

SYMPOSIUM ARTICLE

Strategic sorting: the role of ordeals in health care

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Abstract

Ordeals are burdens placed on individuals that yield no benefits to others; hence they represent a dead-weight loss. Ordeals – the most common is waiting time – play a prominent role in rationing health care. The recipients most willing to bear them are those receiving the greatest benefit from scarce health-care resources. Health care is heavily subsidized; hence, moral hazard leads to excess use. Ordeals are intended to discourage expenditures yielding little benefit while simultaneously avoiding the undesired consequences of rationing methods such as quotas or pricing. This analysis diagnoses the economic underpinnings of ordeals. Subsidies for nursing-home care versus home care illustrate.

Keywords: ordeal; target efficiency; signalling; moral hazard; sorting; health care

1. Ordeals and the special nature of health care

In economic terminology, ordeals are burdens placed on individuals which yield no benefits to others. An ordeal thus imposes what economists call a dead-weight loss (DWL), a cost to some without benefit to others. Some examples of ordeals are requirements that food stamp recipients go through tedious procedures to enrol, that doctors fill out elaborate forms before expensive procedures are approved, and that disabled individuals stay in nursing homes to receive subsidies not available for home care. Some ordeals are not purposeful. For those that are, the goal, often unstated, is to direct scarce resources to more deserving recipients. In many cases, ‘more deserving’ means ‘fewer and more desperate’. Stigma may also serve as an ordeal, even if unintended. Thus, for example, there may be some shame associated with receiving care at a free clinic.

The artist who is a child of affluent parents may opt not to go through tedious procedures to get food stamps; the doctor may decide not to fill out forms if the value of the procedure to the patient is not worth the administrative burden; an incapacitated individual with an at-home caregiver may receive more comfortable but much less subsidized home care; and a middle-class individual may steer clear

of any stigma from care at a free clinic. Ordeals are often imposed in traditional commercial settings, such as by an employer assessing the commitment of employees, but our concern is with ordeals in the health-care arena. The ultimate saved resource is usually dollars from the government, from an insurer, or from a non-profit organization concerned with social welfare.

The vast majority of resources in our society – such as television sets, apartments and lawyer hours – are allocated to the individuals who are willing and able to pay market prices. But health care has a different status in American society, and even more so in most other developed nations. Health care is broadly viewed as a right or an entitlement. In response, the purchase of health insurance is massively subsidized by others. The US government pays the majority of the bill for the poor and the elderly. Most middle-class individuals pay for health plans that are heavily subsidized by tax policy. It is a matter of debate whether the portion of employees' premiums that are paid by employers represent subsidies rather than payments that are passed on to workers. The consumption of almost all expensive health care is covered by some form of subsidized insurance. In response, health insurance is more generous – for example has lower deductibles and co-payments – than what individuals would purchase on their own. That in turn promotes far greater expenditures on health care than would a market solution.

Health insurance, whatever its source, creates a second and quite disparate set of subsidies. At the time health-care services are received, individuals, through their deductibles and co-payments, pay for only a fraction of the costs of their care. A cascade of subsidies spills into most significant health-care purchases. Hence, moral hazard, an unwelcome accompaniment of any form of subsidized purchase, comes into play.

In effect, these disparate subsidies create two different forms of moral hazard. The first promotes the purchase of excessive insurance. The second promotes the excess consumption of health-care resources due to insurance.

The arguments that underlie identifying health care as special and worthy of heavy subsidy, both when services are purchased and through the subsidization of insurance premiums, is not our concern here. Rather, we are concerned with the second-best policies that follow when purchases are heavily subsidized. Given that the prices consumers pay are well below the value of the resources they receive, there will be a strong tendency to have health care overused and excessively expensive. The worried well will go to the doctor too often. Slightly injured individuals will go to the emergency room when a walk-in clinic visit would use far fewer resources. And doctors will order excessive tests, since their patients will suffer little financial penalty when they do so.

Given these wasteful outcomes, governments and health-care plans have imposed elaborate sets of rules as to who can seek what care, with what subsidy, and in what setting. Ordeals comprise one strong component of those rules. The often unstated objective of these restrictions in general, and of ordeals in particular, is to direct care to those who will benefit from it the most.¹ However,

¹Ordeals are a first cousin to what economists refer to as signalling devices. See Spence (1973). A famous result in the signalling literature is that, even if college offered no value, individuals might still incur the expense of attending as a way to convey to the market that they are high-quality individuals. In parallel

there may be information that predicts benefit that is unobservable to those delivering the care, or unacceptable for them to use. Given this situation, an ordeal may be a second-best device that does the sorting that could otherwise be accomplished by access to full information.

Despite these rules, and the resource-withholding effects of ordeals, our society still spends a vast amount on health care. It consumed 18% of US GDP in 2017.² Other countries, such as Canada (11.3% of GDP in 2018)³ and the UK (10% of GDP in 2016),⁴ spent much less overall. That is despite the fact that, with few exceptions, patients in Canada and the UK are not subject to the co-payments and deductibles for doctor visits and hospital stays that limit utilization in the USA. Mean per capita spending on health in the USA is also much higher (\$9403) than in Canada (\$4641) and in the UK (\$3377),⁵ albeit in part because input prices for health care, such as payments to doctors or hospitals, are far higher. It is not surprising that, in those two countries, the wait time for treatment, an exemplar of an ordeal, is much longer than in the USA.

