

Eligibility criteria	6	We captured all research papers published in English on implementation strategies including various stakeholders (parents, adolescent girls, teachers, and community leaders between January 2006 and December 2021.	5
Information sources*	7	The databases searched included: PubMed, EMBASE, CINAHL (Cumulative Index to Nursing and Allied Health Literature) (EBSCO), Google Scholar, and Scopus. Gray literature citations were also searched including Google Scholar.	5
Search	8	Provided as S1	S1 Appendix 1
Selection of sources of evidencet	9	Two independent reviewers assessed articles for inclusion by screening titles, abstracts, and full text.	7
Data charting process‡	10	The data extracted include details about the participants, concept, context, study methods, and key findings relevant to the review question. The draft charting tool was piloted on five included articles, and revisions were made as necessary during data charting.	7
Data items	11	Table 1	8
Critical appraisal of individual sources of evidence§	12	NA	NA
Synthesis of results	13	The extracted data have been presented in Tables and supplementary files to align with the study objectives, accompanied by a narrative summary of how the findings relate to the research question and objectives.	8
Selection of sources of evidence	14	RESULTS	Click here to enter text.
Characteristics of sources of evidence	15		Click here to enter text.
Critical appraisal within sources of evidence	16		Click here to enter text.
Results of individual sources of evidence	17		Click here to enter text.
Synthesis of results	18		Click here to enter text.
Summary of evidence	19	DISCUSSION We identified and mapped implementation strategies to increase HPV vaccination uptake for adolescent girls in sub-Saharan Africa according to ERIC compilation and reported their importance and feasibility.	18
Limitations	20	This scoping review only focused on studies carried out in English and may have missed other important research in other languages. Furthermore, there are limitations inherent to the scoping review methodology itself.	20
Conclusions	21		21
Funding	22	FUNDING MKL and MM are supported by the UNC-UNZA-Wits Partnership for HIV and Women's Reproductive Health Grant number: D43 TW010558.	22

JBIG = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review instead of only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac et al. (7) and the JBI guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of "risk of bias" (which is more applicable to systematic reviews of

interventions) to include and acknowledge the various sources of evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: 10.7326/M18-0850.

Table S3. Identified strategies per study according to ERIC compilation.

SN	Implementation strategy (ERIC)	Definition	Bina gwah o, Agnes (2012)	LaMonga, D Scott (2011)	Watson, Deborah (2012)	Casey, Rebecca M (2021)	Galagan, Sean R (2013)	Raeso M, Katho M E (2015)	Galagher, Katho M E (2017)	Ladner, Joel (2012)	World Health Organization (2015)	Kabam, Severyn (2016)	Moodley, I (2013)	Wama, Richard (2012)	Mnya, Keliang P (2017)	Mugisha, Emmanuel (2015)	Tsu, Vivie Snyma n, Leon (2015)	Whirrtworth, Hilary (2021)	Drotsky, Emmanuel K (2021)	Mpuru, Alex (2021)	Ladner, Joe (2016)	Soi, Catherine (2018)	Delany-Muretwe (2018)	LaMontagne, Scott D (2021)	Engel, Danielle (2021)	Jones, Amy (2021)	PAT H, (2011)	Ministry of Health, Zambia (2013)	Total time strategy used	
1	Access new or existing money to facilitate the implementation	Access new or existing money to facilitate the implementation	1	1	1	1	0	1	1	1	0	1	0	1	0	1	1	1	0	1	1	1	1	1	1	0	1	1	1	21
2	Alter incentive/allowance structures	Work to incentivize the adoption and implementation of the clinical innovation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Alter patient/consumer fees	Create fee structures where patients/consumers pay less for preferred treatments (the clinical innovation) and more for less-preferred treatments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

