Quality Improvement report

How to try to change and improve health services

The Scottish Emergency Care Summary: Improving Unscheduled care

Structured abstract

Problem
Clinicians looking after patients in unscheduled situations have no access to the GP record.

Design
Key prescribing information was copied from the GP practice systems onto a central store (the "Emergency Care Summary") from where it could be accessed on a read-only basis by clinicians looking after patients Out of Hours. The ECS records were made available to trained staff in NHS24, OOHs organisations and A&E departments.

Setting
NHS Out of hours care in Scotland

Key measures for Improvement
The number of ECS records accessed, how many patients opted out of their GPs creating an ECS record, the perceived usefulness of ECS and whether it changed patient management.

Strategies for change
There was full consultation with patient groups and clinicians at all stages of the project. Training and Education was rolled out at the same time as the ECS system was being implemented, and evaluation of initial pilot sites was followed up with more detailed evaluation in 6 centres.

Effects of change
Use of ECS was found to be so beneficial for care of patients that it had become the norm by 2008, and clinicians now rely on the ECS for routine care of patients in unscheduled situations.

Lessons learnt
Clinical engagement at all stages of the project meant that it progressed smoothly and confidently with the backing of patients and key clinical groups. Warnings on the limitations of the use of data held in ECS were publicised, and advice given to clinicians in GP practices to ensure that prescribing data is as accurate as possible, for example including medications prescribed by other prescribers and promptly removing those which have been stopped.

Introduction

Description of context, relevant details of staff and function of department, team and patient group.
By 2004, all GP practices in Scotland routinely used electronic prescribing for both acute and repeat prescriptions for the majority of their patients.([i]) Since the 1990s, Out of Hours care had been gradually moving from GP practices towards Out of Hours Service Providers and when the GP contract was revised in 2004, responsibility moved explicitly to them. In Scotland, patient out of hours calls were all filtered through NHS 24 which meant that clinicians initially receiving calls for triage e.g. to giving phone advice, had no direct access to patient records.

Outline of problem, what were you trying to accomplish.
Patients often find it difficult to remember all of their medications, cannot pronounce some drug names or remember doses. Some patients who are ill, confused or taking multiple medications find it hard to remember their drug and allergy details, so clinicians speaking to them face difficulties when compiling full details of their medications. Having an accurate record of the prescriber's intentions when these patients are admitted to hospital as an emergency was expected to enable clinicians to save time and allow more accurate assessment of the clinical status of that patient. Potential benefits include more efficient assessment, reduced interactions and adverse reactions, and less overprescribing.

Key measures for improvement: what would constitute an improvement in the view of patients?
Key measures are whether transfer of medication and adverse reaction data from GP records to an Emergency Care Summary (ECS) is acceptable to patients and helpful for clinicians, e.g.

- how many patients refused permission for creation of an ECS record,
- how many patients with an ECS record allowed out of hours clinicians access to it;
- whether the OOH clinicians found the system useful;
- how ECS changed patient management;
- Whether it reduced errors.

Process of gathering information: methods used to assess problems
Consultations were carried out with patient groups, and representatives of the Royal College of General Practitioners and Scottish General Practitioners Committee. Views were also gathered from clinicians working in frontline Out of Hours services. It was clear that there was a clinical risk in not having key patient data available when looking after patients after 6pm and at weekends and public holidays when GP practices were closed. Many requests were received to allow unrestricted access to GP records. A focus group study was also carried out to explore patient views on such a record system. ([ii]) Finally, the Information Commissioner's Office was consulted.

Analysis and interpretation, how did this information help your understanding of the problem?
Unrestricted access would not have been acceptable to patients or GPs as custodians of patient-identifiable data. It would not have been allowed by either GMC guidance, nor fulfil the requirements of the Data Protection Act, unless explicit consent could be obtained for each patient. A novel two stage opt out / opt in consent model was developed: upload to the ECS store uses implied consent with opt-out for patients who request it, and then a second stage of explicit consent for each clinical access to the data. This addressed concerns while minimising both privacy risks and operational delays, and the Information Commissioner agreed that this consent model was acceptable.

Methods
Strategy for change, what changes were made, how were they implemented, who was involved in the change process?
It was agreed that up to date prescribing information should be made available to clinicians seeing patients in other unscheduled situations. To achieve this, GPs in Scotland agreed to allow a copy of the GP medication records of patients to be sent to a central store twice daily. GPs also agreed that Out of Hours clinicians would have read-only access to this information once they had asked the patient for permission, and that these accesses would be monitored by a report accessible by the GP.

