CHAPTER 8

GENERAL DISCUSSION
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INTERPRETATIONS

Summarizing the main findings
- There is limited evidence that cognitive behavioural therapy (CBT) may facilitate return to work (RTW) and improves the mental health of workers with adjustment disorders (stress-related mental health problems).
- Guideline-based care (GBC) of workers with common mental health problems seems cost-effective compared to usual care with easy access to a psychologist, but does not result in better outcomes in terms of RTW and treatment satisfaction.
- Workers with ‘minor’ stress-related disorders may benefit from guideline-based care by occupational physicians (OPs).
- Workers with ‘more severe’ mental disorders, such as depression and/or anxiety, may benefit from early detection and easy access to a psychologist.
- There is no difference in guideline adherence between OPs providing GBC, and OPs providing care with easy access to a psychologist. In both scenario’s, guideline adherence is equally low, i.e. 50%.
- Optimal guideline adherence, measured by performance indicators, is not related to RTW.
- Further implementation efforts of guideline-based care need to focus on reducing barriers and enhancing positive job stress (engagement) and social norms of OPs to work according to the guideline.

Interpretations of the CO-OP study results
In the CO-OP study, the randomised controlled trial (RCT) described in this thesis, the effects of guideline-based occupational health care (GBC) for mental health problems were evaluated. Specifically, the guideline of Dutch OPs was examined, with RTW as a primary outcome. In this trial effectiveness, instead of efficacy was studied, as there were no ideal circumstances and the two research conditions were not highly contrasting. Therefore, the ‘triad’ of effectiveness was used to interpret the results, which is a conceptual framework for the interpretation of trials. According to the ‘triad’ of effectiveness, findings always result from the interaction between the intervention-giver (GBC-OP), the intervention-receiver (GBC-worker), and the intervention itself (Huibers et al., 2004; Jellema et al., 2006). The lack of effectiveness in our trial can be explained by a number of findings related to this triad.

Firstly, participating OPs were not able to deliver the intervention (GBC) properly. A process evaluation showed that guideline adherence was low (50%) in the intervention group, and was not different than guideline adherence in ‘usual care’ (UC). Secondly, GBC as delivered in our intervention, seems cost-effective but was not effective in the treatment of workers with mental health problems on RTW and treatment satisfaction. Thirdly, a per-protocol analysis showed that high guideline adherence by the OP in the GBC group did not result in faster RTW of this subgroup of workers, if compared to UC.
Thus, GBC is cheaper but not more effective than UC. Training in GBC does not lead to higher guideline adherence compared to UC, and optimal guideline adherence does not fasten RTW. UC, which is more expensive mainly due to more referrals to secondary care psychologists, seems more effective than GBC for workers with ‘severe’ mental health problems (depression/anxiety) and/or ‘executive’ functions (on street in stressful situations). These results do contribute to a more optimal treatment policy for guideline-based occupational health care for workers with mental health problems. However, the theoretical contribution of GBC (e.g. the CBT-elements) remains unclear as the intervention did not determine higher guideline adherence or treatment outcomes compared to UC.

These findings should be interpreted in relation to our choice of design. An advantage of our design is that we were able to deliver realistic treatment outcomes, including an economic evaluation. A disadvantage of effectiveness studies is that they are not informative if the results are negative: if it does not work in daily practice, it might still be likely that the intervention will be of value under ideal circumstances. Hence, the results of an efficacy study might still be positive.

**Overall evidence**

Until 2008, eight RCTs were published about the effects on RTW of interventions in primary and occupational health care on stress-related mental health problems (Bruinvels et al., submitted). The first one was the publication by van der Klink et al. (2003), a cluster-randomised controlled trial on which the guideline of OPs is based. This study involved an activating approach by OPs in one company, which appeared to be effective for workers with adjustment disorders when compared to a passive UC. Differences in effects with our study can be explained by the cluster-randomised design. It is fair to assume that there was less contamination between the two research conditions, as care by trained OPs was contrasted with passive usual care of different OPs. There were more ideal circumstances, as there was an ‘in-company setting’ of the occupational health service (OHS), the OPs and the intervention and there was no easy access to a psychologist in UC. Another factor might be the time setting of the study, as in 1996 the activating element focussing on RTW was completely new. Additionally, their study sample consisted of less ‘severe’ symptoms (only adjustment disorders), while our study population consisted of workers with depression and anxiety as well. Results of our pragmatic study may have a better generalization to routine practice. Our results do support the implementation of the guideline, because GBC appeared to be economically in favour of UC. Comparable to the results of van der Klink, GBC seemed to be more effective than UC for workers with ‘minor’ mental health problems. However, UC seemed more effective for workers with ‘more severe’ mental health problems, such as depression and/or anxiety.

Results of another randomised controlled trial by Blonk et al. (2006) puts the UC of our study into another perspective. In a 3-arm study the effectiveness of different treatment options were compared. The first group received extensive cognitive behavioural therapy (CBT), delivered by psychologists working for a commercial centre, which was comparable to the psychologists in our control group. The second group received a combined intervention of brief CBT and workplace interventions and was delivered by ‘labour experts’. Both treatments were compared to UC, which consisted of two brief sessions with a GP. Significant effects on RTW were found in favour of the combined intervention by labour experts. These results indicate that an intervention focussing on both the individual worker and the workplace could be more effective than both our treatment groups. Still, we have to take into consideration that the study population of Blonk et al., self-employed, received different occupational health care and
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that only workers with work-related complaints were included. Recently, de Vente et al. (2008) did not find significant effects on RTW of a CBT-intervention provided individually or in a group by a psychologist, compared to UC, among workers on sick leave due to work-related stress complaints.

