Viral Load Dashboard Generation and Programmatic Use for Quality Improvement

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Objectives

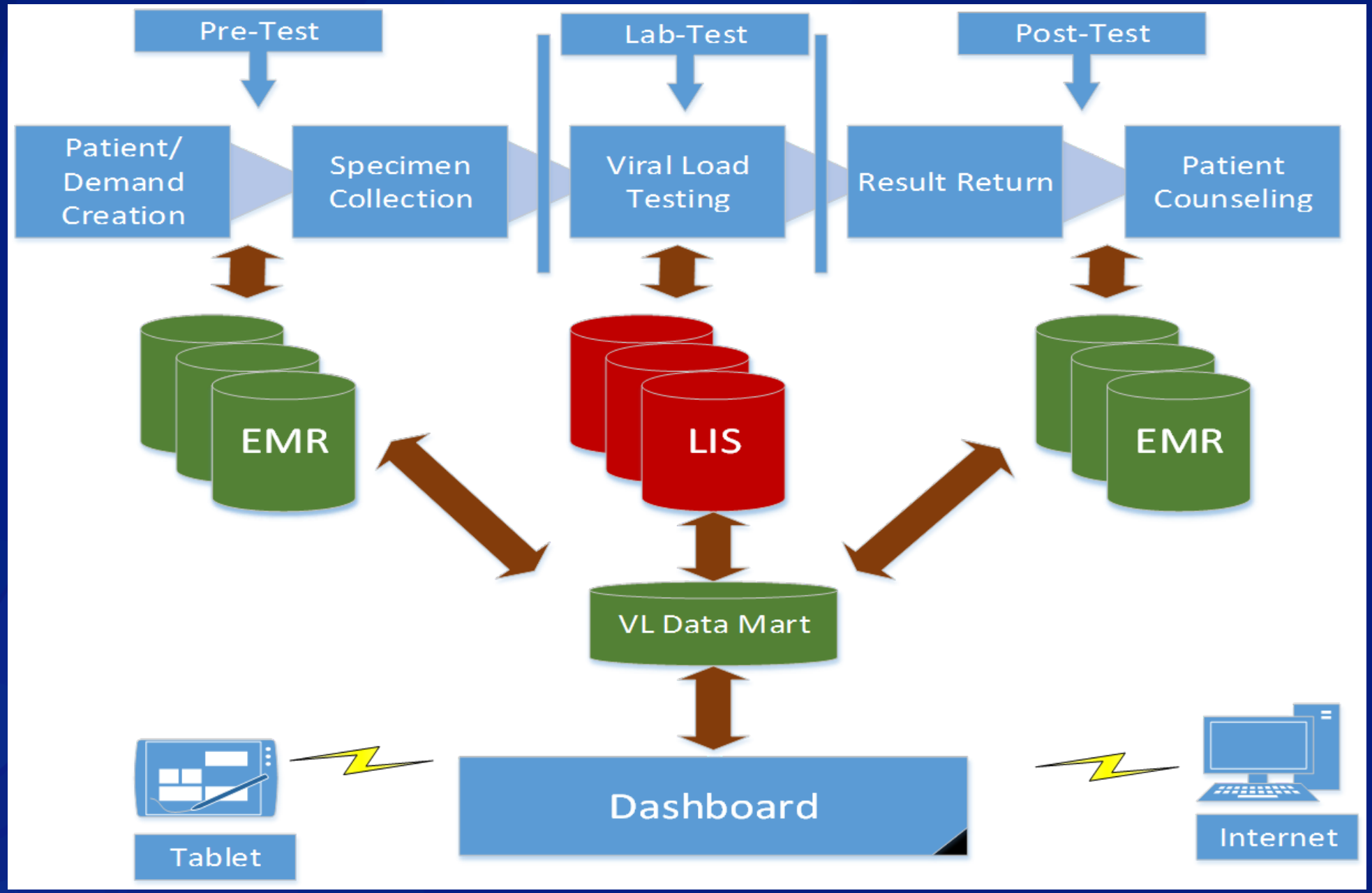
1. **VL M&E is critical to achieve impact**
   - Ongoing need for continuous improvement in VL data and results utilization
2. **Key to understand VL data sources (LIS, EMR), the interface between lab and clinic, data limitations**
   - VL data from the LIS, VL Dashboard: what can it tell us and how can it be used?
3. **Key to understand VL data by gender, age group, priority populations**
4. **Site level VL cascade review and utilization**
5. **Identifying opportunities for Quality Improvement (QI) using VL data for program and patient outcome improvement**

