



Rationaler Antibiotikaeinsatz

⇒ Infektiologisches Konsil

⇒ Perioperative Antibiotikaprophylaxe

⇒ Endokarditisprophylaxe bei zahnärztlichen Eingriffen

⇒ Ambulante Therapie bei Niedrigrisiko-Neutropenie



Infektiologisches Konsil

Rasches Konsil oder Beratung bei positiver Blutkultur ?

Studie (Spanien)

- Patienten (16% Kinder) mit Bakteriämie
- Randomisierung 2 : 1
 - ▶ 589 (rasches infektiologisches Konsil am Krankenbett) versus
 - ▶ 292 (konventionelle Beratung durch Mikrobiologen)

| Ergebnisse | Konsil | Beratung | P = |
|-------------------------------------|--------|----------|--------|
| Tod | 22% | 18% | n.s. |
| Inadäquate Antibiotika (Tagesdosen) | 1,9 | 4,3 | < 0,01 |
| Antibiotikakosten (€) | 391 | 589 | < 0,01 |

- Die Reduktion inadäquater und unnötig teurer Antibiotikatherapie war möglich ohne messbaren Einfluss auf klinische Endpunkte.

Kommentar

- Die hohe Gesamtsterblichkeit ist ungewöhnlich und weist auf erhebliche Komorbidität hin, die eine Beeinflussung klinischer Endpunkte möglicherweise erschwert.

Infektiologisches Konsil bei *S. aureus*-Bakteriämie?

Fall-Kontrollstudie (n = 240)

- Infektiologisches Konsil (51% der Fälle) mit geringerer Sterblichkeit assoziiert (14% vs. 24%; $p = 0,05$)
- In der multivariaten Analyse (*Cox Proportional Hazards*) blieb diese Assoziation signifikant (*Odds Ratio*: 0,5; $p = 0,03$).

Ähnliche Studie (n = 71)

- Erheblich niedrigere Raten an inadäquater Therapie (5% vs. 47%; $p < 0,01$) und Rezidiven bei Patienten mit infektiologischem Konsil (8% vs. 29%; $p = 0,02$)

Beobachtungsstudie

- Obligates Konsil bei *S. aureus*-Bakteriämie
- Verbesserte, aber bei komplizierten Fällen möglicherweise noch immer unzureichende „Compliance“ mit der Empfehlung zur Echokardiographie (unterlassen bei 27%) und zur Kontrollblutkultur (unterlassen bei 13%)

Kitteltaschenkarten +/- Konsil bei nosokomialer Pneumonie

Studie

- Vor-Nach-Studie bei erwachsenen Patienten mit nosokomialer Pneumonie
- 50 (Jahr 2006 ohne Konsil) versus 50 (Jahr 2007 mit Konsil u.a. durch klinischen Pharmazeuten)
- Endpunkt: Befolgung lokal adaptierter ATS/IDSA-Empfehlungen

Ergebnisse

- *Pocket Cards* alleine sichern nicht die ausreichende Befolgung von Therapieempfehlungen.

| | Ohne Konsil | Mit Konsil | P = |
|---------------------------------|-------------|------------|--------|
| Leitliniengerechte Therapie | 36% | 76% | < 0,01 |
| Antibiotikatherapiedauer (Tage) | 12 | 10 | < 0,01 |
| Deeskalation | 40% | 62% | < 0,01 |

- Leitliniengerechte Therapie (ATS/IDSA) bei nosokomialer Pneumonie war in einer anderen Studie ähnlichen häufig; hier wurde jedoch eine erhöhte Sterblichkeit bei Patienten mit Risiko für resistente Erreger und leitliniengerechte Therapie beobachtet !



Perioperative Antibiotikaprophylaxe

Perioperative Antibiotikaprophylaxe

3 kooperative Studien (Frankreich, 2 x Norditalien)

- Evaluation von Indikatoren für adäquate präoperative Antibiotikaprophylaxe (Indikation, Substanz, Dosis, Start, Dauer).

Ergebnisse

- Indikation gut (>80%)
- Substanz und Dosis mäßig gut
- Startzeitpunkt und Dauer ($\geq 30\%$ länger als 24 h) verbesserungswürdig

Unkontrollierte Vor-Nach-Studie (Tufts Medical Center, Boston)

- Umfangreiches Programm mit Information, multiplen Kontrollen in anästhesiologischen (elektronischen) Dokumenten und Pflegechecklisten
- Qualitätsverbesserung erreicht, z.B. korrektes *Timing* verbessert von 77% auf 94%

Kommentar

- Viele Beobachtungsstudien oder unkontrollierte quasi-experimentelle Studien mit interessanten Befunden, die mit besserer Methodik gesichert werden müssen.

