Infection Control Update

January 2024

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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Contents

New or recently updated NICE Guidance (last 6 months)

Suspected sepsis: recognition, diagnosis and early management
NICE guideline [NG51]
Published: 13 July 2016 Last updated: 31 January 2024
https://www.nice.org.uk/guidance/ng51

COVID-19 rapid guideline: managing COVID-19
NICE guideline [NG191]
Published: 23 March 2021 Last updated: 25 January 2024
https://www.nice.org.uk/guidance/ng191

Acne vulgaris: management
NICE guideline [NG198]
Published: 25 June 2021 Last updated: 07 December 2023
https://www.nice.org.uk/guidance/ng198

Pneumonia in adults: diagnosis and management
Clinical guideline [CG191]
Published: 03 December 2014 Last updated: 31 October 2023
https://www.nice.org.uk/guidance/cg191

Genedrive MT-RNR1 ID Kit for detecting a genetic variant to guide antibiotic use and prevent hearing loss in babies: early value assessment
Health technology evaluation - Reference number:HTE6
Published: 30 March 2023 Last updated: 10 August 2023
https://www.nice.org.uk/guidance/hte6

Neonatal infection
Quality standard [QS75]

Published: 18 December 2014 Last updated: 23 January 2024
https://www.nice.org.uk/guidance/qs75

Tabelecleucel for treating post-transplant lymphoproliferative disorder caused by the Epstein-Barr virus (terminated appraisal)
Technology appraisal [TA923]
Published: 19 October 2023
https://www.nice.org.uk/guidance/ta923

Meningitis (bacterial) and meningococcal disease : recognition, diagnosis and management
In development [GID-NG10149]
Expected publication date: 14 March 2024
https://www.nice.org.uk/guidance/indevelopment/gid-ng10149

Kurin Lock for blood culture collection
In development [GID-MT582]
Expected publication date: 12 March 2024
https://www.nice.org.uk/guidance/indevelopment/gid-mt582

Selection of Papers from Medline and CINHAL < 12 months (most recent first)

1. The effectiveness and efficiency of asymptomatic SARS-CoV-2 testing strategies for patient and healthcare workers within acute NHS hospitals during an omicron-like period

Item Type: Journal Article

Authors: Evans, Stephanie;Naylor, Nichola R.;Fowler, Tom;Hopkins, Susan and Robotham, Julie

Publication Date: 2024

Journal: BMC Infectious Diseases 24(1), pp. 64

Abstract: Background: Asymptomatic SARS-CoV-2 testing of hospitalised patients began in April-2020, with twice weekly healthcare worker (HCW) testing introduced in November-2020. Guidance recommending asymptomatic testing was withdrawn in August-2022. Assessing the impact of this decision from data alone is challenging due to concurrent changes in infection prevention and control practices, community transmission rates, and a reduction in ascertainment rate from reduced testing. Computational modelling is an effective tool for estimating the impact of this change.; **Methods:** Using a computational model of SARS-CoV-2 transmission in an English hospital we estimate the effectiveness of several asymptomatic testing strategies, namely; (1) Symptomatic testing of patients and HCWs, (2) testing of all patients on admission with/without repeat testing on days 3 and 5-7, and (3) symptomatic testing plus twice weekly asymptomatic HCW testing with 70% compliance. We estimate the number of patient and HCW infections, HCW absences, number of tests, and tests per case averted or absence avoided, with differing community prevalence rates over a 12-week period.; **Results:** Testing asymptomatic patients on admission reduces the rate of nosocomial SARS-CoV-2 infection by 8.1-21.5%. Additional testing at days 3 and 5-7 post admission does not significantly reduce infection rates. Twice weekly asymptomatic HCW testing can reduce the proportion of HCWs infected by 1.0-4.4% and monthly absences by 0.4-0.8%. Testing asymptomatic patients repeatedly requires up to 5.5 million patient tests over the period, and twice weekly asymptomatic HCW testing increases the total tests to almost 30 million. The most

efficient patient testing strategy (in terms of tests required to prevent a single pCatient infection) was testing asymptomatic patients on admission across all prevalence levels. The least efficient was repeated testing of patients with twice weekly asymptomatic HCW testing in a low prevalence scenario, and in all other prevalence levels symptomatic patient testing with regular HCW testing was least efficient.; **Conclusions:** Testing patients on admission can reduce the rate of nosocomial SARS-CoV-2 infection but there is little benefit of additional post-admission testing. Asymptomatic HCW testing has little incremental benefit for reducing patient cases at low prevalence but has a potential role at higher prevalence or with low community transmission. A full health-economic evaluation is required to determine the cost-effectiveness of these strategies. (© 2024. Crown.)

Access or request full text: https://libkey.io/10.1186/s12879-023-08948-9

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=38191324&custid=ns023446

2. High Gastrointestinal Colonization Rate of Vancomycin-Resistant Enterococci among Hospitalized Patients: Potential Source for Resistant Gene

Item Type: Journal Article

Authors: Mengesha, Techilo Habtemariam;Ali, Musa Mohammed;Mengistu, Mulugeta and Assegu Fenta, Demissie

Publication Date: 2024

Journal: International Journal of Microbiology 2024, pp. 6430026

Abstract: Background: Vancomycin-resistant Enterococci (VRE) is a global health problem and responsible for healthcare-associated infections (HAIs) in patients with prolonged hospital stay, severe underlying disease, and previous broad-spectrum antibiotic therapy. These bacteria can cross-resist and transfer drug-resistant genes to other potentially pathogenic bacteria. Therefore; this study was aimed to determine the gastrointestinal colonization rate of VRE, its antimicrobial susceptibility profile, and associated factors among hospitalized patients.; **Methods:** Prospective cross-sectional study was conducted using stool samples from 223 patients admitted to different wards at Hawassa University Comprehensive Specialized Hospital, from April 1 to June 30, 2021. Patients admitted to the hospital for more than 48 hours for various medical conditions were included. Sociodemographic and clinical characteristics were collected using a structured questionnaire. Fecal specimens were cultured on Enterococci selective media. Enterococcus species were identified using their growth and mannitol fermentation properties. Vancomycin resistance was screened using both the Kirby-Bauer disk diffusion method and a vancomycin E -test strip. Data were entered and analyzed using SPSS version 25. Descriptive and logistic regressions were used to determine the frequency and association of factors with the VRE colonization rate. A p value of 2 weeks (AOR = 4.10, 95% CI: 1.08, 15.57), and those who had a history of treatment with vancomycin (AOR = 4.77, 95% CI: 1.26, 18.09) were more likely to be colonized with vancomycin-resistant Enterococci . More than 95% of Enterococci isolates were susceptible to linezolid, whereas 70.2%, 63.1%, 56.7%, and 53.9% were resistant to tetracycline, erythromycin, penicillin, and ampicillin, respectively. Among the total Enterococci isolated, 141 (54.6%) were multidrug resistant.; **Conclusions:** In our study, high proportion of vancomycin-resistant Enterococci was found. Previous exposure to antibiotics and hospital stay were significant factors for VRE gut colonization. The isolated Enterococci showed variable degrees of resistance to commonly prescribed antibiotics which leads to a worldwide problem multidrug resistance. Therefore, periodic surveillance on antimicrobial resistance pattern, adhering to rational use of antibiotics, and implementing infection prevention protocols may reduce colonization by VRE.; Competing Interests: The authors declare that they have no conflicts of interest. (Copyright © 2024 Techilo Habtemariam Mengesha et al.)

3. Modulation of multidrug-resistant clone success in Escherichia coli populations: a longitudinal, multi-country, genomic and antibiotic usage cohort study

Item Type: Journal Article

Authors: Pöntinen, Anna,K.;Gladstone, Rebecca A.;Pesonen, Henri;Pesonen, Maiju;Cléon, François;Parcell, Benjamin J.;Kallonen, Teemu;Simonsen, Gunnar Skov;Croucher, Nicholas J.;McNally, Alan;Parkhill, Julian;Johnsen, Pål J.;Samuelsen, Ørjan and Corander, Jukka

Publication Date: 2024

Journal: The Lancet. Microbe

Abstract: Background: The effect of antibiotic usage on the success of multidrug-resistant (MDR) clones in a population remains unclear. With this genomics-based molecular epidemiology study, we aimed to investigate the contribution of antibiotic use to Escherichia coli clone success, relative to intra-strain competition for colonisation and infection.; Methods: We sequenced all the available E coli bloodstream infection isolates provided by the British Society for Antimicrobial Chemotherapy (BSAC) from 2012 to 2017 (n=718) and combined these with published data from the UK (2001-11; n=1090) and Norway (2002-17; n=3254). Defined daily dose (DDD) data from the European Centre for Disease Prevention and Control (retrieved on Sept 21, 2021) for major antibiotic classes (β-lactam, tetracycline, macrolide, sulfonamide, quinolone, and non-penicillin β-lactam) were used together with sequence typing, resistance profiling, regression analysis, and non-neutral Wright-Fisher simulation-based modelling to enable systematic comparison of resistance levels, clone success, and antibiotic usage between the UK and Norway.; **Findings:** Sequence type (ST)73, ST131, ST95, and ST69 accounted for 892 (49·3%) of 1808 isolates in the BSAC collection. In the UK, the proportion of ST69 increased between 2001-10 and 2011-17 (p=0·0004), whereas the proportions of ST73 and ST95 did not vary between periods. ST131 expanded quickly after its emergence in 2003 and its prevalence remained consistent throughout the study period (apart from a brief decrease in 2009-10). The extended-spectrum β-lactamase (ESBL)-carrying, globally disseminated MDR clone ST131-C2 showed overall greater success in the UK (154 56·8%] of 271 isolates in 2003-17) compared with Norway (51 18·3%] of 278 isolates in 2002-17; p<0·0001). DDD data indicated higher total use of antimicrobials in the UK, driven mainly by the class of non-penicillin β-lactams, which were used between 2·7-times and 5·1-times more in the UK per annum (ratio mean 3·7 SD 0·8]). This difference was associated with the higher success of the MDR clone ST131-C2 (pseudo-R 2 69·1%). A non-neutral Wright-Fisher model replicated the observed expansion of non-MDR and MDR sequence types under higher DDD regimes.; **Interpretation:** Our study indicates that resistance profiles of contemporaneously successful clones can vary substantially, warranting caution in the interpretation of correlations between aggregate measures of resistance and antibiotic usage. Our study further suggests that in countries with low-to-moderate use of antibiotics, such as the UK and Norway, the extent of non-penicillin β-lactam use modulates rather than determines the success of widely disseminated MDR ESBL-carrying E coli clones. Detailed understanding of underlying causal drivers of success is important for improved control of resistant pathogens.; **Funding:** Trond Mohn Foundation, Marie Skłodowska-Curie Actions, European Research Council, Royal Society, and Wellcome Trust.; Competing Interests: Declaration of interests NJC reports support to his institution from GlaxoSmithKline, Pfizer, and Merck (MSD), and personal grants from MRC, outside the submitted work. All other authors declare no competing interests. (Copyright © 2023 The Author(s). Published by Elsevier Ltd.. All rights reserved.)

4. How to Defeat Multidrug-Resistant Bacteria in Intensive Care Units. A Lesson from the COVID-19 Pandemic. Prevention, Reservoirs, and Implications for Clinical Practice

Item Type: Journal Article

Authors: Woźniak, Anna;Janc, Jarosław;Łysenko, Lidia;Leśnik, Patrycja;Słabisz, Natalia;Oleksy-Wawrzyniak, Monika and Uchmanowicz, Izabella

Publication Date: 2024

Journal: International Journal of Medical Sciences 21(3), pp. 530-539

Abstract: Background: Intensive care unit (ICU) patients are at high risk of infection due to multiple invasive procedures, malnutrition, or immunosuppression. The rapid increase in infections with multidrug-resistant organisms (MDRO) during the COVID-19 pandemic caused a dilemma, as the rules of the sanitary regime in ICU rooms were strictly adhered to in the prevailing epidemiological situation. The combat to reduce the number of infections and pathogen transmission became a priority for ICU staff. This study aimed to assess whether eliminating environmental reservoirs and implementing improved procedures for patient care and decontamination and washing equipment in the ICU reduced the incidence of infections caused by MDR strains. **Material and methods:** The study retrospectively analyzed data in the ICU during the COVID-19 pandemic. The samples were collected based on microbiological culture and medical records in the newly opened ICU (10 stations) and hospital wards where COVID-19 patients were hospitalized. Environmental inoculations were performed during the COVID-19 pandemic every 4-6 weeks unless an increase in the incidence of infections caused by MDR strains was observed. Through microbiological analysis, environmental reservoirs of MDR pathogens were identified. The observation time was divided into two periods, before and after the revised procedures. The relationship between isolated strains of Klebsiella pneumoniae NDM from patients and potential reservoirs within the ICU using ERIC-PCR and dice methods was analyzed. **Results:** An increased frequency of infections and colonization caused by MDRO was observed compared to the preceding years. A total of 23,167 microbiological tests and 6,985 screening tests for CPE and MRSA bacilli were collected. The pathogen spread was analyzed, and the findings indicated procedural errors. Assuming that the transmission of infections through the staff hands was significantly limited by the restrictive use of personal protective equipment, the search for a reservoir of microorganisms in the environment began. MDR strains were grown from the inoculations collected from the hand-wash basins in the wards and from inside the air conditioner on the ceiling outside the patient rooms. New types of decontamination mats were used in high-risk areas with a disinfectant based on Glucoprotamine. Active chlorine-containing substances were widely used to clean and disinfect surfaces. **Conclusions:** Infections with MDR strains pose a challenge for health care. Identification of bacterial reservoirs and comprehensive nursing care significantly reduce the number of nosocomial infections.; Competing Interests: Competing Interests: The authors have declared that no competing interest exists. (© The author(s).)

5. Personal protection equipment: Preliminary evidence of effectiveness from a three-phase simulation program

Item Type: Journal Article

Authors: Altabbaa, Ghazwan;Pidhorney, Corrinne;Beran, Tanya;Kim, Joseph;Ledgerwood, Donna;Cowan, Michèle and Paolucci, Elizabeth Oddone

Publication Date: 2023

Journal: Journal of Infection Prevention 24(6), pp. 244-251

Abstract: Background: Healthcare providers carry the occupational risk of being exposed to pathogens. Personal Protection Equipment (PPE) requires proficiency whenever used. Yet, evidence shows significant errors and variation in competency when applying PPE. **Objective:** In this study, we developed a three-phase intervention to promote PPE proficiency. **Methods:** Education and assessment of participants' PPE knowledge and skills occurred at a large academic university in Western Canada. Participants first completed an online module; second, they experienced one-on-one coaching and deliberate practice with infection control professionals; and third, participants managed a COVID-19 clinical simulation scenario. The measured outcomes include a 15-item pre- and post-knowledge test and a pre- and post-skills assessment of donning and doffing behaviors. These behaviors were observed from video recordings and were assessed using two standardized checklists. **Results:** Knowledge and donning/doffing post-test scores (11.73, 0.95, and 0.96, respectively) were significantly higher after completing all three phases of the educational intervention, $p < .001$. **Conclusions:** An online module alone is insufficient for PPE knowledge and skill development. Rather, a module followed by practice and simulation allows learners to gain proficiency.

