VIRTUAL OUTPATIENT CLINIC FOR OUTPATIENT FOLLOW-UP APPOINTMENTS

Bibhas Roy
Consultant Orthopaedic Surgeon (Shoulder & Elbow)
Central Manchester Foundation Trust
Health Service Journal Top Innovator 2013
MIMIT, Manchester Interdisciplinary Biocentre
www.proms2.org
Hospital Episode Statistics

Hospital Outpatient Activity - 2014-15

Published 18 December 2015
Chart 1 shows the increase in the number of appointments recorded in HES between 2010-11 and 2014-15. There has been a steady increase in recorded appointments and attendances over the period. The ratio of attendances to did not attends has slightly increased in recent years (11.5 : 1 in 2014-15 compared to 10.2 : 1 in 2010-11). The percentage of appointments which were cancelled by either the patient or the hospital has increased from 6.1 per cent by patients and 5.9 per cent by hospitals in 2010-11 to 6.2 per cent by patients and 6.6 per cent by hospitals in 2014-15.
OUTPATIENT CLINICS; THE NUMBERS (DEC 2015)

- 107.2 Million outpatient appointments in 2014-15
- 85.6 (79.9%) Million were attended
- 25.9 Million first outpatient attendances (30.3%)
  - Hence 70% of outpatients appointments are follow-ups
- Patients aged 65 to 69 had the highest number of attendances

http://www.hscic.gov.uk/searchcatalogue?productid=19879&topics=2fHospital+care%2fAdmissions+and+attendances%2fOutpatient+attendances&sort=Relevance&size=10&page=1#top
<table>
<thead>
<tr>
<th>Treatment Specialty Code Description</th>
<th>All Attendances</th>
<th>Attended first appointment</th>
<th>Attended subsequent appointment</th>
<th>Percentage of all attendances</th>
<th>Follow-up attendances for each first attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>75,455,584</td>
<td>22,530,106</td>
<td>52,151,920</td>
<td>100.0%</td>
<td></td>
</tr>
<tr>
<td>Trauma &amp; Orthopaedics</td>
<td>7,375,581</td>
<td>2,510,735</td>
<td>4,838,270</td>
<td>9.8%</td>
<td>1.9</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>6,605,865</td>
<td>1,668,732</td>
<td>4,911,515</td>
<td>8.8%</td>
<td>3.0</td>
</tr>
<tr>
<td>Physiotherapy</td>
<td>3,654,980</td>
<td>938,148</td>
<td>2,688,914</td>
<td>4.8%</td>
<td>2.8</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>3,433,465</td>
<td>950,045</td>
<td>2,486,861</td>
<td>4.6%</td>
<td>2.6</td>
</tr>
<tr>
<td>Dermatology</td>
<td>3,085,866</td>
<td>863,714</td>
<td>2,218,209</td>
<td>4.1%</td>
<td>2.6</td>
</tr>
<tr>
<td>Gynaecology</td>
<td>2,979,238</td>
<td>1,368,288</td>
<td>1,611,336</td>
<td>3.9%</td>
<td>1.2</td>
</tr>
<tr>
<td>Cardiology</td>
<td>2,809,465</td>
<td>1,182,723</td>
<td>1,601,075</td>
<td>3.7%</td>
<td>1.4</td>
</tr>
<tr>
<td>Ear, Nose &amp; Throat (ENT)</td>
<td>2,640,414</td>
<td>1,104,609</td>
<td>1,528,342</td>
<td>3.5%</td>
<td>1.4</td>
</tr>
<tr>
<td>Midwife episode</td>
<td>2,606,213</td>
<td>509,889</td>
<td>2,082,246</td>
<td>3.5%</td>
<td>4.1</td>
</tr>
<tr>
<td>General Surgery</td>
<td>2,193,680</td>
<td>843,052</td>
<td>1,352,595</td>
<td>2.9%</td>
<td>1.6</td>
</tr>
<tr>
<td>Urology</td>
<td>2,104,159</td>
<td>658,562</td>
<td>1,423,864</td>
<td>2.8%</td>
<td>2.2</td>
</tr>
</tbody>
</table>

WAITING TIMES

• Patients should be seen within **30 minutes** of their appointment time
  
  • 74% for Trauma and Orthopaedics vs 85% for dermatology and rheumatology.

