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# Patients' Experiences of Nurse Case-Managed Osteoporosis Care: A Qualitative Study

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**Abstract**

**Background:** Osteoporosis is a chronic condition that is often left untreated. Nurse case-managers can double rates of appropriate treatment in those with new fractures. However, little is known about patients' experiences of a nurse case-managed approach to osteoporosis care. **Objective:** Our aim was to describe patients' experiences of nurse case-managed osteoporosis care. **Methods:** A qualitative, descriptive design was used. We recruited patients enrolled in a randomized controlled trial of a nurse case-management approach. Individual semi-structured interviews were conducted which were transcribed and analyzed using content analysis. Data were managed with ATLAS.ti version 7. **Results:** We interviewed 15 female case-managed patients. Most (60%) were 60-years or older, 27% had previous fracture, 80% had low bone mineral density tests, and 87% had good osteoporosis knowledge. Three major themes emerged from our analysis: acceptable information to inform decision-making; reasonable and accessible care provided; and appropriate information to meet patient needs. **Conclusions:** This study provides important insights about older female patients' experiences with nurse case-managed care for osteoporosis. Our findings suggest that this model to osteoporosis clinical care should be sustained and expanded in this setting, if proven effective. In addition, our findings point to the importance of applying patient-centered care across all dimensions of quality to better enhance the patients' experience of their health care.

**Keywords**

osteoporosis, case-management, patients' experience, information needs, qualitative

## Introduction

Osteoporosis is a chronic condition associated with increased morbidity and mortality and decreased quality of life (1,2). Older adults who suffer from a low trauma (fragility) fracture have a 20% risk of another osteoporosis-related fracture within 1 year (1–3). Fortunately, initiation of bisphosphonate treatment reduces this risk by 50% (4). As such, secondary prevention is evidence-based and straightforward although fewer than 20% of adults aged 50 years or older are tested or treated for osteoporosis after a low trauma (fragility) fracture (2,5,6). In previous randomized trials, we found that a nurse case-manager could augment clinical care, doubling the rates of osteoporosis testing and treatment (7,8) as also seen in other chronic conditions (9,10). However, little is known about patients' experiences of a nurse case-managed model to osteoporosis clinical care.

Improving the patient experience of clinical care is an essential element in improving health care (11). This includes understanding patient experiences within the dimensions of quality care: acceptability (ie, respectful and

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responsive), accessibility (ie, suitable and reasonable), and appropriateness (ie, relevant and evidence-based) of health services (12). Previously, these dimensions of quality have been used to quantitatively evaluate a new model of care for hip and knee replacement (13) and measure health-care service satisfaction (14). This study aimed to understand older patients' experiences of a nurse case-managed model to osteoporosis clinical care within these quality dimensions.

## Methods

We used qualitative description as described by Sandelowski (15,16) to explicate older patients' experiences of nurse case-managed osteoporosis clinical care after suffering a fragility fracture of the upper extremity. Qualitative description is an inductive approach suited to exploring the contexts of patients' experiences with aspects of an innovative care-delivery format (16,17). Ethics approval for this study was granted by the University of Alberta Health Ethics Research Board and all participants provided written informed consent. We followed the consolidated criteria for reporting qualitative research in reporting this study (18).

### *Sample*

We recruited patients from the Comparing Strategies Targeting Osteoporosis to Prevent recurrent Fractures trial (7). This trial enrolled patients aged 50 years or older with upper extremity fragility fractures in an active-comparator randomized controlled trial of nurse case-management versus a multifaceted intervention directed at patients (ie, printed materials, education, telephonic counseling) and their physicians (ie, reminders, opinion leader endorsed guidelines). In the nurse case-managed arm, patients were identified and interviewed from clinic settings (Emergency Departments and Fracture Clinics), arranged bone mineral density (BMD) tests, and offered in-person education, counseling, and guideline-based treatments (ie, bisphosphonate treatment based on standardized treatment algorithms and/or information about supplements, diet, and exercise) as needed, and then followed patients up for 1-year.

