

# Does the national program of prevention of mother to child transmission of HIV (PMTCT) reach its target in Ouagadougou, Burkina Faso?

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## Abstract

**Background:** In the context of universal access to prevention, treatment, care and support, each country has to ensure that 80% of women and children in need have access to PMTCT interventions.

**Objective:** To assess the PMTCT program achievement in Ouagadougou, the capital city of Burkina Faso.

**Methods:** Between August and October 2008, a cross sectional study was carried out in the five health districts of the Centre Health Region. We reviewed weekly statistics from all health care centres (HCC) to compute the coverage of PMTCT program. In 38 HCC with functional PMTCT program, we extracted data of interest from HCC registers and made direct observations of PMTCT services.

**Results:** The PMTCT program was implemented in 49% of HCC (target for the national program: 70%). Fifteen to 31% of these centers were often in shortage for PMTCT consumables. Patients' privacy was not observed in 67% of Voluntary Counselling & HIV Testing wards. Care providers were not qualified enough to deliver PMTCT services. Vitamin A supplementation was not implemented. None of the facilities offered the whole package of PMTCT program interventions. HCC providing HIV testing in labour or in postnatal ward were consistently lacking. Only 86% of antenatal care new attendants benefited from pre-test counselling; 2.4% of pretested women were HIV-positive and 39% of positive mothers received antiretroviral prophylaxis.

**Conclusion:** Coverage and quality of PMTCT programme in the Centre Health Region in Burkina Faso are still limited. Particular support is needed for training, supervision and infrastructures upgrading.

**Key words:** vertical transmission, HIV infection, program, implementation.

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## Introduction

HIV infection prevalence in Africa varies from 15% to 40% among pregnant women in countries where HIV prevalence is highest and where the proportion of women of reproductive age is higher than 55% of HIV infected adults<sup>1</sup>. From 2005 to 2009, mother to child transmission (MTCT) has caused more than 500 000 HIV infections among new-born<sup>2</sup>. MTCT is the most important route of HIV transmission among children. Of these infections, 90% occur in Sub Saharan Africa (SSA). Currently, effective strategies to reduce MTCT risk in resources limited settings are available<sup>3-16</sup>. They are widespread and the global commitment towards the Prevention of MTCT (PMTCT) of HIV is significant. However, challenges to implement and

scale up PMTCT programs have been reported in most of the African countries, including Burkina Faso<sup>1,2</sup>. In 2006, despite efforts to extend PMTCT care, less than 10% of pregnant HIV infected women in Africa benefited from interventions to reduce MTCT. In Eastern and Southern Africa, only 17% of HIV infected women were detected through HIV testing and 11% received ARV based prophylaxis. In western and central Africa 3% of infected women were tested and 1% received ARV prophylaxis<sup>1,2</sup>.

Even in settings where an effective prophylaxis was available during pregnancy and delivery, important gaps persisted during the postnatal period. A few PMTCT programs succeeded in reaching women and babies once they went back home, to provide them with continuous counseling and guidance in the mothers' feeding options for the baby as well as care and treatment<sup>2</sup>.

In Burkina Faso from 2006 to 2010, the national PMTCT program included 5 components of which the third was preventing HIV transmission from infected mothers to their offspring<sup>17</sup>. The key elements of this component included i) counselling and screening of

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HIV infection in women, ii) the use of antiretroviral medicines to reduce MTCT, iii) safer or “cleaner” obstetrical practices and iv) feeding counselling for the new-borns. The program planned to cover 70% of the HCC by the end of 2007.

Today, in the PMTCT option B+ era, it still appears relevant to assess the performance of the PMTCT program in the health region of the centre, in a period where HIV programs were better funded, to shed more light on what could potentially be the implementation challenges for the WHO new PTMCT guidelines. Specifically, our objectives were to assess the quality and the achievements of the national PMTCT program during the first six months of 2008 as compared to the country goals and standards described in the PMTCT program document<sup>17</sup>.

## Method

### Study plan and context

We implemented a descriptive cross-sectional study between August and October 2008 using FHI PMTCT programs assessment guidelines<sup>18</sup>. The survey included the five districts of the Centre Health Region in Burkina Faso. This Region consists of the city of Ouagadougou and its neighborhoods. We enumerated in a census, all HCC that were implementing the PMTCT program at the end of the first six months of 2008.

