WHO Planning and Budgeting Tool for Vaccine Preventable Disease Surveillance: Preliminary Results from Country Pilots in Bangladesh and Karnataka State of India

July 2023

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Contents

- Background and introduction
- Planning and budgeting VPD surveillance
- Overview of the methodology and the budgeting tool
- Results of piloting in Bangladesh and Karnataka State (India)
- Discussion and conclusions

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Background: Polio Transition

- Polio transition is the process of maintaining and, when necessary, repurposing the network and infrastructure established for polio eradication to strengthen broader health priorities, with a specific focus on essential immunization, disease detection, and emergency preparedness and response.
- The goal of polio transition is to transfer the responsibility to national governments to ensure long-term sustainability of essential functions.
- The 2018 WHO World Health Assembly adopted the Strategic Action Plan for Polio Transition (2018 – 23) with three key objectives:
    a. Sustaining a polio-free world;
    b. Strengthening immunization systems, **including surveillance for vaccine preventable diseases;**
    c. Strengthening emergency preparedness, detection and response capacity in countries.

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Background: Surveillance

At the country level, immunization programs have relied heavily on polio-funded infrastructure over the past two decades to support the performance of key functions:

- Immunization information systems
- Vaccine-preventable disease surveillance and laboratory networks
- Introduction of new vaccines and monitoring
- Cold-chain and logistics

Decrease and eventual phasing out of financial resources for polio following eradication represents a significant risk to immunization programmes and surveillance. Careful planning must be undertaken to reduce this risk

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Purposes of the methodology

Developed under the broader umbrella of the Universal Health Coverage Partnership, which builds country capacity for health, **the VPD surveillance planning and budgeting methodology** aims to assist countries to:

- Plan and budget the appropriate level of financial resources required to sustain and strengthen integrated disease surveillance
- Identify the critical components (inputs) of surveillance systems
- Ensure the inclusion of inputs costs into national budgets and strategic plans for strengthening surveillance
- Advocate for adequate levels of domestic and external funding for quality surveillance

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Primary users of methodology

- **Budget officers** – public financing management specialists in charge of budget projections or execution (at Ministries of Health and Ministries of Finance)
- **Programme officers** – operational managers in charge of designing or implementing surveillance interventions
- **Development partners** – representatives of international organizations providing technical or financial support in developing surveillance system

The methodology provides several results tables to enable each type of user to draw out the most relevant insights for their work.

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Budgeting for VPD Surveillance

The present methodology is focused on the VPD Surveillance ***budgeting***, using ***costing*** elements to generate the budget.

- ***Costing*** – retrospective or prospective cost analysis:
  - Refers to the exercise of identifying and measuring costs (collecting information on monetary values incurred to produce goods or services)
  - Usually conducted routinely for standard (structured) production processes when changes in production costs must be tracked; or costs for recovery must be estimated
- ***Budgeting*** – prospective budgeting exercise to:
  - Address needs of in-country stakeholders to prepare core planning and budgeting documents of the country;
  - Estimate budget required at different administrative levels of the country
  - Complement National Health Accounts and previous country cost analysis

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Financial costs: Definitions used by the methodology

- **“Cost”**: The financial cost to the government of sustaining a specific function (including capital investments, excluding in-kind resources).
- **“Unit cost”**: The price per unit of service/commodity used for budget calculations in accordance with the public financial management rules.
- **“Inputs”**: Resources such as:
  - Commodity (reagent, lab-kit, equipment etc.)
  - Service, labour or event (e.g., 1 hour round-table meeting, or a 2-day training for up to 20 participants, field visit with or without overnight stay etc.)
  - Formulated by breaking down an action (i.e., surveillance sub-function) into quantifiable ingredients, with known unit cost.