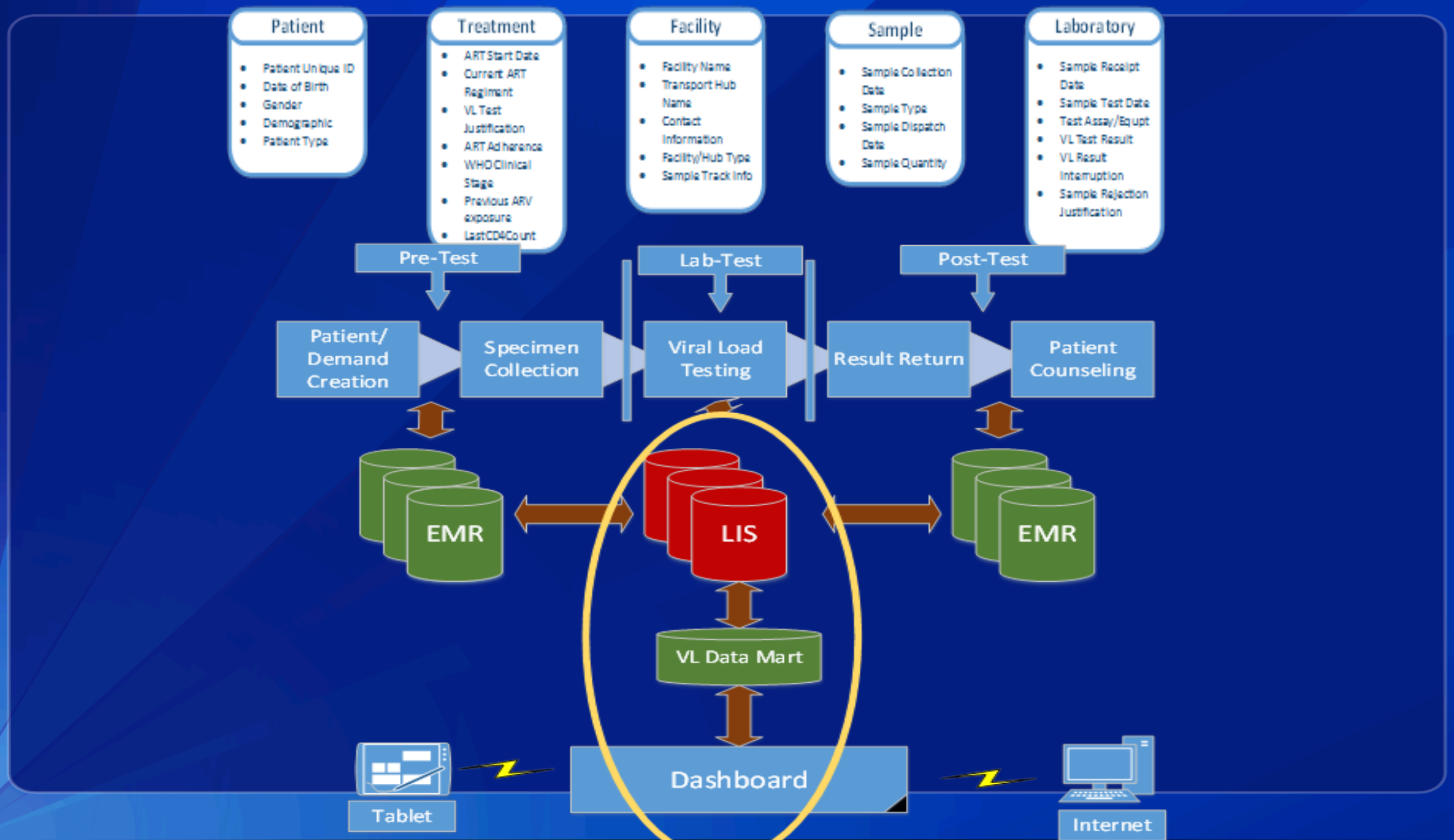
How can program data be used to generate a VL dashboard that helps answer key questions such as:

- **Are there differences in virologic suppression rates among**
  - Men and women on ART?
  - Pregnant or breastfeeding women on ART?
  - Children on ART?
  - Particular sites (by level, classification-scale-up vs maintenance)
  - Samples that are plasma vs. DBS?
- **Are adherence counseling interventions equally able to re-suppress**
  - Children compared with adults?
  - Men compared with women)?

