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# Self-Management Strategies to Curb the Development of NCDs in Rural Communities

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## Abstract

Prevalence of Non-Communicable Diseases (NCDs) in both Low- and Middle-Income countries is viewed as problematic and could lead to side effects when poorly managed. Therefore, serious intervention whereby People Living With the NCDs (PLWNCDS) could take a lead in controlling the side effects and managing the diseases themselves so that they maintain the QoL. To review and discuss literature related to self-management strategies to curb the development of NCDs in rural communities. Comprehensive Literature Review was used to collect data by reviewing literature related to self-management strategies to curb the development of NCDs in rural communities. The results of literature review showed that Self-management of NCDs is viewed as the only way to improve health outcomes and maintain QoL, by employing relevant strategies which will assist in achieving healthier life despite the situations at rural communities. Western World health systems have NCDs management centres at the community level to empower patients with knowledge for improving their QoL, whilst such centres do not exist in the Low-and Middle- Income countries poor communities. The PLWNCDS and residing at rural communities in Low- and Middle- Income countries can benefit from NCDs self-management strategies, despite the poor conditions.

**Keywords:** non-communicable diseases, people living with NCDs (PLWNCDS), low- and middle-income countries, rural communities, quality of life

## 1. Introduction

The prevalence of Non-Communicable Diseases (NCDs) in both Low Income and Middle Income countries is viewed as problematic. Therefore, serious intervention whereby people with the NCDs could take a lead in controlling the side effects and managing the diseases themselves so that they maintain the quality of life [1]. Self-management of NCDs is viewed as the only way to improve health outcomes and maintain quality of life. In maintaining the quality of life it is believed that the People Living with NCDs (PLWNCDS) have to employ various relevant strategies which will assist in achieving healthier life despite the situation they find themselves in especially in rural communities. In the Western World health systems there are Non-Communicable Diseases (NCDs) management centres at the community level to empower patients with knowledge on how to care for themselves to improve

their quality of life [2], whilst such centres do not exist in the Low Income and Middle Income countries poor communities. Therefore, this chapter is aimed at explaining various self-management strategies that PLWNCDs could use in rural communities to raise awareness and as a means of providing information about management of the diseases.

## **2. Knowledge of PLWNCDs in managing the condition**

It has been observed that mostly PLWNCDs in rural communities have limited knowledge when it comes to self-management of the disease including NCDs. The basic things which they understand and believe in is mostly the traditional herbs which might be used to curb the diseases' signs and symptoms. There is lack of knowledge on the lifestyle that communities and PLWNCDs could adhere to in order to minimize predisposing factors and also complications of NCDs. They lack knowledge on the type of diet, exercises they must engage in and the fact that they must avoid excessive alcohol intake and cigarette smoking. The identified lack of knowledge in managing the diseases calls for provision of basic health education at all levels of care especially at primary health care level in order to target rural communities where the problems has been identified. The following has to be included in the health education programme:

### **2.1 Motivational interview**

The HCPs professionals have to use motivational counseling whenever they are consulting or interviewing the PLWNCDs. They should not use directive questions but make sure that the questions asked encourages the PLWNCDs to take part in planning for the health care intervention so that they have that feeling which indicates that they are fully participating in their care and are listened to by HCPs who will be encouraging them to participate and make calculated decisions. This interviewing style of asking the PLWNCDs provocative questions and discussing their responses, often helps uncover important self-management issues and has been proven that is effective in preventing relapse in patients as they will be part of the decision-making process. Motivational interview interventions have been found to be effective in enhancing adherence to intake of chronic diseases medication [3].

### **2.2 Identifying**

The PLWNCDs will be assisted to be able to identify barriers that could be common to impede successful self-management of the disease. Mostly the barriers that exist are co-morbidities which aggravates the existing condition which needs to be self-managed. Therefore, it means that self-management strategies developed with the assistance of the HCPs must include on how to also manage the co-morbidities. A Mixed Method United States study investigating barriers to chronic disease reporting in public schools reported that improving parental education will help in improving chronic disease reporting [4].

