Session 4: STI and Implementation Science

Implementation Science – an African Perspective

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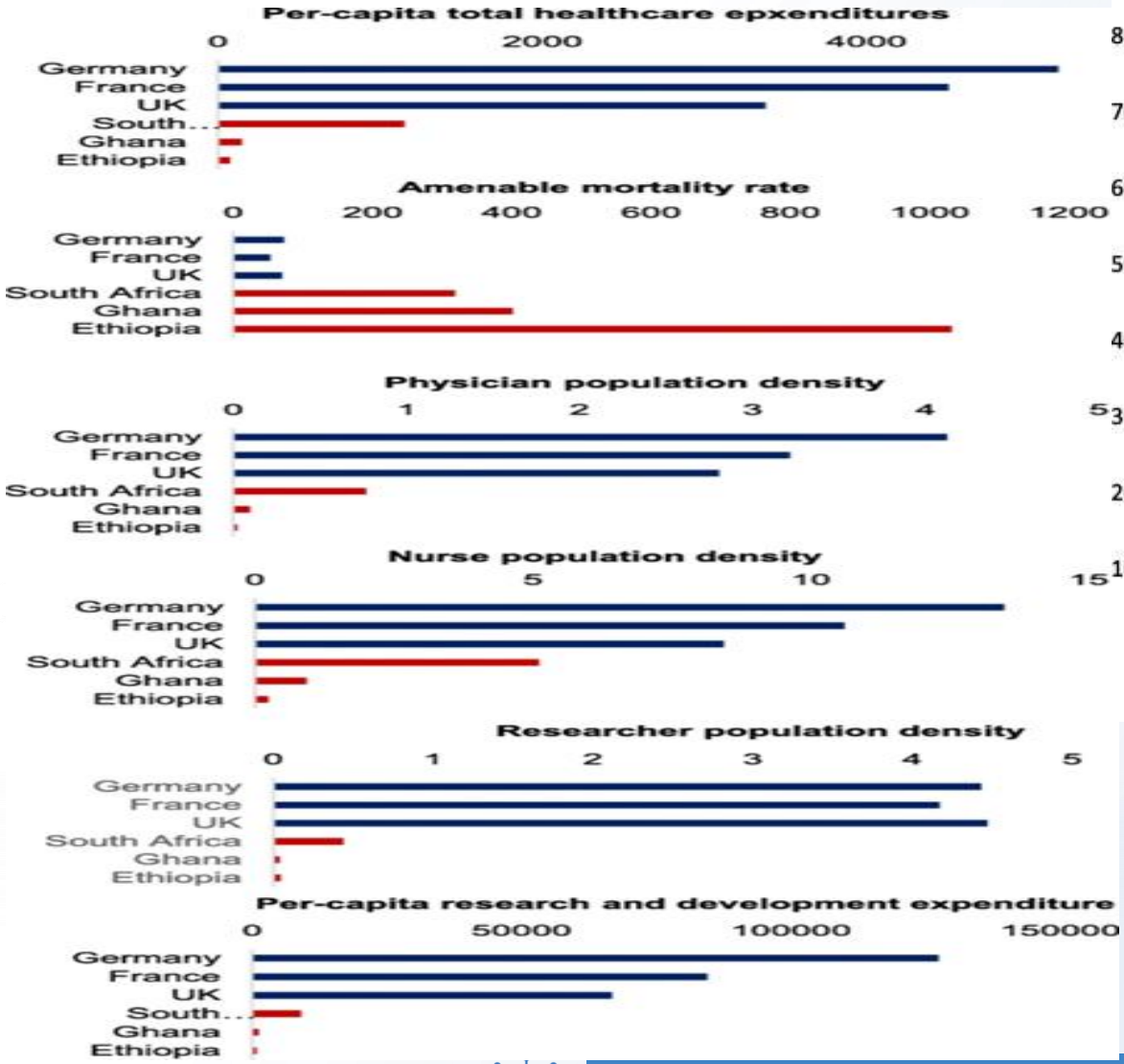
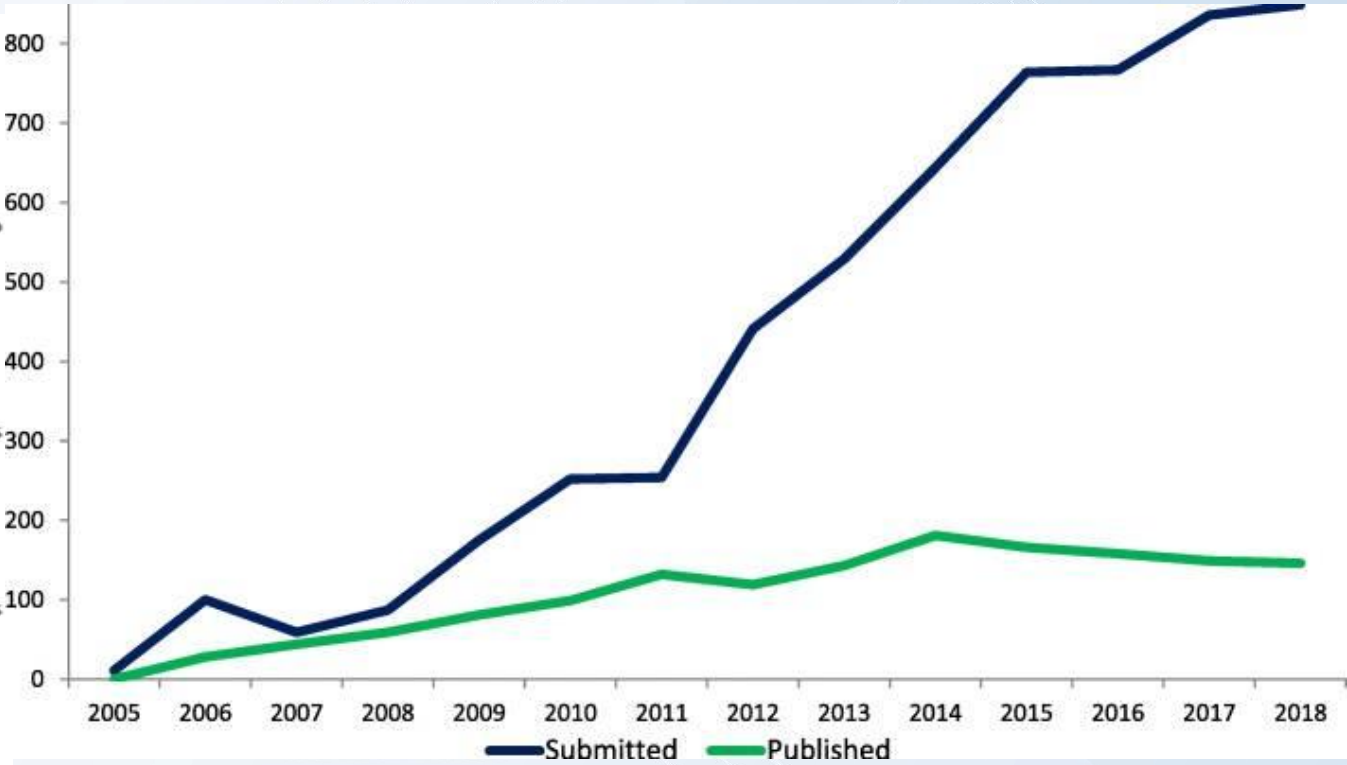
