Evaluation of The Coventry GP Alliance: Best Care, Anywhere: Integrating Primary Care in Coventry Programme

FINAL REPORT

November 2016

Work Package 1: Large data quantitative collection,
Work Package 2: Service user perceptions and service innovation,
Work Package 3: Impact on staff and the wider health and social care system

Produced by: Warwick University, Coventry University and Birmingham University

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Abbreviations

A&E[1]	Accident and Emergency
CCG	Clinical Commissioning Group
CQC	Care Quality Commission
CRCCG	Coventry and Rugby Clinical Commissioning Group
CRRS	Claims Reimbursement and Reporting System
DNA	Did Not Attend
ED	Emergency Department
EHH	Extended Hour Hub
GIS	Geographic Information System
GP	General Practitioner
GP in ED	General Practitioner in Emergency Department
NHS	National Health Service
ONS	Office of National Statistics
OT	Occupational Therapy
PCFT	Primary Care Frailty Team
PSSRU	Personal Social Services Research Unit
PMAF	Prime Minister's GP Access Fund
UHCW	University Hospitals Coventry and Warwickshire
WMG	Warwick Manufacturing Group
WMS	Warwick Medical School

[1] For clarity A&E is used instead of Emergency Room (ER) or Emergency Department (ED) except when referring to the GP in ED programme

Acknowledgement

Work conducted for the evaluation of the Best Care, Anywhere: Integrating Primary Care in Coventry Programme was essentially a collaborative effort between the Coventry – Rugby GP Alliance, the University Hospital Coventry and Warwickshire and academic partners, the University of Warwick, Coventry University and University of Birmingham. We would like to take this opportunity to express our gratitude to all members of the Coventry – Rugby GP Alliance Steering Group for their thoughtful discussions with the research team regarding the multi-faceted nature of the challenges currently facing the primary and acute care sectors in the region. We also gratefully acknowledge the contributions of University Hospital Coventry and Warwickshire for their efforts in sharing hospital activity data with the research team which made this study possible. Dr Wendy Robertson, Dr Victor Adekanmbi, Dr David Jenkinson and Professor Aileen Clarke are partly funded by the NIHR CLAHRC West Midlands initiative. Dr Clare Walker holds an NIHR funded ACF post. This report presents independent research and the views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health.

Executive summary

Background

Coventry and Rugby Clinical Commissioning Group (CRCCG) was recently awarded funds from the 'Prime Minister's GP Access Fund" (PMAF) to establish 'Best Care, Anywhere', integrating primary care in Coventry. The 'Best Care, Anywhere' project aims "to provide an integrated solution, improving primary care access and ensuring continuity of care through integrated pathways". Three innovative primary care schemes were planned:

(1) Extended hours hub, (EHH)

(2) Primary care frailty team, (PCFT) and

(3) Primary care team in A&E treating ambulatory cases (GP in ED).

As the Better Care Anywhere team established these schemes, they commissioned a rigorous evaluation in order to inform the CCG on quality and service improvement provisions with the aim of improving access to primary care and overall service integration for seamless care.

A collaborative evaluation was set up to undertake this work by three universities, University of Warwick (Warwick Medical School and Institute of Digital Healthcare, WMG); Coventry University and University of Birmingham (Health Service Management Centre).

This document presents the final report for this evaluation. The work was undertaken in four work packages:

WP 1: Large data quantitative collection (Warwick University)

WP 2: Service user perceptions and service innovation (Coventry University)

WP3: Impacts on staff and the wider health and social care system (Birmingham University)

WP4: Overall organization of the work and coordination of the final report and workshop (Warwick University)

Aims

The overarching aims of the evaluation were to:

1. Measure the impact of the three new primary care schemes on hospital activity and on the wider health system

2. Determine patient and staff satisfaction with the three new services

3. Determine what effect the enhanced services have on equity of access

4. Enable CRCCG to make a decision as to whether to fund the three schemes past the initial pilot period.

Results

WP1 summary of results:

Workpackage 1 involved two specific tasks. Task-1 entailed an analysis of large dataset; and Task-2 involved Geographic Information Systems Mapping and Analysis.

Task-2 used two years of UHCW activity data to carry out Geographic Information Systems (GIS) mapping and analysis for understanding patterns of service utilization among patients treated by the GP-in-ED scheme. Two sub-tasks were conducted to carry out the GIS mapping: (a) a baseline analysis of UHCW A&E department data; and (b) mapping study.

Results from the unadjusted data analysis revealed that on average, patients seen by the GP in ED programme experienced shorter waiting times in the A&E when compared to their usual care peers in the department. Also, GP in ED patients were seen by a clinician earlier on their care journeys (74.2 minutes) contrasted to the usual care group which waited 80.6 minutes. In addition, only about 3.69% of GP in ED patients had waiting times that had exceeded the A&E 4-hour operational time target. By comparison, around 12.21% of the usual care cohort exceeded the 4-hour stay. Moreover, fewer GP in ED patients were admitted to the hospital from the A&E department.

Findings from the mapping revealed that some regions in the catchment contributed disproportionately to demand in the department. This was especially the case when examined in the context of the city centres of both Coventry and Rugby. Results also showed that 10 post codes contributed disproportionately to minor presentations in department, about 38.06% of minor self-reporting presentations were associated with these 10 post codes. Perhaps surprising was the finding that all the 10 post codes were located within a radius of 3.2 miles from the UHCW. All patients from the 10 post codes had access to primary care as seen from the data analysis.

For Task-1, we analysed data on 336, 945 attendances in A&E at UHCW between June 2014 and March 2016 (11 months before and 11 months after implementing GP in ED Scheme). No significant change was seen in attendance after introduction of the GP in ED. About 8.5% of attendees were in the 0-4 year age group with a spread across the other ages and approximately 30% in the 20-40 year age group. Attendances were relatively even throughout the week, although the highest attendances are on a Monday (~16%) and attendance on each day is greatest between 9-11am. Most people (>60%) were dealt with within 3 hours of attendance at A&E.

Compared with self-reporting minor cases seen by emergency physicians, on average patients seen by GP in ED:

- Spent statistically significant less time (9 minutes less) in the ED before being seen by a doctor;
- Spent statistically significant less time from arrival to medical discharge (13 minutes less);
- Are less likely to spend four plus hours in A&E (rate difference = -5%);
- Are less likely to be admitted (rate difference = -38%); and
- Are less likely to re-attend after seven days (rate difference = -2%).

WP2 summary of results:

This work package focused on the service users' perceptions of the Coventry GP Alliance: Best Care, Anywhere service. In total, 133 questionnaires were collected from the EHH service, and 180 questionnaires from the GP in ED service. Forty-one patients participated in a semi-structured interview focusing on the patient journey through the service, from onset of symptoms to returning home.

Overall, patients were positive about both the GP in ED and EHH services.

- 84% agreed or strongly agreed that they found it easy to access the service.
- 83% agreed or strongly agreed that they were satisfied with how easy it was to access the service.
- 84% agreed or strongly agreed that they would be happy to see the same doctor again.
- 81% agreed or strongly agreed that they were well informed about the decisions made about their care/treatment.

The three most important factors in the decision to access the service were opening hours, waiting times, and parking fees.

Preliminary analysis suggested that GP in ED, EHH and the frailty service all offer significant efficiency savings for the NHS. Further longitudinal analysis of the schemes outcomes will be necessary in order to draw firm conclusions.

WP3 summary of results:

From the perspectives of those working within the PMAF initiatives the project was a necessary development that was responding to identified weaknesses and opportunities within the local health and care system. The project experienced a number of practical challenges, including a lack of suitable accommodation for new services, compatibility of IT systems, and a shortage of key resources including appropriately skilled clinicians and practitioners.

More discrete barriers were also encountered such as different professional perceptions of risk and a perceived lack of support from some senior stakeholders. Despite these difficulties and being in a relatively early stage of development the initiatives are described as having a positive impact for patients and their families. Furthermore, the staff members themselves have found the services to be an enriching and engaging context in which to practise. Key to the success of the project appears to be the diversity of professionals and sectors, engaging committed and skilled staff members, a supportive approach to oversight, and improved communication through increased and better quality contact with other professionals and the services that they represent. As is common with such projects, sustaining the impacts will require continued effort and investment, and positive engagement with wider stakeholders. There is on-going work to be done regarding how these initiatives connect with other services to ensure that the most effective and efficient arrangements are in place, and opportunity to refine further their remit and target populations.

Overarching conclusions

WP1 – Overall workload and attendance remained unchanged after introduction of GP in ED. There were, however, significant improvements in process measures with no detrimental effects on attendees' health outcomes. City centres contributed disproportionately to attendance in ED and approximately 38% of attendances came from just 10 postcode sectors.

WP2 – In the qualitative analysis, some patients were unaware of the fact that they were being treated as part of a new scheme, but notwithstanding their response was positive. The services were found to offer value for money.

WP 3 – Those working in the schemes were generally positive. As one of our respondents commented:

> "*We have a significant cohort of patients who are the ones that struggle with the Health system and the way it works… this is a group of patients who have very varied pasts and journeys through both community and hospital services. ..it's a massive step forward in terms of targeting inequality.*"

We believe that these schemes are going some way to ameliorate inequality experienced by these people.

In conclusion, this evaluation was conducted relatively early in the setting up of the PMAF projects. However, the three schemes offer clear benefits and value for money.

Introduction

In 2015, the Coventry GP Alliance, covering about 74% of practices in Coventry and Rugby, received an award from the Prime Minister's GP Access Fund (GPAF) to implement high quality, catchment-contextualized primary care programmes. The Alliance planned to implement these programmes through three schemes.

- Scheme 1: Extended hours hub: Single hub offering week-day (4-8pm) urgent appointments and weekend routine appointments.
- Scheme 2: Primary care frailty team: Primary care team determining discharge and care planning for frail patients and managing them in proactive, community based primary care.
- Scheme 3: GP in ED: Multidisciplinary primary care team in A&E treating A&E minors in an efficient, direct primary care model, freeing A&E capacity.

First, the GP in ED (**GP in ED**) scheme, co-located within the University Hospitals Coventry and Warwickshire's (UHCW) Accident & Emergency (A&E) department, aimed to treat patients who sought care in the department for non-urgent (minor) presentations. Next, the Extended Hours (**EHH**) programme entailed creating a hub at the City of Coventry Health Centre to providing additional access to primary care after-hours. Finally, GPAF aimed to create a new Frailty pathway by expanding the role of primary care in the discharge and care planning of frail patients from UHCW and managing them in the community setting (**PCFT**).

The three schemes operate via a broad network of providers across the Coventry and Rugby catchment area covering a population of around 374,335 people. The schemes interact across the care continuum incorporating elements of emergency, acute and primary care, along with social and community services. To examine how the schemes operate in the community, three universities, i.e. Warwick (large data quantitative collection and analysis), Coventry (service user perceptions and service innovation), and Birmingham (impact on staff and wider health and social care system), carried out a collaborative exploratory evaluation using a mixed method approach.

Context

Hospital care utilization has been growing at an unprecedented rate in England (NHS Confederation, 2014; Blunt, Bardsley & Dixon, 2010). Numerous factors have been suggested to understand growth in hospital activity including demography (Ipsos MORI, 2012; Cornwell, et al, 2012; Royal College of Physicians, 2012); epidemiological trends such as long-term conditions and co-morbidities (JSNA, Annual Review, 2012); limited availability of out-of-hospital care (Purdy, 2010); increasing self-referrals (Kraaijvanger et al, 2015); and the absence of integrated care (Busse et al., 2010).

These factors are also seen to drive up demand in A&E departments. The College of Emergency Medicine (2013) estimates that between 2011/2012 and 2012/2013, there was an increase in 250,000 attendances to the nation's A&Es. Demand in the department is closely linked with factors both inside and outside the hospital, i.e., the wider environment within which a hospital functions. For example, a recent report suggests non-urgent care as a major factor driving up demand in A&Es (HSCIC, 2013) in part due to difficulties associated with accessing primary care; a desire to receive immediate care without an appointment; interest to have multiple tests and procedures undertaken in a single location (Burt & McCaig, 2001); or patient perception regarding the severity of the condition (Gill & Riley, 1996). At times, such increased activity could also be due to GPs referring non-urgent conditions to the A&E department (Berenson et al., 2003; Studdert et al., 2005).

Context of University Hospitals Coventry and Warwickshire

The University Hospitals Coventry and Warwickshire (UHCW) is the major acute trust in the Coventry-Rugby region. Information about the hospital's service utilization indicate that visits to its A&E department have risen steadily (UHCW Annual Report, 2015/16). Examining recent population trends released by the ONS for both Warwickshire and Coventry show that at the county level, the Warwickshire population grew a little over 3.3% over the five years from 2008/9 – 2012/13 while growth in Coventry was seen to be around 3.7%. During the same time period, visits to UHCW's A&E rose by over 16.8%. Moreover, on a year-on-year basis, attendances to the UHCW have risen by around 3.97% each year since 2008.

On inpatient activity, an analysis of UHCW data conducted by members of the research team indicated that admissions to the hospital had risen by 10% over the period 2008-2012. Also, the population of Warwickshire as a whole grew by about 1% from 2011-2013 while that of Coventry was <1%. By comparison, admissions to hospital have risen by about 2.3% during the same time period. A combination of factors, contributies to the increase in the hospital's activity. Research suggests that large numbers of patients seeking care in an A&E department could have their care needs met at non-hospital settings including in GP settings (Kraaijvanger, 2014; Agarwal et al, 2011). Hence it was important for the Coventry GP Alliance to set up methods to reduce hospital admisisons safely.

The GP in ED (**GP in ED**) scheme, co-located within the University Hospitals Coventry and Warwickshire's (UHCW) Accident & Emergency (A&E) department, aimed to treat patients who sought care in the department for non-urgent (minor) presentations. The Extended Hours (**EHH**) programme entailed creating a hub at the City of Coventry Health Centre to providing additional access to primary care after-hours.

Finally, GPAF aimed to create a new Frailty pathway by expanding the role of primary care in the discharge and care planning of frail patients from UHCW and managing them in the community setting (**PCFT**).

This report describes our evaluation of the three schemes.

Work Package 1

Large data quantitative collection

Project team:

Warwick Medical School: Dr Clare Walker, Dr Olalekan Uthman, Dr Wendy Robertson, Dr Victor Adekanmbi, Dr David Jenkinson, Professor Aileen Clarke*

Institute of Digital Healthcare / WMG: Dr Sudi Lahiri and Emre Dogukaya

(* Project Chair)

Work Package 1 (Task 1): Modelling Impact on A&E System Metrics

Below we provide the modelling of the wider impact of the *'Best Care Anywhere'* on A&E system metrics.

Methodology:

Data gathering:

Anonymized individual level data along with GP practice specific data for all age groups were requested for the project. These include: (1) demographics; (2) partial post code data of service users; (3) determinants of health; (4) comorbidities; (5) post code information of primary care providers and primary care related information pertaining to diagnoses received at primary care, assessments, care plans, medication, preventive care etc; and (6) acute care activity data from the University Hospitals of Coventry and Warwickshire ([UHCW] A&E, inpatient and outpatient).

Requests for data were made from the following points of care: (i) NHS 111; (ii) Ambulance data serving catchment area and post code locations of ambulance hubs; (iii) Acute care activity data from the UHCW; (iv) Participating GP practice location and activity data with respect to each of the schemes pertaining to individual GP practices; (v) Walk-in Centre data and information; (vi) Care homes data and information; and (vii) Any data that can be made available pertaining to nursing home care, as well as social and community care impact data.

To date, only the UHCW has provided the Warwick team with anonymized routine acute activity data, covering a period of 22 months, June 2014 to March 2016. These datasets contain a limited amount of information pertaining to scheme users.

They do contain partial post code information of patients and post code locations pertaining to GP practices participating in the GP Access schemes however.

Modelling analyses (Impact Evaluation)

The modelling approach included before and after analysis and matched analyses to capture the impact of this natural experiment of the *'Best care, Anywhere'* implementation on primary care services utilization. About 6,312 patients seen by GP in ED were matched with 31,560 patients seen by emergency physicians (ratio 1:5). Patients were matched by age, sex, ethnicity, number of procedures, number of presentations. We used the MRC guidelines for using natural experiments to evaluate population health interventions (Craig et al., 2012). **(see Technical Appendix)**

Results:

Level and trends in UHCW A&E Attendance

Between June 2014 and March 2016 there were 336,945 attendances at UHCW's A&E departments. The monthly number of attendances is shown in Figure 1.1. A&E attendances at UHCW averaged approximately 15,000 per month (**Figure 1.1**). Attendance has not changed substantially over this period, however, there was slightly decreased activity between January and February 2015.

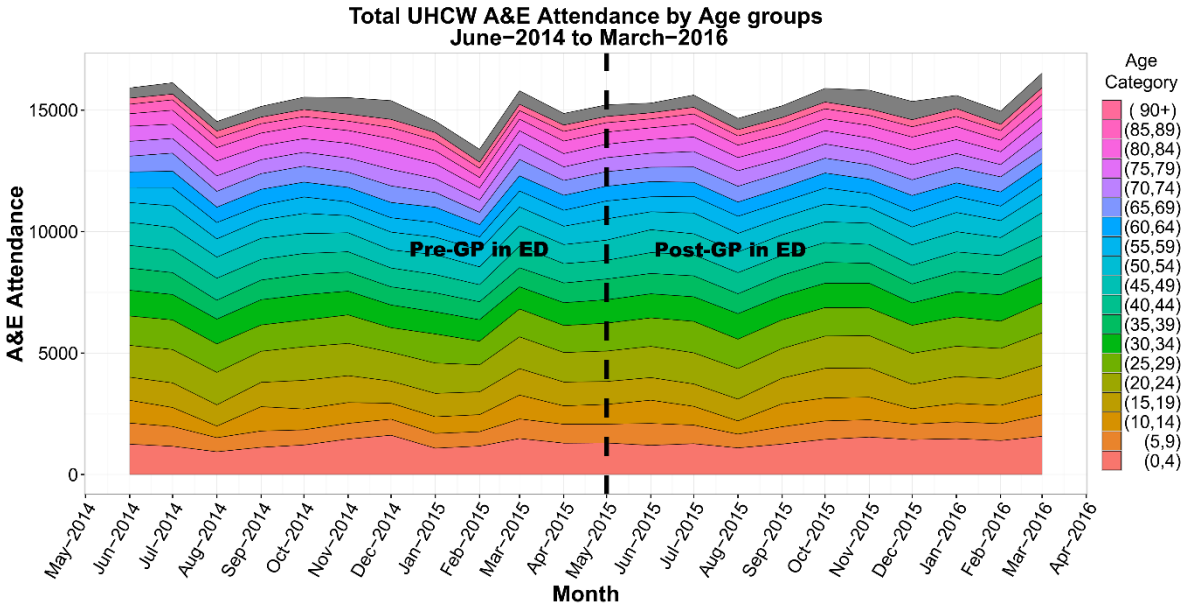


Fig 1.1: UHCW A&E attendance, June 2014 – March 2016 (Source: UHCW)

Who attends A&E?

Figure 1.2 shows the percentage of attendees in each age group. Children 0 to 4 years were most frequent attenders, followed by young adults aged 20-24.

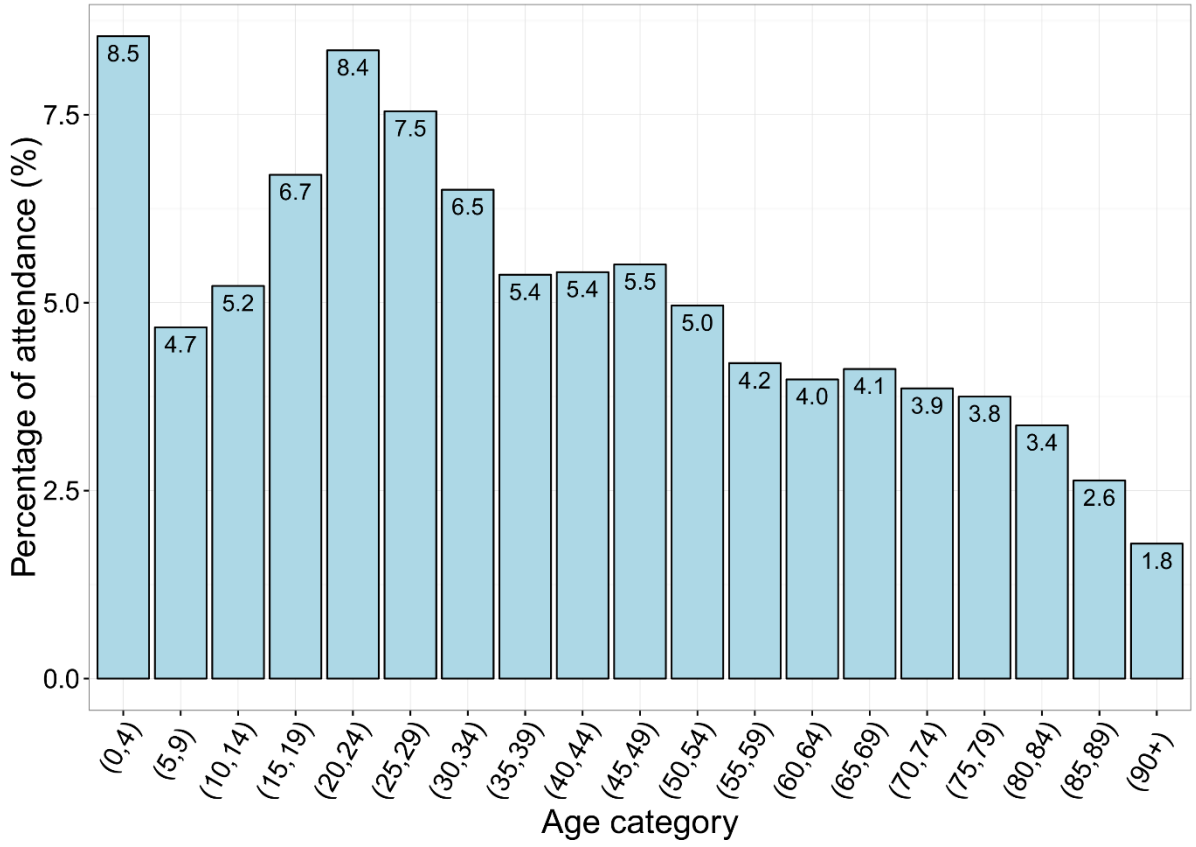


Fig 1.2: UHCW A&E attendance by age group, June 2014 – March 2016 (Source: UHCW)

When do people attend A&E?

Figures 1.3 and **1.4** illustrate this and other trends for all days and times in a week. In terms of days of the week, Monday is the busiest day at A&E. As shown in the heat map, the period between 8am and 10pm is the busiest. Mondays between 9am and 12noon are the busiest hours. The early hours of Monday to Friday are the quietest times.

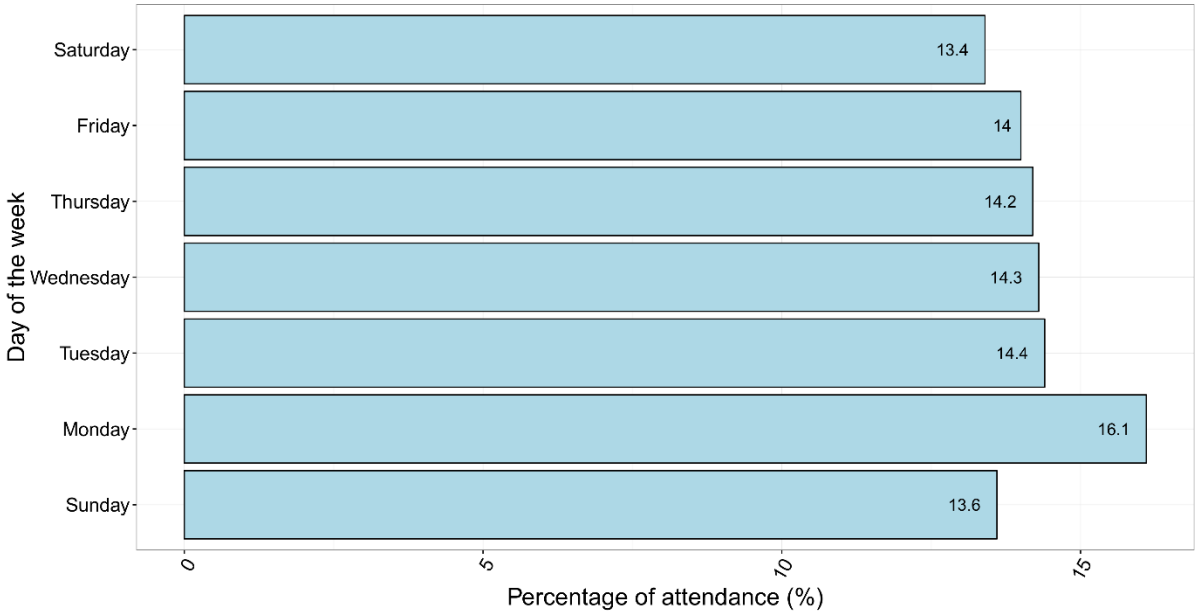


Fig 1.3: UHCW A&E attendance by day of the week, June 2014 – March 2016 (Source: UHCW)

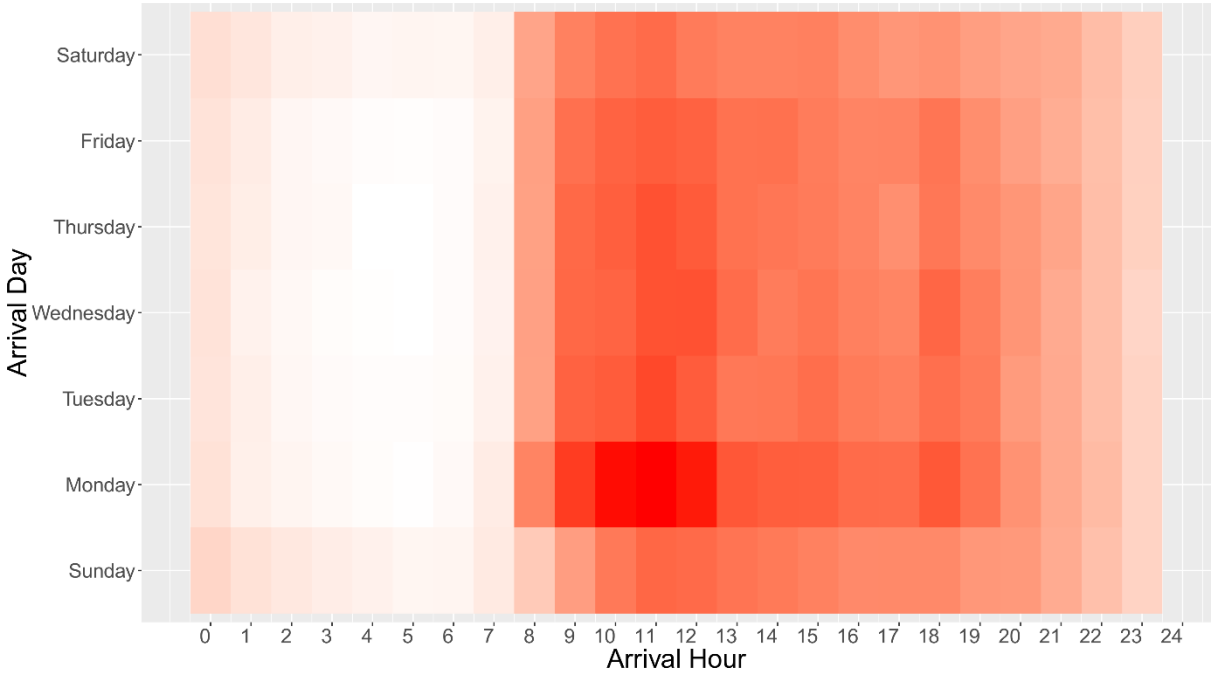


Fig 1.4: Heatmap of UHCW A&E attendance by day of the week and time, June 2014 – March 2016 (Source: UHCW)

Minor self-presenting A&E attendances[2]

Levels of and trends in minor self-presenting attendance

Between June 2014 and March 2016, 7.9% of UHCW A&E department attendees were classified as minor self-presenting. The monthly number of minor self-presenting A&E attendees is shown in **Figure 1.5**. The number of minor self-presenting A&E attendees averaged approximately 1,200 per month.

