Infection Control Update

May 2022

Welcome to the latest copy of the Infection Control Update. The aim of this publication is to bring together a range of recently published research and guidance that will help you make evidence-based decisions.

Accessing Articles

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A selection of papers from Medline and CINHAL (Dec 2021 – May 2022)

1. **Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis**

   Item Type: Journal Article
   Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis

   Publication Date: 2022

   Journal: Lancet 399(10325), pp. 629-655

   Abstract: Background: Antimicrobial resistance (AMR) poses a major threat to human health around the world. Previous publications have estimated the effect of AMR on incidence, deaths, hospital length of stay, and health-care costs for specific pathogen-drug combinations in select locations. To our knowledge, this study presents the most comprehensive estimates of AMR burden to date. Methods: We estimated deaths and disability-adjusted life-years (DALYs) attributable to and associated with bacterial AMR for 23 pathogens and 88 pathogen-drug combinations in 204 countries and territories in 2019. We obtained data from systematic literature reviews, hospital systems, surveillance systems, and other sources, covering 471 million individual records or isolates and 7585 study-location-years. We used predictive statistical modelling to produce estimates of AMR burden for all locations, including for locations with no data. Our approach can be divided into five broad components: number of deaths where infection played a role, proportion of infectious deaths attributable to a given infectious syndrome, proportion of infectious syndrome deaths attributable to a given pathogen, the percentage of a given pathogen resistant to an antibiotic of interest, and the excess risk of death or duration of an infection associated with this resistance. Using these components, we estimated disease burden based on two counterfactuals: deaths attributable to AMR (based on an alternative scenario in which all drug-resistant infections were replaced by drug-susceptible infections), and deaths associated with AMR (based on an alternative scenario in which all drug-resistant infections were replaced by no infection). We generated 95% uncertainty intervals (UIs) for final estimates as the 25th and 975th ordered values across 1000 posterior draws, and models were cross-validated for out-of-sample predictive validity. We present final estimates aggregated to the global and regional level. **Findings:** On the basis of our predictive statistical models, there were an estimated 4·95 million (3·62-6·57) deaths associated with bacterial AMR in 2019, including 1·27 million (95% UI 0·911-1·71) deaths attributable to bacterial AMR. At the regional level, we estimated the all-age death rate attributable to resistance to be highest in western sub-Saharan Africa, at 27·3 deaths per 100 000 (20·9-35·3), and lowest in Australasia, at 6·5 deaths (4·3-9·4) per 100 000. Lower respiratory infections accounted for more than 1·5 million deaths associated with resistance in 2019, making it the most burdensome infectious syndrome. The six leading pathogens for deaths associated with resistance (Escherichia coli, followed by Staphylococcus aureus, Klebsiella pneumoniae, Streptococcus pneumoniae, Acinetobacter baumannii, and Pseudomonas aeruginosa) were responsible for 929 000 (660 000-1 270 000) deaths attributable to AMR and 3·57 million (2·62-4·78) deaths associated with AMR in 2019. One pathogen-drug combination, meticillin-resistant S aureus, caused more than 100 000 deaths attributable to AMR in 2019, while six more each caused 50 000-100 000 deaths: multidrug-resistant excluding extensively drug-resistant tuberculosis, third-generation cephalosporin-resistant E coli, carbapenem-resistant A baumannii, fluoroquinolone-resistant E coli, carbapenem-resistant K pneumoniae, and third-generation cephalosporin-resistant K pneumoniae. **Interpretation:** To our knowledge, this study provides the first comprehensive assessment of the global burden of AMR, as well as an evaluation of the availability of data. AMR is a leading cause of death around the world, with the highest burdens in low-resource settings. Understanding the burden of AMR and the leading pathogen-drug combinations contributing to it is crucial to making informed and location-specific policy decisions, particularly about infection prevention and control programmes, access to essential

antibiotics, and research and development of new vaccines and antibiotics. There are serious data gaps in many low-income settings, emphasising the need to expand microbiology laboratory capacity and data collection systems to improve our understanding of this important human health threat.Funding: Bill & Melinda Gates Foundation, Wellcome Trust, and Department of Health and Social Care using UK aid funding managed by the Fleming Fund.

DOI: https://libkey.io/10.1016/S0140-6736(21)02724-0

2. **Use of Feedback Data to Reduce Surgical Site Infections and Optimize Antibiotic Use in Surgery: A Systematic Scoping Review.**

Item Type: Journal Article

Authors: Ahuja, Shalini;Peiffer-Smadja, Nathan;Peven, Kimberly;White, Michelle;Leather, Andrew J. M.;Singh, Sanjeev;Mendelson, Marc;Holmes, Alison;Birgand, Gabriel;Sevdalis, Nick and ASPIRES study co-investigators

Publication Date: 2022

Journal: Annals of Surgery 275(2), pp. e345-e352

Abstract: OBJECTIVE: Surgical site infection (SSI) prevention remains significant, particularly in the era of antimicrobial resistance. Feedback on practices and outcomes is known to be key to reduce SSI rates and optimize antibiotic usage. However, the optimal method, format and frequency of feedback for surgical teams remains unclear. The objective of the study is to understand how data from surveillance and audit are fed back in routine surgical practice. METHODS: A systematic scoping review was conducted, using well-established implementation science frameworks to code the data. Two electronic health-oriented databases (MEDLINE, EMBASE) were searched to September 2019. We included studies that assessed the use of feedback as a strategy either in the prevention and management of SSI and/or in the use of antibiotics perioperatively. RESULTS: We identified 21 studies: 17 focused on SSI rates and outcomes and 10 studies described antimicrobial stewardship for SSI (with some overlap in focus). Several interventions were reported, mostly multimodal with feedback as a component. Feedback was often provided in written format (62%), either individualized (38%) or in group (48%). Only 25% of the studies reported that feedback cascaded down to the frontline perioperative staff. In 65% of the studies, 1 to 5 implementation strategies were used while only 5% of the studies reported to have utilized more than 15 implementation strategies. Among studies reporting antibiotic usage in surgery, most (71%) discussed compliance with surgical antibiotic prophylaxis. CONCLUSIONS: Our findings highlight the need to provide feedback to all levels of perioperative care providers involved in patient care. Future research in this area should report implementation parameters in more detail.
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3. **Effectiveness of Antimicrobial Stewardship Program in Long-Term Care: A Five-Year Prospective Single-Center Study**

Item Type: Journal Article

Authors: Alawi, Maha Mahmoud;Tashkandi, Wail A.;Basheikh, Mohamed A.;Warshan, Faten M.;Ghobara, Hazem Ahmed;Ramos, Rosemarie B.;Guiriba, Mary Leilani;Ayob, Omar;Janah, Safiah Saad;Sindi, Anees Ahmad;Abdulhamid Ahmed, Suheib Ali;Dammnan, Salah;Azhar, Esam Ibraheem;Rabaan, Ali A.;Alnahdi, Salma and Bamahakesh, Maged Mohammed

Publication Date: 2022

Journal: Interdisciplinary Perspectives on Infectious Diseases , pp. 1-12

Abstract: Objective. To report the effectiveness of the antimicrobial stewardship program (ASP) in a long-term care (LTC) facility, by analyzing the change in antimicrobial consumption and cost and multidrug resistance (MDR) rates over a 5-year period. Method. A prospective interventional study was conducted at a 106-bed facility (nursing home: 100 beds and an intensive care unit (ICU): 6 beds). The ASP was designed and led by a multidisciplinary team including an infectious disease consultant, two clinical pharmacists, a clinical microbiologist, and an infection control preventionist. Five key performance indicators were monitored: (1) intravenous (IV)-to-oral switch rate, (2) consumption of restricted IV antimicrobials (raw consumption and defined daily doses (DDD) index), (3) cost of restricted IV antimicrobials, (4) antimicrobial sensitivity profiles, and (5) MDR rate among hospital-acquired infections (MDR-HAI). Result. A ∼5.5-fold enhancement of the IV-to-oral switch and a 40% reduction in the overall consumption of restricted IV antimicrobials were observed. Regarding the cost, the cumulative cost saving was estimated as 5.64 million SAR (US$1.50 million). Microbiologically, no significant change in antimicrobial sensitivity profiles was observed; however, a large-size reduction in the MDR-HAI rate was observed, notably in ICU where it declined from 3.22 per 1,000 patient days, in 2015, to 1.14 per 1,000 patient days in 2020. Interestingly, the yearly overall MDR rate was strongly correlated with the level of antimicrobial consumption. Conclusion. The implementation of a multidisciplinary ASP in LTC facilities should be further encouraged, with emphasis on physicians' education and active involvement to enhance the success of the strategy.

DOI: https://libkey.io/10.1155/2022/8140429

4. **Exploring temporal trends and risk factors for resistance in Escherichia coli-causing bacteraemia in England between 2013 and 2018: an ecological study.**

Item Type: Journal Article

Authors: Aliabadi, Shirin;Jauneikaite, Elita;Muller-Pebody, Berit;Hope, Russell;Vihta, Karina-Doris;Horner, Carolyne and Costelloe, Ceire E.

Publication Date: 2022

Journal: Journal of Antimicrobial Chemotherapy 77(3), pp. 782-792

Abstract: BACKGROUND: Escherichia coli are Gram-negative bacteria associated with an increasing burden of antimicrobial resistance (AMR) in England. OBJECTIVES: To create a comprehensive epidemiological picture of E. coli bacteraemia resistance trends and risk factors in England by linking national microbiology data sources and performing a longitudinal analysis of rates. METHODS: A retrospective observational study was conducted on all national records for antimicrobial susceptibility testing on E. coli bacteraemia in England from 1 January 2013 to 31 December 2018 from the UK Health Security Agency (UKHSA) and the BSAC Resistance Surveillance

Programme (BSAC-RSP). Trends in AMR and MDR were estimated using iterative sequential regression. Logistic regression analyses were performed on UKHSA data to estimate the relationship between risk factors and AMR or MDR in E. coli bacteraemia isolates. RESULTS: An increase in resistance rates was observed in community- and hospital-onset bacteraemia for third-generation cephalosporins, co-amoxiclav, gentamicin and ciprofloxacin. Among community-acquired cases, and after adjustment for other factors, patients aged >65 years were more likely to be infected by E. coli isolates resistant to at least one of 11 antibiotics than those aged 18-64 years (OR: 1.21, 95% CI: 1.18-1.25; P Copyright © The Author(s) 2021. Published by Oxford University Press on behalf of the British Society for Antimicrobial Chemotherapy. All rights reserved. For permissions, please email: journals.permissions@oup.com.

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5. **Predictors of missed infection control care: A tri-partite international study**

Item Type: Journal Article

Authors: Blackman, Ian;Riklikiene, Olga;Gurkova, Elena;Willis, Eileen and Henderson, Julie

Publication Date: 2022

Journal: Journal of Advanced Nursing (John Wiley & Sons, Inc.) 78(2), pp. 414-424

Abstract: Aim: This study aimed to quantify types and frequencies of missed infection control care and to develop a theoretical model for estimating nurses' consensus scores about this form of missed care. Design: A non-experimental research design using self-audit data was selected to collect information about the types and frequencies of missed infection control care from nurses employed in hospitals located in three different countries. Data collection commenced mid-year 2018. Methods: A multivariate approach was used to apply the consensus scores of 1.911 internationally based nurses in the missed opportunities for maintaining infection control. Results/findings: Thirteen variables exert direct effects on the nurses' total scores underpinning missed infection control care. These include the methods used to prevent hospital-acquired infections, surveillance and hand hygiene practices. Significant nurses' demographic factors also included their countries of origin, employment status, employer type, job retention intentions, work intensity, length of clinical experience and staff development attendance. Conclusion: In magnitude of importance and having the largest effect on missed infection control care is missed care related to reducing hospital-acquired infections followed closely by surveillance. Missed infection control care can be quantified, and variances in its practices can be accounted by exploring the nurses' differing demographic factors, including the nurses' country of origin. Impact: Variations in missed infection control care can be accounted for across three countries. While ward hygiene is underestimated by staff as a mechanism to minimize nosocomial infections, infection control surveillance remains the key to reducing hospital-acquired infections. The study's outcomes invite the use of an ongoing, whole-of-organization approach to infection control with scrutiny being needed for improved staff adherence particularly with hand hygiene.

DOI: https://libkey.io/10.1111/jan.14976

6. **Delivery of antimicrobial stewardship competencies in UK pre-registration nurse education programmes: a national cross-sectional survey**

Item Type: Journal Article

Authors: Courtenay, M.;Castro-Sánchez, E.;Gallagher, R.;Gould, D. and Hawker, C.

