

Evaluation of the Exeter Cluster Pharmacy Service 2014/15

Project overview for Clinical Pharmacist Journal

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Summary

An evaluation of the Exeter cluster pharmacy service was carried out using a range of data collection methods. The conclusions of the project were as follows:

- The ECP service provides a patient-centred service to vulnerable and frail older people with comorbidities in their own homes.
- The patients have complex and changing medicines management needs.
- The team's referrals and follow up work demonstrate integrated working within the wider community Health and Social Care service, contributing to the delivery of a seamless service.
- The team's skill mix is used to provide a differentiated service based on complexity of care.
- A broad range of pharmaceutical interventions are delivered.
- Patient's report that the education and advice provided by the team promotes self-care and supports carers, indicating that the team help to maintain patients' independence.
- A large proportion of contacts (initial and follow up) lead to proposals for changes to patients' medications, most of which are agreed with GPs.
- The service has a positive impact on patient safety and healthcare effectiveness: risks for patients are reduced and a significant number of admissions and their associated costs are avoided.
- The service is well regarded by patients and stakeholders.
- Professionals report feeling supported by the service. Their feedback indicates that the whole-system effects of any changes to service delivery would have to be considered.

Overview

Background

An evaluation of the effectiveness of the Exeter cluster pharmacy (ECP) service was requested by Northern, Eastern and Western Devon Clinical Commissioning Group to inform future plans for commissioning the service. The following components were included in the evaluation:

1. A description of the current structure and operating framework of the ECP Service;
2. An analysis of activity data collected on the CompAS system from Feb-July 2014;
3. Additional details of patients, clinical activity, and outcomes collected prospectively from Sept-Dec 2014;
4. A survey of ECP Service patients undertaken Sept-Nov 14 with a 58% response rate);
5. A survey of professionals who work alongside the ECP Service undertaken in Nov 14 (38% response rate)

The ECP Service

The ECP Service is based within the Exeter cluster as part of the multi-disciplinary team (MDT) which serves a population of 145,000 across the Exeter complex care teams A B C and D. The service optimises medication for patients at risk of medicine related harm with full access to GP clinical information systems (SystmOne, Emis Web) and patient history. It provides a level 3 clinical medication review (a face to face review of medicines and conditions with the patient) including full medicines reconciliation in the home for frail older people. One of the aims of the cluster MDT team is to avoid admissions to hospital and other care settings.

The ECP team is part of Northern Devon Healthcare Trust's (NDHT's) community health and social care service. The pharmacists have professional support from organisational and national pharmacy networks which ensure appropriate governance, patient safety and training. The ECP service currently consists of 1.8 WTE Band 8a pharmacists and 1.0 WTE Band 5 pharmacy technicians. The total cost of delivering the Service in 2014 was approximately £156,000. Services provided are as follows:

- **Case work:** The ECP service has been embedded into the referral pathway for patients accessing the services of Cluster MDT teams which include community nursing, mental health nursing, social services, physiotherapy and occupational therapy, as well as linking with GPs and other health and social care professionals. Referrals are prioritised as urgent or routine by the ECP Team member after reviewing the referral, patient's GP patient record and any other relevant information.

Interventions include:

Medicines reconciliation and proposals for medicines optimisation made in partnership with the patient;
Case management of complex patients (e.g. Parkinson's, digoxin toxicities, dementia, warfarin);
Management of complex & high risk medication regimes, identifying adverse drug reactions, drug interactions, and contraindications;
Medicines clinical review;
Renal dose reduction of medications;
Advice on administering medication (soluble, topical, different oral formulations);
Advice on enteral tube administration of medicines;
Provision of and advice on compliance aids (Opticare, eye drop aids, inhaler spacer devices, dosette training, Haleraids, pill press, Pil bobs, tablet cutters);
Provision of medicines reminder charts (tick charts, specific written information for patients);
Setting up and training carers on Telecare medication dispenser cassettes;
Assessment of patients and preventing unnecessary blister packs;
Education for patients and increasing their concordance (reducing wastage);

- **Providing support relating to medicines to members of the MDT team** including Rapid Response, Acute Care Team (ACT), community matrons and Older People's Mental Health Service. Support varies from, for example, attendance at the NDHT multidisciplinary 'falls group' to provision of injectable medicines risk assessments for community nursing.
- **Attending virtual wards:** the cluster pharmacy team regularly attend the GP surgery 'virtual ward' meetings to feedback on patients they are involved with and give advice on new patients discussed. New referrals are picked up from the virtual ward and at 'core group' meetings.
- **Training other professionals:** Cluster pharmacists provide guidance to non-medical prescribers; physiotherapists; pre-registration pharmacy students; administration of medication via enteral tubes to community nurses; NDHT staff on the new oral anticoagulants; and work shadowing for other staff.
- **Education to patient groups:** Cluster pharmacists are involved providing educational sessions to the Exeter rehabilitation service falls group, Eastern Devon pulmonary rehabilitation courses, Westbank Centre falls day (Exminster).

Evaluation findings [reference to data source in square brackets]:

Who is seen?

The cluster pharmacy service serve patients from all of the GP practices in Exeter, with activity generally matching the proportion of the cities' population registered with given practices [2].

The patients seen by the ECP Service have a range of vulnerabilities : 59% were over 80 years [2]; 52% were living alone; 40% had a care package in place; 61% were housebound; 98% had at least one long term health condition and many had multiple comorbidities; 85% had an impairment affecting their ability to manage their medicines (61% had cognitive problems and 55% had a physical impairment); 27% had been discharged from hospital within 8 weeks; 22% had had a recent fall [3].

ECP patients are pharmaceutically complicated: 92% of patients were taking 5 or more medicines; 54% were taking 10 or more medicines [3].

How are they referred?

The majority of referrals were received from community health teams and GPs [2,3]; The Test of Change [6] showed that liaison with specific teams at the secondary care/community interface can lead to further referrals for patients with complex needs. The survey of professionals [5] indicated that there was scope to improve awareness of the service among GPs, acute care services, Devon Partnership Trust, and the voluntary sector.

What problems do they have with medicines and medicines management?

4 out of 5 patients were unable to visit their GP surgery or community pharmacy to review their medications. 58% were on high risk medicines and 57% had a complex medicines regimen. 90% of patients had three or more reasons for referral. At their assessments, it was found that 61% were not using their medicines as prescribed and 40% of patients had problems with access to or delivery of medicines as prescribed [3].

How is the ECP Service delivered?

Average response times for first visit were 5.4 days for routine referrals and 2 days for urgent referrals [2]. These results fall within the standards detailed in the service's Standard Operating Procedure.

51% of contacts were initial contacts and 49% were follow ups. Pharmacists provided 69% of initial contacts and pharmacy technicians provided 57% of follow-ups. 29% of patients were seen solely by a pharmacy technician, following a pharmacist desk-top patient medication review.

The average number of contacts was 1.9 visits per patient. Contact with the patients was made by a number of methods, with 75% via face to face contact and 22% by telephone. The person contacted following referral was the patient in 83% of cases and a patient proxy (usually a family member or carer) in 17% of cases [2].

The prospective data collection [3] showed that the average time spent on each contact by ECP staff in total was 2 hours, taking into account preparation and follow up time. The average time spent directly with patients was 43 minutes.

What interventions are made?

97% of contacts involved giving information or advice directly to patients or relatives/carers; 68% of contacts involved raising issues about medications or medicine usage for consideration by the patient's GP or other service provider; 60% of contacts involved further actions relating to reminder charts, blister packs or pill boxes, removal of excess medicines, supply of devices or repeat prescriptions etc.; 4% of contacts led to a Datix incident report being submitted [3].

57% of contacts involved proposals to change medications prescribed [3].

At 45% of contacts unwanted medicines were identified. A large proportion of contacts involved follow up with GPs (78%) and pharmacies (56%). 81% involved dealing with practical problems on ordering, obtaining, taking and using medicines [3].

Examples of medication changes [3]:

- Propose switch simvastatin 40mg at night (being forgotten) to atorvastatin 10mg in the morning.
- Add tramadol 50mg capsule one twice a day as required for breakthrough pain.
- AdcalD3 once daily increased to twice daily; omeprazole 20mg reduced from one to two daily to one daily.
- Warfarin- daily dose not being managed, so propose rivaroxaban 15mg daily instead.
- Pulvinal salbutamol inhaler dry powder device to be replaced with Salbutamol Easibreathe inhaler- breath activated MDI as patient can't use Pulvinal appropriately as rescue therapy.
- Simvastatin 40mg tablets -patient is flushing them down the toilet, to be replaced by atorvastatin 20mg daily- he will take these in the mornings in the blister pack instead.
- Buprenorphine 5mcg/hour patch and buprenorphine 10mcg/hr. patch to be stopped as patient still in pain. Suggested to be replaced by morphine SR capsules 10mg twice a day following 24 hour washout period being managed via blister packs.
- Informed prescribing team about relative costs of slow release galantamine compared with standard release.
- Advice regarding medicine administration via enteral feeding tubes.

What is the quality of the service that is delivered?

In the patient feedback results [4], interventions provided by the ECP team were rated as helpful by 100% of patients who had received them. The quality of the service and overall experience was rated positively by 97-100% of patients. In the professional feedback [5], questions on ECP service delivery were answered with a positive rating by 86% or more of respondents. In addition, 91% responded that the team's advice was usually followed. Almost all respondents rated the ECP's communication and liaison with patients, families and other professionals as 'good' or 'very good.'

What are the outcomes?

In the survey of professionals [5], the ECP service was rated positively for its impact on optimising medicines management, maximising the benefits of medication, providing individualised care, and providing safer care. In addition, 93% of respondents felt that the team had a positive impact on providing cost-effective care; and 89% on reducing admissions. Other areas where the team were perceived to be having a positive impact, picked out in professional's comments, included medicines management at home for complex patients and benefits to other professionals.

