

# Mozambique Case Study

## Conducting a Quantitative EMR-Based DPR

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**Designation: Care and Treatment Lead**



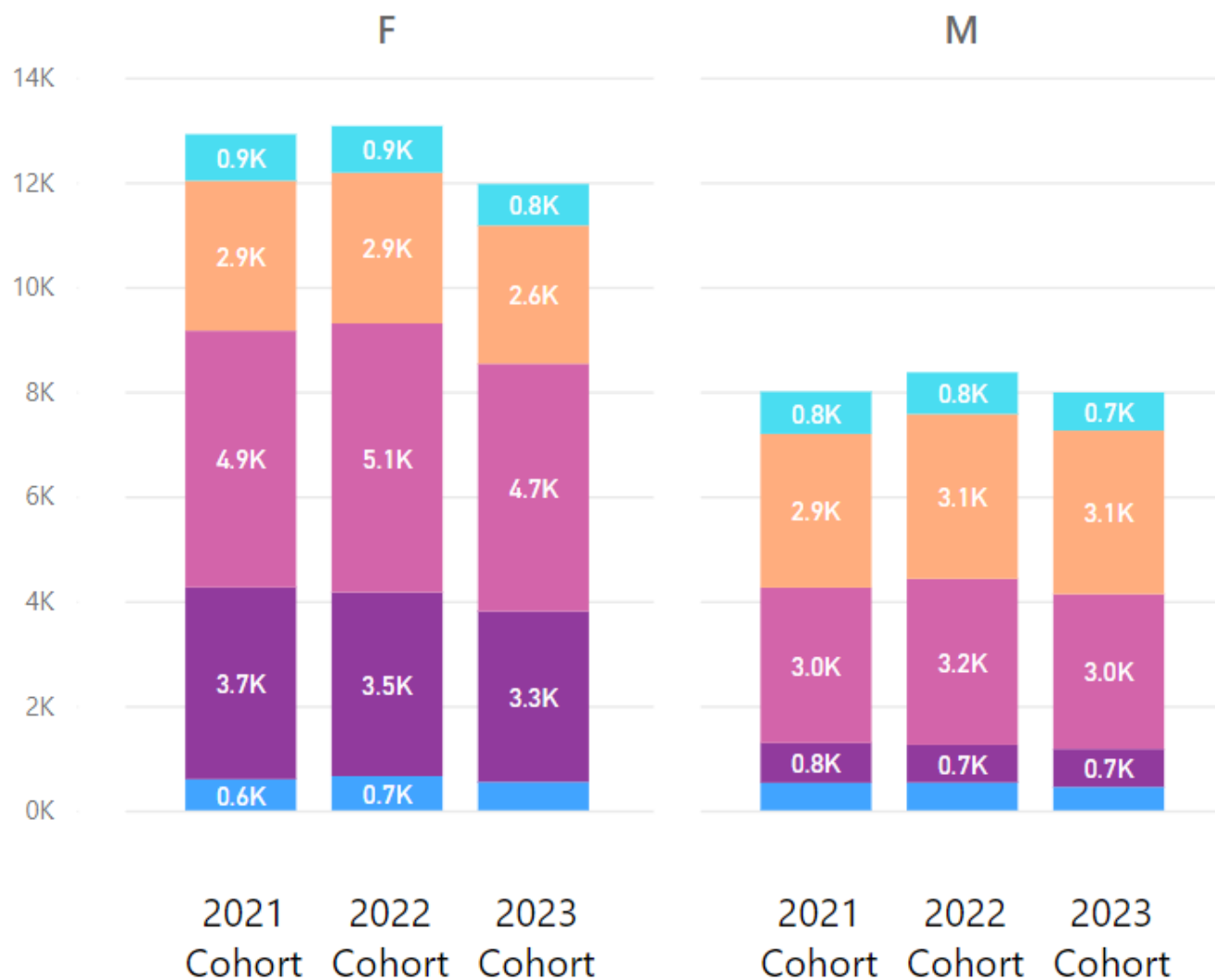
# Presentation Outline

1. Background and Context
2. Requirements Gathering: Overview
3. Demonstration of the Requirements Document
4. Query Layout, Reporting and Development
5. Preliminary Results
6. Next Steps and Recommendations



