Research and Acute Medicine
Embedding Research in the AMU

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Professor of Acute Medicine Imperial College London
NIHR Senior Investigator
Acute Medicine

“part of General (Internal) Medicine concerned with the immediate and early specialist management of adult patients with a wide range of medical conditions who present to hospitals as emergencies”

Acute Medicine making it work for patients
Report of a working party 2004
Royal College of Physicians
2.9 million
Outline

• Opportunities
• Infrastructure
• Support for research
• Partnership
• Examples
The linear belief system?

Best practice
• Randomised Control Trials

Guidelines
• NICE
• SIGN
• ESC
• AHA

Improved outcomes
• Improved processes

National Audit
‘big data’
• Local Audit
• Local Data
Research Opportunities in Acute Medicine
‘real world’ are largely untapped

• Large patient population
  – Vulnerable
  – High Mortality
  – High service use
  – Co-morbid
• Multi-professional staff group
• Education and training environment
• Urgent need
The NIHR health research system
What is NIHR and what does it do?

- NIHR is the largest funder of clinical research: Wellcome £746m; MRC £767m; NIHR about £1bn
- Supports clinical and applied health & social care research to improve health, well-being and prosperity
- Increasingly recognised as a model for organising and delivering health related research.
<table>
<thead>
<tr>
<th>Division</th>
<th>Specialties in this division</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cancer</td>
</tr>
<tr>
<td>2</td>
<td>Diabetes, stroke, cardiovascular disease metabolic and endocrine disorders, renal disorders</td>
</tr>
<tr>
<td>3</td>
<td>Children, genetics, haematology, reproductive health and childbirth</td>
</tr>
<tr>
<td>4</td>
<td>Dementias and neurodegeneration (DeNDRoN), mental health, neurological disorders</td>
</tr>
<tr>
<td>5</td>
<td>Primary care, ageing, health services and delivery research, oral health and dentistry, public health, musculoskeletal disorders, dermatology</td>
</tr>
<tr>
<td>6</td>
<td>Anaesthesia/peri-operative medicine and pain management, critical care, injuries/emergencies, surgery, ENT, infectious diseases/microbiology, ophthalmology, respiratory disorders, gastroenterology, hepatology</td>
</tr>
</tbody>
</table>
Public Involvement

- Involving patients, carers and the public, who have personal experience of or an interest in a health condition(s), in research or research related activities

- An active partnership between patients and the public and researchers, doctors and other NHS staff

Going the extra mile
MRC Developing and evaluating complex interventions

Figure 1 Key elements of the development and evaluation process

**Development**
1. Identifying the evidence base
2. Identifying/developing theory
3. Modelling process and outcomes

**Feasibility/piloting**
1. Testing procedures
2. Estimating recruitment/retention
3. Determining sample size

**Evaluation**
1. Assessing effectiveness
2. Understanding change process
3. Assessing cost-effectiveness

**Implementation**
1. Dissemination
2. Surveillance and monitoring
3. Long term follow-up

https://www.mrc.ac.uk/documents/pdf/complex-interventions-guidance/
What makes an intervention complex?

Some dimensions of complexity

- Number of and interactions between components within the experimental and control interventions
- Number and difficulty of behaviours required by those delivering or receiving the intervention
- Number of groups or organisational levels targeted by the intervention
- Number and variability of outcomes
- Degree of flexibility or tailoring of the intervention permitted

Implications for development and evaluation

- A good theoretical understanding is needed of how the intervention causes change, so that weak links in the causal chain can be identified and strengthened
- Lack of impact may reflect implementation failure (or teething problems) rather than genuine ineffectiveness; a thorough process evaluation is needed to identify implementation problems.
- Variability in individual level outcomes may reflect higher level processes; sample sizes may need to be larger to take account of the extra variability, and cluster- rather than individually-randomized designs considered.
- Identifying a single primary outcome may not make best use of the data; a range of measures will be needed, and unintended consequences picked up where possible.
- Ensuring strict fidelity to a protocol may be inappropriate; the intervention may work better if adaptation to local setting is allowed.
Selected examples
Working with non-traditional academic partners

- Business School
- Art and Design
- Engineering
- Computing
- Mathematics
- Etc
Design

Improving the discharge process

Visibility

Shareable

Empowerment

Follow-up
Iterative Investigation
Current Journey

Improved journey
Visual representation of the journey
Partnership working

Multi-site
Partnership
Overlay Data Analytics and audit

- Consultant of several days (≥ 1 day)
- No other clinical duties
- Twice daily acute take ward rounds 7/7 ….that review all patients

Reduce adjusted case fatality rates (p<0.01)

Beneficial effect on excess weekend mortality (p<0.05)

Lower 28 day readmission rates (p<0.01)
Single Site
High Fidelity Data
Large Numbers – Power
Acute Medical care is an independent predictor of 30-day mortality.

<table>
<thead>
<tr>
<th>Term</th>
<th>Odds Ratio</th>
<th>Lower CL</th>
<th>Upper CL</th>
<th>ChiSquare</th>
<th>Prob&gt;ChiSq</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDC_4</td>
<td>1.902805</td>
<td>1.640456</td>
<td>2.207214</td>
<td>72.3009751</td>
<td>&lt;.0001 *</td>
</tr>
<tr>
<td>MDC_5</td>
<td>1.301386</td>
<td>1.093853</td>
<td>1.548339</td>
<td>8.71458888</td>
<td>0.0032 *</td>
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<tr>
<td>MDC_1</td>
<td>1.264227</td>
<td>1.059248</td>
<td>1.508934</td>
<td>6.64843697</td>
<td>0.0099 *</td>
</tr>
<tr>
<td>Readms</td>
<td>1.124092</td>
<td>1.091334</td>
<td>1.157842</td>
<td>58.8294206</td>
<td>&lt;.0001 *</td>
</tr>
<tr>
<td>CharIndx</td>
<td>1.584536</td>
<td>1.510349</td>
<td>1.662415</td>
<td>332.465122</td>
<td>&lt;.0001 *</td>
</tr>
<tr>
<td>ICU_S</td>
<td>8.806718</td>
<td>7.359387</td>
<td>10.53936</td>
<td>539.10375</td>
<td>&lt;.0001 *</td>
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<td>AMAU_effect</td>
<td>0.336509</td>
<td>0.292954</td>
<td>0.386476</td>
<td>260.758776</td>
<td>&lt;.0001 *</td>
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<tr>
<td>TropPos</td>
<td>9.850993</td>
<td>8.367444</td>
<td>11.59918</td>
<td>736.715446</td>
<td>&lt;.0001 *</td>
</tr>
<tr>
<td>Door_Team_Cat</td>
<td>1.236923</td>
<td>1.183285</td>
<td>1.293011</td>
<td>88.0854566</td>
<td>&lt;.0001 *</td>
</tr>
<tr>
<td>Team_Ward_Cat</td>
<td>1.062015</td>
<td>1.018312</td>
<td>1.107599</td>
<td>7.91463108</td>
<td>0.0049 *</td>
</tr>
</tbody>
</table>

All emergency admissions 2002 - 2008
Working with Patients and Public

Co-production
Patient experience data
Patient reported outcomes
Examples A&B

Investigation of the degree of organisational influence on patient experience scores in acute medical admission units in all acute hospitals in England Sullivan P et al

NIHR CLAHRC for Northwest London, http://orcid.org/0000-0002-9944-1097
Who can help

- Your Trust or organisation – NHS Constitution
  - Local endowments and charities
  - Direct research PA support
- Grant Funders – NIHR, Medical Charities
- Commercial Companies
- Local Universities
  - Post Graduate Students
  - Undergraduates
- The Colleges

- Partnership working
- Share data – big data
Where do we find time for Research?
Building a model
Frailty Theme

Developing and validating a risk prediction model for acute care based on frailty syndromes
BMJ open. 2015, Vol.5(10), p.e008457

Quantifying the prevalence of frailty in English hospitals
BMJ open. 2015, Vol.5(10), p.e008456

Clinically applicable actions

Assess the patient/carer acceptability of FEWS and the language

Validate and assess frailty model

Individual Point of Entry to acute secondary Care

Stopit medication review

My Medication Passport

C&W Hospital Primary Data from Provider Unit Level

"Geriatric Giants"

“Frailty Burden”
Recognized as common clinical presentations in the elderly: e.g. Falls, Incontinence, cognitive impairment, pressure ulcers

More prevalent in the elderly

Confer a higher risk of death, institutionalization, disability and poor quality of life

Within National Recommendations as way of recognizing the frail elderly within acute care


Frailty Syndromes

Percentage mortality by prediction ranking for the frailty syndrome and admission history model

Percentage increase in functional dependence by prediction ranking for the frailty syndrome and admission source model

Percentage readmission (30 Day) by prediction ranking for the frailty syndrome and admission source model

AUC 0.632

AUC 0.634

AUC 0.630
### Patient demographics and outcomes for each frailty score (FEWS) band, >65s

#### Unweighted score

<table>
<thead>
<tr>
<th>Frailty Score (FEWS)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>&gt;9</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>264</td>
<td>270</td>
<td>259</td>
<td>238</td>
<td>211</td>
<td>192</td>
<td>164</td>
<td>147</td>
<td>108</td>
<td>50</td>
<td>1903</td>
</tr>
<tr>
<td>Average Age</td>
<td>74.01</td>
<td>76.61</td>
<td>78.07</td>
<td>80.60</td>
<td>81.09</td>
<td>83.29</td>
<td>85.68</td>
<td>86.84</td>
<td>86.03</td>
<td>87.72</td>
<td>80.52</td>
</tr>
<tr>
<td>NEWS (on admission)</td>
<td>2.13</td>
<td>2.17</td>
<td>2.28</td>
<td>2.34</td>
<td>3.21</td>
<td>2.33</td>
<td>2.10</td>
<td>2.36</td>
<td>3.51</td>
<td>5.12</td>
<td>2.5</td>
</tr>
<tr>
<td>In hospital mortality</td>
<td>2.65%</td>
<td>2.96%</td>
<td>4.63%</td>
<td>10.50%</td>
<td>7.58%</td>
<td>9.90%</td>
<td>9.76%</td>
<td>14.29%</td>
<td>15.74%</td>
<td>11.00%</td>
<td>7.99%</td>
</tr>
<tr>
<td>90 day mortality</td>
<td>6.44%</td>
<td>7.78%</td>
<td>8.49%</td>
<td>17.65%</td>
<td>11.85%</td>
<td>13.54%</td>
<td>15.85%</td>
<td>21.77%</td>
<td>16.67%</td>
<td>17.00%</td>
<td>12.59%</td>
</tr>
<tr>
<td>LOS (days)</td>
<td>7.31</td>
<td>8.08</td>
<td>9.09</td>
<td>11.09</td>
<td>14.44</td>
<td>17.33</td>
<td>17.78</td>
<td>12.29</td>
<td>23.42</td>
<td>15.36</td>
<td>12.35</td>
</tr>
<tr>
<td>Readmission 7 days</td>
<td>5.68%</td>
<td>9.63%</td>
<td>12.74%</td>
<td>10.50%</td>
<td>11.85%</td>
<td>10.94%</td>
<td>12.20%</td>
<td>11.56%</td>
<td>7.41%</td>
<td>8.00%</td>
<td>10.19%</td>
</tr>
<tr>
<td>Readmission 30 days</td>
<td>19.32%</td>
<td>24.07%</td>
<td>27.41%</td>
<td>27.31%</td>
<td>26.54%</td>
<td>23.96%</td>
<td>25.61%</td>
<td>24.49%</td>
<td>17.60%</td>
<td>22.00%</td>
<td>24.27%</td>
</tr>
<tr>
<td>Readmission 90 days</td>
<td>38.36%</td>
<td>42.96%</td>
<td>44.78%</td>
<td>45.80%</td>
<td>45.97%</td>
<td>40.63%</td>
<td>42.28%</td>
<td>46.26%</td>
<td>37.97%</td>
<td>40.00%</td>
<td>43.09%</td>
</tr>
</tbody>
</table>

In hospital mortality; 7d mortality; 30d mortality; 90d mortality contrast 0-2, vs 3+ = all significant difference by Chi-sq; 7d readmission : 0 vs 1+; significant difference LOS 0-2, vs 3+, significant difference by Kruskal Wallis test
Successful Healthcare Improvements From Translating Evidence into Practice (SHIFT-Evidence)

A Framework for Practice and Research

Engage and Empower

Who?

What?
Act Scientifically & Pragmatically

Where?
Embrace Complexity

Success!
Successful Healthcare Improvements From Translating Evidence into Practice (SHIFT-Evidence)

A Framework for Practice and Research
Summary

We must promote **all** research taking place in Acute Medicine in the UK and internationally we need to adopt and use the terms

- Acute Medicine
- Acute Medical Units
- Acute Physicians

Importantly need to ensure these terms are easily searchable i.e. in Title

Encourage Universities to appoint substantive and honorary academic appointments
Thank you
What does the data tell us?

‘Real World’

Local implementation
A second admission with alternative diagnosis has approximately a 3x greater chance of readmission.

Important to have a clear definition of patient groups.
COPD and HF patients
Factors affecting clinical outcomes across the patient journey

<table>
<thead>
<tr>
<th></th>
<th>HEART FAILURE</th>
<th>COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original sample</td>
<td>81285</td>
<td>102009</td>
</tr>
<tr>
<td>Sample included in</td>
<td>77801 (95.7%)</td>
<td>96935 (95.0%)</td>
</tr>
<tr>
<td>analysis (after patients excluded for missing data mainly GP data)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Died within one year of admission</td>
<td>30836 (39.6%)</td>
<td>23367 (24.1%)</td>
</tr>
<tr>
<td>Discharged alive</td>
<td>66219 (85.1%)</td>
<td>91231 (94.1%)</td>
</tr>
<tr>
<td>Readmitted within 30 days</td>
<td>13099 (19.8%)</td>
<td>15074 (16.5%)</td>
</tr>
<tr>
<td>Visited A&amp;E within 30 days</td>
<td>11799 (17.8%)</td>
<td>14426 (15.8%)</td>
</tr>
<tr>
<td>Admitted on first visit to A&amp;E</td>
<td>9061 (76.8% of those who visited A&amp;E)</td>
<td>10652 (73.8% of those who visited A&amp;E)</td>
</tr>
</tbody>
</table>
Patient demographics

Deprivation and age characteristics for patients with Heart Failure and COPD

Increasing age = increased odds of mortality and also readmissions.
Males greater one year mortality than women
Males increase odds of readmission than women
Younger COPD patients, but not HF patients, are significantly less likely to be readmitted.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>COPD Admissions</th>
<th>HF Admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 to 44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 to 49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 to 54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 to 59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 to 64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 to 69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 to 74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 to 79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80 to 84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85 to 89</td>
<td></td>
<td></td>
</tr>
<tr>
<td>90 plus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Deprivation profile

- 1 least deprived
- 5 most deprived

Age profile

- COPD admissions
- HF admissions
Summary

Patient, primary care, hospital associated with variations in readmission and mortality rates?

- **GP supply** associated with improved **COPD mortality** outcomes.

- Higher **staffing levels in hospitals** associated with improved outcomes for COPD and HF (mortality and readmission).

- **Hospital patient experience show** some associations with COPD and HF added (e.g. teamwork).

- Hospital factors directly affecting HF patients were associated with improved outcomes (**HF Audit** variables).
But length of stay may matter

*Inappropriate??*

**Length of stay**

Increased length of stay is associated with increased odds of mortality, but decreased odds of readmission.

<table>
<thead>
<tr>
<th>Length of stay (number of nights)</th>
<th>Percentage of all HF patients</th>
<th>OR (95% CI) – one year mortality</th>
<th>OR (95% CI) – 30-day readmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5.8%</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>9.0%</td>
<td>1.17 (1.07-1.27)</td>
<td>0.87 (0.79-0.97)</td>
</tr>
<tr>
<td>2</td>
<td>6.9%</td>
<td>1.09 (1.00-1.19)</td>
<td>0.79 (0.71-0.88)</td>
</tr>
<tr>
<td>3 or more</td>
<td>78.3%</td>
<td>1.25 (1.16-1.34)</td>
<td>0.83 (0.77-0.90)</td>
</tr>
</tbody>
</table>
But more!