➔ Scarpellini K-1361

➔ Doron K-588

➔ Tordato K-587

➔ Brigitte K-586

➔ Übersicht



Endokarditisprophylaxe bei zahnärztlichen Eingriffen

Endokarditis-Prophylaxe bei zahnärztlichen Eingriffen

Neue Leitlinien

- Eine Endokarditis-Prophylaxe bei zahnärztlichen Eingriffen ist nur noch bei Hochrisikopatienten indiziert.
- Auch für Patienten mit Gelenkprothesen hat die Antibiotikaprophylaxe bei zahnärztlichen Eingriffen keinen Effekt.
- Aufgrund epidemiologischer Studien wird heute die „Alltagsbakteriämie“ (Zähneputzen, Kauen, etc.; zunehmend u.a. mit Alter und schlechtem Zahnstatus) als wesentlich für die Entstehung meisten Endokarditiden angesehen.
- Eine Antibiotikaprophylaxe bei zahnärztlichen Eingriffen ist daher nicht mehr indiziert – Ausnahme sind Hochrisikopatienten (Leitlinien AHA 2007, NICE 2008).
- In einer Fall-Kontroll-Studie (n = 2 x 339) wurde jetzt nachgewiesen, dass Gelenkprothesenträger (Hüft- und Knie-Endoprothesen) bei zahnärztlichen Eingriffen ebenfalls nicht von einer Antibiotikaprophylaxe profitieren.

Kommentar

- Außer für Hochrisikopatienten kann die Antibiotikaprophylaxe bei zahnärztlicher Behandlung entfallen.



Ambulante Therapie bei Niedrigrisiko-Neutropenie

Ambulante Therapie bei Neutropenie und Fieber mit niedrigem Risiko

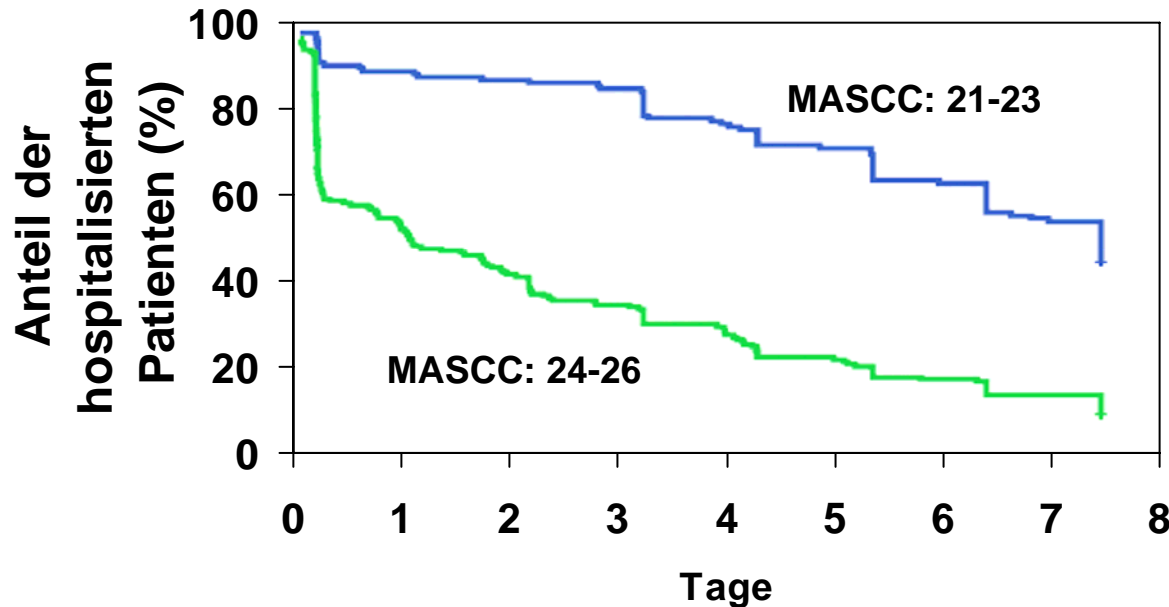
Hintergrund

- I.v. Antibiotika sind bei vielen Patienten mit Neutropenie und Fieber nicht notwendig; so stellt sich die Frage nach „Entlassbarkeit“ (mit oraler Therapie).

Studie

- Prospektive randomisierte Multizenterstudie (n = 333; Moxifloxacin vs. Ciprofloxacin + Amoxicillin/Clavulansäure)
- Untersucht wurden Zeit bis zur Entlassung und Gründe für Nichtentlassung.
- 33% wurden innerhalb 24 h entlassen, abhängig vom MASCC-Score (klinische Niedrigrisikoprädiktion), darunter viele Patienten, die ohnehin schon ambulant betreut wurden. Der Therapiearm war dabei nicht relevant.
- 1/3 der Patienten waren aus psychosozialen Gründen nicht früh entlassungsfähig/-willig (Transportprobleme, Angst, etc.), 1/3 aus medizinischen Gründen, 1/3 unklar (keine oder nicht nachvollziehbare Begründungen).
- Die Komplikationsrate (incl. ungeplante Wiederaufnahme) war <10%.
- Es gab wenig Todesfälle (99% Überleben am Tag 30)

Ambulante Therapie bei Neutropenie und Fieber mit niedrigem Risiko



Kommentar

- Trotz rascher Entfieberung und niedriger Komplikationsrate wurden viele Patienten verzögert entlassen.
- Darunter waren in einem Drittel Fälle, bei denen weder medizinische noch psychosoziale Gründe dokumentiert waren.
- Diese Patienten stellen eine gute zukünftige Zielgruppe für frühere Entlassung dar.



