

Understanding Hospital Costs and Unit Costs

40

LECTURE

Practical hospital governance in Punjab, Pakistan

Know what a service uses and costs.
Explain the calculation and its limits.

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A useful cost figure answers a defined question

A hospital can know how much it paid and still not know what a service cost. Costing connects resources, activity and a clear management question.

- Distinguish cost, spending and payment.
- Build a simple service cost sheet.
- Interpret average and extra costs correctly.
- Check the evidence and explain uncertainty.

OFFICIAL SOURCE

A principle tied to a named law, standard or official guidance.

WORKING METHOD

A practical control or teaching format to adapt to the authorised system.

TEACHING CASE

An invented hospital example, used to practise applying the correct process.

Study output

A checked cost sheet and a short explanation of what its figures mean.

Module 9 | Presentation 3 of 4. Allow 45-60 minutes with exercises. All explanations are on the pages; check the cited sources before live use.

Use costing methods without changing financial rules

The methods in this lecture help an MS understand a service. They do not create spending powers or change official accounts.

Official methods used here

- WHO guidance explains how to identify resources, value their use and calculate costs for a stated purpose.
- NHS England and AHRQ provide additional method references. Their local accounting and payment requirements are not Punjab requirements.

Application within the hospital

- Keep official books, asset records and financial reporting under the applicable rules. Ask the finance team to reconcile the separate management cost sheet.
- Use the correct authority for budgets, procurement, staff, tariffs and contracts. A calculated unit cost does not approve any of these actions.

WHO means World Health Organization. AHRQ means Agency for Healthcare Research and Quality.

Sources: **C1**: hospital methods | **C5**: costing processes | **C6**: educational methods

Different decisions need different cost figures

Write the decision first. The cheapest-looking number may answer the wrong question.

Management question	Useful figure	Also check
What does the service use?	Total and unit cost, with shared resources included.	Defined scope, activity and quality.
What if we add one session?	Extra resources and extra cost of that session.	Staff, supplies and safe capacity.
What if we stop an activity?	Costs that can actually be avoided.	Continuing obligations and care elsewhere.
What cash is needed next year?	Dated cash payments and commitments.	Capital purchases, stock and funding timing.

Use a cost analysis alongside clinical need, access, safety and authorised funding.

WORKING METHOD | Illustrative material is identified in the text.

Cost, spending, charge and payment are different

A single patient episode may have four different figures. Label each one.

Term	Plain meaning	Example of the distinction
Resource cost	Value of the staff time, supplies and other resources used.	A medicine is used from stock bought earlier.
Cash payment	Money actually paid during a period.	A supplier is paid this month for an earlier delivery.
Charge or tariff	The amount set for billing a service.	An approved tariff may differ from resource cost.
Reimbursement	The amount a payer pays under its terms.	A claim may be partly paid or still outstanding.

Expenditure depends on the accounting basis. State whether the source records show payments, purchases or expenses.

WORKING METHOD | Illustrative material is identified in the text.

State whose costs are being counted

Perspective means the viewpoint used to decide which costs belong in the analysis.

Hospital or provider perspective

- Include resources used to provide the defined hospital service. Identify resources paid by another department or donated by a partner.
- Say whether the study measures hospital cash, recorded expenses or the economic value of all relevant resources. These are different views.

Patient or wider perspective

- Patients may face travel, accommodation, medicine payments and lost time. These can matter even when hospital care has no patient charge.
- If examining costs across society, define the method carefully. A payment between parties is not automatically an extra resource cost to society.

This lecture mainly uses the provider perspective. Lecture 41 examines funding and financial sustainability.

Sources: **C2**: provider perspective

Write the boundaries before collecting numbers

Working specification for a cost study. A cost object is the service, activity or patient episode being costed.

01 Purpose

State the decision and who needs the answer.

02 Service

Define the cost object and included departments.

03 Period

Use the same month or year for costs and activity.