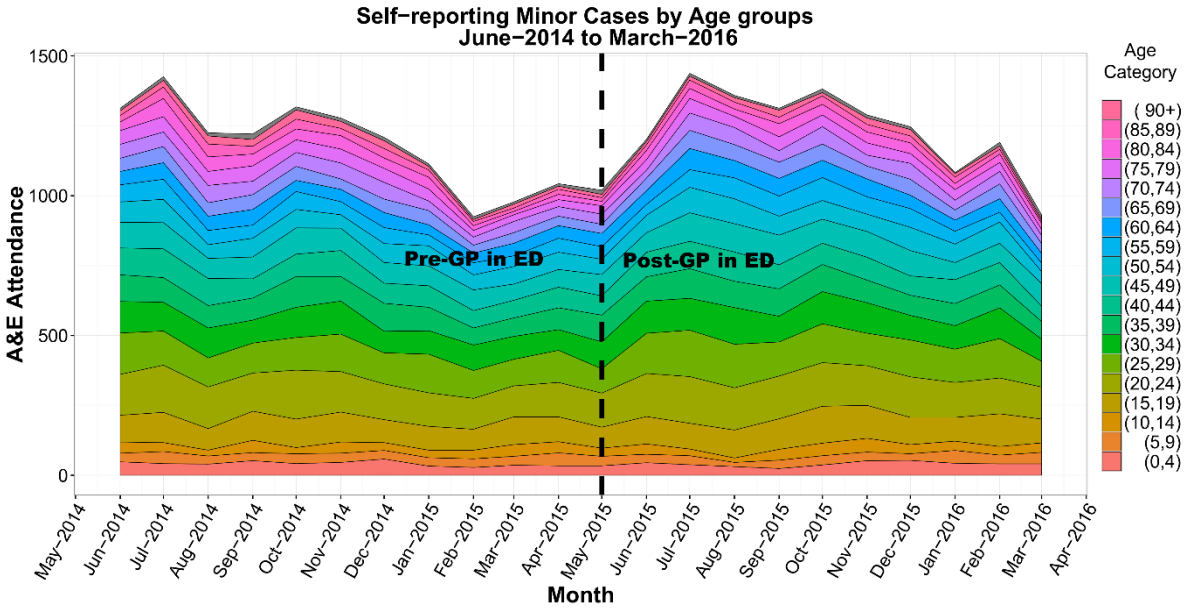


Fig 1.5: UHCW minor self-presenting A&E attendance, June 2014 – March 2016 (Source: UHCW)

Who attends A&E with minor self-presenting cases?

Figure 1.6 shows the percentage of minor self-presenting A&E attendees in each age group. There are clear trends in A&E attendance by age. Young adults aged 20-24 were most numerous presenters. Thereafter, the number of minor self-presenting A&E attendance declines among adults and elderly population.

[2] Defined using HRG code VB11Z - No investigation with no significant treatment.

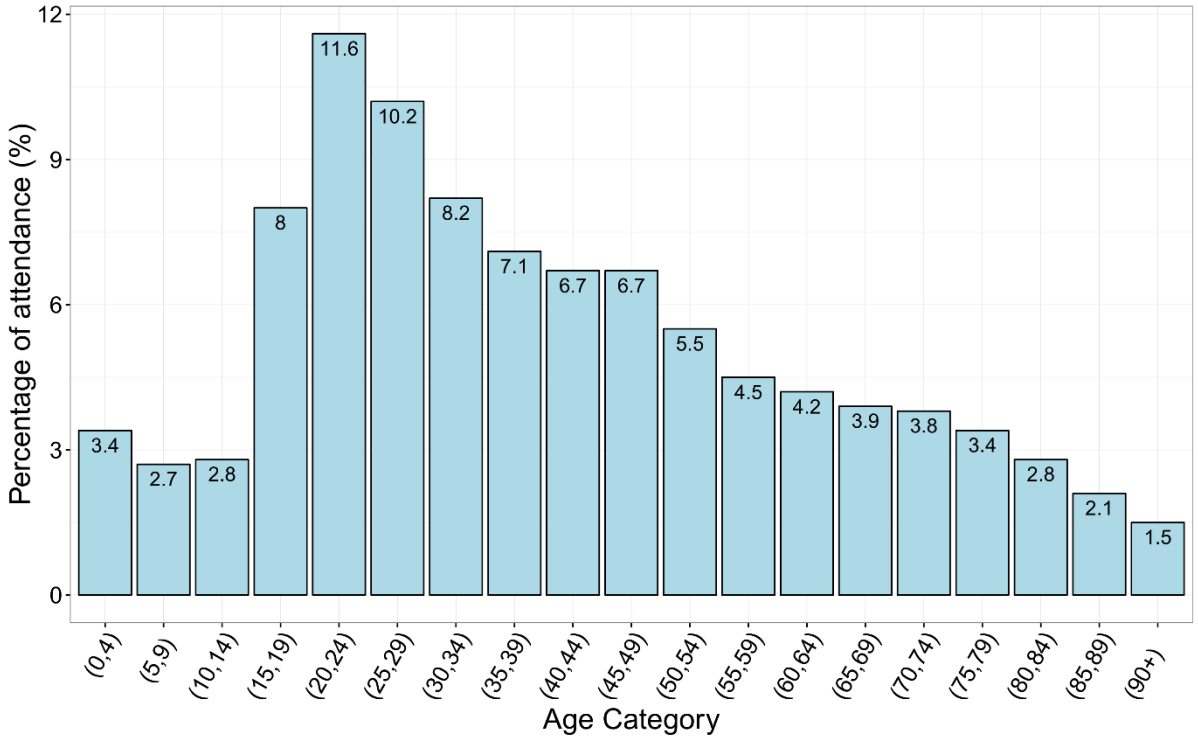


Fig 1.6: UHCW minor self-presenting A&E attendance by age group, June 2014 – March 2016 (Source: UHCW)

When do people attend A&E with minor self-presenting cases?

The pattern is similar to that of all attendances at A&E. In terms of days of the week, Monday is the busiest day at A&E. Period between 8am and 8pm appeared to be busiest hours. Mondays between 9am and 12noon and 5pm and 8pm are the busiest hours. Early hours of Monday to Friday are the quietest time.

The Four-Hour-Measure of A&E waiting times[3]

How long do patients spend in A&E?

Between June 2014 and March 2016, almost half of the patients were either discharged, admitted or transferred to another institution within two-hours after arrival in UHCW A&E and 14.9% of attendees spent more than 4 hours in UHCW A&E department (**Figure 1.7**).

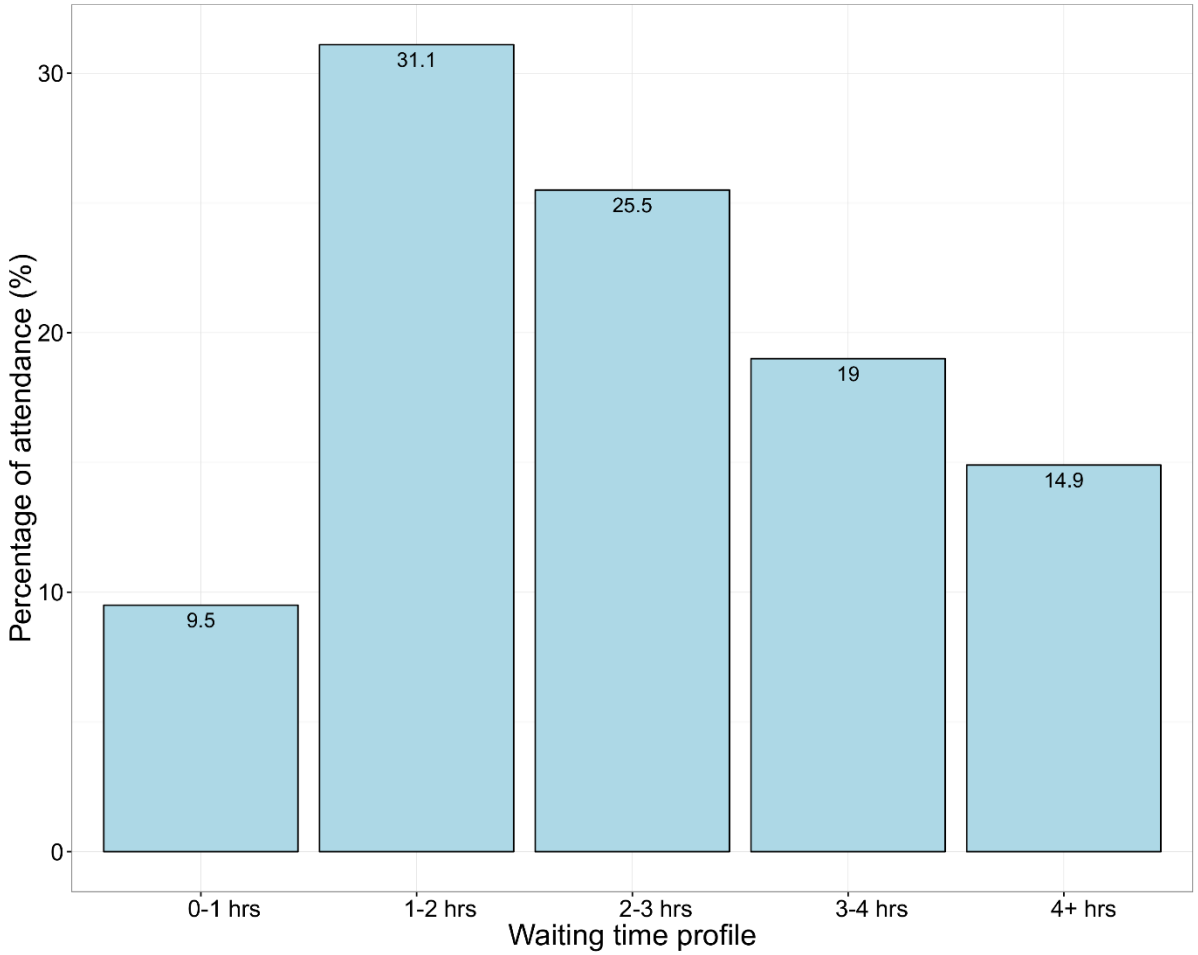


Fig 1.7: Waiting time profile in UHCW A&E department, June 2014 – March 2016 (Source: UHCW)

[3] The percentage of patients who spend less than four hours between their arrival at A&E and either their discharge, their admission to hospital, or their transfer to another institution.

Waiting time profile by age group

The age distribution of patients spending more than four hours in A& E is shown **in Figure 1.8**. Children and teenagers between 0 and 14 years old were less likely to have spent more than four hours in A&E, while patients aged between 20-24 years were most likely to have spent more than four hours.

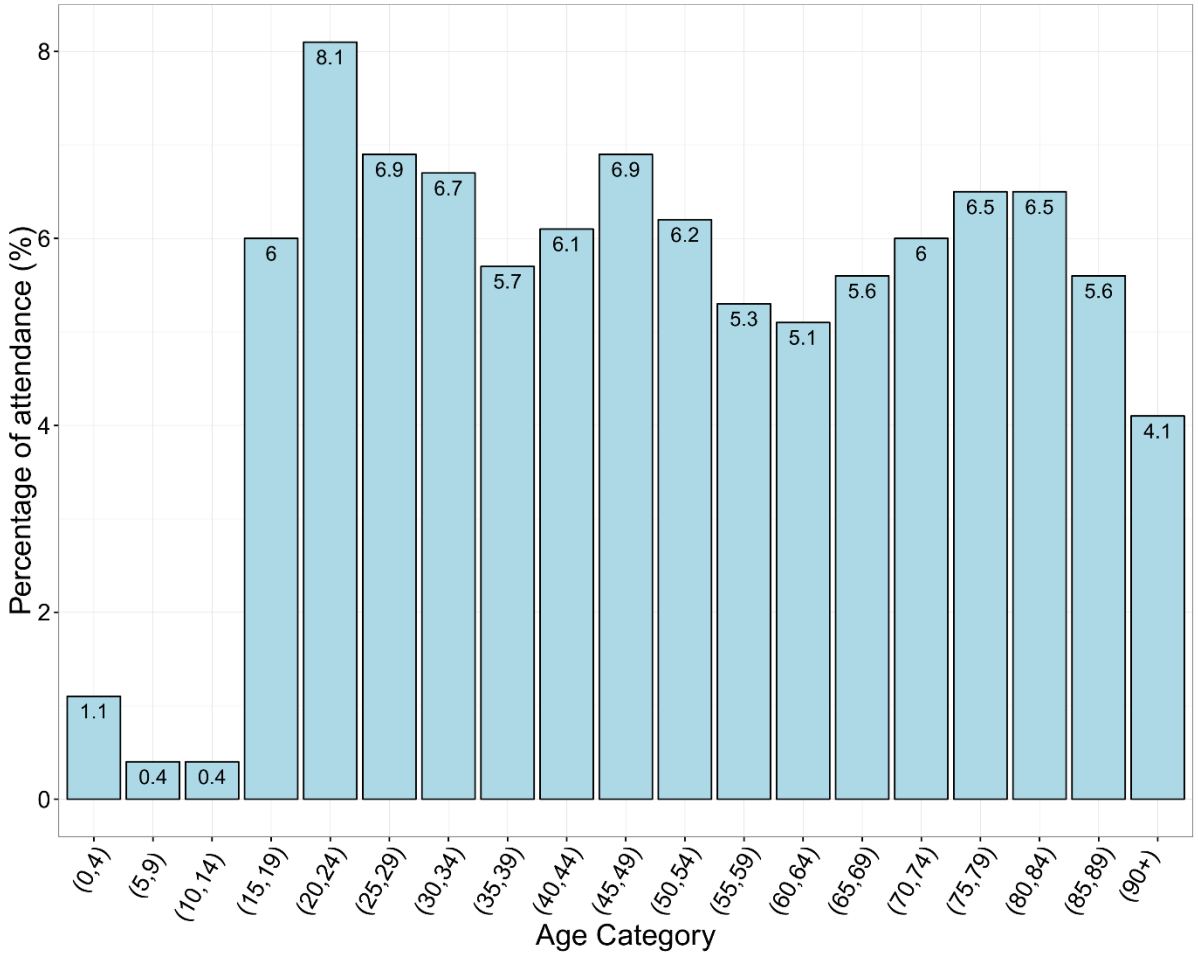


Fig 1.8: Percentage of patients spending over four hours in UHCW A&E department by age groups, June 2014 – March 2016 (Source: UHCW)

Waiting time profile by days of the week

Patients are more likely to spend more than four hours in A&E on Monday (19.6%), followed closely by Sunday (17.0%) and Tuesday (16.1%) (**Figure 1.9**).

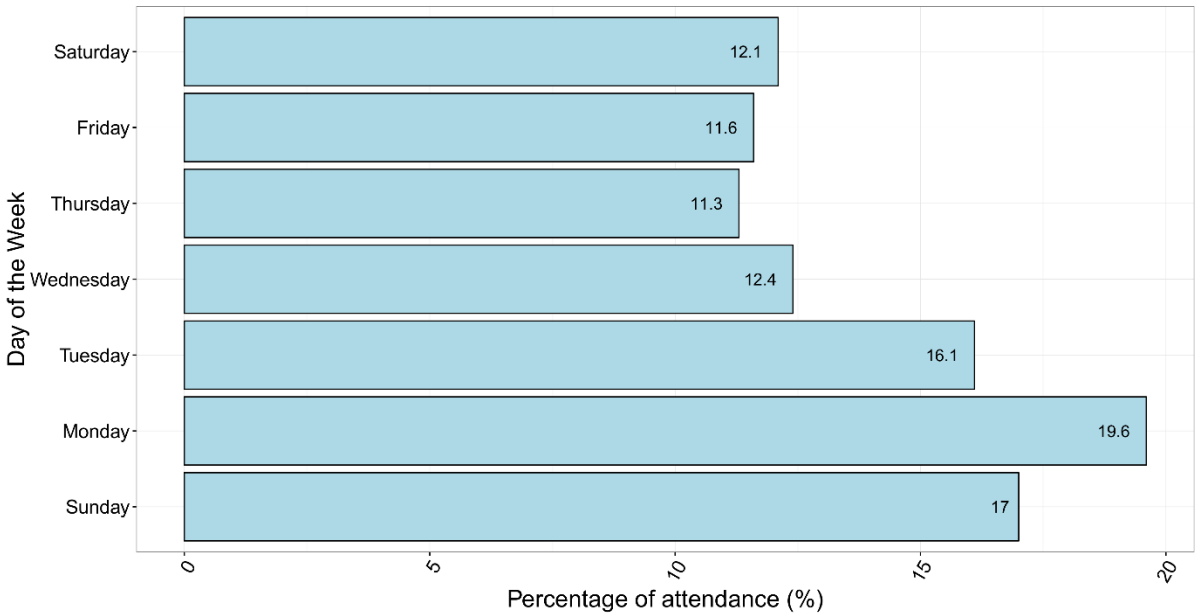


Fig 1.9: Percentage of patients spending over four hours in UHCW A&E department by day of the week, June 2014 – March 2016 (Source: UHCW)

Impact of GP in ED on wider A&E activities

Reduction in A&E attendances (seen by emergency physicians)

*As shown in **Figure 1.10**, between May 2015 and March 2016, GP in ED saw 6,458 patients, a 3.8% the expected 166, 791 A&E attendances at UHCW that occurred in the previous 11 months.*

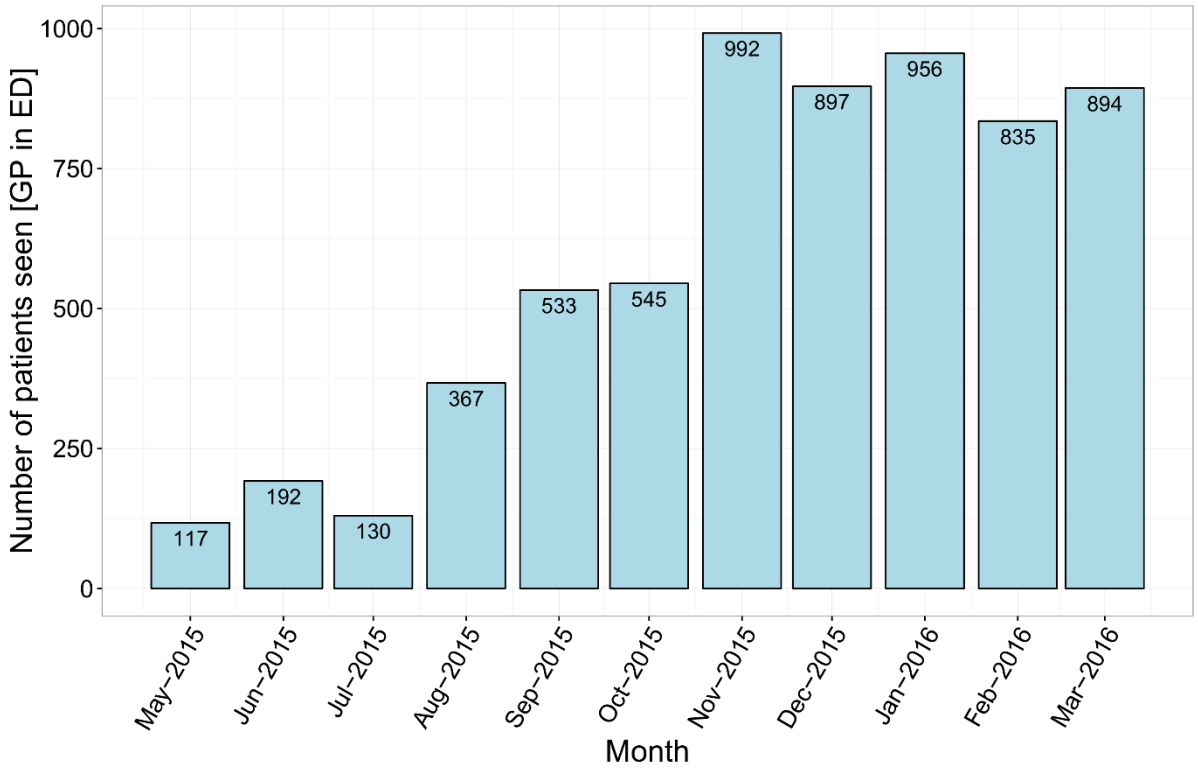


Figure 1.10 Monthly number of patients seen by GP in ED

Impact on A&E four-hour waiting time

Figure 1.11 *shows monthly data on the percentage of patients spending over 4 hours in A&E. The percentage of patients that spent four-plus hours showed a slight decreasing trend during the 11 months' period before GP in ED was introduced at a rate of -0.79% per month (95% CI -1.04% to -0.53%, p=0.012). After GP in ED had been implemented, the trend of change in percentage of patients that spent four-plus hours did not change significantly, +0.24 per month (95% CI -0.62% to +1.10%). This suggests that there is no evidence that GP in ED had discernible effects on the wider four hour waiting time profile.*

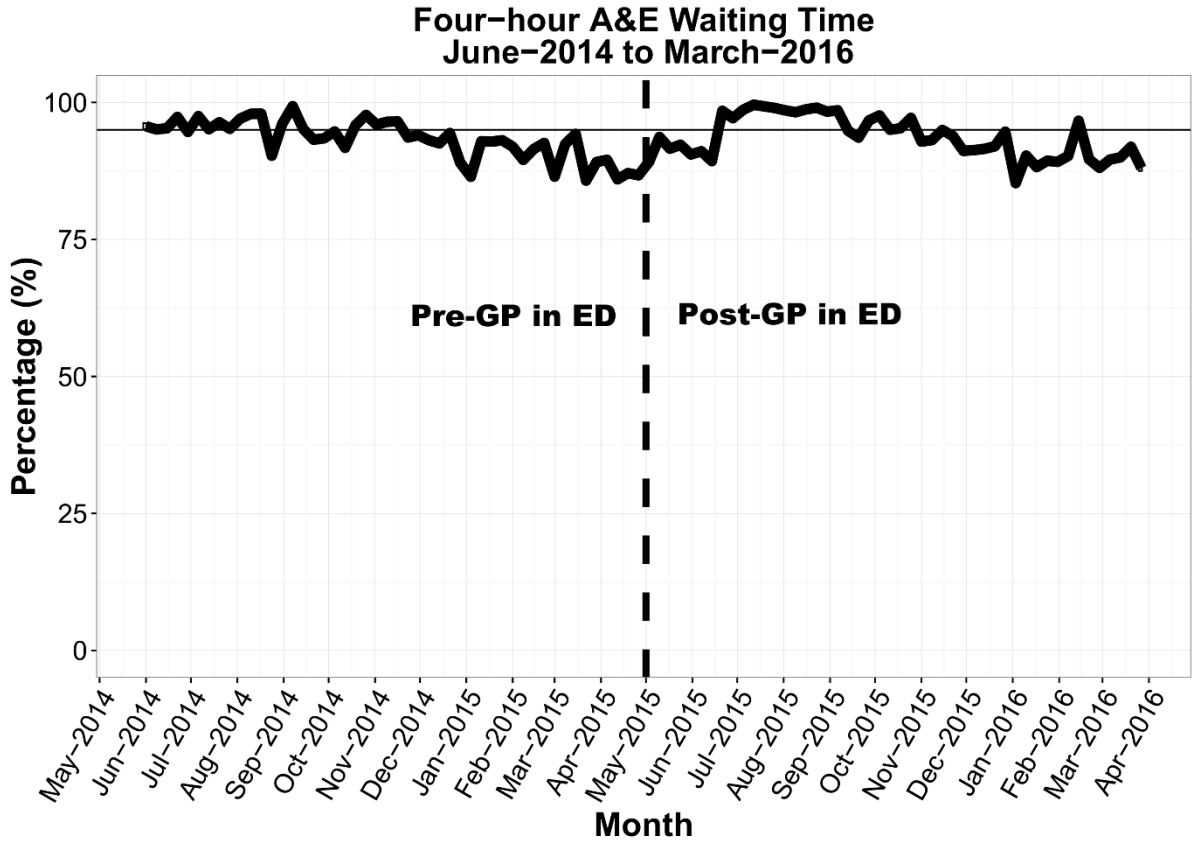


Fig 1.11: Percentage of patients spending four hours in UHCW A&E department, June 2014 – March 2016 (Source: UHCW)

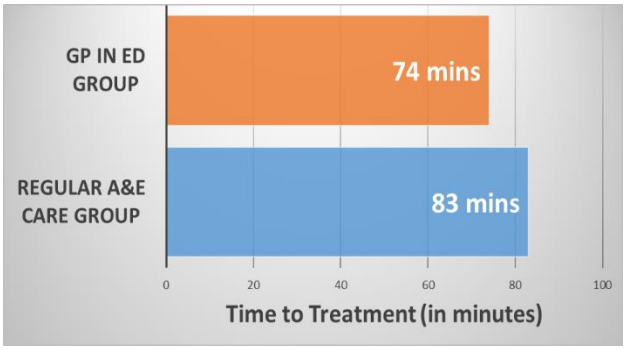
Impact of GP in ED on A&E clinical quality indicators

Time to treatment

Rationale: *Time from arrival to being seen by a decision making clinician (someone who can define the management plan and discharge the patient). The aim is to reduce the clinical risk and discomfort associated with the unnecessary time a patient spends in A&E.*

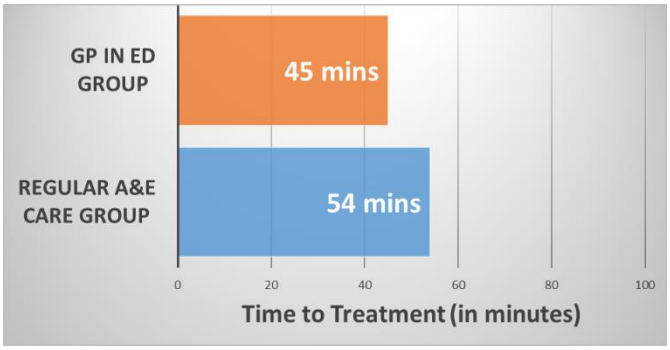
All patients

On average patients seen by GP in ED spent 9 minutes less in A&E before being seen by a doctor. Patients seen by GP in ED spent on average 74 min before being seen a doctor, while patients seen by an emergency physician spent 83 minutes.



Self-reported minor cases

On average non-urgent patients seen by GP in ED spent 9 minutes less in the emergency room before being seen by a doctor. Non-urgent patients seen by GP in ED spent on average 45 min before being seen a doctor, while patients seen by an emergency physician spent 54 minutes.



Total waiting time (in minutes)

Rationale: *The aim is to improve the timeliness and monitoring of care to ensure patients do not have excessive waits in A&E before being transferred, admitted or discharged. Longer lengths of stay in the emergency department are associated with poorer health outcomes and patient experience as well as transport delays, treatment delays, ambulance diversion and patients leaving without being seen.*

All patients

On average patients seen by GP in ED spent 21 minutes less in the A&E (from arrival to medical discharge). Patients seen by GP in ED spent on average 117 minutes from arrival to medical discharge, while patients seen by an emergency physician spent 138 minutes.

Self-reported minor cases

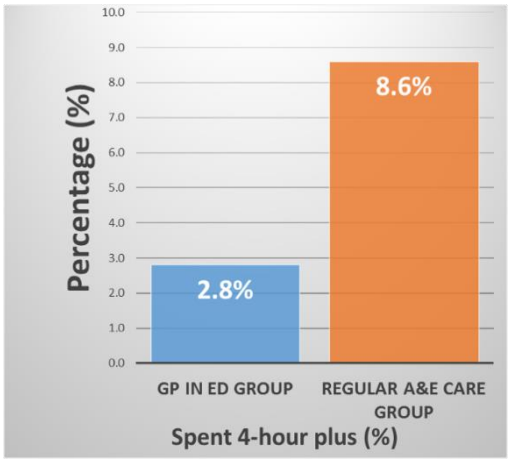
On average non-urgent patients seen by GP in ED spent 13 minutes less in the emergency room (from arrival to medical discharge). Non-urgent patients seen GP in ED spent on average 82 minutes from arrival to medical discharge, while non-urgent patients seen by an emergency physician spent 95 minutes.

Percentage who spent 4-hours plus

Rationale: *The aim is to improve the timeliness and monitoring of care to ensure patients do not have excessive waits in A&E before being transferred, admitted or discharged. Longer lengths of stay in the emergency department are associated with poorer health outcomes and patient experience as well as transport delays, treatment delays, ambulance diversion and patients leaving without being seen.*

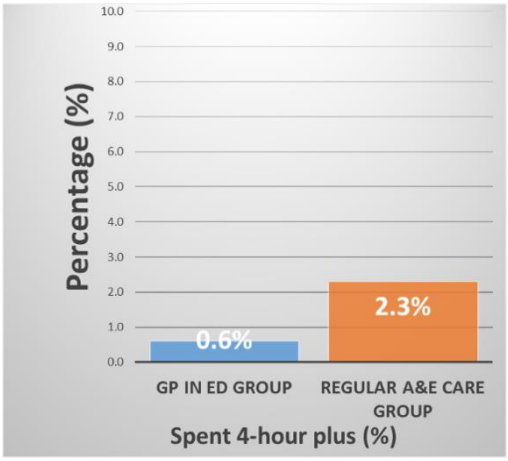
All patients

The proportion of patients that spent four hours plus in the A&E was statistically significantly lower for patients seen by the GP in ED (2.8 vs 8.6%, absolute rate difference = -5.8%). Among patients seen by an emergency physician almost one in ten spent more than four hours in A&E, compared with just 2.8% of those seen by GP in ED.



Self-reported minor cases

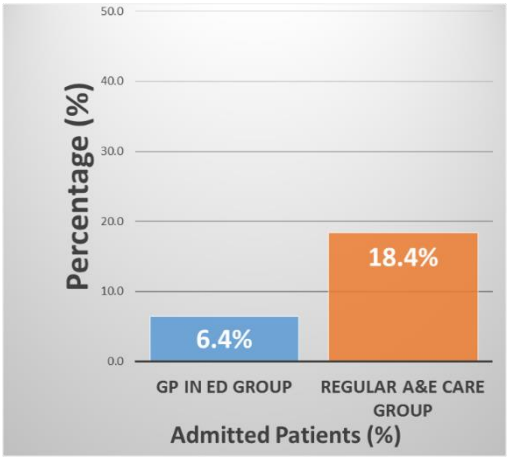
The proportion of patients that spent four hours plus in the A&E was statistically significantly lower in non-urgent patients seen in GP in ED (0.6% vs 2.3%, absolute rate difference = -1.7%). Among non-urgent patients seen by an emergency physician 2.3% spent more than four hours in A&E, compared with just 0.6% of those seen by GP in ED.