## EMR Cohort by Sex and Age Group

Age: ● <15 ● 15-24 ● 25-34 ● 35-49 ● 50+



## Background

- Mozambique has been implementing DPRs since 2021
- The 2024 [4<sup>th</sup>] quantitative DPR involved an EMR data-pull which translated to a sample size of 62,291 RoC
- To include the DPR in the EMR, Mozambique needed to define the indicators and outcomes, which were included in a “Query Requirements Document.” This process will be presented in this tools lab

# Query Requirements Document

- For any report generated in the PEPFAR supported EMR, a query requirements document (document which defines the data elements and calculations to be used) is collaboratively developed
  - This document is discussed in the thematic TWG [in this case the DSD TWG] with representation from the MoH, IPs and PEPFAR
  - The requirement document is updated by the HIS team at CDC
  - Final review is done by the TWG and approved
  - The DPR EMR data-pull can is then “pushed” to the HF and available in the local OpenMRS instance

The query requirement document include:

- Version history
- Introduction and Context for the Query
- Scope of the Query
- References (to other MoH documents)
- Sources for the report
- Definitions of the requirements
- Technical specifications

The main sections that include discussion points are the definition of the requirements (how to create the query) and the technical specifications (how different items are defined, often based on other reports)

# Review of the Requirements Document for the EMR-based DPR

Take 30 seconds to review the documents requirement, found at the link below:



# Key Steps in EMR Query Development and Reporting

Query Development and Layout

Reporting

Using the requirements document, the HIS team develops an SQL query

SQL query is included in the quarterly OpenMRS updates and pushed to all the HF with an EMR

The layout of the output [in excel] is discussed e.g. HF name, HF national code province, district etc.

Each HF generates a report from the OpenMRS server

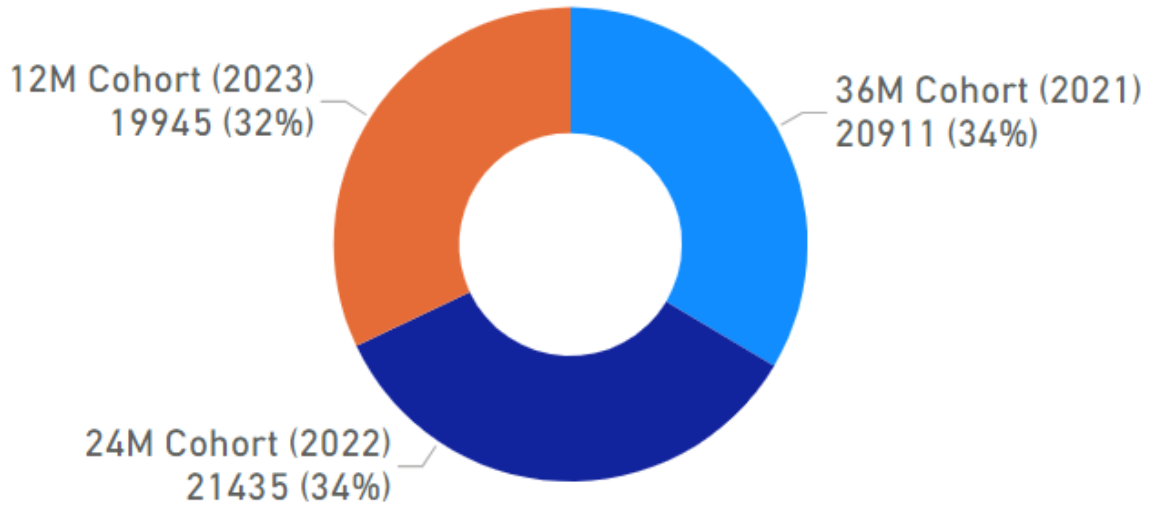
For national DPR reports, each HF runs a report and sends to the provincial level for data merging and generation of a single provincial file

