

**NHS GREATER GLASGOW AND CLYDE**

# Evaluation of the Renfrewshire Development Programme

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## Glossary

|           |                                                                   |
|-----------|-------------------------------------------------------------------|
| ACP       | Anticipatory Care Plan                                            |
| AHP       | Allied Health Professional                                        |
| AMU       | Acute Medical Unit (RAH acute medical receiving ward)             |
| CCU       | Coronary Care Unit                                                |
| CGA       | Comprehensive Geriatric Assessment                                |
| CPAU      | Chest Pain Assessment Unit                                        |
| CSR / CSS | Clinical Services Review/Strategy                                 |
| DME       | Department of Medicine for the Elderly                            |
| ECAN      | Elderly Care Assessment Nurse                                     |
| ED        | Emergency Department                                              |
| eKIS      | electronic Key Information Summary                                |
| ETT       | Exercise Tolerance Test                                           |
| IDL       | Immediate Discharge Letter                                        |
| MAU       | Medical Assessment Unit (RAH assessment unit for GP referrals)    |
| MDS       | Monitored Dosage System (“dosette box”)                           |
| MDT       | Multi-Disciplinary Team                                           |
| NEWS      | National Early Warning Score                                      |
| NSTEMI    | Non-ST elevation myocardial infarction                            |
| OAAU      | Older Adults Assessment Unit                                      |
| QOF       | Quality and Outcomes Framework                                    |
| RAH       | Royal Alexandra Hospital, Paisley                                 |
| RES       | Rehabilitation and Enablement Service                             |
| STEMI     | ST elevation myocardial infarction                                |
| Troponin  | Blood marker used to test for myocardial ischaemia (heart attack) |

## **Executive Summary**

### **What is the Renfrewshire Development Programme?**

NHS Greater Glasgow and Clyde (NHSGGC) published the Clinical Services Strategy “Fit for the Future” in 2015. This strategy supports delivery of the Scottish Government 2020 Vision. It outlines new service models and the need to develop and test these, led to the Renfrewshire Development Programme (RDP). By working across a geographical area, bridging traditional divides of hospital and community care, it was envisioned that this programme would demonstrate how specific services can be improved and adapted for the future.

The RDP is a multifaceted service improvement and development programme involving the Royal Alexandra Hospital (RAH), 13 local Paisley GP practices, community health and primary care services and Renfrewshire social care services. It has developed and assessed new service models which aim to:

- Improve the quality of healthcare including patient experience
- Improve care at the interface between hospital and community care
- Shorten length of stay
- Reduce avoidable admissions to hospital
- Maintain or improve rates of re-admission

### **What was done?**

The RDP was initiated at a stakeholder event in May 2014 which facilitated the mapping of local services and identification of areas for targeting change. Five initiatives, listed below, were selected as a focus for activity; these responded to the priorities identified in the Clinical Services Strategy and took into account local context and supporting evidence. The Programme Team met weekly and this supported a co-ordinated, ‘whole system’ approach to the development of the projects and allowed a number of other small tests of change to be initiated.

### **RDP Initiatives:**

1. Chest Pain Assessment Unit (CPAU): rapid assessment and follow-up for patients with low-risk cardiac chest pain at the RAH.
2. Older Adults Assessment Unit (OAAU): combined assessment and short-stay unit at the RAH to deliver early comprehensive geriatric assessment and multidisciplinary support for timely discharge of frail older adults.
3. Out of Hours Community Inreach Service: a transport, settle-in and coordination service to facilitate timely supported discharge from the RAH.
4. Enhanced Pharmacy Services: community and hospital medicines reconciliation, improved communication of discharge prescription, and actions to reduce high-risk co-prescribing.
5. Enhanced Anticipatory Care Planning: GP practices working with target patient groups and local staff to increase the number and use of ACPs.

### **How was the Programme evaluated?**

Evaluation of feasibility, effectiveness, safety and acceptability was based on the first year of the programme and employed a mixed qualitative and quantitative approach to describe its structure, process and outcomes.

Quantitative evaluation relied upon project activity databases with linked routine data to make comparisons before versus during the RDP and for patients experiencing usual care versus care in an RDP project. A range of routine data was also collated to assess trends in wider health and social care activity. Qualitative data were gathered through patient surveys and project staff feedback.

**Table 1: Summary of key project findings**

| Project                                         | Outcomes                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chest Pain Assessment Unit                      | <p>High patient satisfaction and excellent feedback.</p> <p>Safely reduced length of stay (average 25 hours shorter than before project) and number of patients requiring an overnight stay (7% more patients home on the day they present to hospital).</p>                             |
| Older Adults Assessment Unit                    | <p>High patient satisfaction and excellent feedback from relatives and carers.</p> <p>Safely reduced length of stay (average 3.3 days shorter than patients in other clinical areas).</p>                                                                                                |
| Out of Hours Community Inreach Service          | <p>Discharge support provided to patients from a range of clinical areas.</p> <p>Benefits of joint working between health and social care and co-location.</p>                                                                                                                           |
| Enhanced Anticipatory Care Planning             | <p>Increased number of ACPs completed for patients in target groups.</p> <p>Information contained in the ACP was useful and supports clinical decision making for patients admitted as an emergency.</p>                                                                                 |
| Enhanced Pharmacy Services                      | <p>Initiation of improved medicines reconciliation mechanisms.</p> <p>Establishment of improved communication between hospital and community pharmacy to prevent medication errors.</p>                                                                                                  |
| The overall RDP approach to service development | <p>Joint working has forged new relationships between hospital, community health and social care professionals which have supported ongoing service improvement.</p> <p>The RDP was a rewarding way of working and a successful means of tackling previously hard to address issues.</p> |

**Table 2: Summary of key observed trends in health and social care**

| Activity area         | Observed trends                                                                                                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hospital activity     | Reduction in average length of stay for patients aged > 65 years.<br>No change in overall admissions, bed days or delayed discharges.                                                                                              |
| Primary care activity | No significant change in number of GP encounters in the 13 practices.<br>Out of Hours GP contacts followed the same trends as NHSGGC.<br>Increase in Community Nursing activity.                                                   |
| Social care activity  | Increase in the number of hours of home care provided and the proportion of those aged 65+ years receiving home care.<br>These trends brought activity levels in Renfrewshire closer to those observed on average across Scotland. |

**Summary of Conclusions:**

**Activity:** Project activity was variable over the year, with periods of closure and recruitment challenges impacting on the realisation of potential benefits of the units.

**Effectiveness:** The projects were successful in achieving a number of their objectives, such as reductions in length of stay and increased ACP coverage, as well as the RDP overall building links and improving communication between hospital and community health and social care professionals. Tables 1 and 2 refer.

**Safety:** Readmissions at 7 and 28 days for the CPAU were lower than comparable groups. Whilst in the OAAU there was some variability over the year, overall there is not a consistently higher rate of readmission than in comparable patient groups.

**Acceptability:** Feedback from patients found high levels of satisfaction with the care provided and overall approval of the model of care. Evidence from Programme Team and project staff showed that they have found it satisfying way of working.

**Equity:** Insufficient data were available to make a detailed analysis of the equity impact of the projects (see report for further discussion).

**Cost:** Theoretical cost differences were found, however in the absence of bed closures these have not been realised as cash savings.

**Shifting the balance of care:** There were reductions in length of stay for those aged >65 years, in conjunction with increases in community nursing care and home care, compared with the previous year. However it is not possible to directly attribute these changes directly to RDP initiatives.

### **Recommendations 1: The Renfrewshire Development Programme**

- The current RDP projects should be continued, with preservation of the capacity to assess new patients at peak times.
- Attention should be given to selection criteria, referral pathways and assessment capacity of these projects to ensure that maximum use is made of these services and realise benefits for the largest possible number of patients.
- To ensure equitable use of resources, evidence should be gathered to support the assumption that units such as the CPAU and OAAU free capacity and enhance care quality elsewhere in the hospital, i.e. in standard acute assessment areas, through the most appropriate use of beds.
- Maintenance of successful outcomes will depend on sufficient service capacity in community health and social care.



## **Recommendations 2: Using the RDP findings to support wider implementation of the Clinical Services Strategy**

- Future initiatives should take account of the development of models of care in alternative, non-acute settings in addition to the reduction of demand in hospital, and work towards an integrated approach to care at the individual patient level.
- Clear structures through which learning and experience, from the RDP and future initiatives, can be disseminated across the health board should be identified or, where no appropriate network exists, developed.
- Identification of future initiatives will need to balance the benefits of local knowledge and devolved project development, with the drive for a standardised approach to acute assessment across NHSGGC and the need to ensure sufficient attention to challenging areas e.g. multi-morbidity.

## **Recommendations 3: Data, Monitoring and Evaluation**

- Collection and analysis of data should be matched to purpose, outcomes and time scales at the following three levels: monitoring data, project evaluation data and strategic evaluation data (see main report for details).
- Identified data gathering, access, and validity issues should be addressed to support future monitoring and evaluation efforts, with solutions embedded into routine health and social care data collection (see main report for details).

# The Renfrewshire Development Programme

## 1. Background and context

The Clinical Services Review was launched by NHSGGC in April 2012 and resulted in the Clinical Services Strategy “Fit for the Future” published in 2015 (1). The Clinical Services Strategy serves as a platform for the delivery of the Scottish Government 2020 Vision, and as a means of engaging and working together with Integrated Joint Boards (IJBs) on service planning. The 2020 vision is summarised as:

*“...by 2020 everyone is able to live longer healthier lives at home, or in a homely setting. We will have a healthcare system where we have integrated health and social care, a focus on prevention, anticipation and supported self management. When hospital treatment is required, and cannot be provided in a community setting, day care treatment will be the norm. Whatever the setting, care will be provided to the highest standards of quality and safety, with the person at the centre of all decisions. There will be a focus on ensuring that people get back into their home or community environment as soon as possible, with minimal risk of readmission.” (2)*

The Clinical Services Strategy describes five changes necessary to achieve a sustainable health care system, matched to population needs and providing quality care; these are:

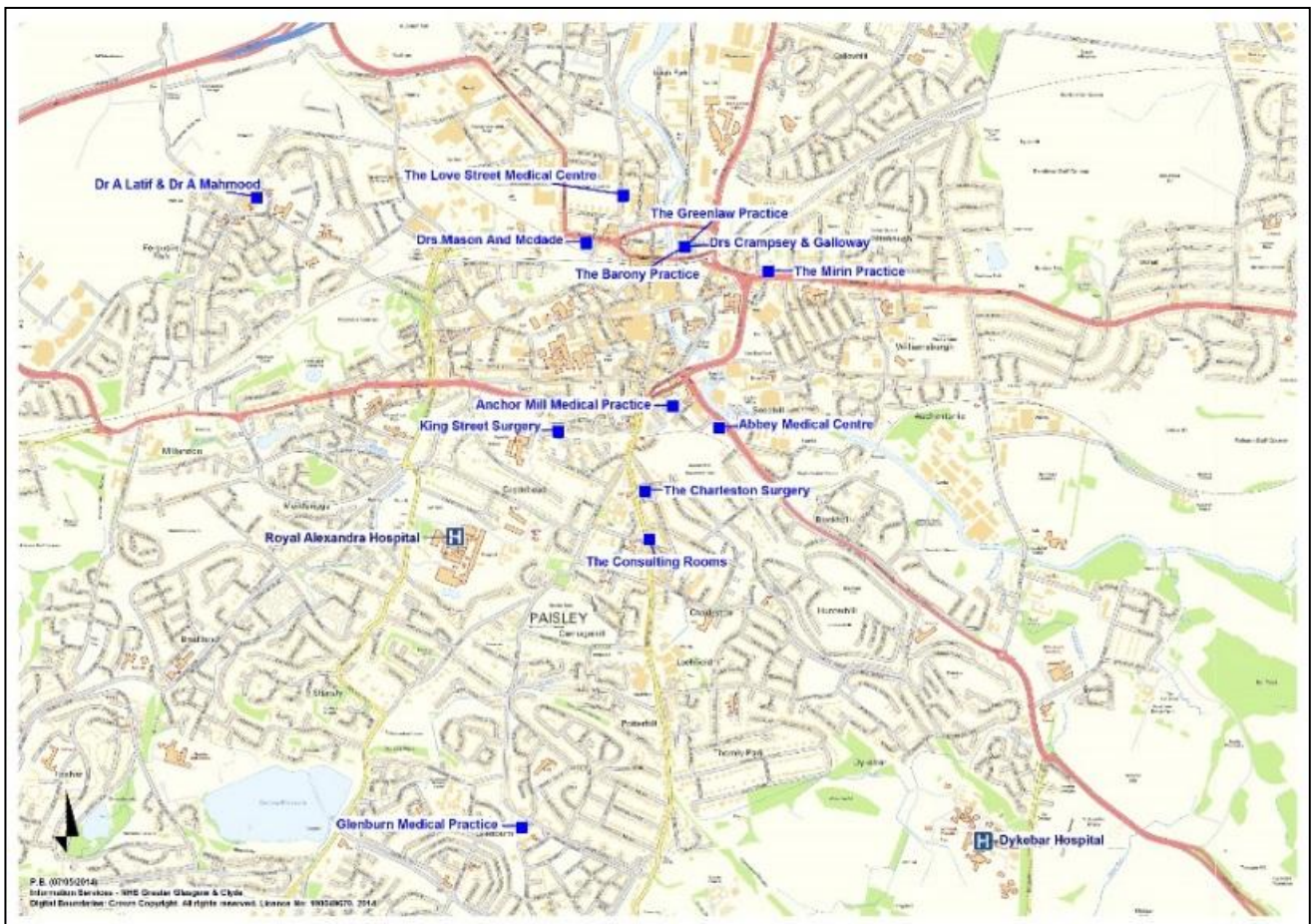
- Think beyond artificial boundaries of ‘hospital’ and ‘community’;
- Focus on patient pathway and needs at each stage;
- Change the delivery of acute care: assess and direct to appropriate place of care;
- Change the provision and accessibility of community services;
- Create different ways of working at the interface. (1 p. 11)

The Clinical Services Review identified the need to further develop and evaluate the new service models in a “test bed” area. The Renfrewshire Development Programme (RDP) was established with the aim of demonstrating new service models and ways of working and assessing their feasibility, affordability and effects.

## 2. Structure and Process of the Renfrewshire Development Programme

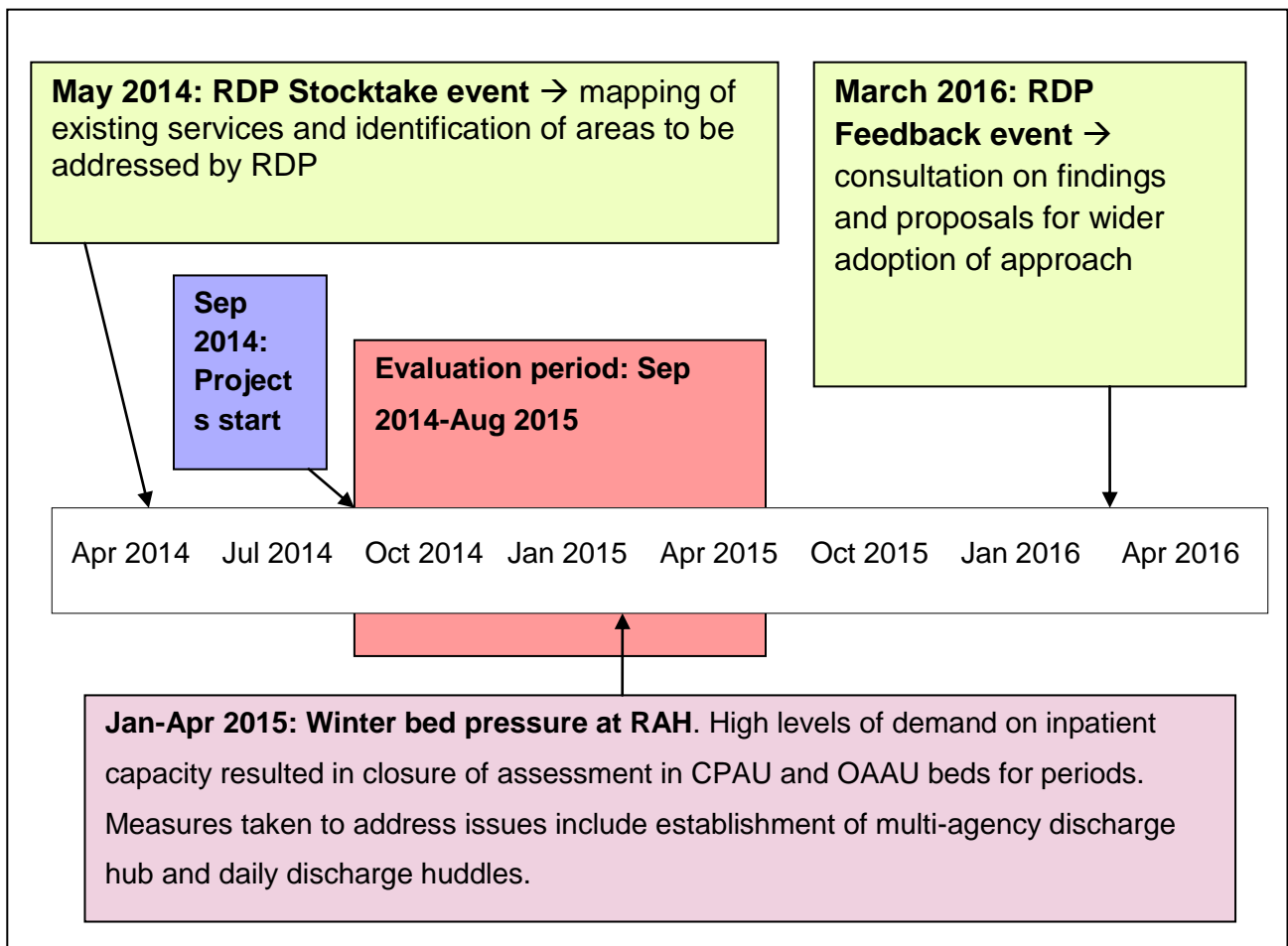
The RDP focused on the Paisley area of Renfrewshire, with 13 local GP Practices (see Figure 1), and involved contributions from those working in the Royal Alexandra Hospital (RAH), local Primary Care services, NHSGFC planning, Renfrewshire Council and patient representatives (see Appendix 1). The Programme Board had responsibility for oversight of the programme, whilst the Project Team led its implementation and met weekly through the initial year of the RDP. These team meetings brought professionals together to address the identified challenges and supported a “whole system” approach to the work undertaken.

**Figure 1: Paisley area of Renfrewshire showing the 13 GP Practices involved in the RDP and the RAH**



The RDP was initiated at a stakeholder event in May 2014 (see Figure 2) and was attended by 163 representatives of local health and social care services. This supported the mapping of local services, sharing information about the RDP and identification of appropriate areas for targeting change.

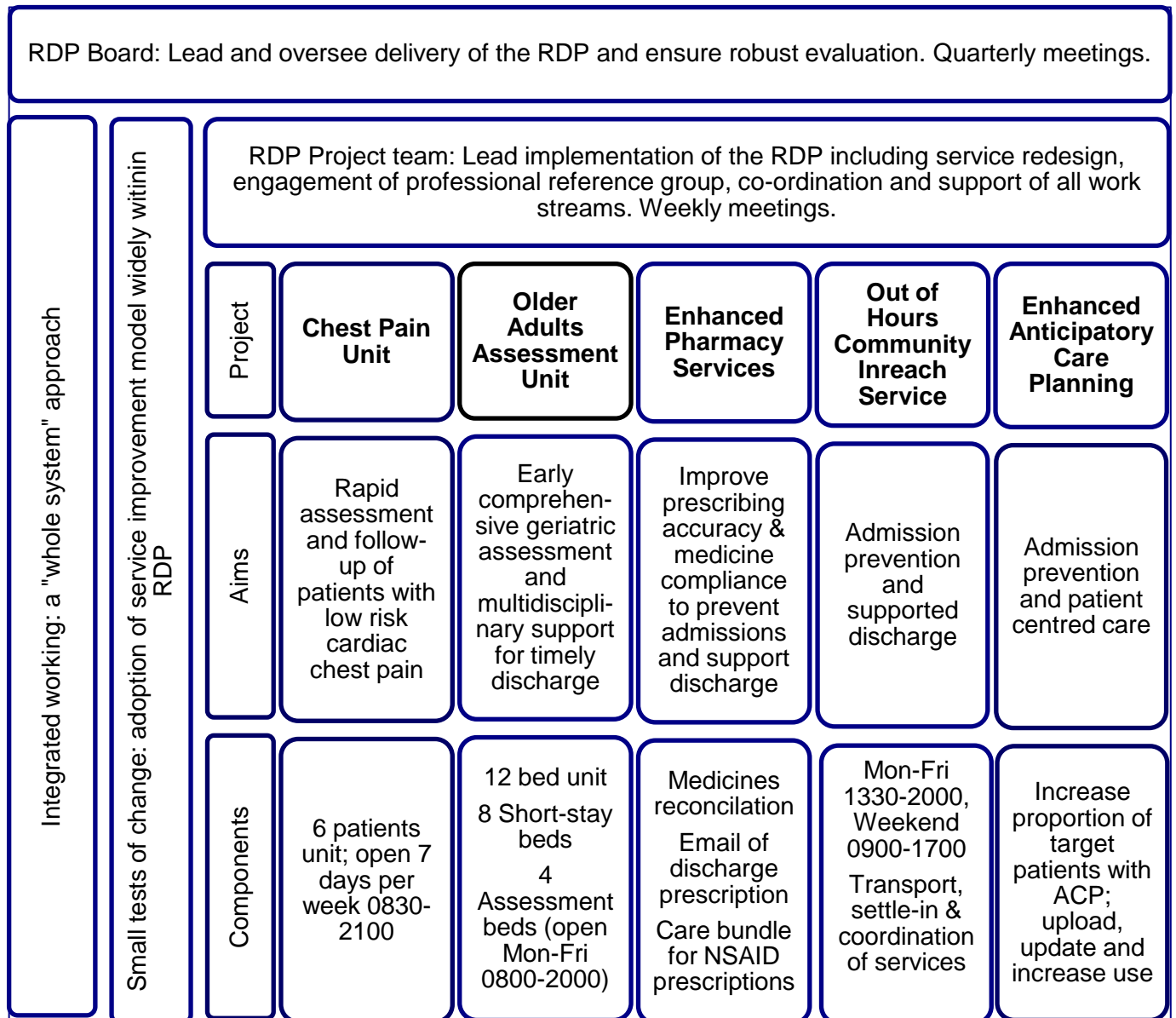
**Figure 2: Timeline of Renfrewshire Development Programme’s Key Events**



Following this and the development of more detailed proposals for the board, five initiatives were selected as a focus for activity. These responded to the priorities identified in the Clinical Services Strategy; taking account of local context and supporting evidence. The five project areas are shown in Figure 3; further detail and rationale for each is given in the relevant evaluation section. As well as these projects, a number of small tests of change were undertaken, as well as work on over-arching issues such as patient transport.