Admitted patients (%)

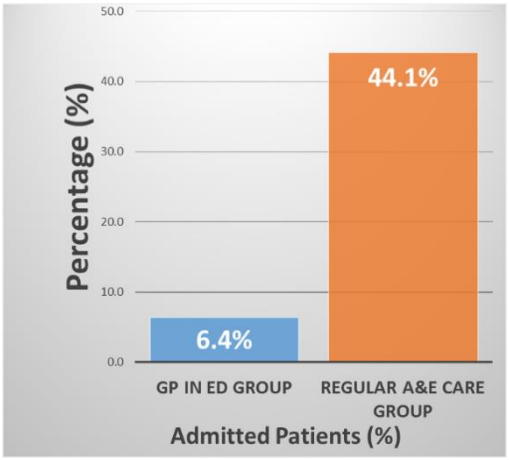
All patients

GP in ED admitted statistically significantly fewer patients compared with emergency physicians (6.4% vs 18.4%, absolute rate difference = -12.0%). Among patients seen by emergency physicians almost one in five were admitted (18.4%), compared with 6.4% of those seen by GP in ED.



Self-reported minor cases

GP in ED admitted statistically significantly fewer non-urgent patients compared with emergency physicians (6.4% vs 44.1%, absolute rate difference = -37.7%). Among non-urgent patients seen by emergency physicians almost half were admitted (44.1%), compared with 6.4% of those seen by GP in ED.

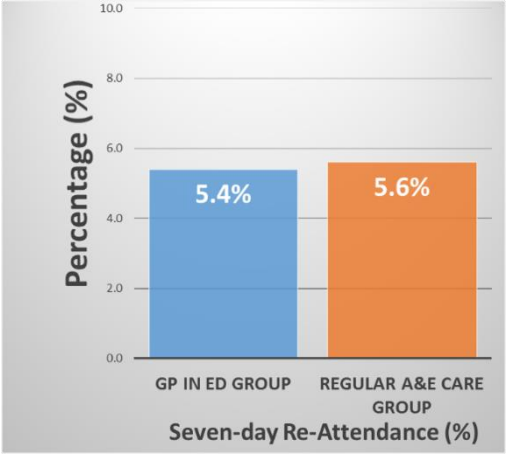


Seven-day re-attendance rate

Rationale: *The aim is to reduce avoidable re-attendances at A&E by improving the care and communication delivered during the first attendance. The optimum re-attendance rate is not zero. Patients may be expected to re-attend if their condition unavoidably worsens, or if they re-attend for unrelated conditions. Expert opinion suggests levels should be below 5% and levels less than 1% may reflect a risk averse approach to care*

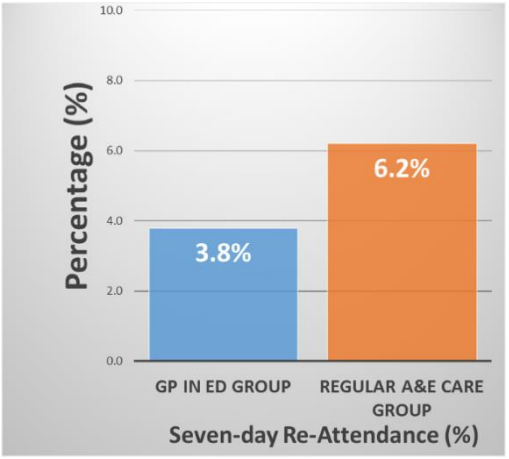
All patients

The rate of seven-day re-attendance was similar among those patients seen by GP in ED and emergency physicians (5.4% versus 5.6%). There was no statistically significant difference in the rates.



Self-reported minor cases

The rate of seven-day re-attendance was statistically significantly lower in non-urgent patients seen by GP in ED compared with emergency physicians (3.8 vs 6.2%, absolute rate difference = -2.4%). Non-urgent patients seen by emergency physicians were almost as twice as likely to re-attend A&E after seven days compared to those seen by GP in ED.



Summary of results:

We analysed data on 336, 945 attendances in A&E at UHCW between June 2014 and March 2016 (11 months before and 11 months after implementing GP in ED Scheme). No significant change was seen in attendance after introduction of the GP in ED. About 8.5% of attendees were in the 0-4 year age group with a spread across the other ages and approximately 30% in the 20-40 year age group. Attendances were relatively even throughout the week, although the highest attendances are on a Monday (~16%) and attendance on each day is greatest between 9-11am. Most people (>60%) were dealt with within 3 hours of attendance at A&E.

Compared with self-reporting minor cases seen by emergency physicians, on average patients seen by GP in ED:

- Spent statistically significant less time (9 minutes less) in the ED before being seen by a doctor;
- Spent statistically significant less time from arrival to medical discharge (13 minutes less);
- Are less likely to spend four plus hours in A&E (rate difference = -5%);
- Are less likely to be admitted (rate difference = -38%); and
- Are less likely to re-attend after seven days (rate difference = -2%).

Work Package 1 (Task 2) Geographic Information Systems Mapping & Analysis to Examine Service Utilization Patterns

Below we provide the plan that was followed for the GIS mapping and analysis.

Methodology

Data and information

Analysis conducted for the study relied on anonymized hospital activity data which were provided by UHCW's research office. Two years of data (April 1, 2014 through March 31, 2016) were furnished for the study. The data were first examined separately for both years, i.e., April 1, 2014-March 31, 2015 (seen as pre-GP in ED) while April 1, 2015-March 31, 2016 comprised the programme year. If trends were seen to be identical, a decision was made to use the two years as a single dataset. At the time of this analysis, no data were available from the EHH and PCFT schemes. Hence, the study on A&E activity data.

The variables in the dataset included:

(1) demographics;
(2) partial post codes of patients; and post codes of GP practices associated with attendances in the A&E;
(3) all date and time information pertaining to hospital visits which helped to inform A&E service demands;
(4) presenting signs and symptoms in the A&E;
(5) procedures and investigation conducted within the department's 4-hour operational target;
(6) all diagnoses received;
(7) patient disposition; and
(8) inpatient activity.

Ethics approval for the study was received by the University of Warwick Biomedical and Scientific Research Ethics Committee (protocol number REGO-2015-1678).

To understand the interface between primary and acute care, the GIS mapping and analysis was conducted using postcode data of general practices available in the dataset, supplemented with additional information culled from the NHS England website, along with partial post codes of patients provided by the hospital.

Sampling

As exclusion criteria, only data pertaining to the UHCW main hospital were employed for the analysis as the GPAF involved examining its schemes in the context of UHCW activity. Therefore, if a patient's first presentation was not to UHCW, these records were removed from the analysis. Table 1.1 provides the sampling selection of the data for the analysis.

Table 1.1: Sampling for the analysis

Initial sample size as shared by the hospital	362019
-Children's emergency department	69268
-Emergency department	205967
-Eye unit	30266
-Gynae short stay	10309
-Arrival site Rugby hospital	46209
Excluding Rugby hospital	315810
-Sampling after data clean up	315747
-Pre-GPAF	170169
-GPAF program year	145578

Plan of Analysis

The overall plan of analysis was to examine

(1) the context within which the GP in ED programme was offered and

(2) the performance of the programme in comparison to the overall UHCW A&E services.

At the population level, we wanted to understand the following:

(1) population distribution within the overall catchment area;

(2) location of facilities that provide primary care in the community;

(3) location of these facilities in relation to population density as it was important to gauge whether higher density which would then lead to understanding

(4) ratio of an area's population to healthcare providers.

Next, it was important to identify factors that contributed to the hospital's activities including areas which were associated with higher numbers of patient visits to the hospital. Other factors such as temporality, i.e., districts associated with various lengths of stays in the

department; difference in wait times for patients depending upon patient residence location; any geographical associations between the A&E quality indicators such as the 4 hour waiting or the 7-day re-attendance rates. These factors could provide further reflections regarding the availability of services in the community and their relation to demand in the A&E. From a patient characteristics' lens, we wanted to understand demographic factors, type of visit with respect to urgency level; and analysis that could provide insights about "hard to reach" groups.

Operational factors included:

(1) whether certain GP practices were contributing more to UHCW A&E visits and the location of these practices; and

(2) if there was any association between certain primary care practices with non-urgent attendances. We reorganised and interrogated the databases to answer these questions.

Results

Figure 1.12 shows the population density of the catchment area developed using the 2011 ONS census data. According to the ONS, the population of the area was 821,807 with darker regions representing higher densities. The areas delineated in red and green lines represent Coventry and Rugby. The map also shows the location of UHCW which houses the GP in ED initiative. Also, located close to the Rugby city centre is St. Cross Hospital which merged its A&E with the UHCW in 2001. St Cross houses a minor injuries and illness service and is a hub for Warwickshire's Primary Care Out of Hours provision. The majority of visits to UHCW are from Coventry, Rugby, Leamington, Nuneaton & Bedworth, and Stratford-upon-Avon. Table 1.2 provides more information about postcode-specific population counts. Results showed that five postcodes, CV6, CV3, CV2, CV10 and CV5, encompass the majority of the population in the region with the first three being most densely populated.

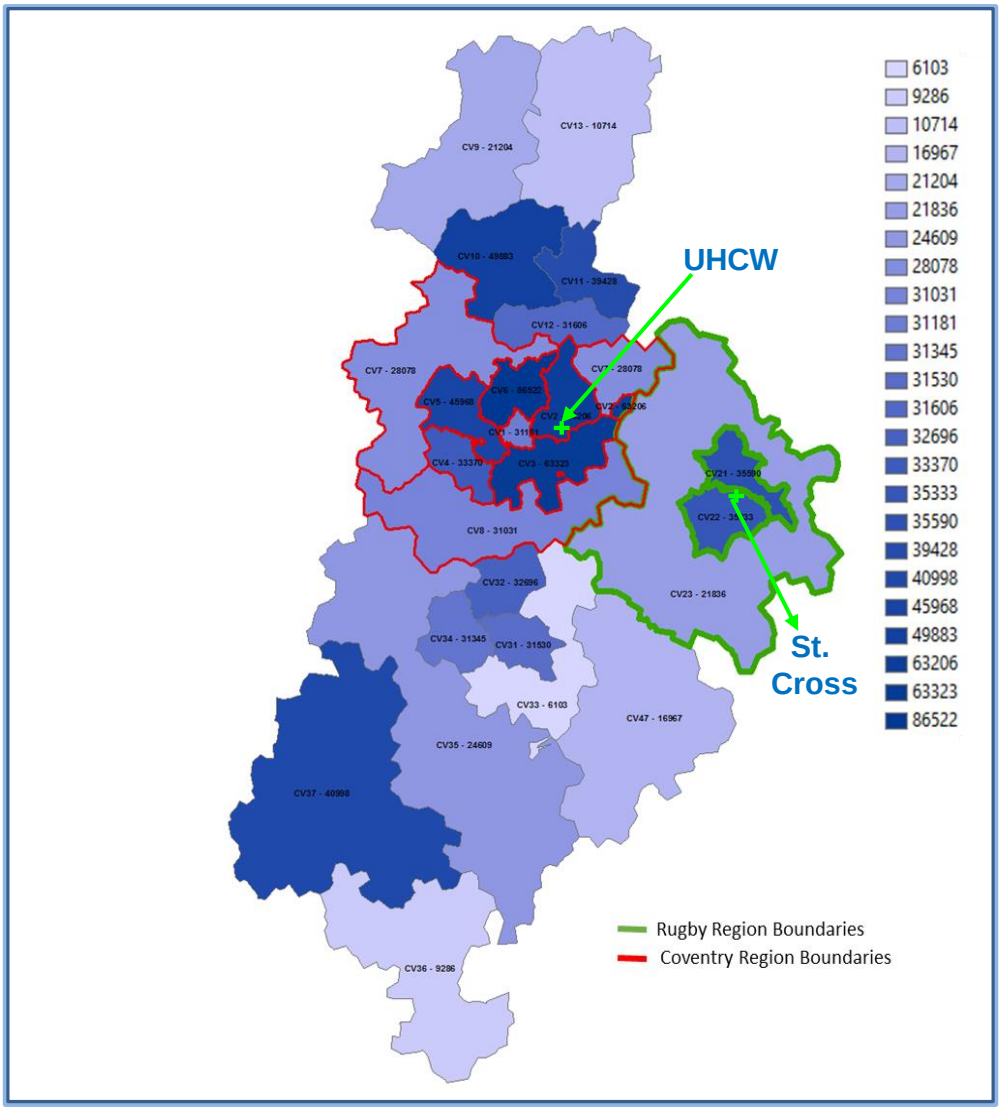


FIGURE 1.12: POPULATION DENSITY OF THE GPAF CATCHMENT AREA

TABLE 1.2: POPULATION OF CV POSTAL CODE AREA DISTRICTS

Post Code	Population	Post Code	Population	Post Code	Population	Post Code	Population
CV1	31,181	CV21	35,590	CV33	6,103	CV47	16,967
CV10	**49,883**	CV22	35,333	CV34	31,345	**CV5**	**45,968**
CV11	39,428	CV23	21,836	CV35	24,609	**CV6**	**86,522**
CV12	31,606	**CV3**	**63,323**	CV36	9,286	CV7	28,078
CV13	10,714	CV31	31,530	CV37	40,998	CV8	31,031
CV2	**63,206**	CV32	32,696	CV4	33,370	CV9	21,204
Total **821,807**							

Next, location of GP surgeries were mapped to gain insights about the distribution of primary care in the region. Figure 1.13 provides more details. Data culled from the NHS England's website indicated that

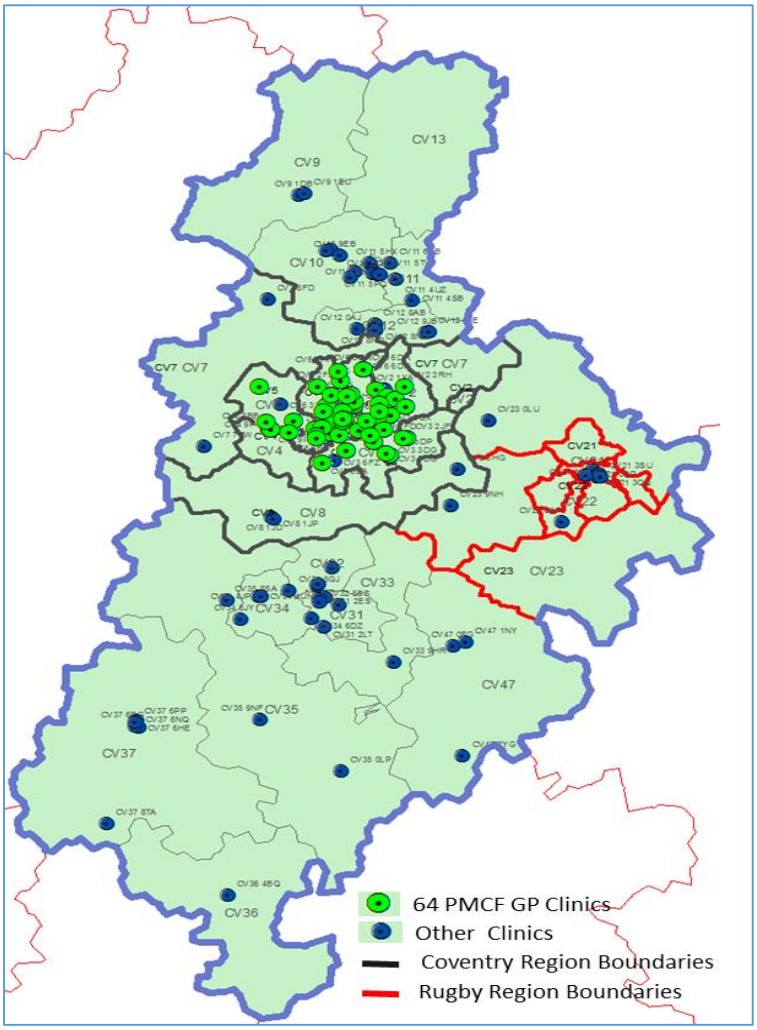


FIGURE 1.13: GENERAL PRACTICES IN CV POSTAL CODE AREA

998 individual GPs, associated with 130 practices, provide primary care in the area. Of these, 64 practices, represented by the green dots on the map, participate in the GP in ED initiatives. The map also shows uneven GP presence in certain geographic areas in that some had either very few or in some cases, no GP surgeries at all as was the case with postal codes CV13 and CV23 respectively.

Next, location and ratio of GP surgeries to population of a district were mapped by creating a composite variable which entailed dividing the district population by numbers of GP surgeries in the corresponding area. Figure 1.14 provides the resulting map which indicated that some districts have significantly higher population per GP surgery ratio. For instance, CV22 and CV7 regions showed a ratio of 35,333 and 14,039 underscoring a need for increased primary care providers in these areas. It is possible that a GP can have more than one address, the satellite office, but in this report GP are allocated to a single main location.

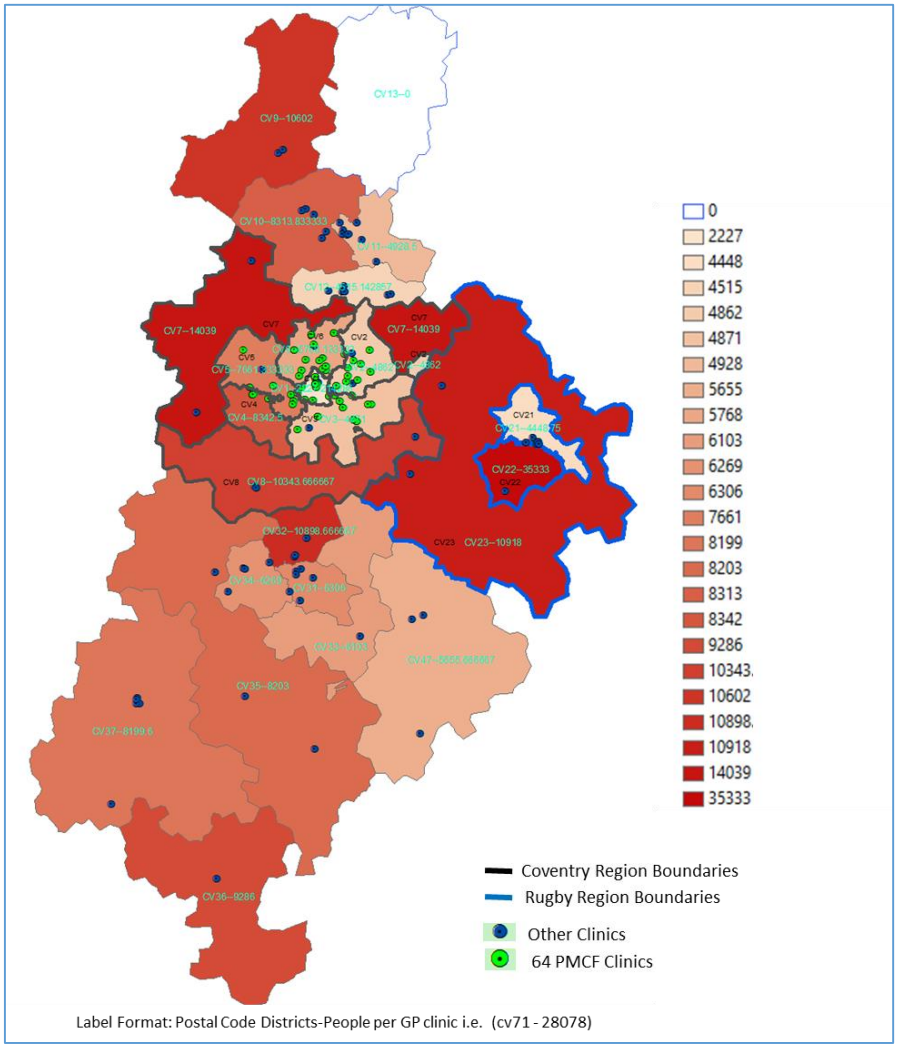


FIGURE 1.14: POPULATION TO GP CLINICS RATIO MAPPING

UHCW A&E Attendances

The CV post codes encompass a total of 133 **sectors**. In the dataset, patient postal codes are recorded as sectors; and mapping was conducted using sector based information. Figure 1.15 and accompanying Table 1.4 provide the results of the analysis. As depicted by the figure, certain post codes had contributed to higher numbers of visit to the hospital's A&E department, for example, CV6, CV2, CV3, CV5, CV1, CV4, CV21 and CV22. Focussing on the dark red regions on the map indicated high concentrations of patient visits to the UHCW from the Coventry and Rugby City Centres. Other similar regions included Atherstone, Nuneaton & Bedworth to the north; and Kenilworth, Leamington Spa and Southam in the south.

Examining location of GP clinics in relation to patient visits revealed that large numbers of patients from Rugby had sought care in the UHCW's A&E department, and it also had fewer primary care centres compared to Coventry.

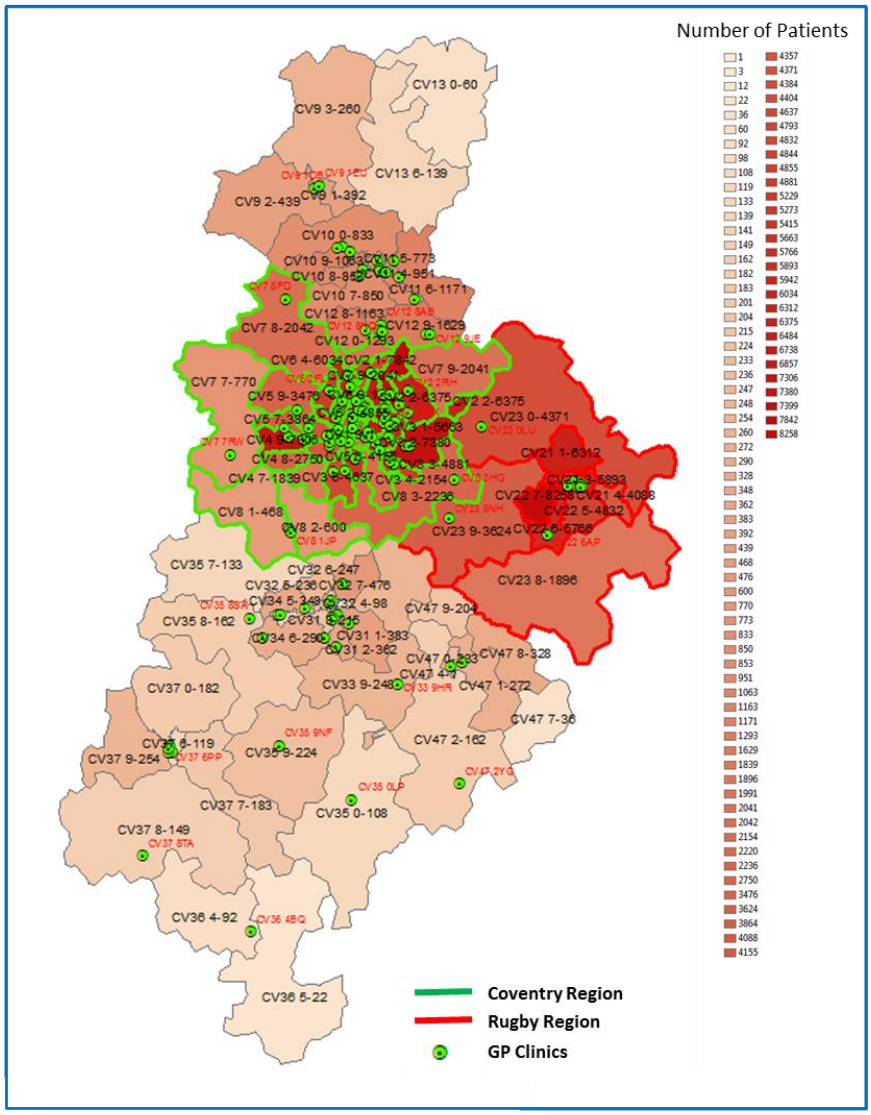


FIGURE 1.15: ATTENDANCES TO THE UHCW FROM SECTORS WITHIN THE CV POSTAL CODE AREA

Age distribution

The age distribution of patients in the sample were grouped into the following categories (in years): 0-15, 16-25, 26-44, 45-64 and 64+. Figure 1.16 provides the results. As seen from the maps, the location of younger age groups visiting the UHCW were generally concentrated around or close to the Coventry and Rugby City Centres. This was also the case with young adults, i.e., those within the 16-24 years age group. However, the distribution of the 45-64

years age group showed an interesting trend in that they were located in more suburban districts.

Examining patterns involving older patients indicated that many were located in regions farthest from the hospital. Furthermore, rural areas contributed to the hospital's A&E attendances evenly. Finally, there was no difference in the geographic distribution of age groupings between pre-GPAF and GPAF phases.

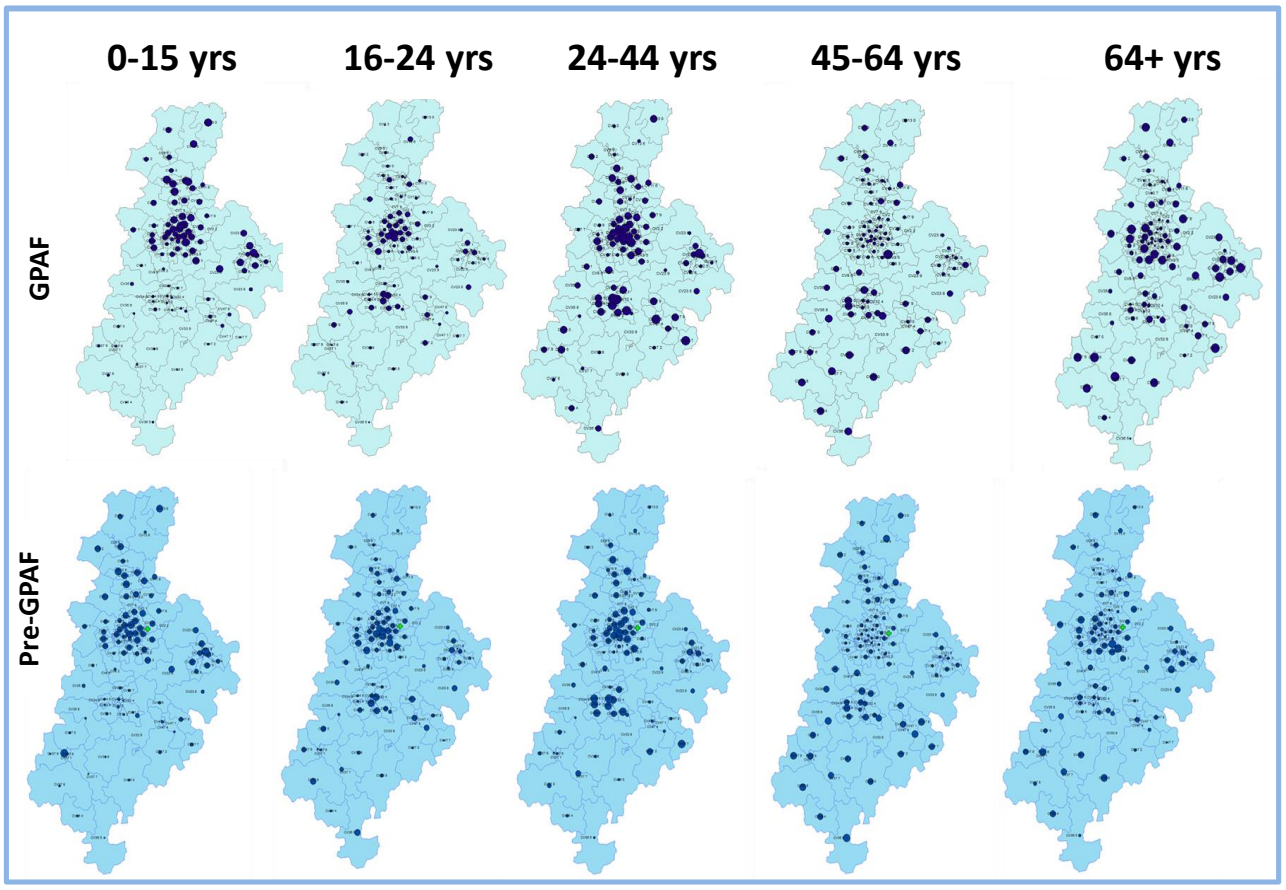


FIGURE 1.16: GEOGRAPHIC DISTRIBUTION OF AGE GROUPS OF UHCW A&E ATTENDEES

Race and ethnicity

The 15 race/ethnicities in the dataset were categorized into four groups: White, Black, Asian and Mixed. Figure 1.17 shows the results of this analysis. Three areas, indicated highly diverse patient populations. The city centres of Coventry, Rugby and Leamington Spa. Also, there was a slightly higher presence of Asian patients in the Leamington area.

