Milton Keynes Clinical Commissioning Group

PRESCRIBING NEWS

November 2012

Special Edition – Antibiotics and infections

Whilst putting together the November edition of Prescribing News, we collected a lot of information on antibiotics kindly contributed by Naomi Fleming, Antibiotic Pharmacist at MKCHS. We therefore took the decision to issue a special edition to mark European Antibiotic Awareness Week.

Focus on Antibiotics

Only 70 years after their introduction, we are now facing a future without effective antibiotics for several types of bacteria that cause infections in humans due to bacteria developing resistance to antibiotics. The spread of resistance threatens a return to times when surgery was restricted to simple operations on the otherwise healthy and when organ transplants, joint replacements and immunosuppressive therapies were unthinkable.

Antibiotic resistance is a complex global public health issue as bacteria travel with us across international boundaries. To tackle it effectively requires an integrated approach at a national, European and international level. European Antibiotic Awareness Day on 18th November is an annual event that aims to raise awareness on how to use antibiotics in a responsible way to keep them effective for the future.

This year a new tool TARGET (Treat Antibiotics Responsibly, Guidance, Education, Tools) will be launched for use by antibiotic prescribers in Primary Care, accessible on the RCGP website www.rcgp.org.uk/TARGETantibiotics/ The “TARGET Antibiotic” resources aim to increase awareness of the importance of antimicrobial resistance and responsible use, through resources aimed at clinicians themselves and for them to share with patients during consultations. MARTI training is available as a clinical resource from this page.

The Department of Health provide educational materials to help implement antibiotic campaigns, downloadable from http://www.dh.gov.uk/health/tag/eaad/ healthcare professionals are encouraged to use this material for patient displays and to stimulate discussion with patients and other healthcare professionals around the antibiotic agenda. Please take the time to visit these resources; they may be useful to inform Action Plans for QOF.

As resistance in bacteria grows it will become more difficult to treat infections, which is why it is important we use our existing antibiotics wisely. There are very few new antibiotics in the development pipeline. A global initiative set up by the BSAC (British Society for Antimicrobial Chemotherapy), calls to all parties – governments, healthcare professionals, industry and charities – to identify and implement solutions to stimulate and regenerate the discovery and development of antibacterial drugs. Please join with **Antibiotic Action** and sign the online petition available at http://antibiotic-action.com/join/ .

UTI Resistance:

Individuals prescribed an antibiotic in primary care for a respiratory or urinary infection develop resistance to that antibiotic. The effect is greatest in the month immediately after treatment but may persist for up to 12 months. (Costelloe C, Metcalfe C, Lovering A, Mant D, Hay AD. Effect of antibiotic prescribing in primary care on antimicrobial resistance in individual patients: systematic review and meta-analysis. BMJ. 2010 May 18;340:c2096).

This effect increases the population carriage of organisms resistant to first line antibiotics, and these resistant organisms can spread between people.

The local report on resistance from community UTIs in June 2012 circulated recently by Dr Ragunathan showed that the majority of *E coli* (the most prevalent organism causing UTI) are responsive to Nitrofurantoin. Nitrofurantoin also gives the best cover of the oral antibiotics for Extended beta-Lactamase producing bacteria that are on the increase, therefore it is the best first line option.

Should Trimethoprim still be used for UTIs?

Local resistance levels mirror national levels, however it is important to note that Trimethoprim resistance in first episodes of uncomplicated UTI will be less than that reported as only recurrent cases, complicated cases or treatment failures are sent routinely for MC+S. Trimethoprim is more likely to work as first line in uncomplicated infections in adults, however, UTIs are likely to be more resistant with recurrent infections, necessitating a sample for MC+S in these cases.

A study was conducted by McNulty et al on patients with an uncomplicated community-acquired UTI treated empirically with Trimethoprim 200mg twice daily for three days. They compared several clinical outcomes, including time to symptom resolution, reconsultation rates, number of subsequent antibiotics and bacteriuria at one month, in patients with isolates resistant to trimethoprim and those with susceptible isolates. The study showed 13.9% had resistant isolates and half of patients reconsulting in the first week had a resistant organism. Patients with trimethoprim-resistant organisms had significantly worse clinical outcomes than those with trimethoprim-susceptible organisms. Nevertheless, trimethoprim resistance was rarer than predicted from routine laboratory submissions and it was calculated that 23 women require microbiological investigation to prevent one reconsultation arising from resistance-based treatment failure. (C. A. M. McNulty**,** J. Richards, D. M. Livermore, P. Little, A. Charlett, E. Freeman, I. Harvey, M. Thomas. Clinical relevance of laboratory-reported antibiotic resistance in acute uncomplicated urinary tract infection in primary care J. Antimicrob. Chemother. (2006) 58 (5): 1000-1008).

Empirical antibiotic treatment in acute, uncomplicated UTIs with Trimethoprim is still recommended, if Nirtrofurantoin is not appropriate, unless patients reconsult in the first week, when antibiotic treatment guided by laboratory testing of urine is recommended.

Other antibiotics from the local report include Pivmecillinam, there are low levels of resistance to it and as it is a narrow spectrum penicillin, there is a low level of collateral damage for instance selecting for ESBL resistance and *C difficile*. It is as effective as cefalexin and ciprofloxacin but without the risks. Ciprofloxacin should be reserved for proven *Pseudomonas* infections. If we use it empirically, we run the risk of increasing resistance to it in organisms already resistant to the majority of other antibiotics.

