CHAPTER 8: MEASURING COSTS

Conceptual framework

Policy analyses should count the opportunity costs of resources used (or saved) by a program. These represent "the long-run marginal value forgone due to the use of these resources."[1] Another way to think about it: we want to count resources that are lost or destroyed during the production of a program.

When conducting an analysis from the societal perspective, you should not count transfer payments. Transfer payments are one-way transfers of a resource, usually money, for which no money, good, or service is received in exchange.

From Barnett (2008):

> Resources are to be valued at their opportunity cost, sometimes called the economic cost. The opportunity cost is the value of the resources applied to their next best use (ie, the potential benefit from taking the opportunity to use the resource in another way). Opportunity cost may differ from price or reimbursement; health care markets function imperfectly, and these may not reflect the opportunity cost. CEA guidelines also state that cost should be estimated from the societal perspective.

For example, forgone earnings should be included in the cost of a college education.

Approaches to measuring costs

Microcosting: Researchers directly measure and price all the resources used in producing a program or intervention. Many costs are difficult to assign to a particular activity. Note that labor costs should be adjusted for fringe benefits. Some researchers increase salary costs by 25%, but higher figures can be justified.

Activity-based cost allocation system: Use producers' internal accounting systems to estimate costs.

Cost-to-charge ratios: Multiply charges by a cost-to-charge ratio. Hospitals' cost-to-charge are available from the Center for Medicare & Medicaid Services.

Gross costing: Multiply units by a general measure of prices. This is the most common approach in policy analysis.

[1] Sanders GD, Neumann PJ, Basu A, Brock DW, Feeny D, Krahn M, Kuntz KM, Meltzer DO, Owens DK, Prosser LA, Salomon JA, Sculpher MJ, Trikalinos TA, Russell LB, Siegel JE, Ganiats TG. Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness AnalysesSecond Panel on Cost-Effectiveness in Health and Medicine. *Journal of the American Medical Association* 2016;316(10):1093–1103.

Reimbursements

We have a special word for the prices that insurers pay health care providers: reimbursements. Private insurers set payment rates through negotiation. Medicare payment levels often serve as the starting point for negotiations. Private insurers' payment rates usually exceed Medicare payment rates. Providers with greater bargaining power are able to negotiate higher rates. Quality is one of the factors that influences providers' bargaining power. For example, hospitals with higher survival rates for cardiac bypass surgery negotiate higher reimbursement rates with private insurers.

Medicare and Medicaid reimbursements are set administratively rather than in the market. Medicare uses formulae to set payment rates equal to providers' average costs, though there are situations where Medicare payments and costs differ by a large amount. Traditionally, the visit or admission has been the unit of pricing. That remains the case today, though Medicare is adopting alternative reimbursement schemes that tie payment to performance measures, like readmission rates.

Sources of data on reimbursement rates

Reimbursement rates are a good place to start when establishing the cost of health care services. There are several caveats to keep in mind. First, they are not useful for measuring the costs of services that are not separately billable. Second, providers may earn profits, in which case reimbursement rates will exceed providers' costs. Profit margins vary by service and payer. Margins are typically higher for private payers.

Medicare fee schedules are publicly available, though it may take some detailed knowledge of the underlying formulae to apply them. For some fee schedules, like the physician fee schedule[2], CMS has created online tools that make reimbursement rates easy to find. For others, like the inpatient prospective payment system, you have to apply the formula using inputs provided in tables on the CMS website or install special software. Medicare claims data are also publicly available for a fee. They take a lot of expertise to manipulate.

It is more difficult to find data on private insurers' payment rates. In many cases they are a closely guarded trade-secret. Some firms make private claims data, with actual payment rates, available. These are costly and difficult to work with. Here are some alternative, free sources.

- Fair Health[3] collects claims data and reports summary statistics about providers' charges. Historically insurance companies have based payments to out-of-network providers on discounted charges.

[2] CMS. Physician Fee Schedule Look-Up Tool. https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PFSlookup/index.html
[3] See http://www.fairhealthconsumer.org/

- Some states collect and report data about payment levels in the name of "price transparency".[4]
- Sometimes payment rates or costs for specific services and procedures are available in the published literature.

The Trump administration has floated a proposal to require private insurers to disclose the reimbursement rates they have negotiated with providers, but it is unclear if it will be enacted.

