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REVIEW

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French good practice guidelines for medical and occupational surveillance of the low back pain risk among workers exposed to manual handling of loads

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Abstract

Several clinical practice guidelines related to the assessment and management of low back pain (LBP) have been published with varied scopes and methods. This paper summarises the first French occupational guidelines for management of work-related LBP (October 2013). Their main originality is to treat all the three stages of primary, secondary and tertiary prevention of work-related LBP. The guidelines were written by a multidisciplinary working group of 24 experts, according to the Clinical Practice Guidelines method proposed by French National Health Authority, and reviewed by a multidisciplinary peer review committee of 50 experts. Recommendations were based on a large systematic review of the literature carried out from 1990 to 2012 and rated as strong (Level A), moderate (B), limited (C) or based on expert consensus (D) according to their level of evidence. It is recommended to deliver reassuring and consistent information concerning LBP prognosis (Level B); to perform a clinical examination looking for medical signs of severity related to LBP (Level A), encourage continuation or resumption of physical activity (Level A), identify any changes in working conditions and evaluate the occupational impact of LBP (Level D). In case of persistent/recurrent LBP, assess prognostic factors likely to influence progression to chronic LBP, prolonged disability and delayed return to work (Level A). In case of prolonged/repeated sick leave, evaluate the pain, functional disability and their impact and main risk factors for prolonged work disability (Level A), promote return to work measures and inter professional coordination (Level D). These good practice guidelines are primarily intended for professionals of occupational health but also for treating physicians and paramedical personnel participating in the management of LBP, workers and employers.

Keywords: Guidelines, Low back pain, Manual handling of loads, Prevention, Surveillance

Introduction

Manual handling of loads (MHL) is a widespread activity among workers: nearly a third of the European Union workers carry loads for at least a quarter of their working time [10]. MHL is ubiquitous and not specific to any particular business sector [29]. The most common injuries resulting from exposure to MHL are back injuries [5, 19, 23]. Although most workers recover completely after a back injury, about 2 to 7 % of them may develop chronic or recurrent low back pain (LBP). Repeated or prolonged sick leave for disease, occupational disease, work

accident or disability due to LBP can compromise the worker's subsequent employment prospects [3, 22, 38]. The problem of job retention for LBP workers is growing concern in the current socioeconomic context of industrialized countries. The changing work environment (more intense work, limited access to training, short-term jobs), ageing of the working population and longer careers are socio-demographic factors that require enhanced medical and occupational surveillance of workers exposed to MHL [31].

This manuscript summarizes the main recommendations for medical and occupational surveillance of the LBP risk among workers exposed to MHL of the French Society of Occupational Medicine (October 2013) [33]. These guidelines correspond to a constant concern of

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52 occupational risk prevention institutions of all industrial-
 53 ized countries of the world, as LBP at work is a major
 54 cause of invalidity. These guidelines are primarily intended
 55 for Occupational Physicians (OPs), specialized nurses and
 56 workplace risk prevention personnel. They are also
 57 intended for healthcare workers such as general practi-
 58 tioners (GPs) and spine specialists (rheumatologists, re-
 59 habilitation practitioners, orthopaedic surgeons, etc.),
 60 especially in terms of coordination of the management of
 61 workers with LBP and resolution of the obstacles to their
 62 return to work. Some guidelines may also concern para-
 63 medical personnel (physiotherapists, nurses, occupational
 64 therapists, psychologists). Finally, these guidelines are
 65 intended for workers, employers and stakeholders. The
 66 guidelines and the review are concerned with non-specific
 67 LBP unless stated otherwise. MHL is defined as “any
 68 transporting or supporting of a load, by one or more
 69 workers, including lifting, putting down, pushing, pulling,
 70 carrying or moving of a load, which, by reason of its char-
 71 acteristics or of unfavourable ergonomic conditions, in-
 72 volves a risk particularly of back injury to workers” by
 73 European legislation. The objectives of these guidelines
 74 are to define an appropriate surveillance strategy in order
 75 to detect and prevent low back injuries related to exposure
 76 to MHL. They apply to all countries’ workers exposed to
 77 MHL activities and especially concern the working-age
 78 adult population suffering from LBP and still at work, or
 79 suffering from LBP and on sick leave.

