Multidisciplinary convalescence recommendations after gynaecological surgery: a modified Delphi method among experts

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Objective To generate structured detailed uniform convalescence recommendations after gynaecological surgery by a modified Delphi method amongst experts and a representative group of physicians.

Design Modified Delphi study.

Setting Expert physicians recruited by their respective medical boards and employed at different hospitals, doctor’s surgeries and healthcare services.

Population Twelve experts (five gynaecologists, two general practitioners [GPs] and five occupational physicians [OPs]) and a representative sample of 63 medical doctors.

Methods Multidisciplinary detailed recommendations for graded resumption of relevant activities after uncomplicated hysterectomy (laparoscopic supracervical, total laparoscopic/laparoscopic-assisted, vaginal and abdominal hysterectomies) and laparoscopic adnexal surgery were developed. Recommendations were based on a literature review and a modified Delphi procedure amongst 12 experts, recruited in collaboration with the participating medical boards of gynaecologists, GPs and OPs.

Main outcome measures A multidisciplinary consensus of at least 67% on the relevant detailed convalescence recommendations in relation to hysterectomy and laparoscopic adnexal surgery.

Results Out of initially 65 activities, the expert panel judged 38 activities relevant for convalescence recommendations. Consensus for all activities was achieved after four Delphi rounds and two group discussions. The recommendations were judged as feasible by a representative sample of 26 gynaecologists, 19 GPs and 18 OPs.

Conclusions Consensus between gynaecologists, GPs and OPs was achieved on all relevant convalescence recommendations regarding hysterectomy (abdominal, vaginal and laparoscopic) and laparoscopic adnexal surgery.

Keywords Convalescence recommendations, gynaecological surgery, hysterectomy, laparoscopic adnexal surgery, modified Delphi study, recovery period.

Introduction

Resumption of work activities after gynaecological surgery takes much longer than expected, irrespective of surgical technique and the severity of surgery.1–4 There is strong evidence that long periods of sick leave can result in work disability, poorer general health, increased risk of mental health problems and even higher mortality.5,6 As a result, long periods of sick leave leads to more physician consultation, medical treatment and higher hospital admission rates.6,7 Considering the high costs of sick leave and medical care, prolonged sick leave induces unnecessary yet substantial costs for society.

Well-defined postoperative recommendations have been shown to reduce sick leave by several weeks in comparison to standard care given without any structural convalescence recommendations.1,8–13 However, detailed recommendations on the resumption of activities are mostly not provided by medical specialists as a result of the lack of recognised guidelines on the gradual resumption of normal activities, and because of a lack of knowledge about the physical demands of the patient’s job.14–17 In addition, because of poor communication between medical doctors, there is substantial variation on the convalescence recommendations given by gynaecologists, general practitioners (GPs) and occupational physicians (OPs).18,19 These recommen-
dations are also regularly conflicting,\textsuperscript{2,20,21} are not evidence based,\textsuperscript{2,9,11,20–24} and are mostly independent of the type of surgery.\textsuperscript{2,24} As frequently no or conflicting advice is given, patients do not know when to resume which activity and compliance to advice is low, which may contribute to irrational beliefs and result in a delayed recovery, prolonged sick leave and reduced quality of life. This underlines the need for generating standardised multidisciplinary pre- and postoperative convalescence recommendations.

Hysterectomy (abdominal [AH], vaginal [VH], total laparoscopic/laparoscopic-assisted [TLH/LAVH] and laparoscopic supracervical [LSH] hysterectomy) is the most frequently performed major surgical procedure for a benign indication in gynaecology. There is a lack of national or international guidelines with respect to the resumption of activities after these types of hysterectomies and laparoscopic adnexal surgery. In this study, we aimed to identify which (work-related) activities were in need of convalescence recommendations, and to formulate these convalescence recommendations via an expert panel of gynaecologists, GPs and OPs.