At the conclusion of the first year of the RDP, a feedback event was held with stakeholders in March 2016. This facilitated sharing of the initial evaluation findings and discussion of these in the context of the next steps in implementing the Clinical Services Strategy. These discussions informed some of the recommendations around future implementation. Summary notes from this event are in Appendix 2.

**Figure 3: RDP Structure and Process**



# Evaluation Aims, Components and Methods

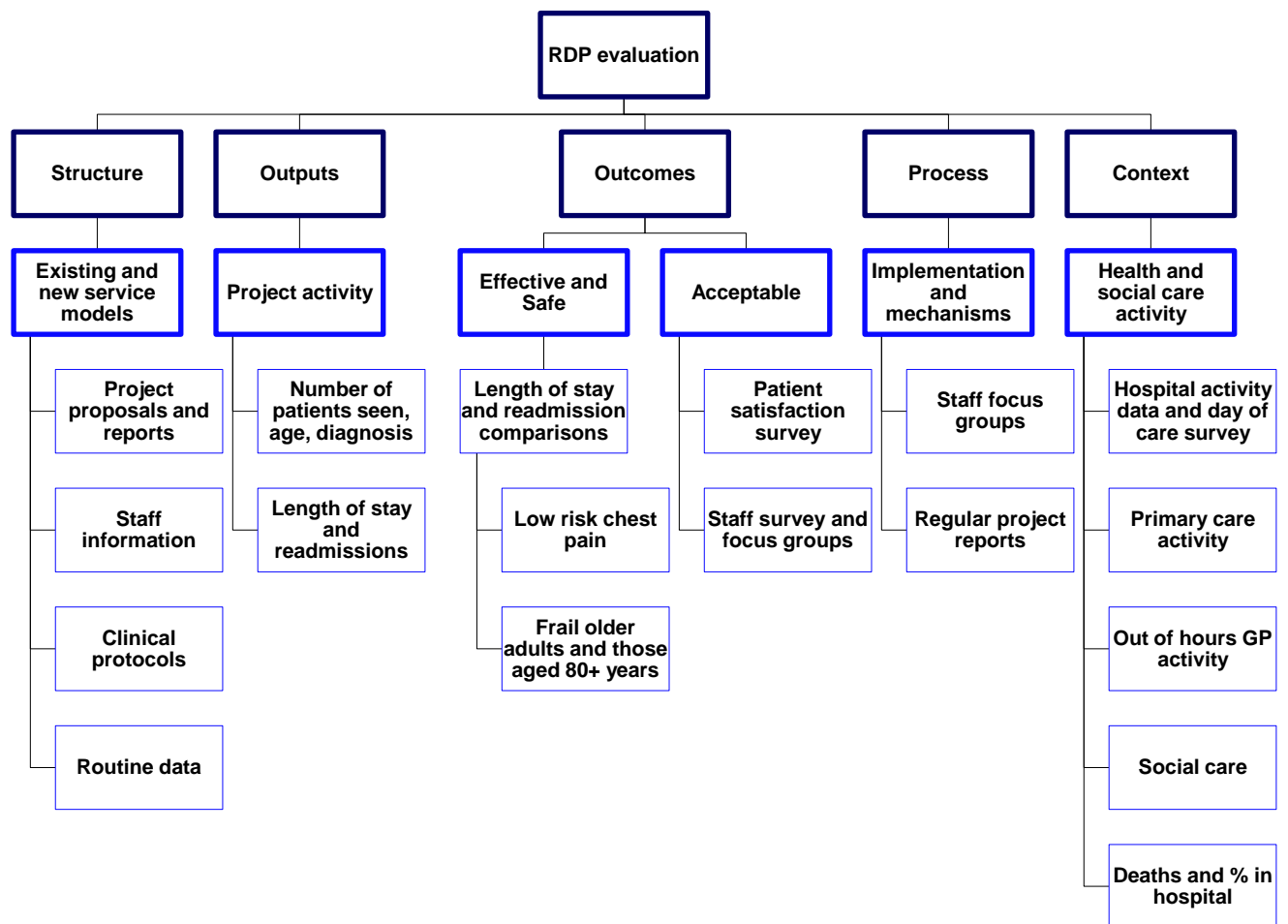
## 1. Evaluation Aims

The aim of this evaluation is to systematically investigate the deliverability, acceptability, effectiveness and cost implications of the overall Renfrewshire Development Programme and its constituent projects.

## 2. Components

The evaluation is based on the first year of the RDP and employs a mixed quantitative and qualitative approach to describe the structure, process and outcomes of the programme. Figure 4 gives an overview of the range of information which has contributed to each area of the evaluation (for full list of quantitative data sources see Appendix 3).

**Figure 4: RDP Evaluation structure and components**



### **3. Methods**

#### **Structure**

Information on the structure of the RDP and its constituent projects was obtained through the terms of reference, meeting minutes, project proposals, interim project reports, visits to the project sites and meetings with staff and project leads.

A description of the changes made by the RDP relied upon an accurate outline of the existing model of care, which was based upon information from staff, clinical protocols, ward databases and routinely collected data, for example the QOF and hospital admissions data. The initial, hospital-wide “Day of Care” survey also contributed to an understanding of the existing care within the RAH.

#### **Process**

An assessment on the fidelity and reach of the interventions is based upon project activity data and interim project reports. Mechanisms of change were identified through staff focus groups and reports by project leads.

#### **Outputs**

Each of the initiatives gathered data regarding the number of patients seen on local project databases; any additional activity data gathered varied by project.

### **4. Outcomes**

#### **Qualitative data**

Patient satisfaction surveys and gathering the views of friends, family and carers were undertaken by the Patient Centred Health and Care Collaborative. A number of staff focus groups were facilitated by Public Health to assess acceptability of the service models to staff and identify process factors relevant to service development. Online surveys were also used to obtain views from acute hospital staff and the RDP project team.

#### **Quantitative data**

Patients who received care in one of the RDP projects were identified via the local project databases. SMR01 hospital admission records were obtained for these

patients to provide a consistent dataset covering length of stay, episodes of care, diagnosis and readmissions at 7 and 28 days.

Two comparisons were made to assess if the RDP projects had impacted on outcomes:

- Before RDP vs. During RDP – the experience of target patient groups in the year preceding the RDP (Sep 2013-Aug 2014) was compared to that in the first year of RDP (Sep 2014-Aug 2015)
- Usual care vs. Care in the RDP project – the experience of similar patient groups who received usual care in the first year of the RDP (Sep 2014-Aug 2015) was compared to that of patients who received care in the RDP projects

Collation and description of data was undertaken in Microsoft Excel 2007 (3). Assessment of statistical significance of differences between groups was made with the SPSS statistical package (4). A comparison of means was undertaken using the Mann-Whitney U test with a p-value <0.05 taken as statistically significant. 95% confidence intervals for difference are presented and were calculated using an Excel tool (5). Where significant differences were detected between groups the cost impact of these was estimated by applying the average direct cost of the relevant clinical episode to the observed difference.

Several methods, based on age, diagnosis and investigations, were used to identify patient groups who were similar to those targeted by the interventions, in order to provide comparators. Full details of the selection of these groups are given in Appendix 2; the following summarises the comparators used:

**Chest Pain Assessment Unit comparison groups:**

- (a) Patients with a discharge diagnosis of “low risk chest pain” (LRCP)
  - 84% of patients seen in the CPAU had a diagnosis of low risk chest pain
  - 21% of patients with low risk chest pain were seen in the CPAU
- (b) Patients presenting with chest pain having a troponin test
  - 43% of patients with chest pain, no immediate evidence of myocardial ischaemia and having a troponin test were seen in the CPAU



### **Older Adults Assessment Unit comparison groups:**

- (a) Patients presenting with specified frailty conditions (dementia, delirium, tendency to fall) - note this does not include all patients who would be classified as frail according to the frailty score.
- 42% of patients seen in the OAAU had one of these conditions
  - 14% of patients with these conditions were seen in the OAAU
- (b) Patients aged over 80 years
- 74% of patients seen in the OAAU were aged over 80 years
  - 15% of patients aged over 80 years admitted as an emergency were seen in the OAAU

### **Health and Social Care context**

Information was gathered on health and social care activity for the period preceding and during the RDP in order to provide an understanding of the context in which the interventions to place, and to monitor for any possible impacts on these services.

### **Hospital activity**

Monthly data on ED attendances, Emergency admissions, Length of stay, Readmissions (7 and 28 days) and Delayed discharges for the RAH and the rest of NHSGGC were collated from Jan 2013 to the end of the evaluation period from routinely collected data within the health board. Indirect standardisation of key indicators was undertaken by the Information Services team.

A “Day of Care” survey was undertaken in the RAH in November 2014, with repeats in key wards in April 2015, June 2015 and Feb 2016.

### **Primary care activity**

Data were gathered from the 13 participating Paisley GP practices on encounters by type and staff member and on community nursing activity.

Information on Out-of-hours GP contacts was gathered for the whole of NHSGGC, and analysed by post code area.

## **Social care**

Data for Renfrewshire were gathered on the number of individuals receiving home care, the number of hours of care provided, the number of new Standard Shareable Assessments that were undertaken and the number of care home residents and admissions.

## **Deaths**

The number of deaths in Renfrewshire was indirectly standardised to NHSGGC for age, sex and deprivation. The proportion of deaths that occurred in hospital was also gathered.

## **Denominator populations**

In order to allow meaningful comparisons over time and place, health and social care activity data were related to the relevant denominator populations.

## **Renfrewshire**

Mid-year population estimates for Renfrewshire were obtained from the National Records Office for Scotland (NRS) and provided the denominator for social care data.

## **Hospital**

As the hospital does not have a discrete population which it serves an estimated total denominator population of 200,000 was used. The population structure and changes over time of Renfrewshire was applied to this figure, as this is the area which most closely reflects the geographical area served by the hospital. This method allows the comparison of rates over time, but not between places.

## **13 GP Practices**

Practice populations for the 13 participating GP practices were obtained from ISD Scotland.

# Chest Pain Assessment Unit

## 1. Description

### Patient group

Patients presenting to hospital as an emergency (self-referral or GP referral) with possible cardiac chest pain but with a low risk of acute myocardial ischaemia (heart attack).

### Project aims

Reduce the time spent in hospital by patients with acute (cardiac) chest pain who are at low risk of complications. Improve the quality of assessment and treatment of patients with acute (cardiac) chest pain, including prompt access to further investigation and specialist review.

### Existing model of care

Patients with possible cardiac chest pain were assessed in the Emergency Department (ED) and then transferred to the Coronary Care Unit (CCU). In order to exclude acute myocardial ischaemia, blood testing for troponin was done at presentation to hospital (zero hours) and at 6 hours after their pain. Patients with negative tests would then wait for review by a cardiologist and further investigation as appropriate, for example exercise tolerance testing (ETT). In addition to those among whom cardiac pain was felt to be the most likely diagnosis, there is a further group of patients who would undergo troponin testing, even though another diagnosis was felt to be probable. These patients may be seen in the ED or MAU and subsequently admitted to AMU and other medical wards.

### New service model

Unit: Seated unit with capacity for 6 patients, located adjacent to the CCU. Open 7 days per week 0830-2100 (last patient accepted 1730). The unit is staffed by specialist cardiology nurses, with patients reviewed by a cardiologist on the day of admission or the following day if an out-of-hours admission.

Patient selection: Patients assessed in the ED or MAU with possible cardiac chest pain and a HEART score  $\leq 5$ <sup>1</sup>.

Subsequent care: transferred to CPAU, nurse specialist assessment, 3 hour high-sensitivity troponin, chest x-ray. Those with positive findings are transferred to CCU (or other medical ward as appropriate). Those without evidence of acute ischaemia are discharged following cardiologist review. Further testing (e.g. ETT) either takes place the same day if possible, or on the next available day as an outpatient.

### **Rationale for inclusion in the RDP**

Acute chest pain is a common reason for presentation to hospital. Under the existing model of care it was felt patients were spending too long in hospital to exclude more serious diagnoses and receive investigations that could otherwise occur on an urgent outpatient basis.

The advent of the HEART score risk stratification tool and new high sensitivity troponin tests, which offer results in just 3 hours, raised the possibility of safely identifying a patient group at low risk of complications who could be rapidly reassured, discharged, and followed up thereafter.

This model of care is intended to deliver improvements in patient care and experience. It tested a new way of working at the interface between community and hospital care with prompt assessment, early discharge and access to specialist cardiology review and investigations on a same-day or early outpatient basis.

### **Evidence base**

The HEART score is a tool developed to predict outcome in those presenting with acute chest pain, in order to guide diagnostic and therapeutic decisions. Based upon a patient's history, ECG, age, risk factors and troponin test, it has been found to be a sensitive predictor of those at risk of major adverse cardiac events within 6 weeks of presentation (6).

---

<sup>1</sup> Composite risk score based on History, ECG, Age, Risk factors and Troponin, as described and validated by Backus et al (2014) (6).

High-sensitivity troponin tests have been recognised as appropriate for use in “early rule-out” decision making strategies by both NICE (7) and the European Society of Cardiology (8).

### **Available evaluation data**

- CCU/CPU troponin database – data on all patients within RAH having troponin testing from Oct 2010, recorded by chest pain specialist nurses
- SMR01 CPU patients – all patients seen in CPU Sep 14-Aug 15, SMR01 records of that and subsequent admissions
- SMR01 Low risk chest pain patients – all patients admitted to hospital with a diagnosis of non-specific chest pain or angina from Jan 2012-Aug 2015
- Patient feedback cards – friends and family test

## **2. Project Activity September 2014-August 2015**

- **622 assessments made in CPAU<sup>2</sup>**
- **74% non-specific chest pain; 7% had angina and 6% diagnosed with a myocardial infarction (3% STEMI, 3% NSTEMI)**
- **Mean age of patients 61 years (range 24-97)**
- **Average length of stay was 9.4 hours, with 67 % patients discharged on day 0**

### **Patient numbers**

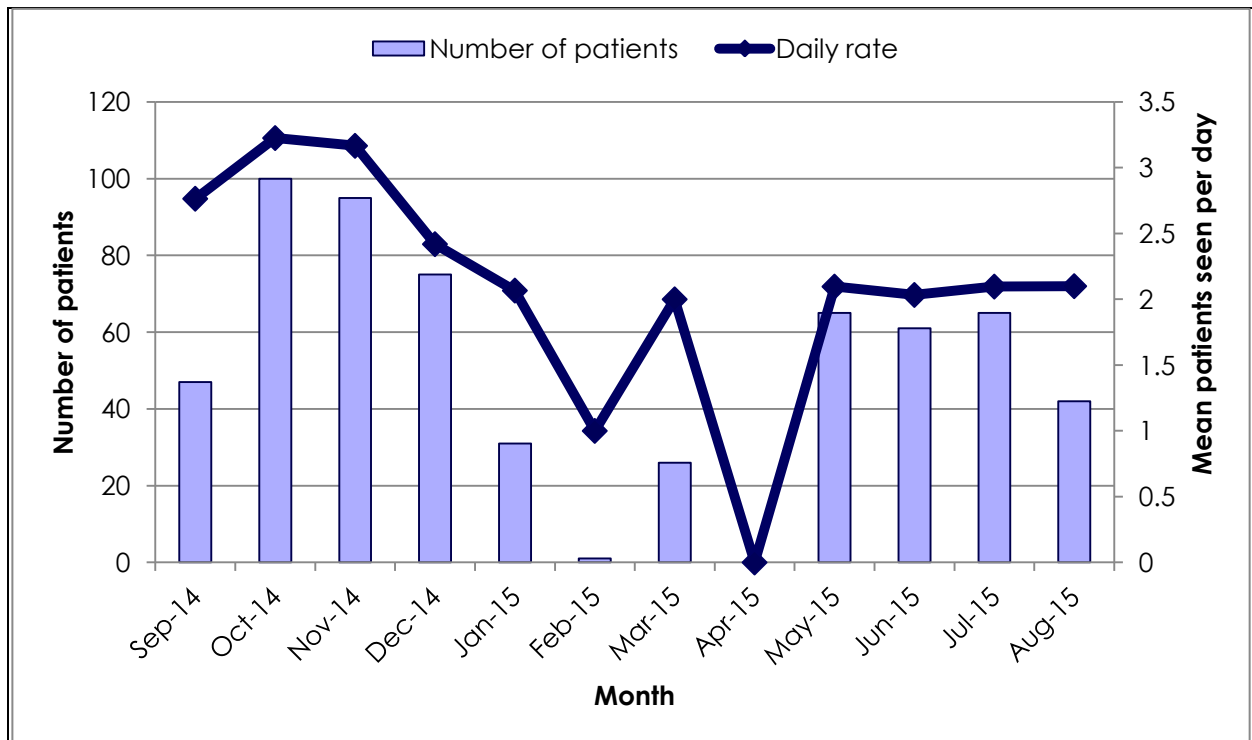
Figure 5 shows activity for the unit over the first year of operation: initially an average of 3 patients were seen per day; between Jan-April 2015 there were significant periods when the unit was closed because the beds were being used as standard acute medical beds at times of pressure<sup>3</sup>. Since May 2015, numbers stabilised at an average of 64 patients per month or just over 2 per day.

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<sup>2</sup> 14/09/2014-20/08/2015: 587 patients seen, 35 repeat consultations → 622 episodes of care; SMR 01 data available for 574 individuals, including all repeats → 609 episodes

<sup>3</sup> Closures: 8-15 Jan 2015, 26 Jan-03 Mar 2015, 10-15 Mar 2015, 23 Mar-03 May 2015.

**Figure 5: Number of patients and mean daily rate of patients seen in the RAH CPAU by month, Sep 2014-Aug 2015**



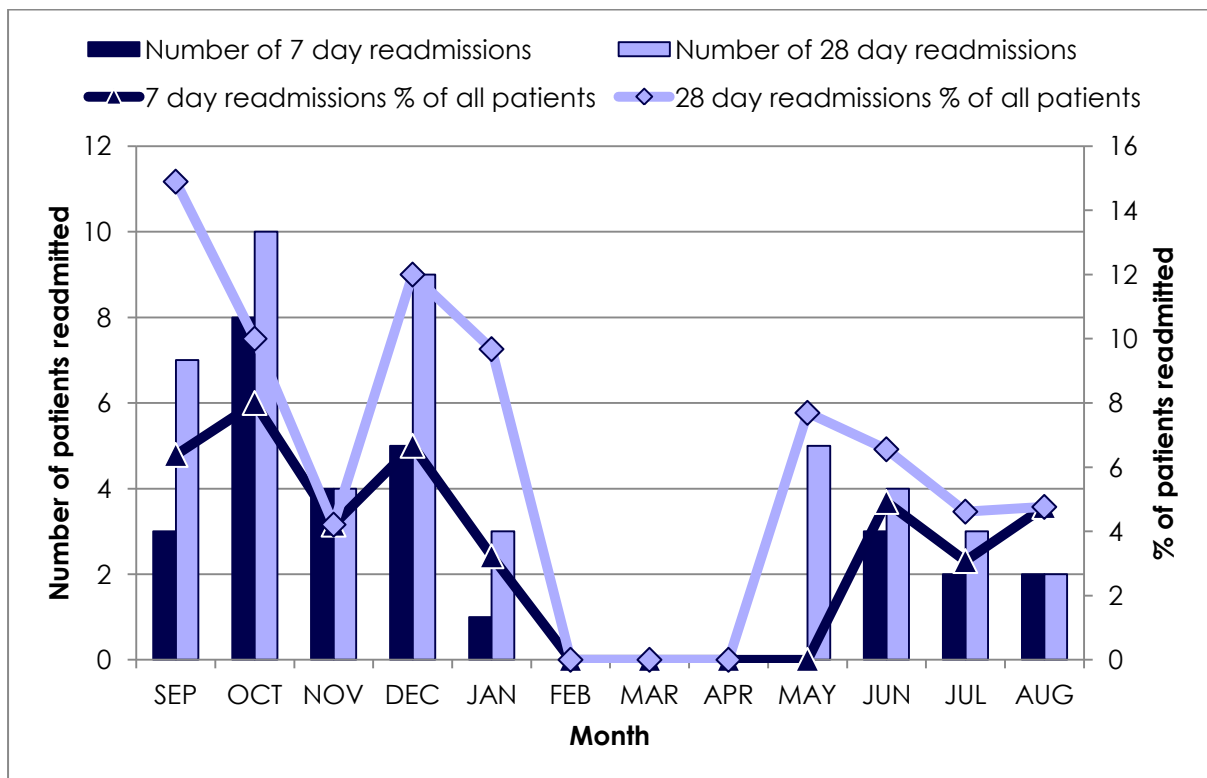
### Diagnoses

The most common diagnosis for those seen in the unit is non-specific chest pain (74%). Diagnoses related to cardiac ischaemia accounted for 13% of those seen, with 6% being classified as myocardial infarction. Other cardiac problems e.g. palpitations accounted for 3%, gastrointestinal issues 3% (mostly reflux), and respiratory diagnoses 1%.

### Readmissions

47 (7.7%) patients were readmitted to hospital for any reason within 28 days, 28 (4.6%) of these within 7 days. Figure 6 shows 7 and 28 day all-cause readmissions.

**Figure 6: 7 and 28 day all-cause readmissions (number and % readmitted) among all patients seen in RAH CPAU Sep 2014-Aug 2015**



### 3. Outcomes

#### Patient satisfaction

Patient feedback “friends and family test” cards were completed by 22 patients. 95% said they would be “extremely likely” to recommend the ward to friends and family in need of similar care, with 5% selecting “likely”.

Comments made reference to good quality communication (4 positive), speed and efficiency of assessment (6 positive), good care (13 positive), as well as a number of general positive comments (see Figure 7). There were no negative comments.

