



# SAIA

Systems Analysis &  
Improvement Approach

## Module II: SAIA Series

# Systems Analysis & Improvement Approach (SAIA)

**Systems engineering** in global health is an approach that uses data to improve decision-making within a given system by

- 1) **diagnosing** problems & **identifying** needs,
- 2) **evaluating decision options** to address a problem/need through **modeling** or **optimization**, &
- 3) translating optimized decision options into practical **recommendations** or **actions**

**SAIA** is a package of systems engineering tools including

- **Cascade analysis**
- **Process mapping**
- **Continuous quality improvement (CQI)**

Well suited to chronic care process improvements

-Wagner & Crocker, et al. Making smarter decisions faster: systems engineering to improve the global public health response to HIV. *Current HIV/AIDS Reviews*. 2019 Jun 13. doi: 10.1007/s11904-019-00449-2.

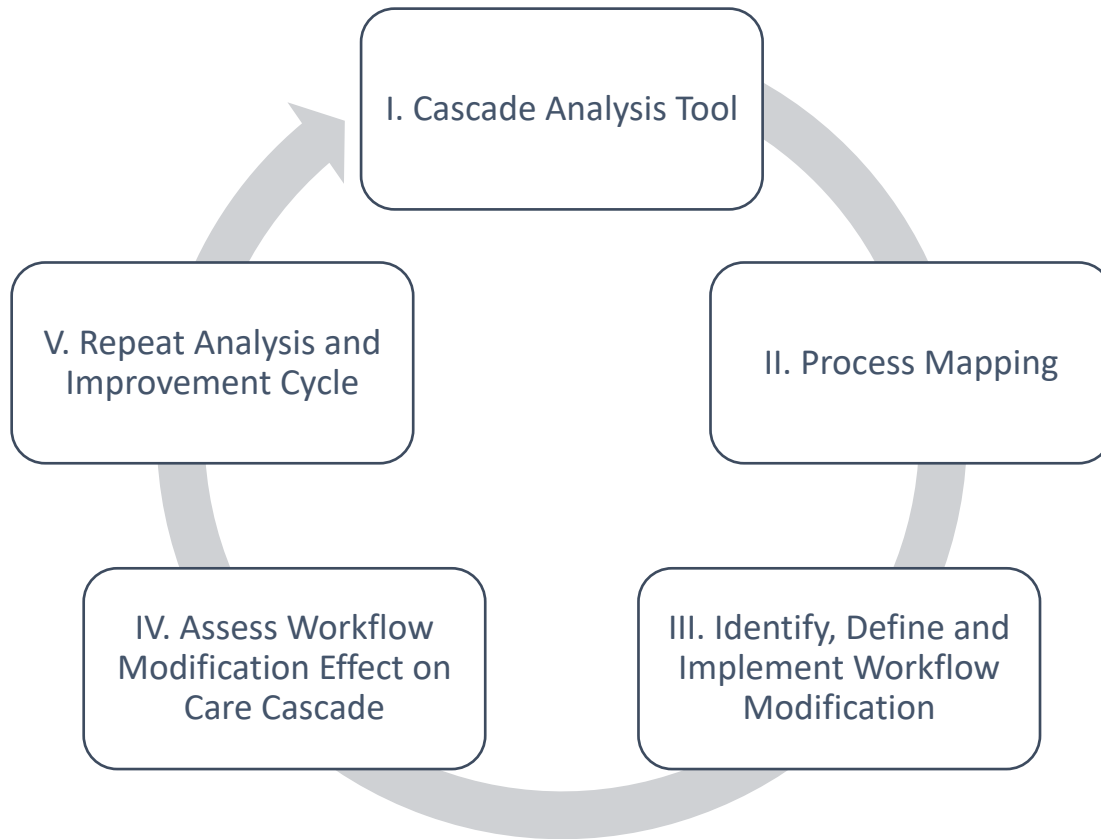


# SAIA

Originally developed to optimize the Prevention of Mother to Child Transmission of HIV Care Cascade in central Mozambique



