Consultant Pharmacists in practice – bridging interfaces of care

Professor Liz Kay, Clinical Director Medicines Management and Pharmacy Services, Leeds Teaching Hospitals
LEVEL 1 TRAUMA CENTRE FOR WEST AND NORTH YORKSHIRE

SEVEN HOSPITALS SIX SITES
1. WHARFEDALE HOSPITAL
2. LEEDS GENERAL INFIRMARY
3. ST JAMES'S UNIVERSITY HOSPITAL
4. SEACROFT HOSPITAL
5. LEEDS DENTAL INSTITUTE
6. CHAPEL ALLERTON HOSPITAL
7. LEEDS CHILDREN'S HOSPITAL

WE TREAT MORE THAN 1,500,000 PEOPLE EVERY YEAR

2,000 BEDS 120 WARDS AND DEPARTMENTS

1 BILLION ANNUAL BUDGET

12,000+ PATIENTS INVOLVED IN LEADING EDGE CLINICAL TRIALS
Medicines Management and Pharmacy CSU

- 500 staff ~ 160 pharmacists, 140 pharm techs, 180 non registered, 5 nurses, 1 medic
- Drug spend ~ £140m
- 365 day 24 hour pharmacist presence
- 365 day medicines preparative and supply service
- 7 day medicines reconciliation and high risk patient review
- 7 day outpatient pharmacy – Boots
The Leeds Way – Our Values

- Patient Centred
- Collaborative
- Empowered
- Fair
- Accountable
Partnerships and Collaborative Working
Our vision

• Clinical practice – safe care
  focus on patient experience - empower patients
  identify gaps in care – affecting safety, improving
  efficiency

• Clinical teaching – role model, bedside learning,
  Referral service, multidisciplinary leadership

• Research – publish – focus on outcomes – not inputs
  Provide evidence. National impact
Anticoagulation and Thrombosis

• 9000+ anti-coagulated patients, hospital based, poor patient experience, poor quality care, innovation opportunity

• Hub and spoke, daily pharmacy team clinics, Saturday, audit

• Introduced new care pathway using apixaban, rivaroxaban, dabigatran pan Leeds for stroke prevention in atrial fibrillation

• New service to change poorly controlled warfarin patients with AF onto DOACs, AF patients’ choose anticoagulant through discussion
Anticoagulation and Thrombosis

- Introduced a new pathway for acute venous thromboembolism using rivaroxaban
- Focus on quality and safety, patient experience and care at home
- Prescribed in Leeds Teaching Hospitals, medical assessment area with GPs taking over prescribing and monitoring once stabilised.
- Pan hospital leadership of vte prophylaxis, medical, nurse staff training, CQUIN – RCA, metrics to manage performance
Older People/ Interfaces of Care

Previous projects identifying older people at high-risk of medicines-related problems post-discharge

Care planning, referral and sign-posting to healthcare professionals in primary care

Project Results
204 older people specific medicines care plan (MCP) on discharge letter
86% clinical need
36% medicines support need
16% people with MCP re-admitted within 30 days c.f. 22% non-MCP
Older People/ Interfaces of Care

Project work now business as usual on all older people’s wards

Using MaPPs across the Trust to support staff talking to patients about their medicines

Collaboration with Primary Care to follow patient pathway - conducting clinical medication reviews for older people post-discharge in domiciliary or care home settings

City-wide work on prevention of falls to reduce number of # neck of femur - LIQH.

Medicines support assessments for patients going home with re-ablement
Consultant Pharmacist Nutrition

- Leading on reducing CVC sepsis in patients receiving PN (cohorting, rationalising prescribing / improving availability of custom bags)
- Leading “Drugs via Enteral Tubes Group” (patient safety & experience, improving communication of information to patients, carers and community prescribers, com matrons)
- Agreed new ONS formulary pan Leeds
- Adult Nutrition Clinic Patient Satisfaction Survey & on-going work to improve efficiency & patient experience
- Multidisciplinary leadership role pan hospital, paed transition
First Reported Adherence vs. Non-adherence Investigation (RANI-I)

221 patients elaborated on their medicines-taking behaviour by providing additional comments about the need for patient-tailored information and better structured medicines reviews.

