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Electronic Transmission of Prescriptions

Pre and Post Intervention Changes
in GP Attitude

Høgskolen i Hedmark
Rapport nr. 18 – 2004

Online-versjon

Utgivelsessted: Elverum

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Rapport nr. 18 - 2004

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ISBN: 82-7671-421-8

ISSN: 1501-8563



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Title: Electronic Transmission of Prescriptions: Pre and Post Intervention Changes in GP Attitude

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Number: 18

Year: 2004

Pages: 17

ISBN: 82-7671-421-8

ISSN: 1501-8563

Financed by: Department of Health (DoH), United Kingdom

Keywords: Electronic Transmission of Prescriptions (ETP) general practitioners,(GP) attitudes

Summary:

The Electronic Transmission of Prescriptions (ETP) scheme has become an important part of the UK Government's plans for modernising the National Health Service¹ (NHS). ETP pilot schemes were implemented by three consortia during 2002 and 2003, with a view to deciding which elements of the schemes were the most effective.

Data for statistical analysis were collected after a 6 month trial period. During this time, the ETP pilots were subject to early teething problems and there were certain concerns not least of which was the increased requirement for competence in computing skills. However, after the trial period, there was a generally positive attitude toward ETP.



Høgskolen i Hedmark

Tittel: Elektronisk overføring av resepter. Allmennpraktiserende legers holdninger før og etter brukserfaring

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Oppdragsgiver: Department of Health (DoH), United Kingdom

Emneord: Elektronisk overføring av resepter, Allmennpraktiserende leger, holdninger

Sammendrag:

Elektronisk overføring av resepter er en viktig del av britiske myndigheters planer for modernisering av helsevesenet. Pilotforsøk har blitt gjennomført i 2002 og 2003, for å teste ut egenskaper med oppleggene.

Data ble samlet inn etter en seks måneders prøveperiode. Systemet hadde barnesykdommer, og kravet til legenes kompetanse i bruk av datasystemer forutsettes økt.

Etter prøveperiode var det likevel en positiv holding til elektronisk overføring av resepter blant legene som deltok i pilotforsøket.

Summary

Introduction The Electronic Transmission of Prescriptions (ETP) scheme has become an important part of the UK Government's plans for modernising the National Health Service¹ (NHS). The scheme is scheduled to be introduced by the UK Government during 2004 and means that prescriptions will pass electronically between General Practitioners (GPs), pharmacies and the Prescription Pricing Authority (PPA), eradicating paper. ETP pilot schemes were implemented by three consortia during 2002 and 2003, with a view to deciding which elements of the schemes were the most effective. Consortia were named: Pharmacy2U (P2U), Flexiscript and TransScript. As part of the evaluation, commissioned by the Department of Health (DoH), GPs participating in these pilots were questioned by mail as to their opinions both before and after the schemes took place. This paper discusses pre and post intervention attitudes and highlights areas, identified through statistical testing, where GP's views had changed.

Method Post-intervention data were available from 26 GPs (19 from P2U, 3 from Flexiscript and 4 from TranScript). Pre-intervention data were available from 129 GPs (54 from P2U, 36 from Flexiscript and 39 from TransScript). However, only 9 GPs who completed the post-intervention questionnaire also completed the pre-intervention questionnaire. Those who completed both post and pre intervention questionnaires came from 2 of the consortium, P2U and TransScript, with 6 out of 9 coming from one practice (P9) and only 2 coming from TransScript (practices T15 and T4). GPs' pre and post intervention attitudes to ETP were measured on a Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neither agree/disagree, 4 = agree, 5 = strongly agree.

Conclusions Data for statistical analysis were collected after a 6 month trial period. During this time, the ETP pilots were subject to early teething problems and there were certain concerns not least of which was the increased requirement for competence in computing skills. However, after the trial period, there was a generally positive attitude toward ETP.

Keywords: ETP, general practitioners, attitudes.

Introduction

The implementation of ETP would mean that 500 million prescriptions would need to be processed electronically per year by the UK's National Health Service²; this far outweighs the volume currently handled by ETP in other countries.

In early June 2002 ETP trials began at three sites across the UK. Pilots officially ended on June 30th 2003. GPs' opinions about ETP were collected via questionnaire both before and after a trial period of 6 months. This paper discusses statistical analyses of GP views at the pre and post intervention stages of the ETP trial and describes where there is statistical evidence of a change in opinion. The questionnaire was constructed jointly between members of the Industrial Statistics Research Unit (ISRU), colleagues at the Sowerby Centre for Health Informatics at Newcastle (SCHIN) and members of the ETP evaluation team at the Manchester School of Pharmacy (MSP).