### Data collection

We first reviewed PMTCT program documents. The field data collection consisted of completing questionnaires with the PTMCT agents and direct ob-

servations of PMTCT units and service provision. We listed also all infrastructures and materials used to perform PMTCT activities.

Twenty investigators, who were divided into 10 teams consisting of two individuals, collected the data. A four-days training with a pilot test preceded the investigation. The field investigation lasted 10 days. We collected data regarding the characteristics of the HCC (location, level in the health care system, type as public or private), the equipment and supply chain, the human resources and working conditions, the care provided and the PMTCT cascade. We obtained the required authorization from the national Ethics Committee and the regional health office. The study was conducted in accordance with the Helsinki declaration. We used the Epi Info 2000 software to run a univariate descriptive analysis of the data.

## Results

Of the 38 Health Care Centres (HCC) implementing PMTCT, 28 were located in an urban area, 35 were primary HCC (the three others were first reference level centres), 32 were public, and six were private for-profit.

Human resources and working conditions at PMTCT units.

Among 387 Health Care Workers involved in PMTCT activities, 62.5% were auxiliaries to midwives, nurses or community health workers (CHW); physicians represented 1.3%. In general, Physicians and laboratory staff were less involved in PMTCT care. Inside the HCC, less CHW contributed to PMTCT care. (Table 1)

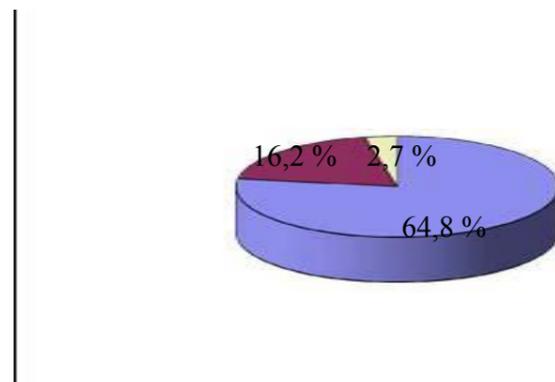
**Table 1: Protocols, equipment and commodities into VCT/ANC services in the sanitary region of the centre (N is varying because of missing data)**

| Items (N)   | Number | Percentage |
|---|--------|------------|
| PMTCT guidelines  | 22     | 59.4       |
| voluntary testing and counseling (VCT) guidelines               | 21     | 56.7       |
| infants feeding counseling guidelines                           | 17     | 56.7       |
| IMCI guidelines   | 16     | 43.2       |
| management of sexually transmitted infections (STIs) guidelines | 25     | 67.5       |
| Post exposure prophylaxis guidelines                            | 11     | 29.7       |
| family planning guidelines                                      | 08     | 21.6       |
| counseling for HIV- positive women guidelines                   | 08     | 21.6       |
| <b>PMTCT services</b>   |        |            |
| VCT   | 28     | 75.7       |
| Infant feeding counseling                                       |        |            |
| Group education   | 37     | 100        |
| Group pre test counseling                                       | 17     | 45.9       |
| Group post-test counseling                                      | 11     | 29.7       |
| Individual pre-test counseling                                  | 31     | 83.8       |
| Individual post test counseling                                 | 31     | 83.8       |
| Couple pre-test counseling                                      | 19     | 51.3       |
| Couple post test counseling                                     | 15     | 40.5       |
| HIV diagnostic counseling (without testing)                     | 13     | 35.1       |
| Follow up counseling  | 23     | 62.2       |
| General nutritional counseling                                  | 28     | 75.7       |
| Partner/family counseling                                       | 14     | 37.8       |
| Outreach/home visit   | 14     | 37.8       |
| Management of troubles related to breastfeeding                 | 16     | 43.2       |
| ARV Prophylaxis   | 26     | 70.3       |
| Infant formula  | 15     | 40.5       |
| PCR for infants   | 07     | 18.9       |
| Safe obstetric practices  | 20     | 54         |
| Elective C-section  | 04     | 10.8       |
| <b>Commodities</b>  |        |            |
| <b>Sink (37)</b>  |        |            |
| Yes   | 29     | 78.3       |
| No  | 8      | 21.6       |
| <b>Clean/Drinking water (32)</b>                                |        |            |
| Yes   | 29     | 78.3       |
| No  | 3      | 8.1        |
| <b>Soap (31)</b>  |        |            |
| Yes   | 29     | 78.3       |
| No  | 2      | 5.4        |
| <b>Clean towel (31)</b>   |        |            |
| Yes   | 14     | 37.8       |
| No  | 17     | 46         |
| <b>Standard examination table (37)</b>                          |        |            |
| Yes   | 37     | 100        |
| No  | 0      | 0          |
| <b>Waste bin (37)</b>   |        |            |
| Yes   | 37     | 100        |
| No  | 0      | 0          |
| <b>Register regularly filled during the last 7 days (35)</b>    |        |            |
| Yes   | 33     | 89.1       |
| No  | 2      | 5.4        |
| <b>2 entry doors at VCT room (31)</b>                           |        |            |
| Yes   | 8      | 21.6       |
| No  | 23     | 62.1       |
| <b>At exit, can PMTCT client meet another client? (30)</b>      |        |            |
| Yes   | 25     | 67.5       |
| No  | 5      | 13.5       |

