Taking care of hospital physicians: Development and implementation of a job-specific workers' health surveillance
Ruitenburg, Martijn

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: http://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.
CHAPTER 5

Feasibility and acceptability of a workers’ health surveillance program for hospital physicians

Ruitenburg MM, Plat MJ, Frings-Dresen MH, Sluiter JK
International Journal of Occupational Medicine and Environmental Health
2015; 28(4):731-739
CHAPTER 5

Abstract

Objectives
A Workers’ Health Surveillance (WHS) program is an occupational health strategy used to detect and address the health of individual workers to improve their ability to work. This study aims to investigate the feasibility and acceptability of a new job-specific WHS for hospital physicians.

Material and Methods
All hospital physicians of the general surgery, radiotherapy and obstetrics and gynaecology departments from 1 academic hospital were invited to participate in the WHS by the in-company occupational health service. An occupational physician and a medical assistant were trained to use the protocol. Feasibility was operationalized as the received and delivered dose, observed success factors and potential obstacles. Acceptability was assessed by asking whether the WHS was desirable and feasible for future use and by estimating the effects on health and workability. Written questions and semi-structured interviews were conducted with the participating physicians, 5 department managers and the 2 occupational health professionals involved in the study.

Results
One-third of the hospital physicians (34%) participated in every part of the WHS. The delivered dose was 77/84 (92%). Almost all hospital physicians who received recommendations expected to adhere to this advice. The study participants appreciated the organization of the WHS. This WHS was positively graded (8 out of 10 max) in terms of acceptability. Positive effects of the WHS on health, work functioning and long-term workability were perceived by 2/3 of the physicians.

Conclusions
The new job-specific WHS for hospital physicians showed good feasibility and acceptability among participating hospital physicians, occupational health professionals and medical managers.
Hospital physicians are exposed to high physical and psychological work demands that can lead to adverse health effects. For example, they have to adopt and maintain working postures that are perceived as uncomfortable and exhausting\(^1\), are confronted with high emotional peak demands\(^3\), and work long hours with little job control\(^4\),\(^5\). Common adverse health effects associated with these job demands include neck, lower back and arm complaints\(^2\),\(^6\),\(^7\). Additionally, symptoms of stress, burnout and depression are also present in a considerable proportion of hospital physicians\(^8\). The reduced health status of a hospital physician can negatively impact the quality of his work and threaten patient safety\(^9\). The presence of psychological health complaints is associated with an increased risk of making errors\(^4\),\(^10\) and reduced quality of patient interactions\(^11\). In addition, the presence of physical and psychological health complaints is associated with reduced workability\(^8\), which might lead to long-term sickness absence\(^12\). To maintain good health and good workability, health surveillance can be used as a preventive measure to reduce the number of health complaints. Health surveillance is an occupational health strategy used to detect, signal and guide diminished health or workability in employees with the goal of preventing work-related diseases and injuries\(^13\).

A job-specific worker's health surveillance (WHS) for hospital physicians can be used to monitor the work-related health status of physicians and to intervene accordingly to ensure optimal health of hospital physicians and to safeguard patient safety. Based on a thorough investigation of all work-related factors that may affect the health of hospital physicians as suggested by the International Labour Organization (ILO)\(^13\), a job-specific WHS for Dutch hospital physicians was developed\(^14\). This WHS contains written screening questions, a physical examination and a consult with an occupational physician. The consult includes feedback on the individual outcomes, additional information and advice or an offer of a targeted intervention. The goals of this periodic preventive medical examination are to detect and prevent work-related health complaints in early stages and to improve workability of hospital physicians\(^13\),\(^15\). The content of this WHS is shown in the Appendix at the end of the article.

A feasibility study is recommended before an intervention can be tested for both efficacy and effectiveness\(^16\). This feasibility study focuses on potential program failure rather than theory failure and produces a set of findings that help determine whether the job-specific WHS for hospital physicians can be implemented in practice. In addition, acceptability, which refers to the opinion of stakeholders with regard to this new strategy, should be investigated\(^17\). The aim of the present study was to investigate the feasibility and acceptability of a job specific WHS for hospital physicians.