How can program data be used to generate a VL dashboard that helps answer key questions such as:

- **As a measure of quality of viral load services, what percent of samples collected**
  - Rejected due to improper or insufficient collection?
  - Rejected due to incomplete/incorrectly filled out requisition forms?
  - Require repeat collection due to errors within the lab?
- **Are there any specific causes of sample rejections at VL labs?**
- **Are there sample backlogs at a given VL test site?**


Pre-Test
Lab-Test
Post-Test
Patient/ Demand Creation
Specimen Collection
Viral Load Testing
Result Return
Patient Counseling
EMR
LIS
EMR
VL Data Mart
Dashboard
Tablet
Internet


Patient
Patient Unique ID
Date of Birth
Gender
Demographic
Patient Type
Treatment
ART Start Date
Current ART Regiment
VL Test Justification
ART Adherence
WHO Clinical Stage
Previous ARV exposure
LastCD4Count
Facility
Facility Name
Transport Hub Name
Contact Information
Facility/Hub Type
Sample Track Info
Sample
Sample Collection Date
Sample Type
Sample Dispatch Date
Sample Quantity
Laboratory
Sample Receipt Date
Sample Test Date
Test Assay/Equpt
VL Test Result
VL Result Interruption
Sample Rejection Justification
Pre-Test
Lab-Test
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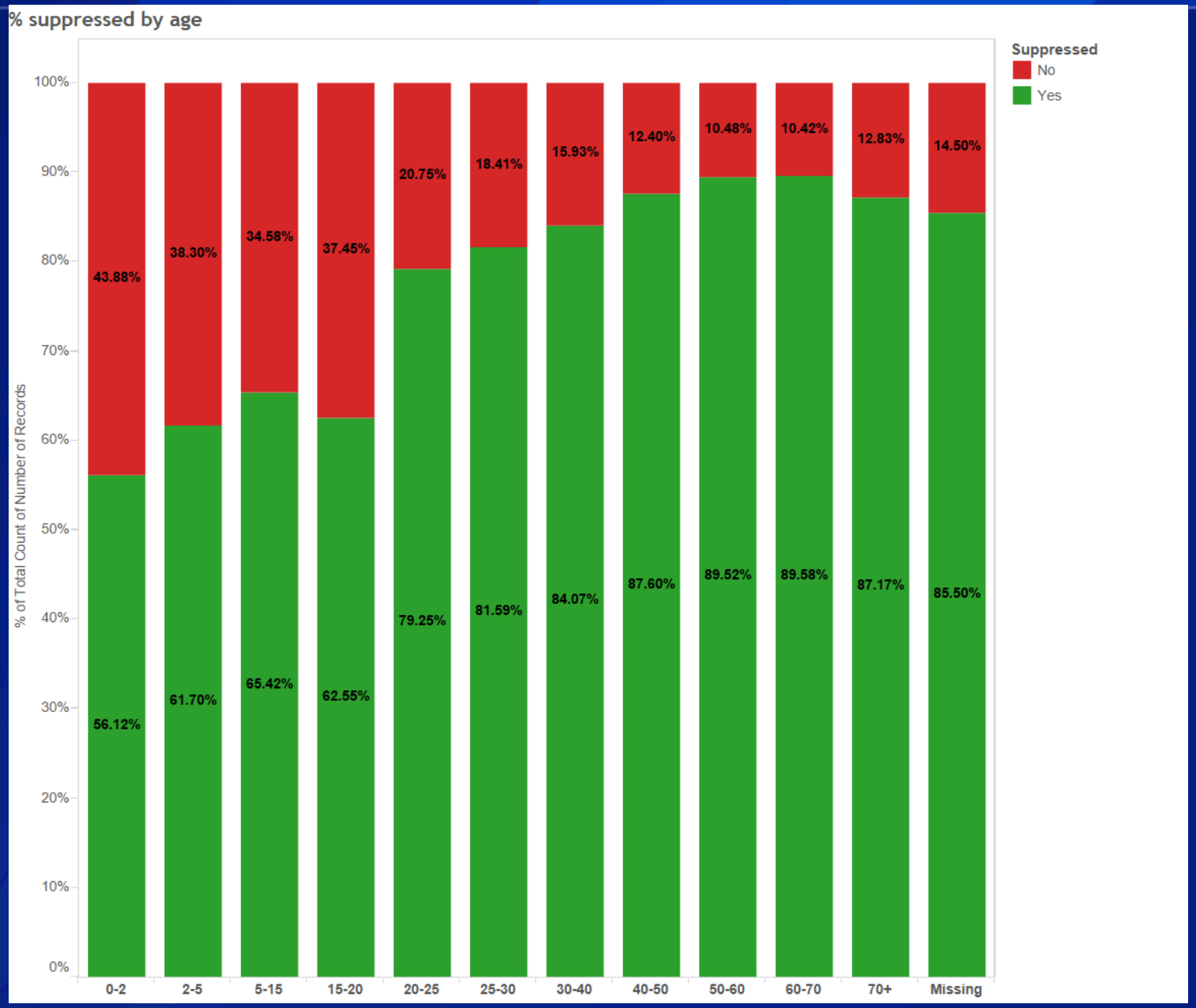
Number of VL Tests per Facility with a VL ≥1000 copies/mL

