

How to do a bottleneck analysis at district and sub-district level



D-I-V-A manuals: practical guidance

What is and how is done a bottleneck analysis?



The Bottleneck Analysis

- The BA is a systematic way to look at the main determinants of effective coverage for selected interventions, that allows one to identify specific problems (bottlenecks) and their causes.
- Steps:
 - 1. Identification of bottlenecks (through indicators)
 - 2. Analysis of the causes of such bottlenecks
 - 3. Identification of solutions
 - 4. Implementation plan
 - 5. Monitoring and evaluation plan



What are the determinants of coverage?



Determinants of coverage (1)

The **supply side** includes the coverage determinants under the control of the health system:

- Availability of commodities (drugs, equipment, diagnosis kits, training materials...)
- Availability of trained human resources (community workers, doctors, nurses, midwives...)
- Geographic access through delivery points (health facilities, outreach activities, community care points...)



Determinants of coverage (2)

The **demand side** includes the coverage determinants linked to utilization from the target population:

Initial utilization

(measures the demand barriers to initiate the utilization of a service, e.g. DPT/Pentavalent 1, ANC visit 1...)

Continuous Utilization

(measures the demand barriers to complete utilization of a service and the follow up/drop outs, e.g. DPT/Pentavalent 3, ANC visit 4...)



Determinants of coverage (3)

Quality includes the coverage determinants linked to quality of the services provided, necessary to ensure their effectiveness:

• Quality/effective coverage

(measures the effectiveness of the intervention by assessing the quality of the service provided, usually in terms of adherence to guidelines)







How can we measure (estimate) the determinants of coverage?



How to measure the determinants of coverage (1)

- Commodities availability:
 - Ideally: measure what percentage of the target population can be covered with the available commodities for a given intervention
 - More often: percentage of delivery points with stock outs of such commodities



How to measure the determinants of coverage (2)

- Trained human resources availability:
 - Ideally: measure what percentage of the target population can be covered with the available health professionals
 - More often: percentage of delivery points with insufficient human resources compared with national norms



How to measure the determinants of coverage (3)

- Geographic access:
 - Ideally: measure what percentage of the target population can easily reach the delivery points for a given intervention
 - Usually measured in terms of: percentage of target population that lives within a certain distance from the delivery points (5 km, or 30 min. trip). Done through admin data or household survey (asking if distance from delivery point is a problem)



How to measure the determinants of coverage (4)

- Initial utilization:
 - concept: measure what percentage of the target population uses a given service at least once
 - Usually measured in terms of: percentage of target population that used a given service over the last three months. Done through admin data, facility surveys or household surveys.



How to measure the determinants of coverage (5)

- Continuous utilization:
 - Concept: measure what percentage of the target population uses a given service as many times as needed
 - Usually measured in terms of: percentage of target population that used a given service the needed number of times over the last three months. Done through admin data, facility surveys or household surveys.
 - * Not necessary for interventions that are provided once only (e.g. early HIV diagnosis for HIV exposed children EID)



How to measure the determinants of coverage (6)

- Effective coverage:
 - Concept: measure what percentage of the target population received a given service in an effective way
 - Usually measured in terms of: percentage of target population that received a given service with good quality over the last three months.
 Done through admin data, facility surveys or household surveys, looking into adherence to guidelines on how a service should be provided.



How can we read a bars graph for determinants of coverage?



Bars graph for bottlenecks identification





Principles to consider when looking at the bars graph with coverage determinants

- The demand side cannot be higher than the lowest determinant in the supply side unless:
 - The private sector provides a major contribution to coverage
 - Indicators for the supply side use different denominators
- There is a cascade between initial utilization, continuous utilization and effective coverage



Usually the demand side cannot be higher than the lowest determinant in the supply



Same denominator

unice

Unless the private sector provides a major contribution to coverage





Or unless the indicators for the supply side use different denominators



Cascade between initial utilization, continuous utilization and effective coverage



unicef

Same denominator (target population)

Example of bars graph with common denominator

(ideal but infrequent)

















No commod.







No commod.

unicef













No HR













No initial util.
















Example of bars graph with different denominators

(not ideal but frequent)





















No commod.





















unicef



















unicef













No commod.





No initial util.



No continuity











No initial util.

No continuity

No quality



How can we identify bottlenecks in the determinants of coverage using the bars graph?



How to identify bottlenecks using a bar graph with coverage determinants

1. Start by looking at the lowest determinant/s in the supply side

2. Then look at the bigger drops in the cascade within the demand side and quality











The reduction of a key bottleneck should bring an increase in effective coverage













The reduction of a key bottleneck should bring an increase in effective coverage









How can we identify bottlenecks in the determinants of coverage using dashboards with color coding?



Using the bottleneck analysis at sub-district level

 Going from bar graphs to color coding, using the same principles

Color coding is used when we do not have point estimates, but we can still classify catchment areas according to the performance in each determinant.

This allows identification of the areas that need extra support and the areas where lessons can be learned.

