

The role of single-dose HPV vaccination in expanding access during a period of supply constraints

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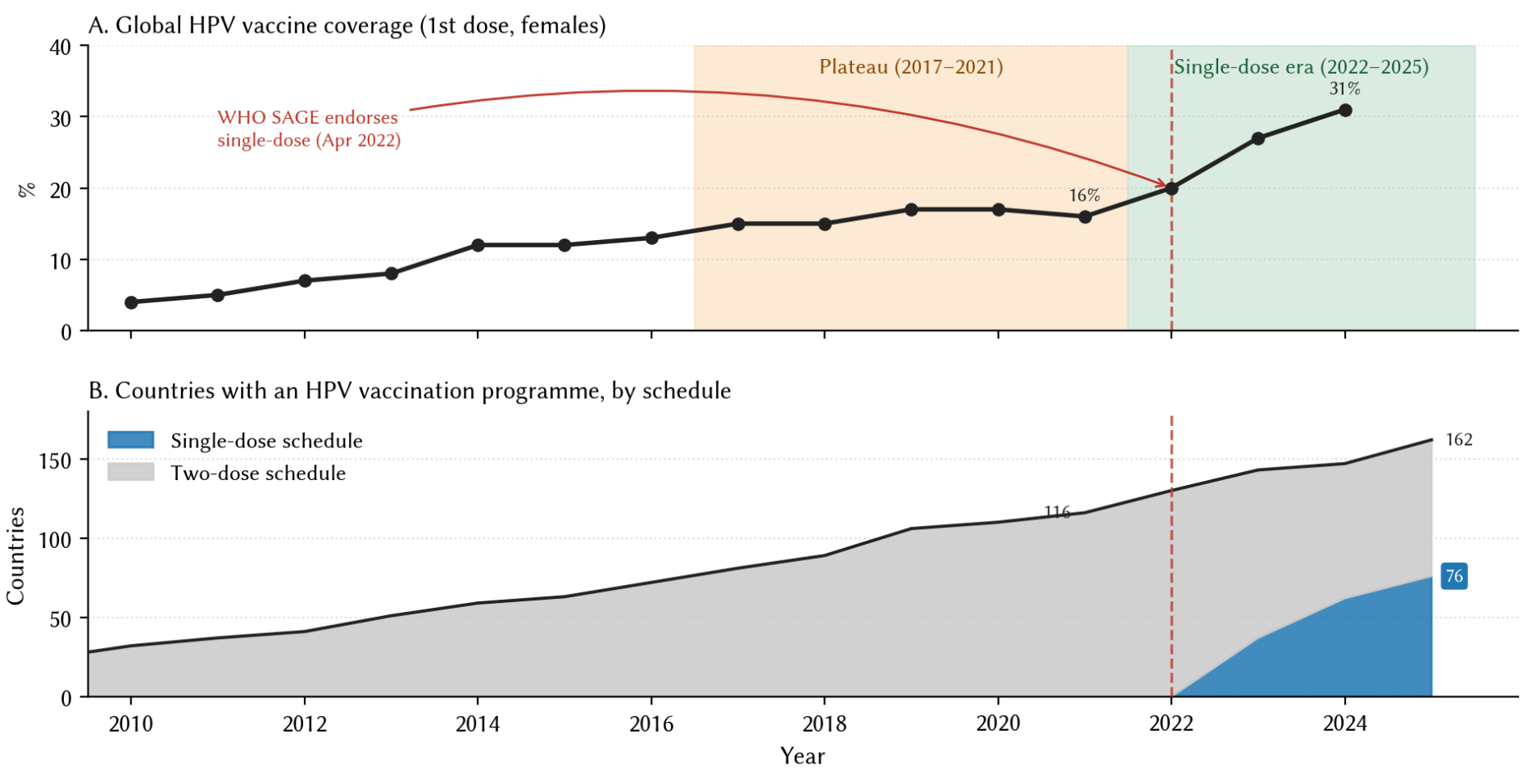
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Gates Foundation

Global HPV vaccination coverage has accelerated since 2022

By 2025, around 50% of 162 countries had moved to single dose

- 2017–2021**
Global HPV coverage plateaued at ~17%; <10% in Gavi countries.
- April 2022**
WHO SAGE endorsed single-dose schedules based on non-inferiority evidence.
- 2022–2025**
More than 20 new countries introduced programs, and coverage increased to 31%
- End of 2025**
76 of 162 countries had moved to single-dose.



