Remote access to patient records in a pre-hospital setting

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Who we are – Physician Response Unit

• Collaboration between Barts Health NHS Trust, London’s Air Ambulance and London Ambulance Service (LAS)
• Tasked to emergency calls by LAS Emergency Operation Centre
• Senior Physician/EAC team
• Catchment area – Tower Hamlets, Newham, Waltham Forest (No restriction for Category 1 calls)
• Service remodeled in August 2017 to provide 12 hour cover 365 days a year with a dedicated team.
Our aims

- Enhance patient care and experience by delivering community-based Emergency Medicine
- Assist/Support London Ambulance Service/Local GPs/Community services
- Reduce hospital attendances and admissions
- Support alternative care pathways to improve clinical outcomes.
Why we wanted access to patient records?

• We aim to take the Emergency Department to the patient
• One key aspect of most patient encounters/consultations is access to their medical records to view blood results/clinic letters and view recent imaging.
• Missing piece to our armory
• Historically very complex to access patient records in the pre-hospital setting, hence restricting the decision making capabilities of the emergency response team
Getting connected?

- Dell Laptop was formatted for secure Virtual Desktop Infrastructure to the Barts Health network
- Secure-IT 2-factor Authentication (TFA) is used alongside NHS-Smartcard access to Cerner Millennium
- Each clinical team member given a login
- Community view portal to both EMIS and PACS
Case 1 – Mrs. B

- 76 year old Mrs. B
  - Severe COPD
  - 7th floor flat in Mile End tower block – non functioning lift
  - Care package in place but possibly not meeting requirements
  - Very breathless, Oxygen levels 84% room air, minimal improvement of supplementary oxygen
  - Awoke feeling severely breathless, mucky thick green phlegm
  - Denies recent hospital admission/GP review or imaging
Case 1 – Mrs. B

- Conveyance to hospital
- Early commencement of therapy
  - Nebulisers
  - IV/PO antibiotics
  - Steroids
  - Oxygen therapy
- Lengthy Challenging extrication
- Temporary pause to package of care
- Likely long inpatient stay with increased nosocomial complication risk
- Re-enactment of care package
Case 1 – Mrs. B

- EHR accessed remotely – Clinical notes, EMIS and PACS reviewed
- Thorough respiratory clinic note and community respiratory team documentation reviewed
- Recent chest X-ray 4 days prior call with report available
- Clearly no change from baseline function
- No benefit from hospital attendance
Case 2 - Mr T

- 86yo male
- Police called by carer as patient not answering door
- Background – Progressive Amyloid Cerebral Angiopatthy (Dementia) & recurrent falls
- PRU tasked to patient as primary response
Case 2 – Mr T

- Pt not speaking
- Reduced mobility
- Apparently confused
- Sitting in bed in a squalid flat

- Physical examination and observations normal
- Impression – Progressive clinical decline
Case 2 – Mr T

- Cerner accessed
- Review of bloods, imaging and Emergency Department attendances
- No clinical records/letters/discharge summaries at home
- On Cerner evident that had multiple identical presentations with protracted inpatient stays
- Daughter (community nurse) had appt the same day to visit a care home to assess suitability
- Cerner enabled fully informed decision to leave at home
- Family happy
Patient activity

1500 patients
Average 5.5 patients / day
Patient ages
Tasking / Dispatch (2)

### Additional LAS resources involved

- **Yes**
  - 650
  - 43%
- **No**
  - 850
  - 57%

### Dispatch method

- Primary dispatch 73%
- Crew Request 27%
Outcomes – Patient disposition

- Managed in community: 68%
- Referred to hospital: 30%
- Death in community: 2%
Service evaluation: methods (1)

- The PRU interacts with various organisations: LAS, Acute hospitals, community health services and primary care providers.
- Some measures of impact can be readily estimated:
  - Number of ambulance resources saved
  - Number of ED attendances saved
  - Hospital admissions and bed-days saved
- Other soft outcomes have not been measured, but may have a significant impact on the quality and productivity of the wider system:
  - Integration of services within and across boroughs
  - Recruitment and retention (innovative and attractive working opportunities)
Service evaluation: methods

• Patient level data was reviewed between 11\textsuperscript{th} September 2017 and 11\textsuperscript{th} June 2018 (273 days)

