PN-ACC-980

ZDRAV*REFORM* TRAINING MANUAL 0952

TOPICS IN ECONOMICS & MANAGEMENT ACCOUNTING FOR HEALTH CARE FINANCING REFORMS

produced under Task Order 5761 370
by Annemarie Wouters, Ph D , and Marty Makinen, Ph D

submitted by the Zdrav*Reform* Program to
USAID/ENI/HR/HP

Contract No CCN-0004-C-00-4023-00
Managed by Abt Associates, Inc
with offices in Bethesda, Maryland, USA
Moscow, Russia, Almaty, Kazakstan, Kiev, Ukraine
September 1997

Topics in Economics and Management Accounting for Health Care Financing Reforms

Objectives

The objectives of this workshop are to (1) introduce local consultant economists, senior health managers, chief economists and financial support staff to key economic topics and management accounting tools that are relevant to current trends in health care financing reform, (2) to provide practical experience to these same individuals in using these tools, and (3) to guide these individuals in designing and implementing systems of management accounting as they prepare for health economic reforms

Participants

This workshop is designed for about 25 participants, typically local consultant economists, senior managers, chief economists and senior financial support staff of health facilities

Format

The workshop is divided into 6 modules Modules 1 through 5 include a set of overheads for classroom presentation and small group exercises Each module should take from 1/2 to 1 day to cover Within each module, a 1 to 2-hour presentation is given in combination with exercises and discussion In Module 6, the participants are asked to work through a longer-term project over the course of the workshop

Module 0 Introduction and Glossary
Module 1 Per Capita Budgets for Oblasts, Rayons, and Cities
Module 2 Practical Applications of Cost Accounting Methods
Module 3 Budgeting Tools for Market-oriented Reforms
Module 4 Understanding Alternative Payment Methods
Module 5 User Fees
Module 6 Final Group Project
Evaluation Form

Key Reference Materials

The following Zdrav*Reform* Program documents can be used for further reference

- *Management Accounting Manual for Health Care Facilities in the NIS* (Wouters, Else)

- *Allocation of a Global Budget on the Basis of Population and Other Health Care Needs by an Oblast Health Administration* (Knowles)

Topics in Economics and Management Accounting for Health Care Financing Reforms

DAY 1

9 00 - 9 30	General Introduction of Instructor and Participants
9 30 - 10 30	Introduction to Course
10 30 - 10 45	Coffee Break
10 45 - 12 30	Per Capita Budgeting Methods
12 30 - 14 00	Lunch
14 00 - 15 15	Per Capita Budgeting Methods
15 15 - 15 30	Coffee Break
15 30 - 17 00	Per Capita Budgeting Methods Exercises & Discussion Introduction to Cost Accounting

DAY 2

9 00 - 10 30	Cost Accounting
10 30 - 10 45	Coffee Break
10 45 - 12 30	Cost Accounting
12 30 - 14 00	Lunch
14 00 - 15 15	Cost Accounting Discussion and Final Exercises
15 15 - 15 30	Coffee Break
15 30 - 17 00	Cost Accounting Wrap-Up Budgeting Tools for Market-Oriented Reform

DAY 3

9 00 - 10 30	Budgeting Tools for Market-Oriented Reform
10 30 - 10 45	Coffee Break
10 45 - 12 30	Budgeting Tools Discussion & Exercises Alternative Payment Methods
12 30 - 14 00	Lunch
14 00 - 15 15	Alternative Payment Methods
15 15 - 15 30	Coffee Break
15 30 - 17 00	Alternative Payment Methods Discussion Work Groups on Final Group Project

DAY 4

9 00 - 10 30	Alternative Payment Methods
10 30 - 10 45	Coffee Break
10 45 - 12 30	User Fees
12 30 - 14 00	Lunch
14 00 - 15 15	User Fees
15 15 - 15 30	Coffee Break
15 30 - 17 00	Work Groups on Final Group Project

DAY 5

9 00 - 10 30	User Fees
10 30 - 10 45	Coffee Break
10 45 - 12 30	Final Working Session on Group Projects
12 30 - 14 00	Lunch
14 00 - 15 15	Group Presentations
15 15 - 15 30	Coffee Break
15 30 - 17 00	Group Presentations & Final Discussion

Celebration Dinner

GLOSSARY

Controllable costs Those costs that are reasonably under the control of the manager in question It is often useful to identify what costs are controllable by a given manager and which ones are not Controllability is a measure of influence over the use or consumption of costs (resources)

Non-controllable costs Those costs which cannot be controlled by a manager Generally, as an individual moves upward in a health care organization's management structure, costs become more controllable by that individual As you move downward in the structure, more and more of the entity's total costs become non-controllable to the individual Department managers generally have control over their direct costs and little, if any control over the overhead that has been allocated to their area

Cost object The item for which the user is trying to establish a cost This could be procedures, activities, services, or other items that use or consume resources and are a target of the costing effort The term "cost object" is a more generic term and holds a greater applicability across the many types of departments For example, one department might want to cost a given clinical procedure, while another department might want to cost an activity Both are cost objects

Direct costs Costs clearly and directly associated, traced, or identified to a cost object Generally, direct costs are the labor resources, medical supplies, equipment costs, and other expenses directly used to produce or deliver a cost object Examples would include nursing time with a patient, medicines, specific equipment

Fully absorbed costs Includes all costs—direct and indirect and allocated overhead A cost object that is fully costed is said to be one that has had all of these costs identified, attributed, or allocated to that cost object

Indirect costs Those costs that cannot be directly traced, identified, linked or associated with a cost object, in a economically feasible way Indirect costs are commonly referred to as all costs that are NOT direct and typically include office supplies and most management costs that are not direct (hands-on patient or direct activity), administrative time, general overhead, etc

Indirect costs (allocated) Overhead costs that have eventually been attached to cost objects by measures of allocation Cost allocation refers to taking costs from one area or department such as administration costs and allocating them to another department or cost object

Overhead costs Indirect costs that are not easily associated with individual patients, procedures, activities or services and by their very nature, cannot be specifically identified to a given output Overhead costs are costs that frequently require some form of aggregated allocation to cost objects Typical examples of overhead departments include such areas as accounting, human resources, administration, security, and facility/building maintenance, etc

Fixed costs Those costs that do not vary with fluctuations in volume, frequency or activity The depreciation cost or fixed monthly rent of a building that houses varying volumes of patients does not change as the volume or frequency of patient visits fluctuates

Variable costs Those costs that vary directly or proportionally with changes in volume or activity X-ray film consumed in taking chest X-rays is a variable supply cost As more chest X-rays are taken, more film is consumed

Semi-variable costs Some costs have certain characteristics of both fixed and variable costs These are also referred to as "mixed costs" Telephone costs could be an example in that there is a fixed monthly base rate augmented by a variable rate that increases as more long distance calls are made

Relevant costs Expected future costs that directly result from the proposed new project or investment

Sunk costs Past costs that are unavoidable because they cannot be changed no matter what action is taken They are not included in profitability analyses of future investments

Break-even point The volume at which losses no longer occur and profit begins Break-even analysis is the determination of the minimum volume or frequency necessary in order for a cost object to be financially self-supporting The point at which total revenues equals total costs (fixed plus variable costs)

Break-even time Capital budgeting method that measures the time taken from the start of the project to when the cumulative present value of the cash inflows of a project to equal the present value of the total cash outflows

Appropriation budget Type of budget commonly associated with government agencies and characterized by an authorized spending level for a specified period

Fixed budgeting A budget that is not adjusted or altered after it is drawn up, regardless of changes in volume, cost drivers, or other conditions during the budget period

Flexible Budget Budget that takes into account the fact that certain costs vary with the level of activity or volume and other costs remain fixed over a relevant range of activity Flexible budgets anticipate the possibility of change and show planned revenues and planned expenses at various levels of volume

Flexible budget variance The difference between actual results and the flexible-budget amounts adjusted for the actual volume achieved

Variances Difference between actual financial results and budgeted amounts

Volume variance Difference due to actual volume differing from what was originally budgeted Flexible budgeting eliminates this variance from the budget

Unit cost or rate variance Difference (variance) due to the actual cost per unit or amount per unit differing from what was budgeted (or standards expected)

Efficiency variance Variance due to actual productivity differing from what was budgeted

Financial Accounting Focuses on standard accounting techniques and how they are used to report to external decision makers (e g government) Methods follow legal and generally accepted accounting principles

Management accounting Focuses on internal use of information within the enterprise and is the process of identification, measurement, accumulation, analysis, preparation, interpretation, and communication of information that assists executives in fulfilling organizational goals

Management by exception The practice of concentrating on areas or processes within the organization that deserve attention and ignoring areas that are presumed to be running smoothly

Management control system A means of gathering data to aid and coordinate the process of making decisions throughout the organization

Payback method (a form of break-even analysis) Capital budgeting method that measures the time it will take to recoup, in the form of cash inflow from operations, the total dollars invested in a project

Performance reports Reports that measure activities These reports usually consist of comparisons of budgets with actual results and link them with volume and other productivity indicators

Decentralization The freedom to make decisions Total decentralization in an organization means minimum constraints and maximum freedom for managers to make decisions at the lowest levels of an organization

Responsibility centers Parts, segments, or subunits of an organization whose mangers are accountable for specified set of activities

Revenue center Responsibility center in which a manager is accountable for revenues only

Cost center Responsibility center in which a manager is accountable for the costs (expenses) only

Profit center Responsibility center in which a manager is accountable for revenues and costs

Straight-line depreciation Depreciation method in which an equal amount of depreciation is taken each year

Cost allocation base Factor (e g square meters, FTEs) that is the common denominator for systematically apportioning a cost or group of costs to several cost objects such as department, activity or procedure

Cost management The performance by executives and others in monitoring and controlling the cost implications of the strategies they are following

Contribution margin The contribution margin represents the difference between the rate or fee charged for a cost object and the variable costs required for providing that cost object This residual amount, the difference, "contributes" toward covering the fixed costs A related term often used in break-even analysis Break-even point formula is (Fixed Costs/(price - variable costs))

RVU costs An acronym meaning Relative Value Costs This is a methodology for costing where the resources of one procedure, product, activity, or service (cost object) are measured 'relative' to one another By establishing a hierarchy of the relative consumption of resources among cost objects, total costs can be assigned to all cost objects according to their relative value adjusted for their frequency of occurrence

Relative value Index number assigned to a procedure based upon the relative amount of labor, supplies, and capital needed to perform the procedure

Average costs Full costs divided by the volume or frequency of the cost object

Bad debt An payment that is unpaid

Capital budgeting The process of planning expenditures on durable assets that last longer than one year

Cash budget A schedule showing cash flows (receipts, disbursements, and net cash) for an enterprise over a specified period of time

Expenses Costs that have been used or consumed in carrying on some activity

Internal control The plan of organization of all the coordinated methods and measures adopted within a business to safeguard its assets, check the accuracy and reliability of its accounting data, promote operating efficiency

Opportunity cost The cost or rate of return of the best alternative investment that is available

Present value The value today of a future payment, or stream of payments, discounted at the appropriate discount rate

Salvage value The value of a capital asset at the end of a specified period

The 80/20 rule This is a rule of thumb indicating that 80% of the resources are utilized in activities that produce only 20% of the procedures or output Employing the 80/20 rule helps to focus the costing effort on those areas that have the highest impact on resource use

Topics in Economics and Management Accounting for Health Care Financing Reforms

Introduction

Purpose of this Workshop

To enable health facility managers to use key tools and techniques in financial management and control to generate financial and economic information needed for making market-oriented internal management decisions.

This managment information will contribute to the improved efficiency and effectiveness of the services provided by the health facility.

There is no single optimal set of techniques for generating useful financial information
The basic tools taught in this workshop need to be adapted to suit the local needs of the institution

Organization of this Workshop

1 Introduction

2 Per Capita Global Budget Methods

3 Cost Accounting

4 Budget Tools for Market-Oriented Reforms

5 Overview of Alternative Payment Methods

6 User Fees in Practice

7 Class presentations of Group Project

8 Workshop Evaluation by Participants

9 Celebration

The Importance of Financial Management and Control·

Managing Resources in a Period of Rapid Change in the Health Delivery System

•Improving Outcomes:

- new approaches to cost-effective health care
  -emphasis on primary health care

•Improving Efficiency Stimulated by Payment Reforms:

- Difficult economic conditions require new emphasis on improving productivity and efficiency of the health service delivery system

- Health Financing reforms

The Importance of Financial Management and Control

Managing Resources in a Period of Rapid Change in the Health Delivery System

- **Diversifying Sources of Funds:**
  - government budgets
  - user fees
  - insurance,
  - enterprise contracts
  - preventing fraud and embezzlement

→ financial viability of the health institution

The Importance of Financial Management and Control

The Changing Role of the Health Facility Manager

- Increasing opportunity for self-governance.

- Under market reform, new payment methods to health providers create new financial risks for health managers

- Financial risk causes behavioral change Health managers must manage their facility through

  -changes in staffing patterns
  -control of the types of services they provide
  -choice of treatment setting inpatient vs outpatient
  -use of inventory and equipment

- Health managers around the world have had little training in the business aspects of health service delivery

Basic Concepts About Financial Management and Control

Financial Accounting:

Branch of accounting that provides financial statements to external agencies such as the government, other regulatory agencies.

Based on legal set of principles and rules for reporting financial status

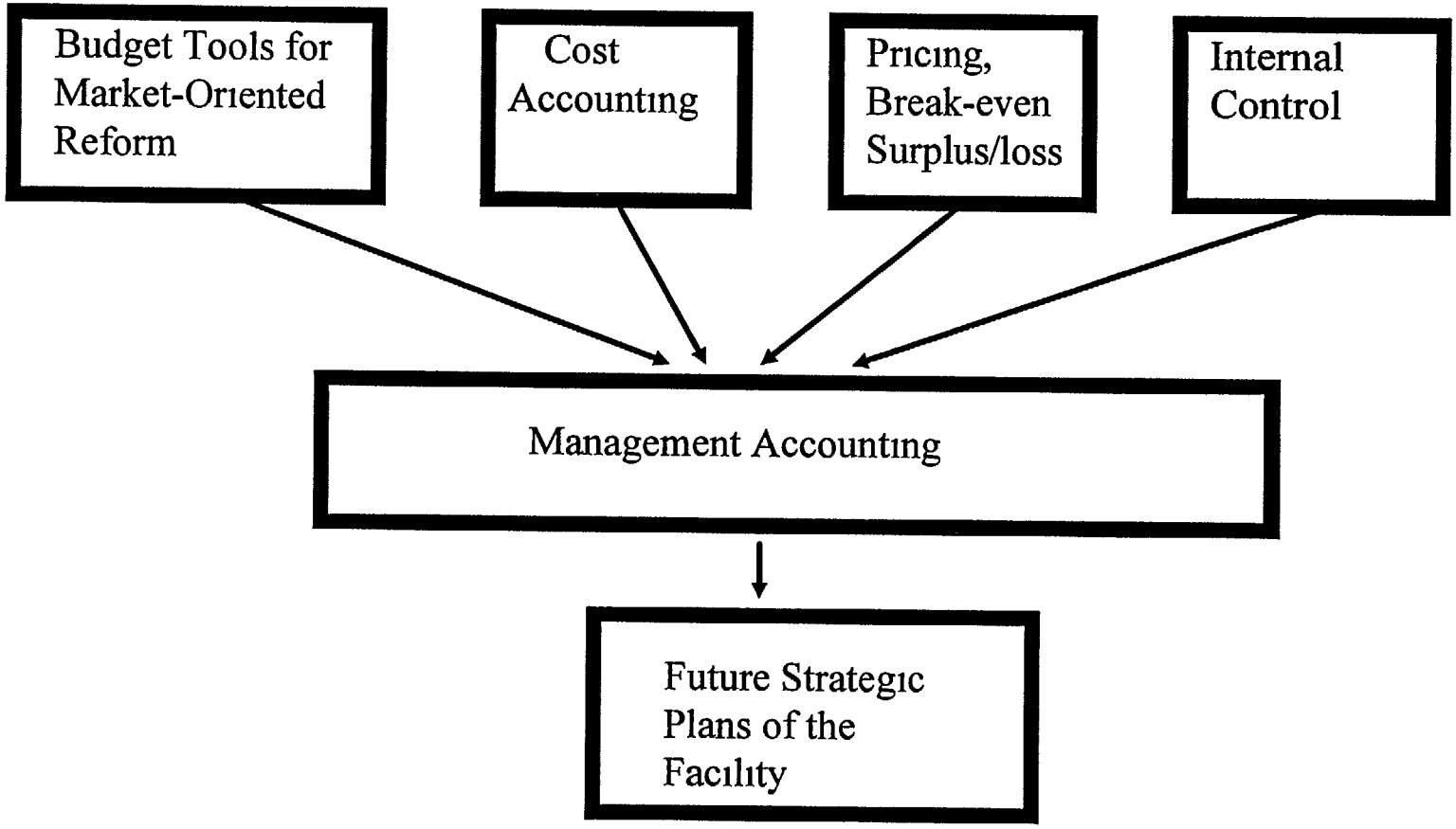
Managerial Accounting:

Economic and financial analysis to provide the financial information for internal management decisions.

Based on well-known techniques such as budgeting, cost accounting, profitability analysis which can be adapted and flexibly used to suit the internal enviroment of the health facility for whatever decision is being made

Not dependent on specific legal or mandated financial reporting requirements

Components of the Management Accounting



Management Accounting Tools - In this Workshop

1	**Budgeting:**	The budget takes the goals and objectives of the health care organization and states them in measurable monetary form The budget acts as a financial plan Actual processes of specific facility are used *Revenue Budget, Expense Budget, Operating Budget* *Cash Budget, Capital Budget*
2	**Cost Accounting**	Describes the performance of the health facility in terms of the cost implications of the services it delivers Examines the costs of services in terms of efficiency, pricing and profitability

Growing Financial Organization of a Health Facility - Chief Economist or Accountant

Some new responsibilities:

-Prepare strategic business plan for health care financing reforms

-Develop budget tools for market-oriented reform

-Establish cost data for management decision-making (including DRGs)

-Establish performance measures for financial and activity performance for new decentralized systems of managment

- Develop billing systems for health insurance and other new sources of revenue

-Monitor different sources of revenue

Introduction Exercise

Self-Assessment of a health facility's financial management systems

For each of the items listed below, evaluate whether your financial system is organized and functioning with policies and procedures with adequately trained staff A value of '1' means that the item is non-existant or minimally present A value of '5' means that the item is fully installed and functioning well

1	A qualified financial manager is assigned to each major responsibility area within your facility	1 2 3 4 5
2	Patient-level financial records	1 2 3 4 5
3	Cost accounting for department-level costs	1 2 3 4 5
4	Cost accounting for procedure or case-level costs	1 2 3 4 5
5	Budgeting for each department	1 2 3 4 5
6	Surplus or loss financial status for each department	1 2 3 4 5
7	Analysis of revenues by source of funds (e g budget, user fees)	1 2 3 4 5

MODULE 1
PER CAPITA BUDGETS FOR OBLASTS, RAYONS, AND CITIES

GUIDELINES FOR ALLOCATING AN OBLAST HEALTH BUDGET AMONG RAYONS AND CITIES

Global Budget for Local Government Health Administration:

An aggregate payment to an oblast, rayon or city health administration fixed in advance to cover selected health service expenditures over a specified period of time.

Goals of Budget Allocation Formulas:

- **Fair:** **takes into consideration the most important resource factors which determine resource needs;**
- **Transparent:** **based on clearly understood procedures and rules.**

SIX PROPOSED APPROACHES FOR CALCULATING GLOBAL BUDGETS

Historically Used Methods:

- Allocation based on:
  1. Previous Year's Budget
  2. Number of Hospital Beds
  3. Equal Shares

Proposed Methods:

- Allocation based on:
  1. Population
  2. Population Adjusted for Age and Sex
  3. Rural Population
  4. Health Status or Environmental Risk
  5. Cross-boundary Patient Flows
  6. Allocation Based on Use of Oblast-level Facilities

Simplest

↓

Complex

Optional Topic: Calculation of age-sex utilization coefficients

24

ORGANIZATION OF MODULE

1. **Policy Background**

2. **Review of Alternative Methods**

   - **Description of Method**
   - **Example with Formula**
   - **Data Requirements**
   - **Strengths and Weaknesses**
   - **Student Exercise**

3. **Use reference tables at end of module for sample data.**
   Table 1: Population, Health and Health Budget Statistics
   Table 2: Age-sex population and relative cost coefficients

POLICY BACKGROUND

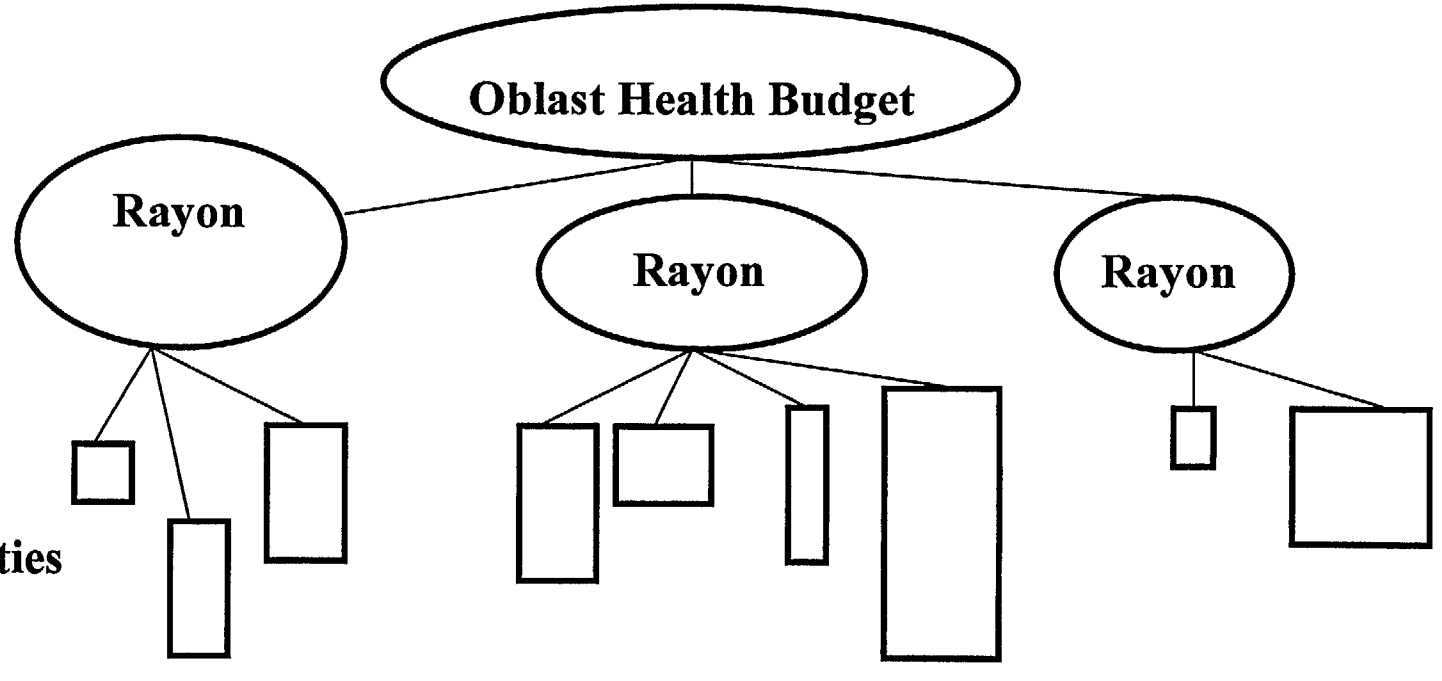
Importance of Budget Allocations

- Defines goverment financing role and policy priorities
- Political decision between geographical regions
- Impacts on efficiency of health care delivery system

Two Levels of Budget or Payment Allocations

Step 1: Oblast to Rayons

Step 2: Rayons to Health Facilities



26

FIRST STEP OF PAYMENT METHODS: OBLAST TO RAYONS

Advantages of Global Budgets for Rayons:

- Control level of expenditures, but allow flexibility in use of resources;
- Easy transition from line item budgeting;
- Predictable budget levels from year to year, stability;
- Limited government budgets can be complemented by other sources of funding.

Conditions for the success of Global Budgets for Rayons:

- Management Autonomy for Local Health Administrations;
- Strong management capabilities in local health administrations;
- Quality assurance mechanisms;
- Mechanisms to adjust global budgets for unexpected but justifiable changes;
- Patient choice of provider to stimulate quality and efficiency;
- Performance and productivity measures;
- Clear definition of government financed minimum health benefits package.

SECOND STEP: ALLOCATION TO HEALTH FACILITIES

Importance: **Potential efficiency gains from using per capita global budgeting for a rayon may be lost if these same incentives are not transferred to health facilities through reformed payment methods.**

SECOND STEP: ALLOCATION TO HEALTH FACILITIES

Provider Payment Choices Under Reform:

- ***Global budgets*: An aggregate payment fixed in advance to set a limit on total expenditures over a specified period of time.**

- ***Capitation:* A specific amount paid per enrollee or per person for a specified package of services over a specified period of time.**

- ***Case-based payment* : A fixed payment covering all services for a specified case or episode of illness.**

- ***Per Diem*: An aggregate payment covering all expenses incurred during one inpatient day.**

- ***Fee-for-service*: Payment made for each specific service rendered.**

Each payment method has its own advantages and disadvantages and each local region much choose the tradeoffs it is willing to accept.

METHOD 1: ALLOCATION BASED ON POPULATION

Description: **Each rayon or city receives a share of the total oblast health budget equal to its share of the oblast's population. "per capita budgeting"**

Step 1: **Brody's share of Lviv Oblast total population:**

Brody Rayon population	*67,399*	*= 2.49%*
Lviv Oblast population	*2,705,286*	

Step 2: **Brody's share of Lviv Health Administration Budget:**

Share of population X oblast health budget

0.0249 X 157,736 million koupons = 3,928 million k.

30

METHOD 1: ALLOCATION BASED ON POPULATION (cont'd)

Data requirements:

- Population of each rayon and city in current year (or as recent as possible)
- Size of total oblast health budget for current year.

Strengths:

- Perceived to be fair;
- Creates incentives for efficiency (e.g., compared with allocations per bed)

Weaknesses:

- Does not capture non-residential population served in rayon health facilities;
- Difficult to obtain recent and reliable estimates of populations in local areas;
- Does not take into account age/sex, special health or environmental conditions or variations in health infrastructure.

METHOD 2: ALLOCATION BASED ON POPULATION ADJUSTED FOR AGE AND SEX

Description: **Each rayon or city receives a share of the total oblast health budget equal to its share of the oblast's population, adjusted to reflect age and sex distribution. "age-sex adjusted per capita budgeting"**

Step 1: **Obtain age-sex weighted utilization rate for Brody Rayon:**

$$\sum_{\text{for all age \& sex categories in rayon}} (\textit{age-sex coefficient } X \textit{ \% of population})$$

$$(9.0 \times 0.0356) + (3.7 \times 0.0422) + (3.0 \times 0.0373) \ldots + \textit{remaining male groups}$$
$$+ (4.5 \times 0.0341) + (3.0 \times 0.0384) + (2.5 \times 0.0383) \ldots + \textit{remaining female groups}$$

32

METHOD 2: ALLOCATION BASED ON POPULATION ADJUSTED FOR AGE AND SEX (cont'd)

Step 2: Obtain age-sex weighted utilization rate for Lviv Oblast:

Σ *(age-sex coefficient X % of population)*
for all age & sex categories in oblast

(9.0 x 0.0353) + (3.7 x 0.0402) + (3.0 x 0.0382) . . . + remaining male groups
+ (4.5 x 0.0335) + (3.0 x 0.0387) + (2.5 x 0.0370) . . . + remaining female groups

Step 3: Calculate an age-sex adjustment factor for Brody rayon:

$$\frac{\text{Age-sex utilization rate for Brody Rayon}}{\text{Age-sex utilization rate for Lviv Oblast}} \quad \frac{5.3401}{4.9376} = 1.0815$$

METHOD 2: ALLOCATION BASED ON POPULATION ADJUSTED FOR AGE AND SEX (cont'd)

Step 4: Obtain Brody's age-sex weighted share of oblast population:

Rayon share of oblast population X age-sex distribution adjustment factor

0.0249 X 1.0815 = 0.0269

Step 5: Calculate Brody Rayon's health budget

Age-sex adjusted share of the population X oblast health budget

0.0269 X 157,736 million koupons = 4,243 million koupons

METHOD 2: ALLOCATION BASED ON POPULATION ADJUSTED FOR AGE AND SEX (cont'd)

Data Requirements:

- population by 5 year age group and by sex for each of the rayon and cities in the oblast (most recent available);
- set of age-sex specific relative health service utilization rates (should correspond to the basic package of health services which is to provided by government funds);
- size of the current oblast health budget.

Strengths:

- Health service utilization depends on age and sex; therefore, health needs are more accurately included in budget allocations.

METHOD 2: ALLOCATION BASED ON POPULATION ADJUSTED FOR AGE AND SEX (cont'd)

Weaknesses:

- **Population estimates for local regions may not be very accurate;**
- **Age-sex utilization rate adjusters need to accurately reflect services *actually provided* by the oblast. Often, such adjusters are not available and approximations from other regions or countries are used.**
- **Epidemiologic and environmental factors are not addressed.**

METHOD 3: ALLOCATION BASED ON RURAL POPULATIONS

Description: **A rayon or city health budget is determined in part on the basis of its share of the oblast rural population. Rural health services are likely to cost more on a per capita basis than urban services because it is more difficult to deliver services to widely scattered populations.**

Rural Allocation : Policy makers must determine what % of the oblast health budget will be allocated on the basis of rayon's or city's share of the rural population.

$$\frac{\text{Rural Allocation}}{\text{Urban Allocation}} = 1 + \frac{(P)}{[(1-P) \times K]}$$

P = % of budget for rural population
K = % of rayon population, rural

Example: $P = 30\%$; $K = 41\%$

$$\frac{\text{Rural Allocation}}{\text{Urban Allocation}} = 1 + \frac{(0.30)}{[(0.70) \times .41]} = 1 + 1.045 = 2.045$$

Rural population would receive twice the per capita allocation as urban areas.

METHOD 3: ALLOCATION BASED ON RURAL POPULATIONS (cont'd)

Step 1: Calculate 70% of total oblast health budget that will be distributed to entire Brody rayon population.

0.70 X 157,736 million koupons = 110,415 million koupons

Step 2: Calculate 30% of total oblast health budget that will be allocated as an additional amount to the rural populations of rayon.

0.30 X 157, 736 million koupons = 47, 321 million koupons

Step 3: Find from population data, Brody's share of the oblast rural population and Brody's share of total oblast population.

rural share: 64,636/ 1,098,043 = 0.0589
total share: 67,399/2,705,286 = 0.0249

METHOD 3: ALLOCATION BASED ON RURAL POPULATIONS

Step 4: Calculate Brody's 1993 budget:

(Per capita basis Budget,{e.g 70%} X Brody rayon's share of total oblast population)
+
(Rural Budget {e.g., 30%} X Brody rayon's share of oblast rural population)

(110,415 million koupons X 0.0249) + 47,321 million koupons X 0.0589)
= 5,536 million koupons

METHOD 3: ALLOCATION BASED ON RURAL POPULATIONS

Data Requirements:

- total and rural populations of each rayon and city;
- share of total health budget as additional allocation to rural populations;
- size of current year's total oblast health budget.

Strengths:

- Provides a simple way to adjust budget for higher costs in rural areas.

Weaknesses:

- Difficult to decide what % of total oblast should be given as additional amount to rural areas (in this case, 30% was just a guess). This % should be based on how much higher costs are in rural than in urban areas for the same list of services.
- Does not consider health status, or environment

METHOD 4: ALLOCATION BASED ON HEALTH STATUS OR ENVIRONMENTAL RISK

Description: Portion of rayon's or city's health budget is allocated on the basis of a measure of its relative health status or relative exposure to environmental health risk.

Some Measures of Health Status:

- Crude death rate (CDR)
- Infant mortality rate
- Average life expectancy at birth
- Healthy years of life lost per 1000 population.

Some Measures of Environmental Risk:

- Average air temperature;
- Index of pollution;
- Rate of exposure to a risk, e.g., radiation.

METHOD 4: ALLOCATION BASED ON HEALTH STATUS OR ENVIRONMENTAL RISK (cont'd)

Environmental Allocation: Policy makers must determine what % of the oblast health budget will be allocated on the basis of rayon's or city's share of health and/or environmental risk

Assume 30% of the budget as additional allocation to rayons with higher risks

Step 1: Determine Brody Rayon's relative CDR adjustment factor

$$\frac{\textit{Brody rayon CDR}}{\textit{Lviv Oblast CDR}} = \frac{15.40}{11.33} = 1.359$$

Step 2: Calculate relative health status weighted share of population

Brody's relative CDR adjustment factor X share of total population

$$1.359 \times 0.0249 = 0.0338$$

METHOD 4: ALLOCATION BASED ON HEALTH STATUS OR ENVIRONMENTAL RISK (cont'd)

Step 3: Calculate Brody Rayon's 1993 health budget

(Per capita basis Budget,{e.g 70%} X Brody rayon's unweighted share of oblast population)

+

(Health Risk Budget {e.g., 30%} X Brody rayon's weighted share of oblast pop.)

(110,415 million koupons X 0.0249) + (47,321 million koupons X 0.0338)
= 4,348 million koupons

METHOD 4: ALLOCATION BASED ON HEALTH STATUS OR ENVIRONMENTAL RISK (cont'd)

Adjustment (if necessary)

Step 4: **Verify that sum of newly calculated rayon and city budgets add to the oblast health budget.**

Step 5: **If step 4 is not satisfied, then scale down each rayon and city budget by ratio of the calculated sum of budgets and the actual oblast health budget.**

$$\textit{Scale down factor (if necessary)} = \frac{\textit{sum of calculated rayon \& city budgets}}{\textit{actual oblast health budget}}$$

Data Requirements:

- **Crude death rate for all rayons and cities (or other measures)**
- **share of total health budget as additional allocation to for special risk factors;**
- **size of the total oblast health budget in the current year.**

METHOD 4: ALLOCATION BASED ON HEALTH STATUS OR ENVIRONMENTAL RISK (cont'd)

Strengths:

- **May reflect health needs more accurately than age-sex adjustments;**

Weaknesses:

- **Proportion of budget allocated based on risk factors is arbitrary;**
- **Choice of risk factor measures is arbitrary;**
- **Creates incentives for health managers to reduce health status in order to get a higher budget allocation**
- **It is not necessarily true that health services themselves will correct health status problems.**

METHOD 5: ALLOCATION BASED ON CROSS-BOUNDARY PATIENT FLOWS

Description: **Budget allocations should be higher for those rayons or cities that treat not only their own residential patients, but also a substantial portion who come from other regions.**

Cross-Boundary Allocation: **Policymakers must determine the % of the oblast budget that will be allocated on the basis of rayon's or city's share of health and/or of cross-boundary patients.**

46

METHOD 5: ALLOCATION BASED ON CROSS-BOUNDARY PATIENT FLOWS (cont'd)

Suggested Approach: Determine proportion of total health services for oblast residents that are given to cross-boundary patients. Use this proportion as basis for proportion for budget that is allocated to pay for inter-rayon patients.