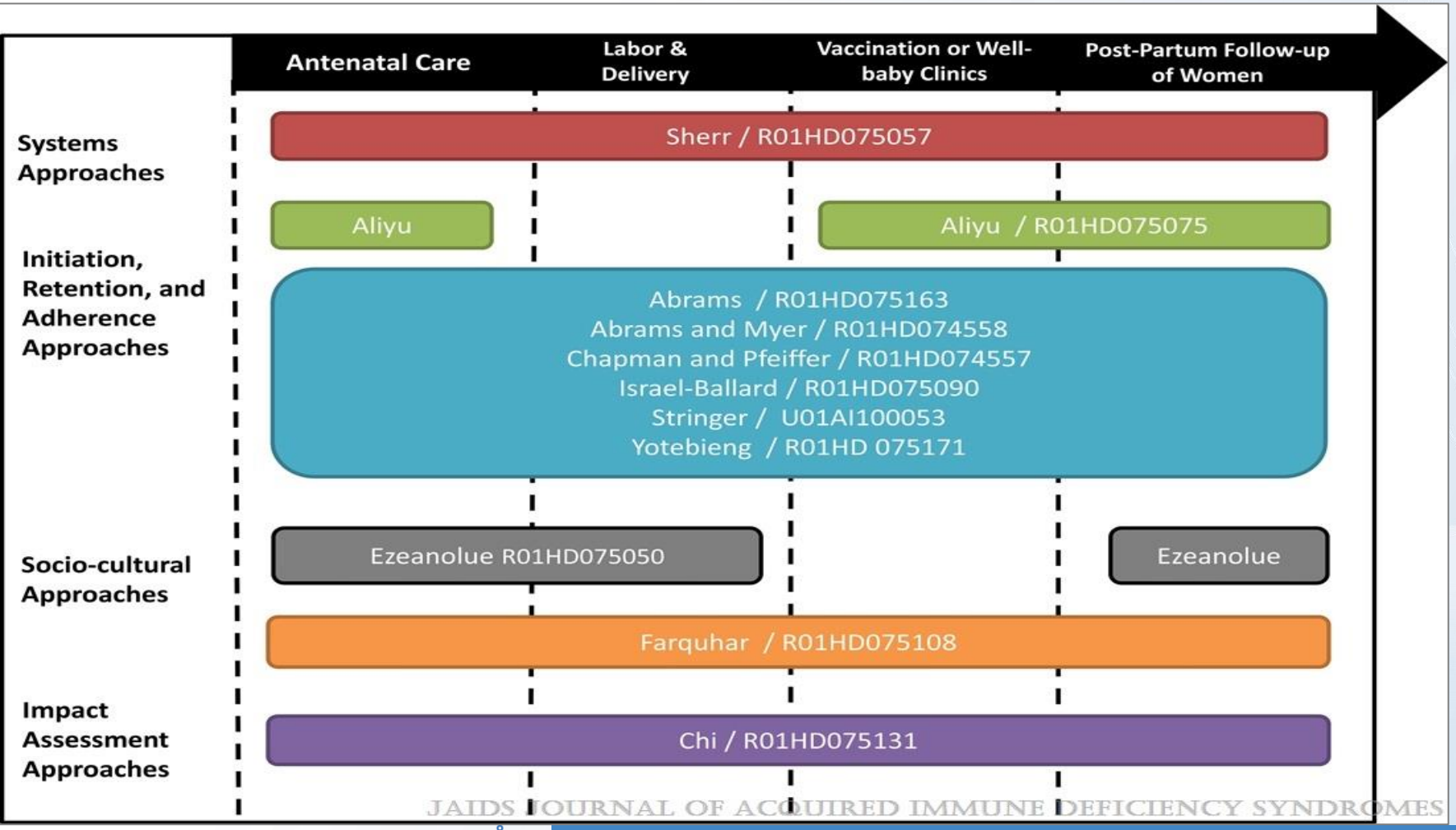
Why Implementation Science in Africa?





