In 2009, the department of occupational health (DST) of the French Institute of Public Health Surveillance (Institut de veille sanitaire, InVS) established a nationwide program for the regular production of indicators intended to report health problems related to the workplace environment, working conditions, and exposures, as well as their trends over time. This document, the third in this series, covers musculoskeletal diseases (MSD) of the upper limbs.

These diseases cover a wide range of periarticular conditions affecting the soft tissue (muscles, tendons, nerves, vessels, and cartilage) and are manifested principally by pain and often daily functional discomfort. Their severity is associated with their consequences – both medical, because they frequently become chronic, and occupational, as a source of inability to perform one’s job. MSDs today are one of the most worrisome issues in occupational health, in France as in Europe.

Beyond the individual factors (age, sex, diabetes, etc.), two major types of occupational factors play a role in their onset: biomechanical factors (such as static loads, forceful motions, extreme postures, highly repetitive movements, vibrations, etc.) and psychosocial and organizational constraints (for example, strong psychological demand, low social support, little decision latitude, and pace constraints).

Among MSDs, those of the upper limbs account for the vast majority recognized as occupational diseases by the main private-sector social insurance fund (RGSS). This document, divided into 3 parts – health indicators, indicators of exposure to the principal risk factors, and indicators of compensation – concerns only indicators related to these upper limb diseases. The principal results for each of these three aspects are described below.

**Health indicators**

Overall, both prevalence and incidence rates increase with age, regardless of sex or specific site. The MSDs most frequently diagnosed by occupational physicians are those of the shoulder, followed by carpal tunnel syndrome (CTS) of the wrists, and then MSDs of the elbow.

In 2011, the prevalence rates of upper limb MSDs attributed to work by occupational physicians was 1.8% among men and 1.2% among women. Between 2006 and 2012, we observed a rising trend, due especially to the increase in shoulder MSDs.
The incidence rate of CTS requiring surgery (attributable to work or not) was 3.7‰ among women and 1.6‰ among men, with wide variations between regions. This rate was higher in the regions of the northeast quarter of France, followed by the Atlantic coast regions.

The broad activity sectors most affected by these upper limb MSDs were farming and the industrial sector (manufacturing, mining, and electricity and water distribution) for both sexes, as well as construction for men. Manual workers, skilled or unskilled, were the occupational category most affected by this type of disease.

The existence of upper limb musculoskeletal symptoms and diseases affects occupational outcomes and, especially, early departure from the labor force: compared with asymptomatic workers, those with a diagnosed upper limb MSD are twice as likely to have left the work force several years later and three times more likely to be receiving disability payments.

Regardless of sex, a gradient according to socio-occupational category was observed: unskilled workers, skilled workers, and sales workers were most affected by cumulative exposures, while managers and professionals were less affected.

Predictive factors for shoulder pain or MSD differed according to sex. Among men, these were especially physical factors and low social support from colleagues. Among women, we find physical factors but also organizational constraints and individual factors such as obesity.

Predictive factors for the onset of CTS several years later included overtime work, use of vibrating hand tools, exposure to cold, and low support from their supervisors. For women, predictive factors for CTS were more often organizational in nature.
Indicators of compensation

Upper limb MSDs account for a predominant proportion of the compensated occupational diseases: over the 1997-2012 period, an average of 70% for the RGSS (main social insurance fund) and more than 80% for the agricultural workers’ social insurance fund (MSA).

The number of workers with upper limb MSDs receiving compensation for them multiplied by six between 1997 and 2012 for the RGSS and by three between 1997 and 2010 at the MSA.

Musculoskeletal diseases were also the leading cause of work days lost from sick-leaves; in 2011, nine million work days were lost for these diseases, 84% of the total number of days of temporary disability from occupational diseases.

The proportion of upper limb MSDs among all occupational diseases indemnified by the RGSS was higher for women than men.

Although CTS ranked first in the RGSS compensation data, musculoskeletal diseases of the shoulder took over first place for upper limb MSDs reported in the work-related disease program (WRD) and in the Pays de la Loire MSD surveillance network. Nonetheless in recent years, the compensation data showed greater growth for shoulder MSDs than for those elsewhere in the upper limb. Nonetheless, it should be noted that the recent modification of RGSS Table 57A (concerning the definition of shoulder diseases compensated as occupational diseases) will make it more difficult to monitor this compensation indicator.

Work in building industry

Biomechanical exposure (at least a difficult posture, at least one forceful motion and highly repetitive movements) and exposure to job strain according to age group, 2002-2005

Source: French Musculoskeletal Disorders Surveillance Program – 2002-2005
Data from the Pays de la Loire MSD surveillance network and the WRD surveillance program have enabled us to confirm the scale of CTS under-reporting by estimating its under-reporting as an occupational disease. The CTS under-reporting rate is estimated at 42% for men and 44% for women, while its occupational disease rate is under-reported by 64% for men and 56% for women.

### Conclusion

This document makes it possible to compare the principal epidemiologic indicators available for work-related musculoskeletal diseases: indicators of exposure, health impact, and compensation.

These data are necessary to guide effective prevention programs for musculoskeletal diseases, which require the mobilization of all stake-holders in companies. These include not only members of the committees for health, safety, and working conditions (CHSCT) and the occupational health department, but also company directors, who are legally responsible for these risks (Labor Code, article L4121-1), and supervisors, as well as workers themselves.

### References


### Table 1

<table>
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<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
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<td></td>
<td>% [variation range]</td>
<td>% [variation range]</td>
<td>% [variation range]</td>
</tr>
<tr>
<td>Shoulder MSD</td>
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<td>64 [56-73]</td>
<td>69 [63-74]</td>
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<tr>
<td>Elbow MSD</td>
<td>75 [69-82]</td>
<td>70 [59-79]</td>
<td>73 [67-79]</td>
</tr>
<tr>
<td>CTS</td>
<td>64 [55-72]</td>
<td>56 [47-64]</td>
<td>59 [52-64]</td>
</tr>
</tbody>
</table>

Sources: Surveillance programme of WRD, 2009
Extractions of the general social security scheme and the salaried agricultural workers scheme, 2009

### To learn more


### Key words: musculoskeletal disorders, MSD, work-related disease, WRD, carpal tunnel syndrome, rotator cuff syndrome, epicondylitis

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