	(A) Inpatient admissions	**(B) Inpatient Days (A x 10)**	*(C) Outpatient visits:*	*(D) Outpatient Equivalent Inpatient Days (C÷4)*	*(E =B + D) Total Volume Inpatient + Outpatient Equivalents*
Total oblast:	*210,00*	**2,100,000**	*3.5 million*	*875,000*	*2,975,000*
Inter-oblast:	*10,000*	**100,000**	*0.5 million*	*125,000*	*225,000*
Within oblast	*200,000*	**2,000,000**	*3.0 million*	*750,000*	*2,750,000*
Inter-rayon:	*20,000*	**200,000**	*0.5 million*	*125,000*	*325,000*
% inter-rayon					***11.82%***

METHOD 5: ALLOCATION BASED ON CROSS-BOUNDARY PATIENT FLOWS (cont'd)

Other assumptions:

1. *1 inpatient admission = 4 outpatient visits (resources)*
2. *ALOS = 10 days*
3. *Inter-rayon budget = 11.82% (from above)*
4. *Residential budget = 88.18% (from above)*
5. *Brody Rayon accounts for 1.5% of inter-rayon services*
6. *Lviv city accounts for 43.5% of inter-rayon services*

Step 1: Calculate amount of Lviv Oblast Health Budget for inter-rayon services and for residential services

11.82% X 157,736 million koupons = 18,644 million koupons
88.18% X 157,736 million koupons = 139,092 million koupons

98

METHOD 5: ALLOCATION BASED ON CROSS-BOUNDARY PATIENT FLOWS (cont'd)

Step 2: Calculate Brody Rayon's 1993 health budget:

(Inter-rayon {e.g 11.82%} X Brody rayon's share of inter-rayon services)
+
(Residential budget {e.g., 88.81%} X Brody rayon's share of residential oblast services)

(18,644 million koupons X 0.015) + (139,092 million koupons X 0.0249)
= 3,743 million koupons

METHOD 5: ALLOCATION BASED ON CROSS-BOUNDARY PATIENT FLOWS (cont'd)

Data Requirements

- number of inpatient and outpatient services provided in each rayon and city, including number of non-residential patients
- ALOS by rayon and city
- conversion factor for converting outpatient visits to inpatient days
- population of each rayon and city
- size of current year's total oblast health budget

Strengths

- simpler than inter-facility payments

Weaknesses

- substantial data requirements, (services for residential & non-residential services).

- depends on previous year inter-rayon patient flows, which may or may not be the same for the current year.

METHOD 6: ALLOCATION BASED ON USE OF OBLAST-LEVEL FACILITIES

Description: Rayon and city health budgets would be adjusted to account for the fact that some of their residents use oblast-level facilities rather than rayon- or city-level facilities. Rayons and cities whose residents use oblast-facilities more should receive smaller local budgets.

Oblast-facilities Allocation: Determine the total budget required to pay for oblast-level facilities

Assumptions for this example:

1. Budget for patient services in oblast health facilities (not teaching or research): 75,000 million koupons.
2. Brody consumes 1.25% of oblast facility services
3. Lviv city consumes 48.05 % of oblast facility services.

METHOD 6: ALLOCATION BASED ON USE OF OBLAST-LEVEL FACILITIES (cont'd)

Step 1: Calculate the 1993 per capita budget for Brody rayon

In this example, we use the simple per capita formula:

% population in Brody X oblast health budget

0.0249 X 157,736 million koupons = 3,928 million koupons

Step 2: Calculate difference between Brody Rayon's percent use of oblast facilities and its percent of the total oblast population

Brody's share of oblast-level services consumed - Brody's share of oblast population

0.0125 - 0.0249 = -0.0124

METHOD 6: ALLOCATION BASED ON USE OF OBLAST-LEVEL FACILITIES (cont'd)

Step 3: Calculate Brody Rayon's budget that includes an adjustment for its use of oblast facilities for patient-level services.

Brody rayon's differential use of oblast-level services
X oblast-level budget for patient services

-0.0124 X 75,000 million koupons = -930 million koupons
(Note: this is a negative amount because Brody uses relatively fewer oblast services)

53

METHOD 6: ALLOCATION BASED ON USE OF OBLAST-LEVEL FACILITIES (cont'd)

Step 4: Adjust Brody's per capita budget to include amount for use of oblast-level patient services

Brody Rayon's per capita - oblast-level budget adjustment
3,928 million koupons - (- 900 million koupons) = 4,828 million koupons

Note 1: Brody's rayon budget increases because compared to other rayons, Brody patients do not use oblast-level facilities. They depend on rayon facilities

Note 2: If budgets of all rayons and cities were calculated in same way, the amounts added to some would exactly cancel out the amounts subtracted from others. The total oblast health budget allocated to rayons and cities would remain unchanged.

54

METHOD 6: ALLOCATION BASED ON USE OF OBLAST-LEVEL FACILITIES (cont'd)

Data Requirements

- Rayon utilization of oblast facility patient services;
- conversion for outpatient services to inpatient days;
- estimate of total cost of providing patient services in oblast-level facilities (not including teaching and research)
- data to calculate per capita budgets (see previous methods)
- size of current oblast health budget for rayons and cities.

Strengths

- Accounts for large presence and use of oblast facilities in some rayons and cities by rayon and city patients.
- Provides incentives to rayons and cities to treat their patients in their own facilities rather than referring them to the oblast.

Weaknesses

- Significant data requirements

GUIDELINES FOR CALCULATING AGE-SEX UTILIZATION COEFFICIENTS (Optional)

ISSUE: **Age-sex utilization coefficients calculated in one region may not apply to another region**

Step 1: **Obtain list of services in minimum health package guaranteed by state that will be paid by government budget.**

Step 2: **For each service, calculate annual utilization rates for each age-sex group.**

Immunizations:

0-5 males: 1.77 immunizations/year
5-10 males: ?
etc.

0-5 females: 1.77 immunization/year
5-10 females: ?
etc.

GUIDELINES FOR CALCULATING AGE-SEX UTILIZATION COEFFICIENTS (Optional)

Step 3: Establish weights for each service that reflect relative resource use.

Suggestions:

- *Use facility-level estimates of cost per unit of service or an average over several facilities.*

	Cost per unit of service	*Relative Cost Value*
- normal delivery	*20,000,000 koupons*	*1.00*
-immunization	*260,000 koupons*	*0.013*
-TB treatment	*91,340,000 koupons*	*4.567*

- *Use relative values from another country*

Step 4: Calculate coefficients

Age-sex specific weight =

Service utilization rate for each age-sex group X relative cost weights

SUMMARY TABLE FOR BRODY RAYON
(This represents a hypothetical situation)

BUDGET METHOD	AMOUNT
Actual 1993 rayon budget	5,195 m kps
Simple per capita	3,928 m. kps
Age-sex adjusted per capita	4,243 m kps
Rural-adjusted per capita	5,536 m kps
Risk-factor adjusted per capita	4,348 m kps
Inter-rayon patients adjusted per capita	3,743 m kps
Use of Oblast Health facility adjusted per capita budget	4,828 m kps

Student Exercises for Rayon and City Global Budget Formulas

For Lviv City, calculate its health budget based on six methods
(Use the same assumptions and data provided in teaching module)

1 simple per capita based budget

2 age-sex adjusted per capita based budget

3 adjusted for rural population

4 adjusted for crude death rate

5 adjusted for cross-boundary patient flows
Assume Lviv city has 43 4% of inter-rayon patient flows
Assume 11 82% of Lviv Oblast patient services are from inter-rayon patient flows

6 adjusted for use of oblast health facility patient services
Assume Lviv city uses 48 5% of Oblast health facility patient services
Assume 75,000 million koupons as the budget for oblast health facility patient services

7 Discuss which budget formula Lviv city would prefer? Which would the oblast health administration prefer?

Student Exercises for Rayon and City Global Budget Formulas - *Solutions*

Method 1. Simple per capita based budget - *Solution*

Step A)

Lviv City Population	**779,876**	**= 28 8%**
Total Oblast Population	**2,705,286**	

Step B)

28 8% x 157,736 million koupons = 45,478 million koupons for Lviv city health budget

Method 2 Age-sex adjusted per capita based budget - *Solution*

Step A) Calculate Lviv City age-sex utilization rate.

(9 x 0.0353) + (3 7 x 0 0402) + remaining male groups +
+ (4 5 x 0 0335) + (3 x 0 0387) + remaining female groups = 4 552

Step B). Calculate Lviv Oblast age-sex utilization rate·

Already done in class = 4 9376

Step C) Calculate Lviv City Adjustment Factor

Lviv city age-sex coefficient = 4 552 = 0 9225
Lviv oblast age-sex coefficient = 4 9376

Step D) Calculate Lviv City age-sex weighted share of the population

0 9225 X 28 8% = 26 568%

Step E) Calculate Lviv City age-sex adjusted per capita budget

26 568% x 157,736 million koupons = 41,907 million koupons

Method 3 Adjusted for rural populations - *Solution*

Step A) 70% of oblast health budget for total population-based portion

70% x 157,736 million koupons = 110,415 million koupons

Step B) 30% of oblast health budget for rural population-based portion

30% x 157,736 million koupons = 47, 321 million koupons

Step C) Lviv city's share of the rural population

0%

Step D) Lviv city health budget

(110, 415 million koupons x 28 8%) + (47,321 million koupons x 0%)
= 31,799 million koupons

Method 4 Risk factor adjusted per capita based budget - *Solution*

Step A) Calculate proportion of Lviv Oblast Health Budget allocated for general population shares (assume 70%) and for special risk factor (assume 30%)

70% share = 110,415 (same as before)
30% share = 47,321 (same as before)

Step B) Calculate Lviv City Relative Crude Death Rate (CDR)

Lviv City Crude Death Rate = 9 05 = *0 799*
Lviv Oblast Crude Death Rate = 11.33

Step C) Calculate population share adjusted for relative CDR

28 8% x 0 799 = 0 230

Step D) Calculate risk-factor adjusted Lviv City Health budget

(28 8% x 110,415 million koupons) + (23 0% x 47,321 million koupons)
= 42,683 million koupons

Method 5 Per capita based budget adjusted for inter-rayon patient flow -*Solution*
Assume Lviv city has 43 4% of inter-rayon patient flows
Assume 11 82% of Lviv Oblast patient services are from inter-rayon patient flows

Step A) Calculate share of Lviv Oblast Health budget for general population portion (88 18%) and share of Lviv Oblast Health budget for inter-rayon patients (11 82%)

88 18% x 157,736 million koupons = 139,092 million koupons
11 82 % x 157,736 million koupons = 18,644 million koupons

Step B) Calculate Lviv city per capita budget adjusted for inter-rayon patient flows

(28 8% x 139,092 million koupons) + (43 4% x 18,644 million koupons)
= 48,192 million koupons

62

Method 6 Per capita budget adjusted for use of oblast health facilities for patient services
Assume Lviv city uses 48.5% of Oblast health facility patient services
Assume 75,000 million koupons as the budget for oblast health facility patient services

Step A) Calculate simple per capita budget for Lviv city

28 8% x 157,736 million koupons = 41,958 million koupons

Step B) Calculate difference between Lviv city's share of the population and share of patient services in oblast health facilities

0 4805 - 0 2883 = 0 1922

Step C) Calculate amount of oblast health facility budget for patient services used in Lviv city over and above its general population share

0 1922 x 75,000 million koupons = 14,415 million koupons

Step D) Calculate final Lviv city rayon health budget

41,958 million koupons - 14,415 million koupons = 27,543 million koupons

SUMMARY TABLE FOR LVIV CITY (This represents a hypothetical situation)

BUDGET METHOD	AMOUNT
Actual 1993 city health budget	49,476 m kps
Simple per capita	45,478 m kps
Age-sex adjusted per capita	41,910 m kps
Rural-adjusted per capita	31,799 m kps
Risk-factor adjusted per capita	42,683 m kps
Inter-rayon patients adjusted per capita	48,192 m kps
Use of Oblast Health facility adjusted per capita budget	27,543 m kps

Table 1 Input Data						
Rayons/Cities	Population 1994	Rural Population 1994	Crude Death Rate 1992/93	Actual Health Expenditures 1992	Actual Health Expenditures 1993	Hospital Beds 1993
Brody	67,399	64,636	15 4	151	5,195	655
Busk	52,096	34,956	15 7	96	2,962	570
Gorodok	77,202	50,953	13 05	137	3,450	680
Drohobych	76,900	70,133	14 5	67	2,084	330
Zhydachiv	83,772	50,515	15 65	193	5,238	735
Zolochiv	77,357	47,497	15 55	141	4,360	870
Kamianka-Buska	61,600	37,822	13 6	104	2,737	535
Mykolaiv	95,500	45,744	9 9	256	8,162	500
Mostyska	62,552	46,351	14 85	98	2,557	1,642
Zhovkva	111,500	74,259	12 7	175	5,155	795
Peremyshlany	51,900	39,444	15 9	93	2,191	540
Pustomytry	112,000	95,872	12 05	104	2,861	605
Radehiv	53,801	40,781	15 15	80	2,818	450
Sambir	74,700	67,006	12 05	159	4,384	841
Skole	49,499	36,332	12 6	105	3,580	505
Sokal	98,700	62,082	13 4	160	4,478	785
Stary Sambir	85,800	65,723	14	139	4,002	780
Stryi	62,201	54,301	12 05	226	3,879	712
Turka	55,822	46,332	12 35	99	2,210	459
Yakoriv	123,490	67,302	10 05	214	6,401	1,050
L'viv	779,876	0	9 05	1,415	49,476	4,764
Boryslav	44,702	0	11,05	120	3,896	450
Drohobych	104,401	0	6 15	425	9,104	1,420
Sambir	43,497	0	12 05	93	2,575	494
Stryi	77,720	0	8 95	248	4,247	635
Truskavets	26,500	0	6 65	68	2,224	350
Chervonorad	94,799	0	7 55	247	7,512	1,152
OBLAST	2,750,286	1,098,043	11 33	5,415	157,736	23,304

Source L'viv Oblast Health Administration

Table 2
Coefficients of Relative Health Care Utilization and Population Age-Sex Distribution of L'viv Oblast and Brody Rayon

	Coefficients of Relative Health Care Utilization		Proportion of Population in Each Age-Sex Group			
			L'viv Oblast		Brody Rayon	
Age Groups	Male	Female	Male	Female	Male	Female
0 - 4	9	4 5	0 0353	0 0335	0 0356	0 0341
5 - 9	3 7	3	0 0402	0 0387	0 0422	0 0384
10 - 14	3	2 5	0 0382	0 0370	0 0373	0 0383
15 - 19	2 2	3	0 0375	0 0357	0 0350	0 0317
20 - 24	2 6	3 5	0 0403	0 0361	0 0278	0 0311
25 - 29	2	4	0 0376	0 0355	0 0256	0 0311
30 - 34	2	4	0 0419	0 0418	0 0395	0 0381
35 - 39	2 5	4 5	0 0375	0 0387	0 0350	0 0352
40 - 44	3 5	5	0 0301	0 0321	0 0284	0 0290
45 - 49	4 5	5 5	0 0258	0 0281	0 0242	0 0257
50 - 54	5	6 5	0 0242	0 0282	0 0228	0 0300
55 - 59	6 5	7	0 0262	0 0324	0 0266	0 0367
60 - 64	7 5	8 5	0 0245	0 0325	0 0290	0 0397
65 - 69	8	9 5	0 0169	0 0291	0 0201	0 0352
70 +	11	11 5	0 0198	0 0446	0 0283	0 0685

Source of Population Data L'viv Oblast Health Administration

MODULE 2

PRACTICAL APPLICATION OF COST ACCOUNTING TECHNIQUES

COST ACCOUNTING TOPICS

- Breaking-Down Facility Global Budgets to the Department Level
- Defining Cost Objects and Relationship to Costs
- Overhead Allocations
- Direct and Step-Down
- RVU Costing Exercises within Departments
- Costs for Pricing

WHY IS COST ACCOUNTING IMPORTANT?

- **Cost Accounting** - supports the decision-making process regarding *internal* operations Cost accounting typically helps managers make more objective and accurate decisions regarding key issues such as·

  - **Pricing** . setting prices, evaluating profit and loss, determining payment schemes, etc

  - **Cost Control** including such topics as budgeting, productivity studies, outcome management, operational improvement, etc

  - **Investments/Divestment** opening and closing departments or hospitals, buying equipment, Expanding operations, etc

- **Note:** Cost accounting is not limited to "market-oriented" economies It is applicable to any organization interested in improved resource management

COST ACCOUNTING DOES NOT REQUIRE CHANGING THE FINANCIAL ACCOUNTING SYSTEM!!!!!

98

TYPICAL QUESTIONS BEING ANSWERED WITH COST ACCOUNTING

1 How many patients can I treat before I run out of money?

2 Where is the best place to cut costs so that I will effect the minimum number of patients?

3 Market or political forces are demanding a reduction in expenses How can this be done without having an even - yet arbitrary - reduction across all departments? (An "across the board" reduction)

4 What is an optimum price for a given service?

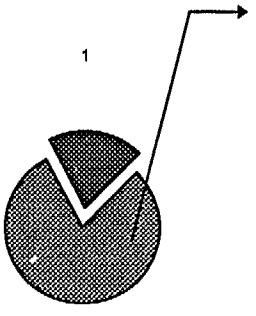
5 How should I modify the design of my costing methods to support different decisions?

6 Given many different prices for many different services, what is an "optimum" mix of products that will provide the greatest financial benefit to the hospital? What is the worst mix of products and services?

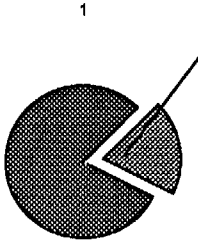
7 Managers feel they are understaffed and overworked Can you provide objective cost data to evaluate performance?

THE 80/20 RULE HELPS TO DEFINE WHAT TO COST

- Do not try to cost everything Experience indicates



80% OF THE COSTS



ARE TYPICALLY ACCOUNTED FOR IN ONLY 20% OF ACTIVITIES

- First, identify what you are trying to cost
- Second, cost those items that account for the majority of costs
- Third, always assess RELATIVE IMPORTANCE

COST ACCOUNTING MOTTO

IT IS MUCH BETTER TO BE APPROXIMATELY RIGHT

THAN

PRECISELY WRONG

(Do not become too detailed and precise in cost accounting methods)

COST OBJECTS

Cost Objects **- The targets of the costing effort**

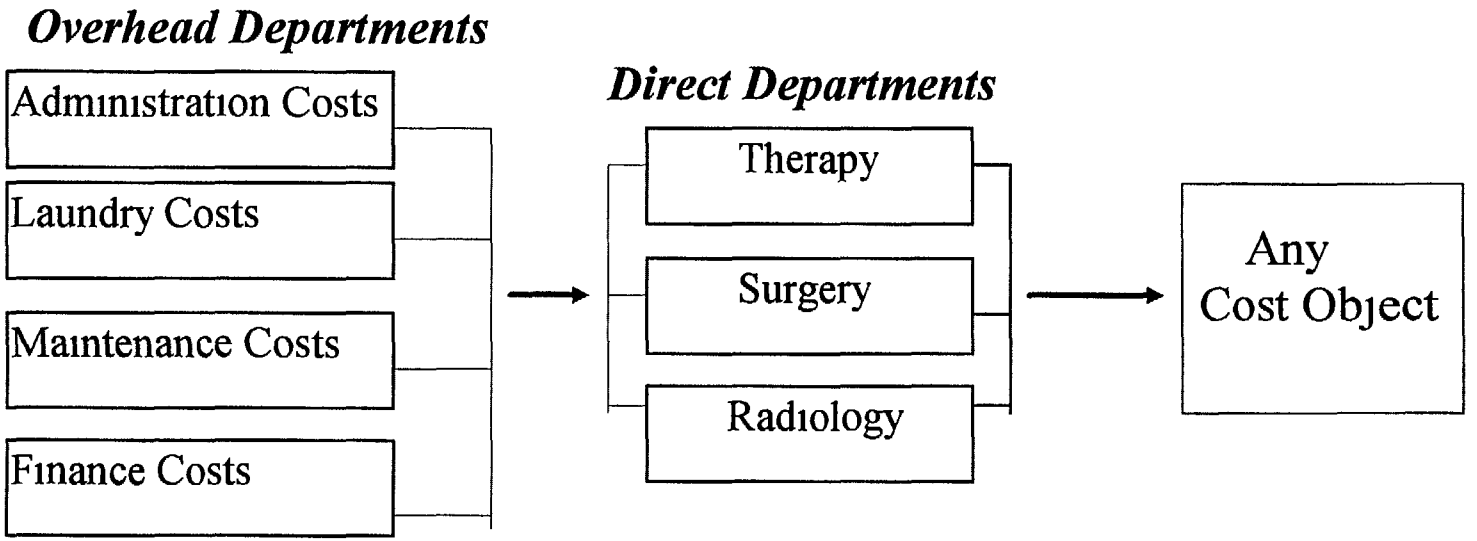
Examples include

- Services (Vaccinations)
- Procedures (Surgery)
- A patient day (Inpatient or Outpatient)
- An activity (Therapy Session)
- A treatment (Chemotherapy)
- A prescription (Antibiotics)
- A lab test (Blood Sugar)
- A patient visit (to a polyclinic)
- An episode of care (An entire period of care)
- Etc

The decision as to what to cost is just as important as the accuracy of the cost.

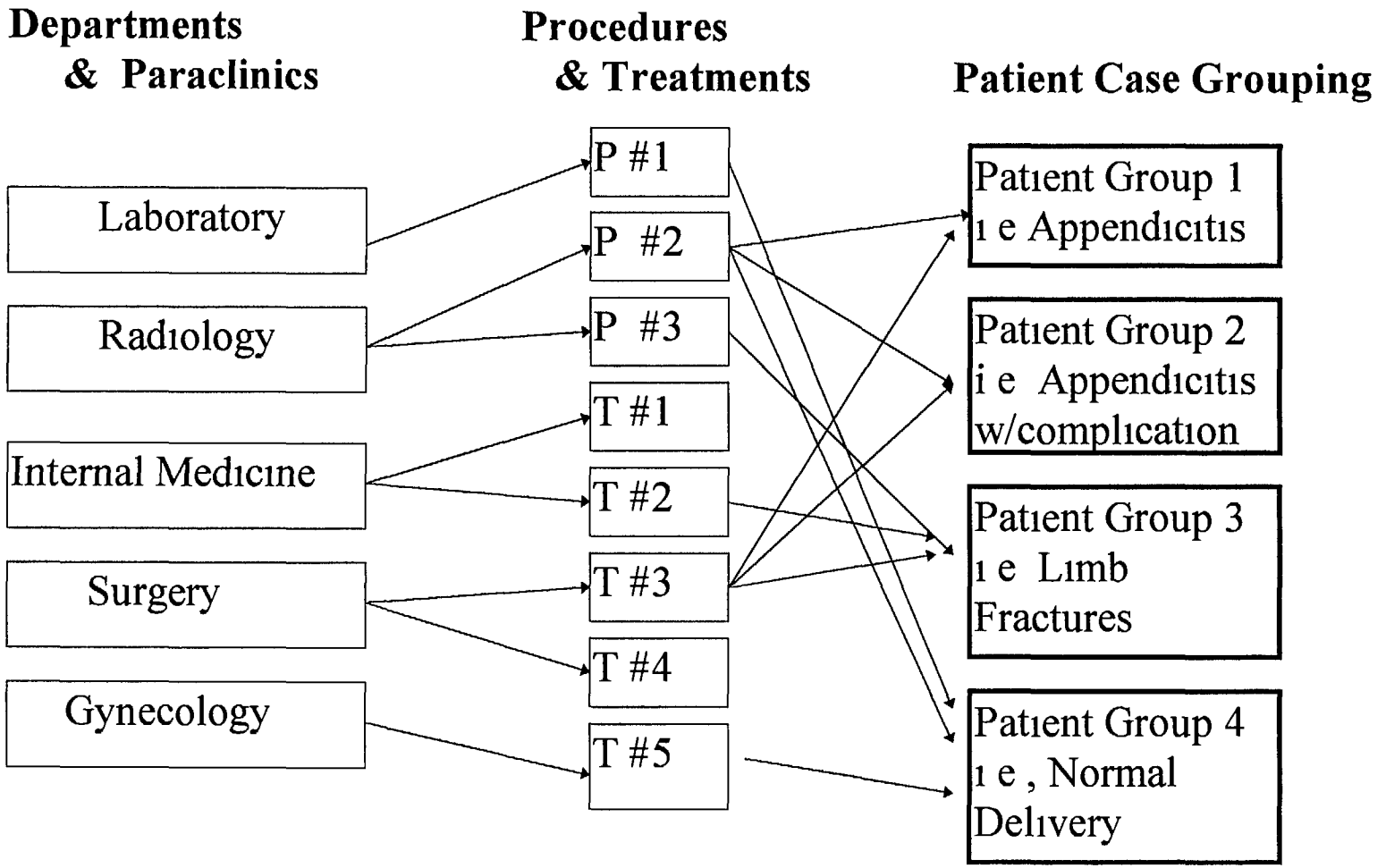
Select Cost Objects where data (such as statistics) are available and the information would be useful to a decision-maker.

COSTING PROCESS



Step	***Action***
1	*Define the cost objects*
2	*Collect/obtain financial Information about the organization*
3	*Define the overhead departments*
4	*Collect/obtain statistical information to allocate this overhead*
5	*Decide on an allocation methodology and allocate the overhead costs*
6	*Group costs into useful categories (Salary, Supplies, Equipment etc)*
7	*Classify the costs within each category as to what is fixed and what is variable*
8	*Calculate costs*

ONE APPROACH TO COSTS FOR INPATIENT CASES
(commonly used in U.S.)



ONE APPROACH TO COSTS FOR INPATIENT CASES: GENERAL OVERVIEW

Calculate Costs for Each Patient Group

1 Define manageable list of procedures and treatments in each paraclinic and department

2 Use step-down and RVU costing methods to calculate costs of procedures, treatments, bed-days

3 Specify standard procedures, treatments and bed-days for each patient group

4 Calculate total cost of patient group

Information Systems

1 Establish simple coding system for each procedure & treatment
(or use internationally accepted coding systems)

2 Establish patient record that records internationally accepted minimum data set
and list of procedures & treatments provided to patient
(hospital ID, Patient #, sex, age, marital status, address, date of admission, duration of stay, discharge status, main diagnosis, other diagnosis, procedures & treatments)

APPROVED OMB NO

ABC HOSPITAL
123 MAIN STREET
BOSTON MA 02122
617-555-1200

3 PATIENT CONTROL NO: 0987654321

5 FED TAX NO. | 6 STATEMENT COVERS PERIOD FROM 010195 THROUGH 011595 | 7 COV D. 14 | 8 N-C D. | 9 C-I D. | 10 L-R D. | 11

12 PATIENT NAME: JANE P.

13 PATIENT ADDRESS

14 BIRTHDATE	15 SEX	16 MS	17 DATE	18 HR	19 TYPE	20 SRC	21 D HR	22 STAT	23 MEDICAL RECORD NO.
07311926	F		010195	09	3	7		01	DOE7899

ADMISSION

CONDITION CODES 24 25 26 27 28 29 30 31

32 CODE	OCCURRENCE DATE	33 CODE	OCCURRENCE DATE	35 CODE	OCCURRENCE SPAN FROM	THROUGH

	39 CODE	VALUE CODES AMOUNT	41 CODE	VALUE CODES AMOUNT
a	X1	2300 00		
b				
c				
d				

42 REV CD.	43 DESCRIPTION	44 HCPCS / RATES	45 SERV DATE	46 SERV UNITS	47 TOTAL CHARGES	48 NON-COVERED CHARGES	49
121	MED/SUR/GYN			14	5600 00		
250	PHARMACY				500 00		
260	IV THERAPY				200 00		
272	STERILE SUPPLY				160 00		
300	LAB				300 00		
320	DX X-RAY				200 00		
329	DX X-RAY/OTHER				600 00		
360	OR SERVICE				1000 00		
370	ANESTHESIA				300 00		
450	EMERGENCY ROOM			1	300 00		
710	RECOVERY ROOM				150 00		
001	TOTAL CHARGES				9310 00		

INPATIENT

50 PAYER | 51 PROVIDER NO. 1001234 | 52 RELEASE OF INFO. | 53 ASSIGN OF BEN. | 54 PRIOR PAYMENTS | 55 EST AMOUNT DUE | 56

DUE FROM PATIENT

60 INSURED'S NAME | 60 A REL | 60 B CERT - BSN - HIC - ID NO. 1234567890 | 61 GROUP NAME | 62 INSURANCE GROUP NO.

63 TREATMENT AUTHORIZATION CODES 123456 | 64 ESC | 65 EMPLOYER NAME | 66 EMPLOYER LOCATION

67 PRIN. DIAG. CD. 6504 | 68 CODE | 69 OTHER DIAG. CODES | 70 CODE | 71 CODE | 72 CODE | 73 ADM. DIAG. CD. | 74 E-CODE | 75

76 PRINCIPAL PROCEDURE CODE 15 DATE 0103 | 77 OTHER PROCEDURE CODE DATE | OTHER PROCEDURE CODE DATE | OTHER PROCEDURE CODE DATE

78 ATTENDING PHYS. ID 434567866 SMITH, PAUL R. MD

79 OTHER PHYS. ID

80 OTHER PHYS. ID

81 REMARKS

85 PROVIDER REPRESENTATIVE X BETSEY COSGROVE | 86 DATE 020195

I COPY THE CERTIFICATIONS ON THE REVERSE APPLY TO THIS BILL AND ARE MADE A PART HEREOF.

HCFA-1450 OCR/ORIGINAL

76

DIRECT COST & INDIRECT COSTS & COST OBJECTS

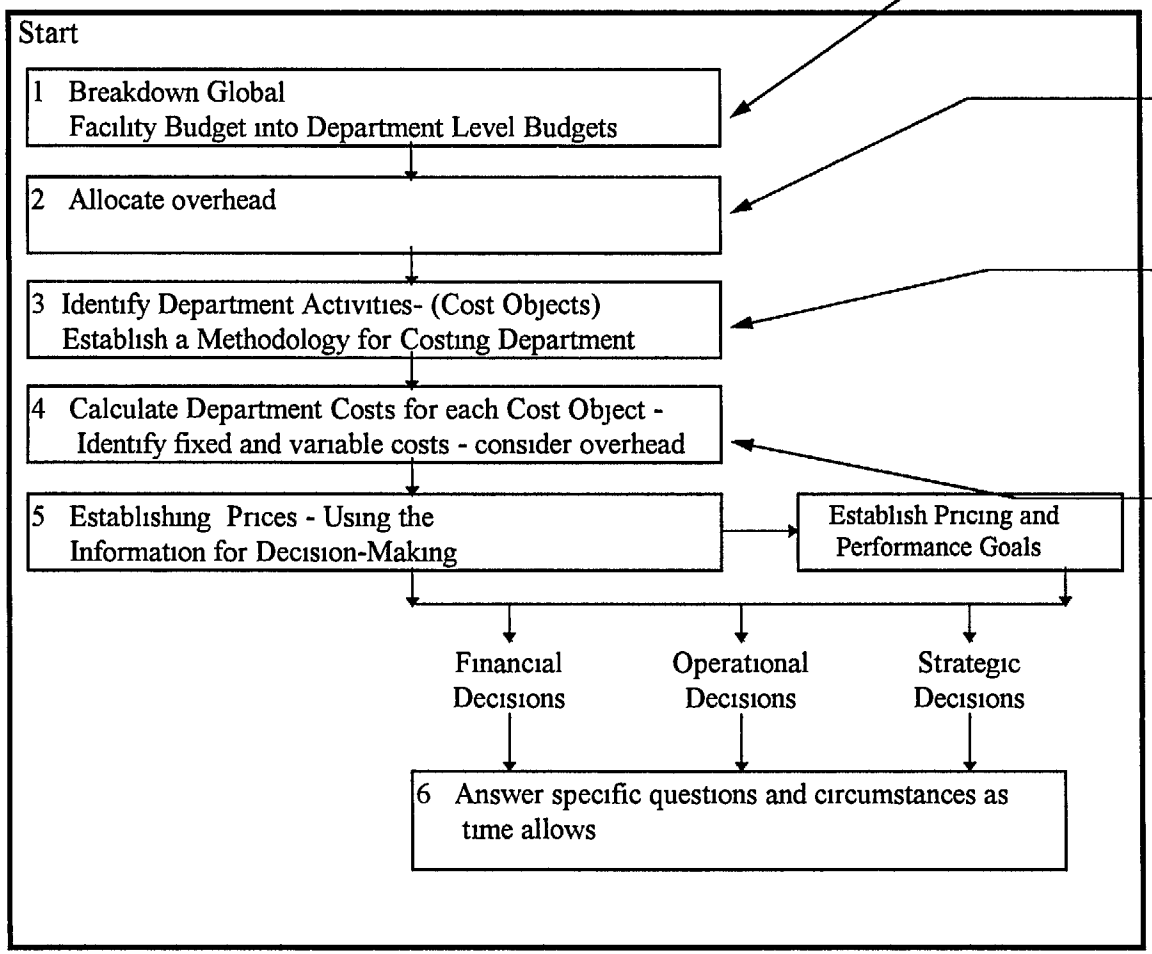
Direct Costs **can be EASILY traced directly to a Cost Object.**

Indirect Costs **are support costs or services that are LESS EASILY traced to a cost object and usually must be allocated to a Cost Object.**

Example: Cost Object = Chest X-Ray in the Radiology Department

Direct Costs	***Indirect Costs***
X-ray Film	**Department Pencils, Paper**
Radiologist's Time/Salary	**Manager's Time/Salary**
X-ray Machine's Equipment Costs	**Heating,**

Overview of Cost Accounting Process



- *List departments - Combine when useful or appropriate*
- *Insure statistics are available- Select a useful methodology and practice*
- *Select a methodology - RVU Costing - Match accuracy and level of detail with decision-making value*
- *Practice RVU costing*

28

BREAKING DOWN THE GLOBAL FACILITY BUDGET

Article	Expense	Allocation Measure	Amount
Article 1	*Salary*	_____	*50 000 000*
Article 2	*Salary Taxes*	_____	*18 500 000*
Article 3	*Utilities/Depreciation*	_____	*12 000 000*
Article 4	*Travel*	_____	*500 000*
Article 9	*Nutrition*	_____	*1 000 000*
Article 10	*Medicines*	_____	*30 000 000*
Article 12	*Equipment*	_____	*300 000*
Article 14	*Linens*	_____	*400 000*
Article 16	*Capital Repair*	_____	*800 000*
Article 18	*Misc*	_____	*26 500 000*
TOTAL			***140 000 000***

Departments

- Administration
- Building Engineering
- Surgery
- Oncology
- Gynecology
- Therapy
- Radiology
- Internal Medicine
- ENT
- Bacteriology Lab
- Clinical Lab
- Family Medicine
- Special Clinic
- Etc

List of Departments should correspond to the management structure of the hospital.