# SAIA Core Components



Used chronologically and repetitively over time

# To begin...

- The first step to using SAIA is defining the care cascade of interest you plan to target
- Ask
  - What are the essential steps a patient takes to be screened, diagnosed, treated, & sustained in care/ linked to referral services?
  - What data sources exist to capture these steps?
  - Who are the stakeholders who need to be brought in to define these steps/sources?
- Let's consider the example of PMTCT

# PMTCT Cascade



## ANTENATAL CARE

- ANC attendance
- HIV counseling & testing
- CD4 testing
- Provision of ARV prophylaxis/ART to mother



## BIRTH

- Safe delivery
- Provision of prophylaxis to infant
- Education on safe infant feeding and care



## POSTPARTUM CARE

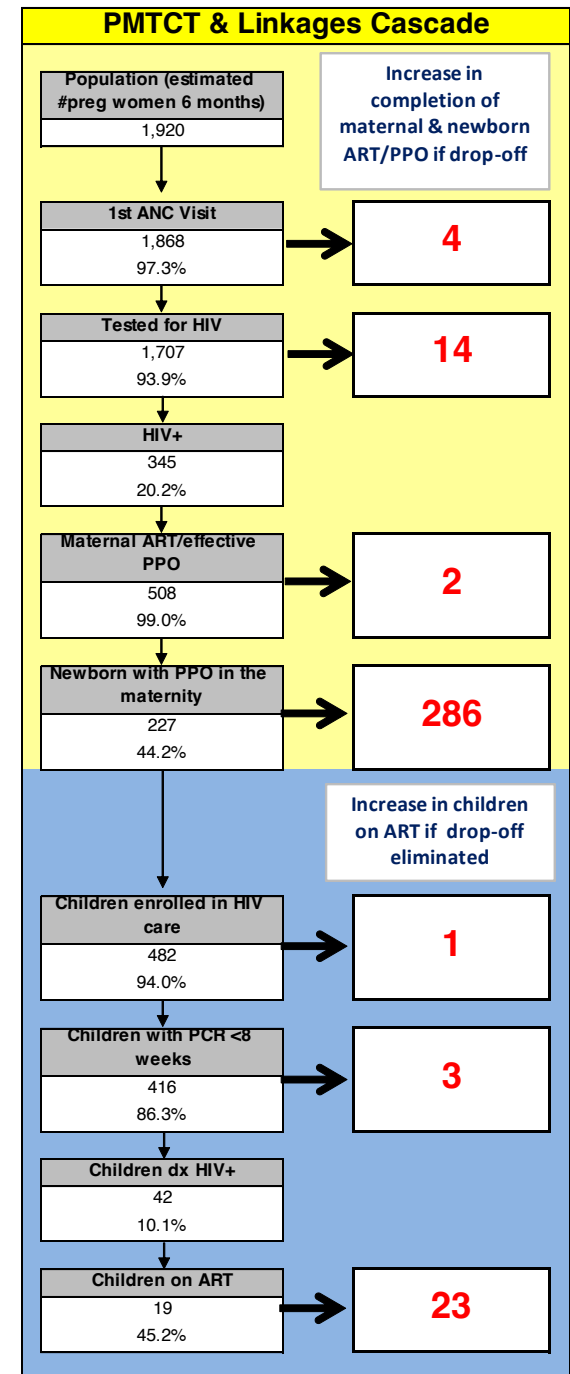
- Viral load testing
- Safe infant feeding
- Infant follow up care and HIV testing
- Family planning
- Linkages to long-term HIV care and treatment

# SAIA Step 1

## Describe PMTCT performance and identify priority areas for improvement

- Use of the **PMTCT Cascade Analysis Tool (PCAT)** to provide a 'systems view' of the sequential, linked pPMTCT cascade steps

