Anti-Retroviral Therapy (ART) & Therapy Adherence of People living with HIV/AIDS"

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BACKGROUND: The subject, "Antiretroviral therapy (ART) & therapy adherence of HIV/AIDS patients, which examined: (I) The quality of patient and client interactions and loss to follow-up; (II) To understand organizational factors affecting ART adherence; (III) Organizational capacity to deliver ART services. The recent introduction ART has

What is Anti-retroviral Therapy? ARV refers to substance that stops or inhabits the replication of retrovirus such as HIV. The recent introduction of combination ART has reduced HIV/AIDS morbidity & mortality by 60% to 90% and improved the quality and duration of life PLHA. The aim of ART is general to prolong and improve the quality of life by maintaining maximal supervision of HIV replication for as long as possible. The reduction in plasma viraemica achieved with ART accounts for much of the clinical benefits associated with ART. The choice of regimen depends on a numbers of factors. These includes among others, the cost of therapy availability and medium/long term affordability, convenience and like hood of adherence, regimen potency, tolerability and adverse effect profile, possible drug interactions and potential for alternate treatment options in the initial drug regimen fails. ART has been shown to benefit both adults and children.

What is Adherence?Adherence is defined as patient's ability to follow treatment plan, take medications at Prescribed times and frequencies and follow restrictions regarding food and other medications. Both patients and health providers face significant challenges with respect to adherence to ART. Once initiated, ART is a lifelong treatment the consistence of multiple medications to be taken two to three times a day with varying dietary instructions. These medications have side effects some of which may be temporary whiles others may be more permanent requiring a change a treatment. In adequate adherence to treatment is associated with detectable viral loads, declining CD4 counts disease progressive, episode of OIS.

INTRODUCTION: The challenges facing the health system in India are likely to impact on life-long adherence for patients in the context of the rollout of ART. Smaller ART programs have been able to demonstrate good adherence rates, but the question remains if this can be achieved by large public sector ART programs. Most adherence researchers share the basic understanding that patients are adherent when they take their medications as prescribed by the health provider. An approach to adherence that combines both clinical and social knowledge- a biosocial approach- is likely to move us to a better understanding of adherence and how to improve adherence to ART. This study on ART adherence of HIV patients aims to gather and document information that could be used to improve services and program strategies for strengthening and maintaining adherence at ART rollout sites in Kolhapur district.

FACTORS AFFECTING ADHERENCE: Currently, very different approaches and models are being adopted to promote ART adherence, but it is not clear if and how effective these are. A study in the USA, which examined barriers to positive adherence, showed that forgetfulness, social and physical environment, drug side effects and patient knowledge played a role. Factors associated with good adherence included use of mechanical devices, commitment, social and professional support and health beliefs. In comparison, recently reported results of a workplace ART program in India showed that being away from home, forgetfulness and feeling worse were commonly cited reasons for missing tablets. The study also examined reasons patients declined to initiate ARVs. The most common reasons for refusal were not being convinced of the benefits of treatment, and inability to

accept HIV diagnosis. In general, it is commonly acknowledged that multi-faceted interventions, including social support are needed for good chronic disease care outcomes, yet research on ART adherence has tended to focus on micro factors limiting themselves to experimental control such as educational strategies, scheduling accommodations to the regimen, and various forms of reminders, which achieve only modest results. Adequate attention has not been paid to research required to understand how social factors influence adherence. It is however, known that several sociological and psychological factors influence adherence of patients to treatment, and these have been summarized to include:

Scheduling Demands and Accommodations: Scheduling demands are challenges which relate to work, daily routine and mealtime dosing, and scheduling accommodations are the steps taken to deal with these challenges e.g. pill-boxes, use of a timer, fitting work routine to fit daily medication schedule.

Cognitive demands/accommodations**:** Cognitive demands refer to patient difficulties in concentrating, forgetfulness and inadequate information. Cognitive accommodations refer to accurate understanding of purpose of ART, feedback on adherence achieved, and patient education.

Mental Health: Refers to depression, hopelessness, anxiety, psychiatric morbidity, and avoidance of positive attitudes about the future, long term plans and goals, active-behavioral coping, and stable mental health all demonstrated consistent relationships with adherence.

Treatment and Medication Attitudes: Fear and skepticism of the drug regimen, mistrust and myths regarding treatment, trust in drug efficacy and positive expectations of their effect are consistently associated with adherence.

Social Climate: Social support, confidentiality fears and fear of public exposure are either positively or negatively associated with adherence.

Provider support: This includes the extent of support from the care provider, and the patient's perception of the provider's degree of caring.

Adherence and Antiretroviral Drug Resistance: Non-adherence to ART has been clearly implicated in the development of antiretroviral-resistant virus. Initial views, based upon experience with tuberculosis, suggested that patients with low levels of adherence might be at greatest risk for developing drug-resistant infection. Recent data suggests that the relationship between adherence and resistance is more complicated and likely varies by antiretroviral class.