04 Unit

Specify a visit, completed test, bed-day or episode.

05 Price basis

State PKR, price date and valuation method.

06 Exclusions

List omitted costs and explain why they matter.

PKR means Pakistani rupees. Every monetary teaching example in this lecture is invented.

Ask how total cost changes when activity changes

These labels depend on the period and activity range. They are not permanent properties of every expense.

Cost behaviour	Simple explanation	Hospital example
Fixed	Total stays similar within the stated range and period.	An existing monthly service contract.
Variable	Total changes with the amount of activity.	Single-use supplies for completed procedures.
Mixed	Has both a fixed amount and a usage-related amount.	A service fee plus a charge for each test.
Step cost	Jumps when an extra block of capacity is needed.	An additional staffed shift beyond current capacity.

A salary can be fixed for next month while staffing cost changes if a new shift is approved.

WORKING METHOD | Illustrative material is identified in the text.

Direct and indirect answer a different question

Direct or indirect describes how a cost is traced to the chosen service. It does not mean fixed or variable.

Type	How it reaches the service cost sheet	Example
Direct cost	Can be traced to the service using a reliable record.	A device used for a specific procedure.
Indirect cost	Is shared and needs a reasoned allocation.	Security serving several departments.
Direct and fixed	Traceable, but does not change with each extra patient.	Dedicated staff pay within the existing roster.
Indirect and variable	Shared total may change with activity.	Shared laundry costs that rise with linen processed.

A cost may be direct to the hospital but indirect to one clinic. Always name the cost object.

WORKING METHOD | Illustrative material is identified in the text.

Use two approaches and compare their results

The choice depends on the question and the available records. Both approaches need clear boundaries.

Top-down: start with the total

- Start with the hospital or department cost total. Assign direct costs, allocate shared costs and divide by the relevant activity.
- This gives an average. It may conceal differences between simple and complex cases unless costs and activity are separated.

Bottom-up: build from resources

- List the resources for a service: staff minutes, medicines, devices, tests and other inputs. Multiply each quantity by its unit value.
- Add relevant shared and capital costs once. Check the result against the department total and explain any gap.

WHO-CHOICE describes an ingredients approach: identify each required resource and value it.

Sources: **C1**: allocation and unit costs | **C4**: ingredients approach

Collect evidence for both cost and activity

Working evidence list. Agree the records and definitions with finance and the service team.

01 Staff

Payroll, employer costs, duty rosters and time use.

02 Supplies

Stock balances, receipts, issues, returns and losses.

03 Equipment

Asset register, service costs and recorded use.

04 Shared services

Bills, contracts and allocation measures.

05 Activity

Verified service register and completion status.

06 Assumptions

Source, date, reason and uncertainty for each estimate.

A budget allocation is provision for spending; it is not evidence that all of it was consumed by the service.

Worked example: allocate staff time once

All people, events and hospital details in this teaching example are invented. They do not describe an actual hospital event.

Period and staff	A team's total relevant employment cost is PKR 2,000,000 for one month.
Observed use	A checked time sample supports 20% of its time for the diagnostic service, 60% for wards and 20% for other work.
Calculation	Diagnostic staff cost = 2,000,000 x 20% = PKR 400,000.
Control	The three shares total 100%. Do not also add the full team payroll to each receiving department.
Limit	Check whether the sample reflects nights, leave, supervision and unusually busy days. Record its limits.

An allocated staff cost is not a separate wage payment or proof that staff pay could be saved.

TEACHING CASE | Illustrative material is identified in the text.

Medicine bought is not always medicine used

A bulk purchase can raise cash payments and stock without raising patient consumption by the same amount.

Begin with stock movements

- For a defined store and item: opening stock + receipts - closing stock gives the net quantity leaving stock, if there are no other movements.
- Identify transfers, returns, expiry, breakage and corrections separately. A net stock reduction is not automatically patient use.

