



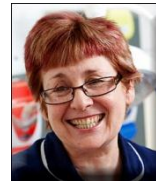
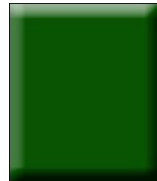
East of England Ambulance Service  
NHS Trust



# Electronic Patient Care Record

## Improvement Experiences July 2012

Dr Pamela Chrispin

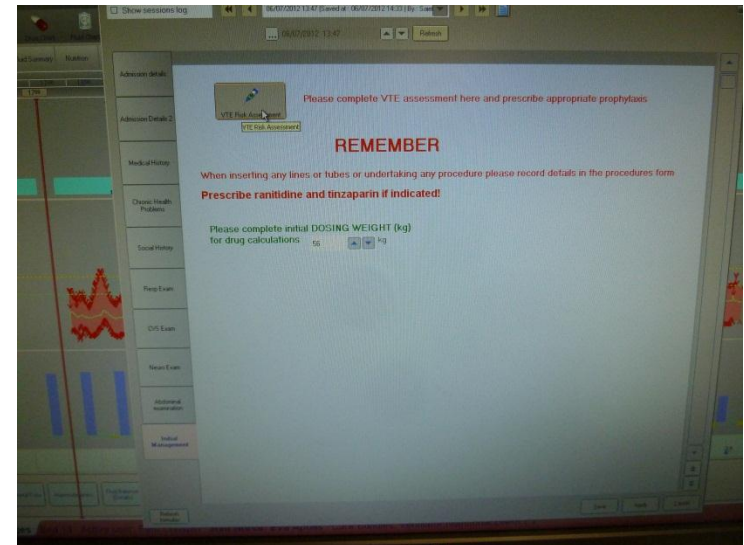
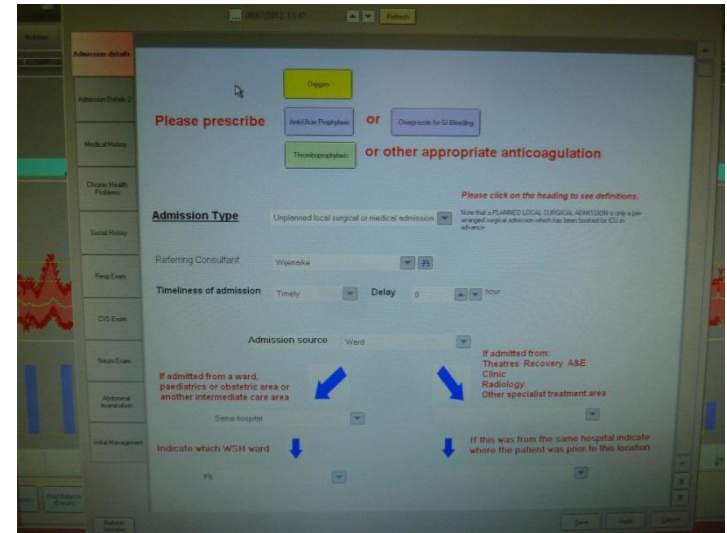






# Possible Uses of Electronic Handover

- Clarification / recording of transfer of responsibility
- Historical narrative
- Awareness of significant events
- Managing acute / chronic situation - diagnostic and monitoring plan / care plan with goals of treatment
- Anticipate future events / prevent undesirable actions / occurrences
- Document decisions and judgments
- Documenting completed tasks
- Educational / audit / research tool





# Potential Benefits of Electronic Handover

- Computerised handover reduces adverse incidents in some settings
- Promotes structure through checklist format – reduced reliance on memory
- Evidence of assessment, diagnosis, treatment in an ‘approved’ way
- Easy access to comprehensive information
- Cross-check existing patient data
- Easy to run queries, audit, research
- Storage and protection of patient data
- Secure from non-authorised users
- Familiar output once embedded
- Key prompts
- Link to help screens