**Methods**

**Design of modified Delphi study**

A modified Delphi consensus approach was used, guided by a systematic review of the published work on the resumption of activities after gynaecological and abdominal general surgery. The Delphi technique was originally designed as a way to obtain the opinion of experts without necessarily bringing them together face to face.\textsuperscript{25} For the purpose of this study, a modified version of the technique was used that also involved panel discussions. An overview of the study design is presented in Figure 1. Using repeated anonymous questionnaire rounds and group discussions, the experts were able to give feedback on the previous round in a controlled way to achieve a consensus opinion in a short period of time. For the group discussions, a nominal group technique was used to reach consensus.\textsuperscript{26} This modified Delphi method has been shown to be an efficient and useful method to bridge gaps in existing evidence of resumption of work activities for specific disorders, and to reach a multidisciplinary consensus opinion within a heterogeneous expert group of medical doctors.\textsuperscript{27} The data were collected between March and September 2009.

**Expert panel recruitment**

To improve the applicability and future implementation of the recommendations, an expert panel was recruited in collaboration with the participating medical boards of gynaecologists, OPs and GPs.

As the different healthcare providers each have their own focus during the postoperative recovery period, an equal distribution between gynaecologists and OPs was aimed for. In addition, GPs were part of the expert panel because of their experience with the whole recovery period. This resulted in a panel of twelve experts: five gynaecologists, five OPs and two GPs. They were all members of their medical boards, had sufficient experience with patients who underwent gynaecological surgical interventions in their own daily practice and reported to have no potential conflict of interest.

**Literature review**

A systematic review of the current literature in 24 available and relevant national and international databases (such as PubMed, Embase, The Cochrane Library and The American Medical Disability Advisor) from 1993 to 2008 was performed by a medical information specialist and the primary investigator. Searches were carried out for convalescence recommendations and time to return to work (RTW) and normal activities (RNA) after gynaecological and abdominal surgery on benign indications. The eligibility of the papers was assessed by three researchers (JAH, JRAAN and AVN), taking into consideration study design, population,
size and RTW/RNA as primary outcome measures. A summary of this review was sent to all panel members to be used when completing the first Delphi questionnaire.

**Case definition and draft case description**
A draft case description was developed by the researchers for each surgical intervention (laparoscopic adnexal surgery and the four surgical approaches of hysterectomy: AH, VH, TLH/LAVH and LSH). In these case descriptions, uncomplicated surgical procedures in otherwise healthy patients without any other major problems (i.e. no comorbidity, psychosocial problems or obstacles other than medical for recovery or resumption of work) was portrayed. During the study, the case descriptions served as reference points for the panel members.

**Development of a list with relevant convalescence recommendations**
The Functional Ability List (FAL) was used to develop convalescence recommendations.28 The FAL has a legal authority to assess functional abilities in the Netherlands, and is used by OPs and insurance physicians (IPs) to assess and advise patients about functional abilities in their work. It distinguishes 59 different physical and psychosocial activities, such as lifting, focusing attention, kneeling, etc. To improve the efficiency of the study procedure, in the initial part of the first Delphi round the panel members were asked which items of the FAL list were considered relevant for developing a multidisciplinary guideline, and whether they recommended additional activities to be added to the list. Based on these results the first questionnaire was composed and sent to the panel.

**Description of the structural consensus method**

*First three Delphi questionnaire rounds and group meeting*
In the first round, the functional ability of each activity (FAL item) was scored by each panel member separately for each case description on a timeline (i.e. 2 days, 4 days, etc.), including a score of the (un)certainty of their decision on a ten-point Likert scale ranging from one (‘very uncertain’) to ten (‘very certain’). Figure 2 shows an example of the activity ‘carrying & lifting’. The relevance of all FAL items was scored additionally. On a scale from one (‘not relevant’) to ten (‘very relevant’), the experts were asked to rate to what extent every activity was in need of developing convalescence recommendations. The relevance of FAL items with a median score below seven were discussed by the expert panel during the first group meeting in order to determine whether the item should be included in the study. All other items with a median score of seven or higher were included without further discussion.