Access or request full text: https://libkey.io/10.1177/17571774231208118

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=173550961&custid=ns023446

6. Care Workers and Managers' Experiences of Implementing Infection Control Guidance in an Epidemic Context: A Qualitative Study in the South East of England, during the COVID-19 Prevaccination Era

Item Type: Journal Article

Authors: Bertini, Lavinia;Bogen-Johnston, Leanne;Sadhwani, Shanu;Middleton, Jo;Sharp, Rebecca;Wood, Wendy;Roland, Daniel;Forder, Julien and Cassell, Jackie A.

Publication Date: 2023

Journal: Health & Social Care in the Community , pp. 1-11

Abstract: The national response to COVID-19 has had a severe impact on adult social care settings, with high mortality amongst people receiving and providing care in England. Care workers had to rapidly adapt to new infection control measures to protect themselves, their colleagues, and the people receiving care. Infection control in residential and domiciliary care is always complex, but COVID-19 infection control measures impacted exceptionally on care workers' working and everyday lives. We undertook qualitative interviews with care workers and managers (n = 10) in residential and domiciliary care for older people in the Southeast England

during the first wave of the pandemic to understand their experiences, solutions, and concerns to implement guidance in practice. Data were analysed using framework analysis, and the following eight themes were identified: (1) Increasing visibility and support for the sector; (2) the impact of negative messaging about the sector; (3) feelings of isolation; (4) accessibility and usability of guidance; (5) social care staff as agents in producing and sharing good practice; (6) managing expectations and the impact of conflicting messages in the media; (7) improving communication with hospitals; and (8) problems in the early pandemic. The findings reveal widespread concerns for the marginalisation of the sector in the policy response and the inadequacy of infection control guidance. Guidance would benefit from a better understanding of domiciliary and residential care settings. This might involve the following steps: (a) coproduction of guidance with adult social care stakeholders, including those in direct-care roles and (b) a shift away from a clinical model of infection control towards a more flexible approach that attends to the inherent variability of care settings.

Access or request full text: https://libkey.io/10.1155/2023/4127871

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=167301053&custid=ns023446

7. Group A streptococcal disease in paediatric inpatients: a European perspective

Item Type: Journal Article

Authors: Boeddha, Navin P.;Atkins, Lucy;de Groot, Ronald;Driessen, Gertjan;Hazelzet, Jan;Zenz, Werner;Carrol, Enitan D.;Anderson, Suzanne T.;Martinon-Torres, Federico;Agyeman, Philipp K. A.;Galassini, Rachel;Herberg, Jethro;Levin, Michael;Schlapbach, Luregn J. and Emonts, Marieke

Publication Date: 2023

Journal: European Journal of Pediatrics 182(2), pp. 697-706

Abstract: Group A streptococcal (GAS) disease shows increasing incidence worldwide. We characterised children admitted with GAS infection to European hospitals and studied risk factors for severity and disability. This is a prospective, multicentre, cohort study (embedded in EUCLIDS and the Swiss Pediatric Sepsis Study) including 320 children, aged 1 month to 18 years, admitted with GAS infection to 41 hospitals in 6 European countries from 2012 to 2016. Demographic, clinical, microbiological and outcome data were collected. A total of 195 (61%) patients had sepsis. Two hundred thirty-six (74%) patients had GAS detected from a normally sterile site. The most common infection sites were the lower respiratory tract (LRTI) (22%), skin and soft tissue (SSTI) (23%) and bone and joint (19%). Compared to patients not admitted to PICU, patients admitted to PICU more commonly had LRTI (39 vs 8%), infection without a focus (22 vs 8%) and intracranial infection (9 vs 3%); less commonly had SSTI and bone and joint infections (p < 0.001); and were younger (median 40 (IQR 21-83) vs 56 (IQR 36-85) months, p = 0.01). Six PICU patients (2%) died. Sequelae at discharge from hospital were largely limited to patients admitted to PICU (29 vs 3%, p < 0.001; 12% overall) and included neurodisability, amputation, skin grafts, hearing loss and need for surgery. More patients were recruited in winter and spring (p < 0.001).; Conclusion: In an era of observed marked reduction in vaccine-preventable infections, GAS infection requiring hospital admission is still associated with significant severe disease in younger children, and short- and long-term morbidity. Further advances are required in the prevention and early recognition of GAS disease.; What Is Known: • Despite temporal and geographical variability, there is an increase of incidence of infection with group A streptococci. However, data on the epidemiology of group A streptococcal infections in European children is limited.; What Is New: • In a large, prospective cohort of children with community-acquired bacterial infection requiring hospitalisation in Europe, GAS was the most frequent pathogen, with 12% disability at discharge, and 2% mortality in patients with GAS infection. • In children with GAS sepsis, IVIG was used in only 4.6% of patients and clindamycin in 29% of patients. (© 2022. The Author(s), under exclusive

Access or request full text: https://libkey.io/10.1007/s00431-022-04718-y

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=36449079&custid=ns023446

8. Antidepressant Medications are Associated with Increased Risk of Hospital-Acquired Clostridioides Difficile Infection: a Population-Based Study

Item Type: Journal Article

Authors: Boustany, Antoine;Onwuzo, Somtochukwu;Zeid, Hadi Khaled Abou;Almomani, Ashraf and Asaad, Imad

Publication Date: 2023

Journal: Arquivos De Gastroenterologia 60(3), pp. 309-314

Abstract: What Is Already Known: •The rate and severity of Clostridioides difficile infection (CDI) has increased throughout North America, the United Kingdom, and Europe. •Scattered evidence about the association of CDI with antidepressant medications use exists in the literature so far. What are the new findings: •The risk of Clostridioides difficile infection is higher in patients who are on mirtazapine, nortriptyline, or trazodone. •The prevalence rate of Clostridioides difficile infection in patients who were using antidepressant medications and the ones who did not, increased with age. **Background** - During the past decade, Clostridioides difficile infection (CDI) has become the most common cause of antibiotic-associated diarrhea. Several risk factors have been implicated. Scattered evidence about the association of CDI with antidepressant medications use exists in the literature so far. Therefore, we aim to investigate whether the risk of developing CDI is increased in hospitalized patients using antidepressant medications. **Methods** - Patients who were hospitalized were included in our cohort. We excluded individuals aged less than 18 years. A multivariate regression analysis was performed to calculate the risk of CDI accounting for potential confounders. **Results** - The risk of CDI in hospitalized patients was increased in individuals diagnosed with inflammatory bowel disease (OR: 4.44; 95%CI: 4.35-4.52), and in patients using clindamycin (OR: 1.55; 95%CI: 1.53-1.57), beta-lactam antibiotics (OR: 1.62; 95%CI: 1.60-1.64), PPI (OR: 3.27; 95%CI: 3.23-3.30), trazodone (OR: 1.31; 95%CI: 1.29-1.33), nortriptyline (OR: 1.25; 95%CI: 1.21-1.28), and mirtazapine (OR: 2.50; 95%CI: 2.46-2.54). After controlling for covariates, the risk of CDI was not increased in patients who were taking fluoxetine (OR: 0.94; 95%CI: 0.92-0.96). **Conclusion** - In contrary to fluoxetine; mirtazapine, nortriptyline, and trazodone were associated with increased risk of CDI in hospitalized patients.

Access or request full text: https://libkey.io/10.1590/S0004-2803.230302023-21

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37792759&custid=ns023446

9. A randomised controlled trial investigating the effect of improving the cleaning and disinfection of shared medical equipment on healthcare-associated infections: the CLEaning and Enhanced disiNfection (CLEEN) study

Item Type: Journal Article

Authors: Browne, Katrina;White, Nicole;Tehan, Peta;Russo, Philip L.;Amin, Maham;Stewardson, Andrew

J.;Cheng, Allen C.;Graham, Kirsty;O'Kane, Gabrielle;King, Jennie;Kiernan, Martin;Brain, David and Mitchell, Brett G.

Publication Date: 2023

Journal: Trials 24(1), pp. 133

Abstract: Background: Healthcare-associated infections (HAIs) are a common, costly, yet largely preventable complication impacting patients in healthcare settings globally. Improving routine cleaning and disinfection of the hospital environment has been shown to reduce the risk of HAI. Contaminated shared medical equipment presents a primary transmission route for infectious pathogens, yet is rarely studied. The CLEEN study will assess how enhanced cleaning and disinfection of shared medical equipment affects the rate of HAIs in a tertiary hospital setting. The initiative is an evidence-based approach combining staff training, auditing and feedback to environmental services staff to enhance cleaning and disinfection practices.; **Methods:** The CLEEN study will use a stepped wedge randomised controlled design in 10 wards of one large Australian hospital over 36 weeks. The intervention will consist of 3 additional hours per weekday for the dedicated cleaning and disinfection of shared medical equipment on each ward. The primary outcome is to demonstrate the effectiveness of improving the quality and frequency of cleaning shared medical equipment in reducing HAIs, as measured by a HAI point prevalence study (PPS). The secondary outcomes include the thoroughness of equipment cleaning assessed using fluorescent marker technology and the cost-effectiveness of the intervention.; **Discussion:** Evidence from the CLEEN study will contribute to future policy and practice guidelines about the cleaning and disinfection of shared medical equipment. It will be used by healthcare leaders and clinicians to inform decision-making and implementation of best-practice infection prevention strategies to reduce HAIs in healthcare facilities.; Trial Registration: Australia New Zealand Clinical Trial Registry ACTRN12622001143718. (© 2023. The Author(s).)

Access or request full text: https://libkey.io/10.1186/s13063-023-07144-z

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=36814314&custid=ns023446

10. Uropathogenic Escherichia coli population structure and antimicrobial susceptibility in Norfolk, UK

Item Type: Journal Article

Authors: Carter, Cailean;Hutchison, Alexandra;Rudder, Steven;Trotter, Elizabeth;Waters, Emma V.;Elumogo, Ngozi and Langridge, Gemma C.

Publication Date: 2023

Journal: The Journal of Antimicrobial Chemotherapy 78(8), pp. 2028-2036

Abstract: Background: Urinary tract infections (UTIs) are a frequent cause for visits to primary care providers. In alignment globally, uropathogenic Escherichia coli (UPEC) are the main aetiological agent for UTIs in Norfolk and are increasingly difficult to treat due to multi-drug resistance.; **Objectives:** We set out to identify which clonal groups and resistance genes are disseminating in the community and hospitals in Norfolk, the first study of its kind for UPEC in this region.; **Methods:** We collected 199 clinical E. coli isolates causing UTIs in the community and hospital from the Clinical Microbiology laboratory at Norfolk and Norwich University Hospital between August 2021 and January 2022. These were whole-genome sequenced using the Illumina and MinION platforms for in silico MLST and antibiotic resistance determinant detection.; **Results:** The isolates were composed of 70

STs; 8 lineages represented 56.7% of this population: ST73, ST12, ST69, ST131, ST404, ST95, ST127 and ST1193. Importantly, primary UTI screening deemed 6.5% of isolates to be multidrug resistant (MDR), with high rates of resistance to ampicillin (52.1%) and trimethoprim (36.2%) in hospitals. Of concern is the probable clonal expansion of MDR groups ST131 and ST1193 in hospitals and community settings with chromosomally encoded blaCTX-M-15, blaOXA-1 and aac(6')-Ib-cr5.; **Conclusions:** The burden of reported UTIs in Norfolk is largely caused by non-MDR isolates and mirrors similar UPEC studies nationally and internationally. Continually monitoring samples with consideration of sources will help reduce burden of disease. (© The Author(s) 2023. Published by Oxford University Press on behalf of British Society for Antimicrobial Chemotherapy.)

Access or request full text: https://libkey.io/10.1093/jac/dkad201

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37358190&custid=ns023446

11. National point-prevalence survey of healthcare-associated infections and antimicrobial use: UK-PAS/UKHSA joint call to action for all paediatric services

Item Type: Journal Article

Authors: Channon-Wells, Samuel;Elmes, Jocelyn;Muller-Pebody, Berit;McGarrity, Orlagh;Chappell, Faye;Drysdale, Simon B.;Ashiru-Oredope, Diane;Patel, Sanjay and Demirjian, Alicia

Publication Date: 2023

Journal: The Journal of Antimicrobial Chemotherapy 78(10), pp. 2392-2394

Abstract: The negative impact of high antimicrobial use (AMU), antimicrobial resistance and healthcare-associated infections (HCAIs) on children is concerning. However, a lack of available paediatric data makes it challenging to design and implement interventions that would improve health outcomes in this population, and impedes efforts to secure additional resources. The upcoming 2023 national point-prevalence survey of HCAIs and AMU in hospitals, led by the UK Health Security Agency, is an opportunity to collect valuable information, which will enable healthcare providers and policy makers to optimize antimicrobial stewardship and infection prevention practices in all populations, including children. These data will facilitate benchmarking and sharing of best practice, internally, nationally and internationally. This is a joint call to action asking all healthcare professionals-particularly in paediatrics-to nominate a lead for their institution and participate in this survey, to ensure appropriate paediatric representation, and help protect children from these growing threats. (© The Author(s) 2023. Published by Oxford University Press on behalf of British Society for Antimicrobial Chemotherapy. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com.)

Access or request full text: https://libkey.io/10.1093/jac/dkad265

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37611224&custid=ns023446

12. Emotional intelligence: Its place in infection prevention and control

Item Type: Journal Article

Authors: Cole, Mark

Publication Date: 2023

Abstract: Background: The Infection Prevention Societies Competency Framework is a detailed tool that recognises the multi factorial work of Infection Prevention and Control Teams. This work often takes place in complex, chaotic and busy environments where non-compliance with policies, procedures and guidelines is endemic. As reductions in Healthcare Associated Infection became a health service priority the tone of Infection Prevention and Control (IPC) became increasingly uncompromising and punitive. This can create conflict between IPC professionals and clinicians who may take a different view as to the reasons for sub optimum practice. If unresolved, this can create a tension that has a negative impact on working relationships and ultimately patient outcomes. **Concepts and Context:** Emotional Intelligence, that ability to recognise, understand and manage our own emotions and recognise, understand and influence the emotions of others, is not something, hitherto, that has been headlined as an attribute for individuals working in IPC. Individuals with higher level of Emotional Intelligence show a greater capacity for learning, deal with pressure more effectively, communicate in interesting and assertive ways and recognise the strengths and weaknesses of others. Overall, the trend is that they are more productive and satisfied in the workplace. **Conclusion:** Emotional Intelligence should be a much sought after trait in IPC as this will better equip a post holder to deliver challenging IPC programmes. When appointing to an IPC team, the candidates Emotional Intelligence should be considered and then developed through a process of education and reflection.

