

## Costs and Discounting

### Healthcare policy, Management and Economics, Public Health, Lecture 14

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- ▶ This chapter explores the other two key parameters in the cost—benefit and cost—effectiveness formulae; how to measure costs, and the principle of discounting
- ▶ While cost calculations may sound like a boring technical exercise, discounting health effects is more of a controversial normative issue. They may cover topics of financing and delivery of healthcare, access to care, quality of care, and health equity

## Average costs

- ▶ In economics, **average cost** or **unit cost** is equal to total cost (TC) divided by the number of units of a good produced (the output Q):

$$AC = \frac{TC}{Q}$$

## Marginal and fixed costs

- ▶ In economics, **marginal cost** is the change in the total cost that arises when the quantity produced is incremented by one unit; that is, it is the cost of producing one more unit of a good;
- ▶ In economics, **fixed costs**, **indirect costs** or **overheads** are business expenses that are not dependent on the level of goods or services produced by the business

## Direct and Indirect costs

- ▶ Some early health economics literature made a distinction between direct and indirect costs
- ▶ This distinction was misleading: which costs are interpreted as 'direct' and which as 'indirect' crucially depend on the viewpoint of the analysis

## Overhead costs

- ▶ Overhead costs are expenses that are not directly attributable to a patient's medical care
- ▶ Among other things, they can include governance and documentation, billing, or supplies
- ▶ In many cases, however, there seems to be no precise definition for indirect overhead costs and direct, diagnosis/treatment-related expenses. Examples of these hard-to-define costs include things such as labs and laundry

## Rising Costs and High Administrative Expenses Worldwide

- ▶ In the U.S. healthcare system, \$750 billion is spent annually on expenses that are not directly linked to healthcare
- ▶ The causes of unnecessary spending vary widely, but generally point toward administrative expenses

## Rising Costs and High Administrative Expenses Worldwide

- ▶ A study of hospital administrative costs in several countries found that costs are highest in the U.S., where they consumed 25.3% of hospital budgets in 2011
- ▶ Administrative costs were lowest in countries operating under single-payer health systems, such as Scotland and Canada. There, hospitals are paid global operating budgets, with separate grants for capital, which results in administrative costs of around 12%

## Complexity Costs

- ▶ high administrative costs are caused by, among other things, the complexity of the health system and billing multiple insurers
- ▶ Another cause is the need for hospitals to generate a profit (or, for non-profit hospitals, surpluses) in order to fund the modernization and upgrades that are essential to survival.

## Allocating Overhead Costs

- ▶ According to Australia's Independent Hospital Pricing Authority, all costs accumulated in overhead costs centers should be allocated to the final cost to ensure that each product category (patient and non-patient) has its fair share of overhead
- ▶ This should be done before making any attempt to partition costs into product categories and subsequently into end classes within product categories
- ▶ Incorrect allocation impedes or prevents intervention measures to reduce costs

## Health service costs

- ▶ Health service costs Over 70% of hospital costs are labour costs
- ▶ So if we are considering the cost of a particular medical procedure, we can start by counting how many personnel are required for how many hours
- ▶ In addition to the direct treatment costs, there are 'indirect overhead costs' that stem from hospital administration and support facilities
- ▶ Different criteria can be used for distributing these shared costs

## Learning from Other Industries

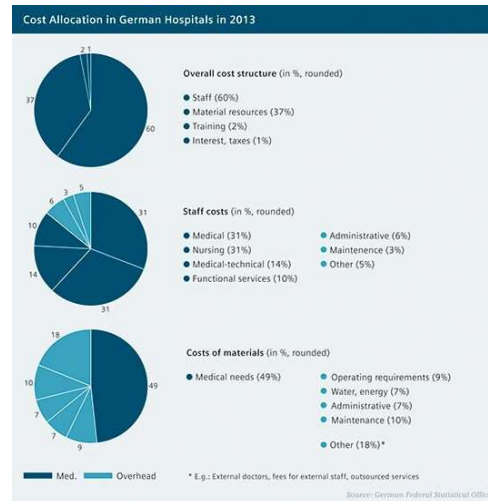
### Parallels between Medical Care and Industry

Of course, people are not cars, just as doctors and nurses are not production resources. Nevertheless, there are many similarities between industrial production and a treatment process, from which opportunities for optimization can be derived.

Success factors in industrial manufacturing	Success factors in the treatment process
Fast production	Short stay
Short waiting times	Short waiting times
Low error and repair rates	Low rates of repeat surgery and infection
No unnecessary movements/paths at the assembly line	No duplicate examinations that are not medically indicated
Optimized inventories	Optimized capacity utilization
Optimized storage	Quick, error-free access to drugs, diagnostic equipment, and surgical resources
Minimized transportation	Few transfers
Efficient production planning	Efficient treatment planning
Reduced space requirements	Reduced space requirements

Source: Pfänder and Fischlein

## Cost allocation



## Health service costs

- ▶ An alternative to undertaking a detailed estimation of all cost items would be to apply national average costs from a DRG tariff
- ▶ If labour productivities and wages are similar across the country, such average cost figures may be a sound basis for long-run decisions about investments and capacity planning in the hospital
- ▶ Marginal costs, however, are still the most relevant basis for making short-term activity decisions.

## Health service costs

- ▶ In addition to hospital costs, there may be follow-up costs in primary care and rehabilitation institutions
- ▶ If the future health care costs are related to the particular intervention, it seems highly appropriate to include them as would any other follow-up activity
- ▶ However, if the future health care costs are unrelated to the particular intervention or condition, they should not be included as an additional cost item

## Non-Health service costs

- ▶ If patients live far from the hospital or the GP, travel costs are involved
- ▶ In addition, there are time costs, based on the premise that time always has alternative uses
- ▶ If leisure time is sacrificed, the conventional way is to value it by net income
- ▶ If working time is sacrificed, gross income earned during the time away is the standard method for valuing the production loss to society



## The discount rates

- ▶ The mathematical formulae are fairly simple as long as we operate with a constant discount rate,  $r$ , and discrete time. The present value of an item,  $Z$ , with a unitary value of 1, occurring at a given future time,  $t$ , is:

$$Z_{PVt} = \frac{1}{(1+r)^t}$$

## The discount rates

- ▶ In general, resources are scarce and will therefore always have alternative uses
- ▶ The same goes for health care; that is why it is crucial to value how much of these resources are required for a new treatment programme

Thank you

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