

# Family physicians and patients' compliance

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## Abstract

Family physicians play a vital role in the care of a wide range of patients. They are often the first point of contact for those with medical needs. One major challenge faced world-wide is patient compliance with therapies. There are numerous factors affecting patient compliance and family physicians need to be aware of these whilst maintaining patient autonomy.

**Key words:** family physicians, patient compliance

## Family physicians and patients' compliance

Family physicians are the gate-keepers in healthcare organisations around the world. In many countries, they are the first point of contact with the health system. One of the main goals of family physicians is to follow patients "from birth to the grave" throughout illnesses. This is in contrast with second-line or hospital medicine, where the patient can be sometimes seen seldom or on as strictly as needed basis. "In hospitals patients come and go; the diseases persist. In general practice, the patients persist, and diseases come and go". Every year, there are several regional conferences where thousands of family physicians meet to discuss this issue. One of the crucial topics of discussion is, of course, adherence to therapy and the rational use of resources. During the past 10 years, there has been a great wave of production of guidelines and treatment regimens for chronic diseases. These guidelines are usually based on the best available evidence, but it is necessary to assess the socioeconomic, ethical and political implications of these guidelines too, as well as the impact they have on the corps of doctors working in the field. Some of the important principles to improve adherence are: maintaining and building good doctor-patient rapport in consultations, emphasizing the concept of patient-centred approach through education and research, strengthening the collaboration with home nurses and other services involved in care of the elderly patients, and finally developing better information technology and filing services for general practices to minimize the risk of failure (1).

Studies have shown that it's often difficult for patients to follow the prescription of a healthcare professional. This includes taking the right dose of medication at the prescribed time and particularly following lifestyle changes to improve health status. Unfortunately, most patients do not adhere to the prescriptions very closely.

Compliance rates in the elderly range from approximately 20%-50%. An increased prevalence of multiple chronic diseases lead to increased medication prescription per patient and the use of long term drug therapy. Patients with chronic diseases have increased difficulty following medical advice than other patients (2).

### Definition of compliance

A definition of compliance is the "Active participation of a patient in his or her own healthcare: seeking medical advice, keeping appointments, following implicit and overt recommendations concerning life style, diagnostic investigations, and medical and surgical regimens."(R. Ritch "Compliance". Primarycare optometry. September 1995. <https://www.healio.com/news/optometry/20120225/compliance>) It means that the patient will do what is needed to improve his/her health status. The improvements begin by going to see a doctor when the patient has medical complaints. The next step is collecting and consuming the prescribed medication at the prescribed times, as well as making changes in lifestyle (3).

### Compliance versus Adherence

In this era of the empowered patient, it is time to think about compliance in a different way. Compliance implies an involuntary act of submission to authority, whereas adherence refers to a voluntary act of subscribing to a point of view. The difference is not just semantic; it goes right to the heart of our relationship with our patients. We need to influence our patients to become, or remain, adherents of good self-care (4).

Occasionally different terms for compliance are used, such as adherence, concordance and pharmionics. There is a slight difference between these terms. As described above, compliance is the extent to which a patient follows the treatment prescribed by a caregiver. Concordance refers to the agreements between the patient and the caregiver and the shared decision-making process. Adherence means the extent to which a patient chooses to follow the prescribed treatment. The last term, pharmionics describes characteristics in medication taking, like the dose of the taken medication or the timing of taking the medication (5).

### Patients with chronic diseases compliance

A number of rigorous reviews have found that in developed countries, adherence among patients suffering chronic diseases averages only 50% (6,7). The magnitude and impact of poor adherence in developing countries is assumed to be even higher given the paucity of health resources and inequities in access to health care. In developed countries, such as the United States, only 51% of the patients treated for hypertension adhere to the prescribed treatment (8). Data on patients with depression reveal that between 40% and 70% adhere to antidepressant therapies (9). In Australia, only 43% of the patients with asthma take their medication as prescribed all the time and only 28% use prescribed preventive medication (10).

For most physicians, it is frustrating when patients do not follow our recommendations and instructions. We expect compliance, even though there is clear evidence

from clinical studies that we shouldn't. The Task Force on Compliance lists compliance rates in the 30-60 percent range for common chronic conditions (11), and it is estimated that only 7 percent of the people with diabetes comply with all the steps considered necessary for good blood glucose control (12).