The prophylactic ARV protocol document (where it existed) was actually the same as the national PMTCT program guidelines<sup>18</sup>. Among the investigated HCC, 28 stated that they knew the existence of PMTCT national guidelines. The others (3) did not know about or denied the existence of such document. In many PMTCT units, different (from the national one) protocols were implemented and it was impossible to know their source. Of 37 interviewed HCC, four offered elective C-section as PMTCT optional care. Forty per cent of HCC had infant formula and 54% implemented safe obstetric practices. Eighteen ANC/PMTCT units of 37 did not provide infant feeding counseling. Seventeen HCC had written guidelines on feeding counseling; Eight HCC presented a copy of the guidelines document. Infant feeding counseling was mostly provided by specifically trained MCH

staffs (43.2% of cases), by MCH staffs trained in PMTCT in general (40.5%) or by counselors dedicated to PMTCT (16.2%). This counseling was provided only to HIV positive pregnant women at 8 HCC. Nine HCC used a check list during the counseling session. All centers that declared using a check list presented a copy of the document. There were two main feeding options available for children born to HIV positive mothers: exclusive breastfeeding and early cessation in all the centres and infant formula in 87% of them. In 67.7% of HCC, mothers preferred exclusive breastfeeding. Nutritional counseling was offered to all women at 25 HCC and only to HIV positive women at 3 HCC. When nutritional counseling was not provided, women were referred to a nutritional counselor. This reference was a routine practice for 4 HCC. Group education was provided in all the centers to women attending ANC (figure1).

**Figure 1 : Number of group counseling per day per HCC**



Twenty four of 32 PMTCT centres had a specific Voluntary Counseling and Testing (VCT) units dedicated to PMTCT program. VCT sessions were provided to every woman attending ANC at 28 centres and only to women attending first ANC at three centres. Three centers had no VCT units. VCT was provided as a routine care at 29 centres. Pre and post test counseling sessions took place at ANC/MCH unit for 14 HCC; at a PMTCT-specific VCT unit, for 13 HCC and at another building different from the PMTCT and ANC/MCH one, for 2 HCC

At VCT/PMTCT units, among 37 HCC, six did not possess a room dedicated to VCT sessions; 21 HCC had one room and 10 of them 2 rooms. There was auditory privacy (an external person could not hear the counselling conversation) at 20 HCC for a total of

25 sites investigated. Visual privacy (an external person could not see the people in a counselling session) was observed at 21 of 29 HCC.

VCT sessions were conducted by ANC/MCH staff at 25 HCC, trained counselors at 13 HCC. HIV testing was performed at ANC/MCH for 19 HCC of 33, at a dedicated VCT unit for seven centers. Six HCC did the first testing on site and the confirmatory test at another laboratory. Rapid tests were used for women attending PMTCT care everywhere. The national testing protocol was correctly implemented in 27 HCC. Four HCC did not use it consistently. The reasons were that, either they had no knowledge of the protocol or there was a reagents shortage. Twenty two HCC used protocols and guidelines to implement VCT and the other 10 did not. Eight HCC showed a copy

of the protocol. Blood samples for testing purpose were taken onsite (VCT unit) for 21 HCC and in the lab for 15 HCC. Test results were available on the same day at 32 HCC of 33.