We purposefully sampled case-managed patients within 2 to 6 months of their initial clinic appointment with the nurse. Based on their clinical assessment, we identified patients offered or not offered (NO) bisphosphonate treatment (by study design, either alendronate or risedronate). Of patients offered bisphosphonate treatment, we included both "acceptors" and "refusers." Although all patients received counseling on bone health, we considered treatment itself as the most potentially important variable to the analysis because there may have been differences in patients' experiences of case-managed care between those offered and NO bisphosphonate treatment (7). The study coordinator informed eligible patients of the study by telephone, including the voluntary nature of participation, and scheduled interviews. We conducted concurrent data collection and analysis of 5 patients at a time until data saturation had been achieved (19); that is, the major concepts were well-defined and explained and no new concepts or themes were expected to emerge from further examination.

**Table 1.** Interview Guide Topic Areas and Questions.

| |
|---|
| **Overall** |
| 1. Describe the care and services you got from the nurse. |
| **Bone health** |
| 2. How did your appointment with the nurse help you understand your bone health? |
| 3. How useful was the information you got about your bone health to you? |
| 4. Were you able to talk to the nurse about your ideas or thoughts about your bone health? Tell me about that. |
| **Treatment options** |
| 5. How did your appointment with the nurse help you understand your treatment options to support bone health? |
| 6. How useful was the information you got about treatment to support bone health to you? |
| 7. Were you able to talk to the nurse about your ideas or thoughts about treatment to support bone health? Tell me about that. |
| **Satisfaction** |
| 8. What did you like about your interactions with the nurse? |
| 9. What didn't you like about your interactions with the nurse? |
| 10. How could your experience have been better, if at all? |
| 11. How was your experience with the nurse different from those you've had with your family doctor or a specialist about bone health? |
| 12. Would you like a similar approach as this for other kinds of health conditions? Why? |
| 13. In your opinion, were your interactions with the nurse necessary to your overall care and health? |
| **Information needs** |
| 14. What did you think about the amount of time your interactions took? |
| 15. In your opinion, was it enough time to deal with everything that you wanted to? |
| 16. Would you have rather gotten the information from the nurse another way, rather than the in-person appointment? Why? |
| 17. What other kinds of information or services would you like to get about your bone health, fall prevention, and/or treatment options? |
| 18. How would you like to get information about health conditions and treatment options? |
| 19. Is there anything else you'd like to tell me? |

Abbreviation: BMD, bone mineral density test.

### *Data Collection*

After consenting to participate, the first author conducted in-person interviews using a semi-structured interview guide (Table 1). Interviews were conducted in the same location as case-management appointments and were 20 to 55 minutes in length. Interviews were digitally recorded for subsequent analysis and verified for content and accuracy.

**Table 2.** Patient Characteristics by Offered or Not Offered Bisphosphate Treatment.

| Characteristics | Total, N = 15 | Offered, N = 8 | Not Offered, N = 7 |
|---|---|---|---|
| | n (%) | n (%) | n (%) |
| Female | 15 (100) | 8 (100) | 7 (100) |
| Age > 60 years | 9 (60) | 5 (63) | 4 (57) |
| BMD test results | | | |
| Osteoporosis (T-Score less than −2.5) | 2 (13) | 2 (25) | 0 (0) |
| Osteopenia (T-Score −1.0 to −2.4) | 10 (67) | 6 (75) | 4 (57) |
| FRAX Score | | | |
| High 10-year risk | 4 (27) | 4 (50) | 0 (0) |
| Moderate 10-year risk | 6 (40) | 4 (50) | 2 (29) |
| Previous fracture(s) | 4 (27) | 2 (25) | 2 (29) |
| OP-related knowledge[a] | 13 (87) | 7 (88) | 6 (86) |

Abbreviations: BMD, bone mineral density; OP, osteoporosis.

[a]The average score (a percentage of correct answers with a higher percentage representing more knowledge) of osteoporosis-related knowledge as measured by the 25-item Facts on Osteoporosis quiz (23) was previously determined in this patient population to be 57% (24).

### *Data Analysis*

Using an integrative approach, we applied content analysis (20) to examine the data, which is appropriate for qualitative descriptive studies such as those reported here (17). Analyses occurred in 3 phases: (1) read and re-read each transcript to understand the essential features; (2) used the quality dimensions of acceptability, accessibility, and appropriateness as the initial coding structure where data could be coded into multiple dimensions; and (3) applied an inductive approach to identify emerging codes and concepts within each dimension (21). Regular research team meetings were led by L.A.W. to review code definitions and emerging concepts and discuss discrepancies to reach eventual consensus.

