

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital



Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Eileen J. Carter, PhD, RN
Assistant Professor at CUMC
Nurse Researcher, New York-Presbyterian Hospital

Funder
APIC Heroes Implementation Research Scholar Award Program 2017-2018

www.webbertraining.com

Discover. Educate. Care. Lead.
March 22, 2018

Outline

Overview of antimicrobial resistance and antimicrobial stewardship programs (ASPs)

Describe nurses' involvement in ASPs

Results from a multisite qualitative that aimed to explore barriers and facilitators to nurse-driven antibiotic stewardship



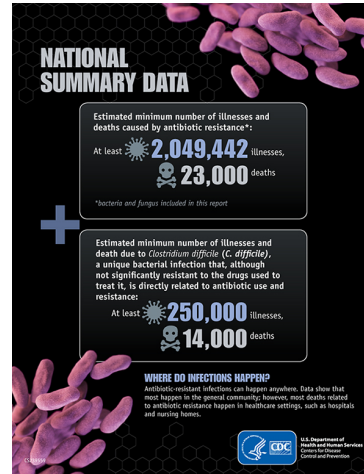
A Webber Training Teleclass
Hosted by Paul Webber paul@webbertraining.com
www.webbertraining.com

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Antimicrobial Resistance

- Organisms develop resistance to the antibiotics designed to kill them
- Unnecessary antibiotic use = major cause of antibiotic resistance
 - Approximately 55% of antibiotics are unnecessary or inappropriate (CDC)
- Global and national public health priority
 - 71st United Nations General Assembly
 - Centers for Medicare and Medicaid Services
 - Joint Commission



Centers for Disease Control. (2013). Antibiotic Resistance Threats in the United States. Retrieved from Atlanta, Georgia

3

WHO: What is antimicrobial resistance (AMR)?



Dr Marie-Paule Kieny
World Health Organization Assistant Director-General
for Health Systems and Innovation



Dr Keiji Fukuda
Special Representative of the World Health Organization
for Antimicrobial Resistance

https://www.youtube.com/watch?v=LHOIPmSJn_8&list=PL9S6xGsoqIBXp4hGamIB-CnpxzyWmW-mr

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Global and National Public Health Priority

- International & National Focus on Antimicrobial Resistance
 - 71st United Nations General Assembly
 - Centers for Medicare and Medicaid Services
 - Joint Commission

Antimicrobial Stewardship Programs (ASPs)

- ASPs - coordinated evidence-based efforts that promote appropriate antibiotic use
- Proven effectiveness
 - Reduce unnecessary antibiotic use
 - Decrease the incidence of antibiotic resistant bacteria and *Clostridium difficile*
- Membership and scope
 - Physicians and pharmacists with infectious disease training
 - Largely oversee and authorize the prescribing of antibiotics

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Outline

Overview of antibiotic resistance and antibiotic stewardship programs (ASPs)

Describe nurses' involvement in ASPs

Results from a multisite qualitative that aimed to explore barriers and facilitators to nurse-driven antibiotic stewardship

Nursing Partnership: Largely Absent in Current ASP Efforts



Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Table 1. Overlap of Nursing Activities With Function Attribution in Current Antimicrobial Stewardship Models

	Nursing	Microbiology	Case Management	Pharmacy	Infectious Diseases	Infection Control	Inpatient Physician	Administration
Patient admission								
Triage and appropriate isolation	•					•		
Accurate allergy history	•			•	•		•	
Early and appropriate cultures	•				•		•	
Timely antibiotic initiation	•				•		•	•
Medication reconciliation	•			•			•	
Daily(24 h) clinical progress monitoring								
Progress monitor and report	•		•		•		•	
Preliminary micro results and antibiotic adjustment	•	•		•	•		•	
Antibiotic dosing and de-escalation	•			•	•		•	
Patient safety & quality monitoring								
Adverse events	•			•	•		•	
Change in patient condition	•			•	•		•	
Final culture report and antibiotic adjustment	•	•		•	•	•	•	
Antibiotic resistance identification	•	•			•	•	•	
Clinical progress/patient education/discharge								
IV to PO antibiotic, outpatient antibiotic therapy	•		•	•	•		•	
Patient education	•				•	•	•	
Length of stay	•		•		•		•	•
Outpatient management, long-term care, readmission	•		•		•	•		•

Abbreviations: IV, intravenous; PO, per os (oral).

Olans, Olans & DeMaria Jr. 2016 Clinical Infectious Diseases 9

How do ASP guiding documents specify nurses' involvement in ASPs?

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Joint Commission ASP Standard

APPROVED: New Antimicrobial Stewardship Standard

The Joint Commission recently announced a new Medication Management (MM) standard for hospitals, critical access hospitals, and nursing care centers. Standard MM.09.01.01 addresses antimicrobial stewardship and becomes effective January 1, 2017.

