

Benefit Conversion to Reduce Moral Hazard in Terminal Healthcare
"You guys had this in my Principles right?"

Economics X464
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Aidan Jobe Sea
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Overview

Health care spending in the US is rising, and an increasing portion is spent treating the terminally ill. In 2005 health care spending was approximately \$2 trillion and rose at 6.9%, over twice the rate of inflation.[1] Further, around 12% of health care spending is on treatments that are ultimately unsuccessful at saving patients lives, and around 20% of an individual's lifetime health care expenditures happen in the year of death.[2] [3] Taken together, this means that 60% of treatment costs in a person's decedent year are spent without benefit. In 1987 these unsuccessful treatment expenditures were already \$67 billion annually, and applying these percentages to 2005's approximately \$2 trillion in healthcare spending shows that of around \$400 billion spent by those dying within the year, \$240 billion was on ultimately unsuccessful treatment. A major cause of these unsuccessful expenditures is aggressive "heroic" treatment of major illnesses by health care providers. Insured patients demand this treatment because their out-of-pocket costs are low and they have no alternative use of their insured access to health care.[4] Offering patients compensation to relinquish their right to full coverage for likely terminal treatments could reduce aggregate end of life expenditures.

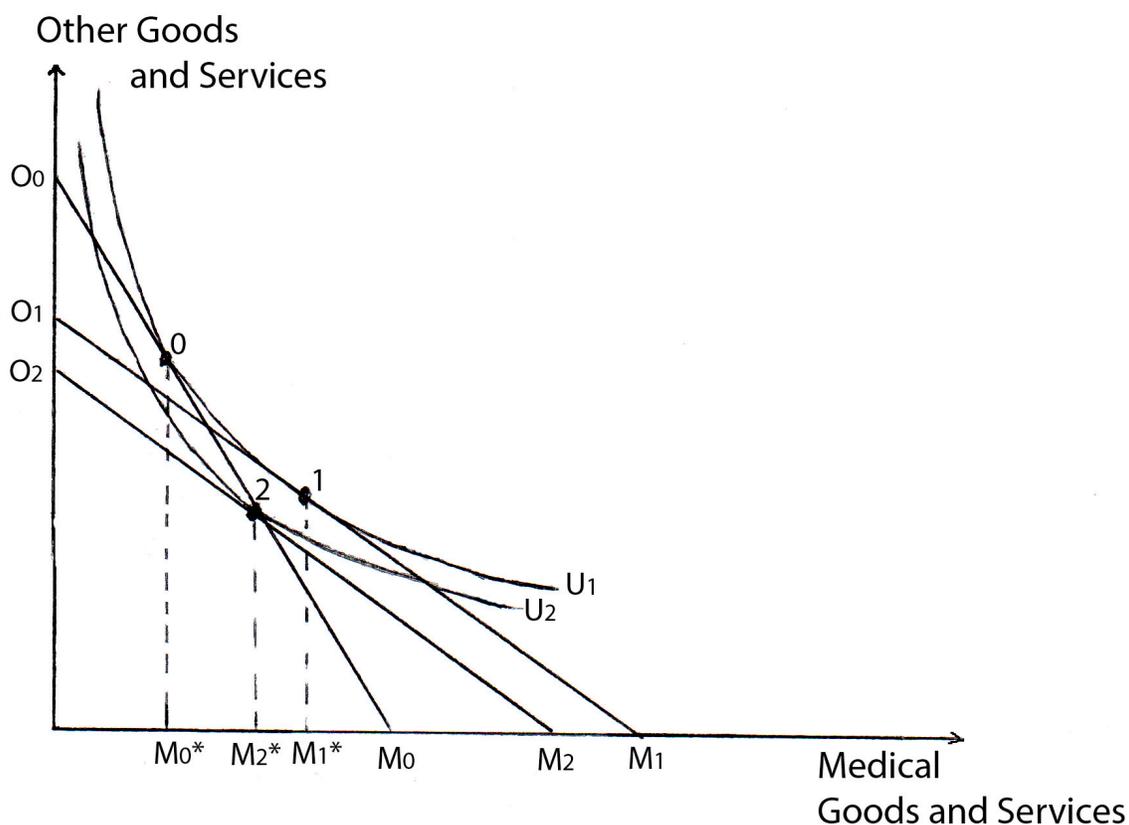
The problem

Moral hazard for the purposes of this paper is defined as a post insurance change in spending behavior by the insured. In healthcare, the common manifestation of moral hazard is the change in consumption by the healthy. This change is the same that would occur with an exogenous reduction in medical service prices and an accompanying reduction in income. It is the extra medical consumption resulting from a change in prices less the reduced consumption from a lowered income level. In Figure 1, this change in prices occurs with the

shift from initial budget constraint O_0, M_0 to O_1, M_1 with these constraints being the linear tradeoff between full consumption of other goods and services and full consumption of medical goods and services, for example a tradeoff between full consumption of other goods point O_0 and full medical consumption point M_0 . At O_1, M_1 prices have changed, but consumers remain on the initial utility curve U_1 and have switched from consumption bundle 0 to 1. Consumption of medical goods has increased from M_0^* to M_1^* . The cost of purchasing insurance is reflected in the reduction of income from O_1, M_1 to O_2, M_2 . On this new budget constraint O_2, M_2 consumers find themselves best off at the intersection of this constraint and new utility curve U_2 at point 2, which leads to medical consumption level M_2^* . If it weren't for the reduced income, medical consumption would have remained at M_1^* . Excluding the possibility of preventative care, this increase in consumption creates dead-weight loss as consumers extend their health consumption beyond the pre-insurance equilibrium due to their marginal costs being below actual cost.