As described above, we drew on several strategies in design and execution to ensure rigor of this study. In addition, we synthesized and presented the findings for each quality dimension using a thematic statement that is a strategy recommended to make findings clear and actionable (22). Data were managed and analyzed using ATLAS.ti version 7 (Berlin, Germany, Scientific Software Development GmbH; 23).

## Results

Between August 2015 and June 2016, we conducted 15 interviews with case-managed patients, including 8 who were offered bisphosphonate treatment (6 accepted and 2 refused) and 7 who were NO bisphosphonate treatment. All participants were female, 60% were 60-years or older, 80% had osteopenia or osteoporosis at one or more BMD sites making them eligible for bisphosphonate treatment, 27% had a previous fracture, and most (87%) had better than average osteoporosis knowledge (24,25; Table 2). No patient had been taking bisphosphonates or any other osteoporosis medications at the time of fracture.

Three major themes regarding the nurse case-managed approach to osteoporosis care emerged from our analysis: acceptable information to inform decision-making; reasonable and accessible care provided; and appropriate information to meet patient needs. We provide illustrative quotes for each theme. Furthermore, we provide additional quotes for each theme as Supplemental Data. For all quotes, we included the age and treatment group (ie, NO = not offered vs OA = offered and accepted vs OR = offered but refused) for each patient.

### *Acceptable Information to Inform Decision-Making*

Overall, patients described the nurse case-managed approach as offering high quality, personalized information from a trusted expert in a respectful manner that informed their decision-making about bone health. They described their interactions as informative with the nurse providing personalized (eg, their BMD results) rather than generic information and answering questions about bone health and/or treatment options: "*It was interesting to talk about my bone health, not generic, but it was my bone health and this is what would benefit me*" (age 56; NO).

All patients reported discussing bone health with the nurse case-manager facilitated by the amount of time provided during the clinic visit. Specifically, patients reported having enough time to ask questions or not feel rushed. This was in contrast to several patients' experiences with family physicians where they reported limited discussion about bone health due to other priorities of the provider (eg, not concerned about bone health) and/or themselves (eg, acute issues unrelated to bone health): "*I haven't really talked much about it with my doctor because he's not really concerned*" (age 66; OR).

In addition, patients explained that the nurse case-manager was an expert in bone health demonstrated by her ability to explain BMD test results, treatment options, and possible side effects. Patients said they would prefer a similar model for other chronic health conditions (eg, hypertension, diabetes) in part because of the opportunity to discuss the condition with an expert. A few patients indicated that they trusted the information or advice they received from the nurse case-manager because they perceived her as a clinical expert.

Patients described respectful interactions with the nurse case-manager as demonstrated by her willingness to listen to their ideas or thoughts about bone health and/or treatment options. This included a nonjudgmental attitude toward patients' decisions including whether to initiate recommended treatments: "*It was not like a doctor saying, 'This is prescribed' . . . it was much more conversation than it was a prescription*" (age 60; NO).

### *Reasonable and Accessible Care Provided*

Overall, patients perceived the nurse case-managed model as reasonable and accessible. The majority of patients were satisfied with the amount of time required, including the necessary testing and in-person clinic visit with the nurse case-manager. They stated that it is not burdensome. The nurse case-manager accommodated their schedules and everything required was conducted in a timely manner, including ordering and completing tests: "*No problem. Easy peasy. And I'm a very busy person*" (age 60; NO). Regarding mode of delivery, the majority of patients preferred in-person visits with the nurse case-manager to review their results and discuss treatment options, rather than receiving the information by telephone or through written materials. The in-person appointment facilitated relationship building and prompted patients to seriously consider the information provided.

Patients appreciated how the nurse case-manager coordinated their clinical care, including organizing tests at preferred locations, using recent BMD results if available, and sending prescriptions directly to the pharmacy. In addition, patients compared the ability to access follow-up care through the nurse case-manager by telephone or e-mail and to family physicians, where they had to make appointments for in-person interactions: "*I've called her a couple of times about different questions she gets back to me or e-mail very promptly . . . You can't just phone and talk to [family physicians] or get them, not usually. I mean, maybe some [family] doctors but certainly not with the one that I have now*" (age 53; OA).