		VF		VF (%)	
Site	Total	0	1	0	1
1	40	33	**7**	82.50%	**17.50%**
2	1567	1182	**385**	75.43%	**24.57%**
3	180	125	**55**	69.44%	**30.56%**
4	2940	2176	**764**	74.01%	**25.99%**
5	603	445	**158**	73.80%	**26.20%**
6	80	54	**26**	67.50%	**32.50%**
7	410	243	**167**	59.27%	**40.73%**
8	45	28	**17**	62.22%	**37.78%**
9	182	170	**12**	93.41%	**6.59%**
10	19	11	**8**	57.89%	**42.11%**
11	46	33	**13**	71.74%	**28.26%**
12	619	570	**49**	92.08%	**7.92%**
13	148	102	**46**	68.92%	**31.08%**
14	8	5	**3**	62.50%	**37.50%**
15	533	342	**191**	64.17%	**35.83%**
16	76	59	**17**	77.63%	**22.37%**

VL Suppression Rates by Age Category

			Age group		
			<15	≥ 15	Total
VF	0	Count	1083	18952	20035
		% within Age_group	65.5%	81.2%	80.1%
	1	Count	571	4395	4966
		% within Age_group	**34.5%**	**18.8%**	**19.9%**
Total		Count	1654	23347	25001
		% within Age_group	100.0%	100.0%	100.0%



