

	ePrescribing System Evaluation – Published Report			
	Programme	NPFIT	NPFIT-EP-DB-0027.02	
	Sub-Prog / Project	e-Prescribing		
	Prog. Director	Tim Donohoe	Status	Final
	Owner	Ann Slee	Version	1.1
	Author	Sam Sibeko	Version Date	5 th Jan 09

ePrescribing System Evaluations

Jan 2009

1. Background

The implementation of ePrescribing (eP) is a priority within the majority of NHS Trusts and is highlighted as one of the five key elements (the clinical 5) for secondary care within the recent Health Informatics Review¹. To support this priority the NHS CFH eP Programme has undertaken a review of existing ePrescribing systems using as a basis the functional requirements outlined for the NHS in England for ePrescribing in Jan 2007².

The purpose of this review was to identify the status of existing ePrescribing systems at the time of review. NHS Connecting for Health do not offer any recommendations based on the results published. The information is being made available to NHS organisations to use to support any work that they may undertake in this area, including looking at potential interim solutions – it is recommended that any use made is supported by wider local work. The reviews were undertaken between June and November 2008, and all scores were based on the available systems demonstrated during this period.

Details of Local Service Provider (LSP) deliverables and timescales are available from Strategic Health Authority Chief Information Officers and at the following link: www.connectingforhealth.nhs.uk/about/howwework/lsp.

2. Process Undertaken

A total of twelve suppliers were identified as having ePrescribing systems available. They all accepted the initial invitation to take part in the system evaluation. Systems that were either standalone or part of a larger electronic patient record were reviewed.

The review encompassed a range of functional, technical and usability measures which were identified during three separate stages. Details of the approaches taken are fully explained within the Appendix in section 6.

The 3 main stages used to evaluate the systems were:

- Stage 1: A pre-evaluation questionnaire completed by suppliers to identify corporate, functional and technical capability (see appendix 6.1 for details);
- Stage 2: System demonstrations using a standard script for an NHS treatment episode (see appendix 6.2 for details) which was reviewed and scored by front line NHS clinical staff coupled with a user interface review (see appendix 6.3 for details);
- Stage 3: Visits to live sites, (NHS where they exist), to identify actual system support, development and clinical use (see appendix 6.4 for details).

3. Results

Full results of the system evaluations are summarised in section 4 below. Of the 12 suppliers who accepted the initial invitation, Siemens did not take part in the front line clinical review and so are not listed in the results table and Orion did not complete the full process.

In addition each supplier was invited to provide a short statement to provide additional information and context for their systems. These are included in section 5 below.

No one system met all of the criteria identified within the various elements of the review.

Some systems had highly developed functionality in all areas whilst others had strengths in some areas but not all. Some systems had highly developed safety and support features whilst others were less mature.

Some systems were not yet felt to be sufficiently 'anglicised' to meet current need for the NHS in England.

The electronic patient record systems had better integration with other clinical information but required considerably more configuration as a result.

A number of suppliers have indicated that they will be utilising this process to support future system development activities.

NOTE: NHS CFH is indebted to the suppliers who responded to the invitation to have their systems evaluated. We hope that the information provided is of use and acknowledge that the systems viewed during this evaluation process may currently be within development cycles. System developments may have occurred subsequent to this report being written and should be borne in mind when using this information.

For further information about any aspects of the report please contact eprescribing@nhs.net

4. Table One – Overall Results Summary

The scores outlined below do not in themselves represent a level of compliance for a particular area and should be used as relative comparators only.