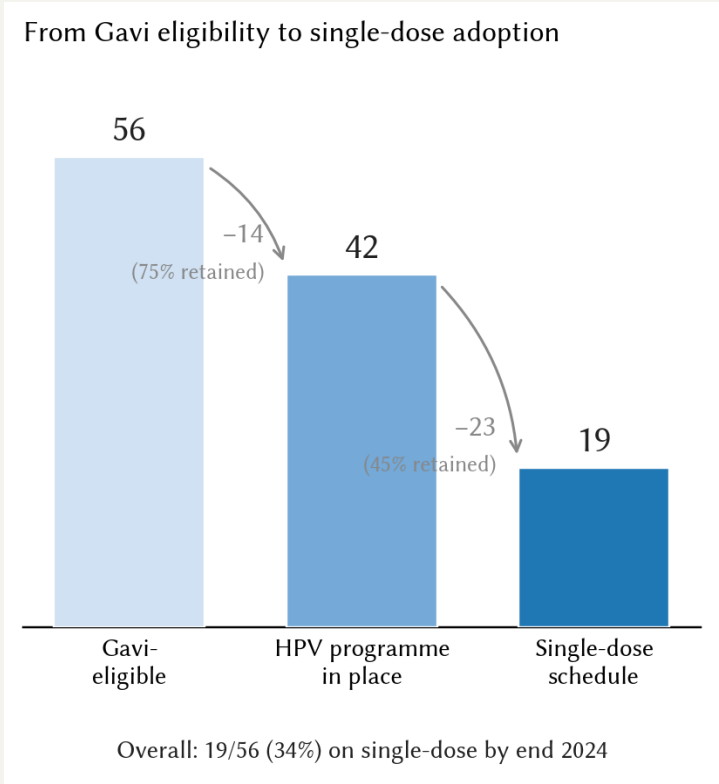
How can we quantify the impact of the single-dose endorsement?

Goals of this study

1. How many additional girls were reached because single-dose was available?
2. What does that translate to in eventual cervical cancers averted?

Scope: quantify impact in countries supported by Gavi

Geographical scope: HPV vaccines in Gavi-supported countries



Country	Single-dose year	CC cases/yr	Vaccine
Nigeria	2023	12,075	Nona
Tanzania	2024	10,241	Nona
Bangladesh	2023	8,268	Biv
Ethiopia	2024	7,445	Nona
Myanmar	2023	7,129	Nona
Mozambique	2024	5,325	Nona
Zambia	2023	3,161	Nona
Cameroon	2023	2,770	Nona
Côte d'Ivoire	2023	2,067	Nona
Mali	2024	1,934	Nona
Cambodia	2023	1,135	Biv
Burkina Faso	2023	1,132	Nona
Sierra Leone	2024	504	Nona
Togo	2023	455	Biv
Lao PDR	2024	371	Nona
Gambia	2024	286	Nona
Solomon Islands *	2023	65	Nona
São Tomé & Príncipe *	2024	13	Nona
Kosovo *	2024	no data	Nona
Modeled total (n=16)		64,298	

How can we quantify the impact of the single-dose endorsement?

Doses shipped → girls reached → cancers averted

Calculating additional girls reached

- Used UNICEF shipment data for 2023–2024 and Gavi dose-schedule info, adjusted for wastage.
- Computed girls reachable under different scenarios:

Scenario	Dose schedule	Utilization	Purpose
No vaccination	N/A	N/A	Baseline for calculating impact
Counterfactual 2-dose	2-dose for all countries	100% of shipped doses (after wastage)	Counterfactual: impact if single-dose had not been adopted
Complete utilization	Actual (1- or 2-dose ./ country)	100% of shipped doses (after wastage)	Maximum potential impact of single-dose adoption
Actual utilization	Actual (1- or 2-dose / country)	Country-reported coverage	Observed real-world impact of single-dose adoption

Calculating cancers averted

- Used HPV-SIM, a dynamic model of HPV transmission & progression, localized to 16/19 countries
- For each scenario, we calculated the number of cervical cancer cases occurring among the cohort eligible for vaccination (20 replicates; 10-90% intervals reported)