Drug prices

The Average Wholesale Price of a drug is the price at which wholesalers sell the drug to pharmacies and providers. Drugs' Average Wholesale Price is available from private sources like Red Book (it used to be an actual book with a red cover). Average Wholesale Prices do not take discounts or rebates into account (the joke: AWP = Ain't What's Paid). The figure on the next page provides a more detailed description of drug pricing.[5]

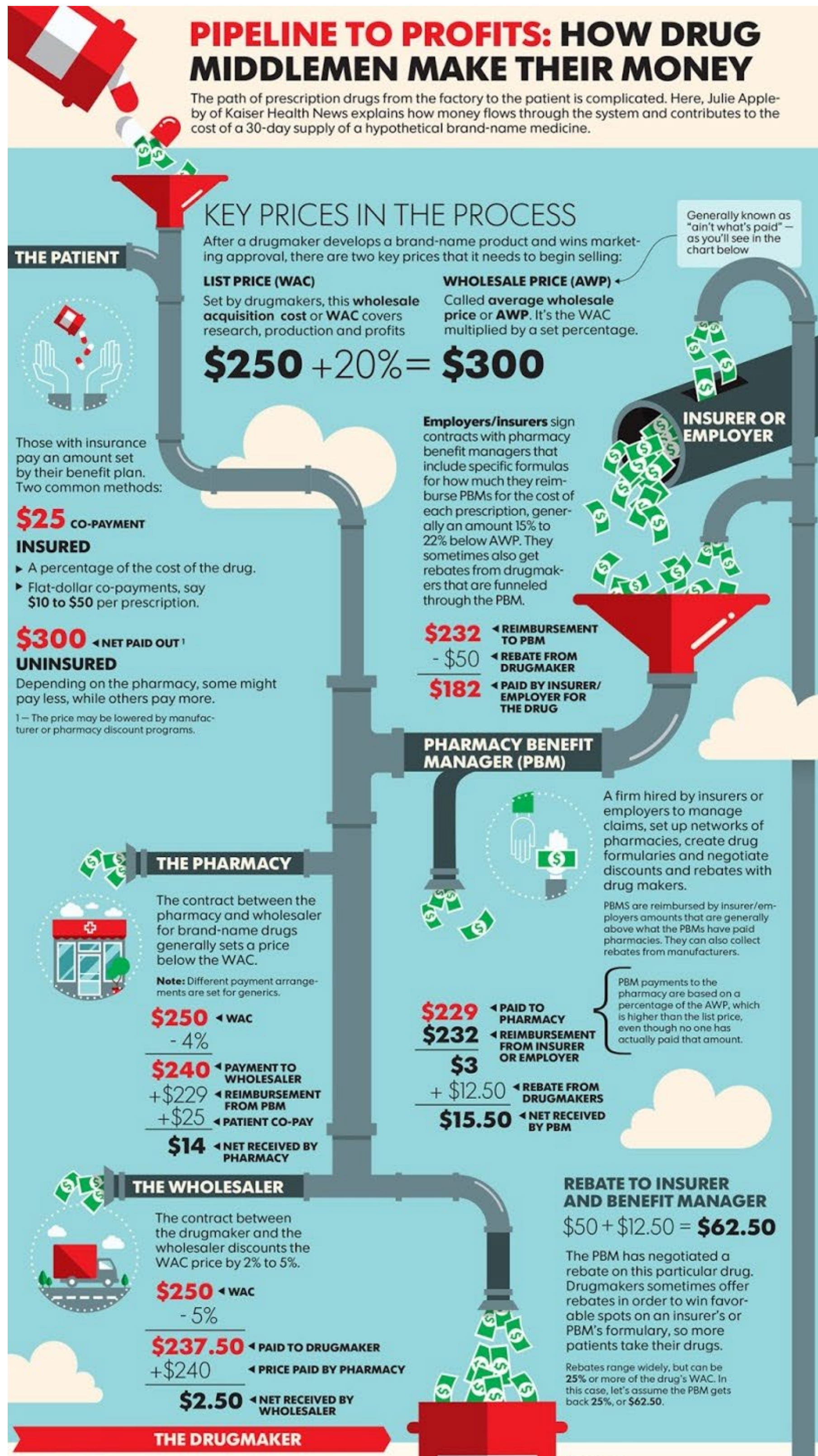
Medicare separately reimburses physicians and hospitals for physician-administered drugs. Medicare does not separately pay for drugs provided to hospital patients. The DRG payment includes hospitals' drug costs. Medicare bases reimbursement for outpatient physician administered drugs on Average Sales Prices, which it computes by dividing drug firms' total revenue by the number of units sold. Drug firms are required to report this information. Average Sales Price data are available on the CMS website. These data cover only physician-administered drugs, like injectable chemotherapeutics. A physician cannot bill Medicare for giving a pill to a patient. You can use CMS's Average Sales Price data to determine what Medicare pays for physician-administered drugs (generally Average Sales Price plus 4.3% to 6%). Average sales prices account for privately-negotiated discounts. They do not account for government-mandated discounts under the 340B program.