Access or request full text: https://libkey.io/10.1177/17571774231159573

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=163137603&custid=ns023446

13. Multiple pathways of SARS-CoV-2 nosocomial transmission uncovered by integrated genomic and epidemiological analyses during the second wave of the COVID-19 pandemic in the UK

Item Type: Journal Article

Authors: Cook, Kate F.;Beckett, Angela H.;Glaysher, Sharon;Goudarzi, Salman;Fearn, Christopher;Loveson, Katie F.;Elliott, Scott;Wyllie, Sarah;Lloyd, Allyson;Bicknell, Kelly;Lumley, Sally;Chauhan, Anoop J. and Robson, Samuel C.

Publication Date: 2023

Abstract: Introduction: Throughout the global COVID-19 pandemic, nosocomial transmission has represented a major concern for healthcare settings and has accounted for many infections diagnosed within hospitals. As restrictions ease and novel variants continue to spread, it is important to uncover the specific pathways by which nosocomial outbreaks occur to understand the most suitable transmission control strategies for the future.; **Methods:** In this investigation, SARS-CoV-2 genome sequences obtained from 694 healthcare workers and 1,181 patients were analyzed at a large acute NHS hospital in the UK between September 2020 and May 2021. These viral genomic data were combined with epidemiological data to uncover transmission routes within the hospital. We also investigated the effects of the introduction of the highly transmissible variant of concern (VOC), Alpha, over this period, as well as the effects of the national vaccination program on SARS-CoV-2 infection in the hospital.; **Results:** Our results show that infections of all variants within the hospital increased as community prevalence of Alpha increased, resulting in several outbreaks and super-spreader events. Nosocomial infections were enriched amongst older and more vulnerable patients more likely to be in hospital

for longer periods but had no impact on disease severity. Infections appeared to be transmitted most regularly from patient to patient and from patients to HCWs. In contrast, infections from HCWs to patients appeared rare, highlighting the benefits of PPE in infection control. The introduction of the vaccine at this time also reduced infections amongst HCWs by over four-times.; **Discussion:** These analyses have highlighted the importance of control measures such as regular testing, rapid lateral flow testing alongside polymerase chain reaction (PCR) testing, isolation of positive patients in the emergency department (where possible), and physical distancing of patient beds on hospital wards to minimize nosocomial transmission of infectious diseases such as COVID-19.; **Competing Interests:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. (Copyright © 2023 Cook, Beckett, Glaysher, Goudarzi, Fearn, Loveson, Elliott, Wyllie, Lloyd, Bicknell, Lumley, Chauhan, Robson and The COVID-19 Genomics UK (COG-UK) consortium.)

Access or request full text: https://libkey.io/10.3389/fcimb.2022.1066390

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=36741977&custid=ns023446

14. The burden and dynamics of hospital-acquired SARS-CoV-2 in England

Item Type: Journal Article

Authors: Cooper, Ben S.;Evans, Stephanie;Jafari, Yalda;Pham, Thi Mui;Mo, Yin;Lim, Cherry;Pritchard, Mark G.;Pople, Diane;Hall, Victoria;Stimson, James;Eyre, David W.;Read, Jonathan M.;Donnelly, Christl A.;Horby, Peter;Watson, Conall;Funk, Sebastian;Robotham, Julie V. and Knight, Gwenan M.

Publication Date: 2023

Journal: Nature 623(7985), pp. 132-138

Abstract: Hospital-based transmission had a dominant role in Middle East respiratory syndrome coronavirus (MERS-CoV) and severe acute respiratory syndrome coronavirus (SARS-CoV) epidemics 1,2 , but large-scale studies of its role in the SARS-CoV-2 pandemic are lacking. Such transmission risks spreading the virus to the most vulnerable individuals and can have wider-scale impacts through hospital-community interactions. Using data from acute hospitals in England, we quantify within-hospital transmission, evaluate likely pathways of spread and factors associated with heightened transmission risk, and explore the wider dynamical consequences. We estimate that between June 2020 and March 2021 between 95,000 and 167,000 inpatients acquired SARS-CoV-2 in hospitals (1% to 2% of all hospital admissions in this period). Analysis of time series data provided evidence that patients who themselves acquired SARS-CoV-2 infection in hospital were the main sources of transmission to other patients. Increased transmission to inpatients was associated with hospitals having fewer single rooms and lower heated volume per bed. Moreover, we show that reducing hospital transmission could substantially enhance the efficiency of punctuated lockdown measures in suppressing community transmission. These findings reveal the previously unrecognized scale of hospital transmission, have direct implications for targeting of hospital control measures and highlight the need to design hospitals better equipped to limit the transmission of future high-consequence pathogens. (© 2023. The Author(s).)

Access or request full text: https://libkey.io/10.1038/s41586-023-06634-z

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37853126&custid=ns023446

15. The Role of Patient Engagement in Surgical Site Infection Reduction: A Process Improvement Project

Item Type: Journal Article

Authors: Cox, Jill;Douglas, Lisa;Wemmer, Valerie and Kaminsky, Kathleen

Publication Date: 2023

Journal: Advances in Skin & Wound Care 36(11), pp. 599-603

Abstract: Background: Surgical site infections (SSIs) are the second most common healthcare-associated infection, with prevention being a high-priority goal for all healthcare organizations. Although routine surveillance and standardized prevention protocols have long been used, patient engagement is an additional intervention that should be considered and may be beneficial in SSI prevention.; **Objective:** To determine if the development of a standardized patient education discharge plan for management of a surgical site and/or surgical drain would contribute to a reduction in SSI rates in inpatients undergoing colorectal, plastic, or general surgery.; **Methods:** A preintervention/postintervention design was used. Before intervention, patients and surgeons were surveyed regarding various discharge practices related to surgical incision/drain care. The intervention consisted of implementing a standardized discharge plan including standardized education and patient discharge kits. After implementation, patients were surveyed regarding discharge practices. Patient survey responses and SSI rates were compared between the preintervention and postintervention time frames.; **Results:** Rates of SSIs decreased across all three surgical specialties during the project period: colorectal SSIs decreased from 3.2% to 2.7%, plastics from 1.2% to 0.5%, and general from 0.86% to 0.33%. Improvements were also realized in patient survey responses to various aspects of surgical incision/drain care.; **Conclusions:** Patient engagement may be an important strategy to integrate with SSI evidence-based care bundles. Active engagement of surgical patients perioperatively has the potential to improve the patient experience, which ultimately can result in improved healthcare outcomes for this population. (Copyright © 2023 Wolters Kluwer Health, Inc. All rights reserved.)

Access or request full text: https://libkey.io/10.1097/ASW.0000000000000055

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37861664&custid=ns023446

16. Competency assessment tools for infection preventionists: A scoping review

Item Type: Journal Article

Authors: da Silva Felix, Adriana,M.;Pereira, Erica G. and Padoveze, Maria Clara

Publication Date: 2023

Journal: Journal of Infection Prevention 24(6), pp. 259-267

Abstract: Background: Infection prevention competencies are critical for successful job performance, career progression and robust performance of infection prevention and control programs. **Aim/objective:** Identify competency assessment tools available to infection preventionists and describe their characteristics, validation processes and reliability. **Methods:** A scoping review was conducted on five databases and grey literature from 1999 to 2022. A descriptive synthesis approach was undertaken to analyse the data. **Finding/results:** Seven tools that meet the inclusion criteria were identified. Of those, one tool was reviewed twice. All tools were

developed in the United Kingdom, Canada, China and the United States, and were published between 2009 and 2022. All tools use a rating scale; and the most used method to assess competencies was self-assessment. Levels of competency were cited by five tools. Two tools provided information on validation methods and reliability tests for internal consistency. **Discussion:** Few competency assessment tools are available in the literature, and there is a lack of information on their development process. A global effort to develop an assessment tool that allows comparison across countries and cultures can be a step forward to propel infection preventionists' careers and enhance the efficacy of Infection Prevention and Control Programs.

Access or request full text: https://libkey.io/10.1177/17571774231203388

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=173550957&custid=ns023446

17. Guarding the central venous access device: a new solution for an old problem

Item Type: Journal Article

Authors: Doellman, Darcy

Publication Date: 2023

Journal: British Journal of Nursing 32(19), pp. S20-S25

Abstract: HIGHLIGHTS: CLABSIs are a major concern in both the adult and pediatric patient population. Contamination of catheter hubs is a common cause of CLABSI. A novel, transparent line guard protects CVAD hubs from gross contamination. Central line-associated blood stream infections (CLABSIs) are a serious and potentially deadly complication in patients with a central venous access device (CVAD). CVADs play an essential role in modern medicine, serving as lifelines for many patients. To maintain safe and stable venous access, infection prevention bundles are used to help protect patients from complications such as CLABSI. Despite most CLABSIs being preventable, rates have been on the rise, often disproportionately impacting critically ill children. New solutions are needed to strengthen infection prevention bundles and protect CVADs from pathogen entry at catheter hubs and line connections. A novel, Food and Drug Administration–listed device has become available recently to guard CVADs from sources of gross contamination, addressing this apparent gap in infection prevention technology and practice.

Access or request full text: https://libkey.io/10.12968/bjon.2023.32.19.S20

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=173240888&custid=ns023446

18. Using Protein Fingerprinting for Identifying and Discriminating Methicillin Resistant Staphylococcus aureus Isolates from Inpatient and Outpatient Clinics

Item Type: Journal Article

Authors: Elbehiry, Ayman;Marzouk, Eman;Moussa, Ihab;Anagreyyah, Sulaiman;AlGhamdi, Abdulaziz;Alqarni, Ali;Aljohani, Ahmed;Hemeg, Hassan A.;Almuzaini, Abdulaziz M.;Alzaben, Feras;Abalkhail, Adil;Alsubki, Roua A.;Najdi, Ali;Algohani, Nawaf;Abead, Banan;Gazzaz, Bassam and Abu-Okail, Akram

Publication Date: 2023

Journal: Diagnostics (Basel, Switzerland) 13(17)

Abstract: In hospitals and other clinical settings, Methicillin-resistant Staphylococcus aureus (MRSA) is a particularly dangerous pathogen that can cause serious or even fatal infections. Thus, the detection and differentiation of MRSA has become an urgent matter in order to provide appropriate treatment and timely intervention in infection control. To ensure this, laboratories must have access to the most up-to-date testing methods and technology available. This study was conducted to determine whether protein fingerprinting technology could be used to identify and distinguish MRSA recovered from both inpatients and outpatients. A total of 326 S. aureus isolates were obtained from 2800 in- and outpatient samples collected from King Faisal Specialist Hospital and Research Centre in Riyadh, Saudi Arabia, from October 2018 to March 2021. For the phenotypic identification of 326 probable S. aureus cultures, microscopic analysis, Gram staining, a tube coagulase test, a Staph ID 32 API system, and a Vitek 2 Compact system were used. Matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS), referred to as protein fingerprinting, was performed on each bacterial isolate to determine its proteomic composition. As part of the analysis, Principal Component Analysis (PCA) and a single-peak analysis of MALDI-TOF MS software were also used to distinguish between Methicillin-sensitive Staphylococcus aureus (MSSA) and MRSA. According to the results, S. aureus isolates constituted 326 out of 2800 (11.64%) based on the culture technique. The Staph ID 32 API system and Vitek 2 Compact System were able to correctly identify 262 (80.7%) and 281 (86.2%) S. aureus strains, respectively. Based on the Oxacillin Disc Diffusion Method, 197 (62.23%) of 326 isolates of S. aureus exhibited a cefoxitin inhibition zone of less than 21 mm and an oxacillin inhibition zone of less than 10 mm, and were classified as MRSA under Clinical Laboratory Standards Institute guidelines. MALDI-TOF MS was able to correctly identify 100% of all S. aureus isolates with a score value equal to or greater than 2.00. In addition, a close relationship was found between S. aureus isolates and higher peak intensities in the mass ranges of 3990 Da, 4120 Da, and 5850 Da, which were found in MRSA isolates but absent in MSSA isolates. Therefore, protein fingerprinting has the potential to be used in clinical settings to rapidly detect and differentiate MRSA isolates, allowing for more targeted treatments and improved patient outcomes.

Access or request full text: https://libkey.io/10.3390/diagnostics13172825

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37685363&custid=ns023446

19. Waterless bathing for inpatients with neurological issues and complex needs

Item Type: Journal Article

Authors: Evans, Helen

Publication Date: 2023

Journal: British Journal of Nursing (Mark Allen Publishing) 32(22), pp. 1092-1097

Abstract: Waterless bathing techniques can enhance the care of patients with neurological difficulties. Traditional methods can be uncomfortable and time consuming. Hospital-acquired infections in the NHS are a significant concern because of both financial burdens and antibiotic resistance, and preventing them is paramount. Conti TM waterless bathing products help reduce infection risks, save time and improve the patient experience. Four case studies illustrate the application of these techniques in a specialist hospital for people with complex and serious neurological conditions, demonstrating their practicality and efficacy as well as improvements in patient care and infection control within healthcare facilities.

Access or request full text: https://libkey.io/10.12968/bjon.2023.32.22.1092

20. A qualitative process evaluation using the behaviour change wheel approach: Did a whole genome sequence report form (SRF) used to reduce nosocomial SARS-CoV-2 within UK hospitals operate as anticipated?

