An ICT Solution for Community Mental Health -Putting Virtuality into the Vision

Ronald DRAPER¹ and Michael RIGBY²

¹ St John of God Hospital, Stillorgan, County Dublin, Ireland ² Keele University, Keele, Staffordshire, ST5 5BG, U.K.

Abstract. The digital age has brought about revolutionary changes in the capacity and methods of managing information. There has been an evolutionary pathway leading from information technology through informatics to communication technology. The 'nineties' has been a decade of patient empowerment fuelled by Internet access and legal rights to information. Clinicians as a whole have lagged in their adoption of the new technologies. Mental health has been seen as a particularly difficult domain because of its multi-professional and multi-locational patterns of service delivery and its traditional reliance upon narrative in the absence of bio-pathologic data. The Hospitaller Order of St John of God has been facing these challenges. The authors describe an integrated information/communication technology (ICT) which can be provided on the clinician's desktop and show that the new integrated ICT affords new opportunities for addressing the needs of community-based mental health services.

1. A Rapidly Changing Health Telematics Environment

1.1. Communication

The digital age has brought about a revolution in methods of managing information. Digitisation together with fibre-optic cabling and satellite links have ushered in a new age of fast, efficient, and low cost communication. Based upon 1990 prices, the cost of a three-minute telephone call from London to New York would have cost \$250 in 1930, \$2 in 1996, and possibly $10 \notin$ in 2005. This led the World Bank to predict [1] that at least half of all workers will ultimately be telecommuters, with profound impact upon the social fabric.

1.2. Re-focusing

The 'eighties' saw the development of information technology (IT). With the increase in speed and memory capacity of personal computers in the 'nineties' greater attention was given to the emerging field of Informatics. With the machine capacity to manage information it became possible to focus attention upon the information itself. The questions concerned what data should be collected and how this should be integrated into logical and coherent action plans for enhancing care and treatment. The need to deliver this information where and when needed has now brought Telematics into the equation. The new focus is Information/Communication Technology (ICT) [2].

1.3. Patient Empowerment

The 'nineties' has been a decade of patient empowerment. The new communication abilities have meant that increasingly patients are able to actively understand, participate in, and influence their health status. Their ability to access information sources is bringing about a fundamental shift in roles and procedures. "Patients will come to realise that information in their physician's head, will be the basis for consistency and quality of care." [3]. Their right to see their records in accordance with subject access rights enshrined in the EU Convention on data protection [4], supported by culture of later Freedom of Information legislation, will mean that they will expect to see hard data.

1.4. Internet Searches

Currently 25% of Irish homes own a computer and 16% of the population use the Internet [5]. 58% of Canadian homes own a computer and 81% of all Canadian students, including elementary school, have searched external databases [6]. 43% of all searches by 40.6 m US adults in 1997 were health/medical related and 10,000 sites were available on the World Wide Web. Interestingly most searchers would have preferred to have information from their physician's offices, yet only 1-2% of physicians provided such information [7].

1.5. Physicians and Technology

"There is a belief amongst many that information technology is coming of age. Within the medical community however, there is dawning realisation that, despite the many promises of IT, we may be lagging well behind other fields in its adoption"[8]. There may be many explanations. For example, hospital communication commonly interrupts tasks and is inefficient [9]. An editorial complains that communication between health professionals is a mess [10]. More seriously poor communication between clinicians puts patients at risk[11].

A review of the Yearbooks of the International Medical Informatics Association has shown a steady increase in the number of publications with 'electronic patient record' as subject but reflect a slow uptake by physicians [12]. Despite its availability IT is not being used to relieve the administrative chores of junior doctors [13]. It is increasingly recognised that this combination of information and communication technologies will radically change structures and patterns of health care delivery in the new Millennium [14]. The World Health Organisation has also recently (in January 2000) addressed this issue, with an International Consultation on Telehealth [15]. A European Union funded project has highlighted some of the safeguards which need to be in place to protect citizens against adverse effects or malicious misappropriation of these otherwise beneficial developments [16,17].

2. Mental Health

The challenge will be to harness the new combination of informatics and communication to maximum effect, for optimal human gain. Mental Health is a particularly strong candidate because of the multi-location, multi-professional, and dispersed nature of services, coupled with the importance on occasions of rapid information exchange. The vision has already been set [18, 19] and is now being taken forward in a needs-based development [20, 21]. However, developments in mental health remain singularly scarce. The 1999 IMIA Yearbook 'The Promise of Medical Informatics' lists 46 papers, considered to be definitive, published in 26 journals but not a single reference to mental health.

This is a paradox. Because mental health services are diverse in nature, delivered by multiple disciplines, at multiple locations, the need for good information is paramount. Records are longitudinal, often birth to grave, and must be the basis for continuity of care despite changes of clinicians. The lack of bio-pathologic data upon which to ground them should be a challenge and not an excuse for inactivity.