Every ANC unit was set up in a standard room (with concrete walls, ceiling and floor). They all had a standard examination table, a visit registry (regularly completed during the last 7 days in 89% of the units),

and a waste bin as shown in table 1. Of 37 units, 29 had a sink, drinking water and soap. Fourteen HCC had a clean towel; Eight of them had two doors at the VCT room. At the exit, 67.5% of PMTCT customers could meet another client.

HIV testing items (rapid test kits, lancets and gloves) were more available than other consumables. Persistently, at least 19% of HCC were often in shortage of VCT and PMTCT products and consumables (Table 2).

**Table 2: frequency of shortage for PMTCT products and consumables (N=26)**

| Product/Consumable | Never/scarcely* (%) | Sometime** (%) | Often*** (%) |
|--------------------|---------------------|----------------|--------------|
| IEC                | 18 (69.23)          | 04             | 04 (15.38)   |
| Condom             | 18 (69.23)          | 03             | 05 (19.23)   |
| AR prophylax       | 17 (65.38)          | 03             | 06 (23.08)   |
| Lancets prick      | 14 (53.85)          | 05             | 06 (23.08)   |
| HIV rapid kits     | 13 (50.00)          | 07             | 06 (23)      |
| Infant             | 12 (46.15)          | 06             | 08 (30.77)   |

\* One shortage one day per month  
 \*\* Shortages less than 2 times per week  
 \*\*\* Shortages more than 2 times per week

### Supplies and equipment at HCC

At the ANC units, two health care centers (HCC) lacked both weighing scales and measurement ribbons (Table

3). Four of them had no tool to measure the height, and seven had no blood pressure device. (Table 3)

**Table 3: Availability of the ANC/PMTCT care products into the health care centres**

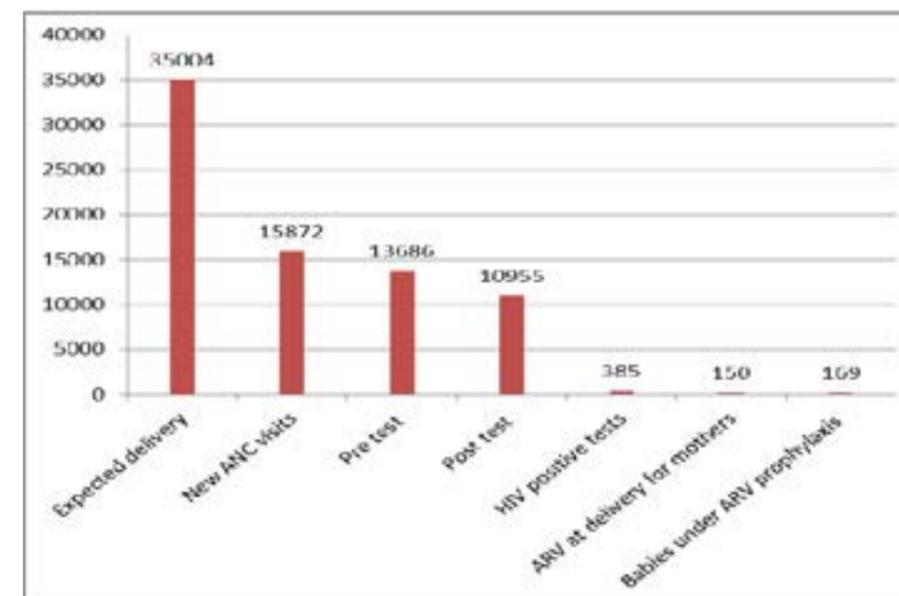
| Items (N)  | Number<br>ANC units | Percentage |
|--|---------------------|------------|
| Weighing scales                                  | 35                  | 94.5       |
| measurement ribbon                               | 35                  | 94.5       |
| Height measurement tool                          | 33                  | 89.1       |
| Blood pressure device                            | 30                  | 81         |
| disposable needles<br>and syringes               | 23                  | 62.1       |
| Gloves   | 24                  | 64.8       |
| Sharp box  | 25                  | 67.5       |
| Running water                                    | 20                  | 54         |
| Hands washing items                              | 22                  | 59.4       |
| Iron tablets                                     | 32                  | 86.4       |
| Folic acid tablets                               |                     |            |
| Multi vitamins tablets                           | 06                  | 16.2       |
| Vitamin A supplement<br>tablets                  | 08                  | 21.6       |
| Mebendazole tablets                              | 11                  | 29.7       |
| Malaria prophylaxis<br>tablets                   | 25                  | 67.5       |
| Tetanus toxoid vaccine                           | 25                  | 67.5       |
| <b>VCT/PMTCT unit (supplies and consumables)</b> |                     |            |
| Gloves   | 28                  | 75.67      |
| HIV rapid tests kits                             | 23                  | 62.16      |
| Lancets for rapid<br>testing                     | 23                  | 62.16      |
| Sharp box  | 27                  | 72.97      |
| Disposable syringes<br>and needles               | 27                  | 72.97      |
| Infant formula                                   | 19                  | 51.35      |
| IEC material                                     | 21                  | 56.76      |
| ARV prophylaxis                                  | 20                  | 54.05      |
| Hand washing items<br>(soap or disinfectants)    | 25                  | 67.57      |
| ARV Sirup  | 15                  | 40.54      |
| Condoms  | 20                  | 54.05      |

