(Ryan, 2017)

Antibiotic Resistance: It's in Our Hands

By Amy Logie

Research Question: How can we most successfully combat the increasing threat of antibiotic resistant bacteria through further education and include sustainable alternative measures?

Introduction to Clinical Issue

Antibiotic resistance is a growing healthcare threat in New Zealand and internationally, with rapidly increasing resistance resulting in antibiotics ineffectively treating some bacterial infections. A microbe's ability to alter genetically and inappropriate use of antibiotics means bacteria have developed strains that resist common antibiotics, now healthcare professionals and scientists are faced with the need to combat these antibiotic resistant bacteria (Bhandari, Thapa, Thapa, Tandukar & Bahadur Sherchand, 2016). Inappropriate antibiotic prescription is the most powerful stimulant in this rapid development, so further education and alternative measures are needed to reduce this (Lee, Cho, Jeong & Lee, 2013).

Education to Healthcare Professionals and Consumers

- Interventions combining prescriber, healthcare consumer and public education in multiple areas and forms has shown to be successful in achieving improvement in the effective use of antibiotics (Llor & Bjerrum, 2014).
- Healthcare professionals have conflicting priorities to provide care that produces a positive outcome, which indicates use of antibiotics, however they have a responsibility towards sustainability for our future populations, so specific education and use of diagnostic tools and frameworks is needed to reduce inappropriate prescriptions (Lee et al., 2013).
- Prescribers who have reduced knowledge around best practice may prescribe antibiotics for illnesses that it will have no therapeutic effect on, such as viral infections, or favour broad-spectrum antibiotics over more appropriate narrow-spectrum antibiotics. Both of these actions contribute to developing antibiotic resistance (Lee et al., 2013; Llor et al., 2014).
- Healthcare consumers poor understanding of appropriate use of antibiotics and false perception that they are needed to treat a cough or common cold may influence prescribers to give antibiotics to reassure patients, even though it may not be appropriate (Hobbs, Grant, Ritchie, Chelimo, Morton, Berry, S & Thomas, 2017).

Possible Sustainable Alternatives to Antibiotics

- Vaccinations are currently available for some bacterial infections and have proven to be successful. Therefore, with research put towards creating preventative vaccines for more bacterial diseases, the amount of antibiotics used would decrease and this will reduce the development of antibiotic resistance (Bhanderi et al., 2016).
- Bacteriophages, viruses that infect and kill bacteria, is another promising alternative. They can genetically change similarly to bacteria and can combat resistant bacterial infections, however due to variability it is not fully established and more development is required (Bhanderi et al., 2016).

Implications/Recommendations

- Ongoing education about best practice for prescribing antibiotics should be provided and increase the use of diagnosing and management plans to make appropriate choices about using antibiotics.
- Reduce stigma of antibiotics being needed to treat most conditions and increase healthcare consumers knowledge about antibiotic resistance.
- More focus into the development of alternative measures such as preventative vaccinations for bacterial infections and bacteriophage therapy.

Conclusion

Antibiotic resistance is one of the greatest threats to our healthcare system and requires many approaches and strategies to reduce risk of further acceleration. Increased education aimed towards healthcare professionals and consumers about antibiotic resistance and appropriate use of antibiotics could significantly reduce the number of them being prescribed. Sustainable alternative measures could also reduce this by providing another treatment option, but more research and development is needed. With these interventions put in place, it means that antibiotics will continue to be effective and there will be a reduced challenge to treat bacterial infections for our future generations.

References

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Submission Rationale

The target audience was an important focus in making the choice of how to present my research findings. I decided to create a summarised and informative poster as my target audience includes both healthcare professionals and healthcare consumers, as they will be effected by this issue and can use these research findings to possibly reduce this threat (Miller, 2007). Posters provide a very concise overview of a topic and are effective in both facilitating knowledge transfer and communicating to both of these populations, which is also increased with the possibility for informal discussion during the forum (Ilic & Rowe, 2013). I felt that if I completed a submission or digital presentation, my findings and recommendations may not have been utilised as often compared to an informative poster that could reach a larger audience. I had two main focuses for my poster, which has proven to be more effective in providing a message than showing multiple findings (Miller, 2007). A structure and layout that flows nicely can also make it easier to find information and follow the 'storyline' of the poster, which I aimed to achieve through the simple layout I used (Rochester Institute of Technology, n.d.). Finally, I also used bullet points so the information is broken up making it easier to follow and clearer to understand (Miller, 2007).

PECOT Model

PECOT is a research model that can be used to formulate and refine a question related to a clinical issue and allowed me to generate a specific question related to antibiotic resistance (Schneider, Whitehead, LoBiondo-Wood & Haber, 2013).

PECOT category	Information relating to question	Explanation
Population	Healthcare professionals and the general population in New Zealand that access healthcare and require antibiotic treatment.	Healthcare professionals have a role in reducing the acceleration of developing antibiotic resistance by providing appropriate education and reducing inappropriate prescription by following guidelines, increasing knowledge and promoting the use of alternative measures. Healthcare consumers are included as education towards them could also reduce the number of antibiotics prescribed by fully informing them of antibiotic resistance and what their options are, as they often seek medication when it may not be required.
Exposure (intervention)	Prescribers, nurses and healthcare consumers exposed to infections and prescribed antibiotics	These groups are going to be affected the most by the acceleration and implications of antibiotic resistance, therefore interventions will apply to all of them.
Comparison/ Control	Healthcare professional that are well educated and provide this education to healthcare consumers around the use of antibiotics.	This comparison will be of interest to recognise the effectiveness of full education and identify possible alternative measures to reduce the prescription of antibiotics and therefore the main accelerator of developing antibiotic resistance.
Outcome	To recognise the effectiveness of interventions such as providing full education on antibiotics, when they are required and promoting use of alternatives to antibiotics to treat bacterial infections.	Gain understanding through evidence-based research on the effectiveness of educational interventions and alternative measures in reducing the progression of antibiotic resistance development.
Time	N/A	N/A

References:

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