### **2.3 Practice**

HCPs are encouraged to support PLWNCDs in self-management of the condition by making changes in practice systems to accommodate these individuals. Group visits or support groups sessions could be arranged on scheduled times known to everyone who belongs to the group so that they can discuss on how they

could self-manage their condition by getting advice from others who are in the similar situations. The HCPs could explain to PLWNCDs the disease management guidelines that could be used including patient reminders and to structure planned visits for review to suits the patients' time. A study about practice change in chronic condition care, encourages the use of theories, which must be adapted and supplemented [5].

Theory enables greater understanding of the relationships amongst factors that influence behavior change [6]. Theories which could be used. Health educational which contains behavior change are extra effective in the management of NCDs. Some of the theories which could be used in practice change includes Health Belief Model (HBF), Trans Theoretical Model (TTM) and Social Cognitive Theory (SCT). The HBF emphasizes that perceived threat as a motivating force and perceived benefits as offering desired course of action, while TTM views behavior change as a process wherein individual's progresses through a chain of awesome stages of change and lastly the SCT describes gaining knowledge as a reciprocal interaction between an individual's cognitive processes, environment and behavior (reciprocal determinism).

## **2.4 Community**

The PLWNCDs could be assisted with improving and controlling pain and mood through participation in programmes emphasizing four efficacy-enhancing strategies: mastery of skills through learning and practice, modeling by inspirational role leaders, encouraging participants to attempt more than they are currently doing and re-interpretation of symptoms to distinguish pain caused by the disease from those that caused by therapeutic interventions. NCDs require life-long self-management with regular HCPs' support and supervision [7–9].

## **2.5 Telephonic helpline**

The Department of Health could assist the PLWNCDs by creating a telephonic helpline where the calls could be answered and assist the PLWNCDs to manage the challenges such as symptoms they are experiencing at that moment prior going to the Primary Health Care Clinic. These telephonic helplines can also assist in clarifying issues like how to take treatment when they have forgotten the medication instructions. It has been found that the use of telephone-based patient self-management of chronic diseases is more cost-effective way to minimize healthcare expenditures [10].

## **3. Billboards, pamphlets, educational booklets, posters and radio talks**

The Department of Health (DoH) and also HCPs have equal responsibilities in making sure that health messages which include health advise reach to individuals in need including PLWNCDs. The DoH has a responsibility of making sure that health messages are placed on billboards which are believed to be influential platform to educate people on health issues. The HCPs professionals have to write Pamphlets, Educational Booklets and Posters which can convey health messages to PLWNCDs. The pamphlets and educational booklets could be distributed at the Primary Health Care clinics and also at local shops and saloons whilst the posters could be displayed on notice boards at the clinics and also on poles along the streets. These will encourage everyone to read through as long as they are visible. Old PLWNCDs who cannot read and write can also request the children whom they are living with to read through for them. All these Billboards, Pamphlets,

Educational Booklets and Posters must also be written in local language. The DoH has to approach local radio stations to provide slots where HCPs could be able to reach out communities to provide Health Education on NCDs. These sessions must also have questions and answers sessions where listeners could be provided with an opportunity to ask questions where they could be provided with an opportunity to be clarified on issues they do not understand as far as NCDs are concerned. It has been found that the use of mass media campaigns can change health behaviors of the people in line with the communicated message [11].

### **3.1 Other related roles executed by HCPs to assist PLWNCDS to manage NCDs**

HCPs should advise PLWNCDS to visit clinics with their families or guardians, at least quarterly, to receive health education together so as facilitate self-management. Support groups for PLWNCDS should be initiated by the facilities to promote acceptance of the condition and give health education when patients come to collect their medication. Community structures must be developed, the Home-Based Carers should be trained to facilitate the programmes to execute activities to assist the PLWNCDS to manage their condition. A South African study reported limitations and challenges to the roles of Community Health Workers (CHWs), which includes not maximally using home visit for health education and further that CHWs are most focused on the sick people and not preventing vulnerable family members [12].

## **4. Strategies by health care professionals (HCPs) in assisting PLWNCDS to maintain quality of life**

It is evident that for the PLWNCDS to adhere to self-management strategies themselves, Health Care Professionals (HCPs) must work together with them to design, develop and implement health plan which has to focus on short and long term goals that could be sustainable, effective, efficient and could be manageable.