**Figure 7: Quotations from patients assessed in the CPAU**



**Length of stay in hospital**

**Average hours in hospital**

Before vs. During RDP

The mean number of hours spent in hospital by patients with suspected cardiac chest pain and a negative zero hour troponin was compared for the year preceding the RDP with the first year of operation of the CPAU.

The length of stay chest pain patients was, on average, 25.3 hours shorter in the project year compared with the previous year, as shown in Table 3.

**Table 1: Average length of stay in hours for patients with chest pain and no immediate evidence of ischaemia, seen in RAH CCU/CPAU, Sep 2013-Aug 2014 vs. Sep 2014-Aug 2015**

|                                 | <b>CCU patients<br/>Sep 13-Aug 14</b> | <b>CCU/CPAU<br/>patients<br/>Sep 14-Aug 15</b> | <b>Difference</b> | <b>95%<br/>confidence<br/>interval</b> |
|---------------------------------|---------------------------------------|------------------------------------------------|-------------------|----------------------------------------|
| <b>Average stay<br/>(hours)</b> | 36.1                                  | 10.8                                           | -25.3 hours       | -21.6--28.6                            |



### Usual care vs. Care in CPAU

Length of stay was compared for those patients seen in CPAU with those assessed in other clinical areas (CCU, MAU, AMU, ED) during the same year (Table 4).

It was 4.7 hours shorter for patients seen in the CPAU compared with those in other clinical areas in the same year. The mean length of stay of chest pain patients fell in all medical units (CCU, MAU, AMU) in the programme year, but the shortest length of stay was achieved in the CPAU.

**Table 2: Average length of stay for patients with chest pain and no immediate evidence of ischaemia seen in RAH CCU/CPU, Sep 2014-Aug 2015 by clinical area**

|                             | <b>Assessed in other clinical area</b> | <b>Assessed in CPAU</b> | <b>Difference</b> | <b>95% confidence interval</b> |
|-----------------------------|----------------------------------------|-------------------------|-------------------|--------------------------------|
| <b>Average stay (hours)</b> | 14.1                                   | 9.4                     | -4.7 hours        | -1.7--7.7 hours                |

### Proportion of patients discharged on the day of assessment

One aim of the project was to avoid recovered patients having to spend a night in hospital awaiting results or further investigation. This outcome therefore explored the proportion of low risk chest pain (LRCP) patients who were discharged on day zero. In order to focus on those who were likely target patients of the CPAU, it was restricted to those with short lengths of stay (< 2 days).

### Before vs. During RDP

64% of LRCP patients were discharged without an overnight stay during the programme year, compared with 57% the preceding year (see Table 5). Some of these patients would have been assessed in clinical areas other than the CPAU, e.g. AMU.

**Table 5: Proportion of LRCP patients discharged without an overnight stay: Before (Sep 13-Aug 14) vs. During (Sep 14–Aug 15)**

|                      | Before | After | Difference | p-value | 95% CI           |
|----------------------|--------|-------|------------|---------|------------------|
| <b>LRCP patients</b> | 57.2%  | 64.3% | +7.1%      | <0.0001 | +3.9%-<br>+10.4% |

Usual care vs. Care in CPAU

70% of LRCP patients were discharged without an overnight stay from the CAPU, compared with 62% from other clinical areas (see Table 6).

**Table 6: Proportion of LRCP patients discharged without an overnight stay: Usual care vs. CPAU care (Sep 14 – Aug 15)**

|                      | Usual care | CPAU care | Difference | p-value | 95% CI     |
|----------------------|------------|-----------|------------|---------|------------|
| <b>LRCP patients</b> | 62.0%      | 70.1%     | +8.1%      | 0.065   | 3.1%-13.0% |

### Readmissions

The proportion of patients readmitted within 7 and 28 days for any reason, was lower among those assessed in the CPU compared with other clinical areas and for the project year compared with the preceding year. The differences were not statistically significant (see Appendix 5).

### Estimation of impact for significant differences

The direct cost per day associated with a cardiology admission in the RAH is £567. A reduction in length of stay of 4.7 hours (0.2 days) in the CPAU compared with usual care therefore equates to a cost difference of -£111 per admission.

An average of 58 patients per month were seen in the CPAU (during the period of stable activity May-Aug), therefore over the cost of the year there was a potential cost difference of -£77,282 associated with the reduction in length of stay observed with this model of care. This accounts for just over half of the estimated roll-out costs of £142,800, although it should be noted that implementation in the RAH was essentially cost neutral as it was undertaken through redistribution of existing

services. The CPAU was initially established in the clinical area freed by the closure of 6 CCU beds.

#### **4. Process factors**

##### **Patient selection**

The outcomes in terms of length of stay and readmissions suggest that this is a safe approach and an appropriate patient group is being selected. However, the activity levels in the unit are quite low, and a significant proportion of patients with low risk chest pain/troponin testing were seen in other clinical areas. This suggests that there is a balance to be struck between identifying suitable low risk patients and making the unit accessible to the largest possible group to maximise benefits for them and the service.

##### **Unit location**

Being located close to CCU provided convenience and support for staff, with easy access to Consultant Cardiologists. Following more recent restructuring of acute care in the RAH (after the RDP evaluation year) the location of the unit has changed to adjacent to the MAU; this location closer to the “front door” may promote referrals and shared learning/support with general acute assessment services.

##### **Dedicated unit**

Reductions in length of stay were also seen during periods when the CPAU was not operating, and were observed even in non-CPAU clinical areas in comparison with the preceding year. This may reflect the availability of high-sensitivity troponin testing, as well as the cultural adoption of the new ways of working demonstrated by the CPAU. This raises the possibility that efficiency gains may be made without a physically dedicated unit, but by adopting new ways of managing chest pain patients in existing clinical areas.

There may be additional benefits to having a dedicated space; staff found working in the unit to be efficient and rewarding, whilst feedback from patients showed it provides a calm atmosphere and the opportunity for clear communication and reassurance from specialist staff.

**Bed pressure**

Experience from the first year of the CPAU showed that it can be difficult to protect assessment beds at times of bed pressure. However, the potential benefits of rapid assessment and prompt discharge may be greatest at these times.

**Clinical lead**

A strong clinical lead has been vital to the inception and successful implementation of this project.

# Older Adults Assessment Unit

## 1. Description

### Patient group

Older adults presenting to the hospital as an emergency (self-referral) meeting frailty criteria (care home residents, polypharmacy, immobility/falls, multiple conditions, acute confusion) without evidence of major physiological disturbance (low NEWS<sup>4</sup> score), and not obviously requiring the input of a non-medical specialty.

### Project aims

- Improve access to specialist Dept. of Medicine for the Elderly (DME) care and early Comprehensive Geriatric Assessment (CGA)
- Reduce length of stay
- Increase the proportion of older people admitted who receive care in specialist beds
- Reduce number of internal hospital moves for older people
- Better care for patients with dementia and delirium
- Prevention of deterioration /crisis care through more proactive management of at risk patients, supported by shared Anticipatory Care Plans

### Existing model of care

Patients in this group received initial assessment and treatment in the ED, without specific assessment of frailty and if admission was considered necessary would be referred to the General Medical receiving team and transferred to AMU. Following medical consultant review on AMU those felt to benefit from DME input would be referred and reviewed by the DME consultant on AMU. Those accepted to the care of the DME team would then await transfer to a DME bed; if not immediately available then patients may be transferred to a general medical ward or boarded on another ward. Once transferred to a DME bed patients would be assessed by the

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<sup>4</sup> NEWS = National Early Warning Score; a composite score based on routinely measured physiological parameters (respiratory rate, oxygen saturations, temperature, systolic blood pressure, pulse rate and level of consciousness) used to assess a patient's condition an alert staff to any deterioration.

ward doctor, and await consultant review at the next ward round (usually twice weekly). This review would usually be the point at which a comprehensive geriatric assessment was made.

### **New service model**

- Unit: 12 bedded unit with 4 assessment beds open 0800-2000 Mon-Fri (latest admission 1600) and 8 short-stay beds open at all times. Staffed by Consultant geriatrician, ward doctor, ECAN (Elderly Care Assessment Nurse), ward nursing staff with interest in care of the older adult, physiotherapist, occupational therapist, and ward manager.
- Patient selection: Patients in the ED or AMU meeting frailty criteria and NEWS score  $\leq 2$  not requiring input from another specialty. Do not need to await review from ED doctor/medical consultant prior to transfer to OAAU.
- Subsequent care: Comprehensive Geriatric Assessment (CGA) followed by daily consultant and AHP review. Discharge supported by Inreach service and follow-up via Hospital/Community MDT and Day Hospital.

### **Rationale for inclusion in the RDP**

Under the existing model of care there was felt to be undue delays in review of patients by a geriatrician and transfer to a DME bed, resulting in longer lengths of stay in hospital. Significant work had taken place in Renfrewshire in the preceding years to reduce “delayed discharges”; it was therefore felt beneficial to focus on a patient group for whom a short length of stay in hospital would be possible. The existing access to established community support teams was felt to provide a supportive context in which to assess this approach.

This model of care is intended to deliver improvements in patient care and experience. It tested a new way of working at the interface between community and hospital care with prompt specialist assessment, early supported discharge where possible, with good access to community support services coupled with specialist geriatrician follow-up in the community.

## **Evidence base**

A meta-analysis of RCTs found that patients who underwent Comprehensive Geriatric Assessment were more likely to be alive and living in their own homes at the end of follow up (median follow up 12 months) (9). Subgroup analysis found that the most effective method of delivering CGA was in a ward setting, as opposed to mobile teams.

A case study report of four sites across Scotland explores the use of a screening tool for frailty, a geriatric assessment unit and a new pathway for frail patients in the ED (10). The outcomes presented suggest that these approaches may reduce length of stay and mortality.

## **Available evaluation data**

- OAAU database – details of all patients assessed in the OAAU
- SMR01 OAAU patients – all patients seen in the OAAU Sep 14-Aug 15, SMR01 records of that and subsequent admissions
- SMR01 Patients with “specified frailty conditions” – all patient admitted to hospital with a diagnosis of falls, dementia or delirium Jan 2012-Aug 2015
- Patient centred health and care collaborative monthly patient surveys

## **2. Project activity September 2014-August 2015**

- **713 patients assessed in OAAU<sup>5</sup>**
- **There was a wide range of diagnoses, with the most common being “tendency to fall” (25%)**
- **68% discharged home from the unit, 26% were transferred to another ward (6% data unavailable)**
- **The mean age 84.3 years (range 47-103), and 74% of patients >80 years**
- **For all patients assessed in the OAAU the average length of stay was 9.4 days, median 4 days. 8.5% of patients were discharged on the day of assessment**

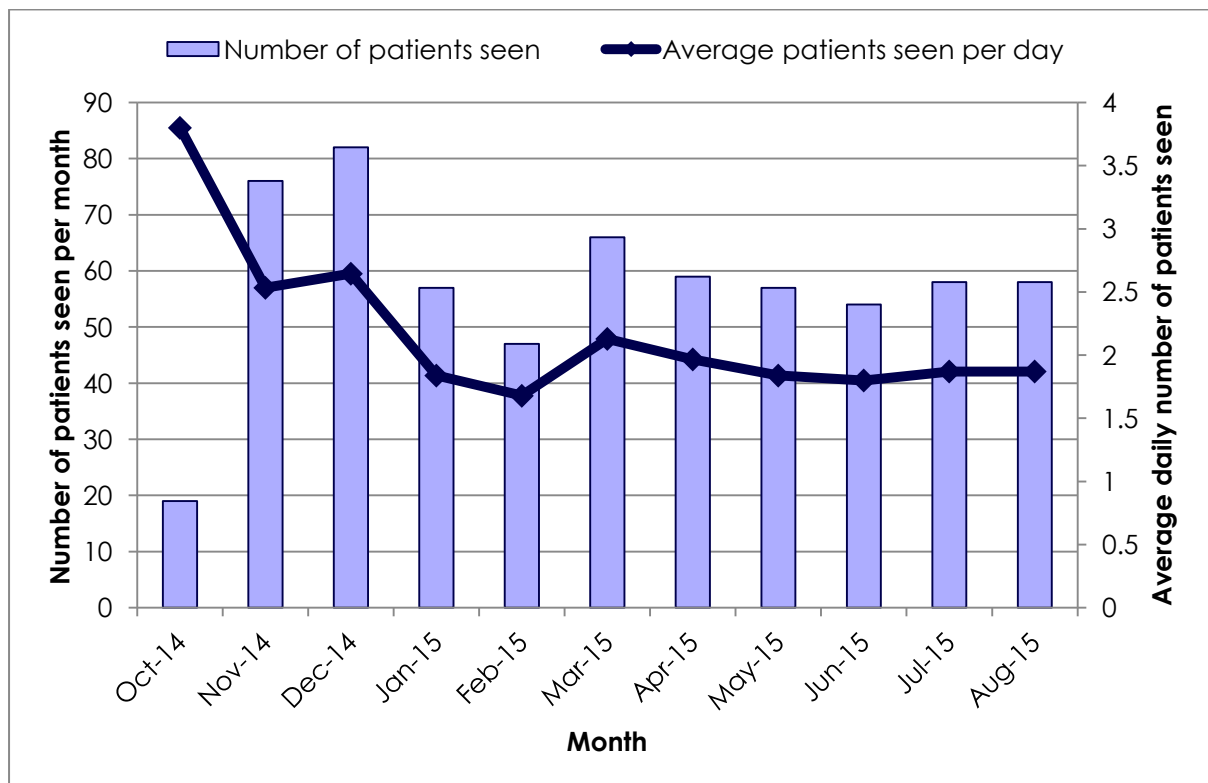
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<sup>5</sup> Seen from 27/10/2014-31/08/2015, with SMR 01 data available for 634 of these (580 individuals, 45 further admissions); and 711 OAAU database entries.

### Patient numbers

Figure 8 shows the number of patients seen in the OAAU and the average number of new patients seen per day by month. There were initial high levels of activity at the end of 2014, followed by reduced numbers of patients seen in the early months of 2015. This is a period when there was significant “winter pressure” on beds in the hospital, and there were periods of closure of the OAAU assessment beds. Since March 2015, activity has been more stable, with an average of 59 patients per month, equating to 2 new patient assessments per day.

**Figure 8: Number of patients and daily mean rate of patients seen in RAH OAAU by month, Sep 2014-Aug 2015**



### Referral source

The majority of patients (62%) were transferred to the OAAU from AMU; 25% came from the ED, with the remainder MAU, wards and other sources such as day hospital and outpatients.



## **Diagnoses**

The most common diagnosis was “tendency to fall” (25% of patients), followed by UTI, syncope and collapse, Acute LRTI, Disorientation, and other gait and mobility abnormalities. The remaining 50% of patients had 156 different diagnoses.

## **Length of stay**

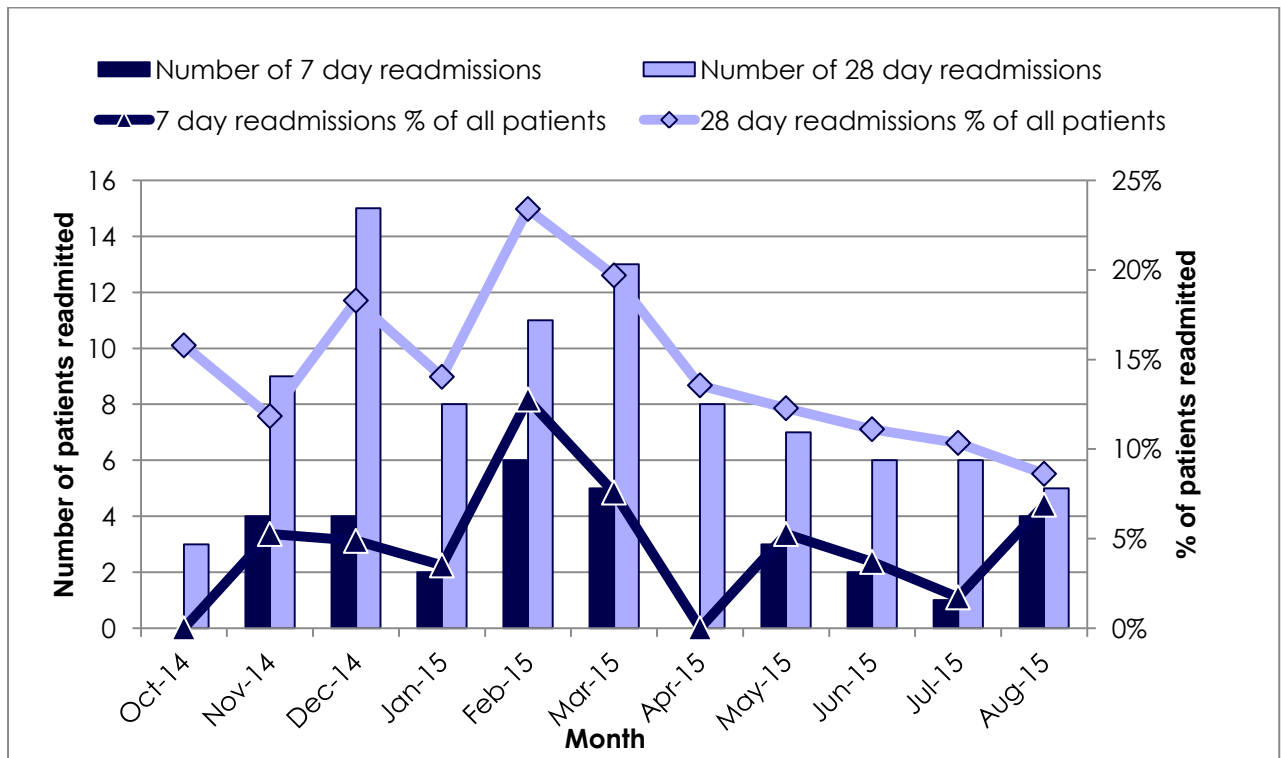
The mean length of stay of all patients seen in the OAAU was 9.8 days (range 0-131) and the median was 4 days. The difference between the mean and median is attributable to the skewed distribution of LOS, with a small number of patients having very long lengths of stay. 8.5% of patients were discharged on the day of assessment.

The mean length of stay for patients discharged directly from the OAAU was 4.4 days.

## **Readmissions**

The overall readmission rate was 4.9% at 7 days, and 14.4% at 28 days. Figure 9 shows how this varied over the course of the year, with highest rates experienced over the winter months, and an improvement in readmission rates since April 2015.

**Figure 9: 7 and 28 day all-cause readmissions (number and % readmitted) among all patients seen in RAH OAAU, Oct 2014-Aug 2015**

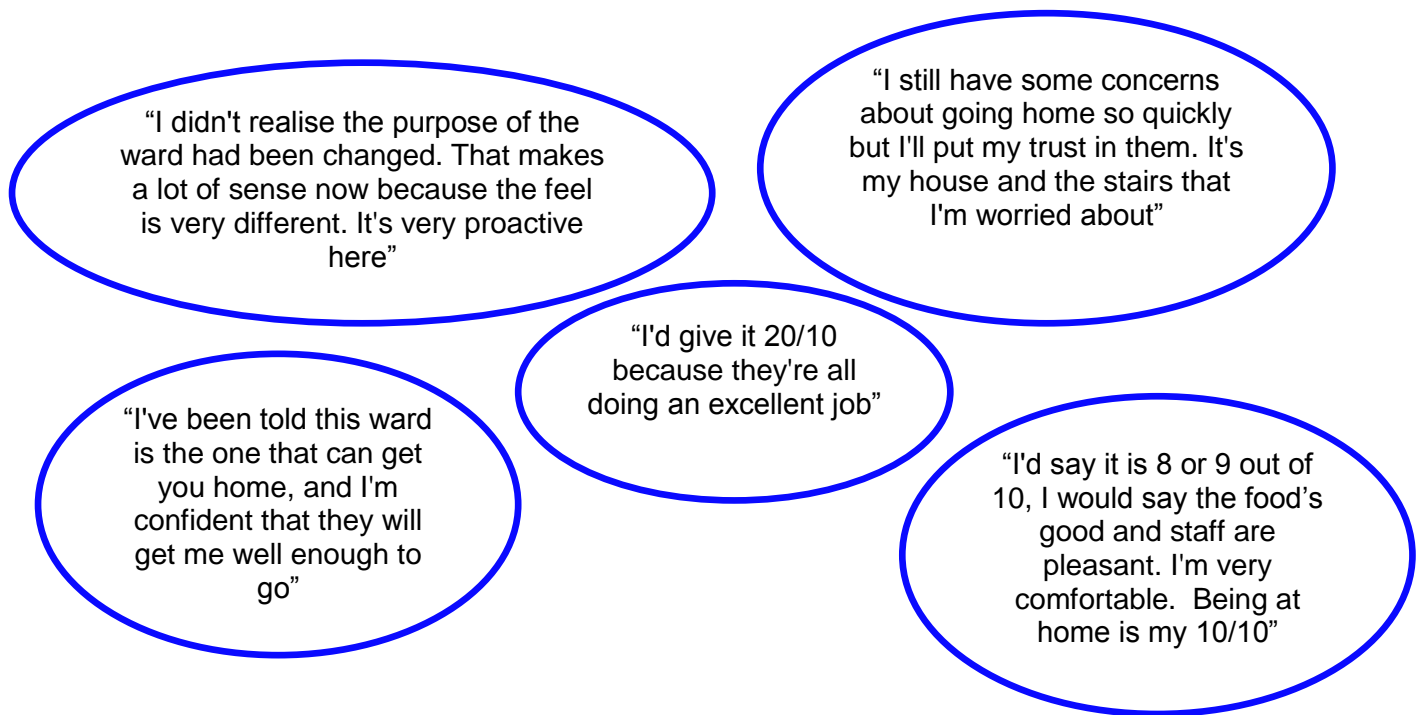


### 3. Outcomes

#### Patient satisfaction

A total of 47 patients were surveyed by the Person Centred Health and Care Collaborative Feedback Nov 2014-Aug 2015. Patients were approached during admission and followed-up with 'themed conversation' on the telephone; 30 interviews were with the patient only, 4 with carers/family and 13 involved both. 98.5% of patients reported an overall positive experience. There was consistent good performance (>90% positive) in the domains of Respect and dignity, Safety, Communication and Involvement. In the domains of Environment and facilities and Consistency and coordination, patient experience was consistently above 80% positive. In Pre-admission experience and Mealtime experience there was more variation, though these areas lie at least partly out with the control of the OAAU.