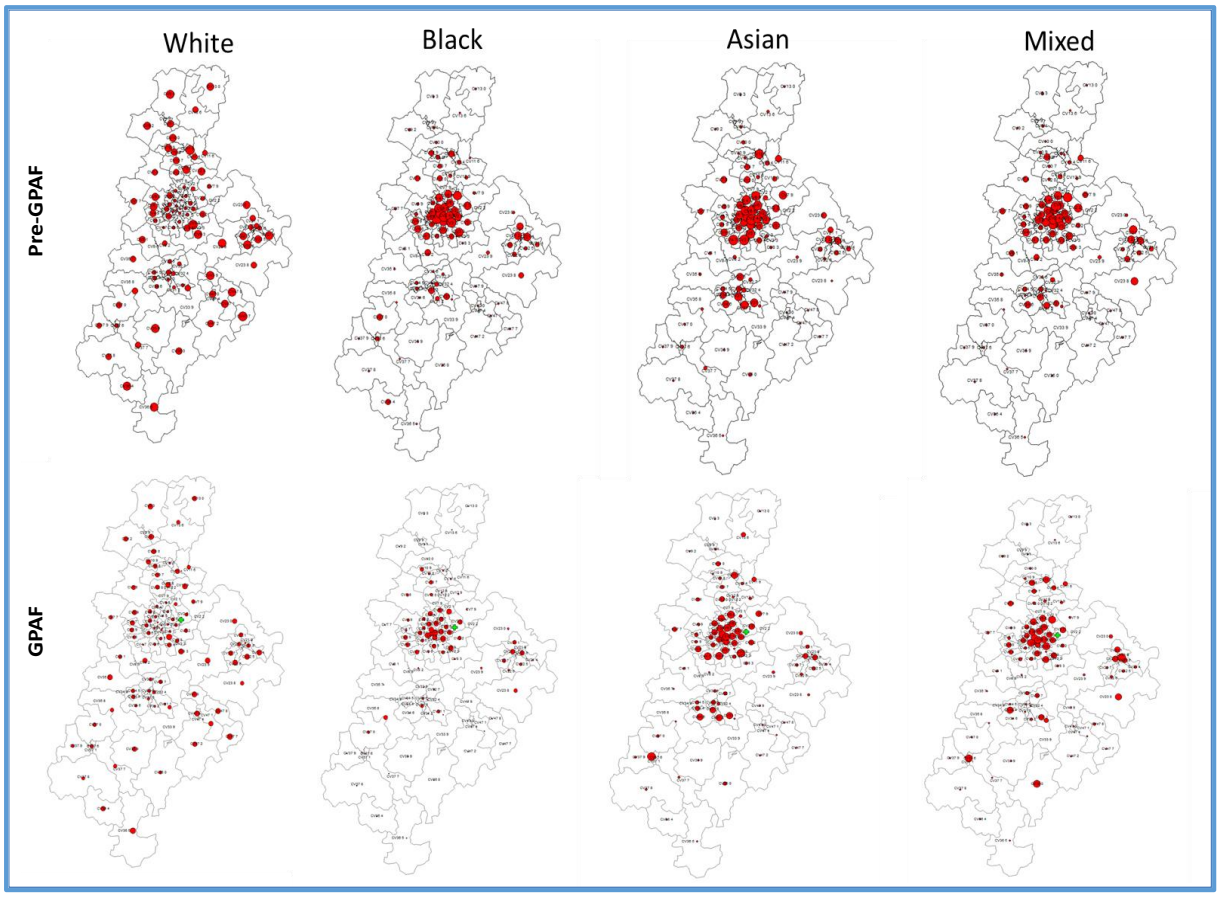


FIGURE 1.17 ETHNICITIES GROUP MAPPINGS FOR PRE-PMAF AND PMAF (NORMALIZED)

4-hour Key Performance Indicator (KPI) Breaches

An A&E department must assess, treat and discharge 95% of all patients within four hours of admission (Department of Health, 2000). Data on breaches pertaining to the UHCW's A&E 4-hour target were examined by district within the Coventry post code areas for both the pre-GP in ED and GP in ED phases to identify any differences between the two years. Results, presented in Table 1.3, indicated that the rate of breaching the target had remained similar for both years across the post codes and varied between 0% and just under 13%

Table 1.3: A&E 4-hour waiting time and patient visits to the UHCW from CV post codes

Postal Codes	Pre-GP in ED		GP in ED	
	Total Patients	%	Total Patients	%
CV1	10820	12.08%	9114	12.30%
CV10	2928	7.89%	2549	9.38%
CV11	2295	8.71%	2061	7.86%
CV12	3328	11.18%	2795	11.41%
CV13	149	6.04%	170	10.00%
CV2	27149	11.04%	22967	11.24%
CV21	7654	15.98%	6973	15.59%
CV22	7060	15.84%	6112	15.53%
CV23	4373	14.13%	3810	14.28%
CV3	24543	12.04%	20099	12.23%
CV30	1	0.00%	0	NA
CV31	733	8.46%	758	8.58%
CV32	827	9.55%	749	8.28%
CV33	171	9.94%	161	9.32%
CV34	615	8.46%	538	8.55%
CV35	491	9.57%	404	8.42%
CV36	84	10.71%	107	12.15%
CV37	695	9.78%	622	8.04%
CV4	9754	12.34%	7902	12.83%
CV47	597	10.89%	484	8.47%
CV5	12864	12.69%	10756	13.22%
CV6	32586	11.95%	27910	11.82%
CV7	3910	12.69%	3431	13.09%
CV8	2361	12.16%	2013	11.18%
CV9	868	9.33%	771	8.17%
Grand Total	156856	12.13%	133256	12.21%

Next, GIS maps were generated to understand the relation between the 4-hour indicator and their post code association. Figure 1.18 maps the 4-hour breaches in the regions with respect to total number of breaches and also post normalization. As seen from the maps, a majority of the breaches were associated with patients residing in the Coventry city centre. Reviewing the normalized maps indicated that large numbers of patients visiting the UHCW from Rugby also saw A&E length of stay exceeding the 4-hour target. Furthermore, patient visits originating from certain post codes such as CV21, CV22 and CV23, all associated with Rugby, had a higher rate of 4 hour breaches.

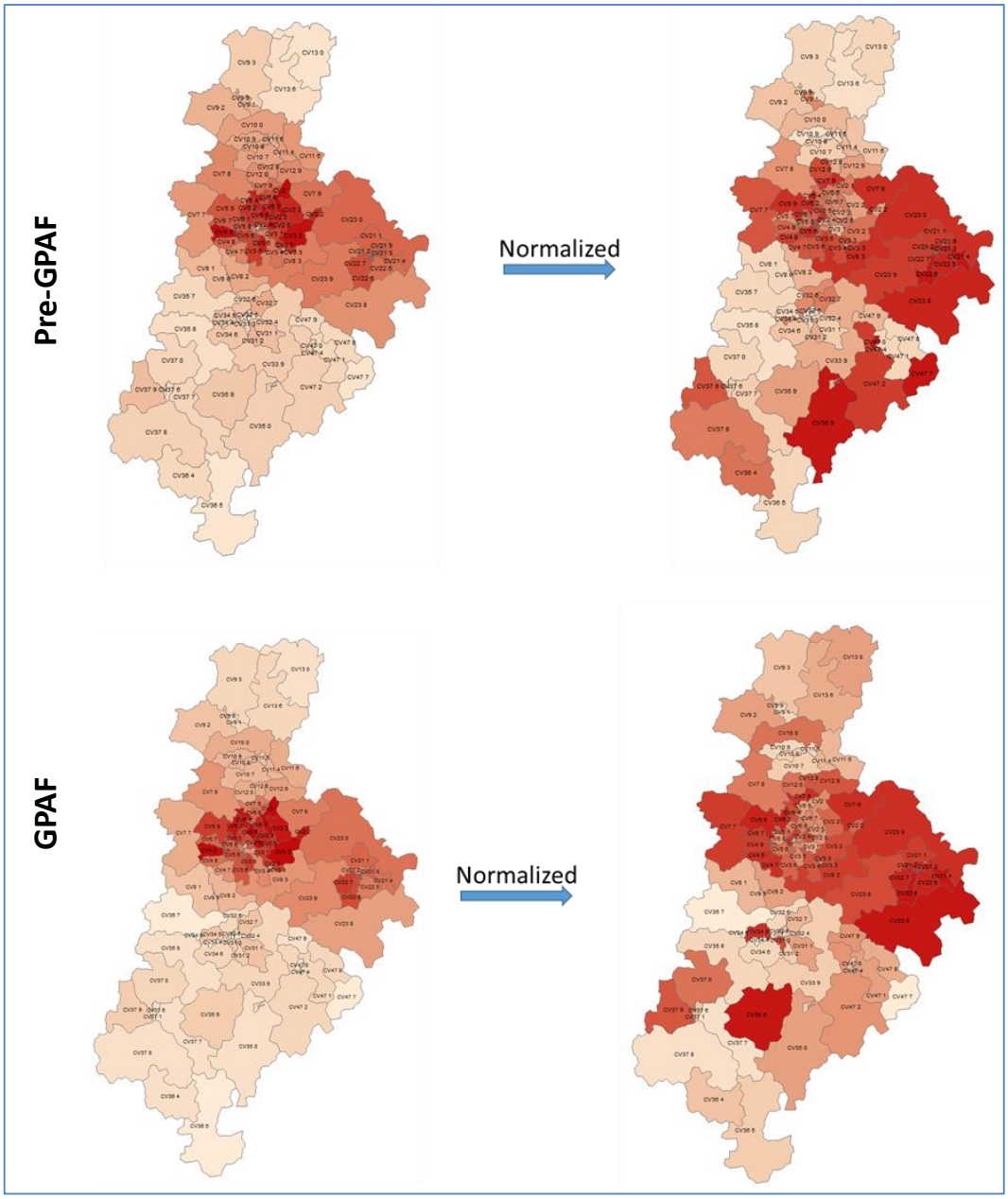


FIGURE 1.18: UHCW A&E 4 HOUR WAITING TIME BREACHES (NORMALIZED)

We would not necessarily expect four hour wait time breaches or re-attendances to vary by post-code. However, a four-hour wait may be associated with the use of the hospital for minor conditions. Living close to the hospital certainly seems to be associated with a greater likelihood of more waits lasting more than four hours.

7-days Unplanned Re-attendances

Next, 7-days unplanned re-attendances were mapped for each district within the Coventry post codes. Figure 1.19 gives the results of this analysis.

With regards to re-attendance, UHCW experienced high rates of re-attendances, i.e., 8.53% and 8.76% (target 1-5%), for both the pre-GPAF and GPAF phases. Figure 1.19 shows that with the exception of CV36, which saw very few patients visiting UHCW, all districts contributed to the higher than expected 7-day re-attendance rates. However, some districts made a bigger contribution to breaches of the 7-day indicator, for example, CV1, CV33 and CV35 comprised more than 9% of re-attendances.

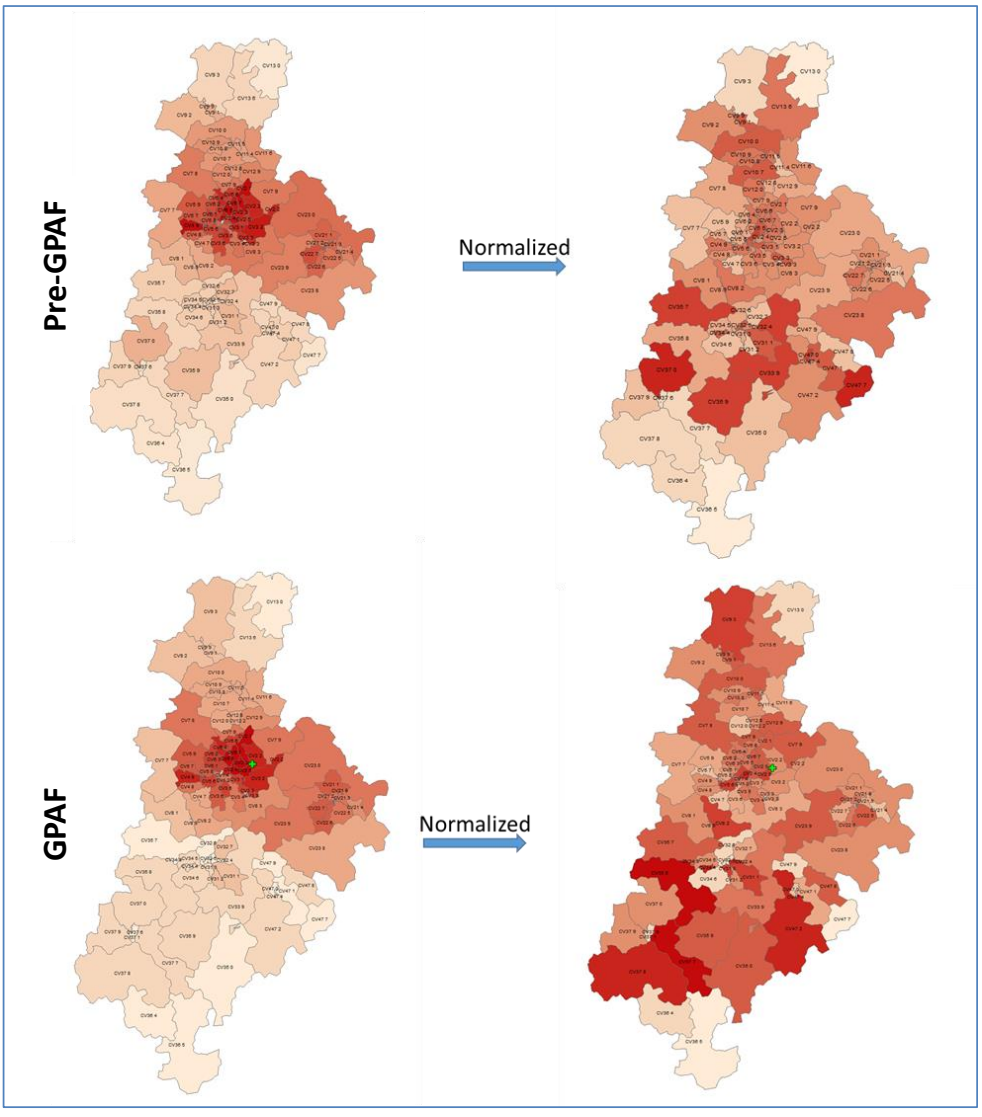


FIGURE 1.19: UHCW A&E 7-DAY RE-ATTENDANCE RATE (NORMALIZED)

The GP in ED Scheme

At the time of this report, a total of 6400 patients had used the scheme (see Table 1.6). Next, Table 1.4 provides the age groups of those who were treated by the GP in ED scheme. As shown in the table, the overwhelming majority of patients seen by the initiative were adults. This is perhaps expected since the programme is located within the adult ED area. Also, more young adults, i.e., those between the age ranges of 16-44 years were treated by GP in ED physicians.

Table 1.4: Age groups of patients treated by the GP in ED scheme at the UHCW

Age (in years)	**UHCW Total A&E Patients**		**GP in ED Participants**	
	Number of patients (145578)	(%)	Number of patients (6400)	(%)
0-15	32721	22.5	401	6.3
16-24	18858	13.0	1389	21.7
25-44	35901	24.7	2569	40.1
45-64	26836	18.4	1370	21.4
64+	31262	21.5	671	10.5

Table 1.5 provides information regarding the race/ethnicity of patients who had used the scheme's services. About a third of the patients treated by the programme were non-Whites with Asian patients forming the largest minority cohort. There were minimal differences by ethnicity.

Table 1.5: Race/ethnicity of patients treated by the GP in ED scheme at the UHCW

Ethnicity	**UHCW Total A&E Patients**		**GP in ED Participants**	
	Number of patients (110363)	(%)	Number of patients (6400)	(%)
Asians	14578	10.0	776	12.1
Blacks	5445	3.7	331	5.2
Mixed	3214	2.2	131	2.1
Not known	4564	3.1	250	3.9
Other	7414	5.1	592	9.3
Whites	110363	75.8	4320	67.5

Lastly, the GP in ED scheme saw more female patients consult compared to males. The difference was about 8%. This trend is somewhat different to the overall UHCW cohort treated by the A&E department which indicates equal distribution of males and females. Figure 1.20 shows the locations of patients who were served by the GP in ED scheme. Table 1.6 accompanies the figure.

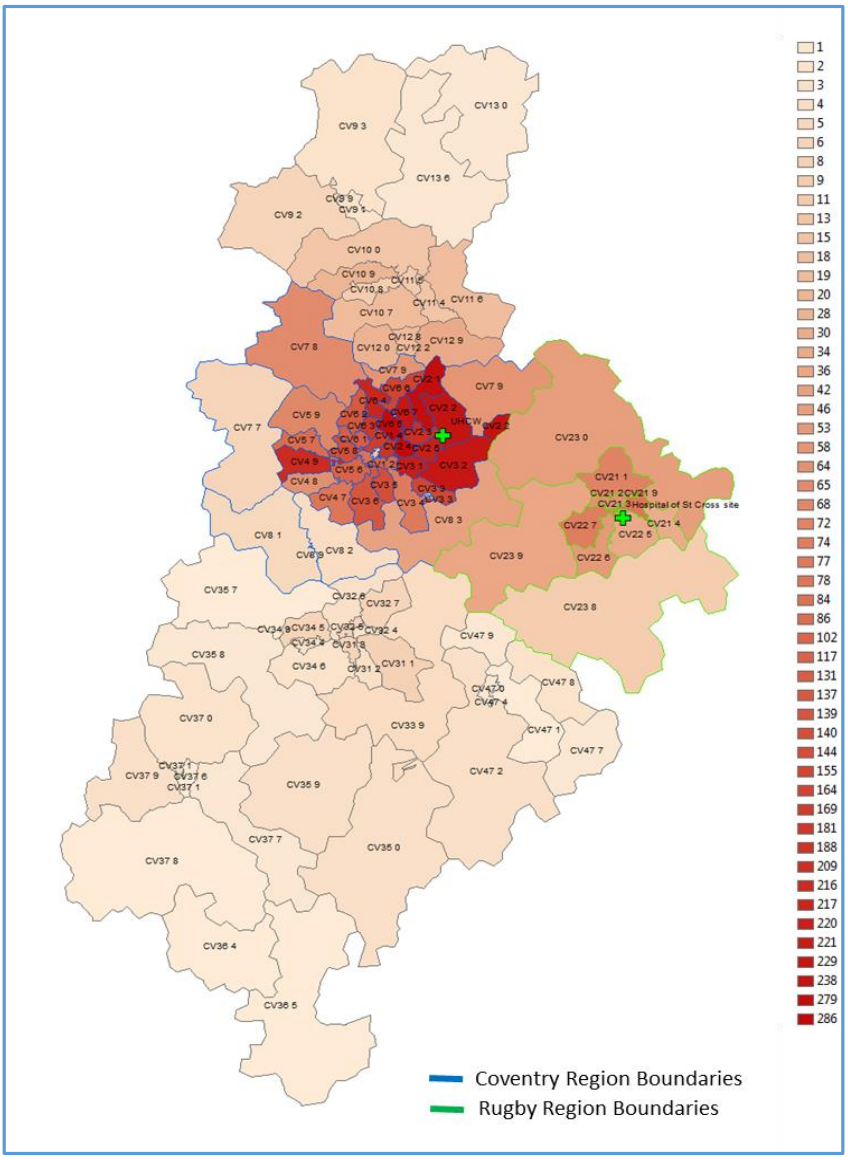


Figure 1.20: Location of patients treated by with GP in ED scheme

Table 1.6: Location of patients treated by the GP in ED scheme at the UHCW

Total CV Patients	**UHCW Total A&E Patients**		**GP in ED Participants**	
	Number of patients (133256)	(%)	Number of patients (5812*)	(%)
CV1	9114	6.8	558	8.7
CV10	2549	1.9	61	1.0
CV11	2061	1.6	42	0.7
CV12	2795	2.1	81	1.3
CV13	170	0.1	2	0.0
CV2	22967	17.2	1232	19.3
CV21	6973	5.2	244	3.8
CV22	6112	4.6	161	2.5
CV23	3810	2.9	91	1.4
CV3	20099	15.1	965	15.1
CV30		0.0	0	0.0
CV31	758	0.6	17	0.3
CV32	749	0.6	17	0.3
CV33	161	0.1	4	0.1
CV34	538	0.4	11	0.2
CV35	404	0.3	7	0.2
CV36	107	0.1	0	0.0
CV37	622	0.5	6	0.1
CV4	7902	5.9	358	5.6
CV47	484	0.4	8	0.1
CV5	10756	8.1	412	6.4
CV6	27910	20.9	1345	21.0
CV7	3431	2.6	129	2.0
CV8	2013	1.5	51	0.8
CV9	771	0.6	10	0.2

*Other areas (non-CV post codes): 588 patients (9.19%)

Compared to the UHCW total A&E patient's attendance distributions, patients post codes are fairly similar (Figure 1.20). Table 1.7 shows that very few patients treated by the GP in ED scheme were admitted to the hospital. In addition, an overwhelming majority of patients, 42.9% (n=2747), discharged by GP in ED staff did not need additional follow-ups.

About a third of patients (28.9%) seen by the programme, were discharged directly from the A&E with some follow up care required.

Table 1.7: Patient disposal categories of patients treated by the GP in ED programme

Disposal Category	Number of Patients (n=6400)	%
Admitted	446	7.0
Discharged-follow up required	1848	28.9
Discharged-no follow up required	2747	42.9
Left	157	2.5
Other	19	0.3
Referred	1183	18.5

Further analysis was then conducted to examine the performance of the GPED scheme in relation to a set of key quality mandates that hospitals must report on a quarterly basis. These were average patient length of stay in the department; average time spent by patients before being seen by a clinician; A&E 4-hour waiting time target, and 7-day re-attendance rate. These indicators were then compared with the hospital's performance with respect to the non-GP in ED patient group. The results are shown in Table 13. On average, GP in ED patients had experienced shorter length of stay in the A&E compared to the general cohort. Moreover, GP in ED patients were seen by a clinicians earlier in their their care journeys. With regards to the 4-hour target, about 3.69% of patients in the scheme had exceeded the mandate. By contrast around 12.2% of the general A&E cohort had seen their A&E waiting times exceed the 4-hour limit. The rate of re-attendances was seen to be similar across the two cohorts. Earlier comparisons between the two cohorts had also indicated that proportionally, fewer GP in ED patients were admitted to the hospital compared to their overall A&E peer group.

Table 13: Patient disposal categories of patients treated by the GP-in-ED programme

Quality indicators	**UHCW (n=133256)**	**%**	**GP-in-ED patients (n=6400)**	**%**
Average Length of stay (min)	162.6	--	120.2	--
Average Time to Seen(min)	80.6	--	74.2	--
4 Hour KPI Breaches	16277	12.2	236	3.7
7 Days KPI Breaches	8404	6.3	435	6.8

Non-Urgent Attendances

This part of the study defined non-urgent attendances as unplanned visits to the hospital that appeared as:

(i) either “self-referrals” or referrals made by “family or friends;”

(ii) associated with HRG codes that signified minor presentations (VB08Z, VB09Z and VB11Z) (NHS, 2016); and

(iii) disposition denoting that patient was discharged from A&E with either (a) no follow up needed; or (b) GP follow-up needed.

This resulted in a population of 77,729 attendances across the two years comprising the study period. GIS mapping was carried out to see if there was a relation between patients presenting with non-urgent attendances and their location.

Certain areas contributed significantly higher proportions of such visits for example, CV2, CV3 and CV6. In total, these three districts contributed over 61% of non-urgent visits to the UHCW’s A&E. Non-urgent visits are mapped in Figure 1.21.

Further analysis of the data revealed that 10 sectors out of 96 CV post code areas contributed 38.06% (n=29586) of non-urgent visits to the A&E department (see Table 1.8).

Mapping the ten sectors (Table 1.8) revealed that all of these ten sectors were within 3.2 miles radius of the UHCW, as shown in Figure 1.22. This suggests that the decision to visit the A&E department or a primary care service is highly dependent on the location of patients. Results from the study suggests that if a patient with minor condition resides near UHCW then patient might opt to go A&E department instead of GP clinic.

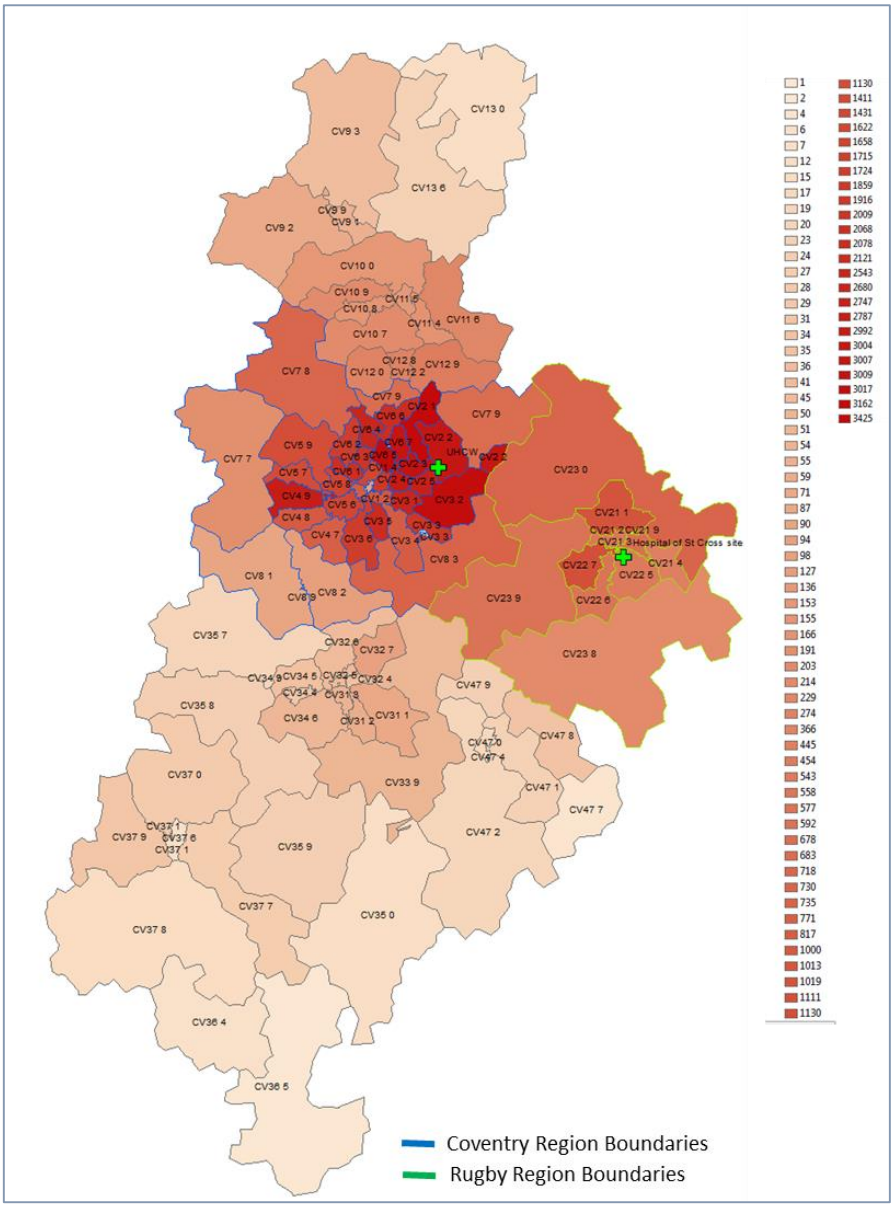


FIGURE 1.21: AVOIDABLE A&E ATTENDANCES FOR POSTAL CODE DISTRICTS FOR CV AREA

TABLE 1.8: THE TOP TEN SECTORS IN THE CV POST CODES ASSOCIATED WITH NON-URGENT VISITS TO THE UHCW A&E

Postal Code	Number Of Patients	Postal Code	Number Of Patients
CV2 1	3425	CV2 2	3004
CV6 5	3162	CV2 4	2992
CV3 2	3017	CV2 5	2747
CV2 3	3009	CV3 1	2680
CV6 7	3007	CV6 4	2543
Total	**29586**		

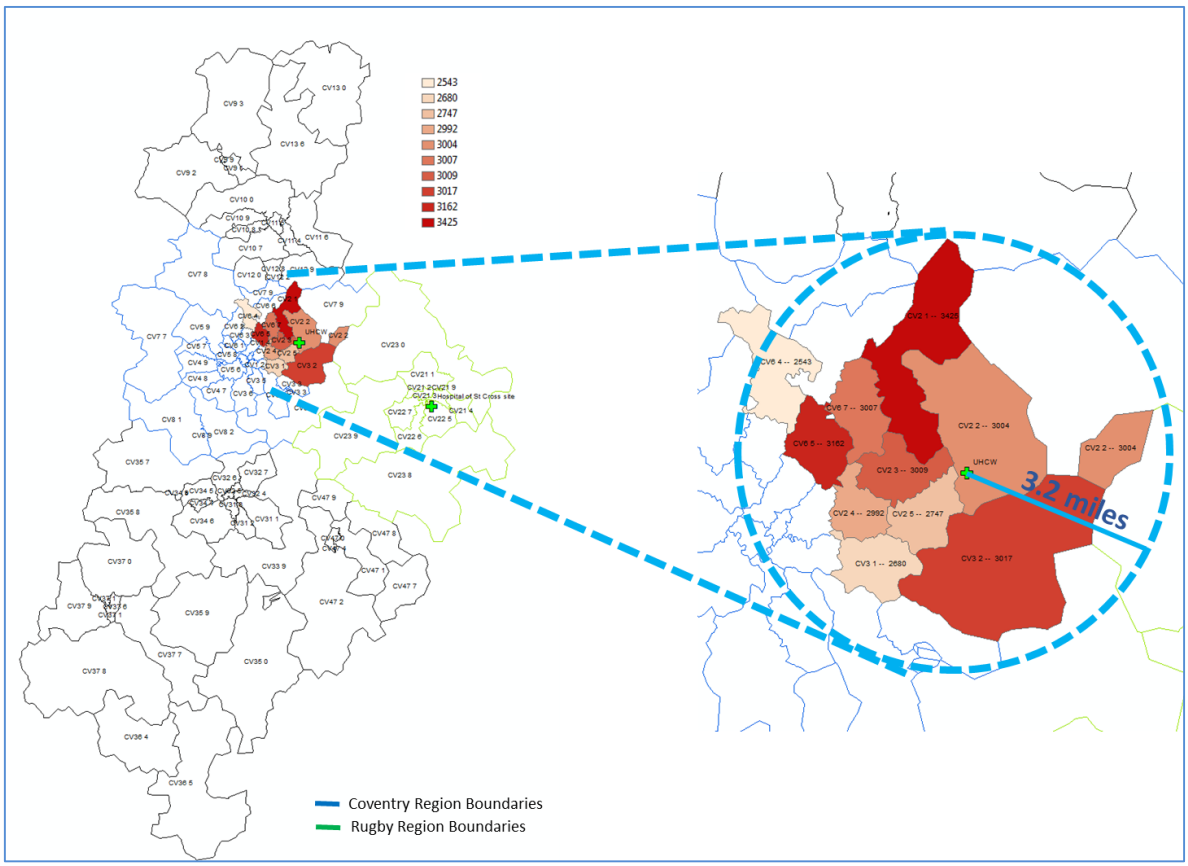


FIGURE 1.22: TOP 10 SECTORS CONTRIBUTING TO MINOR PRESENTATIONS IN THE UHCW A&E DEPARTMENT

Summary of results from GIS Mapping and Analysis:

Task-2 of this work package used two years of UHCW activity data to carry out Geographic Information Systems (GIS) mapping and analysis for understanding patterns of service utilization among patients treated by the GP-in-ED scheme. Two sub-tasks were conducted to carry out the GIS mapping: (a) a baseline analysis of UHCW A&E department data; and (b) mapping study.