The following are the strategies that could be used by HCPs to assist the PLWNCDS which has been found to be successful in countries in the European Region such as Italy, Montenegro, Azerbaijan, and Tajikistan [13], and helped in adherence of self-management strategies and to control the condition:

### **4.1 Self-management support**

Families, friends, community members and different categories of Health Care Providers (HCPs) must be educated on Self-Management Support so that they provide relevant support to PLWNCDS and their family. The support should be developed with the PLWNCDS so that he/she can own the decisions taken and focus on reducing health risk thus maintaining quality of life [14]. The following are the support that is relevant to the PLWNCDS so that they can be encouraged to take care of themselves:

*Patient centred:* Self-management programs should be initiated so that they empower PLWNCDS to take a lead role in planning care and should support them to work in partnership with their HCP to set goal and action plans [14]. The patients will be able to adhere to what they have planned for with HCP because they were involved from the beginning in planning their care. This will also encourage them to implement all strategies advised with in controlling the disease. It has been found that the management of chronic disease encourages patient-centered care such legitimizing lived experiences with disease and acknowledging patient expertise [15].

*Psychological support:* It may be necessary to provide psychological support so that people can be able to cope with the disease and also accept their self-manage which might have been changed by the disease [11]. The health care facilities in the Primary Health Care environment must have psychologists to cater for psychological problems. The advices that they give to PLWNCDs will make them to realize that they can be able to avoid the stressors in the environment that they leave in so that they cope with the disease and play a significant role in maintaining their quality of life.

*Cultural-relevance:* Programmes that are offered for the PLWNCDs should be context-specific because it will also be culturally sensitive and appropriate for different cultural groupings that might exists in the same community [14], provision of care to communities must be relevant and appropriate so that it could accepted by everyone. Thompson [16] recommended that medical interventions should recognize and respect diversity of religious, spiritual and cultural beliefs in the practice.

*Systematic follow-up:* HCP at primary health care level have to conduct clinical assessments on the people in need at community level and follow-up care system must be established [14]. Self-Management Support has been found to be the most frequently used intervention in Chronic Care Model, which is associated with improvements, particularly amongst people living with diabetes and/or hypertension [17].

## 4.2 Self-management responsibility

The PLWNCDs have to take responsibility to maintain their own health by making sure that they manage themselves remotely away from the HCPs.

- It is advisable that those with smartphones could be able to set up reminders on their cellphones to remind them on the time to take their medications, clinic follow-up dates and also save short messages of when to eat and the type of diet to take. These reminders have been proven to assist in adherence to medication instructions and also health advise. It is evident that all these methods of reminding a person will assist them in adhering to medication and health advise instructions.
- The PLWNCDs has to be provide with a small room at the Primary Health Care clinic where they can be able to monitor their own vital signs with simple operated machine such as Blood Pressure, Temperature, Glucometer machine and weighing scale as these will assist them with self-monitoring without calling any HCP to assist.
- Initiating support groups at Primary Health Care level when visiting the clinics will assist PLWNCDs in advising one another on how to adhere to all health and medication advise and instructions so as to achieve health outcomes when living with NCDs, share experiences and also share strategies they use to adhere to health instructions.
- The PLWNCDs must commit themselves to behavioral change as this is key in making sure that they eliminate what is harmful to their bodies and maintain behaviors that will promote quality of life which include amongst other things adherence to correct diet, engaging in physical activity, cessation of smoking and drinking an acceptable amounts of alcohol.

Disclosing the disease to family members who will in turn play a role in treatment supporter and also encouraging to adhere to health advice such making sure that the whole family control salt intake and engage in physical activity just to support PLWNCDs that they are living with. The family members will also do more in making sure that they support their loved ones [1].

## **5. Strategies that could be adhered to at community level to manage NCDs**

The following are the NCDs management strategies that could be used at community level to manage the disease:

### **5.1 Establishment of trust within community members**

Interpersonal positive relationships amongst community is key for management of NCDs because they can support and adhere to reasonable self-management strategies in controlling and maintaining quality of life whilst living with the disease. Establishment of mentors within the communities to promote maintenance of healthy lifestyle and encourage PLWNCDs to adhere to health care and medication instructions. An American Study pointed out that the structural collaboration between health system and community organizations helps in improving healthcare access at community level and also promoting preventive culture [18].