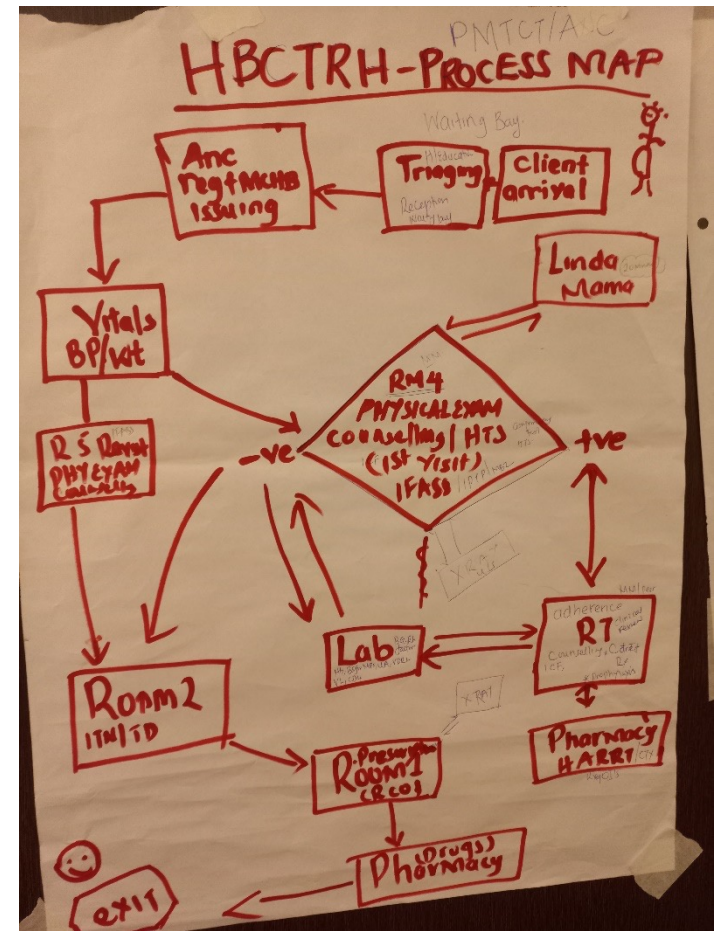
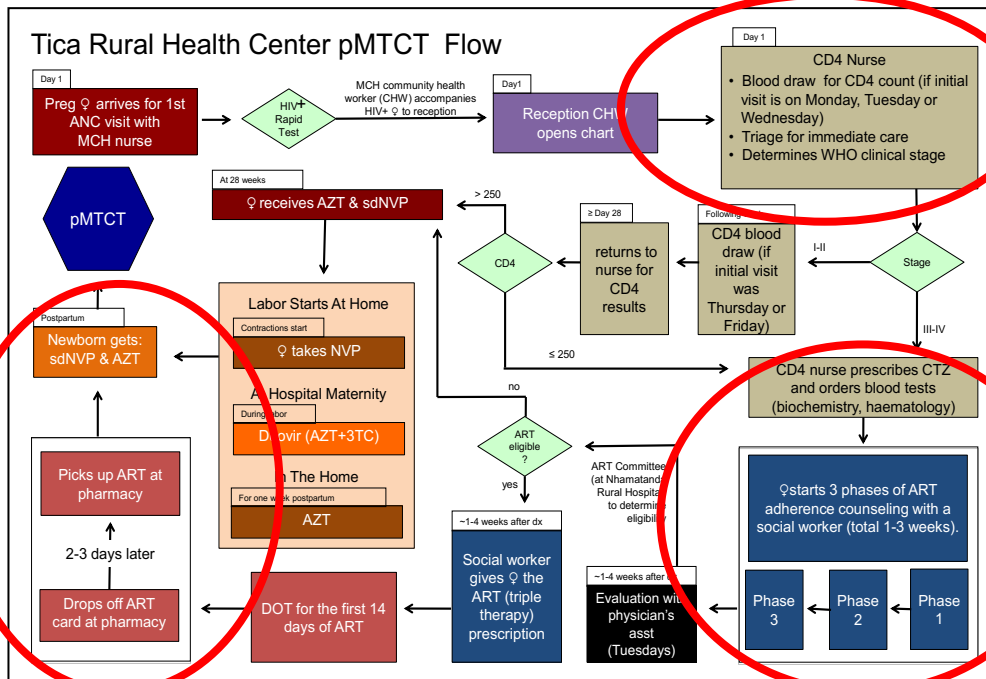
*Gimbel, et al. The prevention of mother-to-child transmission of HIV cascade analysis tool: supporting health managers to improve facility-level service delivery. 2014.*





