

NIOSH MUSCULOSKELETAL HEALTH CROSS-SECTOR PROGRAM (UNITED STATES)

Type of the initiative: Research programme

Timeframe: Ongoing (2016 onwards)

1 Description of the initiative

1.1 Introduction

The National Institute for Occupational Safety and Health (NIOSH) has put in place a major programme targeting the prevention of work-related musculoskeletal disorders (MSDs). The NIOSH Musculoskeletal Health Cross-Sector Program involves a range of partners from industry, labour associations and academia on an agenda that combines research and prevention to act in various sectors.

The programme comprises activities in various areas, such as using surveillance data (including surveys, insurance and workers' compensation data) to identify research needs in relation to underserved worker populations; developing and evaluating cost-effective interventions to prevent work-related MSDs; and sharing new information, risk control technologies and prevention methods tailored to the needs of specific worker and employer populations.

The programme collaborates with the NIOSH Center for Workers' Compensation Studies (CWCS) on identifying industries and occupations with high risk for MSDs and determining effective interventions for reducing those risks.

1.2 Aim of the initiative

The ultimate aim of the programme is to reduce the burden of work-related MSDs through research and by providing support for companies to reduce risks and for practitioners to improve the efficacy of workplace interventions. The specific objectives of the programme are to address risk factors for work-related MSDs through improved assessment methods; develop and evaluate the effectiveness of interventions; use workers' compensation data to better understand risk factors; and disseminate information on effective risk control methods and technologies.

1.3 Organisations involved

The National Institute for Occupational Safety and Health (NIOSH) leads the program, and collaborates with the [NIOSH Center for Workers' Compensation Studies \(CWCS\)](#), the [NIOSH Center for Occupational Robotics Research \(CORR\)](#) and the [NIOSH Center for Direct Reading and Sensor Technologies \(NCDRST\)](#). The programme works with external partners in industry, labour and trade associations, professional organisations and academia.

1.4 What was done and how

NIOSH cross-sector programmes are organised around health outcomes based on the National Occupational Research Agenda (NORA). The NORA is a research framework that prioritises research for NIOSH. Research priorities for the third decade of NORA (2016-2026) target 10 major industrial sectors of the US economy and seven health areas that cross industrial sectors, including musculoskeletal health. Separate NORA councils

on these 17 issues, bringing together representatives from US universities, businesses, professional societies, workers' organisations and government agencies, develop the updated national research agendas.

The NIOSH Musculoskeletal Health Cross-sector Program implements measures in a range of different sectors. Intermediate goals define actions that are specific to certain sectors and that are seen as high priority in those sectors.

Sectors with intermediate goals include agriculture, forestry and fishing; construction; manufacturing; mining; services; and wholesale and retail trade. Each intermediate goal is described through health outcomes, research focus, the worker population and research type. Burdens and needs specific to the sector are highlighted.

For example, the intermediate goal concerning MSDs and emerging technologies has been applied to three sectors (construction, manufacturing, and wholesale and retail trade). A set of activity goals that are specific to the emerging technologies in each of those sectors is defined.

In the wholesale and retail trade sector, activity goals included conducting research to better understand the connection between emerging technologies and MSDs in the wholesale and retail sector and conducting intervention studies to look at the effectiveness of interventions that used emerging technologies to reduce MSDs in the sector.

The NIOSH Musculoskeletal Health Cross-sector Program has a special focus on worker populations at disproportionate risk, including older workers, immigrant workers, workers from ethnic minorities, and low-wage workers. It gives particular consideration to their needs when developing intervention strategies for MSDs, as they represent a growing percentage of the US workforce.