### **5.2 Establishment of community forum**

These types of forum will assist in bringing PLWNCDs together and support one another by sharing their experiences and how people are managing challenges they come across. Additionally, the forum sessions will assist in discussing which specific strategy could be used to solve and adapt to what PLWNCDs are experiencing. More knowledge will be acquired from these forums related to the disease. The health professionals are expected to form part of this forum to provide medical advice always through workshops and health education sessions. This forum could also assist in reaching out for community members who are unable to travel to hospitals due to lack of financial resources to cater for transport. The community members could also be able to identify amongst themselves people who will be able to assist with daily support to PLWNCDs so that they are able to adhere to appropriate self-management strategies. Furthermore, the community forums could engage with the local businesses so that they paste posters and distribute pamphlets that have self-management strategies for PLWNCDs. The health interventions programmes to control risk factors at community levels requires trained NCDs nurses, functional equipments and community forums [19].

### **5.3 Involve of partners in managing NCDs**

Partners of PLWNCDs can play a significant role in management of NCDs by making sure that resources needed are always to adhere to healthy life style, supporting them to adhere to medication, assisting in household responsibilities amongst other things raising children and others so as to alleviate them from stressors that could aggravate the disease. Supporting their partners to adhere to health education instructions and supporting them during medical consultations is significant. Spousal support has been found to positively influence health outcomes and improve quality of life of patients [20].

## **5.4 Common transportation to hospital for follow up visits**

The communities could be able to arrange common transport during the days allocated by nearest clinics and or hospitals to manage chronic diseases. This will assist in such a way that PLWNCDs will be able to budget for the transport money which might be cheaper than arranging own transport or even using public transport. This might also promote the sense of belonging to a group which might even serve as a support of group of PLWNCDs. It has been found that the strong and well-organized community involvement can positively influence provision of healthcare at primary healthcare level [18].

## **5.5 Fighting stigma associated with NCDs**

Stigmatization is regarded as public health issue faced by PLWNCDs leading to their discrimination, isolation and social rejection from the society [21]. Stigmatization may negatively impact on the health of PLWNCDs and further increase the overall burden of the disease. The HCPs needs to take actions to help PLWNCDs on ways to fight the stigma through hearing experiences of the patients and further raising community awareness.

## **6. Strategies that could be used to support self-management for PLWNCDs**

The self-management strategies that could be used are inclusive of that the PLWNCDs have to realize that they have responsibility to take care of self in managing the chronic condition which has to go beyond identifying the challenges they are experiencing but to solve problems they have. The perception is that if PLWNCDs practice healthy lifestyle to mitigate predisposing factors therefore they will be able to also manage the condition later in life [22]. Self-management of chronic condition calls for the PLWNCDs to work together with family, community and also the HCP to manage the condition in facilitating care this will be focusing on promoting wellness and lessening deterioration of health.

Self-management strategies must include the following:

### **6.1 The importance of knowledge acquisition related to the disease**

The PLWNCDs must seek knowledge related to the condition, treatment they are taking and lifestyle to maintain. This will enhance how they management the condition because they will be able to know all aspects related to the disease condition including the complications, the type of treatment and its side effects. These will assist them to adhere to health advise and medication instructions. The existence of knowledge about the condition and all related aspects will enable them to take a lead in making lifestyle changes to promote quality of life.

### **6.2 Development of self-management plan**

The PLWNCDs are expected to develop a self-management plan which is inclusive of strategies which will assist in coping with psychological effects caused by the condition. They need to request for the psychological assistance with problem solving and decision-making skills related to daily life experiences and or challenges. Given the problem solving and decision-making skills they would have acquired they will be assisted in adherence to health advise and medication instructions.

The PLWNCDs must draw a self-management plan that include action plan of enhancing health advise and medication adherence because if they draw the plan themselves with short- and long-term goals, they will own that decision and make sure that they achieve what was planned.

### **6.3 Cessation of smoking and alcohol intake**

The PLWNCDs who are smoking have to stop and those who are drinking excessively alcohol are encouraged to minimize. The reasons for the importance of the changed behavior must be clear to PLWNCDs so that they do not return back to old habits ever again. The importance of cessation of smoking that must be known to PLWNCDs is that the risk of developing acute myocardial infarction drops immediately when one stops smoking and continues to decline each year until ones' health is the same as those who are not smoking within the period of 5 years. Smoking cause the development of atherosclerotic disease, acute coronary disease and has an effect on platelets and for PLWNCDs to smoking will save them from ill health adding to already what they are experiencing [22].