Results from the unadjusted data analysis sub-tasks of Task-2 revealed that on average, patients seen by the GP-in-ED programme experienced shorter waiting times in the A&E when compared to their usual care peers in the department. Results also indicated that GPED patients were seen by a clinician earlier on their care journeys (74.2 minutes) contrasted to the usual care group who waited 80.6 minutes. In addition, only about 3.69% of GPED patients had waiting times that had exceeded the A&E 4-hour operational time target. By comparison, around 12.21% of the usual care cohort exceeded the 4-hour stay. Also, fewer GPED patients had been admitted to the hospital from the A&E department.

Findings from the mapping revealed that some regions in the catchment contributed disproportionately to demand in the department. This was especially the case when examined in the context of the city centres of both Coventry and Rugby. Results from the mapping also showed that 10 post codes had contributed disproportionately to minor presentations in department, about 38.06% of minor self-reporting presentations were associated with these 10 post codes.

Perhaps surprising was the finding that all the 10 post codes were located within a radius of 3.2 miles from the UHCW. All patients from the 10 post codes had access to primary care as seen from the data analysis. However, they had opted to visit the UHCW's A&E department to seek care for minor illnesses.

Conclusion from the GIS Mapping and Analysis

Findings from the mapping, conducted using partial postcodes of UHCW A&E patients along with postcodes of GP clinics, revealed several interesting trends. First, some regions in the catchment had contributed disproportionately to demand in the department. This was especially the case when examined in the context of the city centres of both, Coventry and Rugby.

Results from the mapping also revealed a high concentration of primary care clinics in and around the Coventry city center, some bordering the neighbourhoods of the UHCW. The GPED is seen as a platform by which to treat non-urgent conditions in emergency care settings. Hence, the mapping study conducted a separate analysis involving minor presentations in the UHCW's A&E department. Results showed that 38.06% of minor presentations to the UHCW were associated with 10 post codes. Furthermore, all the 10 post codes were located within a radius of 3.2 miles from the UHCW. Parsing the data further showed that the 10 post codes also encompassed several primary care clinics. While more analysis will be needed to accurately interpret this finding, nonetheless, it can provide valuable insights pertaining to patient preference. The data indicates that patients in the 10 post codes have access to both primary care as well as the hospital. Yet, they had opted to visit the UHCW's A&E department to seek care for minor illnesses.

The aforesaid findings can be explained in part based on the results of data analysis that was carried out within Task-2. The results had indicated that on average, patients seen by the programme had experienced shorter waiting times in the A&E when compared to their usual care peers visiting the department. Furthermore, findings also revealed that GPED patients were seen by a clinician earlier on their care journeys (74.2 minutes) contrasted to the usual care group which had waited 80.6 minutes. In addition, only about 3.69% of GPED patients had wait times that had exceeded the A&E 4-hour operational time target. By comparison, around 12.21% of the usual care cohort had exceeded the 4-hour stay. Equally important, fewer GPED patients had been admitted to the hospital from the A&E department. To some extent, these findings might explain some of the reasons why patients, despite access to a primary care clinic, chose to visit the UHCW.

Work Package 2

Service user perceptions and service innovation

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Project team: Nikki Holliday, Rachael Barker, Ala Szczepura, Becky Whiteman, Darrin Baines, Amir Kahn and Guy Daly

OBJECTIVES

1. To analyse perceived **acceptability** of the three new primary care schemes to users, in terms of **access** and **satisfaction** with the service used, before and after implementation
2. To analyse users' views on perceived **relevance** and **usefulness** of the new services, especially where uptake appears low compared to predicted use (data from Warwick work package).
3. In cases where issues of user acceptability, relevance and integration of pathways emerge in the pilot (including data from Birmingham work package) to examine other innovative services nationally and to use **co-design techniques** with local patients and stakeholders to identify practical and feasible improvements to the relevant schemes.
4. To analyse **tangible cost savings (efficiency)**, based on service costs and Warwick work package analysis of numbers accessing services (predicted trends / trajectories) plus effectiveness (i.e. impact on delayed transfers of care, avoidable admissions, 4 hour waits, uptake of preventive activities, management of chronic diseases etc.).

METHODOLOGY

Work-package 2 aimed to examine service users' perceptions, including hard-to-reach groups, and service innovations of the BCA programme and comprised three phases (Figure 2.1):

Phase 1 – Questionnaires and "Service Safari"

Phase 2 – Semi-structured interviews and a cost analysis

Phase 3 –Service innovation/modified Delphi exercise & co-creation event

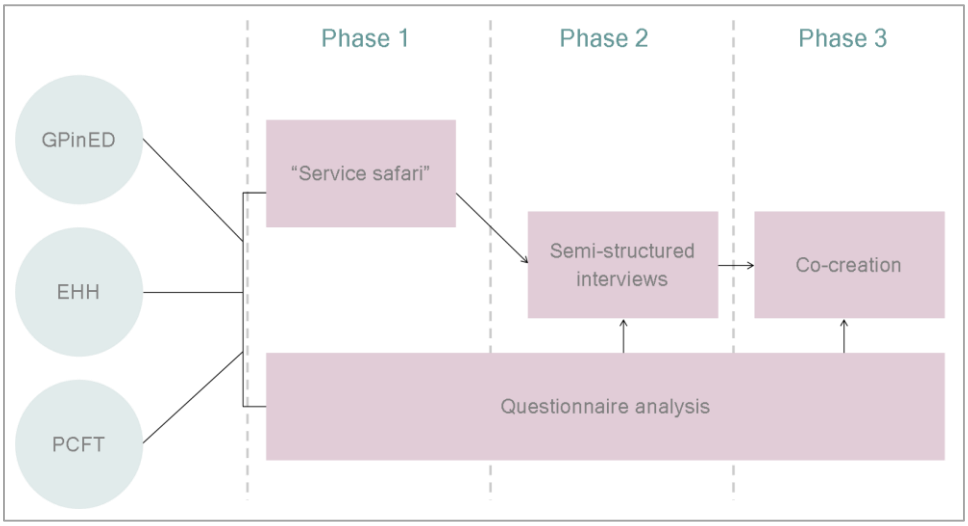


FIGURE 2.1: OVERALL PROTOCOL

Phase 1 – Service safari

GP in ED/EHH Service safari – methodology

The purpose of the service safari was mainly to allow the researchers to become familiarised with the services prior to further data collection and analysis. The researchers recorded their journey through the service using video and photography to make visual artefacts that can be used to frame the analysis of the interview data, and to provide material for the later co-creation sessions. No patients appeared in the video or photography. The researchers were included in the visual artefacts as actor patients where appropriate. The Service Safari was conducted in February 2016, and focused on the GP in ED service.

GP in ED/EHH Questionnaires – methodology

The service providers responsible for delivering GP in ED and EHH asked patients (or their carers) to complete Service Evaluation Questionnaires in paper format as part of their routine care. Following challenges with questionnaire distribution, a mail-out to recent patients was conducted in Summer 2016. The questionnaires were specifically developed for the study and comprised to elicit information on demographics, reasons for using the service barriers/facilitators to accessing the service and satisfaction with the consultation. Patients were made aware via the questionnaire that the data collected was to be used to evaluate the service. Originally, it was planned to collect a minimum of 150 questionnaires across the 3 services at each of 2 time-points to compare early and late attenders to the service, however

this was not possible due to the challenges in questionnaire distribution as described in the interim report (and the decision not to distribute the questionnaire amongst PCFT patients, following feedback from the clinical team). In total, 133 questionnaires were collected from the EHH service, and 180 questionnaires were collected from the GP in ED service.

Questionnaires – analysis

Descriptive statistics were used to describe the sample and to determine the key barriers and facilitators to accessing the service across the group. At this point in time we are still waiting for data on gender and age of the sample from the service provider and will supply full analysis in a future supplementary report.

Phase 2 – Semi-structured interviews

Semi-structured interviews – methodology

The Service Evaluation questionnaire asked patients to identify whether or not they would like to be contacted to take part in a follow-up interview. Researchers only contacted participants who stated that they would be happy to take part in an interview, and it was made clear that Coventry University were conducting the evaluation on behalf of the relevant service provider. The majority of data collection took place via telephone interviews, except in the case of two participants where it was more convenient to conduct a face to face interview. Although purposive sampling had been planned, due to the low response number, all participants who were contacted for interview and provided consent were interviewed. In total, 31 patients were interviewed for the GP in ED service, and 10 were interviewed for the EHH service. Although 14 patients from the PCFT indicated that they would be interested in taking part in a telephone interview (after being invited by letter as the decision was taken not to issue questionnaires to this patient group), only 2 have provided consent to date, and they have not yet provided a suitable time and date to the researchers for their interview. The semi-structured interviews aimed to explore their patient journey for the service, from prior to service access (onset of symptoms) through to returning home. Important issues and themes highlighted from analysis of the questionnaire data and the service safari will also be included in the interview schedule. Results from the interviews were analysed using Framework Analysis and some open coding (using Thematic Content Analysis principles – Green and Thorogood, 2004), by two researchers (NH and RB).

RESULTS

Questionnaire results

Experience of the service

With regards to experience of the EHH and GP in ED services, the majority of respondents felt that this was easy, they were confident in the care they received and they felt well informed. The Table 2.1 below shows the number and percentage of participants indicating whether they agreed or strongly agreed that each factor was a good representation of their experience of the service.

Patients visiting the EHH were more likely to agree/strongly agree that the service was easy to access (χ^2 12.41, df 1; p<0.001), that they were satisfied with the ease of access to the service (χ^2 11.63, df 1; p<0.001), that they felt confident about managing their condition (χ^2 15.96, df 1; p<0.001), that they felt well informed about the decision regarding their care (χ^2 13.87, df 1; p<0.001),that they were confident in the decision about their care (χ^2 13.69, df 1; p<0.001), and satisfied with how involved they were with the decision (χ^2 14.32, df 1; p<0.001). GP in ED attendees were more likely to agree/strongly agree that they had to wait too long for their appointment (χ^2 24.98, df 1; p<0.001).

Table 2.1: Experience of the service

	EHH	GP in ED
	Agree / strongly agree %	Agree / strongly agree %
It was easy for me to access the service today	92	77
I am very satisfied with how easy it was to access this service	90	76
I feel that I had to wait too long for my appointment	9	34
The doctor was very good at explaining my condition to me	86	83
The doctor did not make me feel at ease	23	19
I am confident about the doctors ability to provide care	90	86
I would be completely happy to see this doctor again	87	80
I think that I was discharged too early	8	12
I feel confident about managing my condition	82	62
I am well informed about the decision we made about my care/treatment	90	73
The decision we made about my care/treatment made was the best possible decision in my view	87	70
I am satisfied with how involved I was in the decision	88	71

Accessing the service

With regards to accessing the service, opening hours, parking fees and waiting times were the strongest influencers regarding decisions to access the services. The Table 2.2 below shows the number and percentage of participants indicating whether that factor would be moderately or very influential in their decision to access the service.

Patients visiting GP in ED were more likely to report that poor public transport (χ^2 7.79, df 1; p<0.01) or the cost of attending the service (χ^2 14.11, df 1; p<0.001); lack of parking (χ^2 26.66, df 1; p<0.001) or cost of parking (χ^2 13.04, df 1; p<0.001) was an important factor in their

decision to access the service. Patients visiting the EHH were more likely to indicate that the opening hours were influential in their decision (χ^2 6.62, df 1; p<0.01).

Table 2.2: Accessing the service

	EHH	GP in ED
	Moderately / very much %	Moderately / very much %
Poor public transport	9	22
Parking fees	34	53
Lack of parking	25	52
Opening hours	60	39
Waiting times	47	62
Layout of the building	20	29
No-one to come with me	8	15
Difficulty with writing or speaking English	3	6
Cost of attending	6	32
Lack of information about the service	18	22
Prefer to use other services (e.g. pharmacist)	8	17

Involvement in care/treatment plan

Although a high percentage of people did not respond to this question (37%), of those who did the majority shared the responsibility for decision making regarding their treatment with the clinician (26%) (Figure 2.2).

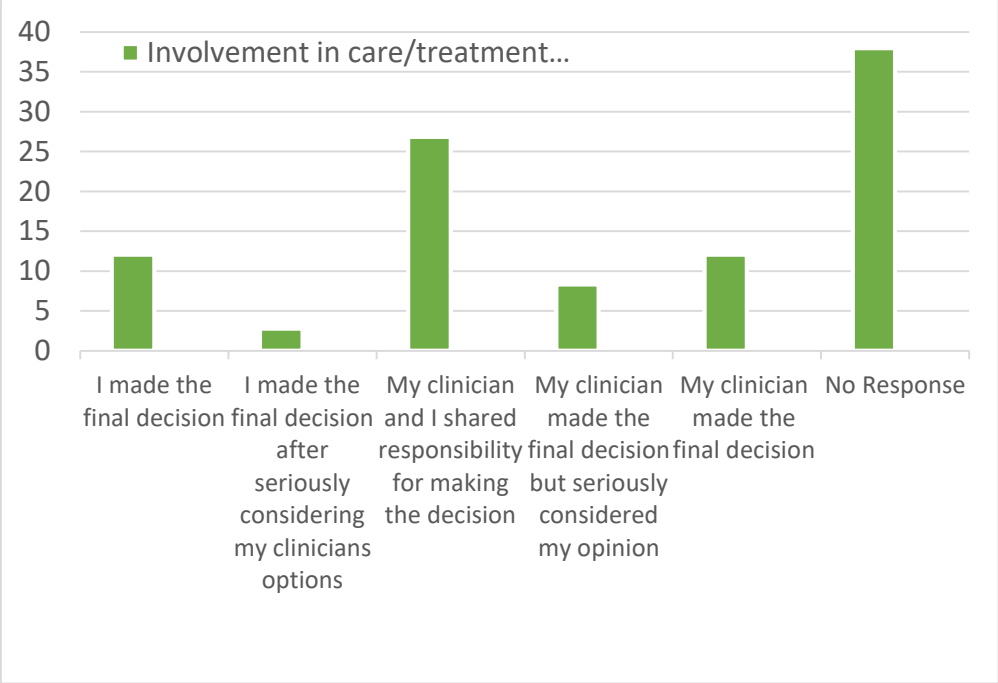


FIGURE 2.2 INVOLVEMENT IN CARE/ TREATMENT

Interview results – GP in ED

GP in ED patients reported accessing a variety of services prior to attending UHCW Emergency Department. Some patients were referred following a visit to the walk-in centre, or following advice and instructions from the 111 helpline. However, other patients presented at A&E as they had previously visited their GP, but had been unsatisfied with the outcome of the consultation:

> *I went to the walk in centre first because I had a lump on my neck that was hurting and it was the walk in centre that referred me to the Hospital to get it checked because of where it was, by my lymph glands so they sent me to the Accident and Emergency*

> *What I did, I didn't go to my own Doctor because it was the weekend, these things always happen at the weekend … I went to the place down Stoney Stanton Road, the walk in centre and it was the Doctor there who suggested that I went to the hospital … And I had a car to take me from the walk in*

centre to the hospital which was brilliant and then you know, I got seen from there

For others, the A&E was their first choice of service, and no other services were accessed prior. Two of the patients stressed how ED was their first choice of service as they considered their situation serious, and were concerned about what would happen should they delay accessing the service.

Yeah I did, I phoned 111 and they told me to get to A&E within the hour, so that was why I went there.

There was one time I did it before thinking that it was going to be fine, and then the results came back bad, and I was in hospital for a week. So it's like no messing around, just get straight to hospital and see what they say.

Travelling to UHCW A&E

All but two of the participants were familiar with the location of UHCW, as they were all local to the Coventry area (CV postcode), and many had visited before either for themselves or accompanying friends and family. Of those participants who did not know where the hospital was, one received instructions from the walk-in centre, and another used Google Maps to locate UHCW. Overall, participants did not report any difficulties getting to the hospital via their chosen method of transport, although one patient stated that it took them over an hour to arrive at UHCW. The majority of participants chose to use the car to visit UHCW, whether they drove themselves or were given a lift by a friend or relative. Of those who drove themselves this was because for them the car was a quicker or more convenient method of transportation. For those who were dropped off by a friend or family member this tended to be to avoid the need to find a park space and/or pay for parking, or because they were too ill to drive themselves:

No I got dropped there because of the parking, the parking isn't always great so I just got dropped in … No and I got a lift on purpose because I know it's quite expensive and it's hard to get parked so I asked if someone could just give me a lift

My friend took me in a car… Because I work at the hospital on an everyday basis I knew that it's not possible to, sometimes, it causes a lot of trouble for everyone, so I just knew that there wouldn't be any car parking so I told him to just go home and come back and pick up when finished, so he just basically went home, I went to A&E and he went home.

One patient walked as they were not able to afford a taxi, and were concerned that waiting for an ambulance would take too long if their case was not deemed a priority. Two participants were brought to A&E by ambulance and one patient utilised a volunteer service at the walk-in centre following their referral to A&E:

I had the ambulance come to me and they put the electro monitors on me and because they weren't sure, because I have previously been diagnosed with rheumatoid arthritis in November and also my brother had a small heart attack in August last year and so I thought well maybe it might be that, I don't know. So I thought it was that and they took me to the emergency room.

Transport/Parking Costs

For those that drove (or had the option to drive), the car parking costs were felt to be very expensive, and as described above it led some people to try and get friends or family to drop them off, rather than drive in their own cars. The cost of parking was quite an emotive subject for the participants, and some of them spoke about the car parking charges at length during the interview. As well as the high car parking charges, participants were also concerned about the capacity of the car park, and a number of participants spoke of difficulties in finding a space to park, or being able to attend an appointment on time due to the queues to enter the car park.

Yeah the spacing at the time was okay because it was early evening but the fee of the hospital car park is just terribly expensive and for some people it's unaffordable you know. I had to go for an MRI scan on Sunday morning, I was only there for 45 minutes and that cost me £2.50. I think they should do something about the car parking fee

Parking - it was okay, we went early morning so the parking was really quite easy to get in but it was the actual cost of getting out of the car park that was the worst because we were there for so long and then every day you've got the same charge every day. If anyone is coming to see you or anything they've got to pay the car park and it does work out really expensive

Some participants took advantage of on-street parking within a short walk of the hospital to avoid paying car parking charges. Only two participants chose to take public transport to access UHCW A&E. Of those, one patient felt it took a long time however the price was acceptable, whereas the other patient felt the bus was quick yet slightly expensive:

So I just drove my car to one of the roads within eight to ten minutes' walk to the hospital. Walked to the hospital, walked back to my car, so there wasn't a problem whatsoever. … re parking costs I'm afraid they're astronomical. And, another thing Rachael, you can find a lot of problems getting in and out of the car park. And in the evenings with the traffic, it can be hell on earth.

Being there

Experience of customer service

All participants interviewed reported positive experiences whilst at UHCW, from meeting the receptionist to their discharge. Participants were happy overall with the treatment they received, and found staff supportive and friendly.

It was brilliant. My little boy was pretty happy; everyone was quite friendly to him. I think because there's a lot of children in A&E, and I think because he was running around… So it was good, because you have to wait quite a long time, and because of how small the injury was they were getting it sorted. He was only 1½ at the time, and so it was a long time for him to wait without anything to do really. But service wise it was great, and because he smiled a lot at the nurses they gave him some chocolate

I think every member I dealt with was brilliant to be honest. And I can probably comment not only on my own personal experience, but there were probably some let's say disruptive patients, and I think they were being fair and stern with them as well. So I think they were handling them appropriately, whereas obviously some people do like to shout loud and make themselves heard. But they obviously did address them well to actually calm them down in a good way

Waiting room environment

Patient views on the waiting room environment were mixed. Some patients found the waiting area pleasant, and in line with what they would expect from such an area. Other patients however, had a negative view of the waiting room, and felt that it could be improved. In particular patients did not like the layout of the chairs, which made them feel like they and other patients were staring at each other. The lack of variety in vending machines was also a concern for patients, particularly when faced with a long waiting time, which would require regular refreshments.

That's not brilliant. You were just in long rows, well there's two lines of chairs outside the A&E area. The chairs are very close together, so if it's very busy you feel you're squashed up next to the person, so personal space. You don't get personal space if that makes sense.

Well I think the waiting room is rather boring and officious to be honest, not a very nice place to sit, you feel like … can't wait to get out to be honest… The environment, I don't think it's very nice, I just don't think it's very nice, I mean to start with everybody can hear what everybody else is coming in for, because although the reception area's to one side the waiting room is not cut off by any means, a partition or anything, there are machines in there for refreshments, it's okay if you drink Coke and fizzy drinks and stuff and want chocolate, but if you want something like a cup of tea or a sandwich there's nothing there, you have to get somebody to leave for you and go over to the main hospital to get something.

Further to this, patients also suggested that a television, or magazines could be provided in the area to occupy waiting patients, and take their minds off the wait or their symptoms. Some patients suggested that the waiting area could be split into two, with GP in ED patients being specifically asked to locate themselves in the area of the waiting room near to the GP in ED office (or the doors leading to the cubicles which were also used for GP in ED patients), not only because this would be more convenient with regards location, but might also provide for a better patient experience as GP in ED patients might be less likely to have severe symptoms than those triaged to remain in A&E.

> *The waiting room is huge and perhaps if it was sectioned off a little bit, so you know what area you were supposed to be sitting in, because there were so many different doors and the GP that we saw was in the one furthest away from us, perhaps if we had been sat a bit closer to where we were supposed to be it would have made things a little bit better, because it was like we saw everybody coming in. There was one gentleman that came in with blood pouring out of his leg which was left on the floor for a couple of hours which wasn't very nice to be sat looking at. There was somebody that had been sick and it hadn't been cleaned up.*

Indeed, some patients complained of seeing other patients who were visibly ill, and one patient felt that the A&E was under-staffed in regards to dealing with the clean-up following a patient being ill.

> *I thought the waiting area was fine, there was probably 30 other people in there. One thing that we did notice, there was a lady clearly she was ill and she was vomiting into a bag, sitting in amongst everybody else. I thought maybe she could have been moved perhaps, but that was the only thing, other than that as you would expect in A&E waiting room*

One patient who was visiting with their child compared the children's waiting area with those of other hospitals, and felt that the UHCW children's A&E area could be improved, for

example with the provision of toys, or a safe enclosed area in which the children can play or move around:

> *In comparison with the situation, I've been to a different hospital about a month later by chance and actually there's a lot more there for them to do. There's an enclosed area where they could wander around, there was a telly with some programmes on, there were books there and toys and things that they could play with.*

Time spent waiting to be seen

The majority of patients felt that they had been seen relatively quickly, and some compared this to previous waits at UHCW ED. For some patients, being seen so quickly defied their expectations of an A&E department:

> *I was expecting three/four hours. So when I got there I'd already told myself that I'm going to stay here for three/four hours. I told my wife that I'm here now but expect me in three/four hours. So when the actual receptionist said to me wait for the nurse to call you and the nurse came in 10 minutes, I was shocked. She said the doctor would call me and within 10 minutes, 25 minutes, 30 minutes, the doctor called me so I was like hang on, is this me, I was shocked.*

Other patients felt that they had to wait a long time before seeing a doctor, although they were aware that their waiting time was dependent upon how their case had been prioritised, and what other cases had presented to A&E that day.

> *In all we were there nine hours. When we first arrived we were seen immediately. Then we were sent to the waiting area where we waited for six hours before we saw the GP. Once we saw the GP things started to move a little bit quicker. Like he saw us, then he went for his scan, he came back and we had to sit and wait again to get the scan results. All in all, nine hours*

Some patients felt that the waiting time increased their anxiety about their symptoms, and they were concerned that their symptoms would worsen with the passing time.

Well it wasn't too good because I was panicking and I've got this rash on me and I'd reacted to medication and then I don't think 111 helped because they've got to tell you, they say get to A&E within an hour and you think oh god, what is going to happen, and then when you're sat there for over an hour and you're thinking I should have been seen by now and you're sat panicking.

Consultation

Awareness of GP in ED service

The majority of patients were not aware that they had been treated as part of the GP in ED service, in line with the service design plan to have no distinction between ED and the GP in ED service, to ensure no additional demand is created. However, some patients *were* aware that they had been treated by the GP in ED service, as it had been explained to them by the GP attending to them.

When we got in to see the GP, we were not aware he was a GP, we thought we were seeing a doctor, and he was really lovely, really helpful, he explained everything to us, he got on the phone to a consultant to get some advice… Then we went back into the waiting area and it was about another half an hour we were there, before we got back into see the GP and this time it was explained to us that he was a GP

When asked if they would have liked more information on the GP in ED service, most patients did not want further information, as it did not matter to them who they were treated by, as long as they were seen by someone and treated appropriately.

Well he didn't explain very much, he just said he was a GP and he was in A&E. And to be quite honest, if anyone could have helped me with the pain they would be very welcome.

Only one patient felt that they would want further information on the service provided to them and one patient felt that patients might be less trusting of a GP doctor, rather than a hospital doctor:

Well, not really because I think if people knew that they were just being seen by a GP I think they'd tend to think that the answers or the diagnosis they are going to be given aren't going to be as good as if they were given by a hospital doctor.

Finding the GP in ED service

All patients interviewed as part of the project had visited the service following its relocation to the Emergency Department. Because of this, the service was extremely easy to find, with patients being able to remain in the ED waiting room to be called through by the GP, and did not require any further instructions or staff to escort them to a different area of the hospital. No patients were given an option regarding whether or not to attend the GP in ED service, the decision was made following the triage process, again in line with the service design plan to have no distinction between A&E and the GP in ED service, to ensure no additional demand is created. Again, this was not an issue for patients as their priority was to be seen by a doctor at the hospital, and to them it did not matter which service this was via.

I didn't have any choice, they didn't say would you like to access our services, I'll send you around to see the GP. And I said I think I need to see a cardiologist and I think you need to repeat the ECG and they said no. They said we don't think we need to do that, there is no cardiologist on anyway and you'd have to wait for hours, it's better to go and see the GP. I didn't feel like I was entirely forced but I didn't have any choice, so I felt it was probably better to be seeing a doctor sooner rather than later so I went round and I was barely able to stay sitting in that waiting room and there was no staff at all.

The Consultation

The majority of patients were very satisfied with their consultation, and spoke of how the doctors took time to explain their diagnosis and potential courses of action, and allowed the patients time to ask questions. The patients felt that the doctors did not rush them, explained their diagnoses and suggested treatment courses, whilst treating them with dignity.

