

The role of DOSA-principle for German hospitals

Abstract

Introduction: Inpatient admission on the day of surgery – in jargon “Day of Surgery Admission” (DOSA) is in many countries widely introduced care principle. There it is already implemented in the treatment standards and combined with fixed target rates. Advantages like higher patient satisfaction, reduction of nosocomial infections or higher cost effectiveness have been proved by earlier studies. German hospitals focus primarily on the punctual start of surgical procedures, optimization of transition times between two surgeries or surgical management. Some of them are already working with the DOSA principle. The study analyzes the current implementation rate of DOSA in Germany and the hidden financial potential of a consistent implementation.

Case presentation: Underlying data include the routinely compiled inpatient documentation of German hospitals as well as the results of the annual quality reports and the hospital benchmark of IGES Institute. The study analyzes if and if so, to which extend the DOSA principle is already implemented in German inpatient care for the surgical procedure of cholecystectomy. Based on the assumption that a DOSA rate of 85% for eligible patients is feasible financial savings are then estimated for the case that preoperative inpatient days could be reduced by one day per case (for non-DOSA cases). The results are then translated into an estimation for the whole inpatient sector and sorted by major diagnostic categories (only for procedures with operative codes relevant for grouping in the contract for ambulatory surgeries).

Conclusion: In 2013 the preoperative inpatient period for cholecystectomy procedures averaged at 2.1 days per case. The DOSA-rate for those surgeries was at 47.6 percent. That translates into a DOSA potential of approx. 46,000 occupancy days or 126 hospital beds (reduction by one preoperative inpatient day per case). The financial impact of a consistent implementation results in 11.9 million Euro of savings solely for gall bladder surgeries (260.54 Euro per case). In case the number of preoperative inpatient days is reduced to zero for eligible cases the savings would increase up 25.1 million Euro (547.13 Euro per case) or approx. 265 hospital beds.

Considering not only cholecystectomy but a nearly complete set of DOSA relevant procedures the analysis for those surgeries results in a DOSA potential of 510,774 cases per year and 138 million Euro in savings. The scale of the calculated figures in this projection evoked by consistent implementation of the DOSA principle is of significant relevance to individual hospitals, as well as the entire inpatient service provision in Germany.

Keywords: day of surgery admission, same day surgery, same day admission

Volume 5 Issue 6 - 2016

Thomas Kersting, Stephan Krumm, Anja Hoffmann

IGES Institute, Germany

Correspondence: Anja Hoffmann, IGES Institute, Friedrichstraße 180, 10117 Berlin, Germany, Tel +49 30 230809 588, Email Anja.hoffmann@iges.com

Received: August 31, 2016 | **Published:** September 19, 2016

Case report

In Anglo-American countries elective patients are typically admitted on the day of the surgical procedure. For German hospitals and the costly surgical inpatient sector this principle could be a key to increased efficiency

For more efficiency in the costly surgical inpatient sector German hospitals focus primarily on the punctual start of surgical procedures, optimization of transition times between two surgeries or surgical management.^{1,2} Some of them are already working with the principle of admitting elective patients on the day of the surgical procedure – in jargon “Day of Surgery Admission” (DOSA). In many countries this care principle is already implemented in the treatment standards and combined with fixed target rates. Ireland, Australia and New Zealand for instance strive for DOSA-rates from 75% to 95%.³⁻⁵ In proved treatment processes the compliance with this demands leads to a regular reimbursement based on diagnosis-related groups (DRG).

A lower deviation to that target rate leads to corresponding penalties. Efficiency and cost-effectiveness of the DOSA-principle have been proven multiple times.

Documented benefits

Part of the comprehensive documented positive effects are higher patient satisfaction, medical advantages such as the reduction of nosocomial infection rates and the financial relief of hospitals as well as health care systems.⁶⁻⁸ German hospitals also experiment with the introduction of the DOSA principle.⁹ Systematic evaluation is currently conducted by the IGES Institute on the basis of statistical data of the German Federal Statistical Office. The objective of the study was the calculation of potential savings for hospitals associated with the consistent utilization of the DOSA principle.