1. Yapa HM, Bärnighausen T. Implementation science in resource-poor countries and communities. Implement Sci. 2018 Dec 27;13(1):154.
2. Sales AE, Wilson PM, Wensing M, et al. Implementation Science and Implementation Science Communications: our aims, scope, and reporting expectations. Implement Sci. 2019;14(1):77.

Grantees work along the PMTCT cascade



Sturke, Rachel PhD, MPH, MIA*; Siberry, George MD, MPH†; Mofenson, Lynne MD‡; Watts, D. Heather MD§; McIntyre, James A. MD‖; Brouwers, Pim PhD¶; Guay, Laura MD§, on behalf of the NIH-PEPFAR PMTCT Implementation Science Alliance Creating Sustainable Collaborations for Implementation Science: The Case of the NIH-PEPFAR PMTCT Implementation Science Alliance, JAIDS Journal of Acquired Immune Deficiency Syndromes: August 1, 2016 - Volume 72 - Issue - p S102-S107

Enter totals in the shaded boxes

Cascade 1 ANC -> PPO		A Total	B %	C Drop-off	D Extra completing through step 4 if drop-off eliminated
	Health facility catchment area	100,000			
	% pregnant	5%			
	Number of months	6			
	Target population	2,500			
Step 1	1st ANC visits	2,250	90%	250	33
Step 2	HIV test at 1st ANC visit	1,580	70%	670	127
	HIV+ women identified at 1st ANC visit	500	32%		
	Previously identified HIV+	0			
	Identified HIV+ at later ANC visit	0			
	Total HIV+ women	500			
Step 3	HIV+ women who start ART or PPO	450	90%	50	33
Step 4	Newborns of HIV+ women receiving PPO	300	67%	150	150

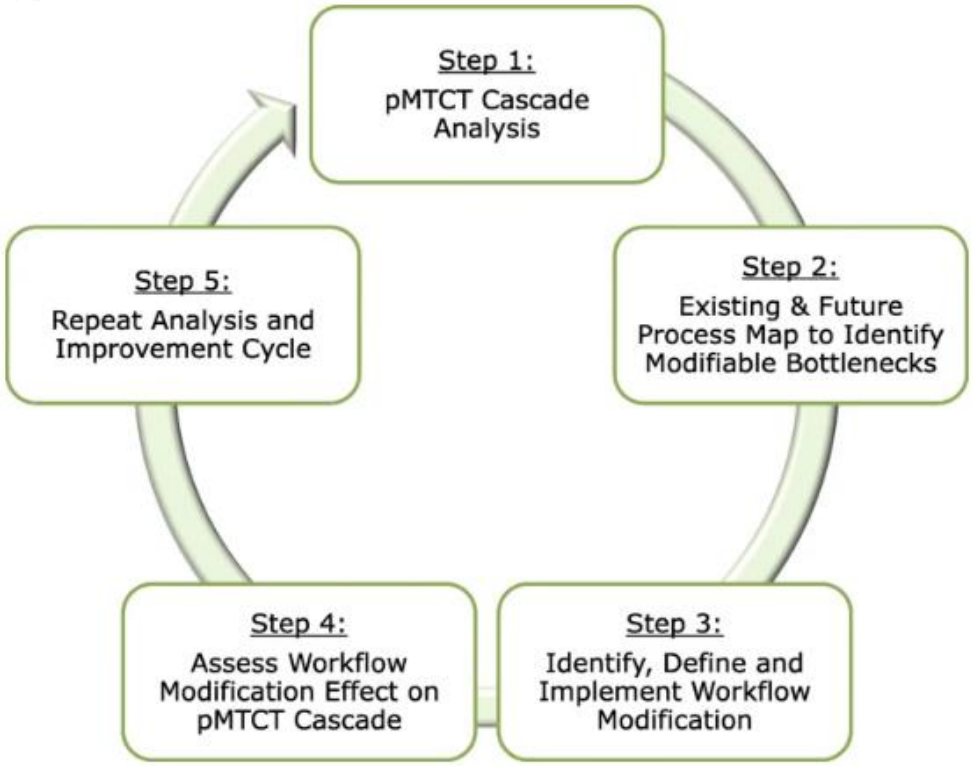
Cascade 2 At-Risk Child Consult - > ART		Total	%	Drop-off	Extra completing through step 7 if drop-off eliminated
Step 5	1st at-risk child visits	210	70%	290	21
Step 6	Babies in at-risk care with PCR <8weeks	147	70%	63	6
	Babies identified HIV+ in at-risk care	30	20%		
Step 7	Eligible babies enrolled in ART	15	50%	15	15