- **Each department or paraclinic should have a head or manager.**
  - **Each department or paraclinic could eventually manage their own budgets.**

ALLOCATING OVERHEAD COSTS

Overhead Costs -

- Two types of *indirect costs* *Indirect costs* related to a specific department and *indirect costs* related to the entire hospital or polyclinic The word OVERHEAD is used to describe indirect costs that are not easily associated with Cost Objects

Examples of Overhead:

OVERHEAD

Institutional Overhead

Building Heating & Electricity Costs
Administrative Salaries
Building Equipment
Etc

Department Overhead

Department Training & Travel Costs
Department Manager Salary
Department Tables, Chairs, etc
Etc

Among the goals of the cost accounting function is the development of "fully-loaded" costs "Fully-loaded" implies that all costs are eventually associated with each cost object including both the direct and the indirect costs

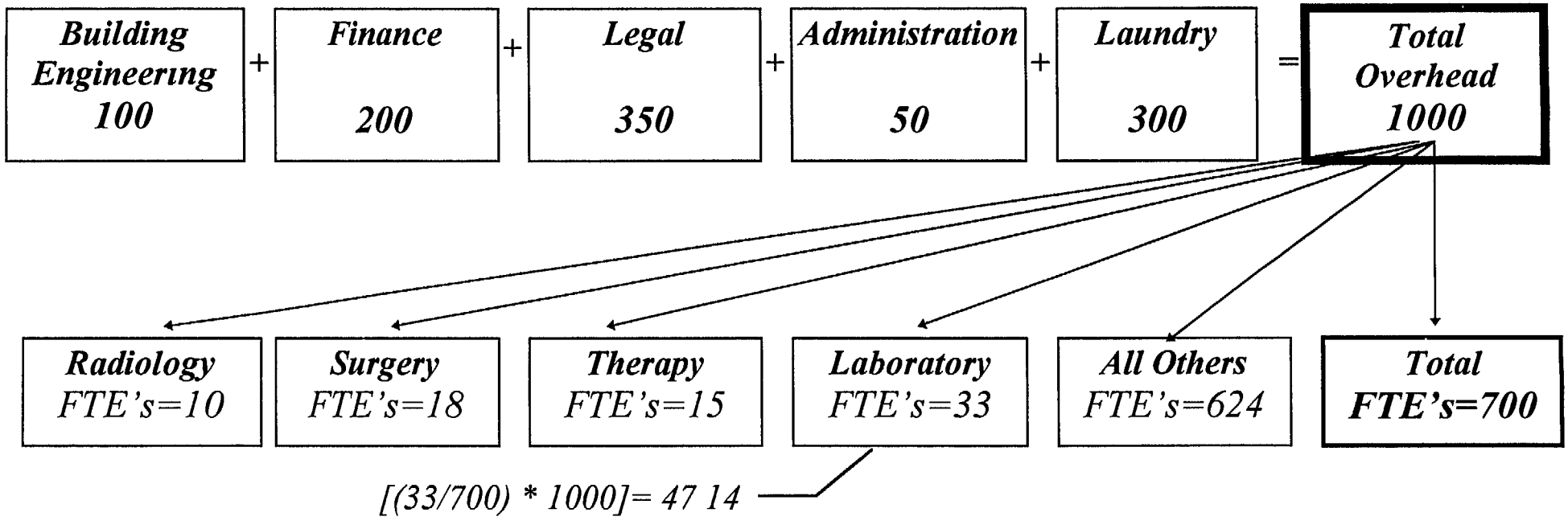
80

OVERHEAD ALLOCATION STATISTICAL MEASURES

Cost to be Allocated	Commonly Used Basis of Allocation
Buildings	Square Meters
Equipment	Square Meters, Hrs of Use
Employee Benefits	Gross Salaries
Building Engineering	Square Meters
Laundry Services	Kilos of Laundry
Cafeteria	Meals Served
Administration	Gross Salary Expense
Medical Records	Time Spent
Social Services	Time Spent

OVERHEAD METHODS - GROUPED OVERHEAD ALLOCATION

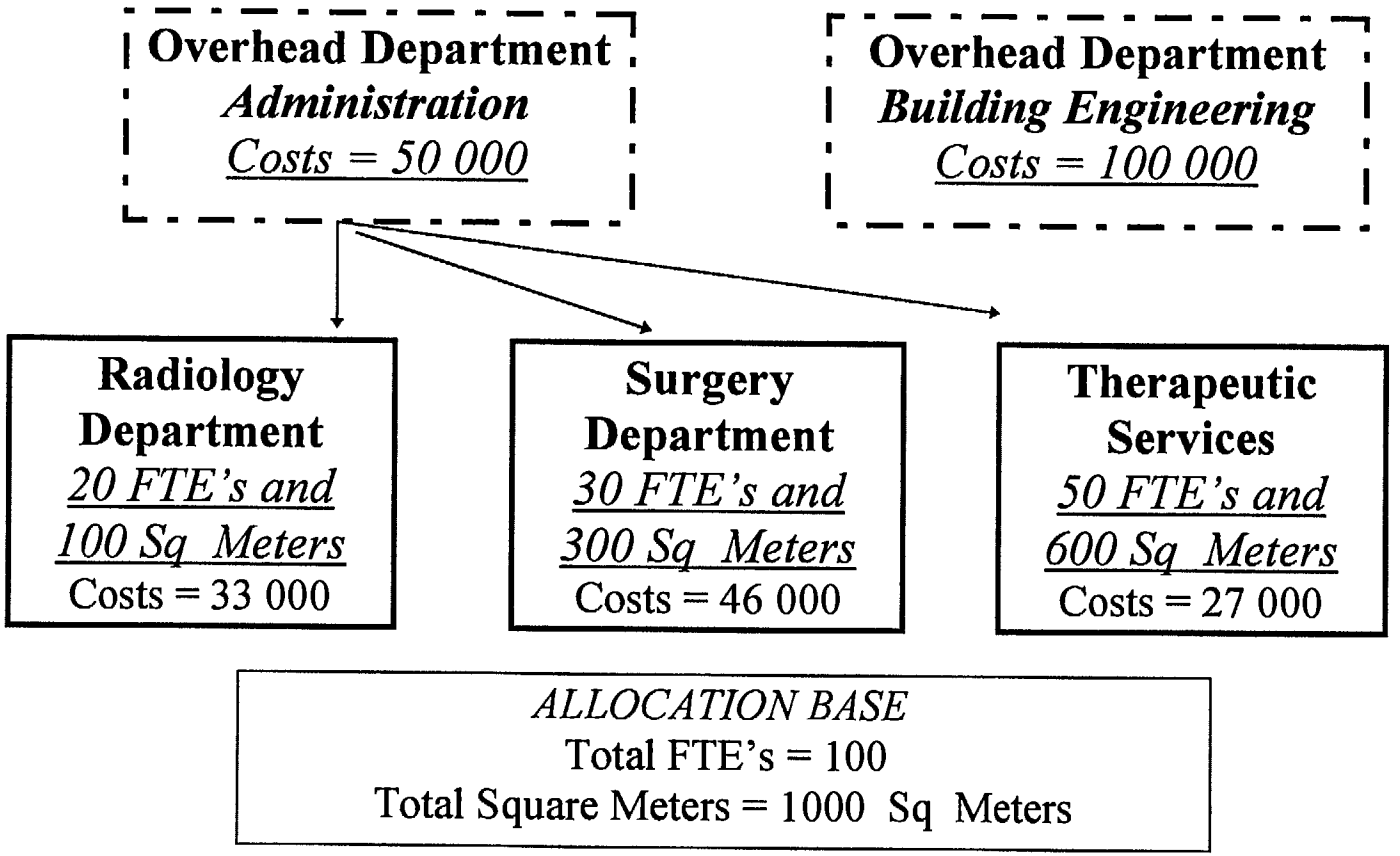
- All Overhead expenses are grouped, summed and then allocated by one measure (Example Allocate 1000 of costs based on FTE's)
  - **Advantages:** Simple and minimal requirements for allocation statistics
  - **Disadvantages:** Cannot trace costs from fellow overhead departments and is not a very accurate methodology



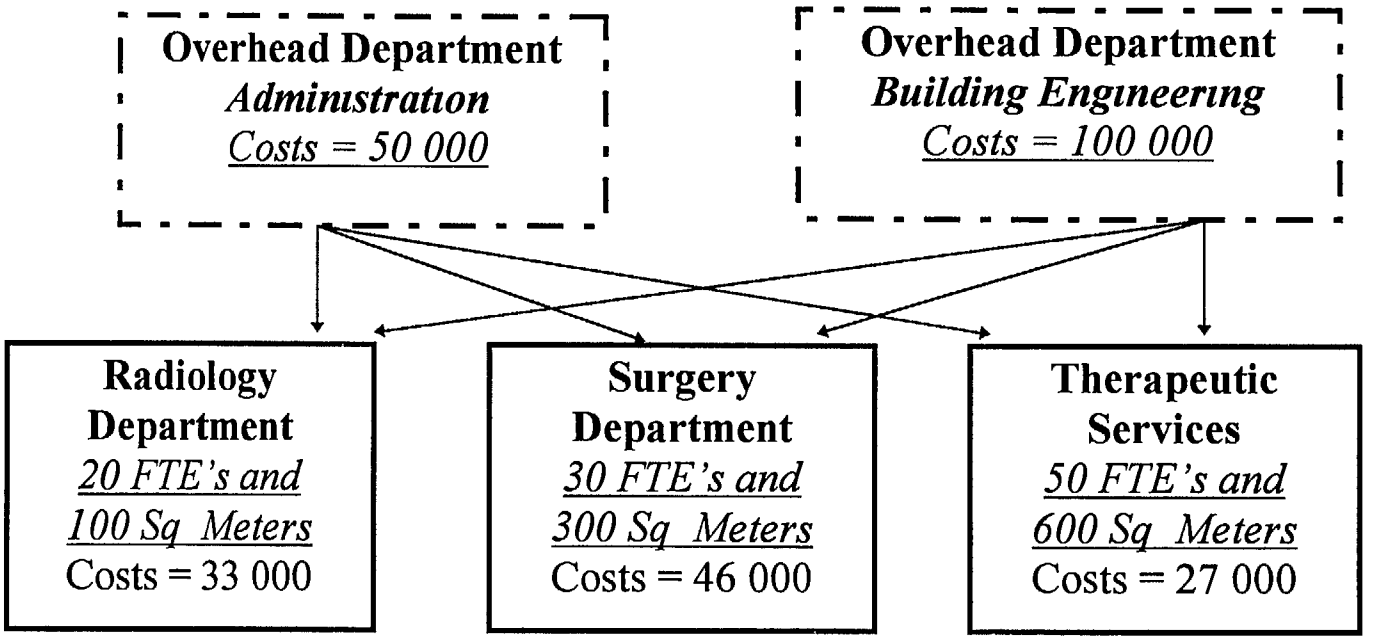
82

ALLOCATE OVERHEAD DIRECTLY (UNGROUPED)

Allocate Administration costs based on FTE's and allocate Building Engineering costs based on square meters



ALLOCATE OVERHEAD DIRECTLY (UNGROUPED)



	Radiology	Surgery	Therapy	Total
Administration	10 000	15 000	25 000	= 50 000
Building Maintenance	10 000	30 000	60 000	= 100 000
Total Allocated	*20 000*	*45 000*	*85 000*	*= 150 000*
Total Direct	*33 000*	*46 000*	*27 000*	
Fully Loaded	*53 000*	*91 000*	*112 000*	

20/100 * 50 000 = 10 000

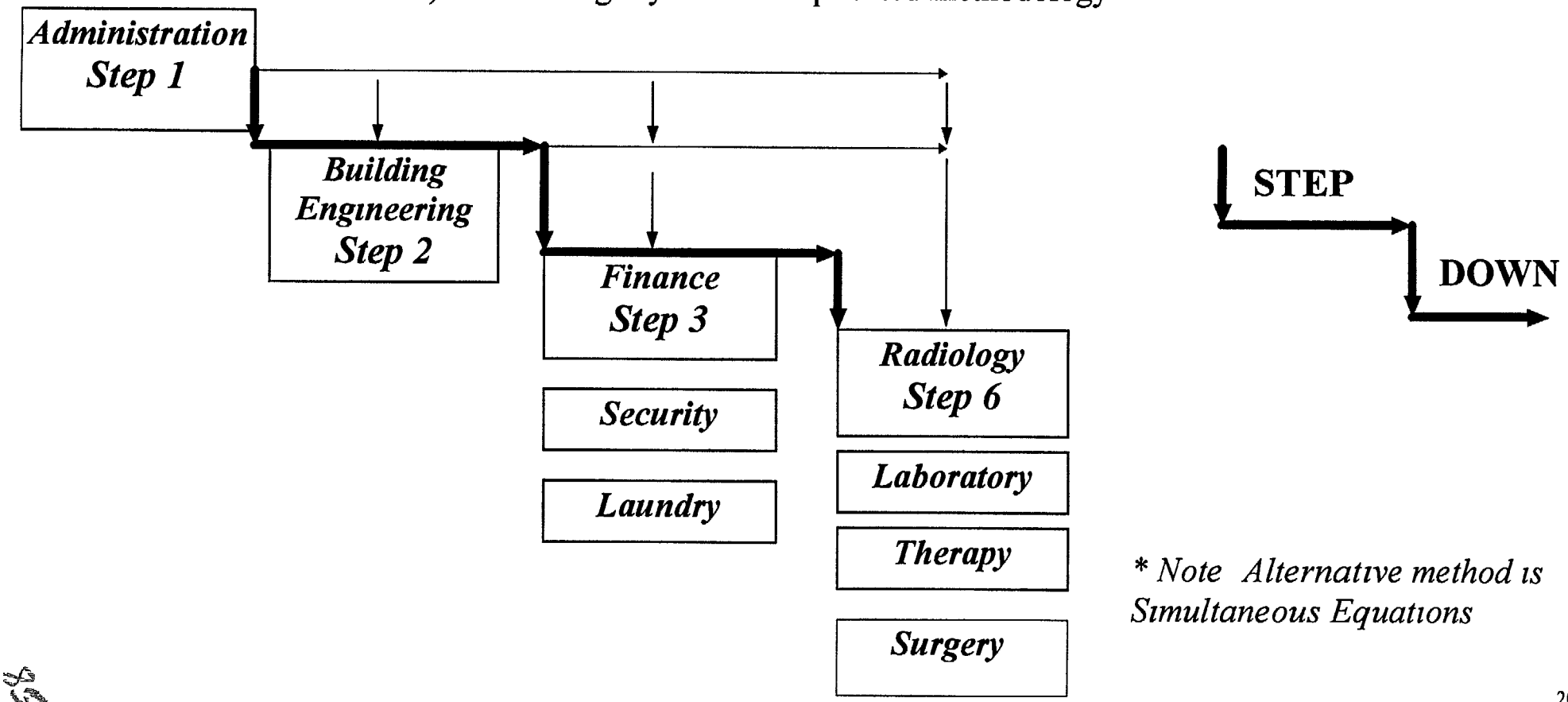
30/100 * 50 000 = 15 000

- Treatment
- Outpatient Visit
- Etc

ALLOCATE OVERHEAD USING STEP DOWN METHOD

- Expenses are allocated in sequence from one cost center to another
- After a department allocates all of it's expenses to other departments, no costs can be allocated back to the first department from any other area

  - **Advantages:** Traceable cost allocations and minimal requirements for allocation statistics
  - **Disadvantages:** Cannot send/receive costs from fellow overhead departments (can only send once) and is a slightly more complicated methodology



** Note Alternative method is Simultaneous Equations*

STEP DOWN ALLOCATION OF OVERHEAD

STEP 1: DETERMINE THE SEQUENCE OF ORGANIZATIONAL UNITS IN THE HEALTH FACILITY

Usually 3 categories:

- **overhead/administration**
- **paraclinic**
- **clinical departments**

Principles of Sequencing:

- **Departments listed first provide services and support to those listed below.**

-*Overhead departments*: provide support to intermediate & final cost centers
-*Intermediate departments*: provide support mainly to final cost centers
-*Final departments*: cost centers that contain cost objects (goal of costing) (e.g. procedures, treatments, bedday costs)

Within each category, centers with largest budgets should come first.

STEP DOWN ALLOCATION OF OVERHEAD

STEP 2: **SELECT A COST ALLOCATION STATISTIC FOR EACH DEPARTMENT BUDGET THAT WILL BE DIVIDED AMONG REMAINING DEPARTMENTS**

-Based on type of service or support provided
-Easily available and accurate statistic

STEP 3: **DETERMINE PROPORTION OF BUDGET ALLOCATED TO EACH REMAINING COST CENTER BASED ON % OF ALLOCATION STATISTIC USED IN EACH REMAINING DEPARTMENT**

STEP DOWN ALLOCATION OF OVERHEAD (cont'd)

How might the costs found within Administration and Building Engineering be allocated to the remaining "production" departments?

Departments	Amount to be allocated	Measure of Allocation
• **Administration**	4 000 000	Total Department Employees
• **Building Eng.**	1 000 000	Square Meters
• Surgery		
• Oncology		
• Gynecology		
• Therapy		
• Radiology		
• Internal Medicine		
• ENT		
• Bacteriology Lab		
• Clinical Lab		
• Family Medicine		
• Special Clinic		

Compare the direct method and the step method.

STEP DOWN ALLOCATION OF OVERHEAD (cont'd)

Department	*Employees*	*Square Meters*	*Amount to be allocated*
• **Administration**	**100**	**200**	**4 000 000**
• **Building Eng.**	**20**	**3000**	**1 000 000**
• Surgery	40	500	
• Oncology	5	400	
• Gynecology	10	300	
• Therapy	20	300	
• Radiology	15	300	
• Internal Medicine	40	300	
• ENT	10	300	
• Bacteriology Lab	10	200	
• Clinical Lab	20	200	
• Family Medicine	20	200	
• Special Clinic	10	200	
TOTAL	**320**	**6400**	**5 000 000**

final cost centers (no intermediate centers)

STEP DOWN ALLOCATION OF OVERHEAD (cont'd)

320 - 100 STEP-DOWN

Department	*Employees*	*Square Meters*	*Amount to be allocated*	*Sequence*	*1st Allocation*	*2nd Allocation*
• **Administration**	**100**	**200**	**4 000 000**	**1**	**(4 000 000)**	**-**
• **Building Eng.**	**20**	**3000**	**1 000 000**	**2**	20/220* 4000000	**(1 363,636)**
• Surgery	40	500			40/220* 4000000	500/3200* 1363636
• Oncology	5	400			5/220* 4000000	400/3200* 1363636
• Gynecology	10	300			10/220* 4000000	300/3200*1363636
• Therapy	20	300			20/220* 4000000	300/3200* 1363636
• Radiology	15	300			15/220* 4000000	300/3200*1363636
• Internal Medicine	40	300	**3,200**		40/220* 4000000	300/3200* 1363636
• ENT	10	300			10/220* 4000000	300/3200*1363636
• Bacteriology Lab	10	200			10/220* 4000000	200/3200* 1363636
• Clinical Lab	20	200			20/220* 4000000	200/3200* 1363636
• Family Medicine	20	200			20/220* 4000000	200/3200* 1363636
• Special Clinic	10	200			10/220* 4000000	200/3200* 1363636
TOTAL	**320**	**6400**	**5 000 000**		**-**	**-**

STEP DOWN ALLOCATION OF OVERHEAD (cont'd)

Department	*1st Allocation*	*2nd Allocation*	*Total Overhead*	*Direct Costs*	*Total Department Costs*
• **Administration**	**(4 000 000)**	-			
• **Building Eng.**	1,363,636	**(1 363,636)**			
• Surgery	727,272	213,068	940,340	2,000,000	2,940,340
• Oncology	90,980	170,454	261,363	1,000,000	1,261,363
• Gynecology	181,818	127,840	309,658	1,500,000	1,809,658
• Therapy	363,636	127,840	491,476	1,500,000	1,991,476
• Radiology	290,908	127,840	418,749	750,000	1,168,749
• Internal Medicine	727,274	127,840	855,115	1,000,000	1,855,115
• ENT	181,818	127,840	309,658	750,000	1,059,658
• Bacteriology Lab	181,818	85,247	267,045	500,000	767,045
• Clinical Lab	363,636	85,227	448,863	500,000	948,863
• Family Medicine	363,636	85,227	448,863	1,000,000	1,448,863
• Special Clinic	181,818	85,227	267,045	800,000	1,067,045
TOTAL			**5,018,175**	**11,300,000**	**16,318,175**

VERIFIED WITH OVERHEAD TO BE ALLOCATED

STEP DOWN ALLOCATION OF OVERHEAD (cont'd)

QUESTION: What do you choose as final cost centers? Both Paraclinical and Clinical departments? Clinical Departments only?

IF Paraclinical and Clinical Departments are final cost centers:

1. **Overhead departments are allocated to paraclinical and clinical**
2. **List of cost objects comes from both paraclinic and clinical departments**
3. **Appropriate if fees are charged in paraclinics and clinical departments**
4. **Appropriate if cost per case can be compiled from cost objects in clinical and paraclinical departments.**

Increasingly used by Western Countries; it is more flexible in cost information

IF Clinical Departments are the ONLY final cost centers:

1. **Overhead costs are allocated first to paraclinicals, THEN total paraclinical costs (including overhead) are allocated to clinical units**
2. **Item 1 requires detailed assumptions about how paraclinic services are distributed to clinical departments. This is often not available.**
3. **List of cost objects comes from clinical departments only, e.g. full bed-day cost**
4. **Cost per case = Total bed-day cost * ALOS**

26

III. Developing Costs: *The RVU Method*

- **Benefits of the RVU Method of Costing**
  1. Manages cost distortions very well
  2. Allows considerable flexibility in selecting and defining cost objects
  3. Provides a rapid, easily maintained methodology for costing
  4. Simplifies the costing process
  5. Suitable for a diverse organization such as a hospital or polyclinic

- **The RVU Method**
  1. A mathematical method for assigning costs to cost objects
  2. Each cost object is first assigned a *relative value* (1, 2, 3, etc) The *relative value* is indicative of the amount of costs one cost object consumes verses another (Example, a 4 consumes twice as much costs as a 2)
  3. When the *relative value* is multiplied times the volume of each cost object, a pro-rata share of costs can be allocated to each cost object
  4. Key to the RVU Method is the determination of the *Relative Value* for each cost object

Example of RVU Costing:

Assume: *The radiology department does three things They take Chest X-Rays, Limb X-Rays and Skull X-Rays You have been asked to define the supply cost of each The only supply used is X-Ray Film Total film costs are 10 000*

Cost Object	(A) RVU	(B) Actual Volume	(C) Relative Volume	(D) Percent of Total Cost	(E) Total Cost	(F) Unit Cost	
Chest X-Ray	1	200	200	20%	2 000	10	*(2000/200)*
Limb X-Ray	1.25	400	500	50%	5 000	12.5	*(5000/400)*
Skull X-Ray	3	100	300	30%	3 000	30	*(3000/100)*
Totals		*700*	*1 000*	*100%*	*10 000*		

C = A x B
D = C divided by total of Column C
E = % of D x Total Costs
F = E divided by B

Question: How do you determine the RVU? This is a clearly a key to allocating costs accurately

- **Two Methods are Typically Used to develop the RVU.**

1 **The Ranking Method**

Rank each cost object in order of relative resource consumption and simply estimate an RVU by comparing each cost object to the first cost object

EXAMPLE

If supply consumption for a Chest X-ray = 1 Then

An X-ray of a Limb is = 1 25
An X-ray of the Skull is = 3 0

- Ranking requires an experienced group of individuals who through their professional judgment can *estimate* the relative consumption of costs Most experienced managers can provide accurate rankings

2. The Objective Data Method

Estimate the RVU using more "objective data" such as an estimate of the film consumed, or hours of labor involved

EXAMPLE:

Labor RVU Analysis using more objective data

Hours of labor for a Chest X-ray	= 10
Hours of labor for a Limb X-ray	= 15
Hours of labor for a Skull X-ray	= 20
TOTAL HOURS	**= .45**
TOTAL Number of Cost Objects	= 3
Average Labor/Cost Object	= 15

Therefore the RVU would be:

	Mathematics	RVU
A Chest X-Ray	10 divided by 15	= 0 66
A Limb X-Ray	15 divided by 15	= 1 00
A Skull X-Ray	20 divided by 15	= 1 33

96

III. Developing Costs: *An Exercise Using RVU Costing Methods*

You have been asked to go to the *Obstetrics Department* and calculate the costs of a birth The *Obstetrics Department* does only one thing They deliver babies There are two types of births, (1) Normal Births and (2) Complicated Births You have been asked to determine the cost for each type of birth

You have interviewed the Manager of the area as well as some experienced doctors and nurses Using the Ranking Method, they have determined the RVU's and told you the following information

- There are 1200 Normal Births per year
- There are 300 Complicated Births per year
- The Total Costs for the *Obstetrics Department* are 65 000 as follows

		RVU's	
		Normal	*Complicated*
Labor Costs per year	50,000	1	2
Supply Costs per year	10,000	1	4
Overhead Costs per year	5,000	1	1
Total Costs	**65 000**		

Question: What is the Unit Cost for each type of birth?

III. Developing Costs: *An Exercise Using RVU Costing Methods* -*THE ANSWERS*

Cost Object	RVU	Actual Volume	Relative Volume/Percent		Total Cost	Unit Cost
Normal Baby						
Labor	1	1 200	1 200 =	67% *	33 500	27 92
Supplies	1	1 200	1 200 =	50%	5 000	4 17
Other	1	1 200	1 200 =	80%	4 000	3 33
Total					**42 500**	**35.42**
			100% =			
Complicated Baby						
Labor	2	300	600 =	33%	16 500	55 00
Supplies	4	300	1200 =	50%	5 000	16 67
Other	1	300	300 =	20%	1 000	3 33
Total					**22 500**	**75.50**
Grand Total					**65 000**	

* *1200 + 600 = 1800* *1200/1800 = 67%* *67% * 50 000 = 33 500*
33 500 divided by 1200 (actual volume) = 27 92 (unit cost)

98

Class Exercise in RVU Costing *-Complete the following RVU Calculation for the Development of RVU's for various Laboratory cost objects*

Cost Object Description	Direct Labor Hours per Cost Object		Average Labor Hours Per Cost Object		RVU per Cost Object
Blood Sugar	*10*	/		=	
Blood Count	*05*	/		=	
Blood Type	*05*	/		=	
RH Factor	*15*	/		=	
Antibody Test	*10*	/		=	
Coagulant Test	*10*	/		=	
Transfusion	*15*	/		=	
Organism test	*15*	/		=	
Poison Screen	*05*	/		=	
ParasiteTest	*10*	/		=	

Totals *1 00*
Divided by *10 Cost Objects*
Equals ***10 Average time per Cost Object***

Cost Object Number	Cost Objects Performed		Relative Value per Cost Object		Adjusted Volume of Cost Objects Performed
Blood Sugar	*4000*	*		=	
Blood Count	*3500*	*		=	
Blood Type	*2000*	*		=	
RH Factor	*4000*	*		=	
Antibody Test	*4500*	*		=	
Coagulant Test	*6000*	*		=	
Transfusion	*2200*	*		=	
Organism test	*1800*	*		=	
Poison Screen	*4000*	*		=	
ParasiteTest	*3000*	*		=	
TOTALS	**35,000**				?

Total operating cost of Laboratory for the period 753,500
Adjusted number of Cost Objects performed ?
Weighted Average Cost Per Cost Object ?

Cost Object Number	Weighted Average Cost Per Cost Object	RVU	Adjusted Cost Per	Cost Objects Performed	Gross Cost
Blood Sugar					
Blood Count					
etc	etc	etc	etc	etc	etc

Class Exercise RVU Costing *-Answers*

Cost Object Number	Direct Labor Hours per Cost Object		Average Labor Hours Per Cost Object		RVU per Cost Object
Blood Sugar	*10*	/	*10*	=	*1 0*
Blood Count	*05*	/	*10*	=	*5*
Blood Type	*05*	/	*10*	=	*5*
RH Factor	*15*	/	*10*	=	*1 5*
Antibody Test	*10*	/	*10*	=	*1 0*
Coagulant Test	*10*	/	*10*	=	*1 0*
Transfusion	*15*	/	*10*	=	*1 5*
Organism test	*15*	/	*10*	=	*1 5*
Poison Screen	*05*	/	*10*	=	*5*
ParasiteTest	*10*	/	*10*	=	*1 0*

Totals *1 00*
Divided by *10 Cost Objects*
Equals ***10 Average time per Cost Object***

Cost Object Number	Cost Objects Performed		Relative Value per Cost Object		Adjusted Volume of Cost Objects Performed
Blood Sugar	*4000*	*	*1 0*	=	*4000*
Blood Count	*3500*	*	*5*	=	*1750*
Blood Type	*2000*	*	*5*	=	*1000*
RH Factor	*4000*	*	*1 5*	=	*6000*
Antibody Test	*4500*	*	*1 0*	=	*4500*
Coagulant Test	*6000*	*	*1 0*	=	*6000*
Transfusion	*2200*	*	*1 5*	=	*3300*
Organism test	*1800*	*	*1 5*	=	*2700*
Poison Screen	*4000*	*	*5*	=	*2000*
ParasiteTest	*3000*	*	*1 0*	=	*3000*
TOTALS	**35,000**				**34,250**

Total operating cost of Laboratory for the period 753,500
Adjusted number of Cost Objects performed 34,250
Weighted Average Cost Per Cost Object 22

Cost Object Number	Weighted Average Cost Per Cost Object	RVU	Adjusted Cost Per	Cost Objects Performed	Gross Cost
Blood Sugar	22	1 0	22	4000	38000
Blood Count	22	5	11	3500	38500
etc	etc	etc	etc	etc	etc

100

APPLYING RVU TECHNIQUES: COSTING PROCEDURES & TREATMENTS IN EACH DEPARTMENT

PREPARATION: Calculate department level costs (direct and overhead costs)

1 Define cost objects in the following departments Discuss the problems/concerns with each

2 What would you do with the costs in the administration department?

3 How might your definition of cost objects within a department change over time?

Departments

- Administration
- Building Engineering
- Surgery
- Oncology
- Gynecology
- Therapy
- Radiology
- Internal Medicine
- ENT
- Bacteriology Lab
- Clinical Lab
- Family Medicine
- Special Clinic
- Etc

Tips:

- Define cost objects which have statistics that are readily available
- Define cost objects at a level of detail which will be sufficient to make meaningful decisions such as
  - *Decisions for Price-Setting*
  - *Decisions for Cost Management*
  - *Decisions for Productivity and Staffing levels*
- Define cost objects so that it is not too difficult to calculate nor maintain the costs over time

APPLYING RVU TECHNIQUES: COSTING PROCEDURES & TREATMENTS IN SURGERY

Cost Objects: The Surgery department breaks the services into 3 Types of Surgery, Level I through III based on surgical complexity and duration. Using an RVU methodology and the information shown below calculate the costs of the three types of surgery

Yearly Department of Surgery Budget

Article 1	*Salary*	*5 000 000*
Article 2	*Salary Taxes*	*1 850 000*
Article 3	*Utilities/Depreciation*	*1 200 000*
Article 4	*Travel*	*50 000*
Article 9	*Nutrition*	*100 000*
Article 10	*Medicines*	*3 000 000*
Article 12	*Equipment*	*30 000*
Article 14	*Linens*	*40 000*
Article 16	*Capital Repair*	*80 000*
Article 18	*Misc*	*2 600 000*
	TOTAL Departmental Costs	***13 950 000***
Administration Overhead		*1 000 000*
TOTAL Costs		***14 950 000***

Statistical Information

Cost Object	**Yearly Quantity**
Surgery Level I	30000
Surgery Level II	10000
Surgery Level III	4000
TOTAL	**44000**

RVU's

Surgery Level	***I***	***II***	***III***
Salary	10	15	20
Utilities	10	20	30
Travel	10	10	10
Nutrition	10	10	10
Medicines	10	30	50
Equipment	10	15	20
Linens	10	11	12
Capital Repair	10	10	10
Misc	10	15	20

APPLYING RVU TECHNIQUES: COSTING PROCEDURES & TREATMENTS IN SURGERY

RVU's *Surgery Level*	*I*	*II*	*III*
Salary	1 0	1 5	2 0
Utilities	1 0	2 0	3 0
Travel	1 0	1 0	1 0
Nutrition	1 0	1 0	1 0
Medicines	1 0	3 0	5 0
Equipment	1 0	1 5	2 0
Linens	1 0	1 1	1 2
Capital Repair	1 0	1 0	1 0
Misc	1 0	1 5	2 0

1. **If....Then...statements for each cost type**
   - ***(If Level I equals 1.0, then Level II equals ???)***
   - ***Based on experienced manager's opinion or group opinion***
   - ***Fast, surprisingly accurate***

2. **Actual Data Analysis for each cost type**
   - ***Obtain relevant data***
   - ***Edit data as required***
   - ***Option to group data into ranges***

Research has shown that expert judgment often leads to similar RVUs as actual data analysis.