**Figure 10: Quotations from patients assessed in the RAH OAAU**



### **Experience of family, friends and carers**

The Community Engagement Team (CET) undertook interviews with 24 family, friends and carers of patients in the OAAU over the course of one week in March 2015. The responses were overwhelmingly positive with the report describing:

*"..a clear picture of high quality care, kind, attentive staff and friendly interactions with patients" (Listening to family, friends and carers" March 2015)*

Responses specifically highlighted:

- Positive staff attitudes, values and behaviours
- High quality care
- Good communication with families and carers
- A clean, bright pleasant environment

## Length of stay in hospital

Before vs. During

There was no statistically significant difference in mean LOS for the overall frailty and 80+ patients groups before and during the period of operation of the unit. As only 14.5% of specified frailty patients and 15.0% of patients >80 years were treated in the OAAU, changes in outcomes for those patients may not be large enough to alter the value for the overall patient group (Table 7).

**Table 7: Average LOS (days) for specified frailty and 80+ years patients: Before (Nov 13-Aug 14) vs. During (Nov 14-Aug 15) RDP, RAH Paisley, Sep 14-Aug 15**

| Patient group              | Before RDP | During RDP | Difference | P-value |
|----------------------------|------------|------------|------------|---------|
| Specified frailty patients | 14.8 days  | 15.1 days  | +0.3       | 0.762   |
| Patients >80 years         | 13.4 days  | 13.0 days  | -0.4       | 0.450   |

Usual care vs. OAAU care

Mean length of stay was 3.1 days shorter among the specified frailty patient group seen in the OAAU, compared to those who were not, and 3.3 days shorter among patients aged over 80 years who were seen in the unit, compared to those who were not. Both these findings were statistically significant (see Table 8).

**Table 8: Average LOS (days) for specified frailty and 80+ years patients: Usual medical/geriatric care vs. OAAU care, RAH Paisley, Sep 14-Aug 15**

| Patient group              | Usual care | OAAU care | Difference (95% Conf. Interval) | P-value |
|----------------------------|------------|-----------|---------------------------------|---------|
| Specified frailty patients | 15.6 days  | 12.5 days | -3.1 days<br>(2.75-3.45)        | 0.023   |
| Patients >80 years         | 13.4 days  | 10.1 days | -3.3 days<br>(3.14-3.46)        | 0.003   |

## Readmissions

### Before vs. During

There was no significant difference in the readmission rate for the specified frailty conditions and 80+ patient groups before and during the project (see Appendix 4).

### Usual care vs. Care in OAAU

Patients aged over 80 years had a lower readmission rate if assessed in the OAAU, compared with usual care. However those with specified frailty conditions had a higher readmission rate if assessed in the OAAU. These findings are summarised in Table 9; statistical tests are not presented for these comparisons as the numbers in each group were too small.

**Table 9: 7 and 28 day readmissions for Specified frailty and 80+ years patients: Usual care vs. OAAU care (Sep 14–Aug 15)**

| Patient group | % Readmissions at: | Usual care | OAAU care | Difference | Lower 95% CI | Upper 95% CI |
|---------------|--------------------|------------|-----------|------------|--------------|--------------|
| Sp. frailty   | 7 days             | 3.5 %      | 6.6 %     | +3.1%      | +0.4         | +6.9%        |
| Sp. frailty   | 28 day             | 7.2 %      | 12.9 %    | +5.6 %     | +1.7         | +10.5%       |
| 80+ years     | 7 days             | 7.6 %      | 5.3%      | -2.3 %     | -4.3         | +0.24%       |
| 80+ years     | 28 day             | 16.9%      | 10.6%     | -6.3%      | -9.2         | -3.0%        |

### Estimation of cost difference associated with new model of care

The direct cost per day associated with a geriatric assessment admission in the RAH is £205. A reduction in length of stay of 3.3 days (as observed in the 80+ patient group) therefore equates to a cost difference of -£676.5 (95% confidence interval -£643.7-£709.3) per admission.

An average of 43 patients per month aged over 80 years were seen in the OAAU, therefore over the cost of the year there was a potential cost difference of -£349,074 associated with the reduction in length of stay observed with this model of care. This exceeds the overall estimated roll-out costs of the unit of £312,000.

## **4. Process factors**

### **Patient selection**

There were fewer than expected referrals from the ED; contributing factors have been identified as the need to raise and maintain awareness of the service among ED staff, and ensuring consistent availability of assessment beds into which to accept patients.

The role of the ECAN has been important in identifying patients in the ED and AMU, and also as a means of raising awareness and communicating with staff in other areas of the hospital.

GP referrals were deliberately not targeted by this initiative, as it was felt that patients who had been reviewed recently by their GP and found requiring admission would be less likely to be candidates for early discharge than self-referrals to the hospital.

Given that only 14.1% of patients with the specified frailty conditions were assessed in the OAAU, it seems likely that there is potential for a greater number of patients to benefit from the service, even allowing for the fact that a proportion of the remainder may not have met the criteria for the OAAU.

### **Unit operation**

Daily consultant and AHP review were important in allowing earlier discharge and the combination of assessment and short stay beds supports early discharge where possible.

### **Bed Pressure**

It was difficult to protect the assessment beds at times of bed pressure. This impacted unit effectiveness, as well as having downstream effects, for example not being able to accept ED patients may impact on referral rates and awareness.

## **Recruitment**

Difficulty in recruiting consultant staff meant there were issues in maintaining cover for the unit, and cross-cover for other DME clinical areas. This, at times, affected the ability of the OAAU to remain open, or function as intended, as well as impacting the overall cost of the unit due to the need to use locum cover.

## **Discharge services**

Active early discharge planning, including involvement in the daily discharge “huddles” and work of the multi-agency discharge hub, supported early discharge. The existing good, cohesive and experienced community team, enhanced by additional input from the OOH community Inreach service provided a context where there were the appropriate services to support discharge.

Medical follow-up and planning could take place via the joint hospital-community MDT and the day hospital, meaning that patients could be allowed home but continue to have consultant geriatrician input into their care.

## **Patient flow in hospital; boarding and transfers**

One aim of the OAAU was to free capacity within the DME wards through the efficient management of patients with a potentially short length of stay. This capacity would then allow other patients to move more quickly from medical admissions (AMU) to a DME bed, without a period of boarding on another ward. A two week audit undertaken in May 2015 suggested that there had been a reduction in the number of patients waiting for a transfer from a medical bed to a DME bed. The OAAU was located in what was ward 6; this ward had previously accepted patients from the Stroke Unit who required medium-term rehabilitation. One unintended consequence of the OAAU unit was high occupancy within the adjacent Stroke Unit, due to the loss of these “downstream” rehabilitation beds. An alternative rehabilitation ward had to be identified for this patient group in order to maintain availability of acute beds in the Stroke Unit.

## **Clinical lead**

A strong clinical lead has been vital to the inception and successful implementation of this project.

## **Out of Hours Community Inreach Service**

### **1. Description**

#### **Patient group**

These are patients who are in need of additional support to prevent admission to hospital, or facilitate discharge from hospital.

#### **Project aims**

- Provide a range of support to allow an alternative to admission or safe discharge earlier from hospital
- Support key points of transition both in and out of hours to support the whole system to shift the balance of care.
- Support and facilitate improved relationships and ways of working with other services to facilitate longer term change and management of patients out with hospital.

#### **Existing model of care**

The Rapid Response team of the Renfrewshire Rehabilitation and Enablement Service (RES) offered access to PT, OT, nursing, dietetic and technical assessment and support to patients referred urgently by their GP or hospital. It operated 0830-1900 Mon-Fri.

#### **New Service Model**

The Out of Hours Community Inreach Service aimed to support key points of transition both in and out of hours. Community social workers coordinated a range of supports to prevent admission and support discharge, working alongside the Rapid Response team. Key additions were the provision of a transport and resettlement service (including transport of equipment) and the extension of hours of working (1330-2000 Mon-Fri and 0900-1700 weekends). The team worked within the multi-agency discharge hub following its establishment in Feb 2015.



## **Rationale for inclusion in the RDP**

Transport and resettlement were felt to be important elements in smoothing the interface between hospital and community care. Provision of this service out of hours was intended to support the provision of a 7 day service and allow safe earlier discharge to promote shifting the balance of care.

## **Evidence base**

Case studies describing similar services elsewhere in the UK are available in Deloitte 2012 (11) and Zinovieff & Robinson 2010 (12). Each of these found evidence that transport and resettlement had the potential to reduce stay in hospital and improve patient experience.

## **Available evaluation data**

- Out of Hours Inreach service database
- Linked SMR01 data for OAAU patients using the Inreach service

## **2. Project Activity September 2014-August 2015**

**334 patients supported by Inreach service**

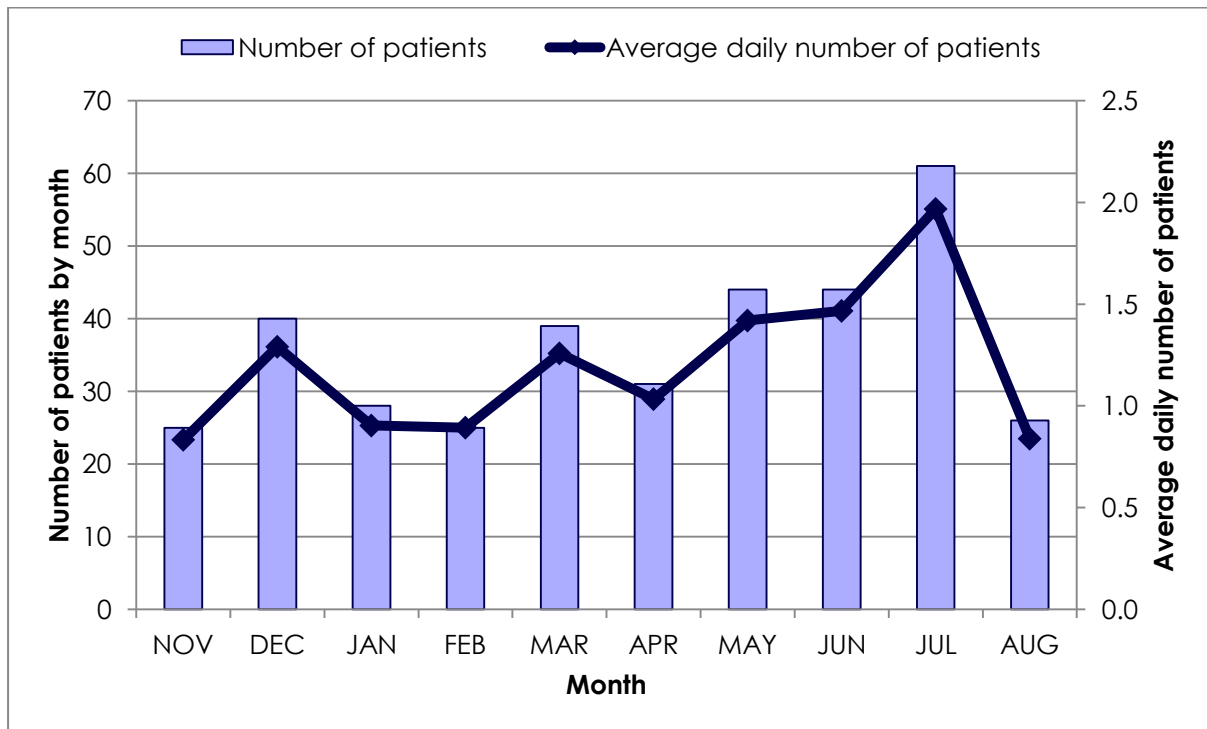
**27% of referrals were from the OAAU, 25% from the ED, and 25% from other wards**

**Mean age 79.4 years (range 16-98)**

## **Patient numbers**

Recruitment delays meant that the service did not commence until Nov 2014. Numbers of patients supported gradually increased, peaking at mean of around 2 patients per day in July 2015 (refer Figure 11).

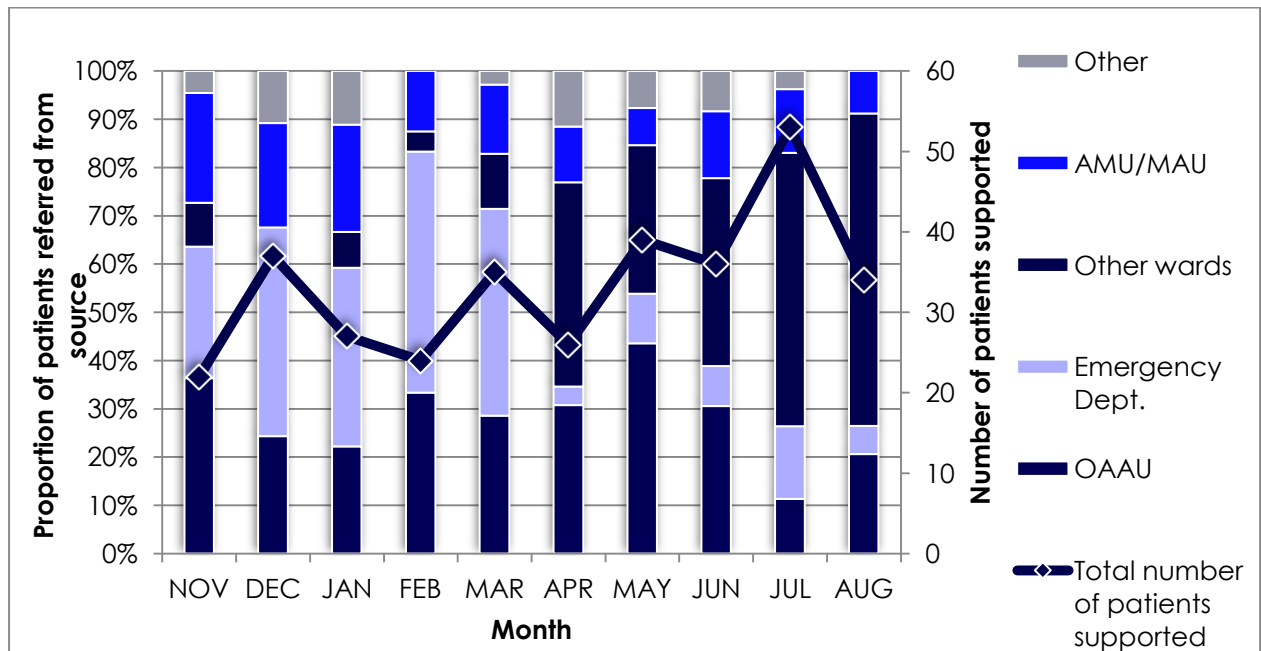
**Figure 11: Patients supported by RAH Inreach service (number and average per day) by month, Nov 2014-Aug 2015**



**Referral source**

Overall the OAAU referred 27% of patients to the service, ED and other wards 25% each, MAU and AMU together 16%. The pattern of referral source changed over the first year of operation, as seen in Figure 12. The proportion of patients from OAAU remained relatively constant at 20-30%. In the initial months a large proportion of patients were from the ED; however by Aug 2015 the vast majority of patients were referred from other wards, with only around 5% from the ED.

**Figure 12: Total number of patients supported by RAH Inreach service, and proportion of patients by referral location, Nov 2014-Aug 2015**



### Inreach and the OAAU

13.6% of OAAU patients were supported by the Inreach service on discharge. This patient group had an average length of stay of 3.6 days

### 3. Process factors

#### Reach and referrals

Referrals were lower than expected and the service has capacity to assist a larger number of patients. Contributing factors to low reach were difficulties in recruitment and initiation of the project, visibility of the service and awareness among clinical leaders in other areas.

#### Adaptations

There were a number of adaptations of the service over the first year of operation, in response to recognised issues and wider circumstances:

- Adoption of uniform – in order to promote team working and visibility
- Involvement in multiagency discharge hub and daily huddles – this has enhanced awareness and uptake of the service in other wards

- Carrying home adaptation aids – to allow prompt, supported discharge of patients requiring simple aids

### **Integrated working**

There were some cultural barriers encountered in providing a joint working team and accommodating social care workers within the hospital. Service managers have been crucial in promoting an integrated service model and providing leadership in this respect.

# Enhanced Pharmacy Services

## 1. Description

### Patient group

These are patients resident in the Renfrewshire area being admitted to or discharged from the RAH and patients in the community on multiple medications or high-risk medicine combinations.

### Project aims

- Improve prescribing accuracy and medication compliance
- Reduce the number of patients admitted as a result of medication issues
- Expedite discharge from acute settings

### Existing model of care

When patients are seen in hospital as an emergency, communication of medicines information often relies upon the Emergency Care Summary (ECS). The accuracy of this depends on the process for medicines reconciliation and updating of ECS in the community; prior to the RDP, the approach to this varied by GP practice.

Upon discharge from hospital, communication of medicines information to the community pharmacy for patients using a compliance aid (also known as a Monitored Dosage System – MDS, or “dosette box”) was via a posted copy of the Immediate Discharge Letter (IDL). Any delay in this process could lead to a medicine changed in hospital not being changed in the MDS compliance aid, with consequent medication errors.

Medicine reconciliation support for patients supported by the Rehabilitation and Enablement Service (RES) was undertaken by an interface pharmacist. It was felt that a large volume of time was spent on technical medication issues and additional support for patients on multiple medications would be helpful.

## **New service model**

There were four elements to the work undertaken:

- A pharmacy technician-led medicines reconciliation service for patients on multiple medications. Referrals were received initially from GPs and then extended to Homecare, RES and Community nurses. Patients were visited at home for a medicines review and interventions as required, e.g. drug education, prescription changes, initiation of MDS compliance aid.
- Application of the Scottish Patient Safety Project (SPSP) approach to high-risk medications across 10 pharmacies in Paisley, through development of a care bundle for patients prescribed oral NSAIDs. The care bundle consisted of 6 questions used by community pharmacists to identify patients at high risk of acute kidney injury or gastrointestinal bleeding (see Figure 13).
- Development of an electronic process for timely communication of discharge medications for patients using MDS compliance aids.
- Improved medicines reconciliation procedures were adopted within primary care, implemented using the methods of the SPSP.

### **Figure 13: Care bundle questions for Pharmacists to address re oral NSAID prescriptions**

- Have you checked that the patient is concordant with taking their NSAID?
- Have you checked if the patient is experiencing adverse drug reactions or side effects?
- Has gastroprotection been prescribed for high-risk patients?
- For patients identified as taking other high risk drugs, has this risk been highlighted to the prescriber?
- If the prescriber was contacted, was the resulting review communicated back to the pharmacy?
- Has this change been discussed with the patient/carer?

### **Rationale for inclusion in the RDP**

Clear communication of drug prescriptions at the interface of care is important to smooth transitions of care. Improving these systems aims to enhance the quality of care and patient safety and supports the reduction of undue delays to discharge.

Medication reconciliation in the community has the potential to reduce emergency admissions due to high-risk prescribing or failure of communication of medication alterations. The enhanced pharmacy services projects worked across hospital and community services and involved staff from General Practice, RES and homecare.

### **Available evaluation data**

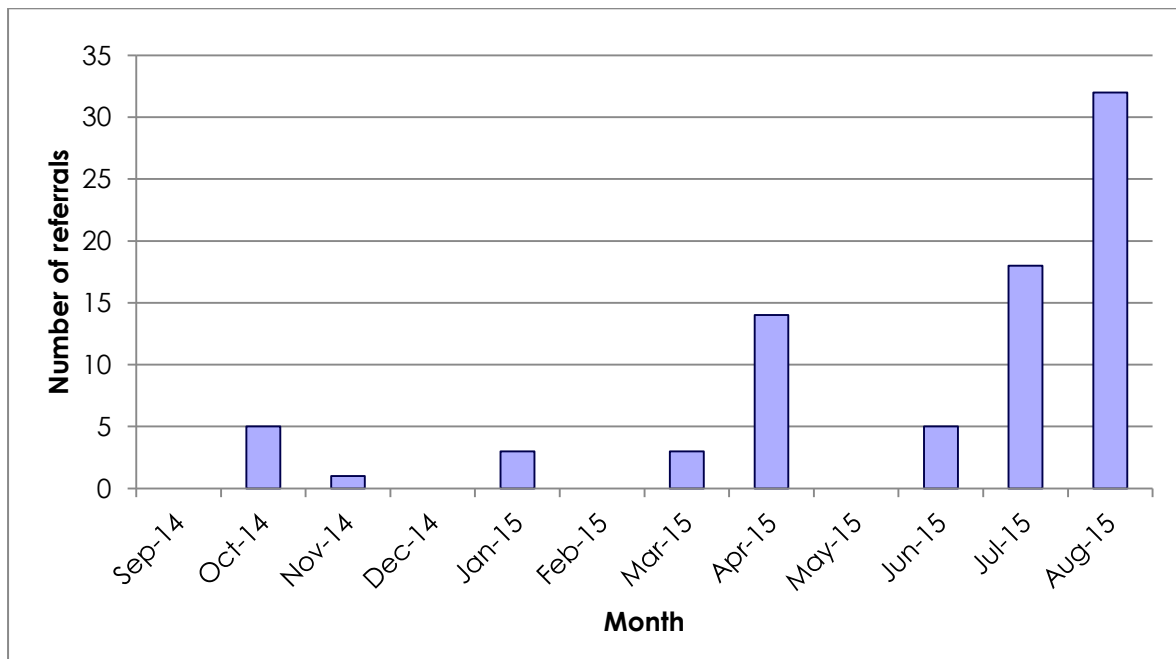
- Emergency Care Summary accuracy
- Compliance with SPSP high-risk co-prescribing care bundle

## **2. Project Activity**

### **Pharmacy technician-led reconciliation service**

- **A total of 45 referrals were made to the reconciliation service in the first year of operation**
- **The majority of referrals were from the RES team and GPs, with most made following discharge from hospital**
- **Key activities in the technician visit were drug education (36%) and changes to prescriptions (22%)**
- **17% of referrals were declined by the patient**

**Figure 14: Number of referrals to pharmacy technician medicine reconciliation service, Renfrewshire, Sept 2014-Aug 2015**

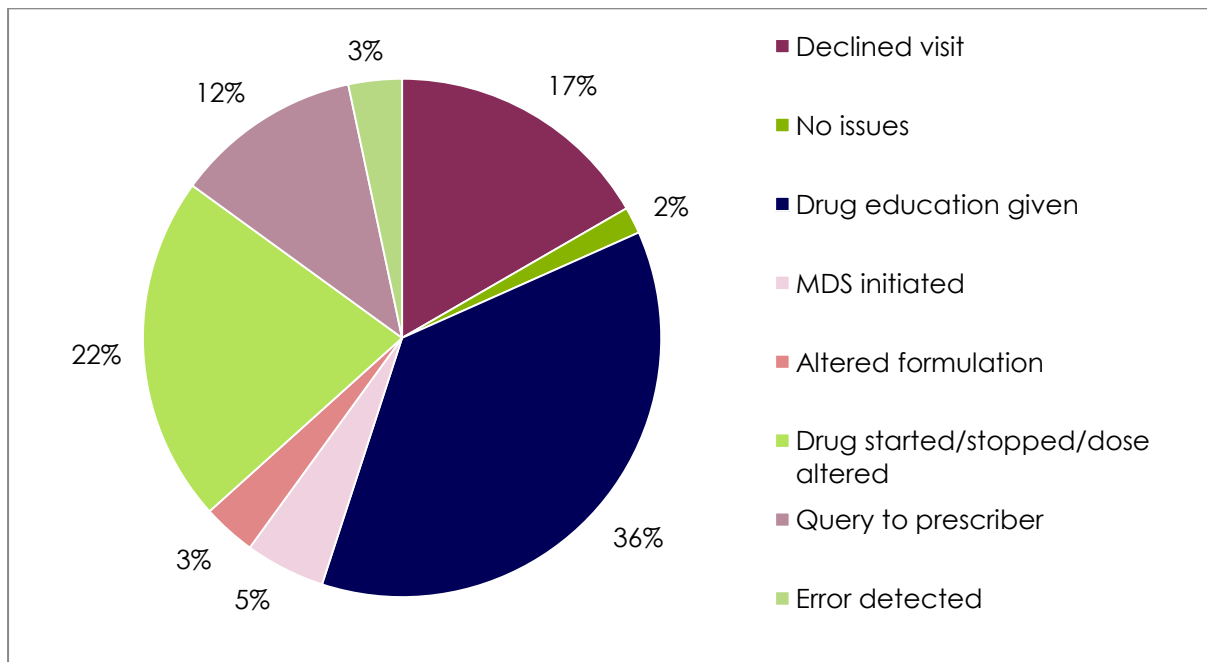


The two main sources of referrals were the RES team (40%) and GPs (31%), with the remainder from Practice nurses, Homecare, Practice pharmacists or other AHP.