Kenya 2015 Viral Load Data

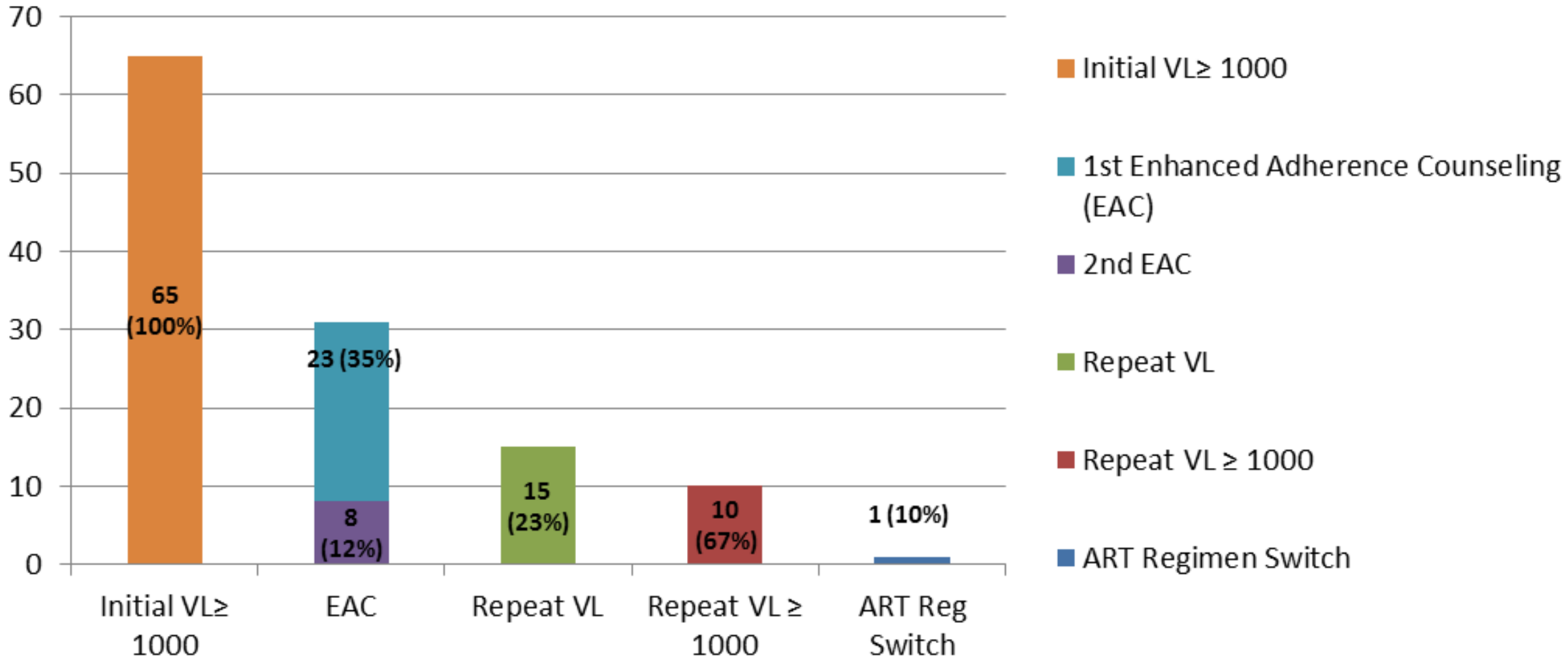
- Includes all indications for VL (routine or suspected failure)

Source: NASCOP website, accessed May 1, 2016

Documentation for Patients with Viral Load ≥ 1,000 copies/mL High VL Register

	Surname	ART no	Age	Sex	Current ART regimen	Reason for VL test	Date first VL taken (DD/MM/YY)	First VL result	1st EAC day result given (DD/MM/YY)	2nd EAC day result given (DD/MM/YY)	3rd EAC day result given (DD/MM/YY)	If further sessions, write date	Expected Date Repeat VL due	Date Repeat VL taken	Result Repeat VL	Date 2nd Repeat VL taken (DD/MM/YY)	Result 2nd Repeat VL	Outcome 1. Switched to 2nd line 2. Remain on 1st line	ARV regimen switch (where applicable)	Outcome date (DD/MM/YY)
1																				
2																				
3																				
4																				

Viral Load Cascade in Adults with an Initial VL Result ≥ 1,000 copies/mL (n= 65)



What do program data tell us?

	ART initiation date	Regimen	VL sample collection date	Date received (by central lab)	Date specimen processed (by central lab)	Date received by Facility	Results	EAC session #1	EAC #2	EAC #3	VL 2 date	VL2 results	MDT date	Outcome
	24/2/ 2015	TDF/ 3TC / EFV	24 Aug 2015	27 Aug 2015	5 Nov 2015	?	31,952	13 Jan 2016			6 Apr 2016	Pending		
Time				3 days	70 days			49 d from processing, 4 months and 17 days from sample collection						

VL Service Quality Assessment

Assess compliance with national guidelines on VL monitoring and management of virologic failure in patients who have initiated ART or are already on ART through:

- Site-level compliance with routine follow-up VL testing in ART patients
- Site-level compliance with interventions for individuals with virologic failure (defined as VL (≥ 1000 copies/mL)
- Whether ARV regimens are changed in a timely manner to a 2nd-line regimen based on repeatedly detectable VL values per national guidelines
- Whether ARV regimens are being changed to an appropriate 2nd-line regimen based on a repeatedly detectable VL values per national guidelines

What is Quality Improvement?