Value the identified use

- Apply a consistent documented valuation method. Do not mix pack prices, individual unit prices and different strengths.
- Reconcile issues with ward balances and returns where needed. An issue to a ward is not always consumption by a patient that month.

Include relevant waste transparently in total service cost; keep it visible so it can be investigated and reduced.

Worked example: stock use and waste

Invented single-item example. All units have the same value of PKR 100; there are no transfers or returns.

Opening and receipts	Opening: 1,000 units. Received: 500 units. Total available: 1,500 units.
Closing and reduction	Closing: 400 units. Net stock reduction = $1,500 - 400 = 1,100$ units.
Checked explanation	Patient use: 1,000 units. Recorded expiry: 100 units. These explain the 1,100-unit reduction.
Cost and cash	Patient use = PKR 100,000. Expiry loss = PKR 10,000. Receipts value = PKR 50,000, regardless of payment date.
Interpretation	The resource reduction is PKR 110,000. Show consumption and waste separately; do not call all of it treatment delivered.

An unexplained stock difference needs investigation. A cost sheet must not turn it into assumed patient activity.

Use a price that matches the question

Working price checks. Keep the quantity and the value of one unit visible on every important line.

01 Unit

Specify one tablet, vial, kit, pack, minute or test.

02 Date

Record invoice, contract or quotation date.

03 Net amount

State how discounts and rebates are treated.

04 Additions

Identify taxes, freight and installation where relevant.

05 Currency

Use a stated exchange rate and date if needed.

06 Purpose

Distinguish past purchase value from replacement estimate.

Use consistent treatment of tax within the stated perspective. A market quotation is not a purchase approval.

WORKING METHOD | Illustrative material is identified in the text.

Show capital in the correct view

A machine is paid for at one time and used over several periods. Do not confuse these views.

View	What the figure represents	Required explanation
Cash plan	Payments due for purchase, installation and later support.	Timing, approved commitments and source of funds.
Official accounts	Treatment required by the applicable accounting system.	Follow its asset and expense rules.
Service cost estimate	A stated share of asset use attributed to the service.	Value, life, residual value, period and method.
Economic analysis	Annual resource cost, including the value of capital tied up.	Explicit discount rate and useful-life assumptions.

Do not add full purchase price and depreciation or annualised capital cost for the same asset use.

Sources: C3: s. 3.3.2

Worked example: purchase and annual use

Invented asset: PKR 6,000,000, used only by this service; assumed five-year life and zero residual value.

Cash purchase	If fully paid at acquisition, that payment is PKR 6,000,000 in the purchase period.
Simple annual share	Straight-line teaching estimate = $6,000,000 / 5 = \text{PKR } 1,200,000$ a year, or PKR 100,000 a month.
Economic alternative	At an illustrative 5% annual rate: $6,000,000 \times 0.05 / [1 - (1.05)^{-5}] = \text{about PKR } 1,385,849$ a year.
Meaning	Economic annualisation includes a cost for tying up capital. It is not the same as the simple annual share or the cash payment.
Use in this lecture	The later monthly example uses only the PKR 100,000 simple share. The life and rate are assumptions, not Punjab rules.

Ask a finance or health-economics specialist to check the chosen capital method before a live decision.

A donated resource still supports real work

A zero hospital purchase payment does not mean a service requires no resources.

For the hospital cash plan

- Show what the hospital actually has to pay. A donated machine may still require staff, power, maintenance, consumables and disposal.
- Record what the donor will cover, for how long and on what terms. Show replacement and support needs after that support ends.

For a broader resource estimate

- Identify the donated asset, supplies or staff time. Value them using a stated, reasonable method when the economic perspective includes them.
- Do not add both a donor payment and the value of the same resource. Keep the funding source separate from the resource used.

The costing label does not approve acceptance of a gift, asset or sponsorship. Use the applicable institutional process.

WORKING METHOD | Illustrative material is identified in the text.

Allocate shared costs using a sensible measure

A cost driver is a measure that helps explain use of a shared resource. Choose it for the actual cost pool.