Supplier	Weight	Alert	Ascribe	Atkosoft	Cambio	CIS	EPIC	FileTek/ Meditech	JAC	Orion	UHB	Varian
System Version		Release 2.4.2	v9.12	v2.0.34	Release 7.2	v3.5.2x	Spring 08	v6	v4.47	v3.1	v156	v8.5
1. Front Line Clinical Review *	48	28.13	33.12	15.92	18.29	26.71	35.40	28.04	30.98	22.11	31.59	19.04
Retrieve Medication History	7	5.40	5.22	3.51	3.31	4.40	5.35	4.96	4.99	5.03	5.04	3.83
Prescribe Inpatient Medicines	7	4.23	4.73	3.35	2.77	4.39	5.21	3.64	4.19	3.89	4.60	2.80
Decision Support	5	3.03	3.21	1.45	2.57	2.96	3.84	3.33	3.69	2.90	3.37	2.07
Prescribing Off Formulary & Predefined Prescriptions	5	2.71	3.70	1.79	1.99	2.49	3.75	2.35	3.39	1.82	3.11	2.66
Pharmacy Verification	3	1.20	2.18	0.17	1.12	1.83	2.25	1.80	1.67	0.91	2.00	1.29
Additional Prescribing Functionality	7	3.98	4.93	2.38	2.29	3.39	4.92	3.83	4.48	2.51	4.28	2.88
Administration	7	4.22	4.44	2.53	2.78	3.77	5.18	4.18	4.21	2.79	4.74	2.12
Discharge Prescribing	7	3.35	4.70	0.75	1.47	3.48	4.90	3.95	4.38	2.26	4.45	1.39
2. Front Line Clinical Impressions *	7	2.87	5.88	1.32	0.49	1.82	6.68	4.62	6.29	0.50	5.90	0.72
Overall Impressions	7	2.87	5.88	1.32	0.49	1.82	6.68	4.62	6.29	0.50	5.90	0.72
3. Functionality **	6	3.28	5.32	4.63	1.88	4.02	5.57	5.96	4.64		4.24	4.61
Functional Spec Conformance	6	3.28	5.32	4.63	1.88	4.02	5.57	5.96	4.64		4.24	4.61
4. User Interface Review *	14	10.23	11.52	9.05	8.41	10.86	13.10	11.26	11.49		11.59	8.14
User Interface Review	14	10.23	11.52	9.05	8.41	10.86	13.10	11.26	11.49		11.59	8.14
5. System Technical Spec **	10	8.02	6.32	6.46	4.75	6.70	8.33	6.09	5.42		7.56	9.27
Conformance to CFH standards	4	3.65	3.65	2.26	2.26	1.57	3.39	2.26	1.57		2.96	4.00
Use of 3 rd Party Information	3	2.61	0.39	1.70	0.20	2.80	2.61	1.50	1.70		3.00	2.80
System Platform	3	1.76	2.28	2.50	2.29	2.33	2.33	2.33	2.16		1.60	2.47
Sub Total	100	52.53	62.16	37.38	33.81	50.11	69.08	55.97	58.82	22.61	60.88	41.78
6. Long Term Partnership	15	2.50	6.32	2.70	2.74	3.20	10.25	9.08	9.39		1.72	3.60
Support and Development **	4	2.50	3.12	2.70	2.74	3.20	2.70	2.78	3.24		1.72	3.60
Live Site Reference Visits *	11		3.20				7.55#	6.30***	6.15			

KEY: * Scored by NHS staff; ** Score by suppliers, *** Filetek / MEDITECH live site reference visit took place at a site with a version 5.4 system, # US Site

5. Supplier Response

The following responses have been provided by each supplier in response to the system evaluation process and results.

5.1. Alert Life Sciences

Alert Life Sciences Computing thanks NHS Connecting for Health for the opportunity to take part in this ePrescribing benchmark. We are pleased that we scored so well especially since the version that was evaluated (Alert v2.4.2) is a US version rather than an official UK version. Since the benchmark was conducted we have released v2.4.3 that corrects many of the issues identified in the benchmark. We plan to release version 2.4.4 in Spring 2009, a full UK market offering containing the FDB UK Multilex drug database, and addressing the remaining issues from the review.

