Chapter XVII
The Use of Interactive Voice Response Systems to Improve the Quality and Safety of Ambulatory Care

Natalie Oake
Ottawa Health Research Institute, Canada

Alan J. Forster
Ottawa Health Research Institute; The Ottawa Hospital; The University of Ottawa, Canada

ABSTRACT

This chapter highlights how an interactive voice response system (IVRS) may be used to improve quality of care problems associated with ambulatory care. The authors provide examples of quality problems, related to access, effectiveness, and safety, and describe how an IVRS may be used to reduce them. The chapter is also comprised of a comprehensive examination of published literature describing studies that have used IVRS interventions. The majority of these studies used an IVRS to manage patients with chronic disease or change behavior related to preventive medicine. Finally, the authors discuss potential implementation issues, including technological requirements of the IVRS, project management, and scalability of the IVRS.

INTRODUCTION

Ambulatory care is the cornerstone of the health system and most services occur in outpatient settings. For example, healthy populations receive preventive services from a general practitioner or from public health departments; patients with chronic illnesses receive care from general practitioners or from specialized clinics; and, many acutely ill patients or those requiring certain surgical procedures are treated in emergency departments, acute care centers or surgical day

care centers. Because the majority of health services are provided in the outpatient setting, particular attention needs to be paid to the quality of ambulatory care.

This chapter highlights some quality of care problems affecting ambulatory care and highlights how one information technology solution, called an interactive voice response system (IVRS), may reduce some of them. An IVRS facilitates human interactions with databases through a telephone interface. IVRSs were developed approximately 30 years ago and despite rapid technological advances and common use in the business sector, have just recently started being used in facilitating the delivery of healthcare (Abu-Hasaballah, 2007). Although early adoption of IVRSs was slow, there appears to be increasing interest in uses for IVRSs in medicine. This is illustrated by an increasing number of publications describing different IVRS applications in medical journals.

The chapter consists of four sections. First, we briefly highlight some of the quality problems affecting ambulatory care. Then, we examine underlying factors contributing to these quality problems and link how an IVRS might reduce them. The third, and major, component of the chapter consists of a thorough examination of the published literature describing studies of IVRS interventions. We conclude by providing some of our recommendations regarding implementation strategies.

SOME QUALITY PROBLEMS RELATED TO AMBULATORY CARE

There are significant data highlighting various quality problems in the outpatient setting. We will discuss three attributes of care, which we think are particularly important for the overall quality of outpatient care, specifically: access, effectiveness, and safety.

Although access to primary care in many industrialized nations is reasonably good under normal circumstances, there may be problems when patients are unexpectedly ill. Supporting these statements is a recent international survey performed by the Commonwealth Fund (Schoen, 2004). This study found that the vast majority of respondents reported having a regular family doctor. In the Netherlands for instance, almost all people surveyed reported they had a doctor. On the other hand, only 80% of Americans responded similarly. While this may seem like there is acceptable access across populations in different countries, when respondents were asked how long they would wait to be seen by their doctor if they called in sick, 30%-60% stated it would take at least two days to arrange an appointment. There is clearly a gap in quality if patients are unable to be seen by their primary care doctor when they feel they need to be seen.

There is also evidence that effective therapies are frequently not used. For example, McGlyn and colleagues at the Rand Corporation recently performed a systematic analysis to determine compliance with recommended therapies for a number of chronic diseases (McGlynn, 2003). This group established a list of indicated practices for over 200 distinct clinical situations. For example, one recommended practice is to prescribe antiplatelet agents in patients following a myocardial infarction. Using these explicit criteria as a guideline, they then assessed compliance in American ambulatory care patients. They found that recommended therapies were provided in approximately 50% of opportunities. Other investigators have found similar results when evaluating compliance with preventive care such as screening or immunization recommendations.

There are data demonstrating that the safety of ambulatory care is sub-optimal. One particular area in which there is a need to improve safety is the monitoring of drug therapies (Gandhi, 2003; Gurwitz, 2003). For example, most patients with non-valvular atrial fibrillation should receive warfarin therapy to reduce the risk of embolic stroke. Warfarin therapy needs to be dosed carefully as