In the second round, the median values and range of the relevance scores, ability scores and certainty of each decision obtained in the first Delphi round were calculated for each item. These (anonymous) results were presented graphically in a group meeting and were discussed with the expert panel, providing the opportunity to explore which items approached consensus from the ability scores, and which items had wide variance in the opinions of panel members. After an item was discussed, the panel members were asked to rate the ability scores again (anonymously), based on the group discussion and their own opinion. They had to rate the abilities with a score based on their maximum certainty, taking into consideration that the most restrictive ability score had to be chosen in the case of uncertainty.

If consensus was not reached on all relevant activities regarding all surgical procedures after the first two rounds, a third Delphi questionnaire round would be organised. In this round, the activities for which consensus was not reached during the second questionnaire round would be sent to the panel members again. Taking into consideration the median score of round two, they would have to rate the functional ability score once more.

![Ability score and certainty of decision](image)

**Figure 2.** Example of the item ‘carrying & lifting’ of the functional ability list.
Evaluation of the feasibility of recommendations by a representative sample of physicians

The results of the last Delphi round (rounds two or three) were translated into detailed diagrams and a summary of the guidelines with draft recommendations for the postoperative resumption of (work) activities. This draft was sent to a representative sample of physicians (gynaecologists, GPs and OPs) derived from the professional organisations that were represented by the panel members (the Dutch Society of Obstetrics and Gynaecology [NVOG], the Dutch College of General Practitioners [NHG] and the Dutch Association of Occupational Physicians [NVAB]), taking into account their geographical distribution in the Netherlands. They judged the presented results on their feasibility in practice, and whether they had objections against the consensus opinion. If they had objections, they were encouraged to explain their objections and to propose other recommendations.

Final expert panel meeting and fourth Delphi round

The results of the last Delphi questionnaire round and the judgment of the representative sample of physicians were presented and discussed at the second group meeting. The procedure of round two was again used to develop a final set of multidisciplinary recommendations, differentiated by disorder, surgical technique and time after surgery.

Consensus rules

To identify consensus, and to determine which activities had to be scored again in the next questionnaire round because of a lack of consensus, a set of consensus rules was used, defined differently for dichotomous and non-dichotomous items. Consensus for dichotomous items was reached when mean consensus over all time points was at least 75%, and consensus per individual time point was higher than 50%. For items with three or more grades of ability, consensus was reached when mean consensus over all time points was at least 67%, and consensus per time point exceeded 50%. All items and time points had to be rated by at least nine panel members.

Results

Literature review

The literature search resulted in 2979 papers. All titles or abstracts were reviewed and cross references of relevant papers were checked, resulting in 81 potentially relevant papers and four clinical guidelines about recovery time until full RTW. After assessing the eligibility of these papers and guidelines, a selection of seven full papers,

1,11,20,21,29–31 four clinical guidelines,

32–35 and 32 articles,

1,4,30,36–65 summarized in tables by the authors, were sent to all panel members.

Number of Delphi rounds and response rate

Four questionnaire rounds and two group discussions were required to meet the objectives of the study. The response rate for round one was 92% (11/12 experts) and in rounds two, three and four 100% of the experts responded. All the experts completed the entire study.

Preliminary list of relevant convalescence recommendations

During the initial part of Delphi round one, the expert panel judged that 38 out of the initial 59 items of the FAL list and four additional activities (taking a bath, jumping, vacuum cleaning and sexual intercourse) should be included in the convalescence recommendations. The results of the first-round questionnaire were based on these 42 items, which are represented in Table 1.

Consensus course

First Delphi questionnaire round

After the first Delphi questionnaire round, for each item the consensus per time unit and the mean consensus was calculated. Consensus was not reached for any of the 42 items regarding all surgical procedures. In Table 1, the consensus flow for TLH/LAVH is represented.

First group meeting and Delphi questionnaire rounds two and three

During the first group meeting, the results of the first questionnaire round were discussed and differences in opinion between the panel members were explored.

