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Directly Observed Therapy [DOT] in Sub-Saharan Africa: Is it Working?

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ABSTRACT

The HIV, AIDS and TB pandemic have increased the burden in Sub-Saharan Africa health facilities, such that even individuals suffering from active tuberculosis (TB) who need to be hospitalized for isolation and close supervision are turned back to be cared for by family members and friends. Of note is that even if active TB clients are hospitalized, there is minimal or no isolation in most Sub-Saharan Africa health facilities. Directly observed therapy [DOT] is the principal component of global TB-control strategy adopted by the World Health Organization [WHO] that could promote adherence to anti-TB therapy among TB clients who are recuperating from their homes. Because of the reduced stay in hospital, DOT is cheaper, cost effective, and more feasible than conventional treatment in managing tuberculosis in Sub-Saharan Africa, given the existing hospital bed capacity and the escalating cases related to the HIV and AIDS epidemic. Sub-Saharan Africa countries have been implementing DOT since its recommendation by WHO in 1994. In this manuscript, various challenges encountered in the implementation of DOT in Sub-Saharan Africa are addressed. These include: DOT implementers, incentives, emergence of HIV, TB-reinfection, TB-stigma, poverty and erratic TB-medication supply. The manuscript concludes by making recommendations for DOT to be effective in Sub-Saharan Africa.

INTRODUCTION:

The HIV, AIDS and TB pandemic have increased the burden in Sub-Saharan Africa health facilities, such that even individuals suffering from active tuberculosis (TB) who need to be hospitalized for isolation and close supervision are turned back to be cared for by family members and friends.[1]Of note is that even if active TB clients are hospitalized, there is minimal or no isolation in most Sub-Saharan Africa health facilities.[2] Probably being taken care of by family members reduces the number of contacts that the clients could have had in a hospital setting. If patients suffering from active TB recuperate from home, they are protected from nosocomial infections,[2] may recover faster because they are in the comfort of their families and community. However, they have to adhere to anti-TB therapy in order to get cured and minimize the risk of spreading TB to contacts (by becoming smear negative) and of developing multiple drug resistance [MDR].

Directly observed therapy [DOT] is the principal component of global TB-control strategy adopted by the World Health Organization [WHO][3,4]that could promote adherence to anti-TB therapy among TB clients who are recuperating from their homes. Because of the reduced stay in hospital, DOT is cheaper, cost effective, and more feasible than conventional treatment in managing tuberculosis in Sub-Saharan Africa, given the existing hospital bed capacity and the escalating cases related to the HIV and AIDS epidemic.[4]

DOT refers to supervised client swallowing of anti-TB treatment under direct observation by a health care worker, community or family member.[5,6]DOT can be home-based or facility-based. This manuscript focuses on home-based DOT because it is ideal for clients suffering from TB who may be too sick to commute to the health facility daily. [7]Furthermore, some clients may not have money for transport to the health facility. The success of DOT has been measured by cure and default rate, and prevention of multiple drug resistant [MDR] TB.[8]However, MDR in Sub-Saharan Africa is gradually increasing, TB cure rate has remained low and the default rate is high.[7,9]

Sub-Saharan Africa countries have been implementing DOT since its recommendation by WHO in 1994. In this manuscript, various challenges encountered in the implementation of DOT in Sub-Saharan Africa are addressed. These include: DOT implementers, incentives, emergence of HIV, TB-reinfection, TB-stigma, poverty and erratic TB-medication supply. The document concludes by making recommendations for DOT to be effective in Sub-Saharan Africa.

Implementers:

In Sub-Saharan Africa professional nursesupervised DOT in the home-based setting is not feasible because nurses in the healthcare facilities are short-staffed.[10]Therefore, they cannot afford to leave the health facility and go to the community to observe TB clients when they take medication. Yet nurses are the ideal implementers because they are competent on barrier care (to minimize cross-infection), medication administration, side-effects to monitor the client for and proper documentation.

Voluntary Community Workers are the ones who observe TB clients take anti-TB treatment in the home setting.[7] Voluntary Community Workers join the DOT program with different intentions. Such as having genuine concern about the wellbeing of community members; to gain skills; and hoping that in future there will be financial remuneration or be employed by the health care system.[11] The Voluntary Community Workers undergo brief training on DOT so as to increase their TB awareness and administration of anti-TB medication.[7]