Publication Date: 2022

Journal: Journal of Hospital Infection 121, pp. 39-48

Abstract: Background: Registered nurses perform numerous functions critical to the success of antimicrobial stewardship, but only 63% of pre-registration nursing programmes include any teaching about stewardship. Updated nursing standards indicate that nurses require antimicrobial stewardship knowledge and skills.Aim: To explore the delivery of key antimicrobial stewardship competencies within updated pre-registration nursing programmes.Methods: This study had a cross-sectional survey design. Data were collected between March and June 2021.Findings: Lecturers from 35 UK universities responsible for teaching antimicrobial stewardship participated in this study. The provision of antimicrobial stewardship teaching and learning was inconsistent across programmes, with competencies in infection prevention and control, patient-centred care and interprofessional collaborative practice taking precedent over competencies pertaining to the use, management and monitoring of antimicrobials. Online learning and teaching surrounding hand hygiene, personal protective equipment and immunization theory was reported to have increased during the pandemic. Only a small number of respondents reported that students shared taught learning with other healthcare professional groups.Conclusion: There is a need to ensure consistency in antimicrobial stewardship across programmes, and greater knowledge pertaining to the use, management and monitoring of antimicrobials should be included. Programmes need to adopt teaching strategies and methods that allow nurses to develop interprofessional skills in order to practice collaboratively.

DOI: https://libkey.io/10.1016/j.jhin.2021.09.027

7. **Rapid intrapartum test for maternal group B streptococcal colonisation and its effect on antibiotic use in labouring women with risk factors for early-onset neonatal infection (GBS2): cluster randomised trial with nested test accuracy study.**

Item Type: Journal Article

Authors: Daniels, Jane P.;Dixon, Emily;Gill, Alicia;Bishop, Jon;Wilks, Mark;Millar, Michael;Gray, Jim;Roberts, Tracy E.;Plumb, Jane;Deeks, Jonathan J.;Hemming, Karla;Khan, Khalid S.;Thangaratinam, Shakila and GBS2 Collaborative Group

Publication Date: 2022

Journal: BMC Medicine 20(1), pp. 9

Abstract: BACKGROUND: Mother-to-baby transmission of group B Streptococcus (GBS) is the main cause of early-onset infection. We evaluated whether, in women with clinical risk factors for early neonatal infection, the use of point-of-care rapid intrapartum test to detect maternal GBS colonisation reduces maternal antibiotic

exposure compared with usual care, where antibiotics are administered due to those risk factors. We assessed the accuracy of the rapid test in diagnosing maternal GBS colonisation, against the reference standard of selective enrichment culture. METHODS: We undertook a parallel-group cluster randomised trial, with nested test accuracy study and microbiological sub-study. UK maternity units were randomised to a strategy of rapid test (GeneXpert GBS system, Cepheid) or usual care. Within units assigned to rapid testing, vaginal-rectal swabs were taken from women with risk factors for vertical GBS transmission in established term labour. The trial primary outcome was the proportion of women receiving intrapartum antibiotics to prevent neonatal early-onset GBS infection. The accuracy of the rapid test was compared against the standard of selective enrichment culture in diagnosing maternal GBS colonisation. Antibiotic resistance profiles were determined in paired maternal and infant samples. RESULTS: Twenty-two maternity units were randomised and 20 were recruited. A total of 722 mothers (749 babies) participated in rapid test units; 906 mothers (951 babies) were in usual care units. There was no evidence of a difference in the rates of intrapartum antibiotic prophylaxis (relative risk 1.16, 95% CI 0.83 to 1.64) between the rapid test (41%, 297/716) and usual care (36%, 328/906) units. No serious adverse events were reported. The sensitivity and specificity measures of the rapid test were 86% (95% CI 81 to 91%) and 89% (95% CI 85 to 92%), respectively. Babies born to mothers who carried antibiotic-resistant Escherichia coli were more likely to be colonised with antibiotic-resistant strains than those born to mothers with antibiotic-susceptible E. coli. CONCLUSION: The use of intrapartum rapid test to diagnose maternal GBS colonisation did not reduce the rates of antibiotics administered for preventing neonatal early-onset GBS infection than usual care, although with considerable uncertainty. The accuracy of the rapid test is within acceptable limits. TRIAL REGISTRATION: ISRCTN74746075 . Prospectively registered on 16 April 2015. Copyright © 2021. The Author(s).

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8. **Role perception of infection control link nurses; a multi-centre qualitative study**

Item Type: Journal Article

Authors: Dekker, Mireille;Mansfeld, Rosa van;Vandenbroucke-Grauls, Christina;Lauret, Tessa E.;Schutijser, Bernadette C. F. M.;de Bruijne, Martine,C. and Jongerden, Irene P.

Publication Date: 2022

Journal: Journal of Infection Prevention 23(3), pp. 93-100

Abstract: Background: Infection control link nurses (ICLN) disseminate knowledge on infection prevention topics to their peers. Little is known about how they succeed and thereby contribute to infection prevention in daily practise. Aim: To explore the experiences of infection control link nurses regarding their role in acute care hospitals and identify perceived facilitators and best practices. Methods: We conducted a qualitative study with semi-structured individual and focus group interviews with ICLN. The effect of COVID-19 on the ICLN role was added as a topic in focus group interviews during the pandemic. Results: Twenty-six ICLN working in acute care hospitals were interviewed. ICLN perceived their role as to identify, monitor, facilitate and inform their

colleagues on infection prevention topics related to their ward. Their experiences vary from feeling challenged and wonder how to get started, to feeling confident and taking initiatives that lead to ward-based improvements. When inspired by each other and supported by infection control practitioners or managers, ICLN feel empowered to initiate more activities to improve practice. During the COVID-19 pandemic, ICLN felt their responsibilities were magnified. When transferred to another ward, the focus on the ICLN role seemed dispersed. Discussion: Empowered ICLN adjust and operationalize infection prevention policies to fit the conditions of their specific wards and provide practical instructions and feedback to their peers which enable better compliance to infection prevention policies. Support and inspiration from other ICLN, infection control practitioners and management contribute to this empowerment and consequently to taking impactful initiatives to improve practice.

DOI: https://libkey.io/10.1177/17571774211066786

9. **Patient perceptions of vulnerability to recurrent respiratory tract infections and prevention strategies: a qualitative study.**

Item Type: Journal Article

Authors: Dennison, Laura;Williamson, Sian;Greenwell, Kate;Handcock, Molly;Bradbury, Katherine;Vennik, Jane;Yardley, Lucy;Little, Paul and Geraghty, Adam W. A.

Publication Date: Apr 20 ,2022

Journal: BMJ Open 12(4), pp. e055565

Abstract: OBJECTIVES: Respiratory tract infections (RTIs) are extremely common, usually self-limiting, but responsible for considerable work sickness absence, reduced quality of life, inappropriate antibiotic prescribing and healthcare costs. Patients who experience recurrent RTIs and those with certain comorbid conditions have higher personal impact and healthcare costs and may be more likely to suffer disease exacerbations, hospitalisation and death. We explored how these patients experience and perceive their RTIs to understand how best to engage them in prevention behaviours. DESIGN: A qualitative interview study. SETTING: Primary care, UK. METHODS: 23 participants who reported recurrent RTIs and/or had relevant comorbid health conditions were interviewed about their experiences of RTIs. Interviews took place as the COVID-19 pandemic began. Data were analysed using inductive thematic analysis. RESULTS: Three themes were developed: Understanding causes and vulnerability, Attempting to prevent RTIs, Uncertainty and ambivalence about prevention, along with an overarching theme; Changing experiences because of COVID-19. Participants ' understandings of their susceptibility to RTIs were multifactorial and included both transmission via others and personal vulnerabilities. They engaged in various approaches to try to prevent infections or alter their progression yet perceived they had limited personal control. The COVID-19 pandemic had improved their understanding of transmission, heightened their concern and motivation to avoid RTIs and extended their repertoire of protective behaviours. CONCLUSIONS: Patients who experience frequent or severe RTIs are likely to welcome and benefit from advice and support regarding RTI prevention. To engage people effectively, those developing interventions or delivering health services must consider their beliefs and concerns about susceptibility and prevention. Copyright © Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY. Published by BMJ.

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6055&isbn=&volume=12&issue=4&spage=e055565&pages=e055565&date=2022&title=BMJ+Open&atitle=Patient+perceptions+of+vulnerability+to+recurrent+respiratory+tract+infections+and+prevention+strategies%3A+a+qualitative+study.&aulast=Dennison&pid=%3Cauthor%3EDennison+L%3BWilliamson+S%3BGreenwell+K%3BHandcock+M%3BBradbury+K%3BVennik+J%3BYardley+L%3BLittle+P%3BGeraghty+AWA%3C%2Fauthor%3E%3CAN%3E35443952%3C%2FAN%3E%3CDT%3EJournal+Article%3C%2FDT%3E

10. **Piperacillin/tazobactam-resistant, cephalosporin-susceptible Escherichia coli bloodstream infections are driven by multiple acquisition of resistance across diverse sequence types.**

Item Type: Journal Article

Authors: Edwards, Thomas;Heinz, Eva;van Aartsen, Jon;Howard, Alex;Roberts, Paul;Corless, Caroline;Fraser, Alice J.;Williams, Christopher T.;Bulgasim, Issra;Cuevas, Luis E.;Parry, Christopher M.;Roberts, Adam P.;Adams, Emily R.;Mason, Jenifer and Hubbard, Alasdair T. M.

Publication Date: Apr ,2022

Journal: Microbial Genomics 8(4)
Abstract: Resistance to piperacillin/tazobactam (TZP) in Escherichia coli has predominantly been associated with mechanisms that confer resistance to third-generation cephalosporins. Recent reports have identified E. coli strains with phenotypic resistance to piperacillin/tazobactam but susceptibility to third-generation cephalosporins (TZP-R/3GC-S). In this study we sought to determine the genetic diversity of this phenotype in E. coli (n=58) isolated between 2014-2017 at a single tertiary hospital in Liverpool, UK, as well as the associated resistance mechanisms. We compare our findings to a UK-wide collection of invasive E. coli isolates (n=1509) with publicly available phenotypic and genotypic data. These data sets included the TZP-R/3GC-S phenotype (n=68), and piperacillin/tazobactam and third-generation cephalosporin-susceptible (TZP-S/3GC-S, n=1271) phenotypes. The TZP-R/3GC-S phenotype was displayed in a broad range of sequence types, which was mirrored in the same phenotype from the UK-wide collection, and the overall diversity of invasive E. coli isolates. The TZP-R/3GC-S isolates contained a diverse range of plasmids, indicating multiple acquisition events of TZP resistance mechanisms rather than clonal expansion of a particular plasmid or sequence type. The putative resistance mechanisms were equally diverse, including hyperproduction of TEM-1, either via strong promoters or gene amplification, carriage of inhibitor-resistant beta-lactamases, and an S133G bla CTX-M-15 mutation detected for the first time in clinical isolates. Several of these mechanisms were present at a lower abundance in the TZP-S/3GC-S isolates from the UK-wide collection, but without the associated phenotypic resistance to TZP. Eleven (19%) of the isolates had no putative mechanism identified from the genomic data. Our findings highlight the complexity of this cryptic phenotype and the need for continued phenotypic monitoring, as well as further investigation to improve detection and prediction of the TZP-R/3GC-S phenotype from genomic data.

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11. **Genomic analysis of 600 vancomycin-resistant Enterococcus faecium reveals a high prevalence of ST80 and spread of similar vanA regions via IS1216E and plasmid transfer in diverse genetic lineages in Ireland.**

Item Type: Journal Article

Authors: Egan, Sarah A.;Kavanagh, Nicole L.;Shore, Anna C.;Mollerup, Sarah;Samaniego Castruita, Jose A.;O'Connell, Brian;McManus, Brenda A.;Brennan, Grainne I.;Pinholt, Mette;Westh, Henrik and Coleman, David C.

Publication Date: 2022

Journal: Journal of Antimicrobial Chemotherapy 77(2), pp. 320-330

Abstract: BACKGROUND: Vancomycin-resistant Enterococcus faecium (VREfm) cause a wide range of hospital infections. Ireland has had one of the highest invasive VREfm infection rates in Europe over the last decade, yet little is known about Irish VREfm. OBJECTIVES: To investigate the population structure of Irish VREfm, explore diversity by analysing the vanA transposon region and compare Irish, Danish and global isolates. METHODS: E. faecium (n = 648) from five Irish hospitals were investigated, including VREfm [547 rectal screening and 53 bloodstream infection (BSI)] isolates and 48 vancomycin-susceptible (VSEfm) BSI isolates recovered between June 2017 and December 2019. WGS and core-genome MLST (cgMLST) were used to assess population structure. Genetic environments surrounding vanA were resolved by hybrid assembly of short-read (Illumina) and long-read (Oxford Nanopore Technologies) sequences. RESULTS: All isolates belonged to hospital-adapted clade A1 and the majority (435/648) belonged to MLST ST80. The population structure was highly polyclonal; cgMLST segregated 603/648 isolates into 51 clusters containing mixtures of screening and BSI isolates, isolates from different hospitals, and VREfm and VSEfm. Isolates within clusters were closely related (mean average Copyright © The Author(s) 2021. Published by Oxford University Press on behalf of the British Society for Antimicrobial Chemotherapy.

