Cervical Cancer: Evidence Based Approaches

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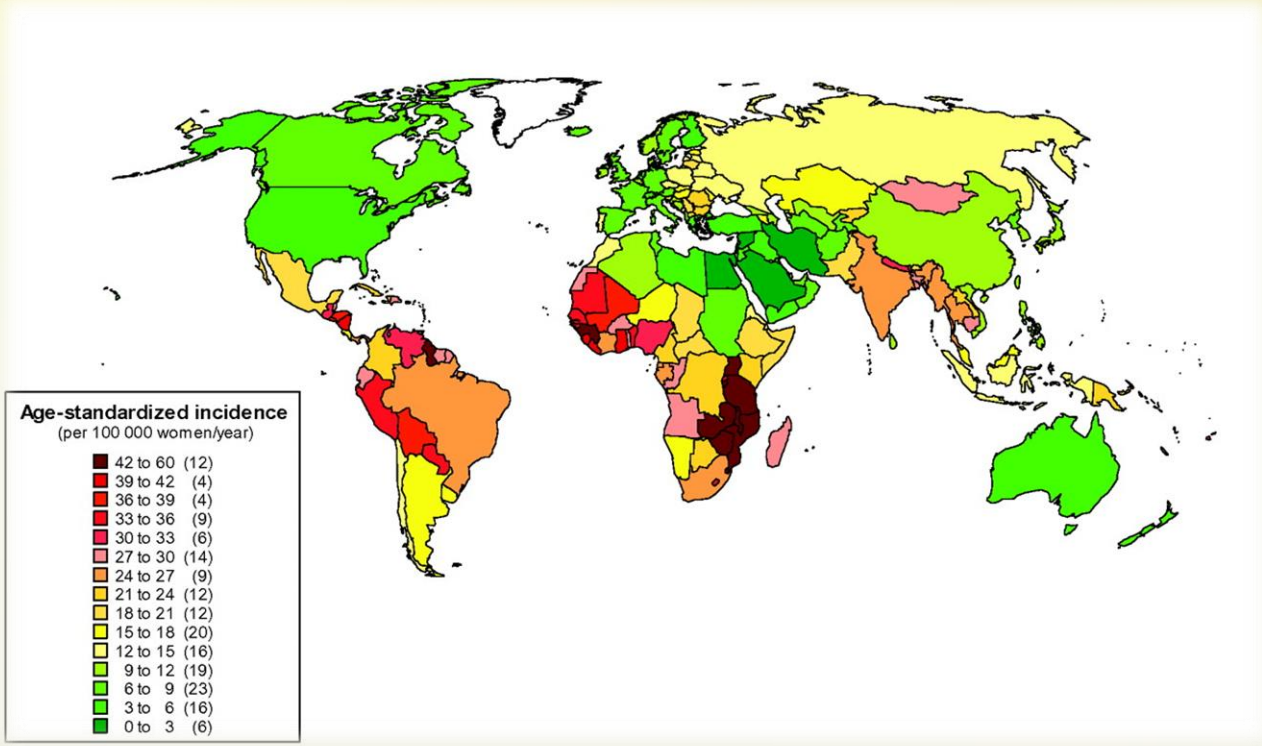
Geographic distribution of the world ASIR of cervical cancer, by country, estimated for 2008 (per 100 000 women-years).