Assisting DOT on a voluntary basis becomes a challenge because the Voluntary Community Workers receive minimal or do not receive any monetary remuneration.[10]The VCWs need money for transport and for their own upkeep and in some situations even maintenance of their families. This therefore means that if the Voluntary Community Worker finds gainful employment he/she will terminate the voluntary services he/she has been offering in DOT. Consequently, Voluntary Community Workers attached to DOT have high staff turnover, [7] and the TB clients have to establish rapport with each new Voluntary Community Workers who takes over. However, this may result in inconsistency in DOT provision. Before a replacement for the Voluntary Community, Worker could be found some clients who are on DOT may default treatment increasing their risk of developing MDR. The lack of monetary incentives for Voluntary Community Workers threatens the sustainability of DOT.[10]

Another challenge with Voluntary Community Workers is that there is no relief staff, in case the Voluntary Community Worker is not able to attend to clients because of personal issues,[7]for example, if he/she needs to attend a funeral or any other personal matters. The absence of the Voluntary Community Worker might make clients who lack motivation, to miss treatment and may end up suffering from MDR.

The work done by Voluntary Community Workers is commended, however, Voluntary Community Workers may not be competent in protecting themselves from infection, hence

they risk acquiring TB. Moreover, some clients do not have full confidence in lay Voluntary Community Workers.[11]DOT is a critical component in the control of TB, hence, Sub-Saharan Africa countries must consider assigning qualified nurses to implement DOT. While still planning to have qualified professionals, in the interim, the health care system must have formal contracts with the Voluntary Community Workers. The contract will make the Voluntary Community Workers to be accountable to the client and health care system. In addition, Sub-Saharan Africa countries should consider offering incentives to the Voluntary Community Workers, for motivation and meeting some of the Voluntary Community Workers daily needs. The health care system also needs to conduct regular workshops for the Voluntary Community Workers so as to empower them with increasing knowledge and skills on TB management. It is in these workshops that the health care system will also get feedback on successes and challenges encountered by the Voluntary Community Workers, and address these as appropriate.

Supervision:

The Voluntary Community Workers do not receive adequate supervision from the healthcare facility qualified nursing personnel. The limited supervision could be attributed to the fact that the qualified nursing personnel are sparse and overworked.[11]Inadequate supervision impedes the work of Voluntary Community Workers because they need guidance from the experts on TB management. The scanty supervision, adversely affect the quality of data reported by the Voluntary Community Workers. Regular supervision from qualified nursing personnel could also motivate the Voluntary Community Workers. SSA health care systems need to allocate more funding to DOT in order to control TB through better supervision.

HIV:

The emergence of HIV makes it a challenge for the Voluntary Community Worker to observe all the community members who are on anti-TB treatment because of the high prevalence of HIV. Especially because about 80% of TB infected clients are co-infected with HIV.[12]In addition, TB is a leading cause of death among HIV infected clients.[13]Moreover, Voluntary Community Workers have to walk from one homestead to the next, because there is no transport[14]provided for them by the health care system. This therefore means that it is possible that by the end of the day the Voluntary Community Worker might not have been able to see all the clients who are on anti-TB therapy take treatment, which may result in some clients missing doses. The absence of transport is associated with limited resources in

Sub-Saharan Africa; probably the health care system could negotiate for funding from Developmental Partners to purchase motorbikes for the Voluntary Community Workers.

To reduce missed doses, the health care system should allow the client to keep a month's supply of anti-TB treatment instead of the Voluntary Community Workers coming with medication, so that even if the Voluntary Community Worker is not able to come on any given day, the client could independently take his/her anti-TB medication. This will also be means of promoting client self-care and independence.

Reinfection:

The client could successfully complete the course of anti-TB treatment; however, completing therapy does not provide immunity for future TB disease.[15]Since the client may also be infected with HIV, the client may become re-infected with TB, as a result of a persistently compromised or declining immune system. At the same time it is most likely that there will be new TB cases in the community who need DOT. The Voluntary Community Worker ends up with increasing TB clients in the community making it difficult for him/her to be able to observe each of the clients taking anti-TB medication.

Notable is that the client may not experience re-infection, but may develop MDR from defaulting treatment. This then means that the Voluntary Community Worker has to observe new TB clients, those with TB re-infection, and clients with MDR taking anti-TB medication. This is a challenge because the Voluntary Community Workers might not be able to observe all these clients taking medication on each day, more so, because they reside in different homes. The workload is overwhelming to the Voluntary Community Workers.[15]

The Voluntary Community Workers' workload could be eased by the utilization of technology, such as providing the VCWs with mobile phones and airtime so as not to have to go and see client every day but probably twice a week. On the other days, the Voluntary Community Workers could send short text messages (sms) or call to remind the client to take medication instead of having to physically reach the client's homestead. Sub-Saharan Africa countries need to budget for cell phones and airtime to give to the Voluntary Community Workers. This is an innovative strategy has been effective in promoting adherence to antiretroviral therapy [ART] among HIV-positive clients in Sub-Saharan Africa.[14]

Risks:

Moving from one homestead to the next, could expose the community worker to various risks,[7]such as snakes and other wild animals, weather hazards, and attack by robbers. Sometimes the community worker has to walk through paths because in Sub-Saharan Africa not all places are accessible by road. It becomes challenging for the Voluntary Community Worker to access the residence and this could contribute towards the client missing some doses. The risks could be minimized by allowing the Voluntary Community Workers text and call the clients who are on anti-TB treatment, reminding them to take medication.