Insert 8 pages from costacct.xls

page 1: Simple calculation of a composite RVU - Surgery Department
page 2: Method One: Calculating procedure costs in a department using total Department costs
page 3: Estimating Labor RVUs with Labor time - laboratory
page 4: Estimating non-labor RVUs with expert judgment
page 5: Method Two: Calculating Procedure/Treatment costs by type of cost
page 6: Method Three: Calculating .... by Detailed RVUs
page 7: Comparison of RVU Methods
page 8: Calculating total costs of Treatments and Procedures

104

Simple *Calculation of a Composite RVU -Surgery Department*

Article No	Expense	Column 1 RVU Surgery Level I	Column 2 RVU Surgery Level II	Column 3 RVU Surgery Level III	Column 4 Sum of Col 1 2 & 3 Sum of RVU's
1 & 2	$6,850,000	1	1 5	2	**4 5**
3	$1,200,000	1	2	3	**6**
4	$50,000	1	1	1	**3**
9	$100,000	1	1	1	**3**
10	$3,000,000	1	3	5	**9**
12	$30,000	1	1 55	2	**4 55**
14	$40,000	1	1 1	1 2	**3 3**
16	$80,000	1	1	1	**3**
18	$2,600,000	1	1 5	2	**4 5**
TOTAL	**$13,950,000**				**40 85**

Total Expense per RVU **341493** ($13 950 000 / 40 85 = 341493)

	Column 5 (341493 * Column 1)	Column 5 (341493 * Column 2)	Column 7 (341493 * Column 3)	Check Figure
	341493	512240	682987	
	341493	682987	1024480	
	341493	341493	341493	
	341493	341493	341493	
	341493	1024480	1707466	
	341493	529315	682987	
	341493	375643	409792	
	341493	341493	341493	
	341493	512240	682987	
TOTAL	3073439	4661383	6215177	13950000

	(3073439 / 13950000)	(4661383 / 13950000)	(6215177 / 13950000)
Composite RVU	**0 220318237**	**0 334149327**	**0 445532436**

Summary Composite RVU depends on RVUs for each budget line item. Here each category of RVU is weighted equally, but one could also weight individual RVUs by the amount of budget for each line item

Method One Calculating Procedure/Treatment Costs in a Department USING *TOTAL DEPARTMENT COSTS*

Total Dept Costs
$13,950,000 00

Cost Object	Column1 Quantity	Column 2 Total RVU	Column 3 (Column 1*Column 2) Weighted Quantity	Column 4 (Column 3 / 11733) Percent of Total Costs	Column 5 (Column 4 * $13950000) Share of Total Costs	Column 6 (Column 5 / Column1) Total Unit Cost
Surgery Level I	30000	0 22	6610	6610/11733 = 56	$7,858,335	$261 94
Surgery Level II	10000	0 33	3341	3341/11733 = 28	$3,972,825	$397 28
Surgery Level III	4000	0 45	1782	1782/11733 = 15	$2,118,840	$529 71
Total	**44000**		**11733**		**$13,950,000**	

This method takes a composite RVU for all department costs and allocates these costs to each cost object Afterwards, overhead from administration can be added, or, overhead could be added into the $13 950 000 amount from the start

Benefits Easy, Quick

Drawbacks Little visibility of component costs,
Difficult to determine fixed and variable costs,
Not real useful for detailed performance reporting

ESTIMATING LABOR RVUs with LABOR TIME -Laboratory Department

Department	LABORATORY	
Budget Articles	1+ 2	
U **Total Cost Center Costs**		2,066,000,000

Cost Object	Labor Time (minutes) Doctors	Nurses	Aides	Oth	Total Min	Labor RVU
I - simple tests					5	0 227272727
II - complex tests					17	0.772727273
Total					22	1

	N *J* Labor RVU	*O* Actual Volume	*P* *J*O* Adjusted Volume		*Q* cost per stand. unit	*R* *Q*J* cost per test	*S* *R*O* Allocated Costs
I - simple tests	0 22727	*285,605*	64,910		14,282	3,246	927,065,181
II - complex test	0 77273	*103,199*	79,745		14,282	11,036	1,138,934,819
Total		388,804	144,655			*T*	2,066,000,000
					Verify with budget		2,066,000,000
					Discrepancy		0

Note Labor RVUs based on minutes for conducting treatment
Labor RVUs do not separate staff categories
Doctors' time is basis for RVUs because their time is most expensive
Simple but good approximation for labor-RVUs

ESTIMATING NON-LABOR RVUs with EXPERT JUDGMENT - Laboratory Department

Department LABORATORY

Budget Article 3+4+9+14+18+overhead (all non-labor articles except medicines)

U **Total Cost Center Costs** 574,323,000

Cost Object	Coefficent of Intensity	Labor RVU
I - simple tests	1	0 5
II - complex test	1	0.5
Total	2	1

Notes
Assume non-labor resources shared equally = 1
Few statistics available to estimate non-labor RVUs
Medicine costs estimated separately
Simple but good approximation

	N *J* Labor RVU	*O* Actual Volume	*P* *J*O* Adjusted Volume	*Q* cost per stand. unit	*R* *Q*J* cost per test	*S* *R*O* Allocated Costs
I - simple tests	0 5	*285,605*	142,803	2,954	1,477	421,882,286
II - complex test	0.5	*103,199*	51,600	2,954	1,477	152,440,714
Total		388,804	194,402		*T*	574,323,000
				Verify with budget		574,323,000
				Discrepancy		0

Method Two. Calculating Procedure/Treatment Costs in a Department by *BY TYPE OF COST -Surgery Department*

Total Dept Salary Costs
$6,850,000 00

Cost Object	Column1 Quantity	Column 2 Salary RVU	Column 3 (Column 1*Column 2) Weighted Salary	Column 4 (Column 3 / 53000) Percent of Total Costs	Column 5 (Column 4 * $6850000) Share of Total Costs	Column 6 (Column 5 / Column1) Salary Unit Cost	Optional Column 7 (Est $2 million) Variable Unit Cost
Surgery Level I	30000	1 00	30000	30000/53000 = 5660377	$3,877,358	$129 25	$37 74
Surgery Level II	10000	1 50	15000	15000/53000 = 2830188	$1,938,679	$193 87	$56 61
Surgery Level III	4000	2 00	8000	8000/53000 = 1509433	$1,033,962	$258 49	$75 47
Total	**44000**		**53000**		**$6,850,000**		

This method applies an RVU for each cost type costs and allocates these costs to each cost object Afterwards, all component cost are summed and overhead from administration is added

Benefits

Easy
Good visibility of component costs,
Easier to determine fixed and variable costs,

Drawbacks

More complicated and time consuming

Method 2 Final RVU	Method 1 Final RVU
0 76	0 22
1 34	0 33
1 92	0 45

Final Cost	Final Cost
$241 82	$261 94
$425 70	$397 28
$609 58	$529 71

Method Three. Calculating Procedure/Treatment Costs by DETAILED RVU's (staff types) & BY TYPE OF COST -Surgery Department

Total Dept Salary Costs
$6,850,000 00

Cost Object	Column1 Quantity	Column 2 Doctor Salary RVU	Column 3 Nurse Salary RVU	Column 4 Other Salary RVU	Column 5 (Column 2 1 33) Weighted Salary Doctor	Column 6 (Column 3 * 0 94) Weighted Salary Nurse	Column 7 (Column 4 * 0 72) Weighted Salary Other	Column 8 (Sum Column 5 6 7) **Total Salary Weight**	Column 9 (12 41 / 3) Average Weight	Column 10 (Column 8 / Column 9) **RVU**
Surgery Level I	30000	1 00	1 00	1 00	1 33	0 94	0 72	3 00	4 14	**0 72**
Surgery Level II	10000	1 50	1 50	1 00	2 00	1 41	0 72	4 14	4 14	**1 00**
Surgery Level III	4000	2 00	2 00	1 00	2 67	1 89	0 72	5 28	4 14	**1 28**
TOTAL	**44000**							**12 41**		

#1 Avg Wage per Year	**140400000**	**99360000**	**76278860**
#2 Total Avg Wage per Year / 3	**105346287**	**105346287**	**105346287**
Wage Weight = #1 / #2	**1 33**	**0 94**	**0 72**

	Column 10 (from above) **RVU**	Column 11 (from above) Quantity	Column 12 (Col 10 Col 11)) Adjusted Quantity	Column 13 (6850000 / 36850)) Adj/Vol Per/Freq	Column 14 (Col 13 Col 10)) **Salary Unit Cost**	Column 15 (Col 14 Col 11)) Allocated Costs
Surgery Level I	**0 72**	30000	21750	$185 89	**$134 77**	$4,043,066
Surgery Level II	**1 00**	**10000**	**10000**	**$185 89**	**$185 89**	**$1,858,894**
Surgery Level III	**1 28**	4000	5100	$185 89	**$237 01**	$948,040
TOTAL		**44000**	**36850**			**$6,850,000**

Note **RVUs for each Staff Cat**
Complicated, but same
Not recommended

Comparison of RVU Calculation Methods

Comparison of RVU's

	Method 1 *RVU*	*Method 2* *RVU*	*Method 3* *RVU*
Surgery Level I	0 22	0 76	0 78
Surgery Level II	0 33	1 34	1 32
Surgery Level III	0 45	1 92	1 85

Comparison of Unit Costs

	Method 1 *Unit Cost*	*Method 2* *Unit Cost*	*Method 3* *Unit Cost*
Surgery Level I	$261 94	$241 82	$247 35
Surgery Level II	$397 28	$425 70	$417 72
Surgery Level III	$529 71	$609 58	$588 10

Calculating Total Costs of Treatments and Procedures

Department laboratory

		Direct Labor Unit cost (based on RVU calculations	Direct Non-labor costs (based on RVU calculations	Overhead costs per unit (based on RVU calculations)	Capital Depreciation (annual depreciation per procedure)	Costs of Medicine and supply kits for each category of treatments/procedures	Total Resource costs	Taxes	Profit	Final Price
	Test Category									
1	*simple urine tests*									
2	*complex urine tests*									
3	*Blood test, Category 1*									
4	*Blood test, Category 2*									
5	*Blood test, Category 3*									
6	*etc*									

IMPLEMENTING RVUs & UNDERSTANDING COSTS- SUMMARY POINTS

1. **<u>What do you need to calculate RVUs?</u>**

- ***List of cost objects (treatments, procedures, services)***
- ***Volume statistics for each cost object for specified period of time***
- ***Budget allocation for major categories of resources for specified period of time***
- ***Statistics or expert judgment to assign resources to cost objects***

IMPLEMENTING RVUs & UNDERSTANDING COSTS- SUMMARY POINTS

2. **How detailed should RVU calculations be?**

- ***Costs differences between estimates using simple and detailed RVUs are usually very small.***

- ***In a health care market where market competition is not very strong, precision in cost caculations is not necessary.***

- ***RVUs based on expert judgment are usually very similar to RVUs based on statistical methods.***

- ***RVUs can be calculated for main categories of budget articles (labor, non-labor) and then combined to make a composite RVU for each treatment or procedure.***

- ***Medicines are usually calculated without RVUs because prices and drug avaialability vary tremendously and exact cost-recovery is essential.***

- ***Different hospitals can use the same RVUs if their treatment practices are similar. A national, regional, or local set of RVUs could be developed.***

IMPLEMENTING RVUs & UNDERSTANDING COSTS- SUMMARY POINTS

3. **How often should RVUs be revised?**

- ***When treatment practices change and the amount and/or cost of resources change substantially.***

- ***RVUs are usually stable over 1-2 years.***

4. **Does RVU costing generate standard (planned) or actual costs?**

- ***Usually, RVU costing generates ACTUAL costs NOT STANDARD costs.***

- ***RVU costing uses actual department budgets and actual volume of services for that period. If budgets and volume of services vary, then prices could change frequently (in a very competitive market economy) or could be set on an unit costs averaged over several months.***

IMPLEMENTING RVUs & UNDERSTANDING COSTS- SUMMARY POINTS

5. **How detailed should the list of cost objects be?**

- ***It would be very time-consuming to cost every test, procedure and treatment. Even if computers were available, all of this data would have to be updated in thecomputer on a regular basis.***

- ***At first, the list of cost objects might include 100 - 500 services. It should include the most frequently used tests and procedures. Often, some tests and procedures can be grouped in categories when resources required are similar.***

6. **What factors influence unit cost estimates?**

- ***Unit costs will change when:***
  - ***volume of services change;***
  - ***department budgets change;***
  - ***RVUs change (reflects a change in price and/or quantity of inputs);***

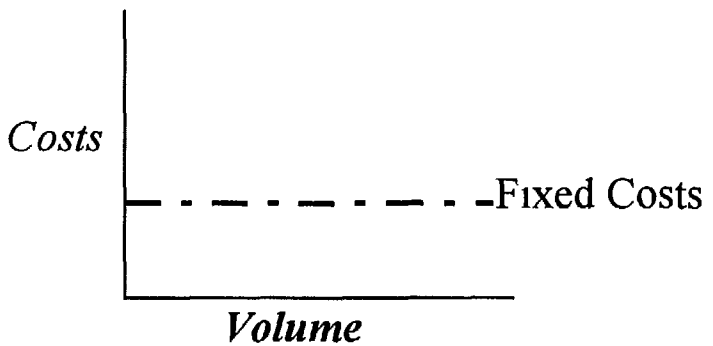
  price and quantity of medicines change

116

UNIT COSTS FOR PRICING - KEY ECONOMIC CONCEPTS

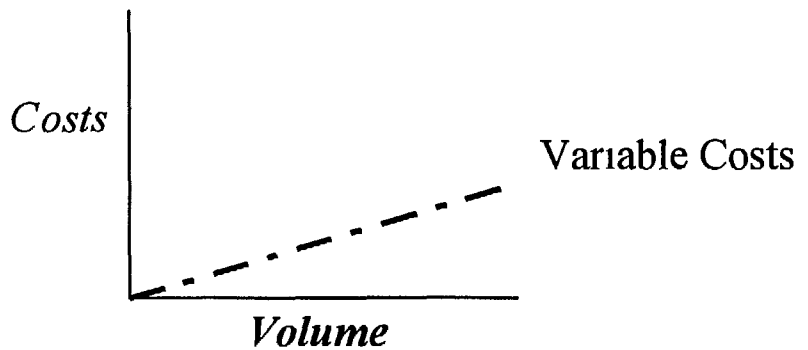
Fixed Cost Pattern

Costs remain fixed as volume changes



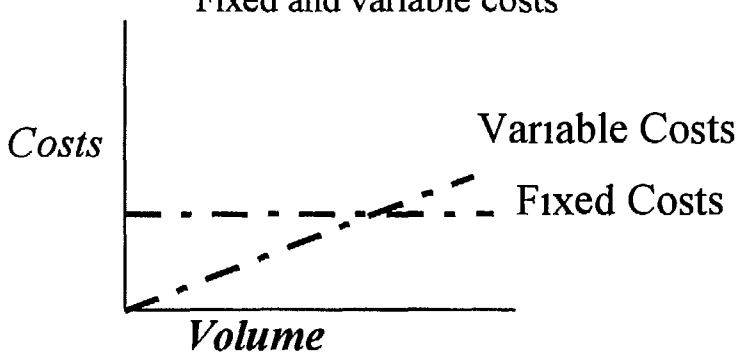
Variable Cost Pattern

Costs increase as volume changes



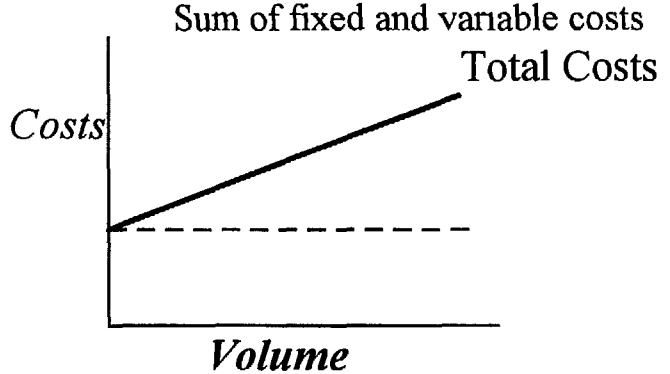
Component Costs

Fixed and variable costs



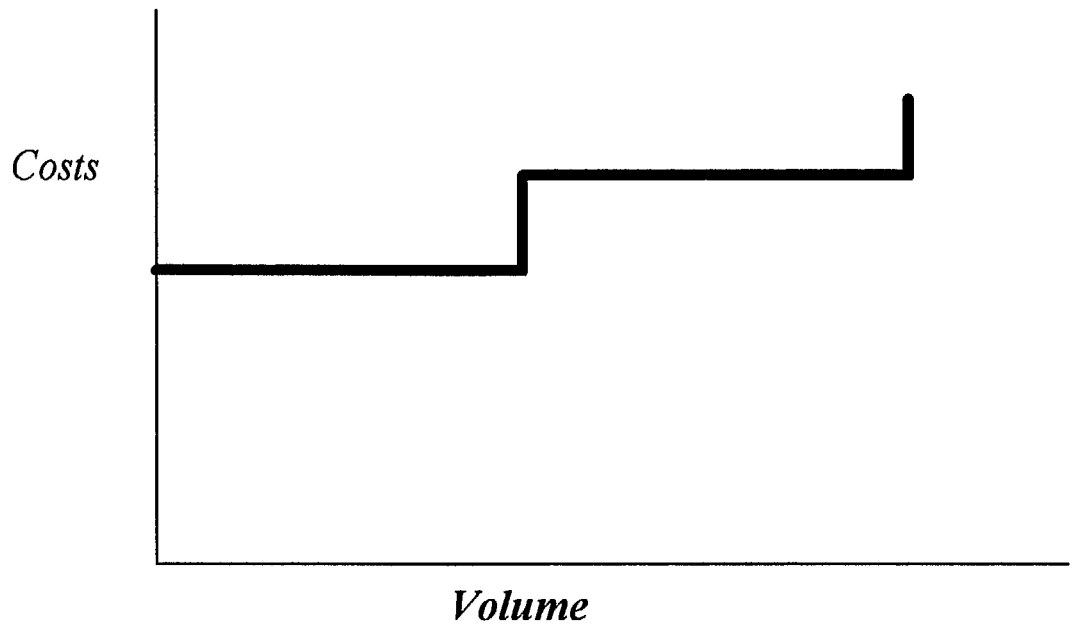
Total Cost Pattern

Sum of fixed and variable costs



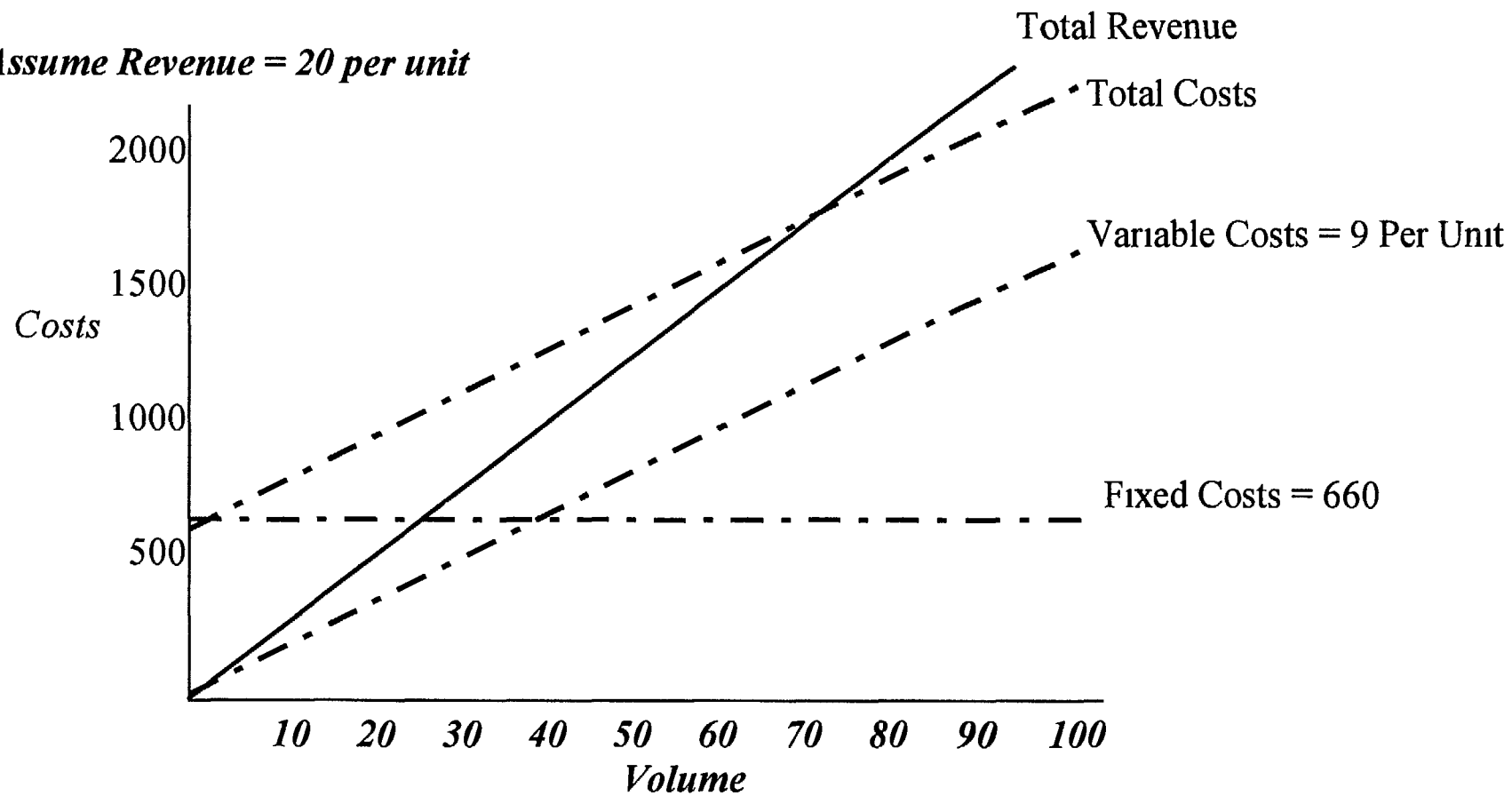
WHAT IS A SEMI-VARIABLE COST

A semi-variable cost is a cost that exhibits both a fixed pattern and a variable pattern Draw a "semi-variable" cost line on the following graph
When might this occur?



ECONOMIC PRINCIPLES OF PRICING: BREAK-EVEN AND CONTRIBUTION MARGIN

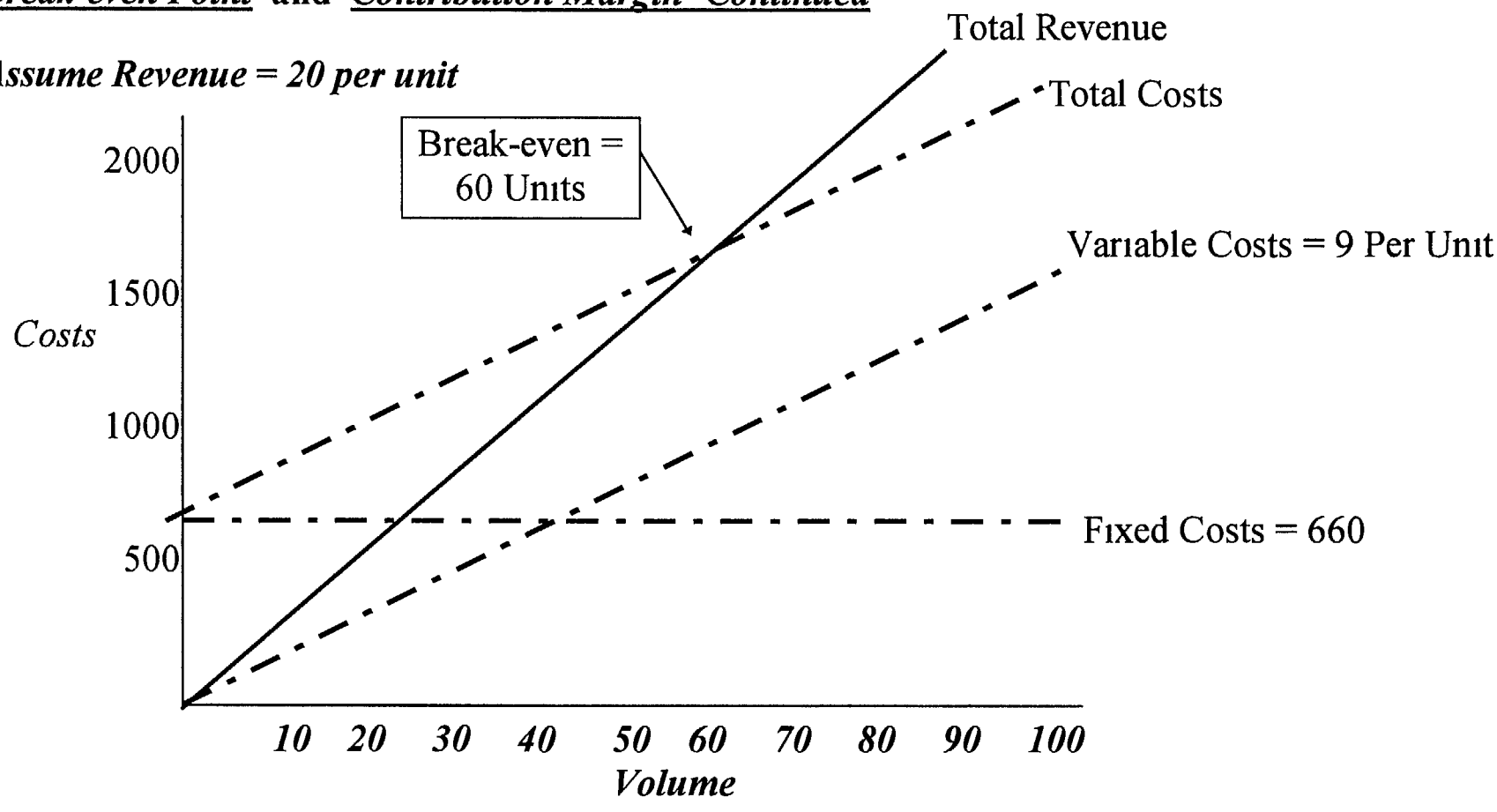
Assume Revenue = 20 per unit



Contribution Margin = The amount of revenue per unit in excess of variable costs
Break-even = Where Total Costs equals Total Revenue

Break-even Point and ***Contribution Margin- Continued***

Assume Revenue = 20 per unit



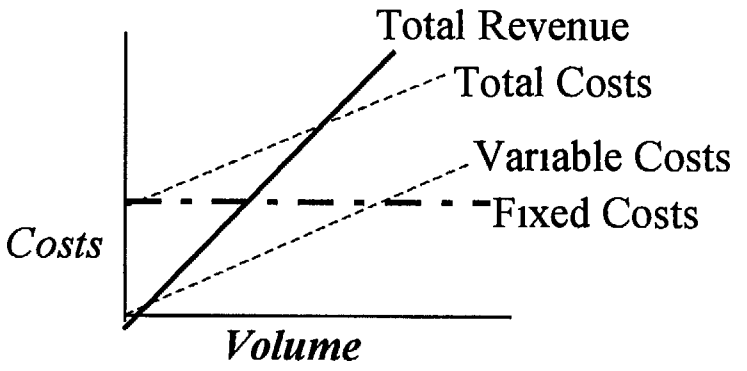
Contribution Margin = Price minus Variable Costs (20 - 9) = 11
Break-even = Fixed Costs divided by Contribution Margin (660 / 11) = 60

120

<u>Exercise</u> - In Fixed, Variable and Break-even Analysis

Calculate the break-even point of the following cost object

Total Department Fixed Costs = 1200
Cost Object's Price = 140
Cost Object's Variable Cost = 100



Answer

Break-even = Total Fixed Costs / Contribution Margin
Contribution Margin = 40 [140-100]

Therefore

Break-even = 30 **[1200 / 40]**

Exercise in Determining Fixed and Variable Costs

Method One = **Classifying each cost category by your opinion as to what is fixed and what is variable**

Usefulness of this method:

- There are too many exceptions in health care - need to use common sense
- The behavior of costs over changes in volume are unpredictable
- The services provided by health care are complex and inter-related

Classify the following items by fixed and variable costs

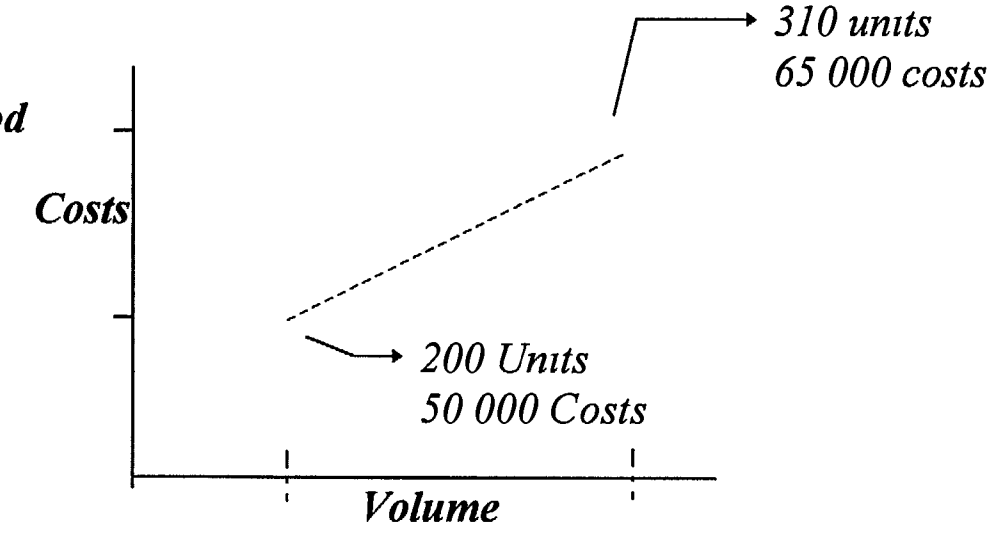
	Fixed %	Variable %
Manager Salary	100	0
X-RAY Film	0	100
Telephone	?	?
Electricity	?	?
Pharmacy-Pills	?	?
Laboratory Test	?	?
Other Examples		

122

Exercise in Determining Fixed and Variable Costs

***Method Two* = The High-Low Method**

The High Volume = 310 and 65,000
The Low Volume = 200 and 50,000



Therefore a difference of 110 units caused 15,000 in additional costs
This difference is assumed to be variable costs

Therefore variable costs per unit is 15,000 divided by 110 = 136 36

Because Fixed Costs = Total Costs minus Variable Costs
Fixed costs at 200 units = 50,000 - (136 36 x 200) = 22,728
Fixed costs at 310 units = 65,000 - (136 36 x 310) = 22,728

The weakness of this method is that it is based on extremes.

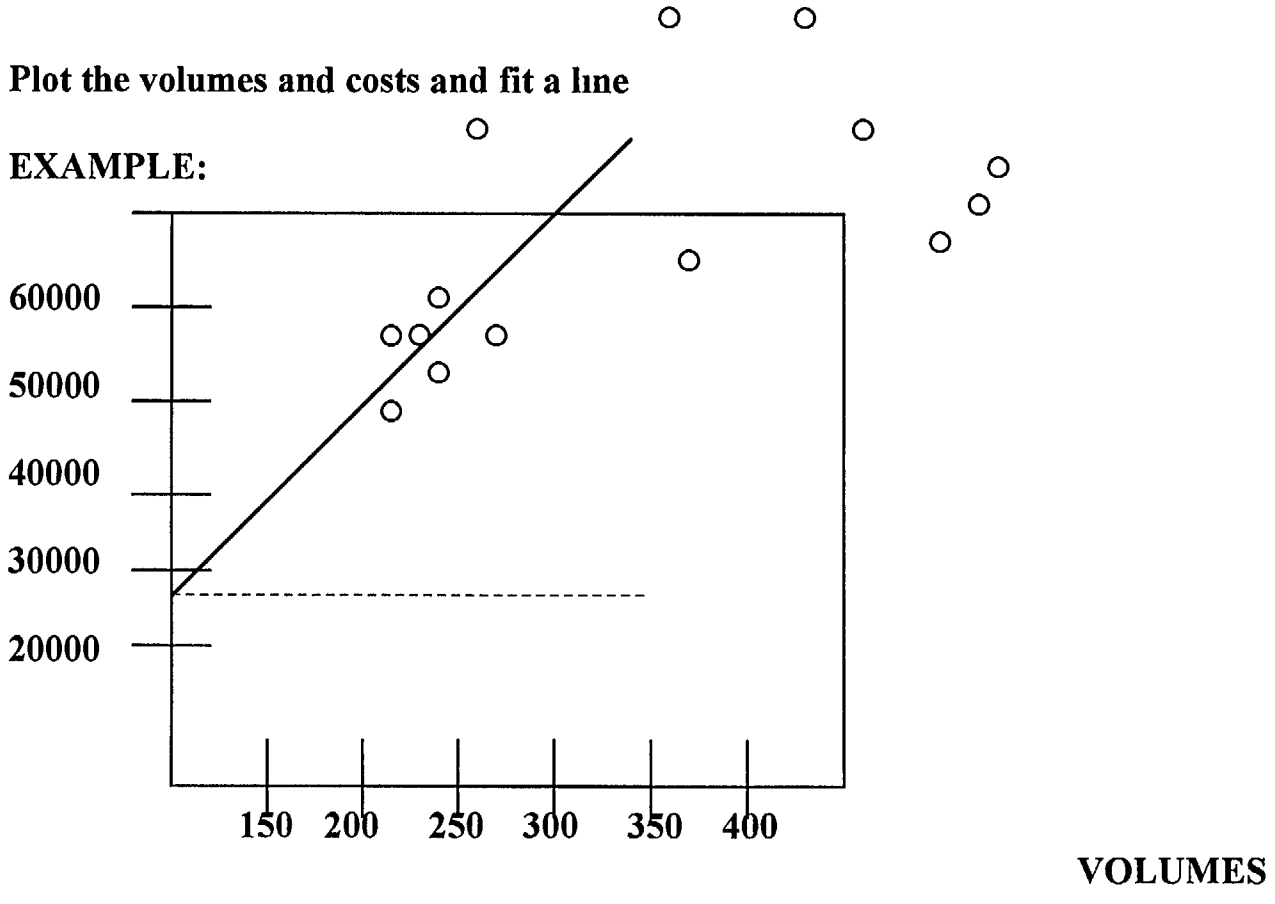
123

<u>Method three</u> The "Scatter" or Graph Method
(Regression Analysis)

Discuss the benefits and drawbacks of this method of determining fixed and variable cost patterns
Describe the relevant range.

Plot the volumes and costs and fit a line

EXAMPLE:



124

UNDERSTANDING COSTS FOR PRICE SETTING

Goal of Exercise: *Pricing a "Patient case or Visit" based on costs in the Surgery Department*

Known Yearly Costs and Statistics in "The Surgery Department"

	Total	*Fixed*		*Variable*
1 Salaries	5 000 000	4 000 000		1 000 000
2 Salaries- Taxes	1 850 000	1 480 000		370 000
3 Utilities	1 200 000	1 000 000		200 000
4 Travel	50 000	50 000		-
9 Nutrition	100 000	100 000		-
10 Medicine	3 000 000	-		3 000 000
12 Equipment	30 000	30 000		-
14 Linens	40 000	20 000		20 000
16 Capital Repair	80 000	80 000		-
18 Misc	2 600 000	2 600 000		-
TOTAL	**13 950 000**	**9 360 000**		**4 590 000**
Facility Overhead	1 000 000	1 000 000		-
Total Department Costs per year =	**14 950 000 =**	**10 360 000**	+	**4 590 000**

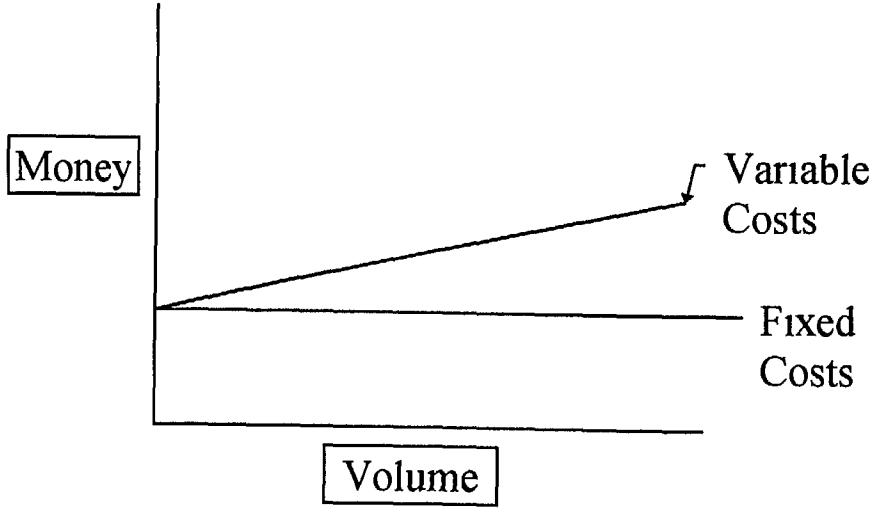
Total Level I Cases (or visits)	*30 000*
Total Level II Cases	*10 000*
Total Level III Cases	*4 000*

USING COSTS FOR PRICING

Create a per-case cost for all patients cases in this department. Based on that cost, what minimal price would you like to obtain?