Non-adherence levels - 44%

Variables Associated with Overall NA (n = 484)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.96</td>
<td>0.94-0.98</td>
</tr>
<tr>
<td>Gender (Male - Female)</td>
<td>0.53</td>
<td>0.32-0.89</td>
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<tr>
<td>Specific Concern about SPM (average)</td>
<td>1.91</td>
<td>1.50-2.43</td>
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<tr>
<td>Issues with Repeat Prescriptions</td>
<td>2.50</td>
<td>1.26-4.94</td>
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<tr>
<td>Aspirin (Prescribed)</td>
<td>2.18</td>
<td>1.15-4.12</td>
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</table>

Variables Associated with NA due to forgetfulness (n = 492)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.96</td>
<td>0.93-0.98</td>
</tr>
<tr>
<td>Gender (Male - Female)</td>
<td>0.48</td>
<td>0.28-0.81</td>
</tr>
<tr>
<td>Diabetic (No - Yes)</td>
<td>0.44</td>
<td>0.23-0.84</td>
</tr>
<tr>
<td>CABG (No - Yes)</td>
<td>0.60</td>
<td>0.39-0.99</td>
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<tr>
<td>Aspirin (Prescribed)</td>
<td>2.00</td>
<td>1.05-3.49</td>
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<tr>
<td>Specific Concern about SPM (average)</td>
<td>1.50</td>
<td>1.15-1.83</td>
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</table>

Variables Associated with Intentional NA (n = 481)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.96</td>
<td>0.93-0.99</td>
</tr>
<tr>
<td>Specific Concern about SPM (average)</td>
<td>2.39</td>
<td>1.57-3.65</td>
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<tr>
<td>General Overdue of Medicines (average)</td>
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<td>1.41-3.90</td>
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<tr>
<td>Beta Blocker (Prescribed)</td>
<td>0.48</td>
<td>0.26-0.91</td>
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<tr>
<td>Aspirin (Prescribed)</td>
<td>4.72</td>
<td>1.26-17.67</td>
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<tr>
<td>Issues with Repeat Prescriptions</td>
<td>3.46</td>
<td>1.94-7.29</td>
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<tr>
<td>No. of Prescribed Medicines</td>
<td>1.14</td>
<td>1.03-1.25</td>
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</tbody>
</table>
Applying Research into practice

In Hospital Advance medicines optimisation ward rounds for patients with HF

Outpatient Advanced Medicines Optimisation Post-MI Clinic

Community based Advanced Medicines Optimisation Virtual Clinic for Patients with HF

The Leeds Teaching Hospitals NHS Trust
Antimicrobials – Optimising Use - HCAI

- Appointed Sept 2008, LTHT 12 MRSA bacteraemia and 80 CDI / month
- Priority – improve quality antimicrobial use

- >100 guidelines developed = >12,000 hits per month. These won EAHP award in 2011
- Indication & duration on Rx >90% since 2010 - prescription chart, audit
- MRSA bacteraemia 95% reduction, CDI 87% reduction
- 12% reduction in total antimicrobial usage
- 3rd lowest 4C antibiotic rate amongst tertiary hospitals
- Annual antibiotic prevalence \(\leq 30\%\) since 2008
Improving use of Antimicrobials in Leeds

- Integrated primary & secondary care ASP
- Stopped cefalosporin reporting from micro for UTI = higher to lower Rxing rate in region
- Expertise / working with others: National policy roles
- NHS-England HCAI/AMR project lead, AMS guidelines (SSTF & TARGET), AN Rx & AMS competencies, ESPAUR, ARHAI Observer, HEE AMR, etc
- RPS spokesman, UKCPA PIN, BSAC council, ESCMID AMS committee, WHO AMR for FIP
- External peer reviewer (AMS); lecturer worldwide
- Research – led 1st global AMS in hospitals survey
- Joint Leeds/Oxford Univ research group: NIHR Prog Grant on AB Allergy application, £8k for diversity project
- Work with Huddersfield & Bradford University on AMS in Community Pharmacy
- Regular publications in Medline listed journals
Challenges

• Consultant pharmacists and strategic plans
• Measuring outcomes
• Integration into pharmacy structures – leadership – mentorship
• Building consultant capacity
• What next after consultancy?
• Research – capacity – drive
• Recognition of excellence
The Future