4	Assess for readiness and identify barriers and facilitators	Assess various aspects of an organization to determine its degree of readiness to implement barriers that may impede implementation, and strengths that can be used in the implementation effort	1	1	1	1	0	1	0	1	0	0	1	1	1	0	0	1	0	1	0	1	1	1	1	1	1	0	1	1	19	
5	Audit and provide feedback	Collect and summarize clinical performance data over a specified time period and give it to clinicians and administrators to monitor, evaluate, and modify provider behavior	0	0	0	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	1	1	1	0	1	1	12
6	Build a coalition	Recruit and cultivate relationships with partners in the implementation effort	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	24

7	Capture and share local knowledge	Capture local knowledge from implementation sites on how implementers and clinicians made something work in their setting, and then share it with other sites	0	0	0	1	0	1	0	1	0	0	1	1	0	0	1	1	1	0	0	1	1	0	0	0	1	0	1	0	12
8	Centralize technical assistance	Develop and use a centralized system to deliver technical assistance focused on implementation issues	1	0	1	1	0	1	1	0	0	0	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	0	1	1	17

14	Conduct cyclical small tests of change	<p>Implement changes in a cyclical fashion using small tests of change before taking changes system-wide. Tests of change benefit from systematic measurement, and results of the tests of change are studied for insights on how to perform better. This process continues serially over time, and refinement is added with each cycle</p>	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0	1	8
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15	Conduct educational meetings	Hold meetings targeted toward different stakeholder groups (e.g., providers, administrators, other organizational stakeholders and community, patient/consumer and family stakeholders) to teach them about the clinical innovation	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	23
16	Conduct educational outreach visits	Have a trained person meet with providers in their practice settings to educate providers about the clinical innovation with the intent of changing the provider's practice	0	0	0	1	0	1	0	1	1	0	0	1	1	0	1	1	0	1	0	1	1	1	1	1	1	1	0	1	0	16

17	Conduct local consensus discussions	Include local providers and other stakeholders in discussions that address whether the chosen problem is important and whether the clinical innovation to address it is appropriate	1	0	1	1	1	1	0	1	1	0	1	1	0	0	0	1	1	1	0	1	1	1	1	1	0	1	1	20		
18	Conduct local needs assessment	Collect and analyze data related to the need for the innovation	1	0	0	1	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	1	1	1	1	0	0	1	1	12
19	Conduct ongoing training	Plan for and conduct training in the clinical innovation in an ongoing way	0	0	1	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	1	0	0	1	1	0	1	1	11	

<p>22</p> <p>Create or change credentialing and/or licensure standards</p>	<p>Create an organization that certifies clinicians in the innovation or encourage an existing organization to carry this out. Change governmental professional certification or licensure requirements to include delivering the innovation. Work to alter continuing education requirements to shape professional practice toward the innovation</p>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	Develop a formal implementation blueprint that includes all goals and strategies. The blueprint should include the following:	
	1)	
	aim/purpose of the implementation;	
	2)	
	scope of	
23	Develop a formal implementation blueprint (e.g., what organizational units are affected);	1 0 0 1 0 1 0 1 1 0 0 1 0 0 0 1 1 0 0 1 0 1 1 1 0 0 1 0
	3)	
	timeframe and milestones;	
	and 4) appropriate performance/progress measures.	
	Use and update this plan to guide the implementation effort over time	
		13

26	Develop and implement tools for quality monitoring	Develop, test, and introduce into quality-monitoring systems the right input—the appropriate language, protocols, algorithms, standards, and measures (of processes, patient/consumer outcomes, and implementation outcomes) that are often specific to the innovation being implemented	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	3
27	Develop and organize quality monitoring systems	Develop and organize systems and procedures that monitor clinical processes and/or outcomes for the purpose of quality assurance and improvement	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1	9		

31	Distribute educational materials (including guidelines, manuals, and toolkits) in person, by mail, and/or electronically	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	0	1	0	23		
32	Facilitate relay of clinical data to providers	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	5	
33	Facilitation	0	0	1	0	1	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	1	1	0	0	1	0	1	1	11