Meanwhile, another trial in primary care showed that a combined intervention by social workers supporting general practice was not effective (Brouwers et al. 2006). Two other trials delivering minimal interventions by GPs on patients with unexplained fatigue symptoms and common mental disorders, respectively, appeared to be ineffective (Leone et al. 2006, Bakker et al. 2007). However, the last one seemed effective when the GP diagnosed a stress-related mental disorder.

Also, the results of two Norwegian trials on interventions by the national social security offices were published (Nystuen et al. 2006, Fleten et al. 2006). A voluntary solution-focused follow-up offered by a local social security office and psychologists did not result in a substantial participation and beneficial results on RTW. However, a minimal postal intervention sent to the sick-listed persons, appeared to be effective on RTW for the subgroup suffering from mental health problems. The minimal postal intervention consisted of a letter containing a brief orientation of the opportunities to return to adjusted jobs while keeping sickness benefits, including cooperation on modified work measures between worker and employer.

Taking this evidence of recent Dutch and Norwegian trials in consideration, it seems hard to prove a superior effect on RTW of counseling by OPs and GPs using CBT-techniques among workers with common mental health problems. However, taking the results of this thesis into account, productivity loss can be avoided by relatively minimal RTW interventions in an occupational health care setting, especially for adjustment or ‘stress-related’ disorders (Waddell & Burton, 2004; Seymore & Grove, 2005; The Stress Impact consortium, 2006; Corbiere & Shen, 2006; Briand et al., 2007).

Promising interventions for workers with common mental health problems seem to be the ones that focus on an activating and combined intervention on individual and work aspects, based on CBT principles, in an occupational health care setting (de Boer, 2004; Taimela, 2007; Vahtera & Kivimaki, 2008; van Oostrom et al., 2008; Vlasveld et al., 2008). This has shown to be effective on RTW for workers with depression as well, since it was found that outpatient psychiatric care with adjuvant occupational therapy was more effective than outpatient care alone (de Vries et al. 2002; Schene et al. 2007, Nieuwenhuijsen et al., 2008).

METHODOLOGICAL CONSIDERATIONS

Strengths and limitations
This is the first randomised controlled trial that evaluated the (cost-)effectiveness of guideline-based care (GBC) for mental health problems with RTW as a primary outcome. The pragmatic study design with broad inclusion criteria allowed variation in context, diagnosis and treatment. Since this was reflective of clinical practice in the occupational health care setting instead of ideal circumstances, external validity of our results was enhanced. Although the guideline has been evaluated in a pragmatic setting, many requirements for a high quality trial were met. A representative source population and intervention setting, in which patients were recruited over the same period of time and from the same source population, guaranteed external and internal validity. Losses to follow-up and principal confounders were taken into account, and the study had sufficient power to detect a clinically important effect. A main strength of our trial is that the results
give a pragmatic evaluation of guideline-based care, compared to an intensive usual care. Additionally, objective data provided by the employer and the insurance company, could be used in the analyses on RTW and health care costs. Another strength of this study is that a new set of performance indicators (PIs) was developed and was used for rating purposes in a new study population, by different researchers. This set of 20 PIs was based on a validated set of 10 PIs.

This study represents a further step in the evaluation of guideline-based care for workers with common mental health problems. Results of this study contribute to treatment options in occupational health practice for workers on sick leave due to mental health problems. Additionally, evidence-based recommendations are proposed for new and better-suited guidelines.

**External validity**
Main comments on our study regarding external validity may be related to our study design, including the content of UC, and the lack of contrast between GBC and UC. Elaborations on these issues, and regarding our study population, are presented below.

**Content of usual care**
The high referral percentage to a psychologist reflects some of the occupational health care practices in recent years in The Netherlands. However, this UC does not seem to reflect UC in most other (western) countries. Occupational health care, especially on mental health problems, has a long history in The Netherlands due to our social legislation system and related societal impact, and has been more developed and evidence-based than in most other countries. UC, with easy access to commercial multidisciplinary rehabilitation psychologists paid by employers, may be regarded as unrealistic to those living in other countries. However, work incapacity due to mental health problems has been recognized more and more worldwide and resulted in guidelines in countries such as the USA and the United Kingdom (AGOEM, 2004; Mackay et al., 2004; Cousins et al., 2004). Referrals to secondary mental health specialists of workers suffering from mental health problems, is not only common in The Netherlands, but is getting more common in Western countries such as the USA as well (Wang et al., 2007; Taimela et al., 2007; Nystuen et al., 2006; Salmela-Aro et al., 2004; Perski & Grossi, 2004; Bower & Rowland, 2006; Gilbody et al., 2006). Therefore, we expect that the external validity of these results will grow, as mental health and occupational health care will integrate increasingly in the near future in a broader international context.