The prime goal of this analysis is to examine the anatomy of ordeals, in particular their functions in health care. It shows that ordeals, inevitably a second-best mechanism given the dead-weight losses they impose, may nevertheless be preferable to alternative mechanisms for allocating health care across an array of circumstances. It identifies the optimal structure of ordeals in some contexts. It argues, implicitly, that the often-harsh critics of ordeals may fail to consider the drawbacks of alternatives or may engage in unrealistic thinking about the potential for making medical resources available.

However, this essay also observes that ordeals in health care are hardly a pure blessing. They are frequently the unintended consequence of some cost-saving mechanisms, which may include the provision of an inadequate supply of a medical resource. Indeed, those mechanisms are sometimes put in place without concern that an ordeal might emerge. Moreover, as is shown below, there are situations where the costs that ordeals impose could be inexpensively reduced or avoided.

1.1. Burdens and ordeals, possible distinctions

When calling medical offices, or other organizations, one often has to work one's way through an elaborate phone tree. That is surely a burden on the consumer. But if the medical office or another organization is saving more on personnel costs than the caller would pay to engage with a human, then the burden does not qualify as an ordeal. Resources are being saved on net. The primary purpose of the burden is to serve efficiency, not to discourage utilization. Therefore, such a burden is not an ordeal.

Purposeful ordeals, of course, also save resources that can be applied to other uses outside the immediate arena. An ordeal is justifiable, at least in the eyes of those who

fashion, less affluent individuals may accept suffering a dead-weight ordeal to qualify for a valuable benefit, such as subsidized health care.

²See Centers for Medicare & Medicaid Service (2018).

³See Canadian Institute for Health Information (n.d.).

⁴See Office for National Statistics (2016).

⁵See Papanicolas *et al.* (2018: 1024).

create it, if the resources saved are valued more highly than the costs of the ordeals to those who suffer them. Ordeals are thus justified to limit low-benefit users from consuming highly subsidized medical resources, namely when moral hazard is a major concern. Presumably, high-benefit users will bear the ordeal and consume those resources.

1.2. Alternatives to ordeals as rationing devices in health care

Ordeals address the need for rationing, given the massive subsidies for most health-care purchases. But there remain some areas of significant medical expenditure where society continues to rely heavily on the market. In many respects, going to the dentist is not unlike going to any of a vast array of doctors. However, ordeals at the former are much more modest than they are with most physician encounters. The average wait time for a dentist is 7 days until an appointment, and 7.5 minutes at the dentist's office.⁶ One possible reason is that dental insurance is less widespread and usually offers less full coverage than medical insurance. The greater the proportion of a bill that is paid directly by the consumer, the more costly it is to the practitioner to impose an ordeal that limits utilization.

Viagra presents an interesting subsidies case. In many jurisdictions, it is not a covered item for insurance when used to overcome sexual dysfunction, a risk like other medical maladies. Presumably, and perhaps prudishly, in those locales, Viagra is classified as an elective treatment, not unlike cosmetic surgery. However, Viagra's purchase is covered by insurance if it is employed for many other medical purposes. An efficiency perspective, by contrast, would cover Viagra, for whatever purpose for patients with relatively inelastic demand, hence a high willingness to pay. As a risk-spreading mechanism seeking to promote efficiency, insurance should cover relatively expensive treatments when inelasticity makes moral hazard a modest concern. Conceivably, an application process, perhaps required on an annual basis, could effectively separate the high- from the low-benefit users of Viagra, assuming that privacy concerns did not impose an excessive burden of a different sort.

1.3. Cost-effectiveness analysis as an alternative to ordeals

Health-care utilization can be restricted in other ways beyond dollars and ordeals. Policy analysts and economists often utilize cost-effectiveness analysis to identify which individuals should be given priority for medical treatments. Two fundamental assumptions underlie the use of this technique: (1) it is possible to observe and utilize information known about individuals to quantify the benefits they will receive from a medical procedure; and (2) the objective of health-care spending, at least within that context, is to secure the greatest aggregate benefit – that is, total benefit across individuals – for the dollars expended.

Health benefits in a cost-effectiveness analysis are measured using a metric such as quality-adjusted life years (QALYs).⁷ Cost-effectiveness analysis is relatively

⁶Elflein (2019).

straightforward to apply within a class of individuals all receiving the same treatment, for example, the use of an expensive prescription drug. It is more challenging and more controversial to compare across categories, for example, a bone marrow treatment for cancer versus the use of that expensive prescription drug. Thus, if the former cost \$200,000 and yielded one QALY, and the latter cost \$20,000 and yielded 0.2 QALYs, the drug would offer greater cost effectiveness, namely $0.2/\$20,000 > 1/\$200,000$.⁸ Cost-effectiveness analysis merely gives a priority order to treatments, without addressing the higher-level question of how much money to spend. In an ideal world, spending would continue until the benefit of the last treatment just exceeded the value of the dollars required. This judgement leads to subsequent questions, such as those regarding the value of a QALY and the qualifications of those who determine that value.

Interestingly, cost-effectiveness analysis is employed in the USA to prioritize preventive services, but not treatments, for example in Medicare (Chambers *et al.* 2015). Presumably, that is because treatment deals with identified beneficiaries. Preventive services, by contrast, only offer modest expected benefits for those at the margin for receiving them. Hence, the political forces are more powerful in affecting treatment priorities than prevention priorities. This observation is reminiscent of the more common discussion of the excess weight given to identified versus statistical lives.

