Information support of evidence-based managing of patients with musculoskeletal disorders in primary health care

For citation: Bol’, sustavy, pozvonočnik, 2019; 9(4): 222-236. doi: 10.22141/2224-1507.9.4.2019.191922

Abstract. Health care efficacy depends on its resource support quality and adherence to the evidence-based approach. The study aimed to characterize the information support of evidence-based managing of patients with musculoskeletal disorders at the level of primary care. Materials and methods. Using information analysis, expert assessments and statistical methods, in the period of 2009–2019 we have been studying evidence-based medicine computer meta-databases, guidelines of both US Preventive Services Task Force (USPSTF) and Canadian Task Force of Preventive Health Care (CTFPHC), medical-and-technological documents of the Ministry of Health of Ukraine. Results. We have demonstrated intensive development of the Cochrane reviews on musculoskeletal disorders (up to 16 per year), their high rating (from 20 to 33.3 % among the top-ranking ones on the Cochrane Collaboration website, mostly concerning neuropathic pain and fibromyalgia), search option efficiency for a total of 785 reviews from this source and in the Cochrane Library on 40 topics from the categories “Rheumatology” and “Orthopaedics & Trauma”, of which 27.0 % are in Russian. The TRIP databases consistent advantages are identified, among them access to the latest evidence and their advanced search; it contains 130 documents on primary care, of which 4 (3.1 %) on musculoskeletal pain. EvidenceAlerts has even more evidence on the primary care — 13,259 documents, of which 140 (1.1 %) on the musculoskeletal system. The principal subject of both USPSTF and CTFPHC is fracture prevention in adults, as supported by their guidelines on screening for osteoporosis, recommendations on falls, taking vitamin D and calcium. Musculoskeletal disorders were focus of 6 out of 93 (6.5 %) guidelines and 3 out of 123 (2.4 %) unified protocols approved by the Ministry of Health of Ukraine during 2012–2017, and 165 out of 962 (17.2 %) new protocols, of which 98.8 % of which have chaptered entitled “Traumatology”, “Orthopaedics” and “Rheumatology”. Their share exceeds the musculoskeletal disorders’ share in the structures of diseases prevalence for the general population of Ukraine (5.4 %) and for the people of the working-age (5.6 %). Conclusions. Musculoskeletal diseases, pain and fractures make up the key and most popular subjects of the Cochrane Collaboration, whose website along with the Cochrane Library, TRIP and EvidenceAlerts is a useful source primarily for scientists. For the primary care specialists of Ukraine, the information support on musculoskeletal disorders relies on single unified protocols and 165 new ones, that should be used in continuing medical education. The population health may be improved by developing an adult fracture prevention program, taking into account the Cochrane Library’s source and the USPSTF and CTFPHC guidelines as especially useful for health managers and scientists. Keywords: musculoskeletal disorders; primary care; evidence-based medicine; computer databases; Cochrane reviews; clinical recommendations and protocols

Introduction

Raising the quality of primary health care (PHC) is one of the priority areas for development of health care systems and requires improved resource supply, first of all in terms of personnel and information resources [1-3]. Information support implies primarily gathering and processing of information necessary for the executive decision making; it is a «systemic element of global health care policy» [1] and its modern paradigm – evidence-based medicine (EBM) [4-6]. A number of international declarations, starting with the Ottawa Charter for Health Promotion (1986) recognize expert analysis of information as the basis for a scientific support of reforms, and note both the importance of improved information support of PHC and the vulnerability of this link’s implementing EBM [1, 7-8].

Among the most useful information resources of EBM, there are reliable generalizations of evidence (systemic reviews (SRs), meta-analyses, guidelines, etc.) and their

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available sources, such as EBM’s computer databases and especially meta-databases, which contain search filters, are subjected to the peer review of content and ensure the ease of search [9-10]. The results of the comprehensive study, launched in 2009 and published by 2017 [5, 7, 9-10], allowed us to evaluate such resources, including those approved by the order of the Ministry of Health of Ukraine № 751 of 28.09.2012 [11], but not used for drafting medical-technological documents (MTDs); we have also confirmed a low significance of screening issues related to the role of experts in the development of MTDs; we have revealed ethical and methodological approaches; we have revealed the competence of specialists and their information support, as well as a lack of conformity of the general sets of the adapted clinical recommendations (including general sets of the adapted clinical recommendations generated, advanced, by clinical categories etc.) [9-10].

Thus, in order to improve the quality of resource supply and PHC for the patients with MSDs, both monitoring and expert evaluation of the best available evidence are necessary, as well as a differentiated presentation of the continuous medical education (CME) results by the PHC and other health care specialists, taking into account the key areas of their activity.

The aim of the study was to characterize the information support of evidence-based managing patients with musculoskeletal disorders in primary care.

Materials and methods

Using systemic approach, universal and special methods of scientific research, including methods of qualitative and quantitative information analysis (bibliographic, bibliometric, informetric, and content analysis), expert assessments and statistical analysis of quantitative results, the following EBM information resources have been studied from 2009 to 2019: - reviews published on the Cochrane Collaboration’s website (www.cochrane.org), including samples of the most popular ones and SRs from the categories of «Orthopedics & Trauma» and «Rheumatology», namely: 300 reviews, which made up the top-50 during six comparable three-month periods of 2011-2013; reviews, which were most popular during two comparable three-month periods of 2017 and 2019 (top-20 and top-10, respectively); - the Cochrane Library website (www.cochranelibrary.com) and the CDSR, its sub-database, including the samples of SRs from the categories of «Orthopedics & Trauma» and «Rheumatology» in the fall of 2017 and fall of 2019; - the computer TRIP database (www.tripdatabase.com), and its categories «Primary care», «Orthopedics», «Rheumatology», the approaches to searching evidence on the issues of PHC and MSDs, as well as the documents found during 2011-2019; - the computer EvidenceUpdates database (now referred to as EvidenceAlerts, www.evidencealerts.com), the approaches to and results of searching evidence on the issues of PHC and MSDs; - a general set of USPSTF recommendations, published on its website www.uspreventiveservicestaskforce.org, and the samples of its recommendations, by categories («Musculoskeletal Disorders», «Injury Prevention», «Metabolic, Nutritional, and Endocrine Conditions», etc.) and by various periods of time: 1996-2017 (n=187), 2018 (n=16), 2019 (n=10); - a general set of the CTFPHC recommendations from its website www.canadianasbestos.ca, published in the fall of 2017 (documents developed in 1993-2017, n=62) and in the fall of 2019 (documents developed in 2011-2018, n=19).

The choice of these information resources as the objects of our study is explained by their availability (economic, technical, linguistic) and the utmost usefulness for the health professionals (new reliable evidence, among them the most important are the secondary ones, ease of any search accelerated, advanced, by clinical categories etc.) [9-10].

