Implementation of outpatient preoperative evaluation clinics: facilitating and limiting factors

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Background. Several studies have shown that outpatient preoperative evaluation by anaesthetists increases quality of care and is cost-effective. The aim of this study was to gain insight into the factors that positively or negatively influence the implementation of outpatient preoperative evaluation clinics (OPE clinics).

Methods. After an extensive literature study and pilot interviews, we constructed written questionnaires that were sent to all Dutch hospitals. The respondents were members of the board of directors, members of the medical staff, anaesthetists, internists, and surgeons.

Results. Cooperation of anaesthetists was most frequently mentioned as facilitating factor for implementation of an OPE clinic across all medical specialists interviewed. Lack of finance was most frequently reported as limiting factor in all categories of hospitals (with a complete, partial, or no OPE clinic), but it was significantly more often reported in hospitals without OPE clinic (P<0.01). Perceived benefits and disadvantages, financial rewarding system, and organizational structure played a clear role in the implementation of OPE clinics.

Conclusions. A variety of factors play a role in the implementation of an OPE clinic. Besides the more obvious ones, such as financing and cooperation of the professional groups involved, underlying factors, such as perceptions of the professionals involved, were found to be related to implementation of an OPE clinic. These underlying factors explain differences between different kinds of hospitals and between professional groups, regarding their resources and motivation to implement an OPE clinic.

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Several studies have shown that outpatient preoperative evaluation (OPE) increases quality of care and is cost-effective.1–4 In the late 1990s, the Dutch Health Council and subsequently the Netherlands Society for Anaesthesiology issued guidelines for OPE. They recommended to conduct a timely preoperative health assessment in all elective surgical patients by or under supervision of an anaesthetist.5,6 However, a multitude of factors can play a role in the implementation of such innovations, including not only budget allocation, but also organizational structure, culture, logistics, and motivation of the people involved.7–9 This survey of all Dutch hospitals aimed to detect financial, organizational, logistical, and motivational factors that influence the implementation of the OPE clinic according to five potentially involved professional groups.

Methods

The survey consisted of two phases.10 Phase-1 consisted of literature study and pilot interviews, and phase-2 consisted of questionnaires.
A search in the Pubmed and the EBSCOHost® Academic Search Elite databases was performed to gain insight into the factors that could influence the implementation of OPE clinics. Search terms included: implementation, preoperative screening, organization, guidelines, hospital, strategies, surgeons, and anaesthetists. Studies on OPE clinics1–4 11–14 and more general literature about implementation of guidelines, innovations, and organizational changes in healthcare6–9 15–24 were included. On the basis of this literature study, face-to-face interviews with mostly open questions were constructed, focusing on the current organization of preoperative evaluation, satisfaction with this organization, level and course of adoption and implementation of an OPE clinic, and perceived facilitating and limiting factors.

Five groups that could be potentially involved in the implementation of an OPE clinic were interviewed. These were members of the board of directors, members of the medical staff (i.e. medical specialists involved in hospital management), anaesthetists, internists, and surgeons. We anticipated potential differences regarding facilitating and limiting factors in hospitals with a different level of implementation of the OPE clinic. Hospitals were divided into three categories according to their level of implementation:10 13 that is, hospitals with a ‘complete OPE clinic’ (where all elective adult surgical patients are evaluated by or under supervision of an anaesthetist before operation), with a ‘partial OPE clinic’ (only subgroups of patients are evaluated routinely), and without an OPE clinic. The nine selected hospitals for the interviews included three hospitals of each category.

Four versions of the pilot interviews were made.25 Members of the board of directors and medical staff received a different version than medical specialists. Also, respondents in hospitals with OPE clinic and those in hospitals without OPE clinic received a different version. This allowed respondents to give information which was specific to the specialty or hospital category. Transcripts of the interviews were returned to the respondents for their consent.

