Chapter 7
Ethical Issues of Health Management Predictive Modeling

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ABSTRACT

In the wake of continuously escalating healthcare costs, health management in the workplace has gained new momentum as employers strategize to optimize the health of their workforce while containing healthcare costs. Gaining acceptance as a viable tool to aid employers is a process called Predictive Modeling. On the surface, Predictive Modeling may contribute significantly to delivering the right interventions to the right person at the right time by identifying high risk individuals, and underusers and overusers of health services. This chapter discusses the ethical principles of nonmaleficence, beneficence, justice and autonomy, as well as value judgments and human rights as applied to Predictive Modeling to guide professionals and employers in health management decisions.

INTRODUCTION

The role of workplace-based health management is more important than ever as employers seek solutions to control escalating healthcare costs. According to Hewitt Associates employer health care costs in the United States have risen 76% over the past five years with 83% of healthcare spending attributable to chronic health conditions. Review of claims data indicates that 1 percent of the population is responsible for 30% of healthcare cost and

10% for 70% of cost, mostly due to chronic and complex conditions (Berk & Monheit, 2001). The challenge for those responsible for health management is early identification of those at risk and the ability to steer them to interventions and treatment that reduce risk and improve health status (Hewitt Associates, 2006).

While it is relatively easy to identify those that are current high users of healthcare services through insurance claims data, identifying the transitional population - those who are currently healthy or light users of services but are eminent high users, is more complex. Predictive Modeling

is a tool to identify people at risk, potential high users and also underusers of healthcare services, and noncompliant patients. As we explore what can be accomplished with Predictive Modeling it is also important to discuss what we should do ethically. Predictive Modeling is inextricably intertwined with health management in this chapter because there is no value to Predictive Modeling except for the purpose of assisting an individual achieve or regain optimal health. The purpose of this chapter is to discuss the ethical implications of Predictive Modeling for those responsible for the management of the health status or cost of defined populations.

BACKGROUND

First the chapter will define Predictive Modeling, Health Management and Ethics and then discuss a framework for application of ethics to Health Management Predictive Modeling.

Predictive Modeling

Predictive Modeling (PM) is defined by Jonathan Weiner, PhD of Johns Hopkins Bloomberg School of Public Health as 'a process that applies available data to identify persons who have high medical need and are *at risk* for above-average future medical service utilization' (Carlson, 2003). Predictive Modeling is currently a diverse field and generally utilizes algorithms derived from regression analysis, decision trees, rule-based systems or neural networks to identify high risk individuals. The overall goal is to improve health status while reducing cost (Axelrod & Vogel, 2003). Uses include (Tremblay, 2005):

1. Identifying healthy persons whose health is likely to decline;
2. Reducing inconsistency in care;
3. Predicting who is likely to be non-compliant with prescribed treatments and medications;
4. Identifying patients with high risk for actionable chronic diseases such as diabetes, congestive heart failure (CHF), asthma, chronic obstructive pulmonary disease (COPD), and depression.

Factors such as age, gender, total co-payments at drug initiation, total medication burden, and initial compliance with prescribed care are predictive of long term compliance (Carlson, 2003). Limitations of PM are that it must use readily available data and generally does not include affective constructs such as attitudes and beliefs. As adoption of PM applications becomes more widespread it is incumbent upon health management professionals to use ethical guidelines as a framework in deciding when to use it and how to use it. A review of the basic tenets of ethics in relation to PM provides a guideline for recommending and designing programs.

Health Management

Health management is a core discipline of our nation's health initiative that assists individuals in making informed decisions on health issues that affect themselves, their families and communities for the purpose of improving health status. Health managers use environmental supports including social, political, economic, organizational, policy and regulatory resources that influence behavior or more directly health. (Breckon et al, 1998; Liss, 1999). Historically, the place of employment is a key organizational site for health management in conjunction with the purchase and provision of work-based health insurance. Health management initiatives involve the behavior change of individuals to improve self-management of care (Robinson & Yegian, 2004).

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