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12. **Longer than 2 hours to antibiotics is associated with doubling of mortality in a multinational community-acquired bacterial meningitis cohort.**

Item Type: Journal Article

Authors: Eisen, Damon P.;Hamilton, Elizabeth;Bodilsen, Jacob;Koster-Rasmussen, Rasmus;Stockdale, Alexander J.;Miner, James;Nielsen, Henrik;Dzupova, Olga;Sethi, Varun;Copson, Rachel K.;Harings, Miriam and Adegboye, Oyelola A.

Publication Date: 2022

Journal: Scientific Reports 12(1), pp. 672

Abstract: To optimally define the association between time to effective antibiotic therapy and clinical outcomes in adult community-acquired bacterial meningitis. A systematic review of the literature describing the

association between time to antibiotics and death or neurological impairment due to adult community-acquired bacterial meningitis was performed. A retrospective cohort, multivariable and propensity-score based analyses were performed using individual patient clinical data from Australian, Danish and United Kingdom studies. Heterogeneity of published observational study designs precluded meta-analysis of aggregate data (I2 = 90.1%, 95% CI 71.9-98.3%). Individual patient data on 659 subjects were made available for analysis. Multivariable analysis was performed on 180-362 propensity-score matched data. The risk of death (adjusted odds ratio, aOR) associated with treatment after two hours was 2.29 (95% CI 1.28-4.09) and increased substantially thereafter. Similarly, time to antibiotics of greater than three hours was associated with an increase in the occurrence of neurological impairment (aOR 1.79, 95% CI 1.03-3.14). Among patients with community-acquired bacterial meningitis, odds of mortality increase markedly when antibiotics are given later than two hours after presentation to the hospital. Copyright © 2022. The Author(s).

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13. **Using mobile phone applications in engaging nurses for preventing healthcare-associated infections: A systematic review**

Item Type: Journal Article

Authors: Fithriyyah, Yayu Nidaul and Aulawi, Khudazi

Publication Date: 2022

Journal: Nursing Practice Today 9(2), pp. 84-101

Abstract: Background & Aim: Prevention of healthcare-associated infections targets health workers. Considering the crucial role of nurses, potential applications of mobile phone-based interventions are innovative, attractive, and easily accessible. This study synthesizes mobile applications with the involvement of nurses or nursing students in outcomes to prevent healthcare-associated infections and their implications. Methods & Materials: Systematic review, database searches included: SCOPUS, EBSCO MEDLINE, PubMed, ProQuest, Institute of Electrical and Electronics Engineers, and SagePUb. Population involved nurses or nursing students with mobilebased interventions about healthcare-associated infections. Quantitative design focused on publications between 2015-2021. Methodological quality applied the Cochrane and the National Heart, Lung, and Blood Institute tools. Analysis used narrative synthesis. Results: 11 studies met inclusion criteria from 1,792. Study populations were heterogeneous. Mobile phone interventions included: short message service (18.2%), (9.1%), mobile and computer access (18.2%), and iOs/Android-based (27.3%). healthcare-associated infections prevention focused on: surgical site infections (54.5%), central line-associated bloodstream infections (9.1%), catheter-associated urinary tract infections (9.1%), antimicrobials (9.1%), knowledge, attitude, and practice towards healthcare-associated infections (18.2%). Most bias risks were moderate to high. Participants showed positive responses. All studies described problems in implementing healthcare-associated infections applications. Five studies reported estimated cost savings. Conclusion: Using mobile phone applications has involved nurses as researchers, participants, and intervention providers to patients. The impact is promising in preventing healthcare-associated infections. Response of user is influenced by technology familiarity, which

involves interactive features and problem anticipation. This review showed significant cost savings, so stakeholders and future research plans can consider it.

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=cin20&AN=155740348&custid=ns023446

14. **Ophthalmia neonatorum in a tertiary referral children's hospital: A retrospective study.**

Item Type: Journal Article

Authors: Gildea, David;Goetz, Reinold;Drew, Richard and Chamney, Sarah

Publication Date: Jan ,2022

Journal: European Journal of Ophthalmology 32(1), pp. 587-591

Abstract: OBJECTIVES: The purpose of this study was to examine the aetiology, investigation and management of ophthalmia neonatorum (ON) presenting to a tertiary referral children's hospital over 5 years. METHODS: The eye swab data of all neonates presenting to Children's Health Ireland at Temple Street (Dublin, Ireland) between 1st January 2013 and 3rd September 2018 was analysed. The medical records of all patients with positive eye swab results were retrospectively reviewed. RESULTS: A total of 157 neonates had positive eye swab results. 54 cases were identified as ON. Chlamydia trachomatis (20.4%) was the most common organism identified, followed by Staphylococcus aureus (18.5%), Haemophilus influenzae (14.8%), Moraxella catarrhalis (7.4%), Streptococcus pneumoniae (5.6%), Escherischia coli (3.7%), Klebsiella pneumoniae (1.9%) and Pseudomonas aeruginosa (1.9%). A bacterial culture swab was tested in all cases (100%), a C. trachomatis/N. gonorrhoeae PCR swab in 70.4% and a viral PCR swab in 35.2%. On subanalysis of the cases that had C. trachomatis/N. gonorrhoeae PCR testing, C. trachomatis was responsible for 28.9% of cases. 50% of cases were hospitalised, intravenous antibiotics were administered in 46.3% and macrolide therapy was prescribed in 38.9%. CONCLUSIONS: C. trachomatis was the most common cause of ON in this study and may be responsible for an even higher proportion of cases due to incomplete testing. In keeping with studies in different populations, S. aureus, H. influenzae and S. pneumoniae were also common. As a result, an improved management algorithm for cases of ON has been introduced in this centre.

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15. **Implementation of an adapted Sepsis Risk Calculator algorithm to reduce antibiotic usage in the management of early onset neonatal sepsis: a multicentre initiative in Wales, UK.**

Item Type: Journal Article

Authors: Goel, Nitin;Cannell, Stephanie;Davies, Gemma;Natti, Murali Sridhar;Kirupaalar, Vickness;Abelian, Artur;Saeed, Shakir;Smith, Rhian;Manikonda, Ravi;Pitchaikani, Prem Kumar;Davies, Dawn;Morris, Rachel May;Edwards, Lynsey;Govindaraju, Roopashree;Creese, Kate;Jones, Jane;Choudhary, Jalil;Rowley, Sarah;Sethuraman, Chidambaram;Muxworthy, Helen, et al

Publication Date: May ,2022

Journal: Archives of Disease in Childhood Fetal & Neonatal Edition 107(3), pp. 303-310

Abstract: OBJECTIVE: Assess the impact of introducing a consensus guideline incorporating an adapted Sepsis Risk Calculator (SRC) algorithm, in the management of early onset neonatal sepsis (EONS), on antibiotic usage and patient safety. DESIGN: Multicentre prospective study SETTING: Ten perinatal hospitals in Wales, UK. PATIENTS: All live births >=34 weeks' gestation over a 12-month period (April 2019-March 2020) compared with infants in the preceding 15-month period (January 2018-March 2019) as a baseline. METHODS: The consensus guideline was introduced in clinical practice on 1 April 2019. It incorporated a modified SRC algorithm, enhanced in-hospital surveillance, ongoing quality assurance, standardised staff training and parent education. The main outcome measure was antibiotic usage/1000 live births, balancing this with analysis of harm from delayed diagnosis and treatment, disease severity and readmissions from true sepsis. Outcome measures were analysed using statistical process control charts. MAIN OUTCOME MEASURES: Proportion of antibiotic use in infants >=34 weeks' gestation. RESULTS: 4304 (14.3%) of the 30 105 live-born infants received antibiotics in the baseline period compared with 1917 (7.7%) of 24 749 infants in the intervention period (45.5% mean reduction). All 19 infants with culture-positive sepsis in the postimplementation phase were identified and treated appropriately. There were no increases in sepsis-related neonatal unit admissions, disease morbidity and late readmissions. CONCLUSIONS: This multicentre study provides evidence that a judicious adaptation of the SRC incorporating enhanced surveillance can be safely introduced in the National Health Service and is effective in reducing antibiotic use for EONS without increasing morbidity and mortality. Copyright © Author(s) (or their employer(s)) 2022. No commercial re-use. See rights and permissions. Published by BMJ.

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16. **Association of Exposure to High-risk Antibiotics in Acute Care Hospitals With Multidrug-Resistant Organism Burden in Nursing Homes.**

Item Type: Journal Article

Authors: Gontjes, Kyle J.;Gibson, Kristen E.;Lansing, Bonnie J.;Mantey, Julia;Jones, Karen M.;Cassone, Marco;Wang, Joyce;Mills, John P.;Mody, Lona and Patel, Payal K.

Publication Date: 2022

Journal: JAMA Network Open 5(2), pp. e2144959

Abstract: Importance: Little is known about the contribution of hospital antibiotic prescribing to multidrug-resistant organism (MDRO) burden in nursing homes (NHs). Objectives: To characterize antibiotic exposures across the NH patient's health care continuum (preceding health care exposure and NH stay) and to investigate whether recent antibiotic exposure is associated with MDRO colonization and room environment contamination at NH study enrollment. Design, Setting, and Participants: This is a secondary analysis of a prospective cohort study (conducted from 2013-2016) that enrolled NH patients and followed them up for as

long as 6 months. The study was conducted in 6 NHs in Michigan among NH patients who were enrolled within 14 days of admission. Clinical metadata abstraction, multi-anatomical site screening, and room environment surveillance for MDROs were conducted at each study visit. Data were analyzed between May 2019 and November 2021. Exposures: Antibiotic data were abstracted from NH electronic medical records by trained research staff and characterized by class, route, indication, location of therapy initiation, risk for Clostridioides difficile infection (C diffogenic agents), and 2019 World Health Organization Access, Watch, and Reserve (AWARE) antibiotic stewardship framework categories. Main Outcomes and Measures: The primary outcomes were MDRO colonization and MDRO room environment contamination at NH study enrollment, measured using standard microbiology methods. Multivariable logistic regression was used to identify whether antibiotic exposure within 60 days was associated with MDRO burden at NH study enrollment. Additionally, antibiotic exposure data were characterized using descriptive statistics. Results: A total of 642 patients were included (mean [SD] age, 74.7 [12.2] years; 369 [57.5%] women; 402 [62.6%] White; median [IQR] NH days to enrollment, 6.0 [3.0-7.0]). Of these, 422 (65.7%) received 1191 antibiotic exposures: 368 (57.3%) received 971 hospital-associated prescriptions, and 119 (18.5%) received 198 NH-associated prescriptions. Overall, 283 patients (44.1%) received at least 1 C diffogenic agent, and 322 (50.2%) received at least 1 high-risk WHO AWARE antibiotic (watch or reserve agent). More than half of NH patients (364 [56.7%]) and room environments (437 [68.1%]) had MDRO-positive results at enrollment. In multivariable analysis, recent antibiotic exposure was positively associated with baseline MDRO colonization (odds ratio [OR], 1.70; 95% CI, 1.22-2.38) and MDRO environmental contamination (OR, 1.67; 95% CI, 1.17-2.39). Exploratory stratification by C diffogenic agent exposure increased the effect size (MDRO colonization: OR, 1.99; 95% CI, 1.33-2.96; MDRO environmental contamination: OR, 1.86; 95% CI, 1.24-2.79). Likewise, exploratory stratification by exposure to high-risk WHO AWARE antibiotics increased the effect size (MDRO colonization: OR, 2.32; 95% CI, 1.61-3.36; MDRO environmental contamination: OR, 1.86; 95% CI, 1.26-2.75). Conclusions and Relevance: The findings of this study suggest that high-risk, hospital-based antibiotics are a potentially high-value target to reduce MDROs in postacute care NHs. This study underscores the potential utility of integrated hospital and NH stewardship programming on regional MDRO epidemiology.

