

# Adoption of ICT in an Australian Rural Division of General Practice

**Patricia Deering**

*Victoria University, Australia*

**Arthur Tatnall**

*Victoria University, Australia*

## INTRODUCTION

Many information technology (IT) products have been developed to support medical general practitioners (GPs) in all aspects of their work (GPSRG, 1998), and much research and development in this area has already been done. It is apparent, however, that GPs are not making as much use of these systems as they could. Our research showed that there is still reluctance, in particular from many rural general practitioners to fully implement information and communication technologies (ICT) in primary health care in rural Australia (Everitt & Tatnall, 2003). While a simple analysis of the statistics of the numbers of computers in medical practice shows that there are computers in most general practices, it is not so clear how, or even whether, they are being used. Rural GPs, however, operate very much in the mode of small business (Burgess & Trethowan, 2002). Some national research shows that GPs use ICT mainly for administrative and some clinical functions, but that much less use is made of online functions (NHIMAC, 1999; GPCG, 2001). This is even more pronounced for rural GPs.

It is clear that the introduction of the Practice Incentives Program by the Australian Government in 1998 dramatically accelerated the adoption of computer technologies (Tatnall, Everitt, Wenn, Burgess, Sellitto, & Darbyshire, 2004); however, the question still remains—do the GPs use the computers they have acquired, and if so, for what? If they do use computers, then why do some GPs use them more extensively than others? The answers to these questions are not simple and do not appear to be related to the age of the GPs. The aim of the research project described in this chapter was to explain in detail the reasons for adoption or nonadoption of ICT in these medical practices and to develop a model that illustrates the process of decision-making in relation to ICT innovations.

The view that research such as this needs to be grounded in the real world of health practice is supported by continuing increases in health costs and complexity of health delivery. The amount of medical information available to medical practitioners has increased the need to find better ways to manage medical practice, and although hospitals are also experiencing these problems, it is on general practitioners that much of the information management burden falls. Many GPs are examining ways that information can be better managed, and various types of information management systems are becoming an important focus of their work.

## USE OF ICT BY MEDICAL GENERAL PRACTITIONERS

While one might expect that highly educated professionals such as most GPs would be at the forefront of the information management revolution; however, our research has shown that this is not entirely the case (Everitt & Tatnall, 2003).

It appears that the slow uptake has continued to some degree in all areas of medical general practice, despite continued support and promotion of computer use (Tatnall et al., 2004). The Commonwealth Department of Health and Aged Care, along with the General Practice Computing Group, also report that general practitioners in Australia are still being encouraged via their Divisions of General Practice to adopt electronic information systems to enhance clinical and practice management. However, Richards (1999) notes, “The adoption of computers by Australian general practitioners has been slow in comparison with other English speaking countries.” It is clear that over a long period of time, much research and development have been done on the use of medical ICT, and many products

Table 1. General practice computer use (GPSRG, 1998)

Use of Computers	Level of Usage (%)
Administrative functions	85
Clinical functions	76
Script writing	60
Generating referral letters	57
Receiving results electronically and running recall systems	57

have been developed for GPs. Despite this, however, reluctance on behalf of GPs to use ICT continues and appears to be a fact of life for many of the rural members of the profession.

Table 1 represents the main uses for computers that were identified by a 2001 General Practice Computing Group (GPCG) study of 1,202 GPs.

## METHODOLOGICAL FRAMEWORK FOR THE RESEARCH

Many factors and entities are involved in determining how GPs adopt and use ICT, and any approach that ignores the inherent complexity of this sociotechnical situation is unlikely to produce useful answers. This chapter will argue that a qualitative approach using the Actor-Network Theory (ANT) allows for the views of all subjects to be fully documented and explained. This approach was necessary because the complexity of health delivery in Australia has increased the need to manage information in medical practices, leading to a multistakeholder environment involving human and nonhuman entities. Our research aimed to explain the patterns of computer use by rural GPs in an Australian Division of General Practice, and to draw out the factors that contribute to patterns of computer use. In undertaking this research, we compared two theoretical approaches that seek to explain the adoption and use of computers by GPs: Innovation Translation (from the Actor-Network Theory) and the better-known theory of Innovation Diffusion.

In regard to the theoretical approach being taken, there has been a search for a seamless design approach to research in ICT for several decades, but often the methodology for ICT research has been transferred from science. This has not always been successful, as these approaches imply that the scientific method produces

reliable knowledge because consistency, dependability, and regularity are the benchmarks for science. However, according to Latour (1987b), despite the fact the scientists aim to subscribe to morally and technically efficient methods that are impersonal and objective with results that are open to everyone, research seldom happens in this manner because science reacts to social pressures just like any other ordinary and mundane system of action.

In his discussion of the Innovation Diffusion model, Rogers (1995) asserts that an individual's decision to adopt an innovation is not an instantaneous act, but rather a process that occurs over time, consisting of a series of actions and decisions. Anything new causes uncertainty, and so there is a lack of predicability and people will seek information to change that situation. In this model, diffusion could be considered a process of information exchange aimed at reducing uncertainty. "The new ideas upon which an innovation is based are communicated over time, through various types of communication channels, among members of a social system through which the innovation diffuses" (Rogers, 1995). There are thus four main elements of any theory of innovation diffusion: characteristic of the innovation itself; the nature of the communication channels; the passage of time; and the social system. Diffusion is considered to be an information exchange process among members of a communicating social network particularly concerned with the characteristics of the innovation. A simplistic view of this project might be that the GPs will make their adoption decisions primarily because of the characteristics of ICT, and would miss other influences due to interbusiness interactions and the backgrounds of the people involved.

While diffusion models (Rogers, 1995) of innovation have had considerable success in explaining the movement (diffusion) of technology in the large scale, they have had much less success in explaining *individual*

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