Sicht des Krankenhausmanagements

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Jetzt gibt es vielfältige Daten, Kennzahlen, Indikatoren

zur „medizinischen Qualität“ ....

Daten = Information = Veröffentlichung = Sicherheit ist ein Mythos!

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zur „medizinischen Qualität“ ....

Daten = Information = Veröffentlichung = Sicherheit ist ein Mythos!

„Information ist ein Unterschied, der einen Unterschied macht.“

Bateson G. Ökologie des Geistes. Anthropologische, psychologische, biologische und epistemologische Perspektiven. Frankfurt am Main: Suhrkamp; 1985

Jetzt gibt es vielfältige Daten, Kennzahlen, Indikatoren

zur „medizinischen Qualität“ ....

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Wie werden aus Daten -> Informationen -> Leitungsinterventionen-> Sicherheit?

Umsetzung der Informationen

CLINOTEL

Morbiditäts- und Mortalitätskonferenz
(M+M-Konferenz)

Handbuch

Revision 01
17.12.2009
Seite 1 von 1

Checkliste
Sofortige Arztkonsultation
Klinik für Allgemein- und Viszeralchirurgie

Patientenetikett

Name, Vorname: _____

Geburtsdatum: _____

Station: _____

Symptome,
die eine sofortige Arztkonsultation
bei erwachsenen Patienten erfordern:

(zutreffendes bitte Ankreuzen)

- ☐ Atemfrequenz < 8/min oder > 28/min
- ☐ O_2-Sättigung < 90 % trotz Sauerstoffgabe
- ☐ Herzfrequenz < 50/min oder > 120/min
- ☐ Blutdruckabfall systolisch < 90 mm Hg
- ☐ Blutdruckanstieg diastolisch > 110 mm Hg
- ☐ akuter Thoraxschmerz
- ☐ neu aufgetretene kalte, zyanotische oder pulslose Extremität
- ☐ neu aufgetretene Verwirrung, Agitation oder Delirium
- ☐ neu aufgetretene Sprachstörung
- ☐ Vigilanzminderung (Somnolenz)
- ☐ akute Veränderung der Pupillenreaktion/-symmetrie
- ☐ neu aufgetretener Krampfanfall
- ☐ Körpertemperatur > 39,0 °C
- ☐ unkontrollierbarer Schmerz
- ☐ neu aufgetretene Oligurie (Diurese < 50 ml / 4 h)
- ☐ akute Blutung
- ☐ Hyper - oder Hypoglykämie (klinisch relevant) oder (< 3,6 / > 12 mmol/l)

Information an _____ (welchen Arzt weitergegeben), **am** ___.___.____ **um** __:__ **Uhr**

Patientenuntersuchung am ___.___.____ **um** __:__ **Uhr** _____ (Unterschrift Schwester)

Bei einem dieser Symptome der Patienten der Klinik ist unmittelbar der **diensthabende Arzt** zu informieren. Bei lebensbedrohlichen Situationen (z. B. Myokardinfarkt) muss der diensthabende Arzt natürlich auch weiterhin umgehend auf der Station erscheinen. Auch die gleichzeitige Information an das Reanimationsteam bei lebensbedrohlichen Situationen bleibt von dieser Regelung unberührt. Sollte innerhalb von **15 Minuten** der diensthabende Arzt nicht erreicht worden sein, ist unverzüglich der **Hintergrunddienst** der jeweiligen Klinik zu informieren.

Dieses Protokoll ist am nächsten Tag im Chefarztsekretariat vorzulegen, wird vom **Chefarzt** bzw. seinem **Vertreter** gegengezeichnet, der den regelrechten Ablauf kontrolliert und dann in die Patientenakte zurückgegeben.

Deutsche Gesellschaft für Neurologie

Akuttherapie des ischämischen Schlaganfalls

Leitlinie der Deutschen Gesellschaft für Neurologie (DGN) und der Deutschen Schlaganfallgesellschaft (DSG) in der Deutschen Gesellschaft für Neurologie

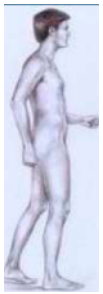
Quality of Care and Mortality Among Patients With Stroke

A Nationwide Follow-up Study

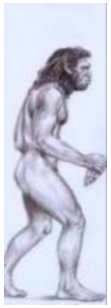
Annette Ingeman, MHSc, Lars Pedersen, MSc,† Heidi H. Hundborg, PhD,† Palle Petersen, DMSc,‡ Susanne Zielke,§ Jan Mainz, PhD,¶ Paul Bartels, MD,* and Søren P. Johnsen, PhD†*

Medical Care • Volume 46, Number 1, January 2008

Entwicklungsstadien der Auswertungen



- Adjustierung



- Stratifizierung

- „Rohe Prozentwerte“

Wenn schon „Statistik“, dann bitte die Fallzahlen nicht vergessen!

Surgical Mortality as an Indicator of Hospital Quality

The Problem With Small Sample Size

Justin B. Dimick, MD
H. Gilbert Welch, MD, MPH
John D. Birkmeyer, MD

Context Surgical mortality rates are increasingly used to measure hospital quality. It is not clear, however, how many hospitals have sufficient caseloads to reliably identify quality problems.

Objective To determine whether the 7 operations for which mortality has been advocated as a quality indicator by the Agency for Healthcare Research and Quality (coronary artery bypass graft [CABG] surgery, repair of abdominal aortic aneurysm, pancreatic resection, esophageal resection, pediatric heart surgery, craniotomy, hip replacement) are performed frequently enough to reliably identify hospitals with increased mortality rates.