• Health economy wide leadership in medicines optimisation
• Integration of pharmaceutical pathways across health economies
• Patient advocate – medicines issues
• Role models – multidisciplinary – juniors
• Research networks
Highlights of consultant pharmacist achievements: antimicrobial therapy

Dr Kieran Hand
Consultant Pharmacist Anti-Infectives
University Hospital Southampton NHSFT
<table>
<thead>
<tr>
<th>Who</th>
<th>Where</th>
<th>When</th>
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<tbody>
<tr>
<td>Kieran Hand</td>
<td>Southampton</td>
<td>January 2007</td>
</tr>
<tr>
<td>Paul Wade</td>
<td>Guy’s &amp; St. Thomas’</td>
<td>August 2008</td>
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<tr>
<td>Philip Howard</td>
<td>Leeds</td>
<td>September 2008</td>
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<tr>
<td>Rob Swallow*</td>
<td>York</td>
<td>October 2009</td>
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<tr>
<td>Andy Karvot</td>
<td>Northern Lincolnshire and Goole</td>
<td>November 2009</td>
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<tr>
<td>Mark Gilchrist</td>
<td>Imperial College Healthcare</td>
<td>April 2011</td>
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<tr>
<td>Hayley Wickens</td>
<td>Southampton (jobshare)</td>
<td>November 2012</td>
</tr>
<tr>
<td>Laura Whitney</td>
<td>St. George’s, London</td>
<td>December 2014</td>
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</table>

*No longer in consultant role*
Dr Kieran Hand, Southampton (Jan07)

- **IT systems**
  - Electronic referral system for ward rounds (winner of UKCPA/Novartis Award 2009)
  - MicroGuide smartphone app (Winner of UKCPA/Novartis Award 2014, NHS Innovation Challenge Prize 2014 £50k and Wessex AHSN Accelerator Fund 2015 - £25k)

- **Influencing government policy**
  - DH guidance “Start Smart, Then Focus”
  - DH scientific advisory committee ARHAI – chair of antimicrobial prescribing quality indicator group: indicators included in NHS England Quality Premium 2015/16
  - Co-author of resistance chapter of Chief Medical Officer report 2013

- **Research**
  - Post-doctoral clinical-academic position at University of Southampton (2012)
  - Lobbied HEE/NIHR to open access to clinical-academic career funding to pharmacists (achieved 2014/2105)
  - Co-applicant on successful NIHR Programme Grant (£2M) and lead applicant on NIHR Health Services and Delivery Research application (£400k, pending)

- **Media**
  - BBC Radio 4 interview for Eddie Mair show (2009)
From maps to Apps

2008  
App free-to-download from Apple iTunes and Google Play for Android devices – search for MicroGuide

2011

2013

UHS Antibiotic Guides
4th Edition 2011

Paediatrics Guide
Adult Micro Guide
About this Guide

Microguides
Sandwell and West Birmingham Hospitals NHS Trust
University College London Hospitals NHS Foundation Trust
University Hospital Southampton NHS Foundation Trust
West Hertfordshire Hospitals NHS Trust
Western Sussex Hospitals NHS Trust

Continue
Don't see your Trust?

Settings  Info
MicroGuide App - Vital Statistics

- 45,000 users of original Southampton version
- 46,000 new users of multi-site version in 18 months
- 45 hospitals currently subscribing
- Target of 120 hospitals by end 2015
- Going international
Using the e-prescribing system: gentamicin dose calculator
Guideline impact in Southampton

Trends in prescribing of high-risk and low-risk antibiotics versus *Clostridium difficile* infection incidence in University Hospital Southampton

- **Low-risk antibiotics**
- **High-risk antibiotics**
- **C. difficile cases**

**Hospital intranet guidelines**

**Pocket guide**

**MicroGuide App**
Antimicrobials dispensed to UHS inpatients adjusted for admissions:

3.4% **DECREASE** from 2010 to 2013

UHS admissions increased by 12% from 2010 to 2013 (SPADE)
Fewer UHS patients exposed to antibiotics in 2014
Interface work: SHIP GP guidelines

Southampton, Hampshire,
Isle of Wight and Portsmouth
Guidelines for **Antibiotic Prescribing**
in the Community **2012**

Adapted from the Health Protection Agency and British Infection Association Management of Infection Guidance for Primary Care by the Antibiotic Sub-group of the Hampshire and Isle of Wight Committee for Healthcare-Associated Infections (CHAIN)