Pre and Post Intervention Attitudes to ETP: General Attributes

Viewing all respondents as a whole, Table 1 reports the views for the majority of GPs at the pre and post intervention stages of the ETP trial.

Overall, it is indicated that GPs regarded ETP as being potentially beneficial at the pre and post intervention stages in most areas. However, on the *negative* side, the majority of GPs agreed that ETP would increase the need for competence with computers and technology.

Interestingly, the majority of the GPs at the pre intervention stage were uncertain as to whether ETP would be a factor in the loss of community pharmacies, but after the trial, they did agree that it would be an influencing factor.

Uncertainty (i.e. neither agreement/disagreement) existed as regards their views on whether ETP would increase the number of 'Pricing Prescription Authority' (PPA) queries, improve patients' prescription compliance and diminish the potential for disciplinary action arising from prescribing errors.

On the positive side, before the trial, GPs believed ETP would increase the number of pharmacist queries about prescriptions but, after the trial, the majority of GPs' views were reversed.

Comparison of Pre and Post Intervention Data: Paired Samples

It was our aim to establish if attitudes had changed at the pre and post intervention stages. The Sign Test³ and the Wilcoxon Signed Ranks Test³ were used to compare attitudes to ETP for those 9 GPs who had completed questionnaires both before and after the trial. The Sign test merely utilises information about the direction of differences within pairs; the Wilcoxon Signed Ranks Test is more powerful in that it considers the relative magnitude as well as the direction of the differences. Both tests were conducted and results compared. Due to only 9 cases being available, Monte Carlo estimates of exact significance levels (p-values) were generated for these statistics to maintain accuracy. The statistical package employed was SPSS⁴.

For both tests, the questions which showed a difference in response (at the 5 % level of significance) were:

- 1) I believe ETP will increase the number of pharmacist queries about prescriptions
- 2) I believe ETP will spread script authorisation throughout the day
- 3) I believe ETP will help reduce prescription fraud

The observed differences in response for this sample of 9 GPs are shown in Figure 1.

After introduction of ETP:

- Overall, GPs from P2U were less concerned that ETP will increase the number of pharmacist queries about prescriptions. Both GPs from TransScript were unchanged in their opinion as to whether ETP will increase the number of pharmacist queries.
- Overall, GPs more agreed that ETP will spread script authorisation throughout the day.
- Overall, GPs more agreed that ETP will help reduce prescription fraud.

Comparison of Pre and Post Intervention Data: Independent Samples

After removal of the 9 GPs who had completed both the pre and post intervention questionnaires (and also removing one which had a missing id in the post-intervention data), the remaining pre data (120 cases) and post data (16 cases) could be viewed as two independent samples. No GPs were common to these two groups and no GP within either of the two groups had completed both questionnaires. Since only 'ordinal' measurement is present in the variables, the Mann-Whitney Test³ was appropriate to determine if the two groups were drawn from the same population i.e. to establish if pre and post intervention responses differed as regards median values. In addition, the chi-squared statistic was also employed to determine if the pre and post groups differed as regards proportions in the different response categories. Monte Carlo estimates of exact p values were again employed for these statistics to maintain accuracy.

The questions whose replies at both stages were indicated as being statistically different at the 5 % level for the Mann Whitney test and/or chi-squared test are given in Figure 2. The percentages of GPs occurring in each of the response categories are given and median response values at each stage are also displayed

There is evidence of a difference in pre- and post- intervention responses for the following questions:

- 1) I believe ETP will spread script authorisation throughout the day.

Although the general pattern of responses in the pre and post questionnaire is the same, it is observed that, after ETP, more GPs agreed/strongly agreed that ETP would spread script authorisation throughout the day.

- 2) I believe ETP will impair GP/pharmacist relations.

Before introduction of ETP, the majority of GPs did not think that ETP would impair GP and pharmacist relations, after ETP the majority of GPs were uncertain.

- 3) I believe ETP will provide concerns with patients who may not want to nominate a pharmacy of their choice.
Before ETP, most GPs agreed that ETP will provide concerns with patients who may not want to nominate a pharmacy of their choice, after ETP the majority of GPs were uncertain.
- 4) I believe ETP will be secure enough to prevent breaches.
Before ETP, some GPs did not think that ETP would be secure enough to prevent breaches. After ETP all of the GPs who completed the post intervention questionnaire were either uncertain or agreed that ETP would be secure enough.
- 5) I believe ETP will provide concerns about breaches of patient confidentiality.
Before ETP, the majority of GPs showed concern as regards breaches in patient confidentiality. After ETP, the majority were uncertain or disagreed that ETP would provide concerns.
- 6) I believe ETP will provide feedback on uncollected prescriptions.
Before the ETP trial, the majority of GPs agreed that ETP will provide feedback on uncollected prescriptions; after the trial, the majority of GPs were uncertain. It is also worth reporting that a further question (not related to ETP attitude) was also significant. The question was
- 7) What is your level of awareness of ETP?
After the ETP trial, all GPs showed awareness. Before implementation, knowledge was sometimes lacking.