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Main challenges

Countries have their own surveillance systems which vary among countries according to

1. The **number and typology of diseases** under surveillance
2. The **typology of surveillance** (aggregated vs case-based, population-based vs sentinel-based, nationwide vs subnational, etc.)
3. The level of **integration** into the health system; and
4. The progress towards **polio transition** and domestic financing

=> the methodology requires flexibility and adaptability to various contexts

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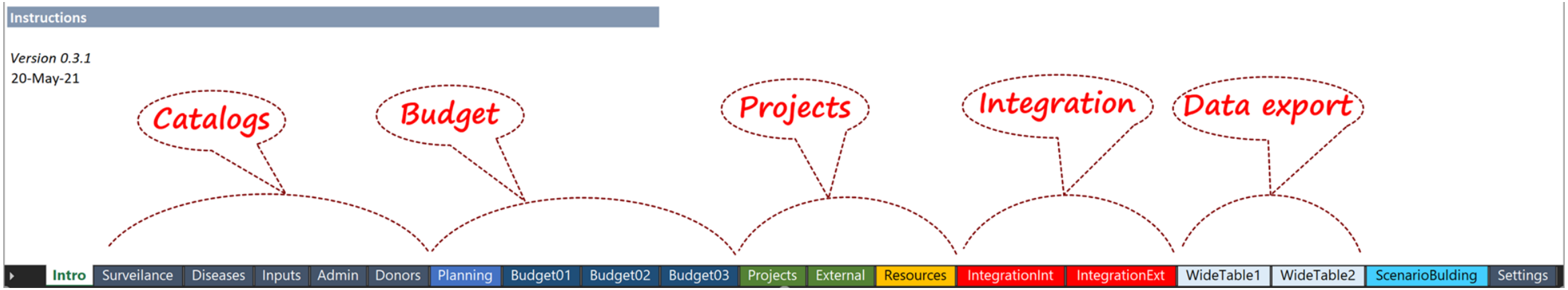
Structure of the Planning and Budgeting Tool



Description of the context:
- Surveillance functions
- Diseases and type of surveillance
- Inputs
- Administrative levels and organizations
- Donors

Planning & Budgeting exercise:
- Planning
- Budget by admin level and input
- Budget by disease
- Budget by surveillance function

External and domestic sources:
- Donor funded projects
- Donor and domestic resources

Integration: Inputs integrated into donor projects or in health system

Data Export for:
- Graphs
- Analysis, and
- Scenario building

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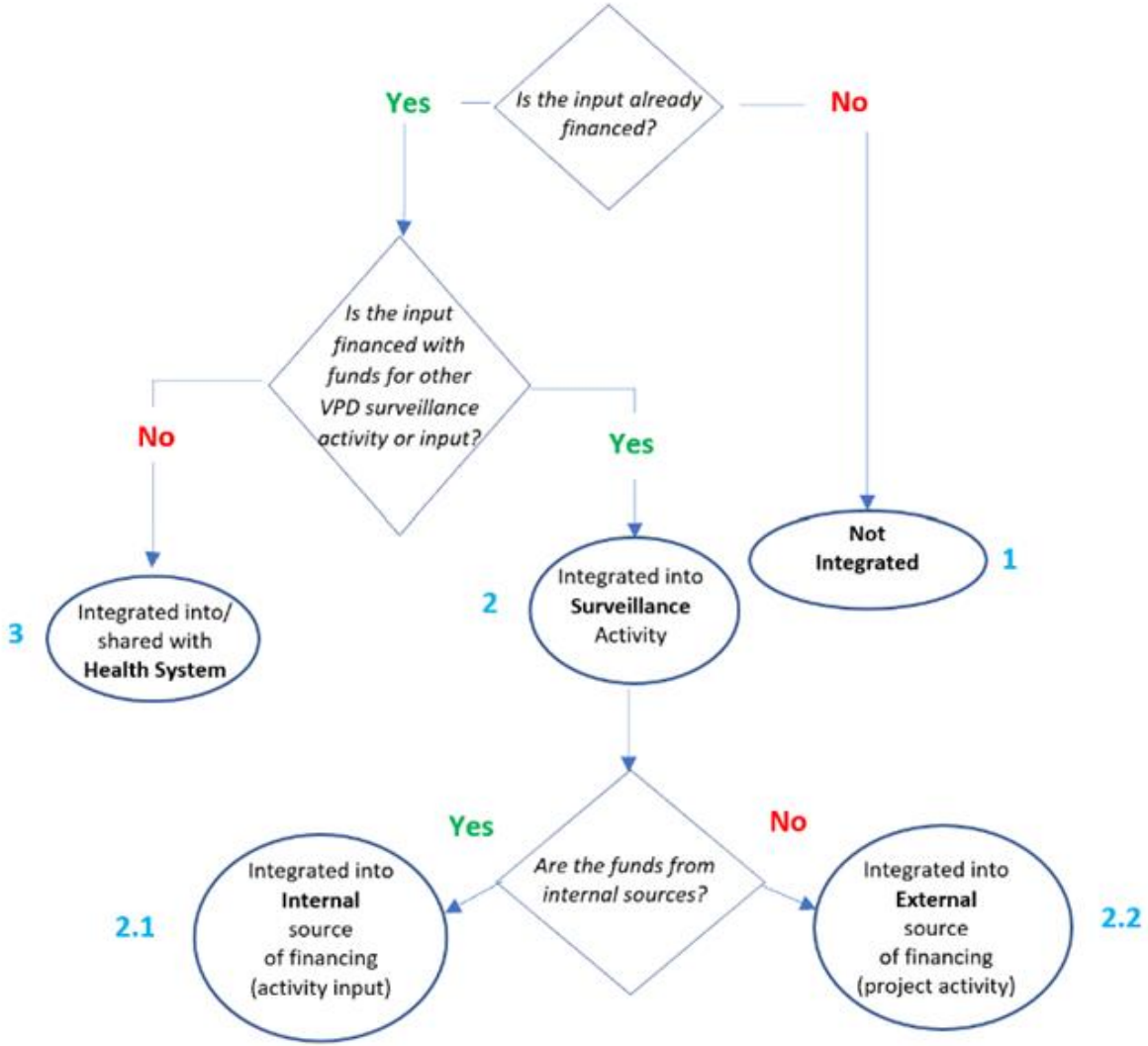
Planning table

