

# A review of the role of information technology in discharge communications in Australia

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## Abstract

*Information technology is believed to be useful for the communication of discharge information between hospitals and community-based health practitioners. At least 20 projects were conducted in Australia between 1993 and 1997 to explore this idea. The value of these projects was at least \$618 000. Despite this level of activity there is no good evidence, either from these projects or the international literature, to suggest that information technology can improve the quality of discharge communications.*

## Introduction

Information technology is believed to be useful for the communication of discharge information between hospitals and community-based health practitioners (Mageean 1986; Sandler & Mitchell 1987; King & Barber 1991; Colledge, Smith & Lewis 1992; Curran, Gilmore & Beringer 1992; Meara et al. 1992; Gosbee 1998). In the last five years in Australia a number of projects have been conducted with the aim of realising these benefits. The purpose of this article is to identify and review national activities in this area and compare them with what is happening internationally. In particular, Australian projects that involve the use of information technology are reviewed.

A 1992 qualitative review of information flows in general practice found that general practitioners (GPs) 'regarded hospitals as an important source of both patient and professional information', but that 'one of the greatest problems was identified as being information flows between GPs and hospitals' (Telecom Research Laboratories 1992, p 27). General practitioners (Penney 1988; Sandler et al. 1989), patients (Penney 1988) and studies of patient outcomes (McWilliam 1992) have identified hospital discharge summaries as an important element in providing continuity of care for patients leaving

hospital for community-based care provided by GPs. Features of the discharge information that GPs have identified as important are:

- timely delivery of information (King & Barber 1991; Balla & Jamieson 1994; McCormick & Boyd 1994)
- a summary in the form of a brief prioritised problem list (King & Barber 1991)
- information about the patient's social situation (Sandler et al. 1989)
- changes in patient medication (Balla & Jamieson 1994).

The content of discharge summaries appears to be fairly accurate (Wilson et al. 1995). Nevertheless, errors in the content of discharge summaries may have serious results (Penney 1988; Miller et al. 1995). The accuracy of the content of discharge summaries does not matter if discharge summaries are not also relevant and timely. United Kingdom studies have found receipt rates of 67–93% (Mageean 1986; Sandler & Mitchell 1987; Colledge, Smith & Lewis 1992; Curran, Gilmore & Beringer 1992; Meara et al. 1992; Landauer 1994). One reason why GPs do not always receive discharge summaries when they should may be the poor quality of information recorded about patients' GPs in the hospital notes. Another reason may be the mode of delivery of the discharge summaries. Overseas studies seem fairly evenly divided on the relative merits of patient versus postal delivery of discharge summaries (Sandler & Mitchell 1987; Colledge, Smith & Lewis 1992; Curran, Gilmore & Beringer 1992; Landauer 1994). No published studies have been identified that suggest that improving the quality or delivery of discharge summaries can improve health.

## Method

It might be expected that information technology can improve discharge communications. To seek evidence to support this hypothesis, a search was conducted of Medline 1966–96 using the key words 'general practice' or 'discharge communications' with 'information technology' or 'computers'. The search found 17 articles. Eight of these were relevant and described the use of computers to generate discharge information between hospitals and GPs (Jelovsek et al. 1977; Janik et al. 1978; Stern & Rubin 1979; Maresh et al. 1983; Branger et al. 1992; Copland 1994; Johnston et al. 1994; Hunter Urban Division of General Practice 1996). The author identified 13 further articles in refereed journals from general reading (Finer & Fraser 1985; Dunn & Dale 1986; Castleden et al. 1988; Holyoake & Semple 1990; Lissauer et al. 1991; Occena & Huang 1991; Odaka et al. 1991; Regan 1991; Williams, Haley & Gosnold 1991; Branger et al. 1992; Roland 1992; Adams, Bristol & Poskitt 1993; Scottish Intercollegiate Guidelines Network 1996).

Projects about the use of information management in discharge communications (alone or with other initiatives) were identified from the GP Branch database of Divisions and Projects Grants Program projects; the National Information Service database of GPEP projects; *Information Management/Information Technology (IM/IT) within General*

*Practice: Past and Present Efforts* (Australian Medical Association 1996); and from the author's own knowledge of projects in the area. Only information in the public domain was used. Projects developed under the National Hospitals Demonstration Program and the Coordinated Care Trials were not otherwise considered. Projects were chosen where it was clear from the information available that the project involved hospitals and GPs in providing and/or using information provided through the information system used by the project.

Where possible the following data were collected for these projects:

- project title
- source of project funds
- area covered by the project (namely, discharge communications, admission planning, resource information and information sharing)
- media used
- method used
- outcomes measured.

To provide an objective measure of the quality of project design, project outcomes and proposed outcomes were evaluated against a set of criteria modified from those used by Johnston et al. (1994). The following criteria were used.

1. The population of interest was composed of GPs with or without other health care practitioners.
2. The intervention was a computer-based discharge generation system evaluated in a clinical setting.
3. The outcomes assessed were clinician performance and a measure of the process of care, including any aspect of patient well-being.
4. The type of evidence was linked to prospective studies with a contemporaneous control group where patient care with a computer-generated discharge summary was compared with patient care without one.

