Durham CCC, Chester-le-Street
Friday 11th September 2015

Evaluation of Telehealth Monitoring in Pregnancy using ‘Florence’ & a multimatrix, multipartner model - a Northeast & N Cumbria AHSN-funded Collaborative Maternity Innovation Project

Kim Hinshaw
Janette Johnson

Rahul Nayar
Paul Marriott
Welcome to....

North East & North Cumbria AHSN

Sunderland
Tyne & Wear

University of Sunderland
My thanks to Professor Oliver James....
“NHS hospitals face having to cut staff and services amid the worst financial outlook for almost a decade... ”

“Board reports covering all 145 hospital trusts in England disclose that 44 per cent expect to end the year in deficit - with a combined “black hole” of more than £330 million... “
“Innovation is not always about new or more resources. It is usually about using existing materials differently”

Lord Ara Darzi
Plan

• What is ‘Simple Telehealth’ technology?

• Using MECS in PIH & GDM
  [Messaging Enabled Care Services]

• Pilot use of MECS for breastfeeding support

• Evaluation – clinical outcomes/patient satisfaction/health economics

• The future – limitations/potential
‘Florence’ is a secure NHS server
- Stoke CCG

- ‘Florence’ runs an SMS-based simple telehealth system
‘Florence’ is a secure NHS server
- clinicians develop the pathway & alerts

SMS
- prompts plus advice/support

Basic smart-phone technology

GP Practices
Hospital Clinicians
Community & Specialist Nursing

SMS
- responses (BP, stix results etc)

Develop clinical pathways & alerts
24,000+ Patients

Supporting people at home
Enhanced support at home
Manage Crisis Effectively
Specialist acute input
Manage step down from acute effectively
Enhanced support at home
Supporting People at Home

Long term hypertension
Smoking Cessation
Long term vital signs monitoring
Care Homes
Pain Mment Medicines Management
"Worried Well" INR
Weight loss motivational messages
Health self assessment
Sexual health

Support* Crisis Acute Trf of care Support
Unstable Hypertension
Newly diagnosed hypertension
Medication Reminders for:
Hypertension / Ashma inhaler / pain management
Paediatric ashma
COPD
Diabetes (type1 & 2)
Heart Failure
Palliative care carer support/wellbeing
Falls prevention
EMAS unstable vital signs monitoring
Oncology
Neurology
Speech therapy
Alcohol support
Learning disabilities
Mental Health behaviour
Mental Health appt & medication reminders/ supportive messages
Daily living/ medication reminders for people with Aspergers/autism
Pregnancy induced hypertension
Gestational diabetes
COPD
CHD
Diabetes
physiotherapy
Monitoring of pre op patients to reduce cancelled operations
Out patient acute specialist follow up
DNA management
Support early discharge
Virtual Wards
Intermediate care
Step down facilities
Unstable vital signs monitoring
Medication management
As *

Virtual Wards
Intermediate care
Step down facilities
Unstable vital signs monitoring
Medication management
As *

Long term hypertension
Smoking Cessation
Long term vital signs monitoring
Care Homes
Pain Mment Medicines Management
"Worried Well" INR
Weight loss motivational messages
Health self assessment
Sexual health
2012 – Pregnancy care & telehealth
- multi-partner teams

PIH Hospital Team

GDM Hospital Team

....supported by the NHS Northern Senate Telehealth team
Pregnancy-induced hypertension (PIH) + Gestational diabetes (GDM)

• Common & significant workload

• ‘Mild PIH’:  
  – referred for **ANTENATAL DAY UNIT** assessment  
  – multiple home visits by **COMMUNITY MIDWIFE**  
  – further visits to **HOSPITAL ANTENATAL CLINIC**

• ‘GDM’:  
  – weekly **ANTENATAL CLINIC** visits  
  – over many weeks
Developing clinical pathways

1. Clinical team develop safe inclusion/exclusion criteria

2. Telehealth team developed the ‘Florence’ text system for the project:
   – texting information ‘to & from’ patient
   – appropriate ‘patient alerts’
   – procured necessary monitoring equipment
   – developed patient information sheets (PIS)
Pregnancy-induced hypertension (PIH)

• ‘Mild PIH’ is common – affects 5% of pregnancies

• Need to watch for preeclampsia (2-3%) but ‘severe preeclampsia’ only affects 0.5% (1/200)

• ‘Mild PIH’ contributes a significant workload to NHS:
  – referred for **ANTENATAL DAY UNIT** assessment
  – multiple home visits by **COMMUNITY MIDWIFE**
  – further visits to **HOSPITAL ANTENATAL CLINIC**
Developing the PIH clinical pathway

- **Inclusion criteria:**
  - 20 to 38 weeks pregnant
  - no significant symptoms (e.g., headache, flashing lights, etc.)
  - normal blood results
  - no significant proteinuria (urinary P:Cr)

- **Exclusion criteria:**
  - symptomatic or BP ↑ (see table) or preeclampsia
  - essential hypertension, twins, etc.