The median relevance score of six FAL items (effective action, independent action, handling the emotional problems of others, expression of personal feelings, dealing with conflicts and protective measures) was scored below seven by the panel members in the first Delphi round. For those items, the expert panel discussed whether they should still be part of the convalescence recommendations. All six items were judged to be irrelevant by the vast majority of panel members (effective action 12/12, independent action 12/12, handling the emotional problems of others 11/12, expression of personal feelings 12/12, dealing with conflicts 12/12 and protective measures 9/12), and were thus excluded from the next Delphi questionnaire round. After the group discussion, two additional items (riding a bicycle and driving a car) were judged by a majority of votes to be relevant for developing convalescence recommendations, and were added to the list of items for the next Delphi questionnaire round. The list of items that was used in the next Delphi questionnaire round consisted of 38 activities.

During the second Delphi questionnaire round, consensus was reached for 16 of the 38 items. The items for which
Table 1. Consensus course for TLH/LAVH

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Number of gradations</th>
<th>Round 1 consensus (%)</th>
<th>Round 2 consensus (%)</th>
<th>Round 3 consensus (%)</th>
<th>Round 4 consensus (%)</th>
</tr>
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<tbody>
<tr>
<td>Personal functioning</td>
<td>Focusing attention</td>
<td>3</td>
<td>62</td>
<td>77</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Dividing attention</td>
<td>3</td>
<td>67</td>
<td>84</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Memory</td>
<td>3</td>
<td>59</td>
<td>68</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Insight into own abilities</td>
<td>3</td>
<td>65</td>
<td>70</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Action tempo</td>
<td>2</td>
<td>70</td>
<td>90</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>Social functioning</td>
<td>Transportation</td>
<td>2</td>
<td>81</td>
<td>97</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>Adjusting to environment</td>
<td>Vibration</td>
<td>2</td>
<td>79</td>
<td>87</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>Dynamic movements</td>
<td>Reaching out</td>
<td>3</td>
<td>57</td>
<td>100**</td>
<td>100</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Reach out frequently</td>
<td>4</td>
<td>54</td>
<td>73*</td>
<td>96</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Bending</td>
<td>3</td>
<td>71</td>
<td>93</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Bend frequently</td>
<td>4</td>
<td>60</td>
<td>83</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Turning/twisting round</td>
<td>2</td>
<td>82</td>
<td>91</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Pushing or pulling</td>
<td>3</td>
<td>64</td>
<td>84</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Lifting or carrying</td>
<td>4</td>
<td>56</td>
<td>67*</td>
<td>88</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Handle light objects frequently</td>
<td>4</td>
<td>52</td>
<td>69*</td>
<td>88</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Handle heavy objects frequently</td>
<td>2</td>
<td>83</td>
<td>94</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Sustained walking</td>
<td>4</td>
<td>55</td>
<td>66*</td>
<td>85</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Walking per day</td>
<td>4</td>
<td>55</td>
<td>88</td>
<td>c</td>
<td>97***</td>
</tr>
<tr>
<td></td>
<td>Climbing stairs</td>
<td>4</td>
<td>56</td>
<td>76</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Climbing</td>
<td>4</td>
<td>62</td>
<td>83</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Kneeling or squatting</td>
<td>2</td>
<td>83</td>
<td>96</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>Static postures</td>
<td>Prolonged sitting</td>
<td>4</td>
<td>57</td>
<td>72</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Sitting per day</td>
<td>4</td>
<td>58</td>
<td>75</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Prolonged standing</td>
<td>4</td>
<td>55</td>
<td>77</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Standing per day</td>
<td>4</td>
<td>54</td>
<td>79</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Prolonged kneeling or squatting</td>
<td>2</td>
<td>87</td>
<td>90</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Prolonged bending and/or twisting</td>
<td>2</td>
<td>78</td>
<td>93</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Working above shoulders</td>
<td>2</td>
<td>73</td>
<td>87</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Changing position</td>
<td>2</td>
<td>67</td>
<td>76**</td>
<td>100</td>
<td>c</td>
</tr>
<tr>
<td>Working hours</td>
<td>Hours per day</td>
<td>5</td>
<td>63</td>
<td>75*</td>
<td>94</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Hours per week</td>
<td>5</td>
<td>63</td>
<td>84</td>
<td>c</td>
<td>100***</td>
</tr>
<tr>
<td></td>
<td>Shift work</td>
<td>3</td>
<td>62</td>
<td>86**</td>
<td>100</td>
<td>c</td>
</tr>
<tr>
<td>Other activities (not-work related)</td>
<td>Taking a bath</td>
<td>2</td>
<td>72</td>
<td>89</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Sexual intercourse</td>
<td>2</td>
<td>85</td>
<td>97</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Jumping</td>
<td>2</td>
<td>79</td>
<td>95</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Vacuum cleaning</td>
<td>2</td>
<td>73</td>
<td>91</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Riding a bicycle*</td>
<td>2</td>
<td>-</td>
<td>83</td>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td></td>
<td>Driving a car*</td>
<td>2</td>
<td>-</td>
<td>78</td>
<td>c</td>
<td>c</td>
</tr>
</tbody>
</table>

