Antimicrobial Resistance: Protecting patients while combating the threats

Executive Summary
Since 2015, Antimicrobial Resistance, also known as AMR, has been an increasing issue when it comes to combating emerging and communicable diseases. AMR continues to jeopardize health security, globally, and damps efforts to combat epidemics and the sustainability of global health, overall. Whereas, AMR is a rising issue globally, the misuse and abuse of antibiotics and antimicrobial medicines specifically in the North American region, continues to lead to influx in annual deaths and contributes greatly to the rising number of patients’ resistant to antibiotics.

Fighting resistance begins with educating healthcare professional of the risks involved. In addition, healthcare professionals can join the fight through providing alternative methods of treating illnesses through the promotion of healthy habits and vaccination.

Introduction
Since the first use of antibiotics in the 1940s, illness and deaths from infectious diseases have been reduced greatly. The discovery of penicillin in 1928 by Alexander Fleming has been recognized as one of the greatest advances in therapeutic medicine. (American Chemical Society, 2017) This epic discovery became to be one the world’s greatest life-saving substance that is still in use today.

Now 70+ years later, the same antimicrobial medicine, along with the thousands of medicine counterparts used to treat illnesses, have become a growing global health risk due to misuse and abuse. This issue has gained the attention of the World Health Organization (WHO) leading them to issue a Global Action Plan on Antimicrobial Resistance at its May 2015 World Health Assembly (WHA). (World Health Organization, 2015)

At the WHA meeting, global leaders, decision makers, and health care professionals adopted the document that outlines five objectives to combat the advancement of this global health risk. Deemed as a “threat to the very core of modern medicine” (World Health Organization, 2015), the misuse and abuse of these once, life-saving drugs has led to a global crisis requiring immediate action on a social, political, and economic platform.

According to the Centers for Disease Control (CDC), in the United States alone, at least two million people have become infected with bacteria that are resistant to antibiotics and at least 23,000 people die each year due to these infections. (Centers for Disease Control, 2017) The increase in illness and death related to AMR as previously explained above is directly correlated to the overuse of drugs over a long period of time. This has permitted the infectious organisms to adapt to them, reducing the effectiveness of the medication; but it does not stop there. Drug resistant bacteria are able to thrive and transmit their drug-resistance to other bacteria, which ultimately leads to more significant health problems and complicates patients that have been infected by diseases such as Malaria and Tuberculosis.
Why does this all matter?

AMR is a borderless danger that jeopardizes not only the health of humans, but animals and crops as well. Furthermore, it impacts achieving the economic, environmental, and social targets of the UN Sustainable Development Goals (SDGs). After the adoption of the WHO Global Action plan, AMR was officially recognized as a threat to the world’s sustainability and development efforts in the resolution entitled ‘Transforming our world: the 2030 Agenda for Sustainable Development”’. (Jasovsky, Littmann, Zorzet, & Cars, 2016)

From an environmental standpoint, in the United States, many farm-raised animals are treated with antibiotics in order to meet the demands of consumers. The animals that have consumed either food laced with antibiotics, or provided in other forms, risk developing the same resistant bacteria as humans do. As the bacteria passes through the body it is absorbed in the muscle and tissue and can pose as a threat when being consumed by humans if the meat is not cooked or handled properly. In the case of vegetable farming, contaminants such as animal feces containing drug-resistance bacteria in the water are transmitted to the vegetables which are later consumed by humans. The cycle then continues after consumption by humans, which often leads to illness requiring medical attention. The bacteria are then able to be spread directly to other patients and health professionals themselves, if the appropriate hygienic procedures are not conducted.

The economic impact of AMR on healthcare systems around the globe is worrisome. Patients suffering from diseases that require surgical procedures, chemotherapy, and other types of treatment therapies are more susceptible to higher healthcare costs when it comes to preventative and curative measures. With the rise in health care costs associated to AMR, populations living in poverty will be forced to give up seeking preventative care; and in the cases of those with drug resistant infections, they will no longer be able to afford treatment options.