Information had to be held to current standards of IT security, with Information Governance within the terms of the Data Protection Act and all relevant professional guidance. At the time of their initial contact with the out of hours service, patients would be asked for their permission for their data to be read, usually by the NHS 24 call handler. Special training was organised and cascaded within NHS 24, along with guidance, publicity and other training materials. Patients were informed by leaflets[iii], special mailings, and local publicity as each Health Board joined the project. GP practice staff were informed by newsletters, posters, leaflets, individual letters and local user meetings. Automatic data uploads meant training for

practices was confined to how to opt patients out of ECS, and to check the audit log of any accesses to records of their own patients.

It was agreed that all clinical staff involved in caring for patients in unscheduled settings would have access to the Emergency Care Summary (ECS) for patients receiving care. If patients gave permission this would apply to all staff looking after them during that episode of care, including doctors, nurses and pharmacists. A secure database called the ECS Store would be the national repository for all Scottish patients, and Health Boards were required to audit access to all records with particular attention to any accesses made to records of patients registered under a different Health Board. The ECS was made available to NHS24 via web services, which meant that all accesses were made directly to an ECS record through the NHS24 computer system. Integrated access was also provided directly through the Adastra and Taycare OOH systems, and through EDIS, the national Accident and Emergency (A&E) system. Clinicians working in all these locations received training on the provenance of the data and its quality before they were allocated system passwords.

Results

Effects of change did this lead to improvement for patients – how did you know?

The ECS was rolled out to cover all patients in Scotland over a period of 2 years. By 2006 over 99% of Scottish patients had an ECS record, and ECS now contains 5,482,406 individual patient records. 1650 patients have chosen to opt out, representing 0.03% of all patient records on ECS; 336 GP Practices have at least 1 patient opt out and 1014 GP Practices have sent ECS extract files (99% of all practices). The number of accesses to ECS records gradually increased to a steady number of 40,000 per week with peaks at busy holiday times such as New Years Day and Easter Monday. NHS24 make the highest number of accesses to ECS (60% of total). The impact of extra calls due to the swine flu epidemic can be seen in the graph of total accesses in 2008 and 2009 at Figure 1.

To find out whether the data in ECS records were making a difference to patient care, we carried out a modified critical incident study ([iv]) to record stories and insights about how ECS was used and whether it helped or hindered the work of NHS staff. We sent evaluation forms to an administrator in six A/E, Out of Hours and Acute Receiving Unit locations and asked them to cascade the forms to ECS users during a three week period in January 2010. (Appendix 1) These asked whether users thought that the ECS was useful, whether it changed practice or care given, and if so, to give examples of such critical incidents. A total of 68 replies were received from pharmacists, nurses and doctors. Overall, 93% of these respondents rated the ECS as helpful or very helpful (table 1) and 47% of respondents said that the ECS had made a difference to their management of the patient. (Figure 2). Some examples of how use of the ECS had changed practice are included in appendix 2.

In a second phase, we sent the same form to all 3 NHS24 call centres in Scotland. 120 forms were returned from NHS24 and these are analysed separately. In this analysis, 81% of respondents said they found the ECS information helpful or very helpful (table 3) and 20% said that ECS had changed their management (figure 2). The comments received from NHS24 users differed from the comments of users in OOHs organisations and A&E departments. Many NHS24 users said that the information was useful for clarifying details of the information given by patients. Many said that it confirmed the patient's statement that they were in good health if no medications were recorded, and could be helpful if patients were confused or on multiple medications. However, a total of 43 replies (36%) pointed out that they found that the medication list on ECS drawn from the GP practice system was not exactly the same as the list confirmed by the patient. Sometimes drugs had been discontinued by a clinician or hospital but not yet removed from the list of repeat prescriptions, or other drugs prescribed elsewhere such as psychiatric clinics were not added to the record. These users stated that it would be helpful if records were more comprehensive and included drugs prescribed by prescribers other than the GP, and also self medications. Their quotes are summarised in three categories in appendix 3

Conclusions

Next steps what have you achieved, how will you take this forward?
A total of 4.2 million accesses have been made to ECS records since the national launch in September 2006. Numbers for 2009 show a 37% increase in use when compared to those for 2008 and 2,170,921 ECS accesses were made from Jan – Dec 2009. (Figure 1) Further details can be found in the Summary of ECS National Usage, which contains the overall figures for use since the ECS service was started nationally in September 2006.([v])
An independent evaluation on cost – benefits carried out by EHI Impact shows how the initial costs of the project have stabilised and the benefits are increasing year on year.([vi])

Other recent evaluations have reported significant benefits to patient safety in NHS24, Out Of Hours, and A+ E departments. ([vii]) In general, the benefits of ECS appear to stem from users getting access to medication information appreciably faster than by telephoning the patient's GP, particularly when the GP surgery is closed. However, there were also some occasions when the information alerted clinicians to a clinically relevant fact (eg nephrotoxic drug, erythromycin not penicillin allergy) where this information was not otherwise available.

