Antimicrobial shortages and the impact on the Richmond/Clarence HSG

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Richmond/Clarence Overview

- Northern NSW LHD
- Amalgamation of 2 HSGS: Clarence and Richmond
- Encompasses 9 Hospitals:
 - 1. Grafton Base Hospital
 - 2. Lismore Base Hospital
 - 3. Casino & District Memorial Hospital
 - 4. Nimbin Multi purpose centre
 - 5. Bonalbo Hospital
 - 6. Kyogle Memorial Hospital
 - 7. Maclean District Hospital
 - 8. Urbenville Rural Hospital
 - 9. Ballina Hospital
- Home to the Bundjalung Nation





Our distribution structure

- Centralised out of Two Base Hospitals
 - Lismore Base Hospital
 - Grafton Base Hospital



Recent Antimicrobial Shortages of concern to Richmond/Clarence

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- 1. Ampicillin/Amoxycillin
- 2. IV Vancomycin
- 3. Piperacillin/Tazobactam
- 4. IV Aciclovir
- 5. IV Fluconazole
- 6. IV Metronidazole
- 7. Po Metronidazole
- 8. IV Azithromycin
- 9. Daptomycin
- 10. Amikacin
- 11. Tigecycline
- 12. Norfloxacin

Advantages of Antimicrobial shortages

- Rationalisation of Antimicrobials
 - 22% of Antimicrobial usage in Australian Hospitals is inappropriate (NAPS 2015)
- Utilisation of more narrow spectrum agents
 - Only when Broad spectrum therapy unavailable
- Utilisation of more effective agents
- Changes in Epidemiology/ sensitivity changes
 - **Eg** Decrease in c diff rates during Piperacillin/Tazobactam shortage (Mendez et al . 2006)

Disadvantages of Antimicrobial shortages

- Increased costs
 - Analysis Premier Healthcare Alliance found shortages cost US\$200 million annually (Antimicrobials account 13% 20%)
- Utilisation of less effective treatments
- Utilisation of potentially toxic therapies
 - eg: Gentamicin
- Utilisation of more broad spectrum therapies
 - "Squeezing the balloon"
- Epidemiology/sensitivity changes

Planning and actioning the shortages

- Wide distribution network needs to be robust
- Cost effective solutions
- All involved: AMS committee, Pharmacy, Procurement, Nursing staff and Medical Officers
- 1. Reviewing usage
 - 1. Is the shortage of concern?
 - 2. NB: Usage will decrease during shortage due to awareness and essentially rationing eg: Metronidazole IV usage halved during shortage in RCHSG
 - 3. Expected duration of the shortage
 - 1. Stock on hand
- 2. Sourcing alternatives/stock
 - 1. Brand or SAS product available
 - 2. Cost
 - 3. Placing back orders
- 3. Controlling/Regulating use
 - 1. Removal from imprest
 - 2. Placing restrictions on use

Planning and actioning the shortages

- 4. Communication
 - 1. Raise awareness through:
 - 1. Global emails
 - 2. Relevant committees
 - 3. Signage at stock holdings
 - 2. Avoid recommending "Blanket alternatives"
 - 1. Encourages off guideline prescribing
 - 2. Develop interim local guidelines
 - 3. Liaise and update relevant advisory groups
 - 1. CEC, NCAS, TAG
- 5. "Trimming the fat" / governance during Antimicrobial shortage
 - 1. Review appropriateness:
 - 1. Piperacillin/Tazobactam 19.9% inappropriate, IV Azithromycin 33.6% inappropriate, Vancomycin 18.9% inappropriate
 - 2. Most common reasons for inappropriate use:
 - 1. Empiric choice to broad/ Failure to de-escalate to Microbiology
 - 2. Duration excessively long

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Table 4: What action did you take because of the shortage?

Borrowing stock from another pharmacy	1%
Use second/third line medicines	<mark>6%</mark>
Use an alternative medicine of equal efficacy	7%
I have no alternatives	12%
Procuring stock through SAS	13%
Switch to a different dose form/strength	15%
Using emergency stock	20%
Using an alternative brand	26%

Table 5: Action taken for most common medicines shortages

Procuring stock through SAS	20.2%
Use an alternative medicine of equal efficacy	6.5%
Using an alternative brand	17.8%
Use second/third line medicines	5.7%
Using emergency stock	31.0%
Switch to a different dose form/strength	10.9%
Borrowing stock from another pharmacy	1.1%
I have no alternatives	6.8%

Table 6. Did this action increase costs?

Yes	51%
No	37%
N/A	13%

Impact on our Antimicrobial Stewardship Program

Positive effects

- AMS involvement in initial prescribing.
 - "What Antimicrobial would you suggest then?"
- Reduction in inappropriate use
 - > 25-26% of all Antimicrobial prescribing is inappropriate in Richmond/Clarence area
 - ▶ Gave us control over one "Green" antimicrobial: Metronidazole
- Adherence to guidelines
- Increased use of oral agents
- Potential long term prescribing change
 - "All our patients didn't die without IV Azithromycin"
- Reductions in treatment duration
 - Transition to oral sooner
- Increase in Microbial yield to direct therapy
 - Reluctance to commence patients on antimicrobials until necessary, thus we actually cultured something

Impact on Antimicrobial Stewardship Program

- Negative effects
 - Increase in costs
 - Metronidazole 300%
 - ▶ NB: Formulary transitional period, so costs difficult to compare
 - Increased labour
 - Sourcing alternatives
 - Recommending alternatives
 - Restriction associations
 - Metronidazole off imprest (difficult to overcome as Nursing saw this as an act of stewardship, to inconvenience them)
 - SAS forms

IV Azithromycin example



During the period of shortage inappropriate use dropped 4.0% at LBH