Abstracts

K-478

Active Interventions versus Guidelines for Modifying Prescribing Behavior in Patients with Hospital-Acquired Pneumonia (HAP) and Ventilator-Associated Pneumonia (VAP)

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Background: HAP and VAP are common, causing considerable morbidity and mortality. They also represent ideal antimicrobial stewardship interventional opportunities. In 2005, concurrent with national guidelines, we developed local guidelines for the treatment of HAP/VAP and distributed them as pocket cards. We aimed to compare guidelines (Pre-group) vs active interventions provided by the antimicrobial stewardship program intervention group (ASPIG) on the treatment of HAP/VAP at a 606 bed community/teaching hospital.

Methods: Consecutive patients were enrolled based on the following criteria: hospitalization >48 hours, age ≥ 18 years, radiographic evidence of pneumonia (PNA), clinically/microbiologically diagnosed HAP/VAP, and admission to the intensive care unit. Timeframe for the Pre-group was 2006 and 2007 for the ASPIG. Primary endpoints were adherence to guidelines, diagnostic strategy: endotracheal aspirates vs quantitative cultures by bronchoalveolar lavage (BAL) in VAP patients, de-escalation, and treatment duration. Secondary endpoints: inpatient mortality, *Clostridium difficile* infection (CDI), resistance development, reoccurrence of PNA, reintubation. The ASPIG recommendations were not mandatory.

Results: Data are presented as Pre-group (n=50) vs ASPIG (n=50): mean age (years) \pm SD: 63.8 \pm 17.3 vs 62.6 \pm 15.7, APACHE II: 13.3 \pm 5.4 vs. 15.3 \pm 7.1, both p=NS. The duration of therapy was shorter in the ASPIG (12.26 \pm 5.1 vs 9.78 \pm 3.4, p=0.0048). Guideline adherence: 36% vs 76%, P<0.0001, de-escalation: 40% vs 62%, p=0.028. BALs rose from 2% to 60%, p<0.0001. Overall, 126 unnecessary antibiotic days were avoided in the ASPIG. Differences in secondary endpoints did not reach significance; trends in reduced CDI and resistance development favored the ASPIG.

Conclusion: The ASPIG results were compelling, demonstrating that human intervention significantly and safely reduced unnecessary antibiotic use in HAP/VAP patients.

K-479

Management of Healthcare Associated Pneumonia (HAP): Relationship of American Thoracic Society (ATS) and the Infectious Diseases Society of America (IDSA) Guideline Compliance and Mortality

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Background: We developed an ICU HAP performance improvement project using the 2005 ATS/IDSA guidelines at four academic medical centers. Guideline impact on clinical outcomes was assessed.

Methods: Data were collected prospectively. Patients (pts) at risk for multidrug resistant organisms (MDRO) were evaluated for severity of illness, adherence to ATS/IDSA guidelines during empiric treatment and 14 day survival.

Results: 301 pts with MDRO risk received empiric therapy. Therapy was compliant with guidelines in 132 pts (Group 1); noncompliant in 169 pts (Group 2). Reasons for noncompliance included failure to utilize dual therapy for gram negatives in 155 pts and no MRSA coverage in 23 pts. At baseline the groups were similar. 230 pts had pathogens identified. Empiric therapy was active against these pathogens in 85/101 pts (Group 1) and 107/129 pts (Group 2). Guideline compliance was associated with increased mortality (30/132 Group 1 vs 19/169 Group 2, $P < 0.008$). Using logistic regression, this effect was independent ($P < 0.05$) of severity of illness, underlying comorbidities, and days of hospitalization, ICU care and ventilation. A parsimonious mortality model included only APACHE II score, guideline compliance, and cancer as independent risks for mortality, with use of a compliant regimen conferring a risk more than half that of cancer.

Conclusions: We noted increased mortality in pts receiving empiric guideline compliant therapy. Compliant and noncompliant empiric regimens were similarly likely to cover pathogens. Compliance increased antibiotic usage. A controlled trial should be considered before more widespread implementation of these guidelines in the ICU.

K-480

Use of Quality Indicators to Measure Compliance with ATS/IDSA Guidelines for Hospital-Acquired Pneumonia (HAP), Healthcare-Associated (HCAP) and Ventilator Associated Pneumonia (VAP) at 4 Medical Centers: the IMPACT-HAP Project

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Background: ATS/IDSA published guidelines (GL) for HAP, HCAP and VAP in 2005. We implemented an ICU performance improvement project (PIP) at 4 medical centers. Quality indicators (QI) were developed to measure GL compliance.

Methods: Data were collected prospectively and entered into a central database. QIs measured include: patients who met diagnostic criteria for HAP, HCAP, or VAP (QI-1); respiratory specimens (QI-2A) and blood culture results (QI-2B) available within 72 hrs of antibiotics; antibiotics compliant with the GL (QI-3); short course therapy performed (QI-4); and those who underwent de-escalation (QI-5). Clinical outcomes were determined for evaluable patients at end of therapy or day 14 if still on antibiotics.

Results: QI-1: 397/404 (98%) of patients met criteria for the diagnosis of HAP, HCAP or VAP. Respiratory specimens were reported in 355/375 (95%, QI-2A) and blood cultures in 308/375 (82%, QI-2B). Empiric therapy (ET) was compliant with the GL in only 135/321 (42%, QI-3). Failure to use a 2nd Gram-negative agent was the main reason for non-compliance in 128/186 (69%). Few patients were short course therapy candidates. De-escalation occurred in 206/271 (76%, QI-5) who met criteria. Clinical improvement/cure was seen in 66% (248/375) of evaluable patients.