M. Arbyn et al. Ann Oncol 2011;annonc.mdr015

Annals of Oncology

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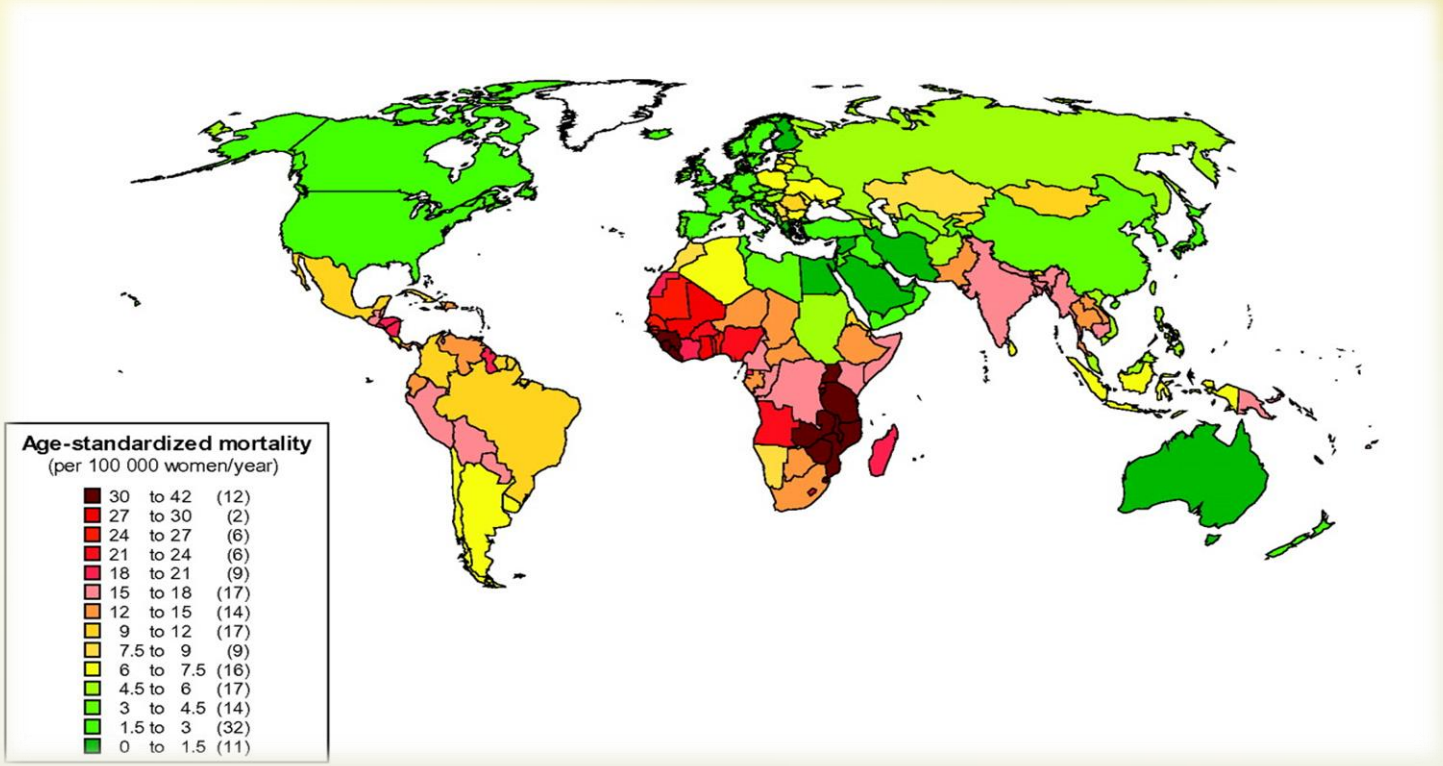