**Lack of contrast between guideline-based and usual care**
Since randomisation was done at the individual level, OPs who were trained in the guideline treated all participants. Obviously this situation created a risk of treatment contamination (lack of contrast) between the groups. The trained OP was initiated to provide GBC to a worker in the intervention group. The same OP was initiated to treat a worker in the UC group with minimal involvement and if applicable, direct referral to a psychologist. A cross-over learning effect may have happened in UC, as the OPs appeared to have the same level of guideline adherence in UC as in the GBC group. The other way around, the OP could refer a worker in the GBC group to a psychologist as well. The guideline promotes this in case of stagnation in recovery or in case of severe mental health problems of the worker (NVAB, 2000; van der Klink, 2003). Although only 17% in the GBC group were immediately referred to a psychologist, still 46% of the workers in the GBC group received psychological treatment of a psychologist and/or psychiatrist during the follow-up period of 1 year.
However, we tried to maximize the contrast by creating a situation in which referral to the psychologist in UC was pre-authorized and always granted by the health insurance company (DGVP). In UC 82% of the participants were immediately referred to a ‘funded’ psychologist, while 85% in UC received treatment of a psychologist and/or psychiatrist. Additionally, results on related PIs indicate that this created a difference between the treatment groups in referral patterns and ‘referral delay’; i.e. the duration between inclusion and referral as well as the duration between referral by the OP and first contact with a psychologist. The percentage of referrals was significantly higher in UC compared to GBC, and referral delay appeared to be significantly higher in the GBC group compared to UC. However, the treatment by the psychologist in UC regularly started after the moment of full RTW and thus the impact of the referral should be doubted with regards to RTW of the worker (table 4). In UC, OPs referred more often to company social workers, who may have taken over the counseling role of the OP.

The intended and expected minimal involvement by the OP in UC did not seem to happen, because no differences in guideline adherence were found between the groups. This may have been due to the introduction of the ‘Gatekeeper Improvement Act’ as well, as OPs were obliged to have regular contact with worker and employer. Our design and these circumstances may have resulted in contamination of treatment in both groups, which may have contributed to an absence of effects of GBC, when compared to UC. Other explanations are the possible inapplicability of the trained skills, or an insufficient training in guideline-based care. However, Smits et al. (2003) showed that a comparable training of the guideline for OPs-in training resulted in an improved guideline-adherence.

Our results may have been biased also by the circumstance that the largest participating police department changed its occupational health service (OHS) during our study. As the OPs in this new OHS could not start immediately and worker, employer and OP had to adapt to this new context, this situation may have had a negative influence on the treatment in the GBC group. In UC these circumstances may have had less impact since workers had more chance to have a consistent therapy by a psychologist, besides the changes in their occupational health care.

Study population
The study population, Dutch police workers, showed a higher risk of getting into stressful situations than other workers (Houtman et al., 2005; Slottje et al., 2008). This has been caused by a relatively high workload and by emotional pressure. To a certain extent this reflects that police workers have other occupational risks than the general working population. As the study population was not fully representative of the general working population, external validity of the results may be limited and caution has to be taken in generalising the results. However, this disadvantage regarding the ability to generalise our study results does not outweigh the advantages of this study population. The police are an organization with a relatively high incidence of common mental health problems and are therefore an interesting target population. Another advantage is the uniform sick leave registration of the police. As the police had connection to only one health insurance company, it also had a well-defined ‘usual care’. By applying broad inclusion criteria we tried to produce results with the highest possible external validity.

Internal validity
Although we faced problems in lack of contrast between the treatment groups, the design of randomised controlled trials positively affects the internal validity of the study. By randomisation, the possibility of bias from unknown confounders is minimised. However, we adjusted our regression models for potential confounders. There appeared to be a
substantial impact of the different participating OPs that delivered GBC or UC, and the severity of the disorder, in confounding the results on RTW. Therefore, we adjusted the models for these (and other less substantial) confounders. We need to mention that there were only 5 participating OPs in the study, and that internal validity could have been better with more participating OPs. The best (contrasting) option would have been a cluster-randomized design, in which trained OPs would have provided GBC and in which OPs without a training provided UC. However, this appeared impossible in the occupational health care setting in which we conducted our study. In ethical sense it was unacceptable to have a UC group with no GBC or no easy access to psychologist, as each worker deserves the best care possible. Other elaborations regarding the internal validity are presented below.

Assessment of guideline adherence

When assessing guideline adherence by a physician, one can distinguish between direct and indirect methods of quality assessment (Schaafsma, 2007). While direct methods observe clinical performance, indirect methods use information from either medical files or self-report measures of physicians. In this thesis, guideline adherence was assessed by means of an audit of medical files. An audit has the advantage that physicians are unaware that their notes will be used for research purposes (Jamtvedt et al., 2006). However, disadvantage of this approach is that negative findings and routine activities may not have been recorded. The use of self-report forms counters this problem, and is still much less time-consuming than direct observations. However, it has been shown that self-report measures tend to lead to overestimation of guideline adherence (Schaafsma, 2007).

One of the strengths of the CO-OP study is that guideline adherence was audited by a set of performance indicators (PIs), as a process evaluation of the trial. A validated set of 10 PIs was used, which was extended to a 20 PI-set, based on recent literature (Nieuwenhuijsen et al., 2005; van der Klink & Terluin, 2005). Use of the initial 10 PI-set generated some problems, as this set was validated using registration forms, which requires the use of more stringent criteria. An overall score on guideline adherence was based on this initial 10 PI-set. The mean performance rates of our study resembled the performance rates reported elsewhere (Anema et al., 2006; Rebergen et al., 2006; Nieuwenhuijsen et al., 2003 & 2005; Smits et al., 2003; Hulshof et al., 2002). However, no relation was found between optimal guideline adherence conform the initial 10 PI-set and earlier RTW, while Nieuwenhuijsen et al. (2005) did find such a relation. In the 20 PI-set, a relation between optimal guideline adherence and faster RTW was found. This association was mostly explained by the PIs on regular contacts between OPs and workers and/or employers (PI14 and PI17). However, regular evaluation was at the time of the study ‘core business’ of the OP and was further enforced by new legislation. Therefore, we do not interpret this aspect of guideline adherence of additional value to UC, compared to other new elements. Per protocol-analyses confirmed this interpretation, since no difference was found in the relation between GBC in the subgroup characterized by optimal guideline adherence and RTW, compared to the relation between UC and RTW.

