Review of Antibiotic Prophylaxis in the Management of Recurrent Urinary Tract Infections (UTI) in Adults

Purpose of audit

Prophylactic antibiotics have been identified as a potential area for improvement to reduce unnecessary antibiotic use. This reduction will also help to slow the development of antimicrobial resistance which may develop from the use of long term antibiotics.

Objectives

- To provide a baseline for measuring effectiveness of strategies designed to improve UTI management, antibiotic use and the implementation of NICE guidelines pertaining to UTI
- To reduce the risk of patients developing *E.coli* bacteraemia
- To reduce the risk of patients developing *Clostridium difficile* infection
- To reduce the risk of patients acquiring antibiotic resistant organisms
- To ensure patients with UTI prophylaxis are reviewed at 6 monthly intervals to encourage appropriate prescribing and minimise long-term repeat prescriptions and side-effects
- To ensure patient confidentiality is respected throughout the process
- To link Welsh health boards together and drive a co-ordinated All-Wales Quality Improvement project

Scope

- The review will cover all patients prescribed antibiotics for the prophylaxis of recurrent UTI, except those listed in the exclusion criteria
- The term 'review' used in this document refers to the procedure of searching, reviewing and recording information found in the patient's medical records
- The GP practice will be informed of all data gathered from the audit in order to guide future practice