Cost-effectiveness analysis has been combined with the analysis of optimal structures for co-payments and deductibles to produce value-based insurance design (VBID). The broad goal of VBID is to shift utilization of a service toward (away from) individuals who would receive high (low) benefit from it. It would also attend to the dollar consequences of the use of a service. Thus, it would make co-payments minimal for a drug, such as an anti-hypertensive, whose use saves more dollars than it costs, or indeed for other drugs that do not save dollar on net, but yield many QALYs for the dollars spent. The principles of VBID could lead to greater co-payments and deductibles for wealthier individuals, lest some less affluent high-benefit users be deterred by those fees. In a perfect world, co-pays and deductibles could be effectively tailored this way. They could then fulfil many of the sorting accomplishments of ordeals while avoiding their dead-weight costs.

However, no analysis, however sophisticated, can distinguish high- from low-benefit users when facts about a person's needs are private to the individual and therefore the administration of medical insurance is far from approaching perfect standards. Moreover, some ordeals sort on dimensions that are in no way commensurate with money, such as in the example of persistent back pain discussed below. Hence, a significant role for ordeals remains. Ordeals, to a significant extent, are able simultaneously to prioritize access to care while escaping the political forces that would directly influence any ranking of access

⁷The use of QALYs as a metric is often debated. See, for example, Goldstein (2016). See also Zeckhauser and Shepard (1976).

⁸When evaluating cost-effectiveness, it is easier to think of *greater* as meaning *better*. Hence, the quotient considered is effectiveness/cost.

to treatments. Any potential beneficiary willing and able to endure the ordeal receives treatment. The balancing downside of ordeals, as mentioned, is the dead-weight costs that they impose. We now turn to the way ordeals achieve target efficiency: prioritizing treatment to those getting the greatest benefit from the resources that are spent.

2. Ordeals and target efficiency

In most social policy realms, the primary role for ordeals is to improve target efficiency (Nichols and Zeckhauser 1982). For example, services are allocated to those willing to bear an ordeal, as opposed to being provided free to everyone or being sold through market processes. Such an approach is often used in health care. Consider a health clinic seeking to serve four types of potential patients, labelled A, B, C and D (see Table 1).

If the clinic offered appointments based on willingness to pay, as do most commercial services, groups A and B would be its clients. However, its primary goal is to serve group D. If the clinic sorts customers by charging nothing and letting a waiting line discourage low-benefit clients, only patients in group D will come. A and C patients are not sick enough to make the ordeal worth bearing. B patients value their time too highly and will pay for swifter care elsewhere. The desired outcome is achieved.

Of course, this initial sorting should also be accompanied by a triage process at the clinic if significant further heterogeneity remains in the group D population. An emergency patient, perhaps having symptoms of a heart attack, should be moved to the head of the line. Patients in severe pain should get priority; pregnant women might get moved up.

Given that many ordeals in health care are employed to control utilization, and that health care at the point of service is greatly underpriced, an ordeal added to a money price has the potential to move society toward a norm in which the benefit of a service equals its cost.

Almost anyone who is told to see a specialist about a condition would like to be able to do so in the next few days. Being made to wait, possibly for weeks, sorts out the people whose condition would have improved without care. It is not surprising that, in Canada, the average wait time for cancer treatment is 3.8 weeks, but for orthopaedic surgery the wait is 39.0 weeks.⁹ That is because orthopaedic problems, such as back pain, often get better on their own,¹⁰ whereas there is a high likelihood that unattended cancer will grow and spread. With cancers, or other conditions that worsen as time passes, waiting time is a highly inappropriate sorting device.

⁹See Fraser Institute (2018).

¹⁰Coste *et al.* (1994) found that recovery from acute lower-back pain was more rapid than previously described: 90% of patients recovered within two weeks and fewer than 2% developed chronic lower-back pain. It is important to note that the Coste *et al.* analysis focused on patients with a less than 72-hour history of pain; this has become a focus for criticism of that paper. However, this aspect of its analysis may reflect the low percentage of initial back pain experienced by the worried well that evolves into a truly chronic condition.

Table 1. Intended and actual patients at a health care clinic

	Mildly ill	Significantly ill
Middle Class	A	B
Poor	C	D

It is important to note that waiting time for health care comes in two forms: waiting at a service facility to be served, such as by sitting at a doctor's office; and waiting until one can get an appointment. We shall refer to them respectively as *idle wait* (IW) and *schedule wait* (SW). IW is an ordeal of boredom and inconvenience. SW is an ordeal of pain, discomfort, potential lost wages and/or possible deterioration before one can receive treatment.

2.1. Deficiencies in the waiting line as a sorting ordeal

Waiting lines, whether of IW or SW, are probably the most commonly employed ordeal in health care. Those lines would achieve target efficiency if those who would benefit most from service were always those willing and able to wait, and if waiting did not have other deleterious effects. Those assumptions are not always correct.

For example, some people who would benefit greatly from care might have high costs of waiting. This would be the case, for example, with a severely sick single parent with three young children. That would also be true for an equivalently sick hourly earner whose waiting time would impose a high monetary cost.¹¹

Conversely, some individuals simply have low waiting costs. They might find sitting in a doctor's office and reading a magazine to be a relatively pleasant experience.¹² Individuals with low waiting costs may, even when their conditions are mild, secure medical treatment that sorts patients by a waiting ordeal. In short, waiting time can be effective in promoting target efficiency, that is, in bringing in the high-benefit patients, if all individuals have roughly equivalent waiting costs. It will perform poorly if those costs are highly variable, as for example if, apart from medical condition, anxious patients incur high costs from SW while serene patients incur low costs.