Shared resource	Possible allocation measure	Question to test
Cleaning of similar areas	Cleaned area, adjusted where intensity differs.	Are intensive areas receiving more work?
Laundry	Weight or counted items processed.	Are weights or item types comparable?
Staff administration	Relevant staff or transactions supported.	Does headcount reflect the work reasonably?
Shared technical service	Recorded time, jobs or equipment use.	Do difficult jobs require more support?

A convenient percentage can be a poor allocation. Record the reason and test important alternative assumptions.

Sources: **C1**: shared-cost allocation

Worked example: a shared facilities cost

Invented monthly example. A PKR 1,000,000 facilities pool excludes the direct utilities and equipment costs shown later.

Pool and measure	The pool serves 1,000 square metres of comparable space. Area is a reasonable measure for this simplified example.
Service share	The diagnostic service uses 200 square metres. Share = $200 / 1,000 = 20\%$.
Allocated amount	PKR 1,000,000 $\times$ 20% = PKR 200,000 allocated to diagnostics.
Other services	The other services receive PKR 800,000 together. Total allocation remains PKR 1,000,000.
Check the assumption	If cleaning intensity, opening hours or security needs differ greatly, area alone may misstate the share.

For several support departments, document the allocation order and avoid allocating the same pool twice.

Build the monthly service cost sheet

Invented diagnostic service. This management estimate uses resource consumption and a simple monthly capital share.

Cost line	Evidence or method	PKR
Staff	20% of team employment cost.	400,000
Supplies consumed	600 completed procedures x PKR 200.	120,000
Equipment use	Simple monthly share from the earlier example.	100,000
Direct utilities and maintenance	Identified service amount; excluded from facilities pool.	80,000
Shared facilities	20% of the separate PKR 1,000,000 pool.	200,000
Total for the month	400,000 + 120,000 + 100,000 + 80,000 + 200,000	900,000

The example has no other costs. A live service may also require interpretation, reporting, waste handling, training and other support.

Make the activity count match the cost

The denominator is the number below the line in the division. A wrong count produces a wrong unit cost.

If the cost covers...	Use a matching activity count	Avoid
A defined diagnostic procedure	Completed procedures in the same period.	Counting appointments as completed procedures.
Inpatient ward care	Defined occupied bed-days or completed episodes.	Mixing available beds with occupied days.
A clinic service	Defined attended visits in the same period.	Combining visits and unique people without explanation.
A whole care episode	All included care within the stated episode boundary.	Ignoring related costs outside one department.

Specify how cancelled work, repeats, incomplete episodes and patients spanning periods are handled.

WORKING METHOD | Illustrative material is identified in the text.

Worked example: calculate the average cost

Use the monthly cost sheet of PKR 900,000 and 600 completed procedures.

Formula	Average unit cost = relevant total cost / matching completed activity.
Calculation	PKR 900,000 / 600 = PKR 1,500 per completed procedure.
What it means	This is the average allocated cost at this activity level, with this service scope and this capital method.
What it does not mean	It is not automatically a patient charge, a reimbursement rate, the cost of one extra procedure or a cash saving from one cancellation.
Reporting line	Report: PKR 1,500 per completed procedure; month stated; 600 procedures; assumptions and exclusions attached.

If the activity count is zero, a unit cost cannot be calculated by this division. Report the cost and reason for no output.

Check for double counting before using the answer

Every included resource should enter the relevant service total once.

Common double counts

- Adding whole-team payroll after already charging the team's allocated time; adding an equipment purchase and its annual share.
- Adding a laboratory charge and the same laboratory staff and reagents; adding the facilities pool after its allocated share is already included.

Common omissions

- Leaving out centrally paid staff, donated supplies, outsourced services, information systems or maintenance that support the service.
- Ignoring teaching, research or standby duties and then comparing the hospital with one that does not provide them. Separate these functions where useful.