**All guideline statements linked to cited research evidence**

From March 2013 available as an app, free-to-download, from iTunes or Google Play for Android. Search for NHS Hampshire.
BMJ Open  A pre-postintervention study to evaluate the impact of dose calculators on the accuracy of gentamicin and vancomycin initial doses

Anas Hamad, Gillian Cavell, James Hinton, Paul Wade, Cate Whittlesea


ABSTRACT
Objectives: Gentamicin and vancomycin are narrow-therapeutic-index antibiotics with potential for high toxicity requiring dose individualisation and continuous monitoring. Clinical decision support (CDS) tools have been effective in reducing gentamicin and vancomycin dosing errors. Online dose calculators for these drugs were implemented in a London National Health Service hospital. This study aimed to evaluate the impact of

Strengths and limitations of this study
- This study suggests that accuracy of gentamicin and vancomycin initial doses can be improved using dose calculators linked to electronic prescribing.
- Dose improvements were demonstrated in multiple specialities within a large acute teaching hospital.
Short report

Reduction in *Clostridium difficile* environmental contamination by hospitalized patients treated with fidaxomicin

J.S. Biswas a, A. Patel a, J.A. Otter a, P. Wade a, W. Newsholme a, E. van Kleef b, c, S.D. Goldenberg a, *

a Centre for Clinical Infection and Diagnostics Research, King’s College, London and Guy’s & St Thomas’ NHS Foundation Trust, London, UK
b London School of Hygiene and Tropical Medicine, London, UK
c Public Health England, Colindale, London, UK
Identifying Best Practices Across Three Countries: Hospital Antimicrobial Stewardship in the United Kingdom, France, and the United States

Kavita K. Trivedi,¹ Catherine Dumartin,² Mark Gilchrist,³ Paul Wade,⁴ and Philip Howard⁵

¹Trivedi Consults, LLC, Albany, California; ²Southwestern Centre for Healthcare Associated Infections Prevention and Control and Inserm 657, Bordeaux University, France; ³Department of Infection/Pharmacy, Imperial College Healthcare NHS Trust, ⁴Department of Infection, Guy’s and St Thomas’ NHS Foundation Trust, London, United Kingdom; and ⁵Pharmacy, Leeds Teaching Hospitals NHS Trust, Leeds, United Kingdom
Monthly count data for new cases of CDI and the number of OBDs before and after the introduction of revised antibiotic guidelines.

Philip Howard, Leeds (Sep08)

Appointed in Sept 2008 when 12 MRSA bacteraemia and 80 CDI per month as part of action plan
• CDI 87% reduction since
• MRSA bacteraemia 95% reduction since
• 12% reduction in total & 13% down antibiotic/adm in year 1
• >100 guidelines developed = >12,000 hits per month. These won EAHP award in 2011
• 3rd lowest 4C antibiotic rate amongst tertiary hospitals
• Indication & duration on Rx >90% since 2010
• Annual antibiotic prevalence ≤30% since 2008
Leeds Antimicrobial Resource Page

Guidelines
- Adults
- Childrens
- Neonatal
- Primary Care
- OPAT / CIVAS

Medicines
- Antibiotics
- Antimicrobial Allergy
- Restricted Antimicrobials
- Calculators
- Antimicrobial Codes & Policies

Process
- Draft Guidance Under Review
- Guideline Development Pack
- Audit
- Performance Data
- Education

- Please read the key antimicrobial stewardship message for the month

*Always write the INDICATION plus DURATION or REVIEW date on ALL antimicrobial prescriptions.*

Recently added/updated Antimicrobial & Infection guidelines
- Neonatal Surgery Antimicrobial prophylaxis

Guidelines for Peer Review (comments welcome)
- Management of Complicated Intra-abdominal Infection in Adults
- Native Valve Endocarditis in Children (i.e. No Intra-Cardiac Prosthetic Material)
Respiratory Treatment Guidelines

- Acute Exacerbation of Chronic Obstructive Pulmonary Disease
- Aspiration pneumonitis and aspiration pneumonia
- Bronchiectasis - Acute Exacerbation
- Community Acquired Pneumonia
- Cystic Fibrosis in Children and Adults
- Hospital Acquired Pneumonia
- Infected Parapneumonic Effusions and Empyema
- Influenza
- Lung Abscess in adults
- Mycobacterium Abscessus Respiratory Tract Infections in Children and Adults with Cystic Fibrosis
- Pulmonary fungal disease (including aspergillosis) in the immunocompetent adult
- Varicella (Chicken Pox) infection in Adults
- Ventilator-associated pneumonia

