Multimorbidity, service organization and clinical decision making in primary care: a qualitative study

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Background. Primary care professionals often manage patients with multiple long-term health conditions, but managing multimorbidity is challenging given time and resource constraints and interactions between conditions.

Objective. To explore GP and nurse perceptions of multimorbidity and the influence on service organization and clinical decision making.

Methods. A qualitative interview study with primary care professionals in practices in Greater Manchester, UK. Interviews were conducted with 15 GPs and 10 practice nurses.

Results. Primary care professionals identified tensions between delivering care to meet quality targets and fulfilling the patient’s agenda, tensions which are exacerbated in multimorbidity. They were aware of the inconvenience suffered by patients through attendance at multiple clinic appointments when care was structured around individual conditions. They reported difficulties managing patients with multimorbidity in limited consultation time, which led to adoption of an ‘additive-sequential’ decision-making model which dealt with problems in priority order until consultation resources were exhausted, when further management was deferred. Other challenges included the need for patients to co-ordinate their care, the difficulties of self-management support in multimorbidity and problems of making sense of the relationships between physical and mental health. Doctor and nurse accounts included limited consideration of multimorbidity in terms of the interactions between conditions or synergies between management of different conditions.

Conclusions. Primary care professionals identify a number of challenges in care for multimorbidity and adopt a particular model of decision making to deliver care for multiple individual conditions. However, they did not describe specific decision making around managing multimorbidity \textit{per se}.

Keywords. Chronic disease, co-morbidity, decision making, primary health care.

Introduction

Primary care professionals often encounter ‘multimorbidity’ (i.e. patients with more than one long-term condition).\textsuperscript{1} Although prevalence of multimorbidity varies with definition, recent work suggests that nearly one in six UK patients have more than one long-term condition included in the Quality and Outcomes Framework, accounting for 32% of consultations.\textsuperscript{2} Although care can be improved in multimorbidity,\textsuperscript{3} the presence of multiple conditions generally leads to poor outcomes.\textsuperscript{4} Managing multimorbidity is difficult given time and resource constraints and because of ‘interactions’ between conditions. This may involve interactions between medications or self-management behaviours. For example, exercise is recommended for many long-term conditions but may be difficult to achieve if patients have co-morbid depression and...
also considered depression and distress in long-term morbidity management (Appendix 2). The schedule of vignettes was added to facilitate discussion of multi- and poorly. After initial interviews, two clinical professionals were asked to identify situations when care for patients with multiple conditions functioned well and poorly. Consultations are increasingly focused on specific clinical tasks, leading to tensions with patient needs for psychosocial support and problem exploration.10,11

There is increasing interest in the management of multimorbidity,4,12–14 but published work has focussed on patient perceptions.15–17 There has been some consideration of the impact of multimorbidity on clinical decision making,18–20 and normative models have been presented,21 but there has been only limited analysis of the routine decision making of primary care professionals22 and less published work on service organization. This paper aimed to explore (i) how services were organized for patients with single and multiple conditions and (ii) how clinical decision making was influenced by the presence of multimorbidity. Our focus was on management in primary care, with some consideration of the primary–secondary care interface.

Methods

Design and sampling
Semi-structured interviews were conducted with GPs and practice nurses in Greater Manchester recruited through the primary care research network. Practices were purposively sampled to vary on list size and deprivation as these are key factors related to practice organization and disease prevalence, but professionals were volunteers.

Data collection
The interview explored the organization of services for patients with single conditions and multiple conditions (Appendix 1), including the use of clinics for long-term conditions, co-ordination of care, treatment planning, advantages and disadvantages of specialist and generalist approaches and patient perceptions of care organization. To explore clinical decision making, professionals were asked to identify situations when care for patients with multiple conditions functioned well and poorly. After initial interviews, two clinical vignettes were added to facilitate discussion of multimorbidity management (Appendix 2). The schedule also considered depression and distress in long-term conditions and how care for co-morbid mental and physical health was delivered. Interviews continued until no new themes emerged.