Interestingly, neither patient that refused treatment commented on the amount of time required or identified the provision of coordinated care or improved access to follow-up care as components of this model. In addition, they either had no preference regarding mode of delivery or would have preferred receiving the information provided by the nurse case-manager through telephone contact rather than in-person visits. Taken together, it appears refusers were less satisfied with the accessibility of this model.

### *Appropriate Information to Meet Patient Needs*

Patients indicated increased awareness, knowledge, and confidence regarding bone health as a result of the case-managed approach. Indeed, several patients explained that their interactions with the nurse case-manager led to an "*aha moment*" of awareness, that it prompted them to focus on their bone health, or become aware that action was required to support or maintain bone health. Specifically, patients reported increased awareness or knowledge regarding the seriousness of osteoporosis or the importance of bone health, the status of their current bone health, and treatment options to support bone health including exercise, the risks and benefits of bisphosphonates, or how to take bisphosphonates and/or supplements. Several patients explained that the information they received from the nurse case-manager reinforced what they already knew about bone health; however, all of these patients scored above average in osteoporosis-related knowledge. A few participants said they were more confident in their knowledge about their own bone health or their ability to support or maintain bone health as a result of the nurse case-manager. Lastly, several patients compared the information they received from the nurse case-manager to other providers. Of these patients, most reported receiving similar information from their family physician regarding treatment options or general advice. However, the 2 refusers reported conflicting information from their family physician regarding diagnosis or treatment.

The majority of patients said their interactions with the nurse case-manager were necessary, rather than optional, to their bone health particularly related to initiating treatment: "*She got me on my medications for one thing. I wouldn't say it was just nice. I think it was absolutely necessary*" (age 73; OA).

More than half of patients identified the responsive nature of the case-managed model in meeting their information needs, explaining that their family physician might not have discussed bone health or their BMD results with them or that it is "*a necessary program for having people not fall through the cracks*" (age 53; OA). Indeed, 4 patients believed it was their responsibility to bring up bone health with their family physician, including requesting BMD test.

## Discussion

Osteoporosis is a chronic condition; however, a nurse case-managed approach has been shown to increase rates of osteoporosis testing and treatment. Our study findings provide insight into older female patients' experiences of a nurse case-managed approach to osteoporosis care. Based on this qualitative study, we found that older female patients experienced nurse case-managed osteoporosis clinical care as acceptable, accessible, and appropriate.

In addition, our findings demonstrated that the case-managed model was patient-centered across these dimensions. This aligns with the principles of person-centered care including respect, coordinated care, and personalized care while simultaneously developing self-efficacy, knowledge and skills of these patients (26). Our findings add to the existing literature as, to our knowledge, such findings have not been captured through quantitative data by ourselves or other clinical research (7).

The nurse case-manager followed recommended guidelines thereby addressing the well-documented care gap between best practices and usual care (7) or, as patients in this study described it, the potential to "*fall through the cracks.*" Typically, family physicians manage multiple acute problems of patients during single visits, described by others as the "tyranny of the urgent" (27,28). This is problematic for secondary prevention after a fragility fracture, especially when the onus is on the older patient to prioritize bone health

during interactions with their family physicians. The case-managed model addressed these issues by coordinating care across diverse settings (eg, emergency departments, laboratory, pharmacy, and physician clinics) (29), thus improving communication and helping older patients navigate the system.

The findings of this study reinforce and further contribute to the existing literature about patients' experiences with nurse case-managed approaches to care. Our results indicate that the case-managed model to osteoporosis clinical care we studied was respectful. This included the nurse case manager's nonjudgmental attitude toward the right of patients to refuse recommended treatment. However, refusing treatment is problematic for secondary prevention. A previous study on persistence with bisphosphonate treatment showed patients reevaluated the severity and impact of osteoporosis versus the risks and benefits of treatments over time and could change treatment status 1-year post fracture (30). As such, additional follow-up consultations with the nurse case-manager may provide opportunities for all patients, including refusers, to reevaluate their clinical care, including information about their diagnosis and treatment options, potentially reevaluating conflicting information received from other sources, thus opening up the possibility of secondary prevention in the future.

If proven clinically effective (and cost-effective or even cost-saving) through the ongoing randomized trial, future research could include a critical realism approach to examine the contexts and mechanisms that affect the outcomes of a case-managed model (31). This would be useful in informing the spread of a case-managed model for osteoporosis, as well as other chronic conditions affecting older adults, such as hypertension, diabetes, or depression. In addition, further research examining the satisfaction of refusers of prescription treatment is warranted. Refusers in this study tended not to comment on certain quality dimensions of the case-managed model or, if they did, their comments were indifferent or less positive.

### *Limitations*

Despite its strengths (ie, qualitative descriptive approach, achieving data saturation, uniform patient population), our work has several important limitations. First, while we sought a variety of perspectives to assess the patient experience of case-management to osteoporosis clinical care, we were only able to recruit 2 patients who refused treatment when it was offered. However, it was not our intent to compare treatment groups, but rather to identify and describe common patterns in the overall patient experience. Second, all study participants were females with upper extremity fragility fractures and findings may have been different with men or other types of fractures (eg, spine, hip). In addition, our findings were based on the experiences of trial patients with universal health-care coverage from one Canadian province. Our results may have been different had we sampled patients with comorbidities or patients from different health-care systems or different provinces in Canada or jurisdictions from the United States or other nations. As such, our findings cannot be extrapolated to all patients but rather transferred to similar patient populations (ie, older females) in similar health-care settings.

## Conclusion

In this study, older female patients described receiving high quality, personalized information by a trusted expert in a respectful manner that informed their treatment decisions. They experienced coordinated care and improved access to follow-up care and were satisfied with the amount of time required and mode of delivery. Finally, they described increased awareness, knowledge, and confidence regarding bone health. Overall, findings indicated that patients experienced nurse case-managed osteoporosis care as acceptable, accessible, and appropriate.

Our findings suggest that the case-managed model to osteoporosis clinical care should be sustained and expanded in this health-care setting, if proven effective from the results of larger randomized trials such as Comparing Strategies Targeting Osteoporosis to Prevent recurrent Fractures (7). Our findings point to the importance of applying patient-centered care across all dimensions of quality to better enhance the patients' experience of their health care.

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### Declaration of Conflicting Interests

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### Supplemental Material

Supplemental material for this article is available online

### References

1. Little EA, Eccles MP. A systematic review of the effectiveness of interventions to improve post-fracture investigation and

management of patients at risk of osteoporosis. Implement Sci. 2010;5:80-97. doi:10.1186/1748-5908-5-80.
2. Sujic R, Gignac MA, Cockerill R, Beaton DE. A review of patient-centred post-fracture interventions in the context of theories of health behaviour change. Osteoporos Int. 2011; 22:2213-24. doi:10.1007/s00198-010-1521-x.
3. Andrade SE, Majumdar SR, Chan KA, Buist DS, Go AS, Goodman M, et al. Low frequency of treatment of osteoporosis among postmenopausal women following a fracture. Arch Intern Med. 2003;163:2052-57. doi:10.1001/archinte.163.17.2052.
4. Bolland MJ, Grey AB, Gamble GD, Reid IR. Effect of osteoporosis treatment on mortality: a meta-analysis. J Clin Endocrinol Metab. 2010;95:1174-81. doi:10.1210/jc.2009-0852.
5. Papaioannou A, Morin S, Cheung AM, Atkinson S, Brown JP, Feldman S, et al. 2010 clinical practice guidelines for the diagnosis and management of osteoporosis in Canada: summary. CMAJ. 2010;182:1864-73. doi:10.1503/cmaj.100771.
6. Bessette L, Ste-Marie LG, Jean S, Davison KS, Beaulieu M, Baranci M, et al. The care gap in diagnosis and treatment of women with a fragility fracture. Osteoporos Int. 2008;19:79-86. doi:10.1007/s00198-007-0426-9.
7. Majumdar SR, Johnson JA, Bellerose D, McAlister FA, Russell AS, Hanley DA, et al. Nurse case-manager vs multifaceted intervention to improve quality of osteoporosis care after wrist fracture: randomized controlled pilot study. Osteoporos Int. 2011;22:223-30. doi:10.1007/s00198-010-1212-7.
8. Majumdar SR, Beaupre LA, Harley CH, Hanley DA, Lier DA, Juby AG, et al. Use of a case manager to improve osteoporosis treatment after hip fracture—results of a randomized controlled trial. Arch Intern Med. 2007;167:2110-15. doi:10.1001/archinte.167.19.2110.
9. McAlister FA, Stewart S, Ferrua S, McMurray JJ. Multidisciplinary strategies for the management of heart failure patients at high risk for admission: a systematic review of randomized trials. J Am Coll Cardiol. 2004;44:810-19. doi:10.1016/j.jacc.2004.05.055.
10. Shojania KG, Ranji SR, McDonald KM, Grimshaw JM, Sundaram V, Rushakoff RJ, et al. Effects of quality improvement strategies for type 2 diabetes on glycemic control: a meta-regression analysis. JAMA. 2006;296:427-40. doi:10.1001/jama.296.4.427.
11. Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. Health Aff (Millwood). 2008;27:759-69. doi:10.1377/hlthaff.27.3.759.
12. Health Quality Council of Alberta. The Alberta quality matrix for health. 2005. Retrieved July 2, 2018, from: http://hqca.ca/about/how-we-work/the-alberta-quality-matrix-for-health-1/.
13. Frank C, Marshall D, Faris P, Smith C, Inst ABJH. Essay for the CIHR/CMAJ award: improving access to hip and knee replacement and its quality by adopting a new model of care in Alberta. Can Med Assoc J. 2011;183:E347-E50. doi:10.1503/cmaj.110358.
14. Health Quality Council of Alberta. Satisfaction and experience with health care services: a survey of Albertans Calgary. Health Quality Council of Alberta. 2010; Retrieved from: https://d10k7k7mywg42z.cloudfront.net/assets/531f7c034f720a52390000f1/HQCA_SE_Technical_Report_2010.pdf.
15. Sandelowski M. Whatever happened to qualitative description? Res Nurs Health. 2000;23:334-40. doi:10.1002/1098-240x(200008)23:4<334::. Aid-Nur9>3.0.Co;2-G.
16. Sandelowski M. What's in a name? Qualitative description revisited. Res Nurs Health. 2010;33:77-84. doi:10.1002/nur.20362.
17. Sandelowski M. Whatever happened to qualitative description? Res Nurs Health. 2000;23:334-40.
18. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007; 19:349-57. doi:10.1093/intqhc/mzm042.
19. Sandelowski M. Sample-size in qualitative research. Res Nurs Health. 1995;18:179-83. doi:10.1002/nur.4770180211.
20. Morse JM, Field PA. Qualitative Research Methods for Health Professionals. 2nd ed. Thousand Oaks, CA: Sage; 1995.
21. Black BP, Holditch-Davis D, Sandelowski M, Harris BG. Comparison of pregnancy symptoms of infertile and fertile couples. J Perinat Neonatal Nurs. 1995;9:1-9.
22. Sandelowski M, Leeman J. Writing usable qualitative health research findings. Qual Health Res. 2012;22:1404-13. doi:.1177/1049732312450368.
23. Scientific Software Development GmbH. Atlas.ti: Qualitative Data Analysis. 2018; Retrieved July 2, 2018, from: http://atlasti.com/.
24. Ailinger RL, Harper DC, Lasus HA. Bone up on osteoporosis. Development of the Facts on Osteoporosis Quiz. Orthop Nurs. 1998;17:66-73.
25. Majumdar SR. Recent trends in osteoporosis treatment after hip fracture: improving but wholly inadequate. J Rheumatol. 2008;35:190-92.
26. Health Foundation. Person Centred-Care Made Simple. London, England: Health Foundation, 2014.
27. Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness. JAMA. 2002;288:1775-79.
28. Wagner EH, Austin BT, Von Korff M. Organizing care for patients with chronic illness. Milbank Q. 1996;74:511-44.
29. Bergeson SC, Dean JD. A systems approach to patient-centered care. JAMA. 2006;296:2848-51. doi:10.1001/jama.296.23.2848.
30. Wozniak LA, Johnson JA, McAlister FA, Beaupre LA, Bellerose D, Rowe BH, et al. Understanding fragility fracture patients' decision-making process regarding bisphosphonate treatment. Osteoporos Int. 2017;28:219-29. doi:10.1007/s00198-016-3693-5.
31. Clark AM, MacIntyre PD, Cruickshank J. A critical realist approach to understanding and evaluating heart health

programmes. Health (London). 2007;11:513-39. doi:10.1177/1363459307080876.

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