Alert's electronic prescribing capability is only one aspect of our products. Alert Paperfree Hospital is a fully featured Electronic Health Record that provides clinical documentation, order communications, results reporting, treatment management functionality, and much more. The electronic prescribing functionality can be used in conjunction with these other features to provide support in A&E, Inpatient areas, Outpatient treatment, and Operating Theatres. We support the creation of Integrated Care Pathways offering decision support and protocol-driven best-practice guidance to improve patient safety and advance quality in treatment.

Alert Life Sciences Computing will continue working with NHS Connecting for Health on this and other initiatives to improve the quality of our products and help ensure a smooth and effective entry into the UK market. For more information on Alert and its products, please contact Laurence Campbell of Alert Life Sciences Computing UK on 07515 516052, or visit <http://www.alert-online.com> for an online demo.

5.2. Ascribe

Ascribe ePMA provides a web-based solution for enterprise scale deployments of general and specialist electronic prescribing and medicines administration. Built on Ascribe's strategic software platform, the Integrated Clinical Workstation, Ascribe ePMA can be delivered as end-to-end fully integrated solution with Ascribe pharmacy, order communications, medicines management and 3rd party systems.

Ascribe has welcomed this review and key findings have been included in the Ascribe ePMA product roadmap. However, there are two areas that require further explanation for readers of this review.

With respect to the use of 3rd party data, Ascribe manages its own formulary based on the BNF for its UK customers. This formulary is used in the Ascribe pharmacy software currently in live use in c. 50% of NHS hospitals and has a long proven track record. This review did not assess the quality of the Ascribe formulary and the result only reflects that a 3rd party dataset such as DM&D was not used. The Ascribe formulary has a similar structure to DM&D, and should NHS DM&D be required, this could be technically accommodated but would decrease the range of functionality in areas such as decision support.

With experience coming from a Windows based prescribing system installed in more than 10 hospitals, Ascribe has developed a new web-based product. At the time of this review the new system had a small representative user base but is now being rolled out more widely with three further go-lives due in 2008. Ascribe's strategy has been to ensure a solid foundation was first established on which the ePMA solution could be delivered to meet the individual clinical and operational needs of customers.

Ascribe contact: Gary Mooney, Head of Enterprise Solutions, email: gary.mooney@ascribe.com.

5.3. ATKOSoft S.A

ATKOSoft, aMedLine system, is a highly customisable solution which always requires adaptation to meet client requirements. Based on the experience gained from successful implementations in other countries including Greece, Italy and Cyprus, ATKOSoft always undertakes a Basic Country Specific Customisation (BCSC) review before the first client specific implementation per country. This covers issues like legislation and regulation, practice differences, coding requirements etc. This type of activity had not been done for the English market prior to the ePrescribing demonstration reviews. Therefore the system presented at the demonstration was lacking the local customisation that would have accommodated the specific requirements for the NHS. Examples include:

- The demo version did not integrate a UK formulary and Commercial Drugs database resulting in limited functionality being available for example in: automatic selection of route, linking of disease type to active ingredients, maximum dose constraints, etc
- The Decision Support functionality of the system is tightly linked to the Drug Formulary knowledge base and therefore the demonstrable features were constrained.
- Knowledge of user preference for the automatic presentation of warnings and reminders, the need to review a medical history etc meant that elements of configuration were not activated for the demonstration despite being available.
- Pharmacist verification of prescription was not presented at all as the system was set up with a completely different workflow.

Nevertheless, we decided to participate in the demonstration to obtain initial feedback on the customisation requirements that we have already planned to undertake over the forthcoming months. By examining the detailed responses that were made available to us, it is obvious that the low scoring was due to the lack of Anglicisation. This feedback will be one of the inputs for the Basic Country Specific Customisation that we plan. For further information please contact Yiannis Samiotakis (yiannis@atkosoft.com) or visit www.atkosoft.com.