34	Fund and contract for the clinical innovation	Governments and other payers of services issue requests for proposals to deliver the innovation, use contracting processes to motivate providers to deliver the clinical innovation, and develop new funding formulas that make it more likely that providers will deliver the innovation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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38	Inform local opinion leaders	Inform providers identified by colleagues as opinion leaders or “educationally influential” about the clinical innovation in the hopes that they will influence colleagues to adopt it	1	0	1	1	1	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1	0	0	0	1	1	12	
39	Intervene with patients/consumers to enhance uptake and adherence	Develop strategies with patients to encourage and problem solve around adherence	0	0	0	0	1	0	0	1	0	0	1	1	0	1	0	1	0	1	0	1	1	1	1	1	1	1	0	0	0	13
40	Involve executive boards	Involve existing governing structures (e.g., boards of directors, medical staff boards of governance) in the implementation effort, including the review of data on implementation processes	0	0	0	1	0	1	1	1	0	1	0	1	0	1	0	1	0	0	0	0	1	1	1	1	1	1	0	1	0	14

46	Obtain and use patients/consumers and family feedback	Develop strategies to increase patient/consumer and family feedback on the implementation effort	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1	0	1	1	0	1	0	7
47	Obtain formal commitments	Obtain written commitments from key partners that state what they will do to implement the innovation	1	1	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	1	1	0	1	1	12
48	Organize clinician implementation team meetings	Develop and support teams of clinicians who are implementing the innovation and give them protected time to reflect on the implementation effort, share lessons learned, and support one another's learning	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0	1	1	6

49	Place innovation on fee for service lists/formularies	Work to place the clinical innovation on lists of actions for which providers can be reimbursed (e.g., a drug is placed on a formula, a procedure is now reimbursable)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	Prepare patients/consumers to be active participants	Prepare patients/consumers to be active in their care, to ask questions, and specifically to inquire about care guidelines, the evidence behind clinical decisions, or about available evidence-supported treatments	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	1	0	0	1	0	0	0	0	0	5

51	Promote adaptability	Identify the ways a clinical innovation can be tailored to meet local needs and clarify which elements of the innovation must be maintained to preserve fidelity	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	1	21
52	Promote network weaving	Identify and build on existing high-quality working relationships and networks within and outside the organization, organizational units, teams, etc. to promote information sharing, collaborative problem-solving, and a shared vision/goal related to implementing the innovation	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	1	0	1	0	22

53	Provide clinical supervision	Provide clinicians with ongoing supervision focusing on the innovation. Provide training for clinical supervisors who will supervise clinicians who provide the innovation	0	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	1	1	0	1	1	12
54	Provide local technical assistance	Develop and use a system to deliver technical assistance focused on implementation issues using local personnel	0	0	0	0	1	1	0	1	0	0	1	0	1	0	0	0	0	0	0	1	1	0	1	0	1	0	1	1	11
55	Provide ongoing consultation	Provide ongoing consultation with one or more experts in the strategies used to support implementing the innovation	0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	6

67	Use data experts	Involve, hire, and/or consult experts to inform management on the use of data generated by implementation efforts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	3
68	Use data warehousing techniques	Integrate clinical records across facilities and organizations to facilitate implementation across systems	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
69	Use mass media	Use media to reach large numbers of people to spread the word about the clinical innovation	1	0	1	0	1	1	1	1	1	0	1	1	1	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	22
70	Use other payment schemes	Introduce payment approaches (in a catch-all category)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
71	Use train-the-trainer strategies	Train designated clinicians or organizations to train others in the clinical innovation	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	5

72	Visit other sites where a similar implementation effort has been considered successful	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	0	1	0	0	1	0	8
73	Work with educational institutions to train clinicians in the innovation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
	Total number of strategies used per article	22	14	17	39	19	32	22	25	12	10	23	31	16	15	20	32	16	20	2	44	40	31	28	29	31	6	45	26	667	

Table S4. Implementation strategies used ERIC clusters according to feasibility and importance.