[6] The primary mechanisms for reducing such expenditure are deductibles and co-insurance which help to make consumers aware of the true cost of their care, but these are essentially shown by the non zero slope of the insured health care budget constraints. What is not shown in Figure 1 is the possibility of full coverage. Full coverage is the assumption of all or nearly all the costs of providing healthcare by the insurer beyond a certain level of medical consumption by the insured. In Figure 2 the point of full coverage is shown at kink I'. The second moral hazard in health insurance is the income transfer made from the healthy to the sick once their medical consumption has initiated full coverage. [5] This change in consumption is not due to a change in prices, but to changes in consumer preference and utility as sick people desire more healthcare than healthy people. And income transfer enables the ill to consume far

beyond their pre-insured income level, but is welfare enhancing as a mechanism for pooling the financial risks of becoming ill.

Figure 1: Moral Hazard Consumption Levels



Aggressive treatment of the terminally ill violates the welfare-enhancing properties of this hazard. The terminally ill are as sick their non-terminal counterparts and as in Figure 2 their utility function intersects full coverage at the same point. The welfare loss occurs when extensive resources are spent treating the terminally ill and the ill die rather than become healthy and support those who become sick in the future. The same moral hazard occurs as with the curably sick, only due to death it is no longer welfare enhancing because like a Ponzi scheme the dying have spent heavily without an ability to repay in the future.

Other Methods

Unfortunately not all terminally ill patients can be classified as terminal, or else determining the welfare implications of individual cases before death would be simple. To address this, a more detailed look at what constitutes an unnecessary treatment is useful. Medical technology has been advancing rapidly and broadly to a state where life-sustaining procedures and support systems are commonly available. With this new ability to sustain people's lives comes an emerging debate on futility. The concept of futility is nothing new. Hippocrates advocated that physicians "refuse to treat those who are overmastered by their diseases, realizing that in such cases medicine is powerless." [7] What has changed is that unlike through most of human existence, physicians are no longer so powerless. With the widespread adoption of intensive care units (ICUs) originally only meant as an academic arena for physicians to learn about the seriously ill, and cardiopulmonary resuscitation (CPR) able to revive the legally dead, the lines between possible and reasonable treatment have blurred. [8] In their paper "Medical futility: its meaning and ethical implications," Dr. Schneiderman et. al propose the following,

"The quantitative portion of our definition stipulated that physicians should regard a treatment as futile if empirical data show that the treatment has less than a 1 in 100 chance of benefiting the patient. The qualitative portion of our definition stipulated that if a treatment merely preserves permanent unconsciousness or cannot end dependence on intensive medical care, physicians should consider the treatment futile."