Conclusions: The ATS/IDSA GL principles were used to develop QIs for a multi-center PIP entitled "IMPACT-HAP". Appropriate initial work-up was performed in most patients, but antibiotic selection did not conform to GL recommendations. De-escalation was effectively performed in most who met criteria. Correlating QIs with outcomes will help refine treatment strategies.

K-522

***Clostridium difficile*-Associated Diarrhea (CDAD) in an Adult Hospital of Rio de Janeiro, Brazil**

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Background: CDAD has been poorly investigated in Brazil where all the publications are restricted to pediatric populations.

Methods: Nosocomial diarrhea (3 daily stools during two consecutive days, initiated 48 hours after admission or readmitted patients with diarrhea initiated 30 days after our hospital discharge) were closely monitored from October-2006 to May-2007, when *C. difficile* stool cultures and/or rectal swabs using selective media (CCFA) and toxins A and B immunoassays started to be performed in IPEC/FIOCRUZ, Rio de Janeiro, Brazil, an infectious disease research hospital. Results: The average incidence density of CDAD from October-2006 to May-2007 was 1.85/1000 patient-days however it was 9.78/1000 in October-2006. The rates decreased to 0.72/1000 from November-2006 to May-2007, after implementation of the surveillance and control program. Among eight CDAD cases, identified by detection of toxins A and B (7 patients) and isolation of *C. difficile* (4 patients), 87.5% (7) had aids and were using large spectrum antibiotics (7). One aids patient had pseudomembranous colitis and 4 died (50%). The cultures of healthcare workers` hands and environmental samples were all negative for the agent. PFGE of the 3 isolated strains obtained during October-2006 outbreak showed that two pertained to the same clone and none were positive for binary toxin by PCR.

Conclusions: This report emphasizes the need of nosocomial diarrhea surveillance and *C. difficile* investigation in Brazilian adult population. Specially, in highly antibiotic consumption settings where attending severe underlying diseases or immunocompromised patients. It also shows that CDAD can present a high incidence and lethality rates in aids population although the control is feasible.

K-537

Methicillin Resistant *S. aureus* (MRSA) Screening of Patients on Hemodialysis (HD) for the Safe Restriction of Vancomycin Use: 7-Year Surveillance

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Background: MRSA bacteremia has been associated with higher mortality. Vancomycin use can cause therapeutic failure of methicillin-susceptible *S. aureus* (MSSA) infections. The effect of MRSA screening and decolonization on the treatment of bloodstream infections (BSI) of patients on HD is shown.

Methods: a prospective survey was carried out from Jan 2001 to Dec 2007 at a 450-bed hospital with a 70 patient/month HD Unit. In and outpatient with chronic renal failure who started HD and contacts of a MRSA carrier were screened for MRSA with a culture of nasal swab. A MRSA carrier was kept on contact isolation till 3 negative swab results after decolonization. Guidelines for management of vascular access-related infection were available. Every patient suspected of primary BSI (CDC criteria) had 2 blood cultures collected and cefazolin initiated. Vancomycin was indicated for patients with sepsis or MRSA carriers. Linear regression and X^2 test were used for statistical analysis.

Results: MRSA screening was done in 2906 patients and 56457 HD runs (DR) were performed. MRSA colonization was detected in 62 (2%) patients (prevalence:1.1/1000 DR). *S. aureus* was isolated from blood in 158 episodes (MSSA 82%) of primary BSI (98% catheter-related, 2% AV fistula). The incidence of MSSA BSI (2.3/1000 DR, n=130) was significantly higher ($p<0.001$) than MRSA BSI (0.5/1000 DR, n=28). Overtime, MRSA BSI rates showed a decrease ($R^2=0.058$). Mortality and metastatic infections were similar on both groups ($p>0.20$). MSSA caused endocarditis in 3 (2%) patients with 1 death; MRSA caused osteomyelitis in 1 (3%) and no death.

Conclusions: MRSA surveillance has permitted the safe therapy with cefazolin for more than 80% of BSI. The low rates of MRSA BSI and infectious complications combined with the strictly necessary use of vancomycin could justify the MRSA screening and decolonization of patients on HD.

K-545

Chronic Prosthetic Joint Infections (CPJI): Epidemiology, Microbiology and Management

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Background: Successful treatment of CPJI requires surgical intervention and prolonged antimicrobial therapy (AT), although the most suitable management has not been clearly defined.

Methods: Consecutive patients with CPJI were recruited from 2004 to 2006 in 8 Spanish hospitals, and followed until 24 months after the end of AT. CPJI was defined as deep infection affecting the implant appeared after the first month of arthroplasty. Outcome was evaluated for the initial therapeutical plan (debridement and retention [DAR] or prosthesis removal [PR]).