80 **Methods**

81 **Literature review**

82 The review methodology followed that of the French
 83 National Authority for Health clinical guidelines [13]. The
 84 present evidence review therefore started with a search for
 85 all published, methodologically sound, systematic reviews
 86 and international guidelines supplemented by narrative re-
 87 views and original scientific studies in key areas of interest
 88 or where systematic reviews were unavailable, in accord-
 89 ance with the French National Authority for Health meth-
 90 odology. The main target for the literature search was
 91 evidence from occupational settings or concerning occupa-
 92 tional outcomes. The literature was searched systemat-
 93 ically from January 1990 to March 2012 in several data
 94 bases: PubMed, Embase, NIOSHtic-2, Cochrane Library.
 95 The Key-Words was “(low back pain OR backache OR sci-
 96 atica) AND (occupational health OR occupational medi-
 97 cine OR occupational disease OR occupational accident)
 98 AND (interventions OR prevention OR return to work
 99 OR absenteeism OR sick leave OR disability OR retire-
 100 ment OR employment OR job changes OR job adaptation
 101 OR job loss OR light duty OR ergonomic OR rehabilita-
 102 tion OR back school OR lumbar support)”. The final se-
 103 lection included five previous international guidelines, 159
 104 systematic reviews, 34, meta analysis and 279 clinical

105 trials. The main French-speaking ergonomics and occupa-
 106 tional health journals were analysed for the period be-
 107 tween 2005 and 2012. This research was completed by a
 108 review of websites, institutional reports, documentation
 109 from institutions in charge of occupational risk prevention
 110 and the documentation of French and European standards
 111 institutions and French and international standards bod-
 112 ies. More than 2800 titles and abstracts were considered.
 113 Detailed methodological information about search ques-
 114 tions, the literature search, reviewing process and the con-
 115 sensus process are given in the guideline report [33].

116 **Scientific evidence and professional expertise**

117 Guidelines were written by a working party and reviewed
 118 by a multidisciplinary peer review committee of 50 experts.
 119 The multidisciplinary working party comprised 24 experts
 120 and practitioners who had a good knowledge of profes-
 121 sional practices in the field corresponding to the topic of
 122 the guidelines and were able to assess the relevance of pub-
 123 lished studies and the various clinical situations evaluated
 124 (occupational health physicians, rheumatologists, National
 125 health insurance consultant physicians, rehabilitation
 126 physicians, general practitioners, physiotherapists, er-
 127 gonomists, occupational therapists, occupational nurses,
 128 regional health inspectors, chiropractors, occupational risk
 129 epidemiologists and work physiology and ergonomics sci-
 130 entists) (see acknowledgments, authors’ information and
 131 contribution). The working party met ten times from
 132 April 2012 to May 2013. Consensus was reached on all
 133 decisions regarding evidence reports and the specific recom-
 134 mendations. The independence and impartiality of the
 135 working party and review committee’s experts in relation
 136 to the topic of the guidelines were verified by a French
 137 National Authority for Health entity devoted to manage-
 138 ment of conflicts of interest.

139 On the basis of the data published in the literature and
 140 professional opinions, the proposed guidelines are classi-
 141 fied as Level A, B, C or D according to the French National
 142 Authority for Health modalities (Table 1) and the Oxford
 143 grading system [28]. The absence of grading does not mean
 144 that the guidelines are not relevant and useful, but indi-
 145 cates the need to conduct further studies.

146 **Review**

147 The resultant evidence is presented below under a logical
 148 sequence of occupational health situations about workers
 149 exposed to MHL: workers exposed to MHL without LBP,
 150 workers suffering from LBP and workers suffering from
 151 persistent or recurrent LBP.