Conclusions

After implementation of the pilot schemes, ETP awareness was shown to have increased and, generally, GPs viewed ETP as being potentially beneficial. Certain areas of opinion produced a similar reaction both before and after the pilot schemes took place. On the human side, GPs felt that ETP would reduce patient ordering and waiting time for repeat prescriptions, reduce number of patient visits to surgery and increase the quality and speed of the repeat prescribing service. They did not think it would give patients less opportunity to interact with their GP or decrease the confidence of patients in repeat prescribing. At the business end, the majority of GPs felt that ETP would help move to a paperless environment, help to reduce prescription fraud, provide feedback on uncollected prescriptions and they did not think it would increase their workload or decrease their ability to monitor repeat prescribing.

On the negative side, GPs agreed that ETP would increase the need for competence in computers and technology and increase the likelihood of repeat dispensing by pharmacists.

There were, however, still areas of uncertainty which remained after the pilot schemes took place. GPs still seemed uncertain as to whether ETP would improve patients' prescription compliance and diminish the potential for disciplinary action arising from prescribing errors.

There were also areas where GPs had become uncertain. After the ETP trial, the majority of GPs seemed to be uncertain as to whether ETP would impair GP and pharmacist relations whereas at the pre intervention stage they did not think the relationship would be affected. After ETP introduction, GPs also seemed uncertain about possible patient concerns relating to pharmacy nomination, previously they felt that this *would* be a problem. On another positive note, after ETP, the majority of GPs disagreed that ETP would increase the number of pharmacy queries about prescriptions whereas before they had an opposite opinion.

For those GPs who completed both pre and post questionnaires, after the pilot scheme there was shown to be a more favourable attitude towards ETP especially in areas relating to 'pharmacist queries about pre-

scriptions', 'reduction of prescription fraud' and 'the spreading of script authorisation throughout the day'.

It must be borne in mind that at the time of post-questionnaire distribution, ETP was in its infancy. This analysis is based on data collected after the ETP pilot scheme had been running for only around 6 months. Nevertheless, the general attitude towards ETP after this time was positive.

At the end of the scheme in June 2003, over 100,000 prescribing and dispensing messages were transmitted between GPs, community pharmacies and the PPA⁵. The scheme had been deemed a success and had been proven to be technically viable to send and receive secure prescribing and dispensing data electronically⁶.

Acknowledgements

We would like to express our gratitude to Dave Stewardson, Director of ISRU (retired) for his continuous support and inspiration during the ETP project. His dedication and vitality remain unsurpassed.

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I believe Electronic Transmission of Prescriptions will:	Before ETP trial			After ETP trial		
	Strongly disagree/ disagree	Neither agree/ disagree	Strongly agree/ agree	Strongly disagree/ disagree	Neither agree/ disagree	Strongly agree/ agree
Increase the workload of GPs.	•			•		
Decrease the confidence of patients in repeat prescribing.	•			•		
Increase number of prescribing errors.	•					
Decrease GPs ability to monitor repeat prescribing.	•			•		
Give patients less opportunity to interact with their GP.	•			•		
Impair GP and Pharmacist relations.	•				•	
Provide concerns with customers who may not want to nominate a pharmacy of their choice.			•		•	
Provide concerns about breaches of patient confidentiality.			•			
Increase number of pharmacist queries about prescriptions.			•	•		
Increase the likelihood of repeat dispensing by the pharmacists.			•			•
Increase the number of PPA prescription queries.		•			•	
Diminish the potential for disciplinary action arising from pre-prescription errors.		•			•	
Be a factor in the loss of community pharmacies.		•				•
Increase the need for competence with computers and technology.			•			•
Spread script authorisation throughout the day.			•			•

I believe Electronic Transmission of Prescriptions will:	Before ETP trial			After ETP trial		
	Strongly disagree/ disagree	Neither agree/ disagree	Strongly agree/ agree	Strongly disagree/ disagree	Neither agree/ disagree	Strongly agree/ agree
Help move to a paperless environment.			•			•
Reduce patient ordering time for repeat prescriptions.			•			•
Reduce the number of patient visits to surgery.			•			•
Reduce patient waiting time for repeat prescriptions.			•			•
Help to reduce prescription fraud.			•			•
Increase the quality of repeat prescribing services.			•			•
Provide feedback on 'uncollected' prescriptions.			•			•
Speed up the repeat prescribing process.			•			•
Reduce errors in the repeat prescribing process.			•			•
Improve medication management repeat prescribing.			•		•	
Be secure enough to prevent breaches.		•				
Improve patient's prescription compliance.		•			•	

Table 1 Views for the majority of GPs at the pre and post intervention stages of the ETP trial

Note: : Questions which show no opinion did not have a predominant category for the majority of responses.