To our opinion it was necessary to restructure and extend the initial 10 PI-set with an additional 10 PIs to assess contrast in guideline adherence between the two groups and to incorporate recent findings. Although a new set of 20 PIs was developed carefully, validity remains insecure. An instrument in validating and improving the quality of these indicators could be the recently developed AIRE-instrument (de Koning et al., 2007).
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**Outcome measures**
The primary outcome measures of this trial were RTW and treatment satisfaction of the main occupational health care stakeholders in the RTW process. Mental health symptoms were only measured at baseline, though this is a frequently used outcome measure in mental health research. Our main focus was recovery of work functioning, as this has mostly been neglected in the field of mental health. As a result, we could not compare the outcome measures of RTW to results at symptom level, or compare results at symptom level to those found in other studies. This may cause some resistance in the acceptance of our results to the clinical field of mental health. However, our trial is one of the few in the field of mental health that focused on facilitating RTW, which is the main focus in occupational health care and received more attention of other disciplines in recent years. The idea that interventions which effectively reduce mental symptoms are effective for improving work-related outcomes has to be doubted, as RTW seems to follow a different pathway in recovery than reduction of symptoms. Recent studies (and results of the in this thesis presented Cochrane review) have shown that RTW does not negatively influence the recovery of symptoms, which is feared by many mental health clinicians (Blonk et al., 2006; Nieuwenhuijsen et al., 2005). Interventions regarding RTW may even enhance recovery of symptoms, although results on this subject remain unclear.

Results on treatment satisfaction confirmed earlier findings by Nieuwenhuijsen et al. (2006) and de Vente et al. (2008) that treatment satisfaction of workers diminishes, if treatment focuses on RTW. An activating treatment facilitating RTW confronts workers with an ‘unfavourable’ situation at forehand, as they feel ‘forced’ to resume work and feel vulnerable in showing their illness symptoms and functioning on the work floor. Surprisingly, however, employer satisfaction did not differ between both treatment groups, while GBC focused more on facilitating RTW and UC was more expensive due to referrals to the psychologist. Another interesting finding is that OPs felt more satisfied with delivering GBC, probably because they experienced more behaviour control and engagement (Rebergen et al., 2006). However, results on outcomes of treatment satisfaction by employers and OPs are difficult to interpret as these outcomes have been hardly measured in other studies.

RTW was defined as the duration of sick leave, which was used as a proxy measure of productivity loss in our cost-effectiveness analysis. By using sick leave days as proxy for productivity loss, we did not take into account work presenteeism (Lerner & Henke, 2008). Mental health problems can influence work presenteeism, as work performance may be suboptimal before and after periods of sick leave (Uegaki et al., 2007; Wang et al., 2007). As this may have biased our findings on cost benefits by reducing productivity loss, future research should focus on these productivity measures as well. However, trials on sick leave data as proxy of productivity loss regarding the mental health field have hardly been published (Brouwers et al., 2006; Schene et al., 2007; Uegaki et al., submitted). This study thus delivers a major contribution to this area, taking objective RTW-data into account.

In conclusion, our intention was to study the effects of the entire current guideline in practice, and it is fair to stat that our results give relevant insight in the overall effect of the guideline for a relevant study sample.

**Applications of the ICF model**
Although no clear answers were found on issues regarding the most effective treatment, this thesis offers new applications of the ICF model (WHO, 2001; Heerkens et al., 2004). In the ICF model (figure 1), introduced in chapter 1, the studied elements of the guideline that proved to have higher adherence than UC and/or seemed promising in enhancing
RTW, are underlined. Process management (regular evaluations with worker and employer) is underlined as it was associated with a faster RTW.

The ICF model offers three opportunities for interventions by OPs (Verbeek, 2006): a) regaining health by means of improvement of mental functioning; b) restoring activities by means of recovery of work performance; c) improving participation by partial or full RTW. Application 1 represents the guideline in that it introduced a simplified diagnostic classification of mental health problems, and a focus on work impairments/limitations/RTW (1). Optimal guideline adherence by the OPs on diagnosis, assessment of work impairments/limitations for RTW and advice on RTW to the worker was not associated with faster RTW. No differences were found on guideline adherence between GBC and UC, except for a significantly higher use in the GBC group of the questionnaire 4DSQ as a diagnostic instrument. Since use of the 4DSQ (or the DASS) may be helpful in differentiating between ‘minor’ and ‘more severe’ mental health problems and seems promising in speeding up RTW, use of the 4DSQ may be promoted (Terluin et al., 2006). In the GBC group, significantly more patients had a stepwise RTW. Apparently, OPs seem successful in incorporating RTW in their treatment. Stepwise RTW may work for the more context-oriented adjustment disorders, while more severe disorders initially need more person-oriented treatment.

The second application (2) advocates process management by a time contingent evaluation regarding work and curative care to prevent disability and facilitate RTW. Guideline adherence by the OP on process management did not show differences between the groups. Optimal guideline adherence on regular evaluations with the worker and the employer predicted faster RTW and, therefore, should be promoted. In the GBC group, the OP contacted the GP more often, although communication between OP and GP was rare.

