Equity assessment of childhood immunization at national and subnational levels in Myanmar: a benefit incidence analysis

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Aim of the study

- Myanmar is a conflict-affected geographically and ethnically diverse lower-middle-income country
- Expanded Program on Immunization (EPI) aims to improve access to immunization services and it is currently funded by donors and government
- We aim to assess if EPI has promoted equitable access to immunization services for children across different socioeconomic groups, and to identify population groups who would be vulnerable to donor exit

Methods

Data collection

Service use: Basic immunization (one dose of BCG & measles, three doses of DPT/pentavalent & polio each) uptake collected from Myanmar Demographic Household Survey (2015-2016)

Unit Cost:

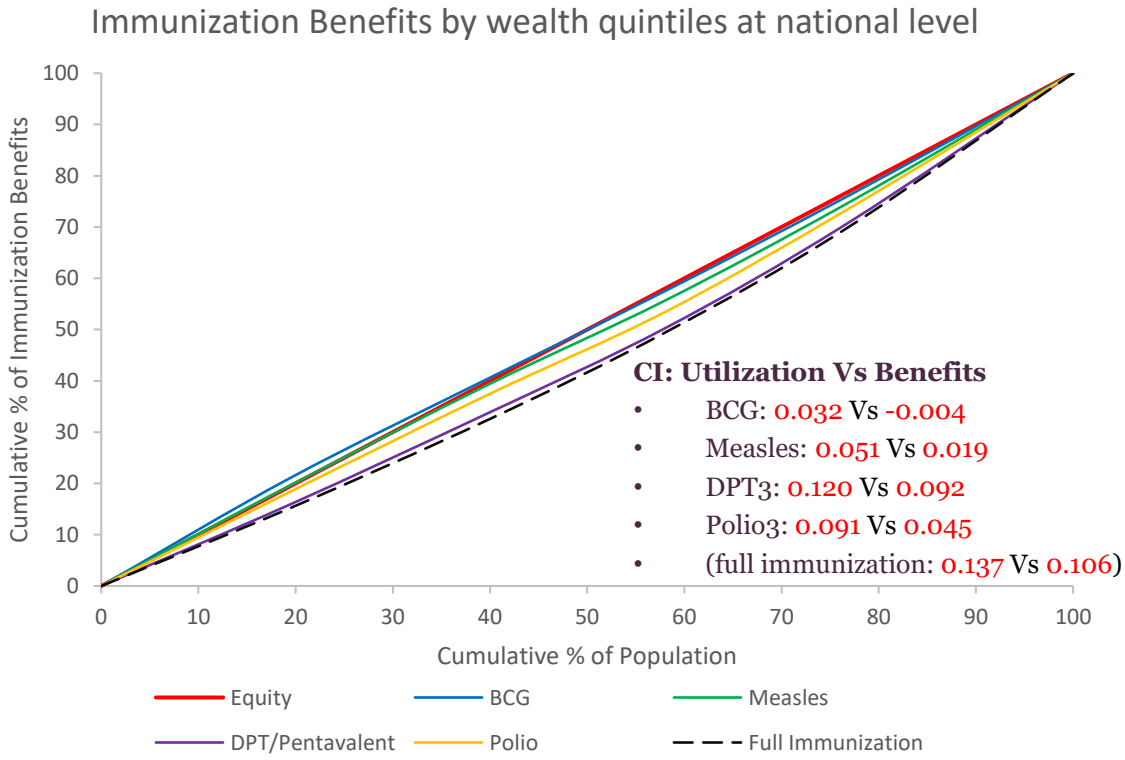
- Vaccines & syringes: 'cost of vaccinating a child' published by UNICEF –same across the country
- Vaccine delivery cost- cost data from IDCC (Immunization delivery cost catalogue) –different by regions (adjusted with regional and rural/urban cost variations for Myanmar)

Data analysis

Benefits: immunization uptake * unit cost per dose of each vaccine, by region & states, urban & rural, social economic groups and mother's education level

Concentration curves & concentration indices to measure distribution of benefits across SE groups

The richer families benefit more from EPI program



- Relatively low coverage (62%-88%) at national level
- The highest coverage for BCG (88%) & the lowest coverage for DPT/pentavalent (62%)
- The almost equal distribution for BCG & the most unequal distribution for DPT3