Willingness and ability to wait may also interact negatively with the severity of individuals' conditions. Thus, Carter *et al.* (2012) found that patients in Canada waiting for the treatment of eating disorders were more likely to drop out of the queue if they experienced longer waiting times. As a result, some of the patients who needed care the most – those with the riskiest medical histories – missed receiving treatment.

Individuals may also be poorly equipped to understand a system that sorts patients by waiting time. Eastwood (2011) found that, in New Brunswick, back-pain patients waiting for a consultative appointment on potential surgery feared that calling the office to inquire about their place in the queue would place them lower

¹¹In many contexts, it would be efficient to employ both ordeals and monetary payments to sort patients.

¹²If the artist cited in relation to the food-stamp example likes to sketch portraits or to compose poetry while waiting, that person's waiting cost may be negligible.

on the waiting list. Desperate to receive care, these same patients upgraded their telephone services to ensure they would not miss calls from the consultative staff.

Using waiting lines to help allocate resources suggests equal treatment and solidarity, as well as the comforting perception that resources are going to those who need them the most. Absent analytic thought, such feelings can sometimes lead us astray in policy prescriptions. As many cities become ever more gridlocked, the absence of congestion pricing costs society dearly. A driver who would pay \$2 to make a trip now when streets are busy rather than nothing later when streets are not congested might be imposing a \$50 waiting time on others, and might be deterred if charged merely a fifth that amount. If congestion-charge monies collected were rebated to all drivers, all might be much better off.

The allocation of kidneys for transplantation provides a health-care example in which the use of waiting time may sort patients poorly. Beyond considerations of match and location, priority for kidneys goes to those who have been waiting the longest.¹³ The condition of such patients deteriorates as they wait. Hence, long-waiting patients who get a kidney secure fewer expected QALYs than patients who receive a kidney more quickly. Presumably, ethical extrapolation from other contexts helped to create this system. Prioritizing longer-waiting patients does keep hope alive, as opposed, for instance, to a system prioritizing recency. However, a system that prioritized most kidneys by recency, but allocated a small fraction by duration would boost QALY gains from the transplant system while still keeping hope alive.¹⁴

In short, waiting-time ordeals are far from a perfect sorting mechanism. The critical question in any context is how well the ordeals perform relative to other methods for prioritizing care, the most common alternative being monetary payment.

2.2. Ordeals other than inconvenience

Inconvenience, such as waiting time or paperwork, is almost certainly the most common form of ordeal in health care. However, any burden that involves a dead-weight loss could serve the purpose. Criminal gangs, fraternities and some military units require the performance of dangerous and/or arduous acts by those who might want to join, thereby sorting by intensity of preference, and in some instances by skill. But an imposition of danger would not make sense for health care. However, a less pleasant treatment experience, say in terms of ambience, might help to sort.

The design and use of in-kind programmes for medical care – programmes that give services rather than money – is an area where the US government spends \$1 trillion per year.¹⁵ Yet, economists are quick to point out the disadvantages of in-

¹³There is one exception. In an effort to match recipients with the longest estimated post-transplant survival (EPTS) with kidneys expected to last the longest, the recipients with the best 20% of EPTS scores are given priority for such kidneys.

¹⁴This assumes that those waiting and hoping will get a less-than-linear value from the likelihood of getting a kidney. The probability-weighting function from Prospect Theory *has* precisely this property. See Kahneman and Tversky (1979: 280–284).

¹⁵Calculation from National Health Expenditure Data (Centers for Medicare & Medicaid Service 2018).

kind versus cash transfers, for example, subsidizing nursing home care, as opposed to giving cash payments to incapacitated individuals. However, in-kind transfers, such as specific medical treatments, can have an advantage in targeting, being of greater benefit to people with particular conditions. Lieber and Lockwood (2019) evaluated the trade-off between lesser benefits and superior targeting in the context of Medicaid benefits for home care. They concluded that, for plausible assumptions, the better targeting gains outweighed the lesser benefits losses.

2.3. Pain, addiction, and ordeals that directly benefit the patient

Some ordeals help patients sort their own care. A patient suffering pain is surely experiencing an ordeal. Weighing against that, addiction to painkillers has become a prominent policy problem of late. When prescribing painkillers, a responsible physician will be trading off relieving the patient from severe pain and raising the risk of addiction. Thus, patients are commonly asked: ‘How is your pain on a scale from 1 to 10?’ If the patient’s response is higher on the scale, the pain relief concern should get greater weight. The patient should get a somewhat more powerful painkiller, possibly for a longer duration. Whether to bear the ordeal of moderate pain or control it with a potentially addictive painkiller is a decision that must rely on each patient’s informed input.

The wait to get treatment for lower-back pain fits into the same category: the ordeal is beneficial on net. Patients can learn whether they fall into the category of patients for whom waiting and suffering, a short-term ordeal, is better than receiving immediate treatment, given that treatment might prove not necessary.

2.4. Ordeals to conserve resources

Institutions providing heavily subsidized health care employ ordeals widely as an efficiency measure to limit the use of health-care resources. Such use would be merited even in a nation with a completely equal income distribution, assuming that it wanted to insure its citizens against significant health expenses yet avoid low-benefit expenditures, as efficiency would require.