Results: 200 patients (79 [39.5%] hips, 116 [58%] knees and 5 [2.5%] elbow implants) were included; 130 (65%) were women, median age was 72 years (range: 30-89). Pain (87%) and flogotic signs (57%) were the most common symptoms. Etiology: coagulase-negative staphylococci: 94 (47%), *S. aureus*: 44 (22%) (7 were MRSA), gram-negative bacilli: 24 (11%), streptococci: 15 (7.5%), anaerobes: 10 (5%). 64 (32%) patients underwent DAR of the implant; 19 (29.7%) cured, 21 (46.7%) needed PR, 14 (31.1%) needed suppressive AT (SAT), 9 relapsed (20%), and 1 (2.2%) had a related-infection dead. On univariate analysis cure was associated with absence of radiologic signs of infection at diagnosis. Completed PR were made in 126 (63%): 88 (69.8%) two-stage PR, 12 (9.5%) one-stage PR, and 26 (20.7%) arthrodesis/resection arthroplasty; 110 cured (87.3%), 7 died (5.6%) (infected-related, 2). Finally, 3 (1.5%) underwent partial PR and 1 (0.5%) amputation. 6 patients were not operated and received SAT (3%).

Conclusions: CHPJ treated with DAR had a high rate of relapse and need of PR. Futures studies are needed to investigate which type of patients may benefit from such approach.

K-547

Successful Salvage in 92 of 112 Infected Arthroplasties and Predictors of Successful Outcome, Using the Oxford “DAIR” (Debridement, Antibiotics and Implant Retention) Protocol

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Background: Prosthetic joint infection (PJI) remains a problem for patients and healthcare providers. Infections of soundly fixed prostheses are often managed with debridement, antibiotics and implant retention (DAIR). Despite varying reports of efficacy the factors predicting success or failure of DAIR, including the optimal intravenous and oral antibiotic durations, remain poorly defined.

Methods: We report 112 cases of PJI (52 total hip replacements, 51 knee replacements and 9 other total joints) managed in a specialist unit. A standardised protocol of debridement, rigorous microbiological sampling, six weeks of intravenous antibiotics and prolonged oral follow-on therapy was used. We analyse the effects of antibiotic duration and cessation, and a range of other risk factors, on the success of this strategy.

Results: We observed only twenty recurrent infections (18%) during a mean follow up of 2.3 years. The mean duration of antibiotic use was 1.5 years. 84% received rifampicin and 59% ciprofloxacin. Predictors for failure included arthroscopic, rather than open, debridement (HR = 4.2, 95% CI 1.5 - 13, p = 0.008), revision rather than primary arthroplasty (HR = 3.1, 95% CI 1.2 - 83.3, p = 0.008) and *Staphylococcus aureus* infection (HR = 2.94, 95% CI 1.0 - 8.3, p = 0.05). These factors were even stronger predictors of failure in those patients who discontinued oral antibiotics. There was a fourfold rise in the risk of failure after stopping antibiotics (HR = 4.3, 95% CI 1.4 - 12.8, p = 0.01) and this was not related to the duration of prior therapy.

Conclusions: The Oxford DAIR protocol for PJI is highly successful. We identify predictors of recurrent infection following DAIR and in those stopping oral antibiotics, informing patient selection, surgical management and the timing of antibiotic cessation.

K-551

Prosthetic Joint Infection (PJI) Due to Dental Procedures

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Background: Many clinicians recommend antibiotic prophylaxis to prevent subsequent PJI due to dental procedures, despite the risk of prosthetic joint infection due to dental procedures and the efficacy of antibiotic prophylaxis being unknown.

Methods: We performed a prospective, single-center, case-control study between 2001-2006. Cases were patients hospitalized with total hip or knee infection. Controls were patients with a total hip or knee arthroplasty but without a prosthetic joint infection. Data regarding demographic features and potential risk factors were collected. Logistic regression was used to assess the association of variables with the odds of infection.

Results: There were 339 cases and 339 controls. There was no increased risk of total hip or knee infection in patients undergoing a high or low risk dental procedure who were not administered antibiotic prophylaxis, compared to patients not undergoing a dental procedure, (adjusted OR, 0.8 [95% CI, 0.4- to 1.6]; and adjusted OR, 0.6 [95% CI, 0.4-1.1]) respectively. Antibiotic prophylaxis in high or low risk dental procedures did not decrease the risk of subsequent total hip or knee infection (adjusted OR, 0.9 [95% CI, 0.5- to 1.6]; and adjusted OR, 1.2 [95% CI, 0.7-2.2]) respectively.

Conclusions: Dental procedures were not a risk factor for subsequent total hip or knee infection. The use of antibiotic prophylaxis prior to dental procedures did not decrease the risk of subsequent total hip or knee infection. The practice of recommending antibiotic prophylaxis for dental procedures in patients with a joint arthroplasty should be reevaluated

K-586

Surgical Antimicrobial Prophylaxis Compliance in French Hospitals

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Background: Most Western countries have developed in the past decades clinical guidelines for surgical antimicrobial prophylaxis (SAP) nevertheless studies assessing practices throughout the world show difficulties for compliance. The PATH study objective was to assess the adherence to national guidelines, and explore reasons for non-adherence.

Methods: A retrospective study was conducted in 2007. Data were collected from anaesthetic and surgical records in total hip replacement (THR), colorectal cancer (CRC) and hysterectomy (HY). Compliance was assessed with five essential criteria derived from the Society of Anaesthesiology and Critical Care : antibiotic use, antibiotic choice, dose, timing of the first injection (strictly within the 60 min before skin incision), and total duration.