Answer: Total Cost Per Case = 14 950 000/ 44 000 = 339.77

Fixed Costs	*10 360 000*
Variable Cost Per Case	*4 590 000 / 44 000 = 104 32*
Total Cost Per Case	***14 950 000 / 44 000 = 339.77***



Minimal price would be more than the variable costs of 104.32

"Full Cost" based on expected volumes of 44 000 would be 339.77

126

USING COSTS FOR PRICING (cont'd)

Question:

If we set the price at 500 per case and our total fixed costs are estimated to be 10 360 000, how many patient cases would we need to break-even? (We are assuming everyone pays their bill!)

Reminders

Break-even = Where Total Costs equals Total Revenue

Contribution Margin = The amount of revenue in excess of variable costs

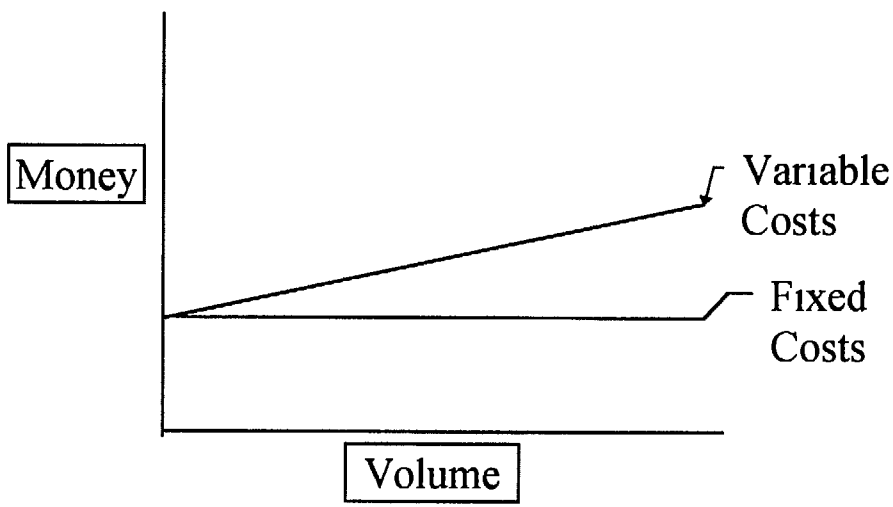
Answers

Break-even = Fixed Costs / Contribution Margin

= 10 360 000 / 395 68

= 26 183 Patient Cases

(Price **500** minus Variable costs **104 32**)



USING COSTS FOR PRICING (cont'd)

Question: Assume your patient volumes have been declining and you expect this trend to continue What price do we need to set to break-even if we are expecting only 30 000 patient cases and we have been told not to loose any money?

Reminders

Break-even = Where Total Costs equals Total Revenue

Contribution Margin = The amount of revenue in excess of variable costs

Answer:

Break-even = Fixed Costs / Contribution Margin

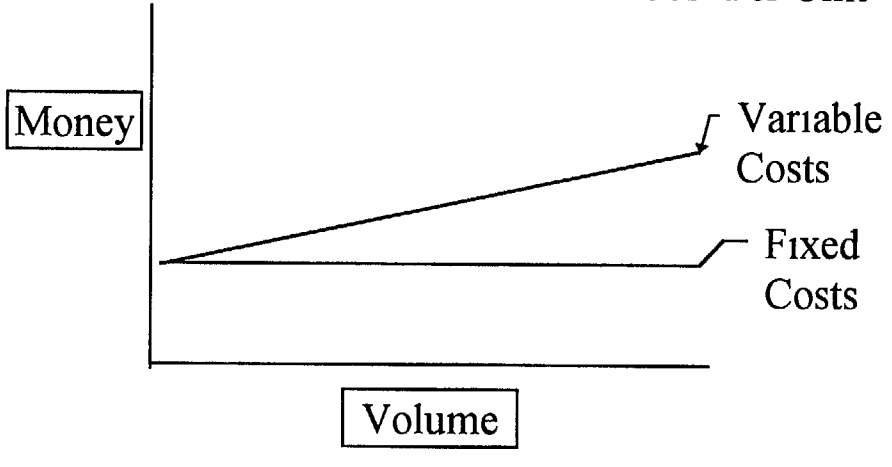
30 000 = 10 360 000 / ?

? = 10 360 000 / 30 000 = 345 33

345 33 + 104 32 = ***449.65***

Required Contribution Margin

Variable Cost Per Unit



128

USING COSTS FOR PRICING (cont'd)

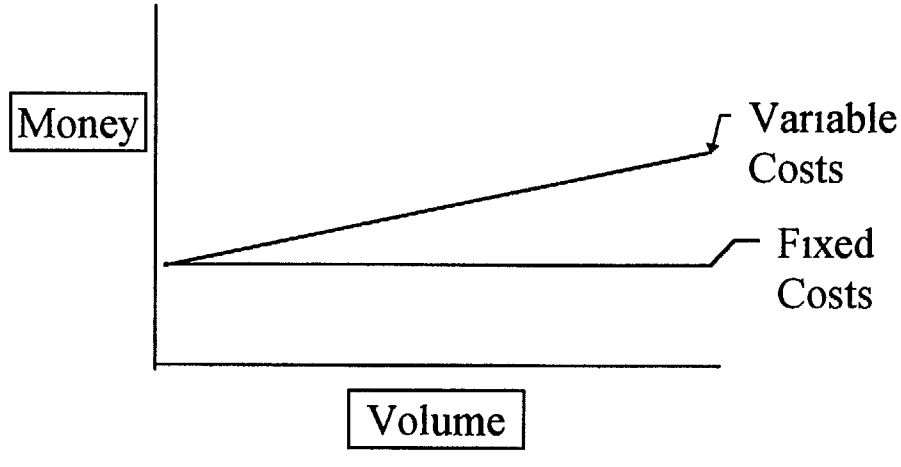
Question: The market-place sets the prices of services. You have no control over this issue. The market has set a price of 100 per patient case or visit.

You expect 39 000 patient cases. For each patient case, how much do you "lose"? Draw the revenue line on the graph below.

Reminders

Contribution Margin = The amount of revenue in excess of variable costs

Answer: *You will "loose" 104 32 - 100 = 4 32 for each patient day + all Fixed Costs*

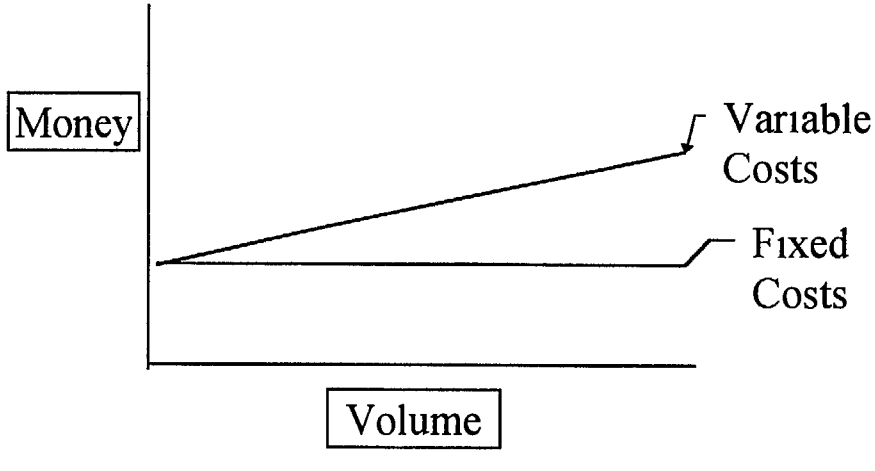


USING COSTS FOR PRICING (cont'd)

Question: Given a price of 100 (and the fact that you are loosing 4.32 per case per patient) discuss what options are available for controlling costs

DISCUSSION POINTS

- Lower All Variable Costs
- Identify those patient types that have the "worst" negative contribution (where variable costs are not being covered)
- Raise Prices
- Lower Fixed Costs
- Other Points



130

Discussion 1 - Pricing/Productivity/Investment and Divestment - *A Discussion Exercise*

Situation: Boris is a famous cost accountant and Chief Medical Doctor of a large inpatient and outpatient medical facility He has listened to many "experts" discuss new ways to finance health care Meanwhile, he has seen his budget reduced while the sick patients continue to enter the hospital He expects some of his financing to come from user fees and some to come from the government He also expects he will obtain more and more flexibility to define staffing levels within his facility In the final analysis, he knows it is his job to use any funds he does obtain to the very best of his ability He also feels the best way to manage resources is to make sure each of his department managers make good decision regarding the management of resources

Discuss:

- How will "optimizing" contribution margins of services help Boris? What are the key data elements necessary to do this?
- How can Boris link contribution margins with worker/department productivity?
- What would a performance report look like that might be useful to give to a department manager in this regard?
- What type of goals might Boris set for his department managers to better manage costs?
- How can cost accounting information be used to make an investment decisions?

Discussion 1 -*Direct and Indirect Costs*

Discuss the usefulness of knowing which costs are direct and which costs are indirect. Can you classify the following costs within the department of surgery as direct and indirect?

Direct Costs - Those costs directly linked to departmental operations
Indirect Costs - Those costs that are not direct

				Possible Answers	
	Total	*Fixed*	*Variable*	*Direct*	*Indirect*
1 Salaries	5 000 000	4 000 000	1 000 000	4 500 000	500 000
2 Salaries- Taxes	1 850 000	1 480 000	370 000	1 665 000	185 000
3 Utilities	1 200 000	1 000 000	200 000	900 000	300 000
4 Travel	50 000	50 000	-	-	50 000
9 Nutrition	100 000	100 000	-	-	100 000
10 Medicine	3 000 000	-	3 000 000	3 000 000	-
12 Equipment	30 000	30 000	-	30 000	-
14 Linens	40 000	20 000	20 000	10 000	30 000
16 Capital Repair	80 000	80 000	-	80 000	-
18 Misc	2 600 000	2 600 000	-	-	2 600 000
TOTAL	**13 950 000**	**9 360 000**	**4 590 000**	**10 185 000**	**3 765 000**
Facility Overhead	1 000 000	1 000 000	-		1 000 000
Total Costs per year =	**14 950 000 =**	**10 360 000+**	**4 590 000**	**10 185 000**	**4 765 000**

121

EXERCISES FOR COST ACCOUNTING

Exercise 1- The Costing Process

You have been asked to determine the costs of your institution for purposes of improving management's decisions regarding the use of limited resources You have decided on the following steps to complete the costing process Discuss each step in a group and note any difficulties, suggestions, or improvements you have with each step

Step	***Action***
1	*Define the cost objects you feel would be useful to the Executive Director*
2	*Collect/obtain financial Information for the past year for the entire organization*
3	*Define which Departments are overhead departments*
4	*Collect/obtain statistical information to allocate this overhead*
5	*Decide on an allocation methodology and allocate the overhead costs*
6	*Group costs into useful categories (Salary, Supplies, Equipment, Overhead, etc - Which categories would you choose?)*
7	*Classify the costs within each category as to what is fixed and what is variable*
8	*Develop RVU's for each cost object for each cost category*
9	*Calculate costs*
10	*Test the accuracy of the costs*

134

Exercise 2

Quick Exercise in Overhead Allocations - *The Polyclinic that you work in has their own laboratory which performs basic blood tests on patients You have been asked to eventually determine the costs of these blood tests and to include an allocated portion of the Polyclinic's overhead costs In this way the managers will understand their "full" costs You are asked to present the overhead allocation two ways*

> ***First,*** *allocate the overhead based on the* *Grouped Overhead Allocation Method* *using FTE's as the basis for allocation*
>
> ***Second,*** *allocate the overhead using the* *Single Step-Down Allocation Method* *Allocate the Administrative Overhead by FTE's, allocate the Laundry overhead costs by kilograms of laundry, and allocate the Maintenance overhead costs by square meters*

You are provided the following information

Overhead Department	Overhead Department	Overhead Department
Administration	*Laundry*	*Maintenance*
Costs = 50 000	*Costs = 100 000*	*Costs = 150 000*

Total Polyclinic FTE's	= 500
Laboratory FTE's	= 50
Total Polyclinic Kilograms of Laundry	= 120 000
Laboratory Kilograms of Laundry	= 6 000
Total Polyclinic Square Meters	= 80 000
Laboratory Square Meters	= 12 000

135

Exercise 2- ***Answers***

Quick Exercise in Overhead Allocations - *You were asked to present the overhead allocation two ways*

First, *allocate the overhead based on the Grouped Overhead Allocation Method using FTE's as the basis for allocation*

Total Polyclinic Overhead = 300 000
Laboratory's allocated Overhead = 30 000*

*** (Sum of 50 000 + 100 000 + 150 000) * (50/500) = 30 000***

Second, *allocate the overhead using the Single Step-Down Allocation Method Allocate the Administrative Overhead by FTE's, allocate the Laundry overhead costs by kilograms of laundry, and allocate the Maintenance overhead costs by square meters*

Allocated Administrative Overhead = 5 000
Allocated Laundry Overhead = 5 000
Allocated Maintenance Overhead = 22 500

Total Allocated to Laboratory = 32 500*

*** (Sum of 5 000 + 5 000 + 22 500***

Overhead Department *Administration Costs = 50 000*	Overhead Department *Laundry Costs = 100 000*	Overhead Department *Maintenance Costs = 150 000*
50 000 * (50/500) = 5 000	100 000 * (6 000/120 000) = 5 000	150 000 * (12 000/80 000) = 22 500

Exercise 3-

Quick Exercise in Fixed and Variable Costs -*You have just completed an overhead allocation to the Laboratory department You have been asked to use your best judgment and to decide which portion of the total costs are fixed and variable You have collected the following information and prepared the following worksheet*

Cost Type	*Total Amount*	*Fixed Amount*	*Variable Amount*
Overhead Allocation	*30 000*		
Administrative Salaries	*4 000*		
Clinical Salaries	*42 000*		
Medical Supplies	*10 000*		
Office and Paper Supplies	*1 000*		
Medical Equipment	*6 000*		
Electricity	*3 000*		
Office Chairs & Tables	*1 000*		
Telephone Costs	*3 000*	_____	_____
Total	***100 000***	?	?

Assume you the manager of this department At the beginning of the year you are given 100 000 and asked to make it last all year You must accept every patient that comes to your department You are told you are not to close operations under any circumstance You can only get more money if you can prove you require it but you must advise your superior at least 90 days in advance Describe the role of computing fixed and variable costs can have in this situation

What problems do you foresee in computing fixed and variable costs in your department?

Describe better methods for determining what costs are fixed and variable

Exercise 4- Applying the 80/20 Rule

You have been asked to provide cost accounting information for an entire hospital in 90 days! Describe the role of an 80/20 analysis to help minimize your effort What criteria might you use to perform the 80/20 analysis?

Answer

The 80/20 analysis would focus my attention on those areas (20%) that account for the majority of resource consumption (80%) Therefore, it would be useful to concentrate the costing effort on those activities that consume the majority of resources (costs)

An 80/20 is a "rough" estimate So, possible criteria for an 80/20 analysis might be

- *Volumes of activities - Assumes a relationship between quantity and costs*
- *Revenue - Assumes a relationship between price and costs*
- *Length of stay - Assumes a relationship between stay and costs*
- *Personal Estimate - Allows managers to estimate what few (20%) of the activities account for 80% of the costs*

Exercise 5- Overhead Allocation Statistics

You have been asked to improve an overhead allocation from the Building Maintenance Department to the Pharmacy Department. Discuss how you might go about this The current allocation is as follows

Sending Department = Maintenance

Supply Costs	100,000
Administration Costs	15,000
Labor- Salaries	192,000
TOTAL	307,000

Total Square Meters in Hospital	=	100,000
Rate per Square Meter	=	3 07 per Sq Mtr
Square Meters in Pharmacy	=	2,000
Current Allocation to Pharmacy	=	6,104 [3 07*2000]

Exercise 5 -*Answer*

Break-out the maintenance department's activities into two categories routine maintenance and department specific maintenance Allocate the routine maintenance based on square meters and the department specific maintenance based on total equipment cost identified to that department Assuming there was no department specific maintenance for the Pharmacy, the new allocation would improve how the costs were allocated.

Example

Of the total maintenance costs of 307,000 assume only 147,000 might be for routine maintenance Therefore, 147,000 divided by 100,000 square meters is 1 47 per sq mtr

*This would change the allocation of routine maintenance costs to 1 47 * 2,000 = 2,940 The old method allocated 6,140*

Exercise 7

Insert Excel spreadsheet RVUexer xls
Exercise Data + Blank forms
Solutions

DEPARTMENT BUDGET
Inpatient Laboratory, 1997

Budget Article Number	Description	Budget Amount
Direct Costs		
# 1	wages & salaries	2,000,000
# 3	utilities & repairs	500,000
#10	disposables	300,000
#14	linens	400,000
# 10	medicines	800,000
TOTAL DIRECT		**4,000,000**
Allocated Overhead Costs		
administration	indirect	**440,000**
TOTAL BUDGET	**direct + indirect + o/h**	**4,440,000**

Categories of Tests or Visits		
	Inpatient Laboratory Department	
Group	Description	Volume for 1997
1	blood test category 1	20,000
2	blood test, category 2	8,000
3	blood test, category 3	2,000
4	urine test, category 1	18,000
5	urine test, category 2	5,000
TOTAL		**53,000**

Coefficient of Intensity (RVU) for non-labor Budget Articles	
Articles 3, 10,14, overhead	
Cost Object	RVU relative to Benchmark
blood test category 1	*1 00*
blood test, category 2	1 00
blood test, category 3	1 25
urine test, category 1	1 00
urine test, category 2	1 00

143

Medicines and Supplies

Department LABORATORY

Budget Article 10

Costs:

actual costs (not budget)

Test	Total Cost of package of medicines, per test
blood test category 1	50
blood test, category 2	70
blood test, category 3	200
urine test, category 1	30
urine test, category 2	60

RVU Exercise - BLANK FORM

Salary Costs using Coefficients of Intensity (RVUs)

Department LABORATORY
Budget Articles 1
U **Total Cost Center Costs**

Cost Object	Labor Time (minutes) Technician	Labor RVU
blood test category 1	5	
blood test, category 2	10	
blood test, category 3	20	
urine test, category 1	7	
urine test, category 2	16	
Total	58	1

	N *J* Labor RVU	*O* Actual Volume	*P* *J*O* Adjusted Volume	*Q* cost per stand. unit	*R* *Q*J* cost per test	*S* *R*O* Allocated Costs
blood test category 1						
blood test, category 2						
blood test, category 3						
urine test, category 1						
urine test, category 2						
Total					*T*	

Verify with budget
Discrepancy

Non-Labor Costs using Coefficients of Intensity (RVUs)

Department LABORATORY
Budget Articles 3+10+14+overhead administration
U **Total Cost Center Costs**

Cost Object	Expert Judgment	Labor RVU
blood test category 1		
blood test, category 2		
blood test, category 3		
urine test, category 1		
urine test, category 2		
Total		

	N *J* Labor RVU	*O* Actual Volume	*P* *J*O* Adjusted Volume	*Q* cost per stand. unit	*R* *Q*J* cost per test	*S* *R*O* Allocated Costs
blood test category 1						
blood test, category 2						
blood test, category 3						
urine test, category 1						
urine test category 2						
Total					*T*	
				Verify with budget		
				Discrepancy		

146

TOTAL COSTS AND PRICES

Cost Center LABORATORY

Budget Year 1995 (meds 1996)

Test	Labor Unit Cost 1	Non-labor unit cost (3, 10, 14, overhead)	Med & supplies (actual costs)	Total unit costs	Taxes (?%) plus 40%	Profit (?%) plus 30%
blood test category 1						
blood test, category 2						
blood test, category 3						
urine test, category 1						
urine test, category 2						
					Depends on laws	Depends on laws

Salary Costs using Coefficients of Intensity (RVUs)

Department LABORATORY
Budget Articles 1
U **Total Cost Center Costs** 2,000,000

Cost Object	Labor Time (minutes) Technician	Labor RVU
blood test category 1	5	0 08621
blood test, category 2	10	0 17241
blood test, category 3	20	0 34483
urine test, category 1	7	0 12069
urine test, category 2	16	0 27586
Total	58	1

	N *J* Labor RVU	*O* Actual Volume	*P* *J*O* Adjusted Volume	*Q* cost per stand. unit	*R* *Q*J* cost per test	*S* *R*O* Allocated Costs
blood test category 1	0 0862069	20,000	1,724	272	23	469,484
blood test, category 2	0 17241379	8,000	1,379	272	47	375,587
blood test, category 3	0 34482759	2,000	690	272	94	187,793
urine test, category 1	0 12068966	18,000	2,172	272	33	591,549
urine test, category 2	0 27586207	5 000	1,379	272	75	375,587
Total		53,000	7,345		*T*	2,000,000
				Verify with budget		2,000,000
				Discrepancy		0

148

RVU Exercise - SOLUTION

Non-Labor Costs using Coefficients of Intensity (RVUs)

Department LABORATORY
Budget Articles 3+10+14+overhead administration
U **Total Cost Center Costs** 1,640,000

Cost Object	Expert Judgment	Labor RVU
blood test category 1	1	0 19048
blood test, category 2	1	0 19048
blood test, category 3	1 25	0 2381
urine test, category 1	1	0 19048
urine test, category 2	1	0 19048
Total	5 25	1

	N *J* Labor RVU	*O* Actual Volume	*P* *J*O* Adjusted Volume	*Q* cost per stand. unit	*R* *Q*J* cost per test	*S* *R*O* Allocated Costs
blood test category 1	0 19047619	20,000	3,810	161	31	613,084
blood test, category 2	0 19047619	8,000	1,524	161	31	245,234
blood test, category 3	0 23809524	2,000	476	161	38	76,636
urine test, category 1	0 19047619	18,000	3,429	161	31	551,776
urine test, category 2	0 19047619	5,000	952	161	31	153,271
Total		53,000	10,190		*T*	1,640,000
				Verify with budget		1,640,000
				Discrepancy		0

TOTAL COSTS AND PRICES

Cost Center LABORATORY

Budget Year 1995 (meds 1996)

Test	Labor Unit Cost 1	Non-labor unit cost (3, 10, 14, overhead)	Med & supplies (actual costs)	Total unit costs	Taxes (?%) plus 40%	Profit (?%) plus 30%
blood test category 1	23	31	50	104	146	**190**
blood test, category 2	47	31	70	148	207	**269**
blood test, category 3	94	38	200	332	465	**605**
urine test, category 1	33	31	30	94	131	**170**
urine test, category 2	75	31	60	166	232	**302**
					Depends on laws	Depends on laws

MODULE 3

BUDGET TOOLS FOR MARKET-ORIENTED REFORMS

Budget Applications - Introduction

Objectives

Efficient and effective use of resources and services is the key to success of the health facilities of tomorrow

Fairness and improved objectivity in resource allocation

Context

Increasing opportunities of self-governance in health facilities
Senior- and mid-level management have increasing responsibility and accountability for ensuring that limited resources are optimally used

- More financial autonomy, flexibility in use of budgets
- Management autonomy
- Managers choose their own norms and processes
- Managers adapt services to local conditions
- Facilities compete for patients

Budget Applications - Outline of Topics

1. Decentralizing budget information and responsibility

2. Budget Performance Indicators

3. Five types of budgets: introduction
   - definitions and linkages between budgets
   - examples of each type of budget
   - using budget information for management

4. Three approaches to preparing budgets: introduction

5. Expense Budgets: Depreciation

Budget Analysis Can Answer Important Questions

1. What is the cost budgeted for performing key procedures in each department?

2. What specific resources can be reduced or eliminated by improving the integration of inpatient and outpatient services?

3. What budgeted costs can be eliminated by closing a specific department?

4. What resources are required to start a new service? What is the budget of the new service? How are the budgets of related departments affected by the new service?

Budget Analysis Can Answer Important Questions

5. What is the total and incremental budgeted amount attributable to providing services to a group of patients paid for by insurance, by an enterprise, or by some other special arrangement?

6. Is the actual expense budget different than the planned expense budget because of changes in volume? In productivity of staff? In prices of inputs? In government allocations?

7. What costs am I (senior management, department head, etc) responsible for managing efficiently and effectively?

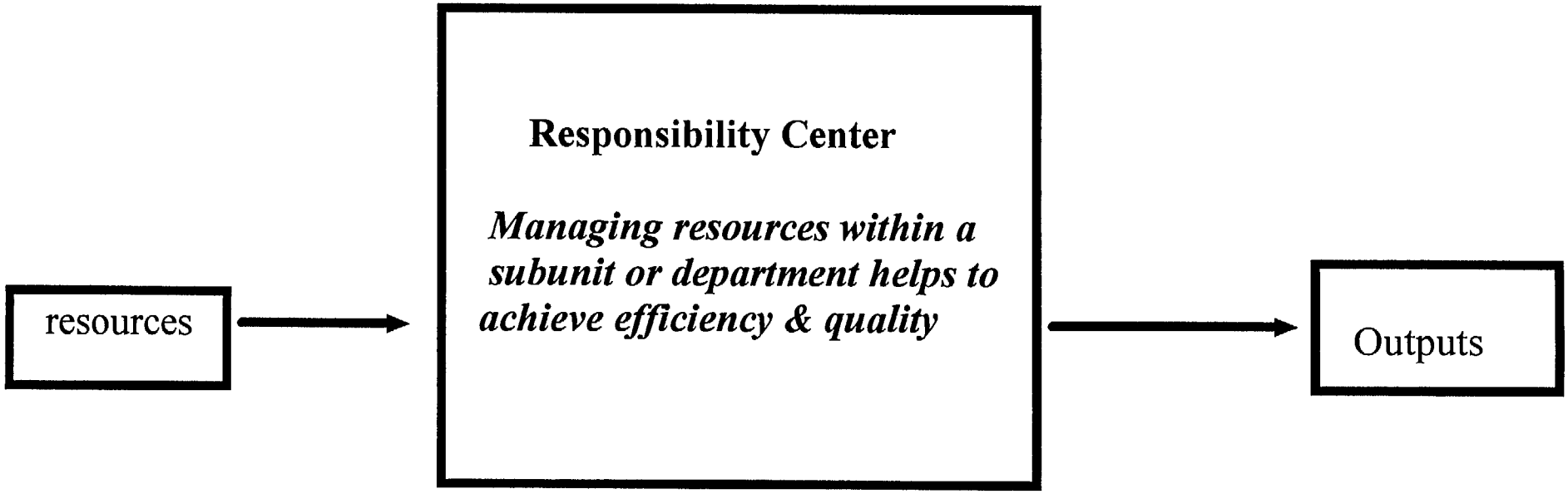
WHO are the PRIMARY USERS of budget information?

- **Chief executive officer**
- **Managers of each Responsibility Area (usually heads of major subunits or departments)**

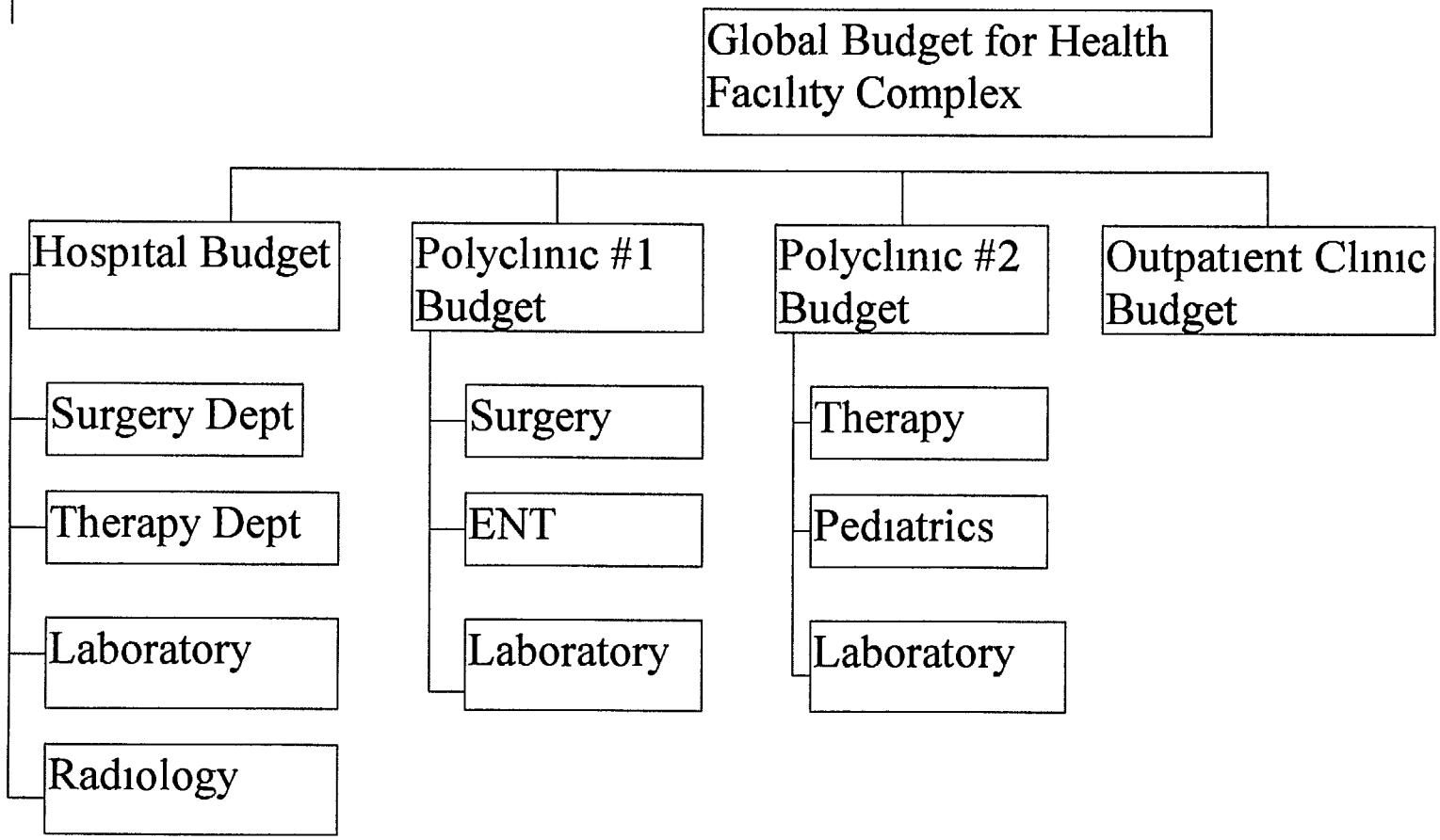
In many countries, as resources available for delivering health services become more tightly controlled, executive managers DECENTRALIZE budget responsibility to those managers who control the operations of key services (e.g. departments)

Why? Those directly responsible for implementing a specified activity or program often have the best knowledge for identifying ways to allocate resources more efficiently and effectively.

CREATING AREAS OR CENTERS WITH BUDGET RESPONSIBILITY



Decentralizing Responsibility for Budgets
(An example .... a variety of ways to decentralize responsibility)



Assigning Responsibility for Budget Items to Responsibility Areas

Direct Costs: Easily identified as costs to a specific department
-usually included in budget of responsibility center

Assigning Responsibility for Budget Items to Responsibility Areas

Indirect Costs Costs not easily linked to a specific department or unit

- Some reasons for NOT INCLUDING indirect expenses
  a) Department manager may <u>not be able to control</u> the expenses
  Example Surgical department cannot control overall condition of buildings

  b) Costs may be very small in proportion to rest of budget.

- Some reasons for INCLUDING indirect expenses
  a) Department managers should be aware of the costs they require from other departments
  Example Surgical department may request all linens to be changed 3 times a day Laundry may have to buy another washing machine to meet this need

  b) Costs may be large in proportion to rest of budget

Assigning Responsibility for Budget Items to Responsibility Areas

Three questions to ask when decentralizing budget authority:

1. **Can the department manager CONTROL use of the specific resources?**

2. **Does putting the specific resource under the control of the department manager increase overall efficiency of the health facility?**

3. **Can amounts of specific resources actually used in each department be measured?**

How are Budgets Interpreted and Used?

Responsibility area managers (e g senior management, facility directors, department heads, other responsibility centers) can use budget information by monitoring

Trends	Monitoring changes in various budgeted items in the facility over time
Exceptions	Explaining large differences between actual budgets and expenses during the budget period
Benchmarks·	Comparing own health facility with comparable budget statistics with other similar well-functioning health facilities
Internal Performance	Monitoring whether budget goals and targets established internally have been achieved

How Senior Management Examines a Budget?

Three types of questions should be asked

1 Are resources ALLOCATED FAIRLY AND OBJECTIVELY? How will performance of the health facility, major subunits, and departments be evaluated?