List each input, its source, how it is assigned and where it appears in the final total.

Average, extra and avoidable cost are different

The management question determines which of these is relevant.

Measure	Meaning	Practical consequence
Average cost	Total relevant cost divided by activity.	Useful for describing the defined service.
Marginal cost	Cost of one additional unit within current conditions.	May be mainly supplies when safe capacity exists.
Incremental cost	Total cost difference between two options.	Can include an extra shift, equipment or start-up work.
Avoidable cost	Cost that can be removed by a specified change.	A payroll allocation does not vanish just because a service closes.

An allocated share can move to another department without creating any hospital-wide saving.

WORKING METHOD | Illustrative material is identified in the text.

Worked example: more output lowers the average

Invented assumption: capacity safely supports 600-900 procedures monthly; all costs except PKR 200 supplies per procedure stay unchanged.

Fixed amount	Staff 400,000 + equipment 100,000 + direct support 80,000 + shared facilities 200,000 = PKR 780,000.
At 600 procedures	Total = 780,000 + (600 x 200) = PKR 900,000. Average = PKR 1,500.
At 900 procedures	Total = 780,000 + (900 x 200) = PKR 960,000. Average = about PKR 1,066.67.
Extra resource cost	The extra 300 procedures cost PKR 60,000 in this limited example, or PKR 200 each.
Interpretation	Average cost falls, but total cost rises by PKR 60,000. There is no PKR 433.33 cash saving on every procedure.

The assumption of spare safe capacity must be checked; the next example changes that assumption.

Worked example: extra capacity creates a cost step

Change only one assumption: the existing roster safely supports 800 procedures, so 900 needs an approved extra staffed session.

Starting position	600 procedures cost PKR 900,000, as before.
Additional capacity	The extra session adds PKR 90,000 in the month. This covers the example's extra staffing and support.
New total	$780,000 + (900 \times 200) + 90,000 = \text{PKR } 1,050,000$.
New averages	Average at 900 = PKR 1,166.67. Extra cost versus 600 = $150,000 / 300 = \text{PKR } 500$ per extra procedure.
Decision	Check the actual limiting resource: staff, room, machine, reporting or supplies. Do not assume a machine alone creates capacity.

Neither the PKR 200 nor PKR 500 extra cost is a universal tariff; each depends on the stated capacity assumptions.

A change in case mix can change the average

Invented simplified example. Routine episodes cost PKR 1,000 each and complex episodes PKR 2,500 each in both periods.

Activity and cost	Period A	Period B
Routine episodes	600 x 1,000 = PKR 600,000	200 x 1,000 = PKR 200,000
Complex episodes	400 x 2,500 = PKR 1,000,000	800 x 2,500 = PKR 2,000,000
Total / 1,000 episodes	PKR 1,600,000 / 1,000	PKR 2,200,000 / 1,000
Average cost	PKR 1,600	PKR 2,200

The average rises because more episodes are complex. The example does not show a rise in either group's unit cost.

Cost quality failures without promising cash savings

Avoidable repeats, waste and delayed care consume resources. Patient safety remains the primary concern.

Measure the resource effect

- Example: 40 avoidable repeat tests use supplies costing PKR 300 each. Identified supply use is $40 \times 300 = \text{PKR } 12,000$.
- Also assess the patient burden, staff time and delay. Do not assume every repeat was unnecessary; clinical review must establish that.

Distinguish the possible benefit

- Preventing repeats may release staff or machine time. A cash saving is a net reduction in actual payments after any new costs are included.
- Include the cost of the improvement itself. A PKR 20,000 monthly control cannot be called cash-saving solely from PKR 12,000 supply avoidance.

Quality improvement may still be justified by safer care, shorter waits and useful capacity, even without immediate cash savings.

Sources: **C6**: cost behaviour and quality

Worked example: explain price and quantity changes

Invented single supply line. Planned: 1,000 units at PKR 100. Actual: 1,100 units at PKR 110.

