Low back pain.
Occupational injuries and diseases.
Observations in France and prevention proposals

jean-pierre meyer, jean-pierre zana
INRS, National Institute of Research and Safety
meyer@inrs.fr

Institut national de recherche et de sécurité
pour la prévention des accidents du travail et des maladies professionnelles

<table>
<thead>
<tr>
<th>Low Back Pain – Disc pathology</th>
<th>pmsi 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 millions hospital stays</td>
<td></td>
</tr>
<tr>
<td>1,08 millions about musculoskeletal pathologies</td>
<td></td>
</tr>
<tr>
<td>182,500 back disorders</td>
<td></td>
</tr>
<tr>
<td>- spine surgery</td>
<td></td>
</tr>
<tr>
<td>fractures</td>
<td>7,500</td>
</tr>
<tr>
<td>discs</td>
<td>62,000</td>
</tr>
<tr>
<td>others</td>
<td>18,000</td>
</tr>
<tr>
<td>85,000 back pain</td>
<td></td>
</tr>
<tr>
<td>lumbar 15,000</td>
<td></td>
</tr>
<tr>
<td>- traumatic pathology</td>
<td>28,000</td>
</tr>
<tr>
<td>lumbar spine and pelvic fractures</td>
<td></td>
</tr>
<tr>
<td>- medical therapeutic</td>
<td>85,000</td>
</tr>
<tr>
<td>back pain</td>
<td></td>
</tr>
<tr>
<td>lumbar disc + sciatica</td>
<td>13,000</td>
</tr>
<tr>
<td>LBP, lumbago + sciatica</td>
<td>11,300</td>
</tr>
<tr>
<td>sciatica alone</td>
<td>11,500</td>
</tr>
<tr>
<td>low back pain</td>
<td>21,500</td>
</tr>
<tr>
<td>sciatica 35,000</td>
<td></td>
</tr>
</tbody>
</table>

Medical information informatized program
Damon et al. Rev med assoc mal, 2000, 4, 19–27
Deyo et al. back surgery
Has 2000, protheses discales
Garreau de lobresse aca de médecine 2009
Ramamurti analyst frost&sullivan
work as a risk factor

<table>
<thead>
<tr>
<th>LBP ? sciatica off work duration</th>
<th>off work off work</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes/no &lt; knee (%) (d)</td>
<td>(% (d)</td>
</tr>
<tr>
<td>controle</td>
<td></td>
</tr>
<tr>
<td>64,4 4,8 5,1 7,0</td>
<td></td>
</tr>
<tr>
<td>exposed</td>
<td></td>
</tr>
<tr>
<td>71,5 9,8 28,9 20,2</td>
<td></td>
</tr>
</tbody>
</table>
| p > 0.1 p = 0.06 p < 0.01 p = 0.08 | in % of a male working population (n = 642)

compensated back pathologies

- **occupational injuries** 660 000
  - involving low back 110 000 17 % of the total
  - of work duration lumbago 59,3 days all 56,4 days

- **occupational diseases** (tables 97 & 98)
  - chronic back pain with sciatica **and** concordant disc hernia

  Whole body vibration 350
  Manual handling 2500 almost the same since 1999
occupational disease tables 97 and 98

chronic disorders of the lumbar spine induced by:

diseases
- sciatica due to disc hernia at L₄, L₅, or L₅, S₁ level with a concomitant level of nerve compression
- crural radiculopathy due to disc hernia at disc level L₂-L₃, or L₃-L₄ or L₄-L₅ with a concomitant level of nerve compression

clinical aspect

<table>
<thead>
<tr>
<th>delay to declare:</th>
<th>6 months exposure time &gt; 5 y</th>
</tr>
</thead>
<tbody>
<tr>
<td>tasks</td>
<td></td>
</tr>
<tr>
<td>- using or driving earth moving machines, loader, excavator, leveller, road roller, tip cart, forklift, scouter, caterpillar tractor, agricultural or forestry tractor:</td>
<td></td>
</tr>
<tr>
<td>- using or driving industrial moving machines: forklift, cranes, standing on vibrating machines</td>
<td></td>
</tr>
<tr>
<td>- lorry driving.</td>
<td></td>
</tr>
</tbody>
</table>

trg 97: exposure to WBV of low and medium frequencies

trg 98: manual handling of heavy loads

limitative list of tasks

what brings occupational compensation?

- better economic and social support for the worker
- awareness from the employers
- more attention to prevention direct cost
- manual handling prevention campaigns
- vibration, MH, postures are part of the work hardness evaluation ageing and hardness are new legal work agreement
- standards vibrations, handling, repetitive tasks
standardisation  CEN - ISO derived

<table>
<thead>
<tr>
<th></th>
<th>handling</th>
<th>pushing - pulling</th>
<th>repetitive work</th>
<th>vibrations (m/s²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>maximum value kg</td>
<td>25</td>
<td>24</td>
<td>70</td>
<td>1,15</td>
</tr>
<tr>
<td>acceptable value daN</td>
<td>15</td>
<td>19</td>
<td>40</td>
<td>0,5</td>
</tr>
<tr>
<td>minimal risk value</td>
<td>5</td>
<td>10</td>
<td>20</td>
<td>prevention is here !</td>
</tr>
</tbody>
</table>

