Estimating the Cost of the Integrated COVID-19 Vaccination Programme in South Africa

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BACKGROUND

- The COVID-19 vaccination programme in South Africa was launched in February 2021 through multiple delivery platforms including mass vaccination (or fixed outreach) sites, mobile and temporary outreach sites.
- By the second year, the programme evolved into a provider-initiated approach where COVID-19 vaccines were offered to patients as part of routine immunisation or healthcare service delivery in hospitals, primary healthcare facilities and schools.
- In the second year, the coverage of the COVID-19 vaccination in the eligible population had increased to 53%, from 44% in year one of the programme.
- Cost estimates of the integrated model will be useful for informing the choice of vaccine delivery modalities, and resource requirements needed for future vaccination programmes.

OBJECTIVE

This study aims to estimate the financial and economic cost of the integrated COVID-19 vaccination programme in South Africa in (from February 2022 to January 2023,) from a public health payer's perspective.

METHODOLOGY

Data collection

A mix of ingredients-based and top-down costing approaches were used to retrospectively collect primary cost data from three health administrative levels (national level, district level and vaccine delivery channel level).

Study perspective

The study was conducted from the public payer perspective and included only costs incurred by the South Africa Departments of Health at the national and district levels.

Study setting

Data was collected on 4 hospitals, 47 primary healthcare facilities (PHCs) and 178 school-based vaccine delivery channels within a mixed urban and rural South African district.

Data analysis

Total and average financial and economic costs were estimated for facility-based (hospitals and primary healthcare facilities) and school-based delivery channels and disaggregated by programme activities and resource types.

Financial costs included financial expenditure made in the procurement of resources, while economic costs included both financial costs and the opportunity costs of existing or donated resources.

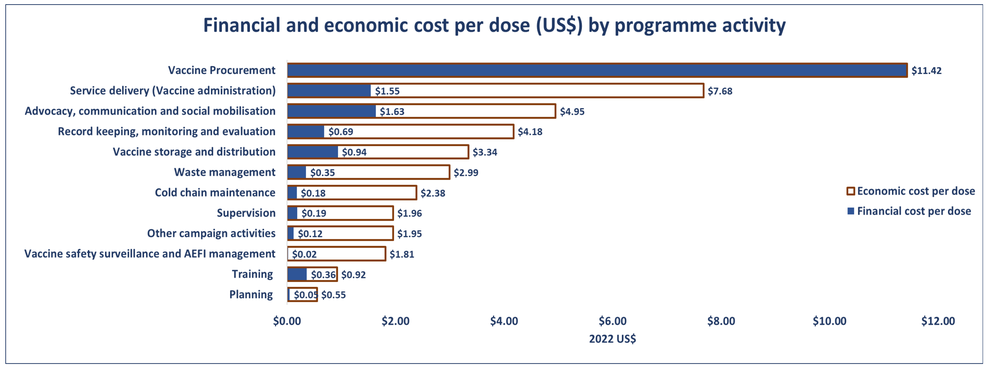
Cost estimates are reported in 2022 United States Dollar (US$).

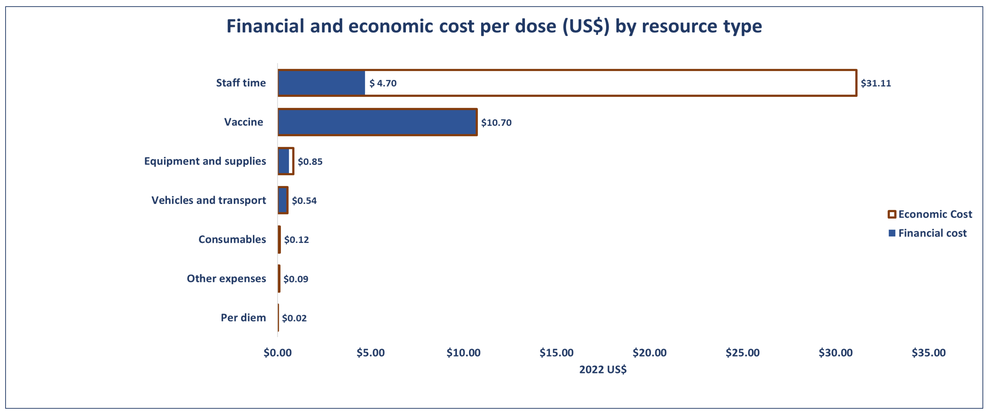
RESULTS

Total cost (US$) and cost per dose (US$) by delivery channel, February 2022-January 2023

	FINANCIAL			ECONOMIC		
	Total (US$)	**%**	**Cost per dose US$**	**Total (US$)**	**%**	**Cost per dose (US$)**
DELIVERY CHANNEL*	*Including vaccine procurement cost*					
Hospital	76 951	4%	13.99	173 820	3%	31.60
PHC facilities*	1 169 729	53%	12.09	2 486 63	45%	25.69
School-based site	951 143	43%	40.78	2 884 773	52%	123.68
West Rand District	2 197 823	100%	17,.50	5 545 224	100%	44.15
DELIVERY CHANNEL*	*Excluding vaccine procurement cost*					
Hospital	10 130	1%	1.84	106 999	3%	19.45
PHC facilities*	99 676	14%	1.03	1 416 578	35%	14.64
School-based sites	624 370	85%	26.77	2 558 000	63%	109.67
West Rand District	734 176	100%	5.84	4 081 577	100%	32.49

*National and district level-specific costs have been allocated to each delivery channel; PHC-Primary healthcare





DISCUSSION AND CONCLUSION

- Our study estimated a significantly higher economic cost per dose of US$32.49 (excluding vaccine procurement costs) in year 2 (February 2022-January 2023) relative to cost per dose estimate from year 1 (February 2021- January 2022) of the COVID-19 vaccination programme in South Africa (US$10.38).
- Total economic costs of PHC and school- based channels were comparable, however, the economic cost per administered in schools was more than quadruple that of PHC facilities owing to the number of doses administered in schools being substantially lower than those administered in PHC facilities.
- The integrated model relied heavily on existing resources from year 1 of the vaccination programme, hence economic costs were significantly higher than financial costs across all delivery channels.
- From February 2022 to January 2023, the school-based delivery model was the main driver of the overall high cost per dose in the study district.
- Vaccine procurement cost and staff time cost contributed the most towards the high cost, accounting for 65% and 71% of total financial and economic costs, respectively.
- The study suggests that vaccine delivery via PHCs is potentially the cheapest way of delivering the vaccine per dose when compared to hospital-and school-based delivery models.
- The estimates can be used to inform policy decisions in the South African public healthcare system as well as other similar settings.

COVID-19 vaccine delivery via PHCs was cheaper per dose delivered than hospital- or school-based delivery.

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