Hypertension, dyslipidaemia and diabetes are well-known risk factors for cardiovascular disease (CVD), which is a leading cause of death and disability worldwide (13-17). Large-scale clinical trials have shown that pharmacological treatment can reduce the morbidity and mortality associated with CVD and that long-term or lifelong treatment is often indicated (18-20). According to the World Health Organization, non-compliance with long-term medication for conditions such as hypertension, dyslipidemia and diabetes is a common problem that leads to compromised health benefits and serious economic consequences in terms of wasted time, money and uncured disease (21). In addition, a recent editorial referred to the overwhelming evidence for a decrease in morbidity and mortality with the use of antihypertensive therapy, and concluded that the greatest potential for improving control of hypertension lies in improving patient compliance (22). Compliance with medication has become a topic of much research, and various interventions have been proposed to improve patient compliance. However, it has proved difficult to compare studies of compliance because of a lack of standard terminology and methodology. Two recent Cochrane reviews of interventions aimed at improving compliance with lipid-lowering and antihypertensive treatments found 'substantial heterogeneity' in the measures of compliance used and therefore did not attempt to combine specific studies (23,24). It was estimated that the compliance rate of long-term medication therapies was between 40% and 50%. The rate of compliance for short-term therapy was much higher at between 70% and 80%, while the compliance with lifestyle changes was the lowest at 20%-30% (25). Furthermore, the rates of non-compliance with different types of treatment also differ greatly. Estimates showed that almost 50% of the prescription drugs for the prevention of bronchial asthma were not taken as prescribed.

Patients' compliance with medication therapy for hypertension was reported to vary between 50% and 70% (26). One US study found that antihypertensive compliance averaged 49%, and only 23% of the patients had good compliance levels of 80% or higher (27). For the management of diabetes, the rate of compliance among patients to diet varied from 25% to 65%, and for insulin administration it was about 20% (28). More than 20 studies published in the past few years found that compliance with oral medication for type 2 diabetes mellitus ranged from 65% to 85%. If the patients do not follow or adhere to the treatment plan faithfully, the intended beneficial effects of even the most carefully and scientifically-based treatment plan will not be realized. The above examples illustrate the extent of the problem of therapeutic non-compliance and why it should be a concern to all healthcare providers, especially family physicians (29).

### Impact of poor adherence and Consequences

Noncommunicable diseases, mental health disorders, HIV/AIDS and tuberculosis, combined represented 54% of the burden of all illness worldwide in 2001(30) and will exceed 65% of the global burden of disease(31). Contrary to popular belief, noncommunicable diseases and mental health problems are also prevalent in developing countries, representing as much as 46% of the total burden of disease for the year 2001 and was predicted to rise to 56% by 2020 (30). The consequences of non-compliant behaviour in the patient with chronic diseases are quite detrimental, however, the professionals have extra work too as it leads to an increase in medical expenses. This means at large there are both medical and economic consequences of non-compliance.

Medication compliance is important in managing disease. Noncompliance can lead to lack of drug efficacy. In other words to reach the same effect of treatment, the medication dose should be increased. Poor compliance can also lead to treatment failure, disease progression, emergence of resistant bacteria when the treatment is interrupted early, medication overdose and avoidable hospitalization (32).

Non-compliance is directly associated with poor treatment outcomes in patients with diabetes and other diseases. In hypertensive patients, poor compliance with therapy is the biggest reason for poorly controlled blood pressure, thus increasing the risk of stroke, myocardial infarction, and renal impairment markedly. Data from the third NHANES (the National Health and Nutrition Examination Survey), which provides periodic information on the health of the US population, showed that blood pressure was controlled in only 31% of the hypertensive patients between 1999 and 2000 (33). Besides undesirable impact on clinical outcomes, non-compliance would also cause an increased financial burden for society. For example, therapeutic non-compliance has been associated with excess urgent care visits, hospitalizations and higher treatment costs (34). It has been estimated that 25% of hospital admissions in Australia, and 33%-69% of medication related hospital admissions in the USA were due to non-compliance with treatment regimens. Additionally, besides direct financial impact, therapeutic non-compliance would have indirect cost implications due to the loss of productivity, without even mentioning the substantial negative effect on patient's quality of life (35).

