

#bugsndrugs

MDROs – Medical Management and the Role of Antimicrobial Stewardship

Dr Clíodhna Ní Bhuachalla MRCPI, FRCPath Specialist in Clinical Microbiology

MDROs – Medical Management and the Role of Antimicrobial Stewardship

Talk outline

- ➤ Antimicrobial resistance (AMR)
- >Multidrug resistant organisms (MDROs)
- >Medical management
- >Antimicrobial guidelines and prescribing
- >Antimicrobial stewardship (AMS)

Fwitter: @SPC2016Corl

Antimicrobial Resistance (AMR)





Guidelines for the Prevention and Control of Multi-drug resistant organisms (MDRO) excluding MRSA in the healthcare setting

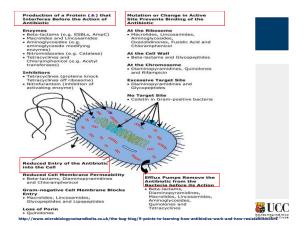
Appendix 2: Definitions used in the document

MDRO: The term multi-drug resistance as used in these guidelines describes a bacterial isolate which is resistant to one or more agents in three or more different classes of antimicrobials that the isolate is expected to be susceptible to; e.g., penicillins, cephalosporins, aminoglycosides, fluoroquinolones and carbapenems.

Infection: the presence of MDRO in tissues or body fluids along with signs and symptoms of infection (either locally or systemically) or the presence of MDRO in normally sterile body sites or fluids (usually but not necessarily with symptoms of infection).

Colonisation: the presence of MDRO in body fluids or tissues (e.g., gastrointestinal tract, urine, or sputum) without clinical signs of infection.

www.hpsc.ie/a-z/microbiology antimicrobial resistance/infection control and hai/guidelines/File, 12922, en.pdf



MDROs

- Meticillin resistant Staph. aureus (MRSA)
- Vancomycin resistant enterococci (VRE)
- Linezolid resistant VRE (LRVRE)
- Penicillin non susceptible Strep. pneumoniae (PNSP)
- Extended spectrum beta lactamase producing gram negative organisms (ESBL)
- Multidrug drug resistant Klebsiella pneumoniae (MDRKP), MDR Acinetobacter spp. (MDR-AB), MDR P. aeruginosa
- Carbapenem resistant Enterobacteriaceae (CRE), Carbapenamase producing Enterobacteriaceae (CPE)
- Multi and Extensively drug resistant tuberculosis (MDR/XDR TB)
- Multidrug resistant gonorrhoea......

Twitter: @SPC2016Cork Safe Patient Care Conference 2017 #bugsndrugs



MDROs



Protecting and improving the nation's health

Guidance for the laboratory investigation, management and infection prevention and control for cases of *Candida auris*

August 2017 v2.0

Twitter: @SPC2016Cork



MDROs - Risk factors for accquisition

Risk factors	
Broad spectrum antimicrobial use	E.g., Carbapenems, cephalosporins, fluoroquinolones, BLBLI combinations (eg., piptazobactam)
Exposure to specific antimicrobials	E.g., glycopeptide use and VRE
Prolonged hospital stay	
ICU admission	
Proximity to colonised/infected patient	E.g., contact of case
Invasive devices	E.g., vascular catheters
Immunosuppression/ underlying chronic disease	
Break in mucocutaneous barrier	E.g., patient with burns injury and MDR p. aeruginosa

MDROs - Medical Management

Key concepts at a prescriber level

· Colonisation versus infection

>E.g., MRSA lives on skin/nares >E.g., VRE/ESBL/CRE usually live in the gut

\cdot Colonisation does not require treatment

≻E.g., chronic leg ulcer ≻E.g., gut carriage

'Treat the patient not the lab result'

Twitter: @SPC2016Cork

Safe Patient Care Conference 2017 #bugsndrugs

MDROs - Medical Management

However if evidence of infection....

· Assess patient clinically

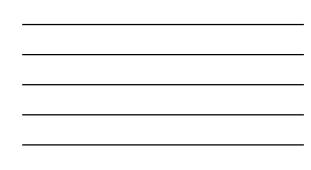
- Early Warning Score (EWS) value?
- · Any concerns re sepsis?

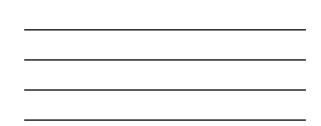




UCC

·			





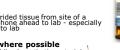
MDROs - Medical Management



Attempt to identify source HCAP CA-UTI IAI SSI Line/ prosthesis related



- Send all relevant Microbiology samples
 Essential to guide optimal treatment/de-escalation later
 Ideally taken before abx
 Labelling
 If critical sample, e.g., debrided tissue from site of a prostshetic joint infection, phone ahead to lab especially if on call hours +/- deliver to lab



- Achieve source control where possible
 Removal of infected central line/prosthetic material
 Drainage of abscess/collection
 Debridement of necrotic tissue

Twitter: @SPC2016Cork







Community Acquired Pneumonia

Treatment in the Community (Adults)

Comments

Start antibiotics immediately. B-

Assess using the CRB-65 score (Confusion, Respiratory rate ≥ 30/min, BP 950/50, Age ≥ 65) Score 0: Suitable for home treatment; Score 1-2: consider hospital referral; Score 3-4: urgent hospital admission. Add macrofied (PS6-5) and suitable for home treatment (RPA guidance).

If no response in 48 hours consider admission or add a macrolide first line or a tetracycline C to cover Mycoplasma infection (rare in over 65s).

