



The Public Health Mentorship Programme: An Intervention Model for Scaling Up and Strengthening Service Delivery in Low Resource and Hard-to-Reach Settings

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Authors' contributions

This work was carried out in collaboration among all authors. Authors GCO, PSD, CM and OKO managed the conceptualization. Author GCO wrote the original draft. Authors PSD, CM, OKO, RBK, UE and EOAJ contributed to data analysis, visualization and review of the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Background: The Clinical Mentorship Programme (CMP) is an organized form of PHM programme, which was deployed as a pioneer public health intervention and modelled to support existing interventions and other ongoing strategies to catalyze better outcomes in the HIV Control Programme in Rivers State, Nigeria. CMP as a form of PHM is untested mainly in Nigeria. It is a structured intervention to complement the effort at bridging the gap of huge unmet needs in HIV

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service delivery in a low-resource setting, marked by a difficult terrain and security challenges. The rationale was to catalyze quality improvement in targeted indicators using locally tested initiatives, build the capacity of local teams, promote a culture of problem-solving attitude at the site level and strengthen team effort between the Institute of Human Virology, Nigeria, Government Agencies and beneficiary community.

Methodology: The CMP was implemented in the State HIV control Programme from about July 2019. The SCMs were chosen as medical doctors and trained to have the requisite knowledge to build staff and improve the quality of the HIV control programme.

Results: Two years after the introduction of the CMP, the capacity of teams was successfully established in a team command structure, which led to improvement in key performance programme indicators.

Conclusion: The CMP accelerated and supported the successful reduction in unmet treatment needs in the Rivers State HIV Control Programme within two years of its implementation. It is further recommended to be adapted in other public health programmes as a form of Public Health Mentorship to optimize service delivery in areas challenged by the high unmet need.

Keywords: Clinical mentorship; HIV; unmet needs; team building.

1. INTRODUCTION

1.1 Public Health Mentorship (PHM) Programme

Mentorship practices to achieve better outcomes are quite common within the public health Space. The Clinical Mentorship Programme (CMP) is an organized form of the PHM programme, which was deployed as a pioneer public health intervention in addition to other ongoing strategies and modelled for the first time in the country to support existing interventions in the HIV Control Programme in Rivers State, Nigeria. The clinical Mentorship Programme (often used interchangeably) is largely untested in Nigeria as a form of Public Health Mentorship Programme (often used interchangeably). It is a structured effort deployed for the first time as the Clinical Mentorship Programme (CMP) in Rivers State, Nigeria, to complement the effort at bridging the gap of the huge unmet needs in HIV service delivery in a low resource setting marked by a difficult terrain and security challenges. Public Health Mentorship has the potential to change the current trends for healthcare systems struggling with resource constraints, terrain difficulties, and capacity to meet ever-growing needs in service delivery. The PHM programme can also be applied as a countermeasure against expanding gaps in service delivery to catalyze better outcomes in a wide range of public health intervention programmes (See Fig. 1). As a

paradigm attempt, Public Health Mentorship (deployed as clinical mentorship in its pioneer effort in Rivers State, Nigeria) can be defined as a systematic exercise of capacity building and deployment of problem-solving interventions aimed at achieving health system strengthening for sustainable, high-quality clinical care outcomes by using indigenous medical experts trained in the essence.

The main aim of the Public Health mentorship programme implemented as a clinical mentorship programme was principally to foster the establishment of local *teams of teams* with improved capacity to achieve objectives in small clusters and accelerate the achievement of quality improvement using locally adapted problem-solving intervention models within the programme structure. Therefore, the PHM was conceptualized to co-create and replicate the *team of teams* as described by General Stanley McChrystal [1] but only in the contexts of health care delivery. Public health mentors can be conveniently integrated to fit into many programmes within the public health space in challenged localities (See Fig. 2). The concept shows how the pedigree of integrating a local indigenous expert – the mentor, can support capacity building of the local implementation team and engenders programme ownership. This infusion within the intervention teams is a formidable health care model for achieving programme needs.

