Experiences of introduction of inpatient medical noting

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Declarations of interest - none
Wirral University Hospitals
Hunger in Wirral: the truth behind the tale that made a Tory MP cry

Frank Field, whose story of a hungry constituent moved Heidi Allen to tears, says he is seeing destitution, not poverty.
WUTH Digital History

~ 1989 PCIS
2011  Cerner Millenium

PAS
Investigation ordering
Results
Clinic letters
PACS

Nov 2016  Launched e-noting for inpatients
Why e-noting
Why e-noting

**CLINICAL NOTES**
(Each entry must be signed)

26/3/96

56

Involved in Serious RTA in
30 lower lobe
multiple #s.

Now tracheostomy in situ
Seems in good spirits
Making E
tardy

O/E: R 100
US 111 to

Small R Crush

Chair? Tread out next us.

Signature
Challenges

Hardware

“Two screen view”

Cognitive function and safety

Software configuration – including data entry and retrieval

Education and implementation
Hardware

- 250 PC Carts
- 200 Laptops + numerous stands
- 200 iPads + existing ward desktops
<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin</td>
<td>116 L</td>
</tr>
<tr>
<td>Haematocrit</td>
<td>0.346 L</td>
</tr>
<tr>
<td>Mean cell volume</td>
<td>92.8</td>
</tr>
<tr>
<td>Mean cell haemoglobin (MCH)</td>
<td>31.1</td>
</tr>
<tr>
<td>Platelet count</td>
<td>287</td>
</tr>
<tr>
<td>Neutrophil count</td>
<td>6.0</td>
</tr>
<tr>
<td>Lymphocyte count</td>
<td>1.1</td>
</tr>
<tr>
<td>Monocyte count</td>
<td>0.7</td>
</tr>
<tr>
<td>Eosinophil count</td>
<td>0.0</td>
</tr>
<tr>
<td>Basophil count</td>
<td>0.0</td>
</tr>
<tr>
<td>Nucleated RBC</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Coagulation</strong></td>
<td></td>
</tr>
<tr>
<td>Prothrombin Time</td>
<td></td>
</tr>
<tr>
<td>INR</td>
<td>1.0</td>
</tr>
<tr>
<td>APTT</td>
<td></td>
</tr>
<tr>
<td>Fibrinogen level</td>
<td></td>
</tr>
<tr>
<td><strong>General Biochemistry</strong></td>
<td></td>
</tr>
<tr>
<td>Glucose level, plasma</td>
<td></td>
</tr>
<tr>
<td>Amylase</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td>142</td>
</tr>
<tr>
<td>Potassium</td>
<td>4.1</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td></td>
</tr>
<tr>
<td>Urea level, blood</td>
<td>6.2</td>
</tr>
<tr>
<td>Creatinine</td>
<td>64</td>
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<tr>
<td>AKI Alert</td>
<td></td>
</tr>
<tr>
<td>Bilirubin</td>
<td>5</td>
</tr>
<tr>
<td>Alkaline Phosphatase</td>
<td>1,300 H</td>
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<tr>
<td>Aspartate aminotransferase level (AST)</td>
<td>93 H</td>
</tr>
<tr>
<td>Alanine aminotransferase level (ALT)</td>
<td>204 H</td>
</tr>
<tr>
<td>Gamma-glutamyl transpeptidase (GGT)</td>
<td>806 H</td>
</tr>
<tr>
<td>Calcium</td>
<td>2.35</td>
</tr>
</tbody>
</table>
Cognitive function and safety
50% of US doctors burned out; 25% of residents depressed. We cannot begin to fix this until we get doctors back with patients, and spending less than 2/3 of their time with the #EHR.
#meded

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Takes 32 #EHR clicks to order a single #flu shot! Can you say "poor design", "burnout"?

04/03/2017, 14:39 from Washington, DC
A Practical Guide for Improving Flight Path Monitoring

Final Report of the Active Pilot Monitoring Working Group

Monitoring Matters
Guidance on the Development of Pilot Monitoring Skills
CAA Paper 2013/02
Monitoring can be analogous to plate spinning – whilst all the plates are going round evenly a cursory tap keeps them on the stick. However as soon as one starts to wobble and requires more attention than the rest you take your eye off the ball and before you know where you are others are wobbling too and eventually all are on the floor.
Reasons for poor monitoring

Distractions

- Human brain has difficulty with sustained vigilance
- Human brain has difficulty with multitasking

Disorientation

- High workload & fatigue

Time pressures
- Increase risk of errors
- “looking without seeing”

Poor flight deck design / layout

Poor system training
Inpatient chart review

Past History
Current History
Observations
Blood
Radiology results
Micro results
Allergies