Results: 2441 surgical procedures from 26 hospitals were reviewed. Compliance for administration of SAP and dose of first injection exceeded 90% in the 3 surgical procedures. For THR the compliance for the five criteria exceeded 89%. Major compliance failures concerned CRC and HY : first injection after skin incision in respectively 23% and 22%, inappropriate agent for HY (36%), inadequate postoperative injection for CRC (36%). Amoxicilline-clavulanate was associated with excessive postoperative duration suggesting confusion between prophylaxis and curative utilisation for clean-contaminated surgery.

Conclusions: Although the principles of SAP are well-established, adherence to each criteria did not conform in more than one third for HY and CRC, in opposition to THR. Indeed surgical site infection after THR is a daily worry for surgeons and anaesthetists. Educational and feedback strategies should take into account organisational features and psychological barriers to comply to rational guidelines.

K-587

Evaluation of Perioperative Antimicrobial Prophylaxis Among Six Italian Hospitals: The Pap-Inf Study

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Background: Appropriate perioperative antimicrobial prophylaxis (PAP) has been shown to decrease morbidity and mortality related to surgical site infections (SSI). Our study aimed to assess the quality of PAP and to develop approaches to its improvement.

Methods: Retrospective study in 19 randomly selected surgical wards among 6 North Italian hospitals. We evaluated rates of PAP on indication or not, and quality of PAP in respect to timely administration (initiation and duration) and to adequate choice of antimicrobials.

Results: A total of 533 patients were included; 58.5% males, median age 60 years (range 8-103). Hospital wards were: general surgery (40%), orthopaedics (21%), neurosurgery (11%), cardiothoracic and vascular surgery (11%), gynecologic surgery (6%). Main concomitant diseases were cardiovascular diseases (19%), diabetes (7%) and cancer (4%). On a total of 494 valuable patients, PAP was on indication in 71%, neither indicated or done in 15%, indicated but not done in 7%, not indicated but done in 7%. Among those patients with PAP on indication, in 21% either doses and/or antimicrobial choice were judged to be inadequate; in 20% the first dose was not administered within 1 hour before surgical incision; in 33% of patients PAP was not discontinued within 24h after the end of surgery.

Conclusions: In a substantial percentage of patients, PAP was inadequate either on indication, or on doses, antimicrobial choice and timely administration. Attempts to correct this attitude should be pursued in order to improve clinical care and to reduce antimicrobial-related resistance selection and costs.

K-588

A Tale of a Successful Surgical Care Improvement Project Program

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Background: In 2006, Medicare instituted surgical prophylaxis measures. Timing of antibiotic administration must be within 1 hour prior to incision. Selection of antibiotics is to be from a procedure-specific list. If vancomycin is used, a reason must be documented. Discontinuation of antibiotics is to occur within 24 hours (48 for cardiac surgery). Specific cardiac, vascular, orthopedic, colorectal, and gynecologic procedures are monitored.

Methods: A committee consisting of an ID physician, an anesthesiologist, a cardiac surgeon, and epidemiology, operating room (OR) nursing, and quality improvement staff carried out a complete overhaul of the system of antibiotic use and administration in the OR. Anesthesiologists took on the responsibility for antibiotic selection by carrying pocket cards detailing the choice of antibiotic, its dosage and dosing interval for each case type. To avoid early administration, antibiotics are administered in the OR only, not on the floor or in pre-op holding. Printed anesthesiologists' pre-op notes and intra-op records were reformatted to ensure documentation of antibiotic administration time and reason for choosing vancomycin. Nurses' pre-op checklists linked the administration of antibiotics to the "Time Out", so that no incision could be made without verifying that antibiotics had been given. Education to clinicians was periodically reinforced regarding the proper wording of post-op orders so that no doses are given later than 24 hours after surgery. The program was rolled out at the start of 2007.

| Results: | Percent compliance 2006 | Percent compliance 2007 |
|---|-------------------------|-------------------------|
| Antibiotic timing pre-op | 77% | 94% |
| Antibiotic selection | 79% | 90% |
| Antibiotic discontinuation within 24 hours (48 for cardiac surgery) | 81% | 95% |

Conclusions: By making systematic changes in the OR, instituting a written protocol, and providing education, we were able to achieve a remarkable improvement in compliance with measures related to antibiotic prophylaxis for surgery.