### Compliance and patient safety

Most of the care needed for chronic conditions is based on patient self-management usually requiring complex multi-therapies(36), the use of medical technology for monitoring and changes in the patient's lifestyle (37). Patients face several potentially life-threatening risks if health recommendations are not followed as prescribed. Some of the risks faced by patients who adhere poorly to their therapies include intense relapse. Relapses related to poor adherence to prescribed medication can be more severe than relapses that occur while the patient is taking the medication as recommended, so persistent poor adherence can alter the overall course of the illness and

may eventually make the patients less likely to respond to treatment (38).

### Factors affecting patients' compliance

The common belief that patients are solely responsible for taking their treatment is misleading and most often reflects a misunderstanding of how other factors affect people's behaviour and the capacity to adhere to their treatment. In order to formulate effective strategies to contain the problem of non-compliance, there is a need to review the factors that contribute to it. An understanding of the value of these factors would also contribute positively to the overall planning of any chronic disease management program. These factors include:

#### Demographic variables

The most common demographic variables studied include age, race, sex and social class. According to the literature study of Balkrishnan(39) only race has an influence on medication compliance. In contrast to the majority of the studies which showed that age was significantly related to compliance, although a few researchers found age not to be a factor causing non-compliance (40). Several studies found that patients with higher educational level might have higher compliance (41).

#### Medical variables

This includes severity and duration of illness, number of co-morbid conditions and frequency of use of medical services. Some researchers reported a positive association between having more than one chronic illness and medication compliance. Patients who use more than one type of medication are more likely to believe that they are in need of treatment and are therefore more likely to adhere to their medical regimen. Other studies show different or opposite outcomes (39).

#### Patients' beliefs and motivation about the therapy

Patients' beliefs about the causes and meaning of illness, and motivation to follow the therapy were strongly related to their compliance with healthcare (42). Negative attitude towards therapy can also be a vital factor influencing compliance. Fifteen studies showed an association between patients' negative attitude towards therapy (eg, depression, anxiety, fears or anger about the illness) and their compliance (43).

#### Family physicians-patient interaction

Most of the above mentioned problems can be reduced by good communication of instructions and information by the family physician (39). When a patient fears the side effects of a medicine, the seriousness of the disease and the importance of taking the medicine should be outlined by the physician. It is also important that the patient understands what the caregiver tells him. A patient forgets about 40% of what he is told by a caregiver. Also patients do not completely understand the information they do remember (44). This leads to misunderstanding of the prescribing instructions and makes the patient partially compliant. Research showed that patients who had more caregiver visits better adhered to the treatment plan

than patients who had less visits. A healthy relationship is based on patients' trust in prescribers and empathy from the prescribers. Studies have found that compliance is good when doctors are emotionally supportive, giving reassurance, respect and treating the patient as an equal partner. Some factors that may influence patients' trust in physicians include if the physician showed disinterest and seldom made eye contact with the patient, and also patients finding it difficult to understand the physician's language or writing. More importantly, too little time spent with patients was also likely to threaten patient's motivation for maintaining therapy. Poor communication with healthcare providers was also likely to cause a negative effect on patient's compliance (45).

### Treatment complexity

The rate of compliance decreased as the number of daily doses increased. A meta-analysis found that there was a significant difference in compliance rate between patients taking antihypertensive medication once daily and twice daily (92.1% and 88.9%, respectively). Thus, simplifying the medication dosing frequency could improve compliance markedly (46).

### Duration of the treatment period

Acute illnesses are associated with higher compliance than chronic illnesses. In addition, longer duration of the disease may adversely affect compliance (47).

### Medication side effects

Numerous studies found that side effects threaten patients' compliance. The second most common reason for non-compliance with antihypertensive therapy was adverse effects (48). The effect of medication side effects on compliance may be explained in terms of physical discomfort, scepticism about the efficacy of the medication, and decreasing trust in physicians (49).

### Cost of therapy and income

Cost is a crucial issue in patient's compliance especially for patients with chronic disease as the treatment period could be life-long. Healthcare expenditure could be a large portion of living expenses for patients suffering from chronic disease. Cost and income are two interrelated factors. Healthcare cost should not be a big burden if the patient has a relatively high income or health insurance. A number of studies found that patients who had no insurance, or who had low income were more likely to be non-compliant to treatment (50).