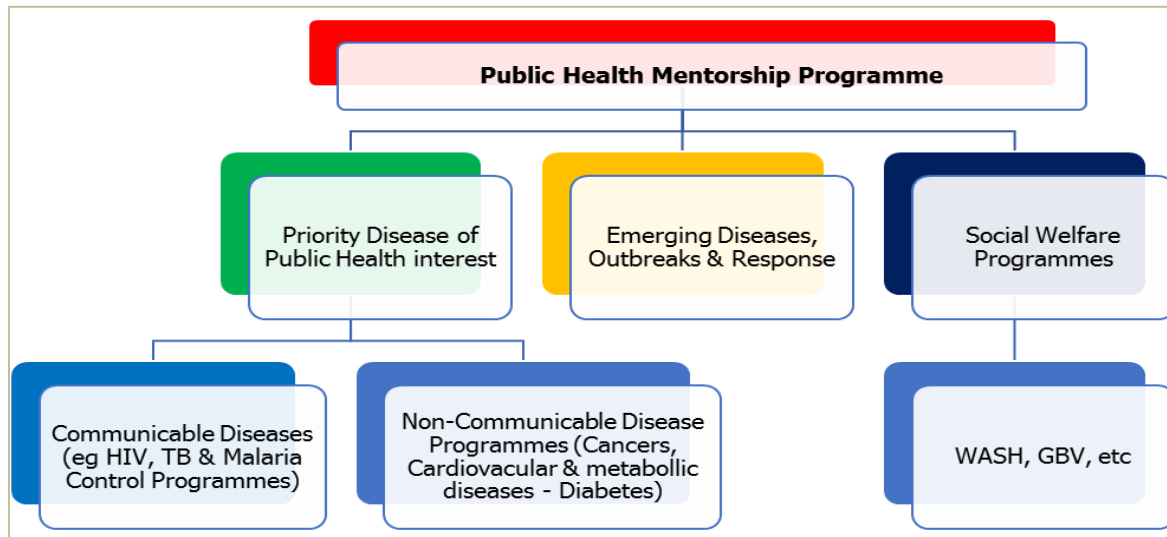


Fig. 1. Consideration of programmes where the PHM can be deployed for better outcomes

2. METHODOLOGY

2.1 The Team Command Structure Design

The PHM was deployed as a modified command system that can be referred to as a team command structure which was adapted from the Incident Command Structure [2]. A command system was established in a PHM programme for ease of coordination and response. Practically, Public Health Mentors were assigned to oversee small clusters (e.g., Local Government Areas) and report centrally to a Chief Clinical Mentor (of the State), in the State HIV Control Programme, in a commander structure modelled as an adaptive paradigm reflecting shared consciousness and vision. It differed from the old traditional methods of working in silos [3].

2.2 Organizational Framework

The PHMP is led by the team Incident Commander (IC) at the State level. The IC identified key priorities, challenges, and opportunities within the programme. The IC shares the vision of the entire programme to achieve desired programme objectives. The IC motivates the team and leverages on the innovative technical strategies adapted to local exigencies in scaling up and strengthening service delivery. The output from the deployed strategies by each team around the thematic areas of the vision becomes the subject of periodic evaluation with the mentor & team as the key responsible party. The team command system eliminates routine bureaucratic *red-*

tapeism by enabling local responsiveness yet shared accountability while keeping up with a common project goal.

This PHM concept draws richly from the motivational book “Team of Teams: New Rules of Engagement for a Complex World”, written by General Stanley McChrystal of the US Army [1], and it supports the idea of creating a team of teams to foster cross-silo collaboration [4,5]. The small teams are a mix of technically sound and knowledgeable local human resources (See Fig. 2), which coalesced from small units at the clusters. Despite operating in different sectors, the rationale of creating a responsible, adaptive and focused team of small clusters with a unified team spirit determined to meet the common goals of service delivery is justified for adaptation and deployment in health sector programming [1].

In further strengthening the structure, the PHM takes into consideration that programming for disease control in the health care delivery sector, where various interventions mirror the *combat* nature of the response and are modelled as “man” on one side and the disease as the “enemy” on the other side [6]. So, programmes have been named in that context as *Combat HIV* [7], *kick out polio* [8], *Eliminate Malaria* [9], *fighting gender-based violence* [10], etc. These command systems have combat names as personifications akin to military metonymies and engagement patterns. The overall goal of these command systems is to secure a win over a “common enemy” – the disease. In this context,