PREDICTORS OF ADHERENCE: A number of factors have been associated with non-adherence to ART. Understanding these factors can increase a clinician's attention to adherence when working with particularly susceptible patients and can inform the development of interventions to improve adherence. Several excellent reviews addressing the predictors of adherence have been published. The factors associated with medication adherence are commonly divided into 5 intersecting categories.

1.Patient Variables: Patient variables include socio-demographic factors (age, gender, race/ethnicity, income, education, literacy, housing status, insurance status, HIV risk factors) and psychosocial factors (mental health, substance use, social climate and support, knowledge and attitudes about HIV and its treatment). Studies report conflicting evidence about the association between socio-demographic factors and adherence behavior. Nonetheless, when an association is found, the direction is consistent: younger age, nonwhite race/ethnicity, lower income, lower literacy, and unstable housing are associated with non-adherence in resource-rich settings. Gender, educational level, insurance status, and HIV risk factors generally are not associated with adherence behavior. More consistent associations are found between certain psychosocial factors and

adherence behavior.Commonpredictorsof non-adherence include depression/psychiatric morbidity, active drug or alcohol use, stressful life events, lack of social support, and the inability to correctly identify the drug regimen or describe the relationship between adherence and drug resistance.
2.**Treatment Regimen** Factors related to the treatment regimen include the number of pills prescribed, the complexity of the regimen (dosing frequency and food instructions), the specific type of antiretroviral drugs, and the short- and long-term medication side effects. The complexity of the regimen and side effects caused by it are clearly associated with non-adherence. At least 1 study has found the number of pills per dose to be associated with adherence. The impact of once-daily regimens on adherence behavior, amid great hope for a beneficial effect, has yet to be examined adequately. Other studies report that the "fit" of the regimen into an individual's daily routine is another important determinant of adherence. The specific type of pills prescribed generally is not associated with adherence behavior.
3.**Disease Characteristics:**Disease characteristics include the stage and duration of HIV infection, associated opportunistic infections, and HIV-related symptoms. A few studies describe a relationship between HIV-related symptoms and non-adherence. Other studies describe an association between a lower CD4 count and non-adherence, although this finding is seen less consistently across studies. Two studies describe increased adherence in those with a history of opportunistic infections. The authors postulate that experience with illness stokes the desire for health and a motivation to adhere.
4.**Patient-Provider Relationship:** Patient-provider relationship characteristics that may affect adherence include the patient's overall satisfaction and trust in the provider and clinic staff, the patient's opinion of the provider's competence, the provider's willingness to include the patient in the decision-making processes, the affective tone of the relationship (warmth, openness, cooperation, etc), the concordance of race/ethnicity between patient and provider, and the adequacy of referrals. Clinical studies investigating the effect of the patient-provider relationship on adherence behavior are limited. A patient's trust in the physician has been associated with improved adherence in at least 2 studies of incarcerated women. A qualitative study using focus groups of HIV-positive men and women reported improved adherence when a patient has a longstanding and trusting relationship with a single provider.
5.**Clinical Setting:**Aspects of the clinical setting that may influence adherence include access to ongoing primary care, involvement in a dedicated adherence program, availability of transportation and childcare, pleasantness of the clinical environment, convenience in scheduling appointments, perceived confidentiality, and satisfaction with past experiences in the health care system. Again, despite an association being intuitive, clinical studies addressing the relationship between the clinical setting and adherence behavior are very limited. Dissatisfaction with prior experience in the health care system has been associated with non-adherence. In conclusion, many factors have been associated with adherence behavior. Some of these factors are largely immutable by the clinician, such as older age, low income, low literacy, and the patient's social milieu. Immutable factors can nonetheless be used by clinicians to help identify those patients at high risk for non-adherence so they can receive the most intensive adherence support. Other factors associated with non-adherence are potentially alterable, such as depression, substance abuse, homelessness, regimen complexity, medication side effects, and the therapeutic relationship between patient and provider. Alterable factors that impact adherence should be attended to, if possible, prior to starting ART, and in a proactive and ongoing way throughout therapy.
INTERVENTION TO PROMOTE ADHERNCE: Increasing recognition of medication adherence as a crucial factor in treatment outcomes has sparked a number of recent studies investigating

methods to support and improve adherence. The following is a synopsis of selected adherence intervention studies, organized into 5 categories: Patient Education and Collaborative Planning, Adherence Case Management, Directly Observed Therapy, Simplified Treatment Regimens, and Adherence Devices. Additional information about antiretroviral adherence interventions can be found in a number of recently published review articles on this topic

A.Patient Education and Collaborative Planning: The majority of antiretroviral adherence interventions reported in the literature involves dedicated time with patients to plan for and support medication adherence. The nature and frequency of these interventions vary, but those that appear effective are characterized by an initial educational session including individualized collaborative medication planning with follow-up sessions maintained regularly over the course of treatment.