In phase-2, the results of the pilot interviews lead to construction of structured written questionnaires with multiple choice questions, again four different versions were made. Main items were: current organization of the preoperative evaluation, satisfaction with this organization, perceived benefits and disadvantages of an OPE clinic, the adoption and implementation of an OPE clinic, perceived facilitating and limiting factors, and future plans. Questions focused on organizational, logistical, financial, and motivational factors. The questionnaires were sent in May 2004 to the representatives of the five professional groups in all Dutch hospitals where surgery was performed (n=138 hospitals). To increase response rates, non-responders were repeatedly contacted by phone. The last questionnaire was returned in September 2004. Questionnaires were handled anonymously.

The answers were summarized for each professional group and each category of hospitals (complete, partial, or no OPE clinic) and expressed as absolute values with percentages. We hypothesized differences in facilitating and limiting factors for implementation of an OPE clinic between university hospitals, general teaching hospitals, and non-teaching hospitals. Therefore, analysis was also done according to these three hospital types. The χ² or Fisher’s exact test (in case of >20% of cell counts <5) was performed to investigate whether frequencies of multiple choice answers differed significantly between respondent groups (P-value <0.05 and two-tailed).

Results

In 130 hospitals (94%), at least one of the five groups returned the questionnaire (Table 1). Anaesthetists showed the highest (70%) and internists the lowest (35%) response. Non-response was mostly due to lack of time.

Fifty-two per cent of the hospitals had a complete, 22% a partial, and 26% no OPE clinic (Table 1). Satisfaction with the current organization of preoperative evaluation was highest among respondents of hospitals with complete OPE clinic (79%) and lowest among respondents of hospitals without OPE clinic (25%). Anaesthetists in hospitals with OPE clinic (partial or complete) worked more often on a fixed salary base compared with anaesthetists in hospitals without OPE clinic (36% vs 14%, P=0.05).

Improved logistics in the preoperative pathway was mentioned most frequently as benefit of an OPE clinic (overall more than 80%, Tables 2 and 3). In university hospitals, ‘working more patient centred’ scored the highest (94%, Table 2). Anaesthetists attributed more benefits to an OPE clinic than internists and surgeons (Table 3).

<table>
<thead>
<tr>
<th>Total response*</th>
<th>Complete OPE clinic†</th>
<th>Partial OPE clinic†</th>
<th>No OPE clinic†</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>(n=71), n (%)</td>
<td>(n=31), n (%)</td>
<td>(n=36), n (%)</td>
</tr>
<tr>
<td>At least one response from hospital</td>
<td>130 (94)</td>
<td>68 (96)</td>
<td>29 (94)</td>
</tr>
<tr>
<td>Board of directors (n=138)</td>
<td>82 (59)</td>
<td>44 (62)</td>
<td>18 (58)</td>
</tr>
<tr>
<td>Medical staff (n=138)</td>
<td>70 (51)</td>
<td>40 (56)</td>
<td>14 (45)</td>
</tr>
<tr>
<td>Anaesthetists (n=138)</td>
<td>97 (70)</td>
<td>54 (76)</td>
<td>21 (68)</td>
</tr>
<tr>
<td>Internists (n=138)</td>
<td>48 (35)</td>
<td>31 (42)</td>
<td>6 (21)</td>
</tr>
<tr>
<td>Surgeons (n=138)</td>
<td>80 (58)</td>
<td>43 (61)</td>
<td>18 (58)</td>
</tr>
</tbody>
</table>

Table 1 Response rates of different professional groups in different hospital category among 138 hospitals. Values are number (percentage) of hospitals that at least returned one questionnaire. *Percentages in relation to total number of hospitals (e.g. 82/138=59%). †Percentages in relation to total number of hospitals within the categories complete, partial, or no OPE clinic (e.g. 44/71=62%).
The majority of the respondents in hospitals with a partial (66%) or no OPE clinic (76%) stated that an OPE clinic had financial consequences for other medical specialists than anaesthetists, in contrast to a minority (42%) in hospitals with a complete OPE clinic (Table 2). However, the possible financial consequences remained the most frequently mentioned disadvantage in the latter. Respondents at university hospitals (where all staff is paid a fixed salary) reported this disadvantage significantly less (24%) than respondents in general hospitals (57% and 56%, Table 2).