[9] While not by any means universally excepted, such a definition could reduce morally hazardous behavior by the terminally ill by providing a metric for when physicians should

refuse treatment. Schneiderman argues that refusing treatment on the grounds of futility is fundamentally different than rationing. With a futile treatment, withholding treatment makes the patient no worse off and may even protect them from dangerous and unnecessary procedures. Rationing on the other hand is a choice to withhold treatment from one group of patients so that either the treatment or the resources that would have gone into the treatment can be redirected to others who will receive more benefit. The key difference between futility and rationing is that futility does not entail any allocation of benefit.

While futility may seem a fairly simple concept to implement into standardized medical practice, a consensus on universal application is far off. While individual doctors may refuse treatments on their own personal ethical grounds, determined patients can relatively easily switch doctors until they find one willing to provide treatment and enable them to engage in morally hazardous behavior even in cases that are empirically guaranteed to be terminal. [10]

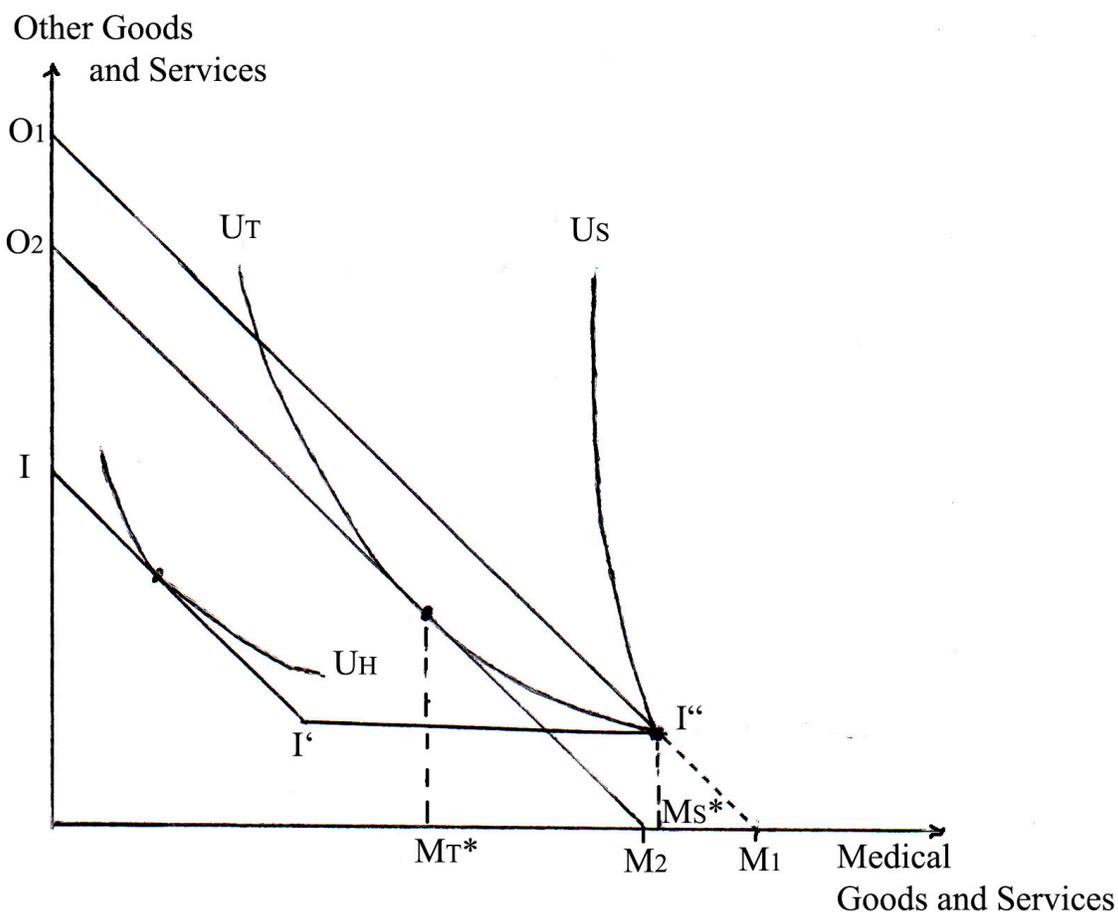
Rationing is a method for reducing moral hazard behavior commonly implemented in a number of other countries such as Britain.[11] While absolute terminality and futility may be a relatively difficult to diagnose, an empirical evaluation taking into account age, gender, marital status, smoking, number of chronic conditions, and a host of other easily observable data points in conjunction with the advancement of illness can relatively easily predict empirical gains from treatment. Coldly rationing out treatment based on its expected benefit is an effective way of avoiding the negative moral hazard of income transfer to those most likely to be terminally ill. Unfortunately rationing violates the principal of patient choice that accompanies medical care as a market driven service, and it also violates physician's ethical calling to heal the sick until their patients have become overmastered by their diseases. As a method for cost control and efficient distribution of a limited public good resource, rationing