In the third application (3), the OP may operate as counsellor by improving skills or changing recovery expectations regarding (return to) work or by counseling on personal characteristics, e.g. coping style (van Rhenen et al., 2007). In the GBC group the OP operated significantly more as counsellor (21 versus 6%), although numbers were small. The counseling role of the OP was the focus and most renewing aspect of the new guideline and related training, but uptake of this counseling role does not seem realistic after a 3-day training course.

In summary, potential improvement in mental functioning, recovery of work performance and participation by RTW, seem possible and necessary regarding more accurate detection of ‘severe’ symptoms by OPs using the 4DSQ. Continuous process management regarding worker and employer has already been put into effect by new legislation and has proven to be effective. The role of the OP as counsellor seems only relevant regarding facilitating (gradual) RTW. This is in line with the recent literature, which does not support an increase in the counseling position of the GP (Leone et al., 2006; Bower & Rowland, 2006; Bakker et al., 2007).

Additionally, this evidence underlines the importance of an occupational health care setting in facilitating and speeding up RTW, without negatively influencing recovery of symptoms (Blonk et al., 2006; Taimela et al., 2008). A referral to a psychologist seems beneficial if ‘more severe’ symptoms are detected or stagnation of recovery occurs, and counseling on the individual level becomes more relevant.
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IN-DEPTH ELABORATIONS ON THE CO-OP STUDY

Our study design focused on effectiveness, because we wanted to know in the first place whether GBC was effective in daily practice for the receivers (workers). GBC appeared to be cost-effective from the societal and company perspective. For the worker, GBC did not seem effective in speeding up RTW and enhancing treatment satisfaction. However, effect modifications on RTW were found regarding the severity of disorder. This means that it is important that the OP is able to accurately diagnose sick-listed workers with mental health problems. Therefore, a more in-depth discussion on the accuracy of diagnosis by the OP is given in the next paragraph. Furthermore, the ‘counseling’ role of OPs for stress- and work-related problems is discussed. As a ‘bridge’ to the conclusions and implications, a brief summary is presented of the opportunities and challenges of evidence-based occupational health care.

![Flowchart of Health Condition and Related Treatments](image)

**Health Condition**

*Mental health problems*

- a) Improvement in mental functioning
  - *e.g. reduction of fatigue, depressive symptoms*
- b) Restoring of activities
  - *e.g. recovery of work performance*
- c) Improvement in Participation
  - *e.g. return to work*

**Environmental factors**
*e.g. supervisor behaviour or work characteristics*

**Personal Factors**
*e.g. age, gender, coping style or recovery expectations*

1. Problem orientation
   - *Diagnosis (4DSQ)*
   - *Work focused treatment*
2. Process manager
   - *Evaluation patient/work/GP*
3. Individual interventions
   - *Counseling stress/work*

**Figure 1** New applications of the ICF model (Rebergen, 2008)

**Accuracy of the diagnosis by the OP**
Table 1 shows a summary of the main elements of the guideline, and shows the connection between type of diagnosis and the related treatment (role).
Table 1 Main elements of the guideline for OPs on mental health problems

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Treatment</th>
</tr>
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<tbody>
<tr>
<td>Adjustment (‘stress-related’) disorder:</td>
<td>OP: case (‘process’) and care manager (‘counsellor’)</td>
</tr>
<tr>
<td>Distress, nervous breakdown, burnout</td>
<td>In case of stagnation referral to GP/psychologist</td>
</tr>
<tr>
<td>Other mental health problems:</td>
<td>OP: case (‘process’) manager</td>
</tr>
<tr>
<td>Depression, anxiety, psychiatry</td>
<td>Communicates/refers to GP/psychologist</td>
</tr>
</tbody>
</table>

The OP may act as care manager by counseling workers with work-related problems for both diagnoses, but only operates as care manager of stress-related problems if an adjustment or stress-related disorder is diagnosed. If not, the OP needs to communicate with the GP and may refer, if necessary and appropriate, to a psychologist. This is a clear distinction with the UC in our study, in which an immediate referral to a psychologist was instigated for each subject. As this distinction appeared to be important for further treatment, an accurate diagnosis by the OP was deemed necessary. Therefore, we checked the accuracy of the diagnosis by the OP in different ways. Chapter 6 briefly described the results of different PIs on problem orientation and diagnosis. As medical files may be insufficient to reveal the real process of detection of symptoms, we made a comparison between the diagnosis of the OP with the diagnosis based on the DASS-scores and the diagnosis of the psychologist.

In this discussion the Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1993) is used as a ‘golden standard’ to evaluate the diagnosis made by the OP, according to cut-off scores used by Nieuwenhuijsen et al. (2003) in a comparable population. Table 2 shows that OPs diagnosed more often stress disorders in comparison with the DASS-scores. This was caused mainly by the finding that OPs diagnosed ‘only’ stress symptoms for participants who had depression, anxiety or remaining psychiatry according to the DASS. The detection of the diagnosis adjustment or stress-related disorder by the OP appeared to have a high sensitivity (82%) and a low specificity (24%). The results indicate that OPs have problems with recognizing depression and/or anxiety at an early stage. The same holds for comparison of diagnoses made by the OP and those available made by the psychologist (table 3), although the diagnosis made by the psychologist was assessed later.