It was investigated to which extend German hospitals deploy the DOSA-principle for the surgical procedure of endoscopic gallbladder surgery (cholecystectomy). The results provide the base for the subsequent transfer on other procedures.

Calculation basis was the article 21 KHentgG record of all surgical procedures. Each hospital is obliged to deliver annually their anonymized inpatient procedure data to the respective official institution - the Institute for the Payment System in Hospitals (InEK). InEK is responsible for the calculation of the DRG reimbursement rates (relative values), the billing of German inpatient health care delivery is based on. Those procedural data are pooled and the results are made available in the annually updated DRG-Report browser. Another source of information are the data of the so called external quality assurance (annual quality reports mandatorily prepared by each hospital) which are reviewed and evaluated by the IQTIG (Institute for Quality Assurance and Transparency in Healthcare formerly conducted by Institute for Applied Quality Improvement and Research in Health Care (AQUA)). Unfortunately, the publicly available data of article 21 KHentgG allow no assertion on the period between admittance and begin of surgery. The results of the IQTIG reviews at least give a notion on the average preoperative period of hospitalization for certain procedures (including cholecystectomy). In order to calculate possible financial savings additional data of a group of hospital benchmarking hospitals was consulted. This data set contains detailed information on the date of admittance and the moment of the surgical procedure.

The pooled average pre-operative period of hospitalization for all different variations of gall bladder surgeries according to the 2013 IQTIG data is 2.1 days. For endoscopic procedures in the low risk ASA-classes I and II (American Society of Anesthesiologists) it is 1.7 days and for the conventional open surgery even 3.3 days. Based on the hospital benchmark the following distribution (Figure 1) of preoperative inpatient days is ascertained: At the moment only 43.6 percent (respectively 47.6% of those cases represented in the hospital benchmark) are following the DOSA principle, meaning the surgical procedure is conducted on the day of admittance. A major fraction of 26.3% (27.1% for benchmark) was operated one day after admittance. However, 19.5% (17.9% for benchmark) of the procedures were conducted with notable time gap to the admittance (two to six days). Complex cases with more than six days preoperative period of hospitalization were exempted, therefore 45% of the procedures qualify for DOSA.

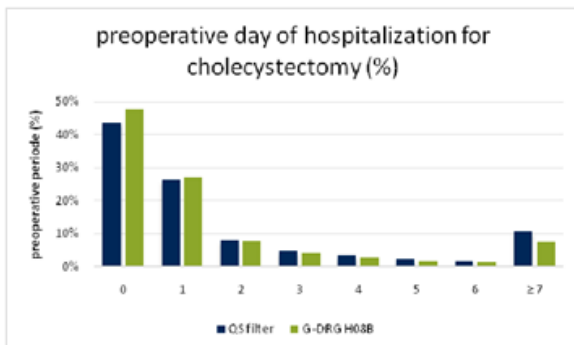


Figure 1 Preoperative day of hospitalization for cholecystectomy (%). **Source:** Hospital benchmark project.

Based on the German data set of the InEK for major diagnostic categories the following statistics were extractable for DRG H08B: In 2013 134,392 cases with an average length of stay of 4.2 days were treated. 87.8 percent of those showed none or only a minor Patient Clinical Complexity Level (PCCL≤1). As average cost the InEK calculated 2,490.24 Euro per case. Those costs were used to estimate the possible savings associated with a consistent implementation of the DOSA-principle. As a target threshold a DOSA rate of 85 percent was

set aligning with the international commonly used rates. Disregarded were cases with higher clinical complexity level (PCCL > 1).