Many ordeals are designed to tilt individuals to seek care in a cheaper way or a cheaper facility. Many patients would prefer brand-name drugs over their generic equivalents. However, many states have laws requiring that generics be dispensed unless patients (and/or their physicians) undertake specific actions – a modest ordeal – to overcome the generic default.

For example, both Medicare and Medicaid automatically enrol qualified participants in ‘step therapy’, a tiered formulary ranging from a low-cost generic tier to a very high-cost, branded-specialty tier of drug offerings. Patients are assigned by default to the lowest tier drug that will treat their condition; they progress up tiers only if deemed medically necessary.¹⁶ The step-therapy system provides two built-in ordeals. First, there is a disincentive to try costly treatments initially; higher tier options, which are more costly for the government to provide, typically have higher co-insurance and co-payments

¹⁶See Medicare (2019).

incurred by the patient. Second, default lowest-tier prescriptions can only be overridden if the prescriber files for an exception: this four-page form with a 72-hour response waiting time serves as a disincentive to prescribing more costly medications.¹⁷

Dupas *et al.* (2016) conducted a randomized controlled trial on the distribution of chlorine solution in Kenya. One study arm gave residents monthly vouchers that required a walk to a local market centre to redeem, a minor inconvenience; the other study arm handed the chlorine out directly.¹⁸ The result of the walk-and-voucher treatment was a significant reduction in the distribution of chlorine solution, but a trivial reduction in chlorine appropriately used for water treatment to prevent disease. (Direct distribution often led to the chlorine not being used.)

If an emergency room frequently has long wait times, patients – particularly those with minor ailments – may choose instead to go to a walk-in clinic where the wait would be much shorter. The magnitude of health resources used would likely be much greater in the emergency room setting.

We have argued that an ordeal is often employed in lieu of a cash payment to sort utilization of health care, particularly expensive health care. For example, individuals who would otherwise get care for free might be discouraged by a small co-payment from going to an emergency room.¹⁹ This proved to be the case in a randomized experiment that showed that a small co-payment operated almost as an ordeal. Selby *et al.* (1996) found that such a co-payment – between \$40 and \$55 dollars (2019 value) – reduced emergency room utilization by 14.6%, as compared with a control. Behavioural economics has shown us that, even to a single individual, a dollar does not *always* have the same value. Presumably, those discouraged by this size co-payment at the emergency room compared those co-pay dollars to the prior zero co-pay rather than to the high cost of providing the care in an emergency room.²⁰

Interestingly, the government often requires care in an expensive facility, as opposed to home care, if patients or their families are to receive reimbursement. A famous case involved Katie Beckett, a young girl with viral encephalitis, and President Ronald Reagan. Medicare rules required that Katie live in a hospital to receive care. She and her parents much preferred care at home. Eventually, Ronald Reagan learned of this situation. He issued the Katie Beckett Waiver, which allowed severely ill children to receive reimbursement if cared for at home. Such home care in this case actually saved the government significant dollars. Presumably, Katie benefited significantly, since she lived to age 34, much

¹⁷See Centers for Medicare and Medicaid Service (2019).

¹⁸Distances varied based on participants' home addresses. No average estimate of distance from the voucher redemption service was given, but vouchers were redeemable at the nearest market centre for 22% of study participants. See Dupas *et al.* (2016: 891).

¹⁹A small co-payment would be an ordeal, if the processing cost was significant relative to the co-payment amount. The benefit to the purveyor of service would then be small or non-existent. The payment thus would impose a dead-weight loss.

²⁰Pratt *et al.* (1979: 205) examined telephone price quotes for 39 standardized products. They found that, when mean price doubled, the standard deviation of quoted prices increased by 86%. They concluded that individuals were much less willing to spend 15 minutes searching to save perhaps \$10 when the price of an item was \$50 rather than when it was \$200.

longer than expected (Willson 2012). If the facility care is much less appealing, even if much more expensive, a requirement that only facilities receive significant reimbursement – a salient case of an ordeal imposed on the patient – could actually save the government (or health plan) money. That would still be the case if significant numbers of families opted to provide lightly subsidized or unsubsidized home care. We explore a situation of this sort with nursing home care.

3. The economics of optimal ordeals

Posit that, for whatever reason, a good is being provided to individuals for a price of 1, but costs K to produce. To avoid severe inefficiencies, an ordeal is imposed to limit demand. The ordeal imposes a dead-weight cost D . Thus, a consumer will face the effective price of $1+D$. A key challenge for policymakers is to determine the optimal value of D . The answer depends on the elasticity of demand for the good, that is, on how the percentage change in the quantity that is demanded responds to the percentage change in the price. If that response is modest (big), the optimal ordeal should be small (great), since many (few) people will be consuming the good who do not value it highly. The optimal ordeal balances the inefficiency of having people buy the good who value it much less than K against the dead-weight loss of the ordeal.²¹

Posit that $K=10$ and that 100 people would buy the good if the price were 10. Some relevant values are shown in Table 2.