Organization and Structure of Clinical Mentors in the State

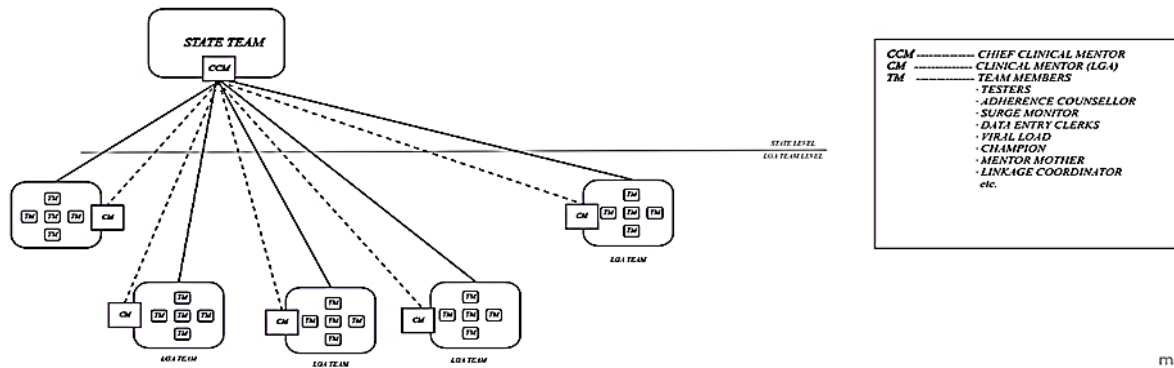


Fig. 2. PHM operational framework

the overall goal is to control and contain the disease or health-related challenge. To this end, there was interest in General Stanley McChrystal's successful sojourn in a difficult terrain, which had been built on an incident command structure with small teams making up a bigger team, who took responsibility, co-created ownership, shared awareness and strengthened knowledge to reach the desired objectives by the injection of capable local human resource at cluster levels of care. This guarantees disciplined, focused and effective countermeasures in sectors seeking to achieve timely program success in challenging environments [1]. This was adapted in the health care sector in Rivers State, as the PHM/CM programme. It mirrored this concept by engineering a cluster of teams technically catalyzed for success by an indigenous expert – the clinical mentor.

2.3 Considerations in Setting up the Mentorship Programme

Setting up the program in the locality involved, setting agenda for quality improvement (defining priority and targets), creation of clusters for mentorship based on needs within the locality based on the burden or poor accessibility to care etc.; the recruitment of the mentors for selected clusters, Local Government Areas (LGAs) or sites, engagement of a coordinating Chief Clinical mentor from the State service, training and orientation of mentors, setting out reporting template & tools, metrics for analysis and pattern of recurrent evaluation for tracking progress towards quality improvement. The PHM as a

problem-solving model leverages a structured but routine process of continuous outcome evaluation as exemplified in the Clinical Mentors programme pioneered in Rivers State.

2.4 Intervention

2.4.1 The CMP implemented as an example of the PHM programme

The CMP in Rivers State was a pioneering public health intervention implemented within the State AIDS/STI Control Programme of the State Ministry of Health within the Rivers ART Surge Project (RSP) context as an example of a Public Health Mentorship Programme [11]. While the actual Implementation of the RSP began around April 2019, the CMP was rolled out in July 2019 with the appointment of the State Director of Public Health Services as Chief Clinical Mentor to coordinate the programme. The CMP was built on the PHM design with lessons learnt from a similar mentorship model used in Zambia to strengthen service delivery in the HIV programme [12]. The CMP was mounted on two key pillars: build the team's capacity (in a team incident command structure) and achieve time-bound performance targets. Subpopulation cluster targets were generated from gaps derived from the baseline survey [13], and the need to reach the UNAIDS fast track strategy of 95-95-95 [14] was prioritized. The rationale was to engender quality improvement targeted indicators (diagnosis, retention and viral load suppression) using locally tested initiatives, build the capacity of local teams, engineer team bonding, foster integration of services, inculcate

a culture of problem-solving attitude at the site level as well as promote collective ownership, shared consciousness & team responsibility between the implementing partner, Government Agencies and beneficiary community.

2.4.2 Selection and deployment

There was a deliberate effort to have an indigenous context to HIV service delivery while setting up the clinical mentors' programme. This effort was achieved through a structured and transparent recruitment process which enabled the hiring of dedicated staff to meet the objectives of the mentor's programme. The hired mentors provided on-site clinical training/mentorship to all programme staff, including the clinic and ad-hoc staff, in the assigned cluster's key areas of service delivery. They assisted local teams in identifying key bottlenecks affecting access and uptake of HIV services, thereby promoting shared consciousness and responsibility. The Clinical Mentors (CMs) also supported innovative interventions in HIV service delivery at the community level. A weekly virtual review meeting with all principal team members and relevant stakeholders was held to evaluate progress and share best practices for a better outcome. The clinical mentors were recruited critically to meet these responsibilities. The Chief Clinical Mentor (CCM) coordinated the State Clinical Mentors (SCMs).