In the survey of patients [4], 97% of patients felt that the team had improved their understanding of what their medicines were for; 97% of patients felt the team had improved their knowledge of when and how to take their medicines; and 97% felt they managed their medicines better as a result of seeing the ECP team.

The prospective data collection [3] estimated that risks of medication related harm, rated using the NPSA scoring tool, were reduced from referral to final contact. Among patients for whom final scores were available, the percentage of patients with grading's of 'high' to 'extreme' risk had fallen from 76% at referral, to 21% at final contact.

According to CompAS activity data [2], for February to July 2014, 62 admissions were avoided as a result of ECP Service interventions. Two independent pharmacists reviewed 20 of the cases and agreed with the cluster pharmacists' classification in 85%. Extending this finding over 12 months, (assuming 85% agreement), would indicate that 106 admissions are avoided in a year. From October to December, 32 admissions were classified as avoided, which at 85% accuracy would indicate 109 admissions avoided per year [3]. The consistency between the two time periods indicates that this is a reliable finding.

In the prospective data collection [3], medication changes were proposed in 57% of contacts. Medication changes were accepted by GPs as proposed 79% of the time. A further 12% were accepted with modifications. In addition, multi-compartment compliance aids were started, changed or stopped in 48% of contacts and therapeutic monitoring changes were made in 8% of contacts.

Cost savings per year were estimated as £242,624 in hospital admissions; £2,740 in medication costs, and £10,140 in social care visits [3], totalling to £255,504. On balance, for 2014, taking into account the cost of providing the Service, it is estimated that the Exeter cluster pharmacy service delivered a saving of approximately £100,000 to the health and social care system.

Example Case Studies

Case Study 1

80 year old man discharged home from CCU, RD&E after admission for review of his ICD which discharged whilst he was at home. Referred to cluster team by GP as thought to be struggling with blister pack. Pharmacist visited on 25th April, two weeks after discharge. His GP record listed his amiodarone dose at 200mg tds, but the discharge letter showed an amiodarone reducing dose. Patient also on digoxin 125mcg od and warfarin 5mg od.

At pharmacist visit, patient actually taking amiodarone 100mg od as directed by hospital. Also taking digoxin and warfarin as prescribed. Patient had not had an INR level taken since 11th April when it was 3.6. Appointments had been made for patient to attend surgery for INR but he had cancelled them as unable to get there. Pharmacist requested urgent INR. GP surgery was unable to do this until after weekend, so community services phlebotomist visited that afternoon (a Friday). INR was 6.9. Plan made with GP to stop warfarin therapy until INR reduced to an appropriate level. Pharmacist also suggested digoxin levels were taken as amiodarone can double the therapeutic levels. Admission avoided. Datix incident report was completed.

Case Study 2

84 year old lady. Referred by community pharmacy for assessment for blister pack. Clinical medication review by pharmacist highlighted eGFR of 19ml/min/1.73m². Patient was prescribed metformin 500mg TDS. Patient was suffering diarrhoea. Metformin should be avoided if eGFR less than 30ml/min/1.73m². Pharmacist discussed with GP – metformin stopped. Diarrhoea resolved.

Case Study 3

87 year old man, living with wife. History of AF, hypertension, hypercholesterolemia, OA, Crohn's disease, PE (with IVC filter). Referred by Onward Care Service prior to discharge from RD&E and also by ACT after discharge for review of medicines management. Concern regarding cognition and quantity of old medication in house. Discharged home on 1st October after admission with sepsis. Had suffered chest pain whilst an inpatient and was started on ACS protocol. Warfarin was started during admission but no clear reason given in discharge summary. Discharged with some medication in a blister pack, some in separate boxes including warfarin, MST and lorazepam. Patient had been requesting more lorazepam saying he had none and takes regularly.

Pharmacist visited on 7th October. Patient had most medicines in a blister pack which had been taken correctly. Had MST tablets, warfarin and lorazepam in separate boxes. lorazepam had been used and there were 12 tablets remaining, sufficient to last until next delivery on Thursday 9th. MST tablets and warfarin not touched. Patient had not taken either since discharge. When asked, patient said he didn't know he needed to take them. Happy with regular paracetamol for pain relief. No evidence of yellow oral anticoagulant book. Discharge summary stated 'see chart' for warfarin dose. A copy of the inpatient warfarin chart had been sent home with the patient with a dose prescribed for 2.10 and then a request for INR to be checked on the 3.10. Also prescribed trimethoprim on 5.10 by out of hours doctors – none taken. Pharmacist confirmed delivery of new blister pack for Thurs with lorazepam in blister pack. Discussed with GP – MST to stop as not needed, warfarin to stop as risk outweighs benefit and patient has IVC filter in situ. Datix incident report completed.

Case Study 4

84 year old lady, living alone. Recently diagnosed with dementia. On warfarin for AF. History of cardio version and pacemaker. Had fluctuating INR over a six week period. Decision made to change from warfarin to rivaroxaban at pharmacist suggestion. Increasing cognitive and physical problems so unable to manage the change from one to the other. High risk that she would take both warfarin and rivaroxaban during switchover period. Pharmacist facilitated change ensuring INR below 3 and that rivaroxaban was in blister pack to start on correct day. Pharmacist liaised with family, GP surgery, community pharmacy and patient to ensure safe changeover.

Case Study 5

69 year old lady, living alone. Visited by pharmacy technician as routine follow up to previous visits. Discharged from RD&E previous day. Patient confused over her methotrexate. Usually on methotrexate SC injection but discharged home from hospital with tablets. Pharmacy technician discussed with GP and Cluster Pharmacist. Patient had been on SC methotrexate injection since 2005 as unable to tolerate tablets. Injection delivered monthly by a homecare company. Patient also identified as having excess Seretide inhalers and salbutamol nebulas. Pharmacy technician liaised with GP, community pharmacy and homecare company to arrange new delivery of SC methotrexate injection and to hold supply of inhalers until current supply used. Methotrexate tablets removed. Methotrexate day changed so pharmacy technician liaised with community pharmacy to ensure folic acid omitted from blister pack on correct day. Datix incident report was completed.

Case Study 6

84 year old lady, living alone. Pharmacy technician visited to review use of new blister pack. Patient had managed well and taken all medication from pack. Patient reported feeling faint and unwell since starting blister pack a week previously. In view of potential previous non-compliance, pharmacy technician asked GP to review as patient prescribed digoxin 250mcg OD, amiodarone 200mg OD and bisoprolol 5mg OD. GP visited that afternoon and reduced digoxin dose to 125mcg OD and requested digoxin level. Blister pack amended by GP and new supply arranged. Digoxin level was 3.8 ug/L (0.5-2.0).

Conclusions:

"No one else can appropriately oversee, consolidate and manage the complex medications of our patients in their own home". (Survey response from a Community Care Worker)

- The ECP service provides a patient-centred service to vulnerable older adults with comorbidities in their own homes.
- The patients have complex and changing medicines management needs.
- The team's referrals and follow up work demonstrate integrated working within the wider community health and social care service, contributing to the delivery of a seamless service.
- The team's skill mix is used to provide a differentiated service based on complexity of care.
- A broad range of pharmaceutical interventions are delivered.
- Patients report that the education and advice provided by the team promotes self-care and supports carers, indicating that the team help to maintain patients' independence.
- A large proportion of contacts (initial and follow up) lead to proposals for changes to patients' medications, most of which are agreed with GPs.
- The service has a positive impact on patient safety and healthcare effectiveness: risks for patients are reduced and a significant number of admissions and their associated costs are avoided.
- The service is well regarded by patients and stakeholders.
- Professionals report feeling supported by the service. Their feedback indicates that the whole-system effects of any changes to service delivery would have to be considered.
- There is scope for refinement of the service: see below

Potential areas for service development:

Refine referral pathways	Improve communication with other local service providers regarding the ECP service and referral criteria. Encourage referrals of patients on high risk medicines. Explore further potential for supporting safe discharge from all local acute and community hospitals.
Further improve service differentiation and specialisation	Use data collected in the 6 month evaluation to inform further scope for service differentiation using the team's skill-mix. Acquire funding for administrative support to cover tasks such as letter writing, typing up medicines charts' and requesting information. Explore avenues for further increasing onward referrals.
Disseminate findings	Share learning regarding admissions reduction and other outcomes, with other service providers and commissioners both locally and nationally via: Northern Eastern & Western Devon CCG Eastern locality Board Meeting NDHT Pharmacy Showcase event National Pharmacy Congress Journal publication
Explore further funding opportunities	Apply to become an NHS England pilot site for new models of care outlined in the NHS 'Five Year Forward View'.
Increase spread of service	Explore potential for this group of experienced domiciliary pharmacists to provide an expert resource for any service developments in other parts of Devon.