Design and Setting The US national average mortality rates and hospital caseloads of the 7 operations were determined using the 2000 Nationwide Inpatient Sample (NIS), and sample size calculations were performed to determine the minimum caseload necessary to reliably detect increased mortality rates in poorly performing hospitals. A 3-year hospital caseload was used for the baseline analysis, and poor performance was defined as a mortality rate double the national average.

Main Outcome Measure Proportion of hospitals in the United States that performed more than the minimum caseload for each operation.

Results The national average mortality rates for the 7 procedures examined ranged from 0.3% for hip replacement to 10.7% for craniotomy. Minimum hospital caseloads necessary to detect a doubling of the mortality rate were 64 cases for craniotomy, 77 for esophageal resection, 86 for pancreatic resection, 138 for pediatric heart surgery, 195 for repair of abdominal aortic aneurysm, 219 for CABG surgery, and 2668 for hip replacement. For only 1 operation did the majority of hospitals exceed the minimum caseload, with 90% of hospitals performing CABG surgery having a caseload of 219 or higher. For the remaining operations, only a small proportion of hospitals met the minimum caseload: craniotomy (33%), pediatric heart surgery (25%), repair of abdominal aortic aneurysm (8%), pancreatic resection (2%), esophageal resection (1%), and hip replacement (<1%).

Conclusion Except for CABG surgery, the operations for which surgical mortality has been advocated as a quality indicator are not performed frequently enough to judge hospital quality.

JAMA. 2004;292:847-851 www.jama.com

PATIENTS AND POLICY MAKERS increasingly use rates of surgical mortality to assess hospital performance. New York and Pennsylvania have long-standing systems for tracking and publicly reporting risk-adjusted mortality rates after cardiac surgery[1,2]; California and New Jersey have more recently adopted this approach.[3,4] The Leapfrog Group, a large coalition of employers and purchasers, has made surgical mortality rates one of the criteria for "evidence-based referral" for cardiac procedures.[3] As part of its broader efforts to develop a core set of quality indicators, the Agency for Healthcare Research and Quality (AHRQ) has recently endorsed the use of surgical mortality rates for 7 surgical procedures including repair of abdominal aortic aneurysm, esophageal resection, and hip replacement.[6]

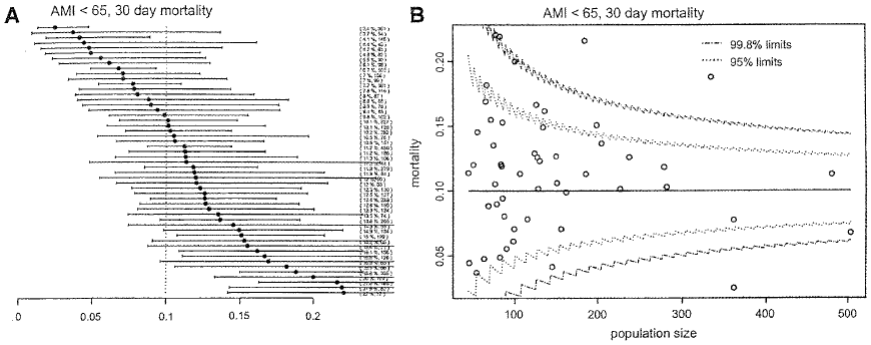
However, there are 2 reasons to question whether rates of surgical mortality can reliably detect quality problems. First, the targeted operations are infre-

```
. sampsi 0.063 0.095, sd1(0) alpha(0.05) power(.80) onesample onesided

Estimated sample size for one-sample comparison of proportion
  to hypothesized value

Test Ho: p = 0.0630, where p is the proportion in the population

Assumptions:

        alpha =   0.0500  (one-sided)
        power =   0.8000
  alternative p =   0.0950

Estimated required sample size:

            n =      409
```

Displaying random variation in comparing hospital performance

A M van Dishoeck,[1] C W N Looman,[1] E C M van der Wilden-van Lier,[2] J P Mackenbach,[3] E W Steyerberg[1]

BMJ Qual Saf 2011;**20**:651–657. doi:10.1136/bmjqs.2009.035881



Small Numbers Limit the Use of the Inpatient Pediatric Quality Indicators for Hospital Comparison

Naomi S. Bardach, MD; Alyna T. Chien, MD, MS; R. Adams Dudley, MD, MBA

Objective.—The aim of this study was to determine the percentage of hospitals with adequate sample size to meaningfully compare performance by using the Agency for Healthcare Research and Quality (AHRQ) pediatric quality indicators (PDIs), which measure pediatric inpatient adverse events such as decubitus ulcer rate and infections due to medical care, have been nationally endorsed, and are currently publicly reported in at least 2 states.

Methods.—We performed a cross-sectional analysis of California hospital discharges from 2005–2007 for patients aged <18 years. For 9 hospital-level PDIs, after excluding discharges with PDIs indicated as present on admission, we determined for each PDI the volume of eligible pediatric patients for each measure at each hospital, the statewide mean rate, and the percentage of hospitals with adequate volume to identify an adverse event rate twice the statewide mean.

Results.—Unadjusted California-wide event rates for PDIs during the study period (N = 2 333 556 discharges) were 0.2 to 38 per 1000 discharges. Event rates for specific measures were, for example, 0.2 per 1000 (iatrogenic pneumothorax in nonneonates), 19 per 1000 (postoperative sepsis), and 38 per 1000 (pediatric heart surgery mortality), requiring patient volumes of 49 869, 419, and 201 to detect an event rate twice the statewide average; 0%, 6.6%, and 25%, respectively, of California hospitals had this pediatric volume.

Conclusion.—Using these AHRQ-developed, nationally endorsed measures of the quality of inpatient pediatric care, one would not be able to identify many hospitals with performance 2 times worse than the statewide average due to extremely low event rates and inadequate pediatric hospital volume.