Wagner AD, Gimbel S, Ásbjörnsdóttir KH, Cherutich P, Coutinho J, Crocker J, Cruz E, Cuembelo F, Cumbe V, Eastment M, Einberg J, Floriano F, Gaitho D, Guthrie BL, John-Stewart G, Kral AH, Lambdin BH, Liu S, Maina M, Manaca N, Matsuzaki M, Mattox L, Mburu N, McClelland RS, Micek MA, Mocumbi AO, Muanido A, Nduati R, Njuguna IN, Oluoch G, Oyiengo LB, Ronen K, Soi C, Wagenaar BH, Wanje G, Wenger LD, Sherr K. Cascade Analysis: An Adaptable Implementation Strategy Across HIV and Non-HIV Delivery Platforms. J Acquir Immune Defic Syndr. 2019 Dec;82 Suppl 3(Suppl 3):S322-S331. doi: 10.1097/QAI.0000000000002220. PMID: 31764270; PMCID: PMC6880809.

The prevention of mother-to-child transmission of HIV cascade analysis tool (PCAT). Cascade 1 covers ANC through postpartum prophylaxis (PPO). Cascade 2 covers at-risk child visits through ART initiation for HIV-positive infants.

Systems Analysis and Improvement Approach (SAIA)-Mozambique

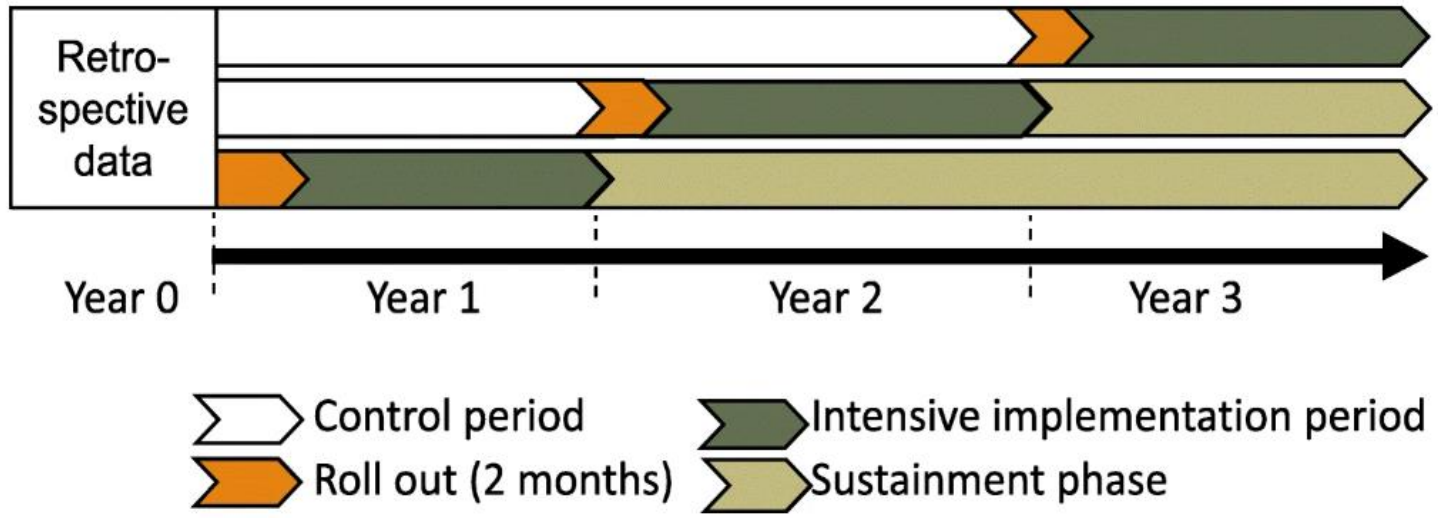
Fig. 2



Five steps of the Systems Analysis and Improvement Approach (SAIA) implementation strategy