APPENDICES

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APPENDIX A

6 Month evaluation of Exeter cluster pharmacy team

Retrospective analysis of activity

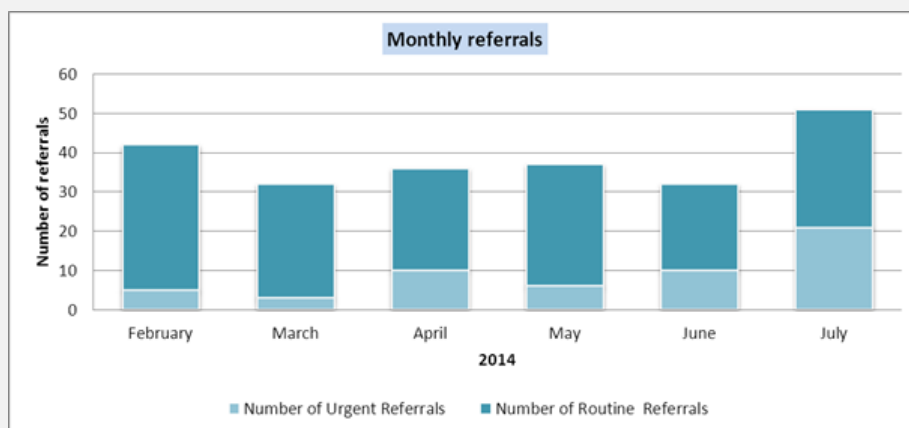
1st February 2014 to 31st July 2014

(CompPAS Data)

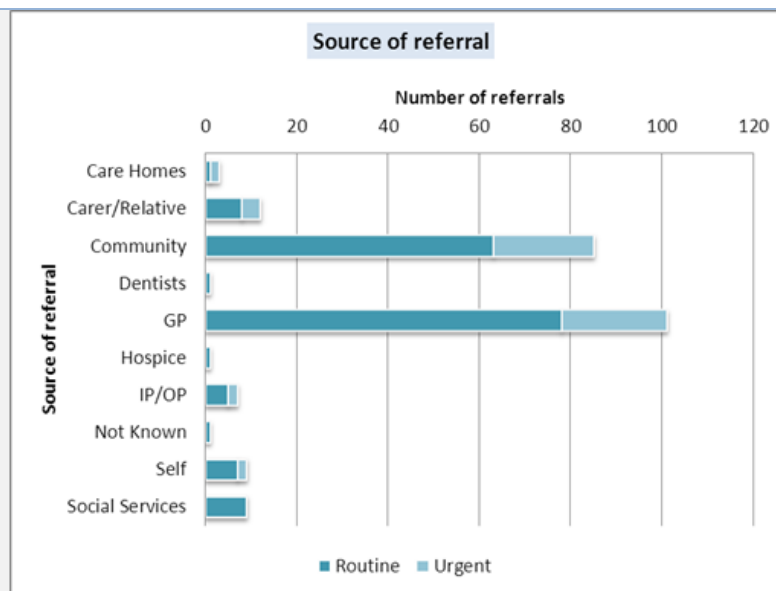
1. Referrals [CompPAS reporting]

Referrals are given priority according to the Standard Operating Procedure for the cluster pharmacy service referral process; November 2013

- The pharmacy team member will make the first contact with the patient within 5 working days of receipt of the referral. This may be by phone or letter, as appropriate.
- Referrals will be prioritised as urgent or routine by the pharmacy team member after reviewing the referral, patient's GP patient record and any other relevant information.
- Urgent referrals will be seen within 7 working days of the date of referral.
- Routine referrals will be seen within 10 working days of the date of referral.



According to CompPAS activity data, for the 6 month period 441 completed contacts were made by the team relating to 236 individual patients. The average response time until first visit for routine referrals over the 6 month period was 5.4 days. Among the 24% of referrals that were urgent, the average response time until first visit was 2 days. These results fall well within the standards detailed in the ECP service Standard Operating Procedure.



The majority of referrals were received from GPs and the Community Health Team; This team includes the Complex Care team, District nurses, Older People's Mental Health, The Acute Community (Nursing) Team, The Onward Care Service, Bodley and Hospital Discharge.

2. Practices served - initial contacts only (n = 234)

The cluster pharmacy team serve all the practices in Exeter, with activity generally matching the proportion of the city's population registered with given practices.

GP Surgery	N	%	Practice population % (*)
Barnfield Hill Surgery	6	3%	5%
Chapel Platt Surgery	0	0%	2%
Foxhayes Practice	5	2%	2%
Isca Medical Practice	9	4%	4%
Heavitree Practice	7	3%	5%
Hill Barton Surgery	8	3%	3%
Ide Lane Surgery	13	6%	5%
Mount Pleasant H. Centre	7	3%	11%
Pinhoe Surgery	7	3%	6%
Southernhay House Surgery	15	6%	5%
South Lawn Medical Practice	17	7%	5%
St Leonard's Practice	17	7%	6%
St Thomas Medical Group	69	29%	24%
Topsham Surgery	31	13%	5%
Wilmington Surgery	12	5%	3%
Westbank Practice	8	3%	5%
Wonford Green Surgery	2	1%	4%
Other	3	1%	0%
Grand Total	236	100%	100%

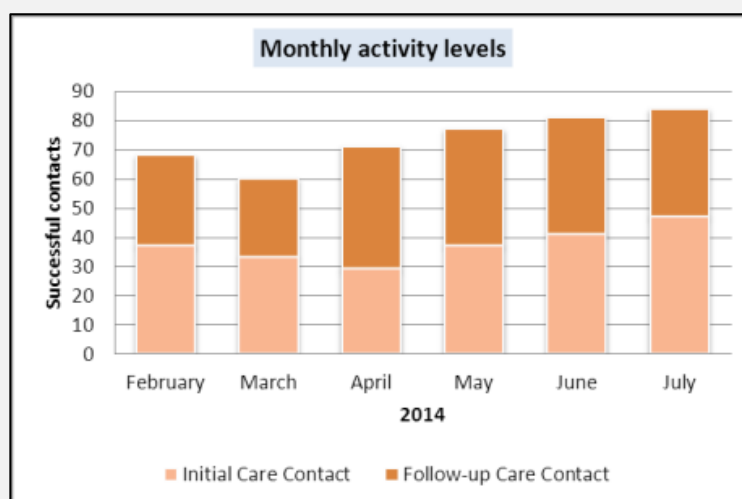
* <http://fingertips.phe.org.uk/profile/general-practice/data>

3. Demographics of patients at referral- initial contacts only (n = 234)

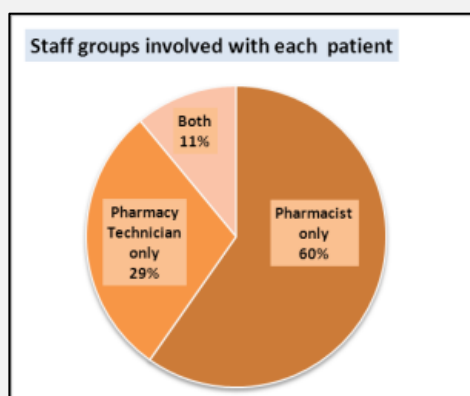
The patients referred were predominantly elderly requiring complex care; 92% were over 60 years of age and 59% were over 80 years; 62% of the patients were female and 38% were male.

4. Number and type of completed patient contacts (n=441)

Over the 6 month period, the team completed 441 patient contacts; 224 (51%) of these were initial contacts and 217 (49%) were follow ups.



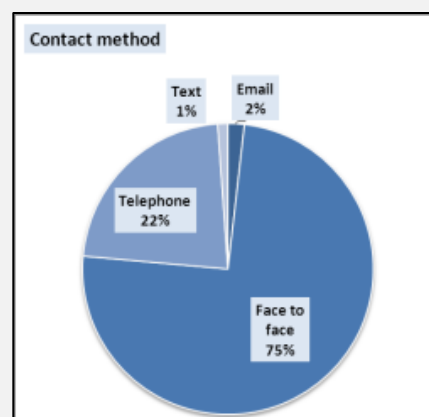
Pharmacists provided 69% of initial contacts and pharmacy technicians provided 57% of follow-up care contacts, which reflects good use of skill mix. There were 1.4 WTE pharmacists working during this period and 0.8 WTE pharmacy technicians. 29% of patients were seen solely by a pharmacy technician, following a pharmacist clinical patient medication review prior to the visit, aiming to maximise patient safety.



The average number of contacts was 1.9 per patient.

5. Contact method – completed patient contacts (n=441)

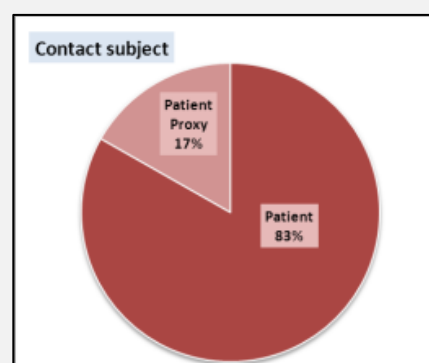
Contact with the patients was made by a number of methods, with 75% via face to face contact with the pharmacy team. The as a whole team managed 22% of their contacts via telephone, which avoids the time and cost of travelling to home visits. (For pharmacists, this percentage of contacts conducted by telephone was 26%).



6. Contact subject - completed patient contacts (n=441)

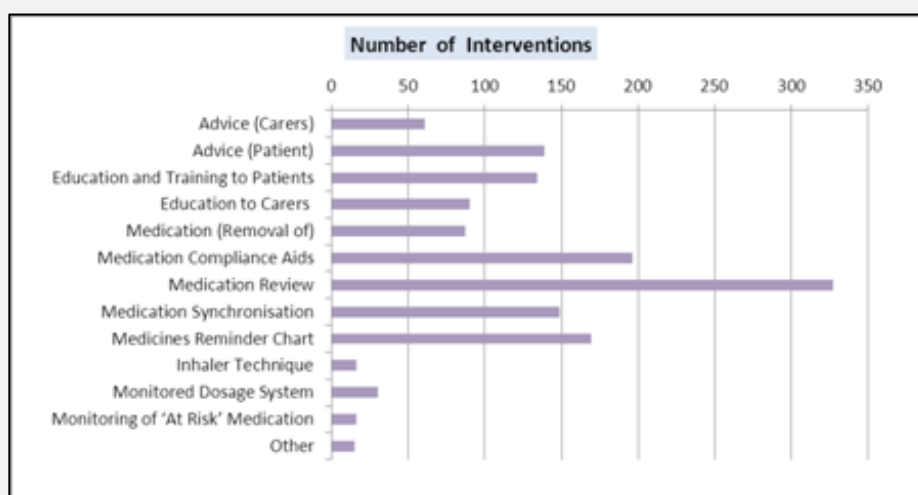
The person contacted following referral was the patient in 83% of cases and a patient proxy in 17% of cases.