Reception:

Some clients together with their families may not be receptive towards Voluntary Community Workers. This could be attributed to some client's and family's negative attitude towards the health care system[11] in general. Such an attitude could also be a result stigma attached to TB. TB has been associated with poverty,[15] and TB clients together with their families may want to isolate themselves because of the stigma. Such stigma contributes towards non-completion of anti-TB treatment.[16]

In addition, certain clients together with their families may prefer traditional medication for the treatment of TB because they believe that traditional medicine can cure TB.[15]Such a belief may be related to knowledge deficit about TB because no traditional medicine has been scientifically tested to cure TB. The professional nurses need to actively participate in community meetings, where they can empower community members with knowledge on TB and its management and dismiss any misconceptions. In addition, the health workers must have influential individuals such as church leaders, teachers, and community leaders empowered with knowledge on TB. Influential individuals in the community could assist in changing the attitudes of TB infected people and that of their families towards Voluntary Community Workers and management of TB.

Ethical issues:

Confidentiality:

Some clients are not receptive towards Voluntary Community Workers because of fears about confidentiality of their illness.[17]Clients fear that VCWs will disclose to community members about the clients' disease. Disclosure of client information can be detrimental to the

client particularly if he/she has self-perceived stigma towards TB. At the commencement of DOT the client must be assured by the nurses that Voluntary Community Workers underwent brief training in which observation of clients' rights including confidentiality were emphasized.

Privacy:

There are clients and families who consider visitation by the Voluntary Community Worker as violation of privacy[18] hence they may not be receptive. When the client is placed on DOT, the nurse has to explain to the client the need and benefits of being in the program and also that the success of the client's treatment depend on cooperation between the client and designated Voluntary Community Worker. However, such an attitude could be minimized by the use of alternative less intrusive strategies[19] such as the use of text messages and calls to remind clients to take anti-TB medication.

Autonomy:

Research has revealed that some clients perceive DOT as depriving clients of their autonomy; [19, 20, 21] by ascertaining that the client is observed when taking anti-TB medication. Furthermore, some clients feel that DOT is humiliating and interferes with their social and work life.[19]It is important therefore that healthcare professionals involve the client in every step of his/her anti-TB management, including making the client aware of his / her medical diagnosis, management modes available and allow the client to choose between facility-based and home-based DOT. The clients also have to be informed about the benefits of DOT, including that DOT promotes adherence to anti-TB therapy leading to TB cure and controls the spread of TB.

The health care system has to deploy counsellors to all TB- departments, to counsel clients suffering from TB, about the condition and its management and the need to adhere to treatment. Initial counselling and on-ongoing client counselling has been successful in promoting adherence to therapy among HIV-positive clients.[10]This strategy might also work well with clients suffering from TB in reducing the default rate and increase disease cure rate.

Poverty:

In some situations, Voluntary Community Workers find it challenging to have the client take medication because of poverty. [22]This is because most anti-TB medication have to be taken

with food to promote absorption, medication tolerance and prevent side effects[7] that could occur as a consequence of taking medication into an empty stomach. For example, ethionamide has to be taken with food; and rifampin has to be taken an hour before or two hours after meals. There are clients who stopped taking anti-TB medication because of poverty as taking medication into an empty stomach made them feel sick.[23]

About half (48.5%) of people in Sub-Saharan Africa live in poverty.[24]Poverty is a contributing factor to TB acquisition because an impoverished individual is likely to have a weakened immune system, [25] prone to contraction of TB. By the time the Voluntary Community Worker arrives in the home, the client might not have had any meal, and not anticipating a meal anytime soon, because the client does not have money to buy food. Clients suffering from TB and their families, particularly those who live below poverty guidelines ($1.25 per day), [26]should be encouraged to have back-yard gardens and also advised to register with available food programs which provide food to deserving individuals in the community.

Mobility of TB clients:

With the prolonged duration of anti-TB treatment, some clients are likely to relocate during the course of treatment. The health care system does not have control over mobility of TB clients.[15]Consequently, some clients, particularly males and the unemployed, [9] relocate notifying neither the nearest health facility nor the Voluntary Community Worker about their intentions to relocate. This is a challenge because in the process of relocation the client comes into contact with new acquaintances that may contract TB, promoting TB spread, and may default treatment. The nearest health facility personnel and attending Voluntary Community Worker must establish trust with the TB client, so that the client can be more open and disclose any plans of relocation. Since client mobility is inevitable, there is need for the healthcare system to establish a feasible client transfer system between health facilities and communities, so that even if the client relocates DOT care does not get interrupted.