Planned and actual	Planned cost = PKR 100,000. Actual cost = PKR 121,000. Difference = PKR 21,000.
Quantity effect	$(1,100 - 1,000) \times \text{planned price } 100 = \text{PKR } 10,000.$
Price effect	$(110 - 100) \times \text{actual quantity } 1,100 = \text{PKR } 11,000.$
Reconcile	$10,000 + 11,000 = \text{PKR } 21,000.$ This stated calculation assigns the combined effect to the price part.
Investigate	More units may reflect more patients, complex care, waste or a record error. Check the cause before calling it inefficiency.

A comparison with a budget is incomplete unless workload, service scope and prices are also understood.

Show how uncertain assumptions change the result

Invented one-month model: PKR 780,000 fixed amount plus PKR 200 per procedure. Capacity is assumed adequate in all rows.

Scenario	Calculation	Average per procedure
Base: 600 procedures	$(780,000 + 600 \times 200) / 600$	PKR 1,500
Lower output: 500	$(780,000 + 500 \times 200) / 500$	PKR 1,760
Higher output: 750	$(780,000 + 750 \times 200) / 750$	PKR 1,240
Supplies rise to PKR 250	$(780,000 + 600 \times 250) / 600$	PKR 1,550

These are scenarios, not statistical confidence limits. State which changes could also alter staffing or other costs.

Compare services only after checking definitions

A published cost is useful only if its scope, date, method and setting are understood.

Before comparing hospitals

- Check currency and price year, service content, complexity, activity, capital treatment, shared costs, teaching and emergency standby.
- Compare quality, access and outcomes as well as cost. A lower number may reflect omitted inputs, simpler patients or fewer available services.

When using WHO-CHOICE data

- Its published service-delivery estimates are model-based and use stated base years. They are not current purchase prices or hospital tariffs.
- The listed inpatient hotel component and outpatient visit estimates exclude drugs and diagnostics. They are not automatically the full cost of an episode.

Use local records for a local decision and identify which missing values came from external estimates.

Sources: **C4**: scope and base-year limits

Reconcile the cost sheet before it reaches the Board

Reconciliation means explaining how the final figure connects to the source records.

- | | | |
|---|----------------------------|---|
| 1 | Start from records | Agree the period and source totals with finance. Identify payments, expenses and stock data separately. |
| 2 | Explain adjustments | Show consumption adjustments, included donations, excluded services and the chosen capital treatment. |
| 3 | Check allocation | Each shared pool must reconcile to its source total. Confirm that direct and indirect costs are not duplicated. |
| 4 | Match activity | Check completed output against the service register. Have finance and the service lead review material differences. |

NHS England CP5 is a method reference for reconciliation; its national submission rules do not apply in Punjab.

Sources: **C5**: CP5

Keep the MS cost dashboard small and usable

Working format. Report the measure, comparison and required action together.

Measure	Why it is useful	What it should trigger
Output and case mix	Explains what work the resources supported.	Check unexpected changes or missing activity.
Total and average cost	Shows resource scale and cost per defined unit.	Investigate the main price or use changes.
Capacity and quality	Explains what limits output and whether care is safe.	Review the bottleneck and corrective action.
Cash and funding position	Shows whether due payments can be supported.	Resolve a timing gap or seek an authorised decision.

Put the price date, period, exclusions, assumptions and reviewer next to the figures, not in an unexplained separate file.

WORKING METHOD | Illustrative material is identified in the text.

Three short decisions to work through

Write your answer and the reason before turning to the next page.

1. Stock

Opening stock is 200 units; receipts 100; closing stock 80. Twenty units expired. No other movements. Unit value is PKR 50.

What are the patient-use quantity and the separately identified expiry value?

2. Extra activity

Monthly cost is PKR 600,000: fixed amount 500,000 plus PKR 100 for each of 1,000 procedures. Another 200 fit safely.