A patient proxy was the representative of the patient, usually a family member, friend or a carer. This had particular significance if the patient had cognitive decline or dementia, where the patient may not have capacity to make decisions without support, or where there were physical barriers to communication such as hearing difficulties



The interventions undertaken during the contacts were as follows:

Intervention	No. of Interventions	No. of Interventions (%)
Advice (Carers)	61	4.3
Advice (Patient)	139	9.7
Education and Training to Patients	134	9.4
Education to Carers (Formal & Informal)	90	6.3
Medication (Removal of)	87	6.1
Medication Compliance Aids	196	13.7
Medication Review	327	22.9
Medication Synchronisation	149	10.4
Medicines Reminder Chart	169	11.8
Inhaler Technique	16	1.1
Monitored Dosage System	30	2.1
Monitoring of 'At Risk' Medication	16	1.1
Other	15	1.0
Grand Total	1429	100.0



7. Average duration of contact - completed patient contacts (n=441)

The average initial contact time with a member of the cluster pharmacy team was 54 minutes, compared with an average follow up contact time of 28 minutes.

Pharmacy technicians spent less contact time with the patient, but the pharmacist had already provided a pre-visit clinical medication review thus saving time during the actual visit.

Contact time x staff group

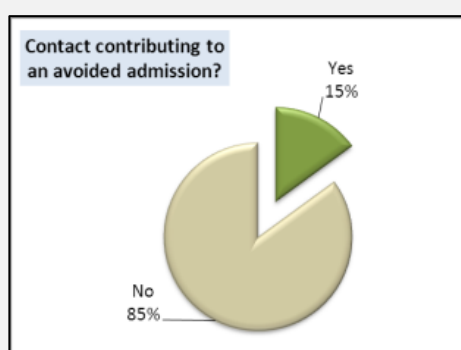
Contact time	Average	Min	Max
Pharmacist	45	1	135
Pharmacist Technician	35	10	90
Grand Total	41	1	135

8. Interventions undertaken during contact [CompAS Reporting]- across completed patient contacts (n=441)

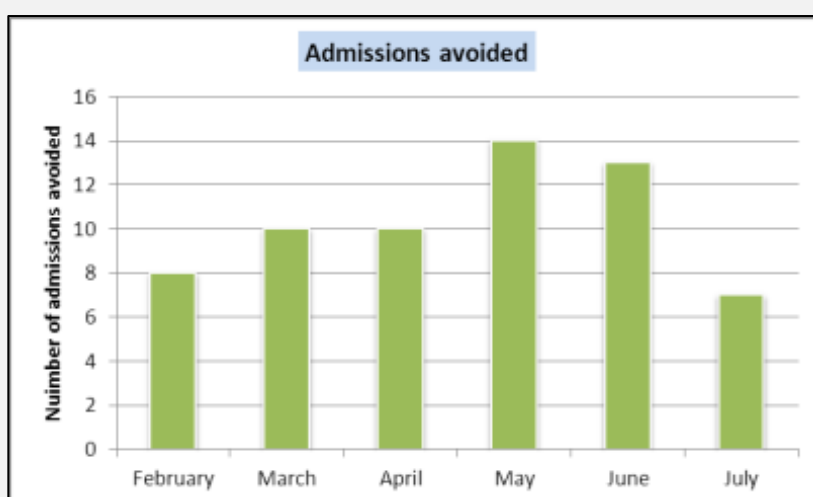
An explanation of interventions during patient home visits by members of the pharmacy team recorded on CompAS, have been captured in a glossary of terms on the last page of the report (Appendix E). Medication review includes level 3 medicines reconciliation in the patient's home, clinical review of their medication and proposals for optimal medicines management. The cluster pharmacy team have access to the GP medical records via SystmOne and EMIS Web before visiting the patient and report back the consultation onto the GP clinical system, as well as liaising with GP and health & social care colleagues about agreed changes and future recommendations to medications.

9. Contact outcome: Admissions avoidance in 6 months- completed patient contacts (n=441)

Of the 441 contacts, 66 (15%) were coded as having contributed to the avoidance of an admission. These related to 62 individual cases. (All demographic data gets transcribed forward into a follow-up visit, when booked through CompAS, including admission avoided, hence the duplication of four records).



Two independent senior pharmacists reviewed 20 of the 62 actual admission avoidance cases using two recognised risk scoring tools (NPSA and RIO). This showed agreement with the cluster pharmacy team in 17/20 cases (85%). Extrapolating this data (assuming 85% agreement) would mean 53 hospital admissions avoided in 6 months. The average cost of an emergency admission to the Royal Devon and Exeter hospital for patients aged 65 and over is £2230 (2014 data). This equates to £118,000 in 6 months and £236,000 of hospital admissions costs saved in one year.



APPENDIX B

Prospective data collection Sept-Dec 2014 report (Additional details of patients, clinical activity, and outcomes)

1. Background:

The prospective data collection was carried out as part of a wider evaluation of the effectiveness of the ECP service. The aim of this part of the project was to add detailed information about patients, activity, and outcomes, to a report of activity generated from data routinely collected on the CompAS system.

2. Method:

2.1 Project design

A data collection tool was designed to cover 3 topics: initial referrals, contacts and outcomes. The items for each section were developed with reference to the role of the cluster pharmacists, medicine usage review topics, and literature on domiciliary pharmacy service provision. The tool was shortened after a brief pilot period.

The final data collection tool was constructed as a 3-section web survey using Keypoint software. ECP pharmacists and pharmacy technicians tried to enter as much data as possible on patients seen, and contacts carried, out between 12/09/14 and 15/12/14. The data was later coded, analysed and reported by the Clinical Audit Facilitator. Medication changes were assessed for their cost impact by the CCG Pharmacy Governance Lead.

2.2 Number of patients, referrals, contacts and outcomes.

The total number of data collection forms submitted was 162. The total number of patients included was 112. The following data was collected:

Referral details: 118 (6 patients had two referrals during the data collection period).

Contact details: 158.

Referral outcome details: 116. (Final outcome of contacts during data collection period).

Some of the forms contained a small amount of missing data. In the following results, missing data are excluded from the percentages reported.

3. Results:

3.1 Who was seen? (Description of 112 patients at time of first referral)

3.1.1 Demographics

89% of patients were over 60 years of age; 57% of patients were over 80. 70% were female; 30% were male. Ethnicity was recorded for 70% of patients. All were 'White-British'.

3.1.2 Living circumstances

52% were living alone; 42% were living with relatives or carers; 2% were in a residential home.

61% were long term housebound.

39% of patients had a care package in place, and a care package was planned for a further 5%.

3.1.3 Long term health problems/ comorbidities

98% of patients had at least one long term health condition; 53% had two or more types of long term condition. The most common type of condition was heart or circulatory (61%). 19% had a respiratory condition, 16% had dementia, 12% had a renal condition, and 59% had another long term health problem.

85% had an impairment affecting their ability to manage their medicines: 30% had a cognitive impairment, 24% had a physical impairment and 31% had both.

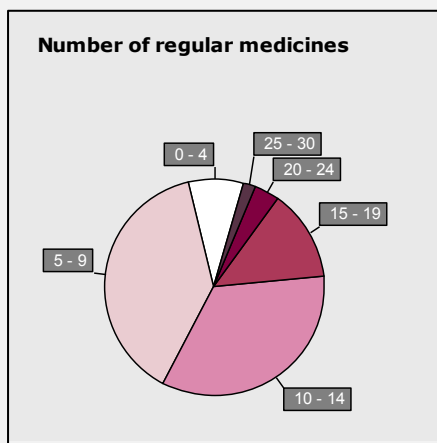
3.1.4 Recent health issues

27% had been discharged from hospital in the last 8 weeks. (19% from the Royal Devon & Exeter NHS Foundation Trust and 8% from a community hospital). A further 1% had been discharged from intermediate or respite care within 8 weeks.

22% had suffered a fall in the last 8 weeks.

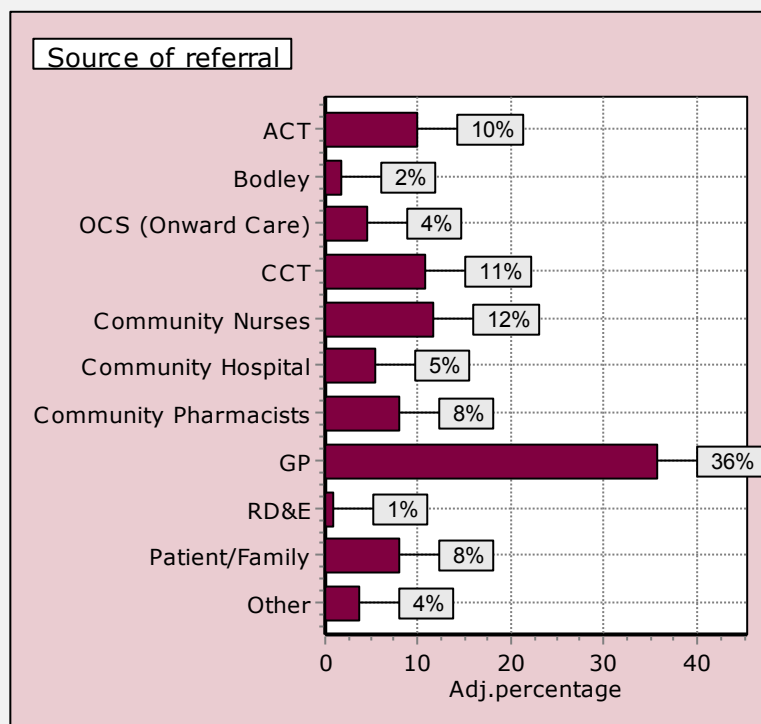
3.1.5 Number of regular medicines

92% of patients were taking five or more medicines regularly. 54% were taking ten or more.



3.2.1 Source of referral

Patients were referred from a variety of sources. GPs referred 36%. The wider community health & social care service (ACT, OCS, Bodley, CCT and community nurses) referred 39%.