Over half of referrals (53%) were for post-discharge medicine reconciliation. 27% were for a compliance check, and the remainder were patient education or MDS assessment (Figure 15).



**Figure 15: Outcome of pharmacy technician visit following reconciliation referral**



**Communication of discharge prescription to community pharmacy**

A medication short-life working group identified issues with delays in communication to community pharmacies for patients receiving compliance aids due to the implementation of a revised faxing policy.

Pharmacy and IT services collaborated to establish secure clinical mailboxes for all 44 Renfrewshire Community Pharmacies and the RAH Pharmacy department to facilitate timely e-mail communication of the IDL following discharge from the RAH.

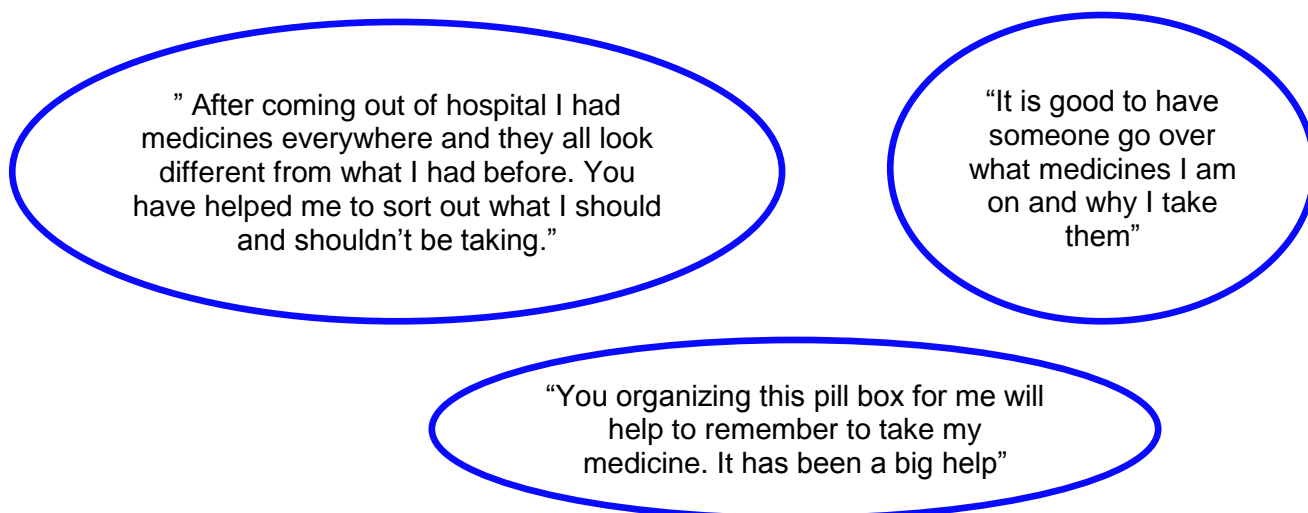
An electronic copy of the IDL for the target patient group was sent to the patient’s nominated pharmacy (with consent) within 24 hours of their discharge from the RAH.

### 3. Outcomes

#### Patient satisfaction

A range of positive feedback was received from patients (Figure 16)

**Figure 16: Quotes from patients visited by the technician-led pharmacy reconciliation service**



#### Accuracy of ECS on admission to hospital

Medicines reconciliation was undertaken for patients admitted to the RAH CCU. This was compared to the medicines information contained in the ECS, to assess the accuracy of ECS (Table 10). This exercise had previously been undertaken in 2013, prior to the implementation of the SPSP medicine reconciliation approach in primary care.

**Table 10: Proportion of Emergency Care summaries found to be accurate and number of severe discrepancies, RAH CCU 2013 and 2015**

|                                       | 2013 | 2015 |
|---------------------------------------|------|------|
| <b>Percentage of ECS accurate</b>     | 48%  | 61%  |
| <b>Number of severe discrepancies</b> | 0    | 0    |

### Staff satisfaction

A high degree of satisfaction was reported with the e-mail system from the RAH pharmacy to community pharmacists. More than 80% respondents preferred the new system, noting it was easy to use and that information about medicine changes was received sooner.

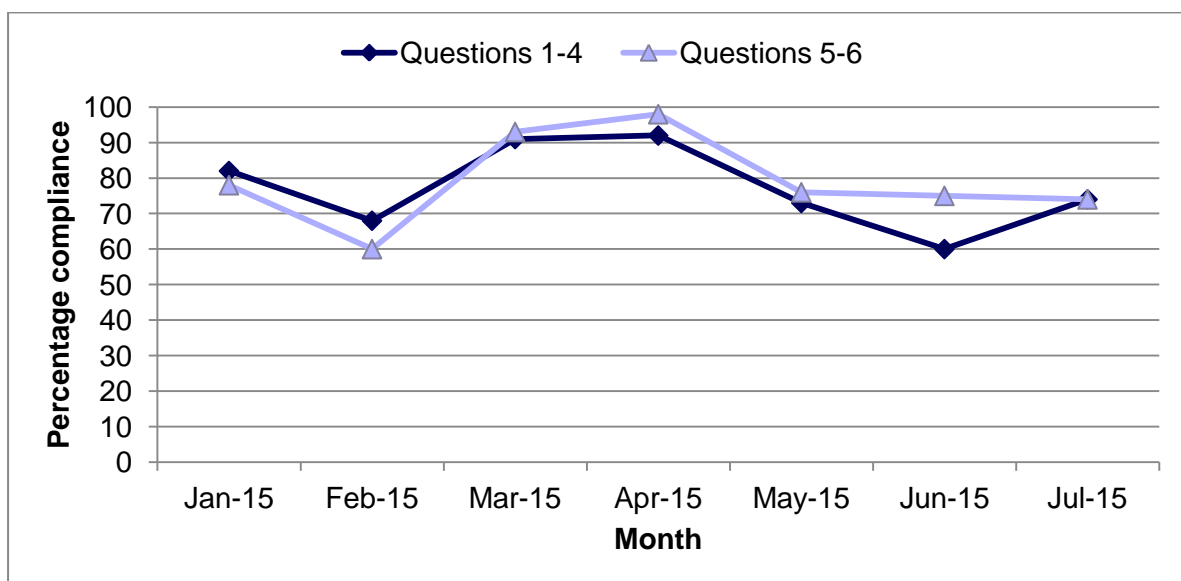
### Quote from Renfrewshire community pharmacist

Love the new system! Very beneficial, allows us to be proactive in response to IDL when in the past we often wouldn't know anything until the patient ran out of medication. Good to have some background information on condition too.

### Compliance with the SPSP high-risk oral NSAID co-prescribing care bundle

Compliance with the NSAID care bundle in community pharmacies varied between 60 and 98% over the course of the first half of 2015 (see Figure 17).

**Figure 17: Percentage of pharmacy data returns compliant with the SPSP high-risk NSAID co-prescribing care bundle, 10 participating Renfrewshire practices, Jan 2015-July 2015**



#### **4. Process factors**

Referral process (GP to community reconciliation service) – GPs were initially required to make referrals via an nhs.net email account. Referral numbers were lower than expected and when reviewed in conjunction with the GPs, the referral process was identified as a potential barrier. Steps have therefore been taken to facilitate referral via SCI gateway in keeping with the process for other GP referrals.

Joint working – the RDP has supported the development of improved relationships and trust across health and social care and community and hospital services. The relationships built and service improvement techniques adopted have led to a number of other initiatives being undertaken.

# Enhanced Anticipatory Care Planning

## 1. Description

### Patient group

Patients registered with 13 participating Renfrewshire General Practices who fall into one of the following target groups:

- Care home patients
- Discharged patients on multiple medications
- Patients with dementia
- Patients with complex and intensive needs

### Project aims

- Increase ACP coverage
- Improve shared knowledge and skills among GPs, community and acute services staff
- Improve communication and information sharing between patients, health and social care staff
- Reduce unplanned hospitalisation in patients with multiple morbidities
- In patients admitted to hospital, enable a proactive approach to discharge
- Increase the proportion of expected death which occur at home

### Existing model of care

Anticipatory Care Planning formed part of the Quality and Outcomes Framework (QOF) for GP Practices in Scotland, with the Quality and Safety Domain indicator 005(S) describing that practices should complete ACPs for 30% of their patients at highest risk of emergency admission (the 5% highest risk, as assessed, for example, by SPARRA score). QOF describes a minimum information requirement and the expectation that eKIS will be used as a summary and means of sharing the ACP (13).

### New service model

Extension of anticipatory care planning to a larger number of patients than that required by QOF 005(S); within the above target groups. Practices were paid an item

of service for each ACP completed or updated. Additional work was undertaken to improve awareness and use of eKIS among health care colleagues involved in emergency care and home care, for example training junior hospital doctors and extending access to eKIS to Community Nurses.

### **Rationale for inclusion in the RDP**

Anticipatory care is identified within the Clinical Services Strategy as a key characteristic of high quality primary care and anticipatory care planning is seen as a core element of the clinical service model for frail elderly patients and those with chronic disease. Enhancement of anticipatory care planning is seen as supporting improved coordination at times of crisis or care transition, and involvement of primary care in discharge planning in the event of hospital admission.

### **Evidence base**

A pilot study undertaken in Nairn used an Anticipatory Care Planning approach to reduce unplanned hospitalisation among patients identified as being high risk of admission (14). Identified patients developed an ACP with their case manager, as well as receiving proactive case management and supported discharge in the event of admission. Those in the ACP group saw statistically significant falls in hospital admission rate and days in hospital after the intervention, whereas the control group did not. A lower proportion of ACP patients died in hospital than those in the control group.

### **Available evaluation data**

- Number of eKIS completed and updated
- OAAU patients who had eKIS
- Online survey of secondary care staff

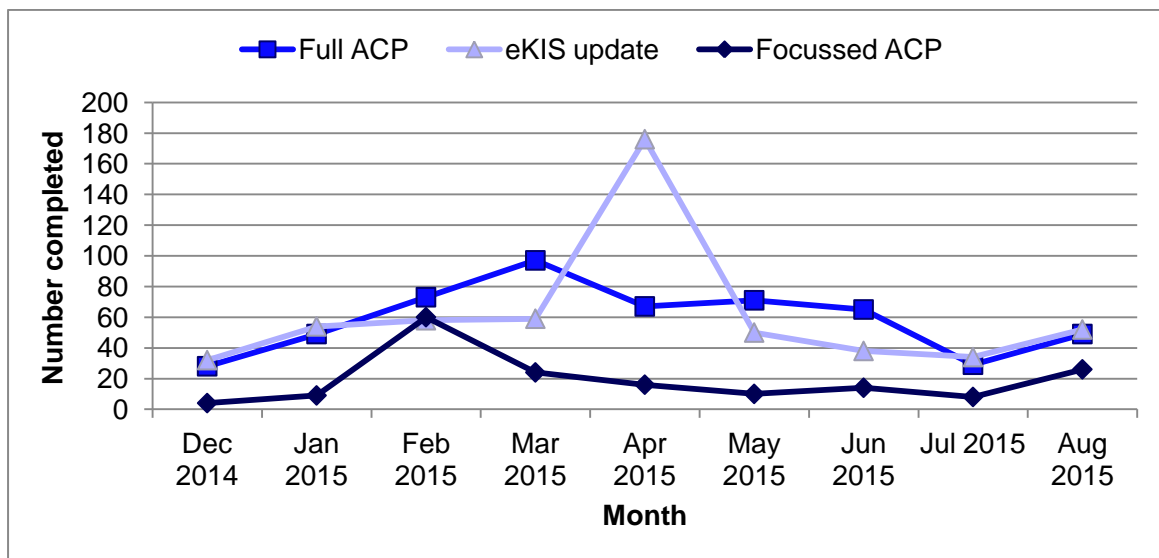
## 2. Project Activity September 2014-August 2015

- 528 full ACPs were completed and uploaded as eKIS, 171 focused ACPs, and 553 ACP updates
- Mean age of full ACP 76.3 years; focussed ACP 67.4 years

### Patient numbers

Data are only available from Dec 2014. There was an average of 59 new ACPs, 19 focussed ACPs and 61 ACP updates each month, across the 13 practices (see Figure 18).

**Figure 18: Number of additional new ACP/eKIS and updated eKIS per month, 13 Paisley practices Dec 2014-Aug 2015**



### Practice level activity

12 of the 13 practices submitted claims for enhanced ACP work; the remaining practice reported adopting the new service model without claiming (activity figures may therefore be underestimates). Activity was variable across the practices; mean completion rate of new ACPs was 9 per 1,000 practice population, range 0-63 per 1,000.

### **3. Outcomes**

#### **Estimated additional ACPs**

In the year Apr 2014-Mar 2015 all 13 practices met QOF indicator Q005(S). If practices just met the 30% threshold, then this equates to a minimum of 1,230 standard ACPs per year for the combined practice population of 82,000 (1,107 for a 9 month period).

The additional 528 ACPs completed as a result of the RDP therefore represents up to a 48% increase in ACP numbers.

#### **ACP among OAAU admissions**

- 105 (14.8%) of patients admitted to the OAAU were documented as having had an eKIS completed
- 17.0% of patients from Paisley postcodes had eKIS, compared with 9.2% of patients from other areas

The information contained in the eKIS found to be “useful” (i.e. provided information relevant to clinical decisions that was not available elsewhere) in 63.8% of cases (n=67).

#### **Acute staff survey**

An online survey was made available to all staff involved in acute out of hours care at the RAH (GP out of hours, Emergency Dept and Medical admissions) to assess changes in the awareness and use of eKIS. There was a low response rate, with just 4 respondents, 3 consultants and one trainee from the ED. The findings were:

- 100% awareness of eKIS and all had accessed at least once in past year
- 75% make more use of eKIS now than one year ago
- 50% have used eKIS to inform a clinical decision in the past year (specifically with reference to knowledge of a patients end of life wishes)
- 100% stated it would be useful if there were more detailed information within eKIS



## **4. Process factors**

### **Consent, access and visibility of eKIS**

An eKIS is accessed via Clinical Portal, where it is located within the Electronic Care Summary (ECS). This raises issues of accessibility and consent; the ECS should only be accessed by secondary care staff if explicit consent from the patient, or if the need is urgent and consent not possible. On the other hand an eKIS is designed as a means for patients to share information; therefore consent for access is given at the time of completion. It would seem preferable that eKIS was therefore more readily visible and accessed within Clinical Portal.

### **Monitoring activity**

Not all GP practices submitted claims for the enhanced ACP work and a detailed baseline of ACP completion was not available. This limits the accuracy with which activity could be tracked.

### **Assessing outcomes**

It was challenging to assess the outcomes of the enhanced ACP project; there was no identified comparator group and the majority of available data were focused on hospital activity. It would have been beneficial to try and capture direct evidence of admission prevention.

## **The Health and Social Care Context**

This section describes activity in health and social care in the period directly preceding and during the RDP. The precise geography varies with the indicator used, and is stated in each section below.

Where appropriate the observed trends are tested to explore if there are significant differences, and where available, the findings are placed in the context of changes in the wider NHSGGC area and Scotland. It is not possible to directly attribute observed differences described here to the activities in the RDP, but where there are changes that are plausibly connected in scale and nature, these are highlighted.

### **1. Hospital activity**

#### **Emergency admissions and bed days used – Renfrewshire**

##### **How Renfrewshire compares to NHSGGC**

Indirect standardisation shows that admissions have been consistently higher than expected for the population in Renfrewshire since 2012, by contrast the bed days used in Renfrewshire have been fewer than expected. This indicates that there are more but shorter admissions in this area, compared with NHSGGC as a whole (see Figures 23 and 24, Appendix 6).

##### **Trends over time in Renfrewshire**

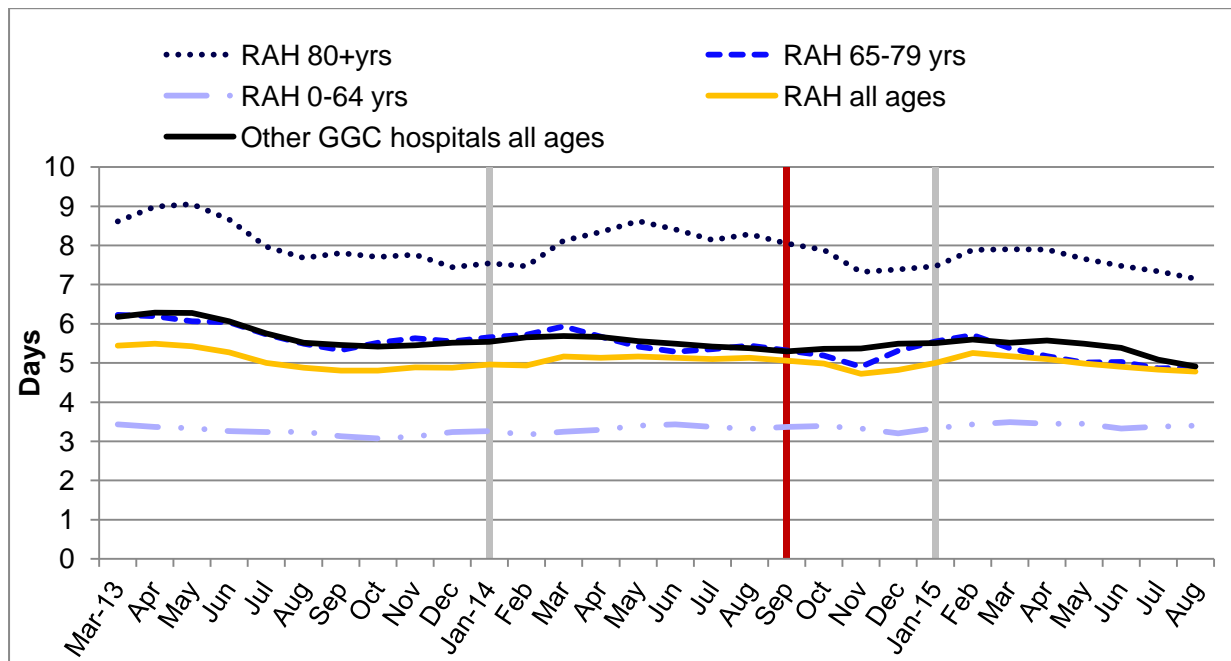
There was no significant difference in the rate of emergency admissions in the RAH in the RDP year compared with that preceding. There was no significant difference in bed day usage in the RAH in the RDP year, compared with the preceding year.

##### **Average length of stay – RAH Paisley**

Average length of stay has fallen steadily over the observed period, from around 5.5 days at the start of 2013, to just under 5 days by mid-2015. This mirrors the trend seen across NHSGGC (see Figure 19).

Reductions in length of stay were most marked in older age groups, and comparisons with the preceding year found statistically significant differences in those age 65-79 years (5.5 vs. 5.1 days,  $p=0.0006$ ) and over 80 years (8.0 vs. 7.5 days,  $p=0.012$ ).

