Computer and information

G130 LIVER DIRECT—A JOINED UP WAY TO MANAGE LONG TERM CARE?

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Since the 1980s, this hospital has provided tertiary care for children with acute and chronic liver disease. To date there are 282 survivors of liver transplantation, 81 children with autoimmune liver disease, 10 children who are intestinal transplant recipients, in total 2580 children are being followed up. These patients have benefited from advances in treatment of liver disease especially in immune suppression. However, this led to a steep rise in phone calls to the unit from patients, parents and primary health care workers. The time taken to deal with phone calls and the lack of continuity of middle grade medical staff led to dissatisfaction expressed informally and two clinical incidents in 2000. Liver Direct was therefore developed and a nurse led telephone consultation service was piloted for 1.5 hours per day and advertised to parents, adolescents and referring share care teams.

Aim: to report the first 8 months experience.

Methods: retrospective analysis of calls logged by the Access database on computer which was linked in house to laboratory results and the patient administration system. An analysis of the on call specialist registrars (SpR) diary of phone calls recorded one month before the start of the study and 1 month later was made.

Results: A total of 824 calls were made in 8 months: 484 were made directly to the service, 319 by voicemail and 24 by email. 558 calls were from parents, 99 from shared care team, 55 from primary health care workers and 78 were from within our hospital. The number of calls per month has remained constant. The subject of the calls can be categorised as follows: biochemistry results especially cyclosporin and tacrolimus levels (35%), medication advice (18.5%), vaccination advice (10%), logistics especially outpatient appointments and admissions (17%), miscellaneous (19.5%). In the month preceding Liver Direct the SpR received an average of 15 telephone enquiries per day, which reduced by 5 per day after the start of the pilot study.

Conclusion: The service is popular with the patients and their families and allows the SpRs and liason nurses to work more efficiently. An audit of efficacy in reducing clinical incidents is in progress.

G131 USERS' PERSPECTIVE OF COMPUTERISED CLINICAL INFORMATION SYSTEM IN NEONATAL INTENSIVE CARE UNIT

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Background: The hospital was relocated to its new site in 1999. Electronic clinical information system was implemented in NICU.

Methods: All the staff in NICU were trained prior to implementation on clinical information system for 2 to 4 hours. Staff spent more time practising on the training module. Questionnaire was sent analysing their prior computer experience, formal computer training, typing skills, computer related professional activities and their opinion after implementation.

Results: There were 42 respondents and 6 (14.2%) were male. 3 (7.1%) had no experience with computers. 12 (28.5%) spent <1hr/week, 22 (52.3%) spent 1–6 hrs/week, 1 (2.3%) spent 6-12 hrs/week, 7 (16.6%) spent>12 hrs/wk on the computer. 32 (76.2%) used internet, 26 (62%) used e-mail, 26 (80.9%) used literature search.9 (21.4%) had formal computer training. 3 (7.1%) were able to type fluently. Their worries for the system were workload 10 (30.9%), errors 14 (33.3%), computer use 15 (35.7%), new system 25 (59.5%) and safety 1 (2.3%). 13 (30.9%) were excited regarding the change. After implementation, the staff felt that the transition to computerised clinical information system was easy 17 (40.4%) and 20 (47.6%) moderately difficult. The difficulties were mostly attributable to double charting.

Conclusions: The computer experience of neonatal health care providers varies and they use computers frequently at work for professional activities. Training the staff prior to implementation reduced the initial apprehension. The amount of work needed during the implementation should not be underestimated.

G132 DEVELOPMENT OF A RESEARCH GOVERNANCE DATABASE

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Introduction: Following the publication of the "Research Governance Framework for Health and Social Care"[1], it has become apparent that Care Organisations and Education/Research establishments need to work more closely together to establish effective methods of managing research. The ultimate aim being to develop a quality research culture and to promote and verify good practice.

Methodology: The information needs for Research Governance, NHS research and development programs and university publications/ Research Assessment Exercise requirements were obtained. A database was designed in Access to link all the information together so that all requirements are met in terms of both data collection and reports.

Results: The database will be demonstrated and the dataset made available to interested viewers. The practicalities of implementing such a system will be discussed.

Conclusion: Effective Research Governance will require access to a wide range of information, which is best, collected by a number of different partner organisations.