152 **Individual information to be given to workers exposed to
 153 manual handling of loads**

154 This information can be delivered by the OP or the occu-
 155 pational nurse, or other health professionals, depending on

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Table 1 Recommendation grading (according to the French National Health Authority, 2010 [28])	
Level of scientific proof provided by the literature (for clinical studies)	Recommendation grading
Level 1	Level A
- High-power randomised comparative studies	Scientific proof established
- Meta-analysis of randomised comparative studies	
- Decision analysis based on well-conducted studies	
Level 2	Level B
- Low-power randomised comparative studies	Scientific proof presumed
- Well-conducted non-randomised comparative studies	
Level 3	Level C
- Case-control studies	Low level of proof
Level 4	Level D
- Comparative studies with major bias	Expert consensus
- Retrospective studies	
- Case series	
In the absence of studies, guidelines are based on a consensus between working party experts after consulting the peer review group	

the occupation health and safety organisation and regulation. In every case, for workers exposed to MHL, the interaction with the health professionals can have direct positive effects, as erroneous beliefs may be identified and discussed [37]. It can also help to restore confidence to workers who are sometimes confused by contradictory information or medical advices [2, 5, 23, 34]. It is recommended to be particularly attentive to the content of the message delivered by the healthcare practitioner in view of its potential impact on the worker's beliefs and behaviour (Level B) [2, 34]; to emphasize the fact that LBP is common and frequently recurrent, but that episodes of LBP are usually brief with a spontaneously favourable outcome (Level B); to indicate that LBP has a multifactorial origin and that occupational factors are one of the modifiable factors influencing the incidence of LBP (Level B); to ensure the consistency of the risk prevention messages delivered by the occupational health team due to the negative impact of discordant messages (Level D).

For workers with LBP exposed to MHL, it is recommended to encourage continuation or resumption of physical activity and, when possible, work by taking into account the job characteristics and the possibilities of job adjustments (Level A) [5, 34, 39]; to backup oral information by written information complying with current recommendations (for example the "Back Book") (Level A) [6, 14]; to provide information concerning physical demands of job (manual material handling, lifting, bending,

twisting, and whole body vibration) and LBP, as it helps to improve the worker's knowledge and promotes a positive change in their beliefs and their inappropriate behaviours (avoidance of movement) related to LBP (Level B) [37]; to explain and make less alarming any medical and technical terms in view of the absence of pathophysiological correlations in non-specific LBP, deliver reassuring information concerning prognosis, ensure that the worker has understood the essential messages and repeat the information concerning the general principles of occupational risk prevention (Level D).

Medical surveillance of workers with LBP exposed to MHL
 No scientific data are available to determine the optimal frequency of medical surveillance specific to the low back risk in symptomatic workers. For workers with LBP exposed to MHL, it is recommended that the frequency of follow-up be determined by the OP or the health professionals, according to the persistence of LBP, its physical and psychosocial impact on work, and job risk assessment (Level D).

Organic causes are rare among adults of working age. The first step in the evaluation of subjects with LBP, the so-called "diagnostic triage", consists of confirming the non-specific nature of the LBP by eliminating any possible organic causes for LBP. The literature review identified a series of signs of medical severity ("red flags"), indicating a probability of an underlying organic cause for LBP that may justify complementary investigations [1, 5, 15, 18, 23–25, 34]. During the clinical interview of workers suffering from LBP, it is recommended to situate the current episode of LBP in the worker's medical history (Level D); to look for an underlying specific cause of LBP, while keeping in mind that LBP secondary to a specific aetiology is rare (Level A) [15]; at the acute, subacute and chronic stages of LBP, look for medical signs of severity ("red flags") allowing detection of an underlying disease (Level A) [1, 5, 15, 18, 23–25, 34]; to look for the presence of a radicular component associated with LBP (Level A) [34]. In the presence of a red flag and/or radicular pain, it is recommended to perform a specific clinical examination of the spine, regardless of the stage of the LBP (Level A) [1] and refer the worker to his/her GP for appropriate investigation and/or management (Level D).

In subjects aged 20 to 55 years with non-specific LBP, no laboratory tests or standard X-rays should be requested. However, in the presence of suspicious clinical signs ("red flags"), these complementary investigations (or even other second-line imaging examinations) are indicated and should be requested by the GP or spine specialist (Level A) [1, 5, 17, 26].

For LBP workers exposed to physical demands of work, occupational assessment is recommended to situate the

237 current episode of LBP in the worker’s occupational his-
 238 tory, and especially identify any changes in working condi-
 239 tions (Level D); to ensure that up-to-date job data are
 240 available (Level D); to evaluate the occupational impact of
 241 LBP (Level D); to assess, with the worker, the risks for his/
 242 her health, taking into account the job risk assessment,
 243 potential job adjustments and the medical and socioeco-
 244 nomic context (Level D). All in order to determine, in
 245 consultation with the worker, whether there is a need to
 246 recommend job adjustments and/or fitness for work re-
 247 strictions; refer the worker to the general practitioner;
 248 adapt medical and occupational follow-up.