3. The Holistic Goal

Rather than being merely records of intervention events, the mental health patient is entitled to expect that all relevant information will be contained in their record and that all of this information will be used in their care and treatment [22]. There are no intelligent functions associated with the manual record. It is, in essence, a repository for isolated islands of information, lacking any integrative function. Attempting to synthesise all relevant information is a time consuming and often-imperfect exercise. This is however, precisely the stated goal for the St John of God development "To ensure that patients can be confident that the professionals caring for them have a reliable and rapid access, 24 hours a day, to the relevant personal information necessary to support their care".

4. The Problem Addressed

In common with most mental health services in the western world the emphasis is upon care in the community. The community base for outpatient services, together with day hospital, day centre, rehabilitation centre, and residential services are in separate locations and operate from 09.00 - 17.00 Monday – Friday. The hospital beds and emergency treatment services operate 24 hours per day at a separate hospital location. There are therefore major problems of record availability. Staff called upon to respond to an emergency do not have access to the patient's current record. It is also well known too that manual records may be absent from their appropriate storage place [23]. However, a limiting factor in physician uptake of computerised record systems has been the nature of systems available. These were initially administrative systems, or at best patient management systems. To achieve the organisation's goal of being able to see distant data unexpectedly and outside working hours, telecommunication components became essential. The required data is clinical data, and must be in electronic format to enable transmission. Migration to an electronic record became inevitable.

5. The ICT Solution to a Service Need

5.1. Goal

The Order's goal was to develop a generic system, of modular construction, meeting all information needs but customisable to the particular clinical service. Continuous online availability is essential.

5.2. The Adult Community Service.

This service provides a comprehensive adult psychiatric service to 165,00 population in south-east Dublin. The organisational structure is unusual and represents an Irish 'Third Way' [24] in which a major private provider, St John of God Hospital, operates a public catchment area service as a major contractor to the statutory health service. The customised package developed for this service will be used to illustrate the operation of the system.

5.3. Communication Challenges

A public sector patient developed two records, inpatient and outpatient, with unrelated numbering systems. Providing online availability in either facility required the reconciliation of the two existing databases. To achieve this both databases have been transferred to a central server via a combination of fibre optic cable and leased telephone lines with ISDN back up.

5.4. Functional Integration - The Value of ICT

The new ICT tools harness communication power, which has opened up new opportunities. The focus is no longer the recording of integrated data, but rather the integrated recording and accessing of clinical activities and communications, with a "cataloguing" of these in an intuitive development, an Internet-type browser. Thus the vision of the integrated record has developed into one of the virtual clinical picture.

6. The New Clinical Session - Virtuality in Practice

Logon to the system is protected by username, password, and user group assignment, which ensure access on a need to know basis related to clinical responsibility and duty of care.

6.1. The First Screen

The first screen, a messaging screen, boots automatically so that messages from other users via the intranet are displayed, noted, and replied to. The screen is then minimised so that the component remains active throughout the session.

6.2 The Entry Screen

The entry screen is now displayed and provides two options. The records of a selected patient can be retrieved, in conventional manner, through a 'find' facility. However a second naturalistic option displays the appointments booked for the session. Colour codes and flags confirm that the particular patient has booked in at reception and is therefore available to be seen. A click on the appointment opens the record for that person. All subsequent activity with that appointment is keyed to the diary and an outcome recorded at the end of the appointment e.g. attended, cancelled etc.

6.3 Diaries and Appointments

Diaries may be browsed both retrospectively and prospectively for patient or provider. Codes indicate whether records are attached to a particular attendance and these may be opened with a click. A range of appointments can be booked from the desktop.

6.4 Basic Options

Irrespective of entry route, four options may be accessed by one mouse click:

- 1. View patient details: demographics, episodes, referral, contacts etc...
- 2. Write documents: structured assessments, histories, templates, and letters.
- 3. View documents: graphic chronological display of all items in record.
- **4.** Refer patient: to other clinicians or programs. A browse facility displays the list of referrals received and/or sent. Referrals are sent electronically via Intranet to connected users and electronically via facsimile to locations not yet networked.

7. The Clinician – Patient Interface

The nature of the patient encounter has changed. Instead of a conventional half an hour during which eye contact is broken by the need to write notes, the patient receives twenty minutes of full attention and the notes are written in the remaining ten minutes. No time is spent rustling through the paper file, all information is readily available. There are no missing notes, no waiting to obtain them. Referrals and appointments are handled directly. During two years no patient has questioned the use of a computer. There appears to be an acceptance that wherever business is done these days a computer is involved, indeed it would appear that the ready availability of information and services inspires confidence.

8. Conclusion

The newly viable and affordable option of combining communication and information technology applications in an integrated way gives new opportunities to address the needs of community-based mental health services. This should both improve service quality, and reduce risks to patients and public caused by imperfect sharing of patient-based data [25]. So far the evidence is that less endeavour is being applied to this than is desirable, and indeed deserved by the public. Though these are challenges to be overcome, these are not insuperable, and the resource benefits in human terms are potentially very significant.