2 Are the STRATEGIC OBJECTIVES incorporated into the budget estimations?

3 Are the TECHNICAL assumptions and methods valid, correct and reflecting the current situation?

A Sample of Performance Indicators, 1991, (Hospitals with 200-299 beds)			
	+ Quartile	*Median*	*- Quartile*
Net Price Indicators			
Net price per discharge	$4,091	$3,411	$2,815
Net price per visit	$201	$139	$98
Bad debt or charity	7 89%	4 76%	2 97%
Discounts	25 27%	20 02%	12 12%
Outpatient revenue	25 26%	21 03%	17 44%
Volume Indicators			
Occupancy rate	67 12%	58 10%	47 84%
Average daily census	173 23	144 73	114 39
Average length of stay	6 80	5 36	4 52
Intensity of Service Indicators			
Cost per discharge	$3,937	$3,392	$2,972
Cost per visit	$202 23	$141 97	$111 53
Case mix index	1 2795	1 1756	1 0259
Efficiency Indicators			
FTEs per occupied bed	4 59	4 15	3 77
Outpatient manhours per visit	8 68	5 84	4 68
Unit Cost Indicators			
Salary per FTE	$24,447	$22,517	$20,347
Employee benefits %	19 58%	17 04%	15 18%

164

Example of Trends in Percentage Breakdown by Major Subunits: 1994-1995		
Major Subunit	*1994*	*1995*
Total health facility	100%	100%
General Administration	8%	8%
Inpatient Departments	40%	27%
Adult Polyclinic	45%	65%
Child Polyclinic	7%	0%

Possible budget trends for a health facility complex with a strategic plan to shift selected inpatient services to the outpatient setting, and merging the adult and child polyclinic

16

Medical Admissions by Payer or Type of Payment

General Hospital - Admissions by Payer					
	Govt Paid	Enterprise	Self-pay	Insurance	Total
Medicine	3,546	140	119	48	3,853
Dentistry	3,934	179	137	52	4,302
Gynecology	373	40	71	32	516
Pediatrics	985	135	17	65	1,202
Total	8,838	494	344	197	9,873

Other options
- -Rayon patients
- -Out-of-rayon patients

Example of a Statistics Budget (cont'd)

Laboratory Department
Budgeted Relative Value Units (RVUs)

	Inpatient	*Outpatient*	*Total*
Government benefits	200,000	50,000	250,000
Enterprise contracts	40,000	10,000	50,000
Private Insurance	80,000	20,000	100,000
Charity	60,000	10,000	70,000
TOTAL	**380,000**	**90,000**	**470,000**

Relative Value Unit Index number assigned to a procedure based upon the relative amount of labor, supplies and/or capital needed to perform the procedure

Sample Format for Forecasting Inpatient Ancillary Procedures per Admission

General Hospital - Ancillary Services Per Admission				
Service	1989	1990	1991	1992
Operating room ½ hour increments	0 935	0 960	1 009	1 171
Radiology procedures	1 092	1 123	1 237	1 430
EKG procedures	0 930	0 957	0 995	1 137
Lab procedures	0 059	0 061	0 064	0 075

- **Reflects actual clinical practices, not norms**
- **Managers could set goals for these norms to improve quality and efficiency**

MODULE 3

BUDGET TOOLS FOR MARKET-ORIENTED REFORMS

Budget Applications - Introduction

Objectives

Efficient and effective use of resources and services is the key to success of the health facilities of tomorrow

Fairness and improved objectivity in resource allocation.

Context·

Increasing opportunities of self-governance in health facilities
Senior- and mid-level management have increasing responsibility and accountability for ensuring that limited resources are optimally used

- More financial autonomy, flexibility in use of budgets
- Management autonomy
- Managers choose their own norms and processes
- Managers adapt services to local conditions
- Facilities compete for patients

170

Budget Applications - Outline of Topics

1. Decentralizing budget information and responsibility

2. Budget Performance Indicators

3. Five types of budgets: introduction
   - definitions and linkages between budgets
   - examples of each type of budget
   - using budget information for management

4. Three approaches to preparing budgets: introduction

5. Expense Budgets: Depreciation

11

Budget Analysis Can Answer Important Questions

1. What is the cost budgeted for performing key procedures in each department?

2. What specific resources can be reduced or eliminated by improving the integration of inpatient and outpatient services?

3. What budgeted costs can be eliminated by closing a specific department?

4. What resources are required to start a new service? What is the budget of the new service? How are the budgets of related departments affected by the new service?

Budget Analysis Can Answer Important Questions

5. What is the total and incremental budgeted amount attributable to providing services to a group of patients paid for by insurance, by an enterprise, or by some other special arrangement?

6. Is the actual expense budget different than the planned expense budget because of changes in volume? In productivity of staff? In prices of inputs? In government allocations?

7. What costs am I (senior management, department head, etc) responsible for managing efficiently and effectively?

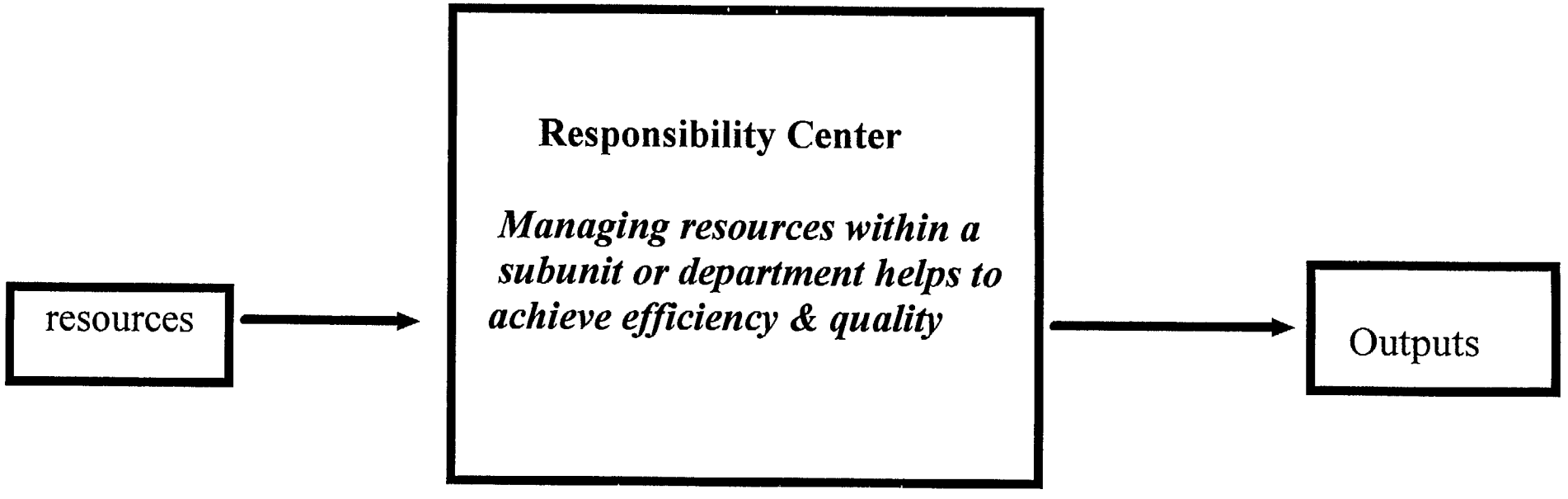
WHO are the PRIMARY USERS of budget information?

- **Chief executive officer**
- **Managers of each Responsibility Area (usually heads of major subunits or departments)**

In many countries, as resources available for delivering health services become more tightly controlled, executive managers DECENTRALIZE budget responsibility to those managers who control the operations of key services (e.g. departments)

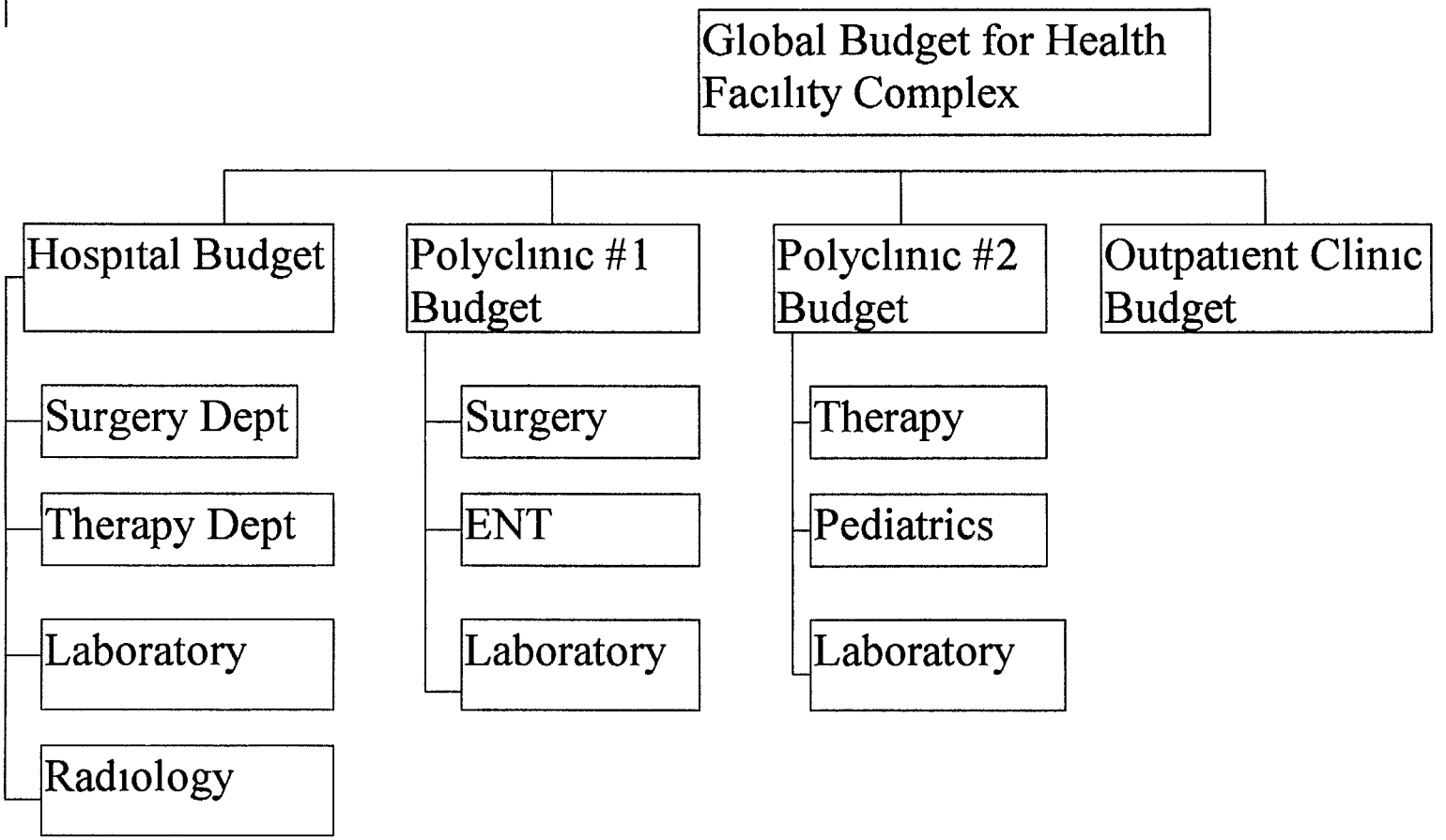
Why? Those directly responsible for implementing a specified activity or program often have the best knowledge for identifying ways to allocate resources more efficiently and effectively.

CREATING AREAS OR CENTERS WITH BUDGET RESPONSIBILITY



125

Decentralizing Responsibility for Budgets
(An example .... a variety of ways to decentralize responsibility)



176

Assigning Responsibility for Budget Items to Responsibility Areas

Direct Costs: Easily identified as costs to a specific department
-usually included in budget of responsibility center

177

Assigning Responsibility for Budget Items to Responsibility Areas

Indirect Costs Costs not easily linked to a specific department or unit

- Some reasons for NOT INCLUDING indirect expenses
  a) Department manager may <u>not be able to control</u> the expenses
  Example Surgical department cannot control overall condition of buildings

  b) Costs may be very small in proportion to rest of budget

- Some reasons for INCLUDING indirect expenses
  a) Department managers should be aware of the costs they require from other departments
  Example Surgical department may request all linens to be changed 3 times a day Laundry may have to buy another washing machine to meet this need

  b) Costs may be large in proportion to rest of budget

Assigning Responsibility for Budget Items to Responsibility Areas

Three questions to ask when decentralizing budget authority:

1. **Can the department manager CONTROL use of the specific resources?**

2. **Does putting the specific resource under the control of the department manager increase overall efficiency of the health facility?**

3. **Can amounts of specific resources actually used in each department be measured?**

How are Budgets Interpreted and Used?

Responsibility area managers (e g senior management, facility directors, department heads, other responsibility centers) can use budget information by monitoring

Trends	Monitoring changes in various budgeted items in the facility over time
Exceptions	Explaining large differences between actual budgets and expenses during the budget period
Benchmarks	Comparing own health facility with comparable budget statistics with other similar well-functioning health facilities
Internal Performance	Monitoring whether budget goals and targets established internally have been achieved

How Senior Management Examines a Budget?

Three types of questions should be asked

1 Are resources ALLOCATED FAIRLY AND OBJECTIVELY? How will performance of the health facility, major subunits, and departments be evaluated?

2 Are the STRATEGIC OBJECTIVES incorporated into the budget estimations?

3 Are the TECHNICAL assumptions and methods valid, correct and reflecting the current situation?

A Sample of Performance Indicators, 1991, (Hospitals with 200-299 beds)			
	+ Quartile	*Median*	*- Quartile*
Net Price Indicators			
Net price per discharge	$4,091	$3,411	$2,815
Net price per visit	$201	$139	$98
Bad debt or charity	7 89%	4 76%	2 97%
Discounts	25 27%	20 02%	12 12%
Outpatient revenue	25 26%	21 03%	17 44%
Volume Indicators			
Occupancy rate	67 12%	58 10%	47 84%
Average daily census	173 23	144 73	114 39
Average length of stay	6 80	5 36	4 52
Intensity of Service Indicators			
Cost per discharge	$3,937	$3,392	$2,972
Cost per visit	$202 23	$141 97	$111 53
Case mix index	1 2795	1 1756	1 0259
Efficiency Indicators			
FTEs per occupied bed	4 59	4 15	3 77
Outpatient manhours per visit	8 68	5 84	4 68
Unit Cost Indicators.			
Salary per FTE	$24,447	$22,517	$20,347
Employee benefits %	19 58%	17 04%	15 18%

Example of Trends in Percentage Breakdown by Major Subunits: 1994-1995		
Major Subunit	*1994*	*1995*
Total health facility	100%	100%
General Administration	8%	8%
Inpatient Departments	40%	27%
Adult Polyclinic	45%	65%
Child Polyclinic	7%	0%

Possible budget trends for a health facility complex with a strategic plan to shift selected inpatient services to the outpatient setting, and merging the adult and child polyclinic

183

Medical Admissions by Payer or Type of Payment

General Hospital - Admissions by Payer					
	Govt Paid	Enterprise	Self-pay	Insurance	Total
Medicine	3,546	140	119	48	3,853
Dentistry	3,934	179	137	52	4,302
Gynecology	373	40	71	32	516
Pediatrics	985	135	17	65	1,202
Total	8,838	494	344	197	9,873

Other options
- -Rayon patients
- -Out-of-rayon patients

Example of a Statistics Budget (cont'd)

Laboratory Department
Budgeted Relative Value Units (RVUs)

	Inpatient	*Outpatient*	*Total*
Government benefits	200,000	50,000	250,000
Enterprise contracts	40,000	10,000	50,000
Private Insurance	80,000	20,000	100,000
Charity	60,000	10,000	70,000
TOTAL	**380,000**	**90,000**	**470,000**

Relative Value Unit Index number assigned to a procedure based upon the relative amount of labor, supplies and/or capital needed to perform the procedure

Sample Format for Forecasting Inpatient Ancillary Procedures per Admission

General Hospital - Ancillary Services Per Admission				
Service	1989	1990	1991	1992
Operating room ½ hour increments	0 935	0 960	1 009	1 171
Radiology procedures	1 092	1 123	1 237	1 430
EKG procedures	0 930	0 957	0 995	1 137
Lab procedures	0 059	0 061	0 064	0 075

- **Reflects actual clinical practices, not norms**
- **Managers could set goals for these norms to improve quality and efficiency**

Budget Performance Reporting

The performance of managers with increased budget responsibility should be monitored by a standard set of indicators

- To determine if budgets are being managed efficiently and effectively,

Budget Performance Reports should

- Compare actual budgets with actual expenses,

- Link actual budgets with performance indicators such as

  -Volume of activity
  (total, and by type of service)
  -Productivity of inputs
  -Costs per service
  -Quality of care

Some Performance Indicators

SELECTED NET PRICE INDICATORS

1 Net price per discharge	net inpatient revenue / Total discharges	
2 Net price per visit	Net outpatient revenue / Total outpatient visits	
3 Bad debt and charity care percentage	Bad debt and charity care / gross patient revenue	x 100
4 Inpatient revenue %	Net inpatient revenue / Total revenue	X 100
5 Outpatient revenue %	Net outpatient revenue / Total revenue	X 100
6 Other revenue %	Other revenue / Total revenue	X 100

VOLUME INDICATORS

7	Occupancy rate	patient days / 365 X licensed beds
8	Average daily census	patient days / 365
9	Length of stay	patient days / total discharges

Some Performance Indicators (con't.)

INTENSITY OF SERVICE

10 Cost per discharge $\frac{\text{Inpatient Operating Expense}}{\text{Total discharges}}$

11 Cost per visit $\frac{\text{Total Outpatient Expenses}}{\text{Total outpatient visits}}$

EFFICIENCY

12 Full-time equivalents/bed $\frac{\text{Inpatient FTE staff}}{\text{Average daily census}}$

13 Outpatient labor hours/visit $\frac{\text{outpatient FTEs' x 2080*}}{\text{Total outpatient visits}}$

14 Inpatient labor hours/visit $\frac{\text{inpatient FTEs' x 2080}}{\text{Total discharges}}$

UNIT COSTS FOR INPUTS

15 Salary per FTE $\frac{\text{Salaries}}{\text{FTEs}}$

16 Capital cost per discharge $\frac{\text{inpatient interest payments and depreciation}}{\text{Total discharges}}$

PROFIT INDICATORS

17 Profit per discharge $\frac{\text{Inpatient net revenue - inpatient costs}}{\text{Total discharges}}$

18 Profit per visit $\frac{\text{Outpatient net revenue - outpatient costs}}{\text{Total visits}}$

*number of hours worked per person per year = 2080 hours
= 260 days per year X 8 hours per day

Budget Preparation and Development - Outline of Topics

- **Budget Methodologies:**
  - -Fixed
  - -Flexible
  - -Product Line

- **Volume Budget**
  - -Volume of Inpatient and Outpatient Services
  - -Ancillary services

- **Expense Budget**
  - -Indirect costs
  - -Personnel and non-personnel items
  - -Variable and fixed expenses

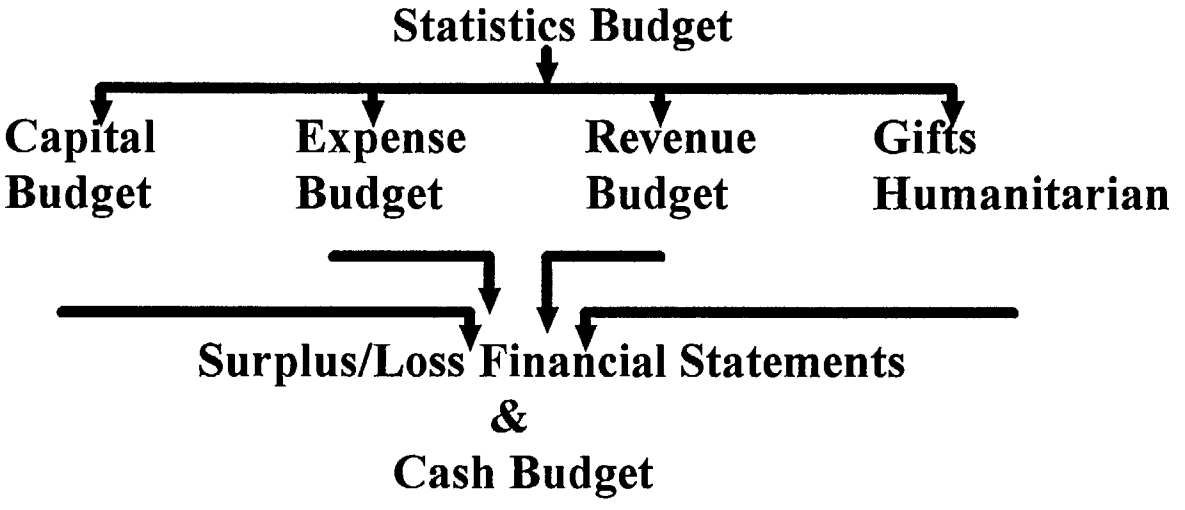
- **Revenue Budget**
  - -Components of the revenue budget

- **Capital Budgeting - A non-numerical approach**
  - -Prioritization Matrix

Types of Budgets and How They are Related

Methods

- Fixed budgets
- Flexible budgets
- Product Line budgets



191

Methodologies for Budgeting - Setting Goals for Performance

Importance:	**Evaluating the financial performance** of a health facility and the areas of responsibility
Indicator of of Performance:	The difference (variance) between actual and planned budgets **Variance = Actual budget - Planned budget**
Responsibility for Performance Indicator:	Managers should be held responsible for those variances they can control

Identifying reasons for variances:

OLD	1	Change in government allocations	*Focus before market reform*
REFORM	2	Change in volume of services	*Reasons 2-5 become more important during market reform*
	3	Change in input prices	
	4	Change in prices charged for services	
	5	Change in efficiency and productivity	

Overview of Methods for Calculating Budgets

Fixed Budgets: Budget is developed based upon one level of activity Revenue, expense, and staffing are fixed even if the actual activity varies from the budget

Flexible Budgets: Budget is developed by basing it as much as possible on the volume forecast using standards or "relationships" per unit of volume and a variability factor Adjusts budgeted revenue, expense and staffing when actual activity varies from the original activity budgeted

Product Line Budgets Forecasts volume using groups of services (e g DRGs, types of cases) as the first step in the budget process

Appropriation Budget: Government allocations for health facility, specified for each type of activity or category of expense Each line item usually becomes a maximum Supplemental funds require government approval

Methodologies for Budgeting

How Different Methods Explain Differences between planned and actual budgets:

Fixed Budgets: (Actual - Planned budget) for responsibility areas
- *total difference only*

Flexible Budgets: (Actual - Planned budgets) for responsibility areas
- *volume*
- *input prices*
- *service prices*
- *efficiency and productivity*

Product Line Budget: (Actual - Planned budgets) for patient groups, types of service
- *volume*
- *input prices*
- *service prices*
- *efficiency and productivity*

Methodologies for Budgeting

Fixed Budgeting (Traditional Approach):

Budget is developed based upon a fixed predicted volume of activity Revenue, expense, and staffing remain constant even if the actual volume of activity changes from the prediction

195

Fixed Budgeting: Advantages and Disadvantages

Advantages:

1. Traditional, well-known approach
   A good place to begin first attempts at budgeting

2 Simple to understand

3 Less time consuming that flexible budgeting

4 Appropriate when volume of services is stable

Disadvantages:

1 The link between cost and volume is not well defined
   Cannot differentiate carefully between fixed and variable costs

2 Budgets cannot be revised easily if future volumes change

3 Difficult to identify reason for differences between actual and planned budgets

FIXED BUDGETING REQUIRES:

1 Predicted volumes general and by type of services (cases, departments, major subunits)

2 Resources (personnel and non-personnel) required per unit of volume (productivity and quality of care)

3 Resource costs for each type of resource

4 Prices paid for services (by government, insurance, user fees)

5 Volume of services rendered to each type of payor

Command Economy	**Market-oriented**
Planning assumptions based on established and regulated norms	Planning assumptions based on actual processes (clinical and non-clinical)

Forecasting Volume of Services & Patient Choice of Provider

1 Projections based on **historical trends** useful starting point, but **not sufficient.**

- Mix of patients may change
- New facility construction or renovation may change demand for services
- Demographic changes in the community
- Changes in the medical staff attract different types of patients
- Changes in treatment protocols (e g inpatient to outpatient, reduced ALOS)
- Changes in financing of services user fees, exempt population, new city and oblast payment methods
- Other changes in the economy
- Changes in services offered by neighboring and competing hospitals

Forecasting Volume of Services

Some Methods for Forecasting Inpatient or Outpatient Volume:

1 Average of past 3 years
2 Linear regression trend analysis

Some Methods for Forecasting Ancillary Services

1 Ancillary CHARGES for each department per patient day
2 RELATIVE VALUE UNITS per patient day or patient visits
3 NUMBER OF PROCEDURES in each ancillary department

Classifying Volume Statistics

- By type of payer government, user fees, insurance, enterprise contracts
- By type of department or services

Case Example of Statistical Volume - Outpatient Visits

The outpatient clinic at Alpha General clinic has experienced the visit counts:

1990	12,000 visits	1993	16,000 visits
1991	13,200 visits	1994	17,600 visits
1992	14,520 visits	1995	?

Possible estimates for 1995:

1 Trend of 10% growth per year

1995 17,600 x 10% = 19,360 visits

1996. 19,360 x 10% = 21,296 visits

2 Average of past 3 years (1992-94)

$$\frac{14{,}520 + 16{,}000 + 17{,}600}{3 \text{ years}} = 16{,}040 \text{ visits}$$

$$\frac{16{,}000 + 17{,}600 + 16{,}040}{3 \text{ years}} = 16{,}546 \text{ visits}$$

Case Example of Statistical Volume - Outpatient Visits (cont'd)

Additional Information to Consider: the capacity of clinic:

What if:

This clinic includes five exam rooms that can handle a maximum of two exams per hour during a five-day-a-week schedule with 10 holidays

Maximum capacity of the clinic =

Clinic days	{(52 weeks/yr x 5 day/week) - 10 holidays}	= 250
Exams per day	5 exam rooms x 2 exams/hour x 8 hours/day	= 80

Maximum capacity = 250 days x 80 exams per day = 20,000 visits

Conclusion:

With trend forecast	maximum capacity would be reached in 1996
With averaging forecast	maximum capacity not reached for several years

Simple calculations can have dramatic results!!!! Use your best judgment!!!

Case Example of Statistical Volume Calculation - Laboratory (cont'd)

Laboratory department tests depends on volume of services in MANY departments

Calculate lab test per patient day:

	Surgery	Pediatrics	ICU	Outpatient
Patient days or visits	19,800	9,200	3,600	20,000
Chemistry test/day or /visit	1 2	1 4	2 9	1 0
Hematology test/day or /visit	1 2	1 2	1 4	1 1
Bacteriology test/day or /visit	1 2	1 2	1 6	0 5

	Surgery	Pediatrics	ICU	Outpatient
Chemistry tests	23,760	***12,880***	10,440	20,000
Hematology tests	23,760	11,040	5,040	22,000
Bacteriology test	23,760	11,040	5,760	10,000
Total	71,280	34,960	21,240	52,000
Grand Total	179,480			

Chemistry tests, pediatrics = patient days x chemistry tests per patient day
12,880 = 9,200 days x 1 4 tests per day

282

Suggestions for Volume Forecasting

Department	Volume Element	Forecasting Technique
1 Total hospital	Total admissions, patient days	•averages of past 3 years, regression of past 3 years
2 Patient care unit	monthly admissions, patient days	•same
3 Dietary	meals	•meals per patient day x patient days
4 Laundry	kilos of laundry	•kilos per patient day x patient days
5 Radiology	relative value units	•RVU per patient day x patient days
6 Laboratory	relative value units	•RVU per patient day x patient days
7 Housekeeping	volume of space	•subjective estimate
8 Emergency	visits	•average or regression

Examining a Revenue Budget

General Hospital - Operating Revenue Budget, 1995 (From Public and other Sources)

	1994 budget	1994 actuals	1995 budget	Change 1994 to 1995 Amount	Change 1994 to 1995 Percent
Patient Services					
Inpatient					
-Medical	$11,630,000	$12,281,000	$13,121,000	$ 840,000	6 8
-Paraclinics	11,423,000	12,216,000	13,548,000	1,332,000	10 9
Total	23,053,000	24,497,000	26,669,000	2,172,000	8 9
Outpatient	2,733,000	3,228,000	3,576,000	348,000	10 8
Total patient	$25,786,000	$27,725,000	$30,245,000	$2,520,000	9 1
Less·					
- govt discounts	$ 2,968,000	$3,291,000	$3,660,000	$ 369,000	11 2
- insurance discounts	532,000	489,000	540,000	56,000	11 5
- free care, bad debt	1,158,000	1,074,000	1,088,000	14,000	1 3
Net patient revenue	$21,128,000	$22,871,000	$24,952,000	$ 2,081,000	9 1
Other revenue	481,000	497,000	548,000	31,000	6 2
NET REVENUE	$21,609,000	$22,871,000	$25,480,000	$ 2,112,000	9 0

Some Explanations about U.S. Revenue Budgets

1 Different subunits and departments within the health facility can earn their own revenues

2 Different payers (insurance companies, government) negotiate different discount rates These are tracked separately

3 Other operating revenue includes payment from parking lots, cafeterias, gift shops

205

General Hospital - Combining Budgets of Revenues and Expenses, 1995					
				Change 1994 to 1995	
	1994 budget	1994 actuals	1995 budget	Amount	Percent
Patient Services					
Inpatient					
Total	$23,053,000	$24,497,000	$26,669,000	$2,172,000	8 9%
Outpatient	2,733,000	3,228,000	3,576,000	348,000	10 8
Total patient services	$25,786,000	$27,725,000	$30,245,000	$2,520,000	9 1
Less					
- govt discounts	$ 2,968,000	$3,291,000	$3,660,000	$ 369,000	11 2
- insurance discounts	532,000	489,000	540,000	56,000	11 5
- free care, bad debt	1,158,000	1,074,000	1,088,000	14,000	1 3
Net patient revenue	$21,128,000	$22,871,000	$24,952,000	$ 2,081,000	9 1
Other Operating revenue	481,000	497,000	548,000	31,000	6 2
NET REVENUE	$421,609,000	$22,871,000	$25,480,000	$ 2,112,000	9 0
Operating Expenses	$ 20,493,000	$22,557,000	$24,484,000	$ 1,927,000	8 5
NET INCOME	$ 1,116,000	$ 811,000	$ 996,000	$ 185,000	22 8

Departmental Statement of Budgeted Revenues and Expenses

Department _____

Month or Year_____

Budgeted Revenues

Departmental government budget allocation

Net revenues from user fees _____

Total Revenues _____

Minus Basic Operating Variable Budgeted Expenses

Article 9 Actual Nutrition Expenses

Article 10 Actual Medicine Expenses

Total Variable Expenses _____

Minus Basic Operating Fixed Budgeted Expenses

Article 1 Actual Labor Expenses

Article 2 Actual Labor Taxes

Article 3 Actual Utilities and overhead Expenses

Article 4 Actual Business Trip Expenses

Article 12 New equipment fund

Article 14 Actual Linen Expenses

Article 16 Actual Building Repair Expenses

Article 18 Actual Miscellaneous Expenses

Total Fixed Expenses _____

Total Operating Budgeted Expenses _____

Net Operating Budget Profit (Loss) Before Taxes _____

Minus Taxes _____

Net Operating Budget Profit (Loss) After Taxes _____

207

The Revenue Budget

Under 100% government finance	Market reform & many sources of funds
•Government is the only source of revenue	• Many sources of funds government, enterprises, user fees, insurance
•All funds allocated by the government are spent	• Opportunities to generate surpluses to improve health services
•All funds are spent according to government specified rules	• Increased flexibility in how funds can be used
• revenue budget indicates funds received from different levels of government	• revenue budget indicates funds received from different payers by type services
⇒ **minimal need for revenue budget; almost no distinction between revenues and expenses**	⇒ **increased need for detailed revenue budgets by type of payor and type of service**

208

Components of the Revenue Budget

Gross revenues Total potential revenues before discounts, bad debt, or other reductions are taken

Discounts: Reductions in price given to payers (e g insurance companies, enterprises)

Bad debt Revenues not earned because a payer has defaulted on payment

Charity Care Revenues not earned because health facility chose to exempt patient from payment, or was legally required to exempt patient

Net Revenues Gross revenues minus all reductions in revenue from discounts, bad debt, charity care

Other Revenue Non-patient services parking, rents,

The Revenue Budget - A Case Example

Gynecology Department Ultrasound Test

Type of payer	Number of tests	Price per test	Gross Revenue	Net Revenue after bad debt and allowances per scan	Net revenue per week
General public source	10	$50	$500	$37 00	$370
Enterprise contracts	5	$50	$250	$35 00	$175
Private Insurance	21	$50	$1,050	$44 40	$933
Self-pay (User fee)	4	$50	$200	$5 50	$22
TOTAL	40		$2,000		$1,500

Gross revenues = 40 scans x $50 per scan x 50 weeks per year = 100,000

Percentage of bad debt and other allowances =1 -{$1,500 , $2,000} = 25%

Other Methodologies for Budgeting

Flexible Budgeting (Newer Approach selectively being phased in):

Before judging the performance of a department or subunit, revenue and expense budget estimates are adjusted to include changes in the volume of services The objective is to determine the appropriate revenue, labor, and supplies and other resources when actual volume changed from the predicted volume on which the original budget was based

Flexible budget requires knowledge of FIXED costs and VARIABLE costs

Flexible Budgeting - An Example

Gynecology Department - Flexible Budget					
	Actual Revenue & Actual Expenses	***Flexible Budget***	***Flexible Variance***	**Fixed Planned Budget**	**Variance: (Actual - Planned)**
Revenue	$100,000	***$97,500***	***$2,500 F***	$90,000	$10,000
Salaries	18,000	***16,245***	***1,755 U***	15,000	3,000
Supplies	2,000	***1,900***	***100 U***	1,800	200
Labor hrs	1,030	***1,040***	***10 F***	960	70
Patient Days	130	***130***	***0***	120	10

Using the **flexible budget,** you can identify precisely the extent to which the difference between the actual and planned budget is explained by changes in volume

As shown above, the flexible budget is calculated to be consistent with actual number of patient days (130) rather than the original prediction (120)

212

What does the Flexible Budget Show?