Table 2 Diagnoses DASS and OP compared (n=208)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>DASS stress</th>
<th>DASS other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP stress</td>
<td>115 (55%)</td>
<td>52 (25%)</td>
<td>167 (80%)</td>
</tr>
<tr>
<td>OP other</td>
<td>25 (12%)</td>
<td>16 (8%)</td>
<td>41 (20%)</td>
</tr>
<tr>
<td>Total</td>
<td>140 (67%)</td>
<td>68 (33%)</td>
<td>208 (100%)</td>
</tr>
</tbody>
</table>

Table 3 Diagnoses Psychologist and OP compared (n=68)

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Psychologist stress</th>
<th>Psychologist other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>OP stress</td>
<td>44 (65%)</td>
<td>13 (19%)</td>
<td>57 (84%)</td>
</tr>
<tr>
<td>OP other</td>
<td>5 (7%)</td>
<td>6 (9%)</td>
<td>19 (16%)</td>
</tr>
<tr>
<td>Total</td>
<td>49 (72%)</td>
<td>11 (28%)</td>
<td>68 (100%)</td>
</tr>
</tbody>
</table>

Problems among OPs in the making of an accurate diagnosis were noticed also in other studies (Anema et al., 2006; Nieuwenhuijsen et al., 2003 & 2005; Hughes et al., 2008). An explanation can be that the guideline is still not well implemented and/or that a 3-day training course is not sufficient to learn to work according to the guideline. Another reason can be that OPs do not have sufficient time in their consultations to come to an
GENERAL DISCUSSION

accurate diagnosis. Although the guideline recommends a first consultation of at least 30 minutes, the contracts of the commercially operating Dutch occupational health services often do not provide such time. A possible solution to this could be the use of mental health questionnaires by the OP. Therefore, OPs can be advised to use the DASS (or the 4DSQ) in the diagnostic process to alert the OP to all possible cases of anxiety disorder and depression (van Rhenen et al., 2008). Another option is to incorporate the expertise of a psychiatrist or a psychologist in the diagnostic process, although this may prolong the outcome.

Is counseling by OPs the most effective solution?
As mentioned in table 1, diagnosis was related to treatment (role). The treatment role regarding the connection between diagnosis and interventions contained two elements. The first element was the role of the OP as case or process manager, and the second element was the role of the OP as care manager, in which the OP may operate as a counsellor. Mean performance by the OP for the role as process manager was weak to moderate, did not show differences between the groups, but was associated with faster RTW. In the GBC group the OP operated significantly more often as counsellor and contacted the GP significantly more often. However, both ‘counseling’ and ‘contact with the GP’ were rarely performed by the OP.

The guideline stimulates the OP to counsel workers on work-related issues and workers with adjustment disorders on stress-related issues. Results of our study confirm the positive (cost-)effects on RTW of GBC, especially for this large subgroup of ‘minor’ mental disorders. However, counseling by OPs does not seem the cause of these positive (cost-) effects for this subgroup, when compared to UC.

For the group of workers with more severe mental health problems, the guideline is more consensus- than evidence-based. When ‘more severe’ mental health problems are diagnosed or recovery stagnates, the guideline prescribes referral to the GP and to a specialist in secondary care. For each worker with mental health problems, contact with the GP is instigated. As contact with and referrals to GPs by OPs rarely occurred in our population, results of other studies on this subject were confirmed (Houtman et al., 2002; Anema et al., 2006; Buijs et al., 2007). From this perspective, and based on the finding that contact between OP and GP showed promising effects on RTW for the subgroup, further communication between GP and OP should be encouraged.

In primary care, workers on sick leave due to mental health problems are not frequently referred to psychologists or other specially trained professionals (20%) (Houtman et al., 2002; Kovess-Masfety et al., 2007). In occupational health care, referrals to psychologists have been more common practice, mainly because employers are growingly keen to invest in these services to avoid productivity loss and related financial consequences. The last decade, commercial psychotherapeutic intervention centres have been developed, in which psychologists treat workers with common mental health problems. These workers are often referred by an OP. These psychologists often use stress-management counseling interventions based on CBT-principles (Blonk et al., 2006). As no conclusive evidence existed about the effectiveness of psychological interventions (e.g. counseling) carried out by physicians, the question remains if this work should be done by other occupational health professionals (e.g. occupational social workers) and/or psychological specialists (van der Klink, 2002).

As mentioned, counseling by OPs was hardly performed, although significantly more often in GBC. This leaves room for improvement, but for now the group of workers with adjustment disorders, counselled by the OP or not, does not seem to benefit from a referral to a psychologist. More important seems, as the results of our review indicate,
that RTW is activated and facilitated by professionals in occupational health care. Although referrals to psychologists in UC were pre-authorized, still ‘referral delay’ seems to happen as can be seen in table 4.

For 68 workers referred to a psychologist of the commercially operating multidisciplinary centre, data were retraceable, 60 in UC and 8 in GBC. For the 8 workers in GBC a referral to the psychologist was done by the OP in a later stage, as was intended by our study protocol. Referral to a psychologist in UC was stimulated by pre-authorization and full funding by the insurance company, while in GBC half of the treatment costs were funded. The duration between inclusion by the OP in UC to an intake by a psychologist was on average one month, while duration between inclusion by the OP to a first session by a psychologist was almost two months. As median partial RTW for both groups was 50 days, OPs facilitated RTW already before psychologists were able to counsel participants.

### Table 4 Referral delay OP-psychologists in calendar days. The cumulative results show the number of calendar days added to the ‘state’ before.