KEY WORDS: adverse events; health services research; quality indicators; quality of care; sample size

Academic Pediatrics 2010;10:266–73

Auch wenn das „statistisch nicht signifikant“ ist,

so kann es dennoch „klinisch bedeutsam“ sein!

Auch wenn das „statistisch signifikant“ ist,

so kann es dennoch „klinisch unbedeutsam“ sein!

ORIGINALARBEIT

Regionale Unterschiede in den Zuweisungs- und Thrombolyseraten bei akutem Hirninfarkt in Hessen

Erwin Stolz, Gerhard F. Hamann, Manfred Kaps, Björn Misselwitz

ZUSAMMENFASSUNG

Hintergrund: Anhand der verpflichtenden Qualitätssicherung der Schlaganfallbehandlung in Hessen wurden regionale Unterschiede in der Thrombolyserate akuter Hirninfarkte festgestellt. Darauf basierend werden Verbesserungsvorschläge formuliert.

Methoden: Es wurden alle Patienten mit akutem Hirninfarkt und einer Aufnahmelatenz von bis zu 3 Stunden aus den Jahren 2007 bis 2008 (n = 7 707) identifiziert. Auf Landkreisebene wurde die relative Thrombolysehäufigkeit analysiert. Diese Subgruppe lysierter Patienten wurde nochmals auf Patienten mit Krankenhausaufnahme ≤ 2 Stunden nach Symptombeginn und den wesentlichen Kernkriterien eingeengt (n = 1 108), um auszuschließen, dass Unterschiede hauptsächlich auf Thrombolysen außerhalb der Zulassung beruhen. Die Lysehäufigkeit wurde außerdem in Bezug auf die Patienten mit primärer Zuweisung in eine Stroke Unit analysiert.

Ergebnisse: Die durchschnittliche Lyserate bei Krankenhausaufnahme bis 3 Stunden nach dem Hirninfarkt lag bei 19 %, allerdings bei einer regionalen Spannbreite von 6 bis 35 %. Bei der Gruppe, die auf Patienten mit einer Aufnahmelatenz bis 2 Stunden eingeengt worden war, schwankte die regionale Lyserate zwischen 13 und 85 %. Selbst bei primär Stroke Units zugewiesenen Patienten lag die regionale Spannbreite der Lyserate in der 3-Stunden-Kohorte bei 8–44 %, in der 2-Stunden-Kohorte bei 16–62 %.

Schlussfolgerungen: Die regionale Thrombolyserate schwankt in Hessen in einem nicht erwarteten Umfang und bedarf einer Verbesserung, insbesondere muss die innerklinische Versorgung von Schlaganfallpatienten differenziert analysiert und verbessert werden.

► Zitierweise
Stolz E, Hamann GF, Kaps M, Misselwitz B: Local differences in acute stroke admission and thrombolysis rates in the German federal state of Hesse. Dtsch Arztebl Int 2011; 108(36): 607–11. DOI: 10.3238/arztebl.2011.0607

Hospital Mortality Risk Adjustment for Heart Failure Patients Using Present on Admission Diagnoses

Improved Classification and Calibration

George J. Stukenborg, PhD, MA

(*Med Care* 2011;49: 744–751)

Ein verpflichtendes Public Reporting mittels administrativen Routinedaten

ohne POA-Kennzeichen oder ohne Berücksichtigung von Sample Size

ist strikt abzulehnen!

Risk adjustment: Never enough or too much

Jon Nicholl
Professor of Health Services Research and Dean,
School of Health and Related Research,
University of Sheffield, UK

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- Casemix adjusted outcomes should be seen as the start of the process of assessing quality of care.
- In all cases, however, risk adjustment should be seen just as the first step
- Risk adjustment is prognostic not diagnostic
- It must be followed by detailed examination, for example
  - using sub-group analyses
  - Then records review

ELSEVIER

Journal of Clinical Epidemiology 64 (2011) 821–829

Journal of Clinical Epidemiology

REVIEW ARTICLES

Development and use of reporting guidelines for assessing the quality of validation studies of health administrative data

Eric I. Benchimol[a,b,c,d,e,f,g,*], Douglas G. Manuel[a,h,i,j,k], Teresa To[a,c,d], Anne M. Griffiths[b,e], Linda Rabeneck[a,d,l], Astrid Guttmann[a,d,e,m]

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[b]*Division of Gastroenterology, Hepatology and Nutrition, The Hospital for Sick Children, Toronto, Ontario, Canada*
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[f]*Division of Gastroenterology, Hepatology and Nutrition, Children's Hospital of Eastern Ontario, Ottawa, Ontario, Canada*
[g]*Department of Pediatrics, University of Ottawa, Ottawa, Ontario, Canada*
[h]*Department of Family Medicine, University of Ottawa, Ottawa, Ontario, Canada*
[i]*Department of Epidemiology and Community Medicine, University of Ottawa, Ontario, Ottawa, Canada*
[j]*Ottawa Hospital Research Institute, Ottawa, Ontario, Canada*
[k]*Statistics Canada, Ottawa, Ontario, Canada*
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[m]*Division of Paediatric Medicine, The Hospital for Sick Children, Toronto, Ontario, Canada*

Accepted 7 October 2010

Positive Predictive Value of the AHRQ Patient Safety Indicator "Postoperative Sepsis": Implications for Practice and Policy

Marisa Cevasco, MD, MPH, Ann M Borzecki, MD, MPH, Qi Chen, MPH,
Patricia A Zrelak, PhD, CNRN, CNAA-BC, Marlena Shin, JD, MPH, Patrick S Romano, MD, MPH,
Kamal MF Itani, MD, FACS, Amy K Rosen, PhD

BACKGROUND: Patient Safety Indicator (PSI) 13, or "Postoperative Sepsis," of the Agency for Healthcare Quality and Research (AHRQ), was recently adopted as part of a composite measure of patient safety by the Centers for Medicare and Medicaid Services (CMS). We sought to examine its positive predictive value (PPV) by determining how well it identifies true cases of postoperative sepsis.