### Level of Proteinuria

<table>
<thead>
<tr>
<th>Level of Proteinuria</th>
<th>Systolic</th>
<th>Diastolic</th>
<th>Upper limit for inclusion to Telehealth</th>
</tr>
</thead>
<tbody>
<tr>
<td>No proteinuria</td>
<td>140-150</td>
<td>90-100</td>
<td>149/99 with no protein</td>
</tr>
<tr>
<td>+ proteinuria</td>
<td>&lt;146</td>
<td>&lt;96</td>
<td>145/95 with + protein</td>
</tr>
<tr>
<td>++/+++ proteinuria</td>
<td>&lt;140</td>
<td>&lt;90</td>
<td>139/89 with ++/+++ protein</td>
</tr>
</tbody>
</table>

All women who develop any symptoms will be informed by Florence text to: contact ANDU or Delivery suite the same day for 1:1 discussion and management irrespective of BP and urine measurement.
### Developing the PIH clinical pathway

**Inclusion criteria:**
- 20 to 38 weeks pregnant
- no significant symptoms (eg headache, flashing lights etc)
- normal blood results
- no significant proteinuria (urinary P:Cr)

**Exclusion criteria:**
- symptomatic or BP \( \uparrow \) (severe) or preeclampsia
- essential hypertension, twins etc

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<td>(&lt;96)</td>
<td>145/95 with + protein</td>
</tr>
<tr>
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<td>(&lt;140)</td>
<td>(&lt;90)</td>
<td>139/89 with ++/++++ protein</td>
</tr>
</tbody>
</table>

All women who develop any symptoms will be informed by Florence text to: contact ANDU or delivery suite the same day for 1:1 discussion and management irrespective of BP and urine measurement.
Equipment – cheap & simple

Microlife ‘WatchBPhome’ digital BP Monitor
- cheap (~ £100)
- portable
- easy to use
- validated for pregnancy

Meditest ‘Protein2’ urine dipstix (£3.27 for 50)
(supplied by BHR Pharmaceuticals Ltd)
www.bhr.co.uk
<table>
<thead>
<tr>
<th>Date</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 May 2013 12:31</td>
<td>Hi, your protein and blood pressure are fine today - we will contact you when it's time to send in your next readings. Take care, Flo.</td>
</tr>
<tr>
<td>28 May 2013 12:31</td>
<td>P0 bp 110 68</td>
</tr>
<tr>
<td>28 May 2013 12:30</td>
<td>Please text in your Protein &amp; Blood Pressure readings this morning, before 1pm. For example “P2BP 139 95”. Thanks Flo</td>
</tr>
<tr>
<td>28 May 2013 12:30</td>
<td>Hy2</td>
</tr>
<tr>
<td>28 May 2013 12:29</td>
<td>Are you experiencing severe headache, flashing lights or severe pain at top of tummy or under ribs on the right? Reply HY1 for YES, HY2 for NO. Thanks Flo.</td>
</tr>
<tr>
<td>Date</td>
<td>Message</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>28(^{th}) May 2013</td>
<td>Hi, your protein and blood pressure are fine today - we will contact you when it's time to send in your next readings. Take care, Flo.</td>
</tr>
<tr>
<td>28(^{th}) May 2013</td>
<td>P0 bp 110.68</td>
</tr>
<tr>
<td>28(^{th}) May 2013</td>
<td>Please text in your Protein &amp; Blood Pressure readings this morning, before 1pm. For example “P2BP 139.95”. Thanks Flo</td>
</tr>
<tr>
<td>28(^{th}) May 2013</td>
<td>Hy2</td>
</tr>
<tr>
<td>28(^{th}) May 2013</td>
<td>Are you experiencing severe headache, flashing lights or severe pain at top of tummy or under ribs on the right? Reply HY1 for YES, HY2 for NO. Thanks Flo.</td>
</tr>
</tbody>
</table>
GDM – clinical pathway