The SCMs were chosen to be medical doctors with a broader understanding of the common

mentoring needs of all members of the team across the HIV treatment and service cascade of the cluster. Only medical doctors who were familiar with the local environment and language and willing to reside within their assigned Local Government Areas (LGAs)/clusters were eligible for recruitment and engagement. The CMs had a good capacity to use Microsoft Word, PowerPoint and Excel sheets. However, before deployment, the mentor's capacity was further strengthened through a five-day training on computer/excel systems, HIV Programme guidelines, the mentors' programme reporting tools, site-level analytics (fishbone, problem tree and trend patterns, etc.), common programme strategies, team building & bonding, use of virtual platforms for programme evaluation, quality improvement cycle (The PDSA cycle), the concept of epidemic control and the objectives of the RSP. The CMs were then deployed to respective LGA/clusters of posting based on gap analysis to strengthen the HIV Control Programme in the State.

2.4.3 Team command structure in CMP

An initial team of 15 clinical mentors (medical doctors) were recruited and coordinated by the CCM. Each of the CMs was deployed to support the HIV programme in the assigned Local Government Area. The State Team was comprised of the Chief Clinical Mentor (the Director of Public Health in the State), the State AIDS Programme Coordinator (Government Staff) and IHVN Project Director (Implementing Partner). At the LGA, a listing of prospective mentees in the HIV programme of the RSP

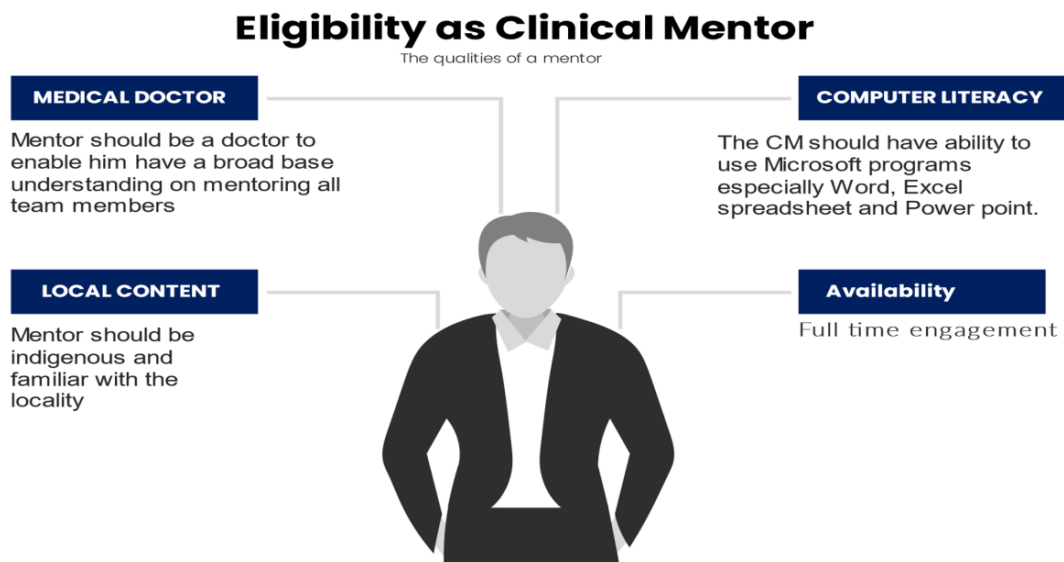


Fig. 3. Qualities of the clinical mentor in the RSP

includes doctors, nurses, laboratory scientists, pharmacists and record officers in the facility, as well as community pharmacists, facility thematic focal persons, and ad-hoc staff, including case managers, surge monitors, trackers, adherence counsellors, index testers, data clerks, viral load champion, mentor mothers, and expert clients etc. The advantage of this engagement was not only in galvanizing government ownership in the programme but also in co-creating a foundation for local programme integration and sustainability, a critical need for better network governance [3].

2.4.4 Quality Improvement: The mediator concept of the CMP in the RSP

To achieve quality improvement in the programme, the mentors in the CMP of the State HIV Control Programme were involved in identifying the top challenges and rate-limiting steps at the site level. Then, working with the respective cluster teams, develop & implement simple, actionable, innovative plans to solve these challenges at the site level. This effort alters the moderator variables in the programme. Therefore, by implementing these locally adapted innovative strategies, the efficiency of available resources was greatly potentiated. In this instance, the independent variable is catalyzed by a mediator-modulator intervention that ensures the achievement of a high-quality dependent/outcome variable in good time.

The mentors' programme deployed several locally relevant strategies in the mediator

segments of the cascade of care to strengthen the operative moderating variable around the dependent variable. Generally, the mentor teams deployed mediator variables like building staff capacity (hand holding mentorship for mentees), purpose fit service delivery strategies (for instance, specific care patterns like evening drug refill for farming communities) and also strengthened team bonding (by encouraging group meetings and regular discussions of selected strategies). Therefore, the manpower input (independent variable) was better placed to achieve the objectives of the RSP (dependent variable) in the State HIV Control Program within the expected timeframe, keeping in mind the unique local challenges, peculiar difficulties of the terrain which retard the effectiveness of the mediator variable in the value chain.

For instance, Viral Load Suppression in eligible (denominator) is the desired outcome indicator (Dependent variable). The independent variables include manpower, materials, drugs, etc., deployed to the site for patient care to achieve at least 95% of the outcome indicator in the eligible cluster. A common rate-limiting step (moderator variable) in this domain is the *sample collection rate (coverage numerator) rate* in the cluster or LGA within the review period. If more than 95% of viral load samples of eligible are not collected, the dependent variable cannot be achieved. This rate-limiting step can be favourably modified if the team is strategically guided. The CMs tactically enabled the deployment of relevant site-specific problem-solving strategies, including line listing, phone calls, text messages, merging

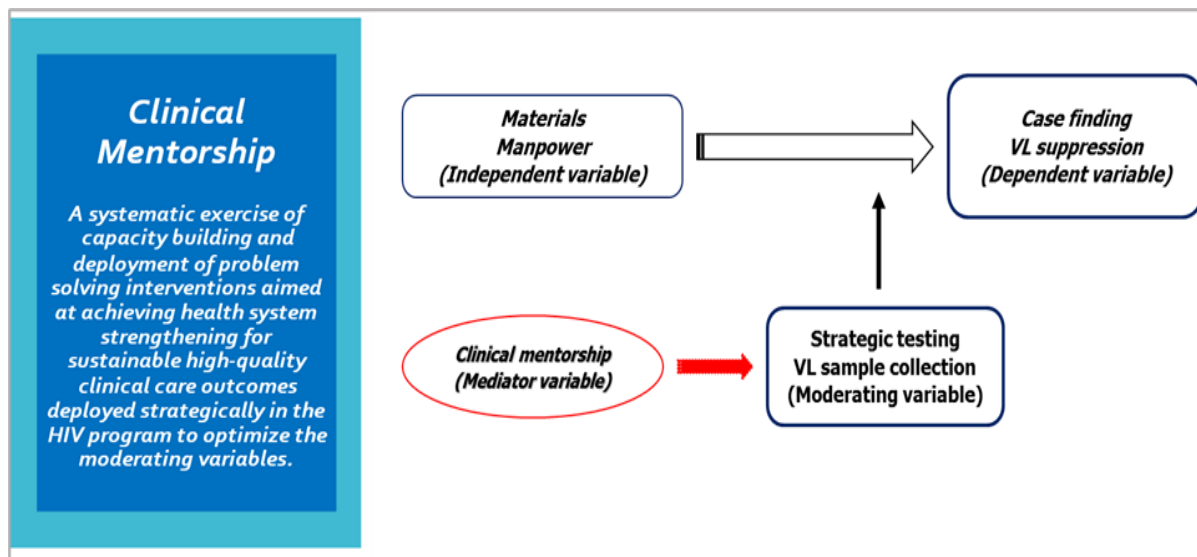


Fig. 4. PHM Problem-solving model

with drug pick up in the clinic with sample collection invitation, use of DBS kits in hard-to-reach areas, community sample collection through home visits as well as capacity building, and site mentorship of the phlebotomist etc. to improve the overall *sample collection rate* for the cluster. The CM assumed the responsibility of guiding the team to deploy targeted strategies applicable in the locality to achieve modifications around the rate-limiting moderator variables. So, the CM helps build a locally smart service delivery team with a clear and collective focus on the objectives. This eliminated the traditional method where implementing partners, community-based organisations, and Government teams often work independently in their respective silos and lack the benefit of local technical guidance, epidemic intelligence, and unity of purpose within the traditional command.