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17. **Epidemiology of invasive meningococcal disease and sequelae in the United Kingdom during the period 2008 to 2017 - a secondary database analysis.**

Item Type: Journal Article

Authors: Guedes, Sandra;Bricout, Helene;Langevin, Edith;Tong, Sabine and Bertrand-Gerentes, Isabelle

Publication Date: 2022

Journal: BMC Public Health 22(1), pp. 521

Abstract: BACKGROUND: Invasive meningococcal disease (IMD) causes high fatality in untreated patients alongside long-term sequelae in 20% survivors. For a comprehensive assessment of epidemiology, an analysis of these sequelae is required. This study aims to investigate the epidemiology of disease between 2008 and 2017 including a description of the sequelae, through the analysis of data collected from the UK Clinical Practice Research Datalink (CPRD) linked with data from the Hospital Episode Statistics (HES), and Office for National

Statistics (ONS) mortality registry data. METHODS: This was a 10-year retrospective observational cohort study designed to describe the incidence, case-fatality rate (CFR) and occurrence of sequelae due to meningococcal disease, in the UK between 2007 and 2017 using data from the UK CPRD-HES-ONS. Cases were identified and matched on age, gender, date of diagnosis of IMD and followed-up-time with a control group without IMD. Demographics, clinical characteristics, mortality, and IMD-related sequelae were examined for IMD cases and compared with matched controls for a more comprehensive assessment. RESULTS: The study analysed 640 IMD patients with majority of the cases diagnosed (76.9%) in a hospital setting. Age-group analysis showed a decrease in the incidence rate of IMD in patients aged 50 years (10.4 - 27.8%). CFR was slightly higher among females, toddlers, and adults >50 years. No significant change in CFR was observed over study period. Case-control study showed a higher number of IMD sequelae among cases compared to age- and gender-matched controls, especially in those >= 50 years. CONCLUSION: The study showed that, despite a relatively low incidence rate, IMD is responsible for a high CFR, namely in older age groups and by a high number of IMD sequelae. The study showed that leveraging data from existing databases can be used to complement surveillance data in truly assessing the epidemiology of IMD. Despite the availability of routine vaccination programs, IMD still poses a significant burden in the healthcare system of the UK. Optimization of vaccination programs may be required to reduce the disease burden. Copyright © 2022. The Author(s).

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18. **Examining the effect of infection prevention and control awareness among nurses on patient and family education: A cross-sectional study**

Item Type: Journal Article

Authors: Hammoud, Sahar;Amer, Faten and Kocsis, Béla

Publication Date: 2022

Journal: Nursing & Health Sciences 24(1), pp. 140-151

Abstract: The significance of patient engagement in infection prevention and control remains to be stressed as a means of improving patient safety. This study aimed to determine nurses' awareness of infection prevention and control, assess patient and family education on infection prevention and control, and examine the effect of nurses' infection prevention and control awareness on patient and family education. A multi-site, cross-sectional study was conducted among 566 nurses in Hungary. Nurses responded to a questionnaire of three parts: demographics, infection prevention, and control awareness; healthcare-associated infections, hand hygiene, and standard precautions; and patient and family education. High scores were reached in overall awareness and standard precautions. Nurses educated patients and family members the most on hand hygiene and respiratory hygiene. Nurses with higher awareness educated patients more than those with lower awareness, but the differences were only significant for respiratory hygiene and the reason for isolation. Nursing leaders are encouraged to enhance the culture that is based on nurse/patient partnership and to develop reminders to emphasize the importance of engaging patients and family members in infection prevention and control.

DOI: https://libkey.io/10.1111/nhs.12905

19. **Methenamine hippurate compared with antibiotic prophylaxis to prevent recurrent urinary tract infections in women: the ALTAR non-inferiority RCT.**

Item Type: Journal Article

Authors: Harding, Chris;Chadwick, Thomas;Homer, Tara;Lecouturier, Jan;Mossop, Helen;Carnell, Sonya;King, Will;Abouhajar, Alaa;Vale, Luke;Watson, Gillian;Forbes, Rebecca;Currer, Stephanie;Pickard, Robert;Eardley, Ian;Pearce, Ian;Thiruchelvam, Nikesh;Guerrero, Karen;Walton, Katherine;Hussain, Zahid;Lazarowicz, Henry, et al

Publication Date: May ,2022

Journal: Health Technology Assessment (Winchester, England) 26(23), pp. 1-172

Abstract: BACKGROUND: Daily, low-dose antibiotic prophylaxis is the current standard care for women with recurrent urinary tract infection. Emerging antimicrobial resistance is a global health concern, prompting research interest in non-antibiotic agents such as methenamine hippurate, but comparative data on their efficacy and safety are lacking. OBJECTIVE: To assess the clinical effectiveness and cost-effectiveness of methenamine hippurate (Hiprex R; Mylan NV, Canonsburg, PA, USA) compared with current standard care (antibiotic prophylaxis) for recurrent urinary tract infection prevention in adult women. DESIGN: Multicentre, pragmatic, open-label, randomised, non-inferiority trial of 12 months' treatment with the allocated intervention, including an early, embedded qualitative study and a 6-month post-treatment observation phase. The predefined non-inferiority margin was one urinary tract infection per person-year. SETTING: Eight UK NHS secondary care sites. PARTICIPANTS: A total of 240 adult women with recurrent urinary tract infection requiring preventative treatment participated in the trial. INTERVENTIONS: A central randomisation system allocated participants 1 : 1 to the experimental (methenamine hippurate: 1 g twice daily) or control (once-daily low-dose antibiotics: 50/100 mg of nitrofurantoin, 100 mg of trimethoprim or 250 mg of cefalexin) arm. Crossover between treatment arms was permitted. MAIN OUTCOME MEASURES: The primary clinical outcome was incidence of symptomatic antibiotic-treated urinary tract infection during the 12-month treatment period. Cost-effectiveness was assessed by incremental cost per quality-adjusted life-year gained, extrapolated over the patient's expected lifetime using a Markov cohort model. Secondary outcomes included post-treatment urinary tract infections, total antibiotic use, microbiologically proven urinary tract infections, antimicrobial resistance, bacteriuria, hospitalisations and treatment satisfaction. RESULTS: Primary modified intention-to-treat analysis comprised 205 (85%) randomised participants [102/120 (85%) participants in the antibiotics arm and 103/120 (86%) participants in the methenamine hippurate arm] with at least 6 months' data available. During treatment, the incidence rate of symptomatic, antibiotic-treated urinary tract infections decreased substantially in both arms to 1.38 episodes per person-year (95% confidence interval 1.05 to 1.72 episodes per person-year) for methenamine hippurate and 0.89 episodes per person year (95% confidence interval 0.65 to 1.12 episodes per person-year) for antibiotics (absolute difference 0.49; 90% confidence interval 0.15 to 0.84). This absolute difference did not exceed the predefined, strict, non-inferiority limit of one urinary tract infection per person-year. On average, methenamine hippurate was less costly and more effective than antibiotics in terms of quality-adjusted life-years gained; however, this finding was not consistent over the longer term. The urinary tract infection incidence rate 6 months after treatment completion was 1.72 episodes per year in the methenamine hippurate arm and 1.19 in the antibiotics arm. During treatment, 52% of urine samples taken during symptomatic urinary tract infections were microbiologically confirmed and higher proportions of participants taking daily antibiotics (46/64; 72%) demonstrated antibiotic resistance in Escherichia coli cultured

from perineal swabs than participants in the methenamine hippurate arm (39/70; 56%) (p-value = 0.05). Urine cultures revealed that during treatment higher proportions of participants and samples from the antibiotic arm grew E. coli resistant to trimethoprim/co-trimoxazole and cephalosporins, respectively. Conversely, post treatment, higher proportions of participants in the methenamine hippurate arm (9/45; 20%) demonstrated multidrug resistance in E. coli isolated from perineal swabs than participants in the antibiotic arm (2/39; 5%) (p = 0.06). All other secondary outcomes and adverse events were similar in both arms. LIMITATIONS: This trial could not define whether or not one particular antibiotic was more beneficial, and progressive data loss hampered economic evaluation. CONCLUSIONS: This large, randomised, pragmatic trial in a routine NHS setting has clearly shown that methenamine hippurate is not inferior to current standard care (daily low-dose antibiotics) in preventing recurrent urinary tract infections in women. The results suggest that antimicrobial resistance is proportionally higher in women taking prophylactic antibiotics. RECOMMENDATIONS FOR RESEARCH: Future research should include evaluation of other non-antibiotic preventative treatments in well-defined homogeneous patient groups, preferably with the comparator of daily antibiotics. TRIAL REGISTRATION: This trial is registered as ISRCTN70219762 and EudraCT 2015-003487-36. FUNDING: This project was funded by the National Institute for Health and Care Research (NIHR) Health Technology Assessment programme and will be published in full in Health Technology Assessment; Vol. 26, No. 23. See the NIHR Journals Library website for further project information.; plain-language-summary Women with recurrent urine infections often require preventative treatment to reduce the frequency of infection episodes. Daily low-dose antibiotic medication is a guideline-recommended treatment option for these women. There is increasing concern globally regarding antibiotic-resistant infections, which has led researchers to look at alternative treatments. This trial was conducted to find out whether or not taking an alternative treatment that is not an antibiotic [i.e. methenamine hippurate (Hiprex R; Mylan NV, Canonsburg, PA, USA)] was as effective as the standard daily low-dose antibiotics. A total of 240 women from across the UK took part in the trial. They were divided equally into two groups; half of the women were given methenamine hippurate and the other half were given standard low-dose antibiotics. Both treatments were prescribed to be taken every day for 1 year. To make a fair comparison, people were put into the two groups at random using a computer program. Aspects of the trial that could be improved were identified through telephone interviews with patients and recruiting staff. Feedback from these telephone interviews helped to ensure the successful conduct of the trial. Patients were followed up for 18 months, comprising the 12 months when they were taking treatment and a 6-month follow-up phase after they had finished treatment. We found that the non-antibiotic option of methenamine hippurate was no worse than the current standard treatment of daily antibiotics in preventing urinary tract infection episodes in adult women. For both treatments, patients expressed high levels of satisfaction. One advantage of the methenamine hippurate treatment was that infecting bacteria were slightly less likely to develop resistance to antibiotics. We also evaluated health-care costs of both treatments and found that methenamine hippurate seemed worthwhile to the NHS in the short term, but there was uncertainty over longer-term costs and benefits. These results will help patients with repeated urinary tract infections to decide on treatment options, particularly if they want to avoid prolonged courses of preventative antibiotics.
Language: English

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20. **New drugs for methicillin-resistant Staphylococcus aureus skin and soft tissue infections**

Item Type: Journal Article

Authors: Hindy, Joya-Rita;Haddad, Sara F. and Kanj, Souha S.

Publication Date: 2022

Journal: Current Opinion in Infectious Diseases 35(2), pp. 112-119

Abstract: PURPOSE OF REVIEW: Staphylococcus aureus is a pathogen incriminated in skin and soft tissue infections (SSTIs), with methicillin-resistant S. aureus (MRSA) becoming the predominant cause and representing a significant burden to the healthcare system. The last updated Infectious Diseases Society of America (IDSA) guidelines concerning MRSA infections and SSTIs management were published in 2011 and 2014, respectively. The UK updated guidelines for MRSA infection treatment were published in 2021. Older treatment options may be associated with toxicity and require frequent dosing. There is a paucity of recent reviews on the armamentarium of new agents for MRSA SSTIs treatment. RECENT FINDINGS: Since 2005, several new antibiotics received a fast-track approval by the Food and Drug Administration (FDA) for SSTI treatment. These drugs include delafloxacin, omadacycline, tedizolid, ceftaroline, dalbavancin, oritavancin and telavancin. In this manuscript, we will review the data that led to these new drugs approval and discuss their advantages and disadvantages in MRSA SSTIs management. SUMMARY: MRSA is a major cause of SSTIs. Several novel therapies covering MRSA were FDA-approved for SSTIs. However, the current IDSA guidelines for MRSA infection and SSTIs as well as the recently published UK guidelines on MRSA treatment only consider these drugs as alternative choices or do not mention them at all. Copyright © 2021 Wolters Kluwer Health, Inc. All rights reserved.