**Material and methods**

The feasibility study was performed in an academic hospital in The Netherlands. The study consisted of a pilot implementation of the job specific WHS for hospital physicians followed by a process evaluation. All physicians were employees of the hospital.
Participants
Several stakeholders were involved in performing the feasibility study:
- 93 hospital physicians of 3 different medical specialties,
- 5 managers of the surveyed medical specialties,
- 1 occupational physician,
- 1 occupational physician’s assistant.

In this manuscript, the term ‘participants’ refers to the hospital physicians of 3 medical specialties, who participated in the WHS procedure. In addition, the physicians also comprise 1 of the groups of stakeholders that evaluated the WHS as a part of the feasibility study. The 3 medical specialties that voluntarily participated in this study were general surgery, radiotherapy and obstetrics and gynaecology. The pilot implementation consisted of inviting participants with the goal of applying the WHS to approximately 20–40 participants, as per Bowen et al. (2009).

Procedure
After the head of the board of the academic hospital, the physician’s board, the workers council, the head of the occupational health service and the medical ethical committee approved the study, the researchers and the managers from each medical specialty separately identified the best means of communication. The eligible physicians (N = 93) received emails and general letters in their individual mailboxes with information about the feasibility study and an informed consent form.

The WHS was organised and executed by the in-house occupational health service (OHS) located in the academic hospital. Beforehand, the researchers, the occupational physician and the occupational physician’s assistant identified the optimal way to organise the pilot implementation in the hospital. After establishing the organisation of the pilot implementation, an expert in occupational medicine and the project leader (JS) educated the occupational physician about the protocol and the tasks that he would be responsible for, following the educational strategy proposed by Grol and Wensing (2006), which consists of using case examples. Two researchers (MMR and MJP) taught the physician’s assistant how to obtain informed consent and how to perform the physical examination according to the instructions in the test protocol. The participating hospital physicians completed written questionnaires about their health. Additionally, the physicians underwent medical examinations to check their vision and hearing and to obtain measures of cardiovascular risk factors. Finally, the occupational physician gave each participating physician a consultation to provide personalised feedback and guidance. This advice could have been a suggestion to adjust one’s lifestyle or a referral to another provider to perform additional examinations or therapy. This guidance could have also been directed to the organisational level, such as the advice to take individual preventive measures at the workplace or in the organisation of one’s work. A written form with these recommendations was given to the participants. The occupational physician kept an individual record of each participant that included the individual results and the recommendations that were provided.
Process evaluation
A process evaluation of the WHS took place with all involved stakeholders to investigate the feasibility and acceptability of the WHS. After completing the WHS, the hospital physicians received a written evaluation form. Hospital physicians who decided not to participate in our study had the opportunity to provide their reasons for non-participation on the informed consent form. Semi-structured interviews were held with the occupational physician and his assistant, as well as with the managers of each of the medical specialties that participated in the study. These interviews were held to obtain information regarding the feasibility and acceptability of the job specific WHS for hospital physicians.

Feasibility was defined as the extent to which the job-specific WHS for hospital physicians was implemented as planned and proposed. Feasibility was tested by identifying the received and delivered dose and success factors and potential obstacles. The received dose was operationalised by the number of participants who completed the questionnaire and underwent the medical examination and by the number of participants who visited the occupational physician. To obtain the received dose the ratio between these numbers was calculated. The delivered dose was operationalised as the number of actual interventions that were recommended relative to the number of interventions that could have been recommended based on the individual outcomes. The delivered dose was measured from the records kept by the occupational physician. As another aspect of the delivered dose, the occupational physician and his assistant were asked to what extent they adhered to the protocol. Information regarding the 2nd concept was obtained from the interviews with all the actors involved, the written evaluation forms and the informed consent of hospital physicians who did not participate in the WHS. For both aspects of the delivered dose the ratios between the 2 numbers were calculated. Regarding the success factors and potential obstacles, a descriptive analysis was performed using the semi-structured interviews and the written evaluations.