## NHS TARIFFS

<table>
<thead>
<tr>
<th>Treatment function name</th>
<th>WF01B First Attendance - Single Professional</th>
<th>WF02B First Attendance - Multi Professional</th>
<th>WF01A Follow Up Attendance - Single Professional</th>
<th>WF02A Follow Up Attendance - Multi Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Surgery</td>
<td>191</td>
<td>207</td>
<td>101</td>
<td>101</td>
</tr>
<tr>
<td>Urology</td>
<td>177</td>
<td>196</td>
<td>96</td>
<td>99</td>
</tr>
<tr>
<td>Breast Surgery</td>
<td>154</td>
<td>154</td>
<td>84</td>
<td>85</td>
</tr>
<tr>
<td>Colorectal Surgery</td>
<td>131</td>
<td>157</td>
<td>72</td>
<td>105</td>
</tr>
<tr>
<td>Hepatobiliary &amp; Pancreatic Surgery</td>
<td>166</td>
<td>166</td>
<td>102</td>
<td>102</td>
</tr>
<tr>
<td>Upper Gastrointestinal Surgery</td>
<td>140</td>
<td>140</td>
<td>82</td>
<td>82</td>
</tr>
<tr>
<td>Vascular Surgery</td>
<td>234</td>
<td>234</td>
<td>116</td>
<td>116</td>
</tr>
<tr>
<td><strong>Trauma &amp; Orthopaedics</strong></td>
<td><strong>137</strong></td>
<td><strong>137</strong></td>
<td><strong>83</strong></td>
<td><strong>83</strong></td>
</tr>
<tr>
<td>ENT</td>
<td>114</td>
<td>141</td>
<td>63</td>
<td>73</td>
</tr>
<tr>
<td>Ophthalmology</td>
<td>115</td>
<td>138</td>
<td>67</td>
<td>75</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment function</th>
<th>Treatment function name</th>
<th>2016-17 Tariff - Outpatient Attendances</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>General Surgery</td>
<td>WF01B First Attendance - Single Professional: 144</td>
</tr>
<tr>
<td>101</td>
<td>Urology</td>
<td>132</td>
</tr>
<tr>
<td>103</td>
<td>Breast Surgery</td>
<td>168</td>
</tr>
<tr>
<td>104</td>
<td>Colorectal Surgery</td>
<td>121</td>
</tr>
<tr>
<td>105</td>
<td>Hepatobiliary &amp; Pancreatic Surgery</td>
<td>188</td>
</tr>
<tr>
<td>106</td>
<td>Upper Gastrointestinal Surgery</td>
<td>113</td>
</tr>
<tr>
<td>107</td>
<td>Vascular Surgery</td>
<td>166</td>
</tr>
<tr>
<td>108</td>
<td>General Surgery Service</td>
<td>153</td>
</tr>
<tr>
<td>109</td>
<td>Transplant Services</td>
<td>121</td>
</tr>
<tr>
<td>110</td>
<td>ENT</td>
<td>107</td>
</tr>
<tr>
<td>111</td>
<td>Trauma &amp; Orthopaedics</td>
<td>129</td>
</tr>
<tr>
<td>112</td>
<td>Diagnostic Imaging</td>
<td>0</td>
</tr>
</tbody>
</table>

NHS TARIFF

Trauma & Orthopaedics: 129, 131, 77, 86
ORTHOPAEDIC CLINIC COSTS - ENGLAND

• NEW Orthopaedic OPA
  • \(2,510,735 \times 137 = \£343,970,695\)

• FOLLOW-UP orthopaedic OPA
  ✪ \((7,375,581 - 2,510,735) \times 83 = \£403,834,425\)

• TOTAL orthopaedic OPA
  ✪ \(\£343,970,695 + \£403,834,425 = \£747,805,120\)
### OUTPATIENT APPOINTMENTS NOT ATTENDED.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Numbers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendances</td>
<td>85,631,701</td>
<td>79.9</td>
</tr>
<tr>
<td>Did not attend</td>
<td>7,442,949</td>
<td>6.9</td>
</tr>
<tr>
<td>Patient cancellations</td>
<td>6,595,051</td>
<td>6.2</td>
</tr>
<tr>
<td>Hospital cancellations</td>
<td>7,057,145</td>
<td>6.6</td>
</tr>
<tr>
<td>Unknown</td>
<td>461,577</td>
<td>0.4</td>
</tr>
</tbody>
</table>
**FOLLOW-UP CANCELLATIONS / DNA**

<table>
<thead>
<tr>
<th>ENGLAND</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not attend</td>
<td>6,785,034</td>
<td>6,860,222</td>
</tr>
<tr>
<td>Did not attend first appointment</td>
<td>1,831,105</td>
<td>1,883,957</td>
</tr>
<tr>
<td>Did not attend first tele consultation</td>
<td>7,105</td>
<td>9,809</td>
</tr>
<tr>
<td><strong>Did not attend subsequent appointment</strong></td>
<td>4,881,042</td>
<td>4,899,818</td>
</tr>
<tr>
<td>Did not attend subsequent tele consultation</td>
<td>17,271</td>
<td>16,959</td>
</tr>
<tr>
<td>Did not attend, first / subsequent / tele unknown</td>
<td>48,511</td>
<td>49,679</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ENGLAND</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient cancelled</td>
<td>5,559,560</td>
<td>5,755,918</td>
</tr>
<tr>
<td>Patient cancelled first appointment</td>
<td>1,657,342</td>
<td>1,722,413</td>
</tr>
<tr>
<td>Patient cancelled first tele consultation</td>
<td>2,477</td>
<td>2,520</td>
</tr>
<tr>
<td><strong>Patient cancelled subsequent appointment</strong></td>
<td>3,858,899</td>
<td>3,976,424</td>
</tr>
<tr>
<td>Patient cancelled subsequent tele consultation</td>
<td>8,530</td>
<td>9,455</td>
</tr>
<tr>
<td>Patient cancelled appointment, first/ subsequent/ tele unknown</td>
<td>32,312</td>
<td>45,106</td>
</tr>
</tbody>
</table>

F/U cancelled by patient 4.2% of all appointments

F/U DNAs 5.2% of all appointments

Follow-up appointments DNA or cancelled by patient = 9.4% of all outpatient appointments

<table>
<thead>
<tr>
<th>ENGLAND</th>
<th>2011-12</th>
<th>2012-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital cancelled</td>
<td>5,756,878</td>
<td>5,783,021</td>
</tr>
<tr>
<td>Hospital postponed / cancelled first appointment</td>
<td>1,336,572</td>
<td>1,397,482</td>
</tr>
<tr>
<td>Hospital postponed / cancelled first tele consultation</td>
<td>1,554</td>
<td>2,251</td>
</tr>
<tr>
<td><strong>Hospital postponed / cancelled subsequent appointment</strong></td>
<td>4,350,970</td>
<td>4,303,285</td>
</tr>
<tr>
<td>Hospital postponed / cancelled subsequent tele consultation</td>
<td>13,214</td>
<td>16,592</td>
</tr>
<tr>
<td>Hospital postponed/ cancelled appointment, first / subsequent / tele unknown</td>
<td>54,568</td>
<td>63,411</td>
</tr>
</tbody>
</table>

Not known 234,880 237,003

SUMMARY OF PROBLEMS IDENTIFIED WITH OUTPATIENT CLINICS

1. Rising number of outpatient clinics; 70% of which are follow-ups.

2. High demand on T&O speciality.

3. Highest number of DNA/cancellations for follow-up appointments.
VIRTUAL CLINIC

• Virtual clinic is a contact between the clinical team and the patient to plan clinical care without direct face-to-face meeting.

• However, there is a lack of standard definition in the context of virtual clinics in their descriptions, technologies used, services offered etc.

• The term has been used to indicate very different set of services
ATTRIBUTES OF VIRTUAL CARE DELIVERY

• What is it?
  • Hi-Tech
  • Tele-something
  • Asynchronous
  • Outsourced
  • Anonymous
## VIRTUAL CARE DELIVERY

<table>
<thead>
<tr>
<th>Real Patient</th>
<th>Virtual Patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Provider</td>
<td>Traditional clinics</td>
</tr>
<tr>
<td>Virtual Provider</td>
<td>Remote monitoring from the clinical service team</td>
</tr>
</tbody>
</table>

Proc AMIA Symp. 2001 : 244–248. PMCID: PMC2243512

*Virtual healthcare delivery: defined, modelled, and predictive barriers to implementation identified.*

V M Harrop, MIT, USA.
VIRTUAL CARE DELIVERY – ALSO COST EFFECTIVE
‘BASKET’ OF MEASURES

• Choose from different domains (Berwick)

• Combine
  • Process
  • Outcome
    • Clinical
    • Machine
    • PROMs
  • Experience
    • PREMs & Satisfaction
From Data to Meaning....

Knees - Mortality Rate

Data for Period April 2003 - March 2013
Surgeon Risk Adjusted 90 Days Mortality Rate

In line with expected rate

What does this mean?

This shows that the 90 day mortality rate following knee surgery for this surgeon is in line with the expected rate, based on the type of patients this surgeon has seen. The national average 90 day mortality rate following primary knee replacement surgery is approximately 0.4%

The surgeon you are reviewing is highlighted as a black triangle. Progression along the x (horizontal) axis means that the surgeon has done more cases and/or cases at a higher mortality risk such as older patients. Progression along the y (vertical) axis means the surgeon has had more deaths. The y axis figures are presented as a ratio. This means the values do not represent percentages of patients who have died, but they represent the proportion of deaths compared to the average.

- Surgeons on the central (green) horizontal line (at a figure of 1) have had exactly the average expected mortality taking into account their case mix and number of cases.
- Surgeons either side of the central green line but below the upper red line have had a level of mortality when taking into
Principles in healthcare measurement

• Why? As it will improve care

• Put data in context in a timely way

• Think about the data/information that you are presented with

• Unless it affects clinical decisions there is no point
Outcomes – Groups & Individuals

**Patient Groups**

- Describe the natural history of disease,
- To determine **clinical** effectiveness or **cost**- effectiveness of health care services,
- Measure or monitor safety and harm
- Measure **quality** of care.
- Risk Stratification

**Individual Patients**

- Minimal clinically important improvement/difference (MCII/MCID)
  - smallest change in measurement that signifies an important improvement
  - Derived from distribution, anchors or ‘expert panels’
  - Comparative Data e.g. for OSS >5
- Patient acceptable symptom state (PASS)
  - absolute level of patient well-being
  - Not comparative
  - single-question outcome tool
PROMS 2.0 – BRINGING TOGETHER...

Clinical perspective

Giving clinicians information at group and individual level about the care they deliver...

Patient perspective

Bringing patients into the decision...
Reducing unnecessary visits...

Resource perspective

Improving OP clinic capacity...
OUR EXPERIENCE - ELECTIVE ORTHOPAEDICS

• Begins with the **new patient referral** to clinic

• Patient is assessed and **diagnosis** made

• **Treatment plan** initiated (predictable course)
  • EG SHOULDER SURGERY - SUBACROMIAL DECOMPRESSION

• Patient can be given **choice** and consent gained for the virtual clinic follow up
PATIENT-REPORTED OUTCOME MEASURES: AN ON-LINE SYSTEM EMPOWERING PATIENT CHOICE

- **Virtual clinic F/U** - planned surgery
- **ASAD**
- **Pre and post** treatment data can be gathered for audit, research, service improvement
- **The focus is on reducing unnecessary follow up appointments**
- **Uses PROMs to guide F/U**
VIRTUAL CLINIC
Sub-acromial shoulder surgery follow-up care uses ‘virtual clinic’ model:

- Patients report their outcomes online – pre and 3 & 12 months post surgery
- Information informs clinician’s judgement re need for 2\textsuperscript{nd} & 3\textsuperscript{rd} face-to-face follow-up OP appointment(s)

**Measures used in shoulder pathway:**

- EQ-5D
- Oxford Shoulder Score
- Picker Patient Experience score
- Friends & Family Test
Improving Healthcare System Usability Without Real Users: A Semi-Parallel Design Approach

Farath Arshad, Centre for Health and Social Care Informatics (CHaSCI), Liverpool John Moores University, Liverpool, UK
Nonso Nnamoko, School of Computing and Mathematical Science, Liverpool John Moores University, Liverpool, UK
James Wilson, North West Deanery, Manchester, UK
Bibhas Roy, Central Manchester NHS Foundation Trust, Trafford Hospital, Manchester, UK
Mark Taylor, School of Computing and Mathematical Science, Liverpool John Moores University, Liverpool, UK

ABSTRACT

This paper describes an early-stage usability study conducted on a prototype system designed to capture and analyze Patient Reported Outcome Measures (PROMs) activities. The system – PROMS 2.0 – was developed by Blueisier for the trauma and orthopaedic department in Trafford Hospital, Manchester, United Kingdom (UK). The Centre for Health and Social Care Informatics (CHaSCI), Liverpool John Moores University (LJMU) examined the system without real users, identified potential usability issues and suggested possible solutions for improvements before final release by Blueisier. Three different approaches were adopted for evaluating user interface (UI) design without users. The first approach is the Cognitive Walkthrough (CW), a task-oriented technique capable of identifying issues through action sequence required to perform a task. The second approach is action analysis which predicts the time a skilled user would need to perform a task. The third approach is heuristic evaluation which tends to identify problems based on recognized standards. Results support the argument from relevant cognitive psychology theories and user-centric design principles that UI evaluation without real users is a useful tool in yielding rapid output for subsequent enhancement. It is concluded that semi-parallel design concept could be the key to timely delivery of software design projects.

Keywords: Action Analysis, Cognitive Walk-Through, Heuristic Evaluation, Human-Computer Interaction, PROMS 2.0, User Interface Evaluation

1. INTRODUCTION

From April 2009, all licensed providers of National Health Service (NHS) funded treatment in the United Kingdom (UK) were expected to collect Patient Reported Outcomes Measures (PROMs) questionnaires from patients undergoing any of four index elective surgical procedures, namely: varicose vein surgery, inguinal hernia repairs, hip replacements and
Create Patient

- Male
- Female
- Unknown

DoB

Name & Address

- Title
- Forename
- Surname

Address

Postcode

Contact Details

Email Address

Please note we cannot automate the collection of outcome data without an email address

Mobile No

Telephone No

show less

Secret Questions

Cancel

Save
<table>
<thead>
<tr>
<th>Name</th>
<th>NHS</th>
<th>Hospital No</th>
<th>DoB</th>
<th>Gender</th>
<th>Pathways</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROMS, Dolina</td>
<td>mass</td>
<td>9999999999</td>
<td>26 Jul 1968</td>
<td>Female</td>
<td>1</td>
</tr>
<tr>
<td>PROMS, Bibhas</td>
<td>mass</td>
<td>9999999999</td>
<td>01 Jan 1958</td>
<td>Male</td>
<td>12</td>
</tr>
<tr>
<td>PROMS, Dolina</td>
<td>mass</td>
<td>06 Dec 2012</td>
<td>01 Jan 1958</td>
<td>Male</td>
<td>4</td>
</tr>
<tr>
<td>PROMS, Fiona</td>
<td>mass</td>
<td>21 May 1967</td>
<td>01 Jan 1958</td>
<td>Female</td>
<td>2</td>
</tr>
<tr>
<td>Name</td>
<td>NHS</td>
<td>Hospital No</td>
<td>DoB</td>
<td>Gender</td>
<td>Pathways</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>PROMS, Dolina</td>
<td></td>
<td></td>
<td>26 Jul 1968</td>
<td>Female</td>
<td>1</td>
</tr>
<tr>
<td>PROMS, Bibhas</td>
<td>99999999999</td>
<td>999999999</td>
<td>01 Jan 1958</td>
<td>Male</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pathway</th>
<th>Started</th>
<th>Owner</th>
<th>Status</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand [Left]</td>
<td>11 Jan 2015</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Arthroplasty [Left]</td>
<td>15 Oct 2014</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Knee Arthroplasty [Right]</td>
<td>17 Jun 2014</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty [Left]</td>
<td>25 Mar 2014</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty [Left]</td>
<td>03 Mar 2014</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Stroke</td>
<td>21 Nov 2013</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty [Left]</td>
<td>31 Jul 2013</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty</td>
<td>16 Jul 2013</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty [Left]</td>
<td>12 Jul 2013</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty [Left]</td>
<td>10 Jul 2013</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty</td>
<td>02 Jul 2013</td>
<td>Roy, Bibhas</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
<tr>
<td>Shoulder Non Arthroplasty [Left]</td>
<td>12 Nov 2012</td>
<td>Jeyam, Muthu</td>
<td>Active</td>
<td>add to worklist</td>
</tr>
</tbody>
</table>
PROMS Introduction (PROMS, Bibhas)

Have you had previous surgery for this problem before? (for hip replacement – have you had a previous joint replacement on the hip on which you are about to have surgery?)

- No
- Yes

Have you been told by a doctor that you have any of the following? (select all that apply)

- Heart disease (for example angina, heart attack, heart failure)
- High blood pressure
- Problems caused by stroke
- Leg pain when walking due to poor circulation
- Lung disease (for example asthma, chronic bronchitis or emphysema)
- Diabetes
- Kidney disease
- Disease of the nervous system (for example Parkinson’s disease or multiple sclerosis)
- Liver disease
- Cancer (within the last 5 years)
- Depression
- Arthritis

Do you smoke?

- Yes - Social smoker
- Yes - More than 15
- Yes - More than 15

Move mouse here to scroll the form
<table>
<thead>
<tr>
<th>Procedure</th>
<th>add</th>
<th>Procedure</th>
<th>add</th>
<th>Procedure</th>
<th>add</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Mar 2014</td>
<td>Title of Shoulder Non Arthroplasty</td>
<td>25 Mar 2014</td>
<td>Oxford Shoulder Score</td>
<td>add</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14</td>
<td>10 Mar 2015</td>
<td>EQ-SD (1 Year)</td>
</tr>
<tr>
<td>01 Nov 2014</td>
<td>Title of Shoulder Non Arthroplasty</td>
<td>10 Mar 2015</td>
<td>EQ-SD Profile: 32335</td>
<td>add</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>VAS: 85</td>
<td>Index: 0.099</td>
<td>01 Feb 2015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessment</td>
<td></td>
<td>01 Feb 2015</td>
<td>Oxford Shoulder Score (3 Months)</td>
</tr>
<tr>
<td>10 Mar 2015</td>
<td>PROMS Surgery Introduction</td>
<td>25 Mar 2015</td>
<td>Oxford Shoulder Score (1 Year)</td>
<td>add</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PREMS</td>
<td></td>
<td>01 Nov 2015</td>
<td>EQ-SD (1 Year)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Notes</td>
<td></td>
<td>01 Nov 2015</td>
<td>Oxford Shoulder Score (1 Year)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other Tasks</td>
<td></td>
<td>25 Mar 2017</td>
<td>EQ-SD (3 Years)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25 Mar 2017</td>
<td>Oxford Shoulder Score (3 Years)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01 Nov 2017</td>
<td>EQ-SD (3 Years)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>01 Nov 2017</td>
<td>Oxford Shoulder Score (3 Years)</td>
</tr>
</tbody>
</table>

Notes:
No forms or tasks present
Dear Mr Demo Demo

Thank you for taking the time to respond to this.

You will remember, prior to your surgery, we discussed a system of collecting some data about your surgery which will enable us to measure the benefit that you have had from the procedure. We send you the appropriate questions at predetermined intervals. These are using defined and validated questions that enable you to understand the outcome of your surgery by comparing this score to your pre operative score. These are known as PROMs (Patient Reported Outcome Measures).

You will also be able to compare your outcome with other patients who have had the same procedure.

If you are doing well and have had the expected benefit from the surgery, you may choose not to come back to clinic, we will continue to communicate with you through email.

We would also request you to complete a few questions about this process of keeping in touch which may enable you to avoid a clinic appointment. We hope this will save you time, and allow us to see patients who need to be seen.

Kind regards
Bibhas Roy

Please complete the following assessment Oxford Shoulder Score
Welcome
Bibhas Proms

Please review/update your current contact details

NHS Number
9999999999

Address


Postcode

Telephone Number

Mobile Number
Please enter

Email Address
Please enter
Welcome
Bibhas Proms

Shoulder Problem [Left]

EQ-5D (3 Months)
This is a questionnaire that helps us measure how well you feel in general.

EQ-5D (1 Year)
This is a questionnaire that helps us measure how well you feel in general.

Oxford Shoulder Score (1 Year)
This assessment is used to assess the impact of shoulder surgery on your quality of life.

PROMS Recommendation
This form asks if you would recommend PROMS 2.

PPE (3 Months)
This assessment measures the experience of your interaction.

PROMS Surgery Introduction
Thank you for completing this form.
**Section 1 - Select the best answer as it relates to your shoulder.**

**During the past 4 weeks...**

**How would you describe the worst pain you had from your shoulder?**

<table>
<thead>
<tr>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Unbearable</th>
</tr>
</thead>
</table>

**Have you had any trouble dressing yourself because of your shoulder?**

<table>
<thead>
<tr>
<th>No trouble at all</th>
<th>A little bit of trouble</th>
<th>Moderate trouble</th>
<th>Extreme difficulty</th>
<th>Impossible to do</th>
</tr>
</thead>
</table>

**Have you had any trouble getting in and out of a car or using public transport because of your shoulder?** (whichever you tend to use)

<table>
<thead>
<tr>
<th>No trouble at all</th>
<th>A little bit of trouble</th>
<th>Moderate trouble</th>
<th>Extreme difficulty</th>
<th>Impossible to do</th>
</tr>
</thead>
</table>

**Have you been able to use a knife and fork - at the same time?**

<table>
<thead>
<tr>
<th>Yes, easily</th>
<th>With little difficulty</th>
<th>With moderate difficulty</th>
<th>With extreme difficulty</th>
<th>No, impossible</th>
</tr>
</thead>
</table>
Welcome Mr Jim PROMS

Oxford Shoulder Score

Your post operative score shows good improvement. We are happy with your progress. We do not think you need to come for another clinic appointment. Alternatively, if you have concerns, another visit to clinic can be arranged.
RESULTS – 2013/14 DATA – 12 MONTHS

- N: 92 (arthroscopic shoulder surgery suitable for Virtual Clinic)
  - Oxford shoulder Score
    - Avg Pre-op OSS: 25 (n: 91)
    - Avg 3 month OSS: 36 (n: 81)
    - Avg 12 month OSS: 40 (n: 63)
  - EQ5D
    - Avg Pre-op EQ5D: 0.42 (n: 89)
    - Avg 3 month EQ5D: 0.72 (n: 78)
    - Avg 12 month EQ5D: 0.71 (n: 61)

- 3 Months
  - Average OSS Difference: 11.3
  - No. of patients with MCID >= 5 - 61 (76.25%)
  - No of patients < 5 - 19 (23.75%)

- 12 months
  - Average OSS Difference: 14.5
  - No. of patient with MCID >= 5 - 51 (82.25%)
  - No of patients < 5 - 11 (17.74%)
Results - Continued

- PPE
  - Avg PPE: 14.02 / 15
  - Recommend Proms 2.0 to friends/Family: - 100%
VALUE OF OUTCOMES

• NICE methodology

• EQ5D is the preferred measure

• £20,000-30,000 per QALY is generally accepted

References
The EQ5D index improvement translates to a gain of 0.24 QALYS per year, which we can show is maintained over the length of our study at 2 years.

Based on an estimated cost per ASAD of £1780, the cost per QALY equates to £7417.
The state of being protected against the criminal or unauthorised use of electronic data, or the measures taken to achieve this
WHY?

• Healthcare Data Breaches\(^1\)
  • In the US, the cost of healthcare data breaches is estimated to be $6 billion
  • 90% of the healthcare organisations in the study had breaches and 40% had more than five breaches
  • Criminal attacks have become the number one reason

• Medical identity theft
  • doubled in the past 5 years to 2.3 million in 2014
  • Average loss of $13,500
  • cannot change healthcare details

REGULATORY FRAMEWORK

• Data protection Act – 1998 (DPD -1995)

• General Data Protection Regulation - EU
  • January 2012, the European Commission proposed a comprehensive reform of data protection rules in the EU
  • 14th April 2016 – adopted by European parliament
  • 24th May 2016 enter into force
  • 6th May 2018 applies as law to all of EU

Technology

What does shake-up of EU data laws really mean?

By Jane Wakefield
Technology reporter

14 April 2016 | Technology

The European Parliament has voted on the biggest shake-up of data protection laws for 20 years.

The data protection regulation’s stated aim is to give citizens back control of their information.

Top Stories

Afghans confirm Taliban leader’s death
Afghanistan’s spy agency confirms Taliban leader Mullah Akhtar Mansour has been killed, after the US targeted him in a drone strike.

41 minutes ago

Brexit ‘could damage NHS,’ warns chief

21 minutes ago

Deadly gun rampage at Austria concert

13 minutes ago

Features

Nazi symbol?
The beautiful flower with an ugly past
General Data Protection Regulation - EU

- It is (will be) law
- Wider responsibility (i.e. cloud providers)
- Legal – prepare for class actions in compensatory claims
- More rigid rules on data transfer outside EU
- Erasure rights
- It is your responsibility to inform users of their rights
  - Explicit not implicit consent
- Sanctions – €100m or 5 percent of global revenue
- tokenised, encrypted or pseudo-anonymised data
VIRTUAL CLINICS AND DATA SECURITY

- New patient – clinician relationship
  - Define roles and responsibilities
  - Contracts and Consents (patients are not employees, are consumers)
  - Patient information documents and informed consents
- Security has to extend to patients
CERTIFICATION

- ISO 27001
  - most used security certification outside of the US
- NEN 7510
95% of all security incidents involve human error – IBM 2014

Only amateurs attack machines; professionals target people.