STUDY DESIGN: Two retrospective cross-sectional studies of hospitalization records that met PSI 13 criteria were conducted, one within the Veterans Administration (VA) Hospitals from fiscal years (FY) 2003 to 2007, and one within community hospitals between October 1, 2005 and March 31, 2007. Trained abstractors reviewed medical records from each database using standardized abstraction instruments. We determined the PPV of the indicator and performed descriptive analyses of cases.

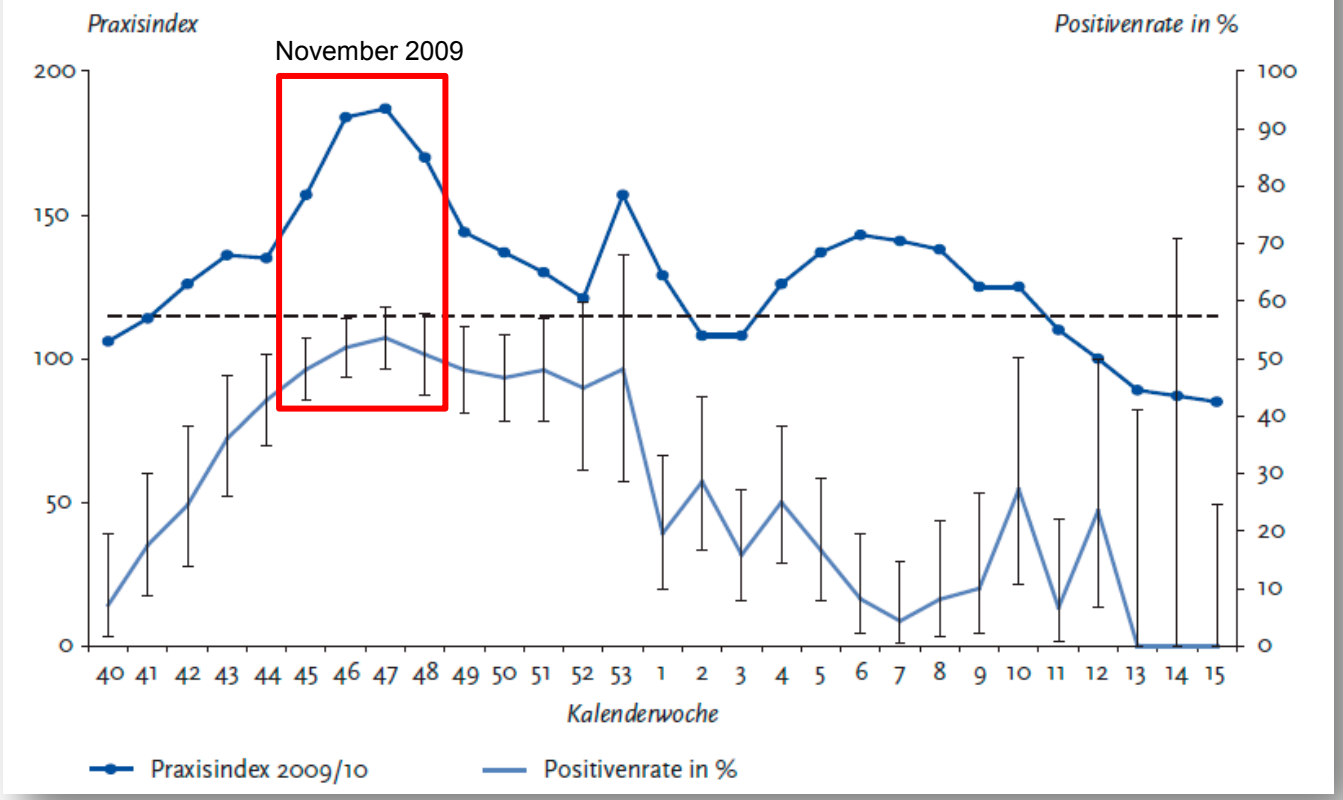
RESULTS: Of 112 cases flagged and reviewed within the VA system, 59 were true events of postoperative sepsis, yielding a PPV of 53% (95% CI 42% to 64%). Within the community hospital sector, of 164 flagged and reviewed cases, 67 were true cases of postoperative sepsis, yielding a PPV of 41% (95% CI 28% to 54%). False positives were due to infections that were present on admission, urgent or emergent cases, no clinical diagnosis of sepsis, or other coding limitations such as nonspecific shock in postoperative patients.

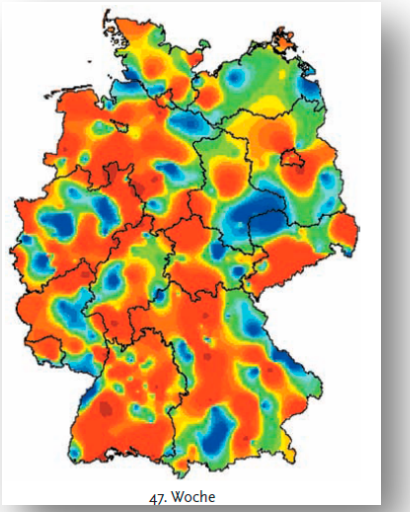
CONCLUSIONS: PSI 13 has relatively poor predictive ability to identify true cases of postoperative sepsis in both the VA and nonfederal sectors. The lack of information on diagnosis timing, confusion about the definition of elective admission, and coding limitations were the major reasons for false positives. As it currently stands, the use of PSI 13 as a stand-alone measure for hospital reporting appears premature. (J Am Coll Surg 2011;212:954–961. © 2011 by the American College of Surgeons)