Discussion

- The **wealthier** households disproportionately benefited more from the publicly financed EPI programme than poorer, mainly because their vaccine uptakes were higher
- IDCC provided robust information on the average delivery cost which we then adjusted with regional, and urban and rural delivery cost variations for Myanmar

Unit cost across different regions & states and rural & urban areas

	BCG			Measles			DPT			OPV			
Regions and States	vaccine & injection supply	delivery cost	Total	vaccine & injection supply	delivery cost	Total	vaccine & injection supply	delivery cost	Total	vaccine cost	delivery cost	Total	Full Immunization cost
Hilly plateau area (Shan)													
Urban	0.37	**2.23**	2.6	0.94	2.23	3.17	2.9	6.69	9.59	0.39	6.69	7.08	**22.44**
Rural	0.37	**2.22**	2.59	0.94	2.22	3.16	2.9	6.66	9.56	0.39	6.66	7.05	**22.36**
Delta area (Ayeyarwady)													
Urban	0.37	**1.44**	1.81	0.94	1.44	2.38	2.9	4.32	7.22	0.39	4.32	4.71	**16.12**
Rural	0.37	**2.79**	3.16	0.94	2.79	3.73	2.9	8.37	11.27	0.39	8.37	8.76	**26.92**
Central plain area (Mandalay, Yangon, Naypyitaw, Sagaing & Magway)													
Urban	0.37	**1.79**	2.16	0.94	1.79	2.73	2.9	5.37	8.27	0.39	5.37	5.76	**18.92**
Rural	0.37	**1.79**	2.16	0.94	1.79	2.73	2.9	5.37	8.27	0.39	5.37	5.76	**18.92**
Coastal area (Tanintharyi, Rakhine & Mon)													
Urban	0.37	**1.6**	1.97	0.94	1.6	2.54	2.9	4.8	7.7	0.39	4.8	5.19	**17.4**
Rural	0.37	**2.54**	2.91	0.94	2.54	3.48	2.9	7.62	10.52	0.39	7.62	8.01	**24.92**
Mountain range area (Kachin, Kayah, Kayin, Chin & Bago)													
Urban	0.37	**1.48**	1.85	0.94	1.48	2.42	2.9	4.44	7.34	0.39	4.44	4.83	**16.44**
Rural	0.37	**1.92**	2.29	0.94	1.92	2.86	2.9	5.76	8.66	0.39	5.76	6.15	**19.96**

Delivery cost calculation: Adjusted with regional and rural/urban delivery cost variations

Geographical areas	Total Operational cost	% adjustment (based on average)	Operational cost (supply chain+service delivery) per dose (IDCC)	Operational cost per dose (adjusted)	Salary (labor cost) per dose (IDCC)	Capital Cost (IDCC)		Total delivery cost per dose (IDCC)	Total delivery cost per dose (adjusted)
Hilly plateau area (Shan)									
Urban	674,250.00	**25.29%**	0.97	**1.2153**	0.78	0.23		1.98	**2.23**
Rural	673,875.00	**25.22%**	0.97	**1.2146**	0.78	0.23		1.98	**2.22**
Delta area (Ayeyarwady)									
Urban	235,875.00	**-56.17%**	0.97	**0.4251**	0.78	0.23		1.98	**1.44**
Rural	990,125.00	**83.98%**	0.97	**1.7846**	0.78	0.23		1.98	**2.79**
Central plain area (Mandalay, Yangon, Naypyitaw, Sagaing & Magway)									
Urban	430,875.00	**-19.94%**	0.97	**0.7766**	0.78	0.23		1.98	**1.79**
Rural	434,700.00	**-19.23%**	0.97	**0.7835**	0.78	0.23		1.98	**1.79**
Coastal area (Tanintharyi, Rakhine & Mon)									
Urban	327,500.00	**-39.15%**	0.97	**0.5903**	0.78	0.23		1.98	**1.60**
Rural	849,125.00	**57.78%**	0.97	**1.5305**	0.78	0.23		1.98	**2.54**
Mountain range area (Kachin, Kayah, Kayin, Chin & Bago)									
Urban	261,525.00	**-51.40%**	0.97	**0.4714**	0.78	0.23		1.98	**1.48**
Rural	503,875.00	**-6.37%**	0.97	**0.9082**	0.78	0.23		1.98	**1.92**
Average	**538,172.50**								

THANK YOU