In addition, the following national evidence resources were studied: - the Register of MTDs on medical standardization, including general sets of the adapted clinical recommenda-
tions (n=93) and unified clinical protocols of the medical aid (UCPMA) (n=123), approved by the orders of the Ministry of Health of Ukraine and available on its website via the link www.mtd.dec.gov.ua/index.php/UK in the fall of 2017 and in the fall of 2019;
- a general set of the Duodecim clinical protocols (recommendations), available on the website of the Ministry of Health of Ukraine via the link http://guidelines.moz.gov.ua/documents in fall 2019 (n=962), and their samples from the categories of «Traumatology», «Orthopedics», «Rheumatology», «General practice».

Results
The EBM computer meta-databases include the Cochrane Library and the Cochrane Database of Systematic Reviews, CDSR (a «gold standard of meta-databases» and key source of medical references on the effects of intervention, i.e. Cochrane reviews), the website of the Cochrane Collaboration, TRIP (which contains up-to-date and mostly secondary evidence from the leading EBM countries), Medline (the database of choice for the initial search on risk factors, prognosis and phenomena; however, the SRs found therein are to be critically evaluated) and EvidenceUpdates (which predominantly included the primary studies; its current name is EvidenceAlerts) [4-5, 10].

Website of the Cochrane Collaboration. Its use as the best evidence source (i.e. Cochrane reviews) for the healthcare providers and consumers has been endorsed by a number of international organizations, including the WHO and the Ministry of Health of Ukraine [1, 9, 11]. Earlier, we have confirmed both the popularity of this database (almost a 4-time increase in the number of the top-50 downloads during 2011-2013) and the lack of its use by the national MTD developers or by the vast majority (96,1 %) of Kyiv primary care physicians in 2015 [7, 13].

By the content-analysis of the 300 SR titles, which were in the top-50 on this website for 6 comparable three-month periods of 2011-2013, the share of MSD reviews was 20 %. Their titles are: «Exercise for improving balance in older people», «Glucosamine for osteoarthritis» (OA), «Diclofenac for osteoarthritis», «Surgery for thumb (trapeziometacarpal) joint osteoarthritis», «Arthroscopic debridgement for osteoarthritis of the knee», «Steroids for acute spinal cord injury»; «Interventions for preventing falls in older people living in the community», «Posterior versus lateral surgical approach for total hip arthroplasty in adults with osteoarthritis», «Traction for low-back pain with or without sciatica», «Conservative treatment for closed fifth (small finger) metacarpal neck fractures in adults», «Acupuncture for shoulder pain», «Injection therapy for subacute and chronic low-back pain», «Surgery or non-surgical treatment for broken heel bones», «Conservative treatments for whiplash», «Rehabilitation for ankle fractures in adults», «Interventions for treating osteoarthritis of the big toe joint». This website’s monitoring confirmed that in the fall of 2017 the share of the MSD reviews among the top-20 was 25 %; those reviews dealing with the effects of pharmacotherapy, namely of gabapentin and duloxetine, in neuropathic pain and fibromyalgia (FM), sulfasalazine in ankylosing spondylarthritis, paracetamol and non-steroidal anti-inflammatory drugs in rheumatoid arthritis (RA), biologic agents and tocainifin in RA with an incomplete response to basic therapy [12].

Further monitoring showed that the mode of pointing out the most popular SRs on the website www.cochrane.org had once again changed, and as of 20.10.2019, they referred to 33.3 % of the top-10 relevant MSD reviews, namely: «Gabapentin for chronic neuropathic pain in adults» by Wiffen PJ. et al. (2017) [14], «Amitriptyline for neuropathic pain in adults» by Moore R. et al. (2015) [15] and «Treatment for malergia paraesthetica, a condition causing numbness and sometimes pain in the thigh» by Khalil N. et al. (2012) [16]. It was established that those SRs were created by the Cochrane Review Groups «Pain, Palliative & Supportive Care Group» and «Neuromuscular Group»; at the same time, the SRs of the Cochrane Review Groups «Back», «Bone, Joint & Muscle Trauma» and «Movement Disorders» did not reach the top-10 in the fall of 2019. The other seven most popular SRs were related to the dental and obstetric care, treatment of onychomycosis and infusion therapy.

Therefore, the evidence-based treatment of musculoskeletal pain remained a popular request for users of the Cochrane Collaboration’s website, and in 2017-2019 it was, to be precise, the pharmacotherapy of neuropathic pain. The above-mentioned SRs reported the following: a medium quality of evidence on the effectiveness of gabapentin’s oral administration at the daily dose ≥ 1200 mg for a moderate or severe pain due to Herper zoster or diabetic neuropathy [14]; a lack of amitriptyline’s effectiveness in the majority of cases (except for the pain caused by a stroke or herpetic infection), especially in the HIV-positive and cancer patients [15]; both absence of randomized controlled trials (RCTs) on treating malergia paraesthetica and their expediency despite a high probability of spontaneous recovery [16].

It is worth noting that changes to the website formats usually improve their availability. In particular, the website of the Cochrane Collaboration was available in Spanish, French, Russian, German, Croatian and Chinese in 2017, while there are also Polish, Portuguese, Hindi, Arabic (16 languages in total) in 2019.

The website of the Cochrane Library allows to browse SRs by 54 Cochrane Review Groups and 36 categories («topics»). Study of the structure, content and format of publishing SRs on the website www.cochranelibrary.com revealed some new topics, such as «Public Health», «Diagnosis», «Effective practice & health system», «Health & safety at work», «Complementary & alternative medicine», «Medical education», «Methodology», «Developmental, psychosocial & learning problems», «Insurance medicine», «Consumer & communication strategies», «Tobacco, drugs & alcohol» etc. As it used to be earlier [12-13], the MSD reviews are presented under the category of «Orthopedics & Trauma» and «Rheumatology». As of 20.10.2019, those categories included 465 and 320 SRs respectively (785 in total), making up the 10% issue of CDSR. Table 1 and 2 show the content of these categories of the Cochrane Library, which was analyzed in the fall of 2017 and 2019.

As Table 1 shows, in the fall of 2019, the Cochrane SRs from the category «Orthopedics & Trauma» were divided
by 25 topics. Now, this category contains SRs on maxillo-facial trauma, groin injuries and hallux valgus (as opposed to 2017). The «Rheumatology» contains 15 topics, and the number of reviews in this category have been narrowed down over two years on almost all topics (except «Overuse injuries» and «Renal bone disease»), especially on OA, spondyloarthopathies, rheumatic diseases in children, lupus and vasculitis. So, a search of the Cochrane reviews on MSDs in this database is available by 40 topics, and most of the SRs available in 2017 and 2019 are dedicated to fractures, back pain and RA. The reviews on issues of osteoporosis are presented in «Rheumatology», and in accordance with their number, this topic ranks sixth.

It is scientists and experts who are known to be the main SR users. Based on the SRs, they develop and upgrade the relevant clinical recommendations, provide information support for the development and implementation of the healthcare programs, the PHC included [5, 9].

