

Post-antibiotic era?

Is the misuse of antibiotics, accelerating antibiotic resistance, causing antibiotics to become less effective in the treatment of common infections?

Issue:

Antibiotic resistance occurs via natural selection, however antibiotic misuse is accelerating this process, posing a great threat on our ability to treat common infections (Cantarero-Arévalo, L., Hallas, M. P. and Kaae, S, 2017).

Antibiotics that were once effective in treating common infections and were essential in post-operative care, are now becoming less effective. Resulting in prolonged illnesses, untreatable infections and even death in some of the more severe cases (David, O'Neal, Miller, Johnson, & Lloyd, 2017).

Implications:

There are currently limited treatment options available to fight infections and if we carry on the way we're going, eventually many infections will become untreatable. Nurses are having to develop better preventative methods to try reduce the initial spread of infection in attempt to minimise antibiotics use. Hospitals will soon become over crowded with drug-resistant, infectious patients, prolonging hospital stays and increasing the risk of hospital acquired infections as the spread of infection will be harder to manage. Antibiotics are also essential for many common surgical procedures however, these are being compromised and soon may be too risky to undergo.

Recommendations:

Individuals;

- Only take antibiotics when prescribed for by a certified health care professional and never re-use old antibiotics.
- Keep vaccinations up to date to eliminate the risk of infections.

Healthcare professionals;

- Practice good hand hygiene.
- Antibiotics should be considered life-saving medicines and prescribed only when necessary according to specific guidelines and regulations.

Agricultural sector;

- Only use antibiotics when advised by a veterinarian and not as a growth promotion method (Ministry of Health - Fact sheet, 2016).

Literature Review:

Antibiotic misuse is aiding the selection of dominant genes over drug-sensitive genes, encouraging bacteria to develop new techniques to overcome antibiotic treatments (Bryant & Knights, 2011). Already 700,000 die each year of drug resistant bacterial infections and it's predicted that in 2050, 10 million people will die if we continue misusing antibiotics (Wiles, 2017).

The leading causes of antibiotic misuse in New Zealand include;

- Inappropriate prescribing of antibiotics from health care professionals.
- Health consumers overusing antibiotics.
- The increasing use of antibiotics in New Zealand's agricultural sector.

Conclusion:

Antibiotic misuse is accelerating the process of antibiotic resistance which in turn is compromising the effectiveness of antibiotic treatment. Inappropriate prescription, overuse and the increasingly high use of antibiotics in agriculture are all contributing factors towards this global crisis, yet they are also easily fixed with simple preventative techniques.

References:

- Antibiotic resistance*. (2016). Ministry of Health NZ, (2). Retrieved 7 March 2017, from <http://www.health.govt.nz/your-health/conditions-and-treatments/treatments-and-surgery/medications/antibiotic-resistance>
- Bryant, B. & Knights, K. (2011). *Pharmacology for Health Professionals* (3rd ed., pp. 843-849). Australia: Melinda McEvoy.
- Cantarero-Arévalo, L., Hallas, M. P. and Kaae, S. (2017), Parental knowledge of antibiotic use in children with respiratory infections: a systematic review. *International Journal of Pharmacy Practice*, 25: 31-49. doi: 10.1111/ijpp.12337
- David, C., O'Neal, K., Miller, M., Johnson, J., & Lloyd, A. (2017). A literacy-sensitive approach to improving antibiotic understanding in a community-based setting. *International Journal Of Pharmacy Practice*, 1-4. <http://dx.doi.org/10.1111/ijpp.12332>
- Image sourced from: <https://ysjournal.com/antibiotics-an-era-of-resistance/>
- Wiles, S. (2017). Antibiotic Emergency. *New Zealand Listener*, (4010), 15-19.

By Katie Millis

PECOT Category	Information relating to question	Explanation
Population	My population for this literature search will target all consumers and prescribers of antibiotics.	I wish to explore antibiotic consumption as a whole to help broaden my literature search in order to uncover relevant and quality information. I have chosen to explore both consumers and the health professionals who prescribe antibiotics as they are both contributors towards antibiotic resistance.
Exposure (Intervention)	I will research people who have been exposed to antibiotic use in their lifetime or those involved in the prescription of antibiotics.	I will be exploring articles that discuss antibiotic misuse and how this has lead to less effective treatment whilst relating it back to antibiotic resistance.
Comparison/ Control	I will compare the effects of antibiotic misuse in other countries whilst relating them back to New Zealand. I also wish to explain what may happen if New Zealanders keep consuming antibiotics they way we are.	There is little research on New Zealand's antibiotic consumption and treatment effects as well as the fact that New Zealand isn't as bad as many other countries in terms of antibiotic resistance. Therefore, I need to research other countries and relate their findings and problems back to New Zealand's as well as discuss what may happen if we don't opt for a change.
Outcome	To explain how the misuse of antibiotics has contributed to an acceleration in antibiotic resistance, resulting in less effective treatments of common diseases and infections. Also to raise awareness and to show the importance of safe, sustainable antibiotic use.	Once the contributing factors have been identified and explored, we can then develop preventive and restorative methods to preserve current antibiotic treatments. This will ensure we can still use antibiotics to treat common diseases and infections however it'll be more effective and used mores sustainably.
Time	The 21 st century	I want to look at the present and the future and the role it's played in shaping antibiotic consumption today.

Summary:

I chose to present my clinical issue in a poster format as antibiotic misuse is a nation wide problem which requires urgent attention from all health care providers and health care consumers. World Health Organisation (WHO), have outlined education and awareness as one of the most important strategies needing to be addressed as soon as possible to ensure we get antibiotic resistance under control (Antimicrobial resistance, 2017). Therefore, I felt the best way to convey my clinical issue was through a visual presentation as it would reach a larger population and would hopefully attract the publics eye making them want to learn more about the issue. Visual learning incorporates images, graphs and colour to help people visualize specific concepts, allowing some to better understand and learn the information being presented (The visual (spatial) learning style, 2017). I believe many New Zealanders develop a greater understanding through visual learning and therefore, felt a poster would be the best way to get my important message across to the public.

References:

Antimicrobial resistance. (2017). Ministry of Health NZ. Retrieved 18 May 2017, from <http://www.health.govt.nz/our-work/diseases-and-conditions/antimicrobial-resistance>
The visual (spatial) learning style. (2017). *Learning-styles-online.com*. Retrieved 18 May 2017, from <https://www.learning-styles-online.com/style/visual-spatial/>