BRIEF

CANADIAN NURSES ASSOCIATION®

ANTIMICROBIAL RESISTANCE IN CANADA

Brief for the Standing Committee on Health

June 2017

CNA is the national professional voice of over 139,000 registered nurses and nurse practitioners across Canada. CNA advances the practice and profession of nursing to improve health outcomes and strengthen Canada's publicly funded, not-for-profit health system.

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Background

The Canadian Nurses Association (CNA) recognizes that antimicrobial resistance (AMR) is a major threat to the health of people in Canada, and is projected to worsen over time if appropriate actions are not taken. As per the Director General of the World Health Organization (WHO), AMR is a "slow moving disaster" and one of the most serious threats to human health and safety.[1] CNA acknowledges the efforts of the federal government to respond to the threat of AMR through the development of the *Antimicrobial Resistance and Use in Canada: A Federal Framework for Action (2014)*[2], *Federal Action Plan on Antimicrobial Resistance and Use in Canada: Building on The Federal Framework For Action (2015)*[3] and the draft document *Tackling Antimicrobial Resistance and Antimicrobial Use: A Pan-Canadian Framework for Action – Draft v2 (2017)*. In tandem with the work done by the federal government, work has been undertaken by national and provincial organizations which has yielded examples successful programs that can be leveraged by the federal government. In this brief, we outline recommendations to support the advancement of the federal action plan on AMR, and highlight how leveraging the expertise of nurses[4], Canada's largest group of health care providers, will be essential to advancing this critical federal agenda.

There are more than 400,000 regulated nurses in Canada[5], comprised of nearly 300,000 registered nurses, 5,000 nurse practitioners and over 100,000 licensed practical nurses. Nurses are present in every health care setting, and have the capacity to dramatically influence the course of AMR in Canada.

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[1] (HealthCareCAN, 2016)

[2] (Public Health Agency of Canada (PHAC), 2014)

[3] (PHAC, 2015)

[4] Unless otherwise stated, nurse or nursing refers to any member of a regulated nursing category, i.e., a registered nurse, licensed/registered practical nurse, registered psychiatric nurse or nurse practitioner. This definition reflects the current situation in Canada whereby nurses are deployed in a variety of collaborative arrangements to provide care.

[5] (Canadian Institute for Health Information (CIHI), 2017)

In its 2017 position statement on AMR, the International Council of Nurses (ICN) articulates that "nurses and other healthcare workers have a vital role to play in preserving the power of antimicrobial medicines. Nurses play a central role in patient care and interdisciplinary communication and, as such, are in a key position to contribute to reducing AMR and critical for the function of antimicrobial stewardship programmes (ASP). Nurses assess and diagnose infections; administer and may prescribe antimicrobials; monitor treatment outcomes and report side effects; provide vaccination; and educate patients, their families and communities."[6]

Further, WHO's Global Action Plan on AMR articulates one of its strategic objectives is to "reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures".[7] Nurses across Canada are well positioned to minimize the need for antimicrobials by preventing infections through a variety of mechanisms including immunization and infection prevention and control programs, and to prevent AMR through low-cost, high-impact stewardship activities.

"Antimicrobial stewardship is the practice of minimizing the emergence of antimicrobial resistance by using antibiotics only when necessary and, if needed, by selecting the appropriate antibiotic at the right dose, frequency and duration to optimize outcomes while minimizing adverse effects. The principles of antimicrobial stewardship apply wherever antimicrobial agents are used including hospitals, long term care facilities, community medicine, agriculture and veterinary use, and in the home and community."[8]

Involvement of a multidisciplinary team has been cited by researchers as an important strategy to meet antimicrobial stewardship goals that require broad engagement of health care providers. Nurses are key to ASPs, and their roles in promoting safety and quality of AMS have been well documented. [9,10,11] CNA recognizes that stewardship is one part of a comprehensive strategy that must

[6] (ICN, 2017)

[7] (WHO, 2015)

[8] (Do Bugs Need Drugs, n.d.)

[9] (The Joint Commission, 2014)

[10] (The Institute of Medicine, 2010)

[11] (Choosing Wisely Canada, 2017)

include the other nationally and internationally recognized key areas for action such as surveillance; infection prevention and control; treatment and research and innovation. Each of these key areas should be considered within the context of "one health", the understanding that human, animal and environmental health are all intricately connected and, as such, all sectors need to be involved in the development and implementation of an AMR action plan.

CNA has been contributing to national work on AMR in the following ways:

- Participating in the Antimicrobial Stewardship (AMS) Canada Steering Committee, and engaging in the Canadian Roundtable on AMS to develop a Canadian multi-disciplinary, multi-sectoral action plan on antimicrobial stewardship.