— Bruce Schneier —
PATIENT AUTHENTICATION SYSTEMS

- Role based access – only to their record
- Security Tokens
- Password management systems
  - Common factor for most breaches
  - Logistical problems resulting from forgotten passwords
- Biometric data
BIOMETRICS

"biological and behavioural characteristic of an individual from which distinguishing, repeatable biometric features can be extracted for the purpose of biometric recognition"


• most secure form of identifying and discriminating between individuals
• Neither something you have nor something you know, but rather it is something that you are
• behavioural or physiological characteristics
TYPES OF BIOMETRICS

DNA Matching
Ear
Eyes - Iris Recognition
Eyes - Retina Recognition
Face Recognition
Fingerprint Recognition
Finger Geometry Recognition
Gait
Hand Geometry Recognition
Odour
Signature Recognition
Typing Recognition
Vein Recognition
Voice / Speaker Recognition
BIOMETRICS - CHARACTERISTICS

- **Universality**: it is shared among all members of a population
- **Uniqueness**: two individuals cannot share the same characteristic
- **Permanence**: it does not change over time
- **Collectability**: it can be measured quantitatively
- **Performance**: the measurement must reliably produce acceptable results
- **Acceptability**: the extent to which the system is accepted by the population
- **Circumvention**: the risk of system verification without valid credentials
FINGERVEIN RECOGNITION

Near infrared Light (LED)

Vein

CCD camera
OTHER INDUSTRIES

Barclays to introduce 'finger-vein ID' readers

Biometric machines use vein pattern rather than fingerprint to identify customers and system will be rolled out to some customers next year.

Barclays is to introduce 'finger-vein ID'. Photograph: greg.whitmore@observer.co.uk
INFORMATION GOVERNANCE

- Information governance and Security
  - Has to extend to patients
  - Administrative – access and control
  - Consent – explicit and implicit models
  - Physical – equipment security
  - Technical – securing information flow often through open networks i.e. the internet
RESPONSIBILITY

• Virtual medicine is an **emerging** field

• **GMC** guidance is **not specific** to virtual clinics

• The GMC have collated the guidance relating to Doctors acting as ‘**responsible consultants**’ - for inpatient care. (Francis report)

• Regarding outpatient care, GP’s carry the overall responsibility. However this is **shared** with hospital doctors.

Guidance for doctors acting as responsible consultants or clinicians. GMC. [www.gmc-uk.org/guidance](http://www.gmc-uk.org/guidance)

**PRACTICALITIES**

- In lieu of specific guidance, virtual clinic appointments should be treated as standard clinic attendances.

- Any virtual clinic interaction needs to be documented and communicated to the patient’s GP.

- Failing to interact with a virtual clinic should follow a similar process to failing to attend a real hospital appointment.
  
  - KNOWLEDGE OF THE **SEVERITY** OF THEIR CONDITION NECESSITATING REFERRAL OR FOLLOW-UP NEEDS TO BE TAKEN INTO ACCOUNT.
• Have a **clear protocol** for dealing with missed appointments.

• Have a system for **identifying patients** who fail to attend for follow-up.

• Ensure **patients are informed** about the system, how it operates and the potential consequences of missing appointments.

• For continually misses appointments, explore any **underlying problem**.

• Ensure that patients' **contact details** are kept up to date.

• Maintain an **adverse incident reporting** system.

• Keep clear records of steps taken to **investigate incidences** of a failure to attend.

DEVELOPING A BUSINESS CASE
FINANCIAL DRIVERS

• In broad terms there are two ways to improve the financial performance of a department or Trust

• 1 - Increase revenue
  • EG REDUCING FOLLOW UP APPOINTMENTS CAN FREE UP CAPACITY TO SEE MORE NEW PATIENTS - HIGHER TARIFF AND LEAD TO MORE COMPLETED TREATMENT EPISODES

• 2 - Reduce costs
  • EG REDUCING REVIEW APPOINTMENTS MAY MEAN FEWER CLINICS NEED TO BE STAFFED
THINK ABOUT HOW YOU CAN CONSTRUCT A BUSINESS CASE FOR YOUR NEW SERVICE

- You should include:
  - **CASE FOR CHANGE**, INCLUDING OVERVIEW OF CURRENT SERVICE?
  - **APPRAISAL** OF OPTIONS (NON FINANCIAL)
  - **FINANCIAL** APPRAISAL OF OPTIONS
  - **RISK** MANAGEMENT PLAN
  - **PREFERRED** OPTION OUTLINED (WITH REASONS)
  - **BENEFITS REALISATION** (AND HOW THESE WILL BE MONITORED)
<table>
<thead>
<tr>
<th>Take Up</th>
<th>System Costs</th>
<th>Reduction in face to face FU income</th>
<th>Virtual FU Costs</th>
<th>Virtual Clinic FU income</th>
<th>Total Costs</th>
<th>New 1st OP Attendance Revenue</th>
<th>Net Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.00%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NEW ACTIVITY – CONVERSION RATIO

• New to Intervention Ratio
  • Tariff dependent on intervention
  • Resource modelling required

• New to FU ratio
Thank You