Fig. 1

From: Scaling-up the Systems Analysis and Improvement Approach for prevention of mother-to-child HIV transmission in Mozambique (SAIA-SCALE): a stepped-wedge cluster randomized trial



SAIA-SCALE stepped wedge implementation timeline

Sherr K, Ásbjörnsdóttir K, Crocker J, Coutinho J, de Fatima Cuembelo M, Tavede E, Manaca N, Ronen K, Murgorgo F, Barnabas R, John-Stewart G, Holte S, Weiner BJ, Pfeiffer J, Gimbel S. Scaling-up the Systems Analysis and Improvement Approach for prevention of mother-to-child HIV transmission in Mozambique (SAIA-SCALE): a stepped-wedge cluster randomized trial. Implement Sci. 2019 Apr 27;14(1):41.

Why then is Implementation Science trotting and not galloping?

- There is limited understanding of the role of IS in enhancing policy implementation and evaluation.
  - IS research is still confounded with operations research,
  - Most of the research agencies are oriented towards basic and epidemiologic research
- Additionally, there are limited skills in:
  - impact evaluation
  - advanced statistical methods and
  - optimization modelling to sustain routine IS research.
- At the moment, and beyond the work of NIH and WHO
  - No defined and deliberate strategy to integrate IS in programme implementation especially in the Ministries of Health

Key challenges facing IS in Africa

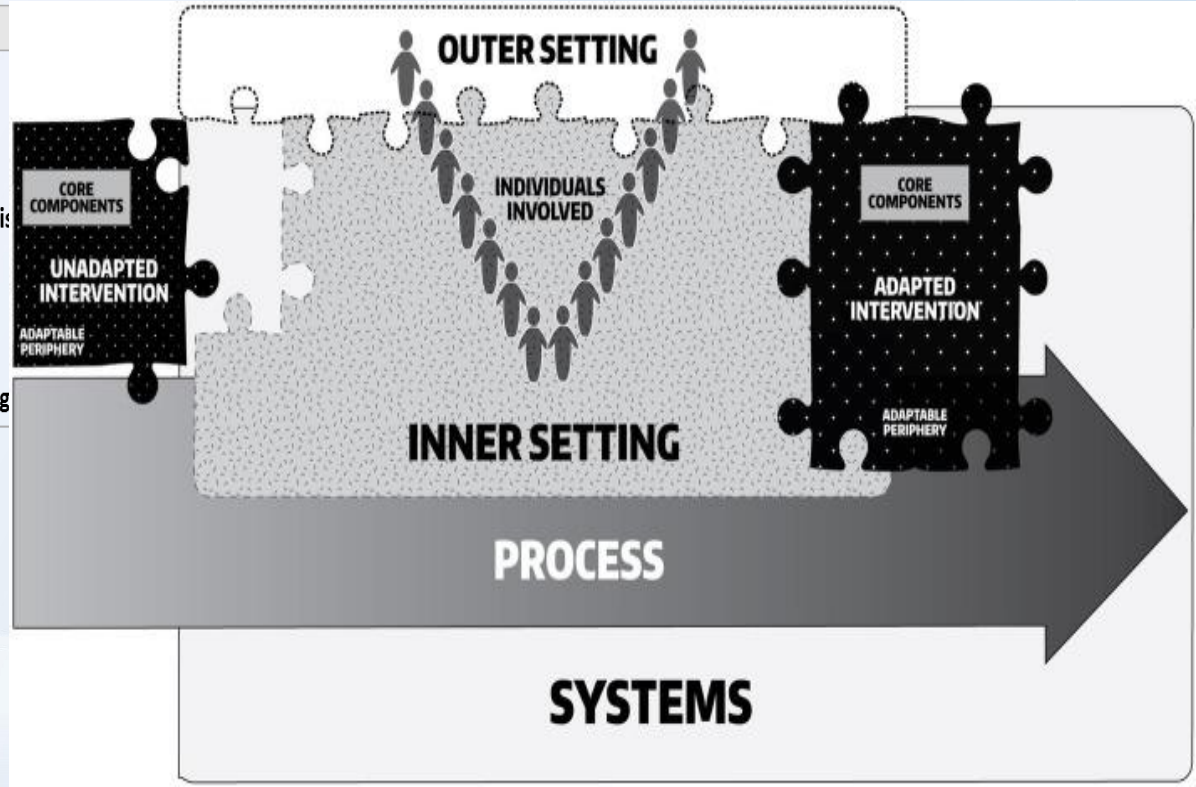
- Which implementation data (eg, cost, training needs, and supply needs) are needed, in addition to effectiveness results of intervention strategies, are the most critical in TILTING the scales for scale-up?
  - Could preliminary research findings inform programs and policy?
- At what point should research interdigitate with policy makers?
- How do you reconcile the need for speedy implementation with the desire for rigorous evaluation of public health programmes?
  - What are the primary methodological barriers to using scientific evidence to inform policy?
- What are feasible and valid methods to measure how well policies have been informed by research evidence?