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21. **Successful control of Candida auristransmission in a German COVID-19 intensive care unit.**

Item Type: Journal Article

Authors: Hinrichs, Carl;Wiese-Posselt, Miriam;Graf, Barbara;Geffers, Christine;Weikert, Beate;Enghard, Philipp;Aldejohann, Alexander;Schrauder, Annette;Knaust, Andreas;Eckardt, Kai-Uwe;Gastmeier, Petra and Kurzai, Oliver

Publication Date: 2022

Journal: Mycoses

Abstract: BACKGROUND: Candida aurisis a frequently multidrug-resistant yeast species that poses a global health threat due to its high potential for hospital outbreaks. While C. auris has become endemic in parts of Asia and Africa, transmissions have so far rarely been reported in Western Europe except for Great Britain and Spain. We describe the first documented patient-to-patient transmission of C. auris in Germany in a COVID-19 intensive care unit (ICU) and infection control measures implemented to prevent further spread of the pathogen. METHODS: Identification of C. auris was performed by MALDI-TOF and confirmed by internal transcribed spacer (ITS) sequencing. Antifungal susceptibility testing was carried out. We conducted repeated

cross-sectional examinations for the presence of C. auris in the patients of the affected ICU and investigated possible routes of transmission. RESULTS: The index patient had been transferred to Germany from a hospital in Northern Africa and was found to be colonised with C. auris. The contact patient developed C. auris sepsis. Infection prevention and control (IPC) measures included strict isolation of the two C. auris patients and regular screening of non-affected patients. No further case occurred during the subsequent weeks. Reusable blades used in video laryngoscope-guided intubation were considered as the most likely vehicle of transmission. CONCLUSIONS: In view of its high risk of transmission, vigilance regarding C. auris colonisation in patients referred from endemic countries is crucial. Strict and immediate IPC measures may have the potential to prevent C. auris outbreaks. Copyright © 2022 The Authors. Mycoses published by Wiley-VCH GmbH.

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22. **A Longitudinal Survey of Antibiotic-Resistant Enterobacterales in the Irish Environment, 2019-2020.**

Item Type: Journal Article

Authors: Hooban, Brigid;Fitzhenry, Kelly;O'Connor, Louise;Miliotis, Georgios;Joyce, Aoife;Chueiri, Alexandra;Farrell, Maeve Louise;DeLappe, Niall;Tuohy, Alma;Cormican, Martin and Morris, Dearbhaile

Publication Date: Jul 01 ,2022

Journal: Science of the Total Environment 828, pp. 154488

Abstract: The natural environment represents a complex reservoir of antibiotic-resistant bacteria as a consequence of different wastewater discharges including anthropogenic and agricultural. Therefore, the aim of this study was to examine sewage and waters across Ireland for the presence of antibiotic-resistant Enterobacterales. Samples were collected from the West, East and South of Ireland. Two periods of sampling took place between July 2019 and November 2020, during which 118 water (30 L) and 36 sewage samples (200 mL) were collected. Waters were filtered using the CapE method, followed by enrichment and culturing. Sewage samples were directly cultured on selective agars. Isolates were identified by MALDI-TOF and antibiotic susceptibility testing was performed in accordance with EUCAST criteria. Selected isolates were examined for blaCTX-M, blaVIM, blaIMP, blaOXA-48, blaNDM, and blaKPC by real time PCR and whole genome sequencing (n = 146). A total of 419 Enterobacterales (348 water, 71 sewage) were isolated from all samples. Hospital sewage isolates displayed the highest percentage resistance to many beta-lactam and aminoglycoside antibiotics. Extended-spectrum beta-lactamase-producers were identified in 78% of water and 50% of sewage samples. One or more carbapenemase-producing Enterobacterales were identified at 23 individual sampling sites (18 water, 5 sewage). This included the detection of blaOXA-48 (n = 18), blaNDM (n = 14), blaKPC (n = 4) and blaOXA-484 (n = 1). All NDM-producing isolates harbored the ble-MBL bleomycin resistance gene. Commonly detected sequence types included Klebsiella ST323, ST17, and ST405 as well as E. coli ST131, ST38 and ST10. Core genome MLST comparisons detected identical E. coli isolates from wastewater treatment plant (WWTP) influent and nursing home sewage, and the surrounding waters. Similarly, one Klebsiella pneumoniae isolated from WWTP influent and the surrounding estuarine water were identical. These results highlight the need for regular monitoring of the aquatic environment for the presence of antibiotic-resistant organisms to adequately inform public health policies. Copyright © 2022 The Authors. Published by Elsevier B.V. All rights reserved.

URL: https://libkey.io/libraries/1293/openurl?genre=article&sid=OVID:medline&id=pmid:35278563&id=doi:10.1016%2Fj.scitotenv.2022.154488&issn=0048-9697&isbn=&volume=828&issue=&spage=154488&pages=154488&date=2022&title=Science+of+the+Total+Environment&atitle=A+Longitudinal+Survey+of+Antibiotic-Resistant+Enterobacterales+in+the+Irish+Environment%2C+2019-2020.&aulast=Hooban&pid=%3Cauthor%3EHooban+B%3BFitzhenry+K%3BO%27Connor+L%3BMiliotis+G%3BJoyce+A%3BChueiri+A%3BFarrell+ML%3BDeLappe+N%3BTuohy+A%3BCormican+M%3BMorris+D%3C%2Fauthor%3E%3CAN%3E35278563%3C%2FAN%3E%3CDT%3EJournal+Article%3C%2FDT%3E

23. **Duty of candour and communication during an infection control incident in a paediatric ward of a Scottish hospital: how can we do better?.**

Item Type: Journal Article

Authors: Inkster, Teresa and Cuddihy, John

Publication Date: Mar ,2022

Journal: Journal of Medical Ethics 48(3), pp. 160-164

Abstract: Duty of candour legislation was introduced in Scotland in 2018. However, literature and experience of duty of candour when applied to infection control incidents/outbreaks is scarce. We describe clinician and parental perspectives with regard to duty of candour and communication during a significant infection control incident in a haemato-oncology ward of a children's hospital. Based on the learning from this incident, we make recommendations for duty of candour and communication to patients and families during future infection control incidents. These include the need to consider a crisis management approach, the importance of not underestimating psychological harm in incidents of a prolonged duration and embedding the existing legislation pertaining to the rights of the child. Copyright © Author(s) (or their employer(s)) 2022. No commercial re-use. See rights and permissions. Published by BMJ.

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24. **An infection control link nurse network in Residential Aged Care: Innovation in collaboration**

Item Type: Journal Article

Authors: Lang, Scott

Publication Date: Jan ,2022

Journal: Australian Nursing & Midwifery Journal 27(6), pp. 50

Abstract: The article discusses the strategies and efforts of an infection prevention and control (IPC) team of a New South Wales Local Health District (NSW LHD) to support and enhance the IPC capacity of the residential aged care sector (RACF) during the Covid-19 pandemic. Also cited are the actions taken by the team like an IPC

and Covid-19 preparedness audit, as well as establishing a RACF IPC Link Network.

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=cin20&AN=154156000&custid=ns023446

25. **Association between nursing home staff turnover and infection control citations**

Item Type: Journal Article

Authors: Loomer, Lacey;Grabowski, David C.;Yu, Huizi and Gandhi, Ashvin

Publication Date: 2022

Journal: Health Services Research 57(2), pp. 322-332

DOI: https://libkey.io/10.1111/1475-6773.1387

26. **To swab or not to swab? Using point-of-care tests to detect Group A Streptococcus infections as part of a Sore Throat Test and Treat service in community pharmacy.**

Item Type: Journal Article

Authors: Mantzourani, Efi;Cannings-John, Rebecca;Evans, Andrew and Ahmed, Haroon

Publication Date: 2022

Journal: Journal of Antimicrobial Chemotherapy 77(3), pp. 803-806

Abstract: BACKGROUND: The community pharmacy-led Sore Throat Test and Treat (STTT) service in Wales allowed pharmacists to undertake a structured clinical assessment with FeverPAIN/Centor scores and a point-of-care test (POCT) for Group A Streptococcus (GAS) infection. A new service model was temporarily agreed as a result of COVID-19, without routine use of POCT. OBJECTIVES: To explore the impact of removing the requirement for GAS POCT from a community pharmacy STTT service on antibiotic supply. METHODS: Analysis of STTT consultation data, obtained for two periods: November 2018 (date the service went live) to September 2019 (pre-pandemic); and November 2020 (date the new service model was introduced) to May 2021. RESULTS: For consultations eligible for POCT, the antibiotic supply rate increased from 27% (922/3369) (95% CI: 26%-29%) with the pre-pandemic service model (FeverPAIN/Centor + POCT) to 63% (93/147) (95% CI: 55%-71%) with the new model (FeverPAIN/Centor only); the percentage of patients who were not issued an antibiotic, despite their high clinical score, decreased from 56% (646/1154) to 9.3% (8/86). CONCLUSIONS: Preliminary data suggest that for every 100 STTT consultations with patients with a Centor score of >=3 or a FeverPAIN score of >=2, the use of POCT may spare up to 36 courses of antibiotics, increasing to 47 for patients with higher clinical scores, suggesting that the pre-COVID delivery model (FeverPAIN/Centor + POCT) is the optimal pathway and POCT in addition to clinical scores may result in fewer antibiotic prescriptions for sore throat symptoms. These findings have implications for STTT service delivery during and beyond the COVID-19 pandemic. Copyright © The Author(s) 2022. Published by Oxford University Press on behalf of British Society for Antimicrobial Chemotherapy.

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806&date=2022&title=Journal+of+Antimicrobial+Chemotherapy&atitle=To+swab+or+not+to+swab%3F+Using+point-of-care+tests+to+detect+Group+A+Streptococcus+infections+as+part+of+a+Sore+Throat+Test+and+Treat+service+in+community+pharmacy.&aulast=Mantzourani&pid=%3Cauthor%3EMantzourani+E%3BCannings-John+R%3BEvans+A%3BAhmed+H%3C%2Fauthor%3E%3CAN%3E35038341%3C%2FAN%3E%3CDT%3EJournal+Article%3C%2FDT%3E

27. **Central Line–Associated Bloodstream Infections and Advanced Practice Providers: Identifying Opportunities for Prevention Efforts**

Item Type: Journal Article

Authors: Mudd, Shawna S.;Slater, Tammy and Curless, Melanie

Publication Date: 2022

Journal: Journal for Nurse Practitioners 18(3), pp. 328-330

Abstract: Central venous catheters can be a vital part of patient care in the hospital setting but are at high risk of infection. Central line–associated bloodstream infections pose a high risk of morbidity, mortality, and increased hospital costs. The purpose of this project is to assess the practices and learning needs of advanced practice providers (nurse practitioners and physician assistants) in the provision of evidence-based care to patients with central venous catheters in the hospital setting. This can guide further educational initiatives for central line–associated bloodstream infection prevention. • Although most nurse practitioners and physician assistants in the hospital do not place central venous catheters (CVCs), they are involved in all aspects of CVC maintenance. • Improving adherence and education related to CVC maintenance best practices is an area for further quality/process improvements. • As consistent members of care teams, advanced practice providers are an ideal group to improve central line–associated bloodstream infection prevention efforts and further implementation of best practices within hospital teams.

DOI: https://libkey.io/10.1016/j.nurpra.2021.12.006

28. **Do Adhesive Drapes Have an Effect on Infection Rates in Orthopaedic Surgery? A Systematic Review and Meta-Analysis.**

Item Type: Journal Article

Authors: Mundi, Raman;Nucci, Nicholas;Ekhtiari, Seper;Wolfstadt, Jesse;Ravi, Bheeshma and Chaudhry, Harman

Publication Date: 2022

Journal: Clinical Orthopaedics & Related Research 480(3), pp. 551-559

Abstract: BACKGROUND: Adhesive surgical drapes are purported to reduce the rates of surgical site infection. Despite that, international surgical guidelines generally recommend against the use of such drapes; however, this is primarily based on nonorthopaedic evidence. QUESTIONS/PURPOSES: (1) Does the use of adhesive drapes decrease the risk of wound contamination? (2) Does intraoperative drape peeling (intentional or

inadvertent) increase the risk of wound contamination? (3) Does the use of adhesive drapes decrease the risk of surgical site infection? METHODS: A systematic review of the MEDLINE and Embase databases was performed according to the Cochrane Handbook methods for randomized controlled trials (RCTs) published since 2000 and comparing adhesive drapes with controls. All databases were searched from inception to March 1, 2021. A pooled meta-analysis was performed, where possible. The Cochrane Risk of Bias Assessment Tool was used to assess risk of bias among the included studies. From among 417 search results, five eligible RCTs were identified and included, all of which were published between 2018 and 2020. There were a total of 2266 patients, with 1129 (49.8%) in the adhesive drape groups, and 1137 (50.2%) in the control groups. The studies included hip and knee surgery trials (n = 3 trials; 1020 patients in intervention groups and 1032 patients in control groups) as well as trials on shoulder arthroscopy (n = 1 trial; 65 patients in the intervention group and 61 patients in the control group) and lumbar spine surgery (n = 1 trial; 44 patients in each group). The data for all three outcomes (wound contamination, impact of intraoperative peeling, and surgical site infection) revealed low heterogeneity based on random-effects models (I2 = 14%, 0%, and 0%, respectively). RESULTS: Based on data from pooled wound swab culture results from four studies, a reduction in wound contamination was associated with the use of adhesive drapes (odds ratio 0.49 [95% CI 0.34 to 0.72]; p Copyright © 2021 by the Association of Bone and Joint Surgeons.