5.4. Cambio Healthcare Systems Ltd

Cambio Healthcare Systems welcomed the chance to 'baseline' our COSMIC ePrescribing functionality, which is used extensively in Sweden and Denmark (where ePrescribing has been in operation for several years), for the English NHS market. The version of the software on demonstration was the commercial off the shelf version developed for the Swedish market and was integrated with the Swedish Drug Formulary. As a result we are not entirely surprised that clinicians would not take it in this state 'as is' for the English NHS market. The opportunity to get constructive feedback from so many NHS clinicians has been incredibly useful and the results will be fed into our Product Roadmap for ePrescribing so that Cambio can deliver an ePrescribing solution specifically tailored for the NHS market and at the same time able to fully integrate with other COSMIC functionality and third party applications.

Cambio would welcome the chance to come back in the future to repeat the process with NHS CFH and demonstrate how COSMIC can show proper support for NHS processes and address some of the issues raised specifically around system complexity and alerting levels. Please contact Andrew Meiner (andrew.meiner@cambiosys.co.uk) for latest information on product development and timescales.

Cambio Healthcare Systems is the market leader of e-health solutions in Scandinavia. COSMIC is a fully integrated suite of e-health applications including PAS, Medical Record, Order Management, ePrescribing, Maternity, Theatre Management, A&E and Business Intelligence, and has been designed to be deployed in large scale installations with over 10,000 users at a regional level across primary and secondary care. (www.cambio.se).

5.5. CIS Healthcare Ltd

CIS-Healthcare is the provider of the market-leading ChemoCare® oncology prescribing and management system with over 60 hospitals using the system in the UK. Our ePrescribing product, Theriak Medicines Management (TMM), is the European market leader with sites in Germany, Holland, Denmark, Austria, Norway and Iceland. For the benchmarking process we demonstrated our Dutch version which had not been developed for the UK market. We were pleased with our high score in the 'front line clinical' section which reflects the systems high level of functionality despite currently being a European focused product and we expect our UK product will score well across all categories. As such we are now working to tailor the design of our core TMM product to create a UK centric version that will include the integration of ChemoCare in order to satisfy the NHS' individual demands. Our experience with ChemoCare prescribing within the NHS and the ePrescribing benchmarking process are both important in helping us to align our product for the UK.

We have successfully tailored TMM in all our other markets to meet specific requirements, ranging from a regional network with over 4,000 concurrent users operating across every ward, to virtual pharmacies supplying groups of hospitals and single specialist centres. We believe this experience of successfully delivering a range of complex ePrescribing solutions in numerous different settings will be invaluable for the UK market. Within the UK we will look to work with individual hospitals and groups drawing on our experience in providing solutions to NHS Cancer Networks and whole regions. Patient care and safety is at the heart of everything we do and we believe in building lasting partnerships with our clients. We believe we have the experience, knowledge and accredited implementation processes required to achieve outstanding care without risking ongoing treatment. CIS Healthcare is now looking forward to working side by side with the NHS to deliver offerings that improve effectiveness, increase patient care volumes, standardise treatment, and provide robust and reliable audit trails. For further information, please contact Valerie Lee, Valerie.lee@cis-healthcare.com +44(0)77 1779 4340

5.6. Epic Systems Corporation

Epic is pleased to provide information about our ePrescribing system for the UK. Our full-featured system covers all areas of ePrescribing, including prescribing, pharmacy verification, medication administration, and discharge prescriptions. Real-time decision support and a medication reconciliation workflow promote patient safety. Our systems scale to large numbers of users providing instantaneous access to current medication information and speeding up bottleneck areas such as patient discharge. We think the best implementation provides ePrescribing as the first step in a comprehensive computerised patient record. Once lab results and patient administration information is connected and your staff use Epic for ePrescribing, they are poised to easily move to more sophisticated uses supporting hospital throughput, better care, and an improved patient experience.