Other questions and Considerations

- Determining appropriate research capacity
  - What's the common understanding of what adequate IS research capacity is?
    - Is it a critical mass (? At what threshold) of card carrying implementation scientists?
    - Would it be an inventory of researchers who have led NIH-funded IS studies;
    - is it the existence of an implementation science research network (Re: PMCT IS network/consortium);
    - or researchers with collaborative partnership with high income countries?
- The role of Public Health Institutes and Research agencies within the Ministries of health needs to be defined
  - How they can partner with NGOs implementing programmes

Where should we focus? Leadership and Context

Course	Organization	Duration	Content
Fundamentals of Implementation Science	University of Washington, USA	11 weeks	• Relevance of implementation science to global health • Impact evaluation methods • Economic analysis methods • Stakeholder and policy analysis • Qualitative health systems research • Quality improvement as a management tool • Disseminating research finding
Specialist Certificate in Implementation Science	University of Melbourne, Australia	6 months	• Conceptual models and frameworks • Role of data in driving implementation success • Different approaches to implementation • Process evaluation • Formative research • Outputs and outcomes • Impact evaluation



Means, A.R., Kemp, C.G., Gwayi-Chore, MC. et al. Evaluating and optimizing the consolidated framework for implementation research (CFIR) for use in low- and middle-income countries: a systematic review. Implementation Sci 15, 17 (2020).

Figure

Where should we focus?
Ethics of Implementation Science

Valerie A Luyckx, Andreas Reis, Dermot Maher, Mahnaz Vahedi . Highlighting the ethics of implementation research.The Lancet Global Health Volume 7 Issue 9 Pages e1170-e1171 (September 2019) DOI: 10.1016/S2214-109X(19)30310-9

Planning phase	• Responsiveness to local needs and priorities • Equipoise • Study design • Stakeholder and community engagement • Balance between risks and benefits
Implementation phase	• Autonomy and informed consent • Privacy and confidentiality • Standard of care • Ancillary care • Community and health-system empowerment
Post-research phase	• Dissemination of research findings • Data ownership • Translating findings into public health action • Scalability and sustainability • Benefit sharing

Kemp, Christopher G.a,*; Weiner, Bryan J.a,*; Sherr, Kenneth H.a; Kupfer, Linda E.b; Cherutich, Peter K.a,c; Wilson, Davidd; Geng, Elvin H.e; Wasserheit, Judith N.a Implementation science for integration of HIV and non-communicable disease services in sub-Saharan Africa, AIDS: July 1, 2018 - Volume 32 - Issue - p S93-S105

Table 3. Examples of priority IS research questions and methods.

