Surveillance of musculoskeletal disorders and risk factors in orchestral musicians

Tim Driscoll¹, Bronwen Ackermann¹, and Gary Galbraith²

¹ Sydney Medical School, University of Sydney, Australia
² Dancer Wellness Project, USA

A surveillance system for musculoskeletal injury and associated possible risk factors in orchestral musicians in Australia was developed as part of the Sound Practice Project. Participants were members of any of the eight main professional orchestras in Australia. Three approaches to surveillance were developed: one paper-based and two web-based. All three essentially asked the same questions. The second web-based system has addressed some of the issues with the earlier two systems and allows regular individual feedback to the participants in order to encourage ongoing participation.

Keywords: surveillance; orchestra; musculoskeletal; injury; epidemiology

Professional orchestral musicians perform at the elite level, placing high physical demands on their bodies. However, there is a lack of prospective longitudinal data on the incidence of musculoskeletal injury and associated risk factors. This limits the ability to reliably identify priority risk factors to address in injury prevention strategies for this population. The Sound Practice Project is a longitudinal study of the eight main professional orchestras in Australia. The project investigates the health of musicians and trials various health-focused programs and interventions.

In Australia and elsewhere there is little or no systematic collection of data on injury or on exposure to potentially important injury risk factors. One arm of the Sound Practice Project (Ackermann et al. 2012, Driscoll and Ackermann 2012, Kenny et al. 2012) was to attempt to establish a surveillance system to collect prospective information on exposure to potential risk factors and on the occurrence of musculoskeletal disorders.
The aim of this article is to provide an overview of experiences in developing a surveillance system for musculoskeletal injury and associated possible risk factors in orchestral musicians in Australia.

METHOD

Participants

Participants were members of the eight main professional orchestras in Australia. They participated for varying lengths of time and in one or more of the three approaches used (see below).

Materials

Three approaches to surveillance were developed: one paper-based and two web-based. All three essentially asked the same questions.

The data collection instrument covers data on exposure (playing and non-playing activities), psychological parameters, and on relevant outcomes (pain and injury). In terms of playing, separate information is collected on rehearsal and performance. This is collected separately for orchestral music, chamber music, popular/commercial/cross-over playing for the orchestra, solo performance, and playing in non-orchestra situations. Information on personal practice and on non-playing workload (such as teaching) is also collected. There is a single question on overall level of exertion and four questions on mental health. The pain/injury questions relate to the site of pain/injury, various characteristics of the pain, and to the pain/injury’s perceived relationship to, and interference with, playing.

RESULTS

The paper-based system was implemented with the intention of musicians completing the two-page form on a regular basis before or after scheduled rehearsals. Based on discussions with orchestra management and musicians, it was expected this would maximize participation. However, the trial implementation identified several important issues, including allocating time for the form completion around the orchestra rehearsal schedule, balancing the frequency of data collection with the proportion of musicians who completed the forms, the level of detail of information collected, the areas covered by the data collection; the format of the form, and the musicians’ perceptions of the usefulness of the information collected.

A majority of musicians subsequently requested a web-based system, with varying opinions as to how frequently the data needed to be entered (weekly,
fortnightly, or four-weekly). The first web-based system allowed the musician to choose the frequency of data entry. Uptake was better with the original web-based system (the paper-based system was continued for those who wanted it) but still low. The main issues identified were difficulties maintaining regular email contact (due to changing email addresses and firewall issues), developing a workable system of reminders, making the entry of data on anatomical site and symptoms simple, and maintaining interest among the musicians. The key area of improvements were determined to be the need for automatic regular feedback to musicians regarding the data they had entered previously and the ability to extract data easily for analysis purposes. A new surveillance system, developed in cooperation with the Dancer Wellness Project, which has an operating model for dance, has been developed. This new version of the online system allows the participant to click on a picture to identify the area of injury, initially broadly and then more specifically. The online data collection is menu-driven as much as possible, but the system does allow text entry in some areas. It incorporates regular reminders and provides feedback to allow the individual to compare their exposure data with others who play the same instrument and overall. This system is being trialed in 2013. Initial results from this trial, and the lessons learned from this and previous approaches will be presented.

**DISCUSSION**

Useful surveillance is difficult to establish and maintain; must be developed taking particular account of the needs, interests, and attitudes of musicians; and is probably most likely to be effective with inclusion of regular and timely feedback to participants of their own results and the broader findings of the surveillance program.

**Acknowledgments**

This project was supported as part of an ongoing five-year occupational health study of Australian Orchestras funded by the Australia Research Council Linkage Grant Scheme (grant number: LP0989486), the Australia Council for the Arts, and in-kind support from the Sydney Symphony Orchestra, Melbourne Symphony Orchestra, Adelaide Symphony Orchestra, Queensland Symphony Orchestra, West Australian Symphony Orchestra, Tasmanian Symphony Orchestra, Australian Opera and Ballet Orchestra, and Orchestra Victoria.
Address for correspondence

Tim Driscoll, Sydney School of Public Health, University of Sydney, New South Wales 2006, Australia; Email: tim.driscoll@sydney.edu.au

References