Price data for self-administered drugs (i.e., drugs the patient picks up at a pharmacy) are available from the Medicare Plan Finder for Health, Prescription Drug and Medigap plans. The Prescription Drug Plan Finder is designed to help beneficiaries select Part D plans. It allows users to enter in the name of a drug and reports the total cost of the drug. Drug prices are also available from online pharmacies. These prices do not include manufacturer discounts and rebates, which can be substantial.

---

[4] For example, Texas Department of Insurance, Health Insurance Reimbursement Rates Consumer Information Guide

[5] Ramsey L, Gould S. Everyone wants a piece of the drug industry and it's one reason prices are rising so fast. *Business Insider* Novmber 6, 2016

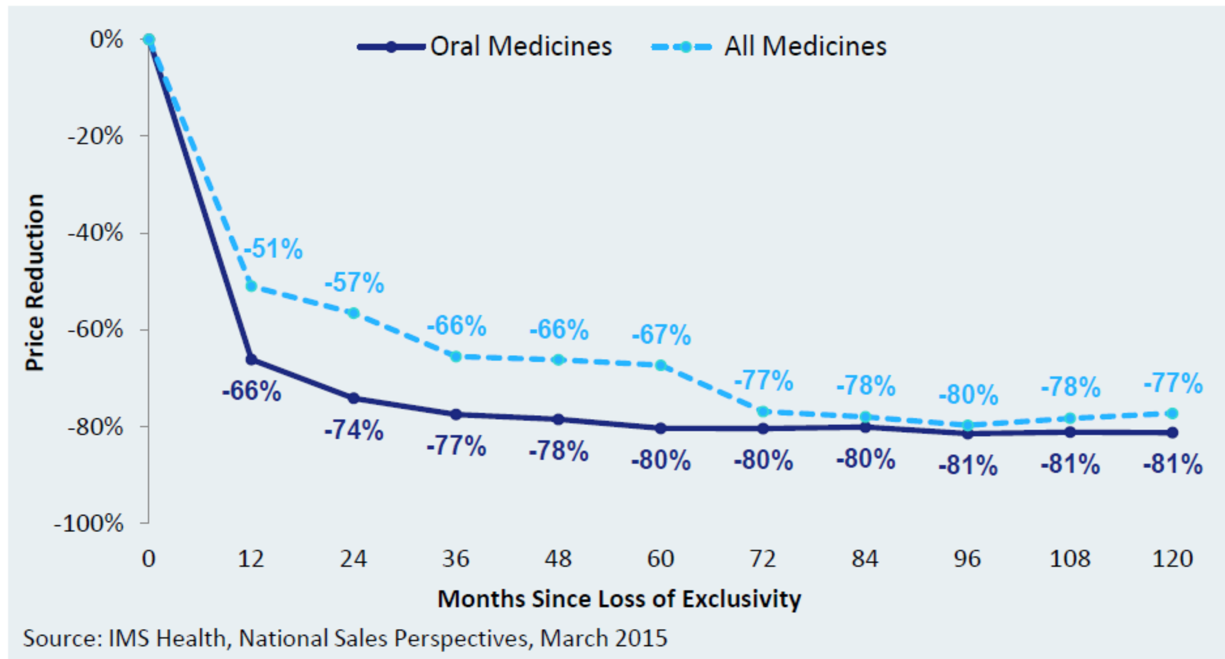


PIPELINE TO PROFITS: HOW DRUG MIDDLEMEN MAKE THEIR MONEY
The path of prescription drugs from the factory to the patient is complicated. Here, Julie Appleby of Kaiser Health News explains how money flows through the system and contributes to the cost of a 30-day supply of a hypothetical brand-name medicine.
KEY PRICES IN THE PROCESS
After a drugmaker develops a brand-name product and wins marketing approval, there are two key prices that it needs to begin selling:
LIST PRICE (WAC)
Set by drugmakers, this wholesale acquisition cost or WAC covers research, production and profits
WHOLESALE PRICE (AWP)
Called average wholesale price or AWP. It's the WAC multiplied by a set percentage.
Generally known as "ain't what's paid" — as you'll see in the chart below
$250 +20%= $300
THE PATIENT
Those with insurance pay an amount set by their benefit plan. Two common methods:
$25 CO-PAYMENT
INSURED
A percentage of the cost of the drug.
Flat-dollar co-payments, say $10 to $50 per prescription.
$300 NET PAID OUT 1
UNINSURED
Depending on the pharmacy, some might pay less, while others pay more.
1 — The price may be lowered by manufacturer or pharmacy discount programs.
INSURER OR EMPLOYER
Employers/insurers sign contracts with pharmacy benefit managers that include specific formulas for how much they reimburse PBMs for the cost of each prescription, generally an amount 15% to 22% below AWP. They sometimes also get rebates from drugmakers that are funneled through the PBM.