Physical address:

Unlike in developed countries, in Sub-Saharan Africa individuals basically, use post boxes for delivery of mail and not physical addresses.[14]The absence of physical addresses makes it a challenge for the Voluntary Community Worker to locate the clients' place of abode, exposing the client to missing some doses. Since taking medication in the presence of a

Voluntary Community Worker ensures that the medication is taken. The Voluntary Community Workers usually cater for large communities (areas of about 3 miles radius) and thereby may not know the exact place of residence for each and every community member. This challenge could be overcome by having more Voluntary Community Workers in each community, and probably have one community worker covering at least one (1) mile radius. In that way, the Voluntary Community Worker will know each homestead within the community. However, as previously discussed Voluntary Community Workers are fewer than expected. In addition, the use of text messages and calling the client as a reminder to take medication each day could also minimize this challenge.

Inconsistent/erratic supply of anti-TB medication:

Some Sub-Saharan Africa healthcare facilities occasionally run out of anti-TB medication, [27]exposing clients to development of drug resistance. Competing, existing, emerging and re-emerging diseases which are a threat to the populace are a challenge to the government budget.[28] Diseases such as HIV, AIDS, malaria, Ebola, and non-communicable diseases [NCD] consume a larger portion of SSA country's budget leaving minimal funds for TB-control.[28, 29]Consequently; some TB-control programs experience stock interruption of anti-TB drugs. The workers responsible for maintain stock in the health care system must be encouraged to be future focused,[29] so that they order anti-TB medication in advance before the facility stock runs out. Interruption in anti-TB treatment could contribute to the development of MDR.

Recommendations:

It is recommended that Sub-Saharan Africa countries properly plan and budget for the implementation of DOT. That is, allocate human and material resources towards DOT; assign qualified nurses to regularly supervise the Voluntary Community Workers / family members assisting the client with DOT; establish work contracts with VCWs so they could be accountable to the clients and health system; pay the Voluntary Community Workers for the services they provide; regularly hold workshops / seminars to empower the Voluntary Community Workers with knowledge and skills on TB management; consider purchasing motorbikes to enable Voluntary Community Workers to move from homestead to homestead where there are TB-clients who are on DOT; have designated health counsellors to counsel the client before enrolment on DOT, as means to promote adherence to therapy; and also consider reducing the number of physical visits to clients by giving cell-phones and airtime to

Voluntary Community Workers to text and call the clients, reminding them to take medications.

SUMMARY AND CONCLUSION:

The implementation of home-based DOT seems to be a challenge particularly because in Sub-Saharan Africa no qualified health personnel are assigned for its implementation. This is because even the available qualified health personnel in the health facilities are short staffed and cannot afford to go out to the community and observe clients take anti-TB medication. Hence Voluntary Community Workers are engaged to assist in DOT. However, since the Voluntary Community Workers are not employed by the health care system they are accountable neither to the client nor the health care system. There is no formal system through which the Voluntary Community Workers collaborate with the health facility personnel.

If the Sub-Saharan Africa countries want to continue to utilize Voluntary Community Workers in the implementation of home-based DOT they need to consider formalizing contracts and offering them incentives. Also have qualified staff supervise the work of Voluntary Community Workers on a regular basis (monthly or fortnightly), and offer periodical training for the Voluntary Community Workers so that they could develop some level of competency. Since the burden of DOT is overwhelming to the Voluntary Community Workers because many people require it as most individuals are co-infected with HIV, transportation for the Voluntary Community Workers could be eased by offering them motorbikes. The Voluntary Community Workers may not need to visit the clients on DOT on a daily basis but on some days utilize the available technology, such as sending text messages or call to remind the client to take medication. This will encourage the client to practice self-care and minimize some ethical concerns related to DOT. Furthermore, clients suffering from TB need to be counselled about their condition and its management, so that they may adhere to anti-TB treatment independently.

The health professionals need to be actively involved in the communities where they have to empower influential community members with knowledge on TB and its management. If influential people are informed they will impart the knowledge to other community members. In addition, the health care system needs to develop a feasible health facility-facility and community-community client transfer system, so as to reduce the number of clients who are lost to follow-up as a result of relocation.

Home-based DOT is beneficial to the client who might be very week and may not have the energy and money to travel to the health facility on a daily basis to obtain facility-based DOT. One would therefore recommend that home-based DOT be not phased out but rather be better planned by the health care system for the benefit of the client and community at large, by controlling the spread of TB.

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