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29. **Invasive Group A Streptococcus Outbreaks Associated with Home Healthcare, England, 2018-2019**

Item Type: Journal Article

Authors: Nabarro, Laura E.;Brown, Colin S.;Balasegaram, Sooria;Decraene, Valérie;Elston, James;Kapadia, Smita;Harrington, Pauline;Hoffman, Peter;Mearkle, Rachel;Patel, Bharat;Ready, Derren;Robinson, Esther and Lamagni, Theresa

Publication Date: 2022

Journal: Emerging Infectious Diseases 28(5), pp. 915-923

Abstract: Healthcare-associated invasive group A Streptococcus (iGAS) outbreaks are common worldwide, but only England has reported outbreaks associated with home healthcare (HHC). We describe 10 outbreaks during 2018-2019 in England. A total of 96 iGAS cases (range 2-39 per outbreak) and 28 deaths (case-fatality rate 29%) occurred. Outbreak duration ranged from 3-517 days; median time between sequential cases was 20.5 days (range 1-225 days). Outbreak identification was difficult, but emm typing and whole-genome sequencing improved detection. Network analyses indicated multiple potential transmission routes. Screening of 366 HHC workers from 9 outbreaks identified group A Streptococcus carriage in just 1 worker. Outbreak control required multiple interventions, including improved infection control, equipment decontamination, and antimicrobial prophylaxis for staff. Transmission routes and effective interventions are not yet clear, and iGAS outbreaks likely are underrecognized. To improve patient safety and reduce deaths, public health agencies should be aware of HHC-associated iGAS.

DOI: https://libkey.io/10.3201/eid2805.211497

30. **Estimating excess length of stay due to healthcare-associated infections by applying and comparing three time-varying approaches: multistate model, survival regression and matched case control methods.**

Item Type: Journal Article

Authors: Pan, Jiafeng;Kavanagh, Kimberley;Stewart, Sally;Robertson, Chris;Kennedy, Sharon;Manoukian, Sarkis;Haahr, Lynne;Graves, Nicholas and Reilly, Jacqui

Publication Date: 2022

Journal: Journal of Hospital Infection
Abstract: BACKGROUND: A recent systematic review recommended time-varying methods in order to minimise bias when estimating the excess length of stay (LOS) for healthcare associated infections (HAI), however little evidence exists for which time-varying method is best used for HAI incidence studies. METHODS: A retrospective analysis of data generated from a one-year prospective incidence study of HAIs, in one teaching hospital and one general hospital in NHS Scotland was undertaken. Three time-varying methods - multistate model, multivariable adjusted survival regression, and matched case-control approach were applied to the data to estimate excess LOS were compared. RESULTS: The unadjusted excess LOS estimated from the multistate model was 7.8 (95%CI 5.7-9.9) days, which was shorter than the excess LOS estimated from survival regression adjusting for the admission characteristics 9.9 (8.4-11.7) days, and the adjusted estimates from matched case-control approach 10 (8.5-11.5) days. All estimates from the time-varying methods were much lower than the crude time-fixed estimates of 27 days. CONCLUSIONS: Studies examining LOS associated with HAI should consider a design which addresses time dependent bias as a minimum. If there is an imbalance in patient characteristics between the HAI and non-HAI groups then adjustment for the patient characteristics is also important, where survival regression with time dependent covariates is likely to provide the most flexible approach. Matched design is more likely to result in data loss, while a multistate model is limited by the challenge in adjusting for covariates. These findings have important implications for future cost-effectiveness studies of infection prevention and control (IPC) programmes. Copyright © 2022. Published by Elsevier Ltd.

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31. **The Role of Targeted Versus Standard Antibiotic Prophylaxis in Pancreatoduodenectomy in Reducing Postoperative Infectious Complications: A Systematic Review and Meta-analysis.**

Item Type: Journal Article

Authors: Pham, Helen;Chen, Andy;Nahm, Christopher B.;Lam, Vincent;Pang, Tony and Richardson, Arthur J.

Publication Date: 2022

Journal: Annals of Surgery 275(2), pp. 315-323

Abstract: INTRODUCTION: Infectious complications are common after pancreatoduodenectomy, which in turn

are associated with preoperative biliary drainage. Current guidelines recommend a first-generation cephalosporin as perioperative antibiotic prophylaxis. However, some studies support the use of targeted antibiotics. The aim of this systematic review and meta-analysis is to evaluate the role of prophylactic targeted antibiotics compared to standard antibiotics in reducing postoperative infections after pancreatoduodenectomy. METHODS: A search from MEDLINE, EMBASE, and Cochrane library from 1946 to July 2020 was conducted. Studies were included if they compared targeted antibiotics with standard perioperative antibiotics while including outcome data on surgical site infections (SSI). Targeted therapy was defined as perioperative antibiotics targeting organisms prevalent in bile instrumentation or by culture data obtained from the patient or institution. Outcomes assessed were the rate of SSIs and their microbiology profile. Analyses included demographic data, perioperative antibiotics, postoperative outcomes including microbiology data, and meta-analysis was performed where applicable. RESULTS: Seven studies were included, with a total of 849 patients undergoing pancreatoduodenectomy. Targeted antibiotics were associated with a significantly lower rate of postoperative SSI compared to standard antibiotic therapy [21.1% vs 41.9%; risk ratios (RR) 0.55, 95% confidence interval 0.37-0.81]. Wound/incisional site infections and organ space infections were lower in patients receiving targeted antibiotic prophylaxis (RR 0.33, P = 0.0002 and RR 0.54, P = 0.0004, respectively). Enterococcus species were the most common bacteria reported. CONCLUSION: There was a significant reduction in overall SSI rates when targeted antibiotics was used. Current standard antibiotic prophylaxis is inadequate in covering microbes prevalent in postoperative infections developing after pancreatoduodenectomy. Copyright © 2021 Wolters Kluwer Health, Inc. All rights reserved.

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32. **Recommendations related to occupational infection prevention and control training to protect healthcare workers from infectious diseases: a scoping review of infection prevention and control guidelines**

Item Type: Journal Article

Authors: Qureshi, Mohammed O.;Chughtai, Abrar A. and Seale, Holly

Publication Date: 2022

Journal: BMC Health Services Research 22(1), pp. 1-11

Abstract: Background: Events such as the COVID-19 pandemic remind us of the heightened risk that healthcare workers (HCWs) have from acquiring infectious diseases at work. Reducing the risk requires a multimodal approach, ensuring that staff have the opportunity to undertake occupational infection prevention and control (OIPC) training. While studies have been done within countries to look at availability and delivery of OIPC training opportunities for HCWs, there has been less focus given to whether their infection prevention and control (IPC) guidelines adhere to recommended best practices.Objectives: To examine national IPC guidelines for the inclusion of key recommendations on OIPC training for HCWs to protect them from infectious diseases at work and to report on areas of inconsistencies and gaps.Methods: We applied a scoping review method and reviewed guidelines published in the last twenty years (2000-2020) including the IPC guidelines of World Health Organization and the United States Centers for Disease Control and Prevention. These two guidelines were used as a baseline to compare the inclusion of key elements related to OIPC training with IPC guidelines of four high-

income countries /regions i.e., Gulf Cooperation Council, Australia, Canada, United Kingdom and four low-, and middle-income countries (LMIC) i.e. India, Indonesia, Pakistan and, Philippines.Results: Except for the Filipino IPC guideline, all the other guidelines were developed in the last five years. Only two guidelines discussed the need for delivery of OIPC training at undergraduate and/or post graduate level and at workplace induction. Only two acknowledged that training should be based on adult learning principles. None of the LMIC guidelines included recommendations about evaluating training programs. Lastly the mode of delivery and curriculum differed across the guidelines.Conclusions: Developing a culture of learning in healthcare organizations by incorporating and evaluating OIPC training at different stages of HCWs career path, along with incorporating adult learning principles into national IPC guidelines may help standardize guidance for the development of OIPC training programs. Sustainability of this discourse could be achieved by first updating the national IPC guidelines. Further work is needed to ensure that all relevant healthcare organisations are delivering a package of OIPC training that includes the identified best practice elements.

DOI: https://libkey.io/10.1186/s12913-022-07673-4

33. **An Electronic Health Record Integrated Decision Tool and Supportive Interventions to Improve Antibiotic Prescribing for Urinary Tract Infections in Nursing Homes: A Cluster Randomized Controlled Trial.**

Item Type: Journal Article

Authors: Rutten, Jeanine J. S.;van Buul, Laura W.;Smalbrugge, Martin;Geerlings, Suzanne E.;Gerritsen, Debby L.;Natsch, Stephanie;Sloane, Philip D.;van der Wouden, Johannes C.;Twisk, Jos W. R. and Hertogh, Cees M P M.

Publication Date: 2022

Journal: Journal of the American Medical Directors Association 23(3), pp. 387-393

Abstract: OBJECTIVE: To investigate whether an electronic health record (EHR)-integrated decision tool, combined with supportive interventions, results in more appropriate antibiotic prescribing in nursing home (NH) residents with suspected urinary tract infection (UTI), without negative consequences for residents. DESIGN: Cluster randomized controlled trial with NHs as the randomization unit; intervention group NHs received the EHR-integrated decision tool and supportive interventions, and control group NHs provided care as usual. SETTING AND PARTICIPANTS: 212 residents with suspected UTI, from 16 NHs in the Netherlands. METHODS: Physicians collected data at index consultation (ie, UTI suspicion) and during a 21-day follow-up period (March 2019-March 2020). Overall antibiotic prescribing data at NH level, 12 months prior to and during the study, was derived from the electronic prescribing system. The primary study outcome was the percentage of antibiotic prescriptions for suspected UTI that was appropriate, at index consultation. Secondary study outcomes included changes in treatment decision, complications, UTI-related hospitalization, and mortality during follow-up; and pre-post study changes in antibiotic prescribing at the NH level. RESULTS: 295 suspected UTIs were included (intervention group: 189; control group: 106). The between-group difference in appropriate antibiotic prescribing was 13% [intervention group: 62%, control group: 49%; adjusted odds ratio (OR) 1.43, 95% CI 0.57-3.62]. In both groups, complications (2% vs 3%), UTI-related hospitalization (2% vs 1%), and possible UTI-related mortality (2% vs 2%) were rare. The pre-post study difference in antibiotic prescriptions per 1000 resident-care days was -0.95 in the intervention group NHs and -0.05 in the control group NHs (P = .02). CONCLUSION AND IMPLICATIONS: Although appropriate antibiotic prescribing improved in the intervention group, this does not provide sufficient evidence for our multidisciplinary intervention. Despite this inconclusive result, our intervention could potentially still be effective, because we established a large reduction in the number of antibiotic prescriptions in the intervention group. Copyright © 2021 The Authors. Published by Elsevier Inc. All rights reserved.

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1016%2Fj.jamda.2021.11.010&issn=1525-8610&isbn=&volume=23&issue=3&spage=387&pages=387-393&date=2022&title=Journal+of+the+American+Medical+Directors+Association&atitle=An+Electronic+Health+Record+Integrated+Decision+Tool+and+Supportive+Interventions+to+Improve+Antibiotic+Prescribing+for+Urinary+Tract+Infections+in+Nursing+Homes%3A+A+Cluster+Randomized+Controlled+Trial.&aulast=Rutten&pid=%3Cauthor%3ERutten+JJS%3Bvan+Buul+LW%3BSmalbrugge+M%3BGeerlings+SE%3BGerritsen+DL%3BNatsch+S%3BSloane+PD%3Bvan+der+Wouden+JC%3BTwisk+JWR%3BHertogh+CMPM%3C%2Fauthor%3E%3CAN%3E34896069%3C%2FAN%3E%3CDT%3EJournal+Article%3C%2FDT%3E

34. **Scaling up Quality Improvement for Surgical Teams (QIST)-avoiding surgical site infection and anaemia at the time of surgery: a cluster randomised controlled trial of the effectiveness of quality improvement collaboratives to introduce change in the NHS.**

Item Type: Journal Article

Authors: Scrimshire, Ashley Brian;Booth, Alison;Fairhurst, Caroline;Coleman, Elizabeth;Malviya, Ajay;Kotze, Alwyn;Tiplady, Chris;Tate, David;Laverty, Annie;Davis, Gillian;Tadd, Win;Corbacho, Belen;Torgerson, David J.;McDaid, Catriona;Reed, Mike and QIST collaborators