Background

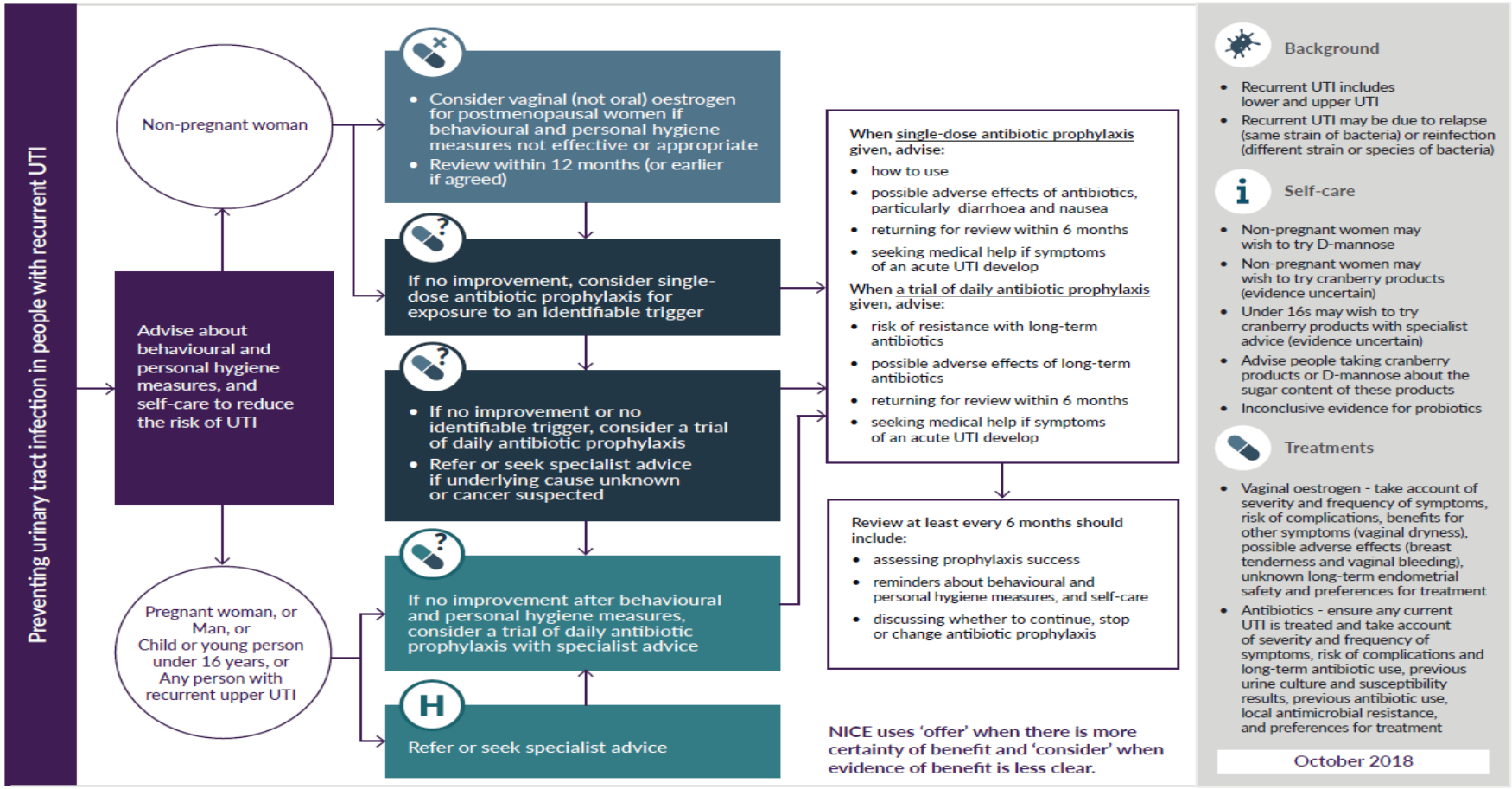
Initial Management of a Recurrent UTI

Before considering antibiotic prophylaxis for recurrent UTIs the following self-care measures should be advised:

- Ensure adequate hydration to promote more frequent urination
- Encourage urge-initiated voiding and post-coital voiding
- For post-menopausal women with risk factors such as atrophic vaginitis, prescribe topical vaginal oestrogens

If the above self-care measures fail to resolve the problem then further investigation is required and prophylactic antibiotics may be considered. See NICE guidance [NG112} on recurrent UTI management.

UTI (recurrent): antimicrobial prescribing



Using Prophylactic Antibiotics

There is no ideal antibiotic for UTI prophylaxis as all are associated with problems of resistance and/or adverse effects. However, trimethoprim and nitrofurantoin are the recommended first line agents*, but consult recent urine culture results (within last 2 months) to confirm sensitivities.
*Please refer to local Primary Care Antimicrobial Guidelines for current up-to-date treatment recommendations

Please note that the use of long-term antibiotic prophylaxis is strongly associated with the development of antimicrobial resistance.

Before deciding to commence antibiotic prophylaxis, the patient should be counselled on the following issues:

- Antibiotic prophylaxis is not usually a life-long treatment
- There is no evidence of additional benefit beyond 6-12 months. Therefore, treatment should be discontinued ideally after 6 months
- There is currently **NO** strong evidence for or against the use of rotational antibiotics

Antibiotic strategies

Stand-By Antibiotics

Consider post-coital stat doses if UTIs associated with sexual intercourse . Nitrofurantoin or trimethoprim should be considered first-line unless their use is associated with resistance, allergy or co-morbidities.

Regular Antibiotic Prophylaxis

If regular antibiotic prophylaxis is required, offer a 6-month trial of low-dose continuous antibiotic treatment

Recurrent symptomatic UTI	**Antibiotic**	**Dose**	**Duration**
	Trimethoprim	100mg nocte	Ensure review at 6-months
	Nitrofurantoin	50-100mg nocte	
	If resistance to above:		
	Cefalexin	125mg nocte	

Cautions & Contra-indications

Trimethoprim

- On long term treatment, patients and their carers should be told how to recognise signs of blood disorders and advised to seek immediate medical attention if symptoms such as fever, sore throat, rash, mouth ulcers, purpura, bruising or bleeding develop
- Trimethoprim may contribute to hyperkalaemia. Close supervision is recommended when used in elderly patients or in patients taking high doses as these patients may be more susceptible to hyperkalaemia
- Seek dosing advise in BNF for patients with renal failure