	Planning	(The year 2022)							
	Diseases name	Surveillance function	Surveillance activity	Input name	Organization	Integrated	Unit	Unit cost	Quantity
01	Diphtheria	Case detection	Medical examination	Salary	Health Dept District	Yes - HS			
				Transportation (service)	PHC clinic	Yes - HS			
02	Diphtheria	Case detection	Active case finding	Salary	Health Dept District	Yes - HS			
				Transportation (service)	PHC clinic	Yes - HS			
03	Diphtheria	Investigation and confirmation	Taking sample	Sample container	Health Dept District	No	Piece	200.00	1,500.00
				Incentives	Health Dept District	No	Case	150.00	750.00
04	Diphtheria	Investigation and confirmation	Sample shipment	Transportation sample	Health Dept District	No	Case	1,400.00	750.00
				Incentives	Health Dept District	No	Case	600.00	750.00
05	Diphtheria	Investigation and confirmation	Lab confirmation	Building	State Lab	Yes - HS			
				Equipment (lab)	State Lab	Yes - SBLI			
				Lab supplies	State Lab	No	Test-kit	2,000.00	750.00
				Salary	State Lab	No	FTE-month	15,000.00	12.00
				Salary	State Lab	Yes - SBLI			
				Furniture	State Lab	Yes - HS			
06	Diphtheria	Investigation and confirmation	Case follow-up	Salary	Health Dept District	Yes - HS			
				Communication	PHC clinic	Yes - HS			
07	Diphtheria	Analysis and feedback	Data processing	Salary	Ministry	Yes - SBLI			
				Equipment (office)	Ministry	Yes - SBLI			
				Electricity	Ministry	Yes - SBLI			
				Office supplies	Ministry	Yes - SBLI			
08	Diphtheria	Investigation and confirmation	Lab confirmation	Lab test (service)	District Lab	Yes - HS			
09	Diphtheria	Investigation and confirmation	Case follow-up	Incentives	Health Dept District	No	Case	250.00	750.00
10	Polio	Case detection	Active case finding	Salary	Ministry	Yes - SBLI			
11	Polio	Analysis and feedback	Data processing	Salary	Ministry	Yes - SBLI			
12	Polio	Case detection	Facility visit	Salary	Ministry	Yes - SBLI			
13	Polio	Capacity building	Supportive supervision	Per diem	Ministry	Yes - SBLI			
14	Polio	Capacity building	Introductory training	Training	Ministry	Yes - SBLI			
15	Polio	Capacity building	Supportive supervision	Vehicle maintenance	Ministry	Yes - SBLI			
16	Polio	Analysis and feedback	Data processing	Office maintenance	Ministry	Yes - SBLI			
17	Polio	Analysis and feedback	Surveillance review meeti	Training	Ministry	Yes - SBLI			
18	Polio	Investigation and confirmation	Patient examination	Incentives	Ministry	Yes - SBLI			
19	Polio	Investigation and confirmation	Taking sample	Incentives	Ministry	Yes - SBLI			
20	Polio	Investigation and confirmation	Sample shipment	Transportation sample	Ministry	Yes - SBLI			
21	Polio	Investigation and confirmation	Case follow-up	Incentives	Health Dept District	No	Case	250.00	1,000.00
22	Polio	Environmental Surveillance	ES - Sample collection	Incentives	Health Dept District	No	Person-day	1,500.00	104.00
23	Polio	Environmental Surveillance	ES - Sample shipment	Transportation sample	Health Dept District	No	Person-day	2,000.00	104.00
24	Polio	Environmental Surveillance	ES - Lab supplies	Lab supplies	Health Dept District	No	Sample kit	2,000.00	48.00