The information analysis showed a consistent increase of CDSR’s high impact factor (it was 4,654 in 2007; 5,939 in 2013; 7,755 in 2018). As of 20.10.2019, there were 128 issues of the CDSR (edited monthly), 28 special collections of evidence, 8103 Cochrane SRs and eight «overviews», of which seven dealt with the effects of biologic therapy with RA, one – to using antiepileptic drugs with neuropathic pain and FM. The CDSR included almost 2.5 thousand Cochrane protocols, more than 1.5 million RCTs and 2 thousand clinical answers.

Note that the SR development has been very rapid over the last decade, but they are considered insufficient in terms of quantity and quality [1, 6, 17]. The heterogeneous primary studies and reviews’ conclusions promote a further search and hypothesizing [9, 18]. Even though the Cochrane SRs are the reference evidence not to be critically evaluated, it is worth noting a tendency of selecting their primary sources from a very limited number of databases and an increased

Table 1. Topics of the Cochrane reviews from the categories of «Orthopedics & trauma» and «Rheumatology» presented on the website of the Cochrane Library in 2017 and 2019

| Category «Orthopedics & Trauma» | Topic of reviews | Number of reviews | Category «Rheumatology» | Topic of reviews | Number of reviews |
|---------------------------------|-----------------|-------------------|--------------------------|-----------------|-------------------|
|                                 |                 | Fall 2017*        | Fall 2019**               |                 | Fall 2017*        | Fall 2019**       |
| Fractures                       |                 | 89                | 85                       | Rheumatoid arthritis | 83       | 73               |
| Back disorders                  |                 | 72                | 65                       | Back disorders   | 88       | 73               |
| Acute pain                      |                 | 65                | 64                       | Osteoarthritis   | 82       | 55               |
| Emergency medicine              |                 | 48                | 46                       | Soft tissue injuries | 67       | 50               |
| Head injury                     |                 | 47                | 37                       | Fibromyalgia     | 32       | 31               |
| Soft tissue injuries            |                 | 35                | 31                       | Osteoporosis     | 38       | 21               |
| Prevention of injuries          |                 | 34                | 30                       | Gout            | 15       | 13               |
| Hip or pelvis trauma            |                 | 32                | 29                       | Spondyloarthopathy | 14       | 9                |
| Minimizing blood transfusion & blood loss | 24 | 22 | Overuse injuries | 7 | 8 |
| Prevention of road traffic injuries | 25 | 19 | Renal bone disease | 7 | 7 |
| Poisoning                       |                 | 9                 | 10                       | Systemic sclerosis | 6       | 4                |
| Falls prevention and balance    |                 | 11                | 10                       | Pediatric rheumatology | 6       | 3                |
| Spinal cord injury              |                 | 11                | 10                       | Lupus erythematosus | 6       | 2                |
| Abdominal trauma                |                 | 13                | 9                        | Vasculitis       | 5        | 1                |
| Dislocation of limb joints      |                 | 11                | 9                        | Other bone disease | 2       | 1                |
| Overuse injuries                |                 | 6                 | 8                        | Reactive arthritis | 1       | 0                |
| Burns                           |                 | 9                 | 6                        |                 |                 |                 |
| Wounds                          |                 | 8                 | 6                        |                 |                 |                 |
| Amputation                      |                 | 5                 | 5                        |                 |                 |                 |
| Maxillofacial trauma            |                 | 0                 | 5                        |                 |                 |                 |
| Pre-hospital trauma care        |                 | 5                 | 4                        |                 |                 |                 |
| Foot conditions                 |                 | 5                 | 3                        |                 |                 |                 |
| Chest trauma                    |                 | 4                 | 2                        |                 |                 |                 |
| Groin injuries                  |                 | 0                 | 1                        |                 |                 |                 |
| Hallux valgus                   |                 | 0                 | 1                        |                 |                 |                 |

Notes. * as of 26.11.2017 [12], ** as of 20.10.2019.
share of non-English SRs and those created by the Chinese experts [7, 9].

The analysis of quantitative indicators, presented on the Cochrane Library website as of 20.10.2019, showed a high intensity of Cochrane reviews’ creation on the topic of MSDs – from 12 to 16 every year – especially in the category «Orthopedics & Trauma» and mainly regarding the effects of intervention. To compare, in 2010 Bastian H. et al. noted 11 SRs being published every day – by various developers and often of a dubious quality [17], later we established an annual creation or update of up to 15 recommendations of the USPSTF based on the SRs [10].

As Table 2 shows, nowadays the Cochrane SR conclusions are quite often updated, published in Spanish, French and other languages; the CDSR contains reviews on accuracy of diagnostic tests. The Cochrane websites are not available in Ukrainian, but the CDSR includes 212 reviews in Russian – on MSDs (121 in the «Orthopedics & Trauma», 91 in the «Rheumatology»), and their share in the total structure is 27.0 %.

Completing analysis of the MSD management’s coverage at the www.cochrane.org and www.cochranelibrary.com websites, we note that this is a study focus of at least 5 of the 54 (9.25 %) Cochrane Review Groups – «Back & Neck», «Bone, Joint & Muscle Trauma», «Movement Disorders», «Musculoskeletal», «Skin» and «Vascular» etc.

Thus, the study established a high intensity of evidence being developed on the issue of MSD management, such as Cochrane reviews (12-16 per year), their great number (n=785) and ease of search at the websites of the Cochrane Collaboration and the Cochrane Library, by 40 topics of the «Rheumatology» and «Orthopedics & Trauma» categories, and 27.0 % of reviews being accessible in Russian. Nowadays, the most popular topics of the Cochrane reviews (33.3 % among the top-10) are both pharmacotherapy of neuropathic pain and FM.

The TRIP is multilingual; it is also one of the key EBM meta-databases with an approved accelerated search of the latest SRs. In 2015, the TRIP provided a differentiated search of more than 315 thousand SRs, guidelines, textbooks, etc. by 27 categories, including «Rheumatology» and «Orthopedics», though not in Ukrainian or Russian. The category of «Primary care» contained over 16 thousand documents (SRs, guidelines, etc.), selected from 36 EBM computer databases using manual search [7, 10].

Having studied the TRIP’s content, we confirm its benefits as a source of evidence concerning the management of patients with MSDs in primary care [7, 10, 12-13]. In 2012, its category «Primary care» contained 627 documents, among them 227 SRs (44.2 %), and 63 (10.0 %) documents being on issues of rheumatology and orthopedics. In 2015, this category expanded by 4.1 times and contained 2599 documents, but the share of SRs (n=787) was 30.0 %, and only 163 and 33 papers (in total 201, i.e. 7.7 %) concerned rheumatology and orthopedics, respectively. During this period of time, the number of documents in the categories of «Orthopedics» and «Rheumatology» increased 10.5 and 8.1 times respectively, while in the «Primary care» category – 1.1 times on orthopedics and 4.9 times on rheumatology.

Nowadays, a category search is unavailable in the TRIP. Evidence may be found either by search terms that match the PICO components (Patient, Intervention, Comparison,
Outcome), or by advanced method (for registered users only). A search in Ukrainian or Russian is still unavailable.