**PMTCT cascade**

New ANC visits were 45.3% of expected pregnancies and 39.1% of expecting women benefited from PMTCT cares. Of the ANC new attendants, 86.2% got a pretest counselling of HIV.

We calculated for this population of pregnant women, an HIV prevalence of 385 (2.4%). ARV prophylaxis was administered to 39% of HIV positive women. Babies tested for HIV infection represented 1% of babies born to HIV positive mothers and 3.1% of the tested babies were found HIV positive (Figure 2).

**Figure 2: Accrued PMTCT cascade data in the Centre Health Region  
PMTCT cascade at the region level**



**Discussion**

During our investigation, all the districts in the study area were implementing PMTCT according to the 2006-2010 program's objectives<sup>17,19</sup>. However, 49% of HCC were actually PMTCT units instead of 70% as planned by the program for that period. In the 2013 national assessment of PMTCT program, 98% of HCC were covered. The options A and B were still implemented as prophylaxis protocol.

Our results showed that PMTCT units faced many shortages of reagents and consumables. None of the HCC offered the whole package of PMTCT care. Mainly none of them offered testing in labor or postnatal ward when a woman had not been tested during the prenatal period. At every stage of the PMTCT cascade, the loss to follow up was important. Considering these results, the effectiveness and success of the national PMTCT program in Burkina Faso was questionable.

**Findings and limits**

We made a census of the study population (health care centres implementing PMTCT program). But we used pooled data from the different HCC we investigated. That made it impossible for us to carry in-depth analysis looking for associated factors. Although, this study discovered that the PMTCT program in the Centre

Health Region is facing many challenges at each step of the service chain, this finding may not be original per se. Though, it assessed the magnitude of the difficulties in PMTCT program in Burkina Faso and shed light on the weaknesses of the program to be considered for the implementation of the newly option B+ guidelines.

**PMTCT challenges**

As compared to the rest of the world<sup>20</sup>, PMTCT centres in the investigated sites were mainly public. More involvement of private sector and community groups could energize the national PMTCT program. The HIV private for-not-profit and community organizations could operate as HIV counseling specialists and outreach field actors to dramatically improve the monitoring of PMTCT customers along the different cascades steps. In doing that, it would reduce the loss to follow up and ensure better quality of care. The medical part of the program would remain assigned to qualified staff. Home-based intervention could be a great opportunity to monitor and manage effective nutritional cares for mother-infant pair. That would contribute to reduce the MTCT rate.

Infrastructures at PMTCT units are an important concern. However, dedicated wards could be sources of stigma. Merging PMTCT units with the other rou-

tine health care units would be possible if VCT session was held during the ANC visit by the same HCW. ANC wards must then be arranged accordingly. The inconvenience would be the uneven distribution of tasks; the qualified staff for ANC would also have to provide VCT sessions while less qualified personnel are not busy. The waiting delay would become longer and that could raise the number of loss to follow up. The participation of community groups and associations would become more difficult.

At national level, elective C-section is not mandatory for HIV infected pregnant women. The country is not able to provide this kind of care to every woman sustainably. However, in the study area, where technical and geographic accessibility conditions are met, presenting the different options available for a safe delivery in order to provide thorough information to HIV infected women is an ethical requirement.