- Information Leaflet – at 1st visit
- Enrolment – in clinic
- Training given & communication to GP
- Supportive Text Messaging Service & Alerts
- Blood Glucose Testing Pre and Post meals
- Targets and alert thresholds pre-determined:
  - pre-meal < 5.5mmol & 2 hr post-meal < 7.2mmol/l
- Fortnightly weight recorded via SMS
AHSN-funded service evaluation

• £76,000

• Embedded across 3 (subsequently 5) units

• Evaluation – outcomes/limitations/potential

• Outcomes:
  • Clinical outcomes
  • Patient satisfaction
  • Level of control
  • Health economics
Recruitment – 219 patients

PIH  n = 88  Intervention for 2.2 (1-7) weeks
GDM  n = 131 Intervention for 9.7 (1-27) weeks

Assessment:  PIH  79/88  (89.8%)
             GDM  119/131  (90.8%)
Clinical outcomes – PIH (n=88)

- Approximately 50% of women using telehealth for PIH raised an ‘alert’
- 10% were ‘false alerts’
- x3 taken off telehealth monitoring
- x5 admitted after telehealth ‘alert’
- No adverse maternal outcomes
Clinical outcomes – GDM (n=131)

• No adverse maternal outcomes

• Awaiting results from the Oxford GDM telehealth RCT:
‘Level of control’ – pre vs post

PIH

GDM

Level of Control Before Telehealth

Level of Control After Telehealth

Level of Control Before Telehealth

Level of Control After Telehealth

48%

82%

57%

85%
Previous pregnancy experience of PIH

**Experience of Past Pregnancy vs Present**

- Much better than last time
- Better than last time
- About the same as last time
- Not quite as good as last time
- Definitely not as good as last time
‘Recommend’
PIH

Patients Likelihood to Recommend.

- Extremely likely: 65%
- Likely: 26%
- Neither: 6%
- Unlikely: 2%
- Extremely unlikely: 1%
- Don’t know: 0%

91%
‘Recommend’

GDM

Patients Likelihood to Recommend

- Extremely likely: 64%
- Likely: 24%
- Neither: 7%
- Unlikely: 4%
- Extremely unlikely: 1%
- Don’t know: 1%

88%
High levels of satisfaction, convenience & flexibility with treatment

Enhanced understanding of diabetes with all patients.

<table>
<thead>
<tr>
<th>Very Satisfied</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>Very Dissatisfied</th>
<th>Average Satisfaction Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How satisfied are you with your current treatment?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>2. How often have you felt that your blood sugars have been unacceptably high recently?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>3. How often have you felt that your blood sugars have been unacceptably low recently?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>4. How convenient have you been finding your treatment to be recently?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>5. How flexible have you been finding your treatment to be recently?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>6. How satisfied are you with your understanding of your diabetes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.4</td>
<td></td>
</tr>
<tr>
<td>7. Would you recommend this form of treatment to someone else with your kind of diabetes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.5</td>
<td></td>
</tr>
<tr>
<td>8. How satisfied would you be to continue with your present form treatment?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.4</td>
<td></td>
</tr>
</tbody>
</table>

Mean score = 5.4
## AHSN project - Health Economics model

<table>
<thead>
<tr>
<th>AHSN project - Health Economics model</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Cohort Size (Control)</strong>: 100</td>
<td><strong>Cohort Size (Telehealth)</strong>: 100</td>
<td><strong>Run</strong></td>
</tr>
<tr>
<td><strong>Legend</strong></td>
<td><strong>Notes [See Sheet 3]</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GDM</strong></td>
<td><strong>PIH</strong></td>
<td><strong>Time (Months)</strong></td>
</tr>
<tr>
<td>Prevalence (fraction of pregnancies)</td>
<td>0.1</td>
<td>Standard Care</td>
</tr>
<tr>
<td>Monthly Hospital Visits (Control)</td>
<td>0.8</td>
<td>Telehealth</td>
</tr>
<tr>
<td>Monthly Hospital Visits (Telehealth)</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Cost per hospital visit</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Cost per telehealth consultation</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Monthly Telehealth Consults</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Fixed costs of telehealth network</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Average Gestation Period (months)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td><strong>Break Even Times, in Months</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break-Even Time (GDM)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Break-Even Time (PIH)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Break-Even Time (Total)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cost Difference (Per Month)</strong></td>
<td></td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Graphs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PIH</strong></td>
<td></td>
<td>Standard Care</td>
</tr>
<tr>
<td><strong>GDM</strong></td>
<td></td>
<td>Telehealth</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net Costs</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Savings to NHS – effects of ‘Maternity Tariff’?