Item Type: Journal Article

Authors: Flowers, Paul;Leiser, Ruth;Mapp, Fiona;McLeod, Julie;Stirrup, Oliver;Illingworth, Christopher J. R.;Blackstone, James and Breuer, Judith

Publication Date: 2023

Journal: British Journal of Health Psychology 28(4), pp. 1011-1035

Abstract: Purpose: The aim of this study was to conduct a process evaluation of a whole-genome sequence report form (SRF) used to reduce nosocomial SARS-CoV-2 through changing infection prevention and control (IPC) behaviours within the COVID-19 pandemic.; **Methods:** We used a three-staged design. Firstly, we described and theorized the purported content of the SRF using the behaviour change wheel (BCW). Secondly, we used inductive thematic analysis of one-to-one interviews (n = 39) to explore contextual accounts of using the SRF. Thirdly, further deductive analysis gauged support for the intervention working as earlier anticipated.; **Results:** It was possible to theorize the SRF using the BCW approach and visualize it within a simple logic model. Inductive thematic analyses identified the SRF's acceptability, ease of use and perceived effectiveness. However, major challenges to embedding it in routine practice during the unfolding COVID-19 crisis were reported. Notwithstanding this insight, deductive analysis showed support for the putative intervention functions 'Education', 'Persuasion' and 'Enablement'; behaviour change techniques '1.2 Problem solving', '2.6 Biofeedback', '2.7 Feedback on outcomes of behaviour' and '7.1 Prompts and cues'; and theoretical domains framework domains 'Knowledge' and 'Behavioural regulation'.; **Conclusions:** Our process evaluation of the SRF, using the BCW approach to describe and theorize its content, provided granular support for the SRF working to change IPC behaviours as anticipated. However, our complementary inductive thematic analysis highlighted the importance of the local context in constraining its routine use. For SRFs to reach their full potential in reducing nosocomial infections, further implementation research is needed. (© 2023 The Authors. British Journal of Health Psychology published by John Wiley & Sons Ltd on behalf of British Psychological Society.)

Access or request full text: https://libkey.io/10.1111/bjhp.12666

21. Economic and health impact modelling of a whole genome sequencing-led intervention strategy for bacterial healthcare-associated infections for England and for the USA

Item Type: Journal Article

Authors: Fox, John M.;Saunders, Nigel J. and Jerwood, Susie H.

Publication Date: 2023

Journal: Microbial Genomics 9(8)

Abstract: Bacterial healthcare-associated infections (HAIs) are a substantial source of global morbidity and mortality. The estimated cost associated with HAIs ranges from $35 to $45 billion in the USA alone. The costs and accessibility of whole genome sequencing (WGS) of bacteria and the lack of sufficiently accurate, high-resolution, scalable and accessible analysis for strain identification are being addressed. Thus, it is timely to determine the economic viability and impact of routine diagnostic bacterial genomics. The aim of this study was to model the economic impact of a WGS surveillance system that proactively detects and directs interventions for nosocomial infections and outbreaks compared to the current standard of care, without WGS. Using a synthesis of published models, inputs from national statistics, and peer-reviewed articles, the economic impacts of conducting a WGS-led surveillance system addressing the 11 most common nosocomial pathogen groups in England and the USA were modelled. This was followed by a series of sensitivity analyses. England was used to establish the baseline model because of the greater availability of underpinning data, and this was then modified using USA-specific parameters where available. The model for the NHS in England shows bacterial HAIs currently cost the NHS around £3 billion. WGS-based surveillance delivery is predicted to cost £61.1 million associated with the prevention of 74 408 HAIs and 1257 deaths. The net cost saving was £478.3 million, of which £65.8 million were from directly incurred savings (antibiotics, consumables, etc.) and £412.5 million from opportunity cost savings due to re-allocation of hospital beds and healthcare professionals. The USA model indicates that the bacterial HAI care baseline costs are around $18.3 billion. WGS surveillance costs $169.2 million, and resulted in a net saving of ca.$3.2 billion, while preventing 169 260 HAIs and 4862 deaths. From a 'return on investment' perspective, the model predicts a return to the hospitals of £7.83 per £1 invested in diagnostic WGS in the UK, and US$18.74 per $1 in the USA. Sensitivity analyses show that substantial savings are retained when inputs to the model are varied within a wide range of upper and lower limits. Modelling a proactive WGS system addressing HAI pathogens shows significant improvement in morbidity and mortality while simultaneously achieving substantial savings to healthcare facilities that more than offset the cost of implementing diagnostic genomics surveillance.

Access or request full text: https://libkey.io/10.1099/mgen.0.001087

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37555752&custid=ns023446

22. Effectiveness of implementing of an infection control link nurse program to improve compliance with standard precautions and hand hygiene among nurses: a quasi-experimental study

Item Type: Journal Article

Authors: Ghorbanmovahhed, Shamsi;Shahbazi, Shahla;Gilani, Neda;Ostadi, Ali;Shabanloei, Reza and Gholizadeh, Leila

Publication Date: 2023

Journal: BMC Medical Education 23(1), pp. 265

Abstract: Background: Standard precautions (SPs) including hand hygiene are considered fundamental protective measures to manage health care-associated infections (HCAIs) and to reduce occupational health hazards. The purpose of this research was to examine the effectiveness of an infection control link nurse (ICLN) program on compliance with SPs and hand hygiene among nurses.; **Methods:** A quasi-experimental study with a pretest-post-test design was conducted with participating of 154 clinical nurses who worked in different wards of a tertiary referral teaching hospital in Iran. The intervention group (n = 77) had 16 infection control link nurses nominated. The control group (n = 77) received only the standard multimodal approach used in the

hospital. Pre- and post-test assessment of compliance with standard precautions and hand hygiene compliance was performed via the Compliance with Standard Precautions Scale (CSPS) and the World Health Organization observational hand hygiene form. Two independent sample t-tests were used to examine differences between Compliance with Standard Precautions and hand hygiene Compliance among nurses in intervention and control group. Multiple linear regression analysis was used to assess the effect size.; Results: After developing and implementing the infection control link nurse program, no statistically significant improvement was found in the Compliance with Standard Precautions (β = 5.18; 95% CI= -0.3-10.65, p = 0.064). An improvement in hand hygiene compliance was observed among nurses in the intervention group that improved statistically significant from 18.80% before the program to 37.32% 6 months after the program (β = 20.82; 95% CI 16.40-25.25, p < 0.001).; **Conclusions:** Given the continuing level of interest that exists in improving health care workers' hand hygiene practices, the findings of this study provide significant practical implications for hospitals seeking to improve compliance with hand hygiene among nurses, showing the effectiveness of using infection control link nurse program. Further research is needed to assess effectiveness of using infection control link nurse program to improve compliance with standard precautions. (© 2023. The Author(s).)

Access or request full text: https://libkey.io/10.1186/s12909-023-04208-1

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37076871&custid=ns023446

23. Hospital-acquired E. coli bacteraemia at a large UK NHS Trust. A return towards baseline following implementation of a 5-year quality improvement programme

Item Type: Journal Article

Authors: Gopaul, Steven;Dominic, Catherine;Tinhuna, Juliana;Green, James;Watkins, Eleanor and Melzer, Mark

Publication Date: 2023

Journal: Infection Prevention in Practice 5(2), pp. 100280

Abstract: Introduction: Until recently, healthcare-associated E. coli bacteraemia was a neglected area of infection prevention and control (IPC), despite a 30-day mortality of 15-20%. Recently, the UK Department of Health (DH) introduced a target to reduce hospital-acquired E. coli bacteraemias by 50% over a five-year period. Following implementation of multifaceted and multidisciplinary interventions, the aim of this study was to determine its impact on achieving this target.; **Methods:** From April 2017 to March 2022, consecutive hospital-acquired E. coli bacteraemic inpatients within Barts Health NHS Trust were prospectively studied. Using quality improvement methodology, and implementing the plan, do, study, act (PDSA) cycle at each stage, antibiotic prophylaxis for high-risk procedures were modified and 'good practice' interventions around medical devices introduced. Characteristics of bacteraemic patients were analysed and trends in bacteraemic episodes recorded. Statistical analysis was undertaken in Stata SE (version 16).; **Results:** There were 770 patients and 797 episodes of hospital-acquired E. coli bacteraemias. Following a baseline of 134 episodes in 2017-18, this peaked at 194 in 2019-20 before dropping to 157 in 2020-21 and 159 in 2021-22. Most hospital-acquired E. coli bacteraemias occurred in those aged > 50, 551 (69.1%), with the highest proportion occurring in those age > 70, 292 (36.6%). Hospital-acquired E. coli bacteraemia occurred more commonly between October to December.Most episodes occurred in either medicine or care of the elderly patients, 345 (43.3%), specialist surgery, 141 (17.7%), haematology/oncology, 127 (15.9%) and patients requiring critical care, 108 (13.6%). The urinary tract, 336 (42.2%), both catheter and non-catheter associated, was the commonest sites of infection. 175 (22.0%) of E. coli bacteraemic isolates were extended spectrum beta lactamase (ESB) producing. Co-amoxiclav resistance was 315 (39.5%), ciprofloxacin resistance 246 (30.9%) and gentamicin resistance 123 (15.4%). At 7 days, 77 patients (9.7%; 95% CI 7.4-12.2%) died and by 30 days this had risen to 129 (16.2%; 95%

CI 13.7-19.9%).; **Conclusion:** Despite implementation of quality improvement (QI) interventions, it was not possible to achieve a 50% reduction from baseline although an 18% reduction was achieved from 2019-20 onwards. Our work highlights the importance of antimicrobial prophylaxis and medical device 'good practice'. Over time, these interventions, if properly implemented, could further reduce healthcare-associated E. coli bacteraemic infection. (© 2023 The Authors.)

Access or request full text: https://libkey.io/10.1016/j.infpip.2023.100280

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37095752&custid=ns023446

24. Taking a novel approach to educating staff on infection prevention

Item Type: Journal Article

Authors: Griffiths, Amy and Fitzgibbon, Pasqua

Publication Date: 2023

Journal: British Journal of Nursing 32(11), pp. 500-501

Abstract: Amy Griffiths and Pasqua Fitzgibbon, Harm Free Care Nurse Specialists, Newcastle upon Tyne Hospitals NHS Foundation Trust (amy.griffiths15@nhs.net), achieved a Bronze award in the Infection Prevention Nurse of the Year category of the BJN Awards 2023

Access or request full text: https://libkey.io/10.12968/bjon.2023.32.11.500

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=164183288&custid=ns023446

25. Incidence of infant Gram-negative invasive bacterial infections in England, 2011-2019: an observational study using population-wide surveillance data

Item Type: Journal Article

Authors: Hallmaier-Wacker, Luisa;Andrews, Amelia;Hope, Russell;Demirjian, Alicia;Lamagni, Theresa L. and Collin, Simon M.

Publication Date: 2023

Journal: Archives of Disease in Childhood 108(9), pp. 762-767

Abstract: Objective: Invasive bacterial infections account for an estimated 15% of infant deaths worldwide. We aimed to estimate the incidence and trends in invasive bacterial infections in infants caused by Gram-negative pathogens in England during 2011-2019.; **Methods:** Laboratory-confirmed invasive bacterial infections in infants (<1 year old) were identified in the UK Health Security Agency national laboratory surveillance data from April 2011 to March 2019. Polymicrobial infections were defined as two or more bacterial species from the same normally sterile sample site. Early-onset infections were defined as <7 days from birth and late-onset as ≥7 days (neonates 7-28 days; infants ≥29 days). Trend analyses were carried out using Poisson (for episodes/incidence) and beta (for proportions) regression.; **Results:** The annual incidence of invasive bacterial

infections increased by 35.9%, from 189.8 to 258.0 cases per 100 000 live births (p<0.001). Late-onset infections in both neonates and infants increased substantially over the study period (p<0.001), whereas early-onset infections increased slightly (p=0.002). Escherichia coli was the most common Gram-negative pathogen isolated and accounted for 27.2% of the overall rise in Gram-negative infant disease incidence. Polymicrobial infections almost doubled, increasing from 29.2 to 57.7 per 100 000 live births (p<0.001), and mostly involved two species (81.3%, 1604/1974 episodes).; **Conclusions:** The incidence of Gram-negative invasive bacterial infections in infants increased between 2011/2012 and 2018/2019 in England, driven mainly by an increase in late-onset infections. Further work is required to elucidate the risk factors and drivers of this increased incidence so that opportunities for prevention can be identified.; Competing Interests: Competing interests: None declared. (© Author(s) (or their employer(s)) 2023. No commercial re-use. See rights and permissions. Published by BMJ.)

Access or request full text: https://libkey.io/10.1136/archdischild-2023-325569

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37280043&custid=ns023446

26. Infant isolation and cohorting for preventing or reducing transmission of healthcare-associated infections in neonatal units

Item Type: Journal Article

Authors: Hanna, Morcos;Shah, Rita;Marquez, Lucila;Barzegar, Rebecca;Gordon, Adrienne and Pammi, Mohan

Publication Date: 2023

Journal: The Cochrane Database of Systematic Reviews 6, pp. CD012458

Abstract: Background: Neonatal healthcare-associated infections (HAIs) result in increased morbidity and mortality, as well as increased healthcare costs. Patient isolation measures, i.e. single-room isolation or the cohorting of patients with similar infections, remain a recommended and commonly used practice for preventing horizontal spread of infections in the neonatal intensive care unit (NICU). **OBJECTIVES:** Our primary objective was to assess the effect of single-room isolation or cohorting, or both for preventing transmission of HAIs or colonization with HAI-causing pathogens in newborn infants less than six months of age admitted to the neonatal intensive care unit (NICU). Our secondary objective was to assess the effect of single-room isolation or cohorting, or both on neonatal mortality and perceived or documented adverse effects in newborn infants admitted to the NICU. **SEARCH METHODS**: We searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, CINAHL, the WHO ICTRP and ClinicalTrials.gov trials registries. There were no restrictions to date, language or publication type. We also checked the reference lists of studies identified for full-text review. **SELECTION CRITERIA**: **Types of studies:** cluster-randomized or quasi-randomized trials at the level of the cluster (where clusters may be defined by NICU, hospital, ward, or other subunits of the hospital). We also included cross-over trials with a washout period of more than four months (arbitrarily defined).; **Types of Participants:** newborn infants less than six months of age in neonatal units that implemented patient isolation or cohorting as infection control measures to prevent HAIs. Types of interventions: patient isolation measures (single-room isolation or cohorting, or both of infants with similar colonization or infections) compared to routine isolation measures.; **Types of Outcome Measures:** the primary outcome was the rate of transmission of HAIs as estimated by the infection and colonization rates in the NICU. Secondary outcomes included all-cause mortality during hospital stay at 28 days of age, length of hospital stay, as well as potential adverse effects of isolation or cohorting measures, or both.; Data Collection and Analysis: The standard methods of Cochrane Neonatal were used to identify studies and assess the methodological quality of eligible cluster-randomized trials. The certainty of the evidence was to be assessed by the GRADE method as evidence of high, moderate, low, or very low certainty. Infection and colonization rates were to be expressed as rate

ratios for each trial and if appropriate for meta-analysis, the generic inverse variance method in RevMan was to be used.; **Main Results:** We did not identify any published or ongoing trials to include in the review.; Authors' **Conclusions:** The review found no evidence from randomized trials to either support or refute the use of patient isolation measures (single-room isolation or cohorting) in neonates with HAIs. Risks secondary to infection control measures need to be balanced against the benefits of decreasing horizontal transmission in the neonatal unit for optimal neonatal outcomes. There is an urgent need to research the effectiveness of patient isolation measures for preventing the transmission of HAIs in neonatal units. Well-designed trials randomizing clusters of units or hospitals to a type of patient isolation method intervention are warranted. (Copyright © 2023 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.)