References

- [1] S. Forge, The consequences of current telecommunications trends for the competitiveness of developing countries. World Bank, Washington DC, 1995.
- [2] G. De Moor, The Promise of Medical Informatics in Europe. In: J.van Bemmel, A.McCray (eds.), IMIA Yearbook of Informatics 1999. Schattauer, Stuttgart, 1999.
- [3] R. Breugel, Patient empowerment a trend that matters. J AIHMA 69 (1998) 30-3.
- [4] Council of Europe. Convention for the protection of individuals with regard to the automatic processing of personal data. Done at Strasbourg the 28th Day of January 1981. Council of Europe, Strasbourg, 1981.
- [5] www.nuaa.net/surveys/how_many_online/europe.html
- [6] V. Galt, Statistics Canada, Globe & Mail 13 October 1999, www.globetechnology.com
- [7] T. Ferguson, Editorial. Digital Doctoring-Opportunities and Challenges in Electronic Patient-Physician Communication JAMA 280 (1998) 1361-62.
- [8] E. Coiera, Evidence Based Medicine, The Internet, and the Rise of Medical Informatics. HP Technical Report HPL-96-26. 1996. Hewlett Packard Research Laboratories, Filton Road, Stoke Gifford, Bristol, BS12 6QZ, UK.
- [9] E. Coiera, V. Toombs, Communication behaviours in a hospital setting: an observational study. BMJ 316 (1998) 673-676.
- [10] J. Gosbee, Editorial. Communication among health professionals BMJ 316 (1998) 642.
- [11] R. Salter, P. Brettle, F. Hobbs, Communication among health professionals BMJ 317 (1998) 317:279
- [12] P. Moorman, Computer-Based Patient Records. In: J. van Bremmel, A. McCray, (eds.) IMIA Yearbook of Informatics 1999. Schattauer, Stuttgart, 1999.
- [13] S. Brennan, The year is 1999: why isn't IT being used to relieve the administrative chores of junior doctors? Br J Healthcare Comput Info Manage 16, 10 (1999) 24-6.
- [14] M. Rigby, And into the 21st Century Telecommunications and the Global Clinic. In: M. Rigby, R. Roberts, M. Thick, (eds.) Taking Health Telematics into the 21st Century. Radcliffe Medical Press, Abingdon, (in the press).
- [15] World Health Organisation, Report of an International Consultation on Telehealth . World Health Organisation, Geneva, (in the press).
- [16] J. Forsström, et al., Towards Evaluation and Certification of Telematics Services for Health (TEAC-Health) - Key Recommendations. University of Turku, Turku, 1999.
- [17] J. Forsström, M. Rigby, TEAC-Health Research-based Recommendations for European Certification of Health Telematics Services. Paper to MIE 2000 (in this volume).
- [18] M. Rigby, An Electronic Patient Information System in Mental Health An integrated Solution for Better Care and Management. In: K-P Adlassnig, G. Grabner, R. Bergtsson, R. Hansen, (eds.) Medical Informatics Europe 1991, Proceedings Vienna, Austria, 1991. Springer-Verlag, Berlin, 1991.
- [19] S. Robins, M. Rigby, Opportunities for community services provided by integrated patient records and critical success factors for achieving this in practice. In: J. van der Lei, W. Beckers, AMICE 95 Proceedings - Strategic Alliances between Patient Documentation and Medical Informatics. VMBI (Dutch Society for Medical Informatics), Amsterdam, 1995.
- [20] M. Mooney, S. Barry, R. Draper, The electronic patient record as a guarantor of personalised mental health care In: B. Cesnik, A. McCray, J-R. Scherrer, (eds.), *Proceedings of the Ninth World Congress on Medical Informatics*. IOS Press, Amsterdam, 1998.
- [21] R. Draper, I. Hamilton, M. Rigby, Developing an electronic patient record for mental health. In: Proceedings of the Health Informatics Society of Ireland's Second Annual Conference, Malahide 13 November 1997. HISI, Dublin, 1998.
- [22] A. Sheridan, R. Draper, M. Rigby, The Importance of a Holistic, Patient Based and Multi-Disciplinary Approach to Terms and Coding for Success in EPR Systems - A Case Study from Mental Health. In: P. Moorman, J. van der Lei, M. Musen, (eds.), Preceedings of IMIA Working Group 17, EPRiMP International Working Conference on Electronic Patients Records in Medical Practice. Rotterdam, 8-10 October 1998. Erasmus University, Rotterdam; 1998. ISBN 90 9012128 5
- [23] S. Troll, Computerizing the Clinical Record. Br J Healthcare Comput Info Manage 12, 7 (1995) 32-34.
- [24] R.Draper, M.Rigby, A. Sheridan, M. Mooney, Health Service Sector, and Health Organization, as the Focus for Innovation in Management –Experiences from the Irish "Third Way". Paper presented to the European Healthcare Management Association Annual Meeting, Parma, 1999.
- [25] J. Ritchie, (Chairman) et al. The Report of the Enquiry into the Care and Treatment of Christopher Clunis. HMSO, London., 1994.