To assess acceptability, we asked whether a future WHS was considered desirable and feasible by the stakeholders involved in the feasibility study. The hospital physicians answered 3 questions with yes or no responses about their expectations of whether the WHS was able to positively affect their general health, their work functioning and their long-term work ability. In addition, they were asked about their appreciation of the current WHS, their appreciation of being offered a WHS in the future (both rated on an 11-point Likert scale from 0 to 10, with 0 meaning “no appreciation at all” and 10 meaning “very much appreciation”) and whether they intended to participate in a future WHS. The managers of the medical specialties, the occupational physician and the occupational physician’s assistant answered questions about their satisfaction with the WHS and their intentions to participate in and/or facilitate a future WHS. For questions with a yes/no response, the relative frequencies (%) were calculated. A mean value was calculated for items that were scored on an 11-point scale (score: 0–10). In addition, these items were dichotomised, using a cut off score of ≤ 5, according to the Dutch scholar system, to calculate the relative frequency of insufficient scores.
Results

Participants
Three medical specialties participated in the study: general surgery, radiotherapy and obstetrics and gynaecology. A total of 93 hospital physicians were invited, of whom 50 (54%) responded and 35 (38%) agreed to participate. In the end, 32 (34%) hospital physicians completed the WHS, and 30 completed the written evaluation. Therefore, the desired and required number of 20–40 participants was obtained. Table 1 provides an overview of the participants.

<table>
<thead>
<tr>
<th>Specialty of respondents</th>
<th>general surgery</th>
<th>radiotherapy</th>
<th>gynaecology and obstetrics</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Invited to study</td>
<td>22</td>
<td>21</td>
<td>50</td>
<td>93</td>
</tr>
<tr>
<td>Those who completed the WHS</td>
<td>10 (45)</td>
<td>8 (38)</td>
<td>14 (28)</td>
<td>32 (34)</td>
</tr>
<tr>
<td>Sex</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Male</td>
<td>8 (80)</td>
<td>2 (25)</td>
<td>4 (29)</td>
<td>14 (44)</td>
</tr>
<tr>
<td>Female</td>
<td>2 (20)</td>
<td>6 (75)</td>
<td>10 (71)</td>
<td>18 (56)</td>
</tr>
<tr>
<td>Occupation</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>Medical doctor</td>
<td>9 (90)</td>
<td>6 (75)</td>
<td>10 (71)</td>
<td>25 (78)</td>
</tr>
<tr>
<td>Medical resident</td>
<td>1 (10)</td>
<td>2 (25)</td>
<td>4 (29)</td>
<td>7 (22)</td>
</tr>
<tr>
<td>Mean Age (years)</td>
<td>46.3 (SD = 8.6)</td>
<td>43.6 (SD = 10.8)</td>
<td>40.7 (SD = 9.4)</td>
<td>43.2 (SD = 9.5)</td>
</tr>
</tbody>
</table>

WHS – Workers’ Health Surveillance (WHS) program
SD – standard deviation

Process evaluation
With respect to the received dose, 91% (N = 32/35) of the hospital physicians completed the questionnaire and underwent the medical tests. All of these hospital physicians (100%, N = 32/32) visited the occupational physician and received personal feedback based on their results. The delivered dose was 77/84 (92%). In total, the occupational physician did not recommend a suggested intervention 7 out of 84 times. However, an additional recommendation was provided 22 times based on the consult. Examples included educational recommendations about lifestyle and tips and tricks.
to prevent needle stick injuries. The total time for each participant to follow the whole procedure was approximately 60 minutes.

The perceived benefits of participating in the WHS were considered to be a factor of success. With respect to reasons for participating (or not) in the WHS and the procedure of the WHS, between 2 and 10 hospital physicians mentioned the following items:
- preventing work-related health complaints and having a check up on their general health were important reasons for participating,
- they doubted the effectiveness of the WHS and were anxious that the WHS would contribute to the medicalization of apparently healthy hospital physicians,
- they appreciated the brief and clear communication of the occupational physician’s assistant,
- most items of both the questionnaire and the medical examinations were clear, although a few were unclear.

Almost all hospital physicians who received recommendations for interventions (N = 22/23) felt that they would adhere to this intervention to improve their health.

The occupational physician and the assistant mentioned that the successful results were the result of offering flexible testing and consulting times for the participating physicians. They also stated that the proximity of the occupational health service to the hospital physicians was a success factor. The clear and regular communication between the occupational physician and the assistant was also mentioned as a success. An obstacle was the workload of the physician’s assistant. Both the occupational physician and the assistant were satisfied (score 9 on a scale from 0 to 10) with the instructions and the documents they received prior to the WHS. During the WHS, they adjusted the protocol slightly to fit their individual working preferences.

The medical directors were satisfied with the organisation of the WHS. They thought the WHS was well-prepared and that the communication to the hospital physicians was brief and clear. They perceived the WHS to be efficient and appreciated the flexibility of the occupational health service with respect to making appointments.