1. Department of Health. Research Governance Framework for Health and Social Care. Department of Health Publications. March 2001 London. http://www.doh.gov.uk/research/rd3/nhsrandd/researchgovernance/govhome.htm

G133 A COMPUTER-BASED COMBINED TREATMENT ALGORITHM AND TRAINING RESOURCE FOR MANAGEMENT OF CHILDREN WITH INTRACTABLE, FUNCTIONAL CONSTIPATION

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In a randomised-controlled trial we have previously demonstrated the feasibility and clinical effectiveness of a nurse-led clinic for the management of children with intractable constipation. Furthermore, using a validated satisfaction questionnaire, we have shown that parents of children with intractable constipation are satisfied with the care they receive in both the medical and nursing clinics. The basis of the management in the nurse-led clinic is the use of a treatment algorithm. We will be demonstrating how we have adapted this algorithm for computer use and incorporated a training package to educate both primary and secondary-level health care workers in the effective management of childhood constipation.

Microsoft PowerPoint™ was used as the platform for the algorithm, which includes clear definitions of all terms used, and a step-wise progression through the clinical assessment of a child with constipation. Alarm bells point to significant organic disease from the clinical assessment and indicate the need for specialist referral. The principles of successful management are underlined including details of the appropriate education on life-style changes in areas of diet, exercise and toilet training. Clear guidance is given on the appropriate use of both stool softeners and stimulant laxative therapy and includes details of dosages and potential side effects of a wide-range of drugs that could be used. A key feature of this algorithm is the escalating use of stimulant laxatives, the use of which is monitored by a specifically designed bowel chart incorporated into the programme. Although this instrument has been designed for use by primary health care workers, it contains within it advanced management protocols including the use of enema treatment and polyethylene glycol lavage and surgical options for management. It is hoped that this instrument will improve the overall management of this common but relatively neglected area of child health.

G134 APPLICATION OF TELEMEDICINE AND REMOTE ECHOCARDIOGRAPHY USING SSL ENCRYPTION AND THE NHS NET IN THE DIAGNOSIS AND MANAGEMENT OF CHILDREN WITH SUSPECTED CARDIAC DISEASE FROM DISTRICT GENERAL HOSPITALS

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Background: In Paediatric Cardiology, assessment and interpretation of electrocardiograms and echocardiograms is central to diagnosis and management. Hence, it is usual to transfer the patient to the tertiary centre for cardiology assessment.

Aims: The objective of this paper is to demonstrate the application of a new system of "store and forward" telemedicine link.

Methods: 6 hospitals, linked to Guy's and St Thomas' took part in this prospective study. A software platform was established using a combination of commercial systems (Medarchive) and specially written programmes for referral of patients. The hardware connection was made with provision of computers in the local hospitals, the NHS net connection and a server at the tertiary centre. The referring paediatrician (trained in echocardiography) recorded echocardiograms as video clips on optical disc. This, along with patient details, clinical findings, and interpretation, were transferred in digital format using SSL encryption across the NHS Net, this system only being accessed after a dual authentification process, with smartcard and user password. All information was stored in electronic patient records on the server. The cardiologist was alerted via an automatic paging system upon submission of new referrals onto the database, and again the paediatrician was paged after the reply by the cardiologist. The cardiologist was not able to view the paediatrician's opinion until his opinion was submitted. Each patient was seen by the cardiologist urgently, electively or in the joint outreach clinic, to compare the accuracy of the data and electronic records of these were stored on the database.

Results: We report our initial experience with this new technology, and demonstrate its use, both for a NHS network, in this country and overseas. In addition, the system can be used in reverse to provide education and support for the district hospital paediatrician.

G135 THE PICU PALM PROJECT: ONE YEAR'S EXPERIENCE OF INTEGRATED PALM COMPUTING IN ST MARY'S PICU

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Aims: To assess the implementation of an integrated Palm handheld computing system in a PICU setting.

Methods: Palm IIIxe units were issued to all eight senior house officers. Other doctors who owned their own Palm computer were welcomed to participate in the project. This included one research fellow and three consultants.