**Figure 19: Average length of stay at RAH and rest of NHSGGC, 2013-2015, 3 month rolling averages by age group, Mar 2013-Jul 2015**

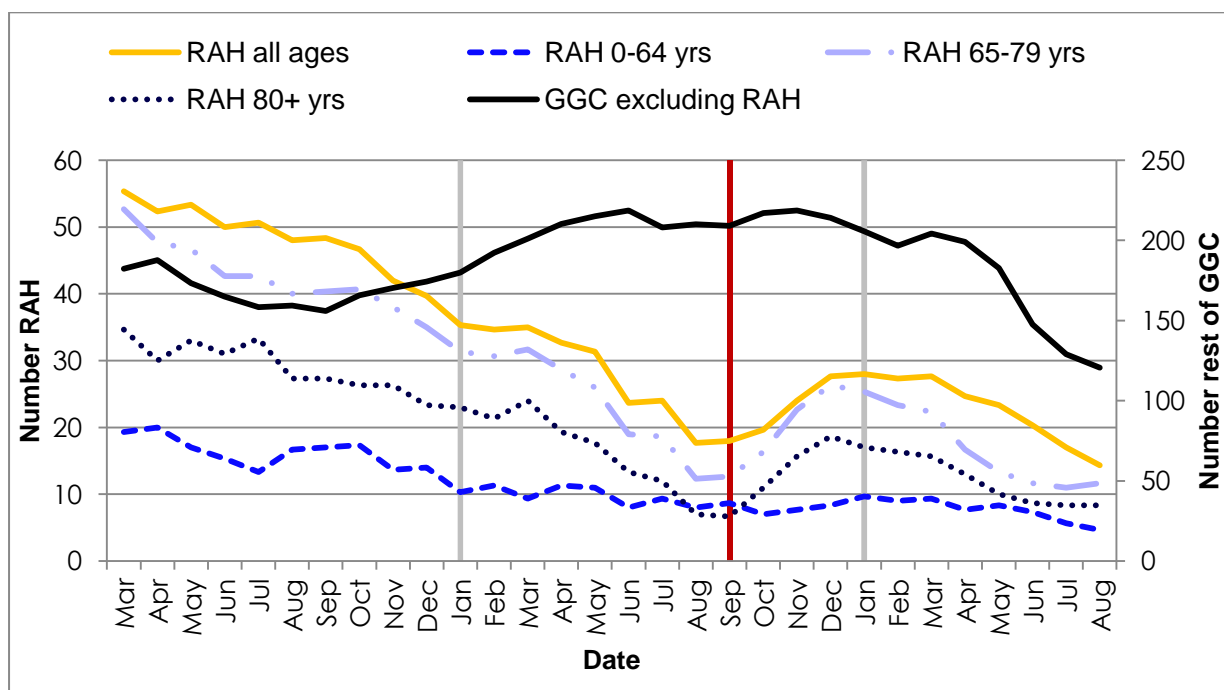


### Delayed discharges – RAH, Paisley

Delayed discharges in the RAH fell dramatically from the start of 2013 to mid-2014. This was a period when there was significant investment and initiatives in this area as part of the Change Fund. Delayed discharges in the rest of NHSGGC have only seen similar reductions since the start of 2015 (see Figure 20).

Over the winter of 2014/5 there was a rise in delayed discharges, a period when there was significant pressure within the hospital. At the outset of 2015 there were a number of initiatives to address this within the hospital, including the establishment of a multi-agency discharge hub and daily discharge huddles. By the end of the RDP period the number of delayed discharges was similar to the beginning and there was no overall significant difference compared with the preceding year.

**Figure 20: Number of delayed discharges RAH by age and rest of NHSGGC, 3 month rolling averages Mar 2013-Aug 2015**



### Day of Care Survey – RAH, Paisley

The Day-of-Care survey has been developed to describe and investigate inpatient delays in acute hospitals. It aims to identify clinical areas or patient groups that might benefit from changes in service provision. Inpatient medical records are reviewed against validated criteria describing illness severity and service intensity to determine if their care is most appropriately provided in an acute inpatient setting (15).

A whole hospital audit was undertaken in the RAH in November 2014, with partial re-audits of areas with the largest proportion of patients with delays in April 2015, May 2015, and Feb 2016. An overview of results can be found in Table 20, Appendix 6. At the initial survey 24% of all patients were found not to meet the criteria, a finding in keeping with other hospitals in Scotland. There was marked variation across the wards, with the highest proportion of patients with delays in the Rehabilitation and Assessment (RAD) wards. Repeat surveys have found improvements, particularly in the medical wards, where the proportion not meeting criteria fell to 10%, but also more recently in the RAD wards.

## **2. Primary care activity**

### **General Practice encounters - 13 Paisley GP Practices**

There is no clear trend over time in number or rate of GP encounters for any age group of patient. Data on home visits were also explored by age group, with no evidence of change in the RDP period compared with the preceding year (see Figure 25, Appendix).

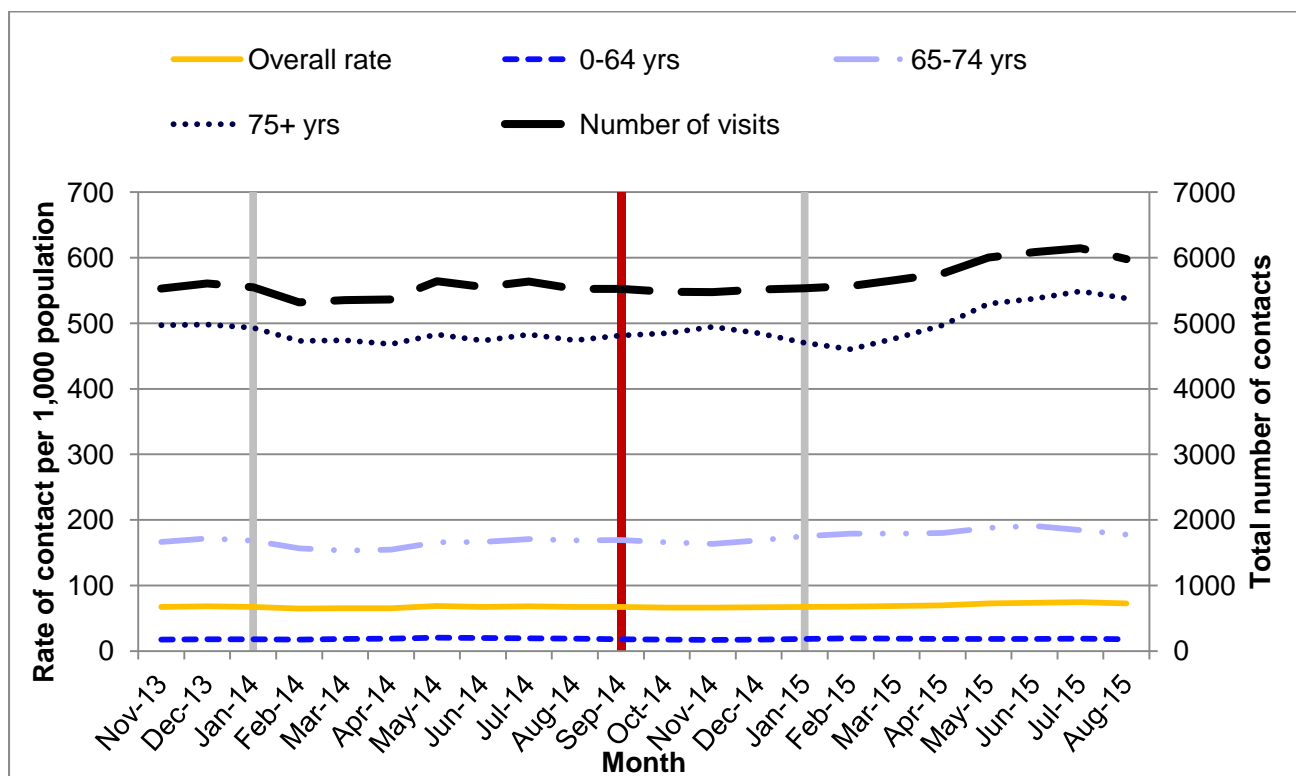
### **GP Out-of-hours contacts – residents of Paisley postcodes**

The trend in out-of-hours GP contacts was the same in NHSGGC and Paisley, but the rate of contact is lower in Paisley, approx. 1.5 fewer contacts per day. There is a slight increase in contacts over time in both areas, but no significant difference in the RDP year compared with previous (see Figure 26, Appendix 6).

### **Community nursing contacts – 13 Paisley practices**

There was an increase in both the number and rate of community nursing contacts from March 2015, as shown in Figure 21. The increase in number of contacts compared with the preceding year was statistically significant in those aged 65-74 (+108 contacts/month, 95% confidence interval 105-111, p-value=0.006) and 75+ years (+ 176 contacts/month, 95% confidence interval 116-237, p-value=0.039). The overall increase amounted to an average of 284 more visits per month in the year Sep 2014- Aug 2015 (95% CI 221-348). This is an increase of 6.7% increase on the previous year.

**Figure 21: Community nursing contacts in 13 Paisley Practices, rate per 1,000 by age group and total number, 3 month rolling averages Sep 2013-Aug 2015**



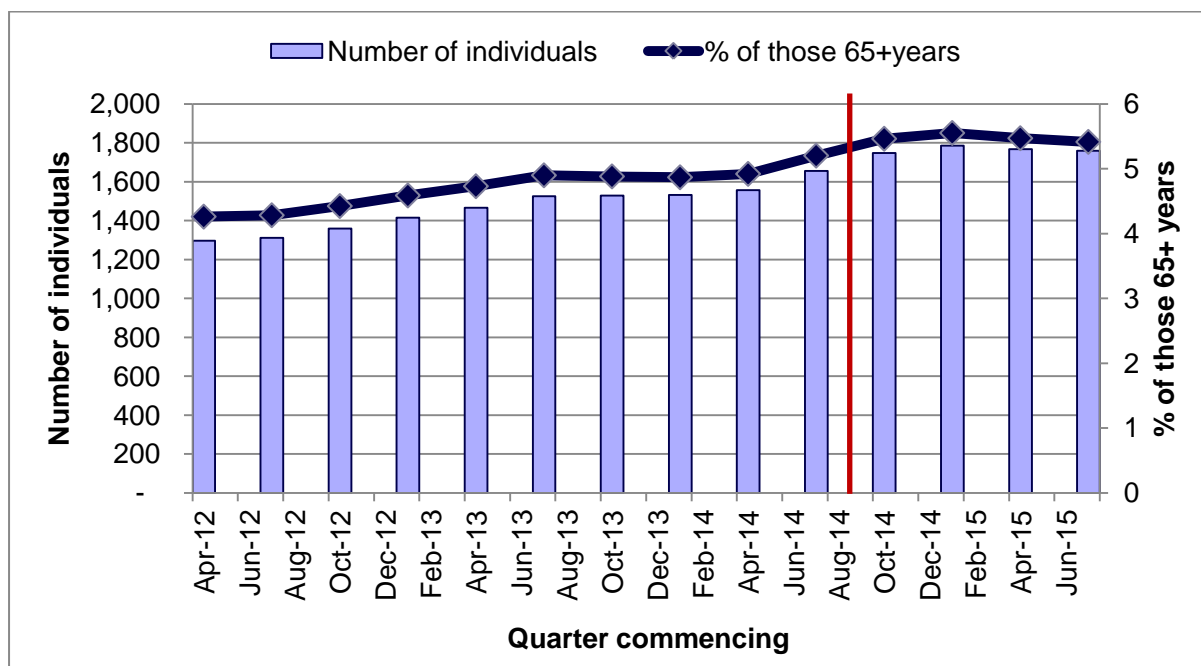
### 3. Social Care provision

#### Home care – Renfrewshire

The number of hours of care provided, the number of people in Renfrewshire receiving home care and the proportion of those aged over 65 years being supported, has steadily increased over recent years (see Figure 22). In each case there was a statistically significant increase in provision in the year Sep 14-Aug 15 compared with the preceding year (see Table 11).

The proportion of those aged 65+ years receiving care in Renfrewshire was significantly lower than the Scottish average in 2011 (9.0% vs. 16.6%) and the observed increase in Renfrewshire saw this gap narrow by 2015 (14.8% vs. 18.1%). The trend of increasing hours of care provided mirrors the pattern seen across Scotland, though there was a 36% increase in Renfrewshire over the past 5 years, compared with a 16% increase across Scotland.

**Figure 22: Number of people and % of population aged 65+ years receiving home care, by quarter, Renfrewshire 2012-2015**



**Table 11: Comparison of average quarterly provision of home care, Renfrewshire 2013-14 vs. 2014-15**

| Home care provision | Sep 2013-Aug 2014 | Sep 2014-Aug 2015 | P-value | Mean quarterly change | 95% CI for change |
|---------------------|-------------------|-------------------|---------|-----------------------|-------------------|
| No. of hours        | 13,709            | 15,515            | 0.007   | +1806                 | +807-<br>+2803    |
| No. of individuals  | 1568              | 1764              | 0.005   | +196                  | +105-+288         |
| % 65+ population    | 5.0%              | 5.5%              | 0.005   | +0.5%                 | +0.3-+0.7%        |

## 4. Deaths

### Standardised mortality ratios (SMR)

These data show the ratio of number of observed deaths to the number of expected death, allowing for the age, sex and deprivation of the population, with a result of 100 indicating a match between observed and expected and results over 100 indicating more deaths than would be expected. Over the 3 year period April 2012-March 2015 there was an excess of deaths in Renfrewshire (SMR=110, 95% CI 107-113), and in the 12 Paisley practices (SMR=109, 95% CI 104-113). There is no clear trend in SMR over time, as shown in Figure 27, Appendix 6.

### Proportion of deaths which occur in hospital

The proportion of deaths which occurred in hospital was slightly lower in Renfrewshire (41.7%) than in the rest of NHSGGC (43.4%), see Table 12. This overall difference is largely attributable to a more notable difference in those aged over 80 years (45.1% vs. 50.8%). However, over the past three years the proportion in Renfrewshire has increased slightly, and that in NHSGGC fallen, so that they have converged at 40% overall in the most recent quarter (Jul-Sep 2015), see Figure 28, Appendix 6 for details.

**Table 12: Proportion of death which occurred in hospital (%), by area and age group, April 2012-Sep 2015**

| Age group   | NHSGGC | Renfrewshire | 13 Paisley practices |
|-------------|--------|--------------|----------------------|
| All ages    | 43.4 % | 41.7 %       | 42.1 %               |
| 0-64 years  | 6.9 %  | 6.6 %        | -                    |
| 65-79 years | 56.4 % | 55.2 %       | -                    |
| 80+ years   | 50.8 % | 45.1 %       | -                    |



## **The Renfrewshire Development Programme: overall strengths and challenges**

The Renfrewshire Development Programme facilitated health and social care professionals, from both hospital and community settings, across a geographical area, working together to develop and improve local services. It combined working to a board-wide strategic vision with identifying local priorities and opportunities.

The outcomes from this programme extend beyond the above findings from each of the projects and include broader changes brought about through this way of working. These changes have been captured through formal and informal feedback from the project team. An online questionnaire, to which there were 8 respondents, gathered their experiences; identified strengths and challenges of the RDP are summarised below:

### **Strengths:**

- Good communication and relationships were built between hospital and community professionals; this has facilitated ongoing service developments<sup>6</sup>
- Strong commitment of individuals involved
- Taking on issues previously seen as “unsolvable”
- Promotes organisational development focused on people

### **Challenges:**

- Need to ensure all stakeholders engaged; for example there has been limited involvement from transport and ambulance services
- Pressure to demonstrate impact in short time-frame and short time-frame for the establishment of projects
- Need protected time for those involved; this has cost implications and also requires the support of colleagues and managers
- Must ensure ongoing demonstration of high-level commitment to programme

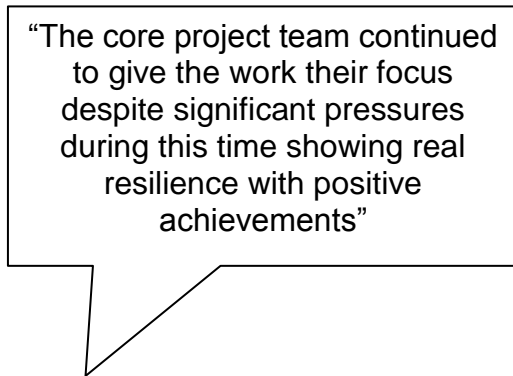
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<sup>6</sup> Examples include: access for GPs to the B-natriuretic peptide (BNP) test for diagnosis of heart failure when this was previously only available as a hospital test; and work between GPs and Renfrewshire Learning Disabilities team to increase the number of people with LD having ACPs.

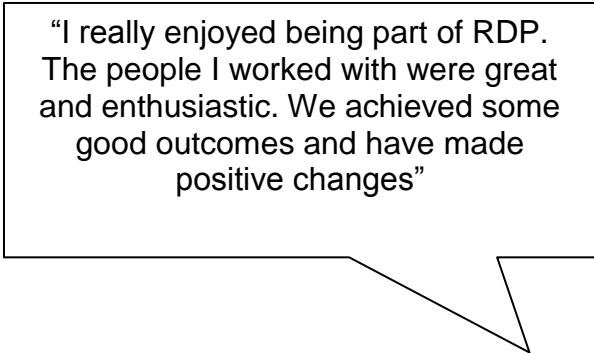
- Maintaining continuity of team members over the whole period of the programme and where this is not possible capturing the groups knowledge, actions and intentions in order that there can be overall continuity within the programme and evaluation

Every respondent stated that the improved communication and relationships across community health and social care services and hospital services that have resulted from this work has been a major success.

### **Quotations from members of the RDP team**



“The core project team continued to give the work their focus despite significant pressures during this time showing real resilience with positive achievements”



“I really enjoyed being part of RDP. The people I worked with were great and enthusiastic. We achieved some good outcomes and have made positive changes”

## **Conclusions and discussion**

### **Activity**

Activity in the projects was variable over the year; this was attributable to a number of factors, including difficulties in staff recruitment, lag-time in start up of new initiatives and suspension of assessment beds due to bed pressure within the hospital. Periods of closure impacted on the realisation of potential benefits of the units, not only due to a reduction in the available service, but also due to knock-on effects in terms of embedding the use and approach of the units in usual clinical practice in the hospital.

In the development of discrete units such as the CPAU and OAAU there is a tension in patient selection between identifying those most likely to benefit, and accepting a wide enough patient group in order that the maximum number will benefit (the sensitivity and specificity of patient selection). It is probable that both units could support higher levels of activity, given consistent staffing, bed availability, patient referrals and selection criteria, and that this would realise greater benefits than those observed.

### **Effectiveness**

Reductions in length of stay were seen for the patient groups managed in the CPAU and the OAAU. The Inreach service has been a facilitator of the way of working of the OAAU, and may have contributed to wider reductions in LOS in the hospital. The effectiveness of these services is also linked to a number of other contextual factors, such as the existing good links with community services, the community-hospital MDT, development of the multi-agency discharge hub, and availability of the high-sensitivity troponin test.

The enhanced ACP project was successful in increasing the number of target patients with ACP completed and updated on eKIS from participating practices. Evidence from the hospital staff survey suggests that this information is useful in guiding clinical decision making when patients are brought in as an emergency.

The RDP overall has been effective in building links and improving communication between hospital and community health and social care professionals. Stakeholder involvement in project selection led to the identification of projects felt to meet local needs and to fit well with existing local service. Although a strength, it also means that recommendations must consider that circumstances may vary in other areas, and reflect the degree to which findings are generalisable.

### **Safety**

The main available measure of safety is all-cause readmissions at 7 and 28 days. For the CPAU these were lower than comparable groups, providing reassurance that this is a safe model of care. For the OAAU there was some variability over the year, but overall there is not a consistently higher rate of readmission than in comparable patient groups. Given that this model of care might be expected to result in some increase readmissions, this is reassuring. Readmission data were not available for patients whose discharge was supported by the Inreach service.

### **Acceptability**

Feedback from patients and relatives indicates high levels of satisfaction with the standards of care provided and overall approval of the model of care. Evidence from staff focus groups and informal feedback suggests that overall they have found it satisfying to work in these settings and that they feel able to deliver a good level of patient care.

Feedback from the project team showed that those involved in the RDP found it a valuable and rewarding way of working.

### **Equity**

Insufficient data were available to make a detailed analysis of the equity impact of the projects. The projects all aim to prevent or improve patient care during emergency admissions, and therefore may benefit those living in the most deprived areas that experience the highest rates of emergency hospital admission.

On the other hand, some of projects target those with simpler or more limited conditions that allow for early discharge, therefore complex patients with multi-morbidity are unlikely to experience care in these projects. In fact the majority of

older adults and those having troponin testing for chest pain continued to be cared for in the “usual care” pathways of medical assessment. There is an assumption that streamlining the care for some patient groups will also improve care for others through the alleviation of pressure and appropriate use of beds, but this assumption has not been fully explored. It is important that the quality of “usual care” is monitored and enhanced.

### **Cost**

Reductions in length of stay have resulted in theoretical cost differences for the targeted patient groups that are in keeping with or greater than the cost of running the projects. As there have not been overall bed closures within the hospital these cost differences have not been realised as cash savings. However they indicate that expenditure on new models of care can realise comparable savings and contribute to improved care, overall hospital efficiency and care of patients in the most appropriate clinical areas.

### **Shifting the balance of care**

During the project year there were overall reductions in hospital length of stay for those aged over 65 years, in conjunction with increases in community nursing care and home care, compared with the previous year. It is not possible to attribute these changes directly to RDP initiatives as they may in part represent longer time trends attributable to wider demographic and service factors. However these changes would represent success in shifting the balance of care.

The models of care explored by the RDP emphasised reductions in demand for secondary care by reducing lengths of stay. Beyond the development of enhanced ACPs there was less work on admission prevention and increasing the supply of alternative models of care in other settings. This element is an opportunity for attention in the future and in other geographical areas.

There was also a focus on physically discrete units and teams that target particular patient groups by diagnosis or condition. This has been a useful way to start working on new service models and to build staff engagement and momentum. It also allows

the analysis of outcomes by unit. However, there is a risk of fragmentation of care by condition rather than the intended integration at the individual patient level.

# Evaluating the RDP: limitations, constraints and lessons learned

## 1. Limitations

### Data completeness and accuracy

#### Hospital data

This was based upon routinely collected data with validated coding practices. The treatment of assessment and ambulatory care patients within admission data, has, however, proved problematic. The advent of Medical Assessment Units for the assessment of GP referrals to hospital means that these patients are now usually counted as an admission, even if discharged the same day, whereas previously would have been seen and discharged from the ED. The changes in this over time and between places limit comparability. In the RAH ambulatory care patients returning to MAU for further investigations or treatment were being counted as “readmissions” and therefore had to be excluded from analysis.

#### GP data

Analysis of the GP activity data revealed significant discrepancies in the recording of encounters and encounter type. This was further investigated by Health Information and Technology (HI&T) colleagues and found to be attributable to variable administrative practices. The accuracy of overall encounters was improved by the removal of those coded as “administrative” and guidelines developed for the improvement of encounter recording (16).

#### Local databases

Local databases maintained by the projects have been a valuable source of data, but are not validated and may, for example, be subject to inter-user variability in recording and also have issues with completeness. For example, when the CPU was closed due to bed pressure in spring 2015, the troponin testing database could not be maintained as the Chest pain specialist nurses were temporarily redeployed to other clinical activities.

## **Qualitative data**

Technical issues with the recording and transcribing of a number of the focus groups have limited the completeness of the record and hence the ability to formally analyse these data.

## **Comparisons**

There are a number of possible sources of error in the comparisons made. The small numbers involved in the project groups, particularly when looking at subgroups such as readmissions, means that there it is harder to reduce the role of chance in observed differences.