Please note, if a person has already got *C difficile* in their gut, even one short course of antibiotic can cause a *C difficile* infection, in fact it has been reported after only one dose of pre-surgery prophylaxis! One third of older people in care homes and a quarter of older people in the community are colonised with *C difficile*, so the use of unnecessary broad spectrum antibiotics should be avoided when there are other less risky antibiotics available for treating UTIs.

Classes of Antibiotics, Bactericidal vs Bacteriostatic and use in Penicillin Allergy:

The fundamental difference between bactericidal antibiotics and bacteriostatic ones is that, with bactericidal antibiotics, the bacteria cannot continue to divide even when the drug is removed (they are non-viable or "dead"). In contrast, with bacteriostatic antibiotics, the bacteria don't divide while the drug concentration is high, but recover when the drug is removed, and continue to multiply as before. They must work together with the immune system to remove the bacteria from the body. Some drugs may be bactericidal to some bacterial genera, but only bacteriostatic to others. Some drugs may be classified as bacteriostatic, but may fulfill the bactericidal criterion at higher doses.

Generally, it is only considered very important to use bactericidal drugs in preference to bacteriostatic drugs when either a) it's a life-threatening infection, such as bacterial endocarditis or meningitis or b) the patient is very severely immunocompromised e.g. has very low numbers of white blood cells ie neutropenia and likely won't be able to clear the infection. In these cases, bactericidal antibiotics are preferred, but in otherwise healthy people with less severe infections, bacteriostatic antibiotics are just as effective.

The table below gives the classes of antibiotics and divides them into Bacteriostatic and Bactericidal. They are also colour coded for penicillin allergy:
Red=Not to be used in penicillin allergy
Orange=Only to be used with caution in penicillin allergy and only if confirmed no history of anaphylaxis/immediate hypersensitivity.
Green= Safe to use in penicillin allergy.

Bactericidal Antibiotics	Bacteriostatic Antibiotics
Penicillins: Phenoxymethylpenicillin/Penicillin V Flucloxacillin Amoxicillin Ampicillin **Penicillins with beta lactam inhibitor:** Co-Amoxiclav Co-fluampicil **Mecillinam:** Pivmecillinam **Cephalosporins:** Cefalexin Cefaclor Cefradine Cefuroxime **Quinolones** Ciprofloxacin Levofloxacin Norfloxacin Ofloxacin **Metronidazole** Metronidazole **Rifamycin** Rifampicin Rifabutin	**Macrolides** Azithromycin (Zithromax®) Clarithromycin (Klaricid®) Erythromycin **Class- Lincosamides** Clindamycin (Dalacin®) **Class-Tetracyclines** Tetracycline Demeclocycline Doxycycline Lymecycline Minocycline Oxytetracycline

Findings from the Project on Patient Experience of MRSA Decolonisation:

Aim: to understand the current patient journey and subsequently develop a consistent and simple patient pathway in order to promote consistency of care and treatment for patients colonised with MRSA.

Since 2011 all patients admitted to hospital for planned or emergency care have been screened for colonization with MRSA. Patients with an infection and/or sores, or wounds that are not healing, may also be swabbed in hospital or the community.

Generally, colonization with MRSA does not cause serious harm and therefore does not require treatment. However, if the carrier needs a healthcare procedure or surgery, or has an open wound there is an increased risk of infection or of bacteraemia. These vulnerable patients will be recommended decolonization treatment. If it is not applied correctly this can increase the risk of infection or bacteraemia in already vulnerable patients.

The project involved a structured telephone interview and ran for 12 months from April 2011. It included all newly diagnosed MRSA patients from 6 GP practices in MK that agreed to take part.

Results:
Fifty-one patients were newly diagnosed as colonised with MRSA, 25 were swabbed in primary care and 26 were swabbed in secondary care, however, only forty-two were recommended the decolonisation treatment. These patients were telephoned and invited to take part in this survey. Six did not complete our questionnaire for various reasons.

Thirty-three females and eighteen males were identified. Ages ranged from a few weeks to 96 years. The 70 to 80 year age group held the highest number and 41% of the total number were over 70 years of age.

Q; Were you given any written information or instructions at any stage?

- 10% were given written information at the time of initial screening,
- 30% were given written information with their results.
- 77% were given written information when they received or collected their Octenisen body wash and Bactroban ointment from the pharmacist.
- Thirteen percent (13%) reported no written information was given at any stage.

Q: Did you follow the instructions telling you how to use the body-wash and nasal cream ?

- 58% said that they had correctly applied the bodywash (including hair wash) and nasal ointment. A further 16% said they had applied it correctly but said they carried on for longer than the five days recommended, "just to be on the safe side".

- 26% of patients did not apply it correctly, either using it in the bath, not applying it for 3 minutes or all over and some not washing their hair. Everyone who commenced the treatment finished it, or said they intended to finish it.

There was a correlation between those who were not given written instructions and those who did not correctly apply the treatment.

Q: Do you think that the staff who talked to you at each stage of this process gave you enough information
Many patients thought they had not been given enough information, especially written information.

Action
Please ensure that patients understand why they have been given decolonisation treatments and how to use them.

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