Analysis
The research team included academic GPs, psychiatrists, psychologists and health services researchers, and the study was informed by multiple perspectives including clinical decision making,23 self-management24 and health psychology.25 Interviews were audiotaped, transcribed verbatim and analysed according to the principles of ‘framework analysis’26 and of ‘constant comparison’.27 Although essentially deductive, framework analysis remains grounded in the data, using a combination of a priori and emergent categories. A coding framework was devised from the initial interviews by WM and PB and modified as analysis proceeded. We allocated data (single or groups of sentences) to the framework and examined relationships within and between the codes. We also explored data which differed from the coding framework. The results from this initial analysis were explored in the ongoing interviews. The interviewer was a non-clinical health services researcher, but data analysis and feedback from the multidisciplinary team were ongoing throughout the study as team members both read a subsample of the transcripts and discussed emerging themes. We present our analysis with illustrative quotes.

Results
Fifteen GPs (a mix of males and females) and 10 practice nurses (all females) from eight practices participated. There was significant variation in age and experience among participants. Practice size and deprivation varied (numbers of GPs 1–14, list size 2464–19 399, Index of Multiple Deprivation 10.01–71.91, where a high score represents high deprivation, and the national average is 21.67 and the average in the northwest is 27.69).

We initially summarize key issues in service organization and clinical decision making for single conditions and then consider how each is modified by the presence of multimorbidity. We then go on to consider these two issues in the particular case of multimorbidity involving physical and mental health problems.

Service organization and clinical decision making in single long-term conditions
Professional accounts emphasized that many services for patients with long-term conditions are organized around condition-specific clinics to support the Quality and Outcomes Framework. However, practical constraints (such as poor attendance in patients with asthma) require a mixed approach comprising condition-specific clinics and opportunistic care in routine
consultations. While current policy suggests that self-management is critical, professional accounts were characterized by perceptions of barriers. Patient motivation for behaviour change was perceived as limited because such changes only influenced clinical parameters without any apparent benefit to immediate well-being. Self-management support was characterized as ‘chipping away’, using regular consultations, continuity and ongoing education to encourage change.

*Service organization in multimorbidity*

There was limited evidence of service organization around multimorbidity. The clash between services and the needs of patients was most salient in terms of logistics and inconvenience as patients were recalled multiple times to attend different disease-specific clinics. Some practices tried to reduce the impact by taking advantage of commonalities across conditions.

There is a weakness on co-morbidity. The computer can’t cope with two concepts in one bite. I’m not worried about it, but what it means in practice is that a patient with co-morbidity gets maybe three or four letters a year as opposed to one letter a year. Because they get the letter for heart disease and then they get the letter for heart disease and then they get the letter for diabetes (GP 09)

They are still invited for their reviews as single conditions. I would say as much as we can we try and tie them in so that the patients don’t constantly feel that they are having to come in when they are not feeling poorly just to sort of, manage and monitor their long-term conditions. I think the patients do get fed up with that… I mean, as I say, I have a couple of patients who had been up to the diabetic clinic and were cross that then they had been called for a review here (GP 14)

Overall, system redesign for multimorbidity was limited and accounts tended to relate to problems of managing multimorbidity within the immediacy of a consultation. Some patients with multimorbidity were under the care of case managers (nurses trained to provide proactive care to patients with long-term conditions with high levels of need for support and at high risk of hospital admission). However, this represented a very small proportion of those with multimorbidity. There were also differences in opinion between practices and case managers in terms of the patients who were most appropriate for case management. For example, instability in the effects of multimorbidity made it difficult to identify the patients most likely to benefit at any one time.

*Clinical decision making in multimorbidity*

Many decision making challenges in long-term conditions (i.e. limited time, low patient capacity for self-management) were exacerbated in multimorbidity. For example, patient self-management (e.g. understanding conditions, taking multiple medications) was problematic, and a number of practitioners highlighted problems associated with polypharmacy. These difficulties were further exacerbated by memory and cognitive capacity issues. Capacity issues were also important when patients with multimorbidity were consulting multiple professionals. Difficulties in information sharing between professionals meant that patients often had to co-ordinate care, reminding professionals about repeated clinical activities and other redundancies. This co-ordination was hampered by memory and cognitive problems, especially if carer support was not available.