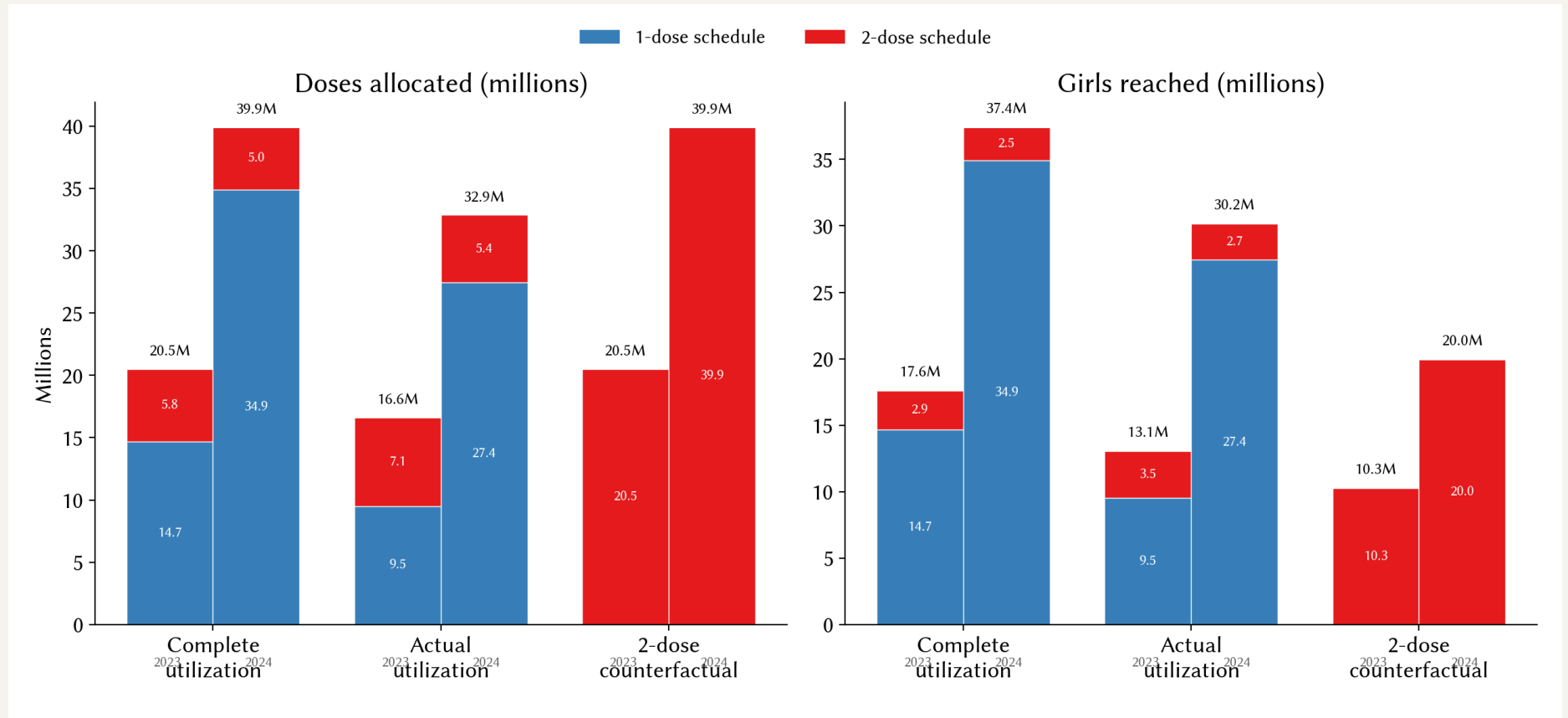
Single-dose dramatically expanded reach

DOSES SHIPPED

- ~60M total doses shipped across 31 countries in 2023–24 – (51.4M to single-dose programs, 10.8M to 2-dose).

GIRLS REACHED

- Counterfactual 2-dose, complete utilization = ~30.3M girls reachable.**
- Single-dose, complete utilization: ~55.0M girls reachable — +23.3M girls vs counterfactual.**
- Single-dose, actual utilization: ~43.3M girls reached — +18.5M girls vs counterfactual.**