The importance of not drinking alcohol for the PLWNCDs is that they will be saving themselves from liver diseases such as alcoholic hepatitis and pancreatitis [23]. Therefore, it will be valuable for PLWNCDs to quit than to continue smoking and or drinking alcohol as there are more complications that may arise.

### **6.4 Monitoring of ones' vital signs and symptoms**

The PLWNCDs must be taught and know how to monitor vital signs and symptoms of the condition so that they could seek for medical help and or control them timeously to prevent severe complications. This will also assist them to adhere to a lifestyle that bring about improvements in their daily living. Self-monitoring of vital signs and symptoms is useful because it leads to reduction of hospitalization and re-admissions to hospitals because PLWNCDs can be able to identify problems and deal with them timeously [24]. Cardiovascular diseases, cancer, chronic respiratory diseases and diabetes are amongst the leading cause of NCDs with specific signs and symptoms [25], however, common signs and symptoms of NCDs includes pain, fever, headaches, swelling, inflammations, and stiffness of joints.

### **6.5 Minimize salt, sugar sweetened and unhealthy food**

Salt and sugar sweetened intake need to be controlled as it influences the functioning of the cardiovascular systems resulting in worsening the condition for PLWNCDs. The regular consumption of salt intake and sugar-sweetened food is discouraged for PLWNCDs because they contribute to an increase in blood glucose and blood pressure. Many guidelines recommend that patients with NCDs should reduce both sugar-sweetened and sodium intake. PLWNCDs need to know the type of drinks that should not be taken as they could raise blood sugar levels and also high blood. The PLWNCDs need to know that they can improve their blood sugar levels when their carbohydrates intake is between 5–35% of their calories. The key to eating well when living with NCDs is to eat a variety of healthy food from each of the food groups that is Proteins, Carbohydrates, Fruits and Vegetables. PLWNCDs have to avoid food such as cakes, cookies, refined grains, muffins or anything made of white flour [26]. Therefore, changes in diet involve PLWNCDs' greater commitment and introducing changes in lifestyle that are not necessarily happily accepted but to give up consuming foods that they truly enjoy but which they are forced to exclude in their diet [24]. A healthy eating includes intake of 400 g or five portions

of fruits and vegetables, 30% of total energy intake of fats [27], less than 10% of total energy intake from free sugars, which is equivalent to 50 g or about 12 teaspoons [28], less than 5 g of salt per day which is half a teaspoon [29] and consumption of variety of food.

## **6.6 Engage in healthy habits**

The PLWNCDs has to stop to engage in unhealthy activities and modify their lifestyle in totality in order to promote quality of life [30]. The by PLWNCDs must engage in physical activity, adhere to diet, medical and health advise which is good for their condition [31]. It must also be clear to PLWNCDs that adherence to correct diet, medical and health advise is important because what one eats and do influence how the body reacts to a condition.

The PLWNCDs must engage in physical activity so that they can keep lower blood pressure and cholesterol levels lower, improve blood flow and keep body weight under control. Furthermore, they must know that physical activity boosts energy level that will assist in getting work done without feeling exhaustion, it promotes positive attitude in an individual that resulting in relieving someone stress of not appreciating oneself and it promote sleep thus resulting in a good rest. The PLWNCDs need to know that engaging in household chores does not not replace in engaging in physical activity.

## **6.7 Management of own stress levels**

Another self-management strategy that PLWNCDs must adhere to is to **manage own stress levels** to avoid falling into depression that could worsen their condition to an uncontrollable state. Stress is one of the main problems amongst PLWNCDs and this led to development of chronicity which must be avoided by the people. In other words, stress can be considered as a cause and as well as a consequence of NCDs. On the other hand, stress increase glucose and glycosylated hemoglobin which may increase stress levels amongst individuals with Type 2 diabetes, as well as causing other physical, behavioral and mental disorders [32], this must be avoided, and HCPs need to skill up by PLWNCDs.