As the example demonstrates, given a heavily subsidized price, an ordeal makes good sense when demand is elastic, but not when it is inelastic. No one will have their gall bladder removed just because the price of the procedure is cheap. Hence, the elasticity is low, and an ordeal would at best be wasteful. But the demand for various cosmetic surgeries would respond strongly to price. Hence, if both types of surgery were heavily subsidized, an ordeal would make sense only for the latter.²²

Quite apart from ethical concerns or some principle that makes health care a special good worthy of subsidy, the spreading of risk provides a solid justification for the subsidization of expensive medical care. Generally, there is a small probability that an individual will have any use for an expensive medical procedure. Hence, before that uncertainty is resolved, individuals will want to buy medical insurance. However, even among those who do need a procedure, some will value the procedure much more than others. Given the heavy subsidy, an ordeal may make sense to discourage the relatively low-benefit users from seeking the procedure.

Posit that there is an expensive surgery that can help individuals with back pain due to herniated discs. The surgery is only cost-effective for those who are often in significant pain. Unfortunately, only patients know their own pain levels. It might be

²¹Ordeals may also sort within individuals, between their high-benefit and low-benefit uses of a service. A person who always has to wait a long time in a doctor's office would tend to avoid low-benefit visits.

²²In fact, few cosmetic surgeries are subsidized, apart from those addressing birth defects or reconstruction following disease or injury. One could imagine an ordeal, such as requiring the patient and the physician to write detailed letters to a strict appeals board, whereby seemingly low-benefit individuals who would nonetheless benefit greatly, perhaps due to their psychological needs, might also receive subsidized cosmetic treatments.

Table 2. Optimal ordeals and the elasticity of demand

Elasticity	2	1	0.5	0.2	0.11
Optimal ordeal size	17.0	8.0	3.5	0.80	0
Number of buyers	30.9	111.1	149.1	140.9	129.2

worthwhile to impose an ordeal before dispensing the treatment. Thus, the individual may be required to engage in extensive time-consuming exercises over a sustained period as a means to convey that the pain is significant. The exercises will help the condition, suggesting that they are only a quasi-ordeal and they may even be more beneficial if the pain is significant. But a major justification for the ordeal is that it is only likely to be undertaken by those in significant pain.

An ordeal may also be useful even if all individuals have identical preferences and finances, given relatively high elasticity of demand and significant monetary risk aversion. An ordeal may be a more efficient way to pay for care than increased monetary payment. That is because the ordeal is not a monetary loss, hence not additive with payment in the utility function. High values for risk aversion and the elasticity of demand would make ordeals a desirable instrument to limit utilization. If those values were low, ordeals would be undesirable. We should also note that, if individuals are poor at assessing the benefit they will get from a procedure, an ordeal attempting to assess value would still impose burdens, but would offer little sorting benefit.

Whatever the justification for heavy subsidies for medical care, an accompanying ordeal may help to distinguish high-benefit recipients from low-benefit recipients. However, ordeals can have highly complex consequences, and those consequences can differ substantially across applications. We will offer one illustrative example.

4. Ordeals and nursing homes versus home care

'John died peacefully at home, after a long illness.' The news is sad, but a common reaction is: 'What a fortunate individual.' Most of us hope to avoid ending our lives in a nursing home. But many of us have no choice, either because we have no one who can deliver care at home, and/or because having the government pay for nursing-home care is too attractive relative to home care, where reimbursement from the government is much more modest.

Nursing home care is a major source of medical expenditure in the USA. In 2018, the median annual cost of adult day health care was \$18,720. By contrast, the cost of a semi-private room in a nursing home was \$89,292.²³ Care for the elderly is a looming problem throughout middle-income and affluent countries; their rapidly ageing populations are characterized by greater eldercare needs and insufficient caregiver availability.

There is a complex array of ordeals dealing with government-paid nursing-home care. First, as mentioned, there are strict limits on assets and income for both the

²³See Genworth (2019).

recipient and the spouse. Thus, individuals who are somewhat above these limits must endure the ordeal of spending down to these limits. It is an ordeal, since the distortion in expenditures benefits no one. The goal of the ordeal is target efficiency, to keep individuals whose wealth is above such limits from reaping the benefits of a programme designed to help the relatively poor.

Posit that the individual has qualified on the income-and-assets basis. The government pays much more through Medicaid for an individual in a nursing home than for supplementary home care. To qualify for this higher level of subsidy, the individual who would prefer to be at home must accept living in the less desirable nursing home facility. This creates a second type of ordeal; endure less favourable conditions to secure payment.²⁴

We shall explore the case of nursing homes in somewhat greater detail, using hypothetical parameter values. Individuals covered by Medicaid in nursing homes must spend down their assets to be sufficiently poor that their costs must be covered. Posit that residence in a nursing home costs \$100,000/year. A critical question regards the optimal level of subsidy for home care. Such payments could cover aides, but might also pay some stipend to family caregivers or for space in the home.

As the payment for home care increases, more individuals would opt for home care rather than the nursing home, a clear saving to the government and a benefit to the individuals who preferred and could remain in a family setting. Figure 1 shows the demand curve for home care as a function of the subsidy differential between the nursing home and home care.

The level of subsidy does not matter for region A, individuals who will always go to the nursing home. Neither does it matter for region D, individuals who will always choose home care. Posit that the home care subsidy is \$30,000/year, implying a differential subsidy of \$70,000. Individuals in C will choose home care, given this subsidy. Almost all would accept a much smaller subsidy to avoid the ordeal of the nursing home.