Publication Date: 2022

Journal: Implementation Science 17(1), pp. 22

Abstract: BACKGROUND: The aim of this trial was to assess the effectiveness of quality improvement collaboratives to implement large-scale change in the National Health Service (NHS) in the UK, specifically for improving outcomes in patients undergoing primary, elective total hip or knee replacement. METHODS: We undertook a two-arm, cluster randomised controlled trial comparing the roll-out of two preoperative pathways: methicillin-sensitive Staphylococcus aureus (MSSA) decolonisation (infection arm) and anaemia screening and treatment (anaemia arm). NHS Trusts are public sector organisations that provide healthcare within a geographical area. NHS Trusts (n = 41) in England providing primary, elective total hip and knee replacements, but that did not have a preoperative anaemia screening or MSSA decolonisation pathway in place, were randomised to one of the two parallel collaboratives. Collaboratives took place from May 2018 to November 2019. Twenty-seven Trusts completed the trial (11 anaemia, 16 infection). Outcome data were collected for procedures performed between November 2018 and November 2019. Co-primary outcomes were perioperative blood transfusion (within 7 days of surgery) and deep surgical site infection (SSI) caused by MSSA (within 90 days post-surgery) for the anaemia and infection trial arms, respectively. Secondary outcomes were deep and superficial SSIs (any organism), length of hospital stay, critical care admissions and unplanned readmissions. Process measures included the proportion of eligible patients receiving each preoperative initiative. RESULTS: There were 19,254 procedures from 27 NHS Trusts included in the results (6324 from 11 Trusts in the anaemia arm, 12,930 from 16 Trusts in the infection arm). There were no improvements observed for blood transfusion (anaemia arm 183 (2.9%); infection arm 302 (2.3%) transfusions; adjusted odds ratio 1.20, 95% CI 0.52-2.75, p = 0.67) or MSSA deep SSI (anaemia arm 8 (0.13%); infection arm 18 (0.14%); adjusted odds ratio 1.01, 95% CI 0.42-2.46, p = 0.98). There were no significant improvements in any secondary outcome. This is despite process measures showing the preoperative pathways were implemented for 73.7% and 61.1% of eligible procedures in the infection and anaemia arms, respectively. CONCLUSIONS: Quality improvement collaboratives did not result in improved patient outcomes in this trial; however, there was some evidence they may support successful implementation of new preoperative pathways in the NHS. TRIAL REGISTRATION: Prospectively registered on 15 February 2018, ISRCTN11085475. Copyright © 2022. The Author(s).

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aling+up+Quality+Improvement+for+Surgical+Teams+%28QIST%29-avoiding+surgical+site+infection+and+anaemia+at+the+time+of+surgery%3A+a+cluster+randomised+controlled+trial+of+the+effectiveness+of+quality+improvement+collaboratives+to+introduce+change+in+the+NHS.&aulast=Scrimshire&pid=%3Cauthor%3EScrimshire+AB%3BBooth+A%3BFairhurst+C%3BColeman+E%3BMalviya+A%3BKotze+A%3BTiplady+C%3BTate+D%3BLaverty+A%3BDavis+G%3BTadd+W%3BCorbacho+B%3BTorgerson+DJ%3BMcDaid+C%3BReed+M%3BQIST+collaborators%3C%2Fauthor%3E%3CAN%3E35279171%3C%2FAN%3E%3CDT%3EJournal+Article%3C%2FDT%3E

35. **Evaluation of in vitro activity of fosfomycin, and synergy in combination, in Gram-negative bloodstream infection isolates in a UK teaching hospital.**

Item Type: Journal Article

Authors: Suich, Joseph;Mawer, Damian;van der Woude, Marjan;Wearmouth, Debbie;Burns, Phillipa;Smeets, Ton and Barlow, Gavin

Publication Date: Apr ,2022

Journal: Journal of Medical Microbiology 71(4)
Abstract: Introduction. Fosfomycin has retained activity against many multi-drug resistant (MDR) Gram-negatives, and may be useful against extended spectrum beta-lactamase (ESBL) producing and carbapenem-resistant Enterobacterales to improve clinical outcomes. Hypothesis/Gap Statement. There are few data from the UK on the susceptibility of invasive Gram-negative isolates to fosfomycin, especially in the era of increasing use of oral fosfomycin for urinary tract infections (UTIs). Aim. We evaluated fosfomycin susceptibility against 100 consecutive Gram-negative bloodstream isolates, both individually, and in combination with other mechanistically similar and differing antibiotics. The aim was to investigate the synergy between antibiotic combinations against several E. coli, K. pneumoniae and P. aeruginosa isolates with variable levels of resistance. Methodology. Disc diffusion and MIC test strip methods applying revised EUCAST guidelines for Fosfomycin were used, followed by the MTS TM 'cross synergy' method for 'resistant' isolates as defined below: (a) Fosfomycin resistant by MIC test strip; (b) MDR isolates defined as being resistant to >=3 classes of antibiotics (based on routine sensitivity testing; beta lactams were considered as a single class), and/or (c) AMP C or ESBL or carbapenemase producers (or carbapenem resistant). FIC Index (Fractional Inhibitory Concentration Index) calculations were used to interpret findings, whereby: FIC = (MICA combination A+B/ MIC agent A) + (MICB combination A+B/ MIC agent B). A result of 0.5 and 1.0 and 4.0 to indicate 'antagonism'. Results. We found that 95/100 isolates were susceptible to fosfomycin by MIC test strip, with 88/100 isolates susceptible to fosfomycin by disc, based on EUCAST guideline breakpoints. A total of 30/100 isolates (the more 'resistant' of the 100) were eligible for synergy testing according to our definitions (see Methodology), with the remaining 70 isolates not tested further. Seventeen out of 30 were MDR, 2/30 were AMP C producers and 9/30 were ESBL producers. Overall, 34/300 (11 %) of all combination tests showed synergy and 161/300 (54 %) were additive. Synergy was most commonly detected between fosfomycin and beta-lactam antibiotics, including piperacillin/tazobactam (10/30; 33 %), ceftazidime/avibactam (10/30; 30 %), and temocillin (8/30; 27 %). An additive effect was most commonly detected with aztreonam (25/30; 83 %) and meropenem (25/30; 83 %), but 100 % indifference was found with tigecycline (30/30). No antagonism was identified with any antibiotic combination. Conclusion. Fosfomycin non-susceptibility by MIC test strip was unusual. Synergy was variable when combining fosfomycin with other antibiotics against the more 'resistant' isolates. Synergistic/additive effects were detected for beta-lactam/fosfomycin combinations in >80 % of all such combinations, suggesting beta-lactams may be the preferred partner for fosfomycin. Agents with a discordant site of action were more likely to result in indifference. Antagonism was not detected.

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2615&isbn=&volume=71&issue=4&spage=&pages=&date=2022&title=Journal+of+Medical+Microbiology&atitle=Evaluation+of+in+vitro+activity+of+fosfomycin%2C+and+synergy+in+combination%2C+in+Gram-negative+bloodstream+infection+isolates+in+a+UK+teaching+hospital.&aulast=Suich&pid=%3Cauthor%3ESuich+J%3BMawer+D%3Bvan+der+Woude+M%3BWearmouth+D%3BBurns+P%3BSmeets+T%3BBarlow+G%3C%2Fauthor%3E%3CAN%3E35476672%3C%2FAN%3E%3CDT%3EJournal+Article%3C%2FDT%3E

36. **Use of perioperative prophylactic antibiotics following excision of ulcerated skin lesions in the UK: a national, multispeciality survey of clinicians.**

Item Type: Journal Article

Authors: Totty, Joshua Philip;Matin, Rubeta N.;Wernham, Aaron;Ray, Ruby;Thomas-Jones, Emma and Abbott, Rachel Angharad

Publication Date: May ,2022

Journal: Clinical & Experimental Dermatology 47(5), pp. 957-959

Abstract: Skin cancer is the most common malignancy in the UK, and up to a third of lesions are ulcerated at the time of excision. Ulceration has been shown to increase the risk of developing surgical site infection following excision, with some studies finding infection rates of 33%. However, no specific guidelines for the use of antibiotic prophylaxis in such cases exist. We surveyed 129 clinicians (covering Dermatology, Plastic Surgery, Ear, Nose and Throat Surgery, and Oral and Maxillofacial Surgery) who all excise skin lesions on a regular basis. There was significant variability in their practice with regard to antibiotic prophylaxis, with 9% always prescribing them and 19% never prescribing them. Variation exists both among and between specialities. This variation increases the risk of antimicrobial resistance and shows a paucity of good clinical evidence, indicating that a well-designed clinical trial is needed to guide future practice. Copyright © 2021 British Association of Dermatologists.

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37. **SUsceptibility and Resistance to Fosfomycin and other antimicrobial agents among pathogens causing lower urinary tract infections: findings of the SURF study.**

Item Type: Journal Article

Authors: Tutone, Michaela;Bjerklund Johansen, Truls E.;Cai, Tommaso;Mushtaq, Shazad and Livermore, David M.

Publication Date: May ,2022

Journal: International Journal of Antimicrobial Agents 59(5), pp. 106574

Abstract: Urinary tract infections (UTIs) are prevalent worldwide, particularly among women. Their incidence increases with age, and treatment is increasingly challenging owing to antibiotic resistance and the lack of new

agents. We investigated the susceptibility of current urinary isolates to fosfomycin and other antibiotics across Europe. This cross-sectional study collected consecutive urinary isolates from non-hospitalised women at 20 centres in Belgium, the UK, Italy, Spain and Russia. Bacteria were tested by disk diffusion with relevant antibiotics. As a quality control, a central laboratory re-tested, by agar dilution, (i) isolates found resistant to fosfomycin and (ii) every tenth isolate; all non-Russian sites were included. A total of 2848 isolates were analysed, principally Escherichia coli (2064; 72.5%), Klebsiella spp. (275; 9.7%) and Proteus spp. (103; 3.6%). For E. coli, agents active against >90% of isolates were nitrofurantoin (98.5%), fosfomycin (96.4%) and mecillinam (91.8%). Fosfomycin and nitrofurantoin remained active against >90% of cephalosporin-resistant E. coli. Among 143 E. coli recorded as susceptible locally by disk tests, 138 (96.5%) were confirmed susceptible by minimum inhibitory concentration (MIC) tests, however resistance was only confirmed in 29/58 (50.0%) of those reported resistant by local disk tests. Escherichia coli was found to be the most common uropathogen isolated and was highly susceptible to fosfomycin, nitrofurantoin and mecillinam, all used effectively for more than 30 years. Guidelines advocating fosfomycin for uncomplicated UTIs in women remain microbiologically valid. Copyright © 2022 The Authors. Published by Elsevier Ltd.. All rights reserved.

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38. **Validating clinical practice guidelines for the management of febrile infants presenting to the emergency department in the UK and Ireland.**

Item Type: Journal Article

Authors: Waterfield, Thomas;Lyttle, Mark D.;Munday, Charlotte;Foster, Steven;McNulty, Marc;Platt, Rebecca;Barrett, Michael;Rogers, Emma;Durnin, Sheena;Jameel, Nida;Maney, Julie-Ann;McGinn, Claire;McFetridge, Lisa;Mitchell, Hannah;Puthucode, Deepika;Roland, Damian and Paediatric Emergency Research in the UK and Ireland (PERUKI)

Publication Date: 2022

Journal: Archives of Disease in Childhood 107(4), pp. 329-334

Abstract: OBJECTIVE: To report the performance of clinical practice guidelines (CPG) in the diagnosis of serious/invasive bacterial infections (SBI/IBI) in infants presenting with a fever to emergency care in the UK and Ireland. Two CPGs were from the National Institutes for Health and Care Excellence (NICE guidelines NG51 and NG143) and one was from the British Society for Antimicrobial Chemotherapy (BSAC). DESIGN: Retrospective multicentre cohort study. PATIENTS: Febrile infants aged 90 days or less attending between the 31 August 2018 to 1 September 2019. MAIN OUTCOME MEASURES: The sensitivity, specificity and predictive values of CPGs in identifying SBI and IBI. SETTING: Six paediatric Emergency Departments in the UK/Ireland. RESULTS: 555 participants were included in the analysis. The median age was 53 days (IQR 32 to 70), 447 (81%) underwent blood testing and 421 (76%) received parenteral antibiotics. There were five participants with bacterial meningitis (1%), seven with bacteraemia (1%) and 66 (12%) with urinary tract infections. The NICE NG51 CPG was the most sensitive: 1.00 (95% CI 0.95 to 1.00). This was significantly more sensitive than NICE NG143: 0.91 (95% CI 0.82 to 0.96, p=0.0233) and BSAC: 0.82 (95% 0.72 to 0.90, p=0.0005). NICE NG51 was the least specific 0.0 (95% CI 0.0 to 0.01), and this was significantly lower than the NICE NG143: 0.09 (95% CI 0.07 to 0.12, p Copyright © Author(s) (or their employer(s)) 2022. No commercial re-use. See rights and permissions. Published

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39. **Efficacy of antimicrobial and anti-viral coated air filters to prevent the spread of airborne pathogens.**

Item Type: Journal Article

Authors: Watson, Rowan;Oldfield, Morwenna;Bryant, Jack A.;Riordan, Lily;Hill, Harriet J.;Watts, Julie A.;Alexander, Morgan R.;Cox, Michael J.;Stamataki, Zania;Scurr, David J. and de Cogan, Felicity

Publication Date: 2022

Journal: Scientific Reports 12(1), pp. 2803

Abstract: The COVID-19 pandemic has demonstrated the real need for mechanisms to control the spread of airborne respiratory pathogens. Thus, preventing the spread of disease from pathogens has come to the forefront of the public consciousness. This has brought an increasing demand for novel technologies to prioritise clean air. In this study we report on the efficacy of novel biocide treated filters and their antimicrobial activity against bacteria, fungi and viruses. The antimicrobial filters reported here are shown to kill pathogens, such as Candida albicans, Escherichia coli and MRSA in under 15 min and to destroy SARS-CoV-2 viral particles in under 30 s following contact with the filter. Through air flow rate testing, light microscopy and SEM, the filters are shown to maintain their structure and filtration function. Further to this, the filters are shown to be extremely durable and to maintain antimicrobial activity throughout the operational lifetime of the product. Lastly, the filters have been tested in field trials onboard the UK rail network, showing excellent efficacy in reducing the burden of microbial species colonising the air conditioning system. Copyright © 2022. The Author(s).