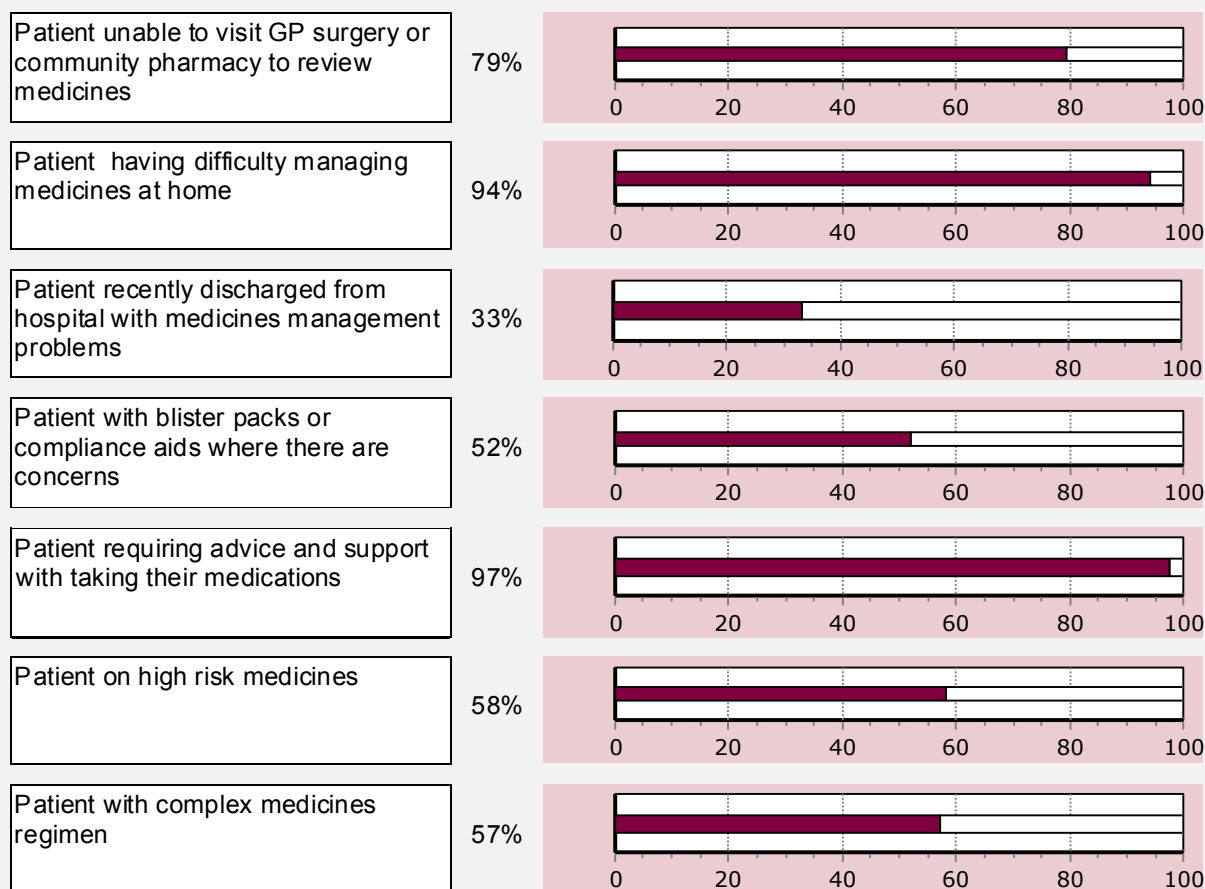


During the data collection period, a test of change was conducted to open up referrals to the ACT, OCS and Bodley. A total of 18 referrals had been recorded from these sources by the end of the project.

3.3 What problems were they having? (Description of 118 referrals)

3.3.1 Reasons for referral

The table below shows reasons for referral and the percentage of patients with each.



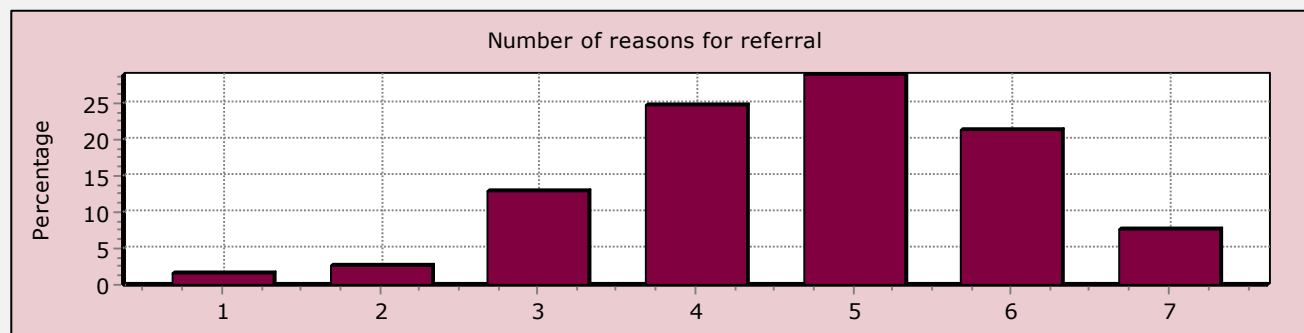
High risk medicines

Included drugs causing preventable admissions to hospital (including drugs with a narrow therapeutic range and those with NPSA drug alerts); for example opiates including transdermal, warfarin, digoxin, lithium, clozapine, insulin, methotrexate, new oral anticoagulants - dabigatran, rivaroxaban, apixaban, theophylline, phenytoin, sodium valproate, DMARDS- sulphasalazine. As per internal local NHS trust guidance.

Complex Medicines regimen:

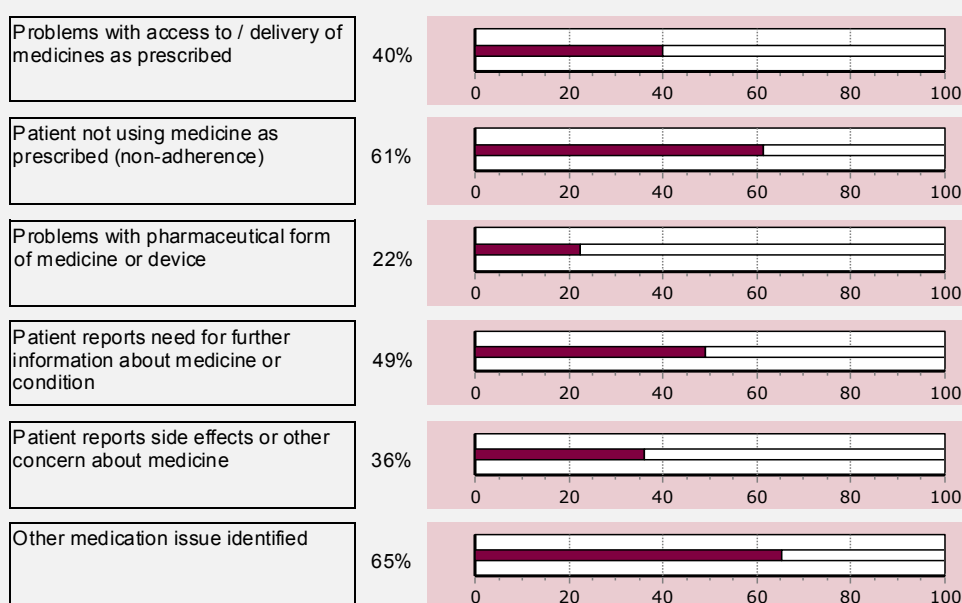
An individual taking five or more medications in multiple frequencies (or more than 12 doses) in a day.

90% of patients had three or more reasons for referral.



3.3.2 Additional patient needs

In addition to the reasons for referral, a number of other patient needs were identified at the initial assessment:



Examples:

New blister pack, medication timings not correct
 Incorrect use of Matrifen opiate patches
 Excess medicines in house - possible adherence issues
 Not taking any medication
 Swallowing difficulties
 Omitting bone prophylaxis
 Run out of warfarin
 Running out of Insulin
 Pain control
 Failure to deliver Monitored Dosage System
 Community pharmacy unable to source midodrine
 Vomiting and only taking fluids
 Risk of overdose of opiates
 Patient omitting clopidogrel post stroke
 Poorly controlled diabetic
 Atorvastatin 20mg daily causing muscle pain
 Has COPD, only prescribed salbutamol
 Warfarin management problems

61% of patients were not using medications as prescribed at referral.

3.3.3 Risks at referral

The ECP team rated patients' risk of medication related harm at referral, using the NPSA risk scoring tool. Of those rated:

- 98% were classed as 'moderate' risk or above;
- 72% were classed as 'high' risk or above;
- 6% were classed as 'extreme' risk.

3.4. How was the service delivered to the patients? (Description of 158 contacts)

3.4.1 Details of contacts

70% were initial contacts and 30% were follow ups.

87% were face-to-face and 12% were by telephone. One email and one text contact were recorded.

70% of contacts were by a pharmacist and 29% with a technician (one was with both). Pharmacists carried out 80% of the initial contacts and 52% of the follow ups, with the balance of each being carried out by technicians.

3.4.2 Time spent on contacts

Time spent on contacts: The average length of time spent with the patient or relative/carer was 43 minutes. The average time taken on each contact and related activities in total was approximately 2 hours. For initial contacts the total time spent was 2 hours and 14 minutes, and for follow ups, 1 hour and 18 minutes. The table below shows the average amount of time spent on each activity for initial contacts and follow ups.