Individuals in B will go to a nursing home. They would need a bigger subsidy before choosing to get care at home instead. Obviously, the more responsive individuals are to the home-care subsidy, as is shown by a shallower slope on the demand curve, the larger that subsidy should be. The subsidy is justified because the government saves significant dollars when individuals choose home care, and the switchers avoid an ordeal. The subsidy should be greater if individuals are more responsive, since more will be switching.

Let the number of people in home care be q , the subsidy to nursing homes be s per capita, and the subsidy to home care be h per capita. The elasticity of demand for home care at quantity q as a function of the difference between s and h is $e = f(q, s-h)$. Fortunately, the savings when one more person chooses home care are also $s-h$. This implies that the optimal subsidy to home care is where $e = 1$.

²⁴A physician friend many years ago worked in the emergency room at Bellevue Hospital in New York. He remarked on a particularly gruesome and ethically problematic ordeal. Down-and-out alcoholics would feign passing out in the street so they could check into the hospital for a few days for a comfortable bed and decent food. The interns would scratch such individuals' breastbones with a hypodermic needle, evidently a very painful procedure, to deter individuals who were conscious from faking unconsciousness.

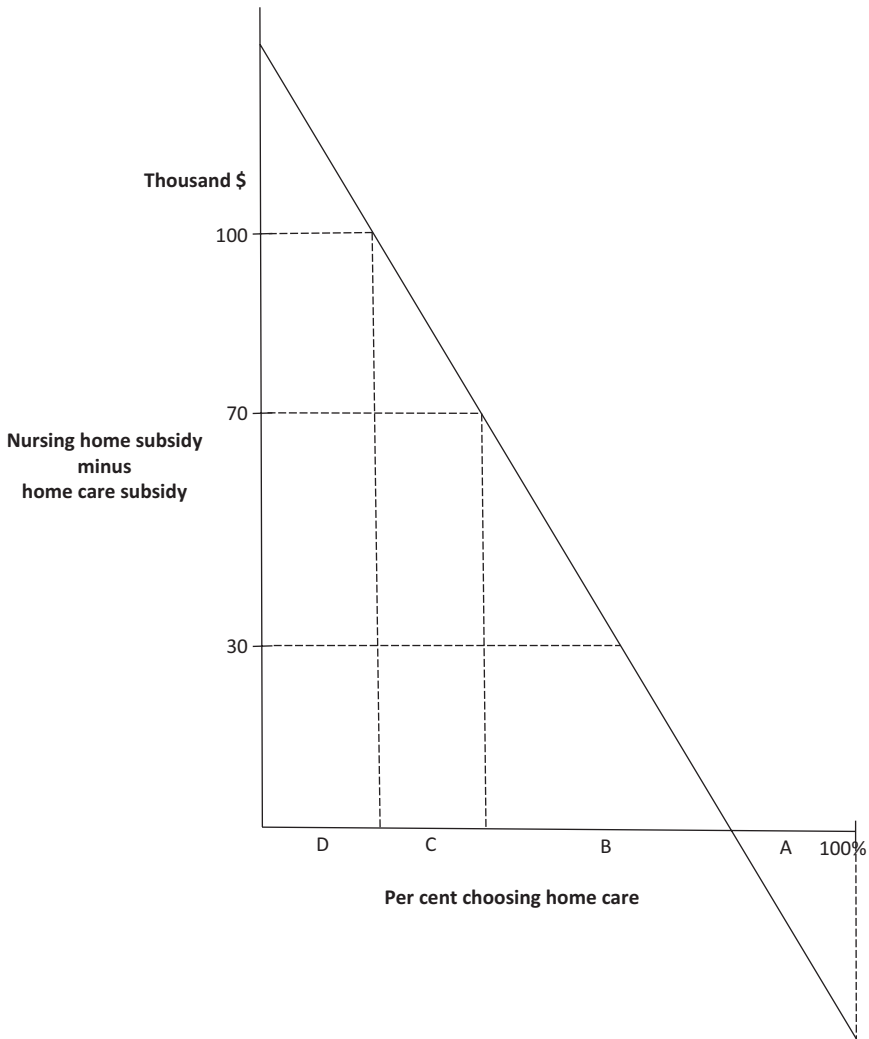


Figure 1. Demand for home care versus nursing home care.

At that point, the fractional reduction in government's savings from home care because its subsidy is increased just equals the fractional increase in people choosing home care.

4.1. Valuing government dollars versus recipient dollars

If the government counted dollars of consumer surplus – that is, benefits to recipients minus their costs – as equivalent to its own dollars, it would subsidize home care to the same level as nursing home care. Then, patients would choose

their preferred locales. The ordeal of residing in a nursing home in order to bolster one's subsidy would vanish.

However, government agencies currently tend to value their dollars more than consumer surplus dollars for two reasons. First, most government agencies are concerned with conserving their budgets. They may think that their mission presently secures greater benefits for the dollars involved. Alternatively, they may just think that prudent spending makes them look good. If so, they would strive to direct people away from nursing homes and towards the more affordable home care. The ordeal entailed by nursing-home life would help them in this effort. Government agencies might then increase their payments for home care to increase the relative cost of nursing homes, and thus encourage resource-saving switching.

Second, if government actors were to think in economic terms, they might recognize that there is a dead-weight cost when government dollars are raised (Saez *et al.* 2012). Calculating the magnitude of this cost is a complex task. Using 2005 tax return data, Saez *et al.* (2012: 42) estimate 'the marginal excess burden per dollar of federal income tax revenue raised is \$0.195 for an across-the-board proportional tax increase, and \$0.339 for a tax increase focused on the top 1 percent of income earners'. In the pursuit of efficiency, a government dollar should be valued at $(1 + \text{marginal excess burden})$ relative to a citizen's dollar.