In severely ill patients, give parenteral benzylpenicillin before admission $^{\rm C}$ and seek risk factors for Legionella and Staph, aureus infection, $^{\rm D}$

Treatment

Treatment	Dose	TX Duration
amoxicillin	500 mg - 1 g TDS	Up to 10 days
clarithromycin	500 mg BD	Up to 10 days
OR doxycycline	200 mg stat/100 mg OD	Up to 10 days

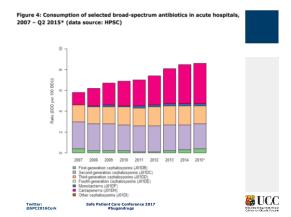
http://www.hse.ie/eng/services/list/2/gp/Antibiotic-Prescribing/



Antimicrobial guideline formulation







Antimicrobial guideline formulation Lest des certificies on l'Alley getons à airbon tits upont tout to geton authorition spinos Figure 2. Occarrance of carbappenement producing Externobacteriscase in 38 fourques countries, sainty an experimental report of mathematic producing the feed of national depress, 2835 Figure 2. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress, 2835 Figure 3. Occarrance of producing the feed of national depress of natio

Carbapenems: Broad spectrum antimicrobials Often used as the last line of treatment for hard to treat human infections caused by (resistant) gram negative bacteria e.g., infection with ESBL producing gram negative bacteria



Infection with	CRE?????			
Public Husto Fruitered	KEY MESSAGE: Treatment ⁽¹⁾ of the patient with an infection caused by carbapenemase-producing Enterobacteriaceae should be undertaken under the advice of the microbiologist			
Acute trust toolkit for the early detection, management and control of carbapenemase-producing	Firstly, establish whether the patient has an infection or is colonised with carbapenemase- producing Enterobacteriaceae as confirmed on laboratory testing:			
Enterobacteriaceae	If the patient has an infection, under the advice of the microbiologist, considerable and the patient of severe infection):			
	Polymyxins (eg colistin) Tigecycline Fosfomycin ¹⁴ (i.v. or, for lower UTI only, oral), is active against most			
	carbapenemase-positive E. coli, but variable against other genera • Aminoglycosides (less consistent) Combination therapy (supported by outcome analyses for treatment of severe infections):			
	Polymyxin + carbapenem Polymyxin + tigecycline Polymyxin + aminoglycoside			
https://www.gov.uk/governr guidanc	ment/collections/carbapenem-resistance- ce-data-and-analysis			
Ourling				
Quality Improvement Division	Search this section Search the whole site			
About Framework for Improving Nation	nal Safety Other Quality Improvement Resources and rammes Programmes Publications			
Quality Improvement Division > National Safety Programmes > HCA				
→ About us HCAI Resou	rrces Share 🔳 🛉 👽 🔇			
	or PHNs and others who need to visit patients/clients in own homes	<u></u>		
 > Provisional Guidance relating to CPE for > CPE Screening guidance for screening > Provisional Guidance relating to CPE for 	in acute hospitals – immediate and longer term priorities			
> You have questions about CPE (FAQ)		_		
http://www.hse.ie/eng/about/Who/QID/	nationalsafetyprogrammes/HCAIAMR/hcailinks.html			
Centers for Diseas	se Control and Prevention			
CDC > MMWR	ity Weekly Report (<i>MMWR</i>)			
	ew Delhi Metallo-Beta- lucing <i>Klebsiella pneumoniae</i> , Nevada, 2016			
DISCLOSURES Morbidity and Mortality We	hlbauch, PhD; Maroya Walters, PhD; Alexander Kallen, MD lekly Report, 2017;66(1):33		 	
	ent death from Pan-	_		
Resistant K. pn CDC	eumoniae published by			
Woman in the US dies from so after medical treatment in Ind	eptic shock resulting from an infected right hip seroma lia.			

Antimicrobial Stewardship (AMS)

Antimicrobial stewardship embodies an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobials to preserve their future effectiveness. It has three major goals:¹⁷

- Optimise therapy for individual patients
- Prevent overuse, misuse and abuse
- Minimise development of resistance at patient and community levels.

Twitter: @SPC2016Cork

Safe Patient Care Conference 2017 #bugsndrugs



Key AMS concepts at a prescriber level....

➤ Reflect on your prescribing practices

➤ Audit cycle **≻**Quality improvement

initiatives

Effective antibiotic prescribing – top ten tips

Effective antibiotic prescribing – top ten tips Antibiotics are essential to modern medicine and may be life-saving, but abuse leads to resistance. All physicians who prescribe antibiotics have a responsibility to their patients (and public health) to prescribe optimally. Institute antibiotic treatment immediately in patients with life-threatening infection.

Prescribe in accordance with local policies and guidelines, avoiding broad-spectrum agents.

Document in the clinical notes the indication(s) for antibiotic prescription.

Send appropriate specimens to the microbiology lab:

- Send appropriate specimens to the microbiology lab; drain pus and remove foreign bodies if indicated. Use antimicrobiol susceptibility data to de-escalate substitute/add agents and to switch from intravenous to oral therapy. Prescribe the shortest antibiotic course likely to be effective.
- Always select agents that minimise collateral damage (i.e. selection of multi-resistant bacteria/C. difficile).

 Monitor antibiotic levels when needed (e.g.

- Use single-dose antibiotic prophylaxis where possible.
- Consult your local infection experts.



Take home points

- AMR and MDROs of grave concern nationally and internationally
- · Running out of treatment options
- Combination of strict infection prevention control measures and AMS practices required
- Promote awareness, education, engagement





Twitter: @SPC2016Cork