249 **Health surveillance in the case of persistent or recurrent LBP**

250 When persistent or recurrent LBP is observed, it is recom-
 251 mended to evaluate prognostic factors, *i.e.* psychological
 252 and behavioural factors (“yellow flags”) likely to influence
 253 progression to chronic LBP and socio-economic and oc-
 254 cupational factors (“blue and black flags”) likely to influ-
 255 ence prolonged disability and delayed return to work. This
 256 evaluation can require several visits/interviews in complex
 257 cases (level B) [5, 7, 23, 26, 35]. Several occupational risk
 258 factors of prolonged work incapacity are also described in
 259 the literature [5, 7, 22, 30, 34, 35, 37]. It is recommended
 260 to evaluate the pain, functional disability and their impact
 261 (Level B) [34]. Evaluation of risk factors for chronic LBP
 262 or prolonged disability can help the clinician to learn
 263 more about worker capacities and the specific work situa-
 264 tions and provide information to guide individual strat-
 265 egies to address them. The interview is recommended to
 266 situate the current episode of LBP in the employee’s med-
 267 ical and occupational history (Level D); to ask the em-
 268 ployee to provide medical data concerning his/her LBP
 269 and its management (Level D); to evaluate the main risk
 270 factors for prolonged work disability (physical demands,
 271 quality of relationships and social climate, beliefs and be-
 272 haviours related to pain, disability management policy)
 273 (Level D) [12, 35]; to assess the employee’s medical, ad-
 274 ministrative and socioeconomic situation (Level D) [35];
 275 to ensure a shared understanding of the situation and the
 276 objectives of management between the employee, the fam-
 277 ily physician and the OP (Level D).

278 Several clinical screening tools can guide the examin-
 279 ation and evaluation of risk factors of chronicity or pro-
T2 280 longed disability (Table 2). To assess these factors, it is
 281 recommended to use a visual analogue scale (VAS) to
 282 evaluate pain associated to LBP (Level A) [1, 34]. Risk fac-
 283 tors for prolonged work disability can be evaluated by
 284 using the Örebro Musculoskeletal Screening Pain Ques-
 285 tionnaire (OMPSQ) (Level D) [27]. The impact of func-
 286 tional disability related to LBP must be evaluated early and
 287 repeatedly (Level A) [34]. The main tools are the Roland-
 288 Morris, Oswestry and Dallas questionnaires (Level D), the
 289 Quebec scale and the SF-36 quality of life questionnaire

Table 2 Recommended tools for assessment of pain, functional and disability impact related to LBP

Assessed dimension	Recommended tool	
Pain	Visual analogue scale (VAS) [34]	t2.4
Work-related factors for prolonged disability	Örebro Musculoskeletal Screening Pain Questionnaire (OMPSQ) [16]	t2.5 t2.6
	Roland-Morris questionnaire [32]	t2.7
Functional disability	Dallas Pain Questionnaire [20]	t2.8
	Oswestry Disability Index [9]	t2.9
	Quebec Back Pain Disability Scale [36]	t2.10
	SF-36 quality life questionnaire [21]	t2.11
Worker beliefs concerning the link between LBP and work	Fear Avoidance Belief Questionnaire (FABQ) work-subscale [11]	t2.12
		t2.13

(Level A) [1]. In the case of repeated or prolonged sick leave for more than 4 weeks, it is recommended to explicitly discuss with the worker his/her beliefs concerning the links between LBP and work (Level A). If a questionnaire approach is adopted, the Fear Avoidance Belief questionnaire (FABQ) questionnaire can be used, especially the FABQ-work subscale (Level D).