Access or request full text: https://libkey.io/10.1002/14651858.CD012458.pub2

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37368649&custid=ns023446

27. Intermittent point prevalence surveys on healthcare-associated infections, 2011 and 2016, in England: what are the surveillance and intervention priorities?

Item Type: Journal Article

Authors: Henderson, K. L.;Saei, A.;Freeman, R.;Johnson, A. P.;Ashiru-Oredope, D.;Gerver, S. M. and Hopkins, S.

Publication Date: 2023

Journal: The Journal of Hospital Infection 140, pp. 24-33

Abstract: Background: Point prevalence surveys are an important surveillance method for determining the burden of healthcare-associated infections (HCAIs).; **Aim:** To outline the key results of two point prevalence surveys in England (2011 and 2016).; **Methods:** All National Health Service and independent sector hospitals in England were eligible to participate. Data were collected between September and November in both 2011 and 2016 based on the protocol and codebook devised by the European Centre for Disease Prevention and Control. Analysis was performed using Stata Version 13 and SAS Version 9.3. A mixed-effects model was applied, which allowed estimation of organization-specific means and accounted for the heterogeneity in the responses from different organizations.; **Findings**: A total of 100,755 case records were included (52,433 in 2011 and 48,312 in 2016). The estimated prevalence of HCAIs was slightly higher in 2016 6.89%, 95% confidence interval (CI) 6.21-7.57%] than in 2011 (6.41%, 95% CI 5.75-7.06%). In both surveys, the prevalence of HCAIs was highest in adult intensive care units (23.1% in 2011, 21.2% in 2016), and pneumonia/lower respiratory tract infections was the most common cause of HCAIs (22.7% in 2011 vs 29.2% in 2016). Inpatients in acute hospitals were older and had higher risk of dying in 2016 compared with 2011; however, the proportion of inpatients with HCAIs or on antibiotics did not differ significantly.; **Conclusion:** The burden of HCAIs in English hospitals increased slightly between 2011 and 2016. However, the proportion of inpatients with HCAIs or on antibiotics did not differ significantly. (Crown Copyright © 2023. Published by Elsevier Ltd. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.jhin.2023.07.015

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37532196&custid=ns023446

28. Hand hygiene practices for prevention of health care-associated infections associated with admitted infectious patients in the emergency department: a systematic review

Item Type: Journal Article

Authors: Issa, M.;Dunne, S. S. and Dunne, C. P.

Publication Date: 2023

Journal: Irish Journal of Medical Science 192(2), pp. 871-899

Abstract: Background: In most high-income countries, emergency departments (ED) represent the principal point of access forcer by critically ill or injured patients. Unlike inpatient units, ED healthcare workers (ED HCWs) have demonstrated relative lack of adherence to hand hygiene (HH) guidelines, commonly citing frequency of intervention and high rates of admission, which reflect severity of cases encountered.; Aim: Assessment of studies on hand hygiene compliance (HHC) by ED HCWs conducted between 2010 and 2020, seeking to estimate HHC rates and intervention strategies utilised to improve HHC in EDs.; **Methods:** Searches conducted in Web of Science, EBSCO HOST (CINHAL & Medline), PubMed, Embase, and Cochrane for full studies published between 2010 and 2020 on the topic of HHC in the ED.; **Results:** One hundred twenty-nine eligible articles were identified of which 79 were excluded. Fifty-one underwent full-text screening before 20 studies were deemed relevant. Of the eligible studies, fifteen (75%) had, as the primary outcome, HHC according to the WHO-recommended 5-moments. Twelve studies (60%) implemented multimodal or single intervention strategies. Eight studies were ambiguous regarding the nature of the approach adopted. In the nine observational studies where HHC was documented, an overall post-intervention median HHC rate of 45% (range 8-89.7%).; **Conclusion**: Multimodal approaches appear to have enhanced HHC moderately among ED HCWs. Elevated complexity associated with critically ill patients, and ED overcrowding, are contributing factors to relatively low compliance rates observed. Strategies to improve HHC rates may need to acknowledge, and cater for, the context of an unpredictable environment. (© 2022. The Author(s).)

Access or request full text: https://libkey.io/10.1007/s11845-022-03004-y

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=35435564&custid=ns023446

29. Clinical evaluation of an electronic hand hygiene monitoring system

Item Type: Journal Article

Authors: Iversen, Anne-Mette;Hansen, Marco Bo;Kristensen, Brian and Ellermann-Eriksen, Svend

Publication Date: 2023

Journal: American Journal of Infection Control 51(4), pp. 376-379

Abstract: Background: We aimed to test the accuracy of an electronic hand hygiene monitoring system (EHHMS) during daily clinical activities in different wards and with varying health care professions.; **Methods:** The accuracy of an EHHMS (Sani Nudge) was assessed during real clinical conditions by comparing events registered by two observers in parallel with events registered by the EHHMS. The events were categorized as true-positive, false-positive, and false-negative registrations. Sensitivity and positive predictive value (PPV) were calculated.; **Results**: A total of 103 events performed by 25 health care workers (9 doctors, 11 nurses, and 5 cleaning assistants) were included in the analyses. The EHHMS had a sensitivity of 100% and a PPV of 100% when measuring alcohol-based hand rub. When looking at the hand hygiene opportunities of all health care workers combined taking place in the patient rooms and working rooms, the sensitivity was 75% and the PPV

95%. For doctors' and nurses' taking care of patients in their beds the EHHMS had a sensitivity of 100% and a PPV of 94%.; **Conclusions:** The objective accuracy measures demonstrate that this EHHMS can capture hand hygiene behavior under clinical conditions in different settings with clinical health care workers but show less accuracy with cleaning assistants. (Copyright © 2022 The Authors. Published by Elsevier Inc. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.ajic.2022.06.017

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=35732254&custid=ns023446

30. Incidence and Outcomes of Non-Ventilator-Associated Hospital-Acquired Pneumonia in 284 US Hospitals Using Electronic Surveillance Criteria

Item Type: Journal Article

Authors: Jones, Barbara E.;Sarvet, Aaron L.;Ying, Jian;Jin, Robert;Nevers, McKenna R.;Stern, Sarah E.;Ocho, Aileen;McKenna, Caroline;McLean, Laura E.;Christensen, Matthew A.;Poland, Russell E.;Guy, Jeffrey S.;Sands, Kenneth E.;Rhee, Chanu;Young, Jessica G. and Klompas, Michael

Publication Date: 2023

Journal: JAMA Network Open 6(5), pp. e2314185

Abstract: Importance: Non-ventilator-associated hospital-acquired pneumonia (NV-HAP) is a common and deadly hospital-acquired infection. However, inconsistent surveillance methods and unclear estimates of attributable mortality challenge prevention.; **Objective:** To estimate the incidence, variability, outcomes, and population attributable mortality of NV-HAP.; **Design, Setting, and Participants:** This cohort study retrospectively applied clinical surveillance criteria for NV-HAP to electronic health record data from 284 US hospitals. Adult patients admitted to the Veterans Health Administration hospital from 2015 to 2020 and HCA Healthcare hospitals from 2018 to 2020 were included. The medical records of 250 patients who met the surveillance criteria were reviewed for accuracy.; Exposures: NV-HAP, defined as sustained deterioration in oxygenation for 2 or more days in a patient who was not ventilated concurrent with abnormal temperature or white blood cell count, performance of chest imaging, and 3 or more days of new antibiotics.; **Main Outcomes and Measures:** NV-HAP incidence, length-of-stay, and crude inpatient mortality. Attributable inpatient mortality by 60 days follow-up was estimated using inverse probability weighting, accounting for both baseline and time-varying confounding.; **Results:** Among 6 022 185 hospitalizations (median IQR] age, 66 54-75] years; 1 829 475 26.1%] female), there were 32 797 NV-HAP events (0.55 per 100 admissions 95% CI, 0.54-0.55] per 100 admissions and 0.96 per 1000 patient-days 95% CI, 0.95-0.97] per 1000 patient-days). Patients with NV-HAP had multiple comorbidities (median IQR], 6 4-7]), including congestive heart failure (9680 29.5%]), neurologic conditions (8255 25.2%]), chronic lung disease (6439 19.6%]), and cancer (5,467 16.7%]); 24 568 cases (74.9%) occurred outside intensive care units. Crude inpatient mortality was 22.4% (7361 of 32 797) for NV-HAP vs 1.9% (115 530 of 6 022 185) for all hospitalizations; 12 449 (8.0%) were discharged to hospice. Median IQR] length-of-stay was 16 (11-26) days vs 4 (3-6) days. On medical record review, pneumonia was confirmed by reviewers or bedside clinicians in 202 of 250 patients (81%). It was estimated that NV-HAP accounted for 7.3% (95% CI, 7.1%-7.5%) of all hospital deaths (total hospital population inpatient death risk of 1.87% with NV-HAP events included vs 1.73% with NV-HAP events excluded; risk ratio, 0.927; 95% CI, 0.925-0.929).; **Conclusions and Relevance:** In this cohort study, NV-HAP, which was defined using electronic surveillance criteria, was present in approximately 1 in 200 hospitalizations, of whom 1 in 5 died in the hospital. NV-HAP may account for up to 7% of all hospital deaths. These findings underscore the need to systematically monitor NV-HAP, define best practices for prevention, and track their impact.

Access or request full text: https://libkey.io/10.1001/jamanetworkopen.2023.14185

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37200031&custid=ns023446

31. Antibiotic resistant infections and deaths rose in England after pandemic controls ended

Item Type: Journal Article

Authors: Mahase, Elisabeth

Publication Date: 2023

Journal: BMJ (Clinical Research Ed.) 383, pp. 2672

Access or request full text: https://libkey.io/10.1136/bmj.p2672

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37967886&custid=ns023446

32. Barriers and facilitators to infection prevention and control guidelines adherence: an integrative review

Item Type: Journal Article

Authors: McCarthy, Maura;Giltenane, Martina and Doody, Owen

Publication Date: 2023

Journal: British Journal of Midwifery 31(1), pp. 32-42

Abstract: Background/Aims: Midwives play a key role in the prevention and control of infection. The identification of barriers and facilitators to guideline adherence is of paramount importance to improve compliance and ultimately patient care. This review's aim was to explore barriers and facilitators to midwives' infection prevention and control guideline adherence. **Methods:** This integrated review used the Whittemore and Knafl method to conduct a systematic search of eight databases for research carried out between 2015 and 2021. Data were analysed using the Braun and Clarke framework and reported using PRISMA guidelines. **Results:** Four themes were identified: 'compliance is infrastructure and resource dependent', 'recognising and working with what you have', 'midwives' fear and anxiety' and 'culture change: a mammoth challenge'. Midwifery experience of infection prevention and control guidelines adherence is affected by factors such as resource availability, guideline availability, healthcare systems, socioeconomic factors and midwives' personal influences. **Conclusions:** Education for midwives is crucial to improve adherence to infection prevention and control guidance. However, education from a behaviour change standpoint has been shown to be most effective and this should be incorporated into training programmes.

Access or request full text: https://libkey.io/10.12968/bjom.2023.31.1.32

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=160961277&custid=ns023446

33. Interventions to improve knowledge or compliance to hand hygiene in nursing students: A scoping review

Item Type: Journal Article

Authors: Meza Sierra, Charbell Ungido;Perez Jaimes, Giovanny Andres and Rueda Díaz, Leidy Johanna

Publication Date: 2023

Journal: Journal of Infection Prevention 24(1), pp. 30-44

Abstract: Background: During their training process, nursing students carry out internships in different care settings, which implies direct contact with more than one patient simultaneously. Their hands represent a vehicle for transmitting pathogens that cause healthcare-related infections. Various interventions have been proposed to improve nursing students' knowledge or compliance to hand hygiene. However, the information on these interventions is scattered in the literature. **Objectives:** This study was conducted to identify and describe the interventions to improve knowledge or compliance to hand hygiene in nursing students evaluated in the scientific literature. **Methods:** The scoping review methodology guided by the Joanna Briggs Institute (JBI) was adopted. Screening and data extraction were performed by two reviewers using templates developed by the authors. **Results:** Thirteen studies were included. Education and training were highlighted as the central core components for interventions. The duration ranged from 15 min to 1 week. The number of sessions varied between one to three sessions. The content was based mainly on the recommendations of the World Health Organization and the Centers for Disease Control and Prevention (CDC). **Conclusions:** There is a limited body of interventions to improve knowledge or compliance to the hand hygiene technique in nursing students. Education and training were highlighted as the central core components for interventions. New primary studies are needed and should include a description in detail of the characteristics of the interventions.

Access or request full text: https://libkey.io/10.1177/17571774221127696

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=161227826&custid=ns023446

34. Detection, survival, and persistence of Staphylococcus capitis NRCS-A in neonatal units in England

Item Type: Journal Article

Authors: Moore, G.;Barry, A.;Carter, J.;Ready, J.;Wan, Y.;Elsayed, M.;Haill, C.;Khashu, M.;Williams, O. M.;Brown, C. S.;Demirjian, A. and Ready, D.