Respiratory Prophylaxis Guidelines

- Thoracic Surgery

<table>
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<tr>
<th>Year</th>
<th>Pre-2008</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015 toMay</th>
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<td>New</td>
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<td>22</td>
<td>48</td>
<td>80</td>
<td>9</td>
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<td>16</td>
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<td>5</td>
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</table>
Philip Howard, Leeds (Sep08)

- Integrated primary & secondary care ASP
- Stopped cefalosporin reporting from micro for UTI = higher to lower Rxing rate in region
- Expertise / working with others: National policy roles
  - NHS-Eng HCAI/AMR project lead, AMS guidelines (SSTF & TARGET), AN Rx & AMS competencies, ESPAUR, ARHAI Observer, HEE AMR, etc
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  - Work with Huddersfield & Bradford University on AMS in Community Pharmacy
  - Regular publications in Medline listed journals
Leeds Health Pathways

The gateway to all essential Leeds Healthcare-related information.

Guidelines  Trust Service Directory  Referral Info  Consultants

Search:   Search LHP

Contact details for the Leeds Health Pathways team

Please note: All pictures and text on this website are protected by copyright law.
### Peer review of guidelines

#### Leeds Antimicrobial Guidelines and Policies Review

<table>
<thead>
<tr>
<th>Guideline/Policy Title</th>
<th>Views</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Antimicrobial agents in adult oncology patients (solid tumour) with neutropenic fever/sepsis</td>
<td>178</td>
<td>11</td>
</tr>
<tr>
<td>Treatment and management of Clostridium difficile infection</td>
<td>167</td>
<td>10</td>
</tr>
<tr>
<td>Community Acquired Pneumonia</td>
<td>151</td>
<td>15</td>
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<tr>
<td>Community Acquired Pneumonia - Draft 2</td>
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<tr>
<td>Guideline for Urinary Tract Infections in Adults</td>
<td>138</td>
<td>22</td>
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<tr>
<td>Parapneumonic Effusions and Empyema</td>
<td>115</td>
<td>13</td>
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<tr>
<td>Severe Sepsis Screening Tool and Resuscitation Care Bundle (Adults)</td>
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<td>16</td>
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<tr>
<td>Severe Sepsis Screening Tool and Resuscitation Care Bundle (Children)</td>
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<td>18</td>
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<tr>
<td>Guideline for the management of infective endocarditis</td>
<td>119</td>
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<tr>
<td>Guidelines for the use of Antifungal Treatments in Adult Haematology Patients</td>
<td>119</td>
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<tr>
<td>Guidelines for the management of Oropharyngeal herpes simplex infection</td>
<td>115</td>
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<tr>
<td>Guidelines for the prevention of infection in adult patients with an absent or dysfunctional spleen</td>
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<td>Guidelines for the management of intravascular catheter-related infection in Adults</td>
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<td>15</td>
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<tr>
<td>Brain Abscess</td>
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<td>11</td>
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<tr>
<td>Guidelines for management of prosthetic valve endocarditis</td>
<td>110</td>
<td>11</td>
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<tr>
<td>Guidelines for the investigation and Treatment of Candida infection in Neonates</td>
<td>115</td>
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<tr>
<td>Guidelines for the management of haematology/pelvis infections</td>
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<tr>
<td>Per-operative Antimicrobial Prophylaxis in Pelvic/Canal Surgery</td>
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<tr>
<td>Neonatal Long Line Sepsis</td>
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<tr>
<td>Management of Varicella (chicken pox) infection</td>
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<td>11</td>
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<tr>
<td>Management of herpes zoster infection</td>
<td>115</td>
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</tr>
<tr>
<td>Herpes Simplex Encephalitis in adults</td>
<td>115</td>
<td>11</td>
</tr>
<tr>
<td>Guidelines for the treatment of tinea corporis, tinea manuum (ringworm) or tinea pedis (athlete's foot)</td>
<td>115</td>
<td>11</td>
</tr>
<tr>
<td>Guidelines for the treatment of Onychomycosis in adults</td>
<td>115</td>
<td>11</td>
</tr>
<tr>
<td>Guidelines for the management of gastroenteritis (Food poisoning)</td>
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<td>11</td>
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<tr>
<td>Appendicitis</td>
<td>115</td>
<td>11</td>
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</tbody>
</table>

**Legend:**
- Green: Number of times each draft has been viewed
- Yellow: Number of comments received
This webpage automatically calculates patient doses according to the regimen policy.