Well sometimes if you are doing a diabetic, if for instance we were doing a diabetes and COPD and we have a problem with the diabetes and we have to start re-educating, you can only retain so much and then you go on to your COPD and you are sorting your inhalers out, the patients then become drained they are not interested (PN 16)

There is a lady who’s got diabetes, she’s COPD, she’s got OA, she’s got coronary heart disease as well, and I think she’s had depression at some point … We’ve had to involve the diabetic nurse; she had a recent hospital admission for infective exacerbation of her COPD. She has a carer, so every time she comes here she comes with her carer. But I think, on the whole, it’s worked quite well with her, partly because I think she’s got all her mental faculties, she remembers well from one appointment to the next what’s going on, she’s able to retain the information. Where it’s particularly complex is where patients are forgetful (GP 3)

Faced with limited resources and multiple problems, GPs consistently deployed what we characterized as an ‘additive-sequential’ model. Firstly, they tried to make sense of the complexity in terms of a list of problems and then identified priorities among patient and professional agendas and finally managed problems sequentially until consultation time was exhausted, deferring remaining problems until later consultations. When professionals did report attempts to change clinical decision making around multiple conditions, the nature of those changes was often not clearly articulated.

You almost need a double appointment for every elderly patient, really, never mind the ones that are complex. It’s a bit like that but we just have to do what we can … Well, I think it’s prioritised by how big a problem, and the impact that it’s having on the patient’s life, the significance of the condition, so it’s not that I would say one of them
is more important than the other at all; it’s just how is it affecting that patient? And that’s how we prioritise, that’s how I prioritise. (GP 03).

Yes, they take more time, they need more time, but usually they’ve, from my point of view, only book in with a GP. If they’ve got several conditions and several conditions need addressing, then you’re limited in what you can do in one consultation slot. You get to know them and maybe next time he might say something like, ‘can you make a double appointment next time?’ So it gives them that little bit longer. Or ask if they can come back; you do what you can within your time, usually go over time and then get them to come back for the rest if they haven’t managed to achieve everything (GP 02).

Beyond this prioritization and sequencing, some professionals expressed some ambivalence about the need to consistently change clinical practice to reflect multimorbidity.

I mean, in some ways you can say well why should their asthma be treated any differently just because they’ve got asthma and heart disease and you know, osteoporosis or whatever (GP 14).

As noted earlier, multimorbidity may lead to interactions, where the management of one condition is influenced by another. In the current accounts, the additive-sequential model dominated management of multimorbidity, and discussions of interactions were rare. Those that were identified related to issues such as polypharmacy (where increasing numbers of medications led to problems of understanding regimes and taking medication appropriately and also to specific interactions between different medications). Professionals also highlighted the potential problems associated with self-management of one condition when a multimorbid problem limited clinical options.

Give patient advice which is just completely impossible for them due to their other conditions in terms of exercise or something like that, when the patient had severe osteoarthritis (GP 14)

That’s sensitive too really. It’s the same with a lot of dietary advice. We have a patient who has gout, who is also diabetic, the two completely conflict with each other and it is hard, it’s weighing up what that patient can manage on the conditions they have, as to what it actually says to do. Patients themselves are quite good with trial and error (PN 21).

Potential synergies were occasionally used in negotiation with patients as an additional motivation for behaviour change. However, the potential to take advantage of synergies was limited by the perceived barriers to behaviour change in patients, which meant that synergies could easily translate into antagonism.

The classic example, if somebody has diabetes and also osteoarthritic, you can say to them, ‘look if you lose weight then it will take the pressure off your joints, it will make your joint pains easier and you will get into a good cycle where you are actually losing weight, exercising and then maintaining your health. So there has to be a carrot element to it (GP 39).

I think fundamentally, the big issue for most of these people is the weight. The weight caused the OA knee, the weight makes the OA knee worse, and the OA knee means they can’t do anything. They can barely; the less they move the more weight they put on. We sort of, say, well you’re diabetes is no good so we’re going to give you something extra above your Metformin, we put them on something like sulphonylureas or whatever else and they start to put more weight on. We say, ‘You really need to go on insulin you know?’ You know, there’s another storm. Then trying to get them to change their established eating habits, it’s difficult as well, so it’s a vicious circle (GP 24).

Some professionals identified benefits of continuity of care in patients with multimorbidity. Continuity allowed them more effective use of the additive-sequential model (as patients returned to deal with problems that were deferred) and provided a platform for self-management support to be delivered slowly over time to achieve effects. However, it was less clear that a long-term relationship led to profoundly different approaches to the management of multimorbidity per se.

you are not going to cure all diabetes, so they are going to be seen regularly for the next few years, so build a relationship with them and hopefully they can take things on board a bit more when you are advising them and they are a bit more open with you as well I think (GP 40).

