

## Chapter 1 : Grampian Joint Formulary - Antimicrobial Therapy General Notes

*1 Chapter 33 Lecture Notes: Antimicrobial therapy I. Chemotherapy A. Definitions 1. Chemotherapy = treatment of a disease by a chemical compound selectively.*

Published online Jul This article has been cited by other articles in PMC. Abstract Objectives Evidence indicates a relationship between obesity and infection. We assessed the prevalence of obesity in hospitalized patients and evaluated its impact on antimicrobial management. Methods Three National Health Service hospitals in London in 2012 were included in a cross-sectional study. Data from all adult admissions units and medical and surgical wards were collected. Patient data were collected from the medication charts and nursing and medical notes. Conclusions One in five hospitalized patients is obese. Introduction The global burden of obesity is reaching unprecedented levels. It is estimated that if the current trend in obesity continues, 3 in 4 of the US population and 7 in 10 of the UK population will be obese by 2030. Obesity is associated with significant health complications and morbidity, including diabetes, cancer and heart disease. Obese patients have also been identified as being at higher risk of respiratory tract infections, Clostridium difficile infections. These infections are a major health threat worldwide, with significant socio-economic impact on the health infrastructure. Despite the growing evidence implicating obesity as a major risk factor for healthcare-associated infections, little evidence exists as to the possible reasons for this association between obesity and infection. Therefore, to understand the prevalence of obesity in populations, accurate information on weight and height of individuals is required. Despite not distinguishing between body fat and muscle, BMI is currently the most widely accepted and used scale to define obesity. Adipose tissue can act as an endocrine organ and exert immunomodulatory effects on the body. One other factor contributing to the observed poorer infection outcomes among obese patients may be inadequate antimicrobial dosing due to both: In antimicrobial dosing, achieving the right concentrations at the site of infection is paramount both to ensure efficacious therapy and to prevent emergence of resistance by exposing pathogens to sub-therapeutic concentrations of antimicrobials. Despite this, there remains a significant gap in scientific literature on appropriate dosing of antimicrobials among obese patients for both treatment and surgical prophylaxis, with only limited and mainly anecdotal evidence from pharmacokinetic studies. We report here on a cross-sectional study investigating the prevalence of obesity in hospitalized patients and the associations between obesity and antimicrobial therapy. Our aim was to measure the prevalence of obesity in hospitalized adult patients and evaluate the impact of obesity on infection and antimicrobial management in this population. Methods Study design and population This was a cross-sectional study that included data collected in three hospitals of a multisite, bed NHS hospital organization in London. Data were collected in two cross sections between March and September and July and August. Existing local antibiotic consumption data indicated that seasonal variability was not significant. Adult admissions units and medical and surgical wards on all three hospital sites were selected for the purpose of identifying the study population. The same wards were included in both episodes of data collection. The data for each patient were collected in a single day to provide a snapshot of patient episodes. All patients physically present on the ward at the time of data collection were eligible to be included in the study. Patients who were away from the ward for a procedure or an operation were excluded from the study, as were patients whose notes were unavailable at the time that the study investigators were on the ward. This was because patients who were physically absent from the ward could not be assessed for obesity, and patients whose notes were missing could not have their medical data included in the study. Formal approval from the National Research Ethics Service was not required for this research as the JRCO identified the work as hospital service evaluation and audit. Data collection At the time of the study the hospitals did not have electronic medical records or prescribing systems and all data sources were paper records on the wards. A data collection form was designed and piloted prior to the study and all data were gathered using this single form. Patient medication charts and nursing and medical notes were screened to collect the data. Data were collected by author E. Data entered into the final database were double checked for accuracy by one of the researchers. To assess participants for obesity, recorded height and weight information