Total Variance:
Actual Budget - Fixed Planned Budget

Revenues:	*$10,000*
Salaries:	*$3,000*
Supplies:	*$ 200*

Remaining Flexible Variance (Explained by other factors) Actual - Flexible Budget	Volume Variance (Explained by change in volume) Flexible - Planned Budget
Revenues: $2,500	*$7,500*
Salaries: $1,755	*$245*
Supplies: $100	*$100*

Unit Cost Variance	Productivity Variance	Volume Variance

Flexible Budgeting - Basic Formulas

Volume Variance: **(BV - AV) x BCU**

Isolating the budget change due to a change in volume while holding the cost per unit constant

Input Price Variance: **(BCU - ACU) x AV**

Isolating the budget change due to a change in unit costs, while holding the volume costant

BV	Budgeted volume
AV	Actual volume
BCU	Budgeted cost per unit
ACU	Actual cost per unit

Flexible Budgeting - Calculations

Data:

Budgeted revenue:	$750 per day
Actual revenue:	$769.23 per day
Labor hours:	8 hours per day
Budgeted salaries:	$15.62 per hour
Actual salaries:	$17.48 per hour
Budgeted supplies:	$10 per patient day + $600 fixed
Actual supplies:	$10.77 per patient day + $600
Budgeted volume:	120 days
Actual volume:	130 days
Budgeted labor hours:	1,030 hours
Actual labor hours:	1,040 hours

Flexible budget (based on actual volume):

Revenue:	$750 per day * 130 days	= $97,500
Salaries:	$15.62 * [130 days *8 hours/day]	= $16,245
Supplies:	$600 + $10(130)	= $1,900
Labor hours:	130 days * 8 hours/day	= 1,040 hrs

Flexible Budgeting - Calculations

Flexible Variance (remains to be explained)

Revenue: (769.23 - 750) * 130	**=2,500**
Salaries:	
Unit cost: (17.48 - 15.62) * 1,030	**=1,916**
Efficiency: (1,030 - 1,040) * 15.62	**= - 156**
	1,760
Supplies:	
Unit cost: (10.77 - 10) * 130	**= 100.01**

216

Flexible Budgeting - Example

Consider the following data

Item	Actual Quantity	Actual Unit Cost	Actual Total Cost
Syringes	1,000	$0 50	$500
Gauze pads	2,000	$0 05	100
IV sets	1,000	$2 00	2,000
TOTAL			$2,600

Item	Planned Quantity	Planned Unit Cost	Planned Total Cost
Syringes	2,000	$0 50	$1,000
Gauze pads	2,000	0 05	100
IV sets	1,000	2 10	$2,100
TOTAL			$3,200

Flexible Budgeting - Example (cont'd)

Total Variance: **$3,200 - $2,600 = $600** Favorable
(less spent than planned)

Volume Variance for syringes:

Planned Use.	2,000 syringes
-Actual Use	-1,000 syringes
Quantity Difference	1,000 syringes
X Unit cost	x 0 50 per syringe
Volume Variance	$500 favorable
	(fewer used than planned)

Unit cost variance for IVs:

Planned unit cost	$2 10
-Actual unit cost	-$2 00
Unit Cost difference	$0 10
x Actual Volume	1,000
Unit cost variance	$100 favorable (unit cost less than planned)

Total Variance = Volume Variance + Unit Cost Variance

$600 F = $500 F + $100 F

Flexible Budgeting - Data Requirements

A **flexible budget** shows how budgets change with **changes in volume** This requires data on

- Fixed costs
- Variable costs
- Semi-variable costs
- Input unit costs
- Input productivity standards
  - staff productivity (e g nursing hours per patient day)
  - ancillary service requirements (e.g tests per patient day)
  - other support service requirements (e g housekeeping per patient day)
- Good forecasts of volume of services

Flexible Budgeting - Advantages and Disadvantages

Advantages:

1 Monetary amounts are adjusted to reflect changes in volume

2 Performance of responsibility centers (e g departments) are more meaningful since changes in volume have been incorporated Other reasons for differences between actual and planned budgets are easier to identify

3 Development and refinement of information required to develop flexible budgets will result in a better data base for forecasting in future years

Disadvantages:

1 More time needed to prepare and maintain the budget

2 More training of department heads is needed

3 Requires more sophisticated information system patient records system and financial information, inventory records which can be linked

221

Methodologies for Budgeting

Product Line Budgeting (Newest Approach selectively being phased in):

Budgets are prepared according to types of services performed (e g DRG groups, other patient classification systems, major diagnoses groups, clinic groups, ICD9 codes) Fixed or flexible budgeting can be used in conjunction with product line budgeting

Product Line Budgeting - Example

Product Category	Net Revenue	Variable Cost	Revenue - V. Cost	Fixed Cost	Net Income
A Complicated Pregnancy	$ 6,675	$2,493	$4,182	$5,839	($1,657)
B Simple Pregnancy	$ 9,925	$3,302	$6,623	$4,496	$2,127
C C-section	$ 3,427	$1,420	$2,007	$4,002	($1,995)

Analysis

- Which type of delivery generates the most profit?
- For those pregnancies which are not yielding a profit, what action might you take to improve their profitability?

223

Product Line Budgeting - Advantages and Disadvantages

Advantages

1 Shows the effects of groups of services on volume, staffing and profitability of departments

2 Generates more accurate volume projections based on patient or service groups

Disadvantages

1 Requires substantial effort to develop resource consumption profiles by product

2 Requires somewhat sophisticated patient records system and financial information system which can be linked

3 Requires coding system which can track patients by patient groups

4 Not easily linked to department structure Management will still occur according to departments, not products

224

Case-Based Budgeting: Steps

1 Determine how patient groups will be defined (e g, DRGs)

2 Develop forecasts of the volume of cases in each patient group

3 Develop typical treatment protocols for each patient group
(Should reflect actual practices) Treatment protocols should be organized by list of cost objects (procedures, tests, bed-days)

4 Based on forecast of volume of cases, and typical treatment protocols for each case, determine volume of tests, procedures, bed-days in each department

5 Based on costs for each cost object, estimate department costs for cases forecasted

6 Add fixed costs of department to get total costs per case

The Capital Expense

In some expense budgets, capital depreciation may be included as a funded expense.

Depreciation: is the expiration (or using up) of a capital asset's quantity of usefulness

Depreciation - Cost of a Capital Asset

The cost of an asset includes all normal and reasonable expenditures necessary to get the asset in place and ready to use

Examples

- *installation costs*
- *obtaining permits*
- *remodeling of space for installation*

Depreciation - Service Life

Service life is the length of time the capital asset will be used in the operations of the business This may not be the same as the asset's potential life The actual use of equipment may be longer than the service life

Determinants of service life

1 Wear and tear from use

2 Inadequacy - asset no longer appropriate for type of service or capacity of service

3 Obsolescence - new inventions have made the old equipment inappropriate

228

Depreciation - Service Life

Some Rules of Thumb

Building	25 years
Vehicle	3-5 years
Refrigerator	5-10 years
Furniture	5-10 years
Medical equipment (e g exam table)	5-10 years
Medical equipment (e g , speculum)	3-4 years
Sterilizer	5 years
Audiovisual equipment	5 years

229

Depreciation - Salvage Value

The salvage value of a capital asset is the amount that will be recovered at the end of the asset's service life

The salvage value should be net of any costs incurred to dispose of the asset (e g moving costs, dismantling, wrecking of old buildings)

Depreciation - Methods of Calculation

1 Straight-line depreciation: Constant and equal reduction in value of capital over the service life of the piece of equipment

2 Units-of-production Reduction in value of asset for each unit of service produced with the equipment

3 Accelerated depreciation
   a Declining balance
   b Sum-of-the-year's digits

Straight-line Depreciation

$$\frac{\text{Cost - Salvage Value}}{\text{Service Life}}$$

Equal shares of an assets total depreciation is allocated to each accounting period

Cost of refrigerator = $500
Service life = 4 years
Salvage value = $50

$$\text{Annual depreciation} = \frac{\$500 - \$50}{4 \text{ yrs}} = \$112\ 50 \text{ per year}$$

Book value (residual value) of refrigerator (initial cost - depreciation)

end of year 1	$387 50	= 500 - 112 50
2	$275 00	= 387 50 - 112 50
3	$162 50	= 275 00 - 112 50
4	$50	= 162 50 - 112 50

Salvage value = $50

Units of Production Method

$$\frac{\text{Cost - Salvage Value}}{\text{Estimate Units of Production}} = \text{Depreciation per unit of Production}$$

Cost of lab equipment = $24,000
Salvage value = $4,000
Number of lab tests = 125,000 miles

$$\text{Depreciation per test} = \frac{\$24{,}000 - \$4{,}000}{125{,}000} = \$0\ 16 \text{ per test}$$

At the end of 25,000 test intervals, the book value of the truck is

25,000 tests	20,000		
50,000 tests	16,000		
75,000 tests	12,000		
100,000 tests	8,000		
125,000 tests	4,000	Trade-in value	4,000

232

Budget Applications

Discussion Exercise 1

1 Describe who currently has responsibility for creating and managing the budget of your facility?

2 Would you recommend decentralizing budget responsibility to heads of major subunits and/or departments within each subunit? Why or why not?

3 If you were to decentralize budget responsibility, with which major subunits and/or departments would you begin? Why?

4 What kind of assistance would managers need to assume more responsibility for the budgets of their subunits and/or departments?

Budget Applications
Discussion Exercise 2

In giving more budget responsibility to heads of major subunits and/or facilities, the senior managers must decide which budget items are (or should be) within the control of the head of the subunit or department If the budget item can be controlled by the head of the unit, then the head of the unit should be able to monitor the expenses incurred by his or her department related to that budget item Go through the list of budget articles below, and determine which of the budget articles can (or should) be controlled by the head of the subunit and list how the expenses incurred in that subunit can be monitored Give reasons for your decision

Budget Article	***To be controlled by Central Administration?***	***To be controlled by Head of Subunit?***	***Monitoring Mechanism***	***Reasons***
1-2 Labor & tax				
3 Utilities				
4 Business Trips				
9 Nutrition				
10 Medicines				
12 New Equipment				
14 Linens				
16 Building repair				
18 Miscellaneous				

Budget Applications

Discussion Exercise 3

In small groups, please prepare responses to the following question

PART 1

As manager of a health facility (either a hospital or a polyclinic or other health center) in a dramatically changing economic environment in Ukraine, what priority questions should a budget analysis answer to help you deliver services more efficiently and effectively For each question, identify what type of budget would provide you with the answer Do you already have this type of budget for your health facility and/or how would you modify your current budgeting system to handle these priority questions

Priority Questions	Type of budget necessary Expense, revenue, capital, cash	Already available or Modifications required
1		
2		
3		
4		
5		
6		
7		

PART 2

Based on your discussions above, what would you recommend as steps required to strengthen budget information for your health facility?

Budget Applications

Discussion Exercise 4

In small groups, please prepare responses to the following question

1 For your health facility, which performance indicators do you already monitor? Which additional performance indicators would you like to collect? Do you already have the data easily available to calculate the indicators? Complete the following table to answer these questions

DEVELOPING PERFORMANCE INDICATORS

Indicator	Already available? (Yes or No)	Collect in the future? (Yes or No)	Necessary data Easily Available? (Yes or No)
NET PRICES			
Net price per discharge			
Net price per visit			
Bad debt & charity %			
Inpatient revenue %			
Outpatient revenue %			
Other revenue %			
VOLUME INDICATORS			
Occupancy rate			
Average daily census			
Length of stay			
INTENSITY OF SERVICE			
Cost per discharge			
Cost per visit			

DEVELOPING PERFORMANCE INDICATORS

Indicator	Already available? (Yes or No)	Collect in the future? (Yes or No)	Necessary data Easily Available? (Yes or No)
EFFICIENCY			
full-time equivalents per bed			
outpatient labor hours per visit			
inpatient labor hours per visit			
UNIT COSTS FOR INPUTS			
Salary per FTE			
Capital cost per discharge			
PROFIT INDICATORS			
Profit per discharge			
Profit per visit			
Profit per department			
YOUR SUGGESTIONS?			
1			
2			
3			
4			

Budget Preparation and Development Exercise
Discussion Exercise 5 - Volume Budget

Your lab is able to produce up to 30,000 tests each month The trend in tests over the years has been as follows (amounts shown are annual tests)

1992	312,000
1993	327,600
1994	343,890

What amount of tests will you budget for in 1994?

Budget Preparation and Development Exercise
Discussion Exercise 5 - Volume Budget - Solution

Examination of the data shows that there is a 5% increase in tests every year

1992	312,000	
1993	327,600	+5%
1994	343,890	+5%
1995	*361,100*	*+5%*

The annual capacity of the lab is 360,000 based on the monthly capacity of 30,000 tests per month Thus, the 1995 maximum is 360,000 Budget would be based on 360,000 tests or less

Budget Preparation and Development Exercise
Discussion Exercise 6 - Volume Budget

Given the following information, what volume of service would you anticipate for your lab in the budget year? You are given information on the most recent 7 months and some forecasts of patient volume for the upcoming year

Data on Volume	Base Period (7 months)	Forecast Budget Year
Surgical Patient Days	70,000	120,000
Medical Patient Days	40,000	75,000
Obstetric Patient Days	10,000	16,000
Outpatient Visits	204,000	350,000

Data on lab tests	Base Period (7 months)	Forecast Budget Year
Tests for surgical patients	175,000	?
Tests of medical patients	60,000	?
Tests for obstretric patients	13,000	?
Tests for outpatient visits	153,000	?

Budget Preparation and Development Exercise
Discussion Exercise 6 - Volume Budget - Solution

1 **Calculate doses per patient day for each department**

Surgery	175,000 tests – 70,000 patient days = 2 5 tests per surgery patient day
Medical	60,000 tests – 40,000 patient days = 1 5 tests per medical patient day
Obstetrics	13,000 tests – 10,000 patient days = 1 3 tests per obstetrics patient day
Oupatient	153,000 tests – 204,000 visits = 0 75 tests per outpatient visit

2 **Based on answers in (1) on tests per patient day or per visit, calculate the annual budgeted tests using the forecasted annual volume**

Surgery	2 5 tests per patient day X 120,000 annual patient days	= 300,000 tests
Medical	1 5 tests per patient day X 75,000 annual patient days	= 112,500 tests
Obstetrics	1 3 tests per patient day X 16,000 annual patient days	= 20,800 tests
Outpatient	0 75 tests per patient visit X 350,000 annual patient visits	= 262,500 tests
TOTAL		695,800 tests

Budget Preparation and Development Exercise
Exercise 7 - Depreciation

1 Calculate the straightline depreciation used for financial analysis

Building renovation	$60,000
Salvage value	0
Service Life	10 years

2 Calculate the depreciation using units of production method

X-ray machine	$176,000
Salvage value	$ 16,000
Service life	10,000 x-rays

Budget Preparation and Development Exercise
Exercise 7 - Depreciation - Solutions

1 Calculate the straightline depreciation used for financial analysis

Building renovation	$60,000
Salvage value	0
Service Life	10 years

Annual depreciation $\frac{\$60,000 - \$0}{10 \text{ years}}$

= $6,000 per year

Book value

End of year		
	1	54,000
	2	48,000
	3	42,000
	4	36,000
	5	30,000
	6	24,000
	7	18,000
	8	12,000
	9	6,000
	10	0

2 Calculate the depreciation using units of production method

X-ray machine	$176,000
Salvage value	$ 16,000
Service life	10,000 x-rays

Depreciation per unit $\frac{176,000 - 16,000}{10,000 \text{ x-rays}}$

= $16 per x-ray

Book value for every 2,500 x-rays

After 2,500	$136,000
5,000	96,000
7,500	56,000
10,000	16,000 (disposal value)

Budget Preparation and Development Exercise
Exercise 8 - Flexible Budgeting

As a manager, you want to be able to explain why the actual budget differed from the planned budget Examine the data below and determine how changes in volume and changed in input prices contributed to the total variance of $400

Consider the following data

	Actual Quantity	Actual Unit Cost	Actual Total Cost
Syringes	3,000	$0 50	$1,500
Gauze pads	2,000	$0 05	100
IV sets	1,000	$2 00	2,000
TOTAL			$3,600

Item	Planned Quantity	Planned Unit Cost	Planned Total Cost
Syringes	2,000	$0 50	$1,000
Gauze pads	2,000	0 05	100
IV sets	1,000	2 10	$2,100
TOTAL			$3,200

1 Calculate the total variance between actual and planned budgets
2 Calculate the volume variance between the actual and planned budgets
3 Calculate the unit cost variance between the actual and planned budgets

Budget Preparation and Development Exercise
Exercise 8 - Flexible Budgeting - Solution

1 Total Variance = Budgeted Amount - Planned Amount

-400	=	3,200	-	3,600

This is a favorable variance because less was spent that planned

2 **Volume Variance for syringes**

Planned Use	2,000 syringes
-Actual Use	-3,000 syringes
Quantity Difference	-1,000 syringes
X Unit cost	x 0 50 per syringe
Volume Variance	-$500 unfavorable (more syringes used than planned)

3 **Unit cost variance for IVs**

Planned unit cost	$2 10
-Actual unit cost	-$2 00
Unit Cost difference	$0 10
x Actual Volume	1,000
Unit cost variance	$100 favorable (unit cost less than planned)

Summary Total Variance = Volume Variance + Unit Cost Variance

-$400 U	=	**$-500 F**	+	**$100 F**

Most of the unfavorable variance is due to the increase in the use of syringes

Budget Preparation and Development Exercise
Exercise 8 - Flexible Budgeting - Solution

Total Variance = $400

Unit cost Variance = $100

Volume Variance = $500

No efficiency variance applicable here with individual inputs

Budget Preparation and Development Exercise
Discussion Exercise 9 - Flexible budgeting

Under what conditions is a flexible budget likely to be more effective that a fixed forecast budget?

Based on your answers above, should you be using a fixed or a flexible in your health facility? What steps would you have to take to generate the information required to generate a flexible budget?

Budget Preparation and Development Exercise
Discussion Exercise 9 Suggested Answers

Two conditions are required to justify the use of the flexible budget rather than just a fixed budget First, there must be some indication that some costs are variable Second, the volume of services should exhibit some variability If volume is constant every year, then a fixed budget is appropriate

Budget Preparation and Development Exercise
Discussion Exercise 10 - Budgets and Salary Incentives

Dr Miller is the head of the gynecology department His department is participating in a wage incentive program in which he and his staff receive 20% of the department's income as a bonus The budget given to the gynecology department is based on the the labor hours worked by the health staff Net income is calculated as

Net income in gynecology = ($12 00 X gynecology labor hours) - other direct expenses

What problems do you see in this incentive program? How might these problems be solved?

Budget Preparation and Development Exercise
Discussion Exercise 10 - Suggested Answers

Under this incentive program, Dr Miller would motivate his staff to work as many hours as possible, even if their services are not really needed The larger the number of labor hours, the larger the bonus payment This tendency to work unnecessary hours could be controlled by setting limits on the absolute level of incentive payment that could be earned One example would be to base bonus pay on authorized overtime work

Budget Preparation and Development
Discussion Exercise 11 - Volume Budget

In your facility, list what measures you would use to indicate the level of activity in each department How would you forecast them for the next year

Areas	Volume Indicator	Forecasting Technique
Medical Departments		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Paraclinics		
1		
2		
3		
4		
5		
6		
7		
8		
Other Supporting Departments		
1		
2		
3		
4		
5		

MODULE 4

UNDERSTANDING ALTERNATIVE PAYMENT METHODS

Method of Payment - Definition

A payment method is the way in which money is distributed from a source of funds to the health institution (or individual provider) providing health care services

Payment method is one component of complex health care financing reform

What is so Important about Payment Method?

Financial Incentives Change Human Behavior

Example Allocation per bed (or bed-days) increases the number of bed and bed-days

Market-oriented health institutions change the way they operate and manage themselves

They identify changes necessary to remain financially viable

- hire/fire staff
- add/remove types of services
- change treatment setting inpatient vs outpatient

Payment mechanisms may affect the delivery of health care services in terms of.

- *efficiency*
- *equity*
- *consumer satisfaction*
- *health status*

A LESSON

Experience from around the world suggests that system performance is MORE SENSITIVE to HOW FUNDS ARE ALLOCATED to providers than to the total amount of funding available for health services.

257

Payment Methods in Other Countries

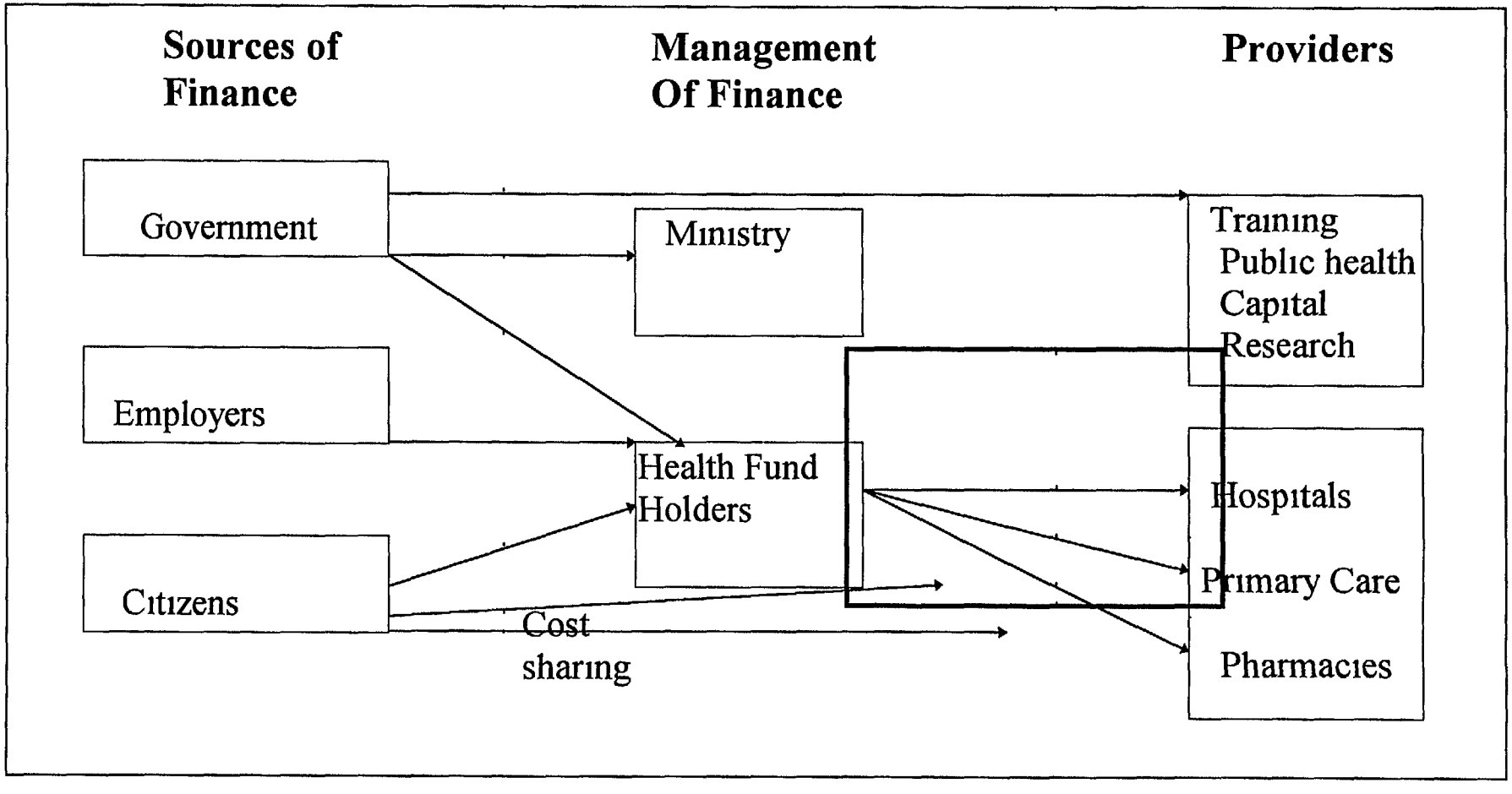
Country	Health Institution	Payment Method
Germany	Hospitals	Per diem, in the future by per case fee
	Non-hospital physicians	Negotiated fees (global budget)
U K	Hospitals	Negotiated fees (global budget)
	Non-hospital physicians	Negotiated fees (global budget)
Canada (Ontario)	Hospitals	Global Budget
	Non-hospital physicians	Negotiated fees
Netherlands	Hospitals	
	Non-hospital physicians	per capita

Payment Methods in Other Countries

Country	Health Institution	Payment Method
U S	Hospitals	Medicare regulated case-based fees Private insurers fee-for-service per diem per capita
	Physicians	Medicare regulated fee-for-service Private insurers fee-for-service per diem per capita

Flow of Funds
Public and Private Financing and Provision of Services - Example

(Source Barnum, Kutzin, Saxenian *Incentives and Provider Payment Methods,* World Bank 1994)



MULTIPLE LEVELS OF PAYMENT REFORM

- ⇒ **From central source to districts, provinces, or states (decentralization)**
- ⇒ **From one local geo-political region to another**
- ⇒ **From local funding authorities to tertiary, secondary and primary providers**

TYPES OF PAYMENT METHODS:

Payments from the Fund Holder to the Health Institution(s)

1	Line item budgeting	Budgets are set by specific item such as salaries, medicines, equipment, food & nutrition, overhead, administration)
2	Global budgeting	An aggregate payment fixed in advance to cover expenditures of a health institution over a specified period of time
3	Per capita payment	A fixed amount paid per enrollee or member of a population to cover the costs of a defined package of services for a specified period of time

TYPES OF PAYMENT METHODS:

Payments from the Fund Holder to the Health Institution(s)

5	Case-based payment	Fixed payment covering all services for a specified case or episode of illness
6	Fee-for-service	Payment is made for each specific service rendered.

Payment from the patient to the Health Institution(s)

7	User fees·	Direct payment of services by the patient

763

INCREASING PATIENT SATISFACTION & EFFICIENCY

Payment methods should link the consumers' choice of provider to the amount of money the provider receives. Funds should follow patient and not health service inputs (e.g. beds)

Two Types of Payment Methods

Prospective Payment: payment rate is negotiated and agreed upon before the health services take place

Retrospective Payment: payment rate is decided upon after the service has been rendered

The Financial Risk Continuum from the Perspective of the Health Institution

Fee for Service	Line Item Budgeting	Per Diem Rate	Per Case Rate	Global Budget	Capitation Rate

Least financial risk → Most financial risk

•• DEPENDS ON WHETHER THE PROSPECTIVE PAYMENT IS ••
•• STRICTLY ENFORCED ••

Does the health institution gain when there is a surplus?
Does the health institution bear the loss when there is a deficit?

26

Global Budget - Definition & Purpose

Definition

- Overall spending target or limit that constrains the price and quantity of services provided
- Aggregate payment fixed in advance to cover expenditures for specified services during a period of time
- Can be applied at 3 levels
  * National * Regional * Facility

Purpose

- Control expenditure growth
- Allow flexibility in use of resources within budget limits to improve efficiency and quality of health care services

Designing a Global Budget: Scope and Amount

1 **Establish the scope and amount of the budget:**

a Population covered
- *entire population*
- *selected population groups the poor, the elderly, war veterans*

b Types of services
- *all services*
- *or selected services inpatient, outpatient, medicines, diagnostics*

c Types of health facilities
- *all facilities*
- *or selected facilities hospitals, primary health care, polyclinics*

Designing a Global Budget: Allocating the Budget to Resources

2 **Allocating budgets to health facilities:**

To remain within the budget, payment rates (prices) and/or volume of services must be adjusted

Budget = Unit Cost x Volume

FORMULA ADJUSTMENTS:

- age-sex
- rural or urban
- special environmental or health risks
- availability of other competing health delivery system
- efficiency improvements
- inter-regional patient flows

Designing a Global Budget: Allocating the Budget to Resources

3. Financial sanctions and rewards for budget performance:

Global budget
\- Expenditures
Surplus remaining

Who gets the surplus?

Global budget
\- Expenditures
Deficit

Who covers the deficit?

- Efficiency improves when global budgets are strictly enforced.
- Quality improves when surpluses are reinvested in the facility.

Global Budgets: Summary of Advantages and Disadvantages

+	Easy transition from line-item budgeting to more complex form of payment	--	Inefficient if not directly tied to peformance monitoring
+	Predictable expenditures	--	Tendency to lower quality
+	Relatively low administrative costs compared to other payment methods	--	Rationing of services, lower access
+	Permits some incentives for efficiency	--	Artificial spending level rather through market forces

Capitation - Definition & Purpose

Definition

- Entities are paid a periodic fixed amount of expenditures for each person enrolled as a member

- A uniform payment per capita paid on a membership basis

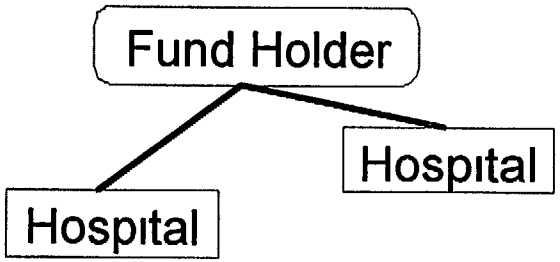
  - *member of a region*
  - *member of an integrated health facility insurance system*

Purpose:

- To provide a package of services to the enrolled population for a fixed fee

Capitation - Types of Capitation

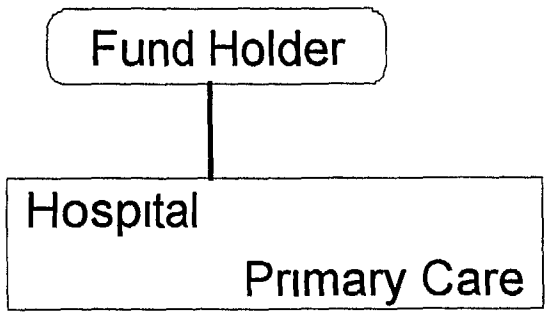
Capitation for Hospital Services



- *Fund holder allocates fixed fee per person per year (or per month) for hospital services provided to a group of people*
- *7,000 koupons (example only) per person in membership group*
- *Covers all hospital services*

Capitation - Types of Capitation

Capitation for Integrated Services



- *Fund holder allocates a fixed fee per person per year (or per month) for all hospital and primary health care (outpatient services) to a group of people*
- *10,000 koupons (example only) per person per year in membership group*
- *Covers all inpatient and outpatient services*

274

Facility-based Capitation and Types of Services Covered

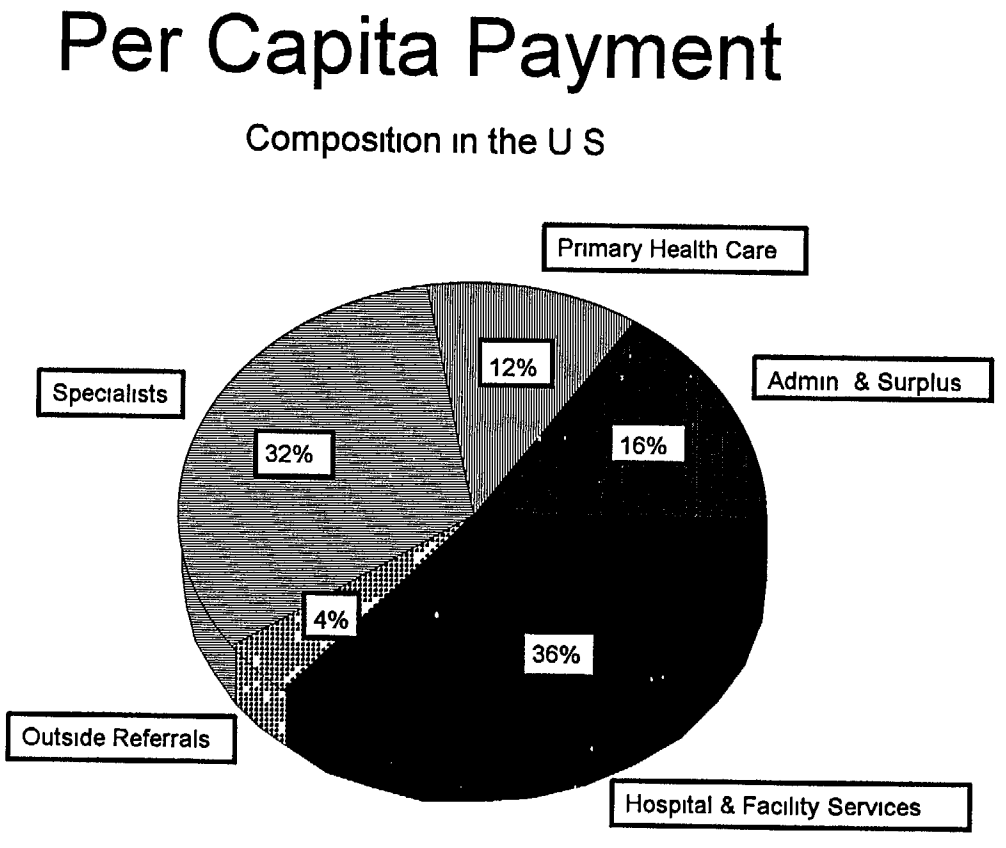
- **Full-capitation (full fundholding):**

  Health facility assumes responsibility for paying for all components of the cost, for all types of services (outpatient and inpatient), even if the patient is referred to other providers.

- **Partial-capitation (partial fundholding):**

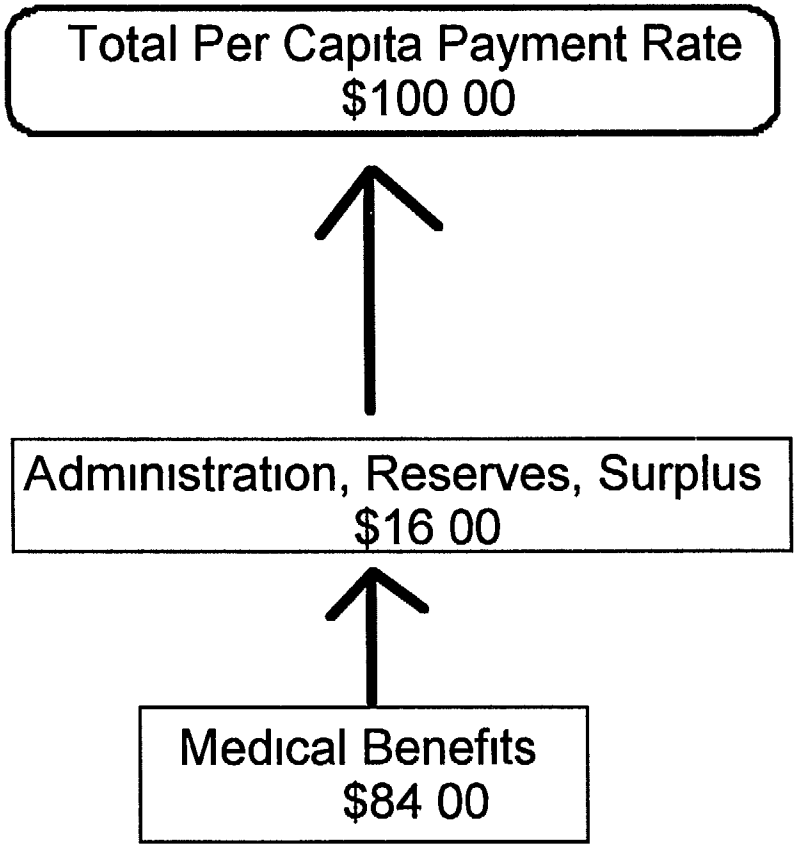
  Health facility assumes responsibility for paying for only selected components of cost and/or for a subset of services (e.g. only outpatient care and/or selected types of referrals).

Facility-based Capitation - Setting the Per Capita Payment Rate
Full Package of Services



276

Facility-based Capitation - Setting the Per Capita Payment Rate



Facility-based Capitation - Setting the Per Capita Payment Rate

How to calculate the medical benefits portion?