Research question	IS discipline, method, or tool
What is the effect of integrated HIV/NCD services on NCD and HIV incidence, morbidity, and mortality at the population level? How do integrated services affect stigma, retention, and adherence related to HIV and NCDs?	Impact evaluation Surveillance and data systems
What is the financial cost of implementing integrated HIV/NCD services? What are the most cost-effective models for delivering integrated services?	Economic evaluation
How can we optimize the delivery of integrated HIV/NCD services (including a robust supply chain) within the HIV care setting?	Operations research Organizational readiness for implementing change
How can we improve the fidelity of integrated HIV/NCD services?	Quality improvement/assurance
What policy changes are necessary for scaling-up integrated HIV/NCD services?	Stakeholder/policy analysis
How do we culturally adapt integrated HIV/NCD services for different countries and contexts within Sub-Saharan Africa?	Qualitative methods
How do we increase the reach of integrated HIV/NCD services, particularly among marginalized communities and vulnerable populations?	Dissemination research
How do we create understanding and appeal of engaging in health practices – including prevention, care seeking, and self-management – that address both NCD and HIV?	Social marketing
What are the most effective ways to build in-country IS research capacity?[a]	

NCD, non-communicable disease.
[a]Although this question is not an IS research question per se, we have included it in this table because it is fundamental to enabling the conduct of the research described in this article and in the supplement, as a whole.

Working Smarter Under Resource Constraints

Freeing up human resources through task-shifting to clients							
HIV testing	HIV self-testing	Standard of care at the time of the study (facility HIV testing)	• HIV testing rates	RCT	Female sex workers	Uganda, Zambia	Ortblad et al. *PLOS Medicine* 2017 [125], Chanda et al. *PLOS Medicine* 2017 [126]
HIV testing	Unsupervised HIV self-testing	Provider-supervised HIV self-testing	• Sensitivity	RCT	Fisherfolk	Uganda	Asiimwe et al. *AIDS & Behavior* 2014 [127]
Cervical cancer screening	Vaginal self-collection of specimens	Cervical specimens collection by clinician	• Sensitivity • Specificity	Validation study	Adult women	India, Nicaragua, Uganda	Jeronimo et al. *International Journal of Gynecological Cancer* 2014 [128]
Freeing up human resources through new models of care							
HIV treatment	Community-based adherence clubs	Standard of care at the time of the study	• Loss to follow-up • Viral suppression	NRC	Adult HIV patients in primary care	South Africa	Grimsrud et al. *JAIDS* 2016 [62]
Buruli ulcer detection and treatment	Buruli ulcus community of practice composed of hospital staff, former patients, CHWs, and traditional healers	Standard of care at the time of the study	• Buruli ulcus detection rate • Buruli ulcus treatment adherence	UBA	General population	Cameroon	Awah et al. *PLOS Neglected Tropical Diseases* 2018 [129]
Family healthcare services	Community-based family health program	Standard of care at the time of the study	• Mortality rates • Causes of death • Adult employment • School enrollment	UBA	Children (aged 10–17) and adults	Brazil	Rocha et al. *Health Economics* 2010 [130]

Yapa HM, Bärnighausen T. Implementation science in resource-poor countries and communities. Implement Sci. 2018 Dec 27;13(1):154

Proposed Approaches for Increasing Utilization of Implementation Science

- All large scale programme such as immunizations, HIV, Malaria should have implementation science protocols approved and funded
- Time series and other efficient impact evaluation techniques
  - Build the programme in such a manner to be easily evaluated
    - Surveillance techniques integration to national information systems
- Ministries of Health are Ministries of Implementation Science
  - Advocacy at the highest levels including with WHO country representatives and Director Generals of Health
  - African Academy of Sciences
- Continue to Build Implementation Science Alliances
  - Global Research Agencies, Academia, NGOs, Ministries of Health

Implementation Science in the era of Covid-19

- Excellent opportunity to show case the utility of IS methods
  - Application of GIS, crowdsourcing to define infectivity patterns, Smart temperature guns
  - Efficient methods for differentiated care
  - Use of social networks for information dissemination, diffusion and uptake of innovations
  - Innovative methods for vaccines delivery
  - Application of robust IS methods to measure impact
    - Stepped wedge may be impractical but quasi-experimental studies feasible
  - Predicting the next epidemics

Thank You

For Your Time