

Hospitals and Physicians: Organisation and Payment

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Plan

Looking at it from the patient side

1. Until now Demand for Health-care, and Supply of Physicians
→ Intersection: Price (P) and Quantity (Q) [*market clearing*]
2. Today: How physicians, hospitals are paid P and how do they deliver Q.
3. National Income Accounting Framework
 - 3.1 Relationship between Prices, Wages, and Payments (\$)
 - 3.2 Relationship between Quantity, Supply

[Objective to control cost and maintain quality]
4. Payments for Physicians:
 - 4.1 FFS, Salary, Capitation, DRG
5. Organisation of Physicians - Managed Care
 - 5.1 HMO, PPO, POS, IPA, HDHP, ACO
6. Evidence on Interventions.

National Income Accounting Framework

Expenditure \equiv Income \equiv Revenue

Pov Hospital

1. **Expenditure** on health-care goods and services
 - 1.1 Expenditure = Price (P) \times Quantity (Q)
2. **Income** to healthcare workers, pharmaceutical, medical devices, research
 - 2.1 Income = Wage rate per unit (W) \times Quantity of inputs (Z)
3. **Revenue** needed to finance it

$$\begin{aligned} \text{Revenue} &= \left\{ \text{Tax}(T) + \text{Social Insurance}(SI) \right\} \\ &+ \left\{ \text{User Charges}(UC) \right\} \\ &+ \left\{ \text{Insurance Premium}(PI) \right\} \end{aligned}$$

4. $P \times Q \equiv W \times Z \equiv T + SI + UC + PI$

National Income Accounting Framework

Two types of use for this framework:

- (1) retrospective
- (2) prospective

$$P \times Q \equiv W \times Z \equiv T + SI + UC + PI$$

A. Retrospective Use: Analyze increase in one part by tracing it to others.

1. Example: If Expenditure ($P \times Q$) increases, either P or Q has increased.
 - 1.1 → Income: Either Z or W or both have to increase.
 - 1.2 $Z \uparrow$: Increase physicians, recall effect of increase in density on billings (SID)
 - 1.3 $W \uparrow$: Increase wage: Income and substitution effect.
 - 1.4 → Revenue: Either one or combination has to increase.
2. Example: If wages of nurses goes up ($W \uparrow$), then keeping Z constant (inputs constant),
 - 2.1 → $(P \times Q)$ and $(T + SI + UC + PI)$ must increase

Uses of Identity

$$P \times Q \equiv W \times Z \equiv T + SI + UC + PI$$

B. Prospective use: Examine likely consequences of *payment reform*:

1. Health-care Expenditure

1.1 E.g. Goal: Reduce hospital expenditure by limiting beds

1.2 $\downarrow Q \rightarrow \downarrow (P \times Q)$

1.3 \rightarrow Holding wages constant ($\uparrow W$), physician supply should decrease $Z \downarrow$

2. Supply of physicians

2.1 E.g Goal: Address shortage of physicians

2.2 If $\uparrow (P \times Q)$ and $\uparrow (T + SI + UC + PI)$

2.3 Option 1: $\uparrow Z$ but $\downarrow W$

2.4 Option 2: Use family physicians (FPs) and advanced practice nurses (APN)

2.5 Change mix of Z such that $\uparrow (Z_1 \times W_1 + Z_2 \times W_2, \dots, Z_n \times W_n)$

linear combination is constant

3. Increase Wages

3.1 Goal: How to increase W by keeping $(P \times Q)$ constant ?

3.2 Change mix of Z such that $\uparrow (Z_1 \times W_1 + Z_2 \times W_2, \dots, Z_n \times W_n)$

Physician Payment

Physician and Hospital Payment

1. **Retrospective** payment system: [*after service has been performed*]
 - 1.1 Payer **reimburses** all costs for services incurred by the provider.
 - ▶ E.g an hour of operating room, 20 doses of medicine, bandages etc.
 - 1.2 Provider does **not assume any risk of cost over-runs**. No cost-sharing.
 - 1.3 **No incentive to control cost**.
 - 1.4 E.g. Fee-for-service payment.
2. **Prospective** payment system:
 - 2.1 Fixed budget for care of each patient - [*upon diagnosis, budget is assigned*]
 - 2.2 Pay on per-case basis rather than per-item or per-service basis.
 - ▶ Reimburses providers independently of costs.
 - 2.3 Complete cost-sharing by suppliers.
 - 2.4 **Strong incentives for efficient operations**.
 - 2.5 E.g. Capitation, Diagnosis Related Groups (DRG):

Types of Payment Methods

1. Fee for service (FFS)
2. Capitation
3. Salary
4. Blended Remuneration
5. Pay-for-performance (P4P)
6. Diagnosis Related Groups (DRG)

Fee for Service (FFS)

Mechanism

1. Retrospective payment for each item of care delivered.
 - 1.1 E.g. Payment for each procedure performed for each patient.
2. $\text{Income} = \text{Cost} \times \text{No. of Procedures}$.

Efficiency: *no need to be efficient*

1. Strong incentive to increase the quantity of services. : *increases renumeration*
2. Patient retention and patient satisfaction matter.

Equality:

- no loss by treating high cost*
1. Equality: Achieved as provider treats both high and low cost patients.

Risk:

- 2.1 Providers not “at risk” - get paid for their services
- 2.2 Patients “at risk” only to extent of deductibles, coinsurance
- 2.3 Insurance company is “at risk” as costs of care may exceed premium collection.

Fee for Service (FFS) - Evidence

1. Evidence of supplier-induced demand.: *to increase revenue generated*
2. Evidence of higher patient-satisfaction. *high cost patients also serviced*

FFS could be used if need the following:

- 1 ✓ High patient satisfaction;
- 2 ✓ Increase in quantity needed (for primary care, mental health?);
- 3 ✓ Reduced risk of cherry-picking patients.

Increase in quantity could be managed through patient-wait lists, rationing, user-charges

Capitation

* people in insurance pool
"future based anticipation"

Mechanism *not dependent upon diagnosis*

1. **Prospective** payment for patient per time period. → Doctors and hospitals are paid either on a flat salary or on basis of how many *covered lives they will take care of.
→ Payers pay fixed payment, to provide all "necessary" care, regardless of actual services provided.

Efficiency:

money coming in is fixed, reduce cost

1. Strong incentive to reduce the quantity of unneeded services per patient
→ Lower supplier-induced demand → Dont make money on volume.
→ Make money by preventing use of care. → Market and legal incentives to prevent under-treatment.
2. **Choice:** Providers can decide the mix of services for patients
3. **Promotes innovation** in delivery of care and increase disease-prevention and health-promotion.
4. Administratively easy.

Capitation

1. Risk:

- 1.1 Providers "at risk" by high risk patients / adverse selection
 - ▶ Predictable cashflow for provider
 - ▶ Performance Risk: Costs may exceed payment per patient.
- 1.2 Patients "at risk" only to extent of deductibles, coinsurance
- 1.3 Insurance company is not "at risk" - predictable and capped payment for payers

Disadvantages:

1. Equality: Not achieved as providers reject high cost patients.
2. Risk of discontinuity of care, lower quality care, cream-skimming
 - 2.1 Evidence of referral out (i.e. low services) : make you go to another doc
 - 2.2 Evidence of increase in emergency room visits (limited after-office hour care)
↳ why?
3. Incentive to increase number of patients but not services per patient.
4. No performance management or feedback mechanism to improve quality.

Salary

Mechanism:

1. Pay per time period.

→ Payment does not depend on number of patients nor on quantity of services per patient.