Nitrofurantoin

- Avoid if eGFR <45ml/min. However, a short course (3-7 days) may be used with caution if eGFR 30-44ml/min in certain patients with uncomplicated lower UTI
- Avoid in patients with G6PD deficiency and acute porphyria
- In pregnancy, avoid near term as may produce neonatal haemolysis
- Closely monitor for signs of pulmonary, hepatic, neurological, haematological and gastrointestinal side effects during treatment, as advised in the summary of product characteristics
- Chronic pulmonary reactions (including pulmonary fibrosis and diffuse interstitial pneumonitis) can develop insidiously, and may occur. Close monitoring of the pulmonary conditions of patients receiving long-term therapy is warranted, especially in the elderly

Managing Patients on a Prolonged Course of Antibiotic Prophylaxis

All patients should be identified for review following 6 months of antibiotic prophylaxis for a recurrent UTI. During the review, a clinical decision should be made to either stop or continue. This decision should be documented in the patient's medical notes. During a review, patients should always be informed on the risks of continued long term antibiotic therapy.

A discussion between the patient and the prescriber should take place to discuss the following issues:

- Increased likelihood of infection with a resistant organism
- Risk of developing a healthcare associated infection, such as *C.diff*
- A prolonged period of antibiotic treatment in most cases allows the bladder wall to 'heal' making UTIs less likely

Recurrence of UTI after stopping Antibiotic Prophylaxis

If a patient develops a recurrent UTI after stopping antibiotic prophylaxis, it is important to determine whether the patient is following the recommended self-care measures as mentioned above.

If recommended self-care measures have been followed, further investigations should include a renal tract ultrasound and a post void bladder residual volume scan.

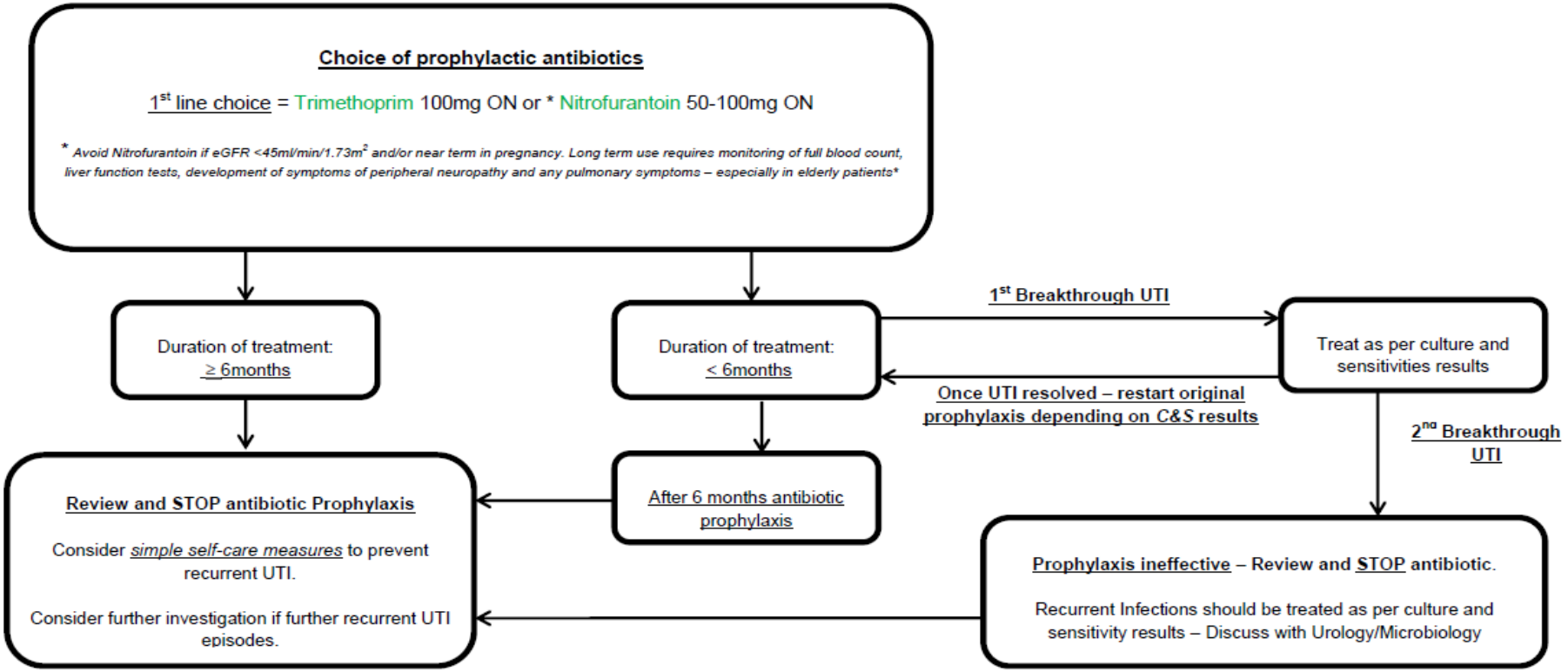
SWAP
Supporting Wales with Antibiotics in Primary Care