2.4.5 Programme Monitoring in the CMP

The CMP monitored segments of epidemic control indicators for quality improvement. Process indicators were selected and routinely tracked. The selection considers routine indicator-based surveillance, event-based surveillance among cohorts, and early warning indicators as applicable in public health settings for epidemic intelligence in the HIV control program. The selected indicators give a representative picture of the team effort along the 95-95-95 targets for epidemic control in each segment (See Fig. 5). The selected indicators were simple to monitor and sensitive to effort

when subjected to evaluation. Achievements are measured as trends and compared with set targets and similar clusters. The indicators can be measured in absolute numbers as well as rates or percentages against targets. The indicators were mainly but not limited to process variables. These were reviewed weekly and collectively for performance measurements.

2.5 How to Improve the Outcome Indicator by Modifying the Process Variable

The mentor is positioned in the team to make key recommendations for programming within the cluster that improve the processes that determine the outcome indicator's value. In the State HIV Control Programme, the input variable (kits, manpower, etc.) is deployed to the site, and 95% viral load suppression is an important outcome indicator to be achieved. However, the critical process indicator set for monitoring by CMP was the viral load sample collection rate over the period of review because 95% cluster viral load suppression cannot be measured adequately or achieved except if the eligible (denominator) samples are sufficiently collected for the given period.

The mentor critically reviews the daily sample collection rate given the targets and promotes strategies that improve the chances of achieving viral load sample collection coverage (an identified rate-limiting step) in all the eligible. So, all samples are targeted for collection using

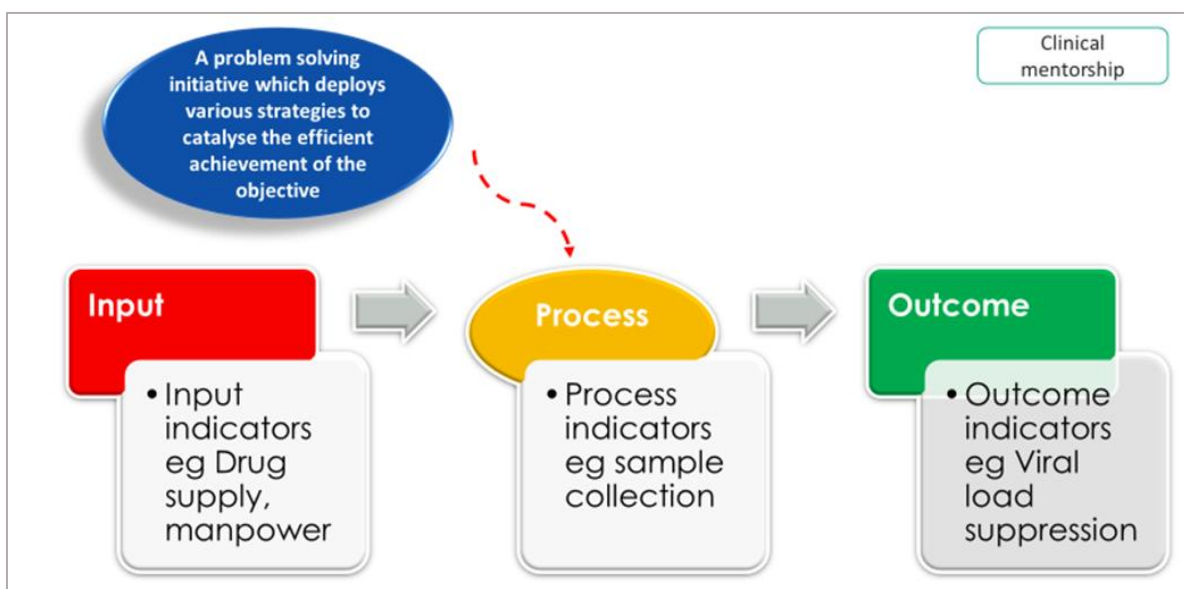


Fig. 5. Clinical mentors' operational framework

locally adapted strategies like line listing, phone calls, and community-driven viral load sample collection. Once near hundred per cent sample collection is achieved, the true suppression rate can be determined to raise the chances of meeting the true outcome target of 95% viral suppression in the cluster. The team's performance is then measured/judged for effectiveness and efficiency through the viral load sample collection effort (the observed rate-limiting step). Team discussions are centred around achieving an early conclusion of sample collection in the assessment period and sharing best practices and local adaptations in the context of this identified weakness within the subject.

However, because quality improvement can be deployed around any dynamic target of choice, the indicators for measurement can also be set around any area of need within the HIV Control programme. Some common examples of modifying variables tracked in the CMP are listed Fig. 6.