A warning screen was included on the ECS reminding users that the ECS data is only one of several sources of prescribing information for a patient, and will not include information on handwritten prescriptions or drugs prescribed by non practice clinicians. (figure 6) It also states that all information should be verified with the patient, as ECS is only one method of reconciling a medication list, and other methods such as letters, handwritten lists and bags of pills brought into the hospital by the patient will all give clues to the full picture. The results show that while ECS is much better than nothing, it could be further improved by addition of medication information from other sources to build a fuller medication record.

The following anticipated data quality issues were high lit in responses:

- discontinuation of drugs is not always timeously updated,
- non-concordance with prescribed treatment
- delay or lack of transcribing prescriptions by others into the GP record system, e.g. nurse prescriptions, drug trials, hospital-only drugs, private prescriptions, methadone from Drug Services, use of OTC drugs

Thus, although the ECS shows the prescribing intention of the GP system user, and is updated twice daily, the issues above limit its reliability. This coincides with the conclusions of an Audit Scotland report [[viii]].

Future work will investigate ECS benefits in terms of speed of clinical assessment, and any change of clinical outcome due to ECS data in the estimation of that clinician at the time. More detailed evaluations are being carried out to assess whether access to ECS should be extended to all Hospital departments and Out Patient clinics in order to bring these benefits to a larger number of patients. For example, hospital clinicians working in non-acute wards feel that access to the Emergency Care Summary would help their patients as well, and improve medicines reconciliation. If ECS is of benefit to clinicians, it is almost certainly of benefit to patients.

Figures and tables

Figure 1
Year on year trend analysis
The following graph shows the change in use from the equivalent period last year

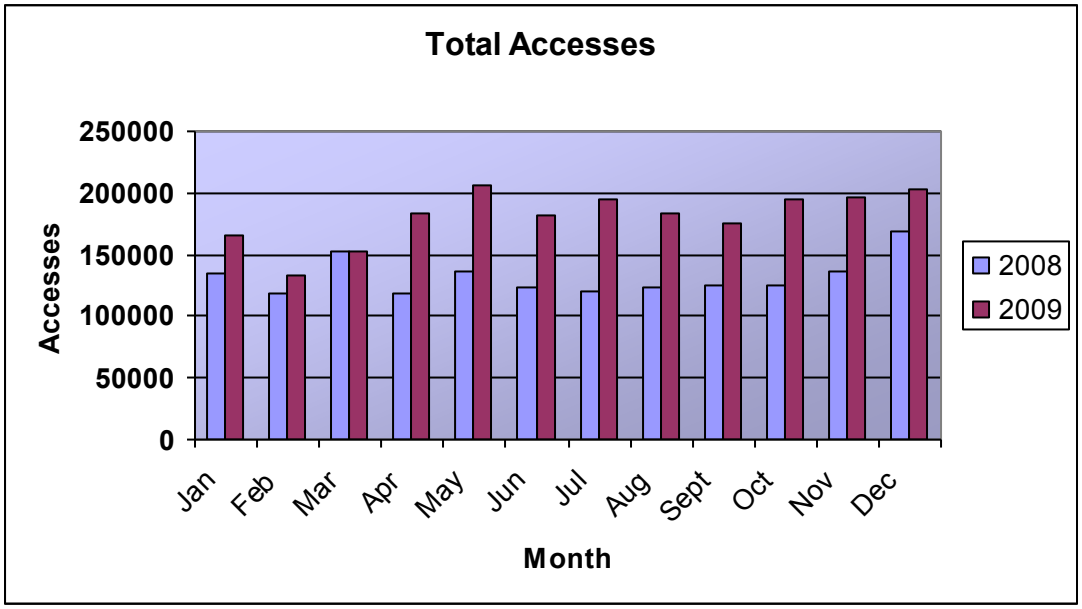
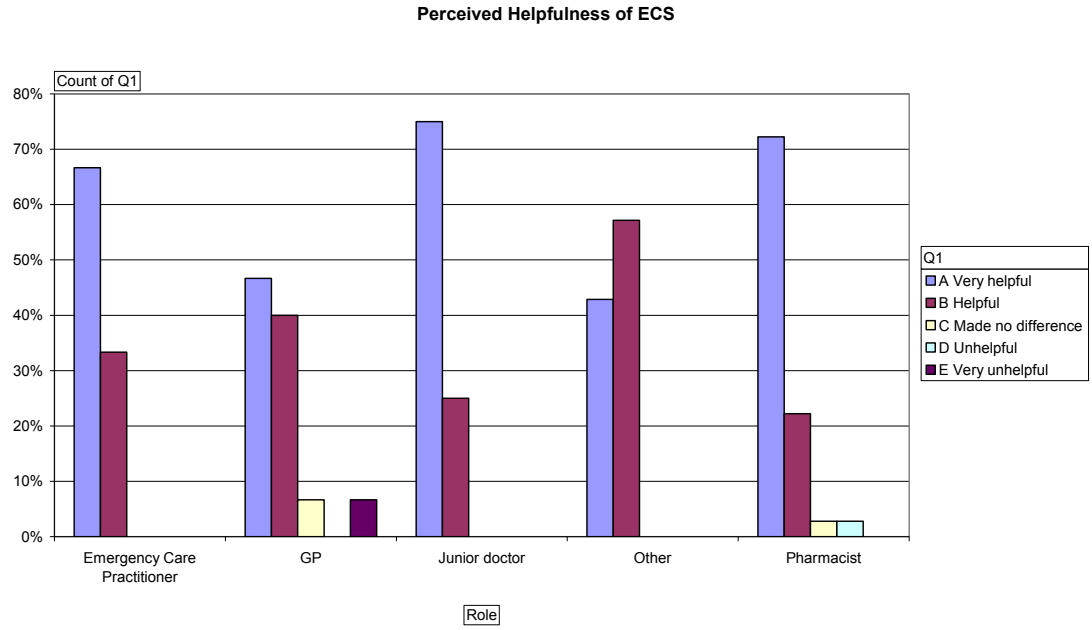