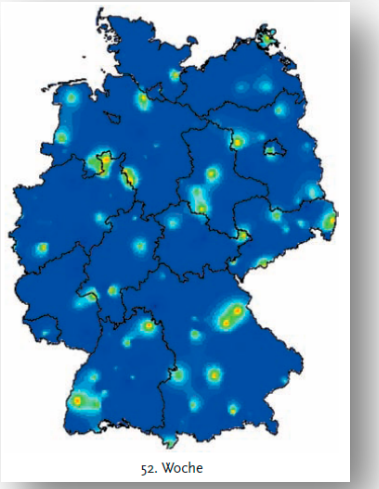
ROBERT KOCH INSTITUT

Bericht zur Epidemiologie der Influenza in Deutschland Saison 2009/10

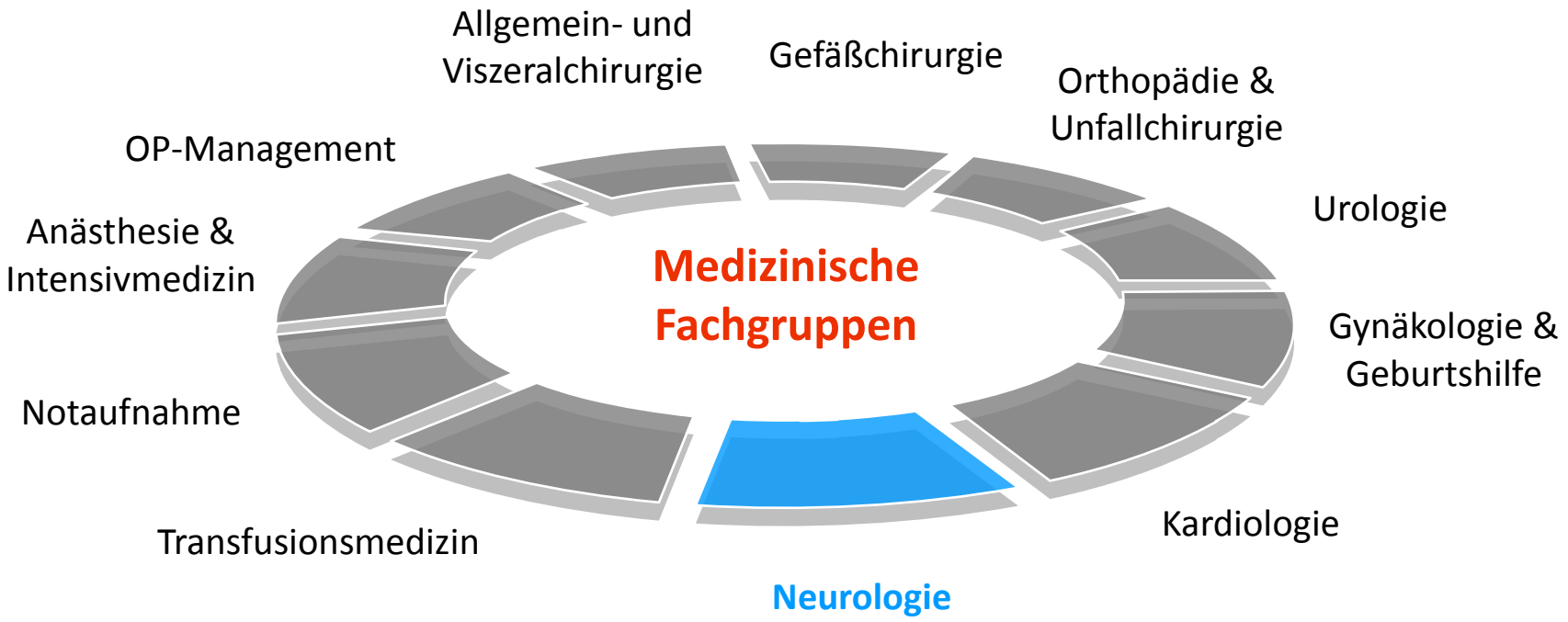
Abb. 6:
Praxisindex und Positivenrate des NRZ in der Saison 2009/10. Die gestrichelte Linie gibt die Grenze der ARE-Hintergrundaktivität an. Bei der Positivenrate wird zusätzlich das 95 %-Konfidenzintervall pro Kalenderwoche angegeben.




47. Woche


52. Woche

ARE Akute respiratorische Erkrankungen



Programm 11.11.2010

- Entwicklung eines abgestimmten Konzepts zur Realisierung der im letzten Treffen konsentierten Ziele zur Verbesserung der Schlaganfall-Versorgung im CLINOTEL-Krankenhausverbund:
  - Leitlinienkonforme Steigerung des Anteils der Patienten mit ischämischem Schlaganfall, bei denen eine Lysetherapie durchgeführt wird.
  - Reduktion des Anteils von Patienten mit ischämischem Schlaganfall mit (Aspirations-) Pneumonie.
  - Reduktion der In-Hospital-Letalität bei Patienten mit ischämischem Schlaganfall.

