Available online at www.sciencedirect.com
ScienceDirect
Journal of Health Economics 26 (2007) 1128–1150
JOURNAL OF HEALTH ECONOMICS
www.elsevier.com/locate/econbase

Optimal health insurance for prevention and treatment☆

Randall P. Ellis[a,*], Willard G. Manning[b]

[a] *Department of Economics, Boston University, 270 Bay State Road, Boston, MA 022l5, USA*
[b] *Harris School of Public Policy Studies, The University of Chicago, 1155 East 60th Street, Room 176, Chicago, IL 60637, USA*

Received 23 May 2007; received in revised form 5 September 2007; accepted 7 September 2007
Available online 2 October 2007

Abstract

This paper reexamines the efficiency-based arguments for optimal health insurance, extending the classic analysis to consider optimal coverage for prevention and treatment separately. Our paper considers the tradeoff between individuals' risk reduction on the one hand, and both *ex ante* and *ex post* moral hazard on the other. We demonstrate that it is always desirable to offer at least some insurance coverage for preventive care if individual consumers ignore the impact of their preventive care on the health premium. Using a utility-based framework, we reconfirm the conventional tradeoff between risk avoidance (by risk sharing) and moral hazard for insuring treatment goods. Uncompensated losses that reduce effective income provide a new efficiency-based argument for more generous insurance coverage for prevention and treatment of health conditions. The optimal coinsurance rates for prevention and for treatment are not identical.

JEL classification: I11; D80; L80

Keywords: Insurance; Prevention; Moral hazard; Risk aversion

1. Introduction

One of the major themes in health economics since the field began has been the behavior of patients and providers in the presence of health insurance that covers part or all of the cost of healthcare. Much of the economic literature on optimal health insurance focuses on "the fundamental tradeoff of risk spreading and appropriate incentives"; see Cutler and Zeckhauser

☆ An earlier version of this paper was presented at the Harvard Symposium and Dinner Celebrating the 25th Anniversary of the *Journal of Health Economics*, April 20, 2007.

* Corresponding author. Tel.: +1 617 353 2741; fax: +1 617 353 4449.
E-mail addresses: ellisrp@bu.edu (R.P. Ellis), w-manning@uchicago.edu (W.G. Manning).

0167-6296/$ – see front matter © 2007 Elsevier B.V. All rights reserved.
doi:10.1016/j.jhealeco.2007.09.002

(2000, p. 576) for a review of this literature. Specifically, it examines either the dead-weight losses from moral hazard, the tradeoff between moral hazard and the gains from insuring against financial risk, or the differential coverage of multiple goods with varying degrees of risk.

Our primary interest in this paper has to do with extending the literature to directly address issues of optimal insurance in markets with two healthcare goods, namely preventive activities/care and treatment of poor health when it arises. For this paper we define preventive care to mean a service with no direct utility or benefit other than it reduces the probability of being in relatively sick states of the world. Although our main focus is on primary prevention, which prevents bad health states from happening altogther (as with immunization), a simple extension of our model partially captures certain dimensions of secondary prevention which include the detection and prevention of a deteriation of a chronic disease.

In the process of deriving an expression for the optimal coverage of preventive care, we contrast how privately and socially optimal choices of preventive care differ, and how these choices are affected by the presence of insurance coverage for treatment services. We also examine how the optimal coverage of preventive care should be influenced by cost sharing on healthcare treatment in a second best optimal insurance policy that covers both prevention and treatment. One of the questions that we answer is: should preventive services be covered at all? Should they be covered to the same extent as other healthcare treatments, such as for accidents, curative care, or paliative care to relieve pain? There is a view held by some in the field that prevention is less uncertain than illness itself and may thus merit less generous coverage. Others have argued for coverage for prevention based on criteria other than economic efficiency (e.g., concerns about cost sharing hampering compliance among those with serious chronic health conditions). However, few have addressed the efficiency arguments for covering prevention based on an expected utility framework.

We present a series of models where consumers' choices about prevention affect expected health status as well as affect expenditures on healthcare treatment. Risk averse consumers value their health, their consumption of non-health goods and services, and protection from financial risks. We provide theoretical support for coverage of prevention to reduce insurance premiums and the cost of bearing risk, especially when the individual's premiums do not fully reflect savings from his or her own individual preventive activity.

This paper makes three basic contributions to the existing literature. First, we differentiate coverage for prevention from that for treatment in determining optimal insurance. Second, we examine how health insurance coverage for both prevention and healthcare treatment are influenced by the presence of uncompensated losses. For example, in a world where consumers are imperfectly insured for loss of income from ill health, or there are uncompensated healthcare treament costs (such as for over-the-counter drugs and supplies) how do these uncompensated losses affect the optimal cost sharing on healthcare treatment? In a parallel manner, how do uncovered costs of prevention (the time and discomfort costs of screening tests, for instance) affect optimal cost sharing on preventive services and healthcare treatment? The third contribution is that we explicitly examine the implications of non-monetary losses, such as blindness or pain, that healthcare treatment may ameliorate but not eliminate. How do such direct utility losses of poor health affect optimal insurance design? As we show below, uncompensated treatment and prevention losses provide an additional rationale for reducing cost sharing both for both preventive care and healthcare treatment goods, while direct utility losses impact optimal preventive care cost sharing only.

Since optimal insurance is a topic of considerable interest to many researchers and policymakers – both economists and non-economists – much has been written on this topic. We do not address these other rationales for insurance coverage that can be found in the health economics and public