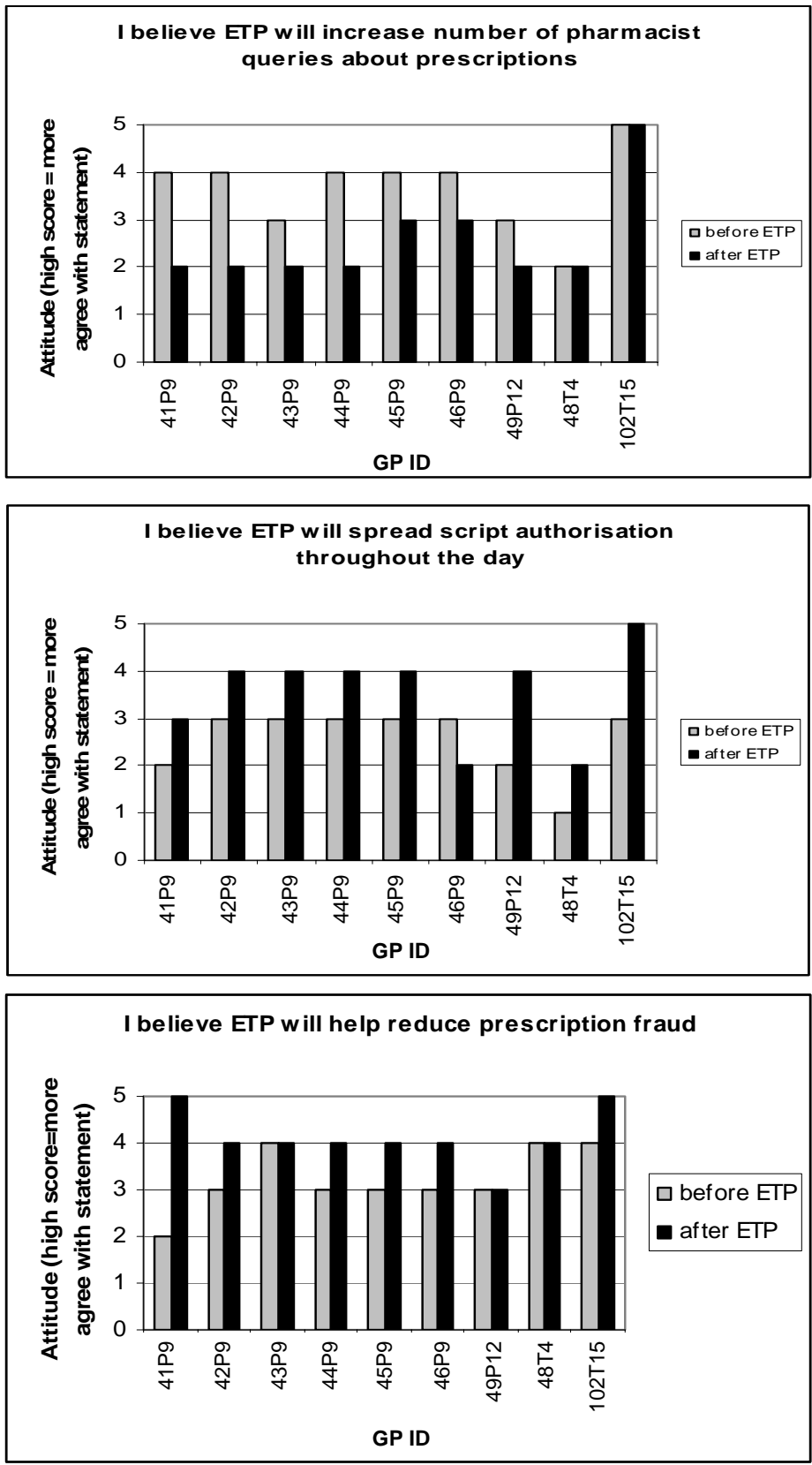


Figure 1 Differences between GPs at the pre and post intervention stages in 2 paired samples

Figure 2 Differences between GPs at the pre and post intervention stages in 2 independent samples

C.S.=Chi-squared Test; M.W.= Mann Whitney Test

NS=not significant at the 5% level ; *=significant at 'table-wide' 0.05 level after adjustment for multiple comparisons⁷.