Create new note

Medicines reconciliation
Prescribed Medication
Family / social issues
DNA CPR Status
General alerts
Disease specific alerts

Document management plan
<table>
<thead>
<tr>
<th><strong>Results Review</strong></th>
<th><strong>MEWS:</strong> MEWS / MEWS Parameters / Comments ===</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Alerts:</strong> Alerts / Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>Allergies:</strong> Allergies / Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>Has VTE status been assessed and has prophylaxis been prescribed if indicated?:</strong> Yes / No / Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>Lab Results:</strong> Lab Results / Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>Radiology Results:</strong> Radiology Results / Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>ECG Results:</strong> Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>Medication Review:</strong> Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>O2 Saturation:</strong> O2 Saturation / Comments ===</td>
</tr>
<tr>
<td></td>
<td><strong>Documents only:</strong> Comments ===</td>
</tr>
</tbody>
</table>
Challenges

Data entry

Data retrieval

Cut and paste?
Challenges

Data entry

Data retrieval

Speciality folder view

Sequential entry view

Editable note viewer

Cut and paste?
**NEWS**

Total mNEWS/PEW: 4

**NEWS Parameters**:

- mNEWS:
  - Respiratory Rate: 10 br/min, Low
  - Temperature Recording Site: Oral
  - Temperature: 34 degrees C
  - Pulse Rate: 60 bpm
  - Systolic Blood Pressure: 120 mmHg
  - Diastolic Blood Pressure: 86 mmHg

Has VTE status been assessed and was prophylaxis been prescribed if indicated? Yes

**Progress Review**

- Comfortable
- Improved since admission
- Did not indw overnight
- PEPS new 360
- Chest clear

**Plan**

- Monitor this pt
- Home at 5pm if
- remains stable
- No other issues
Standard Medical Ward Round

Patient: ZZZTESTPATIENT, POWERNOTE  MRN: 5555253  FIN: 2218697
Age: 36 years  Sex: Female  DOB: 12/05/1981
Associated Diagnoses: None
Author: Corless, John Andrew

Ward Round With
Consultant Led Ward Round:
Lead Consultant: Corless, John.
Documented by: Consultant (Ex: 2,487).

Histories
Background
This 36 year old man was admitted with SOB, cough and wheeze

PMH - asthma

No ITU admission
Usual PEFR 400
Today 220
Never smoked.

Review/Management
Results Review
Laboratory
30/04/2018 16:07
White blood cell count 3.5 x10^9/L
Hemoglobin 112 g/L
Platelet count 150 x10^9/L
D-dimer <200 ng/mL
Sodium 135 mmol/L
Potassium 3.5 mmol/L
Urea level, blood 2.5 mmol/L
Creatinine 45 mmol/L
C-reactive protein (CRE) <5 mg/L NA
C-reactive protein (CRE) 57 mg/L NA

31/07/2018 11:47

MEWS

Total mNEWS/PEWs
30/04/2018 16:00  Total MEWs/PEWs 4

MEWS Parameters: mNEWS
30/04/2018 16:00
Respiratory Rate 10 br/min  Low
SpO2 12 %
FiO2 25 %
Oxygen Therapy Room Air
Systolic Blood Pressure 120 mmHg
Diastolic Blood Pressure 86 mmHg
Systolic Blood Pressure 80 mmHg  Low
Diastolic Blood Pressure 30 mmHg  Low

16/11/2017 15:48

Has VTE status been assessed and has prophylaxis been prescribed if indicated?
Yes

Progress Review
Since admission has had nebs, steroids, O2,
Feels he is improving
No other issues

Findings
Exac asthma

Plan
Continue current Rx (hold nebs if possible)
PEFR chart
asthma nurse review
Aim home tomorrow if stable / PEFR / Obs OK
Will need resp clinic FU

Discharge Information
Not Medically Optimised: Yes. Acutely unwell.
Education
Implementation timeline

Feb 2015  Project start

Jan 16    Two screen problem unresolved

June 16   5 Key barriers acknowledged

July 16   Two screen issued solved – tagging results
          Focussed trials of noting

Summer 16 Education program

Nov 16    Inpatient noting go live
Observations

On balance – change for the better

Quality of note better

Harder to quickly review notes

Takes longer

Lots of potential for further development & enhancements
Top tips

Need lots of hardware

Considerate software layout and function

Need solution to “two screen issue”

Implementation & education plan
“The simple narrative of our age – that computers improve the performance of every industry they touch – turns out to have been magical thinking when it comes to healthcare..... we’re learning [that] computers make some things better, some things worse, and they change everything.”

The Digital Doctor – Dr. Bob Wachter
Thanks for listening