K-1351

Reporting Results of Positive Blood Cultures (bc): The Clinical Impact of an Earlier Microbiological-Clinical Intervention in Antibiotic Consumption and Mortality

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Background: In a previous paper we demonstrated the reduction of antimicrobial misuse of a bedside microbiological-clinical intervention in reporting positive BC (CID 2004, 15;39 (8):1161-9) Mortality was not influenced but intervention occurred when the bloodstream infection (BSI) agent and antimicrobial susceptibility was known. We assess now the value of an earlier similar intervention during the empiric therapy period, when the full identification and antibiogram of BC isolates is not yet available

Methods: During a 12 month period in a 1750 bed teaching institution, we randomly assigned patients in a 2:1 rate with BSI into 2 groups, bedside intervention -Group A- vs Conventional microbiological alert -Group B- We recorded demographical and clinical data, adequacy of treatment, Daily Defined Doses of antimicrobials (DDD), cost in antibiotics (€), early death (until 48 h after BC extraction) or late death. Death was classified as attributable (during the active period of infection)

Results: Overall 972 episodes were randomized, 881 patients remained admitted 48 hours after BC. Early death (before visit) occurred in 47. Overall, 589 patients (67%) were in Group A and 292 (33%) were in group B. Paediatric population was 16% in both groups. Main comparisons between groups A and B were as follows: Mean cost in of acquiring antibiotics: 391.15 vs 589.09 ($p<0.01$) Mean inadequate DDD'/patient: 1.9 vs 4.31 ($p<0.001$), and Total cost of inadequate DDD': 37.09 vs 121.38 ($p<0.01$) Global mortality rate (21.7 vs 18.1), Attributable mortality rate (10.3 vs 8.21). In the paediatric population the mortality rates in group A and B were: 10.8% / 23.9% ($p<0.05$)

Conclusions: Earlier intervention by microbiologists and clinicians in patients with BSI reduces antibiotic misuse and cost of antimicrobials. We were able to demonstrate an impact in the mortality only in the paediatric population.

K-1361

Perioperative Antibiotic Prophylaxis: Protocols Adherence in North Italy

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Background: Perioperative antibiotic prophylaxis (PAP) is a cornerstone of good care in surgery. A multicentric protocol for PAP including 7 major hospitals in North Italy (986 beds each on average) was designed. Data regarding PAP management before protocol implementation are reported.

Methods: 2786 clinical charts randomly collected from surgical activities in 2006 were analysed. An evaluation scoring system verified the adherence to current local protocol, if any, in each hospital. The criteria of appropriateness of PAP were a) the choice of drug b) the dosage c) the time of administration d) the administration of an intraoperative dose in procedures lasting more than 4 hours.

Results: PAP was administered in 72.1% of procedures: 586 procedures had no protocol. PAP was either performed or omitted correctly in 1808/2200 (82.2% = 67.9% correctly administered + 14.3% correctly omitted). 5% of PAP administered was given without indication. The appropriateness criteria (abc) were achieved in 51% of cases; criteria abc+d were fulfilled in 37% of cases. The drug choice was correct in 68.8% (range 20.8-91.7%), the drug dosage in 93.9% (60-100%) and timing in 74% (9.1-100%). Complete appropriateness rate (abc criteria +correctly omitted PAP) was 41%. Remarkably only 56% of PAP were strictly perioperative: in 21.5% of cases supplement doses exceeding 48 hours after the intervention date were given.

Conclusions: PAP management varies significantly among distinct institutions. The need for common guidelines as well as surveillance measures in adherence are urgent in order to implement useful hospital antibiotic policies.

K-3471

Infectious Diseases Involvement for *Staphylococcus aureus* Bacteremia was Associated with Appropriate Therapy and Fewer Relapses

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Background: *S. aureus* bacteremia (SAB) is a common, severe disease associated with frequent relapses and deaths. We reviewed SAB cases at one hospital to determine whether infectious disease (ID) physician involvement (IDInv) was associated with therapy concordant with widely accepted standards or with favorable outcome.

Methods: We identified *S. aureus* in blood cultures from October 2004 through January 2006 at a single hospital. We reviewed medical records to note therapy, whether there was IDInv, and patient outcomes.

Results: There were 101 bacteremias in 90 patients, 68 with MRSA and 33 with MSSA. IDInv was indicated by ID consultation in 66 cases, ID progress notes without consultation in 8 cases, and progress notes that recorded “curbside” ID consultation in 3 cases. There was no evidence of IDInv in 24 cases. We excluded from further analysis cases in which blood cultures became positive within 2 days of death or where therapy was stopped at patients’ request because of poor prognosis. For the remainder, therapy was concordant with widely accepted standards in 71 of 73 cases (97%) with IDInv and 8 of 15 cases (53%) without IDInv ($p=0.00003$, Fisher exact test). Relapse was more likely in patients without IDInv, ($p=0.02$, Chi-square, table).

Conclusions: Since this was a retrospective review, it is possible that unmeasured factors confounded the analysis. Since practitioners were unaware of the review, the observations are probably representative of many practice situations. That IDInv was associated with optimal therapy and less risk of relapse is consistent earlier research. We concluded that outcomes will be substantially better if IDInv is provided for all cases of SAB.

| | Outcome n (%) | | |
|----------|---------------|--------------------|-----------------------------------|
| | Patient Died | Infection relapsed | Infection cured, patient survived |
| IDInv | 5 (7) | 6 (8) | 61 (85) |
| No IDInv | 2 (12) | 5 (29) | 10 (59) |

K-3477

Use of Echocardiography in Cases of *Staphylococcus aureus* Bacteremia at an Academic Medical Center

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Background: National guidelines recommend the use of transesophageal echocardiography (TEE) in all cases of *S. aureus* bacteremia to detect the presence of endocarditis and its complications; however, echocardiography is not used in a substantial proportion of cases at our institution and other medical centers. We sought to explore factors associated with the failure to utilize echocardiography.