I believe that ETP will spread script authorisation throughout the day		Before ETP	After ETP	C.S.	M.W.
	Median Category	Neither agree/disagree	Agree	P values	.
		n (%)	n (%)	0.006	0.045
	Strongly Disagree	2 (1.7%)	1 (6.3%)		
	Disagree	25 (21.0%)	0 (0.0%)		
	Neither agree/disagree	40 (33.6%)	5 (31.3%)		
	Agree	50 (42.0%)	7 (43.8%)		
	Strongly Agree	2 (1.7%)	3 (18.8%)		
	Total	119 (100%)	16 (100%)		

I believe that ETP will impair GP and pharmacist relations		Before ETP	After ETP	C.S.	M.W.
	Median Category	Disagree	Neither agree/disagree	P values	.
		n (%)	n (%)	<0.0005*	<0.0005*
	Strongly Disagree	13 (10.8%)	1 (6.3%)		
	Disagree	83 (69.2%)	2 (12.5%)		
	Neither agree/disagree	21 (17.5%)	9 (56.3%)		
	Agree	2 (1.7%)	4 (25.0%)		
	Strongly Agree	1 (0.8%)	0 (0.0%)		
	Total	120 (100%)	16 (100%)		

I believe that ETP will provide concerns with customers who may not want to nominate a pharmacy of their choice		Before ETP	After ETP	C.S.	M.W.
	Median category	Agree	Neither agree/disagree	P values	.
		n (%)	n (%)	0.002	0.001
	Strongly Disagree	0 (0.0%)	0 (0.0%)		
	Disagree	10 (8.5%)	1 (6.3%)		
	Neither agree/disagree	26 (22.0%)	11 (68.8%)		
	Agree	69 (58.5%)	4 (25.0%)		
	Strongly Agree	13 (11.0%)	0 (0.0%)		
	Total	118 (100%)	16 (100%)		

I believe that ETP will be secure enough to prevent breaches		Before ETP	After ETP	C.S.	M.W.
	Median Category	Neither agree/disagree	Agree	P values	.
		n (%)	n (%)	NS	0.027
	Strongly Disagree	1 (0.8%)	0 (0.0%)		
	Disagree	24 (20.2%)	0 (0.0%)		
	Neither agree/disagree	54 (45.4%)	7 (43.8%)		
	Agree	39 (32.8%)	9 (56.3%)		
	Strongly Agree	1 (0.8%)	0 (0.0%)		
	Total	119 (100%)	16 (100%)		

I believe that ETP will provide concerns about breaches of patient confidentiality		Before ETP	After ETP	C.S.	M.W.
	Median Category	Agree	Neither agree/disagree		.
		n (%)	n (%)	P values	
	Strongly Disagree	1 (0.8%)	0 (0.0%)	NS	0.003
	Disagree	18 (15.3%)	6 (37.5%)		
	Neither agree/disagree	33 (28%)	7 (43.8%)		
	Agree	57 (48.3%)	3 (18.8%)		
	Strongly Agree	9 (7.6%)	0 (0.0%)		
	Total	118 (100%)	16 (100%)		

I believe that ETP will provide feedback on uncollected prescriptions		Before ETP	After ETP	C.S.	M.W.
	Median Category	Agree	Neither agree/disagree		
		n (%)	n (%)	P values	
	Strongly Disagree	0 (0.0%)	0 (0.0%)	NS	0.028
	Disagree	3 (2.5%)	1 (6.3%)		
	Neither agree/disagree	28 (23.5%)	8 (50.0%)		
	Agree	83 (69.7%)	6 (37.5%)		
	Strongly Agree	5 (4.2%)	1 (6.3%)		
	Total	119 (100%)	16 (100%)		

What is your level of awareness of ETP		Before ETP	After ETP	C.S.	M.W.
	Median Category	Aware with some knowledge	Aware with some knowledge		.
		n (%)	n (%)	P values	
	Highly Aware	17 (14.2%)	6 (37.5%)	0.05	0.001
	Aware with some knowledge	59 (49.2%)	10 (62.5%)		
	Not Sure	27 (22.5%)	0 (0.0%)		
	Have heard of term, no knowledge	16 (13.3%)	0 (0.0%)		
	Not aware	1 (0.8%)	0 (0.0%)		
Total	120 (100%)	16 (100%)			