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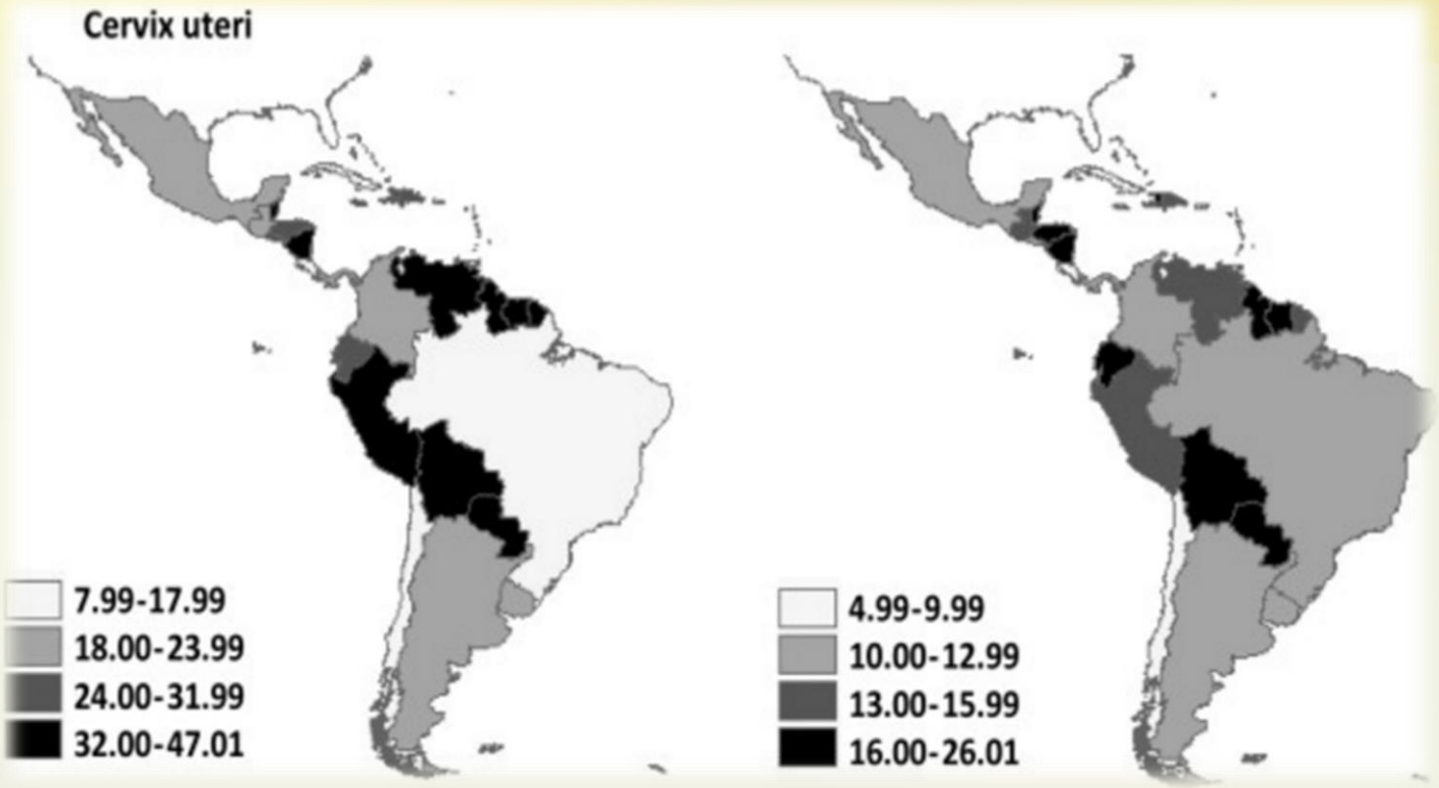
Regional Cervical Cancer Screening Practices

- North America and Europe
  - Centralized national cytology-based screening programs→ decreased cervical cancer incidence and mortality
- Eastern and Central Europe
  - Highly variable; some national cytology-based programs, not uniformly implemented
- Sub-Saharan Africa
  - Lack of centralized care; alternative strategies (VIA, VILI) utilized, although not uniformly implemented
- Asia/Western Pacific Region
  - Cytology and/or VIA implemented in most countries
- **Latin America and the Caribbean**
  - **Efforts to implement cytology-based programs have been less successful; alternative approaches are being explored**

Fokom-Domgue J, Combescure C, Fokom-Defo V, Tebeu PM, Vassilakos P, Kengne AP, et al. Performance of alternative strategies for primary cervical cancer screening in sub-Saharan Africa: systematic review and meta-analysis of diagnostic test accuracy studies. BMJ. 2015;351:h3084.
Murillo R, Almonte M, Pereira A, Ferrer E, Gamboa OA, Jeronimo J, et al. Cervical cancer screening programs in Latin America and the Caribbean. Vaccine. 2008;26 Suppl 11:L37-48.
Poljak M, Seme K, Maver PJ, Kocjan BJ, Cuschieri KS, Rogovskaya SI, et al. Human papillomavirus prevalence and type-distribution, cervical cancer screening practices and current status of vaccination implementation in Central and Eastern Europe. Vaccine. 2013;31 Suppl 7:H59-70.

