Effective Communication and the Osteoporosis Care Gap

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ABSTRACT

Many pharmacological treatments are now available to prevent the occurrence of fragility fractures in patients with osteoporosis. Despite this, concerns persist that many individuals who might benefit from osteoporosis treatment do not receive it—the “osteoporosis treatment gap.” The underlying reasons for this gap are diverse and include those who are not identified as being eligible for treatment as well as those who intentionally choose not to take medications because of uncertainty, unanswered questions, or an inability to understand what is being asked of them. In this perspective article we highlight the importance of providing information on the causes and consequences of osteoporosis during encounters when treatment is being discussed as well as what osteoporosis treatment can achieve and what it cannot. We also review the importance of communicating the benefits and risks of treatment in absolute terms so that patients can understand what taking treatment will mean for them and discuss the utility of decision aids to assist in these conversations. We suggest it is not the treatment gap that is the problem but the care gap. This language acknowledges the importance of healthcare providers identifying those likely to benefit from treatment and increasing the quality of clinical conversations to promote patient engagement and involvement while respecting that treatment is not suitable or wanted by all. © 2022 American Society for Bone and Mineral Research (ASBMR).

KEY WORDS: OSTEOPOROSIS; DISEASES AND DISORDERS OF/RELATED TO BONE; HEALTH SERVICES RESEARCH; EPIDEMIOLOGY

Concern has existed for many years that many individuals who might benefit from osteoporosis treatment do not receive it; this has been referred to as the “osteoporosis treatment gap.” From this perspective we have analyzed individual components of the treatment gap and put forward potential solutions, focusing primarily on the importance of providing patients with accurate information on the balance between absolute benefits and absolute risks of treatment, giving the patient an accurate diagnosis by dual-energy X-ray absorptiometry (DXA) and ensuring that physicians respect shared decision-making when advising on medical treatments for osteoporosis. We also suggest that the term “treatment gap” should be replaced by “osteoporosis care gap” to take account of the fact that not all patients want to take drug treatment, even after having been fully informed of the risks and benefits.

What Is the Osteoporosis Treatment Gap?

Various definitions of the treatment gap have been put forward, but in a recent review by Fuggle and colleagues it was defined as the difference between the number of individuals who require osteoporosis treatment and the number who receive it. The authors did not define what they meant by “require,” but our assumption was that these are individuals who would benefit from receiving such treatment in terms of a reduction in fracture risk. Other definitions of the treatment gap have also been put forward; in a recent publication by McCloskey and colleagues based on a cross-sectional study of 3798 postmenopausal women aged 70 and over in eight European countries, the definition was widened to include individuals who were not being treated who had suffered a major osteoporotic fracture over the age of 50, those with osteoporosis diagnosed by DXA or those with a “high fracture risk.” This was defined as a 10-year major osteoporotic fracture risk above country-specific cut-offs, which ranged between 10% in Poland to 25% in Sweden and Switzerland.

What Benefit Can the Patient Expect from Treatment?

Since osteoporosis is clinically silent until a fracture occurs, the treatments that physicians prescribe to prevent future fractures
do not provide any immediate symptomatic benefit. Accordingly, when discussing treatment options, it is important to ensure that the patient is aware of what benefits they might expect and what side effects might occur. Some individuals in the treatment gap as defined by McCloskey, such as those who have had a fragility fracture aged over 50 and those with a high fracture risk, may not derive any benefit from drug treatment for osteoporosis. We say this because there is no evidence that the commonly used drug treatments for osteoporosis reduce the risk of fractures in all individuals who have experienced a fracture above the age of 50 or because they have a 10-year fracture risk over a certain threshold. Some of these individuals would likely benefit in terms of fracture prevention, but the magnitude of benefit for the individual is uncertain, and information on the degree to which the patient might benefit is crucial to shared decision-making.

Of relevance to the issue of fracture prevention in those at high fracture risk, the UK-based SCOOP trial looked at the effectiveness of a population-based screening strategy for high fracture risk, the strategy was not effective in reducing the overall fracture burden. With the exception of osteopenic fractures in the screened population, although there was a reduction in hip fractures. In both groups, the proportion of patients who were treated for osteoporosis was low (14% in the screened group and 4% in the control group). Although all participants in SCOOP would lie within the treatment gap as defined by a high fracture risk, the strategy was not effective in reducing the overall fracture burden. With the exception of hormone-replacement therapy, the strongest evidence base for fracture prevention using the most widely used treatments for osteoporosis are based on their use when there is DXA-proven osteoporosis (T-score < -2.5) or vertebral fractures or, in the case of zoledronic acid, osteopenia (T-score between -1.0 and -2.5). Consequently, we believe that it is important to perform DXA in people with high fracture risk to give a more precise estimate of fracture risk, to evaluate the effect size of the likely benefit, and to maximize acceptance of treatment.