This observation makes more desirable the very common form of burden that saves government dollars. Even if there were no concerns for target efficiency, an efficiency-seeking government might employ ordeals to discourage the use of heavily subsidized services, those that were priced well below their cost of provision. Many health services fall into this category.

4.2. Ordeals, the rich and the poor

Ordeals in health care allocate resources in a manner that avoids most of the bite of the price system. This fosters a more equitable distribution of health-care resources in relation to income if the rich find the ordeal significantly more burdensome, as measured by willingness-to-pay, than the poor. This allows the poor to receive care at a highly subsidized price by waiting in line, or an ordeal equivalent. The rich will simply do without care, particularly when it is little needed, or pay much more for care elsewhere. This oft advertised benefit is lost if, as is sometimes the case, the rich can skip the line, or its equivalent, and still receive subsidized care because of their superior connections.

It also should be noted that the burden of ordeals on poor people, in terms of lost utility, may be much greater than it would be for the rich. Recent research shows that poor people already often suffer from excessive cognitive loads that impair decision making.²⁵ Ordeals would add to these loads. Any tally of the net benefits of particular ordeals in a particular context should account for the actual burdens on those bearing them, not say what those burdens would be if borne by a typical middle-class person.

²⁵See Mani *et al.* (2013).

Where ordeals should be used, and for what purpose, is an empirical question. It is worth reiterating that even a society with a fully equal income distribution would still find contexts where ordeals are a worthwhile instrument for facilitating resource allocation.

5. Concluding thoughts

Health care at the point of purchase is heavily subsidized in the USA, and more so in other developed nations. This creates an inefficient situation, where individuals will seek care who would receive little value relative to the resources required. Limiting demand for such care through ordeals, such as waiting time, which are impositions on individuals and yield no benefit to others, offers a second-best solution, where the use of the price system alone is determined to be third-best. Ordeals enable high-benefit individuals to receive care while low-benefit individuals sort themselves out, and money is not the primary sorting instrument.

Ordeals spring up as a natural response when underpriced resources are made available. Providers, who are losing money on each unit purchased, find ways to limit demand. Common ordeals include making purchasers wait and imposing administrative burdens on them in order to get served. Both are common features in health care.

Prudent policymakers will look for alternatives to heavy dead-weight ordeals as ways to limit demand. Cost-effectiveness solutions simply rule out individuals with characteristics that indicate low benefit from receiving treatment. An alternative ordeal may be found where the sorting benefit is the same, but the dead-weight cost is less. For example, a clinic could sort patients by requiring volunteer hours, a clear external benefit, as a price for receiving treatment. Or, as mentioned, back patients could be required to do extensive exercises, a benefit to themselves but one they might not otherwise reap, before becoming eligible for an expensive surgical procedure.

Ordeals highlight an intriguing principal-agent relationship between doctor and patient, with the usual complexities of principal-agent relationships. This analysis focused on situations where the patient, or the patient's family, is the decision maker. However, doctors often play a major role in determining where and how a patient is treated. Nevertheless, ordeals may still play a valuable sorting role. Sometimes an ordeal will be suffered by the patient, perhaps a person who must wait in line at a medical facility, where the staff's concern for patient welfare does the sorting. Other times, the doctor will bear the ordeal, perhaps by having to fill out extensive paperwork to qualify a patient for a procedure.

Ordeals, such as waiting lines or tedious application processes for underpriced resources, spring up naturally and did so long before any theory explaining their use. But that an ordeal is natural and existing hardly implies that it is optimal. Many ordeals are the unwelcome product of poorly considered arrangements. Moreover, the evolution of ordeals toward superior arrangements may be sluggish. That evolution is slowed down by the inertia imposed by those who benefit from the current arrangements and by the disproportionate influence of entities that are already in place. Those established forces are reinforced by

ethical arguments and behavioural propensities, both of which weigh costs from acts of commission far above costs from acts of omission.

Although the use of ordeals in a variety of settings stretches back for eons, their widespread use to sort individuals receiving subsidized health care is a relatively recent phenomenon. Unfortunately, those setting the ordeals in health care are often only loosely concerned with their optimal use. Too often indeed, ordeals are treated as natural phenomena, with little thought that they might be replaced or improved.²⁶ Those who foster an ordeal, perhaps the managers of health plans or heads of hospitals, may tally personnel costs, insurance revenues and patient revenues to the dollar, but never seek even a crude assessment of the costs and benefits deriving from an ordeal.

Ordeals currently play a prominent and critical role in directing resources to high-benefit users of health care. Unlike pricing, the primary instrument of resource allocation in developed societies, ordeals are scarcely studied, little understood, and often accepted without thought. Ordeals impose substantial burdens on the users of health care. But the benefits they offer in discouraging the low-benefit use of expensive health care, combined with their widespread existence, argue that ordeals bring considerable net value to the health-care system. Nevertheless, conscious attention to the design and operation of ordeals could greatly enhance that value.

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²⁶Besides inattention, an uncompensated positive externality leads to insufficient efforts to improve ordeals. If A develops a superior arrangement, B can easily imitate it without paying compensation. Business practices such as waiting-line design cannot be patented.

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