11 million Euro potential annual savings only for gall-bladder surgeries

The following assumptions for the calculation were applied: For the remaining fraction of patients with minor clinical complexity (87.8%) and yet without applied DOSA principle, which qualify for DOSA, a target rate of 85 percent was applied. Leading eventually to a total of approx. 46,000 cases to be taken into account. For this fraction we have chosen a conservative estimation and implied that the average preoperative period of hospitalization could be reduced by one. Based on those assumptions and on the InEK sample of 2013 the calculation results in potential savings of approx. 46,000 occupancy days or 126 hospital beds. As unit of measure for the hidden financial savings the InEK discount factor (per day) for patient movements to a different hospital was deployed (0.081 relative value representing 260.54 Euro based on a nationwide base rate of 3,216.54 Euro). Those 260.54 Euro were multiplied with the number of potentially saved inpatient occupancy days. Based on this calculation at least 11.9 million Euro in savings could be realized solely with the consistent implementation of a one day preoperative reduction for elective cholecystectomy. If the complete preoperative 2.1 days in length of stay would be reduced in consequent implementation of the DOSA principle only for cholecystectomy overall savings would increase up to 25.1 million EURO (547.13 Euro per case) – equivalent to an average of 265 hospital beds to be possibly dismissed.

Other procedures, operations and DOSA

For an initial estimation for other procedures eligible for DOSA the following very careful and defensive approach was chosen: Incorporated were only procedures with operative codes relevant for grouping in the contract for ambulatory surgeries according to article §115b SGB V. The corresponding DRG were evaluated under the same assumptions as depicted above. And: Only 34.2% of the overall number of DRG were marked DOSA relevant. The overall analysis (sorted by major diagnostic categories) results in a DOSA potential of 510,774 cases per year. One day of assumed reduction of preoperative hospitalization period therefore would already lead to a potential reduction of 1,399 hospital beds and financial annual savings of approx. 138 million Euro (Figure 2).

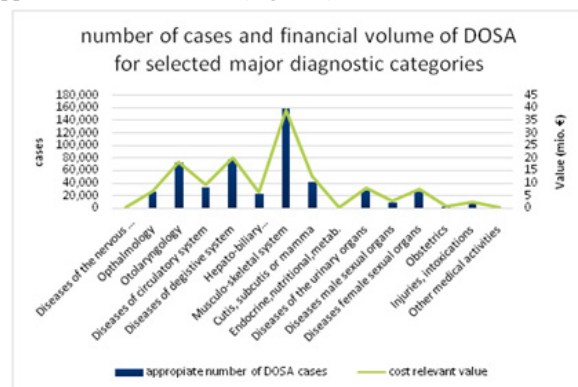


Figure 2 DOSA cases and financial volume. **Source:** Hospital benchmark project.

The scale of the calculated figures in this projection evoked by consistent implementation of the DOSA principle is of significant relevance to individual hospitals, as well as the entire inpatient service provision in Germany. The established DOSA policies of other

countries should not only be seen as an example for the risk reduction of infections but rather a worthwhile opportunity to exploit hidden efficiency potential.

Acknowledgments

None.

Conflicts of interest

The authors declare there is no conflict of interests.

Funding

None.

References

1. Bauer M, Diemer M, Ansorg J, et al. Glossar perioperativer Prozesszeiten und Kennzahlen. Eine gemeinsame Empfehlung von DGAI, BDA, BDC und VOPM. *Anaesth Intensivmed.* 2008;49:S93–S105.
2. Schuster M, Pezzella M, Taube C, et al. Delays in starting morning operating lists: an analysis of more than 20,000 cases in 22 German hospitals. *Dtsch Arztebl.* 2013;110(14):237–243.
3. The Australian Council on Healthcare Standards. Australasian Clinical Indicator Report:2006–2013. University of Newcastle, Newcastle; 2014.
4. Royal College of Surgeons in Ireland. Model of Care for Elective Surgery. 2013.
5. Sunerland P, Joblin K, Anderson D, et al. Quality living healthy lives. 2013.
6. Board N, Caplan G. Implications of decreasing surgical lengths of stay. *Aust Health Rev.* 2000;23(2):67–76.
7. Concannon ES, Hogan AM, Flood L, et al. Day of surgery admission for the elective surgical in-patient: successful implementation of the Elective Surgery Programme. *Ir J Med Sci.* 2013;182(1):127–133.
8. Harries RL, Bradshaw CA, Jones EA, et al. To admit or not to admit on the morning of surgery patients' perspectives on day of surgery admission. *J Perioper Pract.* 2013;23(3):56–58.
9. Frank M, Straßburger C. Das prozessorientierte Krankenhaus. *KU Gesundheitsmanagement.* 2015;5:62–64.