Table 1: Responses of 65 A&E and OOH organisation clinicians about the value of ECS in the current care episode

Role	Very helpful	Helpful	Made no difference	Unhelpful	Very unhelpful	Grand Total
Emergency Care Practitioner	2	1				3
GP	7	6	1		1	15
Junior doctor	3	1				4
Other	3	4				7
Pharmacist	26	8	1	1		36
Grand Total	41	20	2	1	1	65
	63.08%	30.77%	3.08%	1.54%	1.54%	

Figure 2



This chart shows, for each role, the percentage split within that role e.g. 67% of Emergency Care Practitioners responding found it very helpful, and the remaining 33% found it helpful.

One user found it Very Unhelpful.

Figure 3: Response of 65 A&E and OOH clinicians to the question: Did ECS change your clinical management?

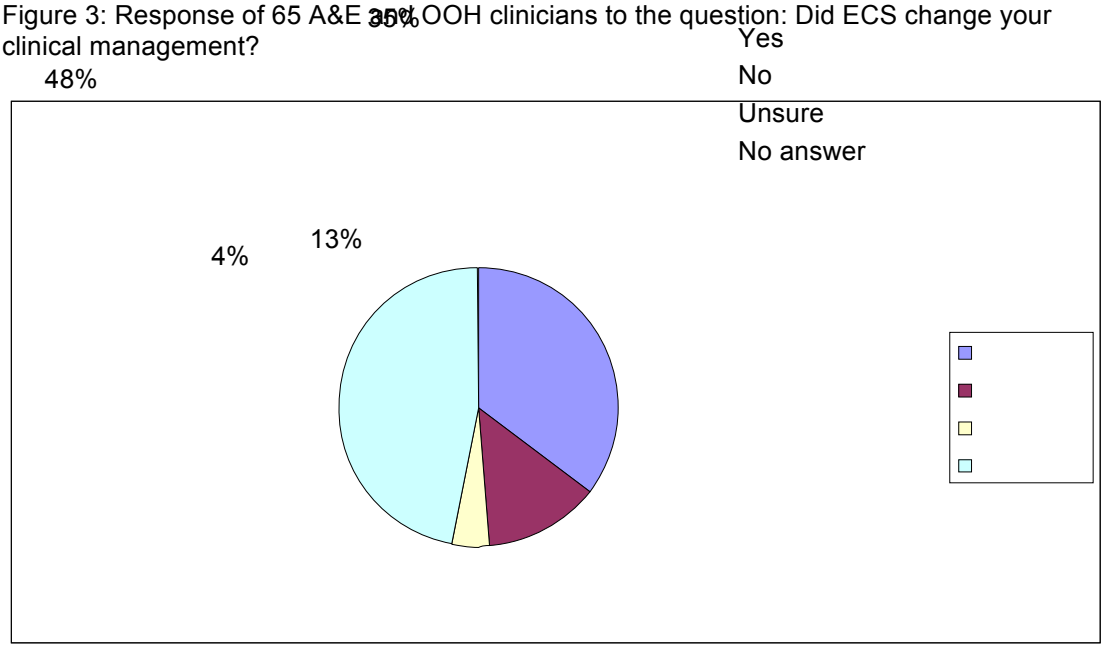


Table 2:

Responses of 118 NHS24 clinicians about the value of ECS in the current care episode

Count of Q1	Q1				
Role	Very helpful	Helpful	Made no difference	Unhelpful	Grand Total
Mental Health Nurse	3	5	1		9
Nurse Advisor	7	6			13
Nurse Practitioner	23	47	21	1	92
Pharmacist	2	2			4
Grand Total	35	60	22	1	118

Yes	No	Unsure	Blank	Total
24	71	6	17	118
20.34%	60.17%	5.08%	14.41%	100.00%

Figure 4: Responses of 118 NHS24 clinicians about the value of ECS in the current care episode by professional group

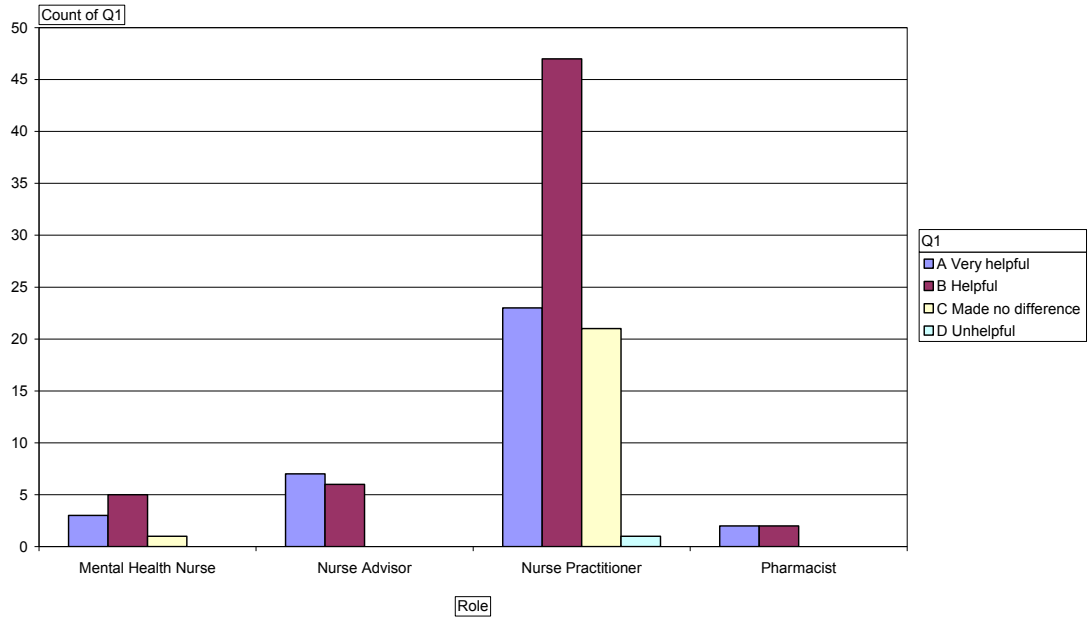


Figure 5: Response of 118 NHS24 clinicians to the question: Did ECS change your clinical management?