1 Forecast demand (utilization rates) for each type of service

2 Resources required for each type of service

$$\frac{\text{Predicted Annual Utilization Rate per service} \times \text{Cost or Fee per service}}{\text{12 months}}$$

= Cost per person per year

Facility-based Capitation - Setting the Per Capita Payment Rate

Actuarial Rates (Example)

	Annual Frequency (procedures/member)	Projected Average Cost	Per Capita Payment Rate
HOSPITAL SERVICE			
Inpatient stay	0 35	$938 00	$27 35
Outpatient surgery	0 05	$1,082 00	$4 51
Emergency room	0 125	$138 00	$1 44
Skilled nursing facility	0 005	$149 60	$0 06
MEDICAL GROUP			
Office Visits	4 2	$35 00	$12 25
Consultations	0 1	$111 00	$0 93
Inpatient visits	0 245	$62 00	$1 27
Inpatient visits - newborn	0 025	$130 00	$0 27
etc			
TOTAL			$85 36

Facility-based Capitation - Incentives for Health Facility That Assumes Risk

How to earn the surplus?

Fee for Service

- Increase revenues by increasing number of services given
- Provide services as long a payment covers the cost
- At a minimum, payment should cover variable costs

Per Capita Payment

- Increase revenues by increasing number of members
- Control costs since revenues are fixed through careful integration of inpatient & outpatient services

Facility-based Capitation - Incentives for Health Facility That Assumes Risk

Comparison of Fee-for-service and Capitation
Trends in the U S

	Fee-for-Service	Payment Per Capita
Members covered	100,000	100,000
Primary care physicians	35-40 physicians	50 physicians (including some physician assistants)
Specialty physicians	150 specialists	50-60 specialists
Hospital beds	275 beds	100 - 150 beds
Use of other outpatient sites	little	extensive
Cost per member per year	$3,500	$2,000
Total cost for all members	350,000,000	200,000,000

Facility-based Capitation - Summary of Advantages and Disadvantages

+	Predictable expenses for fund holder	--	Financial risk may bankrupt facility
+	Facility has incentive to provide services efficiently	--	Provider may seek to enroll only healthiest individuals
+	Relatively low adminstrative costs	--	Facility may lower quality of care
+	Reduces incentives for over-treatment		

Case-based Payment for Inpatient Care - Definition & Purpose

Payment Per Case:

- A hospital receives a fixed payment per inpatient stay;
- Payment >> cost: Hospital keeps surplus;
- Payment << cost: Hospital suffers loss;
- More complex cases receive higher payments
- Shares financial risk between fundholder & health facility

Other Uses of Patient Classification Systems:

- Adjust a global budget for case mix (frequently used in NIS)
- Management: monitor activity of hospitals

Purpose: *Provides incentives to improve efficiency in inpatient care, but recognizes that different hospitals treat different types of patients.*

GOALS IN DESIGNING CASEMIX-ADJUSTED PATIENT GROUPS

- A manageable number of groups (500-700)
- Clinical similarity of cases within a group
- Similar resource use for cases within a group
- Based on simple data collected at admission and discharge of patient

PREDICTED EFFECTS OF DIAGNOSIS-RELATED GROUPS

Predicted Effect	Actual Effect
Decreased length of stay	Yes
More admissions ******** (evidence in NIS)	Yes ****
More surgeries and other procedures performed on an outpatient basis	Yes
Hospitals discourage admission of high-cost patients	Yes
Total payments to hospitals rise at a slower rate	Yes
Quality of care declines	No
Hospitals manipulate coding to increase payment	Yes

285.

MINIMUM BASIC DATA SET FOR IN EUROPEAN COMMUNITY

1 Hospital number
2 Patient number
3 Sex
4 Age on admission
5 Marital status
6 Residence
7 Month and year of admission
8 Length of stay
9 Discharge status (death, home, transfer)
10 Principal diagnosis
11 Other diagnoses
12 Surgical and obstetrical procedures
13 Other significant procedures

Fee-For-Service

A payment is made for each specific service rendered and can be set either prospectively or retrospectively Units of service may be combined as episodes or visit packages (e.g. first and follow-up visit, or visit plus standard diagnostic tests)

281

SUMMARY ASSESSMENTS OF FFS PAYMENT

- can be simple, or very complex to implement based on the definitions of the units of service
- can be employed for any provider (hospital, physician, polyclinic)
- suitable for a policy strategy of competition between providers,
- creates LARGE incentives to increase volume, which may need to be controlled
- Fee-for-service often creates disagreement between fundholder and the provider about what services are justifiable and should be paid

System Requirements for Alternative Payment Methods

	Line Item	Global Budget	Capitation Partial	Capitation Full	Per Case	Per Diem	Fee-for Service
Legal framework	yes	yes	yes	yes	yes	yes	yes
Management Autonomy	yes	yes	yes	yes	yes	yes	yes
Financial information systems	+	++	+++	++++	+++	+	++
Management information systems	+	++	+++	++++	+++	+	++
Closely integrated delivery system	+	+	+++	++++	++	+	+
Utilization management	+	+	+++	++++	++	+	+

+ low complexity, ++ average complexity, +++ above average complexity, ++++ high complexity

SUMMARY OF LESSONS LEARNED ABOUT PAYMENT METHODS

1 *Financial Incentives Matter:* **Many providers will respond to new financial incentives such that health system restructuring will take place.**

2 *Experimentation with payment methods is important:* **No single payment method is appropriate for all situations.**

3 *Payment method is separate from the generosity of payment*: **Payment methods allocate the same amount of funds more rationally.**

4 *The key characteristic of a payment method is the unit of service(s) on which it is based.* **Providers will have incentives to increase the volume of units, but decrease the cost per unit.**

5 *As the unit of payment becomes more aggregated, financial risk to the provider increases.*

SUMMARY OF LESSONS LEARNED ABOUT PAYMENT METHODS

6 *Payment methods that have stronger incentives for efficiency, consumer satisfaction, equity, and quality tend to have higher adminstrative costs.*

7 *Health systems often use a combination of payment methods.*

8 *Payment methods should be kept simple; otherwise, health providers will not understand the fundamental incentives.*

9. *Competition among fundholders and among providers improves the performance of payment methods.*

10 *Competition for patients encourages health facilities to maintain quality and patient satisfaction.*

11 *Skilled management and solid information systems are essential under any payment method.*

SUMMARY OF LESSONS LEARNED ABOUT PAYMENT METHODS

Quality assurance programs are essential under any payment method to ensure an appropriate balance between efficiency and quality.

Payment Methods Discussion Question

Format Divide the class into four small groups
Assign to each group, one of the following payment methods

Group A Global budgets
Group B Capitation (for primary health care group) with partial fundholding
Group C Case-based payment
Group D Fee-for-service

Discussion Questions:

Each group should discuss their payment method in terms of the following questions and be prepared to make a short presentation

1 What are the major incentives created by the payment methods which are important for your local conditions?

2 What are the key indicators (statistics) which would be important to track to monitor the impact of these incentives?

3 What management information (financial and service statistics) would be required to support the implementation of the payment methods? Why?

4 What management/organizational changes would be required to ensure financial viability under the payment method?

Payment Methods Discussion Question

Format Divide the class into four small groups
Assign to each group, one of the following payment methods

Group A Global budgets
Group B Capitation (for primary health care group) with partial fundholding
Group C Case-based payment
Group D Fee-for-service

Discussion Questions.

Each group should discuss their payment method in terms of the following questions and be prepared to make a short presentation

1 What are the major incentives created by the payment methods which are important for your local conditions?

2 What are the key indicators (statistics) which would be important to track to monitor the impact of these incentives?

3 What management information (financial and service statistics) would be required to support the implementation of the payment methods? Why?

4 What management/organizational changes would be required to ensure financial viability under the payment method?

MODULE 5

USER FEES

(reprinted from Zdrav*Reform* course manual *Financial Management and Control*, November 1995)

I. Introduction

- **Workshop Goals**

  1 Clearly identify structure and procedural aspects of efficient and effective cash control

  2 Provide participants with an understanding of selected internal control methods

  3 Ultimately to enhance the delivery of health care by being an improved steward of resources

I. Introduction

- **Workshop Agenda**

1 Introduction - *Goals, Agenda & Overview of Need for Internal Control*
   - Impact / Probability Study
     Exercise

2 Overviews
   - Internal Control for Cash Management
     Definitions, Characteristics, Objectives of Internal Control
     Exercises
     Creating an Internal Control Structure
     Examples of Fraud
     Typical Control Procedures
     Exercises
   - Receivables
     Two Types of Systems
     Exercises

Impact / Probability Study

What is the probability you will be involved in he following event?
Fill in 0% to 100%

What is the relative impact on your organization?
Crisis, High, Medium, Low

Event *What do you think the probability and impact is of*	Probability of Occurring			Impact		
	This Year	Next Year	Year After	This Year	Next Year	Year After
1 Having a new or revised health care financing system where cash is a part of the funding						
2 Competing for business with other organizations based on price and quality						
3 Having or suspecting an incident of cash-theft						
4 Needing to establish controls over cash due to regulatory requirements						
5 Having to explain how cash was used or disbursed including better ways to share incentive monies						
6 Obtaining a computer to help manage finances						
7 Needing to improve or establish the reporting of cash to outside authorities such as a tax authority						
8 Needing to have an external audit of finances						
9 Expanding services that are marketed based on user fees						
10 Needing to write policies regarding user fees so as to qualify for additional humanitarian aid						
11 Having an account receivable function in the facility (issuance of credit)						
12 Establishing a service only supported through user fees						
13 Purchasing equipment with user fees						
14 Other						

Overview of Internal Control for Cash Management

- **Definition of Internal Control** - methods and measures to safeguard assets, seek accuracy and reliability of accounting and administrative controls, and promote operational efficiency Cash is a key asset

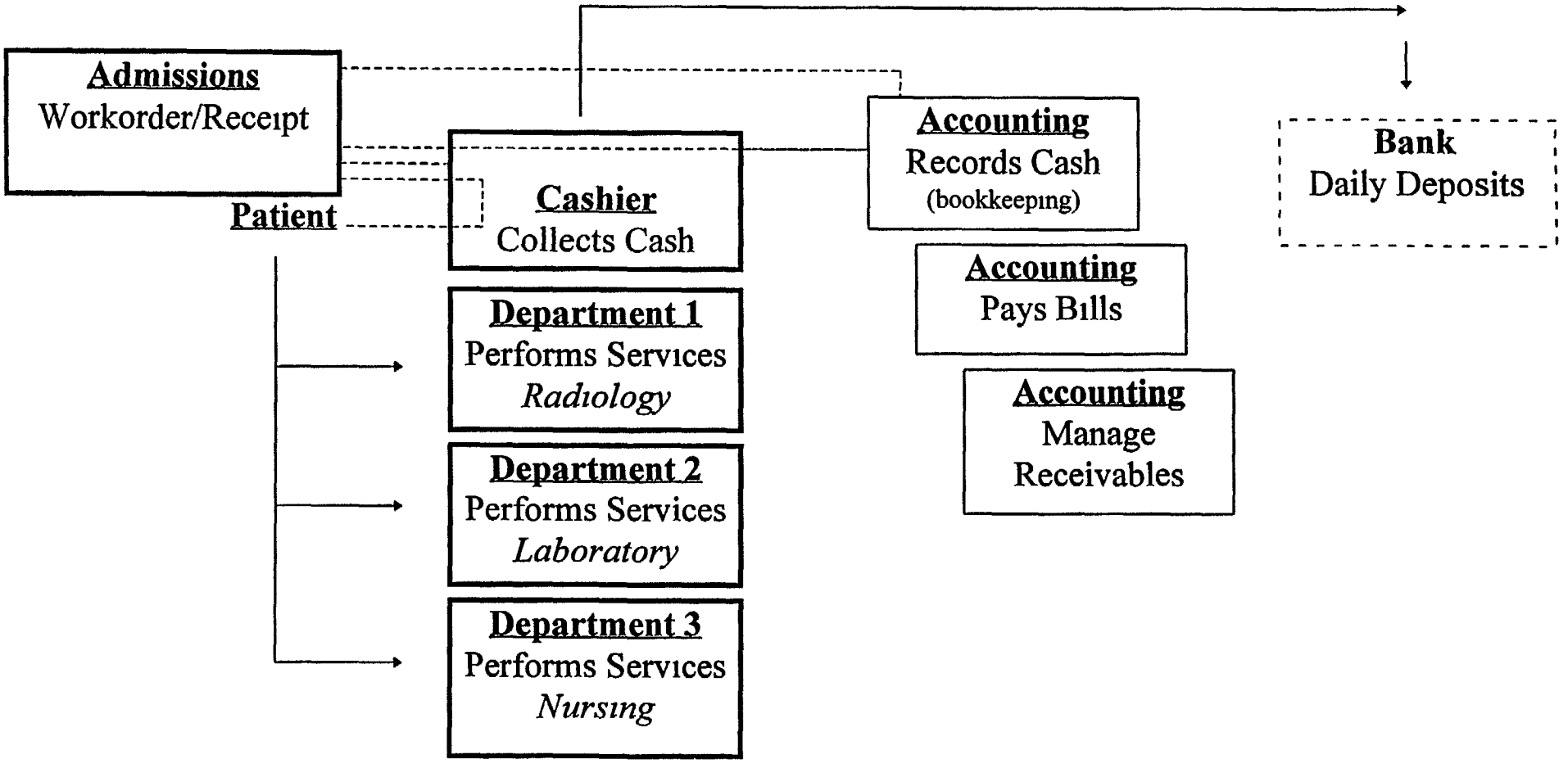
- **Characteristics of Reliable Internal Control**
  - a plan to provide for the segregation of certain functional responsibilities
  - a system of adequate policies and procedures
  - quality personnel suitable to the task DO YOU HAVE THE PERSONNEL RESOURCES?
  - focus on the ideal so participants understand the weaknesses Always a compromise

- **International Objectives of Internal Control**
  - **Depends on Culture** Different cultures reflect/require different levels of control
  - **Audits** Growing need to assess/understand basic control prior to investment (*Examples*)
  - **Typical Objectives of Control ...** Authorized and documented transactions in accordance with local laws, preventing unauthorized access to assets or misstatements of amounts

- **Internal Control Tools**
  - **Checklists and Flowcharts**
  - **Policies & Procedures**
  - **Statistical Process Control Techniques (Dorian Shanin)**

Internal Control Flow-Chart for Cash Management

Example Flowchart



Exercise: *Draw a flow-chart for how your facility is or will probably collect cash from user fees Make sure you identify*

1. Who authorizes and determines the user fee amounts?
2. Who collects the user fee?
3. Who accounts for the user fees? (who keeps the records?)
4. Who makes the deposits of the user fees?
5. Where the deposits are made? (a bank, a safe ?)

Internal Control Questionnaire for Cash Management

	Question	Yes	No
1	*Are cash records kept up to date? Are there daily, weekly, monthly reports?*		
2	*Are accounts balanced and reconciled regularly?*		
3	*Is the Cashier the same person as the Admissions Clerk?*		
4	*Is the cashier's records (such as a register tape) reconciled with copies of the receipts?*		
5	*Can the receipts subsequently be traced to the cash receipts accounting journal?*		
6	*Does the Admission Department list of Workorder Receipts subsequently match accounting and cashier amounts?*		
7	*Is cash handed in daily? (either to bank or audit area)*		
8	*Are employees trained in the cash management?*		
9	*Do employees switch tasks periodically?*		
10	*Is the book-keeper required to take annual vacations?*		
11	*Is there a periodic audit of the process?*		
12	*Are receipt/workorder forms pre-numbered and controlled?*		
13	*Is management satisfied that all employees are honest?*		
14	*Are all voided work-orders accounted for?*		
15	*Is there an occasional audit of services provided versus cash receipts?*		
16	*Is the person auditing the process independent?*		
17	*Is there a separation of functions, including control over hiring key positions?*		

Creating an Effective Internal Control Structure

- Cash and other receivables are "liquid" assets and require more control than non-liquid assets
- Create an organization that promotes an environment of control
  Assess and prioritize the risks of losses with the cost of controls
- Promote communication of internal control among managers as it improves ability to plan, helps to assure money on hand to meet liabilities, unexpected emergencies, and other responsibilities
- Need to periodically audit internal control procedures and policies
- Need to safeguard cash to prevent theft and fraud Learn from other's mistakes

1994 Fraud Survey by AICPA c/o KPMG

3000 firms surveyed

- 18% had a fraud of $1,000,000 or more
- 38% had a fraud of $ 100 000 - $999 000
- 21% had a fraud of $25 000 - $99 000

How was the fraud detected?

52% were uncovered by Internal Control
51% by Tips
47% by Internal Auditor
42% by Management Internal Control Audits
34% by Customers
28% by Accident

WHAT YOU ARE LEARNING SHOULD BE CONFIDENTIAL

Typical Control Procedures for Internal Control of Cash-
Internal control is only as good as it's level of consistent application

- Definitive and clear cut assignment to designated individuals as to the responsibilities of cash management This includes the

  ⇒ *Establishment of a system of written policies and procedures*
  ⇒ *The design of adequate documents and records to help insure the proper recording of transactions and events*

- Segregate the duties of personnel to reduce the opportunity of allowing any one person to be in a position to perpetrate and/or conceal errors or irregularities including the

  ⇒ *Establishment of definite and separate routines for managing the inflow of cash and managing the outflow of cash*
  ⇒ *Separation of the handling of cash from the accounting for cash Keep those who handle cash away from the records of cash and vise-versa*

- Establish adequate safeguards over the access to, and use of, assets and records including

  ⇒ *The need that all cash should be deposited daily*
  ⇒ *All files and documents should be safeguarded and pre-numbered when necessary*
  ⇒ *Independent checks and audits should occur on a periodic basis*

Internal Control Procedures- *Exercise*

Break into three of four groups Each group should design an internal control system for receiving cash under one or more of the four situations shown below Note the responsibilities of the individuals under each situation and point out the opportunities for poor control as well as the possibilities for good control

Situation 1: One person is assigned to the cash responsibility, the cashier The cashier authorizes the user fee, receives cash and maintains the bookkeeping on the cash The cashier also deposits any cash into appropriate bank accounts

Situation 2: Two individuals are provided to manage cash A cashier and a bookkeeper

Situation 3: Three individuals are provided to manage cash An admissions clerk, a cashier, and a bookkeeper

Situation 4 You have no limit on the number of personnel Design a fool-proof internal control system that maximizes control of cash and improves planning opportunities

Internal Control - *Typical Errors and Irregularities of Managing Cash*

- *Errors* are unintentional and *Irregularities* are intentional
- It is more difficult to prevent irregularities than to prevent errors

Types of errors and irregularities

Defalcations (Stealing): *An irregularity*
Intercepting cash before it is recorded in accounting records
Taking cash from recorded but un-deposited receipts
Diverting cash from its intended destination (re-routing payments or refunds)

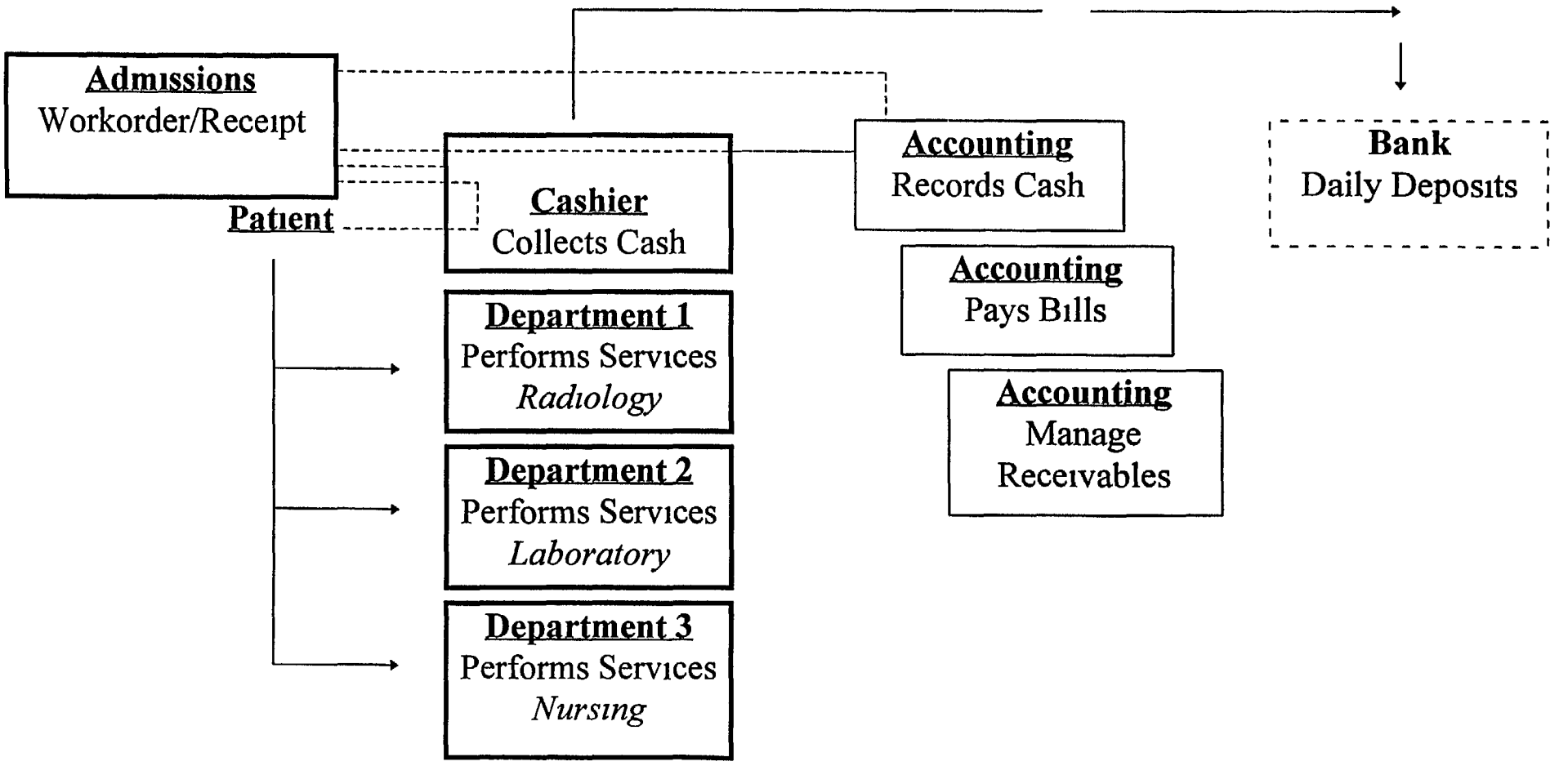
Distortions (Misstatement): *An error*
Misstating the bookkeeping records without taking assets

Unconcealed (Open): *An irregularity or an error*
The cash amount is less than the recorded amount

Concealed: *An irregularity*
The cash amount is intentionally overstated to force agreement with the bookkeeping records (Temporary)
The amounts have never been recorded or have been reduced after being recorded (Permanent)

Exercise:

Using the following internal control chart, identify where each of the four types of errors or irregularities might occur Give examples of how this might happen Comment on what can be done to promote control



Exercise: Solutions/Comments

Defalcations

Interception and the taking of cash suggests cash be recorded quickly and regularly Easier to intercept cash when personnel functions are not separated An interception today can be hid by an interception tomorrow Thus, it is important to reconcile accounts periodically to avoid a "rolling" interception Diverting cash is usually controlled by "authorization" procedures

Distortions

Can occur anywhere where records are kept Regular audits, reconciliation's, and reports coupled with good accounting procedures helps this situation

Temporary Concealment

An issue of timing Requires reconciliation's to stop Surprise reconciliation's useful

Permanent Concealment

Most dangerous Requires attentive and consistent internal control measures, safeguarding of records, and retroactive audits

Common Concerns in Health Care Cash Management Regarding User Fees

- The Authorization procedures are not consistent *Example Sometimes user fees are required, and sometimes they are not Also, who authorizes the fees is often the same person who collects the money or delivers the service*

- Personnel Shortages *If you cannot afford to have the proper number of people involved, supplement the internal controls with spot audits and reconciliation's Also, use statistical controls to identify likely areas of poor control*

- Cash Management controls are co-mingled with Receivable Management *Example The cashier can authorize payment through credit See "Authorizations" above*

- Others ?

309

Overview of **Internal Control - Receivables**

- **Receivables:** a claim of money against an individual or organization Commonly used for patient accounts of user-fees, a receivable is a credit granted to a patient in lieu of cash payment

- **Two (2) Systems of Receivable Control**

  Card System - Commonly used system A card is maintained on each patient with a running balance of what they owe Under the card system, the authorizations for the account receivable are kept as a separate function from the card As payments are made, an entry is made for each payment on the card During the month, payments are made and posted, reducing the balance owed At the end of each month, the cards are reviewed and a balance of all receivables are summed The benefits of the card system is that it separates the authorization function from the collection and bookkeeping function

  Open-Invoice System -A simpler system. A secured file is kept on each patient's open invoices/authorizations (sometimes by date due or by date incurred) At the end of each month, all invoices due are added This method requires that the file be maintained in a secure place Fraudulent access or mis-filing of the file can cause the amount due to be lost

Receivable Control - *Card System Example*

Card for each patient

Patient Name and/or Number

DATE	ITEM (Description and Reference)	AUTHORIZATION	CREDIT	(DEBIT)	DUE
3-3-95	*CHEMOTHERAPY TREATMENT*	*Mr Lushev 098765*		*1 435*	*1 435*
5-3-95	*payment for chemotherapy-098765*		*800*		*635*

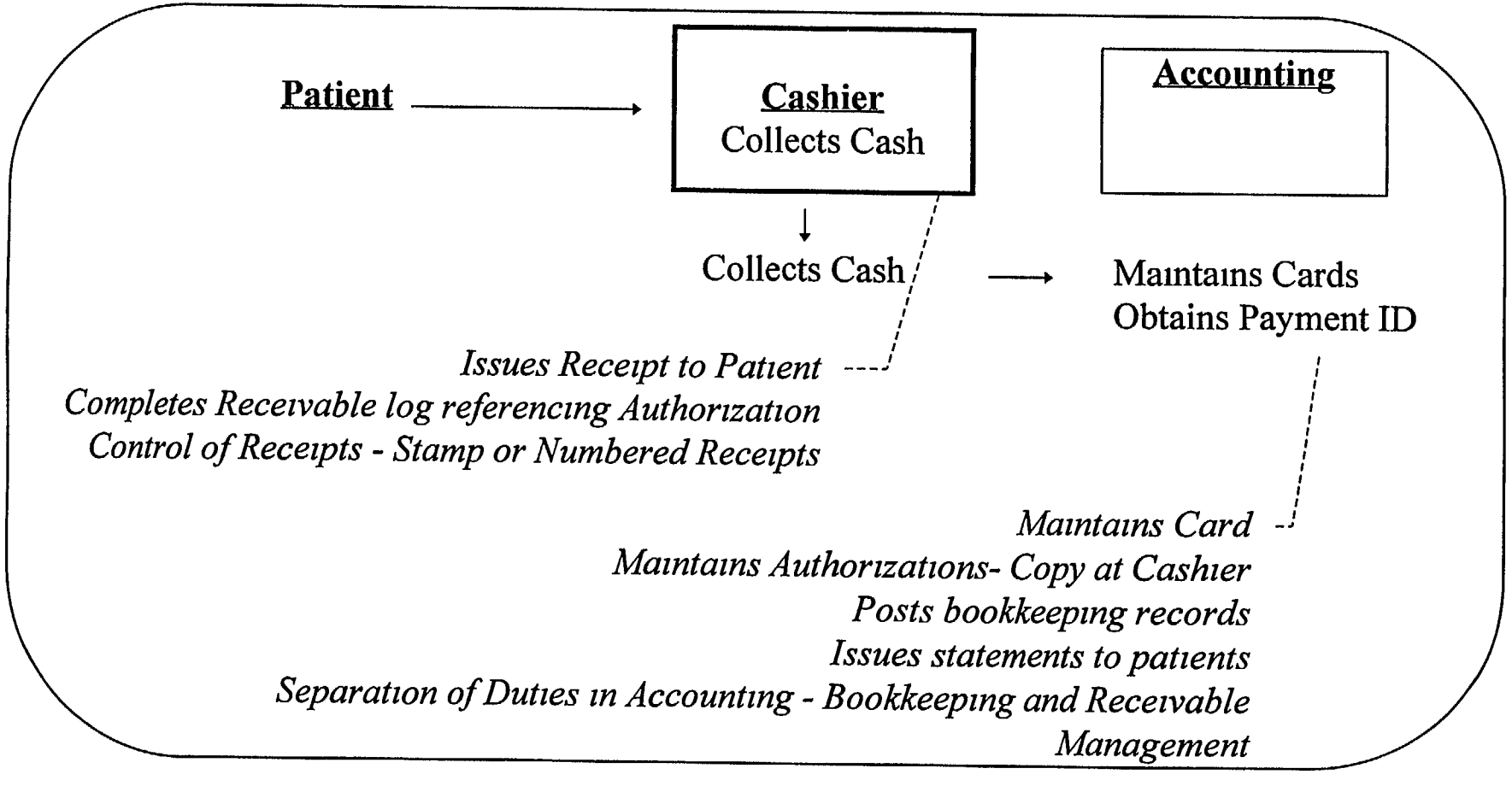
Chronological History

Traceable Authorizations - Authorization can also serve as original Invoice/ service description

Ongoing Balance

Receivable Control - *Card System Example*

Payment Flow



312

Internal Control - *Exercise on the Card System*

Break into three of four groups Assume not all user fees are paid in cash (In other words, assume there is some insurance or other credit mechanism available and you need to keep track of accounts that are receivable)

- *Discuss the application of an internal control system for managing receivables under the "card" system at your facility Summarize your conclusions*
- *Consider the following four "situations" Note the responsibilities of the individuals under each situation and point out the opportunities for poor control as well as the possibilities for good control*

Situation 1: You are the cashier and you maintain the cards & authorizations

Situation 2: You are the uncle of the patient and you work in accounting maintaining the books and the cards

Situation 3: You are the patient. The cashier issues hand written receipts to the patients. You are skilled at forging documents

Situation 4 The system is properly installed but you reconcile the cash accounts with the accounting records once per year

Internal Control - *Open Invoice System*

- **The Authorization / Invoice is maintained in a locked file requiring two people to open and have access to it.**

  Someone takes the Authorization / Invoice and the Receivable is lost forever
  Authorizations represent assets

- **Cash is received and posted at the cashier. Controlled receipts are issued to patient.**

  Normal cash procedures
  Risk of Cashier Fraud if Receipts not managed or reconciliation's of cash logs and Open Invoice file not frequent

- **Each day, cash receipts are posted to the open invoice file**

  Allow different people to post file

Internal Control - *Exercise*

- ***The Authorization of a Receivable*** *is as important as the collection of cash Discuss some of the following key questions as they might pertain to your facility including*

  - *Who should authorize a receivable?*
  - *To whom and how is the receivable paid? (The Card or Open Invoice System)*
  - *Under what terms of payment? (When is it due, how often, interest rates?)*
  - *For what amount? (Are there limits? Exceptions to the limits?)*
  - *With what collateral, if any? (Legal implications)*
  - *Considering what risks? (inflation, no payment)*
  - *Key management reports (Aging Report, Past due Report, Late Collections Report, etc)*

Exercise in Cash Management for User Fee Analysis

Management is looking ahead to improve their management of user fees in 1997 As such, it is important to identify today those key data elements that will promote improved decision-making in the future Review the following subject areas and discuss the relative importance of the issue and the data elements that should be collected today to promote more effective decision-making in the future

Utilization of Services (including excess capacity)

Marketing for Additional User Fee Business

Cost Management of areas involved in user fees business

Incentives for those responsible for user fee business

Quality Management of services provided on a user fee basis

Budgeting Revenue, statistical, and expense

Exercise in Resource Management Tracking for User Fee Analysis

The worksheet on the following page is a sample document for tracking user fees, resources, activities and more within a department Similar documents can be used to track cash, patient-flows, and utilization of services Look over the document and discuss

- Appropriateness for your situation
- Modification that would facilitate your use and improve the control of resources within a department
- Comparisons to similar documents currently in use
- Manpower required to implement such a document
- Other issues

Page ______ of______ Location ____________

Date	Receipt Number	Primary Doctor	Name	Address	Exempt Percent	Professional Services	Gyn	G-Lab	B-Lab	X Ray	Thermo Diag	Other	Total Payments	VAT
							TOTAL							

Activity Tracking Form

MODULE 6: GROUP PROJECT

DESIGN AND IMPLEMENTATION OF MANAGEMENT ACCOUNTING SYSTEMS

Design and Implementation of
Financial Management and Control Systems
in YOUR Facility

The purpose of this group activity is for you to design the financial management and control systems you would like to have in your own health facility, to develop a work plan for implementing the system you design, and to identify the critical first steps you will need to take to begin implementation As you design your management accounting system, keep in mind how it would support the patient classification systems being developed At the end of the workshop, each group will be asked to make a brief ½ hour presentation on the materials they have developed

Assemble yourselves into small groups of 4-6 participants according to the health facility where you work Please answer the following questions

1 What are the key questions relating to financial management and control that you are currently facing in your health facility? List these questions in order of priority

2 How would you adapt the two main financial management tools that have been covered in this workshop including budgeting, cost accounting, to the system of DRGs in order to find the answers you need

3 For each of the tools you find most important to strengthen in your health facility at this time, describe what aspects of the tool are already being used in your health facility

4 Describe the types of improvements you would make in the financial management tools you have chosen for your health facility

5 Develop a work plan (list of activities and schedule of these activities) to show how and when you would make these improvements

6 What are critical first steps you need to take in the next month to begin implementation of your work plan?

WORKSHOP EVALUATION FORM

Topics in Economics and Management Accounting for Health Care Financing Reforms

Instructions Please assess the course which you have just completed Remember that we will use the information which you provide to improve the design and administration of future workshop presentations Your candid answers and recommendations for improvement are essential

Thank you for your participation in this course and in this evaluation

---

Please respond to the following questions using the scale

1 = Poor	4 = Good
2 = Fair	5 = Excellent
3 = Average	

Part A Circle one number for each item

1	Overall quality of the course	1	2	3	4	5
2	Relevance and useful of course materials	1	2	3	4	5
3	How useful were small group activities?	1	2	3	4	5
4	How useful was the final group project?	1	2	3	4	5
5	Rate the performance of the instructors	1	2	3	4	5
6	Rate the quality of the translated material	1	2	3	4	5
7	Rate the quality of the interpretation services	1	2	3	4	5
8	Overall, how much did you learn in this course?	1	2	3	4	5
9	Would you recommend this course to a colleague?	1	2	3	4	5

Part B

Please rate the value (1 = least valuable, 5 = most valuable) of each module of the workshop

1	General Introduction	1	2	3	4	5
2	Per Capita Budget Methods	1	2	3	4	5
3	Cost Accounting	1	2	3	4	5
4	Budget Tools for Market-Oriented Reforms	1	2	3	4	5
5	Alternative Payment Methods	1	2	3	4	5
6	User Fees	1	2	3	4	5
7	Final Group Activity& presentation	1	2	3	4	5

Part C

What characteristics of the workshop did you like best?

Part D

What characteristics of the workshop did you like least?

Part E

What suggestions do you have for presenting the workshop in the future?