**The Importance of Diagnosing Osteoporosis**

In recent years there has been a move away from treating osteoporosis simply because the bone mineral density (BMD) T-score is less than −2.5 to a model where absolute fracture risk is also considered. In the UK, for example, the current iteration of the National Osteoporosis Guideline Group (NOGG) guidelines suggest that drug treatment for osteoporosis should be initiated in people with a high fracture risk whether or not BMD measurements have been performed. Although some patients with very high fracture risk will benefit from treatment, we believe that measurement of BMD is a key component of the treatment pathway, not least because the diagnosis of osteoporosis is highly influential in getting a patient to accept treatment. The common sense model of disease tells us that a diagnostic label helps patients understand their condition and that this in turn helps to guide their coping strategy actions. Empirical evidence also supports this, since in the McCloskey study cited previously the treatment gap in those with a DXA diagnosis of osteoporosis was only 30.9% compared with 94.2% in those without a diagnosis. A systematic review also demonstrated that prior BMD measurements before starting osteoporosis medication was associated with higher persistence and adherence compared to nontesting. Finally, in the SCOOP trial, adherence to osteoporosis treatment was better in patients who had received an assessment of fracture risk followed by a BMD assessment as compared to those allocated to usual care that did not consistently use DXA scanning before treatment commencement. This indicates that a diagnostic label, whether osteoporosis or osteopenia as demonstrated by BMD measurements, helps patients make sense of their susceptibility to fracture and the likely benefit of treatment.

**Problems with the Term Treatment Gap**

Several subgroups of individuals can be identified in the so-called treatment gap. There are those who are likely to benefit from treatment but have not been offered it, and there are others who have been offered treatment who have decided not to take or continue it. Proponents of the term treatment gap suggest that 100% of patients in whom treatment is thought to be clinically indicated should be taking medicine. This is a paternalistic standpoint and does not take account of the individual patient’s situation or preferences. For example, there are individuals who have been identified as benefiting from treatment but who have decided against proceeding, even after having been fully informed of the risks and benefits. We consider that, patients who have made an informed should not be classed as nonadherent. Furthermore, individuals living with frailty and limited life expectancy who may not value or significantly benefit from a preventive treatment and may decide in partnership with their treating clinician that treatment is not appropriate.

**Person-Centered Medicine**

Providing accurate information is at the core of person-centered medicine, which aims to put the patient at the center of decisions about their care. This represents a movement away from decision-making on the appropriateness of treatment being based solely on a cut-off point above or below a somewhat arbitrary threshold. For example, the current UK NOGG guideline (accessible via the FRAX UK calculator) presents clinicians with options of “treat” or “do not treat” above a certain level of fracture risk. A footnote to this algorithm states that “these thresholds are for guidance only and the final decision to assess BMD or to initiate therapeutic intervention lies with the individual clinician.” Although we acknowledge that a threshold approach may make it easier for nonspecialists to identify those in whom treatment may be offered, the wording implies that the decision to initiate treatment lies with the clinician, whereas, in fact, treatment decisions need to be considered by both the clinician and the patient taking into account the wider clinical context.

To improve outcomes for people with osteoporosis, healthcare professionals must play a much more proactive role in providing information to facilitate shared decision-making. The information should be presented in such a way that is understandable, should address concerns about adverse effects or uncertainties, and should offer alternative modes of treatment, such as intravenous therapy, for patients who lack the capacity or find the burden of oral treatments too high (Fig. 1). Healthcare professionals should not only explain the range of possible treatment options available but also include the option of not being treated. It is crucial to consider the wider clinical context and preferences of the patient, including comorbidities, frailty, polypharmacy, and life expectancy, particularly in the frail elderly.
population. A preventive treatment that has no effect on symptoms may not be attractive or appropriate to the patient who prioritizes symptom control and a low treatment burden or who has a limited life expectancy.