Clinical interview and physical examination can provide information on the biopsychosocial context of workers with chronic LBP, as they can reflect the subjective experience and impact of LBP. It is recommended to remind workers that they do not need to wait until a complete resolution of their symptoms before returning to work and that early return to work improves the prognosis, subject to job adjustments, when necessary (Level A) [2, 5, 23, 25]. During the occupational assessment, it is recommended to situate the current episode of LBP in the worker’s occupational history and look for any triggering or aggravating factors (Level D); to ensure that up-to-date job data are available (Level D); to estimate the worker’s capacity to return to work and conditions of return to work as a function of the previously evaluated occupational impact of LBP (Level D); to evaluate, together with the worker, the need to consider staying at work measures (Level D); to ensure a shared understanding of the situation and the objectives of management between the employee, the family physician and the OP (Level D). The worker must be at the centre of the staying at work approach. It is recommended to facilitate the worker’s transition from the health care setting to the workplace by encouraging and helping the worker to adopt a dynamic return to work, evaluating perceived physical demands and social support perceived by the worker and identifying the main difficulties related to work and possible job adjustments, in order to allow a transitional period for progressive and planned return to work and improve the worker’s capacity to cope with residual symptoms at work (Level C) [35].

328 Coordination of healthcare practitioners and social
 329 and occupational stakeholders has a positive influence
 330 on the return to work rate and on pain and disability of
 331 workers who return to work. This coordination can be
 332 facilitated by contact between healthcare workers and
 333 the OP, maintenance of a link between the workplace
 334 and the worker during the sick leave period, job analysis
 335 and possible proposal of job adjustments, consultation
 336 with occupational health professionals, and resolution of
 337 any medical, administrative or social problems [4, 35].
 338 To improve coordination and return to work rate, it is rec-
 339 ommended to evaluate, with the employee's consent, the
 340 need for a consultation with the family physician, special-
 341 ist(s) and, possibly, social insurance official and/or return
 342 to work coordinators (Level D); to ensure consistency of
 343 the messages delivered by the various personnel (Level D);
 344 to inform the employer, with the employee's consent, about
 345 the desired conditions of return to work (Level D); to plan
 346 a workplace visit, in the presence of the worker whenever
 347 possible (Level D); to organize a meeting between the
 348 worker, supervisor, employer and, whenever possible, co-
 349 workers (Level D); to ensure application of the necessary
 350 measures to facilitate staying at work before the employee's
 351 effective return to work (Level D).

352 The pre-return to work visit must be organised a suffi-
 353 cient time before the planned date of return to work in
 354 order to take any necessary measures before the worker
 355 return to work. Several pre-return to work visits may be
 356 necessary (Level D). Finally, specifically at the time of the
 357 return to work, it is recommended to assess, together with
 358 the worker, the risks for his/her health by taking into ac-
 359 count the job risk assessment, any job adjustments re-
 360 quired, staying at work actions taken and the medical and
 361 social context [4, 35] and determine the modalities of
 362 medical and occupational follow-up (Level D).

363 Conclusions

364 Several clinical practice guidelines related to the assess-
 365 ment and management of LBP have been published in
 366 the past 10 years which varied in their scope and
 367 method. These ones are the first French occupational
 368 guideline for management of work-related LBP and their
 369 main originality is to treat all the three stages of primary,
 370 secondary and tertiary prevention of LBP for workers ex-
 371 posed to MHL. They are adapted to the French system
 372 of occupational health, which includes occupational
 373 health services employing occupational physicians and
 374 specialized nurses, but they are also intended for the
 375 surveillance of workers in other countries because they
 376 are also intended for treating physicians and paramedical
 377 personnel participating in the management of LBP.
 378 These recommendations are quite adapted to other oc-
 379 cupational health legislations, especially for countries
 380 where medical surveillance of workers is insured by

general practitioners (GPs). The literature synthesis rec- 381
 ognizes some limitations because of the French National 382
 Authority for Health clinical guidelines method. It relies, 383
 as far as possible, on previous international clinical prac- 384
 tice guidelines but also underlines insufficient evidence 385
 or limitations of current scientific investigations for sev- 386
 eral points of the topic. 387

These guidelines have been published by the French 388
 National Authority for Health clinical guidelines [33]. 389
 Their wide diffusion among the practitioners would im- 390
 prove the homogeneity of clinical practice in the manage- 391
 ment of LBP and promote a multidisciplinary approach of 392
 the three stages of LBP related to MLH's prevention at the 393
 workplace. 394

395 Competing interests

The authors declare that they have no competing interests. 396

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