The EMR data-pull is then shared for analysis, interpretation and to inform QI initiatives

# DPR Results: Cohort Characteristics

Total number of RoCs sampled  
**62,291**

Preliminary Results from the EMR DPR with >62,000 RoC in the sample

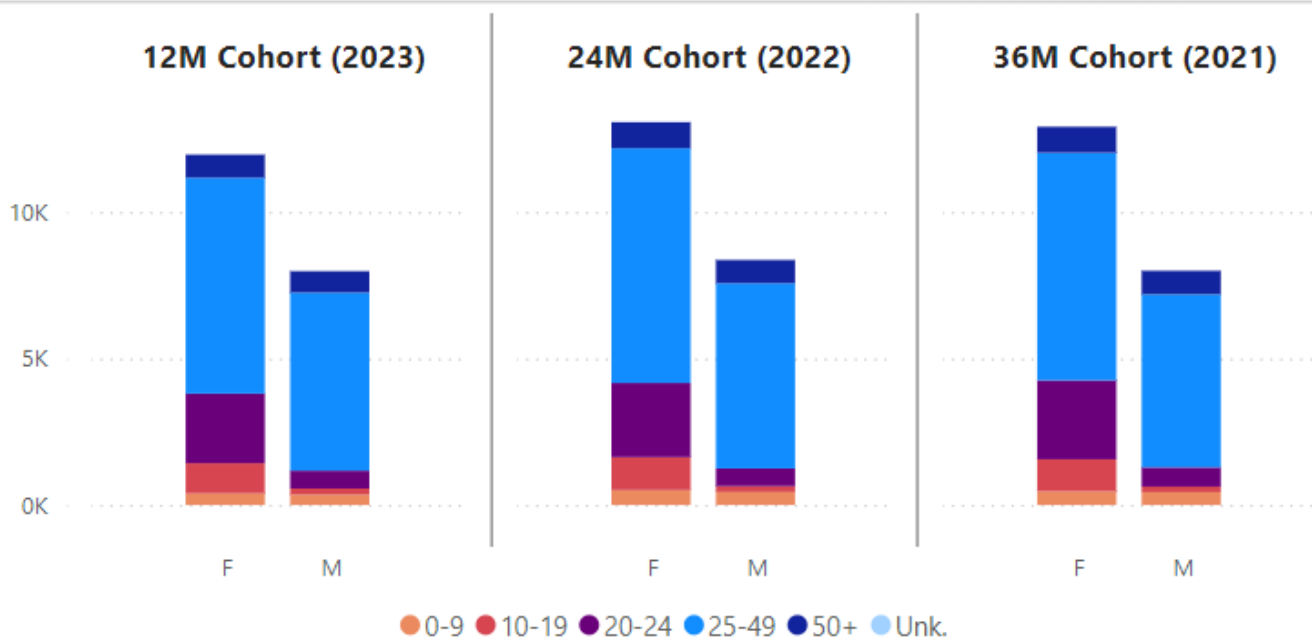


Sex	Count	%
F	37,946	61%
M	24,345	39%

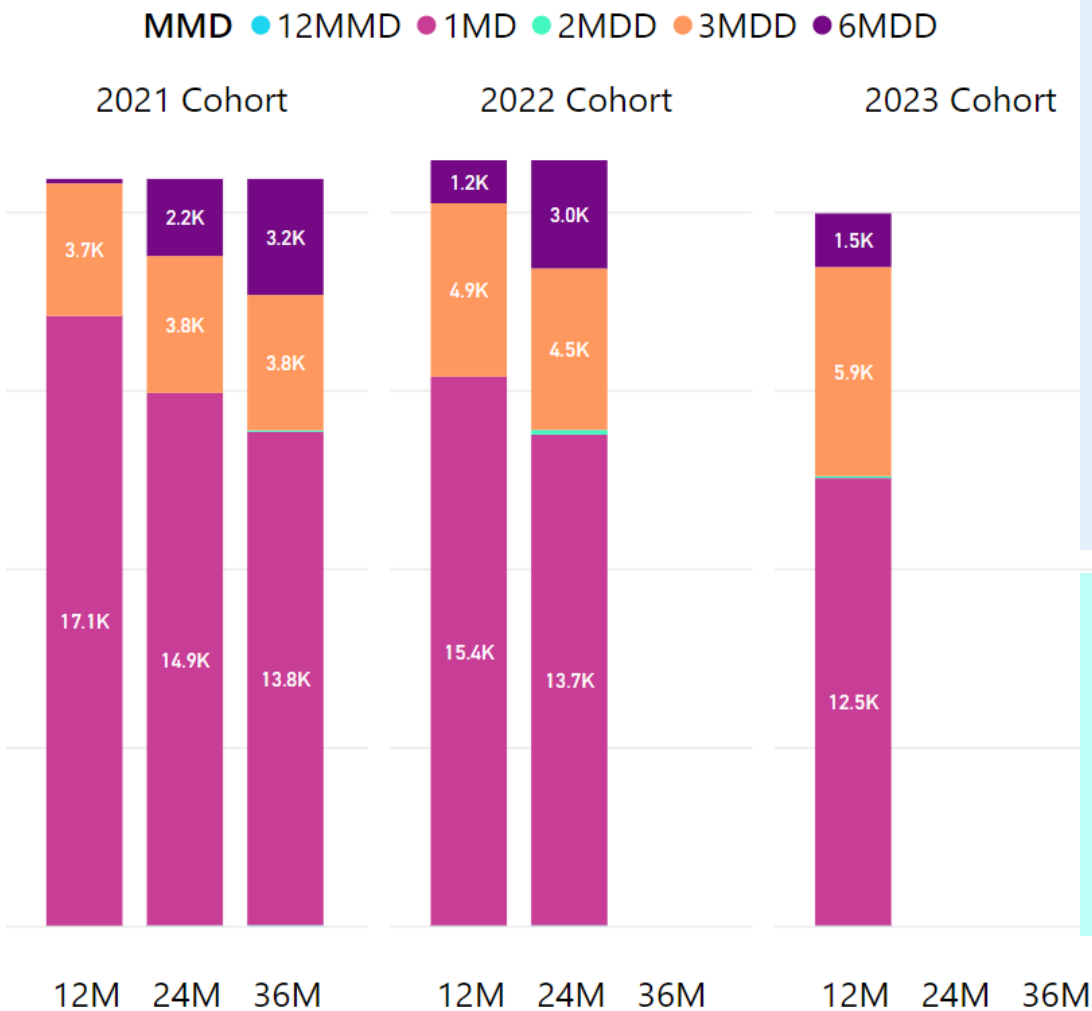
Age Group	Count	%
0-9	2,621	4%
10-19	3,828	6%
20-24	9,487	15%
25-49	41,456	67%
50+	4,897	8%
Unk.	2	0%

Cohort Label	Count	%
12M Cohort (2023)	19,945	32%
24M Cohort (2022)	21,435	34%
36M Cohort (2021)	20,911	34%

province	Count	Percent
Nampula	12,252	20%
Cabo Delgado	8,926	14%
Tete	6,439	10%
Manica	6,267	10%
Sofala	6,053	10%
Zambezia	5,545	9%
Maputo Cidade	4,336	7%
Niassa	3,745	6%
Inhambane	3,499	6%
Maputo Province	2,741	4%
Gaza	2,488	4%



# DPR Results: Methodology and Key Findings



- The coverage of MMD increased from 18% [12m, 2021 cohort] to 37% [12m, 2023 cohort]
- The preference for 6MMD is clear from the rapid growth from initial implementation in 2021