- QI is a systems approach that applies the scientific method to the analysis of performance and efforts to improve it
- Complements quality assurance (QA) – which compares performance to standards (e.g., SIMS)

Model for Improvement

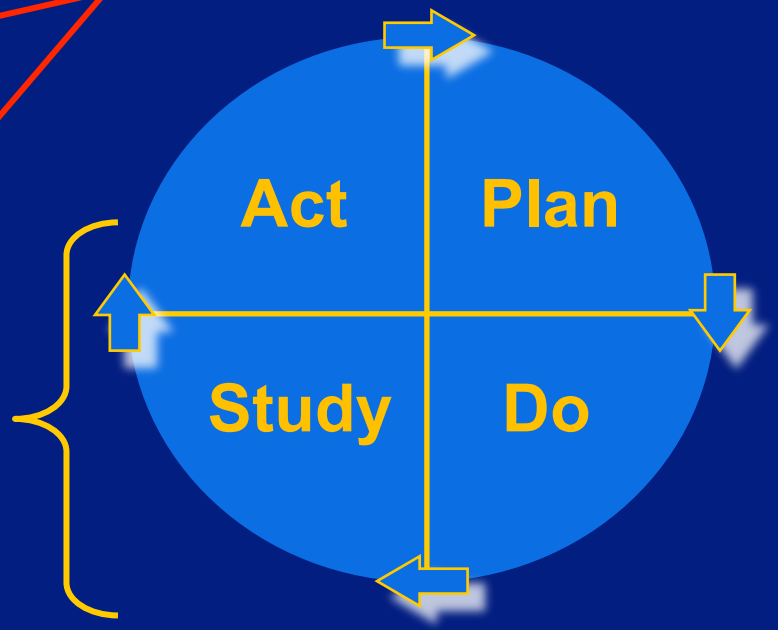
Is there a problem?

1. Determine problem or agree on goal
2. Measure baseline
3. Discuss reasons for baseline status
4. Set target objective
5. Make a plan (including measurement)

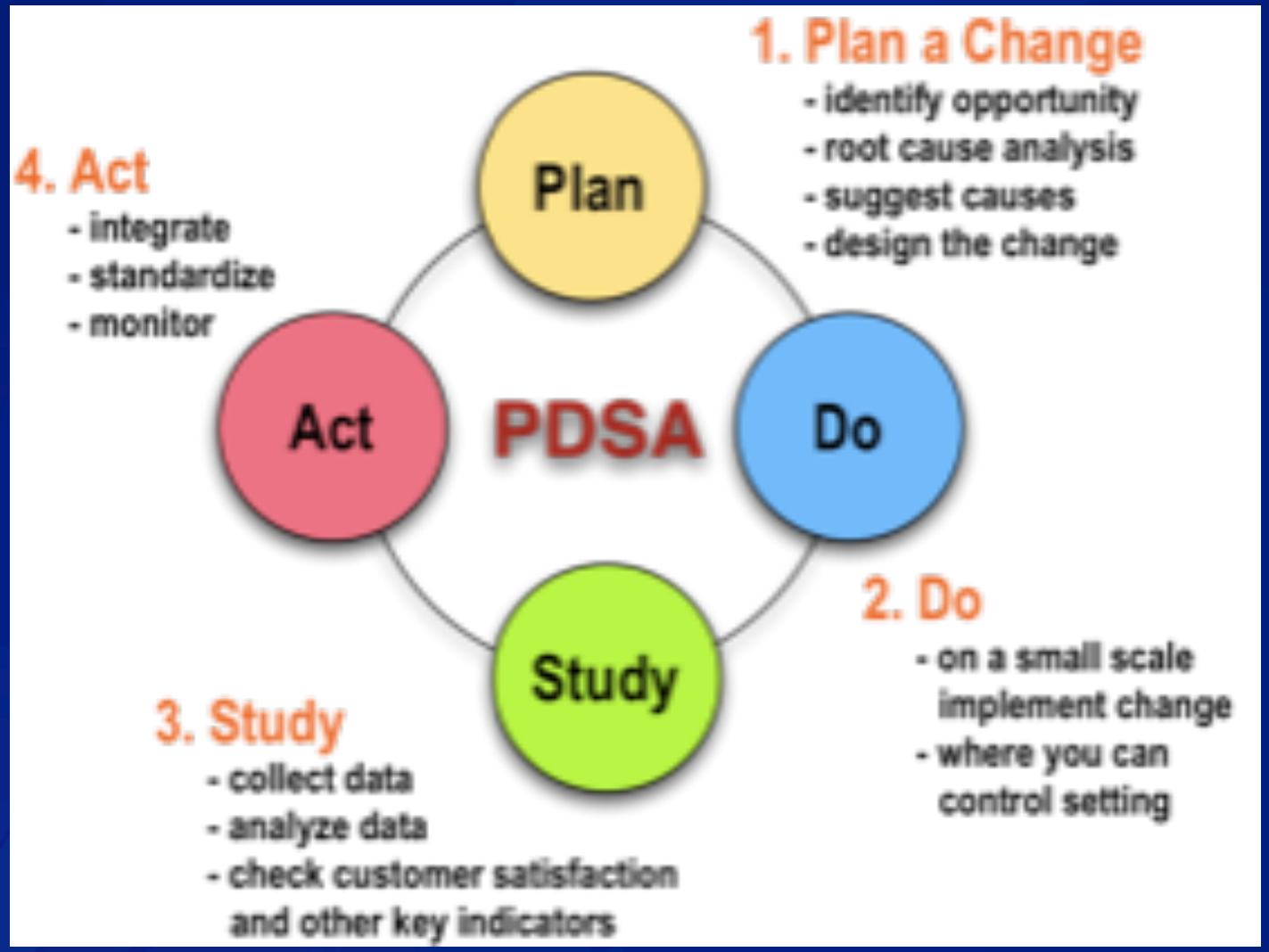
What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?