Our Google search, made on 22.10.2019 using search terms «TRIP database» and «primary care», enabled us to obtain 130 documents via the link http://www.tripdatabase.com/search?&type=t&quality=5&timespan=n&source=e&criteria=area%3a%22Primary%22+Care%22&page=1idLi st=Content analysis of their list confirmed that only four papers were on topic of MSDs (3.1 % of the total number, all published in 2019): 1) a SR and meta-analysis by Whitaker G.A. et al. on the effects of glucocorticoids (GCs) for heel pain [19]; 2) a double blind phase IIb/III RCT of using fasinumab for osteoarthritic pain, reported by Dakin P. et al. [20]; 3) a mixed methods study protocol as to effectiveness, cost-utility, and benefit of a multicomponent therapy to improve the quality of life of patients with FM in primary care, by Caballol Angelats R. et al. [21]; 4) a mixed method evaluation of a primary care-based opioid’s acceptability for chronic non-cancer pain, conducted by Kesten J. et al. [22]. We are reporting the obtained results, taking into account their novelty.

The SR with a meta-analysis of the GC injection effects for a plantar heel pain included 47 trials with a total number of 2989 participants. The results allowed Whittaker G.A. et al. (2019) to establish a GC benefit while comparing them to either autologous blood injection or pain-reducing foot orthoses in the short term (0-6 weeks), but not in the medium term (7-12 weeks). As to the longer term (13-52 weeks), GCs were less effective than dry needle or platelet-rich plasma injections. The effectiveness of GCs in the short and medium term was similar to placebo, but «for improving function, corticosteroid injection was more effective than physical therapy in the short term». The authors concluded that GC injection «is more effective than some comparators for reducing pain and improvement of function in people with plantar heel pain. However...not more effective than placebo injection». Further trials «of low risk of bias» were recommended to strengthen evidence on this issue [19].

Next paper from the «Primary care» TRIP category is written by Dakin P. et al. (2019); it presents the double-blind RCT results on «efficacy, tolerability, and joint safety» of using fasinumab, i.e. anti-nerve growth factor monoclonal antibody, for moderate-to-severe hip or knee pain related to OA with an inadequate response or intolerance to analgetics. 342 of 421 (81.2 %) randomized patients completed the study. Every 4 weeks over 16 weeks they took fasinumab (at 1, 3, 6 or 9 mg) or placebo and were followed up to 36 weeks. The outcomes of the study were articular pain and function, and patient global assessment; radiography and magnetic resonance imaging were used for visualization of the joints. All doses of fasinumab reduced pain, without any obvious dose dependence. Adverse effects rates were respectively 17 and 10 % with fasinumab and placebo, among them serious ones – in 4 and 1 %. Occurrence of 25 cases of arthropathies was described, namely in 1 % of placebo-treated and 7 % of fasinumab-treated patients. Almost 2/3 of the arthropathies were revealed with a scheduled radiography; two of them occurred with the lowest dose of fasinumab, 10 with the highest one; the development of destructive arthropathy was observed in one patient treated with 6 mg fasinumab. Dakin P. et al. concluded that fasinumab alleviated OA pain and improved function even when analgetics were ineffective. They suggested an expediency of further studying «the lowest doses of fasinumab in patients with knee or hip OA» [20].

The other two documents of the «Primary care» TRIP category on MSDs (as shown by the content-analysis results of the titles) are study protocols of «effectiveness, cost-utility, and benefit of a multicomponent therapy to improve the quality of life of patients with FM» in the primary care settings in Spain [21], and assessment of the British experience on the eligibility of such a PHC service as managing chronic non-cancer pain based on both non-pharmacologic support and use of opioids [22].

Our study has confirmed the ease of a quick TRIP search for reliable evidence on MSD management; however, this database does not seem to be useful for most Ukrainian PHC specialists, given the limited content of the «Primary care» category (3.1 % of 130 documents) and the lack of its documents in Ukrainian and Russian.

Currently the TRIP has fewer evidence on issues of managing MSDs in primary care than in 2015 (130 vs 201), but twice more than in 2012 (130 vs 63), and a search by categories «Orthopedics», «Rheumatology», «Primary care», etc. is unavailable. Among the consistent advantages of this meta-database there are availability of the latest evidence and the possibility of their advanced search.

The following EBM meta-database we have studied – EvidenceAlerts (earlier known as EvidenceUpdates) [5] – is a resource of new high-quality evidence (RCTs, SRs and guidelines, selected by the McMaster University’s experts from more than 120 medical journals) with the possibility of their advanced search for registered users. The search we conducted on 31.10.2019 with a search term «primary care» enabled us to obtain a list of 13259 documents (i.e. 102 times more than in the TRIP); after adding a search term «musculoskeletal» this list had been reduced to 140 items. Their titles’ content-analysis revealed both a significant diversity of topics and a lack of systematization on the issues of PHC and MSDs in EvidenceAlerts. It is not possible to search evidence by clinical categories, a limitation which is typical of the TRIP, however removed in the CDSR.

Thus, we have identified consistent advantages of using the TRIP, such as access to the latest evidence and their advanced search, but a lack of search by clinical categories; as far as the primary care is concerned, this database contains 130 documents, of which 4 (3.1 %) deal with musculoskeletal pain. More evidence on primary care is found in EvidenceAlerts – 13259, of which 140 (1.1 %) relate to musculoskeletal issues.

The state of primary-care population and group MSD prevention evidence base finds its reflection in a comprehensive study of the USPSTF and CTFPHC recommendations, considered to be the benchmark in the USA and Canada and dealing mostly with screenings [7]. We’ve studied the USPSTF recommendations published at its website www.uspreventiveservicestaskforce.org, particularly under the categories of «Musculoskeletal Disorders», «Injury Pre-
vention», «Metabolic, Nutritional, and Endocrine Conditions», «Miscellaneous», in the various periods of time. It is revealed that during 1996-2017 the USPSTF published 187 recommendations [12-13], in 2018 — 16, in 2019 — 10. As of 02.11.2019, its website contained 102 recommendations, among them four under the «Musculoskeletal Disorders». As Table 3 shows, one of these recommendations (on screening for developmental hip dysplasia, 2006) nowadays is not valid; others were developed or updated in 2018. Their share in the total structure of the USPSTF recommendations is 3.9 %, turning out to be the same as in 1996-2017, as we established earlier [12-13].

While comparing our new results with those previously obtained, it was found that the share of recommendations under the «Musculoskeletal Disorders» category was the biggest among the USPSTF recommendations in the years of 1996-2012 for children and adolescents (6.3 vs 2.0 %), and their share did not change in the structures of the recommendations for adults and the elderly (3.1 vs 2.5 %). All the recommendations for children and adolescents were dealing with screenings — for developmental hip dysplasia (2006) and idiopathic scoliosis (2004, 2018), while the recommendations for adults and the elderly concerned different preventive technologies: recommendations on the issues of low-back pain (2004), screening for osteoporosis (2002, 2011), including those for falls prevention (2018), recommendations and medications for falls prevention (2012, 2018).