$232 REIMBURSEMENT TO PBM
- $50 REBATE FROM DRUGMAKER
$182 PAID BY INSURER/EMPLOYER FOR THE DRUG
PHARMACY BENEFIT MANAGER (PBM)
A firm hired by insurers or employers to manage claims, set up networks of pharmacies, create drug formularies and negotiate discounts and rebates with drug makers.
PBMS are reimbursed by insurer/employers amounts that are generally above what the PBMs have paid pharmacies. They can also collect rebates from manufacturers.
PBM payments to the pharmacy are based on a percentage of the AWP, which is higher than the list price, even though no one has actually paid that amount.
$229 PAID TO PHARMACY
$232 REIMBURSEMENT FROM INSURER OR EMPLOYER
$3
+ $12.50 REBATE FROM DRUGMAKERS
$15.50 NET RECEIVED BY PBM
THE PHARMACY
The contract between the pharmacy and wholesaler for brand-name drugs generally sets a price below the WAC.
Note: Different payment arrangements are set for generics.
$250 WAC
- 4%
$240 PAYMENT TO WHOLESALER
+$229 REIMBURSEMENT FROM PBM
+$25 PATIENT CO-PAY
$14 NET RECEIVED BY PHARMACY
THE WHOLESALER
The contract between the drugmaker and the wholesaler discounts the WAC price by 2% to 5%.
$250 WAC
- 5%
$237.50 PAID TO DRUGMAKER
+$240 PRICE PAID BY PHARMACY
$2.50 NET RECEIVED BY WHOLESALER
REBATE TO INSURER AND BENEFIT MANAGER
$50 + $12.50 = $62.50
The PBM has negotiated a rebate on this particular drug. Drugmakers sometimes offer rebates in order to win favorable spots on an insurer's or PBM's formulary, so more patients take their drugs.
Rebates range widely, but can be 25% or more of the drug's WAC. In this case, let's assume the PBM gets back 25%, or $62.50.
THE DRUGMAKER

Treatment of drug profits

It is customary in policy analyses and cost-effectiveness analyses to use drugs' actual prices. However, in the case of brand name drugs, prices are often well above manufacturers' costs. Prices in excess of manufacturers' costs should not count as a cost from the societal perspective. Profits are a transfer payment from buyers to manufacturers.

Question: How would you estimate a drug's true cost if the manufacturer does not report profit margins (see Figure[6])?