- Participating in the Federal/Provincial/Territorial AMR Stewardship Task Team to develop a pan-Canadian framework and action plan.

- Through engaging with Choosing Wisely Canada, CNA developed a list of broad nursing recommendations to reduce the use of tests, treatments and interventions that lack benefit or may cause harm.[12] Several of these recommendations advance the AMS agenda, including recommendations to reduce inappropriate or unnecessary use of antimicrobials. As well, there are recommendations to decrease nursing use of interventions that may increase risk of infection, thereby reducing subsequent need for antimicrobials. CNA is also finalizing a specialty Choosing Wisely Canada nursing list in partnership with Infection Prevention and Control (IPAC) Canada. This list includes recommendations to reduce use of interventions that can lead to infection; reduce inappropriate antimicrobial use; and reduce inappropriate or unnecessary laboratory testing where such testing can lead to inappropriate or unnecessary use of antimicrobials.

[12] (Choosing Wisely Canada, 2017)

Despite work done by CNA and other partner organizations across Canada, additional effort and investment is required by the federal government to further address antimicrobial use (AMU) and resistance. Of particular note is the need to emphasize an interprofessional approach to stewardship that includes nurses in collaboration physicians, pharmacists, patients and caregivers as a cost-effective preventative approach to AMR. CNA makes the following recommendations to address the issue of AMR in Canada, with a focus on stewardship:

1) CNA recommends that the federal government support recommendations on antimicrobial stewardship put forth in HealthCareCAN and the National Collaborating Centre for Infectious Diseases (NCCID) document entitled *Putting the Pieces Together: A National Action Plan on Antimicrobial Stewardship*.[13]

2) CNA recommends the federal government commit significant funding over the next five years to support scaling up of antimicrobial stewardship programs in the provinces and territories, conditional on an accountability framework[14], and that the federal government support the role of nurses in antimicrobial use, resistance and stewardship.

Recommendations

Recommendation 1. That the federal government support all 10 recommendations set forth in *Putting the Pieces Together: A National Action Plan on Antimicrobial Stewardship*.

Foundational work done in support of Canada's commitment to develop a Pan-Canadian framework for AMR and AMU by 2017, building on the Public Health Agency of Canada's (PHAC) *Federal Cation Plan on Antimicrobial Resistance and Use in Canada*[15]. Notably, HealthCareCAN and NCCID convened an antimicrobial stewardship roundtable in June

[13] (HealthCareCAN, 2016)

[14] Such an accountability framework could take several forms, an example of which is outlined in CNA's submission to the Finance Committee (CNA, 2016)

[15] (PHAC, 2015)

2016 to hear from more than 50 stakeholders across various interdisciplinary human and animal health professions in Canada, including known leaders in AMR, AMU and AMS. CNA continues to be a member of AMS Canada's steering committee. As such, CNA supports all 10 of the recommendations set forth in this document, considered to be a compilation of research and expert consensus on actions required to advance the agenda on AMS in Canada.

Recommendations for Action from
Putting the Pieces Together: A National Action Plan on Antimicrobial Stewardship

1. Convene and Fund a National Network to Coordinate Stewardship: "AMS Canada"
2. Nominate Executive Leads on AMS at the Federal/Provincial/Territorial Levels for Strategic Planning and Implementation
3. Enhance Accreditation for AMS
4. Support and Scale Up Core Operations in Hospital-Based AMS
5. Enhance Awareness of AMR and AMS among Prescribers and the Public
6. Establish an AMS Research and Development Fund
7. Develop and Support Core Datasets in AMU Surveillance
8. Incent Community Prescribers Using Audit and Feedback Mechanisms
9. Develop National Guidelines for Antimicrobial Prescribing and a Mechanism to Promote Adoption
10. Develop a Network of Centres of Excellence in Knowledge Mobilization (NCE-KM) for AMS

Recommendation 2. CNA recommends the federal government commit significant funding over the next five years to support scaling up of antimicrobial stewardship programs in the provinces and territories, conditional on an accountability framework, and that the federal government support the role of nurses in antimicrobial use, resistance and stewardship.

There are excellent, successful AMS programs in Canada right now. Some occur in the acute care setting, while others occur in the community. Both types of programs are critical to the success of AMS in Canada.