UTI FRIDAY

Review of Antibiotic Prophylaxis in the Management for Recurrent UTIs in Adults

Recurrent UTIs are currently defined as **two** or more symptomatic UTIs in a 6-month period or **three** or more in a 12 month period.

Simple Self Care Measures: *Ensure adequate hydration to promote urination, Encourage urge-initiated voiding and post-coital voiding, Recommend trial of cranberry products, For post-menopausal women with risk factors such as atrophic vaginitis, prescribe topical vaginal oestrogens.*



The Audit Process

1. Transparency

All relevant practice staff must be informed of the work being undertaken

2. Searches for Patients

A search should be designed and run to identify long-term antibiotics for the prophylaxis of recurrent UTI in the last 12 months

The search should include:

Antibiotic	Strength
Trimethoprim	100mg
Nitrofurantoin	50mg, 100mg
Nitrofurantoin MR	100mg
Cefalexin	125mg, 250mg

3. Exclusion/Referral Criteria

The patient's medical history must be reviewed to exclude:

- Pregnant women
- Patients <14 years of age
- Patients who have not received a prescription within the last 6 months

4. Keeping a record

- The printed report must be marked to show those patients that have been reviewed during the process of the audit
- Patient identifiable information must not be removed from the practice
- All documentation must be stored securely
- All data gathered will be used to help shape practice at a local, health board and All Wales level.
- All data used at an All Wales level will be anonymised to the health board and not be traceable back to individual GP practices.

Patient Data Collection Sheet – UTI Prophylaxis Audit

Surgery name			
EMIS/Vision ID			
Sex	M	F	
Age			
Care home resident	Yes	No	
Antibiotic, strength, directions			
Is prophylaxis being cycled? (also list abx above)	Yes	No	
If so, how often?			
Date commenced on prophylaxis (and date of last supply, if appropriate)			
Setting prophylaxis recommended/started	Primary	Secondary	
Does the patient have a long-term catheter?	Yes	No	
Have there been any extra prescriptions for acute UTI whilst on prophylaxis?	Yes	No	
If so, how many in previous 12 months?			
Acute antibiotic, strength, directions, quantity, date (list all in previous 12 months)			
Antibiotic prescribed for acute UTI same as current prophylaxis	Yes	No	
MSU shows resistance to prophylactic agent and prophylaxis not changed	Not changed	Changed	n/a
Has the patient had a prophylaxis review in the last 6 months?	Yes	No	
Date of last prophylaxis review			
Additional GP comment noted in relation to UTI management? Review & stop/continue?			