When fully rolled out, our software will be in use by approximately 20% of the healthcare providers in the United States. It is designed to meet the needs of many types of hospitals in the US and internationally, including large facilities, academic hospitals, and groups of hospitals. To meet these varied needs, our software provides a number of simple configuration options to alter displays and workflows. This flexible structure gives us an advantage in meeting the unique requirements of the UK. Our extensive interface experience helps you manage ePrescribing as an integrated part of your workflow, not an isolated island. We have successfully interfaced with patient administration systems, lab systems, robotics, and/or dispensing cabinets at dozens of sites.

Epic provides a range of systems that successfully support patient access, bookings, bed management, and medication management through even a full replacement of the entire paper chart at large organisations such as Kaiser Permanente and prestigious organisations such as Cleveland Clinic. In addition to customers in the US, Canada, and South Africa, our European office in The Netherlands supports two customers in Europe and is rapidly growing. Epic contact: Teri Thomas, email: teri@epicsystems.com, phone: +01 608 271 9000.

5.7. FileTek / MEDITECH

FileTek UK Ltd is the exclusive UK distributor within the NHS for MEDITECH Electronic Patient Record Systems which includes both full Electronic Prescribing and Pharmacy functionality. The system evaluated was the latest version (V6.0) of the MEDITECH Pharmacy Electronic prescribing system that is in the process of Anglicisation currently. The previous version (V5.6) of the Electronic prescribing software is fully implemented at three sites in the UK and it was this version that was evaluated in the site visit.

MEDITECH is the leading supplier of healthcare information systems in North America and provides integrated software solutions that meet the information needs of health care organisations worldwide, including hospitals, ambulatory care centres, physicians' offices, long term care, behavioural health facilities and home health organisations. FileTek UK Ltd is providing the MEDITECH product suite to a growing number of organisations within the UK that require an integrated, proven, deliverable solution that can be implemented on-time and on-budget to provide real clinical benefit. FileTek UK Ltd offer the extensive MEDITECH software solutions coupled with services based contracts if required, to hospitals in the UK. MEDITECH and FileTek UK Ltd operate globally in more than 2200 enterprises, and supply totally integrated health systems.

For further information please contact Jonathan Headon, Director of Healthcare at FileTek UK Ltd (Jheadon@filetek.com).

5.8. JAC Computer Services Ltd

In response to the summary results issued by NHS CFH for the JAC ePrescribing and Medicines administration module (EPMA) JAC would like to offer the reader the following additional comments:

JAC is grateful to NHS CFH for benchmarking the currently available suppliers in this area which will be of assistance to Trusts wishing to assess the current state of the market. The results achieved in the evaluation, in the main, are a reasonable reflection of the current state of the JAC EPMA module installed in a variety of UK hospital settings and readers should note that on-going development plans are aligned to delivery of many of the key requirements as described in the ePrescribing functional specification issued by NHS CFH in January 2007 and commented on by NHS CFH as part of this review. Readers are welcome to contact JAC for further details if required.

In addition JAC would like to offer the following points in clarification to readers using/reviewing this information:

- ePrescribing is only part of the whole medicines management supply chain and readers are advised to give careful consideration to integration of ePrescribing into other affected areas e.g. Pharmacy.
- Implementation of ePrescribing has significant impact on Clinical users workflows and processes, especially where manual processes are currently in place. Readers planning an implementation should take considerable note of the rapidly increasing body of information and experience available from live UK sites. Information gained will be invaluable in understanding the change management implications of installing ePrescribing in the various UK Healthcare settings and consequently multiple site visits would be highly recommended.

In summary we believe that the JAC evaluation confirms experiences from our live UK sites, namely that the JAC EPMA system when installed as part of a broader Medicines Management strategy offers a system that is safe, user friendly, clinically acceptable and functionally adequate to meet today's needs. For further information please contact Robert Tysall-Blay, Chief Executive JAC Computer Services Ltd at info@jac-pharmacy.co.uk.

5.9. Orion Health Ltd

Orion are dedicated to ensuring that the solutions we provide meet the specific clinical and operational needs of the markets in which we operate. With several years experience with the NHS, Orion continue to be committed to delivering rich clinical solutions to the NHS in line with both the informal and formal requirements laid down by the Department of Health, NHS Connecting for Health and their representatives.