Name	Quantity/Mix	Drug / Solution ra	Start time	Status	Warning	Comments
<input type="checkbox"/> NG/TPN Set On			14/07/2012 17:00	Pending		
<input type="checkbox"/> Lactulose	20 mL		14/07/2012 18:00	Pending		30 - 50ml TDS for
<input type="checkbox"/> Complete Pressur...			14/07/2012 18:00	Pending		
<input type="checkbox"/> Complete HII forms			14/07/2012 19:00	Pending		
<input type="checkbox"/> Consider entry in p...			14/07/2012 19:00	Pending		
<input type="checkbox"/> Lines and Tubing ...			14/07/2012 19:10	Pending		Change Transdu
<input type="checkbox"/> TEDS			14/07/2012 19:10	Pending		
<input type="checkbox"/> Complete CAM-IC			14/07/2012 21:00	Pending		Mild deficiency 10
<input type="checkbox"/> Thiamine	100 mg		14/07/2012 22:00	Pending		
<input type="checkbox"/> Oxygen	1 Application		15/07/2012 00:00	Pending		30 - 50ml TDS for
<input type="checkbox"/> Lactulose	20 mL	47 mL/hour	15/07/2012 00:25	Pending		Pump No. = Incre
<input type="checkbox"/> Fresubin HP Energy	500 mL		15/07/2012 01:10	Pending		
<input type="checkbox"/> Complete Manual ...			15/07/2012 06:00	Pending		30 - 50ml TDS for
<input type="checkbox"/> Teeth Brushing			15/07/2012 06:00	Pending		
<input type="checkbox"/> Lactulose	20 mL		15/07/2012 06:00	Pending		

Name	Quantity/Mix	Drug / Solution ra	Start time	Status	Warning	Comments
<input type="checkbox"/> Arterial Line	30 day		PRN	Pending		
<input type="checkbox"/> Saline Neb	5 mL		PRN	Pending		max 100 mcg per
<input type="checkbox"/> Fentanyl Bolus	50 µg in 0 mL Waste		PRN	Pending		Pump No. 30078
<input type="checkbox"/> Potassium Chloride	60 mmol in 60 mL	10 mmol/hour .10	PRN	Pending		
<input type="checkbox"/> NG Tube	30 day		PRN	Pending		

Shifts handover from a point-in-time interface to a continuum of care





# Potential Hazards of Electronic Handover

- Little evidence that adverse incidents reduction is reproducible – a standardised reliable tool remains elusive
- Top-down deployment usually fails - developers vs clinicians
- Implemented to solve one problem without considering what new ones might arise
- Not a substitute for verbal handover – approx 20-30% of information transferred during handover is not documented in the medical records
- Does not remove human error
- Requires training / access / passwords
- Depends on IT – batteries, Bluetooth
- Looks at single patient, does not capture system issues

Fluid Infusions and Blo	
Gelofusine	<input checked="" type="checkbox"/>
Volulyte	<input checked="" type="checkbox"/> 250
Analgesia_Sedation Inft	
Remifentanil	5 <input checked="" type="checkbox"/>
GI Drug Infusions	
Omeprazole (Bowmed) In	20 <input checked="" type="checkbox"/>
Electrolyte / Vitamin Inft	
Magnesium Sulphate In	<input checked="" type="checkbox"/>
Potassium Chloride	<input checked="" type="checkbox"/>



# Ideal Features

- Allow emergency inter-organisational handover
- IT tool to support the clinician, not frustrate or cause failure
- Structure should improve quality
- Prevents repetition - Permits checking
- Simple to train on and use
- Protect and store patient data
- Readily available on a stable platform which maintains accessibility over time

Category	Field	Value
Patient Details	✓ GP Name	HICKSON
NGK Details	GP Practice Name	
Other Contacts	✓ GP Address 1	THE GUILDHALL AND BARROW SURGERY
	✓ GP Address 2	LOWER BAXTER STREET
GP Details	GP Address 3	
	GP Address 4	
	✓ GP Postcode	IP33 1ET
	✓ GP Phone Number	01284 701601



# Electronic Patient Care Record

- EEEAST has implemented the Emergency Care Solution (ECS) - part of the National Programme for Information Technology (NPfIT)
- Electronic Record is created pre-hospital
- Patients arrive into hospital departments with an electronic record instead of paper





# Electronic Patient Care Record



- ECS – Emergency Care Solution
- Siren software, developed by Medusa
- Supplied by CSCA under the NPfIT
- Used by six Ambulance Services – standardised tool





# Process Overview

- Calls to emergency services in the East of England are recorded in a Computer-Aided Dispatch (CAD) system, which captures numerous data fields, including patient demographics and the urgency of the call.
- Demographic data interfaces with the ePCR, which is automatically available to the Paramedic for access using the Toughbook.
- During the face to face patient assessment, further information is captured, including incident information, clinical condition, treatment, etc.
- Toughbooks are fitted with mobile data SIM cards – ePCR data is continually synchronised with the remote data centre
- If a patient is transported to hospital, the receiving hospital is able to access the patient's electronic record in the data centre via Webviewer.