Examples of projects accomplished include:

- Publishing and promoting the revised NIOSH lifting equation calculator (NLE Calc) mobile app for determining safe manual lifting. It has been downloaded almost 8,000 times in its first 6 months. The revised NIOSH lifting equation (RNLE) is the most popular and widely used publicly available resource ever created by the Musculoskeletal Health Cross-sector Program. Ergonomists, health and safety practitioners, and workers all over the world consider the NIOSH RNLE to be the international standard lifting equation for single, variable, and sequential tasks.
- Administering a survey to an international group of certified professional ergonomists to identify the most commonly used risk assessment methods for work-related MSDs.
- Conducting several studies on the transmission of vibration to the hands of workers in mining and manufacturing industries while using vibration-reducing gloves.
- Developing the ErgoMine software, an ergonomics audit tool for the mining industry, which makes recommendations for improvements.
- Organising webinar series on musculoskeletal health-related topics

1.5 What was achieved

NIOSH is strongly committed to programme evaluation and carries out regular reviews of programme activities, outputs and outcomes to monitor programme performance. Program Performance One-Pagers (PPOPs) are a snapshot of NIOSH programmes' priorities, strategies for achieving priority goals, recent accomplishments, and upcoming work, published yearly. Impact Sheets briefly describe a specific NIOSH or NIOSH-funded research project, the resulting impact or recommendations and relevant statistics.

According to the 2018 PPOP on the NIOSH Musculoskeletal Health Cross-sector Program, data from the US Bureau of Labor Statistics shows a decrease in the number of lost working days due to MSDs, from 37.8 days per 10,000 workers in 2012 to 29.4 days in 2016 (all sectors) (1). The 2019 PPOP also refers to data from the US Bureau of Labor Statistics, which show a decrease in the number of lost working days due to MSDs for nursing assistants and manual material handlers from 226 days in 2012 to 166 days in 2017 and from 164 days in 2012 to 118 days in 2017 per 10,000 workers, respectively.

(1) NIOSH, 2018, Musculoskeletal Health Program (authors Lu M, Ramsey J, McDowell T, Reeves K, and Novicki E), Publication 2018-171, Department of Health and Human Services, Center for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH), Atlanta, GA. DOI: <https://doi.org/10.26616/NIOSH/PUB2018171>

1.6 Success factors and challenges

The cross-sectoral approach of this major programme has meant that interventions can be designed that are measured and adapted to the individual needs of different sectors, while also retaining the bigger picture perspective that allows connections to be made between the problems faced in relation to MSDs by different sectors. Drawing links between challenges can encourage the exchange of ideas for preventing and managing MSDs between sectors.

In addition, the multi-stakeholder approach gives the programme's objectives and actions further reach and is an important factor in the success of the programme.

1.7 Transferability

The structure of the NIOSH programme that takes a cross-sectoral approach to MSD prevention and research could be used by other countries. This approach sees the goals to be achieved as cross-sectoral, but it also takes account of the individual specificities of each sector in the overall goal.

The RNLE is considered to be the international standard lifting equation for single, variable and sequential tasks. Several European countries, such as Germany, Spain and Italy, have used the NIOSH RNLE to develop their own lifting policies for manual handling tasks.

2 Background

According to the results of the National Health Interview Survey Occupational Health Supplement (NHIS-OHS), 2015, almost 12 million individuals in the United States had frequent, severe low back pain and, of these, over 8 million attributed it to their work. Similarly, the same survey identified almost 9 million individuals who had ever had carpal tunnel syndrome (a common upper limb disorder) and, of the nearly 4 million with current carpal tunnel syndrome over half (~2.5 million) regarded it as attributable to their work). The figures for these two conditions alone give some indication of the scale of the problem in the United States.

There are no specific US federal laws relating to ergonomics hazards in the workplace. Instead, the enforcing authorities rely on the General Duty Clause of the Occupational Safety and Health Act of 1970. Section 5(a)(1) of the Act requires employers to keep workplaces 'free from recognized hazards that are causing or are likely to cause death or serious physical harm' to employees, which is essentially comparable to the provisions of the Framework Directive. However, the Occupational Safety and Health Administration has published a variety of detailed ergonomics guidelines covering physical hazards in wide range of different types of industry from foundries to nursing homes.

References and resources

- (1) NIOSH Musculoskeletal Health Cross-Sector Program: <https://www.cdc.gov/niosh/programs/msd/>
- (2) NIOSH lifting equation app, NLE Calc: <https://www.cdc.gov/niosh/topics/ergonomics/nlecalc.html>

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