Implementation strategies	No. of times identified	Go-Zone Quadrant Feasibility and Importance
1. Use evaluative and iterative strategies	113	
4 Assess for readiness and identify barriers and facilitators		
5 Audit and provide feedback	19	1
56 Purposefully re-examine the implementation	12	1
26 Develop and implement tools for quality monitoring	8	1
3	3	1
27 Develop and organize quality monitoring systems	9	1
13	13	1
23 Develop a formal implementation blueprint	12	1
18 Conduct local needs assessment	22	1
61 Stage implementation scale up	7	1
46 Obtain and use patients/consumers and family feedback	8	1
14 Conduct cyclical small tests of change		
2. Provide interactive assistance	51	
33 Facilitation	11	1
54 Provide local technical assistance	12	IV
53 Provide clinical supervision	11	IV
8 Centralize technical assistance	17	III
3. Adapt and tailor to context	45	
63 Tailor strategies	21	I
51 Promote adaptability	21	I
67 Use data experts	3	III
68 Use data warehousing techniques	0	III
4. Develop stakeholder interrelationships	164	
35 Identify and prepare champions	9	I
48 Organize clinician implementation team meetings	6	I
4	4	IV
57 Recruit, designate, and train for leadership	12	I
38 Inform local opinion leaders	24	I
6 Build a coalition	12	IV
47 Obtain formal commitments	2	I
36 Identify early adopters	20	I
17 Conduct local consensus discussions	12	I
7 Capture and share local knowledge	12	I
64 Use advisory boards and workgroups	2	I
65 Use an implementation advisor	0	II
45 Model and simulate change	8	II
72 Visit other sites	14	II
40 Involve executive boards	2	II
25 Develop an implementation glossary	3	II
24 Develop academic partnerships	22	III
52 Promote network weaving		
5. Train and educate stakeholders	131	
19 Conduct ongoing training	11	I
55 Provide ongoing consultation	6	I

29	Develop educational materials	22	I
43	Make training dynamic	12	I
31	Distribute educational materials	23	I
71	Use train-the-trainer strategies	4	I
15	Conduct educational meetings	23	I
16	Conduct educational outreach visits	16	II
20	Create a learning collaborative environment	11	II
60	Shadow other experts	1	II
73	Work with educational institutions	1	II
6. Support clinicians		26	
32	Facilitate relay of clinical data to providers	5	I
58	Remind clinicians	0	II
30	Develop resource sharing agreements	18	III
59	Revise professional roles	2	III
21	Create new clinical teams	1	III
7. Engage consumers		65	
41	Involve patients/consumers and family members	22	I
39	Intervene with patients/consumers to enhance uptake and adherence	13	IV
50	Prepare patients/consumers to be active participants	5	IV
37	Increase demand	3	II
69	Use mass media	22	III
8. Utilize financial strategies		27	
34	Fund and contract for the clinical innovation	0	IV
1	Access new funding	21	IV
49	Place innovation on fee for service lists/formularies	0	IV
2	Alter incentive/allowance structures	0	III
42	Make billing easier	2	III
3	Alter patient/consumer fees	3	III
70	Use other payment schemes	1	III
28	Develop disincentives	0	III
66	Use capitated payments	0	III
9. Change infrastructure		46	
44	Mandate change		
12	Change record systems	10	III
11	Change physical structure and equipment	1	III
22	Create or change credentialing and/or licensure standards	5	III
13	Change service sites	3	III
22		22	III
9	Change accreditation or membership requirements	0	III
2		2	III
62	Start a dissemination organization	0	III
10	Change liability laws		

The rightmost column depicts the go-zone quadrant into which each strategy falls based on the scale mean cut-offs. Go-zone quadrant I: Importance and feasibility are both above the scale means. Go-zone quadrant II: Importance rating is lower and the feasibility rating is higher than the scale means. Go-zone quadrant III: Importance and feasibility ratings are both below scale means. Go-zone quadrant IV: Importance rating higher and feasibility lower than scale means according to Waltz et al.