Publication Date: 2023

Journal: The Journal of Hospital Infection 140, pp. 8-14

Abstract: Background: The multidrug-resistant Staphylococcus capitis clone, NRCS-A, is increasingly associated with late-onset sepsis in low birthweight newborns in neonatal intensive care units (NICUs) in England and globally. Understanding where this bacterium survives and persists within the NICU environment is key to developing and implementing effective control measures.; **Aim:** To investigate the potential for S. capitis to colonize surfaces within NICUs.; **Methods:** Surface swabs were collected from four NICUs with and without known NRCS-A colonizations/infections present at the time of sampling. Samples were cultured and S. capitis isolates analysed via whole-genome sequencing. Survival of NRCS-A on plastic surfaces was assessed over time

and compared to that of non-NRCS-A isolates. The bactericidal activity of commonly used chemical disinfectants against S. capitis was assessed.; Findings: Of 173 surfaces sampled, 40 (21.1%) harboured S. capitis with 30 isolates (75%) being NRCS-A. Whereas S. capitis was recovered from surfaces across the NICU, the NRCS-A clone was rarely recovered from outside the immediate neonatal bedspace. Incubators and other bedside equipment were contaminated with NRCS-A regardless of clinical case detection. In the absence of cleaning, S. capitis was able to survive for three days with minimal losses in viability (<0.5 log 10 reduction). Sodium troclosene and a QAC-based detergent/disinfectant reduced S. capitis to below detectable levels.; **Conclusion:** S. capitis NRCS-A can be readily recovered from the NICU environment, even in units with no recent reported clinical cases of S. capitis infection, highlighting a need for appropriate national guidance on cleaning within the neonatal care environment. (Crown Copyright © 2023. Published by Elsevier Ltd. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.jhin.2023.06.030

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37487793&custid=ns023446

35. Ensuring effective infection prevention and control in the community

Item Type: Journal Article

Authors: Murphy, Kevin

Publication Date: 2023

Journal: Nursing Standard 38(5), pp. 62-67

Abstract: Why you should read this article: • To be aware of the infection prevention and control challenges that nurses may encounter in the community • To consider infection prevention and control measures that you could implement in your practice • To recognise the importance of using an aseptic technique when undertaking certain procedures Managing community-acquired infections remains an ongoing challenge for community nursing teams. The coronavirus disease 2019 (COVID-19) pandemic meant that community nurses had to ensure they were using evidence-based infection prevention and control measures to limit the effects of the pandemic and maintain patient safety. Community environments can be unpredictable, and compared with acute settings nurses will often lack the appropriate resources when visiting patients in their homes or in residential care. This article outlines effective infection prevention and control measures that nurses can implement in the community, such as the appropriate use of personal protective equipment, optimal hand hygiene, safe waste management and adherence to an aseptic technique.

Access or request full text: https://libkey.io/10.7748/ns.2023.e12158

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=163464062&custid=ns023446

36. Using photon disinfection technologies for reducing bioburden in hospitals

Item Type: Journal Article

Authors: Nazeer, Mohamed Niroz Mohamed and Aholaakko, Teija-Kaisa

Publication Date: 2023

Journal: British Journal of Nursing 32(17), pp. 818-1

Abstract: Background: Environmental cleaning and disinfection is the basis of the prevention of healthcare-acquired infections (HAIs). **Aim:** This study aimed to describe photon disinfection technologies (PDTs), report their impact on inactivating micro-organisms and preventing HAIs and to create recommendations for their implementation in hospital settings. **Methods:** An integrated literature review was completed to evaluate and report the impact of PDTs in hospital settings. The quality of 23 articles were assessed, their contents analysed and results reported according to the PICOT model. **Findings:** The microbiological impact of the PDT varied by micro-organism, settings and according to the used devices. It was crucial that environmental cleaning was completed before the disinfection. **Conclusion:** The implementation of PDT in the hospital setting requires inquiry from the viewpoints of microbiological, environmental, occupational, technical and human safety. To enhance the safe implementation of PDTs, the construction and use of evidence-based global standards for PDT are crucial.

Access or request full text: https://libkey.io/10.12968/bjon.2023.32.17.818

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=172318484&custid=ns023446

37. Potential sources of contamination on textiles and hard surfaces identified as high-touch sites near the patient environment

Item Type: Journal Article

Authors: Nygren, Erik;Gonzales Strömberg, Lucia;Logenius, Jenny;Husmark, Ulrika;Löfström, Charlotta and Bergström, Birgitta

Publication Date: 2023

Journal: PloS One 18(7), pp. e0287855

Abstract: The hospital environment represents an important mediator for the transmission of healthcare-associated infections through direct and indirect hand contact with hard surfaces and textiles. In this study, bacteria on high-touch sites, including textiles and hard surfaces in two care wards in Sweden, were identified using microbiological culture methods and 16S rDNA sequencing. During a cross-sectional study, 176 high-touch hard surfaces and textiles were identified and further analysed using microbiological culture for quantification of total aerobic bacteria, Staphylococcus aureus, Clostridium difficile and Enterobacteriacae. The bacterial population structures were further analysed in 26 samples using 16S rDNA sequencing. The study showed a higher frequency of unique direct hand-textile contacts (36 per hour), compared to hard surfaces (2.2 per hour). Hard surfaces met the recommended standard of ≤ 5 CFU/cm2 for aerobic bacteria and ≤ 1 CFU/cm2 for S. aureus (53% and 35%, respectively) to a higher extent compared to textiles (19% and 30%, respectively) (P = 0.0488). The number of bacterial genera was higher on textiles than on the hard surfaces. Staphylococcus (30.4%) and Corynebacterium (10.9%) were the most representative genera for textiles and Streptococcus (13.3%) for hard surfaces. The fact that a big percentage of the textiles did not fulfil the criteria for cleanliness, combined with the higher bacterial diversity, compared to hard surfaces, are indicators that textiles were bacterial reservoirs and potential risk vectors for bacterial transmission. However, since most of the bacteria found in the study belonged to the normal flora, it was not possible to draw conclusions of textiles and hard surfaces as sources of healthcare associated infections.; Competing Interests: The authors have declared that no competing interests exist. (Copyright: © 2023 Nygren et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and

Access or request full text: https://libkey.io/10.1371/journal.pone.0287855

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37418451&custid=ns023446

38. Clostridioides difficile infection surveillance in intensive care units and oncology wards using machine learning

Item Type: Journal Article

Authors: Ötleş, Erkin;Balczewski, Emily A.;Keidan, Micah;Oh, Jeeheh;Patel, Alieysa;Young, Vincent B.;Rao, Krishna and Wiens, Jenna

Publication Date: 2023

Journal: Infection Control and Hospital Epidemiology 44(11), pp. 1776-1781

Abstract: Objective: Screening individuals admitted to the hospital for Clostridioides difficile presents opportunities to limit transmission and hospital-onset C. difficile infection (HO-CDI). However, detection from rectal swabs is resource intensive. In contrast, machine learning (ML) models may accurately assess patient risk without significant resource usage. In this study, we compared the effectiveness of swab surveillance to daily risk estimates produced by an ML model to identify patients who will likely develop HO-CDI in the intensive care unit (ICU) setting.; **Design:** A prospective cohort study was conducted with patient carriage of toxigenic C. difficile identified by rectal swabs analyzed by anaerobic culture and polymerase chain reaction (PCR). A previously validated ML model using electronic health record data generated daily risk of HO-CDI for every patient. Swab results and risk predictions were compared to the eventual HO-CDI status.; **Patients:** Adult inpatient admissions taking place in University of Michigan Hospitals' medical and surgical intensive care units and oncology wards between June 6th and October 8th, 2020.; Results: In total, 2,979 admissions, representing 2,044 patients, were observed over the course of the study period, with 39 admissions developing HO-CDIs. Swab surveillance identified 9 true-positive and 87 false-positive HO-CDIs. The ML model identified 9 true-positive and 226 false-positive HO-CDIs; 8 of the true-positives identified by the model differed from those identified by the swab surveillance.; **Conclusion:** With limited resources, an ML model identified the same number of HO-CDI admissions as swab-based surveillance, though it generated more false-positives. The patients identified by the ML model were not yet colonized with C. difficile . Additionally, the ML model identifies at-risk admissions before disease onset, providing opportunities for prevention.

Access or request full text: https://libkey.io/10.1017/ice.2023.54

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37088695&custid=ns023446

39. Evaluating the cost implications of integrating SARS-CoV-2 genome sequencing for infection prevention and control investigation of nosocomial transmission within hospitals

Item Type: Journal Article

Authors: Panca, M.;Blackstone, J.;Stirrup, O.;Cutino-Moguel, M.;Thomson, E.;Peters, C.;Snell, L. B.;Nebbia, G.;Holmes, A.;Chawla, A.;Machin, N.;Taha, Y.;Mahungu, T.;Saluja, T.;de Silva, T. I.;Saeed, K.;Pope, C.;Shin, G.

Y.;Williams, R.;Darby, A., et al

Publication Date: 2023

Journal: The Journal of Hospital Infection 139, pp. 23-32

Abstract: Background: The COG-UK hospital-onset COVID-19 infection (HOCI) trial evaluated the impact of SARS-CoV-2 whole-genome sequencing (WGS) on acute infection, prevention, and control (IPC) investigation of nosocomial transmission within hospitals.; **Aim:** To estimate the cost implications of using the information from the sequencing reporting tool (SRT), used to determine likelihood of nosocomial infection in IPC practice.; **Methods:** A micro-costing approach for SARS-CoV-2 WGS was conducted. Data on IPC management resource use and costs were collected from interviews with IPC teams from 14 participating sites and used to assign cost estimates for IPC activities as collected in the trial. Activities included IPC-specific actions following a suspicion of healthcare-associated infection (HAI) or outbreak, as well as changes to practice following the return of data via SRT.; **Findings:** The mean per-sample costs of SARS-CoV-2 sequencing were estimated at £77.10 for rapid and £66.94 for longer turnaround phases. Over the three-month interventional phases, the total management costs of IPC-defined HAIs and outbreak events across the sites were estimated at £225,070 and £416,447, respectively. The main cost drivers were bed-days lost due to ward closures because of outbreaks, followed by outbreak meetings and bed-days lost due to cohorting contacts. Actioning SRTs, the cost of HAIs increased by £5,178 due to unidentified cases and the cost of outbreaks decreased by £11,246 as SRTs excluded hospital outbreaks.; **Conclusion:** Although SARS-CoV-2 WGS adds to the total IPC management cost, additional information provided could balance out the additional cost, depending on identified design improvements and effective deployment. (Copyright © 2023 The Authors. Published by Elsevier Ltd.. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.jhin.2023.06.005

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37308063&custid=ns023446

40. Selective digestive tract decontamination to prevent healthcare associated infections in critically ill children: the PICNIC multicentre randomised pilot clinical trial

Item Type: Journal Article

Authors: Pathan, Nazima;Woolfall, Kerry;Popa, Mariana;de la Fuente, Gema Milla;Ferrando-Vivas, Paloma;Brown, Alanna;Gouliouris, Theodore;Tume, Lyvonne N.;Shulman, Robert;Cuthbertson, Brian H.;Sale, Isobel;Feltbower, Richard G.;Myburgh, John;Pappachan, John;Harrison, David;Mouncey, Paul and Rowan, Kathryn

Publication Date: 2023

Journal: Scientific Reports 13(1), pp. 21668

Abstract: Healthcare-associated infections (HCAIs) are a major cause of morbidity and mortality in critically ill children. Data from adult studies suggest Selective Decontamination of the Digestive tract (SDD) may reduce the incidence of HCAIs and improve survival. There are no data from randomised clinical trials in the paediatric setting. An open label, parallel group pilot cRCT and mixed-methods perspectives study was conducted in six paediatric intensive care units (PICUs) in England. Participants were children (> 37 weeks corrected gestational age, up to 16 years) requiring mechanical ventilation expected to last for at least 48 h. Sites undertook standard care for a period of 9 weeks and were randomised into 3 sites which continued standard care and 3 where SDD was incorporated into infection control practice for eligible children. Interviews and focus groups were

conducted for parents and staff working in PICU. 434 children fulfilled eligibility criteria, of whom 368 (85%) were enrolled. This included 207 in the baseline phase (Period One) and 161 in the intervention period (Period Two). In sites delivering SDD, the majority (98%) of children received at least one dose of SDD and of these, 68% commenced within the first 6 h. Whilst admission swabs were collected in 91% of enrolled children, consent for the collection of additional swabs was low (44%). Recruited children were representative of the wider PICU population. Overall, 3.6 children/site/week were recruited compared with the potential recruitment rate for a definitive cRCT of 3 children/site/week, based on data from all UK PICUs. Parents (n = 65) and staff (n = 44) were supportive of the aims of the study, suggesting adaptations for a larger definitive trial including formulation and administration of SDD paste, approaches to consent and ecology monitoring. Stakeholders identified preferred clinical outcomes, focusing on complications of critical illness and quality-of-life. A definitive cRCT in SDD to prevent HCAIs in critically ill children is feasible but should include adaptations to ecology monitoring along with the dosing schedule and packaging into a paediatric specific format. A definitive study is supported by the findings with adaptations to ecology monitoring and SDD administration.Trial Registration: ISRCTN40310490 Registered 30/10/2020. (© 2023. The Author(s).)

Access or request full text: https://libkey.io/10.1038/s41598-023-46232-7

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=38066012&custid=ns023446

41. New frontiers in healthcare environmental hygiene: thoughts from the 2022 healthcare cleaning forum

Item Type: Journal Article

Authors: Peters, Alexandra;Parneix, Pierre;Kiernan, Martin;Severin, Juliëtte A.;Gauci, Tracey and Pittet, Didier

Publication Date: 2023

Journal: Antimicrobial Resistance and Infection Control 12(1), pp. 7

Abstract: Healthcare environmental hygiene (HEH) has become recognized as being increasingly important for patient safety and the prevention of healthcare-associated infections. At the 2022 Healthcare Cleaning Forum at Interclean in Amsterdam, the academic lectures focused on a series of main areas of interest. These areas are indicative of some of the main trends and avenues for research in the coming years. Both industry and academia need to take steps to continue the momentum of HEH as we transition out of the acute phase of the Covid-19 pandemic. There is a need for new ways to facilitate collaboration between the academic and private sectors. The Clean Hospitals® network was presented in the context of the need for both cross-disciplinarity and evidence-based interventions in HEH. Governmental bodies have also become more involved in the field, and both the German DIN 13603 standard and the UK NHS Cleaning Standards were analyzed and compared. The challenge of environmental pathogens was explored through the example of how P. aeruginosa persists in the healthcare environment. New innovations in HEH were presented, from digitalization to tracking, and automated disinfection to antimicrobial surfaces. The need for sustainability in HEH was also explored, focusing on the burden of waste, the need for a circular economy, and trends towards increasingly local provision of goods and services. The continued focus on and expansion of these areas of HEH will result in safer patient care and contribute to better health systems. (© 2023. The Author(s).)