National AMS success stories are captured in the aforementioned report from the Canadian Roundtable on Antimicrobial Stewardship. A notable example in hospital-based AMS is Mount Sinai Hospital-University Health Network's Antimicrobial Stewardship Program (ASP), where innovative approaches were used to improve prescribing practices, resulting in better patient outcomes, and significant cost savings. One such innovative approach was a pilot of an ASP Clinical Nurse specialist role, the first of its' kind in Canada. During the 12-month pilot, for the specific indicator of asymptomatic bacteriuria, the program noted a 27% reduction in unnecessary urine cultures, for a cost saving of $212,000 in one acute care hospital network, as well as a 20% reduction in the overtreatment of asymptomatic bacteriuria.[16,17]

In the community, Alberta and British Columbia's (BC) multi-module education program entitled "Do Bugs Need Drugs" emphasizes public education and working with community-based health care professionals. The latter program, which has been in effect for more than twelve years, has contributed to a 15 percent reduction in prescribing in BC, resulting in $50 million per year in cost-savings, $25 million of which was saved by government.[18] The cost of implementing the program is estimated at approximately 10-15[19] cents per capita annually, which equates to between $3.6-$5.4 million dollars annually.

To maximize the investment in AMS programs, CNA urges the federal government to make additional investments in the next two federal budgets to support the role of nurses in AMS. This support could be used to provide continuing education on antimicrobial stewardship for nurses as key members of the interprofessional health care team.

[16] (Yoskiko Nakamachi, personal communication, June 8, 2017)

[17] Asymptomatic bacteriuria is a common condition whereby persons have bacteria present in their bladder, but these bacteria are not causing illness. Treatment of this condition is considered an unnecessary overuse of antimicrobials.

[18] Based on a recent analysis of BC's PharmaNet database currently being written up by the British Columbia Centre for Disease Control. Contact Dr. David Patrick at the UBC School of Population and Public Health for details.

[19] Patrick, D. (June 7, 2017) Public health's role in improving antimicrobial use through antimicrobial stewardship programs. Presented at Canadian Public Health Association conference in Halifax, N.S.

Regulated nurses make up the largest group of health care professionals in Canada. According to the Canadian Institute for Health Information's Regulated Nurses, 2016 report[20], released in June of 2017, there are more than 400,000 regulated nurses in Canada. This is over 100,000 licensed practical nurses, and nearly 300,000 registered nurses, including 5,000 nurse practitioners. Nurses make up the largest group of health care providers in the country, and are present in nearly every health setting. They are well positioned to contribute to antimicrobial stewardship.

Historically, education and reform around antimicrobial use and stewardship has been targeted to physicians and pharmacists.[21] There is a growing body of international evidence around the role of nurses in antimicrobial stewardship, and how leveraging the role of nurses can improve programs and health care outcomes. Research on the role of the nurse in AMS within Canada is emerging, with findings indicating that greater efforts to leverage nursing leadership and participation in AMS can improve appropriate use of antimicrobials.[22]

Antimicrobial use and stewardship is well within the scope of nursing practice. NPs have broad prescriptive authority, and registered nurse (RN) prescribing is legislated in some provinces, and in development in others. It must be noted that antimicrobial stewardship goes beyond just the prescriber, and one of the keys to success for antimicrobial stewardship programs is an interprofessional approach. Within interprofessional antimicrobial stewardship programs, nurses play integral roles, including the following:

- Assessing and monitoring for signs and symptoms of infection, response to antimicrobial treatment, and antibiotic allergies[23]
- Contributing to clinical decision-making including recommendations around prescribing, deprescribing, and changing route of administration (ie. from intravenous to oral)

[20] (CIHI, 2017)

[21] (Jeffs et al. in press)

[22] (Jeffs et al., in press)

[23] (Edwards, et al., 2011)

- Administering and overseeing medication administration, monitoring compliance with organizational guidelines and best practices for AMU, educating patients and public[24,25,26,27,28,29]
- Informing decisions around laboratory testing
- Contributing to, and often leading organizational infection prevention and control programs, preventing and minimizing the need for AMU, and providing education to patients and public

In summary, nurses educate, advocate, use evidence-informed practices, and are part of team-based care where their recommendations help to guide clinical decision making. Nurses are integral to the success of AMS activities in Canada. They offer a cost-effective solution to ensuring optimal prescribing practices, and preventing and minimizing antimicrobial resistance and associated complications.

Conclusion

Antimicrobial resistance is a national and international issue with local implications. Immediate action is required. CNA encourages the Standing Committee on Health to urge the federal government to adopt all ten expert-developed recommendations in *Putting the Pieces Together: A National Action Plan on Antimicrobial Stewardship* as a key component of addressing antimicrobial use and resistance in Canada. Further, the federal government can take additional concrete action by investing in a) established AMS programs with proven results to reduce inappropriate AMU, and b) education of nurses to leverage their potential as antimicrobial stewards across all health settings in Canada.