It was brilliant; she was very good. She explained everything, told me exactly what she was going to do and even explained that I'd have to go back in the waiting room and wait a little bit longer while they did bloods. It was really good

The person I saw was obviously of a high calibre. I didn't know whether he was in A&E or if he was a GP that provided that service. Obviously now it makes sense, he had quite a good knowledge and very professional … I think it was brilliant, I'd seen the Neurologist who's the specialist in this field, I've been seeing him a couple of times. But whatever this chap did in the space of 10 minutes is exactly what the other check-ups I've been getting as well were. So he was very to the point, asked my symptoms, what's been going on, wanted to reassure me that he didn't think there was anything critical, and that the medication was appropriate as well

However, two patients had a negative experience during their consultation, one because they felt that the doctor and consultant had misdiagnosed the source of pain, and another because they felt that they had not been allowed to finish explaining their symptoms. When asked, however, how the doctors made them feel, again, the majority of patients reported positive experiences, and spoke of how reassured they felt, and how the doctors were caring, attentive and thorough.

I think he addressed all the concerns I had and made me feel like, based on the results he had, that there was nothing seriously wrong and that the problem had been addressed and I felt like it had been sorted, not sorted, but addressed. The problem had been addressed

I felt 100% fantastic. He asked the relevant health questions. It was quite a lot of questions. I must have been in there with him for about half an hour. It was lovely and he came up with a conclusion that the penicillin wasn't going to do the job and he put me on steroids

Satisfaction with length of appointment time

All patients interviewed stated that they were happy with the length of their consultation time. The length of the consultations stated ranged from 10 minutes to an hour for a patient who passed out during their consult. Patients spoke of how they did not feel rushed and had time to explain their symptoms and ask questions.

> *Probably about 20 minutes, 15 minutes … I was still really satisfied but I think because everyone is so busy and the reason I didn't get the right things is that they were too busy to see me, which is fine, you know. I was amazed with the service from the walk in centre straight to the hospital and it was all really good*

Involvement in decision making process in care/treatment

Responses were varied with regards involvement in the decision making process for the patient's care or treatment. While the majority of patients were fully involved in the decision, others felt that the decision regarding treatment was entirely with their doctor. In all cases patients were happy with their level of involvement in the decision.

> *To be honest I didn't really need any because I trusted his words, to take the pain away … I wasn't going to say 'No, I want this, that and that!' I don't have the understanding to be honest.*

> *He was very clear with what was going to happen, but I wouldn't expect to have any involvement other than to sit and listen. Certainly not with anything medical like that, no. He explained it all very clearly*

Satisfaction with outcome of consultation

The majority of patients were also satisfied with the final outcome of their visit to UHCW that day, in particular because they felt that the suggested outcome had been explained to them.

> *Yeah, everything went very well, she explained everything clearly, answered questions and everything was clear after I'd seen her so, yeah, I was very happy. I was even happier because it came out it's not heart problem and it's*

a lack of carotene in blood so I had very low levels of carotene and it came out because of my very poor diet, and not because of heart problems, so I was very pleased... Exactly, yeah, I mean, yeah, with medication because she gave me tablets for a long time to supplement this, so medication but not very serious medication of course.

However, one patient was not satisfied with the outcome of their consultation because they were not sure whether or not the medication was working, and another, although satisfied with the outcome that day, felt that the follow-up which had been planned was not executed correctly.

I would say out of ten about six [SATISFACTION] ...To be honest I take the pills and sometimes they work, and other times they're not working. I know they're not the right treatment for me because most of the time they're treating me for anxiety which I'm not. I used to be stressed and stuff yeah because of certain things that I went through but I'm not stressed about those things anymore. The pain is still there though and it's getting worse.

Comparison with previous A&E experiences

When patients were asked to compare their visit with previous experiences of ED departments, some found it to be a very similar experience, and could not discern any difference between A&E and GP in ED. However, one difference was that many of the patients described that this time they had experienced a shorter waiting time in comparison to previous A&E visits, and that the doctors were able to spend more time in consultation with them.

I thought on the whole it was better, because I was seen quite promptly and there was much more consultation. I have to say, I'd been there before in more of an emergency situation with my mother, and I felt then we were left hanging around… Yes, absolutely because it gives you another layer. If you can't access your own GP then the fact there is a GP there is very, very good,

it's an excellent layer. My only fear would be that if people knew there was a GP there, they would go there rather than trying to access their own GP.

Confidence in following recommendations given regarding condition

The majority of patients stated that upon leaving UHCW they were confident that they would be able to follow the recommendations regarding treatment and care given to them by the doctor. Patients spoke of feeling confident because they felt that the outcome was correct, and because they were informed regarding their condition and treatment.

Oh I followed them, I went back to my GP and they put me on the list to see a specialist and I'm now the happy owner of two stents.

Yes, because he explained everything to me, which I was much informed about what I was going through. I was really satisfied because I knew exactly what was happening.

For one person, the presence of a late chemist near their home boosted their confidence regarding following the treatment, as it meant that they were able to get their prescription fulfilled as soon as possible, and could begin taking their medication that night. There was only one patient who stated that they did not feel confident about following the recommendations given to them during the consultation, but this was because they had lost confidence following their illness.

Back at Home

How the patients felt once they were home

The majority of patients felt better once they had returned home from their visit to UHCW. There were a variety of reasons for this including; because they had been seen quickly at UHCW, because their symptoms had begun to improve, because they felt relieved and reassured regarding their symptoms. One patient initially felt better, however their GP did not want to follow-up on the recommendations provided by the GP in ED doctor, which led to the patient feeling angry. One patient was not sure that the medication they had been prescribed was working, so spoke of how they did not feel better upon returning home, and

was still experiencing pain and symptoms (this patient had been experiencing pain and various symptoms for the past three years).

How the patients felt about using the same service again

All patients stated that they would be happy to use the GP in ED service in the future, and some stressed that this would only be if they were referred to the service – they would visit their GP or a walk-in centre first, if appropriate.

> *Obviously only if I was referred, I wouldn't just take myself down there but if I was referred I would be happy to go down again because it was really good*

> *Yes, definitely, I hope it won't happen ever again, now I try to have a very well-balanced diet and try to eat proper food, so I hope it doesn't happen, but if I need to go to A&E I would be very happy to go, or with someone if they needed to go with someone else and, yeah, I wouldn't be worried about it.*

One patient said that the waiting times might put them off visiting the A&E department in future:

> *The only thing that put me off going to A&E in the first place was the waiting time, just knowing you're going to spend two or three hours just sitting and waiting. But I don't know if I'd have a hesitation going back if I needed to*

Two patients felt that they would like to access the GP in ED service directly in future, as the service has access to hospital consultants and tests which their GP or the walk-in centre did not. One patient also suggested that patients could receive a leaflet about the service, however this would work against the service design plan to provide a service not noticeably different to patients than the A&E pathway.

> *I would definitely use that service again within the hospital, because the GP in the hospital have got the things that normal GPs don't have, like the availability to do a scan, a Consultant in the building. I did actually think about it when I got your letter, what would be the difference of going to my*

own GP and going to see a GP within the hospital, and that basically is it. The GP in the hospital had other facilities that he could call upon that your own GP does not have and the walk in centre doesn't have.

What alternative services would patients use in future?

When asked what alternative services they would use in future, patients spoke of a range of services, and that they would use the perceived severity of their situation to decide which service would be most appropriate. Patients spoke of accessing their GP for minor symptoms, using 111 or seeking advice on the internet if they were unsure of what to do, and using A&E for emergencies.

I would ring 111 first, and then maybe look on the internet, I know you're not supposed to… It is the worst thing that you can do, I have realised from experience that the worst thing to do is google things… I would probably just ring 111 and ask them for advice.

One patient said that they were not aware of many other options regarding access to healthcare services. One patient spoke of how, unless it was an emergency, they would prefer to access private services as although they commended the NHS for their emergency care provision, they had experienced private healthcare in other countries, and felt that services outside of emergency care "[seem] to fall down when you actually get to hospital"

Overall view of service

Overall, patients were very happy with the service and treatment they received whilst under the care of the GP in ED service. Patients spoke of how they had not discerned a difference between the GP in ED service and being treated within the A&E pathway, although they were pleased that they had been dealt with quickly, and had good experiences with the staff during their consultation. The patients interviewed had a lot of praise for the service, and the doctors who provided the consultations.

I thought it was great, absolutely fine. They did what they said, I mean obviously if there was more money in the system and they had more people

working there they'd see people quicker, but you can't blame the service for that.

As described above, some patients enquired as to how a patient might try and access the GP in ED service directly, rather than being referred via triage after presentation to the A&E service. Indeed, one patient was concerned that if members of the public did become aware of the GP in ED service, they might attempt to access this rather than their own GP, thus placing greater demand and pressure on the service.

Yes, absolutely because it gives you another layer. If you can't access your own GP then the fact there is a GP there is very, very good, it's an excellent layer. My only fear would be that if people knew there was a GP there, they would go there rather than trying to access their own GP; particularly if they have problems getting an appointment.

How the service could be improved

Patients were asked how the service could have been improved for them. The responses to this question focused heavily upon improving the availability of parking and the cost of parking at UHCW. Patients also suggested improving the waiting times, although they appreciated that this might not be possible and in such a case there could be improvements regarding informing patients how long they are likely to be waiting, for example, by providing average waiting time information in the waiting room. It was also suggested that the availability of food and drink could be improved, particularly when patients are likely to be waiting for more than a few hours.

In general, you know the amount of time waiting, maybe I think to have some food or something, there's no café or anything in any A & E department so maybe to have some food for the amount of time you're waiting, that might help and hot drinks … I mean A & E is always packed so you wonder when you're going to get your turn as well

One patient suggested that extending the GP in ED service to a 24 hour service would also be an improvement, as they were told that the service would close at 10pm or 11pm, which led

to them having concerns that they might not be seen by a doctor on that day at all. Finally, as described above, patients also suggested improvements to the waiting area, including improvements to the layout of the chairs, improved vending services, and the addition of televisions and reading materials.

> *That's not brilliant. You were just in long rows, well there's two lines of chairs outside the A&E area. The chairs are very close together, so if it's very busy you feel you're squashed up next to the person, so personal space. You don't get personal space if that makes sense.*

Some patients suggested that the waiting area could be sectioned off, with GP in ED patients being specifically asked to locate themselves in the area of the waiting room near to the GP in ED office (or the doors leading to the cubicles which were also used for GP in ED patients), not only because this would be more convenient with regards location, but might also provide for a better patient experience as GP in ED patients might be less likely to have severe symptoms than those triaged to remain in A&E. Other patients complained about seeing others who were visibly ill, with one patient in particular feeling that A&E was under-staffed, leading to a Ward Sister cleaning up after a patient had been ill.

> *The waiting room is huge and perhaps if it was sectioned off a little bit, so you know what area you were supposed to be sitting in, because there were so many different doors and the GP that we saw was in the one furthest away from us, perhaps if we had been sat a bit closer to where we were supposed to be it would have made things a little bit better, because it was like we saw everybody coming in. There was one gentleman that came in with blood pouring out of his leg which was left on the floor for a couple of hours which wasn't very nice to be sat looking at. There was somebody that had been sick and it hadn't been cleaned up.*
>
> *In general, I just think they were under-staffed, over-worked, I mean a Sister ended up cleaning blood off the floor, where were the cleaners? I think we were there on a particularly bad day, like I said doors were broken, machines were broken, blood on the floor, vomit on the floor, it was just a really awful experience*

Patient perceived responsibility and control over health

When asked whether they felt responsible for, or in control of their own health, all patients stated that they felt they had responsibility for their own health, however not all of them felt that they had control over their health.

> *Yes… Well, I think we all must be responsible for our own health. I felt very upset that I had to use A&E because I think people tend to use it too readily but I had no option. I had this gaping wound in my hand, having just finished chemo, it was essential we got something done quickly. So I don't think I had any option but I still felt very easy that I had to use it.*

For those who did not feel in control, in the case of one patient it was because they had experienced a reaction to their medication, and another patient was experiencing long-term symptoms which they felt were beyond their control.

Conclusion

From the patient perspective, the GP in ED service was very much positively received, and patients were happy with the service and treatment they received whilst under the care of the GP in ED service. Patients did not discern a difference between the GP in ED service and the A&E service, and only knew there was a difference when explained by a GP during their consultation, or by the researcher prior to the interview taking place. Patients did not have a preference between being treated by the GP in ED service or ED service, as they felt that they would have been triaged and directed to the appropriate service. All patients reported positive service experiences whilst at UHCW, from meeting the receptionist to their discharge, and reported very positive experiences of their time in consultation. All patients were satisfied with the length of their consultation. The majority of patients felt that they were attended to relatively quickly, and compared the waiting time favourably to previous experiences at ED, and their experience of being seen so quickly defied their expectations of being in an ED department. After learning they had been treated as part of the GP in ED scheme, some patients asked the researcher how they might try and access the GP in ED service directly, rather than being referred via triage after presenting to ED – this thought

itself caused concern for one patient who stressed that if members of the public became aware of the GP in ED service, they might attempt to access this rather than their own GP service, thus placing more demand on UHCW A&E. With regards to improvements to the service, patients responded with concerns about the availability and cost of car parking at UHCW, suggested improved information around waiting times (in the case where waiting time itself cannot be improved), and improvements to the waiting area. Overall therefore, patients were extremely pleased with the service, and the majority of recommendations for improvement were focused around UHCW provisions in general, rather than the GP in ED service itself.

Interview results – EHH

Finding out about the service

Accessing the EHH service

All of the patients interviewed reported first calling their GP prior to being offered an appointment at the Extended Hours Hub, however they were unable to get an appointment at a time to suit them. Many of the patients were unable to get same-day appointments from their GP practice, and in some cases could not get an appointment at their usual practice for a number of days.

> *We tried to get her into the normal doctors… They couldn't get us in down there, and we said to them because it's my daughter then they suggested making an appointment down at the walk-in centre, which we thought was fine.*

> *Yes, I initially contacted my GP, but unfortunately they said that they didn't have any appointments available until I think it was the following day, or maybe a couple of days later, so what they suggested was going to the out-of-hours site.*

For some patients, they were offered the EHH service as they were unable to attend the appointment times and dates offered by their GP practice as it would mean they would have to take time out of work.

> *The option was to see somebody out of hours' kind of thing with an appointment, so that was fine and the time suited me. It just meant I didn't have to take any time off work to go, so I could just go straight after work and not interfere.*

Because the service was new, patients were hearing about the EHH for the first time via their own GP practices, and argued that in future the service could be advertised to all patients whose GP practice had access to the EHH service. For some of the patients, visiting their usual GP practice would have been their first choice, as it was closer to their home and more convenient. However, this did not detract from their experience of the EHH service, as evidenced in the quotes below, and described throughout the remainder of the report.

> *We would have preferred the doctor, because obviously the doctors know my daughter, but we just wanted to make sure because she'd been going on, and we couldn't get into the doctor so we just wanted to get her checked out… For peace of mind for us.*

Information given about service

Many of the patients stated the information that was given about the service was clear and well understood by the receptionist at their surgery, and that this included information regarding the location of the service. Indeed, most of the patients could not offer any suggestions for improvements regarding the information provided about the service.

> *Just that there will be a GP that is appointed to that surgery and he'll have all my computer notes and everything and he's suitably qualified and the best option really… No, I think that was quite sufficient information at the moment, yes.*

Some patients claimed they were not given any information in regards to the service, mostly because they were already familiar with the location of the service. One patient described how they were not given enough information at the time of the appointment and believed they would be seeing their own GP at the Extended Hours Hub Surgery.

> *Not a great deal [at the time of making appointment], just the fact that it was out of hours, like a GP out of hours. I wasn't told that… well I presume that it must have been a locum, so I wasn't that, I didn't really know what to expect apart from the fact that it was going to be a doctor that I saw, with an appointment time... It wouldn't have stopped me from using it, because it was convenient to me to actually get to see a doctor on that day because I'd actually ran out, but it probably would have been a bit more convenient to actually have an understanding that it's not going to be my own GP, or one of the GP's from the Practice, it was going to be just a locum.*

Getting There

Familiarity with the location

All of the patients were familiar with the location of the service due to having previously been to a service there, such as the breast screening, blood service, or their own GP practice.

> *Yeah, I did actually because it's actually in the same building, in fact I'm even sure it was in the same room where I had to go a couple of years previously just to have cyst removed.*

All of the patients found the location easy to find as, being local, residents were familiar with the site which was located near the old Coventry and Warwickshire hospital.

Journey to EHH

Patients spent between 5 and 20 minutes to get from their home to the service. When comparing the EHH GP service to their usual GP practice, the majority of patients found it quicker to access their usual GP (except in the case of the patient whose GP practice was located in the City of Coventry Heath Centre, the same location as the EHH service).

Choice of transport

Of the patients we interviewed, all 10 drove to the Extended Hours Hub service, and cited convenience as the main reason. Patients either chose the on-site parking, or used the street parking in the surrounding area when visiting the EHH service. There were mixed statements in regards to the Extended Hours Hub parking costs, with some patients being happy to pay and finding the car parking charges acceptable, whereas others felt it was inconvenient if you did not have change for the car park machine, or that charges could be a problem for some people who may not be able to afford them.

> *It was okay, it was obviously dark and the only trouble is you have to pay in the machine to park which, you know, you're feeling ill anyway and you don't always have change on you, so it's a bit of problem.*

> *Yeah it was okay. You have to pay obviously, but I suppose maybe people who aren't able to and they aren't very well off, if they were using the car it probably would have been a bit inconvenient for them to have to pay the price for parking.*

Some patients stated that they did not have to pay for EHH service parking, due to the day of the week or time. Patients compared the parking at the EHH service with that at their GP surgery. For most people the most salient difference was that they had to pay for the parking at the EHH service, whereas they were able to access free parking at their GP surgery, however the EHH service tended to have more parking spaces available than the local GPs.

> *Yes, well, the GP car park's free but it's too small, so you have to park on the street but now they've put signs up saying don't park on the street because the locals get annoyed, so park in some pub or other.*

Being there

Ease of finding the EHH service in the building

Patients found that they were easily able to locate the EHH service within the City of Coventry Health Centre using either the instructions provided by their GP practice's receptionist, or by enquiring with staff upon entering the building. One patient stated that there was sufficient signage in the building and that they were able to follow this to find the service, however other patients either did not see this signage, or it was not in place when they visited. In these cases, patients suggested that the signage could be improved to help direct patients to the EHH service, particularly if there was a queue at the main reception desk – a sign would enable them to locate the EHH service without waiting.

> *A sign might have helped to say that this is the what-do-you-call-it, because from memory, as I say, it was a long time ago now (laughs), I don't think there was a sign or anything saying this is after-hours surgery. So I suppose if they decide to keep it on as an ongoing thing they might think about doing something like that in future. Apart from that the lady on the reception was very helpful.*

Problems accessing the building

The majority of patients had no issues entering or accessing the building, with patients stating that it was easy to enter the building even late at night (i.e. the building was not locked). However, there was one patient who experienced some confusion regarding the location of the main entrance.

Experience of customer service

All patients had a positive experience of customer service during their time at the EHH service, commenting in particular on the receptionist being friendly and helpful:

> *They were polite and really what I think you'd expect when you sort of walked into an area like that… but there they were friendly and it was just nice to see*

friendly people... as I say they were quite friendly and helpful, just exactly what I would have expected should I have needed to have spoken to anyone.

Waiting room environment and suggested improvements

All had a positive experience with the waiting room environment, and they found it clean, quiet and comfortable. One patient stated that it was nice as it was separate from the main waiting room for the walk in clinic:

I was sitting on a corridor with seats either side, so the actual main waiting area, you're in this massive hub of germs and people coughing and spluttering and all of that business, so I was actually relieved to be sat separate from that.

Although the patients had praised the waiting area, some stated that the waiting environment did not matter too much as they were not waiting long for their consultation. When asked to suggest improvements to the waiting area, the interviewees suggested the provision of water, children's toys, or reading matter:

If people have got young children, they might want to bring in something to keep them occupied whilst they're waiting, because you know what small children are like.. But for myself no, but for children and that you might want to bring in a few toys, some books, or something.

Time wait to be seen

The maximum amount of time patients had to wait in the waiting area for their consultation was ten minutes, with some stating they were seen immediately upon arrival. All patients were happy with the time they waited, and compared it to their experiences in their usual GP surgery, where they would often have to wait much longer.

Yes, considering you can wait even longer when you're at a doctor's surgery (laughs), I've waited half an hour or more to see a doctor, so less than 10 minutes is great. So if you cast on the appointment time it's probably even less than that.

Consultation

Consultation Description

In regards to the consultation, all patients reported a positive experience and reported that the doctor who provided their consultation was friendly and thorough. Many of the patients spoke about how they did not feel rushed by the doctor, and that they had the time to talk through how they were feeling, and the details of their symptoms.

> *…but when he started talking to me I thought well actually, I thought he was pretty good, I just felt that he had a lot of experience. It was quite reassuring because I thought, I think it was just the way he spoke about various things that he was ruling out straight away that made me think oh, yes, so he can just look and straight away go he's got nothing to worry about for these reasons, … But I thought he was pretty good because he did all of the standard checks of chest and throat and ears and eyes he was pretty thorough but quick as well … I think I had confidence that he knew what he was talking about. I thought he was pretty good, I have to say. I did comment on that to my husband when I got out*

Despite these positive experiences, some patients complained about the inability of the doctor to access their records, meaning that the doctor did not have information regarding past history. One patient suggested that this could be particularly problematic for older people, or those with cognitive impairments who would be relied upon to remember details of their illnesses and medications.

> *The only thing I couldn't get my head around was why they can't access my records, being in the same building, they've only obviously got limited access. It was told to me up front that they wouldn't be able to access my GP records, but being in the same building and well we all know, you can log into different programmes using your own password. I just found it really odd... I'm not annoyed, a bit nonplussed about that.*

Some patients also commented that seeing a different doctor might mean a lack of continuity or follow-up, and one patient described how their usual GP had a different opinion on the outcome of their consultation.

Comparison with usual GP service

Patients compared visiting the EHH service with visiting their usual GP service, and although they viewed the service positively overall, they noted the difference in lack of continuity from seeing the same doctor, and the lack of access to medical records. However, one patient suggested that the lack of access to records enabled the doctor to be more thorough in the consultation. For one patient, they stated that they preferred their own GP due to the familiarity.

> *So yeah, I suppose in comparison to my own GP sometimes you feel like you're on top of one another when we're all waiting... Well again when you phone up, if you're not lucky enough to get to see the GP you always see it's about the same really, because if you get to see another GP you get the advice but you don't get the continuity.*

However, the EHH service still offered important benefits for the patients, including the opening hours, which were much more convenient and fitted in the with patients' lifestyles.

Confidence in following recommendations

All patients stated that they felt confident following the recommendations given to them and this was because they had confidence in the doctor's recommendations, and that their doctor had spent time discussing the outcome with them.

> *I would follow them to the letter because I felt that they were done properly and time was spent in going through it all.*

> *Oh yes because having talked to the doctor, he obviously knew what he was talking about.*

Back at Home

How patients felt once they were home

All patients felt better once they returned home after their visit to EHH, and reported feeling better from taking medication, and they were reassured that they had been "taken care of". Patients also spoke of feeling impressed that they had been able to have access to a GP that evening, rather than having to wait a number of days for an alternative appointment.

> *Quite impressed I can say, instead of me having to hang around and wait for the next day to see the doctor, I thought it was quite good the fact that I was able to go on the same day. Yeah, I was quite impressed with the whole thing.*

> *I felt more relaxed, reassured and basically I was able to take the best option for myself and actually I recovered from that problem quite soon after that, within a couple of weeks maybe.*

How the patients felt about using the same service again

All patients stated that they would be very happy to use the service again. They appreciated that the service allowed them to access a GP outside of 9 to 5 working hours, and without having a long wait at an alternative service, such as a walk-in centre.

> *Yeah it's an ideal thing, especially on an appointment basis and you're not sitting around, waiting around as you would do in a normal walk-in centre. It's an appointment service and everything else and that is brilliant, so you don't just walk in and you're sat there for hours because we've done that in the past. As I say, at the old walk-in centre with (Name) we'd have to wait for ages to see a doctor so you just take pot luck. So with the appointment system and everything else, yeah we'd be happy to use it again.*

What would patients have done if the EHH service didn't exist?

Patients suggested a variety of alternatives they would use to seek help for their symptoms or problem, including ringing friends who were doctors, ringing 111, taking time out of work

to attend an appointment at their GP practice in the day, or waiting until an appointment became available.

> *Probably rung the GP and pleaded, gone to the practice and pleaded for an appointment, or when I'd rung if it hadn't been offered, I'd have probably blown my top over the phone or pleaded with them that can somebody please ring me because I need to see a doctor. At that point I was having serious problems breathing and if that hadn't worked, with my symptoms I'd have gone to A&E... It would be A&E.*

> *If I could have gone to see my own doctor I would have gone to see my own doctor. I tend to see a doctor only when I need to because I always feel that there's someone out there that needs to see a doctor more than myself, but if I could have got in to see my own doctor then I would have.*

Two patients said that they would have chosen to visit the Emergency Department if the EHH service had not been available:

Overall view of the service

Overall, all of the patients were very happy with the EHH service, and felt that it was a bonus service for families and those working who might not be able to access a GP appointment in the day. The interviewees praised the service, and stated that they would recommend the service to others.

> *I would say it was a good service, because at the end of the day you're getting to see a competent doctor, and if it's kind of… not an emergency but a situation where you actually need to see a doctor on that day, then having that access; and also for people who are working, if you're of working longer hours you can't always access a GP after 6pm. If you've got that service readily available, then it suits the person/individual for their own needs.*

How the service could be improved

When asked if EHH could be improved, patients did complain about the lack of access to patient records, meaning that they had to provide the doctor with more information than they usually would in a consultation situation, suggesting that the service could be improved by providing the EHH doctors with access to patient records.

> *The only thing I couldn't get my head around was why they can't access my records, being in the same building, they've only obviously got limited access. It was told to me up front that they wouldn't be able to access my GP records, but being in the same building and well we all know, you can log into different programmes using your own password. I just found it really odd... I'm not annoyed, a bit nonplussed about that.*

Other than this, the majority of patients could not think of any suggestions to improve the service they received further, however one patient suggested that the car parking charges could be lowered, and one patient suggested advertising the service more broadly.

> *Well only the bit about paying for the car park because …. I mean I don't mind paying for the car park, it's not that, but it's just… that time of night in the dark…. It's quite isolated around there, and I don't really feel safe around that area to be honest. That's the only thing but once you're inside it's absolutely fine, no problem at all.*

Patient perceived responsibility and control over health

All the patients interviewed felt that they were responsible for their own or their child's health, except for one patient, whose daughter was under the care of Birmingham Children's Hospital as she had recently had a kidney transplant.

> *Yes, I do… I do believe that lifestyle can determine a lot how healthy we are and obviously it's in our own hands what sort of lifestyle we choose. But having doctors there to support and help and give us the right diagnosis is extremely helpful and useful.*

The majority of patients also felt that they were in control of their health, except for one patient who stated that they did not feel in control when they were required to access health services, such as the GP office or a hospital.

Conclusion

From the patient perspective, the EHH service was very well received, and patients had very positive feedback as well as praise for the service. Patients were given the option to access the service either because they felt that they could not wait for a later GP appointment at their usual GP practice, or because they were unable to attend a GP appointment during working hours. Patients found the EHH service very easy to locate, mostly because they were already aware of the location of the City of Coventry Healthcare Centre. Within the building, most patients were again easily able to find the service, either because they had received previous instructions regarding the location, or because they asked a receptionist at the healthcare centre. Patients viewed their consultation at the EHH service as a positive experience, and the doctors were described as friendly and thorough. Despite these positive experiences, some patients complained about the inability of the doctor to access their patient records. Patients also spoke of how seeing a different doctor to their usual GP meant a lack of continuity and possible lack of follow up, however this seemed to be outweighed by the convenience of the service, such as the opening hours which fitted in with their lifestyle. If the EHH service did not exist, most patients spoke of how they would either be forced to wait for an appointment at a later, or more convenient date, or they would utilise the 111 service for advice. Overall, patients were very satisfied with the EHH service, and other than allowing the EHH doctors access to patient records, could not think of any improvements to the service, and indeed they spoke of how they hoped the service would continue, and be expanded to cover more patients in the Coventry area.

Phase 3 –Service innovation/modified Delphi exercise & Co-creation event

Service innovation/modified Delphi exercise – methodology

Any emerging *issues* of user acceptability, relevance and integration of pathways identified in phase 1 and phase 2 of the current work package (combined with findings from Work package 3: *Impacts on staff and the wider health and social care system*) were to be explored in the light of national innovations. Then using a snow-balling technique, the evaluation team would identify whether other service innovations nationally within the Best Care Anywhere programme of transformational change appear to have identified potential solutions for these. A modified national Delphi exercise covering BCA sites and national experts will identify and explore consensus on innovative services nationally and their perceived strengths and weaknesses.

Co-creation event - methodology

Co-design techniques will be used with local patients and stakeholders to identify practical and feasible improvements to the three Coventry schemes. A structured approach, combined with co-creation and co-delivery/co-design linked to potential innovative solutions identified through the Delphi exercise, will help to identify user-centred improvements for the three local schemes.

Progress– Service innovation/modified Delphi exercise

Service innovation

Due to delays in questionnaire distribution and participant recruitment, the results from Phase 2 which were to form the basis for the snowballing and Delphi exercise were not available in time for this report. Therefore, the Delphi exercise will now take place in Autumn/Winter 2016.

