

# Clinical indicators for ambulatory surgery

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## Abstract

14 clinical indicators for ambulatory surgery were tested on a sample of 111.374 complete AQS1-questionnaires from 1000 surgical units in the fields of gynaecology, orthopaedics and general surgery during a period of 3 years. In addition benchmarking was visualized in 12 different surgical units after "arthroscopic cruciate ligament reconstruction". The results

show that there is enough variation between different surgical units so that this can be used for the staff of surgical units as a tool for self-learning and improving process management. The results also can help to prepare patients for what they have to encounter in ambulatory surgery.

**Keywords:** Clinical indicator; Ambulatory surgery; Benchmarking

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## Aim

The aim is to update the results of the quality assurance programme AQS1 with respect to selected clinical indicators (CI). In particular, this study should answer the question what CI can be used to measure differences in the quality outcome with respect to the different specialties, surgical procedures and surgical units.

## History

In 1999 the Bundesverband für Ambulantes Operieren (BAO) in cooperation with medicaltex GmbH, a private firm specializing in quality assurance programmes for surgery, started an assurance program AQS1 for ambulatory surgery in Germany. This comprised 3 questionnaires, one for the surgeon, one for the anaesthetist and a third and separate one for the patient [1].

In 2007 after evaluating the data of more than 200 000 procedures we suggested to the National Association of SHI-Accredited Physicians (Kassenärztliche Bundesvereinigung KBV) 16 indicators to monitor quality in ambulatory surgery in Germany [2]. Fourteen of these indicators were used for the present study. So far the government has not yet decided upon a national quality assurance programme. But the Kassenärztliche Vereinigung Bayerns (KBV), representation of the KBV in Bavaria, and the BAO together issued a positional paper endorsing the quality assurance programme AQS1 after having studied two clinical indicators in co-operation with the Ludwig-Maximilians-University of Munich [3].

## Methods

The quality assurance programme AQS1 was described in detail [4].

By the end of 2009, data on more than 500.000 ambulatory surgical procedures from about 1.000 surgical units (doctors' offices and day clinics, all government licenced for ambulatory surgery) were available for assessment. The return rate of the patient questionnaires was 50% overall. The collected data comprised all surgical fields. Most data (about two third of the patients) were provided by the three specialties gynaecology, orthopaedic surgery and general surgery.

14 clinical indicators were evaluated for this study. They are:

1. Unplanned hospitalisation within 14 days
2. Waiting time from time appointed for surgical procedure up to actual beginning
3. OR blocking time (from arrival of patient in the OR until leaving)
4. Time period in the recovery area
5. Inability to work (in days) after surgery
6. Intensity of wound pain on the 1st. post-operative day
7. Intensity of nausea on the 1st. post-operative day
8. Possibility to reach the surgeon or anaesthetist at any time
9. Necessity after discharge to see another doctor as an emergency case
10. Sufficient pain medication on the day of surgery (pain scale)
11. Complication "wound infection" requiring treatment
12. Complication "thrombosis" requiring treatment
13. Complication "post-operative bleeding" requiring treatment
14. Satisfaction with this ambulatory procedure

For this evaluation we used a sample of 111.374 complete AQS1-questionnaires that were documented between January 2007 and December 2009, i.e. a period of 3 years.

We chose several groups to test the clinical indicators. The first group represented the entire collective, the second the specialty "gynaecology" and the third group the specialty "orthopaedic surgery". The fourth group consisted of twelve day clinics which performed the procedure "arthroscopic cruciate ligament reconstruction" on at least 50 patients in the selected time period.

## Results

### *1. Clinical indicators for the entire collective*

The average waiting period from time appointed for surgery up to the actual beginning called "unplanned waiting time" was 37 minutes. The "OR blocking time" (from arrival of patient in the OR until leaving) was 49 minutes and the time period in the recovery area ("recovery period") was 109 minutes. The average "period of disability" after surgery in the entire collective was 10 days.

On the first post-operative day 6,8 % of all patients marked the question "intensity of wound pain" as "severe" and 2,8 % had "severe" problems with nausea.

Table 1 shows the percentage of the patients feedback with respect to some particular clinical indicators. The result “complication wound infection requiring treatment” means, that at least antibiotics were taken by the patient, “complication post-operative bleeding requiring treatment” means that the patient was at least treated with a salve bandage.

Only 1,7 % of all patients had to be admitted to a hospital after ambulatory surgery. The wound infection rate was 2,7 % and 98,1 % of the patients would be happy to have ambulatory surgery again.