IS/IT Enablers	Enabling Changes	Business Changes	Benefits	Objectives	Drivers
ePCR	Enable Remaining Vehicles	Availability of Patient Demographics and GP Practice data	Optimise conveyance reductions	Increased support for commissioning of services	Improve patient care and clinical quality and therefore improve patient safety
Web Viewer	Stabilise Toughbook Build	Electronic records as standard	Better patient outcomes	Ambulance Quality Indicators	Improve availability of information
Toughbook Clinical Portal	Defib Integration	On-going improvement consistency of record completion	Improved continuity of patient care	National Performance Measures	Improve organisational efficiencies
Resilient APN	Enable Hospitals	Management of Usage	Improved clinical supervision	Compliance with Caldicott Principles	The Power of Information
Smart Cards	GP Messaging	Secure Access to ePCR via Webviewer	Improvement in data quality	Compliance with Records Management Guidance	Implement systems provided under NPfIT
Data Warehouse	Develop Web Report Suite	Availability of Clinical Record to those subsequently caring for patient	Ability to analyse activity by GP Practice, Patient, Impression	Support QIPP Agenda	Meet national requirement to be using electronic records by 01/04/12
Data Analytics	Implement Data Analytics	Automated Reporting	More sophisticated analysis and audit of clinical data	Foundation Trust	
R5B Software	Product Development	Releasing Time	Improve Patient Handover		
DoS	R5B Upgrade	Frequent Caller Analysis	Reduction in inappropriate care and clinical variations		
R6M Software		Use Pathways and DoS	Secure audit pathways		
		Use of Summary Care Record	Improved 2 way communication with crews		
			Reduction in Trust Insurance Costs (CNST Level 2)		
			Reduction in cost of pre-printed records and archive costs		
			Support CQUIN		



# ePCR Vehicle Fitments Overview

## Example Equipment Installations

**Ambulance**



**Rapid Response Vehicle**





# Electronic Patient Care Record

File	Window	Help	Comments	Filters	?	500
<b>ID</b>	Smith, J	23Y M	Gunshot		R	10:57:09
ID/CC	Identification	Chief Complaint	Secondary Complaints			
<b>Hx</b>	<b>PERSONAL</b>	Last Name:	First Name:			
History		Smith	John			
<b>10</b>	DEMOGRAPHICS	Middle Name:	Preferred Name:			
ABCD						
<b>V/S</b>	NEXT OF KIN	Sex:	Ethnicity:			
Vitals		Male				
<b>Exm</b>	CONTACTS	Date of Birth:				
Physical Exam						
<b>TX</b>		Age:	Age Unit:	Actual	Estimate	
Treatment		23	Years			
<b>CP</b>		Weight:	Weight Unit:			
Care Plan						
<b>I</b>		NHS No.:				
Incident						
<b>R</b>						
Review						







# Webviewer

- The ePCR can be accessed via Webviewer before the patient arrives
- Information will be neatly presented and legible
- Record is stored permanently and securely, accessed by Smartcard

VIEW ADMINISTRATOR TOOLS LOGOUT

Batch View

From

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

To

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Transported: All

Patient Type: All

DISPLAY GRID



# Accessed by Smartcard



Insert into card reader or keyboard

Login using your unique password

**NHS**

ATTENTION: You are attempting to access the NHS Care Records Service. Your use of NHS Care Records Service systems is governed by the terms and conditions stated on the RA01 form that you accepted when your smart card was issued. By entering your passcode you are confirming your acceptance of these and are bound by them and the Computer Misuse Act 1990. All usage of NHS Care Records Service is recorded and analysed. Action will be taken against any individual attempting inappropriate activity involving NHS Care Records Service. If you are not entitled to use the NHS Care Records Service then you must not attempt to gain access.

Enter your passcode to access:



# Patient Report Form

East of England Ambulance Service **NHS**  
NHS Trust

Created on: 02/07/2012 11:05:49

Incident Number: A0207120711  
Patient 1 of 1

**Finalised: Yes**

---

## PATIENT

Sex: Female Ethnicity: W: British  
Chief Complaint: Abdominal Pain / Problems;