Efficiency:

not being paid on volume of services/patients anymore

1. Strong incentive to reduce the quantity of services per patient
2. **Quality:** Maintain quality and working-hours for doctors (through contracts)
→ to ensure patients do not come back
3. Increases disease prevention, health promotion, professional collaboration.
4. **Equity:** Recruit and retain physicians to under-served areas
5. **Risk:**
 - 5.1 Providers receive stable, predictable income.
 - 5.2 Payers bear the risk of cost-overrun

Salary

1. Equality: Not achieved as providers **reject high cost patients**.
2. Evidence of smaller patient list, shorter consultations, less time administration
3. Risk of **lower productivity (shirking)** and under-providing care

Blended Remuneration - Balance of Incentives

1. FFS: Incentives to Overprescribe treatment
2. Flat salary based: Shirk and incentive to withhold treatment.
 - 2.1 Work effort shrinks and effect is worse in larger firms due to lesser monitoring. [low productivity]
 - ▶ In small salary-paid groups, physicians worked 2/3 as much as FFS;
 - ▶ In large salary-paid groups, physicians worked 40% as much as FFS.
3. **Blended: Flat salary + FFS:**
 - 3.1 Blend depends on relative adverse effects of component system:
 - If Demand Inducement is high, then increase salary component.
 - If Shirk and withholding is high, then increase FFS.
 - Lower density areas benefit from physician availability; FFS ensures productivity ↳ FFS, no SID possible yet'
4. **Blended: Capitation + FFS: [Best]**
 - 4.1 Capitation for pre-defined services for each patient + FFS for services outside the list.
 - 4.2 Capitation promotes health promotion and disease prevention, FFS maintains productivity and equality.

Pay for Performance (P4P)

Maintain efficiency and improve quality [bonus]

- 1 ✓ Remunerate and reward quality
2. Performance is measured through clinical indicators.
3. Measurement issues - payment for processes or outcome?
 - 3.1 But never achieve outcomes for certain conditions? [e.g. terminal conditions]
 - 3.2 Health maintenance vs health improvement?
4. Unintended consequences: Physicians reduce quality or quantity in already under-served areas
↳ low chance of getting higher bonus

Diagnosis Related Groups

1. Hospital event has clearly defined boundaries: admission and discharge.
Hospitals can get paid for events in lump-sum
 - 1.1 FFS wont work - because must pay for each service provided in hospital
 - 1.2 Capitation wont work - hospital will be at risk for cost of each event and number of events per year.
2. **Retrospective DRG:** Flat per-discharge payment that varies on diagnoses, severity established at admission.
 - 2.1 Pay for **average mix of patients**, but also **include payment for outliers**
 - 2.2 Payment to hospitals is also **adjusted based on hospital type (teaching, rural)**.

Efficiency:

1. **Strong incentives to reduce costs as payment is fixed**
2. **Expenditure:** Overall savings as hospitals improve efficiency to get to average costs.
3. **Quality:** Improves, operational efficiencies, clinical effectiveness.
4. **Transparency and accountability:** Payers and patients know what they are paying for. Allows for comparison of costs by DRG across hospitals.

Diagnosis Related Groups

no FFS

1. **Equality:** Not achieved as hospitals may choose low-cost patients.
2. Risk of over-serving patients i.e. increase number of admitting patients
^{SID?} (substitution from out-patient or day-surgery)
3. Risk of DRG creep: Doctors may up-code patients.
^{"make up" severity} Increasing DRG payments
4. Risk of pre-mature discharge. (But integration of services?)
^{To save costs}
5. Information requirement:
 - 5.1 Data-intensive to determine average cost for each DRG.
 - 5.2 IT system required for coding, classifying patients, collecting data on all services provided.