Integration: budget perspective

Three possible statutes of integration :

1. **"Not integrated"** – *the input cost must be calculated and covered from VPD budget*
2. **"Integrated into surveillance activity"** – *the input cost for the "child input" that is being integrated into another parent input does not need to be calculated, but source of financing must be specified:*
   - *Integrated into internal source of financing if the input is covered by the budget line item;*
   - *Integrated into external source of financing if the input is covered by the project activity (supported by donor)*
3. **"Integrated into health system"** – *the input is shared with the health system, i.e. the input is a part of the core function of the organization and financed from its budget*



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Piloting VPD Surveillance Planning and Budgeting Methodology: Implementation

Sudan* (remotely)	**Karnataka, India (remotely)**	**Bangladesh (in country)**
September-December 2021	September-December 2021	May-June 2022
Preparation: 3 days online workshop	Preparation: 3 days online workshop	Preparation: 3 days meeting
In total 15 meetings with the WHO HQ technical support	In total 6 meetings with the WHO HQ technical support	In total 5 meetings with the WHO CO technical support
Work was carried out by the in-country team independently with minimal external support	Work was carried out by the in-country team independently with minimal external support	Work was carried out by the in-country team independently with external support (consultant)

* The conflict in the country did not allow validation of the data

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Piloting VPD Surveillance Planning and Budgeting Methodology

Health expenditure indicators per capita*	Bangladesh	Karnataka, India
Current Health Expenditure	51 US$	57 US$**
Domestic General Government Health Expenditure	9 US$	21 US$**
Domestic Private	39 US$	35 US$**
External	3 US$	0.6 US$**
Population	170.3 Million	66.2 Million

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* Data from 2020, WHO Global Health Expenditure Database:
- https://apps.who.int/nha/database/Home/Index/en

**Indicators refer to entire India

Piloting VPD Surveillance Planning and Budgeting Methodology: Priority diseases

Bangladesh	Karnataka	Priority	Type of surveillance
Acute Flaccid Paralysis (AFP)	Acute Flaccid Paralysis (AFP)	Priority	Case-based (lab confirmation)
Measles	Measles	Priority	Case-based (lab confirmation)
Neonatal tetanus	Neonatal tetanus	Priority	Case-based (without lab)
Rubella	Rubella	Priority	Others/*Case-based (lab confirmation*)
Japanese Encephalitis	Japanese Encephalitis	Priority	Case-based (lab confirm)/*Others*
Diphtheria	Diphtheria	Priority	Others/*Case-based (lab confirmation*)
Pertussis	Pertussis	Non-priority/Priority	Others/*Case-based (lab-confirmation*)
Rotavirus	Rotavirus	Priority/Non-priority	Sentinel
	Haemophilus influenzae	Non-priority	*Others*
	Meningococcus	Non-priority	*Others*
	Pneumococcus	Non-priority	*Sentinel*
	Others: Cholera, CRS, Hep A, Hep B, Influenza, Mumps, Non-neonatal tetanus, Typhoid, Varicella	Non-priority	*Others, Sentinel*

Italics refers to Karnataka if different from Bangladesh

Piloting VPD Surveillance Planning and Budgeting Methodology: Prelimary Results (US$ nominal)

Bangladesh (FY 2023)	**Karnataka** (FY 2022)
Total annual budget for VPD surveillance: **12.9 million U$S**	Total annual budget for VPD surveillance: **2.4 million U$S**
Share of the domestic funding in total VPD surveillance budget: **84%**	Share of the domestic funding in total VPD surveillance budget: **65%**
Share of the external funding in total VPD surveillance budget: **16%**	Share of the external funding in total VPD surveillance budget: **35%**
Per capita resource requirements: **0.08 US$** (population 170 million)	Per capita resource requirements: **0.04 US$** (population 66.2 million)