Freitag 16.03.2012

CLINOTEL-Prozessaudit Akuter ischämischer Schlaganfall: Wo liegt der Mehrwert für ein Krankenhaus ohne neurologische Hauptabteilung?
Dr. Petra Vieth, Chefärztin der Abteilung für Angiologie, Marienhospital Steinfurt GmbH

Teleneurologie im Kontext der Überwindung von Sektorengrenzen: Fluch oder Segen?
Prof. Dr. Andreas Bitsch, Chefarzt der Neurologischen Klinik, Ruppiner Kliniken GmbH

Moderierte Diskussion: Überwindung von Sektorengrenzen bei neurologischen Erkrankungen - Wo stehen die Mitgliedshäuser des CLINOTEL-Krankenhausverbundes?
Dr. Frank Thölen M.A., Referent Qualitätssicherung, CLINOTEL-Krankenhausverbund gGmbH, Köln

Aktuelle Entwicklungen und ausgewählte Ergebnisse der Qualitätssicherung mit Routinedaten in der Neurologie
Dr. Frank Thölen M.A., Referent Qualitätssicherung, CLINOTEL-Krankenhausverbund gGmbH, Köln

Die Leitungsaufgabe besteht in der Sicherstellung einer angemessenen

Vorherbestimmbarkeit

von Prozessen und ihren Ergebnissen.

Marginal costs of hospital-acquired conditions: information for priority-setting for patient safety programmes and research

Terri Jackson, Hong Son Nghiem[1], David Rowell[2], Christine Jorm[3], John Wakefield[4]

Faculty of Medicine and Dentistry, University of Alberta, Edmonton, Canada; [1]Centre of National Research on Disability and Rehabilitation Medicine, University of Queensland, Brisbane, Australia; [2]Australian Centre for Economic Research on Health, University of Queensland, Brisbane, Australia; [3]School of Public Health, University of Sydney, Sydney, Australia; [4]Patient Safety and Quality Improvement Service, Queensland Health, Brisbane, Australia

***Objective*: To estimate the relative inpatient costs of hospital-acquired conditions.**

***Methods*: Patient level costs were estimated using computerized costing systems that log individual utilization of inpatient services and apply sophisticated cost estimates from the hospital's general ledger. Occurrence of hospital-acquired conditions was identified using an Australian 'condition-onset' flag for diagnoses not present on admission. These were grouped to yield a comprehensive set of 144 categories of hospital-acquired conditions to summarize data coded with ICD-10. Standard linear regression techniques were used to identify the independent contribution of hospital-acquired conditions to costs, taking into account the case-mix of a sample of acute inpatients (n = 1,699,997) treated in Australian public hospitals in Victoria (2005/06) and Queensland (2006/07).**

***Results*: The most costly types of complications were post-procedure endocrine/metabolic disorders, adding AU$21,827 to the cost of an episode, followed by MRSA (AU$19,881) and enterocolitis due to *Clostridium difficile* (AU$19,743). Aggregate costs to the system, however, were highest for septicaemia (AU$41.4 million), complications of cardiac and vascular implants other than septicaemia (AU$28.7 million), acute lower respiratory infections, including influenza and pneumonia (AU$27.8 million) and UTI (AU$24.7 million). Hospital-acquired complications are estimated to add 17.3% to treatment costs in this sample.**

***Conclusions*: Patient safety efforts frequently focus on dramatic but rare complications with very serious patient harm. Previous studies of the costs of adverse events have provided information on 'indicators' of safety problems rather than the full range of hospital-acquired conditions. Adding a cost dimension to priority-setting could result in changes to the focus of patient safety programmes and research. Financial information should be combined with information on patient outcomes to allow for cost-utility evaluation of future interventions.**

Journal of Health Services Research & Policy Vol 16 No 3, 2011: 141–146

The Cost Impact of Hospital-Acquired Conditions Among Critical Care Patients

Shadi S. Saleh, PhD, MPH, Mark Callan, BS,† Mary Therriault, MS, RN,‡ and Nancy Landor, RN, MS, CPHQ‡*

Background: The modifications introduced to the inpatient prospective payment system on October 1, 2008, to disallow payment for 8 secondary conditions, if not present on admission (POA), constitute a significant shift that is expected to be followed by similar steps by private payers.

Objective: To investigate the cost impact of hospital-acquired complications (HACs).

Research Design: Discharges that included critical care (CC) stay cases, stratified by diagnosis-related groups, were categorized into (1) cases with HACs—those cases where 1 or more of complications were acquired during the course of treatment; (2) cases with complications that were POA; and (3) cases with no HACs or complications on admission. Twelve diagnostic condition groupings or HACs were examined.

Results: Sepsis was the most common condition among single-occurrence HACs, as well as those where 2 HACs occurred. Among the 22 diagnosis-related groups examined, total discharge and CC costs, length of stay, and CC length of stay were consistently the highest among discharges where a HAC occurred, followed by discharges with the presence of a POA complication. Conversely, the lowest level of resource use was associated with discharges where no complication occurred.

Conclusions: The estimates provided in this study should enable hospitals to identify how improvements in care can also result in cost savings. Focusing this study on CC cases enables hospitals to address highest cost cases that consume crucial resources in their CC settings.

Key Words: hospital-acquired complications, costs, critical care

(*Med Care* 2010;48: 518–526)

standing argument, coupled with the heightened interest in quality of care that was ignited by an Institute of Medicine's report (*To Err is Human*), were the main drivers for a Congress' directive to the Secretary of Health and Human Services in 2005. The directive was aimed at identifying at least 2 conditions that were high volume or costs, result in the assignment of the discharge to a DRG that has a higher payment if present as secondary diagnoses and are potentially preventable whether evidence-based guidelines.[2] Ultimately, this led to more changes; beginning October 1, 2008, Medicare no longer factor in DRG payments a set of 8 conditions, if these were hospital-acquired, ie, not present on admission (POA).[2] The conditions include falls, blood incompatibility, air embolisms, objects left in the body after surgery, mediastinitis after coronary artery bypass graft surgery, pressure ulcers, catheter-associated urinary tract infections, and vascular-catheter-associated infections.