There were significant differences between the five professional groups regarding the perceived disadvantages.
Members of medical staff, internists, and surgeons more frequently stated that an OPE clinic has no surplus value for specific patient groups, for example, ASA class I and II, than members of the board of directors and anaesthetists \((P=0.01, \text{Table 3})\). Anaesthetists who stated that an OPE clinic has no surplus value for specific patient groups were mostly found in hospitals without OPE clinic [68% mentioned this disadvantage, compared with 23% and 14% in hospitals with a complete or partial OPE clinic, respectively \((P=0.001)\)].

Anaesthetists (99%), board of directors (85%), and medical staff (71%) were most frequently involved in the decision-making regarding the implementation of an OPE clinic. The average period between the formal decision and the start of implementation was 20 months (so 17 months). The most important reason for having a partial instead of complete OPE clinic was shortage of manpower (69%), followed by inadequate logistics (65%) and lack of finance (59%). In all 33 hospitals without OPE clinic, implementation had been discussed. In 12, a formal decision had been already made to implement an OPE clinic.

Cooperation of anaesthetists was most frequently mentioned as facilitating factor (Tables 4 and 5). In university hospitals, cooperation of the board of directors (75%) and presence of change agents (63%), that is, persons who ‘pull’ the implementation process, were also frequently mentioned (Table 4). Anaesthetists significantly more often named availability of finance and of supporting personnel as a facilitating factor, whereas internists and surgeons significantly more often named cooperation of other specialists than anaesthetists (Table 5).

Lack of finance and shortage of anaesthetists were most frequently reported as limiting factor in all kinds of hospitals (Table 4). Both factors were mentioned significantly more often by respondents from hospitals without OPE clinic. There were no differences between university and general hospitals regarding the limiting factors. Anaesthetists significantly more often reported insufficient cooperation of other specialists than internists and surgeons (Table 5). Members of the board of directors and of the medical staff reported lack of finance as a substantial problem for implementation of an OPE clinic (74% and 70%, respectively).

### Discussion

This study gained insight into the factors that influence the implementation of OPE clinics. The most important facilitating factor was the cooperation of the anaesthetists and the most limiting factor was financing, especially that of extra anaesthetists to employ at the OPE clinic.

Given our comprehensive approach of the literature review, followed by open interviews and extensive questionnaires, and the high participation of hospitals and

#### Table 4 Top five of the perceived facilitating and limiting factors in different hospital categories. Values are number (percentage) of hospitals in which this factor was mentioned most frequently by all or an equal number of respondents most frequently, both factors were scored for that hospital. \(P\)-values refer to comparisons between groups. *Not applicable, question was not asked to this category of hospital.