Trusts with high readmission rates beget

For both COPD and HF – strong evidence that trusts with high readmission rates discharge a higher proportion of patients after zero or one night stay.
The linear belief system

Best practice
- Randomised Control Trials

Guidelines
- NICE
- SIGN

Improved outcomes
- Improved processes

National Audit
- 'big data'
- Local Audit
- Local Data
Informed by Patients, Staff and Academics

National Institute of Healthcare Research; model for translation of research into practice

Cycle for Improvement

Aim: To improve patient and population health outcomes and experience

1. What actually happens
2. Identify Needs
3. Identify Priorities
4. Identify Potential Solutions
5. Implement
Care bundles – one potential solution if implemented well

Builds on the IHI definition
Does not replace clinical judgement

- Integrates the latest evidence-base (often guidelines)
- Distils care to 4-6 priority elements
- Completed within a defined timescale and geography
- All elements should be delivered to maximise patient benefit
- All delivered to 100% - industrial standards
- Provides a means to monitor (DoH 2007)

not a check list
Aim of the project

Action Effect Diagram (AED) BMJ Quality and Safety 2014

- To improve the health, quality of life and experience of care for patients who are primarily diagnosed with acute heart failure in NWL at a high value and allow them to participate in their care in a way that suits them

- To ensure a patient centred approach to care

- To empower patients with education so they feel they have control of their condition

- Using a structures (systematic approach) –AED etc
  - Care bundle is part of the mechanism
National Heart Failure Audit 2014/15 Audit

Figure 4: HF patients receiving ECG and echo diagnostics tests over 4 years (2011-2015)

Table 3: Overall echo diagnosis breakdown (2014/15)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Echo</td>
<td>2.9</td>
</tr>
<tr>
<td>Left ventricular systolic dysfunction (LVSD)</td>
<td>70.2</td>
</tr>
<tr>
<td>Left ventricular hypertrophy (LVH)</td>
<td>8.0</td>
</tr>
<tr>
<td>Valve disease</td>
<td>32.4</td>
</tr>
<tr>
<td>Diastolic dysfunction</td>
<td>10.3</td>
</tr>
<tr>
<td>Other diagnosis</td>
<td>11.1</td>
</tr>
</tbody>
</table>
To improve quality of care for patients with an acute admission for heart failure

Appropriate treatment: 
- β Blocker
- ACE

Ensure accurate diagnosis:
- Clinical
- BNP
- ECHO

Heart failure Care bundle

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<table>
<thead>
<tr>
<th>Primary Aim</th>
<th>Major Contributing Factors</th>
<th>Key Elements</th>
<th>Key Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you aim to achieve?</td>
<td>Understanding how patients contribute to Aim</td>
<td>Public awareness</td>
<td>Identify patient/patient groups suitable in achieving aim</td>
</tr>
<tr>
<td></td>
<td>Are patients aware of risk factors?</td>
<td>Dialogue between Patient and Hospital staff</td>
<td>Allocate time for Patient/professional discussion to identify risk factors</td>
</tr>
<tr>
<td></td>
<td>Identifying Appropriate patient</td>
<td>Identified risk factors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>What is the quality of care for patients in the hospital currently? What should it be?</td>
<td>Correct Coding and Correct Pathway</td>
<td>Identify and measure appropriate care</td>
</tr>
<tr>
<td></td>
<td>Appropriateness of treatment</td>
<td>Ensure appropriate patient setting</td>
<td>Quantitative data to measure coding</td>
</tr>
<tr>
<td></td>
<td>What are the elements of the bundle? How was it derived?</td>
<td>Referral of timely Diagnostics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 Education of patients for self care and self management</td>
<td>BNP Level</td>
<td>Availability of Echo</td>
</tr>
<tr>
<td></td>
<td>What support are patients receiving to optimise communication and understanding?</td>
<td>Initiate Daily weight, U &amp; E</td>
<td>Design and practicality of bundle</td>
</tr>
<tr>
<td></td>
<td>Handover of care</td>
<td>Review medication</td>
<td>Compliance with guidance</td>
</tr>
<tr>
<td></td>
<td>Are patients being referred to community? How?</td>
<td>Initiation of diuretic</td>
<td>% of patients recorded as using bundle</td>
</tr>
<tr>
<td></td>
<td>Resources</td>
<td>Review by specialist nurse</td>
<td>Bundle elements</td>
</tr>
<tr>
<td></td>
<td>Funding spend compared to outcomes</td>
<td>Every-day management</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crisis management</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADL / Best practice management</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reach out/ referral services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advance planning</td>
<td>Number and type of patient education sessions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appropriate referral</td>
<td>Availability of service information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coordination and utilisation of resources</td>
<td>Leaflets, call in services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff training and development</td>
<td></td>
</tr>
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<td>What resources are provided currently</td>
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<td>Number and type of staff training provided</td>
<td></td>
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</tbody>
</table>
Outcome of PDSA cycle
• Evidence of the wait for diagnostic information
  • Standard set to implement echo within 24 hours
• Data issues with Echo identified
• Secured funding for equipment and technicians sustained through the 7 day diagnostic CQUIN
# Heart Failure Admission Care Bundle
Complete within 24h for all patients admitted with diagnosis of heart failure