Burden of Cervical Cancer in the Caribbean and Latin America



Adjusted Rates of Cervical Cancer Incidence and Mortality

Curado MP, de Souza DL. Cancer burden in Latin America and the Caribbean. Ann Glob Health. 2014;80(5):370-7.

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Incidence of Cervical Cancer in the Caribbean

	Cervix uteri							
	Incidence				Mortality			
POPULATION	Numbers	Crude Rate	ASR (W)	Cumula	Numbers	Crude Rate	ASR (W)	Cumula
World	527624	**15.1**	**14**	**1.42**	265672	7.6	6.8	0.75
More developed regions	83078	13	9.9	0.92	35514	5.6	3.3	0.34
Less developed regions	444546	15.6	15.7	1.62	230158	8.1	8.3	0.92
Latin America and Caribbean	68818	22.5	21.2	2.09	28565	9.4	8.7	0.94
Caribbean	5018	**23.6**	**21**	**2.04**	2254	10.6	8.6	0.92
Bahamas	44	24.5	20.6	2.13	15	8.4	7	0.79
Barbados	44	31.8	25.4	2.17	15	10.8	7.2	0.7
Cuba	1287	23	17.1	1.63	569	10.2	6.7	0.71
Dominican Republic	1507	29.7	30.7	3.05	600	11.8	12.3	1.37
Haiti	1048	20.3	24.9	2.45	575	11.1	14.6	1.35
Jamaica	392	28	26.3	2.58	185	13.2	11.9	1.28
Puerto Rico	259	13.3	11.4	0.98	84	4.3	2.8	0.28
Trinidad and Tobago	209	30	24.5	2.51	105	15.1	12	1.36
Belize	43	26.2	32.7	3.09	17	10.3	14.9	1.56

Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray, F. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr, accessed on 04/05/2016; and World Bank, World Development Indicators, 2016. [Internet]. Available from: http://data.worldbank.org/indicator/NY.GNP.PCAP.CD, accessed on 04/05/2016.

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Barriers to Cancer Screening and Treatment in Latin America and the Caribbean

- Effective cytology-based screening requires multiple visits to healthcare providers (initial screening, results, colposcopy/biopsy, treatments, etc)
- Need infrastructure for transport of samples to laboratories
- Diagnostic and treatment centers may require extended travel for patients (especially those living in rural areas)
- Low literacy
- Cultural factors
- Competing health needs
- Limited resources; lack of public awareness
- Lack of centralized national programs for cervical cancer control

Murillo R, Almonte M, Pereira A, Ferrer E, Gamboa OA, Jeronimo J, et al. Cervical cancer screening programs in Latin America and the Caribbean. Vaccine. 2008;26 Suppl 11:L37-48.

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Cancer Control Strategies

- Mostly cytology-based screening programs in Latin America and Caribbean—only effective in Puerto Rico, Cuba, and Chile
- Pan-American Health Organization (PAHO) ProVac Initiative:
  - Conduct situation analysis in each country
  - Intensify information, education, and counseling
  - Fortify existing screening programs; implement innovative technologies (e.g. rapid HPV testing) in resource-limited settings
  - Establish/strengthen information systems and cancer registries
  - Generate evidence to inform HPV vaccine policy
  - Advocate for equitable access and affordable vaccines

Luciani S, Andrus JK. A Pan American Health Organization strategy for cervical cancer prevention and control in Latin America and the Caribbean. Reproductive health matters. 2008;16(32):59-66.