### Social support

Patients who had emotional support and help from family members, friends or healthcare providers were more likely to be compliant. The social support helps patients in reducing negative attitudes to treatment, having motivation and remembering to implement the treatment as well (51).

### Healthcare system factors

The main factor influencing patient compliance in relation to healthcare systems include availability and accessibility. Lack of accessibility to healthcare, long waiting time for

clinic visits, difficulty in getting prescriptions filled and dissatisfaction with clinic visits all contributed to poor compliance (52).

### Improving compliance of patients with chronic diseases

There are three interventions that can improve patients' medication adherence: Informational interventions that focus on cognitive strategies, behavioural interventions that try to influence the behaviour of the patient and finally, family and social interventions in order to support the patient in complying with the regimen.

#### Informational interventions

Medication adherence improves if patients have better insight and a positive attitude towards the medication prescribed. A negative attitude towards medication may exist when a patient fears the side effects of the medication, or does not feel improvement in his health status. A good relationship between patient and caregiver will have positive effects on medication compliance. The family physicians should at first accept the noncompliance behaviour of the patient, without blaming the patient. Subsequently, the family physician should try to convince the patient of the importance of taking the medication. When patients believe or experience that their medication is effective, they will comply better with their regimen (54). The instructions of taking the medications should be clear to the patient and the patient should understand why it is important that he takes the medication (55).

#### Behavioural interventions

Try to influence the behaviour of the patient, and thereby increase the medication compliance of the patient. Change in the behaviour of a patient is likely to progress in several steps:

- 1. Pre-contemplation:** The patient does not realize the seriousness of his disease and does not want to change his behaviour.
- 2. Contemplation:** The patient is not sure about whether he has a disease or not. Therefore, the patient is not sure about whether or not he should take actions against this disease.
- 3. Preparation:** The patient wants to take action but does not know how and is looking for more information about his disease.
- 4. Action:** The patient has all the information he needs, knows what the problem is and is willing to take actions against this problem.
- 5. Consolidation:** For at least six months the patient succeeds in changing his behaviour. The new behaviour begins to become 'normal' behaviour.
- 6. Relapse:** It is difficult for the patient to adjust to the new behaviour.

So we have to know where the patient is and in which stage of behavioural changes so we can help him improve his compliance(56).

The use of a system for medication distribution makes it easier for a patient to collect the right medication in the right dose. There are a few different systems to do this (57).

An effective intervention is simplifying the doses or treatment regimes and the use of feedback to the patient (58). In a complex treatment regime, a mistake is quickly made. A patient may miss a dose or take the wrong medications at the wrong time. When this regime can be simplified the patient can easily adhere to the regime. It is also recommended to tailor the regimen to the daily schedule of the patient (45).

### **Family and social interventions**

The support of family improves adherence of a patient (53) although it is most often used in combination with other interventions. Also group therapy has a positive influence on medication compliance. An important part in group therapy is the peer support and recognition of the treatment signs (55).

### **Combined interventions**

A combination of informational and behavioural interventions appears to be the most effective in improving medication compliance (59). But combining all these interventions will not make patients 100% compliant with their medication regimen. There is no 'one size fits all' solution to this problem, because every patient has his own reasons for his/her non-compliant behaviour (53). Family physicians need to influence their patients to become or remain adherents of good self-care. To do this, they need to establish three key conditions in the communication with patients: shared values, shared language, and mutual respect (4).

### **Listen for the Patient's Values**

Doctors and patients look at compliance through very different lenses. While doctors value compliance, and take it to be a necessary factor in treatment, patients value convenience, money, cultural beliefs, habits, body image and any number of factors that may take precedence over treatment plans. "What physicians call 'noncompliance' may be a patient's expression of disagreement about treatment goals; in this sense, the patient always has the last word," writes patient-centered care advocate Moira Stewart (60). Robert M. Anderson, co-developer of the patient empowerment approach, views noncompliance as "a health care professional's term for disobedience," likening the doctor-patient relationship to that of the parent and child (61). Our expectation that the patient will "surrender" to the medical model is a central problem with the way we think about compliance, because patients are often unwilling or unable to comply with our instructions (62).

Contemporary theories of health communication no longer view the patient as a generic, rational receiver of care and information, but rather as a complex individual who constructs very personal and unique meanings about health and disease. Health communications researchers argue that we need to trust what our patients are telling us that patients themselves are generally the best source of information about attitudes, beliefs, and lifestyle issues that affect their acceptance of medical treatments (63).