**Table 1** Selected clinical indicators in the judgement of patients (entire collective) (AQSI- study 2010, n= 111.374 patient questionnaires)

| Clinical indicator   | Yes   | No    |
|--|-------|-------|
| Sufficient pain medication on the day of surgery                     | 96,3% | 3,7%  |
| Possibility to reach the surgeon or anaesthetist at any time         | 91,6% | 8,4%  |
| Necessity to see another doctor as an emergency case after discharge | 1,5%  | 98,5% |
| Unplanned hospitalisation after ambulatory surgery                   | 1,7%  | 98,3% |
| Complication “wound infection” requiring treatment                   | 2,6%  | 97,4% |
| Complication “thrombosis” requiring treatment                        | 0,7%  | 99,3% |
| Complication “post-operative bleeding” requiring treatment           | 5,6%  | 94,4% |
| Patient would decide for ambulatory procedure again                  | 98,1% | 1,9%  |

## 2. Clinical indicators for gynaecology

The average “unplanned waiting time” was 36 minutes. The “OR blocking time” was 52 minutes and the “recovery period” was 108 minutes. The average period of disability was 17 days.

6,3 % of all patients reported “severe” intensity of wound pain on the first post-operative day. 3,4 % had “severe” problems with nausea.

Table 2 shows the percentage of patients feedback with respect to the particular clinical indicator.

Unplanned hospitalisation after ambulatory surgery was only 1,5 %. Patient satisfaction was 98,4 %.

## 3. Clinical indicators in orthopaedic surgery

The average “unplanned waiting time” was 37 minutes, the “OR blocking time” 49 minutes and the “recovery period” was 109 minutes. The period of disability was 10 days.

6,9 % of all patients had a “severe” intensity of wound pain on the first post-operative day. 2,6 % had “severe” problems with nausea.

Table 3 shows the judgement of the patients with respect to particular clinical indicators. Orthopaedic surgery showed similar results to gynaecological surgery with low rates of unplanned hospitalisation (1,1 %) and overall good satisfaction of patients (97,7 %).

**Table 2** Judgement of gynaecological patients concerning clinical indicators (AQSI- study 2010, n= 35.630 patient questionnaires)

| Clinical indicator   | Yes   | No    |
|--|-------|-------|
| Sufficient pain medication on the day of surgery                     | 94,7% | 5,3%  |
| Possibility to reach the surgeon or anaesthetist at any time         | 91,2% | 8,8%  |
| Necessity to see another doctor as an emergency case after discharge | 1,7%  | 98,3% |
| Unplanned hospitalisation after ambulatory surgery                   | 1,5%  | 98,5% |
| Complication “wound infection” requiring treatment                   | 2,7%  | 97,3% |
| Complication “thrombosis” requiring treatment                        | 0,3%  | 99,7% |
| Complication “post-operative bleeding” requiring treatment           | 3,6%  | 96,4% |
| Patient would decide for ambulatory procedure again                  | 98,4% | 1,6%  |

**Table 3** Clinical indicators in orthopaedic surgery - the patient’s judgement (AQSI-study 2010, n= 36.733 patient questionnaires)

| Clinical indicator   | Yes   | No    |
|--|-------|-------|
| Sufficient pain medication on the day of surgery                     | 98,1% | 1,9%  |
| Possibility to reach the surgeon or anaesthetist at any time         | 93,0% | 7,0%  |
| Necessity to see another doctor as an emergency case after discharge | 1,4%  | 98,6% |
| Unplanned hospitalisation after ambulatory surgery                   | 1,1%  | 98,9% |
| Complication “wound infection” requiring treatment                   | 2,0%  | 98,0% |
| Complication “thrombosis” requiring treatment                        | 1,2%  | 98,8% |
| Complication “post-operative bleeding” requiring treatment           | 7,2%  | 92,8% |
| Patient would decide for ambulatory procedure again                  | 97,7% | 2,3%  |