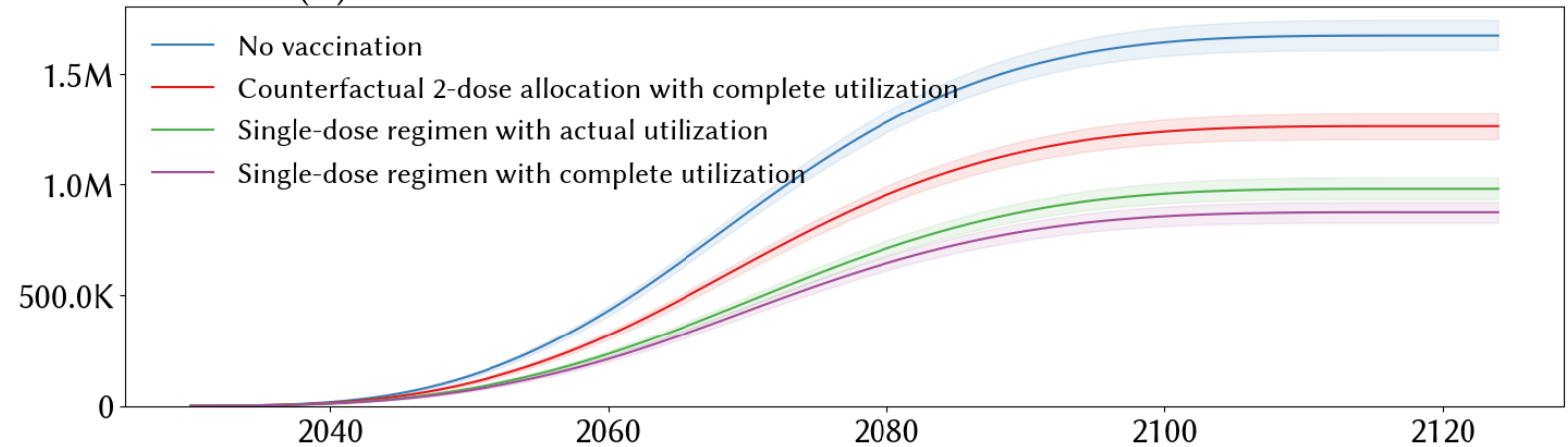


Expanded coverage averted ~300k lifetime cancers in eligible cohorts

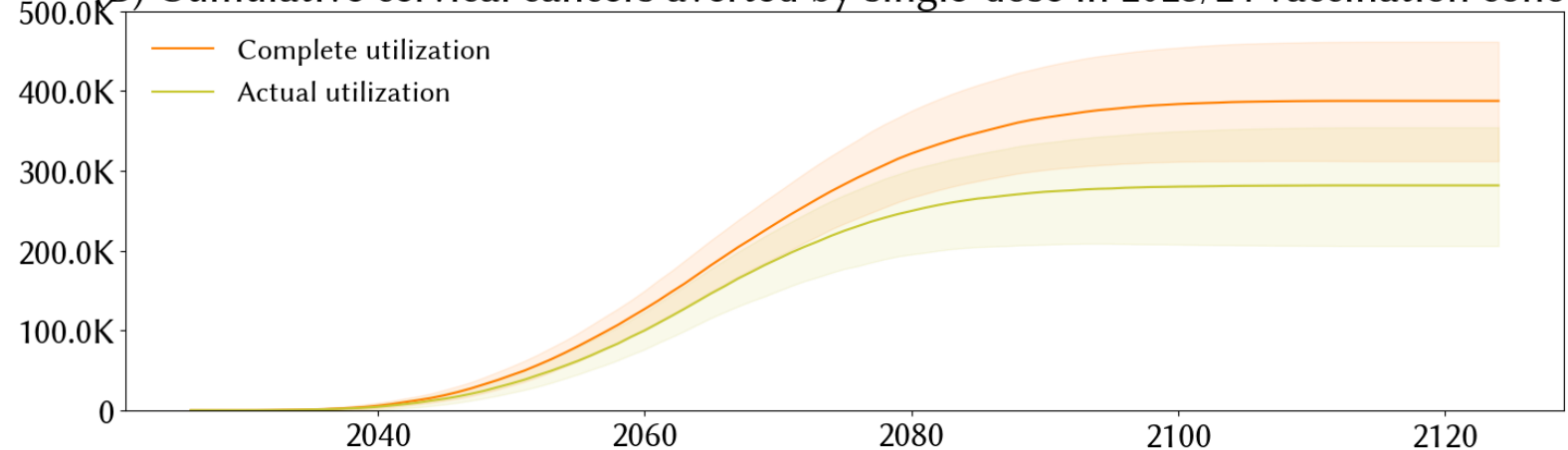
CANCERS AVERTED

- Across the 16 modeled countries, the 2023/24 cohort would generate **~1.62M (1.55–1.69M) lifetime cervical cancers with no vaccination.**
- 2-dose counterfactual averts ~394k cases
- **Switching to single-dose averts an extra**
 - **297,000 (222k–369k) cancers** under actual utilization
 - **370,000 (356k–376k) cancers** under complete utilization
- NNV: 63 vaccinations to prevent 1 cervical cancer

(A) Cumulative cervical cancers in 2023/24 vaccination cohort



(B) Cumulative cervical cancers averted by single-dose in 2023/24 vaccination cohort



Conclusions & acknowledgments

Conclusions

- In a supply-constrained period, the 2022 1-dose recommendation **unlocked vaccination of ~18.5M girls who would otherwise not have received any HPV vaccine, translating to ~300k cervical cancers averted over their lifetimes.**
- All available evidence indicates that single-dose HPV vaccination offers a realistic and expedited pathway toward cervical cancer elimination targets, and that the introduction of single-dose in numerous Gavi-supported countries has already been operationally transformative, enabling substantially greater reach with limited supplies.

Limitations

- Did not account for cold-chain and logistics savings (half the visits, half the storage), and did not account for countries that may not have introduced at all without single dose
- Ignores herd effects, ongoing screening, and indirect benefits to boys. Future cancer numbers are model projections, not forecasts. No formal economic evaluation

Acknowledgments

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 - Tanjila Taskin (Gates Foundation)
 - Peter Dull (Gates Foundation)

Reference

The role of HPV single-dose vaccination in expanding access in GAVI-supported countries during a period of supply constraints (2026). Stuart RM, Theopold T, Miall N, Kobayashi E, Vernam S, Taskin T, Dull PM. *Vaccine*, 75:128187.

Thank you!