However, in advance of available results, a preliminary scope has been undertaken. This has begun to identify key areas relevant to user acceptability and equity in the broader national context. In particular whether any schemes are:

- measuring patient satisfaction & if so how?
- recording impact on access inequality
- involving patients in designing/ re-designing services

Results

There appears to be no coordinated approach to measuring patient satisfaction in programmes nationally. Some sites have used web-based survey approaches (e.g. survey monkey) not always very successfully; others have used touch screens; and some have used paper-based questionnaires. More importantly, there appears to be no standard satisfaction measurement tool or framework in use nationally across sites.

Impact of innovation on access inequality

Relatively few programmes appear to be gathering evidence on the impact of new services on equality e.g. access by ethnic minorities and other "hard-to-reach" groups, including people facing severe and multiple disadvantage. Some sites report programmes which target hard-to-reach groups or areas of socio-economic deprivation – but there is relatively little robust evidence available on measurable impacts. Barriers such as language needs do not appear to be viewed as a challenge which innovative programmes could address. Non-written formats (e.g. pictograms) also do not appear to be used, other than for acquiring consent.

Involving patients in the design/ re-design of service innovation

Involvement of patients in the design of services (co-creation, co-design) appears to be lacking. There is some work focused on the patient journey, but this is usually from the professional's perspective, sharing information between professional groups, defining datasets etc.

Modified Delphi exercise

A two-round modified Delphi exercise is planned based on findings from the WP2 patient surveys and interviews, plus WP3 (Birmingham) interviews/focus group findings. A Delphi

exercise framework has been prepared, ready to be populated; the survey will now take place in Autumn/Winter 2016.

Progress– Co-creation event

The planned co-creation event will now take place in Autumn/Winter 2016.

COST AND SAVINGS ANALYSIS

An important part of evaluating the PMAF is measuring the costs of running the services and estimating any efficiency savings made. In this chapter, we present the costs and savings in three sections. The first section presents a Budget Impact Analysis (BIA) from a health commissioner's perspective for three of the PMAF services. In the second section, we report the planned outlays for the three services. In the third section, we draw our main conclusions.

Budget Impact Analysis

We perform costing studies to estimate the money value of the inputs needed to deliver Extended Hours Services, the Frailty Service and GP in ED. The total cost of each service is calculated by multiplying the resource expended by the unit costs of those resources. In this section, our costing involves the:

(a) Measurement of the quantity of inputs (resources) needed to deliver the names services, measured in natural units, and

(b) Valuation of inputs in money terms. [1]

Our costing work estimates the expected impact on the CCG budget for the named services over the two years of the PMAF (2015/16 and 2016/17). To measure uncertainty, we present a series of scenarios, changing input parameters either one at a time or several at a time. This creates different situations meaningful to CCG decision-makers. For example, changing intervention uptake rates will change the costs of the service. [2] Sensitivity analysis is also presented alongside the costing models.

GP in ED

The analysis for GP in ED is given in Table 2.3. The unit costs show much is paid for the average consultation based upon figures derived from the Personal Social Services Research Unit (PSSRU) publication "Unit cost of health and social care". Using this source is standard practice in NHS costing studies. The table shows that the PMAF unit cost of £47 per consultation was much lower than the hospital cost of £89. A £42 difference. As 26,164 consultations are assumed to be provided, then the estimated cost saving of GP in ED are £746,425.

Table 2.3. GP in ED service cost model for two years

Notes	Description	Unit costs	Units	Total cost
	Total cost for GP in ED		***26,164***	***£1,582,171***
	Average Staff cost per consultation	£47	26,164	£1,217,171
	Estimated current Room cost	£500	730	£365,000
	Average consultation length (minutes)		35	
	Number of consultations		26,164	
	Counterfactual: The ED cost for current patients	***£89***	***26164***	***£2,328,596***
1	***Savings: GP in ED costs less counterfactual costs***			***-£746,425***

Notes: **1.** The data is from 2014-15 "Unit cost of health and social care PSSRU" 9. The budgeted impact is net saving for the GP in ED service; thereby a negative number shows that current purposed expenses are lower than a similar service at current national costs.

Table 2.4 Extended hour service monthly data

	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16
GP Appointments Issued	109	121	121	328	580	629	877
Nurse Appointments Issued	109	121	121	328	580	629	802
Did Not Attended	17%	13%	20%	19%	11%	14%	10.70%
GP Appointments Actual Use	90	105	97	266	516	541	783
Nurse Appointments Actual Use	90	105	97	266	516	541	716
Total practices in the program	1	1	3	5	13	24	28

Extended Hours Service EHH

The extended hour service was based in registered GP surgeries. The number of appointments and associated information are given in Table 2.4. This shows a steady increase in service use over the first six months of the PMAF. As more practices joined the scheme, more patients

received appointments both for doctors and nurses. Costs therefore rose. The main cost analysis is presented in Table 2.5 and is based upon the figure presented in Table 2.4.

Table 2.5 Extended hour service cost model for two years of the program 2015-17

Notes	Description	Unit costs	Units	Total cost
	Total costs, current care (budgeted expense)			***£1,099,066***
	Counterfactual costs for consulted appointments			
	Cost for a GP appointment in regular surgery	£44	5,820	£256,068
	Cost for a Nurse appointment in regular surgery	£25	5,373	£134,335
	Cost of Walk In Centre consultations	£60	3,916	£234,983
	Cost of A & E Consultations	£89	3,357	£298,802
	Cost of visiting pharmacist	£20	559	£11,181
	Total counterfactual cost			£924,188
1	***Net Savings: EH costs less alternate costs***			***£174,878***

Notes: The central assumption is that take up of service stays the same, there will be potential benefits if DNA goes down and attendances go up. **1.** The data is from 2014-15 "Unit cost of health and social care PSSRU" 9. The budgeted impact is net saving for the extended hour hub; thereby a negative number shows that current purposed expenses are lower than a similar service at current national costs.

Using PSSRU data, Table 2.5 shows the unit costs of appointments by different professionals, in different settings. The cost model estimates predicted total costs by assuming the number of consultations provided by GPs, nurses and pharmacists, including Walk In Centre and A&E costs. As existing care would cost £1,099,066 and the cost of the new service would be £924,188, then the estimated savings of EH are £174,878.

Frailty Service

The primary care frailty service is based in Ward 2 of UHCW. The ward is predominantly used by the frailty team (although ward is not exclusive to this service). The following resources were expended for this service:

- GP – 2 x (08:00-16:00) shifts daily, Mon-Fri (16 hours per day)
- Band 6 Frailty Nurse – 15 hours per day, Mon – Fri
- REACT – 1 x (08:00-16:00) shift daily, Mon-Fri (8 hours per day)

- Care Navigators (Age UK) - 2 x (08:00-16:00) daily shifts, Mon-Fri (16 hrs per day)
- Matron - 1 x (08:00-16:00) daily shift, Mon-Fri (8 hours per day)

The cost model and sensitivity analysis for this service are presented in Table 2.6 and Table 2.7.

Table 2.6 Frailty service cost model for two years of the program

Notes	Description	Unit costs	Units	Total cost
1	***Total costs, current care (budgeted expense)***			**£3,164,544**
2	2 x GP at any time	£72	16	£1,152
3	1 x Band 6 Frailty Nurse	£51	15	£765
4	1 x REACT	£51	8	£408
5	2 x Care Navigators	£43	16	£688
6	1 x Matron	£51	8	£408
7	Daily staff cost for running the ward	£3,421	1	£3,421
8	Total cost of Frailty Service for two years	£3,421	730	£2,497,330
9	***Estimated incremental costs of Frailty Service***			***£667,214***
10	Number of possible hospitalization avoided		708	
11	Average cost of hospitalization	£3,421	708	£2,422,068
12	***Estimated net budget impact***			***-£1,754,854***

Notes: The central assumption is that take up of service stays the same, otherwise the cost of operations will increase depending on proportional increase in resource utilization. The data is from 2014-15 "Unit cost of health and social care PSSRU"
1 this is the budgeted figure for the program set for the planned activities for frailty service. **2** Two GP's work 8 hours each with 16 hours of daily work load. **3-4** REACT cost is based at Band 6 nurse cost. **5** Care Navigators cost is based at Band 6 nurse cost **6** Matron or senior nurse cost is based at Band 6 nurse cost **7** this is per day resource cost including salary, overheads, and qualifications and ongoing training. **9** This is the increase in cost for providing at planned expenses compared to national representative cost for a similar service **12.** The budgeted impact is net saving for the frailty service; thereby a negative number shows that current purposed expenses are lower than a similar service at current national costs.

Table 2.6 estimates the costs of services using the resource use approach, which multiplies resources expended by their unit costs. The total cost of the frailty service for two years is £2,497,330. If we assume that this avoided 708 cases, the cost saved is £2,422,068. However, the new service increases costs by £667,214. Therefore, expected savings are £2,422,068 minus £667,214, which equals a saving of £1,754,854. As there is some uncertainty around

these estimates, we performed the sensitivity analysis shown in Table 2.7. We use figures rounded to the nearest £1000. The example shown in Table 2.6 is called the "baseline value", with a cost of running the ward of £3,421,000 and 708 hospitalisations avoided. If we assume no cases avoided, the ward increases running costs by £1,099,000. If 858 hospitalisations are avoided, the costs avoided increase from £1.754m to £3,690m. The scheme is therefore highly efficient, if hospitalisations can be avoided.

Table 2.7 Frailty service cost model: sensitivity analysis with variation to key parameters

Parameter varied	Baseline value	Minimum value	Maximum value	Baseline net saving (£000s)	Minimum net saving (£000s)	Maximum net saving (£000s)	Change (£000s)
Unit cost of running the frailty ward	£3,421	£1,901	£3,897				
Number of Hospitalization avoided	708	0	858				
Identified savings				-£1,754	£1,099	-£3,690	-£4,790

Notes: The budgeted impact is net saving for the frailty service; thereby a negative number shows that current purposed expenses are lower than a similar service at current national costs and vice versa.

PMAF Expenses outlays 2015-2017

The cost of service provision for the PMAF schemes is met by an allocated budget, which is divided into separate budget headings for GP in ED, EHH and Frailty. The data collected, and analysed below, are allocated spends not actual spends. In this initial analysis, we perform the following tasks with this data:

1. Breakdown of cost, by scheme, into staff, management and overheads spends
2. Graphical representation of monthly cost data, by scheme, 2015/16 to 2016/17
3. Calculation of proxy measures of efficiency for three schemes

These estimates are based upon local data only. Future costing work could construct national cost estimates in order to determine cost consequences of the schemes roll-out. The costs for each of the three schemes are shown in Tables 6 to 8. These are discussed below.

GP in ED

Table 2.8 shows that the annual allocated cost for GP in ED services is £770,818 in 2015/16, which increases to £1,054,807 in 2016/17. Of these costs, the majority of expenditure is on staff costs, with the main spends being on GP then nurse time. The 36 per cent growth in costs between the first and second year is primarily driven by an increase in staff costs.

Table 2.8: Annual cost for GP in ED Services			
	2015-16	**2016-17**	**% Change**
Direct Staff Cost			
Lead GP (registrar group)	£462,857	£657,000	41.9
Nurse, ECP (registered practitioner)	£208,286	£295,650	41.9
Administrative and Clerical	£46,286	£65,700	41.9
Total direct staff cost	**£717,429**	**£1,018,350**	**41.9**
Indirect staff costs: Service management team			
Clinical Director	£36,735	£26,071	-29.0
Business Manager	£8,816	£6,257	-29.0
Administrative and Clerical	£4,408	£3,129	-29.0
Total management cost	**£49,959**	**£35,457**	**-29.0**
Service overheads			
CQC registration	£1,000	£1,000	0.0
Insurance	£2,430	£0	-100.0
Total Services overheads	£3,430	£1,000	-70.8
Grand Total	£770,818	£1,054,807	36.8

EHH Services

Table 2.9 show the annual allocated spends for EHH. In contrast to GP in ED, the annual cost for EHH services increases relatively less over the two years, with an increase of 11.9%. In relative terms, support staff and overhead costs comprise larger proportion of the allocated budget in both years.

Table 2.9: Annual cost for EHH Services			
	2015-16	**2016-17**	**% Change**
Direct Staff Cost			
Lead GP (registrar group)	£195,000	£246,600	26.5
Nurse practitioner / ECP / pharmacist	£87,750	£110,970	26.5
Administrative and Clerical	£19,500	£24,660	26.5
Total direct staff cost	**£302,250**	**£382,230**	**26.5**
Indirect staff costs: Service management team			
Clinical Director	£41,429	£26,071	-37.1
Business Manager	£39,771	£25,029	-37.1
Administrative and Clerical (finance)	£6,214	£3,911	-37.1
Total management cost	**£87,414**	**£55,011**	**-37.1**
Direct other costs: Medical supplies			
Medical Consumables	£20,714	£26,071	25.9
Drugs	£20,714	£26,071	25.9
Total supplies cost	**£41,429**	**£52,143**	**25.9**
Service overheads			
Hub premises	£58,000	£73,000	25.9
IT and telecoms	£4,143	£5,214	25.9
Postage and stationery	£4,143	£5,214	25.9
Small medical equipment	£10,357	£6,518	-37.1
CQC registration	£1,000	£1,000	0.0
Insurance	£10,000		-100.0
Total Services overheads	**£87,643**	**£90,946**	**3.8**
Grand Total	**£518,736**	**£580,330**	**11.9**

Frailty Services

Table 2.10 shows the allocated spend for frailty services. Again, staff costs are the main expenditure for this service, but with a wider range of professionals involved. Between the two years, the budget has a relatively large increase of 28.7%.

Table 2.10: Annual cost for Frailty Services			
	2015-16	**2016-17**	**% Change**
Direct staff costs: service delivery team			
Lead GP	£330,000	£438,000	32.7
Community matron / district nurses	£148,500	£197,100	32.7
Mental health workers	£148,500	£197,100	32.7
Community development worker	£148,500	£197,100	32.7
Social care	£148,500	£197,100	32.7
Therapy services	£148,500	£197,100	32.7
Continuing care	£148,500	£197,100	32.7
Administration	£49,500	£65,700	32.7
Total direct staff cost	**£1,270,500**	**£1,686,300**	**32.7**
Indirect staff costs: Service management team			
Clinical Director	£39,286	£26,071	-33.6
Business Manager	£23,571	£15,643	-33.6
Total management cost	**£62,857**	**£41,714**	**-33.6**
Direct other costs: Medical supplies			
Tele healthcare	£35,640	£47,304	32.7
Total supplies cost	£35,640	£47,304	32.7
Service overheads			
IT and telecoms	£786	£1,043	32.7
Postage and stationery	£786	£1,043	32.7
Small medical equipment	£1,964	£2,607	32.7
CQC registration	£1,000	£1,000	0.0
Insurance	£10,000	£0	-100.0
Total Services overheads	**£14,536**	**£5,693**	**-60.8**
Grand Total	**£1,383,533**	**£1,781,011**	**28.7**

Monthly cost data

Figure 2.3 shows the monthly increase in allocated costs for the three schemes over their two-year lifetime. All schemes have a similar cost profile, with a short run-in period, followed by stable monthly planned expenditure until the end of the scheme.

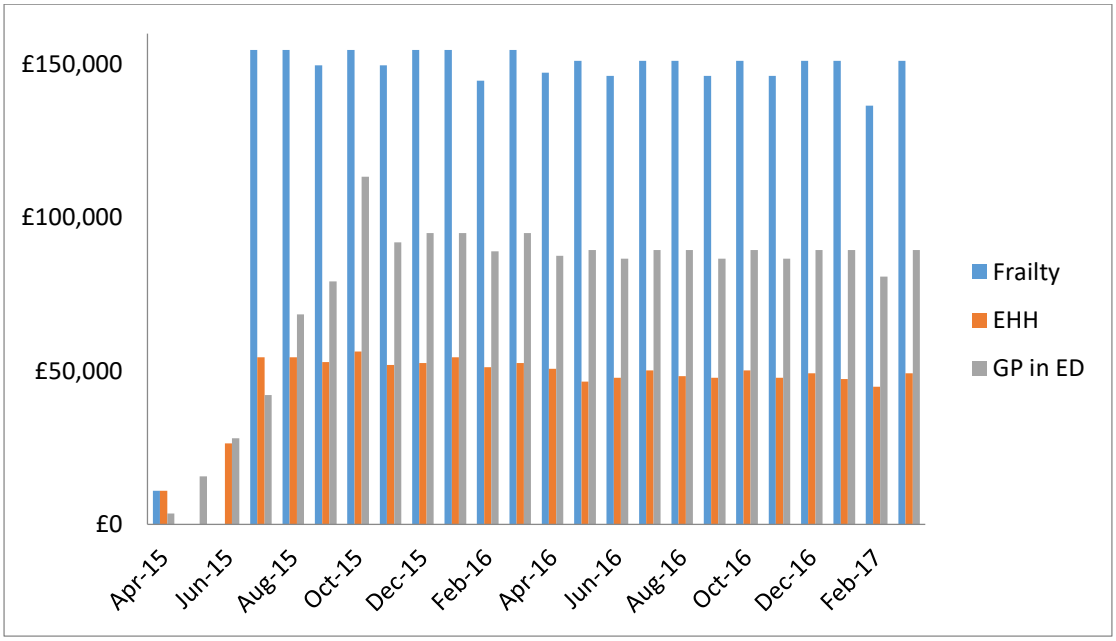


FIGURE 2.3 TOTAL COST OF SERVICE IN £

Efficiency data

Two measures of activity are used in the three projects. First, planned patient contact data are collected for all of the three schemes. Second, planned operating hours are collected for the GP in ED only. These activity data are then converted into the variables “cost per contact” and “cost per hour”. The data shows that the cost per contact varies for the three schemes. However, full data on operating hours was not available.

Table 2.11: Efficiency measures 2015-16			
GP in ED	**2015-16**	**2016-17**	**% Change**
Patient contacts	20,829	29,565	41.9
Total operating hours	2,208	3,132	41.8
Cost Per Contact (pounds per contact)	**£37**	**£36**	**-3.6**
Cost Per Hour (pounds per hour)	**£349**	**£337**	**-3.5**
EHH			
Patient contacts	21,344	26,973	26.4
Total operating hours	-	-	-
Cost Per Contact (pounds per contact)	**£24**	**£22**	**-11.5**
Frailty			
Patient contacts	7996	10613	32.7
Total operating hours	-	-	-
Cost Per Contact (pounds per contact)	**£173**	**£168**	**-3.0**

Conclusions

The conclusions drawn from this analysis is that the three schemes offer substantial savings over existing care. However, a limitation of this analysis is that key assumptions have been made in terms of costs and activity levels. These should be verified with actual outcomes over the lifetime of the project before final conclusions are drawn, In conclusion, our preliminary analysis suggests that GP in ED, EHH and the frailty service all offer significant efficiency savings for the NHS.

Summary of results:

This Work-package focused on the service user perceptions of the Coventry GP Alliance: Best Care, Anywhere service. In total, 133 questionnaires were collected from the EHH service, and 180 questionnaires were collected from the GP in ED service. Forty-one patients participated in a semi-structured interview focusing on the patient journey for the service, from prior to service access (onset of symptoms) through to returning home.

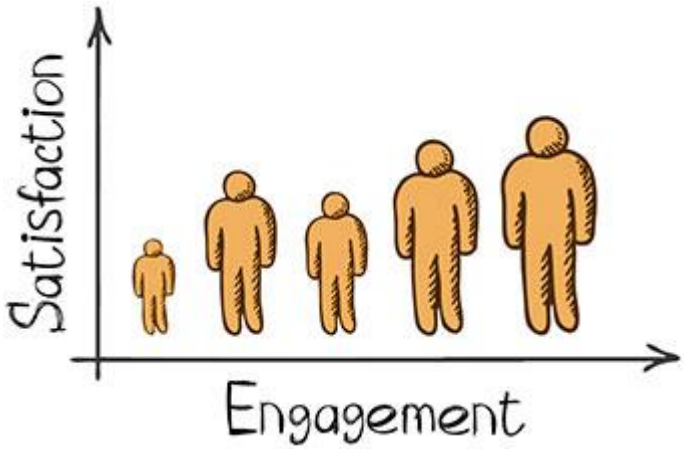
Overall patients were positive about both the GP in ED and EHH services.

- 84% agreed or strongly agreed that they found it easy to access the service.
- 83% agreed or strongly agreed that they were satisfied with how easy it was to access the service.
- 84% agreed or strongly agreed that they would be happy to see the same doctor again.
- 81% agreed or strongly agreed that they were well informed about the decisions made about their care/treatment.

The three most important factors in the decision to access the service were opening hours, waiting times, and parking fees.

Preliminary analysis suggests that GP in ED, EHH and the frailty service all offer significant efficiency savings for the NHS. Further longitudinal analysis of the schemes' outcomes would be necessary in order to draw firm conclusions.

Further data collection and analysis of the data will take place over the coming months, including a co-creation workshop planned for autumn/winter 2016.



Work package 3: Impact on staff and the wider health and social care system

UNIVERSITY OF BIRMINGHAM

Project team: Robin Miller, Hillary Brown & Kerry Allen

Introduction

The aim of this element of the evaluation was therefore to understand the implementation processes of the PMAF programme from the perspectives of those who worked within it. It is well established through previous research that not only does a successful change initiative have to identify the relevant mechanisms which could achieve the desired outcomes it also needs to implement these within the local context. Key to such a process in the field of health and care is securing the commitment of the associated clinicians, practitioners and other staff members as it will be through their practice that the support provided to patients and communities will improve. They will also have unique insights regarding the delivery of the programme, including the dynamic interplay between different services and organisations.

The specific key aims of Workstream 3 were to -

- explore the experiences of staff working within the three PMAF initiatives,
- understand the connection and broader impact of the PMAF programme on the wider health and social care system

  and to
- identify key issues and learning for the future development of the initiatives.

Methodology

The evaluation design was qualitative, using interviews and focus groups to explore the experiences and insights of key stakeholders connected with the PMAF initiatives and programme. In total there were 22 participants which were drawn from different professional groups (including doctors, nurses, social workers and administration staff), sectors (primary, community and acute care) and organisations (local authority, NHS trust and voluntary and community sector). These included those responsible for leading elements of the programme and those who worked within individual initiatives. The data gathering and analysis was completed by three researchers with transcripts being themed with the support of NVIVO software.

Results

Was there support for the PMAF programme?

Interviewees confirmed the overall rationale of the programme that the local health and care system was not working as effectively as it could and that this was having a negative impact for both patients and the use of resources. In particular it was reported that a lack of capacity and/or co-ordination were leading to unnecessary admissions to hospital and patients experiencing extended stays in hospital due to ineffective discharge pathways and inter-agency working. This was despite much commitment by clinicians and practitioners, and often a high standard of quality support provided by single agencies. It was highlighted that some general practices do not have appointments on same day for urgent appointments, or within one to two weeks for routine appointments and this delay had the potential to result in patients then presenting in A&E. There were also patients who were not registered with a general practice due to language or residence issues who were more likely to resort to emergency care options:

> *There's lots of frail older people that come into hospital and present at the front door, they're mismanaged by acute medicine and end up spending two or three weeks in hospital whilst they have some physiotherapy, care is organised and lots of other tests are organised. Essentially when you bring older people into hospital it's generally a bad thing and the longer they stay in, the worst it is.*

> *There are lots of incredibly busy departments doing work with similar patient cohorts, and it's about making sure that we aligned ourselves rather than tread on each other's toes*

> *How are we going to resolve this really practical, low-level issue? In comparison to the medical factors that go on for somebody, they're really simple and straightforward, but if that's the reason why the person's still in hospital, then it's no bigger or less of an issue. It's the reason what's stopping them from going home.*

> *We have to go through the rigmarole of having to send referral forms off by fax to social services or intermediate care and then wait a few days for them to reply to say they've lost it and then for us to send it again and then for them to say it's not for us,*

it's for social services, or the other. We go round this massive loop all the time in terms of trying to get people out with care.

It was also recognised that such shortcomings had been identified previously and programmes developed to respond to these challenges. Whilst these were seen to have had some merit, they were either only partially successful and/or had not been sustained in the long term.

Historically we've tried to work together on some of these patients who are readmitted. And we used to go up there regularly and we used to rotate through the hospital, particularly on the respiratory ward, but that was their baby and they didn't want to work with us at all. It was quite difficult and so that was stopped.

The new developments introduced by the PMAF were seen as offering the potential to better co-ordinate the resources currently available, including those held by patients and their communities, and to ensure that all services were working in a patient-centred manner:

they'll actually be there on the unit so when we talk to them about Mrs Smith they say 'fine, we'll take her out today. We've got the care navigator that can organise the transport, a bit of food in the fridge, etc. We've got the therapists and the care staff that can go in straight away and do it' and so a three week length of stay can be reduced to one day.

I've been in the NHS for a long time and this does feel different. I think maybe we've got a lot of very young, motivated GPs, who I think want to see things change and are willing to put their head above the parapet to make that change. I think it feels like the shift of power in terms of decision-making is becoming a little bit more community focused, rather than all focused on the acute.

Senior stakeholders described the PMAF programme as being embedded within wider strategic discussions regarding integration between health and care, and acute and primary care services. In this regard the recent introduction of multi-disciplinary neighbourhood teams was a linked development, and the Sustainability and Transformation Plan was providing a helpful vehicle to engage all of the relevant organisations:

> The ambulance service has come a long way over the last 12 months. They're coming up with ideas, they're keen to engage, they want to try stuff out.

What have been the impacts of the programme?

Staff members involved with the GP in ED and Frailty Team could identify that the two services had led to considerable improvements in patient care provided. Specific improvements included - improved access for those who had traditionally been excluded from services; more person-centred and holistic care; and increased co-ordination and timeliness of response. As a consequence these patients were seen to have had more control over their care, and to have received support in the setting and manner of their choosing:

> *We have a significant cohort of patients who are the ones that struggle with the Health system and the way it works… this is a group of patients who have very varied, pasts and journeys through both community and hospital services. ..its a massive step forward in terms of targeting inequality.*

> *He's not eligible for hospital transfer, so an ambulance won't be able to take him and he's got absolutely no support whatsoever. …so we drove the chap back to the town where he lives at about two hours' notice. He's absolutely delighted. The hospital is delighted.*

> *There's no doubt that some of those patients would otherwise have been admitted to the hospital possibly inappropriately and there's no doubt that those patients who go through that service get a better quality of service than they would otherwise have got.*

> *frail patients are just in a group of patients that don't have that much of a voice within Health services, so to try and put them at the forefront and let them be involved in their own care and try to really empower them in their opinions, even at their own risk sometimes, is a benefit for them.*

The impacts for patients within the Extended Hours service were principally (as would be expected) connected with being able to access general practice more quickly and at a more convenient time than previously. That said, there were comments that contrary to expectations there were not as many patients in full time employment seeking support outside of office hours, and that bringing children to late evening appointments was not

always appropriate. In addition to the improvement in access, patients were also thought to have a good experience of using the services and that this exceeded their normal expectations. The lack of electronic patient records was seen as both a blessing and a curse – whilst key information may not be as readily available, the consultation process was purely focussed on interacting with the patient which was seen to increase communication and engagement.

> *you do take more time to talk to them as well - you have a chat, which you don't do in general practice….the patient comes into your surgery or into reception in a far better frame of mind than they come in normal surgery*

> *They've all been impressed that they haven't had to sit. You know, when we first said it's in the same place as the walk-in centre, the city of Coventry, they were like 'oh no we're going have to sit there for, you know, an hour and a half' or whatever and we've explained that it is an appointment time. You will be seen on the appointment time, and we've had feedback from them to say they were very impressed with the service that they'd received*

> *we are focused a lot more, you don't have to look on the computer as much because there's nothing to look at!*

In addition to the impacts for patients, the clinicians and practitioners who were involved with the initiatives could relate personal benefits for them as professionals. Within the Frailty Team these centred around the opportunity to learn more about the role and perspectives of others, whereas in the Extended Hours hub the key learning related to alternative ways of providing and organising general practice. The new services were also seen to provide an opportunity to deliver a high quality of clinical care which in turn was highly rewarding and motivating:

> *One of the biggest frustrations in Healthcare can often be that you feel that you can't deliver the service you really want to deliver and so I think it's allowed people to feel that they are.*

Everyday is a learning curve for us, picking up new stuff every day. The hospital staff have learnt from us as well what we do on the outside…So it's been, it's not just been for us, it's been both ways I think that it's really been a good learning experience.

We've had a number of examples where we've had differences of opinions and we've talked that through and that I think everybody in the group would probably tell you that that's been very valuable in doing that, to understand the perspective from another discipline has been particularly beneficial to all of us I think.

Unless you have friends who are other medics who might chat to you, you don't really get to work outside that very rarely. It's quite nice to actually have relationships with other receptionists and doctors and practice managers and actually take some of those ideas back to your own surgery is quite good!

What has worked well and supported the programme to achieve its objectives?

Hearing the voluntary sector

From the voluntary sector perspective integrated care approaches provide a valuable opportunity to learn about other services, communicate their own offer, and be involved in local service development. Whilst this is true to some extent for all organisations, the enabling effect of the PMAF opportunity for voluntary sector organisations to engage locally was expressed strongly within the Frailty service and was highly valued.