Access or request full text: https://libkey.io/10.1186/s13756-022-01185-w

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=36750872&custid=ns

42. Model-based evaluation of admission screening strategies for the detection and control of carbapenemase-producing Enterobacterales in the English hospital setting

Item Type: Journal Article

Authors: Pople, Diane;Kypraios, Theodore;Donker, Tjibbe;Stoesser, Nicole;Seale, Anna C.;George, Ryan;Dodgson, Andrew;Freeman, Rachel;Hope, Russell;Walker, Ann Sarah;Hopkins, Susan and Robotham, Julie

Publication Date: 2023

Journal: BMC Medicine 21(1), pp. 492

Abstract: Background: Globally, detections of carbapenemase-producing Enterobacterales (CPE) colonisations and infections are increasing. The spread of these highly resistant bacteria poses a serious threat to public health. However, understanding of CPE transmission and evidence on effectiveness of control measures is severely lacking. This paper provides evidence to inform effective admission screening protocols, which could be important in controlling nosocomial CPE transmission.; **Methods:** CPE transmission within an English hospital setting was simulated with a data-driven individual-based mathematical model. This model was used to evaluate the ability of the 2016 England CPE screening recommendations, and of potential alternative protocols, to identify patients with CPE-colonisation on admission (including those colonised during previous stays or from elsewhere). The model included nosocomial transmission from colonised and infected patients, as well as environmental contamination. Model parameters were estimated using primary data where possible, including estimation of transmission using detailed epidemiological data within a Bayesian framework. Separate models were parameterised to represent hospitals in English areas with low and high CPE risk (based on prevalence).; **Results:** The proportion of truly colonised admissions which met the 2016 screening criteria was 43% in low-prevalence and 54% in high-prevalence areas respectively. Selection of CPE carriers for screening was improved in low-prevalence areas by adding readmission as a screening criterion, which doubled how many colonised admissions were selected. A minority of CPE carriers were confirmed as CPE positive during their hospital stay (10 and 14% in low- and high-prevalence areas); switching to a faster screening test pathway with a single-swab test (rather than three swab regimen) increased the overall positive predictive value with negligible reduction in negative predictive value.; **Conclusions:** Using a novel within-hospital CPE transmission model, this study assesses CPE admission screening protocols, across the range of CPE prevalence observed in England. It identifies protocol changes-adding readmissions to screening criteria and a single-swab test pathway-which could detect similar numbers of CPE carriers (or twice as many in low CPE prevalence areas), but faster, and hence with lower demand on pre-emptive infection-control resources. Study findings can inform interventions to control this emerging threat, although further work is required to understand within-hospital transmission sources. (© 2023. Crown.)

Access or request full text: https://libkey.io/10.1186/s12916-023-03007-1

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=38087343&custid=ns023446

43. Global prevalence of nosocomial infection: A systematic review and meta-analysis

Item Type: Journal Article

Authors: Raoofi, Samira;Pashazadeh Kan, Fatemeh;Rafiei, Sima;Hosseinipalangi, Zahra;Noorani Mejareh,

Zahra;Khani, Saghar;Abdollahi, Bahare;Seyghalani Talab, Fatemeh;Sanaei, Mohaddeseh;Zarabi, Farnaz;Dolati, Yasamin;Ahmadi, Niloofar;Raoofi, Neda;Sarhadi, Yasamin;Masoumi, Maryam;Sadat Hosseini, Batool;Vali, Negin;Gholamali, Negin;Asadi, Saba;Ahmadi, Saba, et al

Publication Date: 2023

Journal: PloS One 18(1), pp. e0274248

Abstract: Objectives: Hospital-acquired infections (HAIs) are significant problems as public health issues which need attention. Such infections are significant problems for society and healthcare organizations. This study aimed to carry out a systematic review and a meta-analysis to analyze the prevalence of HAIs globally.; **Methods:** We conducted a comprehensive search of electronic databases including EMBASE, Scopus, PubMed and Web of Science between 2000 and June 2021. We found 7031 articles. After removing the duplicates, 5430 studies were screened based on the titles/ abstracts. Then, we systematically evaluated the full texts of the 1909 remaining studies and selected 400 records with 29,159,630 participants for meta-analysis. Random-effects model was used for the analysis, and heterogeneity analysis and publication bias test were conducted.; **Results:** The rate of universal HAIs was 0.14 percent. The rate of HAIs is increasing by 0.06 percent annually. The highest rate of HAIs was in the AFR, while the lowest prevalence were in AMR and WPR. Besides, AFR prevalence in central Africa is higher than in other parts of the world by 0.27 (95% CI, 0.22-0.34). Besides, E. coli infected patients more than other micro-organisms such as Coagulase-negative staphylococci, Staphylococcus spp. and Pseudomonas aeruginosa. In hospital wards, Transplant, and Neonatal wards and ICU had the highest rates. The prevalence of HAIs was higher in men than in women.; **Conclusion:** We identified several essential details about the rate of HAIs in various parts of the world. The HAIs rate and the most common micro-organism were different in various contexts. However, several essential gaps were also identified. The study findings can help hospital managers and health policy makers identify the reason for HAIs and apply effective control programs to implement different plans to reduce the HAIs rate and the financial costs of such infections and save resources.; **Competing Interests:** The authors have declared that no competing interests exist. (Copyright: © 2023 Raoofi et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.)

Access or request full text: https://libkey.io/10.1371/journal.pone.0274248

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=36706112&custid=ns023446

44. Refined design of ventilation systems to mitigate infection risk in hospital wards: Perspective from ventilation openings setting

Item Type: Journal Article

Authors: Ren, Chen;Wang, Junqi;Feng, Zhuangbo;Kim, Moon Keun;Haghighat, Fariborz and Cao, Shi-Jie

Publication Date: 2023

Journal: Environmental Pollution (Barking, Essex : 1987) 333, pp. 122025

Abstract: To prevent respiratory infections between patients and medical workers, the transmission risk of airborne pollutants in hospital wards must be mitigated. The ventilation modes, which are regarded as an important strategy to minimize the infection risk, are challenging to be systematically designed. Studies have considered the effect of ventilation openings (inlets/outlets) or infected source locations on the airflow

distribution, pollutant removal, and infection risk mitigation. However, the relationship (such as relative distance) between ventilation openings and infected sources is critical because it affects the direct exhaust of exhaled pollutants, which has not been thoroughly studied. To explore pollutant removal and infection prevention in wards, different ventilation modes (with varying ventilation openings) and infected patient locations must be jointly considered. This study investigated displacement ventilation (DV), downward ventilation (DWV), and stratum ventilation (SV) with 4, 6, and 10 scenarios of ventilation openings, respectively. The optimal ventilation mode and relative distance between outlets and infected patients were analyzed based on the simulated pollutant concentration fields and the evaluated infection risk. The pollutant removal effect and infection risk mitigation of SV in the ward were largely improved by 75% and 59% compared with DV and DWV, respectively. The average infection risk was reduced below 7% when a non-dimensional relative distance (a ratio of the actual distance to the cubic root of the ward volume) was less than 0.25 between outlets and infected patient. This study can serve as a guide for the systematic ventilation system design in hospitals during the epidemic.; Competing Interests: Declaration of competing interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. (Copyright © 2023 Elsevier Ltd. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.envpol.2023.122025

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37336354&custid=ns023446

45. Association of ward-level antibiotic consumption with healthcare-associated Clostridioides difficile infections: an ecological study in five German university hospitals, 2017-2019

Item Type: Journal Article

Authors: Rohde, Anna M.;Mischnik, Alexander;Behnke, Michael;Dinkelacker, Ariane;Eisenbeis, Simone;Falgenhauer, Jane;Gastmeier, Petra;Häcker, Georg;Herold, Susanne;Imirzalioglu, Can;Käding, Nadja;Kramme, Evelyn;Peter, Silke;Piepenbrock, Ellen;Rupp, Jan;Schneider, Christian;Schwab, Frank;Seifert, Harald;Steib-Bauert, Michaela;Tacconelli, Evelina, et al

Publication Date: 2023

Journal: The Journal of Antimicrobial Chemotherapy 78(9), pp. 2274-2282

Abstract: Objectives: To analyse the influence of antibiotic consumption on healthcare-associated healthcare onset (HAHO) Clostridioides difficile infection (CDI) in a German university hospital setting.; **Methods:** Monthly ward-level antibiotic consumption measured in DDD/100 patient days (pd) and CDI surveillance data from five university hospitals in the period 2017 through 2019 were analysed. Uni- and multivariable analyses were performed with generalized estimating equation models.; **Results:** A total of 225 wards with 7347 surveillance months and 4 036 602 pd participated. With 1184 HAHO-CDI cases, there was a median incidence density of 0.17/1000 pd (IQR 0.03-0.43) across all specialties, with substantial differences among specialties. Haematology-oncology wards showed the highest median incidence density (0.67/1000 pd, IQR 0.44-1.01), followed by medical ICUs (0.45/1000 pd, IQR 0.27-0.73) and medical general wards (0.32/1000 pd, IQR 0.18-0.53). Multivariable analysis revealed carbapenem (mostly meropenem) consumption to be the only antibiotic class associated with increased HAHO-CDI incidence density. Each carbapenem DDD/100 pd administered increased the HAHO-CDI incidence density by 1.3% incidence rate ratio (IRR) 1.013; 95% CI 1.006-1.019]. Specialty-specific analyses showed this influence only to be valid for haematological-oncological wards. Overall, factors like ward specialty (e.g. haematology-oncology ward IRR 2.961, 95% CI 2.203-3.980) or other CDI cases on ward had a stronger influence on HAHO-CDI incidence density (e.g. community-associated CDI or unknown association case in same month IRR 1.476, 95% CI 1.242-1.755) than antibiotic consumption.; **Conclusions:** In

the German university hospital setting, monthly ward-level carbapenem consumption seems to increase the HAHO-CDI incidence density predominantly on haematological-oncological wards. Furthermore, other patient-specific factors seem to be equally important to control HAHO-CDI. (© The Author(s) 2023. Published by Oxford University Press on behalf of British Society for Antimicrobial Chemotherapy. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com.)

Access or request full text: https://libkey.io/10.1093/jac/dkad232

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37527398&custid=ns023446

46. 7295 Elderly Hospitalized Patients with Catheter-Associated Urinary Tract Infection: a Case-Control Study

Item Type: Journal Article

Authors: Shen, Li;Fu, Ting;Huang, Luguang;Sun, Huiying;Wang, Yu;Sun, Lili;Lu, Xiaoyun;Zhang, Jing;Yang, Zhaoxu and Ni, Chunping

Publication Date: 2023

Journal: BMC Infectious Diseases 23(1), pp. 825

Abstract: Background: Catheter-associated urinary tract infection (CAUTI) ranks second among nosocomial infections in elderly patients after lung infections. Improper treatment can lead to death. This study analysed the risk factors, pathogen distribution, clinical characteristics and outcomes of CAUTI in elderly inpatients with a large sample size to provide evidence for clinical prevention and control.; **Methods**: Based on the HIS and LIS, a case–control study was conducted on all hospitalized patients with indwelling urinary catheters ≥ 60 years old from January 1, 2019, to December 31, 2022, and the patients were divided into the CAUTI group and the non-CAUTI group.; **Results**: CAUTI occurred in 182 of 7295 patients, and the infection rate was 3.4/per 1000 catheter days. Urine pH ≥ 6.5, moderate dependence or severe dependence in the classification of self-care ability, age ≥ 74 years, male sex, hospitalization ≥ 14 days, indwelling urinary catheter ≥ 10 days, diabetes and malnutrition were independent risk factors for CAUTI (P < 0.05). A total of 276 strains of pathogenic bacteria were detected in urine samples of 182 CAUTI patients at different times during hospitalization. The main pathogens were gram-negative bacteria (n = 132, 47.83%), followed by gram-positive bacteria (n = 91, 32.97%) and fungi (n = 53, 19.20%). Fever, abnormal procalcitonin, positive urinary nitrite and abnormal urination function were the clinical characteristics of elderly CAUTI patients (P < 0.001). Once CAUTI occurred in elderly patients, the hospitalization days were increased by 18 days, the total hospitalization cost increased by ¥18,000, and discharge all-cause mortality increased by 2.314 times (P<0.001).; **Conclusion:** The situation of CAUTI in the elderly is not optimistic, it is easy to have a one-person multi-pathogen infection, and the proportion of fungi infection is not low. Urine pH ≥ 6.5, moderate or severe dependence on others and malnutrition were rare risk factors for elderly CAUTI in previous studies. Our study analysed the clinical characteristics of CAUTI in the elderly through a large sample size, which provided a reliable basis for its diagnosis and identified the adverse outcome of CAUTI. (© 2023. The Author(s).)

Access or request full text: https://libkey.io/10.1186/s12879-023-08711-0

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=38001413&custid=ns023446

47. Phage therapy: Awareness and demand among clinicians in the United Kingdom

Item Type: Journal Article

Authors: Simpson, Emily A.;Stacey, Helen J.;Langley, Ross J. and Jones, Joshua D.

Publication Date: 2023

Journal: PloS One 18(11), pp. e0294190

Abstract: Bacterial resistance or tolerance to antibiotics is costly to patients and healthcare providers. With the impact of antibiotic resistance forecast to grow, alternative antimicrobial approaches are needed to help treat patients with antibiotic refractory infections and reduce reliance upon existing antibiotics. There is renewed interest in bacteriophage (phage) therapy as a promising antimicrobial strategy. We therefore performed the first multi-specialty survey about phage therapy and the first such survey among clinicians in the United Kingdom. An anonymous 10-question survey of clinicians from medical and surgical specialties in two Scottish Health Boards was performed. The 90 respondents spanned 26 specialties and were predominantly consultants (73.3%). The respondents were concerned about antibiotic resistance in their clinical practice; 83 respondents estimated having seen 711 patients in the last 12 months whose infections were refractory to antibiotics (delaying or preventing resolution). Over half (58.8%) of the respondents had previously heard of phage therapy. Staphylococci, Pseudomonas and E. coli were identified as the highest cross-specialty priorities for the development of phage therapy. Together, 77 respondents estimated seeing 300 patients in the last 12 months for whom phage therapy may have been appropriate (an average of 3.9 patients per clinician). Most respondents (71.1%, n = 90) were already willing to consider using phage therapy in appropriate cases. Additional comments from the respondents affirmed the potential utility of phage therapy and highlighted a need for more information. The results of this survey demonstrate substantial demand for and willingness to use phage therapy in appropriate cases, both from individual clinicians and across specialties. Demand from a wide range of specialties illustrates the broad clinical utility of phage therapy and potential scope of impact. Widening access to phage therapy could deliver substantial clinical and financial benefits for patients and health authorities alike.; Competing Interests: JDJ is Director of the company UK Phage Therapy. All other authors declare no competing interests. This does not alter our adherence to PLOS ONE policies on sharing data and materials. (Copyright: © 2023 Simpson et al. This is an open access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.)

Access or request full text: https://libkey.io/10.1371/journal.pone.0294190

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37956142&custid=ns023446

48. Hospital resource endowments and nosocomial infections: longitudinal evidence from the English National Health Service on Clostridioides difficile between 2011 and 2019

Item Type: Journal Article

Authors: Stead, S.;Vogt, L.;Antons, D.;Salge, T. O.;Gecht, J.;Klasen, M. and Sopka, S.