<table>
<thead>
<tr>
<th>Facilitating factors (perceived as decisive)</th>
<th>Complete OPE clinic ((n=68), n(%))</th>
<th>Partial OPE clinic ((n=29), n(%))</th>
<th>No OPE clinic ((n=33), n(%))</th>
<th>(P)-value University hospital ((n=8), n(%))</th>
<th>Teaching hospital ((n=76), n(%))</th>
<th>Non-teaching hospital ((n=46), n(%))</th>
<th>(P)-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation board of directors</td>
<td>23 (34)</td>
<td>14 (48)</td>
<td>—</td>
<td>0.18</td>
<td>6 (75)</td>
<td>17 (22)</td>
<td>11 (24)</td>
</tr>
<tr>
<td>Cooperation anaesthetists</td>
<td>59 (87)</td>
<td>21 (72)</td>
<td>—</td>
<td>0.09</td>
<td>8 (100)</td>
<td>45 (59)</td>
<td>27 (59)</td>
</tr>
<tr>
<td>Presence of change agents</td>
<td>30 (44)</td>
<td>8 (28)</td>
<td>—</td>
<td>0.13</td>
<td>5 (63)</td>
<td>21 (28)</td>
<td>11 (24)</td>
</tr>
<tr>
<td>Availability of finance</td>
<td>29 (43)</td>
<td>8 (28)</td>
<td>—</td>
<td>0.16</td>
<td>1 (13)</td>
<td>24 (32)</td>
<td>11 (24)</td>
</tr>
<tr>
<td>Availability of supporting personnel</td>
<td>24 (35)</td>
<td>11 (38)</td>
<td>—</td>
<td>0.80</td>
<td>4 (50)</td>
<td>17 (22)</td>
<td>13 (28)</td>
</tr>
<tr>
<td>Limiting factors (perceived as an obstacle)</td>
<td>Insufficient cooperation of other specialists</td>
<td>10 (15)</td>
<td>1 (3)</td>
<td>7 (21)</td>
<td>0.12</td>
<td>0 (0)</td>
<td>11 (14)</td>
</tr>
<tr>
<td>Lack of finance</td>
<td>20 (29)</td>
<td>11 (38)</td>
<td>24 (73)</td>
<td>0.0002</td>
<td>4 (50)</td>
<td>33 (43)</td>
<td>19 (41)</td>
</tr>
<tr>
<td>Lack of appropriate space</td>
<td>11 (16)</td>
<td>6 (21)</td>
<td>7 (21)</td>
<td>0.78</td>
<td>3 (38)</td>
<td>16 (21)</td>
<td>6 (13)</td>
</tr>
<tr>
<td>Not enough anaesthetists to employ at OPE clinic</td>
<td>16 (24)</td>
<td>9 (31)</td>
<td>20 (61)</td>
<td>0.001</td>
<td>2 (25)</td>
<td>27 (36)</td>
<td>18 (39)</td>
</tr>
<tr>
<td>Savings that OPE clinic can give are difficult to prove</td>
<td>11 (16)</td>
<td>2 (7)</td>
<td>9 (27)</td>
<td>0.10</td>
<td>1 (13)</td>
<td>14 (18)</td>
<td>7 (15)</td>
</tr>
</tbody>
</table>
Although all respondents were convinced that an OPE clinic had benefits, some groups attributed more benefits than others. Overall, respondents (including anaesthetists) in hospitals without OPE clinic reported significantly less benefits and more disadvantages than respondents in hospitals with OPE clinic. This might explain why in these hospitals an OPE clinic is not implemented yet, despite the evidence for cost-effectiveness and increase in quality of care.26 27

The most limiting factors for implementation were lack of finance and shortage of anaesthetists to run the OPE clinic; both are closely related. Lack of finance is a frequently reported problem with respect to implementation of innovations in healthcare.8 13 In hospitals without OPE clinic, anaesthetists significantly more often worked on a fee for service basis. This rewarding system could affect the willingness of the anaesthetists to implement an OPE clinic, as there is no extra fee for preoperative evaluation. Interestingly, cooperation of anaesthetists was mentioned more frequently as facilitating factor than the availability of finance. It seems that if the anaesthetists want to cooperate, an OPE clinic can be implemented even with limited resources. The importance of motivation and cooperation of the professionals involved was also found in a study on implementation of an in-training-assessment programme in anaesthesia28 and in more general studies on implementation processes in medical settings.15 17 22

Perceived facilitating factors differed between university and general hospitals. Differences were mostly found in the cooperation and motivation of the involved groups, the presence of change agents, and the availability of personnel. Differences in financial and organizational structure between university and general hospitals may explain these findings, for example, all medical specialists in university hospitals are paid a fixed salary and university hospitals may have a more hierarchical structure. Analysis between teaching and non-teaching general hospitals showed no conspicuous differences, most likely because their structures are more alike.

The percentage of Dutch hospitals with an OPE clinic increased from 50% in 2000 to 74% in 2004 and the percentage of hospitals with a complete OPE clinic increased from 20% to 52%.10 In all hospitals without OPE clinic, the implementation of such a clinic was on the agenda and negotiations had started between the professional groups. A new trend in preoperative care is substitution of specific tasks between anaesthetists and nurses.12 29 30 This might provide a solution for the lack of finances and manpower, and enhance implementation of OPE clinics.