Audit conducted by: Date:

Audit Summary Sheet

	Number	% of practice population
Practice list size		100%
Number of patients on long term antibiotic prophylaxis for recurrent UTI		

		Number	% audit sample
Number of patients:	**0 – 20 years**		
	21 – 40 years		
	41 – 60 years		
	61 - 80 years		
	80+ years		
Number of patients cycling prophylactic antibiotics			
Frequency of cycling	**Monthly:**	**2 monthly:**	**3 monthly:**
Number of patients on: (including cycled antibiotics)	**Trimethoprim 100mg**		
	Trimethoprim 200mg		
	Nitrofurantoin 50mg		
	Nitrofurantoin 100mg		
	Cefalexin 125mg		
	Cefalexin 250mg		
	Other		
Number of patients on prophylaxis for:	**<6 months**		
	6 months – 1 year		
	1 – 2 years		
	2 – 3 years		
	3 – 4 years		
	4 – 5 years		
	>5 years		
Number of prescriptions initiated in primary care			
Number of prescriptions recommended by secondary care			
Number of patients with a long-term catheter			
Number of patients having acute treatment for UTI (in last 12 months) while on prophylaxis			
Antibiotic prescribed for acute UTI same as prophylaxis			
MSU shows resistance to prophylactic agent and prophylaxis not changed (calculate % from total MSU)		/	
Number of patients with a documented prophylaxis review in the last 6 months (excluding those who have been on prophylaxis for <6 months)		/	
Review & stop (calculate % from total reviews)		/	
Review & continue (calculate % from total reviews)		/	

References

1) SIGN. 2012. Management of suspected bacterial urinary tract infection in adults [Online]. Available at: http://www.sign.ac.uk/guidelines/fulltext/88/ [Accessed: 15th November 2016]

2) HPA. 2014. Diagnosis of UTI: A quick reference guide for Primary Care [Online]. Available at: https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis [Accessed: 15th November 2016]

3) NICE. 2015. Urinary tract infections in adults [Online]. Available at: https://www.nice.org.uk/guidance/qs90 [Accessed 15th November 2016]

4) PHE. 2016. Urinary Tract Infection (UTI) information leaflet [Online]. Available at: http://www.rcgp.org.uk/~/link.aspx?_id=9FCF9DA4B4A045519593320478DFD9E7&_z=z [Accessed: 5th December 2016]

5) European Association of Urology. 2015. Guidelines on Urological Infections [Online] Available at: http://uroweb.org/wp-content/uploads/19-Urological-infections_LR2.pdf [Accessed 10th December 2016]

6) Drug Safety Update. 2014. Nitrofurantoin [Online] Available at: https://www.gov.uk/drug-safety-update/nitrofurantoin-now-contraindicated-in-most-patients-with-an-estimated-glomerular-filtration-rate-egfr-of-less-than-45-ml-min-1-73m2 [Accessed 12th December 2016]

7) British National Formulary. 2016. 71st Edition

8) Electronic Medicines Compendium. 2016. Nitrofurantoin 100mg Tablets [Online] Available at: http://www.medicines.org.uk/emc/medicine/29701 [Accessed 15th December 2016]

9) Electronic Medicines Compendium, 2013. Trimethoprim 200mg Tablets [Online] Available at: http://www.medicines.org.uk/emc/medicine/26365 [Accessed 15th December 2016]

10) Cochrane Library. 2012. Cranberries for preventing urinary tract infections [Online] Available at: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD001321.pub5/abstract;jsessionid=08BFECEFC1D32C51290F40B78BF1BD89.f04t02 [Accessed 16th December 2016]

11) NICE CKS. 2015. Urinary tract infection (lower) – women [Online] Available at: https://cks.nice.org.uk/urinary-tract-infection-lower-women#!scenario:2 [Accessed 16th December 2016]

12) Cochrane Library. 2008. Antibiotics for preventing recurrent urinary tract infection in non-pregnant women (Review) [Online] Available at: http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD001209.pub2/pdf/standard [Accessed 16th December 2016]

13) BMJ.2016. Urinary Tract Infections in Men [Online] Available at: http://bestpractice.bmj.com/best-practice/monograph/76/treatment/step-by-step.html [Accessed 16th December 2016]

Acknowledgements

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