So it does make it easier when you do build up that relationship with patients, that you do see the same ones for these conditions, because then you realise, partly you don’t have to deal with it all in one go, these are chronic conditions and you are going to be seeing this patient regularly, they build up that trust with you that they can come out with things that are bothering them, and that very, very frequently happens (GP 18).

Service organization and clinical decision making in multimorbidity across physical and mental health

Most practices were involved in case identification and monitoring for depression using standardized scales, in
line with the Quality and Outcomes Framework. However, there were few other changes to service organization to deal with co-morbidity between physical and mental health. Professionals faced familiar pressures (such as long waiting lists for psychological treatments and patient resistance to antidepressants). There was little evidence that specific services for these patients were available (beyond the psychosocial content in some chronic disease management programs).

The co-existence of long-term conditions and mental health problems did have an important impact on clinical decision making as making sense of the causal relationships between conditions was complex. Long-term conditions could lead to depression, but some professionals expressed ambiguity over use of the ‘depression’ label.

The difficulty then comes in trying to diagnose, well, are they depressed or not? They’re upset, frustrated, angry, you know, confused about these chronic conditions, which they didn’t have, that can be a bit different from depression (GP 18).

Although the pathway linking diagnosis of a long-term condition and consequent depression was most often highlighted, other relationships were discussed. The burden of self-management could itself be a cause of distress. Depression could both act as a barrier to effective self-management or result from failures of self-management.

**Long-term conditions as a cause of depression**

I mean, obviously the trouble is with a lot of conditions like COPD, it is progressive there is no cure of it and the way we can help them feel a little better, unfortunately things are going to get worse’ (GP 14).

**Self management of long-term conditions as a cause of distress**

but I can think of a couple of cases here where we’ve actually made patients almost over the top so very anxious about their conditions, like you say when they have co-morbid conditions they spend almost all their time obsessing about this and that and the other, diet and those sorts of things, exercise and their cholesterol levels. (GP 14)

**Depression as a barrier to self management of long-term conditions**

because I said ‘I think that your mood is so totally flat, that we need to get you sorted before we can even address your diabetes.’ (PN 07)

**Failures of self management as a cause of distress**

So the main issue there in terms of looking at it is say, ‘look the way you are feeling may be because you are not clinically depressed, but because you are not controlling your diabetes well. That could be causing the sleep disturbance.’ That is a way into it . . . linking the two together and how it can affect your mood and the way you are feeling, energy levels and you can talk about the fact that if your blood sugar is raised you do tend to feel tired and it can affect your sleeping pattern. So that may again make you feel tired in the day.’ (GP 39)

Identifying the causal relationships between physical and mental health conditions could impact on decision making. Relationships could determine priorities in terms of sequence (where treatment of a physical condition was prioritized for its impact on depression) or could be utilized in terms of negotiation with a patient (where symptoms of depression could be made to appear understandable by reference to their basis in reactions to physical health problems).

I mean, people with chronic disease obviously they have a good reason, a lot of it is down to their physical incapability that makes them depressed, and so I think the treatment of it is different because I mean, sometimes we treat their depression by helping the physical condition and sort of, educating them and making them more empowered to deal with that and that helps them feel better (GP 14).

And then work on from that and just trying to tease out whether it is actually the condition that is causing the problem [depression], or if there are other issues allied to the condition [Right] But as a starting point I think it is quite useful to explain to patients that this can be a reaction to the situation and try and work out a way of trying to deal with it. (GP 39).

**Summary of the analysis**

Our analysis suggests that patients with long-term conditions have a number of needs, some professionally defined (such as monitoring for the Quality and Outcome Framework) and some patient-defined. Multimorbidity adds additional needs (e.g. to deal with antagonisms and polypharmacy, to prioritize conditions and care co-ordination). However, the ability of primary care professionals to respond to these needs is limited by contextual pressures on the way that they organize services (such as the Quality and Outcomes Framework) and make decisions (such as pressures of time). The interaction between patient needs and professional response leads to certain outcomes for patients with multimorbidity, including high levels of logistical inconvenience (through the need to attend multiple appointments), contested priorities in the consultation and low emphasis on multimorbidity-
specific issues such as antagonisms and therapeutic synergies.