Most hospital physicians believed that participating in this WHS would positively affect their general health (N = 24/29), work functioning (N = 20/29) and long term work ability (N = 22/29). They appreciated the current WHS, with a mean score of 8 (range: 6–10). Overall, the ability to participate in this WHS in the future was appreciated, with a mean score of 8 (range: 3–10), although 3 hospital physicians did not appreciate this. Almost all hospital physicians (N = 28/30) indicated that they would participate in a WHS when offered in the future. One third of the hospital physicians (38%) preferred to receive recommendations for interventions from the occupational physician, and almost 1/2 (48%) of the physicians preferred online recommendations. Almost all hospital physicians (N = 29/30) were satisfied with the brief and clear communication prior to the WHS. The occupational physician indicated that he would like to continue offering the WHS in the future because he believed that the WHS meets the needs of hospital
physicians. He stressed the importance of a clear internal consensus within the occupational health service about tasks and duties. Both the occupational physician and his assistant suggested offering an online questionnaire. In addition, an online record of results and advised interventions for each hospital physician was recommended to reduce paperwork.

The medical directors of surgery, radiotherapy and obstetrics and gynaecology were satisfied with the brief and clear communication prior to the WHS. They also appreciated the proximity and flexibility of the occupational health service. All medical directors were dubious about offering this WHS in the near future because of the unknown long-term effectiveness of the WHS on work-related health and the work-ability of hospital physicians. The medical directors suggested maintaining the organisation of the current WHS when offering the WHS in the future. They supported the suggestion to offer an online questionnaire to the participants. To optimise the WHS, they suggested stressing that participation is voluntarily and regularly and repeatedly informing hospital physicians about the option to participate in the WHS.

Discussion

In this study, a new job-specific WHS for hospital physicians was found to be feasible and acceptable. In general, this WHS was well received by all stakeholders involved. The communication from and organisation of the in-house OHS were appreciated. Hospital physicians who received a recommendation expected to adhere to this advice and believed that one’s health and workability could be improved by following this advice.

An essential aspect to consider is the desire of the target group of hospital physicians to participate in a WHS. In this study, 1/3 of the invited hospital physicians participated in and completed the WHS, a relatively high number compared to other similar implementation studies. Two-thirds of the hospital physicians anticipated that the WHS would be able to positively affect their general health, work functioning or long term ability to work, suggesting that these perceived benefits were, for most hospital physicians, the main reason to participate. In the future, when implementing the new job specific WHS for physicians in other hospitals, these perceived benefits to the physicians should be emphasised to increase the received dose.

One challenge in implementing a new WHS protocol for occupational health (OH) professionals is that if participants do not embrace medical tests and recommendations, the theoretical maximal effect will never be achieved. The protocol for administering the WHS in this study was described in detail. However, earlier WHS studies in other health care occupations also provided exact descriptions of signals to look for, criteria to use, relevant choices for recommendations and topics to discuss with workers, but these descriptions were not sufficient to effectively guide the OH professionals. Because the current job-specific WHS was executed by in-house occupational health professionals, we educated them about the suggested WHS protocol before the implementation phase. Before the study, it was emphasised that this was an important test of
their ability to follow the protocol. The results of the delivered dose, which reflects the number of interventions that were recommended based on each individual’s results, revealed that the occupational health professionals in this study were able to adhere well to the protocol. This is an important finding because the theoretical effect of adhering to the WHS should be maximal to demonstrate the potential effect on worker outcomes.

All stakeholders were satisfied with the communication and organisation of the WHS, which increases the likelihood of future implementation of the WHS. With the exception of offering an online questionnaire, the OH professionals and medical managers suggested maintaining the current organisation of the WHS. An online questionnaire would also decrease the workload of the physician’s assistant, because it would reduce the amount of time she spent on administrative tasks. Consultation with all stakeholders about the organisation of the WHS prior to implementation most likely was the main contributor to positive acceptance of the WHS, reinforcing the results of implementation studies that stress the importance of understanding the perspectives of different stakeholders, especially medical managers, who will influence the feasibility and acceptability of an intervention. Information about the optimal means of communicating and organising a WHS for physicians should be obtained from medical managers and supervisors.