### **Speak the Language of Feelings**

Using the patients' own words and language whenever possible has been shown to significantly increase patient satisfaction with the medical visit (64). Satisfaction is also increased by avoiding biomedical talk and emphasizing talk about feelings. In studying the relationship of the physician's interview style with the satisfaction of adult patients with chronic illness, researchers found that patients were less satisfied when doctors asked questions about biomedical topics and more satisfied when doctors asked about psychosocial topics (65). Patients were also more satisfied when they themselves talked about their feelings and relationships, rather than biomedical topics. These findings suggest that affective language, the language of feelings, might be the shared language through which physicians stood and patients can build understanding and find common ground.

Using affective language in the physician-patient encounter has also been shown to improve clinical outcomes. In a controlled trial, three factors were related to significant improvements in outcomes in patients with a variety of disease states (ulcer disease, hypertension, diabetes, and breast cancer). These factors included more patient control; more affect, particularly negative emotions expressed by both physician and patient; and more information provided by the physician in response to patient information-seeking (66). Data suggest that patients benefit through increased satisfaction and improved outcomes when they and their doctors have an opportunity to talk about their feelings, both positive and negative.

A focus on the shared language of feelings is one of the key elements of the patient empowerment model of care (61, 67). Patient empowerment is based on adherence, not compliance.

Empowerment programs are designed to help the patient become an informed decision maker and to shift the responsibility for managing disease from the doctor to the patient. In empowerment training, patients develop self-awareness in the psychosocial aspects of self-care, including goalsetting, problem solving, stress management, coping, social support, and motivation. They also develop expertise about their illness by attending comprehensive disease state education programs. Respect patients' expertise about their own lives. Physicians can learn to be experts in diabetes management, but only patients can be experts in the conduct of their own lives (61).

Mutual respect is the third extremely important factor in the medical communications equation. Given the traditional role definitions of doctors as authorities and patients as passive recipients of care, it can be difficult for physicians to cultivate respect for the "life" expertise that patients contribute to the medical transaction (67).

### **Gain the Patients' Adherence and Loyalty**

We've learned through experience not to expect patient compliance, and communications theory sheds some light on why a compliance mindset generally doesn't work. By

establishing the right conditions for adherence - shared values, shared language, and mutual respect — we can enable our patients to better care for themselves, which is the true goal.

The improved patient outcomes and satisfaction to be gained from an adherence approach will be worth the investment in learning to communicate more effectively. And over time, the adherence approach will help us to build stronger relationships with our patients, increasing their loyalty to us and our practice.

The following four suggestions, based on the most recent findings in health communication research, can help family physicians to establish the right conditions for adherence in the practice.

- Begin from the patient's perspective: Use the patient's story as the starting place. Listen for the patient's meanings, language, and values as he tells the story. Use the patient's language as much as possible. Translate biomedical terms into terms the patient understands.
- Include feelings in the discussion: Ask the patient how she feels about the situation. Actively listen, using the patient's terms to reflect on what they are saying. Show the patient you care by expressing your feelings about their progress, problems, etc.
- Base treatment goals on the patient's values: Ask the patient how much he prefers to participate in medical decision making. Allow the patient to participate to the extent that he is willing. Guide the patient to set goals, establish steps he is willing to take.
- Identify barriers to self-care based on his own needs and values (66).

### Support Patient Learning

Ask the patient what other sources they have consulted for information about their condition, and help them make accurate sense of it. Provide or direct the patient to the information they are seeking (66).

### Improving adherence might be the best investment

Improving adherence might be the best investment for tackling chronic conditions effectively. Studies consistently find significant cost-savings and increases in the effectiveness of health interventions that are attributable to low-cost interventions for improving adherence. In many cases investments in improving adherence are fully repaid with savings in health care utilization (67) and, in other instances, the improvement in health outcomes fully justifies the investment. The time is ripe for large scale, multidisciplinary field studies aimed at testing behaviourally sound, multifocal interventions, across diseases and in different service-delivery environments. Interventions for removing barriers to adherence must become a central component of efforts to improve population health worldwide. Decision-makers need not be concerned that an undesired increase in health budget will occur due to increasing consumption of medications, because adherence to those medicines already prescribed will result in a significant decrease in the overall health budget due to the reduction in the need for other more