Discussion

Professionals described several challenges in multimorbidity, some of which (e.g., complexity in making sense of relationships between conditions, problems of co-ordination, the impact of cognitive capacity) have been reported previously. They were aware of the inconvenience suffered by patients with multimorbidity, and some practices organized their clinics to attempt to reduce this burden so that multiple related conditions could be dealt with in a single consultation. Dealing with multiple competing agendas in multimorbidity was important. The ability to prioritize is a key skill of generalist professionals and done in conjunction with patients provides the platform for patient-centred care.

The prevalence of multiple conditions means that encountering multimorbidity is routine, and primary care professionals had developed methods to manage such patients in the confines of available resources. However, there was limited evidence that multimorbidity was actively considered in the organization of care or in clinical decision making. Professionals tended to deploy an additive-sequential model with limited discussion of interactions or synergies. There was an awareness of the impact of polypharmacy, but this seemed to be less crucial in our data compared to previous work. This may reflect differences in health systems (England versus Ireland), participants (GPs and nurses versus GPs and pharmacists) and methods (individual interviews versus focus groups). Professionals in the previous study made a number of suggestions for interventions to improve the care of such patients, but our analysis suggested that the problems of delivering care for multimorbidity were not seen as sufficiently serious to encourage a fundamental shift in service organization or decision making.

Strengths and limitations of the study

Caution must clearly be applied in interpreting the findings from a volunteer group of professionals from one area. Although practices were purposively sampled on characteristics relating to prevalence of multimorbidity and service organization, a willingness to participate was the key factor. Our sample did vary in age and experience, but the analysis found no major differences relating to these factors. Although GPs and practice nurses clearly have different clinical responsibilities and their decision making is based on a different (albeit overlapping) knowledge base, we did not identify clear differences in their approach to the management of multimorbidity. Limiting the study to one geographical area limits the potential for variation in service delivery (such as differences in the organization of secondary care or the availability of case managers). We chose individual interviews because of our focus on individual clinical decision making, and alternatives (such as focus groups) may have highlighted other issues.

Clearly, the care of long-term conditions in the UK is influenced by the Quality and Outcomes Framework, and it would be instructive to compare these accounts with those from other similar systems which lack a disease-oriented pay-for-performance system. Through our vignettes, we explored the possibility that primary care professionals were in possession of decision making models for managing multimorbidity that they struggled to deploy in their routine work but our analysis did not suggest this was the case. It is possible that this reflects limitations of the vignettes or a lack of variability in the sample.

Although respondents were not randomly sampled, generalizability of the results derives from the generation of concepts of wider applicability. The interviews and emerging themes were subject to ongoing analysis and discussion among a multidisciplinary research team. It would also be useful to compare accounts of decision making with other professionals, such as nurse case managers and secondary care professionals.

A more fundamental limitation is that our data represent accounts from professionals, and it is not clear that such accounts relate strongly to actual behaviour. Exploration of actual consultations through recording, observation or other ethnographic methods would be a logical next step. For example, prioritization is a key generalist skill, and patients with multimorbidity require assistance with this process, but little is known about how this is actually done in practice.

Comparison with existing literature

There is a tension concerning multimorbidity in primary care. On the one hand, multimorbidity is highly prevalent and impacts negatively on care. Managing ‘complexity’ such as the presence of multiple conditions is a defining characteristic of primary care. Our respondents acknowledged these complexities, echoing the results of a previous interview study. On the other hand, this study identified limited impact of multimorbidity on clinical decision making. The management of multimorbidity was consistently captured by an additive-sequential model, whereby additional multi-morbidities add to the total burden of care, and require clinical decisions about priorities, what can be dealt with in any single consultation and what can be deferred. Such a model accords with work on ‘competing demands’ in clinical behaviour. Although interviews contained evidence of attempts to ‘take account’ of other conditions in decision making about
an index problem, the nature of that accounting was unclear, and there was limited explicit consideration of multimorbidity per se, such as antagonisms or therapeutic synergies. In the context of co-morbid physical and mental health, we identified that professionals’ understanding of the relationship between disorders could impact on management choices (i.e., prioritizing physical management to improve mental health), but there was a lack of consistency. Some interventions focus on depression as a priority to improve later self-management of conditions such as diabetes, but the evidence base for such priorities is contested.