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Piloting VPD Surveillance Planning and Budgeting Methodology: Total resources required, by disease and source of financing (US$)

Bangladesh (2023)

Disease name	National Budget	External funding	Total Resources	National Budget %	External funding %
AFP	205,833	1,196,195	**1,402,028**	15%	85%
Diphtheria	2,819,944	0	**2,819,944**	100%	0%
Measles	1,456,264	132,467	**1,588,732**	92%	8%
Non-neonatal Tetanus	3,631,111	0	**3,631,111**	100%	0%
Pertussis	816,667	0	**816,667**	100%	0%
Japanese encephalitis	1,148,187	744,519	**1,892,706**	61%	39%
Rotavirus	766,667	16,220	**782,887**	98%	2%
Grand Total	10,844,674	2,089,401	**12,934,074**	**84%**	**16%**

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Piloting VPD Surveillance Planning and Budgeting Methodology: Total resources required, by disease and source of financing (US$)

Karnataka (2022)

Disease name	National Budget	External funding	Total Resources	National Budget %	External funding %
AFP	33,561	900,085	**933,646**	4%	96%
Diphtheria	829,452	16,900	**846,352**	98%	2%
Measles	95,548	0	**95,548**	100%	0%
Neonatal tetanus	719	0	**719**	100%	0%
Pertussis	2,466	0	**2,466**	100%	0%
Pneumococcus	10,274	0	**10,274**	100%	0%
Cholera	741,041	0	**741,041**	100%	0%
CRS	10,274	0	**10,274**	100%	0%
Grand Total	1,723,335	916,985	**2,640,320**	**65%**	**35%**

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Budget by surveillance functions (domestic funding, US$)

Surveillance Functions	Bangladesh 2023	% of total	Karnataka 2022	% of total
Case detection & investigation	5,386,792	49.7%	572,952	33.2%
Analysis and feedback	4,200,222	38.7%	690,110	40.0%
Environmental surveillance	-	-	30,137	1.7%
Reporting	1,257,659	11.6%	430,137	25.0%
Total	**10,844,673**	**100.0%**	**1,723,336**	**100.0%**

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Budget by Inputs (domestic funding, US$)

Input categories	Bangladesh 2023	% of total	Karnataka 2022	% of total
Salaries	8,547,000	78.8%	1,276,349	74.1%
Lab supplies/test	2,297,673	21.2%	207,425	12.0%
Transportation			239,562	13.9%
Total	**10,844,673**	**100.0%**	**1,723,336**	**100.0%**

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Budget by Administrative Level (domestic funding, US$)

Admin Level	Bangladesh 2023	% of total	Karnataka 2022	% of total
National	42,222	0.4%	42,466	2.0%
District/State	4,158,000	38.3%	741,288	43.0%
Upazila/Local	6,644,451	61.3%	939,582	55.0%
Total	**10,844,620**	**100.0%**	**1,723,335**	**100.0%**

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Discussion

- The piloting showed that the methodology is relatively user-friendly, although requiring team-work with active participation of budget officers and programme officers.
- The methodology and the tool are relatively flexible to be adapted to various contexts and respond to various needs of users .
- The variations in the results of the two piloting countries maybe due to:
  - different structure and organization of surveillance systems;
  - different degree of dependency from external sources of financing;
  - different degree of integration of various activities and surveillance functions.

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Conclusions

The planning and budgeting methodology helps to quantify the budget required by the surveillance system to be funded by internal or external resources.

The results have relevance also for advocacy, by providing detailed information of the resources required.

It is expected that the methodology will contribute to the implementation of national polio transition plans, National Immunization Strategies, and to the achievement of immunization and transition objectives.

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Acknowledgement

A number of individuals have directly or indirectly contributed to the development and successful implementation of the VPD surveillance planning and budgeting methodology. Among them, our gratitude to

- the representatives from Ministries of Health of Sudan, Bangladesh and Karnataka State who participated in the piloting; and
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The WHO user guide and tool for planning and budgeting vaccine-preventable disease surveillance are available at:

https://www.who.int/teams/polio-transition-programme/tools-and-guidance

or by QR:

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Thank you

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