<table>
<thead>
<tr>
<th>Duration (days)</th>
<th>Sick-leave registration</th>
<th>Inclusion OP</th>
<th>Referral OP/OHS*</th>
<th>Intake Psy**</th>
<th>1st session psy**</th>
<th>Duration treatment N</th>
<th>N sessions (mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBC</td>
<td>0</td>
<td>15</td>
<td>63</td>
<td>15</td>
<td>15</td>
<td>165</td>
<td>9.6</td>
</tr>
<tr>
<td>Cumulative</td>
<td>0</td>
<td>15</td>
<td>63</td>
<td>15</td>
<td>15</td>
<td>165</td>
<td>9.6</td>
</tr>
<tr>
<td>UC</td>
<td>0</td>
<td>23</td>
<td>18</td>
<td>12</td>
<td>26</td>
<td>133</td>
<td>7.6</td>
</tr>
<tr>
<td>Cumulative</td>
<td>0</td>
<td>23</td>
<td>41</td>
<td>53</td>
<td>79</td>
<td>212</td>
<td>60</td>
</tr>
</tbody>
</table>

* OHS = Occupational Health Service  
** Psy = Psychologist of commercial provider, fully funded by the insurance company in UC

A different situation seems to occur if the diagnosis is ‘more severe’ and/or recovery stagnates. Then, the beneficial influence of a psychological treatment may occur, since psychologists take over the care management. However, we should mention that psychologists in UC were working for a multidisciplinary rehabilitation centre. Therefore, these psychologists may have been more focussed on RTW in their treatment, than the average psychologist in primary and secondary care. Still, accurate detection of ‘more severe’ symptoms and immediate referral to a psychologist seem important for this subgroup. However, a counseling and process management role by the OP regarding the work situation and work-related stress remains necessary, as psychologists may not incorporate this in their treatment. Communication and cooperation between the OP and the psychologist is essential, both to divide treatment role and responsibility, and to evaluate results of recovery of symptoms and RTW.

**Improvement of guideline-based care in occupational health care**

In the field of occupational evidence-based medicine, guideline-based care has been embraced by prominent OPs and researchers, and it is now starting to reach daily occupational health practice. However, if we compare our results on guideline adherence for OPs on mental health problems to the studies by Smits (2002), Nieuwenhuijsen (2004) and Anema et al. (2006), no major differences were found. Results show equally weak performance rates on diagnosis, interventions and continuity of care. Equally high performance rates were found for work-related issues as evaluation of work causes and limitations in return to work. Although efforts need to be done on the measurement of guideline adherence in the field of occupational health care, implementation of the existing evidence-based guidelines may need adaptations to this field. More specific for occupational health care is the strong influence from legislation, from management of...
occupational health services and the presence of different stakeholders, i.e. workers, employers and sometimes insurance companies.

The study described in chapter 7 of this thesis showed that guideline adherence by Dutch OPs lagged behind its acceptance. Results of a recent thesis by Schaafsma (2007) confirmed these results in the broader perspective of evidence-based medicine (EBM). Most OPs were having a positive attitude towards EBM, but were aware of only a small portion of their actual information needs. This positive attitude and small awareness did not result in actual EBM practice. The most common way was to consult colleagues, while scientific databases were rarely consulted. Results of chapter 7 in this thesis revealed that self-reported guideline adherence correlated significantly with perceived behaviour control. Correspondingly, ‘no time available’ was an important reason not to search for literature in Schaafsma’s study, but to ask a colleague or an expert for an answer.

Schaafsma found that enhancement of EBM competence did not prove to be a reliable predictor for the quality of actual EBM performance or practice. Besides a stimulating environment, the fact that OPs were obliged to practice EBM made that the quality improved substantially. However, this effect decreased after four months, possibly indicating that the initial enthusiasm would need repeated stimulation or courses to continuously enhance quality. These results correspond with the significant correlation we found (chapter 7) between normative behaviour of important people around the OP and guideline adherence.

Recently, Hugenholtz (2008) concluded in her thesis that continuous medical education consisting of an EBM course combined with recurrent peer group session is effective in enhancing performance of OPs. However, many OPs lack the time for such an intensive intervention. Therefore, an introductory e-learning course on EBM is proposed, which appeared to be as effective as lecture-based learning, but may have a wider range of implementation. More research in this area is needed, to examine if e-learning relates to the implementation of guideline-based care.

CONCLUSIONS AND RECOMMENDATIONS

Case description (recommended continuation of General Introduction)

The worker consults his occupational physician (OP) 3 weeks after he has been sick-listed. The OP diagnoses an adjustment disorder, with indications for an underlying depression. He agrees with worker, employer, and company social worker to continue work part-time with work accommodations, and daily structuring activities (e.g. cycling). During the second consultation 3 weeks later the worker is only focused on his deteriorated mental health symptoms. In consultation with general practitioner (GP) the OP notices stagnation of recovery, and refers the worker to a psychiatrist. OP and GP agree that OP will be the process (case) manager. The OP informs the employer and advises a structuring work rhythm without productivity norm. During the third consultation 3 weeks later it appears that the worker has consulted the psychiatrist, who has diagnosed a depressive disorder. He has started medical treatment, combined with therapeutic sessions. The OP advises worker and employer to build up easy work activities and informs them about potential side-effects regarding work productivity. One month later the worker has regained control on activities and social interactions. The worker feels better now and is able to conduct self-instigated problem-solving activities. The treatment with the psychiatrist works well, and he has started running again. In the fifth consultation with the OP, five months after the start of the sick leave, the worker appears to have major improvements in his mental health state and work functioning. The OP advises full RTW and elaborates on ways to
prevent relapses. One month later the worker is free of symptoms, has fully returned to work and is back at his initial level of functioning. After agreement by the worker, the OP informs GP and psychiatrist about the steps taken. GP and psychiatrist continue this treatment by reinforcing essential elements as structure, (social) activities, and experiments with problem-solving behaviour.