Quality Improvement Projects at a site



QI Team X Hospital

QI: A cyclical process of measuring and improving a process or processes within a system

QI Project Steps

- Step 1: Identify and meet with the **right stakeholders**
- Step 2: Agree on **problem** statement and **goal**
- Step 3: Get or review **baseline data** and clarify issues, understand reason for gaps
- Step 4: Agree on action **PLAN** with measureable indicators and targets.
- Step 5: Assign roles, responsibilities, and timelines
- Step 6: **DO**
- Step 7: **STUDY** results
- Step 8: Take **ACTION** to spread the gains, or revisit action plan

Problem Statement

- Start by describing the scope of the problem with numeric, geographic details (what, when, where)
- What are the negative results of the problem?
- Avoid including solutions

Examples of Problem Statements

- In facility X during Q2 of 2016, only 35% of ART patients with virologic failure received 1 EAC session
- In facility X during Q2 of 2016, only 23% of ART patients with virologic failure had a repeat VL
- In facility X during Q2 of 2016, only 10% of ART patients with repeat documentation of virologic failure had an ART regimen switch

Aim Statement

Should be specific, measureable, achievable, realistic, and time-limited

(SMART)

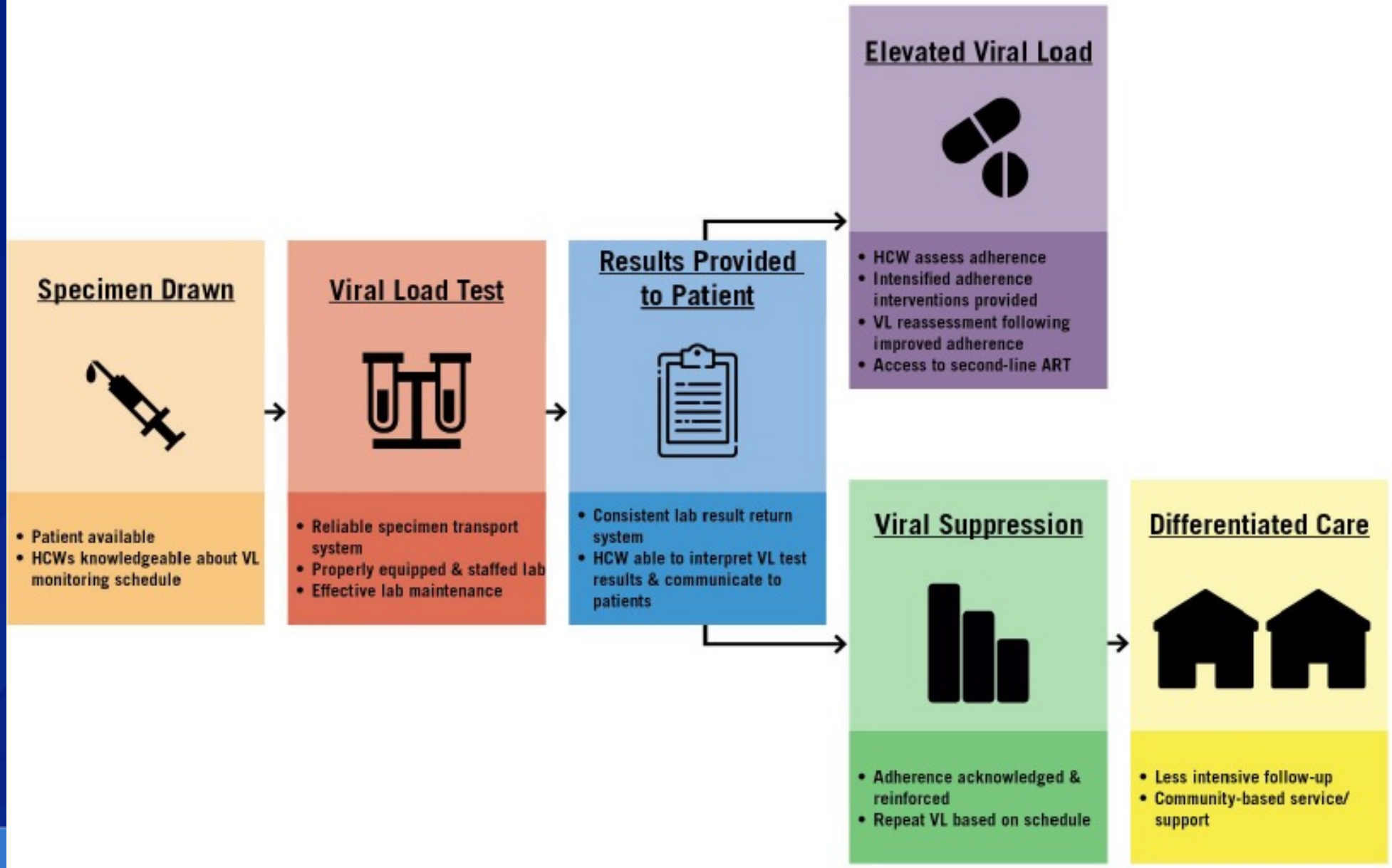
Aim Statement

By October, 2016, facility X will implement a high VL register where ART patients with VL results ≥ 1000 cp/mL have dates of EAC sessions captured, reviewed by the site VL focal person weekly to identify patients who have not received an EAC session within 6 weeks of the high VL result, and contact tracing procedures initiated by the adherence counselor to improve compliance with EAC 1 sessions from 35% at the end of Q3 to 60% at the end of Q4 2016

Invite Stakeholders