Bottleneck identification by colors



	Lower threshold	Upper threshold	Area A	Area B
commodities	70%	100%		
human resources	50%	80%		
geographic access	60%	90%		
initial utilization	45%	75%		
continuous utilization	35%	65%		
effective coverage/quality	25%	55%		



Bottleneck identification by colors



Same logic, but careful with thresholds

		Lower threshold	Upper threshold	Area A	Area B		
	commodities	70%	100%				
	human resources	50%	80%				
	geographic access	60%	90%				
i	initial utilization	45%	75%	\mathbf{N}		}	Each one of
	continuous utilization	35%	65%				
	effective coverage/quality	25%	55%	Å	K		thresholds
	Same denominator						cannot be higher that the previous one


Assigning thresholds

	Lower threshold	Upper threshold	Area A	Area B
commodities	70%	100%		
human resources	50%	80%		
geographic access	60%	90%		
initial utilization	45%	75%	\mathbf{N}	\mathbf{N}
continuous utilization	45%	75%		
effective coverage/quality	45%	75%	Å	K
	7	R		

 Value that identifies the catchment areas that face the highest challenges.
It needs to be at least 30% lower than the upper threshold. 1. Level that should be reached in the district for each determinant of coverage, taking into account the current circumstances and constraints.



Interpreting colors

	Lower threshold	Upper threshold	Area A	Area B
commodities	70%	100%		
human resources	50%	80%		
geographic access	60%	90%		
initial utilization	45%	75%		
continuous utilization	35%	65%		
effective coverage/quality	25%	55%		

GREEN: the determinant of coverage in the catchment area is higher than the upper threshold. There is something to learn from it.

RED: the determinant of coverage in the catchment area is lower than the lower threshold. This is a determinant and/or a catchment area to be prioritized for assistance.

YELLOW: anything in between, allow to see change (hopefully progress) over



Identifying the common bottlenecks

	Lower threshold	Upper threshold	Area A	Area B	Area C	Area D	Area E	Area F	
commodities	70%	100%							
human resources	50%	80%							┛
geographic access	60%	90%							Ļ
initial utilization	45%	75%							Ť
continuous utilization	35%	65%							
effective coverage/quality	25%	55%							ł



Identifying the catchment areas in need

	Lower threshold	Upper threshold	Area A	Area B	Area C	Area D	Area E	Area F
commodities	70%	100%						
human resources	50%	80%						
geographic access	60%	90%						
initial utilization	45%	75%						
continuous utilization	35%	65%						
effective coverage/quality	25%	55%						



Once a bottleneck is identified, what do we do?



From bottlenecks to solutions

Once key bottlenecks have been identified, we need to understand what their causes are

 For the main causes of a bottleneck, one or more solutions need to be identified and their implementation properly planned



Once the bottleneck is identified, its causes need to be assessed thoroughly









Causality analysis

- 5 WHYs
- Four key questions:
 - Can we solve the bottleneck? (Can we do something about it? Is it in our scope of action?)
 - Do we have the resources to solve the bottleneck?
 - Do we have the capacity to solve the bottleneck?
 - Do we have the motivation/incentives to solve the bottleneck?







Identification of solutions

- Five key questions:
 - Is the proposed solution likely to have an impact?
 - Is the proposed solution feasible?
 - Is the proposed solution cost-effective?
 - Is the proposed solution acceptable?
 - Is the proposed solutions going to help us to reach the unreached population groups?



How can we translate the analysis done so far into an operational plan?



Ideally the objective is to get to cover 100% of the population (equity) with effective (good quality) coverage, but operational targets may be lower.





From analysis to planning

- Objectives: increase in quality coverage, must be <u>based on the real possibility</u> of reducing bottlenecks, SMART.
- Outputs: reduction of bottlenecks, based on causes and solutions identified, <u>realistic</u>.
- Activities: activities to be carried out to implement the identified solutions, must be time bound, with clear responsibilities and resources.



Planning:

Objective: to increase coverage

– Outputs: to reduce bottlenecks

- Activities: to implement solution



Be specific on the activities

- Activities should:
- Have a clear calendar for implementation with precise deadlines
- Have a cost estimate and available resources to be implemented
- Have an identified person/institution accountable for their implementation



A real life example

• Bottleneck identification and implementation of solutions in Ethiopia for mosquito nets.



Bar graph with determinants Removing coverage bottlenecks of coverage in Ethiopia to scale up ITN







How can we set up a monitoring plan to ensure implementation over the next twelve months?



From planning to monitoring

- **Objectives**: monitored at district level once or twice a year.
- **Outputs**: monitored at community/facility level, at catchment area level and at district level quarterly.
- Activities: monitored at community/facility level, at catchment area level and at district level monthly or bi-monthly as needed.



Monitoring the 3 levels periodically





Set the monitoring activities

 Build into the routine activities in the district (reviews, meetings, supervision visits...) the periodic monitoring of activities implementation and bottleneck reduction.



Thank you!



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