There is an inherent bias when comparing patients who experience usual care vs. those in the RDP projects, as those in the project group were specifically selected as being likely to benefit from the CPU/OAAU. Patients receiving usual care may have done so for a number of reasons including time of day of presentation (i.e. when unit is closed), capacity within the unit (no assessment beds available), or patient characteristics that excluded them (i.e. not meeting unit criteria). The limited data available on the comparison group mean it is not possible to determine which of these factors were most important. This limitation does not invalidate the findings, but should be recognised. On the other hand, if a selection bias is present then it does also indicate that the selection criteria of the units were successfully identifying the appropriate patient group.

Confounding factors may play a role in the difference observed between groups. Over time there may be other influences, not measured here, that have led to changes in outcomes. When comparing between groups there is also the potential for elements of the intervention to spread beyond the project unit itself. For example other clinical areas may adopt the active discharge planning processes of the OAAU, or use the chest pain assessment protocol to support investigation and prompt discharge. Such cultural changes in practice and shared learning may well be beneficial, but may also dilute the observed effects of the intervention in the project group.



## **2. Constraints**

The described limitations are, in part, attributable to a number of constraints on the evaluation process. These included the available time and resources, availability of data and continuity issues in the planning and undertaking of project monitoring and evaluation.

## **3. Lessons learned-what would we do differently?**

### **The monitoring and evaluation functions**

The blurring of these two roles led to a lack of clarity over the function of each and the appropriate data and time scales required. Maintaining clearer separation of the monitoring and evaluation functions would have improved efficiency and clarity.

### **Additional data and analysis**

There are a number of areas where additional data would have improved the rigour of analysis or depth of understanding. In particular, having routinely recorded frailty and HEART scores would have allowed identification of patients that were candidates for care in the OAAU/CPAU but received usual care as a comparator group. Additionally the ability to identify frail patients and monitor their outcomes will be important in providing evidence that we are meeting the Care of Older People in Hospital standards (17).

More detail on patient journeys within the hospital would contribute to an understanding of how efficient and appropriate care was for patients, both within the units and those receiving usual care. The majority of data was drawn from routine hospital-based sources; this presented a challenge when exploring the impact of ACPs where the aim was to avoid admission. Further attention should be given to the means of tracking patient progress in the community.

### **Rational, outcome-focussed data use**

A large volume of data was gathered as part of both the monitoring and evaluation of the RDP. Only a relatively small proportion of this contributed directly to the

assessment of discrete outcomes. Clear description of a small number of key measurable outcomes would support rational data gathering.

## Recommendations 1: The Renfrewshire Development Programme

These recommendations relate to the future functioning of the Renfrewshire Development Programme and the projects initiated through it.

- The current RDP projects should be continued, with preservation of the capacity to assess new patients at peak times
- Attention should be given to selection criteria, referral pathways and assessment capacity of these projects to ensure that maximum use is made of these services and realise benefits for the largest possible number of patients
- To ensure equitable use of resources, evidence should be gathered to support the assumption that units such as the CPAU and OAAU free capacity and enhance care quality elsewhere in the hospital (standard acute assessment areas) through the most appropriate use of beds
- Maintenance of successful outcomes will depend on sufficient service capacity in community health and social care

## **Recommendations 2: Using RDP findings to support wider implementation of the Clinical Services Strategy**

These recommendations describe how these findings might influence service developments across NHSGGC. They are based on the evaluation evidence and reflections on their relevance, particularly taking into account discussions at the RDP Feedback stakeholder event.

- Future initiatives should take account of the development of models of care in alternative, non-acute settings in addition to the reduction of demand in hospital, and work towards an integrated approach to care at the individual patient level
- Clear structures through which learning and experience (from the RDP and future initiatives) can be disseminated across the health board should be identified or, where no appropriate network exists, developed
- Identification of future initiatives will need to balance the benefits of local knowledge and devolved project development, with the drive for a standardised approach to acute assessment across NHSGGC and the need to ensure sufficient attention to challenging areas e.g. multi-morbidity

### Recommendations 3: Data, monitoring and evaluation

These recommendations describe how data should be used rationally to support future health service monitoring and evaluation, and where gaps in the data exist how they might be addressed.

Collection and analysis of data should be matched to purpose, outcomes and time scales at the following three levels:

- Monitoring data – local project activity data, updated regularly and directly linked to features of the initiative that might be amended in the short-term (e.g. through PDSA cycle)
- Project evaluation data – data on individuals receiving care within new initiatives, and appropriately matched/randomised control individuals that will allow assessment of whether the project has met its outcomes
- Strategic evaluation data – population level data on key indicators that reflect whether the board and its constituent areas are moving towards the aims of the CSS and the 2020 vision

The identified data gathering, access and validity issues should be addressed to support future monitoring and evaluation efforts, with solutions embedded into routine health and social care data collection, for example:

- Recording of decision-making scores (e.g. HEART and Frailty scores) on Clinical Portal
- A standardised approach to the handling of ambulatory care and acute assessment care episodes
- Measurement of primary care activity that is accessible, comparable and reliable
- Measurement of equity impact of new initiatives

## Acknowledgements

|                    |                                            |                          |
|--------------------|--------------------------------------------|--------------------------|
| Sharon Adamson     | Head of Planning                           | NHSGGC                   |
| Dr Iain Findlay    | Consultant Cardiologist                    | RAH                      |
| John Gomez         | Information Manager                        | NHSGGC                   |
| Dr Chris Johnstone | GP                                         | Barony Practice, Paisley |
| John Kennedy       | General Manager                            | RAH                      |
| Lorna Kelly        | Head of Policy                             | NHSGGC                   |
| Ann Lees           | Health Economist                           | NHSGGC                   |
| Dr Oona-Mary Lucie | Consultant Geriatrician                    | RAH                      |
| David Leese        | Director                                   | Renfrewshire HSCP        |
| Jacqui McGeough    | Head of Planning                           | Clyde Sector, NHSGGC     |
| Dr Janice Murtagh  | Consultant Geriatrician                    | RAH                      |
| Sylvia Morrison    | Primary Care and<br>Community Services     | Renfrewshire HSCP        |
| Angela McLelland   | Primary Care and<br>Community Services     | Renfrewshire HSCP        |
| Danny McAllion     | Senior Information and<br>research analyst | Renfrewshire Council     |
| Jacqueline Nicol   | General Manager                            | RAH                      |
| Hugh O'Pray        | GP IT facilitator                          | NHSGGC                   |
| Frances Paton      | Business Intelligence<br>Manager           | NHSGGC                   |
| Dr Lynne Rush      | Specialty Registrar                        | Public Health, NHSGGC    |
| Shiona Strachan    | Head of Adult Services                     | Renfrewshire Council     |

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## Appendix 1: Programme Board & Project Team Members

**Table 13: Renfrewshire Development Programme Board Members**

| <b>Name</b>           | <b>Organisation</b>                 | <b>Role</b>                                                                                   |
|-----------------------|-------------------------------------|-----------------------------------------------------------------------------------------------|
| Dr Jennifer Armstrong | NHSGGC                              | Medical Director                                                                              |
| Ian Beattie           | Renfrewshire Council                | Head of Adult Services                                                                        |
| Mari Brannigan        | NHSGGC                              | Director of Nursing - Partnerships                                                            |
| Dr Iain Findlay       | NHSGGC                              | Consultant Cardiologist                                                                       |
| Marie Farrell         | NHSGGC                              | Director Clyde Sector                                                                         |
| Dr Rob Gray           | NHSGGC                              | Staff Side Rep                                                                                |
| Dr Cathy Johnman      | NHSGGC                              | Honorary Consultant Public Health, NHSGGC and Clinical Senior Lecturer, University of Glasgow |
| Dr Chris Johnstone    | NHSGGC                              | Lead GP                                                                                       |
| Anne Marie Kennedy    | Overarching Patient Reference Group | Patient Representative                                                                        |
| John Kennedy          | NHSGGC                              | General Manager, RAD                                                                          |
| Professor Paul Knight | NHSGGC                              | Associate Medical Director (Rehabilitation and Assessment Directorate)                        |
| David Leese           | NHSGGC                              | Chief Officer, Renfrewshire HSCP                                                              |
| Dr Oona-Mary Lucie    | NHSGGC                              | Consultant Geriatrician                                                                       |
| Norman Lannigan       | NHSGGC                              | Head of PPSU                                                                                  |
| Dr David Murdoch      | NHSGGC                              | Consultant Cardiologist                                                                       |
| Fiona MacKay          | NHSGGC                              | Head of Strategic Planning and Health Improvement, Renfrewshire HSCP                          |
| Jacqui McGeough       | NHSGGC                              | Head of Planning, Clyde Sector and Diagnostics                                                |
| Dr Janice Murtagh     | NHSGGC                              | Consultant Geriatrician                                                                       |
| Jacqueline Nicol      | NHSGGC                              | General Manager, ECMS                                                                         |
| Catriona Renfrew      | NHSGGC                              | Director Corporate Planning and Policy                                                        |
| Dr David Stewart      | NHSGGC                              | Lead Director for Acute Medical Services                                                      |

**Table 14: Renfrewshire Development Programme Project Team members**

|                  |                                                            |
|------------------|------------------------------------------------------------|
| Ian Beattie      | Head of Adult Services, Renfrewshire Council               |
| Iain Findlay     | Consultant Cardiologist, Royal Alexandra Hospital          |
| Lynda Fenton     | Specialty Registrar Public Health, NHSGGC                  |
| Cathy Johnman    | Consultant Public Health, NHSGGC                           |
| Chris Johnstone  | GP Clinical Lead                                           |
| John Kennedy     | General Manager, RAD, Royal Alexandra Hospital             |
| Oona-Mary Lucie  | Consultant Geriatrician, Royal Alexandra Hospital          |
| Lees Ann         | Health Economist                                           |
| Jacqui McGeough  | Head of Planning, Clyde Sector and Diagnostics             |
| Angela Mclelland | Service Development Officer, Renfrewshire CHP              |
| Janice Murtagh   | Geriatrician, Royal Alexandra Hospital                     |
| Jacqueline Nicol | General Manager, ECMS Clyde Sector                         |
| Sylvia Morrison  | Primary Care and Community Services, Renfrewshire HSCP     |
| Spencer Green    | Lead Clinical Pharmacist, RAH                              |
| Susan Love       | Lead Clinical Pharmacist, Renfrewshire HSCP                |
| Sharon Adamson   | Head of Planning, NHSGGC                                   |
| Alistair Dorward | Consultant Respiratory Physician, Royal Alexandra Hospital |
| Shona Strachan   | Head of Adult Services, Renfrewshire Council               |

## **Appendix 2: Renfrewshire Development Programme Feedback Event 16/03/2016**

The summaries below draw out the key themes and ideas proposed at the Renfrewshire Development Programme Feedback event. The event was attended by 39 representatives of Acute and community health and social care services from across NHSGGC. Following presentation of the initial RDP evaluation findings, three open discussions were facilitated to allow exploration of how best these findings could inform implementation of the Clinical Services Strategy across the Board.

**Open Forum Discussion 1:** This focused on points of clarification relating to the presentation of features and findings of the RDP.

**Open Forum Discussion 2:** Actions needed to implement findings across all sectors: opportunities, challenges and issues.

### **Ambulatory care and acute assessment**

- The potential for the expansion of the approach used in the CPAU (rapid assessment, prompt discharge, early follow-up) for other acute presentations to hospital was raised.
- The need for a consistent approach to acute care across NHSGGC was raised, highlighting that patients should experience the same care pathways irrespective of which hospital they present to.
- Expansion of rapid assessment processes will require robust mechanisms for follow-up and clear communication with General Practitioners.

### **Anticipatory Care Planning and eHealth**

- The content of Anticipatory Care Plans was discussed, and distinction drawn between recording of factual information about a patient and their circumstances and a management plan that will be implemented in the event of certain conditions. An aspiration of a single shared record was raised.

- Widening access to electronic records was seen as largely beneficial, but there was some caution regarding confidentiality and who maintains overall responsibility for ensuring the information is an accurate record.

### **Mechanisms for implementation**

- Joint governance of implementation of service developments was seen as important.
- A planning process for interface services needs to be developed to allow these changes to occur across the system.
- Existing services may vary between areas, and there may be differences the population served and their needs, however whilst being aware of these local variations the overall service challenges are seen as similar across the Board.
- Existing clinical/professional networks may be used for the dissemination of learning about service improvement. Where these do not exist there should be work to ensure that good practice can be shared across the health board and more widely, for example a shared learning network for those working in Dept. Medicine for the Elderly.

**Open Forum Discussion 3:** How do we start to progress the wider development of services between traditional acute, primary, and community services as one of the key development areas for IJBs and for the Acute Division?

### **Ideas proposed included:**

#### **Implementation of service developments:**

- Have a programme similar to the RDP at each acute site
- Use MCNs for developing service ideas and disseminating learning

#### **Primary care:**

- Access to diagnostic investigations in the community
- Opportunities for service development and reduction of variation offered by cluster working
- Care home LES should be extended

### **Anticipatory Care Planning:**

- A board-wide approach to ACPs would be useful; including a consistent approach to what should be core elements, mechanisms of sharing and use of the plans.

### **Managing and spreading the intensity of acute assessment work in hospital:**

- Review emergency appointment and home visit times in primary care, to try and ensure patients are referred to hospital as early as possible in the day.
- Review shift patterns in acute assessment so they best match periods of intensity.
- Have appointment times within Medical Assessment Unit.
- Have morning rapid access clinics, with transport, for conditions that are urgent but do not need same-day hospital assessment.

### **Hospital discharge**

- Have a combined discharge team to facilitate discussions between health and social care.
- Improve post-discharge support to prevent readmissions.

### **eHealth**

- Make more use of available technology to support home visits and consultations.
- Work towards compatibility of systems across health and social care.

### Appendix 3: Data Sources

| Topic                       | Dataset                      | Source Type          | Contact                                                     | Content                                                                | Period            | Interval        | Geography                           | Denominator Population      | Data for Comparisons |
|-----------------------------|------------------------------|----------------------|-------------------------------------------------------------|------------------------------------------------------------------------|-------------------|-----------------|-------------------------------------|-----------------------------|----------------------|
| <b>SECONDARY CARE DATA</b>  |                              |                      |                                                             |                                                                        |                   |                 |                                     |                             |                      |
| <b>Emergency Dept</b>       | Hospital activity indicators | Extract from routine | John Gomez (Information Manager, NHSGGC Corporate Services) | ED attendances #, Breaches #%, % admitted, by age group, flow group    | Jan 2013-Oct 2015 | Calendar months | RAH, Paisley practice, other NHSGGC | None (developed separately) | Other GGC included   |
| <b>Emergency admissions</b> | Hospital activity indicators | Extract from routine | John Gomez                                                  | Number of admissions, by age, specialty                                | Jan 2013-Oct 2015 | Calendar months | RAH, Paisley practice, other NHSGGC | None (developed separately) | Other GGC included   |
| <b>Bed days</b>             | Hospital activity indicators | Extract from routine | John Gomez                                                  | Number of bed days, ALOS, number of 0 stay episodes, by age, specialty | Jan 2013-Oct 2015 | Calendar months | RAH, Paisley practice, other NHSGGC | None (developed separately) | Other GGC included   |
| <b>Elective admissions</b>  | Hospital activity indicators | Extract from routine | John Gomez                                                  |                                                                        | Jan 2013-Oct 2016 | Calendar months | RAH, Paisley practice, other NHSGGC | None (developed separately) | Other GGC included   |

| Topic                      | Dataset                      | Source Type          | Contact    | Content                                                                   | Period            | Interval        | Geography                           | Denominator Population      | Data for Comparisons        |
|----------------------------|------------------------------|----------------------|------------|---------------------------------------------------------------------------|-------------------|-----------------|-------------------------------------|-----------------------------|-----------------------------|
| <b>SECONDARY CARE DATA</b> |                              |                      |            |                                                                           |                   |                 |                                     |                             |                             |
| <b>Day cases</b>           | Hospital activity indicators | Extract from routine | John Gomez |                                                                           | Jan 2013-Oct 2017 | Calendar months | RAH, Paisley practice, other NHSGGC | None (developed separately) | Other GGC included          |
| <b>AAU</b>                 | Hospital activity indicators | Extract from routine | John Gomez | Number of admissions with ACI and 0-1 day stay by age and area            | Jan 2013-Oct 2018 | Calendar months | RAH, Paisley practice, other NHSGGC | None (developed separately) | Other GGC included          |
| <b>Readmissions</b>        | Hospital activity indicators | Extract from routine | John Gomez | Number and rate per 1000 admissions, 7&28 days by age group and specialty | Jan 2013-Oct 2019 | Calendar months | RAH, Paisley practice, other NHSGGC | All admissions              | Other GGC included          |
| <b>Delayed discharges</b>  | Hospital activity indicators | Extract from routine | John Gomez | Number of delayed discharges and number of bed days lost                  | Jan 2013-Oct 2020 | Calendar months | RAH only                            | None (developed separately) | Sourced from ISD - GGC wide |

| Topic                          | Dataset                                       | Source Type             | Contact    | Content                                                                                                       | Period              | Interval        | Geography            | Denominator Population | Data for Comparisons |
|--------------------------------|-----------------------------------------------|-------------------------|------------|---------------------------------------------------------------------------------------------------------------|---------------------|-----------------|----------------------|------------------------|----------------------|
| <b>SECONDARY CARE DATA</b>     |                                               |                         |            |                                                                                                               |                     |                 |                      |                        |                      |
| <b>Boarding</b>                | One-off report                                | Extract from routine    | John Gomez | Number of days patients spend occupying a bed in a ward out with the specialty under which they were admitted | April 2014-Feb 2015 | Calendar months | RAH only             |                        |                      |
| <b>Standardised Admissions</b> | Standardised hospital activity data (one-off) | Calculated from routine | John Gomez | Indirectly standardised emergency admission rates                                                             | April 2012-Sep 2015 | Quarterly       | Renfrewshire, NHSGGC | Renfrewshire           | GGC                  |
| <b>Standardised bed days</b>   | Standardised hospital activity data (one-off) | Calculated from routine | John Gomez | Indirectly standardised bed days used in emergency admissions                                                 | April 2012-Sep 2015 | Quarterly       | Renfrewshire, NHSGGC | Renfrewshire           | GGC                  |



| Topic                             | Dataset                     | Source Type                          | Contact    | Content                                                                     | Period              | Interval | Geography              | Denominator Population | Data for Comparisons |
|-----------------------------------|-----------------------------|--------------------------------------|------------|-----------------------------------------------------------------------------|---------------------|----------|------------------------|------------------------|----------------------|
| <b>SECONDARY CARE DATA</b>        |                             |                                      |            |                                                                             |                     |          |                        |                        |                      |
| <b>Deaths standardisation</b>     | Standardised mortality data | Calculated from routine              | John Gomez | Indirectly standardised overall deaths and proportion of deaths in hospital | April 2012-Sep 2015 |          |                        |                        |                      |
| <b>OAAU linked data</b>           | CHI-linked SMR-01 records   | Routine linked from project database | John Gomez | Episodes, specialty, diagnosis, LOS, readmissions (7&28 days)               | Sep 2014-Aug 2015   | N/A      | RAH OAAU               | N/A                    | N/A                  |
| <b>CPU linked data</b>            | CHI-linked SMR-01 records   | Routine linked from project database | John Gomez | Episodes, specialty, diagnosis, LOS, readmissions (7&28 days)               | Sep 2014-Aug 2015   | N/A      | RAH CPU                | N/A                    | N/A                  |
| <b>Specified Frailty patients</b> | Frailty SMR-01 records      | Extract from routine                 | John Gomez | LOS, readmissions , Paisley practice, OAAU attendance                       | Sep 2012-Aug 2015   | N/A      | RAH, Paisley practices | N/A                    | N/A                  |

| Topic                               | Dataset                                 | Source Type                                         | Contact                                                                  | Content                                               | Period              | Interval        | Geography                                                 | Denominator Population              | Data for Comparisons          |
|-------------------------------------|-----------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------|---------------------|-----------------|-----------------------------------------------------------|-------------------------------------|-------------------------------|
| <b>SECONDARY CARE DATA</b>          |                                         |                                                     |                                                                          |                                                       |                     |                 |                                                           |                                     |                               |
| <b>Low Risk Chest Pain patients</b> | LRCP SMR-01 records                     | Extract from routine                                | John Gomez                                                               | LOS, readmissions Paisley practice, CPU attendance    | Sep 2012-Aug 2015   | N/A             | RAH, Paisley practices                                    | N/A                                 | N/A                           |
| <b>PRIMARY CARE DATA</b>            |                                         |                                                     |                                                                          |                                                       |                     |                 |                                                           |                                     |                               |
| <b>GEMS activity</b>                | Extract GEMS, Extract GEMS Renfrewshire | Extract from routine via Advanced Health and Care   | Paul Rafferty (Advanced Health and Care)                                 |                                                       | Jan 2013 - May 2015 | Daily           | All NHSGGC, Renfrewshire (residents), Post code (3 digit) | Paisley postcode areas (PA1-5, G78) | Rest of GGC from same dataset |
| <b>General Practice activity</b>    | CSR summary                             | Extracted from individual practice systems, on site | Hugh O'Pray (GP IT facilitator, NHSGGC)                                  | Encounters by type, user, practice, patient age group | Jan 2014-Sept 2015  | Quarterly       | 13 Paisley practices                                      | Practice populations (ISD)          | None                          |
| <b>Community nursing activity</b>   | Community nursing                       |                                                     | Frances Paton (Business Intelligence Manager, NHSGGC Corporate services) | Contacts by location, planned, completed, age group   | Sep 2013-Aug 2015   | Calendar months | 13 Paisley practices, by practice                         | Practice populations (ISD)          | None                          |

| Topic                             | Dataset                        | Source Type             | Contact                                                                        | Content                                                                             | Period              | Interval        | Geography                          | Denominator Population                                     | Data for Comparisons |
|-----------------------------------|--------------------------------|-------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------|-----------------|------------------------------------|------------------------------------------------------------|----------------------|
| <b>SOCIAL CARE</b>                |                                |                         |                                                                                |                                                                                     |                     |                 |                                    |                                                            |                      |
| <b>Home care</b>                  | Home care stats RDP            |                         | Danny McAllion (Senior Information and Research Analyst, Renfrewshire Council) | Number of Hours and number of people 65+                                            | Apr 2012 - Sep 2015 | Quarterly       | Renfrewshire                       | Renfrewshire residents (NRS mid-year population estimates) |                      |
| <b>Care homes and assessments</b> | Standard Shareable Assessments |                         | Danny McAllion                                                                 | Care home residents, Care home admissions, New SSAs                                 | Apr 2013 - Sep 2015 | Calendar Months | Renfrewshire                       | Renfrewshire residents (NRS mid-year population estimates) |                      |
| <b>Social care survey</b>         | Social care survey 2015        |                         | ISD, publicly available                                                        | Home care details                                                                   | 1998-2015           | Annual          | Scotland and all local authorities |                                                            |                      |
| <b>DEATHS</b>                     |                                |                         |                                                                                |                                                                                     |                     |                 |                                    |                                                            |                      |
| <b>Deaths</b>                     | RDP deaths data                | Calculated from routine | John Gomez                                                                     | Number of deaths, proportion in hospital, indirectly standardised by HSCP to NHSGGC | Apr 2012 – Sep 2015 | Quarterly       | NHSGGC and constituent HSCPs       | N/A                                                        |                      |

## Appendix 4: CPAU and OAAU comparison groups

### 1. Chest Pain Assessment Unit

#### Patients with a discharge diagnosis of “low risk chest pain” (LRCP)

This group was identified on the basis of the most common discharge diagnoses given to patients seen in the CPU. The top five ICD10 diagnoses are shown in Table 15, and together these accounted for 84% of the patients seen in the unit. SMR01 records were accessed for all patients with these as their first diagnosis from Jan 2012-Aug 2015. Since Sep 2014 21% of these LRCP attendances were seen in the CPU.