NCDs management must be known to by PLWNCDs as a constant process; it is an ongoing challenge that maybe complicated by the impact of stress. Excessive stress is a major barrier to effective control of the condition and a danger to PLWNCDs' general health. Whether or not you have NCDs, stress is harmful because it causes so much wear and tear on the body. The ability to think clearly and to make good decisions is impaired when the mind is burdened therefore, it is advisable to PLWNCDs to seek professional help when they feel stressed and be able to know when they are stressed [33]. Stress management and avoidance of stressors is key when leaving with NCDs to promote quality of life.

## **6.8 The importance of adherence to prescribed medication and Health advise to maintain quality of life**

The PLWNCDs are dependent on treatment they collect from the health facilities therefore it is important that they are encouraged to collect their medications as instructed so that they do not miss the treatment. However, in rural areas sometimes medications are not always available when they arrived to collect in Primary Health Care clinics therefore, the PLWNCDs are advised to go 3 days or prior finishing the medications that they are having so that if they do not find them they will be having enough to visit the nearest hospital to get the medications. They are also encouraged

to have treatment buddies who are relatives who will encourage and monitor them to take treatment as prescribed. It is also important that PLWNCDs have knowledge of the importance of adherence to treatment such as its efficacy, pharmacological action and complications when it is not taken correctly. The fact NCDs management is complex, requiring a life-long commitment and drastic changes to the patient's lifestyle the PLWNCDs has to make sacrifices and adhere to various lifestyle changes which have been mentioned. Social support from family members is also key therefore, PLWNCDs have to disclose their diagnosis to family members so that they can provide them with practical help and can reduce lack of adherence to health advice and medication instructions [34]. Quality of life is about how good or bad a person regards their life to be, and not what other people necessarily imagine it to be [35], and it is maintained through adherence to treatment, exercise and healthy eating.

### **6.9 Self-care activities**

Patients exhibit poor self-care behaviors. This is significantly associated with the level of education and not having knowledge about the NCDs which emanated from low levels of education of PLWNCDs. Therefore, PLWNCDs must be educated of self-care activities which will assist them in maintaining quality of life that is taking care of their selves to be clean, in the era of pandemic such as COVID-19 consistent washing of hand with soap and water, wearing of face mask and staying in a well ventilated space must be maintained. Taking acceptable portion of well-balanced diet without must be an option always for PLWNCDs [36].

Adequate knowledge of foot care to those who have diabetes because if this is not done, they need to know that it might contribute to ulceration that could result in amputation that could increase stress levels in ones' life and further increase financial burden [37].

## **7. Other related important information for self-management that PLWNCDs could adhere to**

The information includes the following:

### **7.1 Existing knowledge related to medication taken for NCDs**

A chronic disease, such as NCDs is taken as a burden for the person who lives with it therefore to accomplish good self-care so that one can be able to accept decisions and self-manage the disease in daily basis. The level of knowledge about the disease empowers the patient to act as an equal partner in the management of the disease [38]. Patient education for NCDs control was found to be the cornerstones of their disease management.

### **7.2 Self-management programme**

The establishment of the education workshops as part of NCDs medical management could assist the PLWNCDs and controlling the disease. The annual meeting and health days whose purpose is to provide a regular forum of communication on management of NCDs will be important to assist the PLWNCDs to manage their condition. In order to accomplish good self-care, patients need to be qualified and able to accept decisions and self-manage a disease on a daily basis and these workshops and meetings could achieve that. The level of knowledge about the disease empowers the patient to act as an equal partner in the management of the disease.

### 7.3 What need to be done to promote adherence

Low health literacy of PLWNCDs must be addressed through educating them to understand the treatment and also health instructions. These teachings must be personalized for each patient and for each medication. Teach them on how to interpret medication labels and medication information correctly. This is common even when labelling requires minimal reading skills. For example, instructions to take medicine twice daily (which is vague since 'daily' means once per day) or every 12 hours means individuals must make further decisions about what the words actually mean.

"Take medication as directed" is even more difficult to interpret and the instructions need to be broken down further. Patients are more likely to understand more specific medication administration times such as 08 a.m., 06 p.m. but indicating times may be useful to or suit some individuals better than others. These instructions, advice or education must be clear to PLWNCDs to promote adherence.

## 8. Conclusion

People Living With NCDs from low- and middle- income countries and residing in rural communities can adopt and employ various relevant NCDs self-management strategies for controlling side effects, improve health outcomes and general well-being, including maintenance of quality of life.

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