B.**Adherence Case Management**Adherence case-management programs consist of intensive adherence education and collaborative planning that is multidisciplinary and designed to be maintained over an extended period of time. In practice, such programs are designed for patients who have demonstrated, or are at great risk for, inadequate adherence and can exist separate from or within the primary clinical site.

C.**Directly Observed Therapy:** Directly observed therapy (DOT) has been identified as a possible means of helping patients with difficulties adhering to ART. Enthusiasm for DOT in HIV care is based on its successful use treating non-adherent patients with tuberculosis (TB). TB, however, differs from HIV in several relevant respects. TB is curable and the duration of its treatment is limited, whereas treatment of HIV is thought to be life-long. Treatment of TB can be compelled by law because of the risk of airborne transmission, whereas treatment of HIV is voluntary. Furthermore, some have argued that the successes documented in programs offering DOT for TB result more from the strength of structural elements of the programs, such as a reliable drug supply, than from witnessed dosing.Nonetheless, due to the evident difficulties with medication adherence, DOT in HIV has been evaluated in a number of recent studies in the developed and developing world. One study compared 50 incarcerated participants who received their initial ART through DOT with 50 patients initiating ART at an outpatient clinic who monitored their own medication

D.**Regimens:** Treatment regimens as simple as 2 pills once or twice daily are now available and have the potential to reduce the scheduling requirements and pill burden associated with ART. Studies clarifying the potency of these regimens, the patients for whom they are appropriate, and their long-term clinical benefit are emerging. Adherence to simplified regimens, in particular to those taken once daily, is of great interest and concern. On one hand, as discussed above, regimen complexity (dosing frequency plus food instructions) and pill burden have been identified as predictors of non-adherence.

E .**Adherence Devices:** A variety of devices that may help patients adhere to their treatment regimens are available. Most of them are simple, inexpensive, and easy to integrate into the routine care of patients on ART. Because these devices are often provided free of charge by pharmacies or pharmaceutical companies, it is usually possible for clinicians to provide these devices or for patients to obtain them on their own. The following are examples of commonly used adherence devices.

F. **Medication Organizers:** Medication organizers (Example. pillboxes, medicates) are readily available and come in many different shapes and sizes appropriate to the needs of individual patients. They allow patients to organize their weekly doses of medication in 1 convenient location instead of carrying multiple pill bottles, and to verify whether they have taken a given dose. Patients taking

pillboxes to appointments helps clinicians monitor for recent non-adherence. When a new regimen is prescribed, clinicians commonly supervise patients as they set up their first medication organizer. Some pharmacies also provide medications prefilled into weekly organizers. Medication organizers are a staple of adherence case-management programs for HIV and other diseases.

G .**Reminder Devices:**Reminder devices are particularly important given that patents cite "simply forgot" as the primary reason for missed doses. Common devices include alarms on watches, beepers, or other electronic items that allow for multiple daily reminders. Calendars, paper or electronic, allow patients to document scheduled doses and note when they have been taken.

H. **Visual Medication Schedules:**A visual medication schedule (VMS) shows pictures of prescribed medications superimposed upon a weekly calendar. Images of many prescribed medications are available in sticker sets provided by drug makers or in computer programs. It is also possible to create a VMS by affixing actual pills to a paper calendar. A VMS can help ensure that the patient understands the prescribed regimen and can help other caregivers assist in medication adherence. A VMS provided at each clinic visit has been shown to improve outcomes in patients receiving anticoagulation therapy, another situation requiring chronic treatment and exact adherence.

I.**Cost-Effectiveness of Adherence Interventions:** The cost-effectiveness of antiretroviral adherence interventions is difficult to assess because the cost of such interventions is not well defined, and because the long-term clinical benefit of improved adherence does not lend itself easily to quantification. One study used a model to assess the impact of adherence interventions on patients' costs of care and life expectancy in a developed-world setting, investigating low-cost (eg. electronic reminders, medication organizers) and high-cost (eg, DOT) interventions in hypothetical cohorts of patients at varying stages of the HIV disease progression.

CONCLUSSION: One likely reason is that this population of HIV positive patients on ARVs may over represent those who cope better. It is possible that some of those who dropped out were less able to cope. It was not possible to follow-up with these patients to determine how different they were in terms of their coping ability, access to and use of social support services and their adherence rate as the facilities maintained little or no contact with, or information on drop-outs. However, it could be postulated that the majority of the respondents had accessed adequate social support and were already coping with their HIV status prior to treatment initiation.

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