Cancer Control Strategies

- Universal HPV vaccination
  - Currently, price of HPV vaccine is prohibitive for most Caribbean countries
  - Strategies previously used to disseminate rubella and tetanus vaccines may be helpful in developing plans for HPV vaccine dissemination
  - If implemented, universal HPV vaccination will reduce cervical dysplasia and thus the efficacy of Pap smear as a primary screening test
- HPV testing as a primary screening, with Pap smear for triage
- VIA or VILI, self-sampling, and Rapid HPV testing may improve screening in rural areas
- Establishment of HPV vaccination and screening registries
  - Method for evaluating efficacy of these strategies

Andrus JK, Lewis MJ, Goldie SJ, Garcia PJ, Winkler JL, Ruiz-Matus C, et al. Human papillomavirus vaccine policy and delivery in Latin America and the Caribbean. Vaccine. 2008;26 Suppl 11:L80-7.
Franco EL, Tsu V, Herrero R, Lazcano-Ponce E, Hildesheim A, Munoz N, et al. Integration of human papillomavirus vaccination and cervical cancer screening in Latin America and the Caribbean. Vaccine. 2008;26 Suppl 11:L88-95.
Munoz N, Franco EL, Herrero R, Andrus JK, de Quadros C, Goldie SJ, et al. Recommendations for cervical cancer prevention in Latin America and the Caribbean. Vaccine. 2008;26 Suppl 11:L96-L107.

Cancer Control Strategies

- HPV Self-sampling
  - Can be done in privacy of home and delivered by a paraprofessional
  - Circumvents both access and cultural barriers
  - Potentially could be paired with
- Community health workers
  - Individuals of target populations who are trained in intervention delivery and have extensive knowledge of cultural norms and values
  - May deliver screening interventions such as self-sampling
  - Promote health literacy
  - Connect women with formal healthcare system and ensure timely follow-up for abnormal tests

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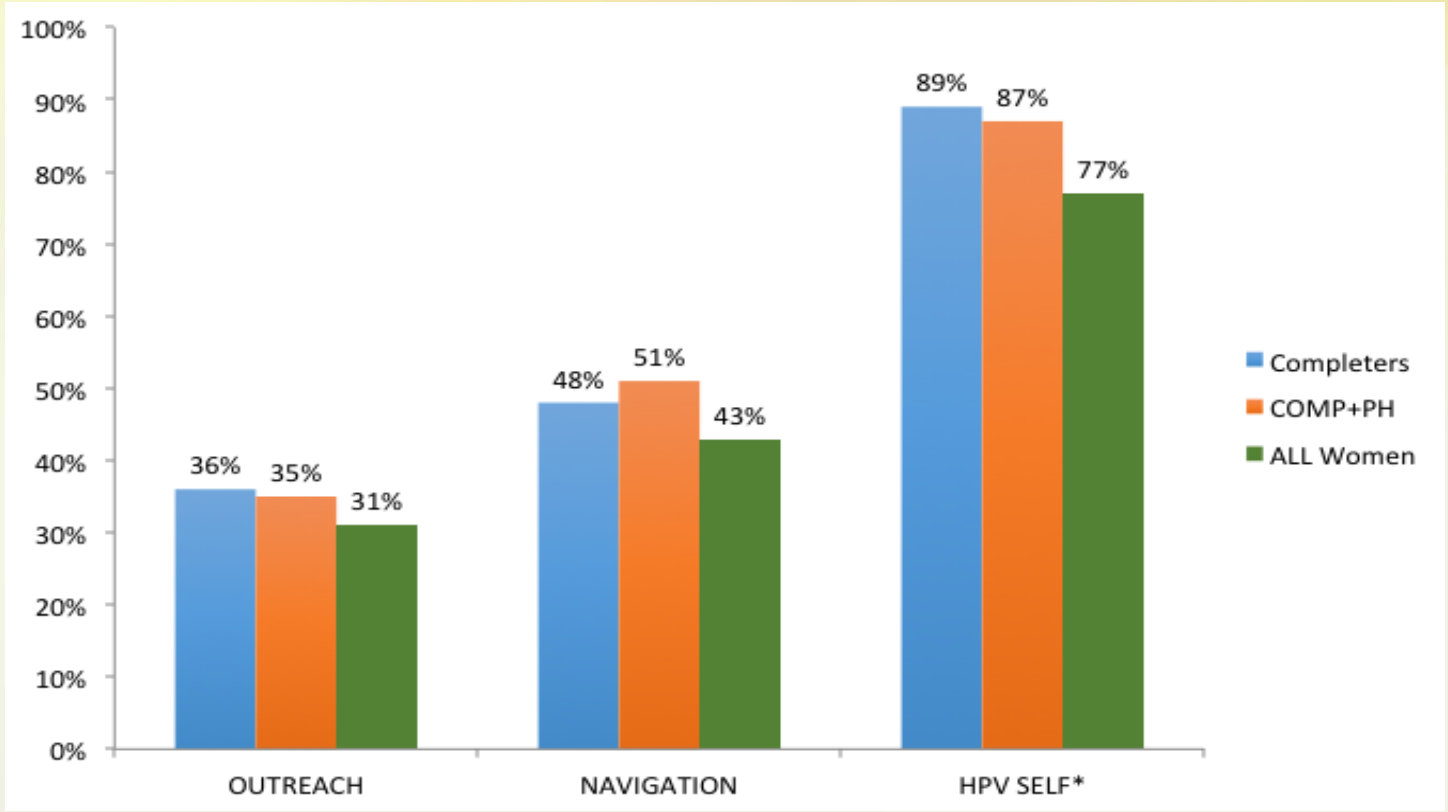
Cancer Control Strategies