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40. **Strategies for Antibiotic Administration for Bowel Preparation Among Patients Undergoing Elective Colorectal Surgery: A Network Meta-analysis.**

Item Type: Journal Article

Authors: Woodfield, John C.;Clifford, Kari;Schmidt, Barry;Turner, Gregory A.;Amer, Mohammad A. and McCall, John L.

Publication Date: 2022

Journal: JAMA Surgery 157(1), pp. 34-41

Abstract: Importance: There are discrepancies in guidelines on preparation for colorectal surgery. While intravenous (IV) antibiotics are usually administered, the use of mechanical bowel preparation (MBP), enemas, and/or oral antibiotics (OA) is controversial. Objective: To summarize all data from randomized clinical trials (RCTs) that met selection criteria using network meta-analysis (NMA) to determine the ranking of different bowel preparation treatment strategies for their associations with postoperative outcomes. Data Sources: Data sources included MEDLINE, Embase, Cochrane, and Scopus databases with no language constraints, including abstracts and articles published prior to 2021. Study Selection: Randomized studies of adults undergoing elective colorectal surgery with appropriate aerobic and anaerobic antibiotic cover that reported on incisional surgical site infection (SSI) or anastomotic leak were selected for inclusion in the analysis. These were selected by multiple reviewers and adjudicated by a separate lead investigator. A total of 167 of 6833 screened studies met initial selection criteria. Data Extraction and Synthesis: NMA was performed according to Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) reporting guidelines. Data were extracted by multiple independent observers and pooled in a random-effects model. Main Outcomes and Measures: Primary outcomes were incisional SSI and anastomotic leak. Secondary outcomes included other infections, mortality, ileus, and adverse effects of preparation. Results: A total of 35 RCTs that included 8377 patients were identified. Treatments compared IV antibiotics (2762 patients [33%]), IV antibiotics with enema (222 patients [3%]), IV antibiotics with OA with or without enema (628 patients [7%]), MBP with IV antibiotics (2712 patients [32%]), MBP with IV antibiotics with OA (with good IV antibiotic cover in 925 patients [11%] and with good overall antibiotic cover in 375 patients [4%]), MBP with OA (267 patients [3%]), and OA (486 patients [6%]). The likelihood of incisional SSI was significantly lower for those receiving IV antibiotics with OA with or without enema (rank 1) and MBP with adequate IV antibiotics with OA (rank 2) compared with all other treatment options. The addition of OA to IV antibiotics, both with and without MBP, was associated with a reduction in incisional SSI by greater than 50%. There were minimal differences between treatments in anastomotic leak and in any of the secondary outcomes. Conclusions and Relevance: This NMA demonstrated that the addition of OA to IV antibiotics were associated with a reduction in incisional SSI by greater than 50%. The results support the addition of OA to IV antibiotics to reduce incisional SSI among patients undergoing elective colorectal surgery.

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41. **The effect of a full-time infection control nursing service in the prevention of multidrug-resistant organism in the orthopedic ward**

Item Type: Journal Article

Authors: Yang, Yun;Tang, Ting-ting;Lin, Ji;Gan, Chun-lan;Huang, Wen-zhi and Fang, Yue

Publication Date: 2022

Journal: BMC Infectious Diseases 22(1), pp. 1-8

Abstract: Background: Our aim was to evaluate the effect of setting up a full-time infection control nursing service on reducing the prevalence of multidrug-resistant organism (MDRO) in the orthopedic ward.Methods: From January 2015 to March 2019, routine prevention and control measures were taken for patients infected/colonized with MDRO in this ward, which was set as the pre-intervention period. The intervention period was from April 2019 to June 2021. The study was designed to evaluate whether the establishment of a full-time infection control nursing service could reduce the positive density of MDRO in the hospital by using an interrupted time-series model of a quasi experimental study.Results: There were 11,759 patients during pre-intervention period and 8142 patients during intervention period. The total number of MDRO isolated before intervention was 177, of which 145 were obtained in hospital and 32 were brought in from outside hospital. The total number of MDRO isolated after intervention was 47, of which 29 were obtained in hospital and 18 were brought in from outside hospital. Before intervention, the positive density of MDRO in the orthopedic ward showed an increasing trend (β1 = 0.02, P = 0.003). After intervention, the positive density of MDRO showed a downward trend (β3 = - 0.05, P = 0.018).Conclusions: The establishment of the full-time infection control nursing service in the orthopedic ward can effectively reduce the nosocomial prevalence of MDRO.

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42. **The efficacy of the use of presumptive antibiotics in tube thoracostomy in thoracic trauma-results of a meta-analysis.**

Item Type: Journal Article

Authors: Elnahla, Ahmed;Iuliucci, Kayla R.;Toraih, Eman;Duchesne, Juan C.;Nichols, Ronald L. and Kandil, Emad

Publication Date: Nov ,2021

Journal: American Journal of Surgery 222(5), pp. 1017-1022

Abstract: INTRODUCTION: The purpose of this study was to determine the impact of presumptive antibiotics, used in chest traumas requiring thoracostomies, in preventing infections such as empyema and pneumonia. METHODS: According to PRISMA guidelines, a systematic search of PubMed, Embase and Cochrane Library databases was conducted by two independent reviewers. Studies evaluating the role of antibiotics were included. RESULTS: Antibiotic administration was associated with a lower incidence of overall infectious complications (OR:0.6, 95%CI: 0.43 to 0.84, p = 0.003). Subgroup analysis revealing that the best protective effect against empyema (OR:0.35, 95%CI to 0.65, p = 0.001). When stratified by trauma type, antibiotic use was protective in penetrating injuries, against empyema (OR:0.14, 95%CI: 0.04 to 0.47, p = 0.001) and pneumonia (OR:0.24, 95%CI:, 0.12 to 0.53, p = 0.001) while there was no protective effect in blunt trauma against empyema (OR:0.25 95%CI: 0.03 to 1.73, p = 0.16) or pneumonia (OR:1.22, 95%CI: 0.38 3.90, p = 0.72). CONCLUSION: Presumptive antibiotic use in thoracostomies has a clear role in preventing infectious complications in trauma patients. This role is primarily attributed to their protective effect on penetrating trauma patients. Copyright © 2021 Elsevier Inc. All rights reserved.

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T%3E

43. **Assessment of the Frequency of Dual Allergy to Penicillins and Cefazolin: A Systematic Review and Meta-analysis.**

Item Type: Journal Article

Authors: Sousa-Pinto, Bernardo;Blumenthal, Kimberly G.;Courtney, Lindsay;Mancini, Christian M. and Jeffres, Meghan N.

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Abstract: Importance: Cefazolin is the preoperative antibiotic of choice because it is safer and more efficacious than second-line alternatives. Surgical patients labeled as having penicillin allergy are less likely to prophylactically receive cefazolin and more likely to receive clindamycin or vancomycin, which results in higher rates of surgical site infections. Objective: To examine the incidence of dual allergy to cefazolin and natural penicillins. Data Sources: MEDLINE/PubMed, Web of Science, and Embase were searched without language restrictions for relevant articles published from database inception until July 31, 2020. Study Selection: In this systematic review and meta-analysis, a search of MEDLINE/PubMed, Web of Science, and Embase was performed for articles published from database inception to July 31, 2020, for studies that included patients who had index allergies to a natural penicillin and were tested for tolerability to cefazolin or that included patients who had index allergies to cefazolin and were tested for tolerability to a natural penicillin. A total of 3228 studies were identified and 2911 were screened for inclusion. Data Extraction and Synthesis: Data were independently extracted by 2 authors. Bayesian meta-analysis was used to estimate the frequency of allergic reactions. Main Outcomes and Measures: Dual allergy to cefazolin and a natural penicillin. Results: Seventy-seven unique studies met the eligibility criteria, yielding 6147 patients. Cefazolin allergy was identified in 44 participants with a history of penicillin allergy, resulting in a dual allergy meta-analytical frequency of 0.7% (95% credible interval [CrI], 0.1%-1.7%; I2 = 74.9%). Such frequency was lower for participants with unconfirmed (0.6%; 95% CrI, 0.1%-1.3%; I2 = 54.3%) than for those with confirmed penicillin allergy (3.0%; 95% CrI, 0.01%-17.0%; I2 = 88.2%). Thirteen studies exclusively assessed surgical patients (n = 3884), among whom 0.7% (95% CrI, 0%-3.3%; I2 = 85.5%) had confirmed allergy to cefazolin. Low heterogeneity was observed for studies of patients with unconfirmed penicillin allergy who had been exposed to perioperative cefazolin (0.1%; 95% CrI, 0.1%-0.3%; I2 = 13.1%). Penicillin allergy was confirmed in 16 participants with a history of cefazolin allergy, resulting in a meta-analytical frequency of 3.7% (95% CrI, 0.03%-13.3%; I2 = 64.4%). The frequency of penicillin allergy was 4.4% (95% CrI, 0%-23.0%; I2 = 75%) for the 8 studies that exclusively assessed surgical patients allergic to cefazolin. Conclusions and Relevance: These findings suggest that most patients with a penicillin allergy history may safely receive cefazolin. The exception is patients with confirmed penicillin allergy in whom additional care is warranted.

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44. **The Comparative Efficacy of Chlorhexidine Gluconate and Povidone-iodine Antiseptics for the Prevention of Infection in Clean Surgery: A Systematic Review and Network Meta-analysis.**

Item Type: Journal Article

Authors: Wade, Ryckie G.;Burr, Nicholas E.;McCauley, Gordon;Bourke, Grainne and Efthimiou, Orestis

Publication Date: 2021

Journal: Annals of Surgery 274(6), pp. e481-e488

Abstract: OBJECTIVE: There is uncertainty around preoperative skin antisepsis in clean surgery. Network meta-analysis provides more precise estimates than standard pairwise meta-analysis and can rank interventions by efficacy, to better inform clinical decisions. BACKGROUND: Infection is the most common and costly complication of surgery. The relative efficacy of CHG and PVI based skin antiseptics in clean surgery remains unclear. METHODS: We searched for randomized or nonrandomized studies comparing the effect of different preparations of CHG and PVI on the dichotomous outcome of surgical site infection. We included studies of adults undergoing clean surgery. We excluded studies concerning indwelling vascular catheters, blood sampling, combination antiseptics or sequential applications of different antiseptics. We performed a network meta-analysis to estimate the relative efficacy of interventions using relative risks (RR). RESULTS: We included 17 studies comparing 5 antiseptics in 14,593 individuals. The overall rate of surgical site infection was 3%. Alcoholic CHG 4%-5% was ranked as the most effective antiseptic as it halved the risk of surgical site infection when compared to aqueous PVI [RR 0.49 (95% confidence interval 0.24, 1.02)] and also to alcoholic PVI, although uncertainty was larger [RR 0.51 (95% confidence interval 0.21, 1.27)]. Adverse events related to antiseptic application were only observed with patients exposed to PVI. CONCLUSIONS: Alcoholic formulations of 4%-5% CHG seem to be safe and twice as effective as PVI (alcoholic or aqueous solutions) in preventing infection after clean surgery in adults. Our findings concur with the literature on contaminated and clean-contaminated surgery, and endorse guidelines worldwide which advocate the use of alcoholic CHG for preoperative skin antisepsis. REGISTRATION: PROSPERO ID CRD42018113001. Copyright © 2020 The Author(s). Published by Wolters Kluwer Health, Inc.

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