Publication Date: 2023

Journal: The Journal of Hospital Infection 134, pp. 129-137

Abstract: Objectives: To identify key factors associated with Clostridioides difficile infections (CDIs) in healthcare at the hospital organization level.; **Design:** Longitudinal study covering the period 2011-2019. Hospital reports were analysed to determine the number of CDIs and several hospital-related environmental factors: financial resources (i.e., cleaning expenditure), spatial resources (i.e., number of single rooms with a private bathroom), human resources (i.e., number of physicians and nursing staff) and cultural resources (i.e., error reporting climate). The relationships between the environmental factors and CDIs were analysed in a hybrid within- and between-hospital random-effect model.; **Setting:** A total of 129 general hospital Trusts operating in the English National Health Service (NHS).; **Participants:** All inpatients in 129 general hospital trusts of the NHS in the years 2011-2019, covering 120,629 cases of CDI.; **Main Outcome Measure:** Annual number of CDIs per hospital trust.; Results: Single rooms were associated with fewer CDIs at the within-hospital level, but not at the between-hospital level. Similarly, more nursing staff was associated with fewer CDIs at the within-hospital level, but not at the between-hospital level. This effect was not observed for physician staffing. A different picture emerged for the protective effect of cultural resources, with a weakly significant effect of between-hospital differences, but no within-hospital effect. Financial resources were not associated with CDIs either between hospitals or within them over time.; **Conclusions:** The present study identified hospital resources with a beneficial influence on CDI rates. Healthcare organizations can use this knowledge for active CDI prevention. (Copyright © 2023 The Authors. Published by Elsevier Ltd.. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.jhin.2023.01.014

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=36750139&custid=ns023446

49. Trends in laboratory-confirmed bacterial meningitis (2012-2019): national observational study, England

Item Type: Journal Article

Authors: Subbarao, Sathyavani;Ribeiro, Sonia;Campbell, Helen;Okike, Ifeanyichukwu;Ramsay, Mary E. and Ladhani, Shamez N.

Publication Date: 2023

Journal: The Lancet Regional Health.Europe 32, pp. 100692

Abstract: Background: Bacterial meningitis is associated with significant morbidity and mortality worldwide. We aimed to describe the epidemiology, aetiology, trends over time and outcomes of laboratory-confirmed bacterial meningitis in England during 2012-2019.; **Methods:** UK Health Security Agency routinely receives electronic notifications of confirmed infections from National Health Service hospital laboratories in England. Data were extracted for positive bacterial cultures, PCR-positive results for Neisseria meningitidis or Streptococcus pneumoniae from cerebrospinal fluid and positive blood cultures in patients with clinical meningitis.; **Findings:** During 2012-19, there were 6554 laboratory-confirmed cases. Mean annual incidence was 1.49/100,000, which remained stable throughout the surveillance period (p = 0.745). There were 155 different bacterial species identified, including 68.4% (106/1550) Gram-negative and 31.6% (49/155) Gram-positive bacteria. After excluding coagulase-negative staphylococci (2481/6554, 37.9%), the main pathogens causing meningitis were Streptococcus pneumoniae (811/4073, 19.9%), Neisseria meningitidis (497/4073, 12.2%), Staphylococcus aureus (467/4073, 11.5%), Escherichia coli (314/4073, 7.7%) and group B streptococcus (268/4073, 6.6%). Pneumococcal meningitis incidence increased significantly during 2012-9, while meningococcal, group A streptococcal and tuberculous meningitis declined. Infants aged <3 months had the highest mean incidence (55.6/100,000; 95% CI, 47.7-63.5) driven mainly by group B streptococci, followed by 3-11 month-olds (8.1/100,000; 95% CI 7.1-9.0), where pneumococcal and meningitis predominated. The 30-day

case-fatality rate (CFR) was 10.0% (71/6554). Group A streptococcal meningitis had the highest CFR (47/85, 55.3%). The probability of surviving at 30 days was 95.3% (95% CI, 93.4-97.3%) for infants and 80.0% for older adults (77-84%).; Interpretation: The incidence of bacterial meningitis has remained stable. The high CFR highlights a need for prevention through vaccination.; Funding: PHE.; **Competing Interests:** The authors declare no conflicts of interest. (Crown Copyright © 2023 Published by Elsevier Ltd.)

Access or request full text: https://libkey.io/10.1016/j.lanepe.2023.100692

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37538400&custid=ns023446

50. Whole-genome sequencing reveals widespread presence of Staphylococcus capitis NRCS-A clone in neonatal units across the United Kingdom

Item Type: Journal Article

Authors: Wan, Yu;Ganner, Mark;Mumin, Zaynab;Ready, Derren;Moore, Ginny;Potterill, Isabelle;Paranthaman, Karthik;Jauneikaite, Elita;Patel, Bharat;Harley, Alessandra;Getino, Maria;Brown, Colin S.;Demirjian, Alicia and Pichon, Bruno

Publication Date: 2023

Journal: The Journal of Infection 87(3), pp. 210-219

Abstract: Objective: Increased incidence of neonatal Staphylococcus capitis bacteraemia in summer 2020, London, raised suspicion of widespread multidrug-resistant clone NRCS-A. We set out to investigate the molecular epidemiology of this clone in neonatal units (NNUs) across the UK.; **Methods:** We conducted whole-genome sequencing (WGS) on presumptive S. capitis NRCS-A isolates collected from infants admitted to nationwide NNUs and from environmental sampling in two distinct NNUs in 2021. Previously published S. capitis genomes were added for comparison. Genetic clusters of NRCS-A isolates were defined based on core-genome single-nucleotide polymorphisms.; **Results:** We analysed WGS data of 838 S. capitis isolates and identified 750 NRCS-A isolates. We discovered a possible UK-specific NRCS-A lineage consisting of 611 isolates collected between 2005 and 2021. We determined 28 genetic clusters of NRCS-A isolates, which covered all geographical regions in the UK, and isolates of 19 genetic clusters were found in ≥2 regions, suggesting inter-regional spread. Within the NRCS-A clone, strong genetic relatedness was identified between contemporary clinical and incubator-associated fomite isolates and between clinical isolates associated with inter-hospital infant transfer.; **Conclusions:** This WGS-based study confirms the dispersion of S. capitis NRCS-A clone amongst NNUs across the UK and urges research on improving clinical management of neonatal S. capitis infection.; Competing Interests: Declaration of Competing Interest The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. (Crown Copyright © 2023. Published by Elsevier Ltd. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.jinf.2023.06.020

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37394013&custid=ns023446

51. Evaluating the environmental microbiota across four National Health Service hospitals within England

Item Type: Journal Article

Authors: Watson, F.;Wilks, S. A.;Keevil, C. W. and Chewins, J.

Publication Date: 2023

Journal: The Journal of Hospital Infection 131, pp. 203-212

Abstract: Hospital surfaces contaminated with microbial soiling, such as dry surface biofilms (DSBs), can act as a reservoir for pathogenic micro-organisms, and inhibit their detection and removal during routine cleaning. Studies have recognized that such increases in bioburden can hinder the impact of disinfectants and mask the detection of potential pathogens. Cleanliness within healthcare settings is often determined through routine culture-based analysis, whereby surfaces that exhibit >2.5 colony-forming units (CFU) per cm 2 pose a risk to patient health; therefore, any underestimation could have detrimental effects. This study quantified microbial growth on high-touch surfaces in four hospitals in England over 19 months. This was achieved using environmental swabs to sample a variety of surfaces within close proximity of the patient, and plating these on to non-specific low nutrient detection agar. The presence of DSBs on surfaces physically removed from the environment was confirmed using real-time imaging through episcopic differential interference contrast microscopy combined with epifluorescence. Approximately two-thirds of surfaces tested exceeded the limit for cleanliness (median 2230 CFU/cm 2), whilst 83% of surfaces imaged with BacLight LIVE/DEAD staining confirmed traces of biofilm. Differences in infection control methods, such as choice of surface disinfectants and cleaning personnel, were not reflected in the microbial variation observed and resulting risk to patients. This highlights a potential limitation in the effectiveness of the current standards for all hospital cleaning, and further development using representative clinical data is required to overcome this limitation. (Copyright © 2022 The Healthcare Infection Society. Published by Elsevier Ltd. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/j.jhin.2022.11.001

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=36343745&custid=ns023446

52. Barriers to infection prevention and control in patients' homes

Item Type: Journal Article

Authors: Wood, Dana Jayne

Publication Date: 2023

Journal: British Journal of Community Nursing 28(12), pp. 598-600

Abstract: While there is a lot of emphasis on the need for good infection prevention and control practices and acute care, the increasing complexity of patients being cared for in their own homes means that there is an increased risk for infection. Good practice is required by community nurses to minimise this risk. Patients' own homes can present particular challenges in complying with good practice and this article looks at some of the barriers to optimum infection prevention and control precautions in this setting.

Access or request full text: https://libkey.io/10.12968/bjcn.2023.28.12.598

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=rzh&AN=173929257&custid=ns

53. Surge of lower respiratory tract group A streptococcal infections in England in winter 2022: epidemiology and clinical profile

Item Type: Journal Article

Authors: Wrenn, Katie;Blomquist, Paula Bianca;Inzoungou-Massanga, Carmellie;Olufon, Oluwakemi;Guy, Rebecca L.;Hatziioanou, Diane;Findlater, Lucy;Smith, Iona;Mirfenderesky, Mariyam;Luyt, Karen;Williams, Tom;Stoianova, Sylvia;Dickinson, Michelle;Pietzsch, Maaike;Jarvis, Christopher I.;Brown, Colin;Lamagni, Theresa and Kumar, Deepti

Publication Date: 2023

Journal: Lancet (London, England) 402 Suppl 1, pp. S93

Abstract: Background: Following low incidence of invasive group A streptococcal (iGAS) infections during the COVID-19 pandemic, marked increases were noted in many countries during 2022, particularly in children. In November 2022, severe presentations of lower respiratory tract infections (LRTIs), including empyema, were notified by clinicians across the UK. UKHSA investigated this rise with the aim of informing clinical management and public health response.; **Methods:** We undertook a case-series analysis using multiple routine data sources, exempted from ethics approval or patient consent. We identified iGAS cases in England in children younger than 15 years with an LRTI reported between Oct 1 and Dec 21, 2022, using UKHSA laboratory surveillance data (GAS detected in LRT specimens) and notifications by clinicians and Health Protection Teams (HPTs). Symptoms, diagnoses, health-care interactions, and outcome (death or recovery) data were obtained from HPT case management notes, the National Child Mortality Database, and the NHS Digital Emergency Care Dataset.; **Findings:** We identified 147 cases of LRTI iGAS in children across England (77 52%] male, 70 48%] female; median age 4 years IQR 2-6]). Predominant ethnicities were White (74 65%] of 113 with known ethnicity) and Asian (18 16%] of 113). Most reported symptoms were fever (90 75%] of 120 children with ≥1 symptom) and cough (60 50%] of 120), and 71 (48%) of all 147 children had a diagnosed respiratory viral coinfection (most commonly hMPV and RSV). 127 (86%) of children attended an emergency department, 31% (n=36/114 with onset date) at least twice within 21 days after symptom onset. 37 (25%) of 147 children died, with a median time from symptom onset to death of 4 days (IQR 3-7). Of 32 children with sample dates, 16 (84%) were tested for GAS on or after the day they died. Over half of deaths (21 57%] of 37 deaths) occurred in the community after rapid deterioration, of whom 18 had previous contact with health-care services documented.; Interpretation: The UK saw an unusual rise in iGAS LRTIs in children in late 2022. One in four cases died, over half in the community. Non-specific symptoms, viral symptoms, or positive virology might have lowered suspicion of bacterial infection. Although the use of multiple available data sources expedited the analysis, varying data completeness limited interpretation. Our study highlights the need for earlier detection and identification of effective measures to prevent death.; Funding: None. (Copyright © 2023 Elsevier Ltd. All rights reserved.)

Access or request full text: https://libkey.io/10.1016/S0140-6736(23)02095-0

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37997140&custid=ns023446

54. Using multiple indicators to predict the risk of surgical site infection after ORIF of tibia fractures: a machine learning based study

Item Type: Journal Article

Authors: Ying, Hui;Guo, Bo-Wen;Wu, Hai-Jian;Zhu, Rong-Ping;Liu, Wen-Cai and Zhong, Hong-Fa

Publication Date: 2023

Journal: Frontiers in Cellular and Infection Microbiology 13, pp. 1206393

Abstract: Objective: Surgical site infection (SSI) are a serious complication that can occur after open reduction and internal fixation (ORIF) of tibial fractures, leading to severe consequences. This study aimed to develop a machine learning (ML)-based predictive model to screen high-risk patients of SSI following ORIF of tibial fractures, thereby aiding in personalized prevention and treatment.; **Methods:** Patients who underwent ORIF of tibial fractures between January 2018 and October 2022 at the Department of Emergency Trauma Surgery at Ganzhou People's Hospital were retrospectively included. The demographic characteristics, surgery-related variables and laboratory indicators of patients were collected in the inpatient electronic medical records. Ten different machine learning algorithms were employed to develop the prediction model, and the performance of the models was evaluated to select the best predictive model. Ten-fold cross validation for the training set and ROC curves for the test set were used to evaluate model performance. The decision curve and calibration curve analysis were used to verify the clinical value of the model, and the relative importance of features in the model was analyzed.; **Results:** A total of 351 patients who underwent ORIF of tibia fractures were included in this study, among whom 51 (14.53%) had SSI and 300 (85.47%) did not. Of the patients with SSI, 15 cases were of deep infection, and 36 cases were of superficial infection. Given the initial parameters, the ET, LR and RF are the top three algorithms with excellent performance. Ten-fold cross-validation on the training set and ROC curves on the test set revealed that the ET model had the best performance, with AUC values of 0.853 and 0.866, respectively. The decision curve analysis and calibration curves also showed that the ET model had the best clinical utility. Finally, the performance of the ET model was further tested, and the relative importance of features in the model was analyzed.; **Conclusion:** In this study, we constructed a multivariate prediction model for SSI after ORIF of tibial fracture through ML, and the strength of this study was the use of multiple indicators to establish an infection prediction model, which can better reflect the real situation of patients, and the model show great clinical prediction performance.; **Competing Interests:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. (Copyright © 2023 Ying, Guo, Wu, Zhu, Liu and Zhong.)

Access or request full text: https://libkey.io/10.3389/fcimb.2023.1206393

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37448774&custid=ns023446