- SUCCESS Project: Community health worker-delivered HPV self-sampling found to be highly efficacious cervical cancer screening among Haitian and Hispanic women living in Miami, as well as women living in Haiti
  - CHWs provided education, intervention, and follow-up successfully
  - May represent a strategy to augment screening programs throughout the Caribbean, especially those targeting individuals living in rural and resource-limited areas

Mandigo M, Frett B, Laurent JR, Bishop I, Raymondville M, Marsh S, et al. Pairing community health workers with HPV self-sampling for cervical cancer prevention in rural Haiti. International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics. 2015;128(3):206-10.

Cancer Control Strategies



Cervical Cancer Screening Completion among SUCCESS Participants

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Cancer Control Strategies

- Given the results of the SUCCESS study, we are now conducting a trial comparing in-person self-sampler delivery vs. mailed self-sampler delivery
- Mailed self-sampling kit includes detailed pictorial instructions and pre-paid envelope for sample return
- Preliminary results suggest that mailing the self-sampler may be efficacious for improving screening among Caribbean immigrants
- This type of intervention may be explored within Caribbean countries as well

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Overall Numbers 5/10/16

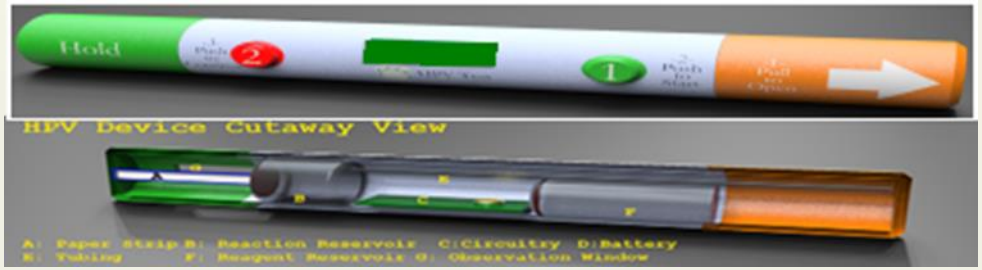
Assessed Total: 2,147 LH=716 SD=656 HI=767
Eligible Total:689 LH=198(28%) SD=200(30%) HI=291 (38%)

Site	Total Eligible	Total Enrolled	%	Kits Returned Arm 1	%	Total Kits Returned Arm 2	%
Little Haiti	178	153	86%	69/123	56%	54/123	44%
South Dade	200	158	79%	69/118	58%	49/118	42%
Hialeah	253	198	78%	72/150	48%	78/150	52%
Total	689	509	74%	210/391	54%	181/391	46%

***Total number of kits returned N= 391**
Arm 1= kit delivery via CHW
Arm 2= kit delivery via mail

Cancer Control Strategies

- HPV Rapid Assay
  - We are in the process of developing a paper-based assay to detect high risk HPV
  - Does not require laboratory infrastructure
  - Can be delivered by a paraprofessional
  - When paired with a screening modality such as self-sampling, this point-of-care test could revolutionize cervical cancer screening within rural and resource-limited settings in the Caribbean



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