This effort by Medicare to align financial disincentives with poor quality, in contrast to pay for performance that aligned financial incentives with good quality, will undoubtedly be followed with other similar initiatives by private payers.[3] As such, a strategic question arises—to what degree will these public and private initiatives adversely affect hospitals' finances. Such an effect will be at 3 levels. First, additional costs that are associated with these conditions, if hospital-acquired, will be nonreimbursable (though certain cases will qualify for outlier payments). This implies that hospitals will have to absorb such costs and, furthermore, potentially offset the extra payments associated with a higher-weight DRG. Second, some have argued that, in addition to absorbing the additional costs, hospitals

How Dangerous is a Day in Hospital?

A Model of Adverse Events and Length of Stay for Medical Inpatients

Katharina Hauck, PhD and Xueyan Zhao, PhD†*

Background: Despite extensive research into adverse events, there is no quantitative estimate for the risk of experiencing adverse events per day spent in hospital. This is important information for hospital managers, because they may consider discharging patients earlier to alternative care providers if this is associated with lower risk, but other costs and benefits are similar.

Methods: We model adverse events as a function of patient risk factors, hospital fixed effects, and length of stay. Potential endogeneity of length of stay is addressed with instrumental variable methods, using days and months of discharge as instruments. We use administrative hospital episode data for 206,489 medical inpatients in all public hospitals in the state of Victoria, Australia, for the year 2005/2006.

Results: A hospital stay carries a 5.5% risk of an adverse drug reaction, 17.6% risk of infection, and 3.1% risk of ulcer for an average episode, and each additional night in hospital increases the risk by 0.5% for adverse drug reactions, 1.6% for infections, and 0.5% for ulcers. Length of stay is endogenous in models of adverse events, and risks would be underestimated if length of stay was treated as exogenous.

Conclusions: The results of our research contribute to assessing the benefits and costs of hospital stays—and their alternatives—in a quantitative manner. Instead of discharging patients early to alternative care, it would be more desirable to address underlying causes of adverse events. However, this may prove costly, difficult, or impossible, at least in the short run. In such situations, our research supports hospital managers in making informed treatment and discharge decisions.

Key Words: medical errors, complications of care, adverse drug reactions, infections, ulcers, hospital quality

(*Med Care* 2011;49: 1068–1075)

cancer, or AIDS in each year, and total costs of preventable AEs have been estimated between $17 billion and $29 billion for the USA.[1] Over the last 2 decades, increasing research effort has been invested into analyzing the incidence of AEs and understanding why they occur and how they could be prevented.[2] Results allow targeting efforts to patients, medical procedures, and hospitals most at risk. Research into AEs has mostly been based on relatively small scale survey data.[3] Usually, a team of medical experts analyzes patient records retrospectively to judge whether an AE has occurred. Owing to the subjective nature of this process, record reviews are said to have only modest reliability in identifying AEs.[4,5] As they are expensive and time consuming, record reviews often focus on 1 or 2 hospitals and/or particular patient groups,[2] which makes it problematic to generalize the results.

In this study, we use large scale administrative hospital data to analyze AEs. Our objective is to establish the relationship between the risk factors and incidence of 3 of the most common and serious types of medical AEs: adverse drug reactions, hospital-acquired infections, and pressure ulcers. These AEs are relatively common, generate considerable morbidity and mortality, and are considered preventable under optimal care.[6–9] We model AEs as a function of patient risk factors, hospital characteristics, and length of stay in hospital (LOS), using administrative hospital data for around 200,000 medical patient episodes in public hospitals in Victoria, Australia. An important feature of our analysis is that we include LOS as a risk factor for AEs, and that we estimate a 2-equation system model allowing for the potential endogeneity of LOS. As detailed in the next section, there is a policy motivation for estimating the marginal impact of LOS on AEs, and the correlation through common unobservable patient, specialty, and hospital factors needs to be accounted for.

Hospital Quality and the Cost of Inpatient Surgery in the United States

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Context: Payers, policy makers, and professional organizations have launched a variety of initiatives aimed at improving hospital quality with inpatient surgery. Despite their obvious benefits for patients, the likely impact of these efforts on health care costs is uncertain. In this context, we examined relationships between hospital outcomes and expenditures in the US Medicare population.

Methods: Using the 100% national claims files, we identified all US hospitals performing coronary artery bypass graft, total hip replacement, abdominal aortic aneurysm repair, or colectomy procedures between 2005 and 2007. For each procedure, we ranked hospitals by their risk- and reliability-adjusted outcomes (complication and mortality rates, respectively) and sorted them into quintiles. We then examined relationships between hospital outcomes and risk-adjusted, 30-day episode payments.

Results: There was a strong, positive correlation between hospital complication rates and episode payments for all procedures. With coronary artery bypass graft, for example, hospitals in the highest complication quintile had average payments that were $5353 per patient higher than at hospitals in the lowest quintile ($46,024 vs $40,671, $P < 0.001$). Payments to hospitals with high complication rates were also higher for colectomy ($2719 per patient), abdominal aortic aneurysm repair ($5279), and hip replacement ($2436). Higher episode payments at lower-quality hospitals were attributable in large part to higher payments for the index hospitalization, although 30-day readmissions, physician services, and postdischarge ancillary care also contributed. Despite the strong association between hospital complication rates and payments, hospital mortality was not associated with expenditures.

Conclusions: Medicare payments around episodes of inpatient surgery are substantially higher at hospitals with high complications. These findings suggest that local, regional, and national efforts aimed at improving surgical quality may ultimately reduce costs and improve outcomes.