What are the new total cost and the extra cost per added procedure?

3. Claimed savings

A service has PKR 300,000 of allocated staff pay. After a change, the same staff remain paid and use freed time on another ward.

Is PKR 300,000 a hospital cash saving? What benefit could be reported?

Use the definitions and state the assumptions. A correct division is not enough if the cost category is wrong.

Answers and reasons

Use the definitions, the stated assumptions and the calculation.

1. Stock use

Net reduction = $200 + 100 - 80 = 220$ units. Patient use = $220 - 20$ expired = 200 units. Patient-use value = PKR 10,000; expiry = PKR 1,000.

2. Extra activity

New total = $500,000 + (1,200 \times 100) = \text{PKR } 620,000$. Extra cost = $20,000 / 200 = \text{PKR } 100$ per added procedure. New average is about PKR 516.67.

3. Savings

No staff cash saving has been established because pay continues. Report released staff time and its verified use elsewhere. A separate reduction in a payment would need evidence.

The strongest answer shows the calculation, the meaning and the condition on which the result depends.

Prepare a cost sheet for one defined service

Use a non-confidential real case or the invented examples in this lecture.

Define

Choose one service, period, perspective and completed output unit. List inclusions and exclusions.

Calculate

Show staff, consumed supplies, equipment use and shared support. Identify the main evidence and methods.

Test and explain

Calculate unit cost. Test activity and price changes. Explain capacity limits and any claimed savings.

Ask the service lead and finance officer to check the records, arithmetic, allocation, output count and interpretation.

Use anonymised or invented data for public teaching. Do not publish patient-level or restricted institutional records.

Six checks before relying on a cost figure

Use these questions whenever a cost sheet is presented for a management decision.

01 Question

Does this figure answer the decision being made?

02 Boundary

Are period, service and perspective stated?

03 Resources

Are material inputs included once?

04 Activity

Does the denominator match the cost?

05 Uncertainty

Are major assumptions and limits visible?

06 Authority

Has the required financial or service decision been obtained?

Next: Lecture 41 - Funding Care and Assessing Financial Sustainability.

Sources and continued use | 1

Select a source title or its official-source link to open the document.

c1 Analysis of hospital costs: a manual for managers

WHO, 2000. Shepard, Hodgkin and Anthony. ISBN 92 4 154528 3. Cost centres, allocation, unit costs and managerial use. A costing method, not a Punjab accounting rule.

World Health Organization | [Official source](#) | [Author-hosted WHO manual](#)

c2 Costing guidelines for tuberculosis interventions

WHO, 2019. ISBN 978-92-4-000009-4. Provider perspective and collection of resource, price and activity data. Used for general costing methods; TB-specific service assumptions are not applied here.

World Health Organization | [Official source](#)

c3 Making choices in health: WHO guide to cost-effectiveness analysis

WHO, 2003. ISBN 92 4 154601 8. Section 3.3.2: economic annualisation of capital. This lecture does not adopt the guide's model discount rate, asset lives or efficiency assumptions as Punjab requirements.

World Health Organization | [Official source](#)

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Sources and continued use | 2

Select a source title or its official-source link to open the document.

C4

WHO-CHOICE: quantities and unit prices (cost inputs)

Official methodology and data page, accessed 4 October 2026. Ingredients costing and limits of published service-delivery estimates, including their base year and exclusion of drugs and diagnostics.

World Health Organization | [Official source](#)

C5

Integrated information requirements, costing processes and costing methods 2026

NHS England, 2026 edition. Cost identification, allocation, activity matching and CP5 reconciliation. Used as a reference for transparent methods only; its reporting duties apply in England, not Punjab.

NHS England | [Official source](#)

C6

The Business Case for CUSP

AHRQ educational session, 17 January 2012. Cost behaviour, capacity and the financial effects of quality improvement. Its United States payment arrangements and example percentages are not applied here.

Agency for Healthcare Research and Quality, United States | [Official source](#)

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