This table presents the mean consensus per activity per Delphi round for TLH/LAVH. When consensus is reached after round two (see Methods), the activity was excluded from the next Delphi round and presented in this table as ‘c’ (consensus): *additional item after first Delphi round; ±consensus achieved.

*Mean consensus reached, but contains time point with consensus lower than 50%.

**Mean consensus reached, but contains time point that is rated by less than nine panel members.

***Adjustment of ability score during fourth Delphi round.

Consensus was not reached were then sent to the panel members for a third Delphi questionnaire round. After the third round, consensus was reached for 36 activities regarding all surgical procedures.
18 OPs. Major revisions were not requested and only minor revisions were proposed.

Second group discussion and Delphi round four
The two activities for which consensus was not reached in questionnaire round three (walking per day and standing per day) were taken to the fourth Delphi round, where consensus was also reached for these activities. Based on the proposed minor revisions by the representative sample of physicians and contradictions in ability score regarding some activities/surgical procedures, an adjustment of the ability score was made for 14 different activities during Delphi round four. Table 1 shows for which activities an adaptation was made for laparoscopic hysterectomy (‘walking per day’ and ‘working hours per week’). After round four, consensus for all 38 activities was reached.

Final convalescence recommendations and case descriptions
For each case description (hysterectomy [AH, VH, TLH and LSH] and laparoscopic adnexal surgery), a final set of convalescence recommendations was formulated, based on the consensus findings of Delphi round four and an analysis of the comments of the representative sample of physicians.

Figure 3 presents a detailed diagram of the recommendations for TLH/LAVH, and Figure 4 shows an example of how the recommendations may be summarised for guidelines.

Discussion
Main findings
In this study, the modified Delphi method proved to be an efficient and useful method to bridge the gaps in opinions between gynaecologists, GPs and OPs, and to achieve a consensus opinion between the stakeholders in a relatively short period of time. After four questionnaire rounds and two group meetings, consensus was reached for all relevant recommendations. Based on the consensus findings, detailed convalescence recommendations for the resumption of activities after hysterectomy (AH, VH and LH) and laparoscopic adnexal surgery have been formulated.

Comparison with other studies
The literature review revealed no comparable studies that developed or evaluated detailed convalescence recommendations after hysterectomy or laparoscopic adnexal surgery. In clinical practice, recommendations are mainly based on traditions and personal opinions.

Previous studies of advice on the return to work include UK guideline from the Department for Work and Pensions (DWP), and clinical guidelines of the American Medical Disability Advisor (MDA). The DWP guideline claim to report evidence-based recovery times, and recommend a postoperative recovery to full activity (including work) of 3 weeks after laparoscopic-assisted hysterectomy, and 7 weeks after abdominal hysterectomy, regardless of the nature or physical taxation of the job. This is comparable with the 4 and 6 weeks recommended by our expert panel for a full return to a physically demanding job. The guidelines of the MDA report consensus-based advice for a minimum, optimum and maximum length of disability for uncomplicated cases, itemised for the demands of the job. In relation to laparoscopic adnexal surgery, LH, VH and AH, the MDA recommends an optimum length of disability of 1, 4, 4 and 6 weeks for sedentary work, and 3, 10, 10 and 12 weeks for a very physically demanding job, respectively. When we compare these results with the developed recommendations in this Delphi study, it is striking that for all types of hysterectomy and job classification, at least 2–6 weeks less sickness leave is advised in our guidelines. The most plausible explanation for this substantial difference in recommendations in postoperative recovery is that the two guidelines were developed for different purposes. Our guideline is developed as an aid for the gradual resumption of activities and reintegration, whereas the MDA disability guideline tables represent important points in time after which, if full recovery has not occurred, additional evaluation should take place, and is designed to determine the duration of sickness benefit.

