

**Introduction** Occupational exposure to animals and food of animal origin is a poorly characterized risk factor for salmonellosis and campylobacteriosis, the main causes of bacterial gastroenteritis in the Western world.

**Objectives** We performed a population-based registry study in The Netherlands to assess whether differences exist in the incidence of reported salmonellosis and campylobacteriosis cases among occupational groups, and whether these differences are reflected in the magnitude of exposure to these pathogens using serological data.

**Methods** Person-level occupational data for all Dutch residents during 1999–2016 were linked to lab-confirmed salmonellosis and campylobacteriosis data and to serological data from a national sero-survey. Standardized incidence ratios (SIRs) for salmonellosis and campylobacteriosis among occupational sectors and specific high-risk occupations were calculated based on the total employed population. Moreover, Salmonella and Campylobacter sero-incidence rates were compared among sectors and high-risk occupations.

**Results** Occupational exposure to live animals or manure and working in the sale of animal-derived food products were associated with significantly increased risks of salmonellosis (SIR 1.55 to 1.82) and campylobacteriosis (SIR 1.36 to 1.65). Moreover, incidences were significantly higher in specific industrial sectors, as well as healthcare and social work sectors. Mean sero-incidence rates ranged from 1.28 to 2.30 infections/person-year for Campylobacter, and 0.36 to 0.99 for Salmonella; with only slightly higher rates for people in high-risk occupations.

**Conclusion** Significant differences in reported salmonellosis and campylobacteriosis incidence exist among occupational sectors, with the highest incidence in those persons occupationally exposed to live animals. These differences are only partially reflected in the serology.

#### RF-149 MUSIC PROFESSORS: AMBASSADORS FOR THE PREVENTION OF HEARING LOSS IN MUSICIANS

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**Introduction** Several studies document the occurrence of hearing problems in musicians due to the constant exposure of loud sounds during activities such as group rehearsals, music performances and individual practices. Most of them reveal that many musicians are unaware of the risks faced in making music and are resistant to preventive actions. However, it seems reasonable to reverse this context based on the development of preventive actions during the graduation time of this public.

**Objectives** To suggest a protocol of educational actions regarding hearing health with professors from higher education institutions in music.

**Methods** The elaboration of the protocol of educational actions in hearing health was based on active learning and problematizing methodologies, to happen through activities developed in the academic environment.

**Results** The protocol was developed to be applied in six modules, with of 1 h 30 min each, and contemplates the following topics (1) notions of anatomy-physiology of hearing, effects of high sound intensity, control measures and means of prevention of hearing loss; (2) acoustic characteristics of the

work environment and workload in practical music classes and/or supervising internships (3) workshops towards the use of sound pressure level measurement apps and hearing screening apps; (4) composition and recording of jingles and podcasts related to the risks of exposure to high intensity music to play for music students.

**Conclusion** The development of the activities planned in the protocol can lead professors to incorporate the concepts and attitudes related to hearing health, to act as promotion agents to positively influence new generations of musicians with regard to that matter. The results must be continuously evaluated to identify the weaknesses and potential of the protocol.

## Symposia

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#### S-55 NOVEL MECHANISMS UNDERLYING THE CARCINOGENICITY OF NIGHT SHIFT WORK

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**Objectives** Understanding the mechanisms by which an exposure causes cancer can be critical to establishing causality and to developing successful prevention/intervention strategies. Multiple mechanisms underlying the carcinogenicity of night shift work have been proposed, including several novel ones in recent years, though specific mechanistic links remain uncertain.

**Methods** Novel mechanisms for the carcinogenicity of night shift work will be reviewed. In the context of these mechanisms, the methodologic limitations that continue to plague human mechanistic studies of night shift work will also be discussed.

**Results** Multiple animal studies and some human mechanistic studies have pointed to suppressed DNA damage repair, epigenetic impacts and gut dysbiosis as novel mechanisms by which night shift work may cause cancer. Human mechanistic studies continue to suffer from multiple limitations such as small sample sizes, poorly defined shift schedules, inappropriate timing of biospecimen collection relative to conduct of night shift work and inadequate consideration of diurnal variation in biomarker measures.

**Conclusions** While there is compelling evidence for multiple novel mechanisms underlying the potential carcinogenicity of night shift work, additional high quality human mechanistic studies are needed to establish the relevance of these mechanisms.

#### S-58 MIXED EXPOSURES TO CLEANING AND DISINFECTING CHEMICALS IN HEALTHCARE OCCUPATIONS

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**Introduction** Certain cleaning and disinfecting products are used extensively in healthcare and associated with asthma and