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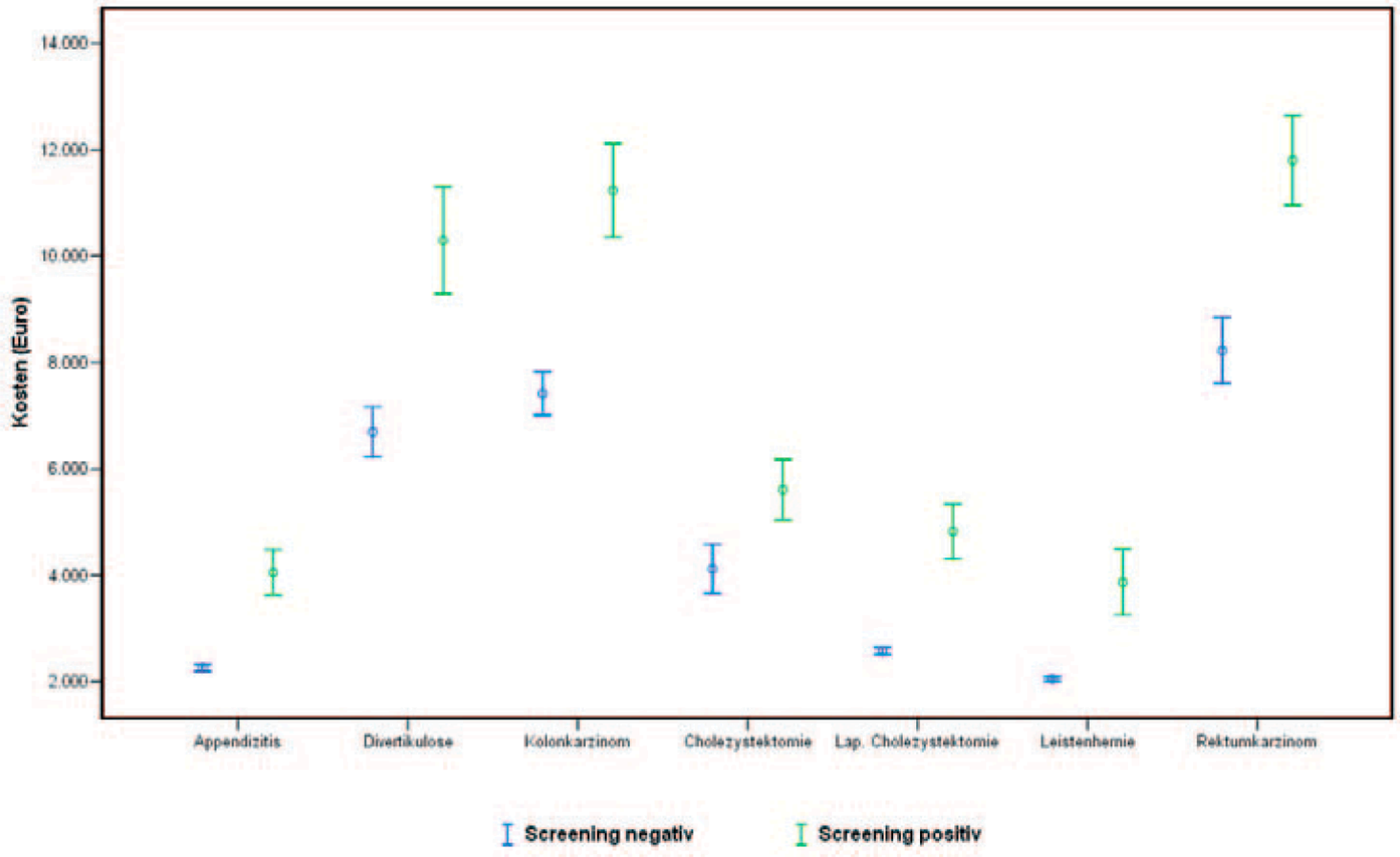
quality improvement. Among many examples, the Centers for Medicare and Medicaid Services and many private payers have enacted pay-for-performance programs to enhance hospital compliance with evidence-based perioperative care and, in some instances, large collaborative quality-improvement initiatives.[3,4] Professional organizations, including the Society of Thoracic Surgeons and American College of Surgeons, are disseminating outcomes reporting and feedback systems, like the National Surgical Quality Improvement Program.[5]

Despite the obvious value of these programs for surgical patients, their likely effects on health care costs are uncertain. Relationships between hospital quality and payments for inpatient surgery are not well characterized. On the one hand, caring for patients with postoperative complications is resource intensive and expensive. According to one study, the average cost of surgical complications exceeded $10,000, most of which is passed along to payers.[6] Such data imply that higher-quality hospitals would tend to be associated with lower expenditures. On the other hand, achieving superior outcomes in surgery may require that hospitals invest in expensive resources, such as intensivist-staffed intensive care units, high nurse-to-bed ratios, advanced technology, and specialist services.[7,8] To the extent that such investments are directly or indirectly passed along to payers, higher-quality hospitals would tend to have higher expenditures.

A better understanding of relationships between hospital quality and payments would be essential for anticipating the financial consequences of selective referral and quality-improvement initiatives focused on inpatient surgery. In this context, we studied relationships between hospital outcomes and 30-day Medicare payments in patients undergoing 4 common inpatient procedures.

METHODS

Abbildung 1: Kosten in Abhängigkeit vom Screening-Ergebnis – Mittelwert und Konfidenzintervall (€)



das Krankenhaus 9/2006 Qualitätssicherung mit Routinedaten

Dr. Andreas Becker/Udo Beck/Bianca Pfeuffer/PD Dr. René Mantke

Qualitätssicherung mit Routinedaten – Ergebnisqualität und Kosten

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