2.6 Achievement/Outcome

Two years after introducing the CMP in the State HIV Control Programme, the capacity of teams was successfully established in a team command structure that is demonstrable with improvement in key programme indicators. The CMP was deployed to support the attainment of the

objectives of closing the gaps in HIV service delivery in the State elucidated by the NAIS. Therefore, the CMP accelerated quality improvement through mentorship, using locally grown problem-solving intervention models (as an addition to other pre-existing layers of care), acting as a moderator variable to catalyze better programme outcomes. Consequently, the unmet programme needs for HIV treatment in Rivers State were successfully reduced within two years of its implementation [11]. Boyd reports that in April 2019, there were 42,879 on treatment (with 62% retention reported) by the start of the RSP, while 184,551 persons were estimated by SPECTRUM to be living with HIV in the State. Similarly, the NAIS had reported that as of 2018, Viral Load Suppression amongst sampled PLHIV in Rivers State (aged 15-64years) was <40% [13]. By March 2021 (two years after the onset of the CMP in the RSP), the National AIDS/STI Control Programme reports that there were 144,122 persons on treatment with 12-month cohort retention of 92% and a Viral load suppression rate of 94% (NASCP, 2021). This represents a huge effort at closing the gap (significance). The CMP deployed strategically within the Rivers State HIV Control Programme supported by the United States Centre for Disease Control and Prevention (USCDC) and the Institute of Human Virology of Nigeria (IHVN) successfully catalyzed the achievement of these targets.

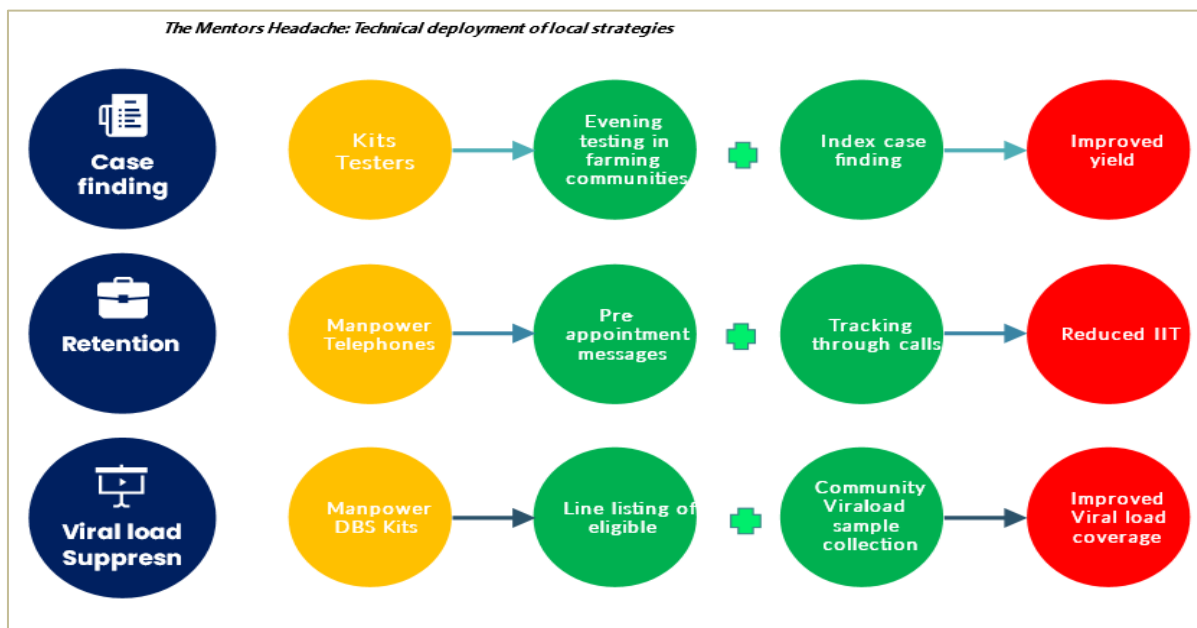


Fig. 6. Modifying outcome variables at the site level

3. RESULTS AND DISCUSSION

Quality improvement involves monitoring input or outcome indicators to identify challenges requiring resolution. In some circumstances, the process towards the outcome can be tracked for the timeliness, responsiveness, and effectiveness. This was exemplified in the CMP, which contributed to the achievement of set targets in the State HIV Control Programme within the stipulated time frame [11]. The addition of the CMP as a paradigm and adaptive innovation, without doubt, strengthened the HIV Control Programme of the State and was led by the Director of Public Health as the State Chief Clinical mentor. The teams of team strategy with a synchronized human resource mesh of State actors, development partners, and embedded IHVN staff at various levels of care enabled better coordination with clear lines of accountability, responsibility, and alignment of goals between the State Ministry and supporting partners. The CMP catalyzed the establishment of local teams of teams using the model aptly described by Stanely McChrystal under a steam team command. This improved the team's capacity to adaptively meet the challenges of programming in the State through the mentoring processes and application of epidemic intelligence to achieve desired goals within 18 months of programming [11].