# SAIA Step 2

Process mapping to identify modifiable facility-level bottlenecks

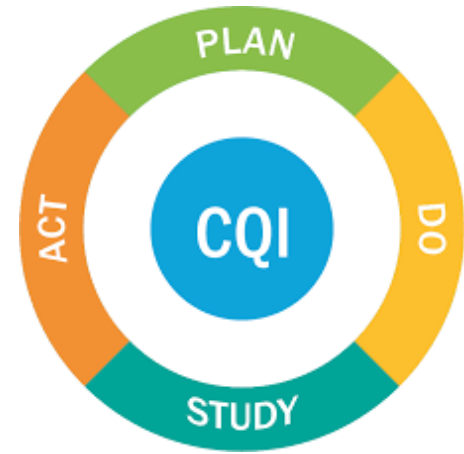




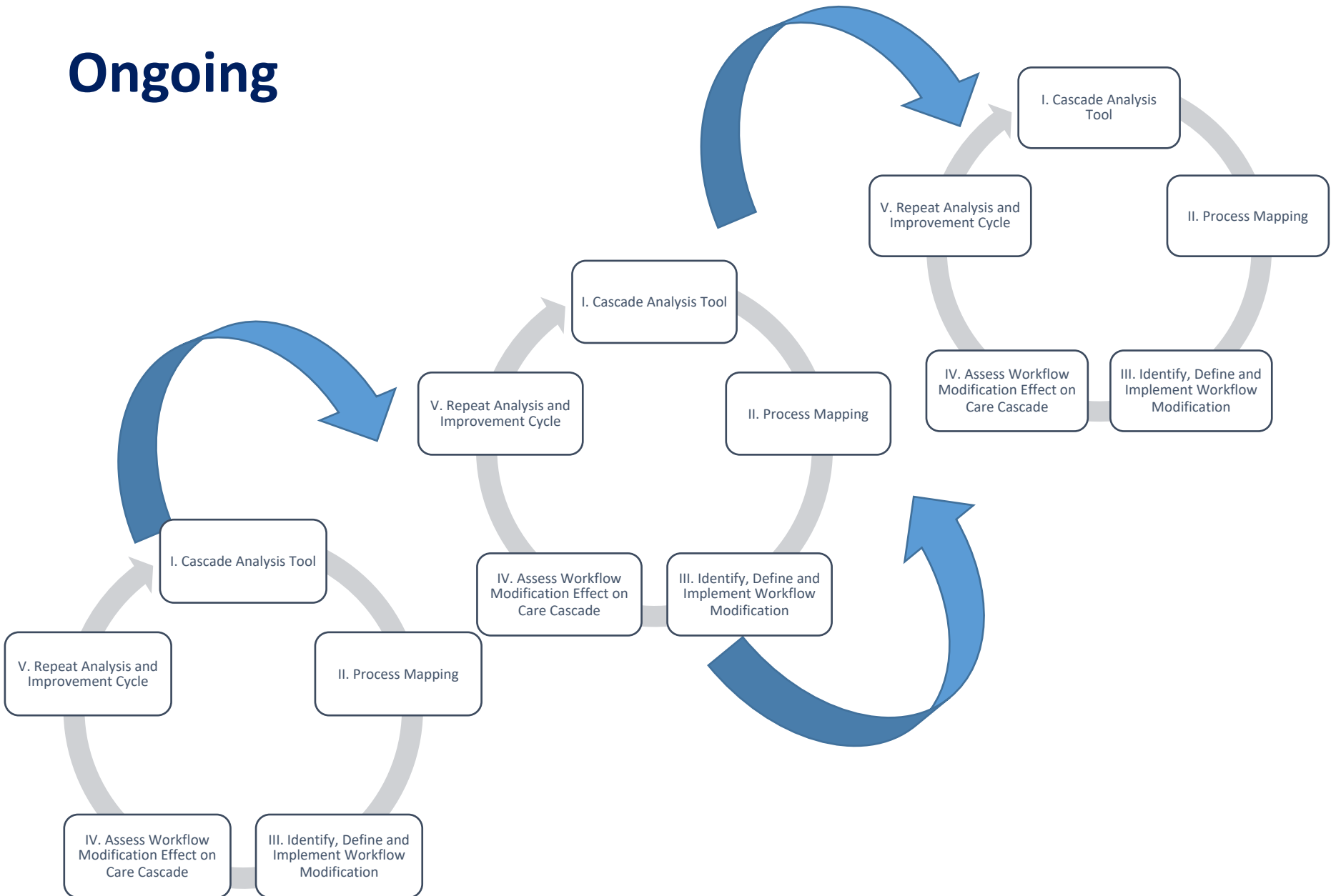
# SAIA Step 3-5

## Continuous Quality Improvement

- Design & test facility-specific workflow adaptations
- Monitor changes in performance; initiate additional iterations
- Repeat analysis and improvement cycle



