

# FEASIBILITY AND ACCEPTABILITY OF A WORKER'S HEALTH SURVEILLANCE PROGRAM FOR HOSPITAL PHYSICIANS

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## 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 gynecology 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 work ability. 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 work ability 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.

## Key words:

Feasibility, Hospital physicians, Worker's Health Surveillance, Acceptability, Work ability

## INTRODUCTION

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 [1,2], 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, burn-out 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

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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 work ability [8], which might lead to long-term sickness absence [12]. To maintain good health and good work ability, 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 work ability 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 Labor 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 work ability of hospital physicians [13,15]. The content of this WHS is shown in 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 gynecology. 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) [16].

### 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 organized 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 organize the pilot implementation in the hospital. After establishing the organization 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) [18], 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 personalized 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 organizational level, such as the advice to take individual preventive measures at the workplace or in the organization 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 operationalized 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 operationalized 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 dichotomized,

using a cut off score of  $\leq 5$ , 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 gynecology. A total of 93 hospital physicians were invited, of whom 50 (54%) responded and 35 (38%) agreed to participate. Finally, 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.

### 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

**Table 1.** Overview of participating hospital physicians according to specialty

Parameter	Specialty of respondents			
	general surgery	radiotherapy	gynecology and obstetrics	total
Respondents				
invited to study [n]	22	21	50	93
those who completed the WHS [n (%)]	10 (45.0)	8 (38.0)	14 (28.0)	32 (34.0)
Sex [n (%)]				
male	8 (80.0)	2 (25.0)	4 (29.0)	14 (44.0)
female	2 (20.0)	6 (75.0)	10 (71.0)	18 (56.0)
Occupation [n (%)]				
medical doctor	9 (90.0)	6 (75.0)	10 (71.0)	25 (78.0)
medical resident	1 (10.0)	2 (25.0)	4 (29.0)	7 (22.0)
Age [years] (M $\pm$ SD)	46.3 $\pm$ 8.6	43.6 $\pm$ 10.8	40.7 $\pm$ 9.4	43.2 $\pm$ 9.5

WHS – Workers’ Health Surveillance (WHS) program.  
M – mean; SD – standard deviation.

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 organization 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 gynecology 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 organization 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 to stress that participation is voluntarily and to also regularly and repeatedly keep 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 organization 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 work ability 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 [19]. 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 emphasized 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 [20]. 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 emphasized 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 organization 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 organization 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 devoted to administrative tasks. Consultation with all stakeholders about the organization 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 [16,21].

Information about the optimal means of communicating and organizing 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 [22–24]. As observed in this study, they might have doubts about the effectiveness of a WHS or fear medicalization. European countries often lack strategies for prevention, early identification of diseases and promotion of health among physicians [25]. However, this study has 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, like Bowen et al. (2009) [16], that for an intervention to be worthy of testing for efficacy, it should first be deemed feasible and acceptable [16].

## 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 work ability of hospital physicians. Future evaluations will be needed to demonstrate these effects.

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**Appendix.** Overview of the concepts of the job-specific Workers' Health Surveillance for hospital physicians and the way they were addressed

Parameter	Concept
<b>Health effects</b>	
physical health effects	
musculoskeletal complaints and perceived work-related restrictions in neck, shoulder, back and hand/wrist region	written questions (yes/no)
psychological health effects	
posttraumatic stress complaints	Impact of Events Scale [26]
psychological health complaints	Brief Symptom Inventory (BSI) [27] scale depression and anxiety
<b>Health requirements</b>	
recent exposure to	
aggression and violence in work by (family of) patients and colleagues	written questions (yes/no)
traumatic experiences	written question (yes/no)
needlestick injuries	written question (yes/no)
infections	written question (yes/no)
exposure of airways/lungs to dust, smoke, gas or vapor	written question (yes/no)
exposure of the skin to solid and liquid substances	written question (yes/no)
<b>Wakefulness</b>	
drug use	written questions
alcohol use	Alcohol Use Disorders Identification Test-C [28]
work-related fatigue	Questionnaire on the Experience and Evaluation of Work [29] scale work related fatigue
sleepiness	Epworth Sleepiness Scale [30]
sight in relation to function	written question (yes/no) + Landolt-C ring test
hearing in relation to function	written question + whisper test
<b>Work ability</b>	
general current work ability (scale 0–10)	written question
self-reported other work-related health complaints	written question
<b>Risk factors for cardiovascular diseases (CVD)</b>	
smoking / family history of CVD / diabetics	written question (yes/no)
excessive body mass index / blood pressure / waist circumference	biometric examination