## COMMENTS

No history of trauma.  
Took own co-codamol this morning 2 x 15/500

## HISTORY

	ACTUAL	PERTINENT NEGATIVES
Symptoms	GU / GI: Abdominal Pain; Dysuria; General: Abdominal Pain; Cardiovascular: Cold Peripheries;	GU / GI: No Diarrhoea; Cardiovascular: No Palpitations; No Chest Pain;
Origin of Pain/Symptom	Abdomen: Lower;	
Onset	Date/Time: 29/06/2012	
Provocation	Nothing;	
Quality	Stabbing;	
Radiation/Spread	Abdomen: Upper; Abdomen: Middle; Abdomen: Lower;	
Relieved By	Nothing;	
Time (Duration)	Days: 3;	
Allergies	No known allergies: No Known Allergies;	
PMH	Surgical: Other: twisted bowel about 15 years ago operated.; Endocrine: Other: Lupus; GU/GI: Last Bowel Movement: '01/07/2012 19:00'; Diverticulitis;	Neuro: No Epilepsy; Surgical: No Appendectomy; Endocrine: No Diabetes - Insulin Dep.; No Diabetes - Non-Insulin Dep. (Diet); No Diabetes - Non-Insulin Dep. (Meds);
Soc./Fm.Hx	ACTIVITIES OF DAILY LIVING: Normally self caring;	

## FIRST VITAL SIGNS

Time	HR	RR	BP-Sys	BP-Dia	SPO2	Peak Flow	EtCO2	BM	TEMP	Pain: Numeric	Pain: Visual	GCS	Position	Done By
M- 10:30:00	76BPM - Reg.;		88mmHg - RT;	51mmHg	95% - RA;			7.5mmol/L	37Celsius - TYM;	9		15	Lying	MB

## Impression

Impression **Medical: Acute Abdominal Problem;**

Gen	Primary Survey Summary:	Normal
	Patient Position Found:	Lying
	AVPU:	Alert;
A	Airway Status:	Clear;
B	Breathing Sounds:	Breathing Sounds: Normal/Clear;
	Respiratory Rate:	Regularity: Fast;
C	Skin:	Temperature: Cool; Colour: Cyanosed; Moisture: Dry; Cap Refill: More than 2 seconds; Turgor: Slightly decreased;
	Pulse:	Site: Left Radial; Rate (per/min): Normal; Rhythm: Regular; Strength: Weak;
D	Pupils:	(L): Quality: Normal; (R): Quality: Normal;
	Mental Status:	Normal;
	Loss of Consciousness:	No;
Exam Systems	CNS:	Examined and normal;
	CVS:	Examined and normal;
	GU/GI:	Guarding; Pain worse moving, coughing;
	General/skin:	Clammy; Cyanosed (Central);
	Respiratory:	No Audible Wheeze; No Unable to talk in full sentences;

#### VITAL SIGNS

Time	HR	RR	BP-Sys	BP-Dia	SPO2	Peak Flow	EtCO2	BM	TEMP	Pain: Numeric	Pain: Visual	GCS	Position	Don By
M-10:30:00	76BPM - Reg.;		88mmHg - RT;	51mmHg	95% - RA;			7.5mmol/L	37Celsius - TYM;	9		15	Lying	MB
M-11:00:00	84BPM - Reg.;	20BPM	100mmHg	71mmHg	9% - RA;					6		15	Lying	MB
M-11:21:51	84BPM	19BPM	99mmHg - RT;	88mmHg	97% - RA;					5		15	Lying	MB

#### TREATMENT

Section	Item	Summary	Done By
Treatment	IV/IO	Site: Left; Site: ACF; Successful: Yes; Attempts: 1; Size (G): 18;	Marcus Bailey
Treatment	Drug	Drug Name: Morphine Sulphate 10mg amps; Amount: 5; Unit: mg; Route: Intra Venous; Batch No.: 1172640; Expiry Date: 10/09/2013;	Marcus Bailey
Treatment	Oxygen	Type: Reservoir mask; Rate: 12; Flow Rate Unit: l/min;	Marcus Bailey
Treatment	IV Fluid	Site: Left ACF; Type: 0.9% NaCl; Fluid Bolus: 50 mL; Rate (per/min): TKV/O;	Marcus Bailey
Treatment	Drug	Drug Name: Metoclopramide; Amount: 10; Unit: mg; Route: Intra Venous; Batch No.: 11061042; Expiry Date: 01/01/2014;	Marcus Bailey
Treatment	Drug	Drug Name: Morphine Sulphate 10mg amps; Amount: 2.5; Unit: mg; Wastage Amount: 2.5; Wastage Unit: mg;	Marcus Bailey