Physicians can be reluctant to seek access to healthcare services and try to avoid discussing their health with the occupational physician or their general practitioner. As observed in this study, they might have doubts about the effectiveness of a WHS or fear medicalization. Strategies for prevention, promotion of health and early identification of diseases among physicians are often lacking in European countries. However, this study revealed that the new job-specific WHS for hospital physicians is a feasible and acceptable occupational health strategy for early detection of work-related health complaints among hospital physicians. One might argue that the effectiveness of the job-specific WHS in reducing work-related health complaints and increasing the ability to work must be tested, but we believe, in line with Bowen et al. (2009), that for an intervention to be worthy of testing for efficacy, it should first be deemed feasible and acceptable.

**Conclusions**

As we have demonstrated feasibility and acceptability, we recommend that the WHS be implemented as an occupational health strategy with the aim of reducing work-related health complaints and improving the workability of hospital physicians. Future evaluations will be needed to demonstrate these effects.
References

14. Ruitenburg MM, Plat MJ, Frings-Dresen MHW, Sluiter JK. Healthy working for medical doctors and medical residents: development and pilot-implementation of a WHS (in Dutch: Gezond blijven werken voor medisch specialisten (in opleiding); ontwikkeling en pilot-implementatie van een PMO); Amsterdam: Coronel Instituut voor Arbeid en Gezondheid, AMC, (Coronel rapportnummer; 12-01; 2012).


Appendix

Overview of the concepts of the job-specific Workers’ Health Surveillance for hospital physicians and the way they were addressed

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health effects</strong></td>
<td></td>
</tr>
<tr>
<td>physical health effects</td>
<td></td>
</tr>
<tr>
<td>musculoskeletal complaints and perceived work-related restrictions in neck, shoulder, back and hand/wrist region</td>
<td>written questions (yes/no)</td>
</tr>
<tr>
<td>psychological health effects</td>
<td></td>
</tr>
<tr>
<td>posttraumatic stress complaints</td>
<td>Impact of Events Scale(^{(26)})</td>
</tr>
<tr>
<td>psychological health complaints</td>
<td>Brief Symptom Inventory (BSI)(^{(27)}) scale depression and anxiety</td>
</tr>
<tr>
<td><strong>Health requirements</strong></td>
<td></td>
</tr>
<tr>
<td>recent exposure to</td>
<td></td>
</tr>
<tr>
<td>aggression and violence in work by (family of) patients and colleagues</td>
<td>written questions (yes/no)</td>
</tr>
<tr>
<td>traumatic experiences</td>
<td>written question (yes/no)</td>
</tr>
<tr>
<td>stick- or needle injuries</td>
<td>written question (yes/no)</td>
</tr>
<tr>
<td>infections</td>
<td>written question (yes/no)</td>
</tr>
<tr>
<td>exposure of airways / lungs to dust, smoke, gas or vapour</td>
<td>written question (yes/no)</td>
</tr>
<tr>
<td>exposure of the skin to solid and liquid substances</td>
<td>written question (yes/no)</td>
</tr>
<tr>
<td><strong>Wakefulness</strong></td>
<td></td>
</tr>
<tr>
<td>drug use</td>
<td>written questions</td>
</tr>
<tr>
<td>alcohol use</td>
<td>AUDIT-C(^{(28)})</td>
</tr>
<tr>
<td>work-related fatigue</td>
<td>QEEW scale work related fatigue(^{(29)})</td>
</tr>
<tr>
<td>sleepiness</td>
<td>Epworth Sleepiness Scale(^{(30)})</td>
</tr>
<tr>
<td>sight in relation to function</td>
<td>written question (yes/no) + Landolt-C ring test</td>
</tr>
<tr>
<td>hearing in relation to function</td>
<td>written question + whisper test</td>
</tr>
<tr>
<td><strong>Work ability</strong></td>
<td></td>
</tr>
<tr>
<td>general current work ability (scale 0–10)</td>
<td>written question</td>
</tr>
<tr>
<td>self-reported other work-related health complaints</td>
<td>written question</td>
</tr>
<tr>
<td><strong>Risk factors cardiovascular diseases (CVD)</strong></td>
<td></td>
</tr>
<tr>
<td>smoking / family history CVD / diabetics</td>
<td>written question (yes/no)</td>
</tr>
<tr>
<td>body mass index / blood pressure / waist circumference</td>
<td>biometric examination</td>
</tr>
</tbody>
</table>