• In order to measure potential cost savings, average costs were sourced from NHS Reference Costs, 2015-16 (Department of Health):
  • Average cost of an ambulance ‘see and treat and refer’: £181
  • Average cost of an ambulance ‘see and treat and convey’: £236
  • Average cost of an Emergency Department attendance: £138
  • Average cost of an non-elective admitted inpatient bed occupancy per night (at Barts Health): £550

• Mean length of stay data has been sourced by matching diagnoses from PRU discharges with data from NHS Digital, Hospital Episode Statistics for England. Admitted Patient Care statistics, 2016-17.
Impact: London Ambulance Service

• In 273 days, the team saved alternative LAS resources from being dispatched to 850 patients

• The team estimated that out of 1012 patients that were managed in the community, 801 patients would have likely been conveyed to the Emergency Department.

• Therefore:
  1. 3.1 x LAS resources (FRU/CRU/MRU or ambulance) per day were saved for other emergency callers
  2. There was an estimated reduction in 801 LAS ambulance conveyances (2.9 per day). At a unit cost of £236 this equates to an estimated cost saving of: £189,036

N.B. The cost saving calculated does not include the reduction in primary response vehicles as the type of resource cannot be known – but therefore the total expected cost-saving would be higher than the quoted figure.
Impact: Emergency Department Attendances

• In 273 days, the team saved an estimated 801 ED attendances

• At an average tariff cost of £138 per episode, this equates to an estimated cost saving of: £110,538

• This activity helps to:
  • reduce over-crowding and high demand in the Emergency Department
  • demonstrate to ambulance and ED staff that alternative care pathways can successfully be accessed to enhance patient care
  • reduce the risk of over-investigation and unnecessary prolonged encounters for patients attending the ED
Impact: Hospital admissions

- In 273 days, the team estimated that **167** patients that were managed in the community would otherwise have been admitted to inpatient wards in hospital.

- Based on matched condition mean length-of-stay data from HES, this equates to an inpatient bed occupancy reduction of **1002 bed days**

- The cost of a non-elective inpatient bed per night at Barts Health is £550. Therefore this activity gives an estimated cost saving of **£551,100**

- This activity helps to:
  - Reduce overcrowding and exit-block in the Emergency Department
  - Reduce pressure on acute inpatient wards
  - Demonstrate to staff that alternative pathways are available that can treat patients successfully in the community setting (with excellent patient feedback). This is a necessary paradigm shift given the system challenges across the acute / emergency sector.
Total approximate cost-saving

• In 273 days, the PRU model was able to deliver a range of potential cost savings as described

• The total cost saved is estimated at £850,674

• The operational cost of the PRU in the same time-frame is approximately £224,250 (including medical and LAS staffing, vehicle costs and expendibles).

NET: + £626,424
“The 250"

- Identified using data analysis as the highest impact users of LAS resources, ED attendances and inpatient bed days
- Carefully filtered patient group
- Targeted dispatch could have more profound impact on local resources and the wider NHS
- Dynamic rather than static patient group
“The 250"

Selection Criteria:

The query looks at the 12 months preceding the end of the latest quarter, and then applies the following criteria:
1. Patients who have had 7 or more admissions. Defined as frequent users.
2. Patients who have had at least one admission per each of the 4 quarters. Defined as quarterly users
3. Patients who have had at least one admission in 3 of the 4 quarters, and are now aged 80 plus. Defined as infrequent but 80 plus.
4. Patients who have had 4 or more admissions in the latest quarter. Defined as rising users.

Exclusion criteria:
1. Patients aged 3 or below
2. Patients who have been marked as deceased before last update, if admitted before end of last quarter
3. Patients with a sickle cell diagnosis
4. Patients with no fixed abode registered
"The 250"

Number of patients by category:

- Frequent User: 90
- Infrequent but 80 plus: 90
- Quarterly User/other: 44
- Rising User: 34
Conclusions

• Enabled and informed our decision making capacity on the PRU
• Service has made significant impact to deliver excellent patient care with gains made along the emergency care pathway
• Service has a unique position with the framework to lead the delivery of integrated care
• We aim to expand the service both within our area and across London
Questions