TREATMENT			
Section	Item	Summary	Done By
Treatment	WIO	Side: Left; Site: ACF; Successful: Yes; Attempts: 1; Size (G): 18;	Marcus Bailey
Treatment	Drug	Drug Name: Morphine Sulphate 10mg amps; Amount 5; Unit: mg; Route: Intra Venous; Batch No.: 1172640; Expiry Date: 10/09/2013;	Marcus Bailey
Treatment	Oxygen	Type: Reservoir mask; Rate: 12; Flow Rate Unit: l/min;	Marcus Bailey
Treatment	IV Fluid	Site: Left ACF; Type: 0.9% NaCl; Fluid Bolus: 50 mL; Rate (per/min): TKVO;	Marcus Bailey
Treatment	Drug	Drug Name: Metoclopramide; Amount: 10; Unit: mg; Route: Intra Venous; Batch No.: 11061042; Expiry Date: 01/01/2014;	Marcus Bailey
Treatment	Drug	Drug Name: Morphine Sulphate 10mg amps; Amount: 2.5; Unit: mg; Wastage Amount: 2.5; Wastage Unit: mg;	Marcus Bailey

VEHICLE(S)									
Trust Name	Agency Number	District / Region	Call Sign	Vehicle Call Sign	Vehicle ID	Primary Role of Unit	Vehicle Type	Service Level	Vehicle Base Station
RYC			no002		NO002		Rapid Response Vehicle		Hellesdon

CREW MEMBERS							
Name	Role	Level	Position	ID Number	Registration	Type	Current Crew
Anonymised	User	Paramedic	Primary Crew		10788813		Yes

INCIDENT		
	Details	Delays/Divert
Incident Date / Time:	Address 1: Post Code:	
Dispatched:	Dispatch Complaint: Abdominal Pain / Problems Code: 01C03 Call Type: Emergency Address 1: Post Code: Telephone 1:	
Wheel Check:		
Mobile:	Incident Number: A0207120711 Response Priority: Category C; Number of Patients: 1	
Arrive Scene:		
At Patient Side:		
On Scene Transfer:		
Depart Scene:		Response Outcome: Treated and Transported;
Arrive Destination:	Destination Type: Emergency Department; Receiving Location: Addenbrookes Hospital (Cambridge)	
Care Transfer:		
Available:		

Background  
PDS trace on  
finalisation –  
NHS number  
returned



INCIDENT		
	Details	Delays/Divert
Incident Date / Time:	Address 1: Post Code:	
Dispatched:	Dispatch Complaint: Abdominal Pain / Problems Code: 01C03 Call Type: Emergency Address 1: Post Code: Telephone 1:	
Wheel Check:		
Mobile:	Incident Number: A0207120711 Response Priority: Category C; Number of Patients: 1	
Arrive Scene:		
At Patient Side:		
On Scene Transfer:		
Depart Scene:		Response Outcome: Treated and Transported;
Arrive Destination:	Destination Type: Emergency Department; Receiving Location: Addenbrookes Hospital (Cambridge)	
Care Transfer:		
Available:		
OUTCOMES		
GENERAL		
Condition of Patient at Destination: Improved		
DRUG WASTAGE		
Drug Name	Amount	
Morphine Sulphate 10mg amps	2.50 mg	
SIGNATURE		
Patient Handover		
Name of signer: Anonymised		
Person signing: Nurse		
Date/Time of signature: 02/07/2012 11:33:11		
Primary Crew		
Name of signer: Anonymised		
Date/Time of signature: 02/07/2012 11:31:26		
PDS Lookup		
NHS Number : 4580667948	Status : PDS Trace returned a successful match	



# Receiving Units

- Emergency Department
- Assessment Units
- Maternity
- Paediatrics
- Coronary Care/PPCI
- Stroke/Hyper Stroke
- Major Trauma Centres (MTC)
- Mental Health units