is extremely effective, but in the United States medical care is both a public and private good and any implementable policy must align with its private good property of consumer choice.

The answer to this dilemma of choice has often been thought to exist in advanced directives where healthy people express their desires for the maximum level of treatment they wish to receive. By design these documents are intended to express a patient's desires when they have been incapacitated or are otherwise incapable of making their own decisions. As of yet advanced directives have not been directly tied to insurance contracts, but if connected a substantial cost savings could be achieved.[11] Contracts containing advanced directives that limit access to aggressive care could be offered for a substantially reduced premium. The problem is that this form of advanced directive would often not cohere to the sick patient's treatment wishes. For example, suppose in Figure 2 a healthy consumer at UH has signed an advanced directive limiting them to treatment level M_T^* . If they become ill with preferences U_S , this consumer will now desire but be disqualified from all treatments beyond M_T^* irrespective of the potential benefit to the patient and even if it is likely the patient will regain health. While a potentially effective method for reducing medical insurance expenditure, advanced directives applied to insurance contracts would be ineffective because they fail to provide patients with the treatment level they desire.

Benefit Conversion

The mechanism this paper will show is able to reduce the costs of providing for terminal patients while retaining patient's choice over treatment level is a buyout of a terminally ill patient's right to full coverage by insurers. This buyout converts patient's right to full coverage into a cash endowment that can be flexibly allocated between medical and other goods. The premise behind this policy is that a payment in cash is most often preferred to an equal payment in kind such as medical services. This buyout, more gracefully called a benefit conversion by Fung, seeks to take advantage of the welfare gain from a change to payment in cash by offering a level of compensation below the full cost of treatment that leaves the terminal patient no worse off than they would have been under full treatment.[4] Those who expect to recover from their illness have highly inelastic demand for medical services. For them, a payment in cash equal to the cost of providing medical care will not make them less happy, but it will also not be welfare improving due to an immediate reallocation back into full treatment where they are happiest. This is shown by utility curve U_S and its intersection at I'' . Those who are terminally ill and are aware of their reduced benefit from aggressive treatment will have a change in their preferences from U_S to terminal utility level U_T . For these people, their diminished expectation for future health has made them more willing to substitute into other goods, but due to their insured budget constraint, those with terminal preferences still find themselves as the same bundle of consumption as those who believe they will recover.

Figure 2: Benefit Conversion

In Figure 2 the healthy start with utility U_H and are only using medical services requiring a co-payment. When a healthy person becomes seriously ill their utility curve shifts out to U_S so that they demand a level of medical care available through full coverage past point I' . This level of care is limited to M_S^* because while a range of treatment options may exist for any condition, there is always a maximum treatment level that cannot be exceeded. This most aggressive level of treatment occurs at bundle I'' and the utility of the sick and the dying both reach a corner solution at this level of treatment simply because no further level of treatment is available. To keep this treatment level a benefit conversion would keep the price slope from portion I, I' of the insured consumption constraint and expand out to M_1, I''