Mothers, who could afford, would then opt for C-section to reduce the MTCT risk. In the same way, women who have not been tested during pregnancy must be offered the opportunity at the labor or postnatal ward. WHO recommends this practice, when it is feasible<sup>21</sup>. According to the Ghent Group<sup>22</sup> VCT units inside MCH and health care centres need well trained and experienced staff, able to provide the women with all the detailed methods to reduce the HIV transmission risks. There was an average of one physician per district involved in the PMTCT program. In this specific setting, such physicians' involvement is great. Did these physicians actually operate? An actual involvement of one physician per district into PMTCT program implementation should solve most of the concerns notified as shortages when it is a question of procurement or as misuse or non-consistent use of ARV prophylaxis protocol. Some studies carried out in Tanzania and Malawi reported that respectively one fourth and one half of HIV positive women did not receive the single dose of Nevirapine and two third of babies at risk of infection were not administered the Nevirapine prophylaxis within the 72 hours after birth, although, the drugs were available. There is a gap between the number of prenatal and postnatal care attendants.

A large part of the people trained in PMTCT did not actually work in the program because of lack of motivation, assignment at a position where people cannot implement PMTCT care or refusal to implement

PMTCT care. The more the professional category is involved in PMTCT care or can be available, the less it has been trained. In Cameroon, 50% of trained people did not contribute to the therapeutic education program that was the goal of their training<sup>23</sup>. In Zambia, involvement of lay counselors have been stressed in the national guidelines as a crucial point to be taken into account, in order to ensure counseling provision, monitoring and follow up of faltering customers as well as community sensitization on the importance of the HIV test in a sustainable way<sup>24</sup>.

#### Lost to follow up in the PMTCT cascade

The lost to follow up could be due to an actual implementation of the "opt in" strategy instead of the "opt out" one. One of the inconveniences notified about this method is the increase in workload and an important number of lost women, especially between ANC visit and VCT session. While the "opt out" strategy allows a high rate of VCT intake (more than 95%), studies report a low rate of tested women with "opt in" strategy<sup>25,26</sup>. To improve the PMTCT cascade and the accuracy of the data, VCT units must be more available. That includes availability of buildings, PMTCT items, staff and the actual implementation of the "opt out" strategy to ensure more coverage<sup>22,26</sup>.

#### Progress in PMTCT since our survey

In the 2013 PMTCT annual report, 88.4% of the Health Centre Region ANC new attendants were pre tested for HIV infection and 98.2% of the HCC were actually implementing PMTCT program. Among these women, 2.1% were tested positive for HIV. The follow up after delivery has also improved with 46% of the kids born to HIV infected mothers being tested by PCR at six months.<sup>27</sup> This report highlighted the importance of NGOs and community involvement in PMTCT program. In 2013, the so called "stepping stone" or community PMTCT was started.

#### Conclusion

Forty nine per cent of the HCC were implementing PMTCT program, instead of 70 % as per the national program goal. In general in the study region, the contents of PMTCT guidelines were not known and understood by HCW. As a result, there were important loss to follow up at different steps of PMTCT cascade. Moreover an effective plan to mobilize women towards MCH centres did not exist. Only half of expected pregnant women attended ANC first visit.

PMTCT units were not able to provide HIV counseling and testing for every pregnant woman who asked for it. They could not provide prophylaxis drugs to each mother-child pair that needed it. While national PMTCT guidelines indicate infected mothers as the priority for treatment, HAART as PMTCT option for immuno-deficient women was crucially unavailable.

National PMTCT program should develop more leadership and synergistic partnership to build suitable infrastructures, to make sure that PMTCT supplies are consistently and sustainably available, and to motivate PMTCT field workers. It needs also to push stakeholders at the peripheral level, to take ownership of the program. It should also develop an effective supervision plan for PMTCT operators.

Since our study, improvements have been made in the program. However, worries are being raised by the discussion about the implementation and scaling up of the newly B+ strategy that has been found the most cost-effective option elsewhere<sup>28</sup>. In a context of a developing setting with very scarce resources one hand and an efficacious and cheaper A and B options (if sufficient coverage can be assured) in the other hand, is it worth engaging in unaffordable B+ strategy with potential compliance issues?

#### Authors' Contributions:

Conceived and designed the study: ES, NM; implemented the study: ES; analyzed the data: ES; wrote the paper: ES, NM

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