**After completing, peel off and stick into patient notes**

### Bundle element & action*
- BNP Level Measured?
  - Yes
  - No
- Result: __________ pg/ml
  - *NTpro BNP > 400 pg/ml → echocardiography recommended*
- Date of last echo:
  - dd / mm / yyyy
  - (Leave blank if no previous echo)
- Ejection Fraction: __________ %
  - Time echo completed:
    - hh : mm ;
    - dd / mm / yyyy
- Specialist referral made?
  - Yes
  - No

*Review diuretics daily. Change dose/ route of administration as clinically indicated
*Initiate fluid restriction, fluid balance monitoring daily weights
*Monitor renal profile
*Regular review of interventions

### Duplicate data – for audit and measurement

### Bundle element
- BNP Level Measured
- Result: __________ pg/ml
- Date of last echo:
  - dd / mm / yyyy
  - (Leave blank if no previous echo)
- Ejection Fraction: __________ %
  - Time echo completed:
    - hh : mm ;
    - dd / mm / yyyy
- Specialist referral made?
  - Yes
  - No

**Ward / Department**
- Admission Date & Time:
  - hh : mm ; do / mm / yyyy

**Patient Identifier**
Implementation of the care bundle – weekly

Outcome: an increase in the determination of coding for Heart Failure patients following the introduction of the care bundle.

Trust meeting the best practice tariff - uplifts the general tariff by £300 - £600 per patient depending on comorbidities.
Features of trusts with high readmission rates

For COPD and HF – evidence that trusts with high readmission rates discharge a higher proportion of patients after zero or one night stay.
Heart Failure

Crude Mortality Rate
- 2014/15: 14.15%
- 2015/16: 9.73%
- 2016/17: 8.23%

Mortality for Patients with Heart Failure April 2013 - April 2017

Annual Mortality Rate
- 2014/15: 14.15%
- 2015/16: 9.73%
- 2016/17: 8.23%
Dr Foster Data shows a lower mortality rate against all non specialist providers.
Heart Failure / Patient Engagement is Key to Communication

Clinical Expertise is used in the development of programmes

Listening to patients to improve care

Working within networks not Hierarchies

Clinician
But there is more to do
Heart failure population per Cardiac Rehabilitation Service

- Average Heart Failure Population per Cardiac Rehabilitation Service
- 299 - 885
- 886 - 1274
- 1275 - 1610
- 1611 - 2157
- 2158 - 4870
- No Service

Cardiac Rehabilitation Service

Data Source: QoF 2015/16 CCG HF register size
Summary

- Implementing improved care is not easy (complex)
- Understanding the data – both big and small
- Local context is important – link to HF network
- Monitoring implementation and outcomes is essential
- If outcomes achieved – **better care plus**
  - Positive Feedback loop to staff
  - Potential link to resources
  - Influence guidelines and policy
- Joining the dots ------- continuous process