## 4. Clinical indicators for the orthopaedic procedure “arthroscopic cruciate ligament reconstruction”

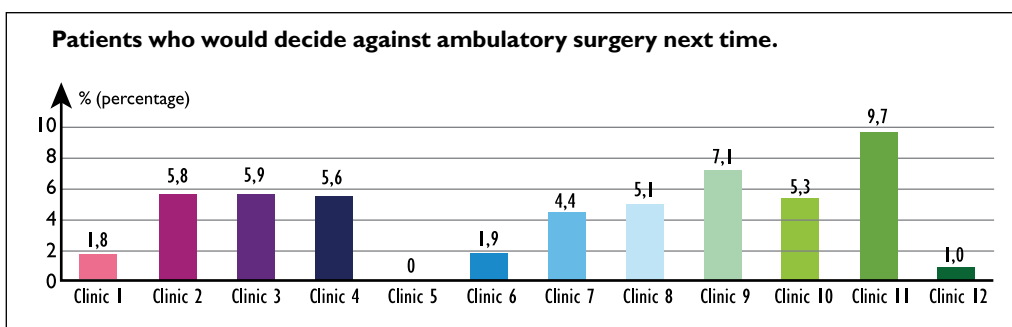
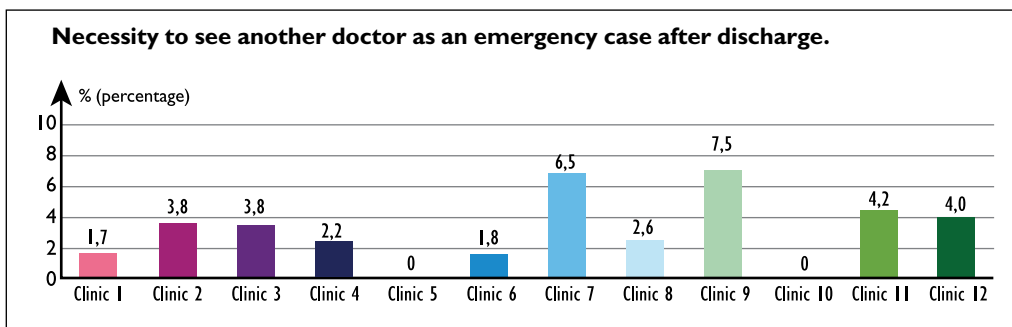
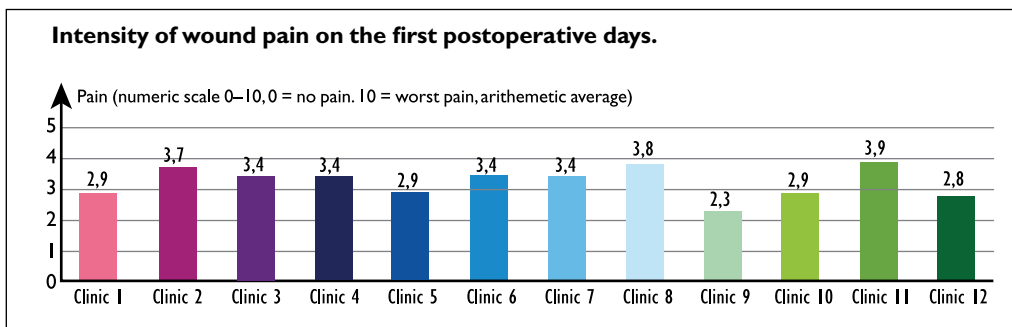
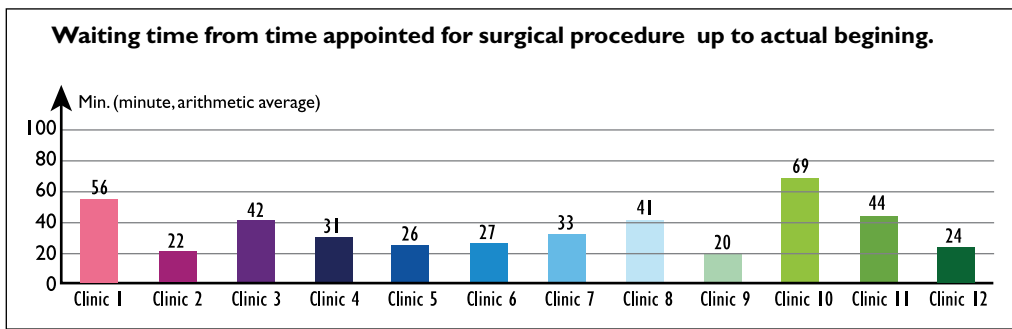
Figure 1 shows the results of 12 different day clinics and their performances with respect to 4 clinical indicators:

1. Unplanned waiting time, 2. Intensity of wound pain, 3. Necessity to see another doctor, 4. Patient dissatisfied with ambulatory surgery.

The results were:

- “Unplanned waiting time” in the 12 different day clinics ranged between 0 and 60 minutes.
- “Intensity of wound pain” on the first post-operative day was judged to be between 0 and 3,9 on a pain scale of 10.
- “Necessity to see another doctor” as an emergency case after discharge occurred between 0 and 7,5 % of all patients.

**Fig. 1** Benchmarking for 12 different day clinics using 4 clinical indicators after 'arthroscopic cruciate ligament reconstruction'. (AQS1-study, n = 2,525 patient questionnaires)



- Between 0 and 9,7 % of the patients would decide against an ambulatory procedures the next time.

Thus there is marked variation between the different day clinics

## Conclusion

The selected clinical indicators obviously allow benchmarking between individual day clinics and the collective which at the end of 2009 comprised 1000 surgical units.

The benchmarking reports – issued quarterly – indicates to surgeons and anaesthetists where to improve their process management and thus the wellbeing of their patients. Thus AQS1 initiates and sustains a

process of self-learning which has been documented in special cases.

For potential patients the results of this assurance programme offer solid evidence how well former patients have felt after ambulatory surgery in the whole collective and in particular in specific day clinics.

Our results also show that there is a substantial variation between the surgical specialties on the one hand and between different day clinics where the same surgical procedures were performed.

We can conclude that our selected indicators are appropriate to indicate quality differences in ambulatory surgery.

For future aspects these clinical indicators can be evaluated with respect to economic efficiency, i.e. inability to work, and to patient satisfaction.

The questionnaires can be filled out within minutes during routine work. The cost for one AQS1-questionnaire inclusive of the return postage for the patient is 1,49 € for the print version and 1,41 € for the online version.

## References

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