**Patient cost savings**
- Reduced travel costs for attending day unit / clinic
- Reduced childcare costs / time off work

**Additional potential cost savings**
- Reduced mileage costs for community midwives (especially for rural community services)
- Reduced carbon footprint for NHS & patients
The NHS Maternity Tariff

- Antenatal (mandatory) – x3 levels of funding:
  - mandated in 2013
  - ‘fixed’ at booking in early pregnancy
  - Adjusted by Market Forces Factor (MFF)

<table>
<thead>
<tr>
<th>Level</th>
<th>2013-14</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>£1,076</td>
<td>65.5%</td>
</tr>
<tr>
<td>Intermediate</td>
<td>£1,722</td>
<td>27.3%</td>
</tr>
<tr>
<td>Advanced</td>
<td>£2,865</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

- Antenatal (non-mandatory) funding
The NHS Maternity Tariff

- Included in the tariff...

“The new payment approach also included some services that were previously part of local contracts and not covered by mandatory national prices, such as community antenatal and postnatal care. The cost of these services is now covered by the pathway payments instead.”
The NHS Maternity Tariff

- What else is included in the tariff... still ‘confusing’:

“The exception to this approach is for maternity services in an outpatient setting. All maternity activity, for both consultant led care (TFC 501 obstetrics), and midwife led care (TFC 560 midwife episode), is included in the maternity pathway price.”
# PIH – ‘NHS’ costs

<table>
<thead>
<tr>
<th></th>
<th>Sunderland</th>
<th>QEH</th>
<th>S Tyneside</th>
<th>JCUH/Friarage</th>
<th>Total cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cohort size</strong></td>
<td>38</td>
<td>8</td>
<td>8</td>
<td>25</td>
<td>79</td>
</tr>
<tr>
<td><strong>Study period (weeks)</strong></td>
<td>42</td>
<td>28</td>
<td>32</td>
<td>16</td>
<td>118</td>
</tr>
<tr>
<td><strong>Total weeks of telehealth</strong></td>
<td>60</td>
<td>28</td>
<td>22</td>
<td>44</td>
<td>154</td>
</tr>
<tr>
<td><strong>Average weeks in telehealth</strong></td>
<td>1.8</td>
<td>3.5</td>
<td>3.1</td>
<td>2.2</td>
<td>2.2 weeks</td>
</tr>
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## NHS COST SAVINGS

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<th>Total cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total NHS cost (historic)</strong></td>
<td>£16,900</td>
<td>£7,536</td>
<td>£6,014</td>
<td>£9,552</td>
<td>£40,002</td>
</tr>
<tr>
<td><strong>Total NHS cost (telehealth)</strong></td>
<td>£13,481.72</td>
<td>£5,280.76</td>
<td>£4,240.94</td>
<td>£9,252.76</td>
<td>£32,256.18</td>
</tr>
<tr>
<td><strong>Net savings</strong></td>
<td>£3,418.28</td>
<td>£2,255.24</td>
<td>£1,773.06</td>
<td>£299.24</td>
<td>£7,745.82</td>
</tr>
<tr>
<td></td>
<td>(20.2%)</td>
<td>(29.9%)</td>
<td>(29.5%)</td>
<td>(3.1%)</td>
<td>(19.4%)</td>
</tr>
<tr>
<td><strong>Net savings per week on telehealth</strong></td>
<td>£56.97</td>
<td>£80.54</td>
<td>£80.59</td>
<td>£6.80</td>
<td>£50.30</td>
</tr>
<tr>
<td><strong>Net savings per pregnancy</strong></td>
<td>£89.96</td>
<td>£281.91</td>
<td>£221.63</td>
<td>£11.97</td>
<td>£98.05</td>
</tr>
</tbody>
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# GDM – ‘NHS’ costs

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<th>Total cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort size</td>
<td>59</td>
<td>38</td>
<td>22</td>
<td>119</td>
</tr>
<tr>
<td>Study period (weeks)</td>
<td>51</td>
<td>45</td>
<td>36</td>
<td>132</td>
</tr>
<tr>
<td>Total weeks of telehealth</td>
<td>678</td>
<td>240</td>
<td>230</td>
<td>1148</td>
</tr>
<tr>
<td>Average weeks on telehealth</td>
<td>11.5</td>
<td>8.0</td>
<td>10.5</td>
<td>9.7 weeks</td>
</tr>
</tbody>
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## NHS COST SAVINGS