to provide a linear tradeoff between medical and other goods up until the maximum treatment level M_s^* . To those who expect to regain health, denoted by utility U_s , bundle I'' is still utility maximizing under buyout and consumption will remain unchanged due to unwillingness to substitute other goods now for the possibility of consumption later. Those who are aware that future consumption is not an option because they are likely to die are at U_T and will be far more willing to substitute other goods for medical goods and services. With this change in utility due to increased awareness of mortality, a lower level of compensation M_2, O_2 enables utility level U_T . Determining the cost savings possible from this lower level of transfer is achievable through the measurement of equivalent variation where those on M_1, I'' would be asked the maximum they are willing to pay to avoid reverting back to their prior insured income constraint. This payment is the amount required to make M_1, I'' and the insured constraint equivalent and represents the greatest amount M_2, O_2 may be less than M_1, I'' while still meeting U_T . Graphically this savings can be seen in the difference between points M_1 and M_2 , M_2 being the intercept O_1, I'' would have had with M if treatment was allowed to extend beyond M_s^* . The effects of this policy can be seen through the aggregation of such savings across terminal preferences.

This buyout of full coverage acknowledges people's terminal change in preferences and seeks to make them better or no worse off while simultaneously reducing costs for the coverage provider.[4] The difference between this and the proposals of Fung and Byrne is that in this proposal the insured individual is only relinquishing full coverage, which is replaced by an outward shift of the co-insurance portion of their original insured budget constraint, and patients remain so-insured and are not disallowed from receiving large amounts of care. Fung takes his argument a step further than eliminating health coverage in

the buyout when he recommends that such benefit conversions be accompanied by assisted suicide. As shown in Figure 2, patients still prefer considerable medical services after a buyout, only these services become more characteristic of a shift to palliative care than a desire for the cessation of all care. Due to the more moderate slope of this compensated budget constraint a new point of intersection with U_T results in an expenditure level considerably lower than that required under full coverage to make the terminal patient equally happy.

The potential for widespread cost savings to insurers with the introduction of a benefit conversion system are considerable. While any method that relies on consumer preference to derive its cost savings will need to work harder than a system like rationing in order to be effective, the emphasis on consumer choice in our market society means that any plausible method must rely on consumers choosing to limit their own costs rather than forcing those limitations upon them. Unlike any of the other methods cited, a benefit conversion system derives cost savings from the preferences of the terminally ill and therefore has potential for implementation.

Notes

- [1] Health Insurance Cost. The National Coalition of Health Care, Washington, DC.
<http://www.nchc.org/facts/cost.shtml>
- [2] Lubitz, J.D. and Prihoda, R., 1984. The use and costs of medicare services in the last 2 years of life. *Health Care Financing Review* **5**, pp. 117–131.
- [3] Lubitz, J.D. and Riley, G.F., 1993. Trends in Medicare payments in the last year of life. *New England Journal of Medicine* **328**, pp. 1092–1096.
- [4] Fung, K. K., 1993. Dying for Money: Overcoming Moral Hazard in Terminal Illness through Compensated Physician-Assisted Death. *American Journal of Economics and Sociology* v52, n3 (July 1993):275-88
- [5] John A. Nyman and Roland Maude-Griffin. The Welfare Economics of Moral Hazard. *International Journal of Health Care Finance and Economics* v1, n1 (March 2001): 23-42
- [6] Pauly, Mark V. "The Economics of Moral Hazard: Comments," *American Economic Review* June 1968: 531-7.
- [7] Lawrence J. Schneiderman, MD; Nancy S. Jecker, PhD; and Albert R. Jonsen, PhD. Medical Futility: Response to Critiques
- [8] Kaplan RM, Schneiderman LJ. Healthcare Resource Consumption in Terminal Care *Pharmacoeconomics*, 1997 Jan;11(1):2-12.
- [9] Schneiderman LJ, Jecker NS, Jonsen AR. Medical futility: its meaning and ethical implications. *Ann Intern Med* 1990; 112 (12): 949-54
- [10] My grandparents did this very thing three months ago.
- [11] Margaret M. Byrne, Peter Thompson. Death and Dignity: Terminal Illness and the Market for Non-treatment. *Journal of Public Economics* v76, n2 (May 2000): 263-94