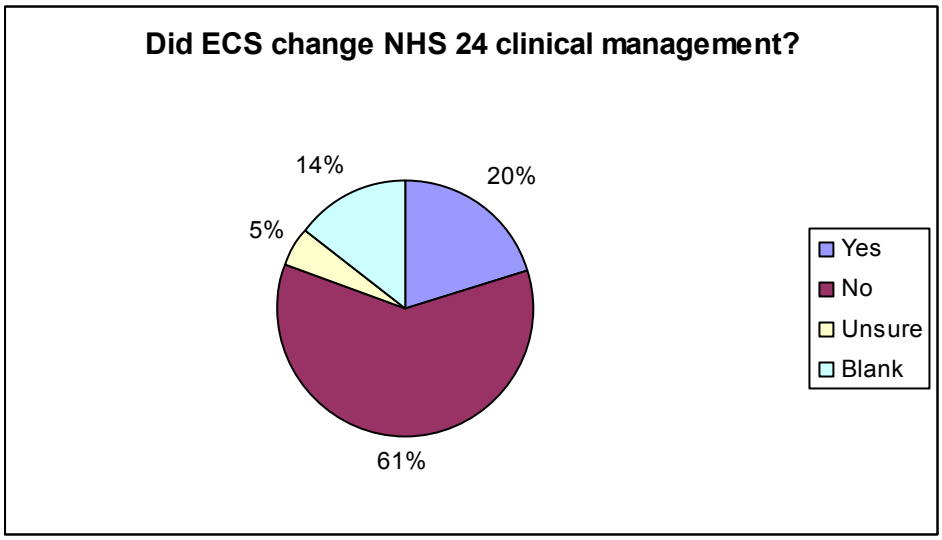


Figure 6

Warning screen on ECS

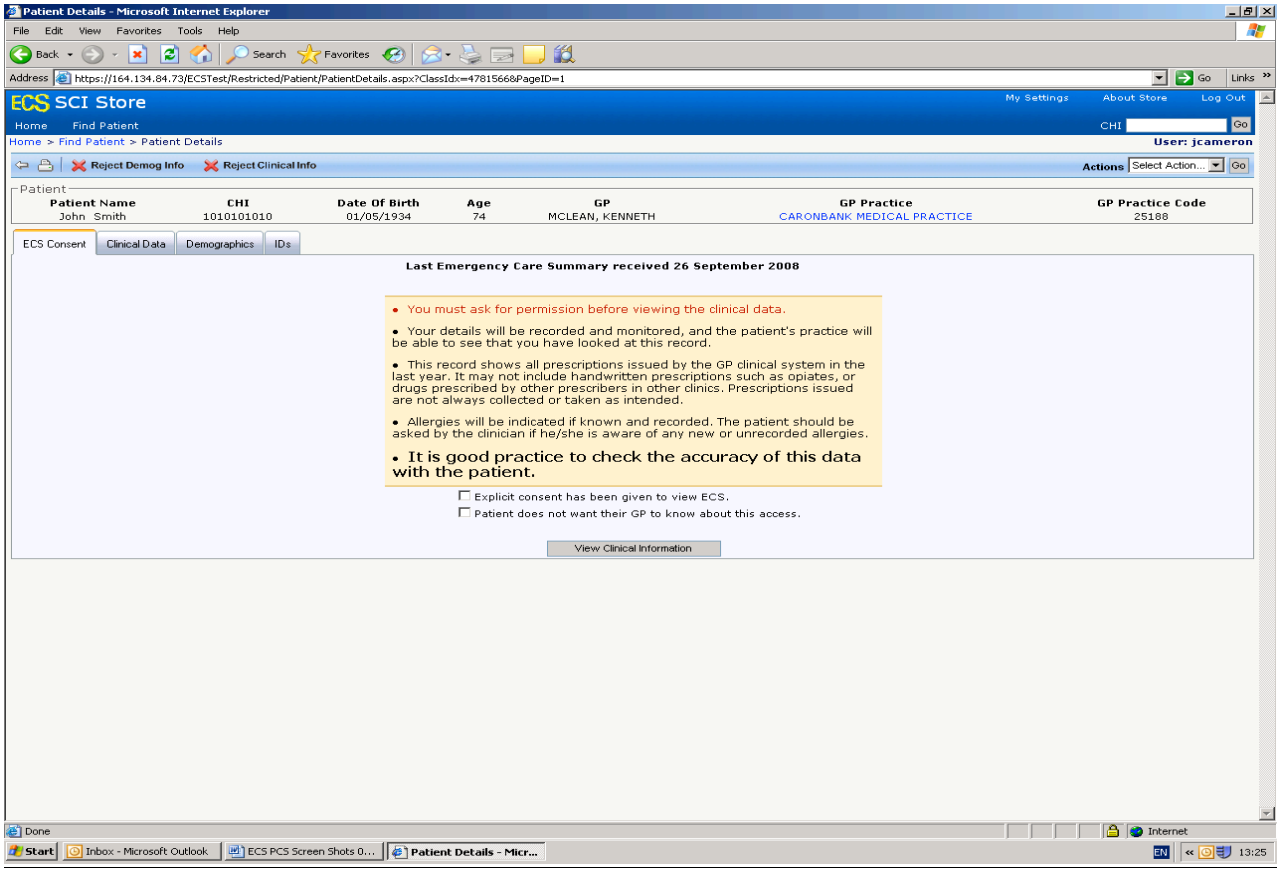
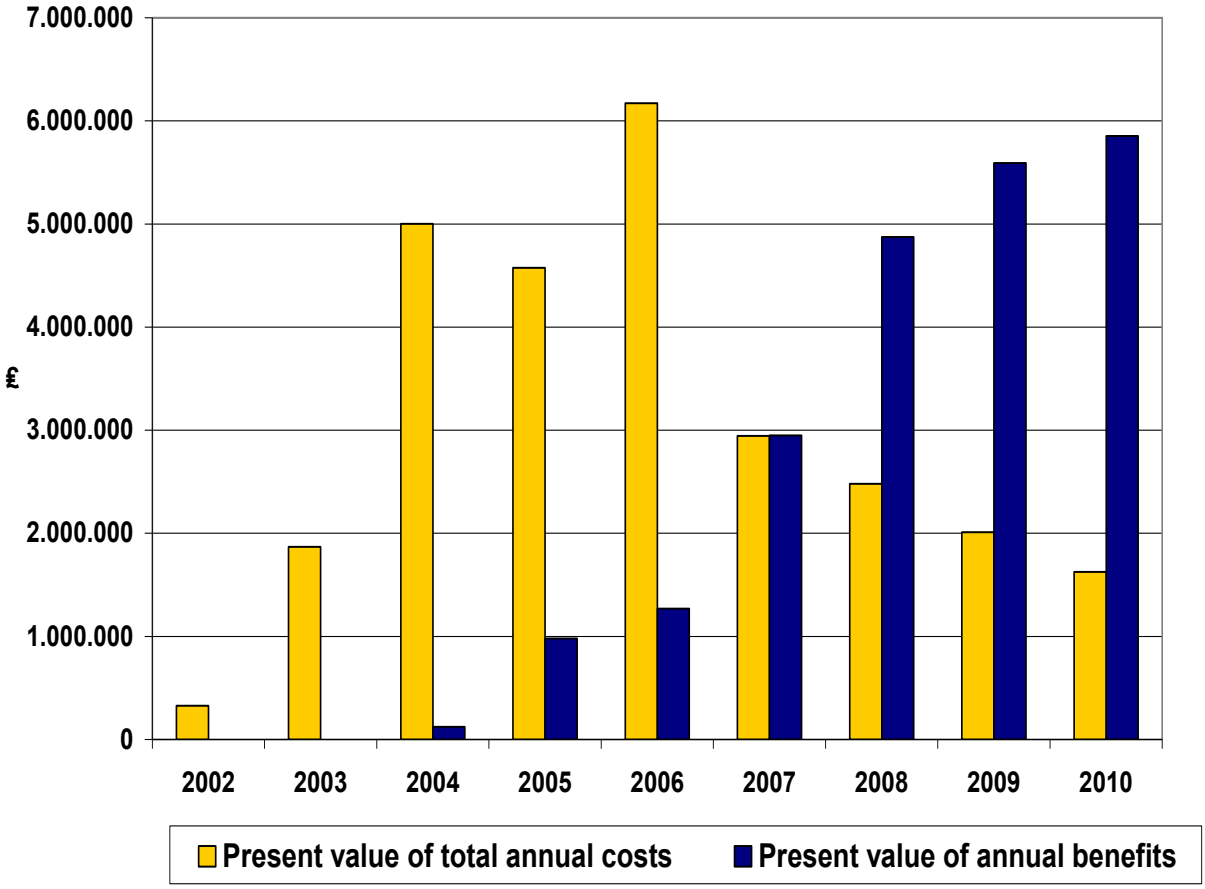


Figure 7

Cost – benefit analysis of the project



The costs are totals of proxy amounts included for time spent on discussions, training, hidden costs such as process changes at NHS24 before the integrated system was installed and costs of auditing accesses. The proxy costs for the benefits are things like costs for time saved and costs for better medical management.

Appendix 1

Emergency Care Summary Evaluation Form

The ECS has been established in Scotland for over 5 years and is widely used in A/E, Out of Hours and NHS 24. We would like to hear about your experiences, both good and bad. Please feedback any incidents or problems you have experienced, and please tell us about any cases where it has changed your decision or the outcome for the patient. We would like to know about any stories, good and bad, in order to further evaluate and inform plans for future development.