costly interventions. Rational use of medicines means good prescribing and full adherence to the prescriptions. Interventions that promote adherence can help close the gap between the clinical efficacy of interventions and their effectiveness when used in the field, and thus increase the overall effectiveness and efficiency of the health system. For outcomes to be improved, changes to health policy and health systems are essential. Effective treatment for chronic conditions requires a transfer of health care away from a system that is focused on episodic care in response to acute illness towards a system that is proactive and emphasizes health throughout a lifetime. Without a system that addresses the determinants of adherence, advances in biomedical technology will fail to realize their potential to reduce the burden of chronic illness. Access to medications is necessary, but insufficient in itself to solve the problem (68). Increasing the effectiveness of adherence interventions might have a far greater impact on the health of the population than any improvement in specific medical treatments (69).

## Conclusion

Nonadherence to treatment is a problem of increasing concern to all stakeholders in the health system. Since the early 1970s, the extent and consequences of poor adherence have been well documented in terms of impact on population health and health expenditure. Poor adherence limits the potential of efficacious treatments to improve patients' health and quality of life. This is a particular problem in the context of the chronic conditions that currently dominate the burden of illness in the society. Across health disciplines, family physicians experience considerable frustration over the high proportion of their patients who fail to follow treatment recommendations. Adherence is a behavioural problem observed in patients, but with causes beyond the patient. It occurs in the context of treatment related demands that the patient must attempt to cope with. These demands are characterized by the requirement to learn new behaviours, alter daily routines, tolerate discomforts and inconveniences, and persist in doing so while trying to function effectively in their various life-roles (70,72). While there is no behavioural magic bullet, there is substantial evidence identifying effective strategies for changing behaviour. Family physicians (and other health enablers) often assume that the patient is, or should be motivated by his or her illness to follow a treatment protocol. However, recent research in the behavioural sciences reveals this assumption to be erroneous. In fact, the patient population can be segmented according to level-of-readiness to follow health recommendations. The lack of concordance between patient readiness and Family physician's behaviour means that treatments are frequently offered to patients who are not ready to follow them. This reflects an understandable bias towards treating the biomedical problem and an under-emphasis on addressing the behavioural requirements of the treatment protocol. Prochaska argued that people move through stages of increasing readiness to follow recommendations as they develop the motivation and skills required to change their behaviour. First-line interventions

to optimize adherence can go beyond the provision of advice. Building on a patient's intrinsic motivation by increasing the perceived importance of adherence, and strengthening confidence by intervening at the level of self-management skills are behavioural treatment targets that must be addressed concurrently with biomedical ones if overall effectiveness of treatment is to be improved. This approach offers a way of increasing the sophistication of the adherence interventions offered to patients (73). Pharmacists, case managers, health educators and others involved in patient care should be made familiar with these basic concepts. All physicians have an important role to play and an opportunity to dramatically improve health by specifically targeting issues of patient adherence. The risk for nonadherence for all patients should be assessed as part of the treatment-planning process and their adherence should be monitored as part of treatment follow-up. The traditional approach has been to wait to identify those patients who demonstrate nonadherence and then try to "fix" the problem. Family physicians report lack of time, lack of knowledge, lack of incentives and lack of feedback on performance as barriers. Clearly, non-adherence is not simply a "patient" problem. At the points of initial contact and follow-up, providers can have a significant impact by assessing risk and delivering interventions to optimize adherence. To make this way of practice a reality, practitioners must have access to specific training in adherence management, and the systems in which they work must design and support delivery systems that respect this objective. Health care providers can learn to assess the potential for nonadherence, and to detect it in their patients. They can then use this information to implement brief interventions to encourage and support progress towards adherence (74). So it is concluded that family physicians can play a big role in improving patients' compliance through increasing their understanding as regards the importance of taking their medications and life style changes as needed. It helps if the relationship between patient and their family physicians is good. They should try to keep the medication regime as simple as possible to reduce mistakes in dosing and timing. It also helps to improve compliance when the medication regime is tailored to the patient. When there are no major changes in the daily routine of the patient, it is easier to fit the regime into this routine. Feedback to the patient on regular base also helps patients to adhere to their medication regime. Enhancement of patients' role and their autonomy, using shared decision making and using patient centered consultations can help in improving patients with chronic diseases medication compliance.

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