Initial and follow up contacts Activity	Average time spent per contact (mins)	
	Initial (n=110)	Follow up (n=48)
Contact planning/case research	30	11
Travel	20	21
Contact with patient/proxy	49	31
Follow up admin	26	10
Follow up with GP	12	5
Follow up with pharmacist	7	0
Follow up with others*	5	0
Total time spent on contact	134	78
* includes relatives and other services		

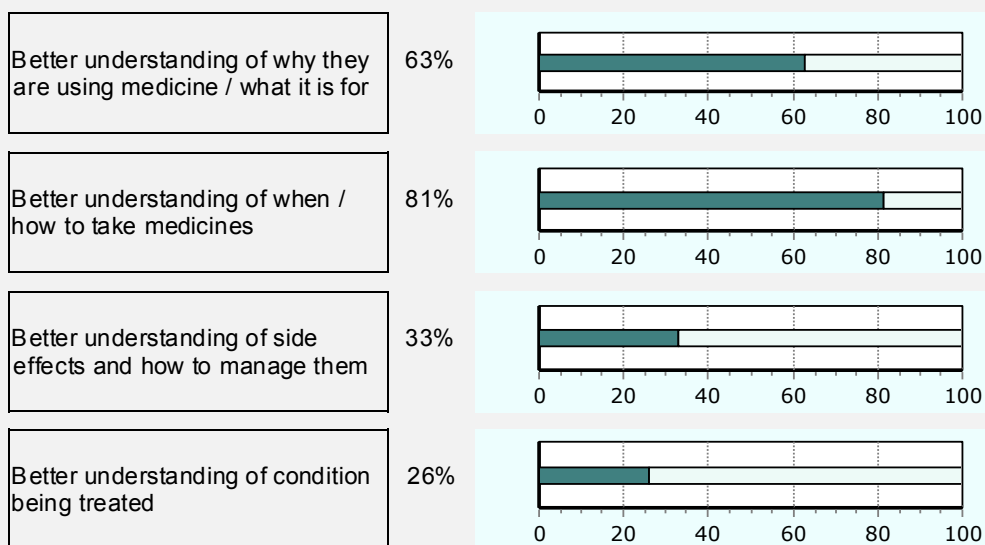
3.5. What interventions were made? (Description of 158 contacts)

3.5.1 Summary of interventions

- 97% of contacts involved giving information or advice directly to patients or relatives/carers.
- 68% of contacts involved raising issues about medications or medicine usage for consideration by the patient's GP or other service provider.
- 60% of contacts involved further actions relating to reminder charts, blister packs or pill boxes, removal of excess medicines, supply of devices or repeat prescriptions etc.
- 4% of contacts led to a Datix trust incident report being submitted.

3.5.2 Advice and information

The table below gives details of the areas of understanding addressed by the ECP team during their contacts with patients.

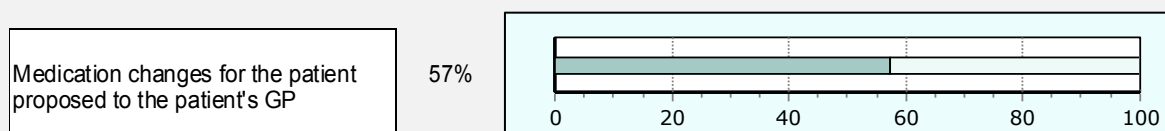


Examples:

AdcalD3 at lunch and tea to avoid reducing absorption of Levothyroxine in the morning.
 Counselling on how to apply a Matrifen opiate patch to correct area of body
 Telecare medication device discussed & excess medicines removed
 Awareness to carers that patient needs to use nebuliser regularly
 Encouraged patient to take analgesia
 Advice given regarding diarrhoea

3.5.3 Medication recommendations

Changes to medications were proposed in 57% of contacts (69% of initial contacts and 31% of follow ups). The total number of medicines for which changes were proposed (starting, stopping, altering) was 223 equating to 2 changes per patient, on average.



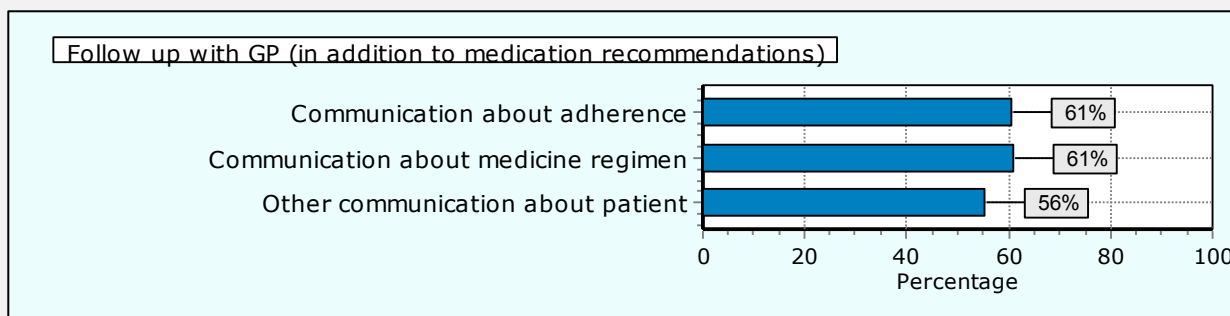
3.5.4 Details of other intervention types (in addition to medication recommendations)

Other Interventions		
Intervention type	Intervention	% of contacts
Advising patients on the effective use of medications	Advice on medicines usage (prescribed and OTC) aiming to develop improved adherence	83%
	Advice on effective use of 'when required' medication	66%
	Ensuring appropriate use of different medicine dosage forms eg inhaler types/ soluble tablets	33%
	Advice on tolerability and side effects	36%
Ensuring an effective supply of medications	Dealing with practical problems in ordering, obtaining, taking and using medicines	81%
	Suggestions to synchronise supply	38%
Identifying prescribing issues to be followed up	Identification of problems for patient with drug prescribed (allergy/ interaction)	10%
	Identification of items without adequate dosage instructions	13%
	Identification of other problems with prescription documentation	23%
Identifying medications that could be prescribed more effectively	Identification of the need for a change of dosage form to facilitate effective use	18%
	Identification of unwanted medicines (patient no longer taking the medicines)	45%
Other interventions	Identification of need for therapeutic monitoring	6%
	Assessment for multi compartment compliance aids (blister packs, pill organisers etc)	43%
	Suggestions to improve clinical effectiveness	63%

On average, 6 of the interventions listed above were delivered at each contact.

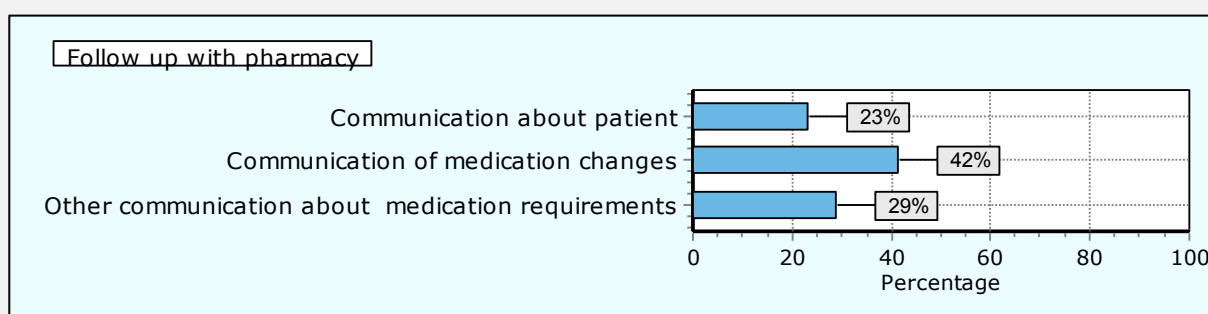
3.5.5 Details of post-contact follow up work

ECP team members carried out follow up work with GPs after 78% of contacts. The follow up activities were as follows:



Details of patient contacts were recorded in GP notes 94% of the time.

Follow up work with pharmacies was undertaken after 56% of contacts. The follow up activities were as follows:

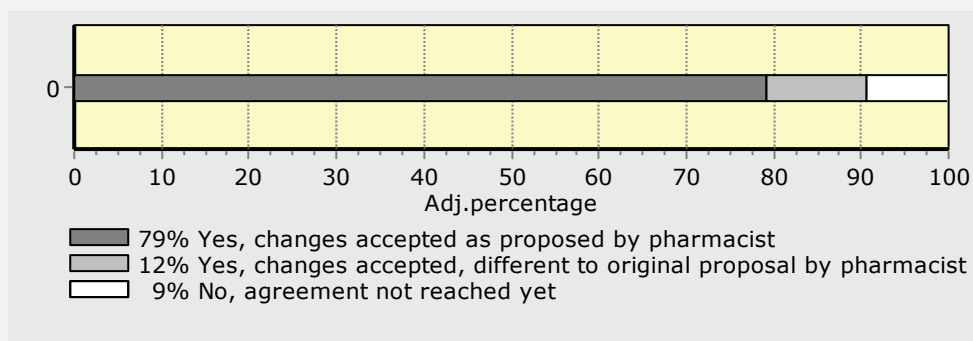


Other follow ups were undertaken after 46% of contacts. These were with relatives/carers, care agencies, community nursing teams, specialist nurses, social services, GP practice staff, ACT, Rapid Response Team, podiatry, community support team for dementia, and the Royal Devon & Exeter Hospital.

3.6. What were the outcomes?

3.6.1 Medication changes

57% of contacts resulted in proposals for medication changes. Changes proposed to GPs following patient contacts, were accepted as proposed 79% of the time. A further 12% were accepted with modifications.



Examples of medication changes:

Add tramadol 50mg cap one twice a day as required for breakthrough pain.

Adcal D3 daily increased to twice daily; Omeprazole 20mg reduced from one to two daily to one daily.

Warfarin- daily dose not being managed propose rivaroxaban 15mg daily

Pulvinal salbutamol inhaler dry powder device to be replaced with Salbutamol Easibreathe inhaler- breath activated MDI as patient can't use the Pulvinal appropriately as rescue therapy.

Simvastatin 40mg tablets being refused at night and patient is flushing them down the toilet, to be replaced with atorvastatin 20mg daily- he will take these in the mornings in the blister pack instead.

Buprenorphine 5mcg/hour patch and Buprenorphine 10mcg/hr. patch to be stopped as patient still in pain. Suggested to be replaced by Morphine SR capsules 10mg twice a day following 24 hour washout period being managed via blister packs.

Informed prescribing team about relative costs of slow release galantamine compared with standard release.