Board Area _____

Your Role _____

Patient sex and age (please do not give any identifying details) _____

Brief detail of presenting problem

About the Emergency Care Summary

Do you feel the ECS was helpful in the care of this patient?

Very helpful ☐ Helpful ☐ Made no difference ☐ Unhelpful ☐ Very unhelpful ☐

Please explain your answer in the box below.

Did it change your clinical management?
For example would your plan for investigations, admission or treatment have been different if you hadn't been able to access ECS?

an taken straight to Ultrasound and renal biopsy.

78 year old male admitted with a stroke. Patient unable to communicate. ECS gave quick and easy cess to patient's drug history and allergies

Appendix 2: Positive comments from A&E and Out of Hours users

20 year old male with tonsillitis said he was allergic to penicillin so the clinician advised him they would escribe Erythromycin after he stated he was not allergic to that. On checking the ECS, it stated he was ergic to Erythromycin. After a long discussion, he finally remembered about the Erythromycin allergy (he llapsed).

patient with angina was about to be treated with nitrate but ECS showed that he was already on 120mg osorbide therefore required an alternative. Without ECS it would not have been known that the patient as already on nitrate (because patient couldn't remember, paramedic crew hadn't brought in patient's eds and GP practice closed).

CS has been useful where GPs have sent in handwritten lists but missed some drugs e.g. a recent tient with no mention of levothyroxine

asy to use. If printed off at point of emergency admission this would be a great improvement to patient re. Can a national directive not be given that this should be done in all cases across Scotland?"

/hat a huge difference it makes to caring for many of our patients. Whether it be finding out what they're , when they can't remember, or if the patient is saying something different, because they didn't get a peat prescription when they did. Also multiple allergies. PS. could tetanus status be added to it?"

n excellent system! Absolutely invaluable on the wards. Saves a massive amount of time not having to one GP surgeries and eliminates the potential errors of transcripting drug histories from GP receptionists g. EC/MR/inhale types"

Appendix 3: Comments from NHS24 users

NHS24 clinicians stated that the ECS record was helpful for:

A patient who was intoxicated and had blacked out

A patient with dementia and 3rd party caller who had limited info of PMH

There were many comments referring to general benefit e.g.

'Good if updated regularly by GP practice'

'Very helpful - especially with elderly patients who often don't know what medical problems they have'

'It informs my practice and assessment. There are occasions when consent is withheld and I am unable to access ECS so therefore reliant totally on the history as stated by the patient'

Many replies stated that the ECS had become an automatic part of the process for assessing calls taken for patients in the OOHs period, eg:

Checking ECS is an automatic part of the call - like checking previous call history

References

[i] L. Morris, J. Dumville, L. Malcolm Campbell, F. Sullivan, (2003). **A survey of computer use in Scottish primary care: general practitioners are no longer technophobic but other primary care staff need better computer access. Informatics in Primary Care, 11, pp.5-11.**
http://www.ncbi.nlm.nih.gov/pubmed/16274587

[ii] **http://www.scimp.scot.nhs.uk/documents/Healthonline-publicattitudestosharingintheNHS.pdf**

[iii] **http://www.ecs.scot.nhs.uk/Documents/Patients/ECS%20Leaflet.pdf**

[iv] **FitzGerald K**, **Seale NS**, **Kerins CA**, **McElvaney R**. **The critical incident technique: a useful tool for conducting qualitative research.** J Dent Educ. 2008 Mar;72(3):299-304
Dental Department, Our Lady's Children's Hospital, Crumlin, Dublin 12, Ireland.

Lindberg DA, **Siegel ER**, **Rapp BA**, **Wallingford KT**, **Wilson SR**. **Use of MEDLINE by physicians for clinical problem solving** JAMA. 1993 Jun 23-30;269(24):3124-9.

[v] Summary of ECS usage figures **http://www.ecs.scot.nhs.uk/evaluation**

[vi] EHR impact study **The socio-economic impact of interoperable electronic health record (EHR) and e-Prescribing systems in Europe and beyond** **http://www.ehr-impact.eu/index.htm**

[vii] Summary of evaluations on ECS website **http://www.ecs.scot.nhs.uk/evaluation**

[viii] **http://www.audit scotland.gov.uk/docs/health/2009/nr_090416_managing_meds.pdf**