The content-analysis results of recommendations under the «Musculoskeletal Disorders» category allow us to consider the fracture prevention in adults as a priority for the USPSTF activity. It reliance on the epidemiologic and economic evidence is noted in the texts of the USPSTF recommendations for 2018. In particular, in the USA, fractures are the main cause of morbidity and mortality related to trauma in people aged 65 years and older: in 2014, fractures were revealed in 28.7 % of adults (in total, 29 million cases), and they caused 33 thousand deaths in 2015 [23]. In 2015, 2 million new cases of fractures were recorded, and in 2025, 3 million are predicted [24]. The guidelines for fracture prevention are developed by the International Society of Clinical Densitometry, the International Association of Osteoporosis, the American Association of Osteoporosis, the American Geriatric Society, the Brazilian Society of Endocrinology and Metabolology etc. [25-26].

The grade definition of the USPSTF recommendations, updated in 2012, is available via the link www.uspreventiveservicestaskforce.org/Page/Name/grade-definition. Our study has shown that the highest grade of А (i.e. the USPSTF recommends to offer or provide the service, because «there is high certainty that the net benefit is substantial») was not given to any statement under the category of «Musculoskeletal Disorders». In 1996-2017, grade B (i.e. the USPSTF recommends to offer or provide the service, because «there is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial») was given to two statements, namely: on screening for osteoporosis in women aged ≥65 years and younger who have similar (i.e. ≥9,3 %) 10-year risk of developing fractures, as well as on counseling older patients on exercises, physiotherapy and taking vitamin D for falls prevention. At the time, the USPSTF did not recommend either routine screening of adolescents for scoliosis (grade D), or routine complex assessment of falls risk in the elderly (grade C); also, it was noted there was an insufficient evidence on routine screening of either older men for osteoporosis, or newborns for developmental hip dysplasia (grade I) [12].

In 2018, the recommendation on screening for developmental hip dysplasia (2006) was inactivated («The USPSTF has decided not to review the evidence and update recommendations for this topic... If new evidence becomes available, the USPSTF may elect to update this topic»), and three recommendations were published under the «Musculoskeletal Disorders»: 1) on screening for adolescent idiopathic scoliosis; 2) on screening for osteoporosis to prevent fractures; 3) on interventions for falls prevention in community-dwelling older adults. In 2019, no changes were made to this category.

Our study has shown that the abovementioned recommendation on screening for osteoporosis to prevent fractures was also included under the category of «Injury Prevention» — along with two other recommendations created in 2018 — «Intimate partner violence, elder abuse, and abuse of vulnerable adults: screening» (age group: adolescent, adult, senior) and «Child maltreatment: interventions» (counseling and screening of adolescents and children). There is no recommendation on MSDs under the «Miscellaneous» category. As far as the category of «Metabolic, Nutritional, and Endocrine Conditions» is concerned, it was the recommendation on vitamin D and calcium supplementation for primary fractures prevention in adults published in 2013 [27] and updated in 2018 under the title «Vitamin D, Calcium, or Combined Supplementation for the Primary Prevention of Fractures in Community-Dwelling Adults: Preventive Medication» [24]; in 2015, the recommendation on screen-

| Title                                                                 | Type                  | Year  | Age group               |
|----------------------------------------------------------------------|-----------------------|-------|-------------------------|
| Developmental Hip Dysplasia: Screening (Inactive)                     | Screening             | 2006  | Pediatric               |
| Adolescent Idiopathic Scoliosis: Screening                            | Screening             | 2018  | Adolescent, Pediatric   |
| Falls Prevention in Community-Dwelling Older Adults: Interventions    | Counseling, Preventive medication | 2018  | Senior                  |
| Osteoporosis to Prevent Fractures: Screening                          | Screening             | 2018  | Adult, Senior           |

Our study has shown that the highest grade of А (i.e. the USPSTF recommends to offer or provide the service, because «there is high certainty that the net benefit is substantial») was not given to any statement under the category of «Musculoskeletal Disorders». In 1996-2017, grade B (i.e. the USPSTF recommends to offer or provide the service, because «there is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial») was given to two statements, namely: on screening for osteoporosis in women aged ≥65 years and younger who have similar (i.e. ≥9,3 %) 10-year risk of developing fractures, as well as on counseling older patients on exercises, physiotherapy and taking vitamin D for falls prevention. At the time, the USPSTF did not recommend either routine screening of adolescents for scoliosis (grade D), or routine complex assessment of falls risk in the elderly (grade C); also, it was noted there was an insufficient evidence on routine screening of either older men for osteoporosis, or newborns for developmental hip dysplasia (grade I) [12].

In 2018, the recommendation on screening for developmental hip dysplasia (2006) was inactivated («The USPSTF has decided not to review the evidence and update recommendations for this topic... If new evidence becomes available, the USPSTF may elect to update this topic»), and three recommendations were published under the «Musculoskeletal Disorders»: 1) on screening for adolescent idiopathic scoliosis; 2) on screening for osteoporosis to prevent fractures; 3) on interventions for falls prevention in community-dwelling older adults. In 2019, no changes were made to this category.

Our study has shown that the abovementioned recommendation on screening for osteoporosis to prevent fractures was also included under the category of «Injury Prevention» — along with two other recommendations created in 2018 — «Intimate partner violence, elder abuse, and abuse of vulnerable adults: screening» (age group: adolescent, adult, senior) and «Child maltreatment: interventions» (counseling and screening of adolescents and children). There is no recommendation on MSDs under the «Miscellaneous» category. As far as the category of «Metabolic, Nutritional, and Endocrine Conditions» is concerned, it was the recommendation on vitamin D and calcium supplementation for primary fractures prevention in adults published in 2013 [27] and updated in 2018 under the title «Vitamin D, Calcium, or Combined Supplementation for the Primary Prevention of Fractures in Community-Dwelling Adults: Preventive Medication» [24]; in 2015, the recommendation on screen-

| Table 3. The USPSTF recommendations under the category of «Musculoskeletal Disorders», available on the task force's website as of 02.11.2019 |
|-----------------------------------------------------------------------------------------------------------------------------------|
| Title                                                                 | Type                  | Year  | Age group               |
|----------------------------------------------------------------------|-----------------------|-------|-------------------------|
| Developmental Hip Dysplasia: Screening (Inactive)                     | Screening             | 2006  | Pediatric               |
| Adolescent Idiopathic Scoliosis: Screening                            | Screening             | 2018  | Adolescent, Pediatric   |
| Falls Prevention in Community-Dwelling Older Adults: Interventions    | Counseling, Preventive medication | 2018  | Senior                  |
| Osteoporosis to Prevent Fractures: Screening                          | Screening             | 2018  | Adult, Senior           |
The USPSTF recommends exercise intervention to prevent falls in the community-dwelling older adults (65 years or older) who are at increased risk for falls. The USPSTF recommendation is supported by the simultaneous published «Recommendations on the use of vitamin D» by the international experts [26]. Pludowski P. et al. (2018) noted a global pandemic of vitamin D deficiency, its causes and negative effect «on health and well-being of children and adults, as well as on the healthcare systems»; they posted 12 guidelines on use of vitamin D in various populations (general, of the elderly, women, newborns, children and adolescents, older women, fragile elderly, patients with osteoporosis, a history of fractures, increased risk of falls or estimated deficiency of vitamin D).

Prospects for strengthening the evidence base of this USPSTF recommendation is supported by the simultaneously published «Recommendations on the use of vitamin D» by the international experts [26]. Pludowski P. et al. (2018) noted a global pandemic of vitamin D deficiency, its causes and negative effect «on health and well-being of children and adults, as well as on the healthcare systems»; they posted 12 guidelines on use of vitamin D in various populations (general, of the elderly, women, newborns, children and adolescents, older women, fragile elderly, patients with osteoporosis, a history of fractures, increased risk of falls or estimated deficiency of vitamin D).

The key statement of the second recommendation presented in the Table 3 is: «The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for adolescent idiopathic scoliosis in children and adolescents aged 10 to 18 years» [29]. This is an update of the recommendation issued in 2004, which argued for the advantage of harms over benefits of such interventions. The change of grade D (discourage the service) to grade I (insufficient evidence) took place given «the lack of direct evidence of screening benefits...and little or no evidence for exercise or surgical treatment effect on curves progression and health outcomes». However, the updated issue informs us about the «mandatory or recommended» character of such surveys in schools in most US states. This USPSTF recommendation is criticized by Hresko M.T. et al. (2018) [30].

The Table 4 shows that in 2018 the USPSTF fully approved exercises to prevent falls in the community-dwelling older adults (grade B) and selectively endorsed the multifactorial interventions, such as preventive counseling and medication (grade C), while supplementation with vitamin D was not recommended to this aim (grade D) [23]. Earlier, the USPSTF did recommend physiotherapy and vitamin D supplementation too (grade B), but did not approve «automatic in-depth assessment...and comprehensive management of multifactorial falls risks» (grade C) [31], and was supported by the American Academy of Family Physicians on its website www.aafp.org.

The Table 5 contains the key statements of the 2018 USPSTF recommendation «Vitamin D, Calcium, or Combined Supplementation for the Primary Prevention of Fractures in Community-Dwelling Adults: Preventive Medication» [24]. It was noted that «community-dwelling is defined as not living in a nursing home or other institutional care settings». The recommendation was based on the SR, which did not include the cohorts with an established osteoporosis or vitamin D deficiency, history of fractures or GC therapy. Having studied the current evidence, the USPSTF established the following: 1) a lack of adequate evidence supporting advantages of taking vitamin D, calcium or their combination for fracture prevention in community-dwelling postmenopausal women and men; 2) presence of adequate evidence that daily supplementation with vitamin D at a dose ≤ 400 IU and calcium ≤ 1000 mg is not useful for primary fracture prevention in the community-dwelling postmenopausal women; 3) presence of inadequate evidence of effective taking greater doses of vitamin D and calcium; 4) presence of adequate evidence of supplementation with vitamin D and calcium increasing the incidence of nephrolithiasis. The key statements of this recommendation are of grade I (evidence is lacking) and grade D (discourage the use of the service), and it is not intended for patients with osteoporosis, a history of fractures, increased risk of falls or estimated deficiency of vitamin D.

Discussing the issue of vitamin D supplementation, the USPSTF quoted «the recommendations of others» and indicated the priority of its guideline intended for primary fractures prevention [24]. It reported that the National Osteoporosis Foundation had approved a daily supplementation with 800-1000 IU of vitamin D for patients of 50 years or older [32], the Endocrine Society had recommended daily taking «800 IU of vitamin D for patients 65 years or older for prevention of falls and fractures» [33], while the American Geriatrics Society — «at least 1000 IU of vitamin D and calcium for reducing risk of developing fractures and falls» [34].

Prospects for strengthening the evidence base of this USPSTF recommendation is supported by the simultaneously published «Recommendations on the use of vitamin D» by the international experts [26]. Pludowski P. et al. (2018) noted a global pandemic of vitamin D deficiency, its causes and negative effect «on health and well-being of children and adults, as well as on the healthcare systems»; they posted 12 guidelines on use of vitamin D in various populations (general, of the elderly, women, newborns, children and adolescents, older women, fragile elderly, patients with osteoporosis, a history of fractures, increased risk of falls or estimated deficiency of vitamin D).
Having studied both
Recommendation
Grade

No net benefit or that the harms outweigh the benefits. Grade C: the USPSTF recommends «the current evidence is insufficient to assess the balance of benefits and harms of the service». Grade D: the USPSTF recommends against the service due to a moderate or high certainty that it has no net benefit or that the harms outweigh the benefits.

As it is noted above, in 2015 the USPSTF edited its recommendation on screening for vitamin D deficiency in the population of non-pregnant community-dwelling adult patients of primary care settings aged 18 years and older, who do not have the signs and symptoms of vitamin D deficiency or conditions in which treatment with vitamin D is recommended. Its main statement is of grade I, i.e. the USPSTF concludes that «the current evidence is insufficient to assess the balance of benefits and harms of screening for asymptomatic adults for vitamin D deficiency» [28].

Finally, the Table 6 presents the key statements of the 2018 USPSTF guideline on screening for osteoporosis to prevent fractures, whose target groups were adult and senior patients of primary care. Our study has confirmed a change in the formulation specifically for female population. In particular, in 2011, the USPSTF approved this preventive technology for women aged ≥65 years and younger who have a 10-year risk of developing fractures «similar or higher than that of 65-year-old white women without additional risk factors», i.e. 9.3 % (grade B), while evidence for screening men was considered to be insufficient (grade I) [35].

An important component of the USPSTF recommendations for PHC is «the recommendations of others». In particular, they quote the following:

- guidelines by the National Osteoporosis Foundation (2014), which approved evaluation of bone mineral density (BMD) in all women of 65 years and older and men of 70 years and older, as well as in the younger postmenopausal women and men of 50-69 years, given their risk factor profile, including fractures in adult age [32], and almost identical guidelines of the International Society for Clinical Densitometry (2015), which approved evaluation of BMD in all women of 65 years and older and men of 70 years and older, as well as in the younger postmenopausal women and men who have risk factors of low bone mass (www.iscd.org/official-positions/2015-iscd-official-positions-adults) [35];

Table 5. The key statements of the 2018 USPSTF recommendation «Vitamin D, Calcium, or Combined Supplementation for the Primary Prevention of Fractures in Community-Dwelling Adults: Preventive Medication» [24]

| Population                  | Recommendation                                                                 | Grade |
|-----------------------------|---------------------------------------------------------------------------------|-------|
| Men and postmenopausal women| The USPSTF concludes that the current evidence is insufficient to assess the balance of the benefits and harms of vitamin D and calcium supplementation, alone or combined, for the primary prevention of fractures in men and postmenopausal women | I     |
| Postmenopausal women        | The USPSTF concludes that the current evidence is insufficient to assess the balance of the benefits and harms of daily supplementation with doses greater than 400 IU of vitamin D and greater than 1000 mg of calcium for the primary prevention of fractures in the community-dwelling postmenopausal women | I     |
| Postmenopausal women        | The USPSTF recommends against daily supplementation with 400 IU or less of vitamin D and 1000 or less of calcium for the primary prevention of fractures in the community-dwelling postmenopausal women | D     |

Notes. USPSTF — US Preventive Services Task Force. IU — international unit. Grade I: the USPSTF concludes that «the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined». Grade II: the USPSTF concludes that «the current evidence is insufficient to assess the balance of benefits and harms». Grade D: the USPSTF recommends against the service due to a moderate or high certainty that it has no net benefit or that the harms outweigh the benefits.
The USPSTF recommends screening for osteoporosis with a bone measurement testing to prevent osteoporotic fractures in women 65 years and older.

The USPSTF recommends screening for osteoporosis with a bone measurement testing to prevent osteoporotic fractures in postmenopausal women younger than 65 years at an increased risk of osteoporosis, as determined by a formal clinical risk assessment tool.

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for osteoporosis to prevent osteoporotic fractures in men.

Notes. USPSTF – US Preventive Services Task Force. Grade B: the USPSTF recommends to offer or provide the service, because there is a high certainty that the net benefit is moderate, or there is a moderate certainty that the net benefit is moderate to substantial. Grade I: the USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality or conflicting, and the balance of benefits and harms cannot be determined... If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.”
the protocols on «Fatigue», «Xerostomia», «Unintentional weight loss», «Dry eye syndrome» also featuring under this category are more closely related to the rheumatic diseases than MSDs. In general, 17.2% of all Duodecim protocols (165 of 962), including only two (1.2%) from the «General practice» category, and all 163 protocols of the categories «Traumatology», «Orthopedics», «Rheumatology» (i.e. 98.8%) deal with MSDs.

The following protocols presented under the category of «Rheumatology» should be considered as the most important sources of information for PHC doctors on MSD management: «Knee pain», «Pain in the hip and buttocks», «Groin pain», «Heel pain», «Clinical diagnostics of joint inflammation in adults», «Clinical examination of the patient with inflammation of joints in primary care», «Myositis», «Musculoskeletal pain», «Specific signs and symptoms in patients with inflammatory joint diseases», «Lameness or walking reluctance/failure in children» etc. Given the UCPMA absence on these issues, and in compliance with the Ministry of Health of Ukraine’s order № 1422 of 29.12.2016, these new protocols are binding, provided their approval by the healthcare facility and obtained informed consent by the patient.

Discussion

Our comprehensive study (retrospective analysis and prospective monitoring) of the key international and Ukrainian EBM information resources, which has been conducted in 2009-2019, allowed us to evaluate the state of information support on the issue of MSD management and establish the most useful sources of evidence for various groups of health care personnel in Ukraine. Our recent finding is characterization of the Duodecim protocols, approved by the Ministry of Health of Ukraine for use in primary care along with the relevant adapted clinical recommendations and UCPMAs published in 2012-2015, as well as of the Cochrane Collaboration, Cochrane Library, USPSTF, CTFPHC and TRIP websites, approved by the Ministry of Health of Ukraine in 2012 for use when developing MTDs on standardization. The usefulness of such a meta-source as Evidence Updates (EvidenceAlerts) has been consistently studied in comparison with the TRIP database, as far as the primary care is concerned.

The limitation of our study, which has been previously substantiated, is that it does not include any peer-review medical journals, thematic EBM computer databases, the Campbell Collaboration’s website and some other meta-databases of evidence (i.e. BestBETs, Essential Evidence Plus, Medline/Pubmed, NHS Evidence, NICE). Compared to the Cochrane Library, the other principal EBM meta-database, Medline/Pubmed, is not considered a priority for supporting data on interventions, is too large and includes SRs, which should be critically evaluated; the NICE database contains mostly guidelines and statistical data, etc. [5, 7].

Despite its relevance and significance, the issue of providing the rationale for primary care is insufficiently covered by the national medical reference literature. The complexity of national PHC standards’ development is associated with a small number of international guidelines, approved for adaptation by the NICE, the Ministry of Health of Ukraine etc. [10]. A range of problems associated with the EBM implementing has been identified by T. Greenhalgh et al. (2017), representatives of the British medical school, namely «its assumption that evidence is stable and independent of social relationships... existence of different values and priorities in different groups of experts; where vested interests loom large; or where uncertainty is inherent... imposing rigid or unworkable protocols», etc. [6]. This is why the Duodecim protocols, approved by the Ministry of Health of Ukraine, are a useful information resource for both general practitioners-family doctors and physicians of primary specialized medical care, in particular, on the issues of MSDs. It is worth noting that the share of Duodecim protocols on MSDs (17.2%) exceeds the share of documents on the musculoskeletal diseases in the structures of disease prevalence in the general population of Ukraine (5.4%) and working age population (5.6%) to a significant extent.

We have also obtained the following new findings: a sustainably growing interest of the Cochrane Collaboration and their website’s users to the MSDs of a varying genesis (among the most prominent topics there are a pharmacotherapy of neuropathic pain, FM and fractures), predominance of interventions for pain (related to OA, encephalopathy, or FM) among the latest TRIP data, as well as attention of the leading American and Canadian task forces to fracture prevention in the primary care adult patients. The study confirmed the following advantages of the Cochrane websites, TRIP and EvidenceAlerts: the novelty of reliable SRs, accessibility of their quick search and especial usefulness for the scientists. As far as the main focus groups of the USPSTF and CTFPHC recommendation users are concerned, they are predominantly found among the management, senior scientists and developers of the healthcare programs [5, 7, 9-10].

Given our data [7] on the very low exposure of Kyiv PHC doctors to the Cochrane reviews, international guidelines and principal computer EBM databases (indicated in 2015 by 96.1%, 87.6% and 75.5% respondents, who explained it by their lack of English language acquisition or lack of access to a computer-based decision-making system at their workplace), neither the Cochrane websites (including a gold standard such as CDSR), nor the TRIP, EvidenceAlerts, the USPSTF and the CTFPHC websites may be considered as a valuable source of medical information for this group of health care personnel in Ukraine. However, it does not concern the SRs, written in Russian and published on the Cochrane Collaboration website, in particular 212 reviews on MSDs.

We have discovered that the PHC doctors have an urgent need for improving their knowledge and skills of using the EBM information resources. We have also had our own experience of organizing and holding the scientific and scientific-practical seminars on EBM in various focus groups of healthcare professionals in 2011-2015 [7, 13]. Both these vectors reflect the importance of raising awareness about the protocols among general practitioners-family doctors, internists, rheumatologists, orthopedists within the frameworks of CME. It is worth mention-
ing that an important share of professional information is obtained by an overwhelming majority of PHC doctors through their personal and professional contacts (for 38.1 % of the respondents) and hard copy instruction manuals (for 24.8 %) [7].

Conclusions
The musculoskeletal diseases, pain and fractures constitute a range of ever-popular areas of interest for the Cochrane Collaboration, whose website along with the Cochrane Library, CDSR, TRIP, EvidenceAlerts is a useful source of information, primarily for the health care researchers. By contrast, for the primary care specialists of Ukraine, the foundation of information support on managing MSD patients is laid by a meager group of unified clinical protocols and 165 new ones; however, the entire CME system is built around their knowledge. To promote the population health and well-being, we need to develop and implement a targeted adult fracture prevention program, which takes into account both the Cochrane Library’s category «Orthopedics & Trauma» and the USPSTF and CTIFHC recommendations, which are especially useful for health care managers and scientists.

The prospects for future research are explained by the expediency of both monitoring and expert analysis of the following: the leading EBM information resources on providing primary care to the patients with musculoskeletal disorders of different genesis, of the thematic EBM computer databases on physiotherapy, rehabilitation etc., and websites of medical associations and task forces. It is also worth studying the results of their application within the CME framework of PHC specialists, internists, rheumatologists, orthopedists etc.

Conflicts of interests. Authors declare the absence of any conflicts of interests and their own financial interest that might be construed to influence the results or interpretation of their manuscript.

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Інформаційне забезпечення доказового ведення пацієнтів з ураженнями кістково-м’язової системи в первинній ланці охорони здоров’я

Оригінальні дослідження / Original Researches

Резюме. Актуальність. Ефективність медичної допомоги залежить від якості її ресурсного забезпечення і дотримання засад доказової медицини. Мета дослідження — характеристика інформаційного забезпечення доказового ведення в первинній ланці пацієнтів з ураженнями кістково-м’язової системи. Матеріали та методи. Упродовж 2009–2019 рр. з використанням методів інформаційного аналізу, експертних оцінок і статистичного аналізу досліджено комп’ютерні мультимедіа бази даних доказової медицини, настанови Американської і Канадської робочих груп з профілактики та медико-технологічні документи МОЗ України. Результати. Встановлено високу інтенсивність створення кожноїнісійських оглядів з питань кістково-м’язових уражень (до 16 на рік), їх високий рейтинг (від 20 до 33,3 % найпопулярніших на веб-сайті Кіндерінісійського співробітництва щодо нейрорадіологічного білью і фіброміалгії), можливість швидкого пошуку 785 оглядів на цьому веб-сайті та в Кіндерінісійській бібліотеці за 40 тематичних категорій (рентгенологія та «ортопедія та травматологія»), 27 % з них російською мовою. Стабільними перевагами бази даних TRIP є доступність найновіших доказів і їх розшарування пошукові команди ланцюг інформації присвячено 130 документах, із яких 4 (3,1 %) — м’язово-скелетному білью. Більше доказів для первинної ланції маєсь та EvidenceAlerts — 13 259, з них щодо м’язово-м’язових уражень — 140 (1,1 %). Провідною темою Американської і Канадської робочих груп виявилися профілактика переломів у дорослих, що підтверджено їх настановами зі скринінг на остеопороз, консультаціями щодо пацієнтів, вживання вітаміну D і кальцію. Кістково-м’язові ураження стосуються 6 з 93 (6,5 %) настанов і з 3із 123 (2,4 %) уніфікованих протоколів, затверджених МОЗ України в 2012–2017 рр. і 165 з 962 (17,2 %) нових протоколів. Актуальність дослідження — стягнутість розгляду рентгенології, ортопедії, травматології. Їх частка перевищує частку хвороб кістково-м’язових систем в структурі поширеності хвороб у населені України (5,4 %) і населення працездатного віку (5,6 %). Висновки. Кістково-м’язові хвороби, біль і переломи належать до провідних і популярних тем Кіндерінісійського співробітництва, веб-сайт якого є джерелом доказів, корисним насамперед для науковців, поряд із Кіндерінісійською бібліотекою, TRIP, EvidenceAlerts. Інформаційне забезпечення спеціалістів первинної медичної допомоги України з питань кістково-м’язових уражень базується на поодиноких уніфікованих і
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Інформаційне обслуговування доказального ведення пациентів з порушеннями кістко-м'ясної системи в первинному звеньї захворювання

Резюме. Актуальность. Эффективность медицинской помощи зависит от качества ее ресурсного обеспечения и приверженности основам доказательной медицины. Цель исследования — характеристика информационного обеспечения ведения в первичном звене пациентов с поражениями костно-мышечной системы. Материалы и методы. В течение 2009–2019 гг. с применением методов информационного анализа, экспертных оценок и статистического анализа исследованы компьютерные метабазы данных доказательной медицины, рекомендации Американской и Канадской рабочих групп по профилактике и медицинско-технологические документы МЗ Украины. Результаты. Установлены высокая интенсивность разработки кокрановских обзоров, посвященных вопросам костно-мышечных болезней (до 16 за год), их высокий рейтинг (от 20 до 33,3 % популярнейших на веб-сайте Кокрановского сотрудничества, касающихся нейропатической боли и фибромиалгии), возможность быстрого поиска 785 обзоров на этом веб-сайте и в Кокрановской библиотеке по 40 темам категорий «ортопедия и травма» и «ревматология», 27 % из них на русском языке. Стабильными преимуществами базы данных TRIP определены доступность новейших доказательств и их расширенного поиска; первичному звену в ней посвящены 130 документов, из них 4 (3,1 %) — мышечно-скелетной боли. Больше доказательств для первичного звена содержит EvidenceAlerts — 13 259, из них костно-мышечных болезней — 140 (1,1 %). Основной темой Американской и Канадской рабочих групп оказалась профилактика переломов у взрослых, что подтвердили их рекомендации по скринингу на остеопороз, консультации по вопросам падений, приему витамина D и кальция. Костно-мышечных поражений касаются 6 из 93 (6,5 %) рекомендаций и 3 из 123 (2,4 %) унифицированных протоколов, утвержденных МЗ Украины в 2012–2017 гг., и 165 из 962 (17,2 %) новых протоколов, 98,8 % которых содержат разделы «Травматология», «Ортопедия» и «Ревматология». Их доля превышает долю костно-мышечных болезней в структуре распространенности заболеваний у населения Украины (5,4 %) и населения трудоспособного возраста (5,6 %). Выводы. Костно-мышечные болезни, боль и переломы относятся к ведущим и популярным темам Кокрановского сотрудничества, веб-сайт которого как ресурс доказательств полезен прежде всего научным кадрам, наряду с Кокрановской библиотекой, TRIP, EvidenceAlerts. Информационное обеспечение специалистов первичного звена Украины по вопросам костно-мышечных болезней базируется на единичных унифицированных и 165 новых протоколах, что следует использовать в ходе непрерывного профессионального образования. Укреплению здоровья населения послужит разработка программы профилактики переломов у взрослых с учетом данных Кокрановской библиотеки и рекомендаций Американской и Канадской рабочих групп по профилактике, что наиболее ценно прежде всего для управленческих и научных кадров. Ключевые слова: костно-мышечные болезни; первичное звено; доказательная медицина; компьютерные базы данных; кокрановские обзоры; клинические рекомендации и протоколы.