Advice regarding medicine administration via enteral feeding tubes.

Restart bimatoprost eye drops- patient has stopped ordering and using these as she did not think it was to be continued long-term.

The cost impact of the proposed medication changes was calculated and, extended to 12 months, would equate to annual cost saving of £2,740.

These changes were in addition to advice given about inappropriately used medicines (61% of patients).

3.6.2 Medicine management changes

Medicine management changes were made, in addition to the medication changes listed above. Multi-compartment compliance aids (blister packs or pill organisers) were started in 19%, changed in 14% and **stopped** in 5% of contacts.

Examples of medicine management changes:

Recommended style of pill box to son to support medicines management

Supplied weekly strip organiser for morning meds and enlarged print Medicine Reminder Chart

Initiated blister pack for patient as appropriate to their needs

Two blister packs reviewed and condensed into one

Request lorazepam removed from blister as no longer needed

Switched from blister packs to ordinary cartons and supplied PILL Tower Organiser instead

Advised on use of compliance aids Opticare eye drop aid and Haleraid devices

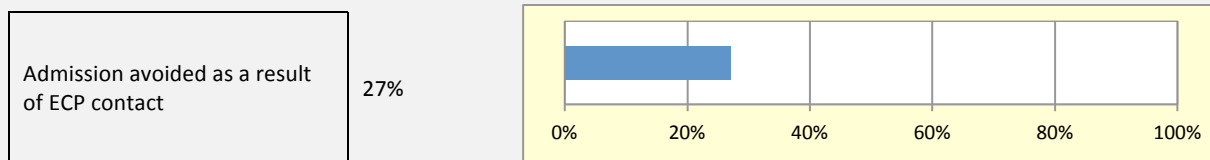
Filled blister pack with 20mg additional furosemide as dose had been increased, then resealed pack.

3.6.3 Social care changes

Contact with the ECP service had led to a change in 3 patients' care packages (3% of referrals). The total number of visits saved was estimated at 26 per week. The cost of 30 minute social care visits was estimated at roughly £7.50 per visit, giving a saving of £2,535 over 3 months. The cost saving for a full year would be £10,140.

3.6.4 Admissions avoided

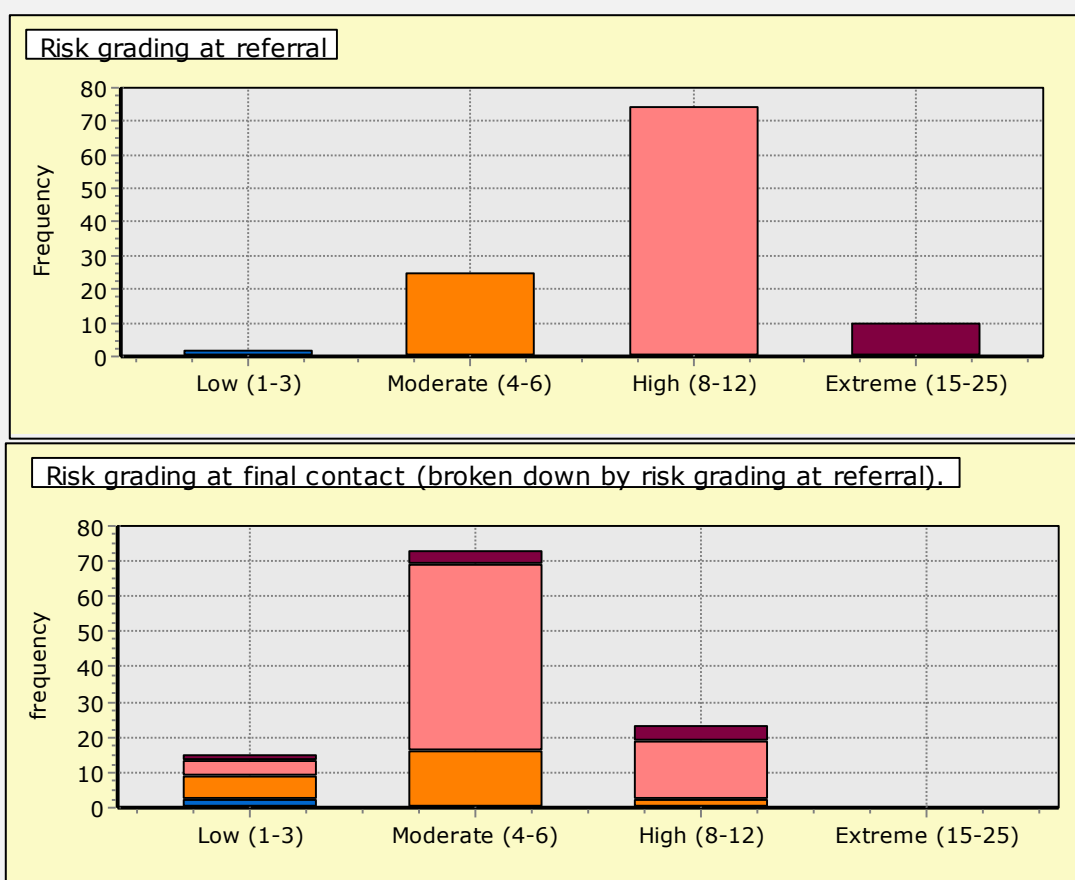
The ECP Team assessed that 32 of the 118 referrals (27%) had resulted in an avoided admission over the 3 month data collection period.



The review of admissions avoidance coding carried out on CompAS data as part of the 6 month retrospective evaluation, validated the assessed coding in 85% of cases. For this prospective study dataset, this would imply 27 admissions avoided over 3 months. Based on costing's for hospital admissions of £2230*, this equates to £60,656. Extended to 12 months, the cost saving could be £242,624. * costing's based on RD&E hospital admissions of patients aged 65 and over (2014).

3.6.5 Risk score changes

The NPSA risk scoring tool was used to assess risk of medicine related harm. Among patients for whom initial and final scores were available, the percentage of patients with grading's of 'high' to 'extreme' risk had fallen from 76% at referral to 21% at final contact. The chart below shows the risk grading's at referral of these patients. The following chart shows how these risk levels changed by the final contact.



APPENDIX C

Patient Feedback Results

Background:

The survey was carried out as part of a wider evaluation of the effectiveness of the Exeter cluster pharmacy service (ECP).

Survey design and distribution:





The questionnaire was designed to cover 3 topics: interventions delivered, service impact, and the overall experience (including the standard NHS friends and family question). The questions for each section were developed with reference to the previous feedback form used by the ECP, medicine usage review topics, CQC survey questions and the standard NDHT 'family and friends question'. Feedback on the first draft of the questionnaire was sought from clients of the ECP service. As a result, the length of the questionnaire was shortened and some of the questions were changed. The final two-page questionnaires were distributed with a covering letter to 66 patients over a 10 week period between September and November 2014.

Results:

Thirty-eight completed questionnaires were received, representing a response rate of **58%**

Nineteen patients made at least one comment. Comments related to specific interventions (3), overall impact of the ECP service (12) and service quality (10).

Interventions provided by the ECP Service





Interventions		
Question	% of patients who had received service (of those who responded and could remember)	Chart
Did they remove medicines that you no longer needed?	73%	
Did they arrange pill boxes or blister packs?	67%	
Did they set up reminder charts for you?	76%	
Did they provide information or advice on how to manage your medicines at home?	95%	

The number of patients who had received each type of intervention varied, as can be seen in the table above. All patients who had received the interventions rated them as 'helpful'.

Three patients said that they did not receive either pill boxes / blister packs, or reminder charts, but would have liked to; one commented 'but explained'. Two people made positive comments about advice or information that they had received. For example:

She was able to explain all the relevant information to the whole family.

The impact of the ECP service

Impacts		
Question	% of patients who said 'yes a great deal' or 'yes, quite a bit' (of those who gave a rating)	Chart
Have they helped you to understand what your medicines are for?	97%	
Have they helped you to know WHEN to take medicines	97%	
Have they helped you to know HOW to take your medicines?	97%	
Do you manage your medicines better as a result of seeing the pharmacy team?	97%	
RATINGS: Yes, a great deal; Yes, quite a bit; Yes, slightly; No, not at all;		

Almost all patients felt that the ECP team had helped them either 'a great deal' or 'quite a bit' on each of the questions about understanding or managing their medicines. Twelve patients made an additional comment about the impact of the service. All of the comments were positive. They described how helpful the service had been, or

how they had been affected by it. Examples are:

This visit was the most helpful I have had. I wish it had come sooner. No more confusion with my medication. Invaluable!

She made daily life much more easy to organise for me!

The quality of the ECP Service

Overall experience		
Question	% of patients who said 'Yes, always' (of those who gave a rating).	Chart
Do you have confidence & trust in the team members that you have seen?	100%	
Do you feel that you have been treated with respect and dignity by members of the pharmacy team?	100%	
RATINGS: Yes, always; Yes, sometimes; No		
Friends & family test	% of patients who said 'extremely likely' or 'likely' (of those who gave a rating)	Chart
How likely would you be to recommend the pharmacy team to friends and family, if they need similar care or treatment?	97%	
RATINGS: Extremely likely; Likely; Neither likely or unlikely; Unlikely; Extremely unlikely		

All patients gave positive ratings of their confidence and trust in the service and their treatment with respect and dignity. Almost all said they would be likely to recommend the service. Ten people gave positive feedback about the quality of the ECP Service in their comments. Examples are:

Very satisfied.

The team member that we saw was amazing.

Summary of findings:

- The response rate was high at 58%
- Interventions provided by the ECP team were rated as helpful by 100% of patients who had received them.
- 97% of patients felt that the team had improved their understanding of what their medicines were for.
- 97% of patients felt the team had improved their knowledge of when and how to take their medicines.
- 97% felt they managed their medicines better as a result of seeing the ECP team.
- The quality of the service and overall experience was rated positively by 97-100% of patients.

APPENDIX D

Professional Feedback Results

Background:

The survey was carried out as part of a wider evaluation of the effectiveness of the Exeter cluster pharmacy service (ECP).