# Ongoing

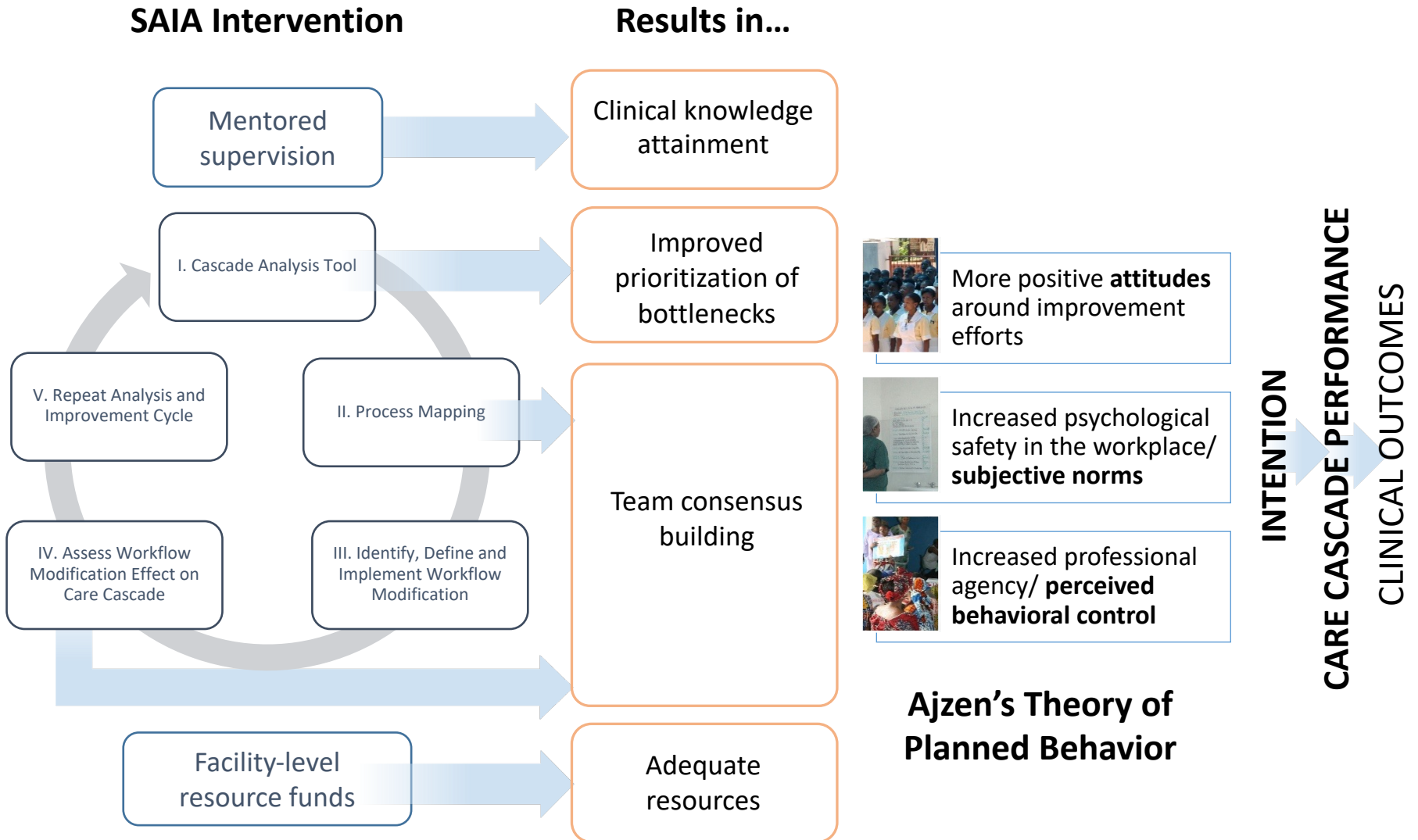


# Systems Analysis & Improvement Approach (SAIA) to Optimize PMTCT Trial



- Cluster RCT conducted in Côte d'Ivoire, Kenya & Mozambique
- Tested impact of SAIA on the PMTCT cascade
- Intervention implemented by study nurses
- Resulted in improvements in
  - **ART uptake** (13.3% vs. 4.1% increase)
  - **Early infant diagnosis** (11.6% vs. 0.7% increase)

# How does SAIA work?



# Measurement

- Process measures

Process Measures	
Pregnant mothers HIV screened	<u># women HIV tested</u> # women in ANC
HIV+ pregnant mothers treated	<u># HIV+ women receiving cART</u> # women identified HIV+ in ANC
HIV-exposed infants screened	# infants born to HIV+ women <u>screened within 8 weeks</u> # infants born to HIV+ women

- Clinical measures

Clinical measures	
Mothers with VL suppressed	# HIV+ mothers with VL suppressed at 6 weeks post partum (<20copies/mL) # HIV+ mothers on cART
Mother-to-Child HIV transmission	# Infant tested positive by 6 months <u>post partum</u> # infant of HIV exposed mothers tested

- Micro-interventions

- Type of change
- Periodicity
- Success/failure

Type of Change	Specific Example	Process Improvement
1. System Reorganization	CD4 blood draws changed from weekly to daily	HIV+ moms with CD4 increased from 26% to 56%
2. Expand patient /provider knowledge	Maternity tours provided to ANC patients	16% increase in institutional births
3. Improve communication across healthcare team	ANC nurses pick up lab results At shift change head nurse crosschecks pharmacy & maternity registries on infant ARV administration	Lab return time reduced from 6 weeks to 10 days
4. Improve data & its use		54% to 88% increase in correct administration

**SAIA:** Providing health workers & managers with a systems view = novel, iterative approaches to improve health service delivery



# Coming up next

The next three modules will walk through each core component of the SAIA, including

- Deck 3: Cascade Analysis
- Deck 4: Process Mapping
- Deck 5: Continuous Quality Improvement





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