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<th>Total cohort</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total NHS cost (historic)</td>
<td>£95,516.37</td>
<td>£22,607.82</td>
<td>£35,065.80</td>
<td>£153,189.99</td>
</tr>
<tr>
<td>Total NHS cost (telehealth)</td>
<td>£91,492.19</td>
<td>£22,347.93</td>
<td>£27,725.14</td>
<td>£141,565.26</td>
</tr>
<tr>
<td>Net savings</td>
<td>£4,024.18</td>
<td>£259.89</td>
<td>£7,340.66</td>
<td>£11,624.73</td>
</tr>
<tr>
<td></td>
<td>(4.2%)</td>
<td>(1.2%)</td>
<td>(20.9%)</td>
<td>(7.6%)</td>
</tr>
<tr>
<td>Net savings per week on telehealth</td>
<td>£5.94</td>
<td>£1.08</td>
<td>£31.92</td>
<td>£10.13</td>
</tr>
<tr>
<td>Net savings per pregnancy</td>
<td>£68.21</td>
<td>£6.83</td>
<td>£333.67</td>
<td>£97.69</td>
</tr>
</tbody>
</table>
### GDM – ‘Patient’ costs

<table>
<thead>
<tr>
<th>PATIENT COST SAVINGS</th>
<th>Historic</th>
<th>£2,503.03</th>
<th>£6,166.30</th>
<th>£24,240.69</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total patient cost (historic)</td>
<td>£15,571.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total patient cost (telehealth)</td>
<td>£13,709.56</td>
<td>£2,503.03</td>
<td>£4,378.07</td>
<td>£20,590.66</td>
</tr>
<tr>
<td>Net savings</td>
<td>£1,861.80</td>
<td>£0.00</td>
<td>£1,788.23</td>
<td>£3,650.03</td>
</tr>
<tr>
<td>12%</td>
<td></td>
<td>(0%)</td>
<td>(29%)</td>
<td>(15.1%)</td>
</tr>
<tr>
<td>Net savings per week on telehealth</td>
<td>£2.75</td>
<td>£0.00</td>
<td>£7.77</td>
<td>£3.18</td>
</tr>
<tr>
<td>Net savings per pregnancy</td>
<td>£31.56</td>
<td>£0.00</td>
<td>£81.28</td>
<td>£30.67</td>
</tr>
</tbody>
</table>
‘Fixed costs’ excluded from model

- Annual ‘Florence’ licence: £9,000 (inc VAT)
- Initial cost of BP machines: £131-88 (£95.66 – bulk)
Problems / Limitations

• Estimating & realising true NHS costs......

• Embedding new service & maximising use of telehealth......

  131 new referrals
  92 considered for telehealth (70%)
  40 entered telehealth (30%)

Potential

• Increasing patient control & interest in own health

• Future health benefit?

• International collaboration
Summary

1. Patient-delivered home monitoring for mild PIH & GDM using simple Telehealth SMS is realistic & deliverable.

2. Pregnant women find the technology easy to use, the concept highly acceptable & GDM medication adjustment is practical via SMS.

3. Health economic benefits – highly dependent on the maternity tariff..... PIH > GDM - but may be ‘marginal’ in pregnancy.

4. Service benefits – are more tangible for both PIH & GDM.

5. Implementation & embedding are ongoing issues to be addressed.... needs adequate training & support.
We saw several areas of outstanding practice including:

Sunderland Royal Hospital

- There was close collaborative working between the directorate of paediatrics and emergency medicine, which had developed a shared medical consultant staffing approach, including consultant staff qualified in paediatric emergency medicine.
- The directorate of paediatrics had facilitated the inspection of the service by a team of young service user inspectors.
  - The use of the tele-health system in maternity services enabled women to monitor blood glucose levels and blood pressure in their own homes avoiding unnecessary visits to hospital.
  - The compassion expressed to families if their family member died whilst on the critical care unit. For example, nurses placed a locket of hair and the rings of the patient in a small silver bag and handed a printed card to the family with sympathy from the staff at the critical care unit.
Thank you

... and thanks to the wider project team...

Clinicians – doctors, midwives & specialist nurses
CCG support
Sunderland University – Ian Evans, Ashleigh Evans, Scott Wilkes
Health economics – Andrew Smith
NE&NC AHSN
“Innovation is not always about new or more resources. It is usually about using existing materials differently”

Lord Ara Darzi
Weblinks

• Stoke CCG – ‘Simple Telehealth’: www.digitalhealthsot.nhs.uk

• NHS England TECS resources for Commissioners: http://www.england.nhs.uk/ourwork/qual-clin-lead/tecs/