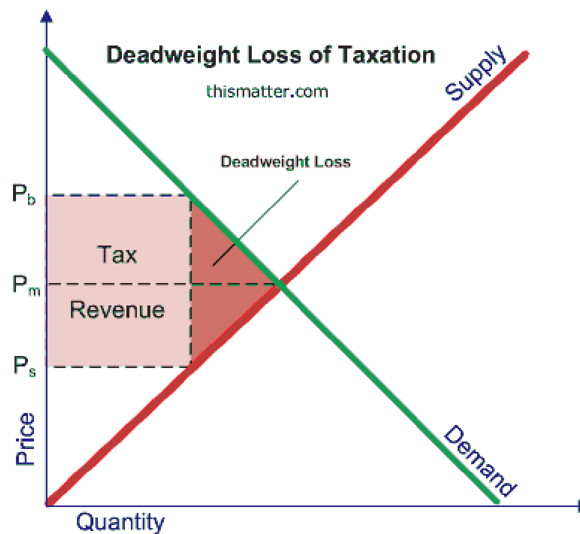


Salaries

You can assign costs to interventions that involve hiring (or firing) people using salaries plus fringe benefits. Occupation-specific salary data are available from the Bureau of Labor Statistics. It is customary to multiply salaries by 1.25 to account for the cost of fringe benefits, like health insurance.

[6] IMS. *Price Declines after Branded Medicines Lose Exclusivity in the US*. January 2016.

Excess tax burden



From the Tax Foundation[7]:

> Economists have long focused on the role taxes play in the everyday decisions of people and businesses. Resources transferred from the private economy to the government through taxes reduce disposable income, and the manner in which revenues are raised can have important consequences for the economy. The more households and businesses base decisions on tax considerations, the more economic resources are wasted. High tax rates in particular can be especially harmful. They can affect the amount of labor workers supply, especially for secondary workers among married couples, by decreasing the financial reward for additional work. High tax rates can also discourage saving, affect allocations of investments, and affect how households spend their money. In addition, high rates can reduce taxpayer compliance because the gain from not reporting income is greater.

How does the income tax change behavior? A few examples:

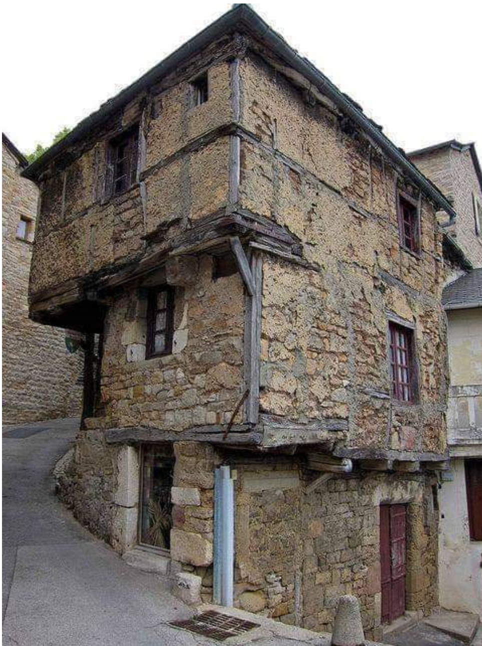
- It changes decisions about hours worked and labor force participation.
- It affects the form of compensation.
- It affects whether we rent or buy homes.

The Tax Foundation reports that the average marginal burden of the current (as of 2009) income tax is $105 billion, or 11.5% of total revenue ($921 billion). For increases in the tax rate, the excess burden may be 30% or higher.

[7] Carrol R. *The Excess Burden of Taxes and the Economic Cost of High Tax Rates*. August 2009. http://taxfoundation.org/sites/taxfoundation.org/files/docs/sr170.pdf

The Office of Management and Budget recommends increasing the cost of policies that entail tax increases by 25% to reflect the excess burden:[8]

> a. Analysis of Excess Burdens. The presentation of results for public investments that are not justified on cost-saving grounds should include a supplementary analysis with a 25 percent excess burden. Thus, in such analyses, costs in the form of public expenditures should be multiplied by a factor of 1.25 and net present value recomputed.
>
> b. Exceptions. Where specific information clearly suggests that the excess burden is lower (or higher) than 25 percent, analyses may use a different figure. When a different figure is used, an explanation should be provided for it. An example of such an exception is an investment funded by user charges that function like market prices; in this case, the excess burden would be zero. Another example would be a project that provides both cost savings to the Federal Government and external social benefits. If it is possible to make a quantitative determination of the portion of this project's costs that give rise to Federal savings, that portion of the costs may be exempted from multiplication by the factor of 1.25.



The oldest house in France (13th century). At the time, taxes were based on the area of the ground floor.

[8] Office of Management and Budget. *Circular A=94. Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs.* https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A94/a094.pdf