Context

With the increased prescribing of antimicrobial medicines to the general public to combat a myriad of illnesses, AMR has made its way to fame in the global health arena. Healthcare professionals are often at fault of administering antibiotics to patients to alleviate symptoms of illnesses that are not responsive to antibiotic treatments. According to the CDC, up to half of antibiotic use in humans and much of antibiotic use in animals in unnecessary and inappropriate and makes everyone less safe. (Centers for Disease Control, 2017)

Furthermore, halting the slightest over-usage would greatly slow the continuous spread of resistant bacteria.

The Infectious Diseases Society of America have been advocates of promoting antimicrobial stewardship relevant to human medicine. The terminology refers to improved measures for the appropriate use and administration of antimicrobial medicines. Antimicrobial stewards seek to achieve optimal clinical outcomes related to antimicrobial use, minimize toxicity and other adverse events, reduce the costs of health care for infections, and limit the selection for antimicrobial resistant strains. (Infectious Disease Society of America, 2011)

Solutions

International collaboration is vital for nations to address this growing health risk. On the global forefront, the WHO in their Global Action Plan have outlined five main objectives. The objectives include: (World Health Organization, 2015)

• Improving awareness and understanding of AMR through more effective communication, education and training
• Strengthening the knowledge and evidence base through surveillance and research
  • Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures
  • Optimizing the use of antimicrobial medicines in human and animal health
  • Develop the economic case for sustainable investment taking account the needs of all countries, and increase new investment in new medicines, diagnostic tools, vaccines and other interventions.

On a national level, the United States initiated collaborative efforts, creating the Interagency Task Force on Antimicrobial Resistance with the CDC, Food and Drug Administration (FDA), and the National Institute of Allergy and Infectious Disease (NIAID). In addition, the US and EU established the Trans-Atlantic Task Force on Antimicrobial Resistance (TATFAR), to address the health threat, that continues to jeopardize patient safety.

The CDC also proposed its own action plan composed of four main objectives to effectively and aggressively fight resistance. The objectives include: (Centers for Disease Control, 2017)

- Preventing infections, preventing the spread of resistance
- Tracking
- Improving antibiotic prescribing/stewardship
- Developing new drugs and diagnostic tests

The CDC’s action plan addresses not only ways to prevent AMR in a healthcare setting, but also in food and throughout the community. As the leading national resource, the CDC advocates for healthy habits such as routine vaccination, and preventing the spread of sexually transmitted diseases, while also providing useful information for staying safe when sick, in the hospital, or traveling.

What must be done?

Taking into consideration the proposed action plans by the World Health Organization and the Centers for Disease Control, it is in the best interest of National Nurses Associations world-wide to sustain both action plans in compliance with the standards set forth both domestically and internationally. The role of the nursing community is to promote patient safety while improving the overall access and quality of healthcare/primary care. AMR poses a threat to the largest working group of health professionals worldwide, as they come in contact with patients infected with drug resistant bacteria and care for those whom are at high risk of infection. Furthermore, the nurse’s role as an integral part of antimicrobial stewardship is vital for communities to effectively combat against this growing public health emergency.

Through the creation of educational programs, and adjusting nursing school curriculum to reflect that challenges we face today, nurses and all health care workers will gain the knowledge to safely promote the appropriate dispensing and prescribing of antimicrobial medicines. All stakeholders, including national governments, and intergovernmental organizations, professional organizations have the important duty to generate the knowledge to provide to those practicing medicine regardless of their geographical location.

Conclusion

The evidence is alarming, and action must be taken. Antimicrobial resistance is a threat that must be addressed. The extensity of this pandemic effects not only public health in general, but also the health of the animals and crops we harvest our food, and the world’s ability to achieve greater sustainability.

From its strain on low-income populations to its projected strain on national economies and their workforce, global forces must come together given the actions plans provided the WHO and the CDC to create effective policies for a sustainable framework.

Since the discovery of the first antibiotic in 1928, health care has transformed in ways unimaginable. Antimicrobial medicines have saved numerous lives over the decades and will continue to serve as a vital treatment for a myriad of diseases. Through adopting appropriate practices with prescribing and administering antimicrobial medicines, requiring health professionals to partake in education/training sessions for continued professional development, and include AMR across the Sustainable Development Goals we will be able to continue on an upward trajectory.
to achieving public safety and great health, globally.

References: