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Clinical guidelines and care pathway for management of low back pain with or without radicular pain

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► To cite this version:

Florian Bailly, Anne-Priscille Trouvin, Sandrine Bercier, Sabrina Dadoun, Jean-Philippe Deneuville, et al.. Clinical guidelines and care pathway for management of low back pain with or without radicular pain. *Joint Bone Spine*, 2021, 88 (6), pp.105227. 10.1016/j.jbspin.2021.105227 . hal-03277894

HAL Id: hal-03277894

<https://hal.science/hal-03277894>

Submitted on 12 Jul 2021

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Florian Bailly, Anne-Priscille Trouvin, Sandrine Bercier, Sabrina Dadoun, Jean-Philippe Deneuille, Rogatien Faguer, Jean-Baptiste Fassier, Michèle Koleck, Louis Lassalle, Thomas Le Vraux, Liesse Brigitte, Karine Petitprez, Aline Ramond-Roquin, Jean François Renard, Alexandra Roren, Sylvie Rozenberg, Catherine Sebire, GillesVuides, François Rannou, Petit Audrey

Abstract

Objective: To develop guidelines for low back pain management according to previous international guidelines and the updated literature.

Methods: A report was compiled from a review of systematic reviews of guidelines published between 2013 and 2018 and meta-analysis of the management of low back pain published between 2015 and 2018. This report summarized the state-of-the-art scientific knowledge for each predefined area of the guidelines from a critical review of selected literature. A multidisciplinary panel of experts including 17 health professionals involved in low back pain management and 2 patient representatives formulated preliminary guidelines based on the compilation report and a care pathway. The compilation report and preliminary guidelines were submitted to 25 academic institutions and stakeholders for the consultation phase. From responses of academic institutions and stakeholders, the final guidelines were developed. For each area of the guidelines, agreement between experts was assessed by the RAND/UCLA method.

Results: The expert panel drafted 32 preliminary recommendations including a care pathway, which was amended after academic institution and stakeholder consultation. The consensus of the multidisciplinary expert panel was assessed for each final guideline: 32 recommendations were assessed as appropriate; none was assessed as uncertain or inappropriate. Strong approval was obtained for 27 recommendations and weak for 5.

Conclusion: These new guidelines introduce several concepts, including the need to early identify low back pain at risk of chronicity to provide quicker intensive and multidisciplinary management if necessary.

Introduction

Low Back Pain (LBP) is a highly prevalent cause of disability and one of the most expensive health conditions. It has become the leading cause of years lived with disability in both developed and developing countries [1]. Many people experience LBP, often for a limited period. However, for a few, LBP becomes chronic and causes a high burden on quality of life. LBP is also associated with high costs, including those related to health care and indirect costs related to workdays lost or reduced productivity [2].

Management of LBP remains heterogenous around the world. Although imaging has a limited role, imaging rates are high: 39% of patients with LBP are referred for imaging by general practitioners in Norway [3], 50% in France [4,5], 54% in the USA [6] and 56% in Italy [7]. Although exercise is recognised as the best treatment for chronic low back pain, many physiotherapists perform passive treatments instead [8].

Similarly, the treatment provided by many physicians is mainly drug-based [9].

Therefore, we need to implement actions to better care for these patients in order to reduce the transition to a chronic condition. Developing and implementing guidelines will likely improve LBP management [10].

Various guidelines have been published over the last few years in the United States, Denmark, England, Belgium [11–14]. The most recent international guidelines [13] had updated the bibliography until March 2016, so these guidelines are intended to update the scientific data on low back pain with or without radiculalgia. In France, the last guidelines date back to 2000 and need to be updated [15]. In response to a National Health Insurance Fund request, the French National Authority for Health (FNAH) coordinated an update of the French guidelines on LBP with or without associated radiculopathy.

The objective was to develop guidelines including a care pathway for managing LBP and based on previous international guidelines in addition to updated literature. The main target group of these guidelines was primary sector healthcare providers (i.e., general practitioners and physiotherapists) but also medical specialists and other providers from the primary or secondary healthcare sectors involved in LBP management.

Methods

Elaboration of these guidelines followed the international standards for clinical guidelines: managing conflict of interest, critical appraisal of literature, multidisciplinary evaluation, participation of stakeholders and patients [16]. The review and creation of the guideline methods were established prior to the conduct of the guidelines and are available in the complete report [17]. The adaptation of these international standards for Clinical Practice Guidelines to the French context was driven by an accelerated guidelines method summarized below. A guide detailing the methodology followed is available [18]. This guidelines development method was used because of the availability of recent data (well-done clinical guidelines and systematic reviews).

Establishing an expert panel

All the experts were selected by the scientific societies of each specialty. Liberal practitioners were to be included to allow maximum representation. The working group consisted of a project leader and methodologist (K.P.), a project manager (F.B.), a documentalist, and a panel of experts including 2 patient representatives (B.L. and C.S.) and various healthcare providers considered to have relevant competencies for patients with LBP (general practitioners (S.B., T.L.V, A.R.R and J-F.R.) , rheumatologists (S.D. and S.R), a physical medicine and rehabilitation physician (F.R), an emergency specialist (G.V.), a spine surgeon(R.F.), a radiologist(L.L.), physiotherapists (A.R. and J-P.D.), a psychologist (M.K.), two occupational physicians (J-B.F. and A.P.) and a pain physician(A-P.T)). For all participants of this group, the French National Agency of Health (FNAH) assessed potential conflicts of interest. Experts with any conflict of interest that might interfere with development of the guidelines were excluded. Potential conflicts of interest were also examined by use of a comprehensive national database for physician remuneration.

Literature research

The target population for the guidelines was adults with non-specific low back pain, with or without radiculalgia. All patients with radiological abnormalities (such as herniated disc, narrow lumbar canal, posterior joint osteoarthritis) except scoliosis (which was not considered as non-specific low back pain) could be included. Surgical management and job retention were excluded due to recent guidelines in this field [19,20]. All other drug or non-drug treatments could be included. Reports of LBP in children, pregnant

women and secondary LBP (due to infection, inflammatory rheumatism, cancer) were excluded. A framework document was written to define the research methodology, the guidelines scope (target population) and the fields to be addressed in the guidelines. The prespecified part of the compilation report dealt with the definition of LBP, relevance of LBP imaging, pharmacological therapeutics, rehabilitation, infiltrations, all other care covered by the literature research (previous guidelines or systematic review): self-management, resumption of daily activities, manual therapies, psychological interventions, multidisciplinary rehabilitation programs, back belts, insoles, lumbar traction, transcutaneous electrical nerve stimulation (TENS), acupuncture, physical therapies such as massage or heat application, sport, relaxation, sophrology or hypnosis), and secondary prevention. To allow for including the largest number of recent guidelines, a systematic search of guidelines published over the previous 5 years was conducted as was a search for systematic reviews and meta-analysis published over the previous 3 years in MEDLINE, Cochrane Library, and other sources (see complete report). For an exhaustive overview of existing guidelines on LBP, guidelines published in the international literature and those published but not referenced (“grey literature”, especially national health agencies) were searched. A systematic review of articles published between January 2013 and December 2018 in English or French was performed (keywords summarized in Supplementary data 1). In total, 49 potential grey literature papers were evaluated (listed in the complete report [17]). The updating of scientific evidence was performed by identifying the systematic reviews published between January 2016 to December 2018 in English or French (keywords summarized in Supplementary data 1).

[Compilation report and final guidelines drafting](#)

A librarian performed the systematic review of existing guidelines and meta-analysis. Then the project manager selected articles related to the scope of the guidelines. The compilation report summarized a critical review of the selected literature. Some guidelines or systematic reviews were excluded with justification (see complete report), and some methodological limitations were specified in the compilation report. Some selected articles have been discussed between the project manager and the project leader for external review if necessary. A short synthesis summarizing the state-of-the-art scientific knowledge for each area of the guidelines was compiled. Based on this compilation report, the working group developed preliminary

guidelines that were graded according to Table 1. Each recommendation was validated when consensus was reached by the group. In the absence of consensus, the guideline was discussed and subsequently redrafted. Synthesis of the literature and guidelines in the compilation report were performed considering international literature (without local specificity). The final synthesis for health practitioners was designed in accordance with French specificities. A care pathway was developed to propose the trajectory and the different steps that a patient with LBP may follow. Then, the compilation report and preliminary guidelines were submitted to 25 academic institutions and stakeholders for the consultation phase. From the preliminary guidelines and responses from the academic institutions and stakeholders, the expert panel drafted the final guidelines. For each area of the guidelines, agreement between experts of the working group was evaluated by using the RAND/UCLA method [21]. Each expert evaluated each of the guidelines on a scale of 1 to 9 (1, complete disagreement and 9, complete agreement).

Each area of the guideline was considered:

- “appropriate” with median score ≥ 7 and agreement among members of the working group
- “inappropriate” with median score ≤ 3.5 and agreement among members of the working group
- “uncertain” with median score 4 to 6.5 (indecision) or no consensus among members of the working group.

Strong approval was considered if the rating was 7 to 9, and strong disapproval 1 to 3. Weak approval was considered if the rating was 5 to 9, and weak disapproval 1 to 5. Because the working group consisted of more than 16 members, an extreme value could be excluded from the global rating, according to the RAND/UCLA method.

An external validation was performed by an independent committee of the FNAH.

Results

The initial literature search identified 572 references of recent international guidelines or systematic reviews of LBP. Seven international guidelines were included [11–14,22–24] and 9 other guidelines were excluded: 2 because of conflicts of interest [25,26], 1 because of lack of updated literature research [27] and 6 because

of lack of methodology [28–33]. After removing duplicates, full reading, selection and summary of relevant articles, the compilation report included 101 references (Figure 1). The compilation report which included synthesis of all guidelines and meta-analysis with a synthesis of data for all topics was submitted to the expert group during 3 different meetings to reach consensus on the guideline's topics, considering benefits and harms of each treatment. A translation of the synthesis of the compilation report is included in this manuscript (Supplementary data 2). In total, 32 preliminary recommendations including a care pathway (divided into 2 parts to facilitate its use and readability) were drafted and submitted to academic institutions and stakeholders (Supplementary data 3). Thirteen stakeholders responded to the reading phase and After considering their comments, the expert panel drafted the final guidelines (Table 2) and a care pathway (Figures 2a and 2b). Three additional recommendations were also developed and included in the compilation report but not in the synthesis due to French medical specificities (table 3). Three recommendations were rated Grade A, 12 were rated grade B, 2 were rated grade 3, and the remaining 13 had expert consensus (Table 2 and table 3). Red, yellow, blue and black flags were reported in a separate table (table 4). The guidelines were validated by an independent committee of the FNAH on March 26, 2019. The full clinical guidelines are available with all supportive material, including the description of methods, on the FNHA website [17]. The 31 recommendations and the care pathway were assessed as appropriate; none was evaluated as uncertain or inappropriate. Strong approval was obtained for 27 recommendations and weak approval for 5 (definitions of back pain, education in pain neurophysiology, manual techniques, back belts, muscle relaxants).

Discussion

This article summarizes the methodology used and results in developing new clinical guidelines and care pathway for LBP. Many of the guidelines achieved consensus among developers and adopted previous validated concepts. The guidelines also highlight several new elements of care management in addition to existing international guidelines.

First, new definitions of LBP have been suggested: it was proposed to speak of LBP acute flare-up, recurrent LBP or chronic LBP. The aim was to consider LBP no longer as an isolated episode but as a whole disease.

Most patients have a time-varying pain trajectory, with episodes of relapse and remission, with or without background pain [34]. Recurrence of LBP is common because more than two-thirds of individuals experience recurrence within 12 months after recovery [35]. The global management of pain trajectories also allows for approaching the issue of secondary prevention of recurrence. The use of the “common LBP” term rather than “non-specific LBP” was proposed because this latter is poorly understood by patients who usually believe that the LBP cause has not been identified [36].

Second, the concept of sub-acute LBP was not considered relevant because it is based on only a time criterion and not a prognostic factor. The concept of LBP at risk of chronicity was preferred given that it is sometimes necessary to initiate early multidisciplinary management for some patients, without waiting for the sub-acute or chronic stage. This concept of LBP at risk of chronicity was already proposed by the Belgian guidelines [11,37], and the relevance of early management, including physical therapy with active patient participation, has been shown to limit the transition to chronicity[38].

Third, all drugs were downgraded to second-line treatment, after non-drug treatments, given the lack of evidence for decreased duration of LBP acute flare-up, although this point is not consequential between the other guidelines (see Supplementary data 3). Non-drug treatments that include the patient as an actor in their own management, rather than passive treatments, have been preferred. As recommended by multiple guidelines, physical exercise associated with patient education is the main treatment for patients with LBP but also for secondary prevention [39]. Based on a systematic review of the exercises that can be performed after rehabilitation, no exercises have been contraindicated, and multiple practical modalities can be proposed to the patients[40]. The effectiveness of physical activity is probably linked not only to a change in muscular strength but also to other mechanisms such as endogenous opioid mechanisms [41], mood improvement, reduction of kinesophobia, and cortical reorganisation [42].

The creation and validation of these guidelines have strengths and weakness. The main strength relies on the strong methodologic design, with consensus of all health care experts involved in LBP management at all stages of the pathology as well as an external review by several academic institutions in different fields and stakeholders. The coordination of these guidelines by a national agency ensures the independence, lack of

conflict of interest and respect of rules to develop guidelines. The weakness of these guidelines could be the updating of scientific data based on recent systematic reviews and meta-analyses but not all LBP publications given the high number of available studies in all the main fields in interest of this guideline. For ozone therapy, only one meta-analysis was found with high risk of bias and a lot of data lacking. A manual search outside of the predefined time was performed and found another meta-analysis with good quality. These guidelines could allow for modifying some aspects of LBP management, especially the transition to chronicity and reduced performance of non-relevant spinal imaging and prolonged sick leave use. The dissemination of these guidelines is planned via a national campaign aimed at the general population as well as at health professionals via the distribution of booklets. The challenge is to disseminating those guidelines into clinical practice is a major challenge [43]. This challenge has been well demonstrated in the field of LBP, in which repeated and durable interventions are necessary to modify important aspects of LBP management, such as reducing the performance of spinal imaging and prolonged sick leave and increasing the appropriateness of referrals to reduce the risk of transition to chronicity [44]. These elements will be evaluated in future impact studies.

To keep the guidelines in line with ongoing scientific evidence, these guidelines should be updated within 5 years based on these guidelines and an update of the literature.

Acknowledgment

The authors would like to thank the French National Authority for Health for organising and funding these guidelines. These guidelines were totally funded by the FNAH to ensure their independence (The project manager (F. B.) has received fees to select the literature included in the guidelines and to write the compilation report (total amount 4560 euros for a work representing 3 months full time), All other experts, including the 2 patient representative received fees for the compensation of the 3,5 days of presence (mean amount 382 euros for employees and 785 euros for private practitioners), and for eventual transport costs).

Contributor, guarantor information and transparency declaration

The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted. All the co-authors participated in the expert group that created and validated the guidelines. All the co-authors also validated this article. The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

Bibliography

- [1] GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018;392:1789–858.
- [2] Katz JN. Lumbar Disc Disorders and Low-Back Pain: Socioeconomic Factors and Consequences. *JBJS* 2006;88:21–4.
- [3] Werner EL, Ihlebæk C. Primary care doctors' management of low back pain patients--ten years after. *Tidsskr Nor Laegeforen* 2012;132:2388–90.
- [4] Assurance Maladie - Risques professionnels. Rapport inédit sur les lombalgies liées au travail : un enjeu de santé publique 2016. <http://carsat-nordpicardie.fr/images/stories/GRP/2016-11-15-Dossier-de-presse-AT-MP.pdf> (accessed December 24, 2019).
- [5] Caisse Nationale d'Assurance Maladie. Programme de sensibilisation sur la lombalgie - Dossier de presse 2017. https://www.ameli.fr/fileadmin/user_upload/documents/CP_DP_lombalgie.pdf (accessed December 24, 2019).
- [6] Rosenberg A, Agiro A, Gottlieb M, Barron J, Brady P, Liu Y, et al. Early Trends Among Seven Recommendations From the Choosing Wisely Campaign. *JAMA Intern Med* 2015;175:1913–20.
- [7] Rizzardo A, Miceli L, Bednarova R, Guadagnin GM, Sbrojavacca R, Della Rocca G. Low-back pain at the emergency department: still not being managed? *Ther Clin Risk Manag* 2016;12:183–7.
- [8] Carey TS, Freburger JK, Holmes GM, Castel L, Darter J, Agans R, et al. A long way to go: practice patterns and evidence in chronic low back pain care. *Spine (Phila Pa 1976)* 2009;34:718–24.
- [9] Michaleff ZA, Harrison C, Britt H, Lin C-WC, Maher CG. Ten-year survey reveals differences in GP management of neck and back pain. *Eur Spine J* 2012;21:1283–9.
- [10] McGuirk B, King W, Govind J, Lowry J, Bogduk N. Safety, Efficacy, and Cost Effectiveness of Evidence-Based Guidelines for the Management of Acute Low Back Pain in Primary Care. *Spine* 2001;26:2615.
- [11] Centre fédéral d'expertise des soins de santé KCE, Wambeke P, Desomer A, Ailliet L, Berquin A, Demoulin C et al. Guide de pratique clinique pour les douleurs lombaires et radiculaires. KCE Reports 287Bs. Good Clinical Practice (GCP). 2017. https://kce.fgov.be/sites/default/files/atoms/files/KCE_287B_Douleurs_lombaires_et_radiculaires_Resume1.pdf (accessed September 11, 2019).
- [12] Qaseem A, Wilt TJ, McLean RM, Forcica MA, Clinical Guidelines Committee of the American College of Physicians. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med* 2017;166:514–30.

- [13] Stochkendahl MJ, Kjaer P, Hartvigsen J, Kongsted A, Aaboe J, Andersen M, et al. National Clinical Guidelines for non-surgical treatment of patients with recent onset low back pain or lumbar radiculopathy. *Eur Spine J* 2018;27:60–75.
- [14] NICE. National Institute for Health and Care Excellence. Low back pain and sciatica in over 16s: assessment and management. NICE guideline [NG59]. 2016. <https://www.nice.org.uk/guidance/ng59> (accessed September 11, 2019).
- [15] Agence Nationale d'Accréditation et d'Evaluation en Santé. Diagnostic, prise en charge et suivi des malades atteints de lombalgie chronique. *Revue du Rhumatisme* 2002. <https://linkinghub.elsevier.com/retrieve/pii/S1169833002003034> (accessed December 24, 2019).
- [16] Qaseem A. Guidelines International Network: Toward International Standards for Clinical Practice Guidelines. *Ann Intern Med* 2012;156:525.
- [17] Haute Autorité de Santé. Prise en charge du patient présentant une lombalgie commune 2019. https://www.has-sante.fr/portail/jcms/c_2961499/fr/prise-en-charge-du-patient-presentant-une-lombalgie-commune (accessed June 11, 2019).
- [18] Haute Autorité de Santé. Accelerated guidelines - Methodological Guide 2016. https://www.has-sante.fr/jcms/c_1764530/en/accelerated-developed-guidelines (accessed August 16, 2020).
- [19] Haute Autorité de Santé. Lombalgie chronique de l'adulte et chirurgie. Haute Autorité de Santé https://www.has-sante.fr/jcms/c_2615316/fr/lombalgie-chronique-de-l-adulte-et-chirurgie (accessed January 3, 2020).
- [20] Petit A, Mairiaux P, Desarmenien A, Meyer J-P, Roquelaure Y. French good practice guidelines for management of the risk of low back pain among workers exposed to manual material handling: Hierarchical strategy of risk assessment of work situations. *Work* 2016;53:845–50.
- [21] Fitch K, Bernstein SJ, Aguilar MD, Burnand B, LaCalle JR. The RAND/UCLA appropriateness method user's manual. RAND CORP SANTA MONICA CA; 2001.
- [22] ICSI. Institute for Clinical Systems Improvement. Adult acute and subacute low back pain. Sixteenth edition. 2018. <https://www.icsi.org/guideline/low-back-pain/> (accessed September 11, 2019).
- [23] Institute of Health Economics (Alerta, Canada). Toward Optimized Practice. Evidence-informed primary care management of low back pain. Clinical practice guideline. 3rd edition - minor revision 2017. 2015. <http://www.topalbertadoctors.org/cpgs/885801> (accessed September 11, 2019).
- [24] Chenot J-F, Greitemann B, Kladny B, Petzke F, Pflingsten M, Schorr SG. Non-Specific Low Back Pain. *Dtsch Arztebl Int* 2017;114:883–90.
- [25] Garcia JBS, Change Pain Latin America AdvisoryPanel. Change Pain Latin America--new initiative established to enhance management of patients with chronic pain in Latin America. *Braz J Anesthesiol* 2014;64:140–2.
- [26] Malik Mohamed Hussein A, Singh D, Mansor M, Izma Muhamed Kamil O, Yin Choy C, Suma Cardoso M, et al. The Malaysian Low Back Pain Management Guidelines <https://www.masp.org.my/index.cfm?&menuid=23> (accessed April 6, 2020).
- [27] Wong JJ, Côté P, Sutton DA, Randhawa K, Yu H, Varatharajan S, et al. Clinical practice guidelines for the noninvasive management of low back pain: A systematic review by the Ontario Protocol for Traffic Injury Management (OPTIMa) Collaboration. *Eur J Pain* 2017;21:201–16.
- [28] Tamburin S, Paolucci S, Magrinelli F, Musicco M, Sandrini G. The Italian Consensus Conference on Pain in Neurorehabilitation: rationale and methodology. *J Pain Res* 2016;9:311–8.
- [29] Metzger RL. Evidence-based practice guidelines for the diagnosis and treatment of lumbar spinal conditions. *Nurse Pract* 2016;41:30–7.
- [30] Reese C, Mittag O. Psychological interventions in the rehabilitation of patients with chronic low back pain: evidence and recommendations from systematic reviews and guidelines. *Int J Rehabil Res* 2013;36:6–12.
- [31] Poitras V, Khangura S, Ford C. Physiotherapy Interventions for the Management of Neck and/or Back Pain: A Review of Clinical and Cost-Effectiveness. Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2017.

- [32] Zhao H, Liu B, Liu Z, Xie L, Fang Y, Zhu Y, et al. Clinical practice guidelines of using acupuncture for low back pain. *World Journal of Acupuncture - Moxibustion* 2016;26:1–13.
- [33] Lisi AJ, Salsbury SA, Hawk C, Vining RD, Wallace RB, Branson R, et al. Chiropractic Integrated Care Pathway for Low Back Pain in Veterans: Results of a Delphi Consensus Process. *J Manipulative Physiol Ther* 2018;41:137–48.
- [34] Kongsted A, Kent P, Axen I, Downie AS, Dunn KM. What have we learned from ten years of trajectory research in low back pain? *BMC Musculoskelet Disord* 2016;17:220, s12891-016-1071–2.
- [35] da Silva T, Mills K, Brown BT, Pocovi N, de Campos T, Maher C, et al. Recurrence of low back pain is common: a prospective inception cohort study. *J Physiother* 2019;65:159–65.
- [36] Lim YZ, Chou L, Au RT, Seneviwickrama KMD, Cicuttini FM, Briggs AM, et al. People with low back pain want clear, consistent and personalised information on prognosis, treatment options and self-management strategies: a systematic review. *Journal of Physiotherapy* 2019;65:124–35.
- [37] Centre fédéral d’expertise des soins de santé KCE. Lomalgie et douleur radiculaire : éléments-clés d’un itinéraire de soin 2017.
https://kce.fgov.be/sites/default/files/atoms/files/KCE_295B_Lomalgie_et_douleur_radiculaire_Intitenaire_de_soins_Synthese_0.pdf (accessed October 12, 2019).
- [38] Arnold E, La Barrie J, DaSilva L, Patti M, Goode A, Clewley D. The Effect of Timing of Physical Therapy for Acute Low Back Pain on Health Services Utilization: A Systematic Review. *Arch Phys Med Rehabil* 2019;100:1324–38.
- [39] Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, et al. Prevention and treatment of low back pain: evidence, challenges, and promising directions. *Lancet* 2018;391:2368–83.
- [40] Ribaud A, Tavares I, Viollet E, Julia M, Hérisson C, Dupeyron A. Which physical activities and sports can be recommended to chronic low back pain patients after rehabilitation? *Ann Phys Rehabil Med* 2013;56:576–94.
- [41] Bruehl S, Burns JW, Koltyn K, Gupta R, Buvanendran A, Edwards D, et al. Are endogenous opioid mechanisms involved in the effects of aerobic exercise training on chronic low back pain? A randomized controlled trial. *Pain* 2020;161:2887–97..
- [42] Nicolini C, Fahnstock M, Gibala MJ, Nelson AJ. Understanding the Neurophysiological and Molecular Mechanisms of Exercise-Induced Neuroplasticity in Cortical and Descending Motor Pathways: Where Do We Stand? *Neuroscience* 2021;457:259–82.
- [43] Ward V, House A, Hamer S. Developing a framework for transferring knowledge into action: a thematic analysis of the literature. *J Health Serv Res Policy* 2009;14:156–64.
- [44] Mesner SA, Foster NE, French SD. Implementation interventions to improve the management of non-specific low back pain: a systematic review. *BMC Musculoskeletal Disorders* 2016;17:258.

Competing interest statement:

Dr. Bailly reports personal fees from Lilly, personal fees from Grünenthal, personal fees from Boston, outside the submitted work.

Dr Bercier has nothing to disclose.

Dr Dadoun has nothing to disclose.

M Deneuille has nothing to disclose.

Dr Faguer has nothing to disclose.

Dr Fassier has nothing to disclose.

Dr Koleck has nothing to disclose.

M Lassalle has nothing to disclose.

Dr Le Vraux has nothing to disclose.

Mrs Liesse has nothing to disclose.

Dr. Petit has nothing to disclose.

Dr Petitprez has nothing to disclose.

Dr Ramond-Roquin has nothing to disclose.

Dr. Sebire has nothing to disclose.

Dr. Rannou reports grants from Pierre Fabre, grants from Fidia, grants from MSD, grants from Pfizer, grants from Bone Therapeutics, grants from Expanscience, grants from Grünenthal, grants from Thuasne, grants from Genévrier, grants from Fondation Arthritis, personal fees from Pierre Fabre, personal fees from Fidia, personal fees from MSD, personal fees from Pfizer, personal fees from Bone Therapeutics, personal fees from Expanscience, personal fees from Grünenthal, personal fees from Thuasne, personal fees from Genévrier outside the submitted work.

Dr Renard has nothing to disclose.

Mrs Roren has nothing to disclose

Dr. Rozenberg reports personal fees from Sanofi, during the conduct of the study.

Mrs Sebire has nothing to disclose.

Dr. Trouvin reports personal fees from Menarini, personal fees from Recordati, personal fees from Pfizer, personal fees from Astellas, outside the submitted work.

Tables:

Table 1. Table 1. Grading of recommendations on low back pain (18)

Table 1 Final guidelines with recommendations grading and consensus among experts.

Table 3 Recommendations based on data from the literature and expert consensus but not included in the synthesis for health professionals.

Table 4 List of alert flags and related characteristics

Figures:

Figure 1: Flow chart of development of guidelines

Figure 2a : Care pathway. Part 1: Flare-up of low-back pain.

Figure 2b : Care pathway. Part 2: Low back pain at risk of chronicity or chronic disease

Supplementary data:

Supplementary data 1: Search criteria

Supplementary data 2: Synthesis of the compilation report

Supplementary data 3: Stakeholders and institutional organizations requested to the reading phase

Table 1. Grading of recommendations on low back pain (18)

Level of scientific evidence provided by the literature (for clinical studies)	Recommendation grading
<p>Level 1</p> <ul style="list-style-type: none"> - High-power randomised comparative studies - Meta-analysis of randomised comparative studies - Decision analysis based on well-conducted studies 	<p style="text-align: right;">Grade A</p> <p style="text-align: center;">Established scientific evidence</p>
<p>Level 2</p> <ul style="list-style-type: none"> - Low-power randomised comparative studies - Well-conducted non-randomised comparative studies 	<p style="text-align: right;">Grade B</p> <p style="text-align: center;">Scientific presumption evidence</p>
<p>Level 3</p> <ul style="list-style-type: none"> - Case-control studies 	<p style="text-align: right;">Grade C</p> <p style="text-align: center;">Low level of evidence</p>
<p>Level 4</p> <ul style="list-style-type: none"> - Comparative studies with major bias - Retrospective studies - Case series 	
<p>In the absence of studies, guidelines are based on a consensus between working experts after consulting the peer review group</p>	<p style="text-align: center;">Expert consensus (EC)</p>

Table 2 Final guidelines with recommendations grading and consensus among experts.

Title	Recommendations	Consensus
<p>1. Definition of low back pain (LBP)</p>	<p>LBP is defined by a pain between the costal margins and the inferior gluteal folds. It can be associated with radiculargia corresponding to a pain localized in one or two legs according one or several dermatoma.</p> <p>Common LBP is a back pain without warning signs of “red flags”. The term “common LBP” is preferred to “non-specific LBP” in daily practice (Expert consensus (EC))</p> <p>Chronic low back pain is defined as a pain with a duration of at least 3 months.</p>	<p>1. appropriate; weak consensus</p>
<p>2. Proposed terms to define LBP</p>	<p>The following terms are proposed (EC):</p> <ul style="list-style-type: none"> - “LBP acute flare-up” rather than “acute LBP” to encompass acute pain with or without background of LBP pain, requiring temporary intensification of treatment or resulting in temporary impairment of functional capacity - “LBP at risk of chronicity” with an evolution of LBP of less than 3 months and with a high risk of prolonged LBP (presence of “yellow flags”) - “Recurrent LBP” with recurrence of LBP within 12 months. This should be considered LBP at risk of chronicity. 	<p>2. appropriate; strong consensus</p>
<p>3. Clinical assessment of LBP</p>	<p>Warning signs (i.e., “red flags”) pointing to an underlying pathology requiring specific and/or urgent management must be searched with any recent LBP, symptom aggravation or new symptom appearance.</p> <p>The search for these warning signs should be kept in mind by the</p>	<p>3. appropriate; strong consensus</p>

	<p>practitioner at all stages of LBP, especially with LBP acute flare-up occurring in the context of chronic pain or in case of clinical symptom change (EC). Isolated consideration of warning signs (“red flags”) has limited specificity; their combination must attract attention and lead to suspecting an underlying pathology that justifies a specific management.</p> <p>The patient should be assessed 2 to 4 weeks after a LBP acute flare-up (EC).</p>	
<p>4. Assessment of the risk of chronicity</p>	<p>Early identification of psychosocial risk factors (i.e., “yellow flags”) is recommended to assess the risk of persistent pain and/or disability and to establish risk-based management (grade B).</p> <p>Some elements (fears and beliefs, psychological and social contexts) need to be early assessed.</p> <p>In addition to this evaluation, a composite questionnaire such as the STarT Back screening tool (stratified management) and the short version of the Örebro questionnaire (absenteeism prognosis) can be used to assess the risk of chronicity (grade B). Other more specific questionnaires such as the Fear-Avoidance Back Questionnaire (level of fears, avoidance and beliefs related to LBP) or Hospital Anxiety and Depression scale can also be used (EC).</p>	<p>4. appropriate; strong consensus</p>
<p>5. Relevance of imaging</p>	<p>In the absence of a red flag, there is no indication to perform spinal imaging in case of LBP acute flare-up (Grade C).</p> <p>The patient should be informed as to why imaging is not necessary (EC).</p> <p>In the absence of a red flag, perform spinal imaging should be performed in case of chronic LBP (after 3 months) (EC): MRI is</p>	<p>5. appropriate; strong consensus</p>

	<p>recommended (or CT scan in cases of contraindications to MRI) (EC).</p> <p>If an invasive procedure (epidural infiltration or spinal surgery) is considered, spinal imaging (MRI or CT if contraindicated) is recommended (except for patients with a very high level of pain, in order to not delay management) (EC).</p> <p>In the absence of a red flag, there is no indication to perform isolated simple radiograph apart from spinal instability (spondylolisthesis) or static disorder (EC).</p> <p>There is no indication to repeat imaging in the absence of symptom modification (EC).</p> <p>The patient should be informed about the lack of systematic correlation between symptoms and radiological signs. The patient should be informed about the medical and technical terms of imaging reports and these should be played down (EC).</p>	
<p>6. Overall management of the LBP patient</p>	<p>Management must be patient-centred: considering the patient's experience and the impact of their pain (physical, psychological, social and professional dimensions) (EC). This comprehensive management is usually called “bio-psycho-social” and is based on a shared medical decision.</p> <p>The terms of the diagnosis should be explained to the patient and reassuring information provided about the prognosis of common LBP (usually favourably within a few weeks) (EC).</p> <p>With chronic LBP or at LBP risk of chronicity, it is useful to consider a multidisciplinary management (EC), which may involve a physiotherapist, a rheumatologist, a physical medicine and rehabilitation physician, an occupational physician, and then, if</p>	<p>6. appropriate; strong consensus</p>

<p>home, is recommended (Grade B). The physiotherapist participates in the patient's education (reinsurance, fight against fears and beliefs, awareness of physical activity benefits) as part of a bio-psycho-social management (EC). The performance of physiotherapy must involve the active participation of the patient (Grade B). Passive therapies should not be used in isolation because they have no effect on improving LBP (EC).</p>	<p>consensus</p>
<p><u>Second line management:</u></p>	<p>11.</p>
<p>11. Education in pain neurophysiology for patients with chronic LBP or at risk of chronicity : Indicated (EC)</p>	<p>appropriate; weak</p>
<p>12. Manual techniques (manipulations, mobilizations) only as a part of a multimodal combination of treatments including a supervised exercise program : Possible (Grade B)</p>	<p>consensus 12. appropriate;</p>
<p>13. Psychological interventions such as cognitive behavioural therapy, only as a part of a multimodal combination of treatments including a supervised exercise program, conducted by a cognitive behavioural therapist professional or a team trained in pain : Possible (Grade B)</p>	<p>weak consensus 13. appropriate;</p>
<p><u>Third line management:</u></p>	<p>strong</p>
<p>14. Multidisciplinary physical, psychological, social and occupational rehabilitation program in patients with persistent low back or root pain, in the presence of psychosocial risk factors that interfere with their recovery, or with failure of recommended active management. Those programs must be adjusted according to the patient's medical, psychosocial and professional context. Programs should include supervised active exercises, a multidisciplinary approach, cognitive behavioural therapy, and social care.</p>	<p>consensus 14. appropriate; strong consensus</p>

15-20 Drug management	<p>15. No analgesic drug has proven its efficacy in the medium term on the improvement of LBP acute flare-up. Nevertheless, graduated analgesic management, starting with level I analgesics, can be implemented for managing painful episodes (EC). It is recommended to recall the correct use of analgesics and their intended use in symptomatic and non-curative effects (EC). The choice of treatment should consider medical history, previous experience with analgesics, patient preferences and risk of misuse.</p> <p><u>First line management :</u></p> <p>16. Paracetamol may be useful in a symptomatic intention to treat pain (EC).</p> <p>17. Non-steroid anti-inflammatory drugs (NSAIDs) can be offered after evaluation of the benefit/risk balance based on history, for the shortest possible time, at the lowest effective dose (Grade A).</p> <p><u>Second line management:</u></p> <p>18. Opioids: The risk of misuse must be considered. Weak opioids may be offered in addition or not to paracetamol, at low doses, with failure or contraindication to NSAIDs, for the shortest possible time (Grade B). Strong opioids are reserved for refractory LBP despite a well-managed</p>	<p>15. appropriate; strong consensus</p> <p>16. appropriate; strong consensus</p> <p>17. appropriate; strong consensus</p> <p>18. appropriate; strong</p>

<p>treatment (including multidisciplinary rehabilitation program) for the shortest possible time (Grade B).</p> <p>The patient should be informed about the risk of opioid misuse. The continuation of low or strong opioid therapy should be regularly reassessed according to the benefits previously established with the patient (EC). Tools are available to detect misuse risk before the first prescription (Opioid Risk-Tool) and before renewal (POMI scale). With risk of misuse, close patient monitoring is recommended (EC). With proven misuse, joint management with a pain or an addiction centre is recommended (EC).</p>	<p>consensus</p>
<p>19. Antidepressants (tricyclic or serotonin/noradrenaline reuptake inhibitors) are not indicated with LBP acute flare-up with or without radiculalgia (Grade A). They can be considered with chronic radiculalgia with a neuropathic component or with associated anxiety and depression disorders, considering the benefit/risk balance (Grade B). Neuropathic component can be assessed using DN4 score or <i>Pain detect</i>. The patient should be informed about how antidepressants work (delayed effect) and side effects (EC).</p>	<p>19. appropriate; strong consensus</p>
<p>20. Gabapentinoids are not indicated for LBP acute flare-up with or without radiculalgia (Grade A). They may be considered with chronic radiculalgia with a neuropathic component, considering the benefit/risk balance (grade B). Neuropathic component can be assessed using DN4 score or <i>Pain detect</i>. The patient should be informed about how gabapentinoids work (delayed effect) and side effects (EC).</p>	<p>20. appropriate; strong consensus</p>

<p>21-29: Possible care under conditions / not recommended</p>	<p>21. Ultrasound use and lumbar traction are not recommended (Grade B).</p> <p>22. Orthopaedic insoles are not recommended (Grade B).</p> <p>23. Acupuncture, acupressure and dry needling have not been found effective in alleviating LBP.</p> <p>24. In the absence of a good-quality study, we cannot rule on the effectiveness of sophrology, relaxation, “mindfulness meditation” or hypnosis. However, these can be considered part of a multimodal combination of treatments including active patient management (EC).</p> <p>25. Lumbar belt or corset wearing can be considered for a short period of time to help with recovery even if it has not been found effective in alleviating LBP (EC).</p> <p>26. For the neuropathic component of pain, after failure of other therapeutic alternatives (including multidisciplinary management), spinal cord stimulation can be discussed in a pain center (EC).</p> <p>27. In the absence of study, we cannot determine the benefit of Nefopam or corticosteroids (EC).</p> <p>28. Muscle relaxants have an unfavourable benefit/risk balance in common LBP (EC).</p>	<p>21. appropriate; strong consensus</p> <p>22. appropriate; strong consensus</p> <p>23. appropriate; strong consensus</p> <p>24. appropriate; strong consensus</p> <p>25. appropriate; strong consensus</p> <p>26. appropriate; weak consensus</p> <p>27. appropriate; strong consensus</p>
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	<p>29. There is no indication for antibiotics (Grade B), vitamin D (Grade B), lidocaine patch (EC) or anti-TNF alpha (EC).</p>	<p>consensus</p> <p>27.</p> <p>appropriate;</p> <p>strong</p> <p>consensus</p> <p>28.</p> <p>appropriate;</p> <p>weak</p> <p>consensus</p> <p>29.</p> <p>appropriate;</p> <p>strong</p> <p>consensus</p>
<p>30. Epidural steroid injection</p>	<p>There is usually no indication for epidural infiltration in LBP without radiculalgia (Grade C).</p> <p>Epidural infiltration may be considered for persistent and severe root pain despite well-managed medical treatment (Grade C), if available after cross-sectional imaging, and as a part of a shared decision with the patient given the risks and limited effectiveness of infiltrations.</p> <p>With a surgical history, the approach must be located away from the operated stage or by the sacrococcygeal hiatus way (EC).</p> <p>In terms of available products in France, the foraminal way is contraindicated (EC). We cannot make clear recommendations about the use of intra-articular facet infiltration.</p>	<p>30.</p> <p>appropriate;</p> <p>strong</p> <p>consensus</p>
<p>31. Secondary</p>	<p>Patients experiencing an LBP episode should practice regular physical</p>	<p>31.</p>

prevention	activity and/or self-rehabilitation exercises to reduce the risk of recurrence (Grade B). The choice of physical activity should be decided according to the patient's preference (EC).	appropriate; strong consensus
32. Care pathway	See Figures 2 and 3	32. appropriate; strong consensus

Footnotes : LBP = Low back pain ; EC = Expert consensus; MRI = Magnetic resonance imaging; CT = computed tomography; NSAIDs = Non-steroid anti-inflammatory drugs

Table 3: recommendations based on data from the literature and expert consensus but not included in the synthesis for health professionals:

Text of the recommendation	Level of scientific evidence	Reason of non-inclusion in the synthesis guideline
Radiofrequency denervation can only be considered in the presence of lumbago resistant to usual treatments (including multidisciplinary management) in patients with two positive facet diagnostic blocks.	Grade B	not included in the synthesis because radiofrequency denervation is very little performed in France
In the absence of good quality studies, it is not possible to conclude on the effectiveness of ozone therapy.	Expert consensus	not included in the synthesis because ozone therapy is very little performed in France
Transcutaneous electrical nerve stimulation (TENS) has no effect on the development of low back pain. TENS should not be proposed as the sole treatment for chronic low back pain. It may be useful as an adjunct in some patients for pain control to reduce the need for medication, as a complement to	Expert consensus	not included in the synthesis because TENS prescription is limited to pain centres that can provide education on its use

non-drug therapy		
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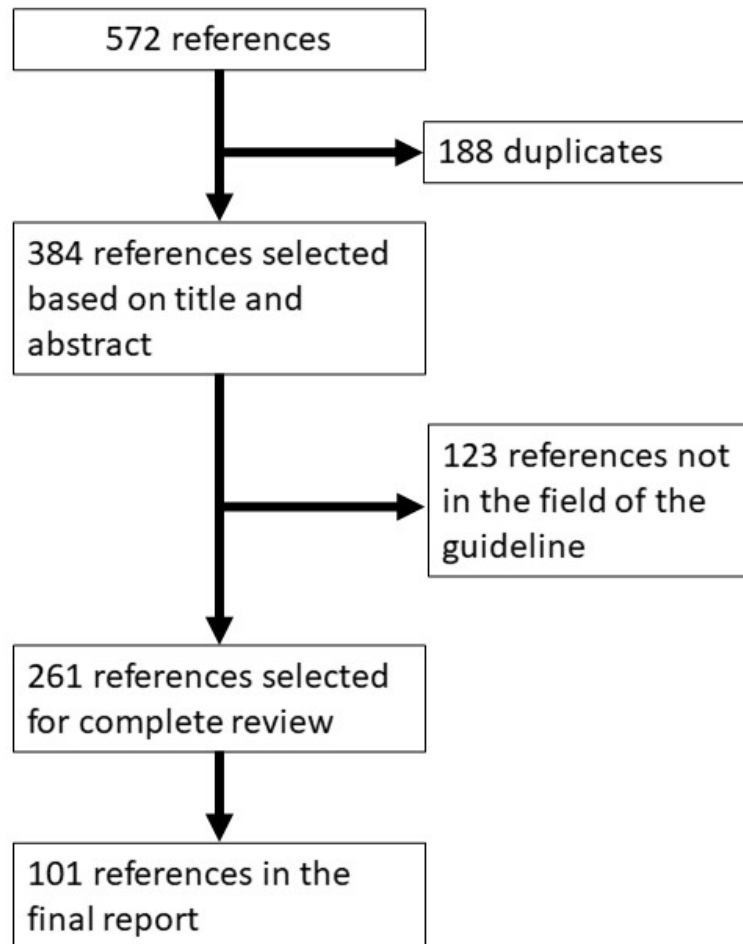
Footnote: TENS = Transcutaneous electrical nerve stimulation

Table 4 : List of alert flags and related characteristics

Type of alert flag	list of characteristics suggesting towards an alert flag
« Red flags » (pointing to an underlying pathology requiring specific and/or urgent management)	<ul style="list-style-type: none"> - Non-mechanical pain: pain of progressive aggravation, present at rest and particularly during the night. - Extensive neurological symptom (deficiency in bladder or anal sphincter control, motor impairment in the legs, horse tail syndrome) - Paraesthesia at the pubis (or perineum) level - Major trauma (such as a fall from height) - Unexplained weight loss - History of cancer, presence of febrile syndrome - Intravenous drug use, or prolonged use of corticosteroids (e.g. asthma therapy) - Significant structural deformation of the column - Dorsal or thoracic pain - Age of onset less than 20 years or more than 55 years ; - Fever - Alteration of the general condition
“Yellow flags” (psychosocial indicators of an increased risk of transition to chronicity)	<ul style="list-style-type: none"> - Emotional problems such as depression, anxiety, stress, a tendency towards depressed mood and withdrawal from social activities

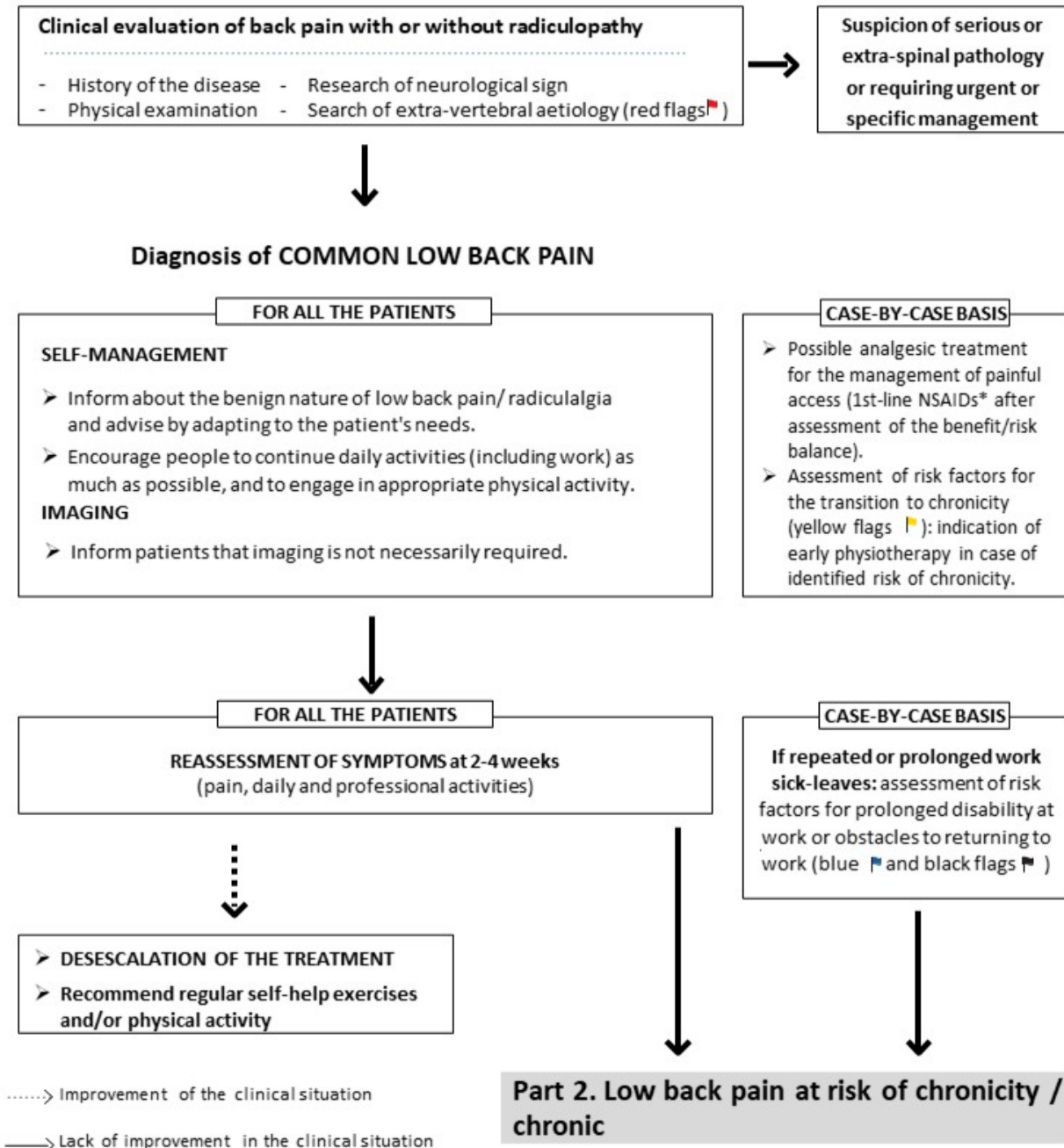
	<ul style="list-style-type: none"> - Inappropriate attitudes and representations about back pain, such as the idea that pain is dangerous or that it could lead to severe disability, passive behaviour with expectations of solutions placed in treatment rather than active personal involvement. - Inappropriate pain behaviours, especially avoidance or reduction of activity, related to fear - Work-related problems (job dissatisfaction or work environment considered hostile) or problems related to compensation (disability pension)
<p>“Blue flags” (prognostic factors related to the worker's perceived representations of work and the environment)</p>	<ul style="list-style-type: none"> - High physical workload - High demand for work and low control over work - Lack of ability to modify one's work - Lack of social support - Time pressure felt - Lack of job satisfaction - Stress at work - Little hope of returning to work - Fear of relapse
<p>“Black flags” (prognostic factors related to company policy, care and insurance system)</p>	<ul style="list-style-type: none"> - Employer policy preventing gradual reinstatement or change of position - Financial insecurity - Criteria of the compensation system

- | | |
|--|--|
| | <ul style="list-style-type: none">- Financial incentives- Lack of contact with the workplace- Duration of sick leave |
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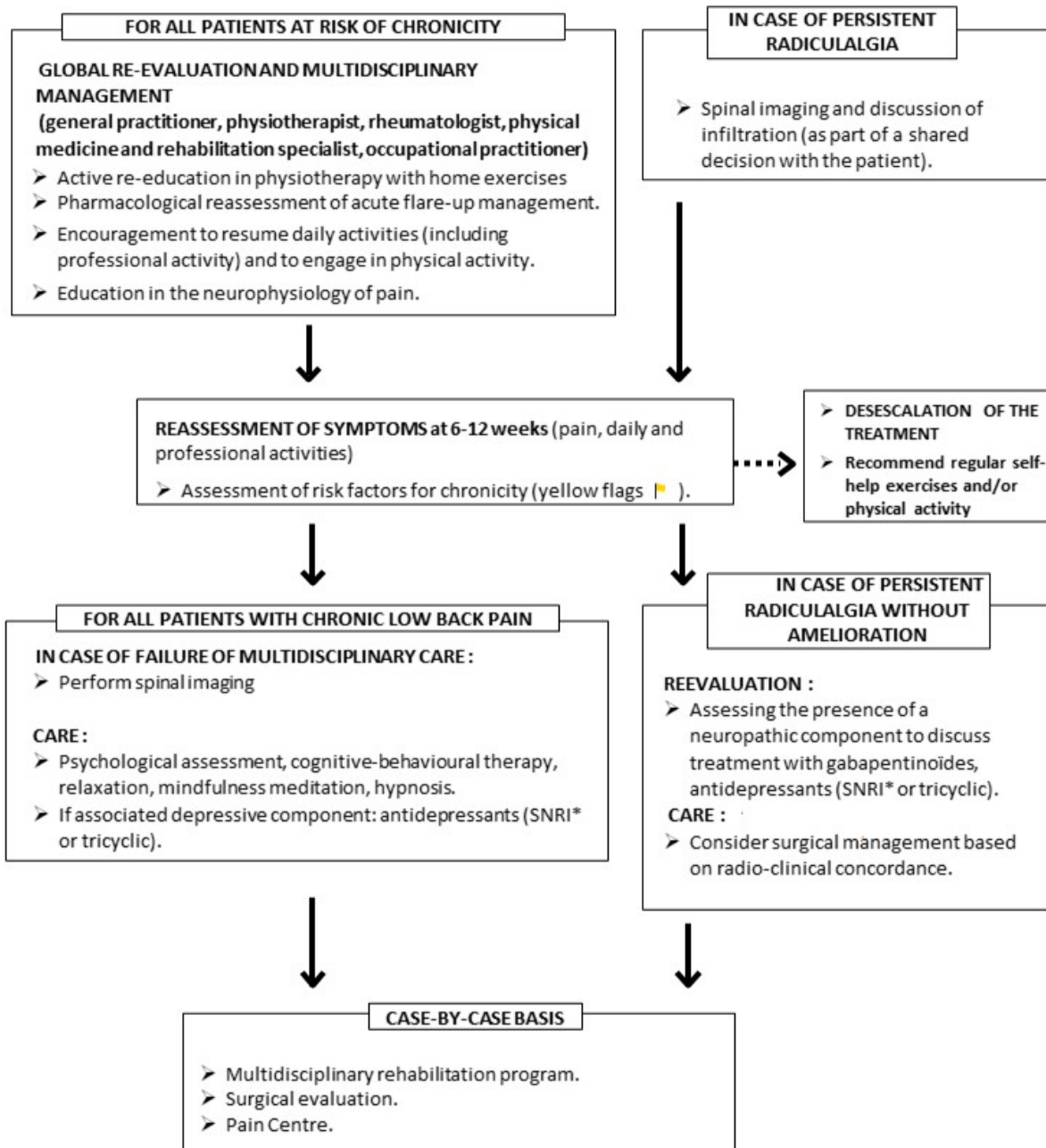


Management of patients with common low back pain : Care pathway

Part 1. Low back pain acute flare-up



Part 2. Low back pain at risk of chronicity / chronic



.....➤ Improvement of the clinical situation

—➤ Lack of improvement in the clinical situation

*NSAIDs = non-steroidal anti-inflammatory drugs

SNRI = serotonin-noradrenalin reuptake inhibitor

Appendix 1: Search criteria

The following automated bibliographic databases were searched:

- Medline (National Library of Medicine, United States of America) ;
- The Cochrane Library (Wiley Interscience, United States of America) ;
- BDSP (Banque de données en santé publique, France) ;
- Science Direct (Elsevier, United States of America) ;
- National Guideline Clearinghouse (Agency for Healthcare Research and Quality, United States of America) ;
- HTA Database (International Network of Agencies for Health Technology Assessment)

For guidelines:

“Sciatica”[Majr] OR “Back Pain”[Majr:NoExp] OR “Low Back Pain”[Majr:NoExp] OR back pain Or sciatica Field: Title

AND

Guideline* or Guidance or Consensus or Recommend* Field: Title

For systematic reviews, meta-analysis:

“Sciatica”[Majr] OR “Back Pain”[Majr:NoExp] OR “Low Back Pain”[Majr:NoExp] OR back pain Or sciatica Field: Title

AND

“Meta-Analysis as Topic”[Mesh] OR “Meta-Analysis “[Publication Type] OR “Review Literature as Topic”[Mesh] OR “Meta Analysis” OR “systematic Review” OR “Literature review” Or “Quantitative Review” OR “pooled analysis” [title/abstract]

Definition of low back pain : synthesis of the literature

Low back pain is not defined in most guidelines. When it is defined, the location of pain between the rib cage and the lower gluteal fold is used, as is commonly found in the literature. The Canadian guideline adds muscle tension or stiffness to the pain. No systematic review of the definition of low back pain was found in the research. In France, the term "lombalgie" is often used, but the French version of the Belgian guideline uses "douleur lombaire" rather than "lombalgie". Non-specific low back pain is the term generally used in the international literature, but some data from the literature (not presented here) suggest a misinterpretation of this terminology in current practice. For example, the term "low back pain" is preferred to "non-specific low back pain" in the British guideline. A review of the literature assessed whether it was possible to individualize a subtype of low back pain (the facet syndrome). It was concluded that interrogation and clinical examination could not identify such a subgroup. No meta-analysis categorizing low back pain by imaging was found.

The previous 2015 guideline of the FNAH on the surgical management of low back pain proposed a different definition of chronic low back pain: "Chronic low back pain is defined as pain in the lumbar region that has been present for more than 3 months. This pain may be accompanied by radiation to the buttock, iliac crest or even thigh, and only exceptionally extends beyond the knee. A new definition of chronic low back pain is proposed, differentiating between

- Non-degenerative low back pain, previously called specific low back pain or secondary low back pain (known as symptomatic), linked to a traumatic, tumorous, infectious or inflammatory cause;
- degenerative low back pain, the origin of which may associate one or more of the following causes: discogenic or facetary or mixed, ligamentous, muscular, linked to a regional or global disorder of the spinal statics;
- lumbago with no restrained relation to anatomical lesions.

These guidelines concern degenerative low back pain of discogenic or facetary or mixed origin. They do not concern non-degenerative low back pain, spondylolisthesis, narrow lumbar canal and low back pain with radiculalgia. The

diagnostic approach is not the subject of these guidelines, however, it is important to remember that, when faced with chronic low back pain, it is necessary to differentiate between chronic degenerative and non-degenerative low back pain. »

There is no consensus definition of sciatica found in the various guidelines. The term "radiculalgia" is sometimes used rather than sciatica, which is more anatomically accurate and does not exclude cruralgia. The French version of the Belgian guidelines uses the term "radiculalgie", as do those of the United States and Canada, but the British NICE uses the term "sciatica". Only the Belgian KCE proposes a definition of radiculalgia, underlining the lack of consensus. No systematic review of the literature was found in the research.

Data from a 2010 meta-analysis concerning the terminology of "recurrent low back pain" were reported: there is no consensus definition of recurrent low back pain, which is characterized in studies by the number of recurrences, the duration of the low back pain, the severity of the pain, or the evolution of the pain. The number of recurrences of low back pain episodes is the most commonly used definition, without a precise number of episodes emerging from this meta-analysis (and several studies use the term "recurrent" or "recurrent", without defining a precise number behind this term). Most often, the last 6 or 12 months are used as the reference period to define recurrent low back pain.

A review of the literature (without meta-analysis) from 2016, on the pain trajectories of low back pain patients, found that fluctuating pain corresponds to approximately 11 to 33% of low back pain patients.

The German guidelines identify chronic low back pain (greater than 12 weeks), as well as low back pain at risk of chronicisation, as those requiring multidisciplinary assessment. The other guidelines do not use the term "low back pain at risk of chronicization".

Red flags: synthesis of the literature

Red flags are not addressed in the North American and Danish guidelines, which do not address the initial diagnostic process. There is consensus on the terminology "red flags" to designate the signs that should lead to consideration of

specific management (either by supposition of a specific pathology requiring specific management or by suspicion of a serious sign that should lead to discussion of prompt surgical management). Nevertheless, the list of these red flags is heterogeneous. A meta-analysis, assessing the relevance of these red flags, found that all but two of them were not informative.

Evaluation of the risk of chronicity: synthesis of the literature

The risk classification of chronic low back pain is not addressed in North American guidelines. All other guidelines advise assessment of psychosocial risks known as "yellow flags". The timing of this assessment is not detailed. The Canadian guidelines suggest that a more detailed review be conducted if no improvement is made, but the difference between a summary and detailed review is not specified. KCE suggests that an assessment should not be conducted within the first 48 hours. The German guidelines suggest screening at the beginning of management. The STarT Back screening tool or Örebro questionnaires are proposed by the KCE and NICE. ICSI only offers the STarT Back. The Canadian TOP guidelines do not offer any tools, possibly in relation to older data than the other guidelines. A systematic review of the literature found that the two most evaluated and robust questionnaires were the STarT Back and the Örebro questionnaire. A French version of these two questionnaires is available.

The evaluation of the risk of chronicity indicates the need for multidisciplinary management. The time limit for referral to a specialist is not consensual. The Canadian algorithm proposes a referral within 1 to 6 weeks. A systematic review of the guidelines (which included guidelines not presented here, particularly in languages other than English or French) found that referrals to the recommended specialist were made within 4 weeks to 2 years. The German guidelines propose a 4-week delay for the evolution of low back pain, requiring a questionnaire on psychosocial and work-related risks.

Imaging: synthesis of the literature

With respect to the appropriateness of imaging in the acute phase of low back pain or lumboradiculalgia, all of the guidelines emphasize that MRI or CT scans are not indicated in the absence of red flags. Imaging is proposed in the

following cases: either if an invasive procedure (epidural infiltration or surgery) is considered (according to most guidelines), or to be discussed during specialist management. Some guidelines suggest clinical situations in which spinal imaging should be performed in certain contexts, largely overlapping with the red flag situations mentioned above. In a case of common low back pain (without radiculalgia), without operative indication, but persistent in the sub-acute or chronic stage, the guidelines do not rule on the relevance and chronology of spinal imaging, in the absence of bibliographical data. A systematic review (highlighted changes in MRI (notably regression / decrease in hernia size) during one year. A second systematic review found that some MRI data (Modic 1 in low back pain patients, central disc herniation in root canal patients) could guide the course of action, but the studies were few and heterogeneous.

Concerning the choice of the most relevant imaging modality, all the guidelines agree on the lack of interest of radiographs. If imaging is indicated, MRI is the examination most reported in the guidelines, since it is the examination generally tested in the literature. A CT scan is recommended if MRI is not feasible. The radiographs are presented in relation to the studies that evaluated them (older studies), and the limitations of the radiographs have been highlighted. Some specific situations have not been evaluated in the guidelines, such as a suspicion of spinal mobility (spondylolisthesis).

Paracetamol: synthesis of the literature

the oldest guideline advocates paracetamol, since it was based on the literature before the publication of a large negative study in the Lancet on paracetamol. The other guidelines do not advocate the use of paracetamol, with the exception of the ICSI guideline. A systematic review with meta-analysis did not find any efficacy of paracetamol in acute or chronic low back pain.

Non-steroidal anti-inflammatory: synthesis of the literature

All the guidelines suggest that NSAID treatment should be considered, considering contraindications and potential side effects, with the exception of the Danish guidelines which do not recommend it. The Belgian, British, and German guidelines insist on short-term prescriptions.

Three meta-analyses concerning NSAIDs found superior efficacy of NSAIDs. Nevertheless, most of the randomised controlled trials on NSAIDs concern molecules that are little used or not available in France, which limits the external validity of these meta-analyses. One meta-analysis found an increase in side effects with NSAID treatments.

Opioids: synthesis of the literature

All of the guidelines conclude that there is no first-line indication for opioids. The Belgian, British (for acute low back pain), German, American (for chronic low back pain) and Canadian guidelines recommend prudent use after failure or intolerance to NSAIDs. The British guideline for chronic low back pain and the American guideline for acute low back pain do not recommend the use of opioids. The differentiation between weak and strong opioids usual in France is not always available in international articles. The only weak opioid frequently discussed in the guidelines is tramadol. The Belgian and Canadian guidelines recommend the shortest possible duration of use.

A meta-analysis found opioids to be more effective than placebo, but with more side effects. The molecules analysed were significantly different from the practical use of opioids in France.

Other treatments for neuropathic pain: synthesis of the literature

The Danish and North American guidelines do not address the use of neuropathic treatments. All other guidelines suggest that neuropathic therapy should not be used in acute low back pain. For chronic low back pain, the Belgian and English guidelines do not recommend their use. The Americans recommend duloxetine as a second-line treatment while the Canadians separate the treatments anticonvulsants (insufficient data), tricyclic antidepressants

(possible effectiveness at lower doses than for depression), serotonin reuptake inhibitor antidepressants (not recommended except in the case of associated depression).

A meta-analysis evaluated pregabalin and gabapentin without finding efficacy, subject to the exclusion of studies including patients with predominantly radiculalgia. No meta-analysis on the use of antidepressants was identified.

Other treatments: synthesis of the literature

Muscle relaxants are not recommended by the Belgians whereas they are according to the American and Canadian guidelines. They are not evaluated in the British and Danish guidelines. A meta-analysis found short-term but not long-term efficacy. The main muscle relaxant proposed in these articles (cyclobenzaprine) is not available in France. The meta-analysis underlines the absence of studies of benzodiazepines with a muscle relaxant effect.

Corticosteroids are not recommended by the Americans, Canadians and not mentioned in the others. A network meta-analysis found a lower efficacy of corticosteroids per os compared to epidural infiltration.

Antibiotics are not recommended in the Belgian or Canadian guidelines and are not mentioned in the other guidelines.

A meta-analysis did not find any effectiveness of vitamin D supplementation. There are no guidelines for vitamin D supplementation.

A meta-analysis found that etanercept (subcutaneous or epidural injection) was effective for radiculalgia. A network meta-analysis found an efficacy of anti-TNF by IV route for lumbar pain, and by subcutaneous route for radicular pain. No treatment in France has a marketing authorisation for this indication.

Physiotherapy: synthesis of the literature

The Belgian and British guidelines suggest the use of supervised exercises according to a risk stratification, while the Danish, American and Canadian guidelines segment low back pain according to its acute/chronic status.

Some passive techniques such as heat are recommended for acute low back pain in the American and Canadian guidelines, whereas they are not recommended in the Belgian and British guidelines. Lumbar traction is not recommended by the Canadian and Belgian guidelines. The German guidelines allow passive techniques to be performed as part of comprehensive management.

For chronic low back pain (or at risk of chronicity according to the classification of the Belgian and British guidelines), supervised exercises are recommended in all the guidelines. The type of exercise program is not detailed except for the Danish guidelines recommending motor control programs in recent radiculalgia, and the Canadian guidelines recommending aquatic exercise for chronic low back pain.

Several systematic reviews with meta-analysis have evaluated different physiotherapy techniques. Motor control programs were no more effective than other interventions. Aquatic exercises were more effective on pain and function than non-aquatic exercises. Movement control programs were more effective in the short term but not in the long term than a variety of interventions. *Mechanical Diagnosis and Therapy* (sometime called “McKenzie therapy”) was not more effective than other techniques for acute low back pain but was more effective for chronic low back pain. Neural mobilizations were effective compared to various interventions. Stabilization exercises were more effective than general exercises but not compared with manual therapies. The application of coloured rigid adhesive tapes (kinesio-taping) was no more effective than standard care.

Graduated exposure was more effective than graded activity on disability and catastrophism but not on pain. Given the generally heterogeneous comparator arms, which may be standard care or heterogeneous techniques, it is difficult to conclude that one technique is superior to another.

A systematic review has compared exercises with surgery for sciatica on herniated discs, spondylolisthesis or narrowed lumbar canal, finding superiority of surgery on almost all criteria.

A systematic review compared the performance of early or delayed physiotherapy. Early physiotherapy was found to be effective on multiple criteria (low quality evidence) with identification of a subgroup of patients who could benefit preferentially from this early physiotherapy (patients with a spinal pathology related to work).

Spinal injections: synthesis of the literature

For radiculalgia: North American guidelines do not address the relevance of epidural infiltration. The Belgian, ICSI, and Alberta TOP guidelines recommend that infiltration be performed in cases of root pain in the event of drug failure, noting their transient effect, whereas the British guidelines do not provide recommendations except for acute and severe sciatica. The Danish guidelines give a negative recommendation, but leave the possibility of achieving them after careful consideration. No approach is recommended in the guidelines reviewed. A meta-analysis compared the foraminal versus caudal approach without finding a difference, while another comparing foraminal versus interlaminar suggests a somewhat greater efficacy of the foraminal approach. A comparison of the injected product (anesthetic versus anesthetic + corticosteroid) did not find any difference between these two possibilities.

It is noted that the corticosteroids used vary according to the country, for example dexamethasone sodium phosphate without neurotoxic excipients or triamcinolone used in some trials are not available in France or do not have a marketing authorisation. The only product available in France (Hydrocortancyl) had a re-evaluation of its medical service rendered in December 2017, the Transparency Commission highlighting the low level of evidence with efficacy at best low and of short duration on pain, and risks of neurological complications. Hydrocortancyl is contraindicated for infiltration of the lumbar spine by the foraminal route. In an operated patient, after evaluation of the risk-benefit balance, the injection should be made at a distance from the operated stage or via the sacro-coccygeal hiatus.

For low back pain, there is no recommendation to perform spinal injection. A meta-analysis did not find any effectiveness of posterior joint infiltrations in low back pain either. No specific data are detailed in the guidelines for low back pain with Modic 1. A meta-analysis detailed in the imaging section found greater efficacy of epidural/intradiscal infiltrations in the presence of Modic 1 even though this study was carried out to evaluate the relevance of MRI.

Surgery synthesis (no review of the literature)

Surgery was excluded of the review due to previous FNAH guidelines.

The FNAH has published guidelines in 2015 on chronic low back pain in adults and surgery. They specify in particular that:

- Dynamic stabilization systems and interspinous devices are not recommended as a guideline for chronic degenerative low back pain.

- The outcomes of arthrodesis: are no better than non-surgical management including intensive rehabilitation and cognitive therapy on recovery of function (as assessed by the ODI) and pain; are better than non-surgical management not including intensive rehabilitation.

Disc prosthesis does not provide clinically relevant improvement in chronic low back pain and function compared to arthrodesis or multidisciplinary rehabilitation.

These guidelines did not address non-degenerative low back pain, spondylolisthesis, narrow lumbar canal, and low back pain with radiculalgia. Spondylolisthesis, spinal canal stenosis and low back pain with radiculalgia are in practice frequent indications for spinal surgery, particularly in the presence of good radio-clinical correlation and in the absence of efficacy of non-invasive or infiltrative treatments.

General non-drug therapy: synthesis of the literature

All the guidelines agree on the importance of remaining active as much as possible (deleterious effect of prolonged bed rest). Appropriate education is advised, particularly on the benign and spontaneous favourable evolution of the majority of low back pain episodes. Canadian guidelines encourage a rapid return to work. The Belgian, Danish and Canadian guidelines encourage physical exercise.

A meta-analysis evaluated education in low back pain and neck pain, without reporting any clinical benefit.

A meta-analysis evaluated self-management programs with short- and long-term effectiveness on pain and disability.

A meta-analysis evaluated telemedicine programs in low back pain without reporting clinical benefit.

A meta-analysis evaluated education programs in the neurophysiology of pain and found immediate and medium-term effectiveness on pain and disability. Another meta-analysis found efficacy on disability but not significantly on pain in the short (except in a subgroup versus placebo analysis) or long term.

Return to daily activities: synthesis of the literature

All the guidelines agree on the importance of remaining active as much as possible (deleterious effect of prolonged bed rest). The Canadian guidelines encourage an early return to work. The Belgian, Danish and Canadian guidelines encourage physical exercise.

Manual therapy: synthesis of the literature

All of the guidelines call for manual techniques, with the exception of the Canadian guidelines, which call for them only for acute low back pain that has failed first-line therapy, but not for chronic low back pain. The Belgian, British, German and Danish guidelines recommend these manual techniques as part of comprehensive management.

Four systematic reviews have evaluated manipulations with results in favour of manipulations compared to usual care in acute or chronic low back pain, but inconsistent results between meta-analyses when manipulations were compared to acute care. One meta-analysis found short-term efficacy on pain of manipulations compared to mock manipulations with no long-term data available.

Psychologic interventions: synthesis of the literature

The Danish and North American guidelines focusing on acute and sub-acute low back pain do not address psychological interventions. Psychological interventions such as cognitive-behavioural therapies are recommended by all other guidelines.

Two systematic reviews have evaluated cognitive-behavioural therapies, one of which deemed it possible to conduct a meta-analysis, finding short- and long-term effectiveness on pain, long-term but not short-term effectiveness on disability, and no effectiveness on quality of life.

Multidisciplinary management: synthesis of the literature

The Danish and North American guidelines focusing on acute and sub-acute low back pain do not address multidisciplinary rehabilitation programs. These programs are recommended by all other guidelines. The Belgian and British guidelines suggest that such programmes should be carried out in the presence of psychosocial factors hindering recovery or in the event of failure of previous treatment. The German guidelines recommend them in the event of failure of previous care.

Three systematic reviews have evaluated back schools. Short-term effectiveness was contradictory (weak to absent), all of these systematic reviews found a lack of long-term effectiveness.

A systematic review evaluated multidisciplinary rehabilitation programs, finding effectiveness on pain, disability and return-to-work compared to usual care but not when compared to other interventions.

A systematic review compared physiotherapy, psychological/behavioural interventions or their combination in spinal pain and found superiority of combining these treatments with physiotherapy alone in the short and long term but not in the medium term.

Back belt: synthesis of the literature

The Belgian, British and Canadian guidelines do not recommend the use of lumbar belts. The other guidelines do not provide a definitive guideline. No meta-analysis was found on this subject.

Shoe insoles: synthesis of the literature

The Belgian, British and Canadian guidelines do not recommend the use of orthopaedic inserts. The other guidelines do not provide a definitive guideline. No meta-analysis was found on this subject.

Transcutaneous electric stimulation (TENS): synthesis of the literature

The Belgian, British and Canadian guidelines do not recommend the use of TENS. The other guidelines do not provide a definitive guideline.

Two systematic reviews found inconsistent and at best poor efficacy of TENS in heterogeneous studies.

Acupuncture: synthesis of the literature

The British Danish guidelines do not recommend acupuncture while the American and Minnesota guidelines as well as the Canadian guidelines recommend its use. The Belgians do not rule on acupuncture. The German guidelines leave its use possible if carried out as part of active management.

No systematic review of the English-language literature was found on acupuncture. A systematic review on acupuncture found short-term effectiveness on pain but not on disability. A meta-analysis found dry needling versus placebo to be effective. One meta-analysis found cupping therapy to be effective in chronic spinal pain, while another did not.

Physical activity: synthesis of the literature

The Belgian, Danish and Canadian guidelines encourage physical exercise. The North American and Canadian guidelines encourage the practice of yoga, but do not rule on physical activity in general.

Four systematic reviews evaluated yoga, pilates, and walking promotion. For each of these physical activities, association with usual treatment was beneficial on the judging criteria but was not significant when compared or added to other active interventions.

A qualitative systematic review evaluated the sports achievable after rehabilitation and regained the possibility of resuming physical activity at a low level.

Relaxation, meditation, hypnosis: synthesis of the literature

The American and Canadian guidelines recommend yoga, which includes some relaxation. Relaxation, mindfulness meditation, biofeedback are also recommended by the American guidelines.

A systematic review has evaluated the effectiveness of biofeedback in chronic spinalgia, and found it to be effective compared to usual treatments or with an active control arm.

A systematic review evaluated stress reduction based on mindfulness, finding efficacy on short and long term pain, and on short term function when compared to usual care, but not when compared to other active treatments.

No data were found for hypnosis.

Radiofrequency denervation: synthesis of the literature

Only the Belgian and British guidelines rule on the value of denervation by radio frequency. Both guidelines recommend that its use should only be considered when non-invasive treatment has failed and in the case of a diagnosis of positive bundle branch block.

Two meta-analyses are in conflict with each other on the results of denervation, taking into account different selection criteria (limitation in time of the included analyses, possibility to include studies with a control arm being a diagnostic block, possibility to include studies with a predominant radiculalgia).

Spinal cord stimulation: synthesis of the literature

There are no guidelines for spinal cord stimulation. A systematic review (without meta-analysis) finds an efficiency of spinal cord stimulation in postoperative lumbar pain. Spinal cord stimulation is indicated in France for, among others, neuropathic pain after failure of therapeutic alternatives, secondary to a chronic root pain syndrome persisting for at least 1 year. It is recommended by the FNAH as a technique of last resort.

Ozone therapy: synthesis of the literature

No guideline is given on the value of ozone for low back pain on degenerative disc disease or herniated discs. A meta-analysis seems to find an effectiveness of ozone, but the quality of this meta-analysis is very low (no description of the population, no limit of research, no systematic analysis of biases, no meta-analysis). Given these limitations, a previous meta-analysis was manually searched outside the original time frame and also found ozone efficacy in the presence of a herniated disc. It is noted that these two studies refer to low back pain without specifying or not the existence of a root component.

Secondary prevention: synthesis of the literature

Only Canadian guidelines recommend physical exercise to reduce the likelihood of recurrence of low back pain. The other guidelines did not assess secondary prevention aspects.

Four meta-analyses (including 3 by the same author) found that exercise, more or less combined with education, or physical activity was effective in reducing the likelihood of recurrence of low back pain. One of the studies found this association in prospective studies but not in cross-sectional studies.

Appendix 3 stakeholders and institutional organizations requested to the reading phase

The following stakeholders and institutional organizations were asked for their views and responded to the reading phase:

- French Chiropractic Association
- French Association for the Fight against Rheumatism
- French Association of Non-drug Therapies
- National Professional Council of Rheumatology
- College of Masso-Kinesitherapy
- College of General Medicine
- Osteopaths of France union
- French Society for the Study and Treatment of Pain
- French Society of Spinal Surgery
- French Society of Orthopaedic and Osteopathic Manual Medicine
- French Society of Physical Medicine and Rehabilitation
- French Osteopathic Society
- French Rheumatology Society
- National Health Insurance Fund
- Health Directorate General
- National Research and Security Institute

The following stakeholders and institutional organizations were asked for their views and did not respond to the reading phase:

- Association of Physiotherapists Osteopaths
- National Professional Council for Orthopaedic and Trauma Surgery
- French Society of Orthopaedic Surgery and Traumatology
- Association city hospital - fight against pain
- National Professional Council of Emergency Medicine
- French Society of Emergency Medicine
- National Professional Council of Radiology
- French Psychological Society

- French Society of Radiology
- Union of Osteopathic Physiotherapists Masseurs Osteopaths
- Agricultural Social Security Administration
- General Direction of Care Provision
- Social Security Administration