[24] Ibid

[25] (Olans, et al, 2016)

[26] (Gillespie, et al, 2013)

[27] (Landenheim, et al. 2013)

[28] (Broom, et al., 2016)

[29] (Manning, et al. 2016)

References

Broom A, Broom J, Kirby E, Scambler G. (2016). Nurses as antibiotic brokers: Institutionalized praxis in the hospital. *Qual Health Res*.: 1049732316679953.

Canadian Institute for Health Information. (2017) Regulated Nurses, 2016. Ottawa, ON: CIHI. Retrieved from: https://www.cihi.ca/sites/default/files/document/regulated-nurses-2016-report-en-web.pdf

Canadian Nurses Association. (2016). *Innovative ways to provide better access to health care for all: Submission to the Standing Committee on Finance*. Retrieved from: https://www.cna-aiic.ca/~/media/cna/page-content/pdf-en/cna-2016-pre-budget-submission-to-standing-committee-on-finance.pdf?la=en

Choosing Wisely Canada & Canadian Nurses Association. (2017). *Nine things nurses and patients should question.* Retrieved from: https://www.cna-aiic.ca/~/media/cna/page-content/pdf-en/nine-things-nurses-and-patients-should-question.pdf?la=en

Do Bugs Need Drugs. (n.d.) *Antimicrobial stewardship.* Retrieved from: http://www.dobugsneeddrugs.org/health-care-professionals/antimicrobial-stewardship/

Edwards R, Drumright L, Kiernan M, Holmes A. (2011). Covering more territory to fight resistance: Considering nurses' role in antimicrobial stewardship. *J Infect Prev*.12(1):6-10.

Gillespie E, Rodrigues A, Wright L, Williams N, Stuart RL. (2013). Improving antibiotic stewardship by involving nurses. *Am J Infect Control*. 41(4):365-7.

HealthCareCAN & National Collaborating Centre for Infectious Diseases (NCCID). (2016). *Putting the pieces together: A national action plan on antimicrobial stewardship.* Retrieved from: https://nccid.ca/publications/putting-pieces-together-national-action-plan-antimicrobial-stewardship/

International Council of Nurses. (2017). *Antimicrobial Resistance.* (Position statement). Retrieved from: http://www.icn.ch/images/stories/documents/publications/position_statements/ICN_PS_Antimicrobial_resistance.pdf

Jeffs et al. (in press) Engaging nurses in optimizing antimicrobial use in ICUs: A qualitative study. *Journal of Nursing Care Quality*.

Ladenheim, D, Rosembert D, Hallam C, Micallef C. (2013). Antimicrobial stewardship: the role of the nurse. Nursing Standar. 28(6):46-49.

Manning M, Pfeiffer J, Larson EL. (2016). Combating antibiotic resistance: The role of nursing in antibiotic stewardship. *American J Infect Control*.44(12):1454-1457.

Olans RN, Olans RD, DeMaria A. (2016). The critical role of the staff nurse in antimicrobial stewardship—unrecognized, but already there. *Clin Infect Dis*. 62(1):84-89.

Public Health Agency of Canada. (2014). *Antimicrobial resistance and use in Canada: A federal framework for action.* Retrieved from: https://www.canada.ca/content/dam/canada/health-canada/migration/healthy-canadians/alt/pdf/drugs-products-medicaments-produits/buying-using-achat-utilisation/antibiotic-resistance-antibiotique/antimicrobial-framework-cadre-antimicrobiens-eng.pdf

Public Health Agency of Canada. (2015). *Federal action plan on antimicrobial resistance and use in Canada: Building on the federal framework for action.* Retrieved from: https://www.canada.ca/content/dam/canada/health-canada/migration/healthy-canadians/alt/pdf/publications/drugs-products-medicaments-produits/antibiotic-resistance-antibiotique/action-plan-daction-eng.pdf

The Institute of Medicine. The Future of Nursing: Leading Change, Advancing Health. 2010. Retrieved from: http://www.nap.edu/catalog.php?record_id=12956.

The Joint Commission. National Patient Safety Goals. (2014.) Retrieved from: http:// www.jointcommission.org/standards_information/npsgs.aspx.

World Health Organization. (2015). *Global action plan on antimicrobial resistance.* Retrieved from: http://www.wpro.who.int/entity/drug_resistance/resources/global_action_plan_eng.pdf