<table>
<thead>
<tr>
<th>Gentamicin dose for the following patient:</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
</tr>
<tr>
<td>Patient's Name</td>
</tr>
<tr>
<td>Unit number</td>
</tr>
<tr>
<td>Age 43 years</td>
</tr>
<tr>
<td>Serum Creatinine 109 micromol/l</td>
</tr>
<tr>
<td>Calculated Dose</td>
</tr>
</tbody>
</table>

Calculations

Creatinine Clearance for Males
= (140 - age) × Weight × 1.23 divided by serum creatinine.
= (140 - 43) × 88.6 × 1.23 divided by 109
= 121.5 ml/min

Male Ideal Body Weight
= 50kg + (2.3 kg × number of inches over 5 feet)
= 50kg + 2.3 × 16.8
= 88.6 kg

Using Ideal Body Weight for dosing weight as it is the lesser value
Dose is calculated at 640mg. (7mg/kg of dosing weight, rounded to nearest 40mg dose)
However, this exceeds the maximum of 560mg, so prescribe 560mg.
Andy Karvot, Lincolnshire (Nov09)

- Established Trust’s Antimicrobials Steering Group.
- Development of antibiotic education for doctors, nurses and pharmacy staff.
- Ensured antibiotics reviews on all mandatory surveillance healthcare acquired infections (Clostridium difficile and MRSA) Trust-wide and attendance at / implementing relevant actions from associated RCA meetings.
- Responsible for Trust’s antibiotics audit programme, in conjunction with the Quality and Audit Department.
- Encouraging prescribers Trust-wide to include indications and durations / review dates on all antibiotics scripts.
- Chair of Yorkshire and Humber Antimicrobials Pharmacists’ Group for last three years.
- Plan to achieve 5% savings on Trust antifungals expenditure, through appropriate drug choice, both class wise and within classes.
- Movement towards compliance with South Manchester Hospitals antimicrobial stewardship self-assessment standards.
Andy Karvot, Lincolnshire (Nov09)

- Quality improvement
  - Rapid audit cycles (Plan-Do-Study-Act) quality improvement methodology
  - Intervention to create dedicated antibiotic section of inpatient prescription chart
Standard 2: Indication documented on antibiotic Rx

![Graph showing compliance over days]
Standard 3: Course length / review date on antibiotic script

![Graph showing compliance over days]
## Regular Medicines

<table>
<thead>
<tr>
<th>Drug (1)</th>
<th>Dose</th>
<th>Route</th>
<th>Date/Time</th>
<th>Month &amp; Year</th>
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<tbody>
<tr>
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### Additional instructions / indications

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<th>Print NAME</th>
<th>BLEEP</th>
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<table>
<thead>
<tr>
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### Additional instructions / indications

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Previous prescription format

Together
we care, we respect, we deliver
**Dedicated antibiotics prescribing section**

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**Antimicrobials:**

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STOP, REWRITE only if clinically indicated

*Together, we care, we respect, we deliver*
Mark Gilchrist, Imperial (Apr12)

- **Local**
  - Revision of local prescribing metrics for anti-infectives: customised reports + actions plans to Divisional managers
  - Introduced automated antimicrobial consumption monthly tracking report by speciality
  - Introduced antifungal stewardship initiatives
  - Centralised infection pharmacists activity + introduced dedicated pager for all 3 sites

- **National**
  - Led the transition of UKCPA Infection Management Group to Pharmacy Infection Network. In this time, the network has been rebranded, provided an extensive education and training portfolio together with publishing an Infection and Antimicrobial Stewardship Curriculum
  - BSAC Council
  - Flown the flag for Pharmacists to be at the heart of OPAT (outpatient parenteral antimicrobial therapy) services – This has led to co-chairing BSAC OPAT Initiative
  - DH guidance “Start Smart – Then Focus” review/ development group