What could account for the lack of impact on clinical decision making? It is possible that clinical examples of interactions (beyond medications) are rare and not immediately apparent to professionals. The salient impact of multimorbidity for professionals revolves around logistics and the smooth operation of consultations. Complex interactions among conditions may be obscure in comparison, apparent from an epidemiological perspective but hidden from clinical view. This may be exacerbated by a focus on disease parameters such as HbA1c as indicators of quality of clinical care: studies with patients indicate that consideration of global outcomes helps to highlight the interactions between the management of different conditions. Professionals may also focus on simpler acute problems because of a concern about the complexity of managing multimorbidity.

Similarly, a major impact of multimorbidity may be in terms of capacity for self-management as the added burden of self-management in multimorbidity can overwhelm patient resources. However, research has suggested that primary care professionals do not take an active role in self-management. Again, the impact of multimorbidity on decision making may be limited because supporting self-management is an infrequent part of clinical work: even when synergies were highlighted, ambivalence about self-management meant that their potential often remained unfulfilled.

Implications for future research or clinical practice
How might a greater focus on multimorbidity be encouraged? It is not immediately obvious how clinical indicators might be used, although professionals can ‘exception report’ patients for whom certain indicators are less appropriate and multimorbidity may be a reason. The additive-sequential model might suggest that the resources allocated to general practices should be weighted for multimorbidity alongside age, gender and social deprivation to allow professionals to spend more time on such patients. The additive-sequential model reinforces the idea that time is an important determinant of primary care, although the evidence about the effect of multiple problems on consultation length is unclear. There may be recognized communication techniques (such as ‘agenda setting’ and ‘topic tracking’) that could allow exploration of multiple demands while remaining economic with professional resources. Although longer consultations might ameliorate this problem, time may not be the only determinant. Primary care professionals may adopt the additive-sequential approach due to an aversion to making multiple adjustments to the management of a patient with multimorbidity lest this creates instability or waiting to see whether resolution of one problem benefits others. Such caution may well be justified given the complexity of the links between conditions and the difficulties faced in making sense of those in a clinically meaningful way.

Recent quality improvement initiatives highlight the role of ‘care plans’, agreements between patient and professional which are used to organize care by integrating the professional perspective with the experiences, concerns and preferences of patients. Recent commentators have highlighted how patients with multi-morbidities have to deal with a significant burden of treatment as well as disease. A care planning process sensitized to multimorbidity could help consideration of interactions between conditions and their management, a core clinical practice issue for long-term conditions. This would encourage patients and practitioners to explicitly manage multimorbidity as well as meeting the needs of the individual disorders.

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References
Appendix 1 Interview schedule

Background

- Job title and role
- Qualifications
- Length of time in role, experience and key responsibilities
- Organization of care for single conditions
- Structures
- Disease-specific clinics?
- Recall arrangements?
- Organization of care for people with co- or multimorbidities
- How does this differ for care for people with multiple conditions?
Does the organization of care for people with multiple chronic conditions require a different set of skills?

Does anyone have primary responsibility for patients with more than one condition (co-morbidity care manager)?

How are the care needs and treatment plans of patients with co-morbidities communicated?

What are your views on the generalist and specialist approaches to treatment?

What options does the patient have to communicate with the practice?

Could you describe a situation where the system of care worked well for a patient with co- or multi-morbidities?

Where it did not go well?

Are there any ways in which you think the system of care could be improved for people with co- or multi-morbidities?

Does the practice have any plans to change the way care is organized and co-ordinated for people with co- or multi-morbidities?

What do you think patients feel about how the system is currently organized?

Appendix 2 Clinician vignettes

**Vignette 1**
Your next patient is a 72-year-old woman who shows up for her yearly diabetes review. While doing so, you realize that she has had two emergency appointments with other doctors in your practice for the acute management of her COPD. She does not seem concerned at the moment about this, but complains because of pain in her osteoarthritic knee.

**Vignette 2**
Your next patient is a 55-year-old man who has made an appointment for discussing symptoms that suggest he may suffer from depression. During the consultation, you realize that he has not collected his diabetes medication for several months. When asked about this, the patient says that he feels well and doubts that he needs any medication at all.

Emotional distress in chronic disease

How often do you see emotional distress in patients with chronic disease?