Another distinguishing feature of the results of our study compared with the previously mentioned guidelines is the level of specification of the recommendations. The DWP guidelines and MDA only report the recovery time until a full return to work, whereas the results of our Delphi study provide detailed advice of different types of graded activities from the day of surgery until a full return to work.

Strengths and limitations
A primary strength of the present study lies in the use of the modified Delphi method, in which the participants had all relevant and available literature at their disposal, were allowed to maintain anonymity during the questionnaire rounds, which prevents peer pressure, and had the opportunity to revise their opinion during the group discussions. The questionnaire rounds prevented domination by any particular individual who might otherwise be overly influential in a group decision. Furthermore, representatives from the stakeholder groups of gynaecologists, OPs and GPs were involved, which can improve the practical applicability of the research findings, and leads to guidelines that are endorsed by all stakeholders. A third strength is the heterogeneous expert panel, with the different health-
Table 1: Ability gradations

<table>
<thead>
<tr>
<th>Category</th>
<th>Item*</th>
<th>Number of ability gradations*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal functioning</td>
<td>Focusing attention</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Dividing attention</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Memory</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Insight into own abilities</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Action tempo</td>
<td>2</td>
</tr>
<tr>
<td>Social functioning</td>
<td>Transportation</td>
<td>2</td>
</tr>
<tr>
<td>Adj. to environment</td>
<td>Vibration</td>
<td>2</td>
</tr>
<tr>
<td>Dynamic movements</td>
<td>Reaching out</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Reach out frequently</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Bending</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Bend frequently</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Turning/twisting round</td>
<td>2</td>
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<tr>
<td></td>
<td>Pushing or pulling</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Lifting or carrying</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Handle light objects frequently</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Handle heavy objects frequently</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sustained walking</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Walking per day</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Climbing stairs</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Climbing</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Kneeling or squatting</td>
<td>2</td>
</tr>
<tr>
<td>Static postures</td>
<td>Prolonged sitting</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Sitting per day</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Prolonged standing</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Standing per day</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Prolonged kneeling or squatting</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Prolonged bending and/or twisting</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Working above shoulders</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Changing position</td>
<td>2</td>
</tr>
<tr>
<td>Working hours</td>
<td>Hours per day</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Hours per week</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>shift work</td>
<td>3</td>
</tr>
<tr>
<td>Other activities (not-work related)</td>
<td>Taking a bath</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sexual intercourse</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Jumping</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Vacuum cleaning</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Riding a bicycle</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Driving a car</td>
<td>2</td>
</tr>
<tr>
<td>Time schedule</td>
<td>T0: period prior to surgery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1: day of surgery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2dy: second day after surgery, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1wk: first week after surgery, etc</td>
<td></td>
</tr>
</tbody>
</table>

*For clarification of items and ability gradations, see appendix S1.