- **International:**
  - In 2013/14 started discussion with international antimicrobial pharmacists to create an international network – So far this has attracted 10 different countries and a proposal to FIP to create a formal group under their guise.
  - Talks in Middle East to develop stewardship (2014 + 2015)
  - Talks in Hong Kong to develop OPAT (2014)
  - ICAAC international infection conference: Workshop convenor
Imperial mini point prevalence audits
Forecasting carbapenem resistance from antimicrobial consumption surveillance

Start Smart, Then Focus

Figure 1: Antimicrobial Stewardship (AMS) – Treatment algorithm

**ANTIMICROBIAL STEWARDSHIP**

**TREATMENT ALGORITHM**

Start Smart → Then Focus

DO NOT START ANTIBIOTICS IN THE ABSENCE OF EVIDENCE OF BACTERIAL INFECTION

1. Take histories of relevant allergies
2. Initiate prompt effective antibiotic treatment within one hour of diagnosis (or as soon as possible) in patients with life threatening infections
3. Comply with local antimicrobial prescribing guidance
4. Document clinical indication (and disease severity if appropriate) and dose on drug chart and in clinical notes
5. Include review/stop date or duration
6. Obtain cultures prior to commencing therapy if appropriate

CLINICAL REVIEW & DECISION AT 48-72 HOURS

1. STOP
2. IV to oral switch
3. Change antibiotic
4. Continue and review IV antibiotics daily or document stop date for oral antibiotics
5. OPAT*

DOCUMENT ALL DECISIONS
Outpatient parenteral antimicrobial therapy and antimicrobial stewardship: challenges and checklists

M. Gilchrist\textsuperscript{1*} and R. A. Seaton\textsuperscript{2}

\textsuperscript{1}Imperial College Healthcare NHS Trust, Charing Cross Hospital, London W6 8RF, UK; \textsuperscript{2}NHS Greater Glasgow and Clyde, Brownlee Centre, Gartnavel General Hospital, Glasgow G12 0YN, UK

*Corresponding author. Tel: +0203-311-1704; Fax: +0203-311-1342; E-mail: mark.gilchrist@imperialnhs.uk

Development of an expert professional curriculum for antimicrobial pharmacists in the UK

Jacqueline Sneddon\textsuperscript{1*}, Mark Gilchrist\textsuperscript{2} and Hayley Wickens\textsuperscript{3}

\textsuperscript{1}Scottish Antimicrobial Prescribing Group, Healthcare Improvement Scotland, Glasgow, UK; \textsuperscript{2}Imperial College Healthcare NHS Trust, London, UK; \textsuperscript{3}University Hospital Southampton NHS Foundation Trust, Southampton, UK
Dr Hayley Wickens, Southampton (Nov12)

• Quality assurance in local prescribing
  – Led development of Oracle database for rapid collection of antimicrobial prescribing audit data

• National and international leadership
  – Survey of antimicrobial stewardship activities by pharmacists in English hospitals (2011, published in high-impact journal 2013)
  – Development of UK point prevalence survey online data collection system with BSAC
  – UK co-ordinator for European Surveillance of Antimicrobial Consumption project (ESAC-Net) for ECDC, 2009-2015.
Entering HAPPI data

- Apex icon on desktop
- Login with network password > select HAPPI audit
- Select ward and choose patient
- Click on any standard for explanatory text
HAPPI audit results reported to Trust Board quarterly and to commissioners 6-monthly

Pharmacy HAPPI audit
Standard 2: Guideline followed or deviation justified?

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The increasing role of pharmacists in antimicrobial stewardship in English hospitals

H. J. Wickens¹,²*, S. Farrell³, D. A. I. Ashiru-Oredope⁴, A. Jacklin¹ and A. Holmes¹ in collaboration with the Antimicrobial Stewardship Group of the Department of Health Advisory Committee on Antimicrobial Resistance and Health Care Associated Infections (ASG-ARHAI)†

Development of an expert professional curriculum for antimicrobial pharmacists in the UK

Jacqueline Sneddon¹*, Mark Gilchrist² and Hayley Wickens³

¹Scottish Antimicrobial Prescribing Group, Healthcare Improvement Scotland, Glasgow, UK; ²Imperial College Healthcare NHS Trust, London, UK; ³University Hospital Southampton NHS Foundation Trust, Southampton, UK
That’s all folks