In conclusion, a variety of factors play a role in the implementation of OPE clinics. Besides the obvious factors such as financing and cooperation of the groups involved, underlying factors such as perceived benefits and disadvantages, financial rewarding system, and organizational structure are also related to successful

Table 5 Top five of the perceived facilitating and limiting factors according to different types of medical specialists. Values are number (percentage) of respondents. P-values refer to comparisons between groups. *Question was only asked to medical specialists in hospitals with a complete or partial OPE clinic.

<table>
<thead>
<tr>
<th>Facilitating factors (perceived as decisive)</th>
<th>Anaesthetists n (%)</th>
<th>Internists n (%)</th>
<th>Surgeons n (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation anaesthetists</td>
<td>69 (97)</td>
<td>25 (86)</td>
<td>41 (93)</td>
<td>0.12</td>
</tr>
<tr>
<td>Cooperation other medical specialists</td>
<td>22 (31)</td>
<td>17 (61)</td>
<td>24 (57)</td>
<td>0.004</td>
</tr>
<tr>
<td>Presence of change agents</td>
<td>39 (55)</td>
<td>13 (46)</td>
<td>24 (59)</td>
<td>0.70</td>
</tr>
<tr>
<td>Availability of finance</td>
<td>49 (69)</td>
<td>14 (48)</td>
<td>20 (47)</td>
<td>0.03</td>
</tr>
<tr>
<td>Availability of supporting personnel</td>
<td>49 (71)</td>
<td>11 (39)</td>
<td>19 (43)</td>
<td>0.002</td>
</tr>
<tr>
<td>Limiting factors (perceived as an obstacle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient cooperation of other specialists</td>
<td>19 (24)</td>
<td>0 (0)</td>
<td>5 (10)</td>
<td>0.003</td>
</tr>
<tr>
<td>Lack of finance</td>
<td>35 (44)</td>
<td>10 (30)</td>
<td>15 (30)</td>
<td>0.17</td>
</tr>
<tr>
<td>Lack of appropriate space</td>
<td>16 (20)</td>
<td>4 (13)</td>
<td>10 (20)</td>
<td>0.67</td>
</tr>
<tr>
<td>Not enough anaesthetists to employ OPE clinic</td>
<td>25 (33)</td>
<td>9 (29)</td>
<td>19 (40)</td>
<td>0.58</td>
</tr>
<tr>
<td>Savings that OPE clinic can give are difficult to prove</td>
<td>13 (16)</td>
<td>4 (13)</td>
<td>10 (20)</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Table 5: Top five of the perceived facilitating and limiting factors according to different types of medical specialists. Values are number (percentage) of respondents. P-values refer to comparisons between groups. *Question was only asked to medical specialists in hospitals with a complete or partial OPE clinic.
implementation. These underlying factors explain existing differences between different kinds of hospitals and among professional groups with regard to their resources and motivation to implement an OPE clinic.

Acknowledgements
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Appendix
Relevant questions from the questionnaire. The answers were provided with check boxes for ‘yes’ and ‘no’.
Tables 2 and 3 were based on the following questions. These questions were formulated the same in all relevant questionnaires.

Which benefits does an OPE clinic have according to you?
Working according to the law on medical agreement
Working more patient centred
Improvement of logistics of preoperative pathway
Improvement of provided patient record
Opportunity to optimize patients’ condition
Enrichment of the profession of the anaesthetist
Decrease in cancellations of surgery
Decrease in length of stay
Decrease in preoperative consults by other specialists
Decrease in function tests
Decrease in lab requests
Decrease in X-rays
Other…...

Which disadvantages does an OPE clinic have according to you?
Disintegration of preoperative care
Imposed care innovation
Decrease in professional freedom for anaesthetists
Decrease in professional freedom for other specialists
Too labour intensive for anaesthetists
No surplus value for specific patient groups
Increase in waiting time for surgery
Has financial consequences for other specialists
Inconvenient for patients
Other…...

Tables 4 and 5 were based on the following questions.

Which facilitating factors played a role in the implementation of the OPE clinic and which of these were really decisive?

<table>
<thead>
<tr>
<th>Facilitating Factors</th>
<th>A role</th>
<th>Decisive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation board of directors</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Cooperation anaesthetists</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Cooperation other medical specialists</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Cooperation medical staff</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

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