I've had lots of conversations informally and formally and kind of discussion groups and planning groups with various partners in the system, giving the voluntary-sector perspective and giving our input, which for us has been an incredibly helpful period because the voluntary sector often feels like there's a closed door, and the views aren't necessarily heard. But recently, actually, from the integrated-care approach, we've been very much listened to, very much included in – getting closer to co-design is what I would say.

In addition voluntary sector staff in the Frailty service described the benefit of not being a "bolt-on" to existing services, acting to patch up problem after the services had been

designed. Instead they talked about being able to include voluntary sector skills and thinking from the outset.

> *Actually, we can add as much value to the design phase as anybody else and we would like to be there from day one and see what the kinks are and help you iron them out.' And in the frailty service, people from different disciplines have had that role of ironing those kinks out, rather than it being a very top-down process. So that's been – I would say from a 'why has it been successful?', that's a real big part of it.*

Dedicated staff with the right experience

Getting the right staff to lead and deliver new interventions was described as essential to their success across all services. PMAF delivered innovation in services – either delivering in new way, by different staff or at different times and locations. Because of this added level of complexity, securing confident and experienced staff was imperative. This was not just the case for leadership positions but applied to all staff contributing to the services. This example describes the importance of employing the right reception staff at the extended hours hub.

> *They're highly skilled, they know exactly what they're doing, they know what to do if there's – the ordinary, day-to-day problems, as I call them, and, yes, I got phoned last night 'cause one of the doctors was late turning up. But she [reception staff member] knew exactly what to do and how to deal with it, at what point to ring me and…so I think having the skilled staff in there. I wouldn't have wanted to start it with, you know, kind of an apprentice or an unqualified who didn't know EMIS or didn't know what to do for chaperoning, or didn't know what to do if there's an emergency.*

This member of staff, responsible for the recruitment of GPs in the Emergency Department, explains the benefits of involving staff with the right skills and connections. The importance of individuals with complementary skills is significant in multi-sector, multidisciplinary teams.

> *So he kind of, well he aided me with his clinical knowledge to take the lead within the ED department. He was, I think one of the big benefits he'd worked there for six or seven years previous in his training and as a junior doctor. So he was well, he made the*

key connections or the key stakeholders with a lot of people. So when we opened the service it wasn't a new face to the people within the business.

Beyond getting the right people to staff and manage services, staff described that giving staff time to focus on this particular service was another important success factor. Particularly in the extended hours service, staff tended to juggle their PMAF funded work role with other roles. For instance, practice nurses and GPs took on the work in addition to their daytime commitments. For some services this is unavoidable, however the ability to focus entirely on the new integrated initiatives (Frailty and GP in ED) was valued by interviewees, and especially important in leadership roles.

Having dedicated, specific staff has been – is always a really, really important factor.

Trust in the governance approach

Staff leading service developments described how they needed time and space to redesign and create new approaches to care provision. Within this, a supportive approach (from the GP Alliance and the CCG) that was not too focussed on immediately producing outcomes was appreciated by staff in hindsight.

They were sort of allowing us to find our feet and try and figure out what's the best way to make this work. That was quite unnerving because we felt like we should be develop, you know, and delivering outcomes. And in fact what, you know, when we've spoken to them and said 'listen we're worried that you're wanting to see numbers and we can't give you numbers because the Trust isn't really helping us', they've been really supportive about that, and said 'listen, we can see that this has got real potential, you're doing what you're doing and we trust you'. So that's been so supportive.

They definitely gave support and time so they aid us without significant pressure on what we were delivering and kind of like a trust that we would try to develop the best thing that we could and that was very helpful to not have the, to not feel that pressure to be delivering it immediately and have that space. So that was actually good and then I think just the people who helped planning the GP in ED did the right thing to be

able to build relationships with people in lots of different areas and that did actively help, so even though we don't have necessarily formal agreements with anyone we're very supported by lots of different groups.

This trust-based style of governance was recognised and interpreted in a positive light by the local authority.

It hasn't been overly burdensome. The people haven't become overly drawn into the, like, performance management and reporting that goes with flagship schemes, and people spend the large proportion of time, energy and effort on delivering it rather than, you know, counting it.

Staff leading the initiatives were keen to highlight the helpful nature of their PMAF steering meetings.

It feels like quite a good forum to raise concerns and challenges and often things get picked up and we, you know, we're able to access help through that.

The breadth of experience of members in the GP alliance was also seen as an important factor that might help the governance style to be less risk-averse.

I think you've got some very senior GPs leading through the GP alliance, so they're leading from a more senior level in terms of, you know, board-to-board discussions and exec discussions, so there is a top-down approach, which I don't think we had previously. So I think they've got a very different philosophy. They're not risk averse. They're willing to share risk; they're willing to work with us. So I think they're doing more than just being a GP in ED.

Better communication between sectors

Frailty and GP in ED initiatives described better communication between sectors. This increased communication often had a positive impact on staff and patient knowledge of services, patient experience and the ability to deliver services efficiently.

It's good actually because we have the links between primary care and the secondary care. The communication and the relationship between primary care and secondary care has been in hand, and it was really good as that helped the patient journey.

It's a kind of a new learning as well for us. Like getting to know these systems and the facilities available in the community, in the primary care for our patients to get them out quickly and safely. And if they know that the community matrons manage lots of this complex patients, and also for us to have reassurance that we wanted to send these patients home today, that we know somebody's going to follow up tomorrow, and also the Age UK in place to follow up in a few days time. So that's kind of good for the patient perspective and also for us, having to give us confidence to send the patient.

Helping people understand what services are available in the Community and what's reasonable to expect the GPs to follow up and what's not. So it was very much just about establishing a skill mix, it wasn't really that we're better at some things and they're better at some things, it was just trying to create a whole mix of skills in an area that people knew they could draw on whenever needed.

Bringing social workers together in teams with health professionals in their day-to-day work was seen as particularly helpful. Accessibility of social workers seemed to reduce the time it takes to make arrangements for community support.

Having that dedicated resource of professional resources all in one team, trusting each other, working closely together with each other, not having to go find people but having to go and actually, you know, dig somebody up from Social Services, or go and find therapy or whatever it might; actually knowing that you've got resources there on hand to actually rapidly turn people around…There is a specific social worker, who is for a portion of their time is actually dedicated to the team, so it's not a kind of trying to find a resource; the resource is already there.

The benefits of mixed teams went beyond inclusion of social work. Staff interviewed described a broader process of learning and sharing experience that could underpin more

efficient service design. This benefit seemed to be immediate in initiatives such as the frailty service that bought together diverse professionals.

> *We've now got a really good understanding about what the challenges for Social Services are; they have a really good understanding about what we can achieve and what our limitations are, what are GPs' capacity and what their remit might look like and the challenges that they face about working within a hospital environment, and, you know: 'I know what you did last week and I know what this case looks like' and therefore it gets smoother and smoother and smoother.*

What has not worked well and acted as a barrier to the programme achieving its objectives?

Frailty service

The first challenge for the service was to be clear about which patients were being identified as being suitable for the service and how frailty was assessed.

> *You can describe frailty in a range of different ways and until we started to use the service we didn't have a frailty assessment tool in operation in the hospital or indeed out of the hospital to identify frail patients.*

A number of other practical issues arose when interviewing staff working within the frailty service. These included a lack of physical space for the team and the compatibility of IT systems used by different members of staff and different organisations.

> *I think we've always had an issue in terms of space and, you know, resources within the hospital are a – you know, they're a favourite subject of everybody. There isn't enough – you know, meeting spaces are challenging, the question about having dedicated beds is a real, burning issue and always has been…*

> *Some of our managers are on it, but we need specific permission to be able to access a particular part of CRRS. We had a lot of IT issues around that…*

Most pressingly, staff resources have proved problematic, particularly with the recruitment of senior nurses and therapists.

You can't necessarily just dream up or find highly-qualified, highly-in-demand professionals to just suddenly appear ... That goes for GPs and it goes for all professionals, because there are lots of services that are stretched. … from a nursing recruitment point of view it's not a secret to know that those really good quality, qualified staff who have got that ability to work in community and hospital settings, that's not necessarily an easy remit to fill. So there are challenges there.

But the problem is… everybody wants the matron now and there's just not quite enough of us.

So I would say the challenges have been matrons and therapists, as well. We have not been able to recruit – we've recruited some OTs, but we still haven't fully recruited our OTs and we are struggling with physios, as well.

The issue of resources across the system from a capacity point of view was also discussed in relation to the support of frail, older people and the 'social care' type of support which might be necessary – this could take the form of assistance within the home, or for some elderly patients, a temporary or longer-term stay in a care home.

We've got a patient who came in, lived on his own, a carer would come in once a day, but he was quite vulnerable and he was unsafe to be left on his own. I needed a placement, like a sheltered accommodation sort of placement and he was probably here for about six weeks, trying to sort that out.

Trying to get the patients into the right placements for the patient is a struggle.

There's been a gentleman who's been here for four or five weeks and I think he's now number three on the list to be moved to a placement. So that's quite a long time to keep patients here.

The relationship between different organisations and agencies did create some tensions within the delivery of the service. These tensions arose due to a number of factors, not least the appreciation of how money flowed around the system and which organisation would get what income and which organisation would bear certain costs.

So there's certainly been lots of conversations about financial flows and there's a tension for us between wanting to take work away from the hospital but then being reliant on the income associated with that work to make our books balance.

Lot of shall we say resistance from various places, from say your gerontology team to potentially your council team to actually what does that mean for us? Does that mean I'm going to lose money…? So you have to work through that, which is not easy.

Apart from the practicalities, professional differences had emerged particularly in relation to the level of risk that was considered appropriate in the management of some individual cases. Though these had caused some tensions initially, they were also seen as a learning experience.

One of our, probably our biggest learning curve has been about risk really. The biggest amount of discussions have been about the different disciplines and either risk adversity or the consideration of risk really and very often a large part of my role can be around that.

I had an issue yesterday, the doctor wanted to send the patient home and we were saying as nursing staff, she's not safe to go home. The husband's not coping, she's got vascular dementia, he's on his knees, they need more support. He needs support. Let us finish what we are doing with our, this is my annoyance, we need to finish what we are doing with our patients before we send them home.

Attitudes to risk of a different nature were also apparent in the consideration of patient confidentiality and the sharing of information between organisations. This had led to some negotiation in certain cases as to what information was considered appropriate to share and for what purposes. Communication and engagement between different parts of the system as a whole had been perceived as a barrier for some interviewees and this aspect of joint working continued to be seen as a work in progress.

I suppose the learning from that for me is that I'm not sure that we've always messaged and communicated as effectively as we might with the wider organisation so that people knew what was going on and were welcoming and accepting and that kind of thing.

I think it hasn't been promoted probably quite as well within the hospital environment so there will be areas that probably don't know so much about the service. There's been some misunderstanding in that it has sometimes been seen as a kind of urgent response service.

Primary Care is commissioned by NHS England at the moment and there's a big disconnect I would say between Primary Care and the CCG and NHS England and a loss in terms of what we would like to see from Primary Care.

West Midlands Ambulance Service engagement in the scheme it's not good. They just pick up a patient and take them straight in to hospital. Don't think about what else they can do with them, which is not good, but again that's a difficult one, that's a real sticking point getting West Midlands Ambulance to do a bit more than what they're doing.

How the service works for patients who do not live in Coventry was also raised as an issue.

Coventry were very aware and were part of the build-up of the Frailty Team and the meetings previously, Rugby perhaps weren't quite so aware and we get a lot of Rugby patients in the hospital here. So I think there was an issue there.

A final point to note in relation to the frailty service specifically, relates to the perception of senior commitment to the project and leadership. It was mentioned that more could have been done to raise awareness of the service and to promote it more proactively and widely throughout the system, so that staff might have more clarity over its aims and objectives, thus ensuring a smoother process of operationalisation.

To start with it was a bit slow taking off to get people aware, you know, people who are working. People are protective of their own areas like A&E staff are protective that's their baby, you know, they're starting to recognise the work we're doing and yeah the referrals are coming more and more.

What has happened is that you've got a lot of very senior clinicians in principle are signed up to delivering, but in terms of how that is implemented, there hasn't been clear agreement on what all elements of that frailty pathway will look like.

What happens longer term for the service was also the subject of some uncertainty for interviewees and this aspect of promoting the service was also seen as potentially problematic.

> *I hear talk now that that funding's going to come to an end, without hearing that the service is fully up and running and implemented and delivering what it wanted to do. So I think there's maybe perhaps a lack of understanding about that and what happens when the funding is finished – does that frailty unit just then close down or has it proved itself to be able to keep going?*

The Extended Hours Hub

Again, practical issues were raised in relation to the provision of the service such as the technology used and the information governance arrangements. These were described as being somewhat 'clunky' with downloads and uploads to systems required to transfer patient records and information between the referring practices and the Extended Hours Hub, though it was acknowledged that it was a system that worked in practice.

> *Information sharing so getting the practices to allow us to look at their records and the other one was the actual IT. So actually getting the instal, the GPs able to access the shared record of the patient…the next thing was getting the practices to sign and say yes we could look at their records and yes we could use them in the evenings. Initially the LMC sent out a message to all practices said the information governance agreement is not fit for purpose so don't sign it. Which didn't help.'*

Space and equipment were also raised as problematic issues to overcome initially, specifically in relation to the storage space that was available for holding dressings or other consumables in a shared facility. One practice mentioned the need to provide patients with certain dressings that they would have to take with them to the Hub as these would not be available for them otherwise.

There was some suggestion from interviewees that DNA rates might be higher for the service than routine GP appointments though the evidence to support this was not made available to the research team. If this is found to be the case, then a number of potential reasons might account for this phenomenon. It is possible for example, that patients might feel less

commitment to a service that is not provided by their own practice or staff that are known to them.

> *Do not attend rates are quite high, they're a bit higher than normal primary care rates during the day. So again we're just trying to understand why patients are not coming to be honest, you know, and again that's a phone call really to the patient to say you had your appointment last night, any chance you could tell me why you didn't come?.*

The issue of appropriate referrals to the service was also raised with a couple of interviewees suggesting that more information could have been made available in the form of a fuller service specification to determine what the service would and would not deal with i.e. an example was given of a patient with whiplash that wanted an urgent appointment that was classed as an inappropriate referral to the Extended Hours Hub. There were also queries raised about the appropriateness of referrals to the Hub for patients for whom continuity of care was important such as those with mental health conditions, or those requiring medication reviews.

Lastly, interviewees noted that though the service creates welcome additional capacity for patient consultations, the actions generating from those consultations come back to the practice the next day to deal with and there was a perception that some GPs might be finding this burdensome in addition to their usual workload. However, it was not reported that this had become unmanageable.

Generic barriers

It was noted by a number of interviewees that services had been commissioned rather than pathways, which was seen to run counter to the aims and objectives of the new services. Thus Key Performance Indicators were not always aligned to the delivery of integrated pathways.

> *Commissioners are not commissioning an integrated pathway, so we still have service specifications for these projects with aligned KPIs that don't always align as they want. … that actually drives you into keeping things a little bit separate.*

> *It's partly because we need to get the project delivered, and there's a bit of lack of clarity still, but secondly we're not commissioned to deliver an integrated pathway at this moment.*

Finally, the length of time for CQC registration to be processed and the requirements for regulatory and governance processes to be put in place was seen as a hindrance to getting the services up and running.

> *''The constraints of all three schemes were the CQC registration. So we had to wait for the registration to get, to come through from CQC. So that caused, that was a restraint we couldn't stop...''*

What are the key issues for future development of the programme?

Due to the perceived success of the current initiatives by the majority of the participants a key issue going forward was retaining the current capacity, and ideally increasing the resources so that the services could be offered out to a greater number of patients. It was also recognised that there was opportunity to streamline some current aspects of the services through being more defined about roles and ensuring that processes were as efficient as possible. In respect of the Extended Hours Hub there was a need to be clearer on how it links with other services such as the Walk-in Centre and the Out of Hours Service.

> *We have to sort of pull the criteria together a little bit and say well, you know, because otherwise we're going to be taking everything, particularly as they're noticing that they're not coming back in with our support. They're going to want and every time they have a patient, it's going to be give them to community matron at this rate. So - we're like no more!*
>
> *I think that the numbers of people who can be supported by it are far greater than what we're able to support, and that goes across the whole system.*
>
> *More people at the front door and then we're able to spread that culture of sharing management with patients and not over medicalising*

In addition to uncertain and insufficient resources there were some mentions of a lack of understanding and support within senior members of some organisations as being a risk to sustaining and expanding the impacts achieved. There also appeared to be a need to understand how other new developments such as a hospital-led frailty service would fit alongside the PMAF programme. A connected issue was that of activity based payments for

the acute provider once the GP in ED service was no longer funded by a ring-fenced (and additional) grant:

> *I would hope that we are trail blazing to a certain extent in that way. Maybe to deaf ears at the moment, but that doesn't mean it's not the right way. We're mindful of the fact, it's not massively accepted at the moment.*
>
> *The conversations [around financial flows] remain unresolved and if we were going to normalise some of this stuff then we would need to make sure that we got to grips with that in a way that we probably just haven't at the moment.*

It was also recognised that on the ground there was an on-going need to keep explaining and promoting the new arrangements to ensure that other staff members were aware to refer in appropriate patients:

> still building those relationships in order for A&E to phone and say there's a little old lady here, had a fall, she can go home, but we just need somebody to make sure she's ok. There's still an issue of that's my baby and that's yours, do you know what I mean?

Summary of results:

From the perspectives of those working within the PMAF initiatives the Programme was a necessary development that was responding to identified weaknesses and opportunities within the local health and care system. The programme experienced a number of practical challenges, including a lack of suitable accommodation for new services, compatibility of IT systems, and a shortage of key resources including appropriately skilled clinicians and practitioners. More discrete barriers were also encountered such as different professional perceptions of risk and a perceived lack of support from some senior stakeholders. Despite these difficulties and being in a relatively early stage of development the initiatives are through described as having a positive impact for patients and their families. Furthermore, the staff members themselves have found the services to be an enriching and engaging context in which to practice. Key to the success of the programme appears to be the diversity of professionals and sectors, engaging committed and skilled staff members, a supportive approach to oversight, and improved communication through increased and better quality contact with other professionals and the services that they represent. As is common with such projects, sustaining the impacts will require sustained effort and investment, and positive engagement with wider stakeholders. There is on-going work to be done regarding how these initiatives connect with other services to ensure that the most effective and efficient arrangements are in place, and opportunity to refine further their remit and target populations.

Conclusions

Overall attendances at A&E were relatively static after the introduction of the GP in ED, although there was a seasonal variation for self-reporting minor cases. No overall change was observed in attendance rates or four-hour waits before and after introduction of the intervention. In the matched analyses there were process benefits, patients seen by GP in ED experienced a shorter wait and they were less likely to be admitted. Importantly they were not more likely to re-attend, suggesting no substantial difference in health outcomes.

City centres contributed disproportionately to attendance in A&E and approximately 38% came from just 10 postcode sectors. We would not necessarily expect four hour waits or re-attendances to differ by post-code. However, a four-hour wait may be associated with the use of hospital for minor conditions. Being close to the hospital certainly seems to be associated with a greater likelihood of more four hour waits.

In the qualitative analysis, some patients were unaware of the fact that they were being treated as part of a new scheme, but notwithstanding their response was positive. The services were found to offer value for money.

Study limitations

At the time of this analysis, no quantitative data were available from the Extended Hour and Primary Care Frailty Pathway schemes. Hence, the study focussed on A&E activity data. It is possible that we have not controlled forsome important confounders such as severity of presentation, although we adjusted our analysis for number of presenting symptoms, number of procedures conducted and number of test ordered. In addition, we do not know the eventual health outcome, although re-attendance data are re-assuring on this front.

Originally, it was planned to collect a minimum of 150 questionnaires across the 3 services at each of 2 time-points to compare early and late attenders to the service, however this was not possible because of the challenges in questionnaire distribution as described in the interim report (and the decision not to distribute the questionnaire amongst PCFT patients,

following feedback from the clinical team). At this point in time we are still waiting for data on gender and age of the sample from the service provider and will supply full analysis in a future supplementary report. However, this result of this was no questionnaire data were collected for the PCFT service. As a consequence of these delays, the semi-structured interviews were only completed for GP in ED and EHH. Results from the PCFT patient interviews, the Delphi exercise and the co-creation workshop will be available in Autumn/Winter 2016, and the results submitted as a supplementary report. The results of the Service Safari (conducted in February 2016) will be used to inform the co-creation and these results will therefore also be included in the Supplement Report.

The conclusions drawn from cost and saving analysis is that the three schemes offer substantial savings over existing care. However, a limitation of this analysis is that key assumptions have been made in terms of costs and activity levels. These should be verified with actual outcomes over the lifetime of the project before final conclusions are drawn.

Overarching conclusions

Those working in the schemes were generally positive. As one of our respondents commented:

> "*We have a significant cohort of patients who are the ones that struggle with the Health system and the way it works… this is a group of patients who have very varied, pasts and journeys through both community and hospital services. ..its a massive step forward in terms of targeting inequality."*

We believe that these schemes are going some way to ameliorate the inequality experienced by these people.

Although, this evaluation was conducted relatively early in the setting up of the PMAF projects, we consider that it offers clear benefits and value for money.

References

Agarwal S, Banerjee J, Baker R, Conroy S, Hsu A, Rashid J. Potentially avoidable emergency department attendance: interview study of patient' reasons for attendance. Emerg Med J. 2011; doi:10.1136/emermed-2011-200585

Berenson, R.A., Kuo, S., May, J.H. (2003). Medical Malpractice Liability Crisis Meets Markets: Stress in Unexpected Places. Washington, DC: Center for Studying Health System Change; *Issue Brief No. 68*.

Blunt, I., Bardsley, M., Dixon, J. (2010). Trends in emergency admissions in England 2004-2009: is greater efficiency breeding inefficiency? The Nuffield Trust, London.

Burt, C.W., McCaig, L.F. (2001). Trends in hospital emergency department utilization: United States, 1992–99. National Center for Health Statistics. *Vital Health Statistics, Vol. 13 (150)*.

Busse, R., Blumel, M., Scheller-Kreinsen, D. & Zentner, D. (2010). Tackling chronic disease in Europe. Strategies, interventions and challenges. European Observatory on Health Systems and Policies. At: www.euro.who.int/document/e93736.pdf.

College of Emergency Medicine. (2013). Key Messages from the Review of Urgent and Emergency Care Response from the College of Emergency Medicine. On the web at: secure.collemergencymed.ac.uk/code/document.asp?ID=7336

Cornwell, J., Levenson, R., Sonola, L., and Poteliakhoff, E. (2012). Continuity of care for older hospital patients. A call for action. London: The King's Fund. On the web at: http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/continuity-of-care-for-older-hospital-patients-mar-2012.pdf

Craig, P., Cooper, C., Gunnell, D., Haw, S., Lawson, K., Macintyre, S., Ogilvie, D., Petticrew, M., Reeves, B., Sutton, M. & Thompson, S. (2012). Using natural experiments to evaluate population health interventions: new Medical Research Council guidance. *J Epidemiol Community Health,* 66**,** 1182-6.

Department of Health. (2000). National Health Service Plan: a plan for investment a plan for reform. At: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/documents /digitalasset/dh_118522.pdf. Last accessed: March 15, 2011.

Department of Public Health, Joint Strategic Needs Assessment. Available at: http://hwb.warwickshire.gov.uk /files/2012/03/ JSNA_Annual_Review_Long-term-conditions.pdf

Focus on…Accident and Emergency Depatment. (2013). Health and Social Care Information Center. At: http://www.hscic.gov.uk/catalogue/PUB13040/acci-emer-focu-on-2013-rep-V2.pdf

Gill, J.M., & Riley, A.W. (1996). Nonurgent use of hospital emergency departments: urgency from
the patient's perspective. *Journal of Family Practice, Vol. 42 (5):491-6.*

Guagliardo, M.F. (2004). Spatial accessibility of primary care: concepts, methods and challenges.
International Journal of Health Geographics, Vol. (3):3:1-13.

Ipsos MORI. Britain 2012. Who do we think we are? London: Ipsos MORI, 2012.
www.ipsos-mori.com/researchpublications/publications/1481/ Britain-2012.aspx.

Kangovil, S., Barg, F.K., Carter, T., Long, J.A., Shannon, R. and Grande, D. (2013). Understanding why patients of low socioeconomic status prefer hospitals over ambulatory care. Health Affairs, Vol. (32): 1196-1203

Kraaijvanger N, Rijpsma D, van Leeuwen H, van Dijk N, Edwards M. Self-referrals in a Dutch emergency department: how appropriate are they? Eur J Emerg Med. 2014; doi: 10.1097/MEJ.0000000000000216 [PubMed]

NHS Confederation. (2014). Key statistics on the NHS. Available at:
http://www.nhsconfed.org/priorities/political-engagement/Pages/NHS-statistics.aspx

NHS England (2016). Urgent Care Navigation Service Pilot. Available at:
http://castlepointandrochfordccg.nhs.uk/about-us/our-governing-body/governing-body-meetings/2016/31-march-2016/1940-item-11-urgent-care-navigation-service/file

Purdy, S. (2010). Avoiding hospital admissions: What does the research evidence say? London: The
Kings Fund. At:
http://www.kingsfund.org.uk/sites/files/kf/Avoiding-Hospital-Admissions-Sarah-Purdy-December2010.pdf

Royal College of Physicians. (2012). Hospitals on the edge? The time for action. At:
http://www.rcplondon.ac.uk/sites/default/files/documents/hospitals-on-the-edge-report.pdf

Studdert, D.M., Mello, M.M., Sage, W.M., DesRoches, C.M, Peugh, J., Zapert, K., Brennan, T.A.
(2005). Defensive Medicine among High-Risk Specialist Physicians in a Volatile Malpractice Environment. *Journal of the American Medical Association, Vol. 293 (21):2609–2617*.

University Hospitals Coventry and Warwickshire. Annual Report 2015-2016. At:
http://www.uhcw.nhs.uk/clientfiles/File/UHCW%202016%20Annual%20Report.pdf

Technical Appendix

Modelling analyses (Impact Evaluation)

The modelling approach including interrupted time series (before and after) and propensity score matching (cross-sectional observation, with or without) to capture the differentiated impact of this natural experiment of the *'Best care, Anywhere'* implementation on primary care services utilization. The approach is consistent with Medical Research Council guidelines for using natural experiments to evaluate population health interventions.

First, we performed an interrupted time series analysis modelled using autoregressive, integrative moving average approach to assess the wider effect of GP in ED on monthly four-hour waiting profile. To estimate changes in these rates for all groups after the intervention, we used segmented linear regression models to control for seasonal fluctuations. The basic model included terms to estimate the pre-existing level for each rate in the first month of the observation period (intercept), trend in the rate before implementation of GP in ED, change in level of the rate immediately after implementation, and change in trend after implementation.

In the second analysis we constructed a sample of patients balanced on covariates and risk factors (such as age, sex, ethnicity, number of procedures, number of presentations) using a propensity score. The propensity score approach was used to control for observed confounding factors that might influence both group assignment and outcome. We constructed the propensity scores using a logistic regression. Each participant's propensity score was the conditional probability (odds) of being seen by GP in ED versus regular emergency physician. We matched each patient seen by GP in ED to another similar patient seen by regular emergency physician with the closest propensity score on a ratio of 1:5 using a nearest neighbour algorithm with no replacement, and matching was restricted to the common support region. We calculated the average treatment effect on treated patients, which is a measure of the impact of GP in ED on clinical (A&E) quality indicators (i.e. time to treatment, total waiting time, spent four hours plus, admitted patients and unplanned seven-day re-attendance).

GIS mapping and analysis

Mapping was carried out using ARC GIS Version 10.3 and progressed along these premises: data pre-processing to meet data quality and completeness requirements; merging various datasets using SQL server SSIS toolbox feature Extract, Transform and Load since the data arrived in batches from the hospital at different points along the study's timeframe; developing discretized datasets based on research foci; and analysis of the data.

As is sometimes the case, hospital data can be incomplete and noisy. Hence in data cleaning routines, the files were first checked for missing values, outliers, and inconsistencies. Data cleaning was performed both manually through the development of macros using excel functions, and automatically using SSIS data cleaning utilities. The cleaned data were then examined with checks for completeness and format corrections. Standard descriptive statistics were run to check for value ranges. Once the datasets were cleaned, further extraction tasks were performed by batching all the needed variables to gauge their sample values and for better understanding of the overall analysis steps. Validation was performed by R Validate package and Excel filtering functions. Here, multiple validation tasks were performed during the data merging phases. Data pre-processing and processing were completed and the resulting datasets were used to carry out the mapping.

The mapping project was guided by a set of principles based on discussions among staff and supported by existing evidence. Lastly, additional restructuring, and refinement were carried out by employing normalization procedures. Normalization, a standard practice when examining population or activity per unit area or density, leads to minimizing differences in values based on the size of the area. For example, in this study, when examining breaches involving the A&E department's 4-hour performance indicator, the total number of breaches associated with a region were normalized by dividing the events with total number of patients visiting from that particular region. This yielded valuable information on the percentage of 4 hour breaches for a particular district. Normalization can also provide a more realistic view of factors that affect patients' care journeys and decisions regarding the type of care they access.