Managed Care

Why Managed Care

1. Insurance developed to reduce financial risk:
 - 1.1 Financial risk from (1) **Uncertainty in probability of illness / health outcome**; (2) **Uncertainty and variability in medical costs**
2. Insurance introduces price-distortion, suffers from **asymmetric information**
 - ⇒ Behaviour change: **Moral Hazard - ex-ante and ex-post;**
 - ⇒ Welfare loss due to price-distortion and quantity-distortion.
3. Managed care interferes to correct choice about amount of care.
 - 3.1 Contracts between **MCO and consumer** limits consumer's access to care.
 - ▶ Incentives to reduce quantity of care, shift to lower-cost alternatives.
 - ▶ Consumers **pre-commit** to plan in advance that will constrain their choices.
 - ▶ Pre-committent can improve overall expected utility.
 - ▶ Alternative: **Buy insurance with lower premium (lower services)**
 - trade-off of lower-cost premium for greater financial risk.
 - MCO lowers premium while retaining elimination of financial risk.
 - 3.2 Contracts between **MCO and provider** limits supplier-induced demand, and lower prices.
 - ▶ Potential for legal-challenge as alter physician-patient relationship.

Consumer allowed lower quality of care only (precommitment)

Types of Managed Care

1. Health Maintenance Organisation (HMO)
2. Fee for service (FFS)
3. Independent Practice Association (IPA)
4. Preferred Payment Organisation (PPO)
5. Point of Sale Plans (POS)
6. High Deductible Health Plan (HDHP)
7. Accountable Care Organisation (ACO)

Types of MCO: FFS and HMO

1. Fee for Service (FFS)

1.1 Traditional payment. Covers all bills.

⇒ least incentive to control cost and cautious use of medical interventions.

2. Health Maintenance Organisation (HMO)

2.1 Paid on “capitation” basis: Fixed amount per year to provide all medical care for enrollee. *volume of customers served*

⇒ Incentive to control cost and cautious use of medical interventions.

2.2 Insurance plan, Doctors, and Hospitals are either same organisation or closely affiliated.

- ▶ Insurance plan owns the hospital(s).
- ▶ Doctors work in medical offices and/or hospitals.
- ▶ Doctors are paid salary.

2.3 Patients must use plan-affiliated providers. → *go to hospitals covered by your plan*

Types of MCO: IPA and PPO

1. Independent Practice Association (IPA) ?

- 1.1 Doctor are independent and work in own office.
- 1.2 Patient are mixed: traditional FFS + “capitation” based from MCO

2. Preferred Payment Organisation (PPO)

- 2.1 Contractual agreements with provider on price. *lower 'cost' to treat*
- 2.2 PPO send patients to providers in-return for lower negotiated price.
- 2.3 Lower price → lower premiums → attracts enrollees *[volume ↑]*
- 2.4 Doctors are paid on fee-for-service system (negotiated fee for each service)
but lower

Types of MCO: POS, HDHP, ACO

→ capitation rather than salary [HMO]

1. Point of Sale Plans (POS) [less restrictive than HMO]

- 1.1 HMO without walls: Providers could be spread out in **own** offices.
- 1.2 Doctors are paid on **capitation** payment (instead of salary as in HMO):
 - Compensation is per patient per year ⇒ Control costs
 - Patients can choose which in-network provider to see at point-of-care
 - Competition among providers → Better quality and responsiveness.

2. High Deductible Health Plan (HDHP)

- 2.1 First, large up-front deductible; then $x\%$ coinsurance, then catastrophic coverage. [\$2600 deductible, 20% coinsurance, full coverage]
 - Consumer faces cost ⇒ Incentive to control cost through search, monitoring, cautious use.

3. Accountable Care Organisation (ACO)?

- 3.1 Similar to HMO but without entire range of services.
- 3.2 Receives payment for both quantity and quality of care.

Market Share of MCOs

Year	Conventional	HMO	PPO	POS	HDHP
1988	73	16	11	0	0
1996	27	31	28	14	0
2008	2	20	58	12	8
2018	<1	15	48	8	29

Key Takeaways:

1. HMO, PPO, POS control cost by limiting access to subset of providers.
2. HDHP unlimited access but higher cost-sharing → trade-off between convenience vs higher OOP.
3. People prefer plan that control costs, but w/o interfering in medical care:

- 3.1 HMO: Most interfering. Popular in 1990s when few other options.
- 3.2 PPO: Control costs (discounted prices) w/o active interference.
- 3.3 POS: Panel of “preferred providers” with choice of going “outside”.
- 3.4 HDHP: High deductible with no control on utilization.