Survey design and distribution:

Target groups for the questionnaire were the main teams and professionals who work in liaison with the Exeter cluster pharmacy service. The questionnaire was designed to cover 4 topics: awareness of the team, quality of ECP input, ECP communication and liaison, ECP impact, and comments. The questions for each section were developed with reference to the role of the cluster pharmacists, medicine usage review topics, and previous evaluations designed by the Clinical Audit and Effectiveness Team. Feedback on the first draft of the questionnaire was sought from professionals from the target groups.

The final two-page questionnaire was constructed as a web survey using Keypoint software. Links to the web form were sent to 315 email addresses from the target groups and other community contacts with a covering email in November 2014. Respondents were asked to complete the survey within 2 weeks.

Results:

119 completed questionnaires were received out of a total of 313 successfully delivered emails, representing a response rate of 38%.

Respondents

Professional groups		
Profession	n	%
GP	31	26%
Community Matron	3	3%
Nurse Specialist	5	4%
Nurse	13	11%
Healthcare Assistant	0	0%
Pharmacist	16	13%
Physiotherapist	1	1%
Occupational Therapist	7	6%
Social Worker	10	8%
Manager	6	5%
Pharmacy Tech	6	5%
Community Care Worker	5	4%
Other	13	11%
Not answered	3	3%
Total	119	

Working area		
Area	n	%
ACT	4	3%
CCT	10	8%
Community Hospital	4	3%
Community Nursing	14	12%
Community Pharmacy	12	10%
General Practice	38	32%
RD&E	8	7%
DPT	6	5%
Social Services	12	10%
Voluntary sector	3	3%
Other	8	7%
Total	119	

Ratings of the ECP Team

The following table shows the percentage of respondents who rated the ECP team positively or very positively on each of the topics.

Topic	Item	Overall % positive	
		Overall % positive	Chart
Awareness of Service	Clear about role of Exeter Cluster Pharmacists	95%	
	Aware of working hours of the team	66%	
	Know who to refer to the team	83%	
	Know how to refer to the team	91%	
SCALE: -2 Disagree strongly ; -1 Disagree; 0 Neutral; 1 Agree; 2 Agree strongly			
ECP Input	Friendly response to referrals and queries	97%	
	Clear recording of contacts in patients' notes	86%	
	Prompt Assessments	94%	
	Clear plans of care for patients	90%	
	Useful advice on managing patients	97%	
	Advice given by the ECP team is usually followed	91%	
SCALE: -2 Disagree strongly ; -1 Disagree; 0 Neutral; 1 Agree; 2 Agree strongly			
Communication & Liaison	Communicating well with patients	97%	
	Involving family/carers	97%	
	Team working with H&SC community staff	97%	
	Linking with GPs	94%	
	Liaison with Community Pharmacists	96%	
	Liaison with acute care staff	96%	
	Liaison with other community providers	96%	
SCALE: -2 Poor; -1 Fair; 0 Satisfactory; 1 Good; 2 Very good			
ECP impact	Reducing inappropriate admissions	89%	
	Maximising health benefits of medication	98%	
	Individualising care	97%	
	Optimising medicines management	99%	
	Enabling early discharge from hospital	84%	
	Delivering safer care	97%	
	Delivering more cost-effective care	93%	
SCALE: -2 Strong negative impact ; -1 Negative impact; 0 Neutral impact; 1 Positive impact; 2 Very positive impact			
% rated positively (1) or very positively (2) out of all ratings (no comment / not answered excluded)			

Comments

Thirty-one respondents gave additional comments about the benefits of a specialist domiciliary pharmacy service. Of these, 29 comments were wholly positive, one was negative and one was mixed. Some of the comments covered several themes.

Comment themes	Total 61	Negative 2	Examples	Positive 59	Examples
The overall value of the service	16	1	<i>none (GP)</i>	15	<i>an invaluable service (Community Care Worker)</i> <i>well used and well needed service (Community Nurse)</i> <i>vital service (Nurse Specialist)</i> <i>too many benefits to list (Social Worker)</i> <i>a great service (Hospital Pharmacist)</i>
The impact on medicines management at home for complex patients	3			3	<i>No one else can appropriately oversee, consolidate and manage the complex medications of our patients in their own home. (Community Care Worker)</i> <i>supports community care of complex patients (GP)</i>
The financial impact	5	1	<i>?value (GP)</i>	4	<i>keeps costs down (GP)</i> <i>good value service (Community Pharmacist)</i>
The impact on hospital admissions	3			3	<i>We consider the withdrawal of this service to be short sighted, illogical and almost certainly expensive at a time when we are expected to reduce admissions to hospital (Practice Manager)</i> <i>The referrals that have been made to the community pharmacy team were picked up the next day and a plan was in place. This enabled the patient to maintain independence at home and prevent unnecessary hospital admission. (Nurse Specialist)</i>
The impact on other professionals	7			7	<i>would miss service if not there as can be difficult to get GPs to do what ECP do so rapidly and effectively (Physiotherapist)</i> <i>I have found the Community Pharmacists very helpful with advice and information when discussing individual cases. (Rehabilitation Officer - Visual Impairment)</i> <i>please do not take them away from our Team as the risks to our clients would increase and place enormous pressure on us to contact G.P.'s to cover their work on a DAILY basis. (Social worker)</i>
The impact on patient safety	4			4	<i>There has been a lot of discharges from the acute setting where the medication management on discharge has been very poor. The referrals that have been made to the community pharmacy team were picked up the next day and a plan was in place (Nurse Specialist)</i> <i>I would strongly support continuing this service as it enhances patient safety (GP)</i>
Comments on provision of a specialist domiciliary pharmacy service	9			9	<i>Please DO NOT take this service away (Community Matron)</i> <i>This is a valuable service and has been recognised by other areas across the UK (RD&E Manager)</i> <i>Keep the service or commission community pharmacists to provide it. It is important that it stays. (Community Pharmacist)</i> <i>Community pharmacies do not have the capacity or access to patients notes to be able to deliver this service ... Domiciliary pharmacy work needs to be an appropriately funded and commissioned and valued service. (Hospital Pharmacist)</i>
Comments on the quality of the service	9			9	<i>Excellent (Nurse Specialist)</i> <i>Friendly, down to earth, professional (Pharmacy Technician)</i> <i>excellent , friendly, approachable always (GP)</i>
Other	4			4	

Question wording: 'From your experience of the Exeter Cluster Pharmacy Service, can you describe the main benefits of working with a specialist domiciliary pharmacy team in the box below? (if you feel there are no benefits, please write 'none')'.

Summary of findings:

Questions on ECP service delivery were answered with a positive rating by 86% or more of respondents.

- Feedback on ECP input was largely positive ($\geq 90\%$) for providing a friendly response, useful advice, prompt assessments, and clear plans. In addition, 91% responded that the team's advice was usually followed. The results suggest that there is room for improvement in the clarity of the team's records. Overall, DPT staff and voluntary sector staff were less positive than respondents from other working areas.
- Almost all respondents ($\geq 94\%$) rated the ECP's communication and liaison with patients, families and other professionals as 'good' or 'very good.' Devon Partnership Trust staff were less positive about the service than respondents from other working areas.

Ratings of the team's impact were almost unanimously positive ($\geq 97\%$) in relation to optimising medicines management, maximising the benefits of medication, providing individualised care, and providing safer care. In addition, 93% of respondents felt that the team had a positive impact on providing cost-effective care; 89% on reducing admissions, and 84% on enabling earlier discharge.

Awareness of the service was variable across professionals' working areas. Areas where awareness of the service was less good were: General Practices, acute care, Devon Partnership Trust, and the voluntary sector. The team's working hours, and knowledge of who to refer, were the least well known.

Additional comments picked out areas where the team were perceived to be having a positive impact (medicines management at home for complex patients, reduced costs, reduced admissions, benefits to other professionals, and improved patient safety), as well as giving feedback about the overall value and quality of the service. Only 2 of the whole group of 119 respondents used the 'benefits/none' comments question to query the value or benefit of the service.

APPENDIX E

Glossary of (intervention) terms

Term	Definition
Adherence	Adherence to (or compliance with) a medication regimen is generally defined as the extent to which patients take medications as prescribed by their health care providers
Blister pack = MDS = Monitored dosing system, DDS = Domiciliary dosing system by Boots	A blister pack is a Multi compartment Compliance Aid, filled with patient's solid oral medicines by the dispensing pharmacy (and usually delivered to the patient) on a weekly cycle.
Compliance aids	Aids or devices that make it easier for a person to take their medicines correctly e.g. reminder charts, inhaler aids, eye drop aids, winged or easy screw tops on bottles, large print labels etc. In this context compliance aids usually refer to pill organizers or pharmacy dispensed blister packs.
Medicine Reminder Chart	A personalised list of the patients medicines, including descriptions, medical indications and dosing times
Medicine Synchronisation	Synchronisation of the supply of medicines so that the stock at home should run out at the same time, in order to avoid wastage
Monitored dosing system (MDS) = Blister pack	Multi compartment Compliance Aid, filled with patient's solid oral medicines by the dispensing pharmacy (and usually delivered to the patient) on a weekly cycle.
Multi compartment Compliance Aids (MCA)	MCAs or monitored dosage systems (MDS) are the terms used to describe a range of medicines storage devices divided into compartments to simplify the administration of solid oral medication. They were designed to make it more convenient for the patient who is self-administering to manage their medicines and act as a visual reminder as to whether the drugs have been taken or not.
Pill organiser	Multi compartment Compliance Aid, usually made of plastic, filled with solid oral medicines by patient or family (or carers).
Reconciliation	The process of identifying the most accurate list of all medications that the patient is taking, including name, dosage, frequency, and route, by comparing the medical record to an external list of medications obtained from a patient, hospital, or other provider.
Therapy	In the pharmaceutical sense, the comprehensive list of medicines that patient takes regularly.