Effective Communication and Shared Decision-Making

Effective communication is crucial in person-centered medicine. The way in which osteoporosis is framed and the risks and benefits of treatment are presented can have a major influence on the patient’s decision-making. Before treatment is even discussed, the healthcare professional must establish the patient’s baseline understanding about osteoporosis and fracture-reducing medications. Exploring patient beliefs might reveal misunderstandings about what osteoporosis is, its causes and consequences, and what treatment can achieve. Qualitative research has indicated that patients decide not to initiate or continue osteoporosis medicine if they believe that osteoporosis is a normal part of aging for which treatment is futile, if they do not believe they are personally at risk, or if they do not consider the consequences of osteoporosis as important. Another issue that may erode patients’ confidence in understanding the diagnosis and treatment advice may be competing health conditions, such as poor dental health, or conflicting messages on the risks of treatment by different healthcare professionals. This highlights the importance of education of all healthcare professionals involved in patient care so that similar advice can be given to patients by healthcare professionals from different specialties. An approach of informed and shared decision-making is suitable for all patients, although the extent of this can be flexible, depending on patient preferences. For example, patients who have established long-term trust in their physician might want to be told what the physician feels is the best thing to do. Even for patients who prefer to be guided in their decision-making, using the principles of shared decision-making helps the clinician to make decisions in the patient’s best interest and improves the quality of communication and understanding.

Recent systematic reviews have shown mixed results regarding the use of patient education alone to improve adherence to osteoporosis treatment. This is not surprising because it is well established that knowledge alone is insufficient to achieve behavioral change. The application of principles of shared decision-making makes it possible to elicit patient beliefs, allows for more targeted information sharing, and makes it more likely that perceptions of illness and treatment will change. This explains why shared decision-making interventions have shown promise in increasing the uptake of preventive medicines such as vaccines and stroke prevention.
Decision Aids for Effective Communication

Patients make decisions about whether to take medication based on their perceptions of need for that medicine, balanced with concerns about side effects and risks, as well as practical considerations surrounding medication administration. However, existing patient information about osteoporosis medicines contains much more focus on harms than benefits, such that both patients and primary care clinicians consider the benefits of osteoporosis medicines to be ambiguous and vague. In simple terms, osteoporosis medicines strengthen bones and reduce fracture risk. However, how reduction in fracture risk is communicated can influence patient perceptions and intentions. The use of relative risk is not recommended because it can lead to overestimation of treatment benefits versus when the same information is presented using a personalized absolute risk format. In osteoporosis, a recently published study emphasized the difference between expressing benefit in terms of an absolute risk reduction versus relative risk reduction when applied as part of routine care in a secondary care setting in the UK. This study showed that patients were less likely to accept treatment when benefits were presented as an absolute rather than relative risk reduction and revealed that approximately 25% declined treatment after the absolute benefit was explained, whereas they would have accepted treatment if presented with a relative risk reduction. Further analysis showed that the two main factors that influenced the patients’ decision to decline treatment were lower absolute fracture risk values and increasing age. Although paradoxically this could lead to a decline in treatment uptake, we feel this represents informed decision-making and, as such, does not widen the care gap. Based on this study, the authors developed an application called Osteoporosis Risk Benefit (ORB) calculator, which allows clinicians to enter the patients’ risk of a major osteoporotic fracture (MOF) over a given time period and estimate the absolute risk reduction for commonly used treatments on any major osteoporotic fracture, hip fracture, vertebral fracture, and nonvertebral, nonhip fractures. Entering data into the app takes only 2–3 minutes, and the results can be reviewed with the patient in numerical form or using a visual aid in which the total number of fractures with or without treatment is displayed. The Mayo Clinic has also developed a decision aid tool, but it only considers the effects of bisphosphonates and does not allow calculation of the risk of individual fracture types. Furthermore, the Mayo tool may overestimate the benefit of bisphosphonates, which are assumed to reduce MOF fracture risk by 40%, whereas in reality, the reduction is lower in particular with nonvertebral, nonhip fractures and varies with type of bisphosphonate. The iFraP tool incorporates a pictorial presentation of individualized major and hip fracture risk, with and without treatment, alongside information about risk factors and bone density, an explanation of why bone health matters, including animations and information about treatment benefits, side effects, and practical issues. A clinical trial to evaluate the implementation of iFraP and the associated shared decision-making training package within routine clinical practice is currently in progress, involving a nested process evaluation and economic analysis. The iFraP tool is not yet publicly available but will be published on the study website when the trial has completed.

Despite the availability of these decision aids, it is important to emphasize that these tools do not meet international patient decision aid standards nor have they been shown to improve clinical outcome. Nonetheless, we have all encountered patients who are terrified of the risks of very rare adverse effects, such as osteonecrosis of the jaw or atypical femoral fractures, and a decision aid that could put these risks in context and side by side with the potential benefits of therapy in terms of fractures prevented would be helpful. This has been achieved in other areas of medicine and was used to good effect by the Medicines and Health Care Regulatory Authority (MHRA) in the UK to communicate the benefits of the AstraZeneca Covid-19 vaccine, in relation to the very rare occurrence of cerebral thrombosis.