Frequency  1 / 5 min

Time trend of occupational diseases

Number of occupational diseases

- n°57
- total
- n°97 and 98

Year 1979 to 2010

85 %
## Locomotor Occupational Diseases 2010

<table>
<thead>
<tr>
<th>Number</th>
<th>&quot;MSDlimbs&quot;</th>
<th>Vibrations hand/arm</th>
<th>Meniscus</th>
<th>Chronic Lombo-sciatica</th>
</tr>
</thead>
<tbody>
<tr>
<td>n°</td>
<td>57</td>
<td>69</td>
<td>79</td>
<td>97</td>
</tr>
<tr>
<td>Number</td>
<td>39874</td>
<td>131</td>
<td>422</td>
<td>381</td>
</tr>
<tr>
<td>Days lost (million)</td>
<td>8.2</td>
<td>0.036</td>
<td>0.084</td>
<td>0.144</td>
</tr>
<tr>
<td>Off work d/case</td>
<td>207</td>
<td>277</td>
<td>198</td>
<td>379</td>
</tr>
<tr>
<td>2006 Figures</td>
<td>+ 25</td>
<td>10</td>
<td>27</td>
<td>9 %</td>
</tr>
<tr>
<td>Off work d/case</td>
<td>166</td>
<td>252</td>
<td>156</td>
<td>349</td>
</tr>
</tbody>
</table>

### 2006 Figures

- Off work d/case: 166, 252, 156, 349
- 9% increase

### Time Trend of Occupational Injuries

- Frequency "index": inj/1000 w
- Workers x 2.1
- Injuries x 0.6
- Mean / 3.5

A total of 35 millions "lost days" a city of 350000 inh where nobody works.
occupational injuries - off work duration

Statistics CNAM-TS

"lumbago"

all occupational injuries (OI)

19,5 d in 1955

10% don't work again

20% don't work again

medical knowledge when no red flags

move

- **clinical observations**, epidemiology of return to activity
  - 5, 2 and 0 day rest

- **imagery, most often (red flags), no information - pain reaction**
  - at age 60, 60% of pain free have "bad" RX

- **sport medicine**, space, animal models, lumbar physiology & biomecanics
  - knowledge of the 80th: muscle/tendon healing, proprioception,
    - early loading limits scar fibrosis; enforce muscle/tendon

- **motor control** muscle coactivities are rapidly less efficient
  - small functional changes but frequent relapses ++

- **psychology** moving makes confident, helps to manage pain
  - leave the pain vicious circle
  - progressive exposure to risk factors

"I will just ask for some tests to be covered by my insurance"

Deyo in spine 1996

**how say "stay active"?**
chronic is more than time

Soreness  Pain  Lumbago  Sciatica  Handicap

acute  chronic

Exclusion
Costs explosion
Treatments less efficient
more complex

other pains
chronic pain syndrome

do work make enough?

no

how to engage companies in a prevention process?
- comprehensible
- possible costs, means, company history
- credible science based
- faisable at their own

bringing more than low back treatment
how engage work?

help to stay active/resume activity: work can (must) help

care

LBP sufferer

worker

occupation

work adaptations

the 2 "crutches" of the LBP sufferer

the truth for many diseases

the crutch - care

stay active or resume activity

more efficient care

first contact, exclude red flags
explain pathology
means to cure
why move

pain killers
follow the patient

make the "stay active"
message credible

at risk of chronicity

at risk of chronicity

absence duration (days)
The crutch - work

A green frame

<table>
<thead>
<tr>
<th>MHandling</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>load (kg)</td>
<td>3</td>
</tr>
<tr>
<td>tonnage (t/d)</td>
<td>100 (4 wheels)</td>
</tr>
<tr>
<td>push - pull load to move (kg)</td>
<td>40 TechAct/min</td>
</tr>
<tr>
<td>repetitive work</td>
<td>HR rest &lt;30 bpm/ 1 h</td>
</tr>
<tr>
<td>heavy work</td>
<td>HR peaks &lt;0,85(220-age)</td>
</tr>
<tr>
<td>posture</td>
<td>&quot;no&quot; bending (&lt;20°)</td>
</tr>
<tr>
<td>WBV</td>
<td>&quot;no&quot; posture (rests)</td>
</tr>
<tr>
<td>falls</td>
<td>&lt; 0,5 m.s² &lt; 1 h / day</td>
</tr>
<tr>
<td>psychosocial</td>
<td>8-21 d &quot;welcome&quot;</td>
</tr>
</tbody>
</table>

Factors of RTW success
- good therapeutic explanations
- connexion care - work
- welcome at work
- confident
- work adaptation, schedule

Why at work?

company efficient group, decision, means to do or to get help
work makes handicap

do it by yourself external expert has not (always) the good
or most adapted or acceptable idea …

workforce health is part of: company social role
economic success
workforce management

RTW is treatment, it must be a collaboration between work and care
is a gold standard of healing success

for the worker, work supports: social and financial life
self confidence
acknowledgment
2 flyers a booklet

<table>
<thead>
<tr>
<th>employers</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;preventors physicians&quot;</td>
</tr>
<tr>
<td>employees</td>
</tr>
</tbody>
</table>

ED 6040

ED 6057

ED 6087

meyer@inrs.fr

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**conclusion**

Work for all. for those with back pain as well.

alf nachemson (clin orthop relat res. 1983, 179, 77-85)

- disc hernia can be a severe clinical form
  - its far to be the only one becoming severe

- efficient prevention needs improvement of working conditions
  - scientific knowledge and standards makes this easier

- the «green frame» is an experimental process proposed to guide companies to build a *socially accepted* early RTW possibility
to help care & rehabilitation for their workers with severe LBP

with good communication, it's not expensive
  - it's just better care

and better prevention through work adaptation for all