Final conclusions
In this thesis it was shown that guideline-based care by OPs, reflected by an activating approach facilitating RTW of the worker with mental health problems, is cost-effective in occupational health, if compared to usual care with easy access to a psychologist. These results support the overall evidence that a minimal intervention in occupational health care is (cost-)effective, especially regarding the substantial group of workers suffering from ‘minor’ mental health problems. Considering workers with ‘more severe’ mental disorders, such as depression and/or anxiety, early detection and more extensive combined interventions by occupational experts and/or specialised secondary care interventions by psychologists may be more effective. In a process evaluation, no contrast in guideline adherence by the OP was found between GBC versus UC. The per-protocol analysis showed that high guideline adherence by the OP in the GBC group did not result in faster RTW of the worker compared to UC. However, it remains unclear if these results are due to limitations of our study, the content of the guideline, or the implementation of the guideline in our intervention. We conclude that the guideline needs revision into a less ambitious version with more attention for detection and treatment of the more severe mental health problems. Guideline-based care may be improved by more rigorous implementation efforts, than the 3-days training course in the intervention of this study. Continuous training and supportive legislation by the relevant stakeholders may enforce the perceived behaviour control by OPs, which appeared to be associated with higher guideline adherence.

Revision of the guideline
Recently, the guideline for OPs has been revised (NVAB, 2007). A critical reappraisal of the guideline appeared to be necessary since it was more consensus-based than evidence-based. Another reason was that the guideline seemed to be too ambitious in changing the OP’s performance in the current setting. Using the AGREE-criteria (Hulshof & Hoenen, 2007), revision of the guideline resulted in a less complex and less ambitious edition, to maximize applicability. There is a less prominent place of the counseling element. The new guideline promotes some elements that were measured by the extended 20 PI-set we used in our process evaluation. These are: more use of the 4DSQ, continuous evaluation with worker and employer to facilitate RTW, more attention for depression and anxiety, evaluation of and intervention on stagnation, consultation of the GP after 2 months, and (relapse) prevention of mental health problems.

Recommendations for future research
Although a recent review of evidence on the effectiveness of occupational health interventions showed that high quality evaluation studies have been conducted in all areas of occupational health care, the number of evaluation studies is still small compared to the number of aetiological studies (Ruotsalainen et al., 2006; Verbeek, 2007). As a result, there remains a challenge to conduct more trials on effectiveness, in particular within occupational health care. More research on the effectiveness of mental health
interventions within occupational health care is obviously necessary, preferably from other countries than Norway and The Netherlands.

Furthermore, our studies show the importance of the use and evaluation of occupational health care interventions, e.g. evidence-based practice guidelines and systematic reviews. A good initiative that is currently in preparation is the publication of a list of available and downloadable evidence-based guidelines for occupational health care on the website of the ICOH committee on health services research and evaluation in occupational health (www.icohweb.org). We suggest stimulating research on impairments caused by mental health problems and on RTW-issues in various health care settings, including insurance medicine (Franche et al., 2005).

In this thesis, emphasis was put on the evaluation of the potential added value of guideline-based care. Results showed that guideline-based care did not result in better guideline adherence, faster RTW and higher treatment satisfaction, but led to more cost-effective care, compared to usual care. This leaves us with the question of what is the additional added value of training in the guideline. Will a revision of the guideline result in an increase of the effectiveness, if guideline adherence remains this poor? Future research should therefore investigate how guideline adherence can be improved in non-clinical settings, such as occupational health. Answering the question of why guideline adherence is low and acting upon this answer could be of greater influence on the effectiveness of the guideline than changing its contents alone. We expect that future research on behaviour change and (multidisciplinary) guideline implementation may help to answer these questions.

Finally, evidence-based occupational health care practice needs further investigation of output and outcome measures. Prevention of occupational and work-related diseases plays an important role in most countries, instead of sickness absence advice. Ongoing Dutch studies may confirm the need for more work-related interventions of mental health problems, i.e. by work adaptations, collaborative occupational health care or work-related guidelines for psychologists (van Oostrom et al., 2008; Vlasveld et al., 2008; Lagerveld et al., in press). Additionally, studies should investigate the potential effect of evidence-based practice on preventive actions and advices in occupational health care. Recent examples are the studies by Duits et al. (2007 & 2008) and van Rhenen (2007 & 2008), who found promising results of detective screening and preventive interventions on sick leave for workers with mental health problems. There may be potential for internet-based guided self-help and internet-administered cognitive behaviour therapy as well (Cuijpers et al., 2007 & 2008).

**Recommendations for occupational health care practice**

- Cognitive behavioural therapy interventions should be used for workers with adjustment disorders, preferably in an occupational health care setting.
- Application of an activating guideline-based care by OPs should be promoted, as this is more cost-effective than usual care with easy access to a psychologist.
- Workers with depression or anxiety symptoms should be detected in an early stage, and should be referred to pre-authorized secondary mental health care.
- The guideline should be revised in a more simple and applicable version, with more attention for workers with severe mental health problems.
- Implementation of guideline-based care should focus on higher applicability of the innovative elements of the guideline by OPs, and should be facilitated by continuous training and supportive legislation by relevant stakeholders.
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GENERAL DISCUSSION


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