- Include those closest to the work
- Include decision makers
- Include the consumers and the community when possible

VIRAL LOAD CASCADE



Take Home Messages

- Essential to establish systems and monitor all steps of the pre- and post-test facility cascade to ensure routine VL monitoring achieves maximum impact
- Key to understand VL data by age group, priority populations
- Critical need to strengthen the laboratory-clinical interface and the use of data to drive decision making
- Critical to utilize routinely collected data: construct, review and utilize data from site level VL cascades
- Leverage existing data sources, understand what it can tell you and how can it be used

Challenge

- What data analysis and use plan does your country have /will plan to develop?
- How can you ensure that data from program and lab are being used and shared most effectively? Can you have routine interdisciplinary reviews VL performance?
- Can you identify opportunities for Quality Improvement (QI) using VL data for patient outcome and program improvement?

VL Dashboard for Clinical Mentors

- # tests/site by sample type (DBS vs plasma)
- Test results categories: TND, < 40, 40-999, ≥ 1000 copies/mL
- Age disaggregations <10, 10-14, 10-19, > 14 y/o (discuss the pediatric/adolescent disaggregation given importance of identifying issues with virologic suppression in different groups
- Indication of testing (routine vs targeted), pregnant/BF
- % of virologic suppression (<1000) vs virologic failure (> 1000)
- % who received 1st/2nd/3rd Enhanced Adherence Counseling (EAC)
- % who received follow up VL test
- % who were switched to 2nd line
- % that were suppressed on repeat test (VL2)
- % switched to 2nd line ART
- % with VL result after switch (VL3)
- % suppressed after switch to 2nd line (VL3_VS)