**Table 15: ICD10 Codes used to identify the ‘low risk chest pain’ patient group**

|      |                              |
|------|------------------------------|
| R074 | Chest Pain, unspecified      |
| R073 | Other chest pain             |
| R072 | Precordial pain              |
| I209 | Angina pectoris, unspecified |
| I200 | Unstable angina              |

#### Patients presenting with chest pain having a troponin blood test

This group was identified on the basis of having been investigated with a troponin blood test on presentation to hospital as an emergency. A local database of all such patients has been kept in the RAH since 2012, maintained by the cardiology specialist nurses. In order to focus on those patients targeted by the CPU, individuals were excluded if they did not present with chest pain or if they had clear myocardial ischaemia on presentation (diagnosed STEMI or positive troponin at zero hours). In the year Sep 2014- Aug 2015 43.0% of these patients were assessed in the CPU.

## 2. Older Adults Assessment Unit

### Patients presenting with specified frailty conditions

A group of diagnoses were selected with reference to the literature (ref) and in consultation with the Department of Medicine for the Elderly (DME) Consultants as being likely to be most sensitive and specific for those patients being targeted by the OAAU, and they focus on those with dementia, delirium and tendency to fall. The ICD10 codes are shown in Table 16. SMR01 records for all patients with these diagnoses were obtained for the period Jan 2012-Aug 2015. Of patients seen in the OAAU 41.6% had one of these frailty diagnoses; it should be emphasised that patients with a wider range of frailty diagnoses were accepted to the unit but these were too diverse and non-specific to be helpful in determining a comparator group. Since Sep 2014 14.5% of this patient group were assessed in the OAAU.

**Table 16: ICD10 codes used to identify the “specified frailty conditions” patient group**

|       |                                                         |
|-------|---------------------------------------------------------|
| F00*  | Dementia in Alzheimer disease                           |
| F01   | Vascular dementia                                       |
| F02*  | Dementia in other diseases classified elsewhere         |
| F03   | Unspecified dementia                                    |
| F05.1 | Delirium superimposed on dementia                       |
| F05.9 | Delirium, unspecified                                   |
| F06.0 | Organic hallucinosis                                    |
| F06.7 | Mild cognitive disorder                                 |
| F107  | Residual and late-onset psychotic disorder              |
| G30   | Alzheimer disease                                       |
| G31.1 | Senile degeneration of brain, not elsewhere classified  |
| G31.8 | Other specified degenerative diseases of nervous system |
| R29.6 | Tendency to fall, not elsewhere classified              |

### **Patients aged over 80 years**

Whilst the OAAU aimed to identify patients on the basis of frailty rather than age the majority (74.0%) of patients seen in the OAAU were aged over 80 years. SMR01 data on this patient group was available via the routine project monitoring dataset. In the first year of the project 15% of patients aged over 80 years admitted as an emergency were seen in the OAAU.

## Appendix 5: Chest Pain Unit and Older Adult Assessment Unit, supplementary data tables

**Table 17: Proportion of LRCP patients readmitted at 7 and 28 days (any reason): Before (Sep 13-Aug 14) vs. During (Sep 14 – Aug 15)**

|                      | Readmissions | Before | After | Difference | p-value |
|----------------------|--------------|--------|-------|------------|---------|
| <b>LRCP patients</b> | 7 days       | 4.7 %  | 2.8 % | -1.9 %     | 0.114   |
|                      | 28 days      | 8.2 %  | 6.4 % | -1.8 %     | 0.226   |

**Table 18: Proportion of LRCP patients readmitted at 7 and 28 days (any reason): Usual care vs. CPAU care (Sep 14 – Aug 15)**

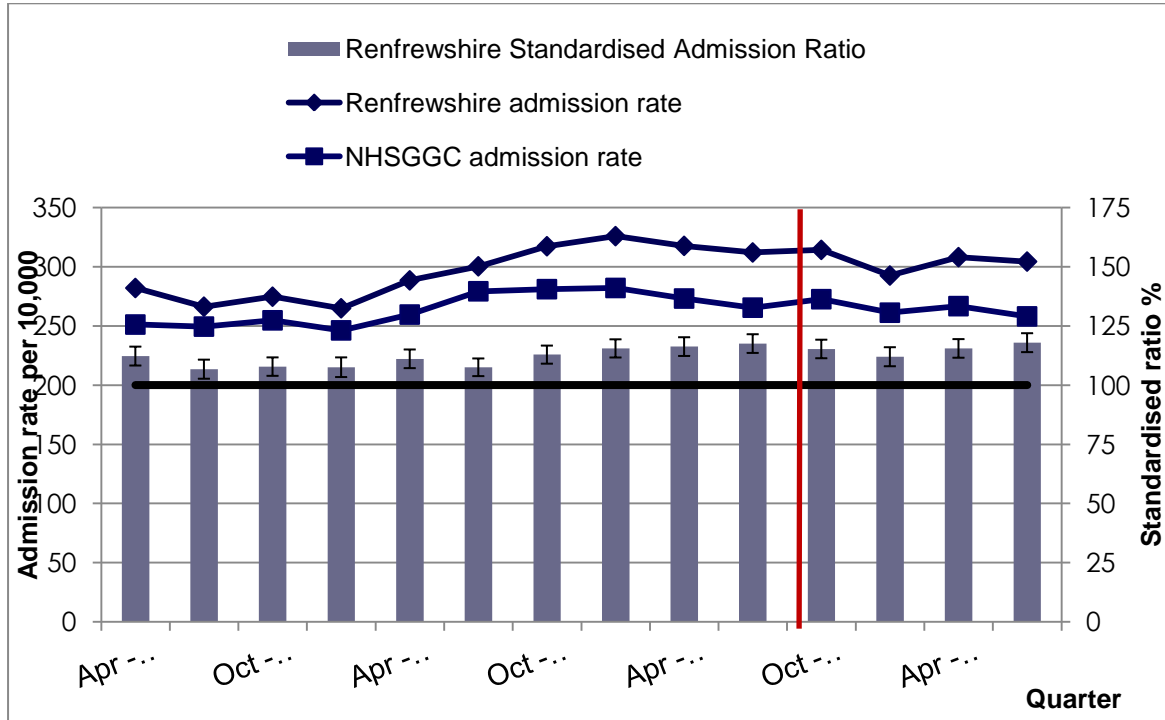
|                      | Readmissions | In    | Out   | Difference | p-value |
|----------------------|--------------|-------|-------|------------|---------|
| <b>LRCP patients</b> | 7 days       | 1.9 % | 3.4 % | -1.5 %     | 0.082   |
|                      | 28 days      | 6.4 % | 7.1 % | -0.7 %     | 0.488   |

**Table 19: 7 and 28 days readmissions (all-cause) before and during RDP for patient with specified frailty condition and those aged over 80 years, RAH, Paisley**

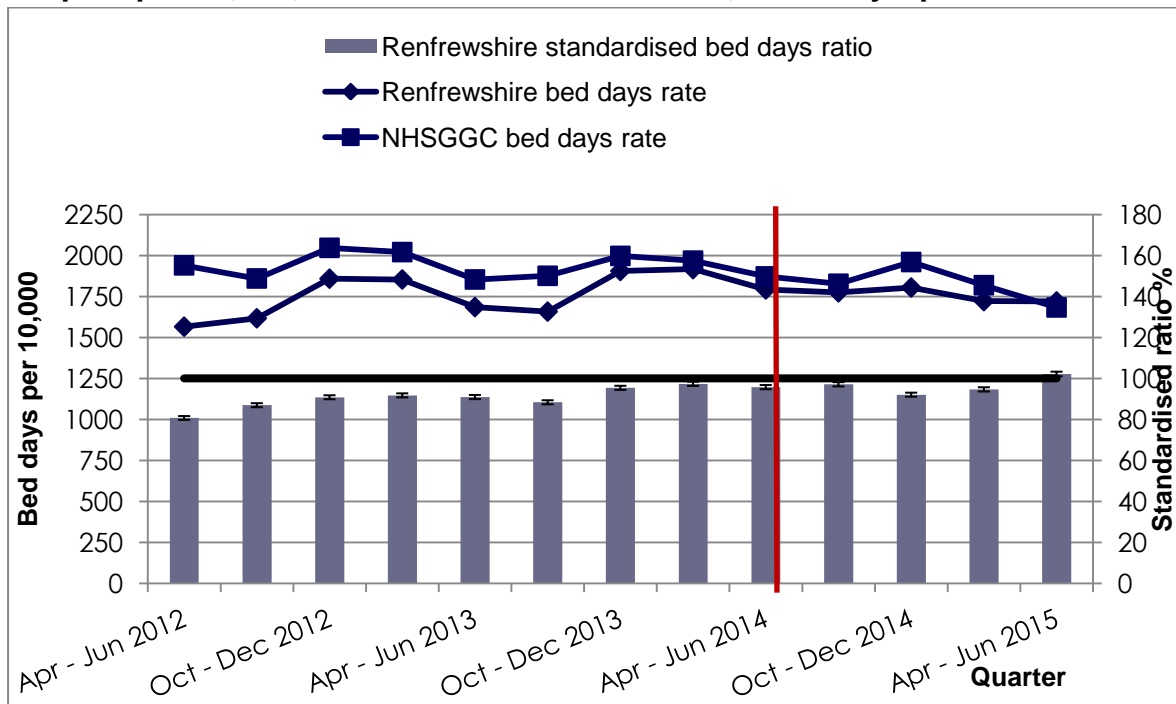
| Patient group      | % Readmissions at: | Before OAAU | During OAAU | Difference | Lower 95% CI | Upper 95% CI |
|--------------------|--------------------|-------------|-------------|------------|--------------|--------------|
| <b>Sp. frailty</b> | 7 days             | 4.5%        | 4.1 %       | -0.5 %     | -2.0         | +1.1         |
| <b>Sp. frailty</b> | 28 day             | 9.3 %       | 8.2 %       | -1.1 %     | -3.2         | +1.0%        |
| <b>80+ years</b>   | 7 days             | 7.4%        | 7.1%        | -0.3%      | -1.4         | +0.9%        |
| <b>80+ years</b>   | 28 day             | 18.2%       | 16.7%       | -1.5%      | -3.1         | +0.2%        |

## Appendix 6: Health and Social care context, supplementary graphs

**Figure 23: Renfrewshire standardised admission ratio\* and rate of emergency admission to hospital per 10,000, Renfrewshire and NHSGGC, Quarterly Apr 2012-Sep 2015 \*standardized to NHSGGC for age, sex and deprivation**



**Figure 24: Renfrewshire standardised bed days ratio\* and rate of bed days in hospital per 10,000, Renfrewshire and NHSGGC, Quarterly Apr 2012-Jun 2015**

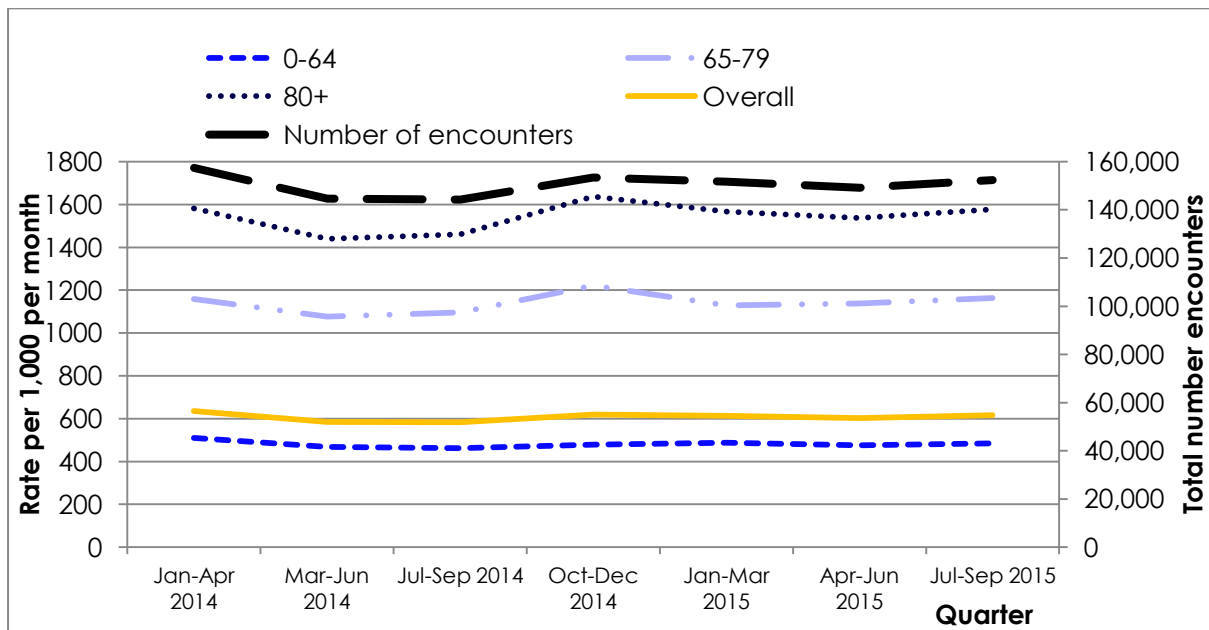




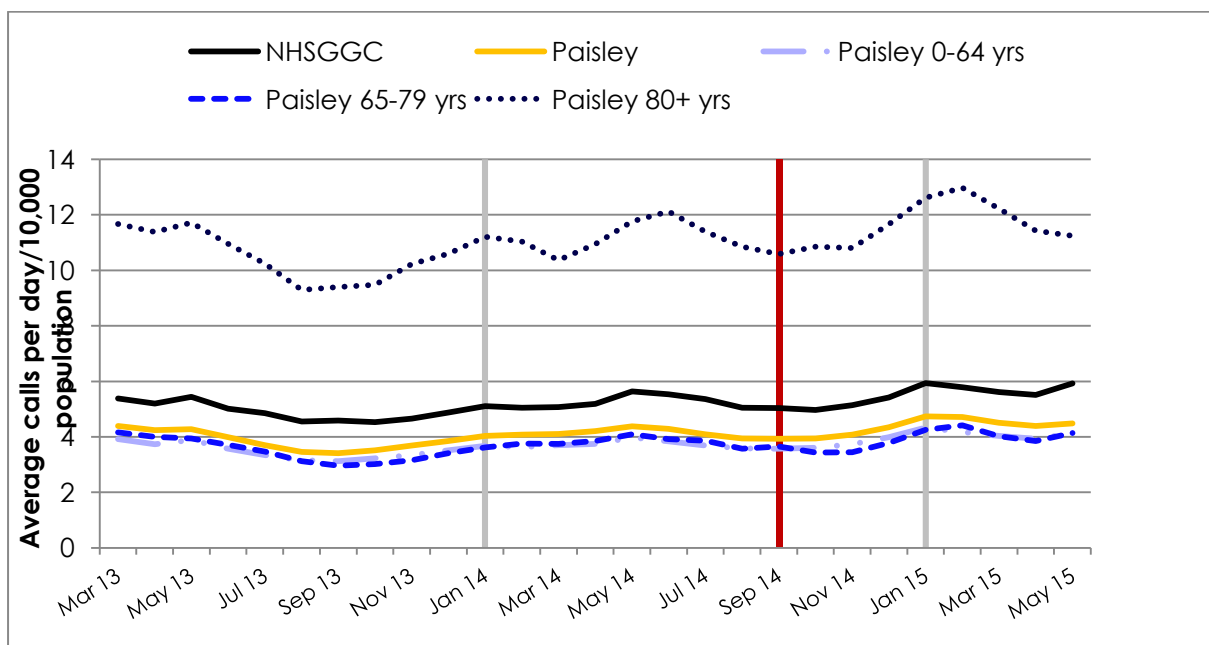
**Table 20: Day of Care Survey; overview of results RAH, Paisley Nov 2014 – Feb 2016**

| Date           | Wards                                                      | Number of patients | Occupancy | % Patients not meeting criteria                   | Top 3 reasons not met                                                                                                                                                   |
|----------------|------------------------------------------------------------|--------------------|-----------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nov-14         | All                                                        | 546                | 100%      | 24%                                               | Awaiting social work allocation/ assessment (18%)<br>Awaiting AHP assessment/ treatment (15%)<br>Awaiting Consultant decision/ review (13%)                             |
| Nov-14         | Medical: 27<br>RAD: 3, 5, 7                                | 120                | 100%      | 47%                                               | Awaiting social work allocation/ assessment (27%)<br>Awaiting Consultant decision/ review (14%)<br>Awaiting AHP assessment/ treatment (7%)                              |
| Apr-15         | Medical: 27<br>RAD: 3                                      | 60                 | 100%      | 31.50%<br>Medical 13%<br>RAD 50%                  | Awaiting AHP assessment/treatment (ongoing rehab) (26%)<br>Awaiting Consultant decision/ review (26%)<br>Alteration to equipment for home/ re-housing (16%)             |
| May/ June 2015 | Medical: 1,8,14,27<br>RAD: 3, 5, 7<br>Orthopaedics: 22, 23 | 243                | 100%      | 25%<br>Medical 10%<br>RAD 50%<br>Orthopaedics 10% | Awaiting AHP assessment/ treatment (ongoing rehab)<br>Awaiting Consultant decision/review or awaiting MDT review<br>Alteration to equipment for home/ re-housing        |
| Feb-16         | Medical: 27<br>RAD: 3, 5, 7                                | 120                | 100%      | 22.50%<br>Medical 10%<br>RAD 37%                  | Awaiting social work allocation/ assessment (48%)<br>Making choices/awaiting place in care home (26%)<br>Other (discharge plans in place for subsequent 2-3 days) (19%) |

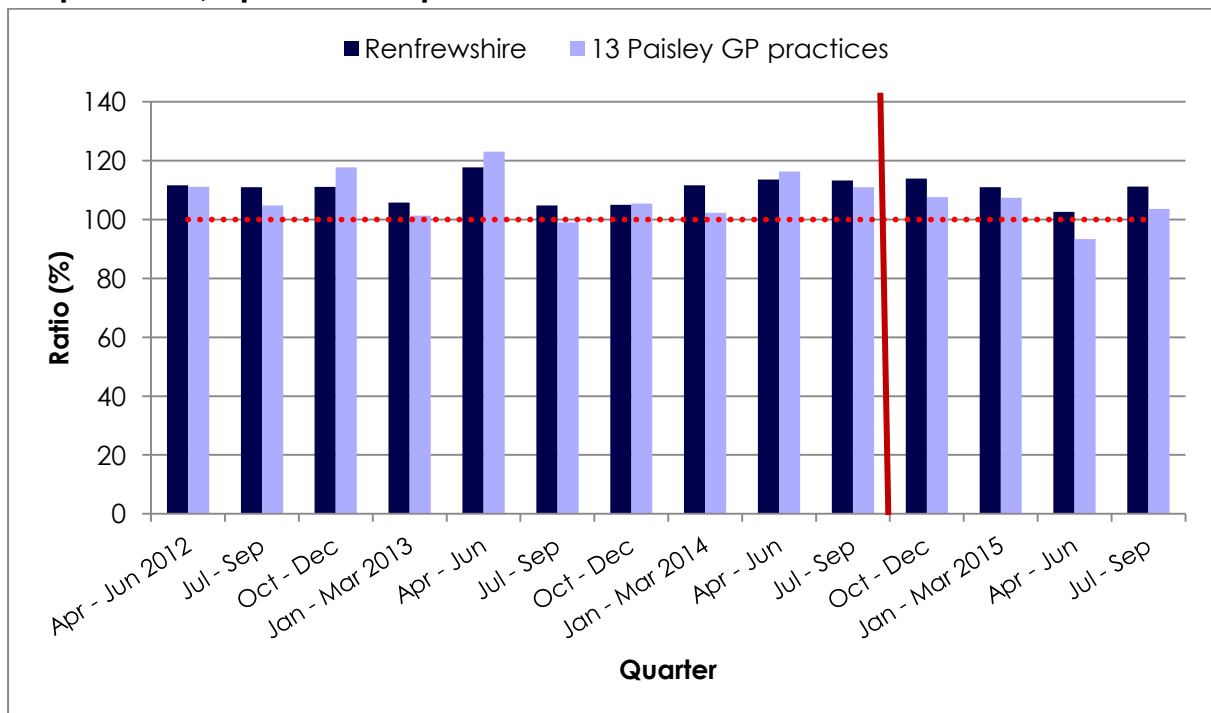
**Figure 25: Number and rate of primary care encounters per 1,000 practice population per month, quarterly 2014-2015, 13 Paisley practices by age group**



**Figure 26: Average GEMS calls per day per 10,000 population, Paisley and NHSGGC, 3 month rolling averages Jan 2013- May 2015**



**Figure 27: Quarterly standardised mortality ratios, Renfrewshire and 13 Paisley GP practices, April 2012-Sep 2015**



**Figure 28: Proportion of deaths that occurred in hospital, rolling averages (3 quarters) April 2012-Sep 2015, NHSGGC, Renfrewshire and 13 Paisley practices, all ages and 80+ years**