## Results

There is little evidence that computers can improve outcomes. Evidence from business generally is scanty, but what there is suggests that information technology costs more than it delivers (Landauer 1994). As many as 90% of information technology projects in health care fail (Power 1997). Evidence of benefit from the introduction of information technology into health care in general, and general practice in particular, is also lacking (Johnston et al. 1994; Sullivan & Mitchell 1995; Lock 1996).

Eighteen of the articles identified in the literature search described computerised medical records systems which generated discharge summaries as their primary task or as a secondary task (Jelovsek et al. 1977; Janik et al. 1978; Stern & Rubin 1979; Maresh

et al. 1983; Finer & Fraser 1985; Dunn & Dale 1986; Castleden et al. 1988; Holyoake & Semple 1990; Lenhard et al. 1991; Lissauer et al. 1991; Occena & Huang 1991; Odaka et al. 1991; Regan 1991; Williams, Haley & Gosnold 1991; Branger et al. 1992; Roland 1992; Adams, Bristol & Poskitt 1993; Scottish Intercollegiate Guidelines Network 1996). Two of these were Australian (Castleden et al. 1988; Regan 1991), but one of these was a proposed rather than actual system (Regan 1991). Reported benefits of a computer-generated discharge summary included:

- timeliness (Castleden et al. 1988; Holyoake and Semple 1990; Branger et al. 1992)
- increased GP satisfaction (Branger et al. 1992), cost-effectiveness (Finer & Fraser 1985) or efficiency (Dunn & Dale 1986; Branger et al. 1992)
- reduced error rate (Janik et al. 1978; Maresh et al. 1983)
- the facilitation of clinical audit (Janik et al. 1978; Stern & Rubin 1979; Castleden et al. 1988; Scottish Intercollegiate Guidelines Network 1996).

One of the articles was a review (Roland 1992). No articles compared the outcomes of using information technology to generate discharge communications against a contemporaneous control group.

The capacity of a computerised database to greatly simplify the auditing process required to evaluate discharge communications underpins the methods used in many of these articles. Paper-based audits are costly and usually only undertaken as an academic exercise. Electronic records can facilitate cheap and rapid feedback about the quality of discharge information to providers. This is a prerequisite for quality assurance activities in this area. None of the articles studied reported on the study design used.

One of the descriptive articles is worthy of further attention (Scottish Intercollegiate Guidelines Network 1996). It defines a minimum data set for hospital–GP discharge communication and is important because it provides a model which might be adapted for use in Australia. There are several noteworthy features of the data set, namely

- it was developed by consensus between the stakeholders at a national level
- the protocol deals with issues of local implementation
- it is independent of technology so can be implemented using traditional or electronic technology
- because it is a defined data set, it can be used for auditing and benchmarking the quality of communications in different settings.

Twenty relevant Australian projects were identified. The total value of the 16 projects for which figures are available was \$618 400, thus the average cost was \$38 650 per project.

Information about these projects is difficult to obtain and patchy once it has been obtained. It is also insufficient, for the following reasons.

1. Information collected by funding agencies is not standardised, making a meaningful comparison between the projects impossible.
2. Information about methods and outcomes is particularly scarce, but this improves to some extent after 1996.
3. Where information is provided about methods and outcomes, it is insufficient to allow the study to be reproduced.
4. No projects appear to have considered issues of experimental design along the lines suggested by Johnston and colleagues (1994).

Only three reports about these projects were able to be located in the public domain (Bolton & Calvert 1995; Hunter Urban Division of General Practice 1996; St Vincent's Private Hospital 1996).

## Discussion

This article has described the widely perceived potential for information technology to improve discharge communications and the extent of resources that have been invested in this area. In view of these factors it is unfortunate that there is insufficient information about the use of this technology to comment on its potential uses at the hospital–community interface. This limitation arises because of poor reporting and limitations in the methods used to study the area.

Patient privacy is a widely supported community value (O'Connor 1994). Discharge communications between hospitals and community health care providers carry the risk of breaching patient privacy. In the absence of evidence that improved discharge communications improve health, there is an ethical requirement for studies investigating aspects of discharge communications to evaluate their impact on both health and privacy. There is a further ethical requirement that these studies use sound methods, be rigorously conducted, and communicate their results effectively because of the risk to patient privacy that they constitute.

A large amount of money and effort has been invested in experiments using information technology to improve discharge communications between hospitals and GPs in Australia. The bulk of these funds have come from the public purse. It is of concern that so little information is available about these projects. To make best use of limited resources, there is a need for the outcomes of projects to be standardised to permit comparison of their results and for these results to be more widely disseminated.

Greater methodological rigour is required to ensure that a coherent approach to the problem of discharge communications is taken. Resources must be strategically applied to demonstrate what, if any, benefit accrues from improved discharge communications. If it can be shown that improved discharge communications are of benefit, then optimal methods of communicating must be identified. Finally, the use of these methods must be encouraged.

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