Leveraging the deployment of problem-solving strategies (mediator variable) executed at the cluster level in the CMP, available resources (independent variable) were optimized to achieve better outcomes by enhancing the moderator variables, which are often the rate-limiting steps to achieving the set targets. This paradigm pioneer effort at capacity building and sustainable system strengthening using the CMP can be used elsewhere in similar localities or different public health programmes to achieve anticipated outcomes.

The major challenge in introducing the CMP into public health programmes may reside in achieving seamless team bonding. This is expected with the introduction of new members, new concepts, and new roles into existing teams and projects. Once a new member with a new strategy is introduced into an existing team, some form of active bonding and re-orientation may become necessary. Team building sometimes encounters a stormy stage in the process of achieving better team performance [15]. This challenge was commonly observed in

the early period of the introduction of the CMP in the State HIV Control Programme. Understanding clear roles and responsibilities in the organogram of the team incident command system and the delineation of clear responsibilities showing how to manage areas of duty overlap are often sufficient in solving this challenge. It is further eased off as the mentoring and quality improvement strategies gradually amortized in the programme over time. In fact, at engagement, the clinical mentors were trained on their roles and responsibilities within the team and how to support each team member in achieving their targets. The capacity of CMs was enhanced for team building and harnessing team energies to meet a common goal. The mentor in the team was encouraged to hold small cluster meetings with team members and identify common challenges while ensuring collective responsibility in solving them. In the end, team bonding becomes a natural response to meeting the targets set forth for the local team. This eventually catalyzed better programme outcomes, as observed in the pioneer effort in the Rivers State HIV Control Programme.

The other challenge is in the resources needed for operationalizing a CMP. The deployment of a CMP requires additional resources, especially for training and capacity building programmes, funding additional local strategies as a result of the continuous quality improvement interventions as the need arises, as well as the acquisition of materials necessary for the programme, for instance, computers with analytic software and audio-visual facility systems for virtual reviews with other teams or other clusters of the State. The CMP achieved the latter by leveraging the infrastructure already established for the *Project ECHO*, a virtual audio-visual system supported by IHVN for the RSP. The platform enabled real-time connection with peers and teams across the State. The use of Project ECHO for knowledge sharing and conversations around quality improvement in several other parts of the world has been tested and found to be efficient in this regard [16–18]. It is impossible to attribute all observations as a direct causal inference of the CMP or eliminate biases around the mediator-moderator variables. However, the CMP was a major pioneer innovation which was implemented within the State HIV Control Programme in the period; and its introduction can be described as a timely and effective gamechanger in meeting the desired goals for HIV control in Rivers State when compared with the data in the earlier years of programming without the CMP [11].

4. CONCLUSION AND RECOMMENDATION

The CMP is a model for achieving a continuous quality improvement program. It is a paradigm concept that entails a systematic exercise of capacity building and deployment of problem-solving interventions to achieve health system strengthening for long-term, high-quality clinical care outcomes in low-resource and difficult terrains through a team command structure. It was amortized strategically in the HIV programme as a form of mediating variable to optimize the moderating variables and achieve more efficient outcomes in HIV programming. Apart from some anticipated challenges, the clinical mentorship programme successfully reached the desired programme goals of reducing unmet needs in the State.

It is helpful as a high impact intervention for closing the ever-dynamic gaps in HIV service delivery programmes in low resource settings, especially in localities classified as hard to reach due to security, terrain difficulty in terms of topography or other instances. It is further recommended to be adapted for other public health programmes as a form of Public Health Mentorship programme.

DATA AVAILABILITY STATEMENT

Data is available upon reasonable request from the State AIDS/STI Control Programme of the Rivers State Ministry of Health.

CONSENT

It is not applicable.

ETHICAL APPROVAL

Permission for publication was sought from the State AIDS/STI Control Programme and the Rivers State Ministry of Health Ethics Committee.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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