Source: <https://www.kff.org/report-section/2018-employer-health-benefits-survey-section-5-market-shares-of-health-plans/>

last accessed February 20, 2020

How to Control Costs?

1. Consumer side:
 - 1.1 Co-payments;
 - 1.2 Second-Opinion programs;
 - 1.3 Gatekeeper Models.
2. Physician side
 - 2.1 Payment strategies for Physicians and Hospitals
 - 2.2 Holdbacks
 - 2.3 Provider Selection
 - 2.4 Price and Fee Schedules
 - 2.5 Intervention in Treatment Choices

Holdbacks

1. Insurance plan “holds back” part of payment due to physicians until year-end.
2. Compares actual treatment costs to planned target.
3. If treatment cost < planned target, then holdback is dispersed to physician.
4. If treatment cost > planned target, then holdback is kept by MCO to cover costs:
 - 4.1 Physicians control use of care, should have incentive to control cost by sharing in losses with MCO.
5. Evidence:
No effect on use of medical care use;
Physicians have little economic incentive to participate.

Selection of Providers

1. MCOs rely on careful selection of providers to control costs:
 - 1.1 If providers have intrinsic cost differences, then find low-cost provider.
 - 1.2 If providers were pricing above cost, then negotiating price downward has savings.
2. However, MCOs do not reap full benefit of controlling cost:
 - 2.1 Do not use full information on costs to select providers, pooling high-and low-cost providers:
 - ▶ E.g. Some providers had double the price of other providers in same plan, after controlling for patient severity and geographical dispersion.
→ Bring into panel, all those who wished to participate, more doctors meant more patients which increases market share.
 - 2.2 Prefer high-quality “outliers”

Intervention in Treatment Choices

Patient (copayment, gatekeeper) and Provider(selection of providers, holdbacks) are broad/large measures.

Small measures: prior authorisation and denial of payment.

1. Prior Authorisation

- 1.1 MCOs require prior authorisation for expensive interventions [before treatment]
- 1.2 Routine approval is common, however sometimes limits are attached.
- 1.3 “Hassle” of getting approval offsets gains from extending hospital stay.

2. Denial of Payment [after treatment]

- 2.1 Either doctor or patient has to bear the cost.

Evidence on Interventions

Cutler, McClellan, and Newhouse (2000)

1. Studied Acute Myocardial Infarction (heart attack) - no self-selection into different kinds of plans.
2. Found that **treatment indicators** (hospitalization rate, average length of stay, surgery, angioplasty) were **same across different types of plans**.
3. Found that **cost savings were entirely from negotiated price per unit of service**.
 - 3.1 FFS: \$38,500,
PPO cost was 70% of FFS (\$26,500),
HMO cost was 60% of FFS (\$23,600).
 - 3.2 75% of difference in cost was due to price-negotiation.
→ Managed care managed to reduce or “squeeze fat” in prices.
 - 3.3 25% of difference in cost was due to actual “management” of patient.

Conclusion and Summary

1. From Demand for Health-care, Payment from Patient, and Supply of Physicians
2. To Payment for Physicians
 - 2.1 Efficiency and Equity
3. Organisation of Physicians - Managed Care
 - 3.1 HMO, PPO, POS, IPA, HDHP, ACO
 - 3.2 Choice vs Cost Control
4. Control costs:
 - 4.1 Consumer side
 - 4.2 **Copayment**, second-opinion, Gatekeeper
5. Physician side:
 - 5.1 Payment Mechanisms: FFS, Salary, Capitation, DRG
 - 5.2 Holdbacks, Selection of Providers
6. Evidence on Interventions.
 - 6.1 HMO outperformed FFS.