# Hospital Deployment

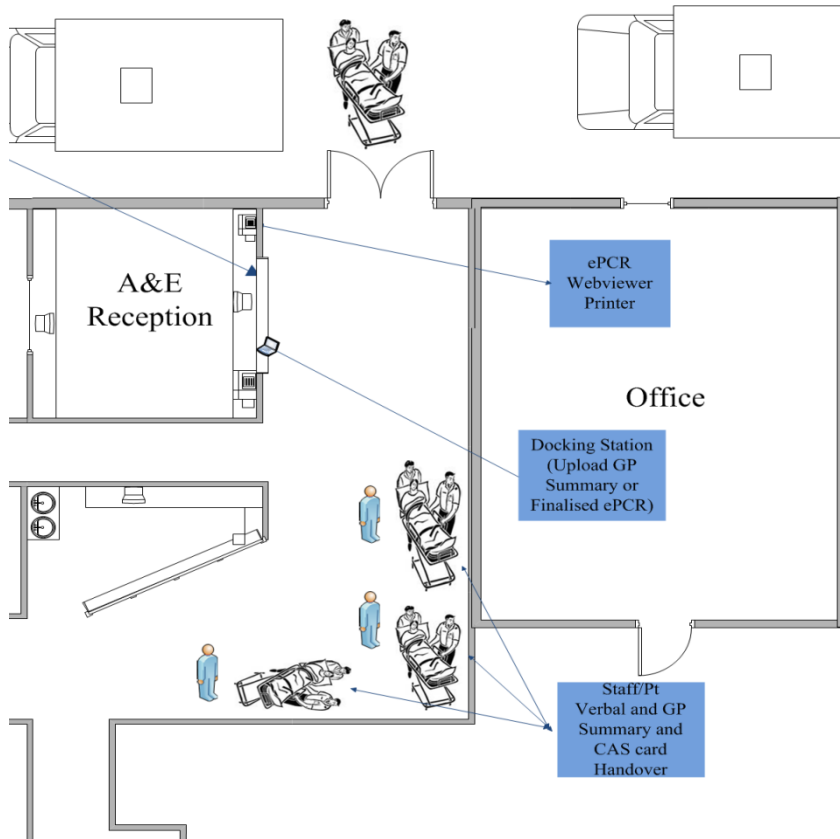
Full Business and Technical Enablement  
24/7 Operation  
All Receiving Units  
Technical Solution – 3G/GPRS, LAN and Wireless

Receiving Location	Go-Live Date
Queen Elizabeth, King's Lynn	21/02/2011
James Paget, Gorleston	06/04/2011
Norfolk & Norwich University Hospital	18/05/2011
West Suffolk Hospital	08/06/2011
Hinchingbrooke Hospital	29/07/2011
Ipswich Hospital	10/08/2011





# A&E Dept Queen Elizabeth, King's Lynn





# Benefits Realised – End-Users

- Ability to view clinical record pre-arrival
- Ease and speed of record retrieval with secure audit trail
- Alerts to any complex problems, allergies etc
- Comprehensive, legible record
- Easy to change details, can't be changed once finalised except by administrator with audit trail
- Consistently presented, familiar, standard terminology
- Permanent availability of record – ability to reprint as required
- Lasting record of patient attendance – very useful for frequent flyers
- NHS Unique Identifier incorporated



# Benefits Realised – Crews and EEAST

- Familiarity
- Information collected in an approved (defensible) way
- Signed with clear transfer of accountability
- Audit
- Ambulance Clinical Quality Indicator collection
- Incident review
- Feedback to individual clinicians
- Access to information - Guidelines, BNF, Toxbase, intranet, Athens, Email, Google Translate



# Barriers and Challenges - Deployment

- Massive change programme requiring significant investment
- CQuIN at risk
- Engagement and communication - training of 2000 staff
- Delay between training and usage
- Cultural change moving from paper to electronic records
- Previous negative experience in some areas
- Perceived as top-down
- Organisational support in hospitals
- Conflicting pressures and existing work programmes within hospitals
- Capacity of hospitals to roll out and manage Smartcards
- Lack of ability to flex to local requirements - minor / complex situations





# Barriers and Challenges - Operational

- Technical inability to interface with hospital systems (PAS)
- Multiple systems in use within A&E - multiple screens/windows
- Emergency Departments not universally equipped in appropriate locations to view an electronic patient record, therefore on-going dependency on printing a hard copy for inclusion with CAS card
- Limited space within ED to site equipment such as docking stations





# Barriers and Challenges – On-going

- Technical Support and liaison
- Lack of printers on vehicles
- Not installed on private or voluntary sector vehicles, officer cars
- Crew resistance – ‘H&S’
- Maintenance of familiarity with systems and process in units with low conveyance rates (e.g Maternity)
- Dependency on Toughbook maintaining a connection with the data centre
- Lack of structured feedback to individual crews on patients outcome





# Barriers and Challenges – Solutions

- Role Models
- Clinical Champions
- Persistence
- Compulsory use (3% to 85%)
- Functionality of Toughbooks – adding value for crews





# Future Benefits

- Wider ability to share information electronically to a wide range of stakeholders that can facilitate patient care.
  - GP notifications
  - Falls Teams, SPOC, CSD, Out of Hours
- Future potential to interface directly with hospital systems