was collected where it was available. Therefore, in addition to collecting the recorded height and weight from the medical records, a pre-validated figure rating scale FRS was used. The scale had been validated in a study with participants. To assess inter-rater reliability of obesity using the FRS, wherever it was possible two investigators independently assessed the study participants using the scale. Participant demographic data e. Current medication, including antimicrobials and the indication, for the admission episode was collected from the medication charts. For every participant, all courses of antimicrobial prescribing for an active infection were recorded. Antimicrobials administered for HIV and TB were excluded as patients would have been on these therapies for a long time. Antimicrobials prescribed for prophylaxis were also excluded from this study. The dose and frequency of all antimicrobial courses were recorded to assess whether any dosing adjustments were made based on weight for those antimicrobials that required it or whether any patients had their dose increased due to being overweight or obese. Exploratory univariate investigation of confounding and interaction were assessed for the following factors: A backward elimination approach was conducted to investigate the association between patient weight category and complicated antimicrobial therapy on a patient, adjusted for the confounding factors. Models were compared using a likelihood ratio test. Results In each episode of data collection 34 wards were visited. These wards represent half of the available bed capacity across the hospitals included in this study. A total of in and in patients were admitted in a hospital bed on the day of data collection from the wards included in the study. Validation of the FRS Height and weight were inconsistently recorded for the participants in their medical notes. As a result of this, the FRS was used to categorize participants as obese or non-obese.

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*A. Successful antimicrobial therapy occurs when an effective concentration of drug is delivered to the site of infection for a sufficient period of time. Minimum effective concentrations are those needed to inhibit growth.*

Patient Group Directions Antimicrobial Therapy General Notes Resistance to antibiotics and other antimicrobials is recognised locally and nationally as a major threat to public health and patient safety. The prevalence of antimicrobial resistant bacteria and other healthcare associated infections is partly governed by antimicrobial usage. Prescribers are therefore encouraged to prescribe antibiotics prudently and follow local and national guidelines as a matter of good clinical governance. Empirical recommendations for antimicrobial therapy are based on local epidemiology and resistance patterns and advise the non-specialist on the most appropriate antimicrobial for the initial treatment of common infections. It does not include other aspects of management. Prescribe an antibiotic only when there is likely to be a clear clinical benefit. It is important to use the correct dose and appropriate course length. Do not prescribe an antibiotic for viral infections. Use simple generic antibiotics if possible. Avoid broad spectrum antibiotics e. Specialist Advice For patients with a history of infection with meticillin-resistant staphylococcus aureus MRSA or extended spectrum beta-lactamases ESBLs specialist advice about choice of antibiotics should be sought from medical microbiology. Suitable samples should be taken where appropriate and sent to microbiology with a clinical history. On the receipt of culture results, the choice of antimicrobial should be reviewed, taking into consideration antimicrobial sensitivities, patient factors refer to penicillin allergy policy , toxicity, and cost-effectiveness. If there is no response to initial treatment or if the infection recurs, specialist advice should be sought. Dosing and Duration Recommended adult doses and durations of treatment have been included but often this will depend upon clinical judgement in the individual case. Most infections will normally respond to a three to ten day course. Doses in the policy are for adults only unless otherwise stated, and assume normal renal and hepatic function. Please note that the recommendations for empirical therapy in hospital do not apply to children and neonates. These agents are therefore not recommended as first-line treatments for common primary care infections. There may be situations where these are the most appropriate antibiotics to give, and should only be prescribed after careful consideration of the risks and clinical benefit of prescribing. Specific consideration should be made to using these agents in patients over the age of 65 years who are particularly at risk of the development of this infection. For information on the use of antibiotics in pregnant or breastfeeding women, or in patients with renal or hepatic impairment, please refer to BNF information in individual drug monographs , or contact Medicines Information Tel: Please also note the recent MHRA advice for the use of cough and cold preparations in children if advising on self care.

## Chapter 3 : Sanford Guide - Antimicrobial on the App Store

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## Chapter 4 : Antimicrobial therapy in obesity: a multicentre cross-sectional study

*Antimicrobial agent - drug used to treat disease caused by microbes. 3. Antibiotic - chemical substance produced by a microorganism that has the capacity to inhibit the growth of bacteria and even destroy them.*

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