Figure 3. Detailed convalescence recommendations after fourth Delphi round for TLH/LAVH.
Lastly, the evaluation of the feasibility of the recommendations by a large sample of geographically dispersed physicians, allowed an examination of different points of view and prevented recommendations that go against general clinical practice. The main limitation of this study was the use of the functional ability list, which was originally developed for the detailed assessment of functional ability by OPs and IPs in the Netherlands. Conversely, in our study we used this instrument to judge different gradations of strain in the recovery process after a medical intervention. By using the FAL, the gradations of strain were judged in great detail. In combination with the variation of recovery time per patient, determining to which extent a patient could be strained at a given time was a challenging task for the experts. However, at this moment it is the most suitable instrument available for this kind of study, and the experts did reach a consensus opinion for all activities and gradations of strain. A second limitation is that the convalescence recommendations are based on opinions of a single group of Dutch experts, and cannot be taken to be reflective of all Dutch experts. Nevertheless, the evaluation of the recommendations by a representative sample of physicians indicates that the results are representative for the stakeholders. It needs to be noted that the convalescence recommendations are mere point estimations of an average recovery time with a natural range, not taking into account other (non)medical factors that might influence the postoperative recovery time. If complications or co-morbidities are present, the physician will have to determine whether the recovery period will need to be extended. As this was an exclusively Dutch study, external validity has to be examined for the results to be applicable internationally. Finally, it is possible that the expert panel has inadvertently overlooked an important convalescence recommendation. However, such a risk is minimal because the panel members were a heterogeneous sample of experts, they had elaborate opportunity to provide suggestions for relevant activities and all available knowledge about convalescence recommendations provided by the literature review was used.

Interpretation of the results and policy implications

The recommendations can be interpreted as an average functional recovery time for a healthy woman between 18 and 65 years old, not taking into account other (non)medical factors that might influence the postoperative recovery time. If complications or co-morbidities are present, the physician will have to determine whether the recovery period will need to be extended. As this was an exclusively Dutch study, external validity has to be examined for the results to be applicable internationally. Finally, it is possible that the expert panel has inadvertently overlooked an important convalescence recommendation. However, such a risk is minimal because the panel members were a heterogeneous sample of experts, they had elaborate opportunity to provide suggestions for relevant activities and all available knowledge about convalescence recommendations provided by the literature review was used.

The recommendations are meant to be a tool for gynaecologists, GPs and OPs, to assist them in giving unambiguous detailed convalescence recommendations to their patients.
patients during the perioperative period. By doing so, patients will be better informed about when it is thought to be medically safe to resume daily and work activities after gynaecological surgery, and it will give them the possibility to arrange (workplace) adaptations if necessary. Prospective cohort studies exploring sick leave after general surgical procedures show that the return to work is mainly influenced by the expectations of the patient and their supervisors, rather than by physical factors or the type of surgery.\(^1\)\(^,\)\(^8\)\(^–\)\(^10\) Therefore, it is assumed that detailed convalescence recommendations will especially help to exploit the potential advantages of minimal invasive surgical procedures by accelerating the recovery of patients. Furthermore, the unambiguous recommendations developed in this study are likely to enhance compliance to advice given by medical specialists, and stimulate the patient to resume activities with increasing gradations of strain, which will presumably bring about a quicker recovery without an increase in complications.\(^9\)\(^,\)\(^11\)\(^,\)\(^13\) Therefore, the recommendations may potentially prevent work disability, increase the quality of life and increase patient satisfaction with care. To investigate these hypotheses, further research using a randomised controlled trial will be conducted, in order to validate the recommendations developed in this study.

**Conclusion**

Consensus between gynaecologists, GPs and OPs was achieved on all relevant convalescence recommendations for recovery, regarding hysterectomy (AH, VH and LH) and laparoscopic adnexal surgery. These consensus-based multidisciplinary recommendations should be considered as an important first step towards the improvement of perioperative care. Further study will be conducted to validate the guidelines and evaluate the effectiveness in clinical practice.

**Disclosure of interests**

The authors declare that they have no conflicts of interests.

**Contribution to authorship**

All five authors made substantial contributions to this article. JRA, JAH and AVN reviewed the literature, and administered the Delphi process with the expert panel. All authors participated in the analysis and interpretation of the data, in the drafting or revising of this article, and all approve this version to be published.

**Details of ethics approval**

The study design and procedures were approved by the Medical Ethics Committee of the VU University Medical Center (9 February 2009, no. 2009/42).

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**Supporting information**

The following supplementary materials are available for this article:

- **Appendix S1.** The functional ability list of the 38 items presented in Table 1 and Figure 3.
- Additional supporting information may be found in the online version of this article.
- Please note: Wiley-Blackwell are not responsible for the content or functionality of any supporting information supplied by the authors. Any queries (other than missing material) should be directed to the corresponding author.

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