At this point our ePrescribing solution provides only a small subset of the functionality the NHS is seeking and given the delta between the NHS' requirements and the functionality contained within Orion's solution, Orion will not be marketing its ePrescribing solution in England, but will instead focus on providing its Clinical Integration Framework solution which provide NHS Trusts with a rich interim solution pending the completion of the ICRS programme.

5.10. Siemens Healthcare

Siemens Healthcare provides a broad portfolio of clinical support solutions within the UK and globally, including Electronic Prescribing and Medicines Administration solutions. We acknowledge the omission of any scores for Siemens within the review due to the incomplete nature of the review that was possible during the process.

Siemens Healthcare provides specific solutions to address customers' needs through the application of workflow solutions that deliver improved efficiency and safer patient care. Therefore, should an organisation require evaluation of a Siemens solution which includes ePrescribing then please contact Paul Burdett at Paul.Burdett@siemens.com for further information.

5.11. University Hospitals Birmingham NHS Foundation Trust (UHB)

PICS is an electronic prescribing system that has been in continuous use at University Hospital Birmingham since 1998, initially in specialist areas but throughout the trust since 2005. It was developed from a collaboration between UHB clinicians and the University Wolfson Computer Laboratory, later incorporated into the trust. From its inception PICS has been subject to continuous multi-professional clinical feedback and development. The result of this is an excellent track record of stability, safety and usability. It incorporates various patient management facilities, including laboratory and radiology ordering and results reporting. Patients' diagnoses and co-morbidities are recorded within PICS and together with laboratory results they drive electronic decision support for prescribing. More recently, the PICS team have worked closely with the British National Formulary to further develop these features and to modify the PICS drug dictionary into a resource with widespread applicability.

PICS therefore forms an excellent benchmark against which to assess other electronic prescribing solutions.

For further information please contact Ian Clark at ian.clark@uhb.nhs.uk.

5.12. Varian Medical Systems Ltd

As an organisation wholly focused on Oncology and Cancer Therapy, we are grateful to NHS CFH for the opportunity to take part in this benchmarking exercise. This has been a valuable process for us in performing a gap analysis and understanding the key differences between chemotherapy prescribing and the requirements of 'generic' ePrescribing; to this end we deliberately chose to present the product 'as is' and without any extensive re-configuration.

The scores show that the system stands up well in some areas but (as expected) is weaker in others - the feedback is therefore both encouraging and challenging at the same time but in every respect very useful in helping us formulate a strategy to move forward. Our focus today remains on Oncology but we will use this process to assist us in decision making regarding general ePrescribing. Should we choose to move in this direction, this will be backed with the support and investment that has under-pinned Varian's success in Oncology.

For further information please contact Steve Laws at steve.laws@varian.com or telephone 01293 601200.

6. Appendix

6.1. Pre-evaluation Questionnaire

To view the pre-evaluation questionnaire, see

<http://nww.connectingforhealth.nhs.uk/eprescribing/supplierquest>

The following questions from the initial questionnaire contributed to the overall results:

10, 12, 13, 15, 16, 17, 19, 20, 21, 22

6.2. System Demonstration Script

To view the System Demonstration script, see

<http://nww.connectingforhealth.nhs.uk/eprescribing/demo>

6.3. User Interface Review

To view the User Interface Review approach, see

<http://nww.connectingforhealth.nhs.uk/eprescribing/usability>

6.4. System Site Review Summary

To view the System Site Review approach, see

<http://nww.connectingforhealth.nhs.uk/eprescribing/livequest>

7. References

¹ Health Informatics Review Report July 2008, Department of Health Ref 10104

² ePrescribing functional specification version 1.0

www.connectingforhealth.nhs.uk/systemsandservices/eprescribing/baselinefunctspec.pdf