All the Palm computers were pre-loaded with an author-defined combination of commercial and 'shareware' medical software. In addition, a purpose-written patient-tracking program was installed. The use of the Palm as a medical reference text, drug formulary, patient tracker, medical calculator (e.g. drug corrections and infusions), a protocol database, and personal information manager was assessed via serial questionnaires for three groups of doctors that rotated through the PICU.

Results: Doctors found the Palm handheld computer easy to use in day-to-day patient management. They found the medical calculator the most useful program. Using this program resulted in fewer infusion calculation errors. It was faster to find pertinent drug information using an electronic formulary. New senior house officers found the hospital address book and the on-call calendar very useful as it was given to them at induction. However, they found the patient tracker impractical to use. The most common problem encountered was total data loss due to delay in replacing batteries.

Conclusions: The Palm handheld computer is an excellent adjunct to the practice of clinical medicine. It enables medical staff to be more time efficient. The calculation of drug infusions is more accurate and has the potential to eliminate serious medical errors.

G136 THE ISABEL DIFFERENTIAL DIAGNOSTIC TOOL: RESULTS OF EVALUATION ON A SET OF REAL-LIFE CLINICAL CASE SCENARIOS

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Background: ISABEL is a decision-support system on the Internet that incorporates the use of a novel differential diagnosis tool (IDDT), powered by textual pattern recognising software searching standard paediatric textbooks. In response to entering clinical features from a patient, it produces a list of differential diagnoses for the doctor to consider.

Aims: To assess the accuracy of the IDDT in a variety of clinical scenarios drawn from real-life patients.

Materials and methods: Data were collected from Oct–Dec 2000 on an unselected group of children presenting to the emergency departments in 4 hospitals (2 teaching and 2 district general). This included the age group, presenting clinical features, results of initial investigations, the examining doctors' working diagnosis and the final diagnosis as recorded in the discharge summary. Presenting clinical features were entered into the IDDT by one investigator not involved in data collection and the 15 differential diagnoses generated by IDDT were recorded. The proportion of cases in which the final diagnosis was present in the IDDT list was calculated (binary measure of diagnostic quality).

Results: A total of 114 cases were analysed from a total of 144 forms (the rest ineligible due to incomplete data collection). A total of 55 unique diagnoses were represented in the dataset. In 77% of cases, the final diagnosis was present in the IDDT list.

Conclusions: The IDDT showed a clinically reasonable degree of accuracy in generating differential diagnoses and the final diagnosis in a range of real-life clinical presentations. Further studies are underway to measure the clinical impact of the IDDT in the hands of real users.

G137 DEVELOPMENT OF A GENERIC, CROSS-PLATFORM SOFTWARE MODEL TO CREATE, MODIFY, AND VIEW GUIDELINES ON THE WEB

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Background: The use of evidence-based guidelines in clinical practice has demonstrated unequivocal benefits and improved patient outcomes. However, there are significant logistic difficulties associated with their delivery to the point-of-care, more so with their creation, maintenance, adaptability in response to rapidly changing evidence and easy accessibility at the bedside.

Aims: To create a software model that facilitates the easy creation, maintenance and viewing of guidelines delivered via the Internet, and enables novice guideline developers, administrators as well as users to access them.

Methods: All guidelines were represented as algorithms with text boxes, decision nodes and action nodes. For the guideline contributor, a Java applet was created with an easy to use drag-and-click interface that opened in any HTML browser. This was used to build basic decision and action nodes as well as provide additional relevant (hyper)textual information. Data pertaining to a guideline, decision node text, action node text and other text was stored as XML data. A separate Java applet was created for the user that opened in a normal HTML browser and would utilise the stored XML data to provide a visual representation of the guideline on a webpage.

Results: Storing the data in XML enabled uniformity in data representation as well as enormous flexibility. The Java applet for the contributor was easy and intuitive to use and was used to store the data in XML format. Access to this was restricted to contributors. On the public website, the user clicking on a specific guideline was presented with the algorithm in convenient visual format with links to the evidence base and other relevant information.

Conclusions: Universality of access, convenience and ease of use as well as its adaptability render the Internet an ideal medium for delivering guidelines at the bedside. A generic model to represent data flexibly on the Internet, which can be used by guideline developers as well as users separated by great geographical distances, is crucial to in order to achieve this.