Healthcare professionals will need to help guide patients through using the most appropriate resources to assist with decision-making, particularly in the frail and elderly population. Patient access to online resources, including the previously described decision aids, is increasing; however, such access remains limited in the older age group. There has been a growth in Internet use among older adults in the UK; however, in 2019, only 47% of those aged 75 and over had accessed the Internet in the previous 3 months, with 29% of those over 65 having never accessed the Internet. Interestingly, in the UK, men have been shown to be more frequent Internet users, with 54% of men aged over 75 being recent Internet users compared to 41% of women, which is relevant for the osteoporosis patient population.

Closing the Osteoporosis Care Gap

We suggest it is not the treatment gap that is the problem but the osteoporosis care gap (Fig. 1). This language acknowledges the importance of healthcare providers identifying those likely to benefit from treatment and increasing the quality of clinical conversations to promote patient engagement and involvement, while respecting that treatment is not suitable for or wanted by all. A previous perspective article in the Journal of Bone and Mineral Research focused on solutions to addressing the “crisis” in the treatment of osteoporosis, and one of those was to enhance patient-engagement strategies. We agree that engagement is essential to ensure that patients are on board with the treatment on offer and are aware of the risks and benefits to them as individuals. Clinicians should be aware that the use of tools that present information on absolute benefit may result in a reduction in the proportion of patients who accept treatment, but ultimately this is the patient’s decision, even though it may negatively impact fracture occurrence at a population level. It could be that the wider introduction of anabolic treatments followed by anti-resorptive therapy, using a “gain and maintain” approach, might increase acceptance rates thanks to the greater efficacy compared with oral bisphosphonates which have been the mainstay of managing osteoporosis over the past three decades. In the meantime, clinicians might reflect on the extent to which their services and individual practice enable patients to feel involved and informed and their autonomy respected.

Acknowledgments

Professor Stuart Ralston was funded by grants from NHS Lothian Charity (S030820) and from the Realistic Medicine Value Improvement Fund of the Scottish Government. Dr Zoe Paskins was funded by the National Institute for Health Research (NIHR) (Clinician Scientist Award, CS-2018-18-ST2-010/NIHR Academy). The views are those of the authors and not those of the NIHR,
NHS, Department for Health and Social Care or other funders. For the purpose of open access, the authors applied a CC-BY public copyright license to any author accepted manuscript version arising from this submission.

**Author contributions**

Katherine A.P. Ralston: Conceptualization; writing – original draft; writing – review and editing. Barbara Hauser: Conceptualization; writing – review and editing. Zoe Paskins: Conceptualization; writing – review and editing. Stuart H. Ralston: Conceptualization; writing – review and editing.

**Conflicts of interest**

Prof. Stuart Ralston reports research grants to his institution from Kyowa Kirin, AstraZeneca, the European Commission, the Medical Research Council, and the Efficacy and Mechanisms Evaluation Programme of the UK National Institute for Health Research; donations of investigational medicinal products from Eli Lilly and Novartis to his institution for clinical trials; financial support to his institution for educational events from Pfizer, Abbvie, Kyowa Kirin, Alexion, Amgen, Cellgene, Bristol Myers Squibb, Janssen-Cilag, Novartis, Eli Lilly Thornton & Ross, AstraZeneca, Sanofi Genzyme, Sandoz, and Roche; and financial support to his institution for consultancy work from UCB, outside all the submitted work. Dr. Hauser reports research grants to her institution from Novartis and consultancy fees from UCB outside the submitted work. Dr. Zoe Paskins reports grants from NIHR, Versus Arthritis, Royal Osteoporosis Society, General Council for Nursing, Haywood Foundation, Chartered Society for Physiotherapy, and the British Society for Rheumatology; honoraria from the Royal College of General Practitioners; nonpaid consultancy for UCB and unpaid committee roles with the Royal Osteoporosis Society, Versus Arthritis, National Osteoporosis Society Guideline Group, and the Haywood Foundation. Dr. Katherine Ralston has no conflicts of interest to declare.

**Peer review**

The peer review history for this article is available at https://publons.com/publon/10.1002/jbmr.4701.

**Data availability statement**

Data sharing not applicable - no new data generated

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