Methods: Review of *S. aureus* bacteremia cases one year prior to and one year after the implementation of a policy of mandatory infectious disease (ID) specialist consultation.

Results: Mandatory ID consultation increased the overall use of echocardiography (57% vs. 73%, $p = .01$), predominantly due to more frequent use of transthoracic echocardiography (55% vs. 69%, $p = .03$) as compared with TEE (18% vs. 23%, $p = .34$). Echocardiography was not utilized in 27 (27%) of 100 cases during the mandatory consultation period. Sixteen (59%) of these 27 cases were classified as complicated bacteremia: 9/16 (56%) had an early indication for prolonged antimicrobial therapy (deep-tissue infection and/or positive follow-up blood culture), while 7/16 (44%) did not have an indication for prolonged therapy and follow-up blood cultures were not obtained. In multivariate analysis, factors associated with failure to utilize echocardiography included being on a surgical service (OR 4.4 [95% CI 1.1-17.7]), nosocomial acquisition of infection (OR 12.0 [95% CI 1.4-104.5]), skin and soft tissue source of infection (OR 27.8 [95% CI 3.3-234.2]), and uncomplicated bacteremia (OR 7.3 [95% CI 1.5-36.6]).

Conclusions: Echocardiography is not routinely utilized in cases of both uncomplicated and complicated *S. aureus* bacteremia at our institution, while TEE is used in only a minority of cases. As this pattern of use has been observed at other medical centers, the disconnect between existing guidelines and clinical practice warrants further evaluation and should be addressed in future guidelines.

K-3481

Infectious Disease Consultation Lowers Mortality from *Staphylococcus aureus* Bacteremia

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Background: *Staphylococcus aureus* bacteremia (SAB) is associated with significant morbidity and mortality. Infectious disease consultation (IDC) is common and well-studied during SAB in studies of predominantly methicillin sensitive staphylococci, but the impact of IDC on mortality during methicillin resistant SAB is not known.

Methods: We compared demographic characteristics and clinical outcomes in patients with SAB who did or did not receive IDC in a nested case-control study at an academic medical center, and then conducted a Cox proportional hazards survival analysis on the impact of IDC on mortality.

Results: IDC was more common among patients with severe complications of SAB, such as septic arthritis (10.2% vs. 2.1%, $P=0.006$), central nervous system involvement (7.1% vs. 0%, $P=0.001$), endocarditis (20.4% vs. 5.6%, $P<0.001$), and osteomyelitis (20.4% vs. 2.1%, $P<0.001$). Length of hospitalization was not different between the two groups, however the likelihood of intensive care unit admission was actually lower in patients with IDC (38.8% vs. 53.5%, $P=0.025$). In hospital mortality was lower in patients receiving IDC (9.2% vs. 25.4%, $P=0.002$). In a multivariate survival analysis, IDC was associated with substantially lower mortality during SAB (Odds Ratio(OR) 0.23, $P=0.001$). This benefit was most pronounced in patients who had methicillin-resistant SAB (OR 0.18, $P=0.007$) or who required ICU admission (OR 0.18, $P=0.007$). In a subset of 89 patients studied in ongoing analyses, we found that IDC was associated with more frequent blood culture monitoring but not with earlier removal of indwelling lines.

Conclusions: IDC results in a dramatic decrease in mortality from SAB. Close monitoring of clearance of blood cultures may be one reason why IDC is beneficial in the management of SAB. We are also exploring additional factors such as whether IDC impacts the likelihood of prosthetic joint removal and timing of therapeutic interventions.

L-2124

Early Discharge of Patients (pts) with Febrile Neutropenia (FN) Orally Treated and Assessed at Low Risk (LR) for Medical Complications Using the MASCC Score - Data from a Multicenter Therapeutic Trial (46001)

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Background: A substantial rate of pts with FN is treated orally in an outpt setting. The MASCC score has been recommended for identifying pts with FN at LR but there is no data from multicenter trials validating the MASCC LR prediction rule in outpts or pts discharged early

Methods: We performed a double-blind, randomized, international trial comparing the efficacy/safety of oral moxifloxacin versus ciprofloxacin/augmentin in pts with FN, a MASCC score >20 (LR), able to swallow. It was intended to discharge pts as soon as possible based on predefined medical and non-medical criteria

Results: Of the 333 eligible pts, 50% had solid tumor and 69% were outpts at fever onset; 244 pts were eligible for early discharge (ie before the end of atb therapy) and 195 (59%; 95%CI, 53-64%) were eventually discharged early, with similar rates of pts in the two arms over time : 26% within 6 h, 34% at 24 h, 39% at 48 h. There was no death and readmission because of clinical deterioration or complication was required in only 9 pts leading to a 5% serious adverse events (SAE) rate (95%CI, 2-9%); 49 pts (15%; 95%CI, 11-19%) were eligible but not discharged for a variety of reasons while 89 pts (27%; 95%CI, 22%-32%) were not eligible for discharge (many due to psychosocial reasons). The number of pts with SAE among those not discharged was 9 (7%; 95%CI, 3-12%).

Conclusions: Most pts with FN predicted at LR by the MASCC score, orally treated can be safely discharged early. This international study confirms that, in the outpt setting, these pts remain at LR for serious complications leading to readmission (<10%)