of users.







## Lessons by theme





## Piloting





"The main strength of the pilots was the learning. By identifying as many problems as possible, *useful preparation packs* could be developed for the subsequent rollout, where questions related to issues experienced during the pilots were used to reduce the risk of reoccurrence."

ICT EPMA Project Manager

Imperial College Healthcare NHS Trust

- Committed consultants must be chosen to lead the pilots.
- The necessary number of pilots should be conducted.
- Varied locations should be chosen to conduct the pilots.
- Enough time must be given to the pilots.
- It is important to understand the objectives of the pilots.
- Sufficient amount of time should be allotted to evaluate and extract key

lessons.



## Planning and Strategy





"Deciding the safest way of approaching implementation was key: the senior team had to weigh up the risks of taking a 'big bang' (I.e. very rapid) versus a more gradual approach which would require the presence of a hybrid record."

Deputy CIO

Imperial College Healthcare NHS Trust

- A proactive project manager actively engaging with departmental leads is key to the success of the project.
- A clear management structure for floorwalkers needs to be formulated.
- Sufficient time for preparation prior to roll-out must be provided
- It is important to have a clear protocol and to allocate enough time allocated for transcription.
- Implementation should occur in the downstream wards first.



## Training





"We wanted training to be *engaging* and *clinically relevant* rather than being focused on software-specific processes.

Simply clicking through pages engages no part of the brain."

#### Consultant Geriatrician

Imperial College Healthcare NHS Trust

- Having a multi-faceted training programme can be greatly beneficial. Not all clinical teams will respond to training provided in a particular way.
- Providing the Pharmacy Team with extensive training is key to the success of the project.
- When possible, training sessions should be led by Clinical Leads alongside the ICT leads.
- An internal Trust user manual can be extremely useful.
- Demos and 'test' patients that replicate real, world scenarios can facilitate training.



## Engagement and Communication





"It's very difficult to speak to everybody, but *identifying individuals who will 'feed*' key messages to others can be incredibly helpful if you miss certain people."

#### Change Lead

Imperial College Healthcare NHS Trust

- It is important to identify those who are most positive towards the adoption of the ePMA system.
- Engaging users at each ward, providing them with information about the benefits of ePMA and likely changes to workflow can facilitate a smooth implementation.
- A collaborative attitude and effective communication amongst ICT-Pharmacy-Clinical teams is essential for the success of the project.
- Cross-departmental meetings can promote information-sharing-and-shared learning.



#### Resistance





"It can be difficult to approach clinicians when they do not want to adopt a new system. They are reluctant, they don't want change, they are happy doing things as they have always been done."

**Chief Nursing Information Officer**Imperial College Healthcare NHS Trust

- It can be difficult to convince users to learn and adopt a system alongside their everyday work.
- Resistance is particularly strong among senior clinicians.
- Older generation of clinicians may resist change due to limited computer literacy.
- Engaged Leads can help attain buy-in and combat resistance.



#### Ongoing Support





"Even after a ward went live, the team would still walk back to that ward twice a day, proactively asking doctors and nurses whether they were ok, or if they required any further help."

#### Lead ePMA Pharmacist

Imperial College Healthcare NHS Trust

- Sufficient ongoing support for senior clinicians in the early stage of implementation is key.
- Out-of-hours technical support for hardware/software issues or queries can be greatly beneficial.
- Feedback channels and issue escalation mechanisms to support future concerns facilitate smooth implementation.



#### Infrastructure & Equipment





"A lot more infrastructure and hardware was needed than originally anticipated. In addition, maintaining a large number of computers on trolleys had the unintended consequence of requiring premature equipment replacement."

**Deputy CIO**Imperial College Healthcare NHS Trust

- Sufficient infrastructure planning to accurately understand requirements is key.
- A possible small 'reserve' fund to meet higher than expected demand for: power carts, printers, scanners and desktops can prove to be extremely useful.



#### About this resource





This case study was developed from lessons taken from a series of semi-structured interviews with staff involved in the implementation of ePMA at Imperial College Healthcare NHS Trust by the Health Innovation Network (HIN) in Autumn 2018. The aim of this work is to support other NHS organisations that may be considering adopting a similar solution.

#### VIEW FULL CASE STUDY AT

#### WWW.HEALTHINNOVATIONNETWORK.COM/E-PRESCRIBING

This work was undertaken by the Technology Team at the HIN and links into the broader e-prescribing toolkit developed through Professor Aziz Sheikh.

http://www.eprescribingtoolkit.com/





## Technology Team | Health Innovation Network | About Us







We connect academics, NHS commissioners and providers, local authorities, patients and patient groups, and industry.

We work to accelerate the spread and adoption of evidence-based innovations and best practice across South London and beyond.

Acting as catalysts of improvement across the local health and care system, our work supports better health outcomes & economic growth.





# **Summary and Next Steps**

Followed by Q&A

## Next Masterclass, 13th March 2019

#### **Agenda**

1pm *Introduction* 

Ann Slee, NHS England

1.05pm Using Snomed to support allergy checking

Anthony Young, Northumberland, Tyne and Wear Trust

1.35pm What is happening with the ePrescribing Toolkit?

Lucy McCloughan, Margaret Callaghan, University of Edinburgh

1.55pm *Summary, next steps and close* 

Ann Slee

All presentations are on the toolkit – <u>www.eprescribingtoolkit.com</u>