- The DPR cohorts are equally distributed
- Cohort size was for TX\_NEW within the first 6 months of the year



# Lessons learned

- ❑ From the 2<sup>nd</sup> Round of DPR query revision in Nov. 2024, 15 more additional indicators were included
  - Unexpectedly, the generation of the HF reports after this update took >24 hours and forced the national team to cancel the request
- ❑ **Lessons Learned:**
  - In-depth testing of the SQL scripts in real-life datasets before deployment is critical
  - Set realistic expectations with the amount of data pulls from the EMR

# Recommendations

- The layout of the report presented in this tools lab is not the recommended for flexibility in visualization, as each line contains multiple indicators
- The recommended layout, especially when working with tools such as PowerBI and Tableau is to use the “Long” format, in which each line has the RoC demographic information and a single indicator. This allows significantly improves data visualization and analyses

Wide Format

Team	Points	Assists	Rebounds
A	88	12	22
B	91	17	28
C	99	24	30
D	94	28	31

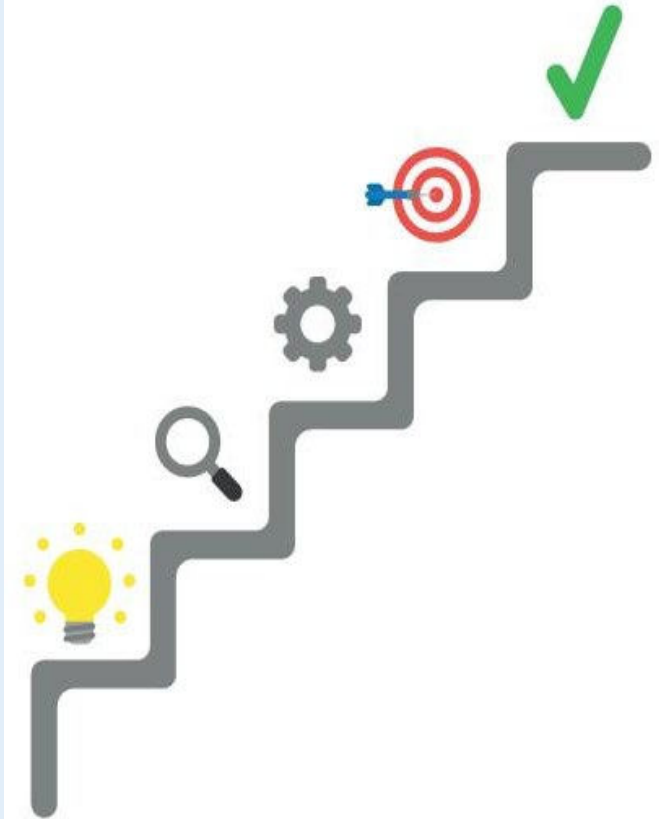
Long Format

Team	Variable	Value
A	Points	88
A	Assists	12
A	Rebounds	22
B	Points	91
B	Assists	17
B	Rebounds	28
C	Points	99

- Using EMR for a qualitative DPR is simple and highly impactful, allowing for a super sample.
- Preparation is key for a successful DPR EMR including testing of the queries in real-life situations
- With the increased ease in EMR data-pull, including additional data elements that may not be directly impacted by the HIV Program (i.e. comorbidities or synergistic services) can be vital in 'painting' a more holistic picture of DSD in the country
- A qualitative component is essential to help explain some trends that quantitative data may not

## Next Steps

- Reviewing the DSD EMR query to identify issues that led to the longer run time (>24 hours)
- The HIV program is in the process of transitioning a selection of the EMR reports, potentially including the DPR, into a longitudinal database [~650 sites with 1.6m RoC]. This will facilitate routine review [on a quarterly basis]





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cquin.icap.columbia.edu

Link to Documents



Thank You!