Current scientific literature emphasizes the need to reduce the use of inappropriate antimicrobials in all health care settings due to antimicrobial resistance. According to the World Health Organization (WHO): "Antimicrobial resistance threatens the effective prevention and treatment of an ever-increasing range of infections caused by bacteria, parasites, viruses and fungi." The Centers for Disease Control and Prevention (CDC) identified that 20%-50% of all antibiotics prescribed in US acute care hospitals are either unnecessary or inappropriate.¹ The CDC has also stated: "Antibiotics are among the most commonly prescribed medications in nursing homes. Up to 70% of long-term care facilities' residents receive an antibiotic every year."²

On June 2, 2015, The Joint Commission participated in the White House Forum on Antibiotic Stewardship. The Joint Commission joined representatives from more than 150 major health care organizations, food companies, retailers, and animal health organizations at the forum to express commitment for implementing changes over the next five years to slow the emergence of antibiotic-resistant bacteria, detect resistant strains, preserve the efficacy of existing antibiotics, and prevent the spread of resistant infections.³

Subsequently, The Joint Commission developed the antimicrobial stewardship standard for hospitals, critical access hospitals, nursing care centers, ambulatory care organizations, and office-based surgery practices and conducted a field review in November and December 2015. Prior to and during the field review, Joint Commission staff conducted stakeholder calls on the proposed antimicrobial stewardship standard with several governmental and professional organizations, including the Centers for Medicare

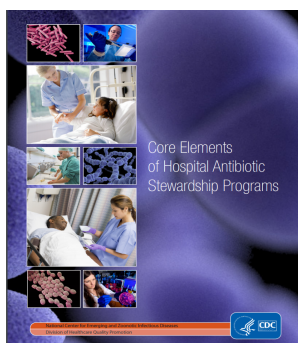
Continued on page 3

Page 1 Joint Commission Perspectives, July 2016, Volume 38, Issue 7 Copyright 2016 The Joint Commission

Reporting: Regularly reporting information on the antimicrobial stewardship program, which may include information on antibiotic use and resistance, to doctors, nurses, and relevant staff.

The Joint Commission. (2016). Approved: New Antimicrobial Stewardship Standard. Retrieved from https://www.jointcommission.org/assets/1/6/New_Antimicrobial_Stewardship_Standard.pdf 11

CDC – Core Elements of ASPs



KEY SUPPORT FOR THE ANTIBIOTIC STEWARDSHIP PROGRAM		
Does any of the staff below work with the stewardship leaders to improve antibiotic use?		
B. Clinicians	<input type="checkbox"/> Yes	<input type="checkbox"/> No
C. Infection Prevention and Healthcare Epidemiology	<input type="checkbox"/> Yes	<input type="checkbox"/> No
D. Quality Improvement	<input type="checkbox"/> Yes	<input type="checkbox"/> No
E. Microbiology (Laboratory)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
F. Information Technology (IT)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
G. <u>Nursing</u>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Nurses can assure that cultures are performed before starting antibiotics. In addition, nurses review medications as part of their routine duties and can prompt discussions of antibiotic treatment, indication, and duration.^{46, 47}

Centers for Disease Control and Prevention. (2014). Core Elements of Hospital Antibiotic Stewardship Programs. Retrieved from Atlanta, GA: <https://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html> 12

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

IDSA Guidelines & Nursing Involvement in ASPs

Evidence Summary
 Education is a common tool for ASPs. Strategies include educational meetings with didactic lectures and distribution of educational pamphlets and materials. No comparative studies are available to determine which educational strategy is most effective. Educational strategies should include medical, pharmacy, physician assistant, nurse practitioner, and nursing students and trainees. In a survey of fourth-year medical students at 3

Barlam, T. F., Cosgrove, S. E., Abbo, L. M., MacDougall, C., Schuetz, A. N., Septimus, E. J., . . . Trivedi, K. K. (2016). Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. *Clinical Infectious Diseases*, 62(10), e51-e77. doi:10.1093/cid/ciw118 13

ASP Guiding Documents Fail to Account for Nurses' Overarching Antibiotic-Related Responsibilities

Table 1. Overlap of Nursing Activities With Function Attribution in Current Antimicrobial Stewardship Models

	Nursing	Microbiology	Case Management	Pharmacy	Infectious Diseases	Infection Control	Inpatient Physician	Administration
Patient admission								
Triage and appropriate isolation	•					•		
Accurate allergy history	•			•	•		•	
Early and appropriate cultures	•				•		•	
Timely antibiotic initiation	•				•		•	•
Medication reconciliation	•			•			•	
Daily(24 h) clinical progress monitoring								
Progress monitor and report	•		•		•		•	
Preliminary micro and antibiotic adjustment	•			•	•		•	
Antibiotic dose escalation	•			•	•		•	
Patient safety & quality								
Adverse events	•			•	•		•	
Change in patient condition	•				•		•	
Final culture report and adjustment	•			•	•	•	•	
Antibiotic resistance identification	•				•	•	•	
Clinical progress/patient education/discharge								
IV to PO antibiotic, outpatient antibiotic therapy	•		•	•	•		•	
Patient education	•				•	•	•	
Length of stay	•		•		•		•	•
Outpatient management, long-term care, readmission	•		•		•	•		•

Abbreviations: IV, intravenous; PO, per os [orall].

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

The collage features several journal covers and article titles:

- American Journal of Infection Control**: "Practice Forum: Combating antibiotic resistance: The role of nursing in antibiotic stewardship" by Mary Lou Manning PhD, CRNP, CIC^{4*}, Jeanne Pfeiffer DNR, MPH, RN, CIC⁵, and Elaine L. Larson PhD, RN, CIC².
- Nurse Education Today**: "Contemporary Issues: Antibiotic stewardship: The role of clinical nurses and nurse educators".
- Clinical Infectious Diseases**: "INVITED ARTICLE: The Critical Role of the Staff Nurse in Antimicrobial Stewardship—Unrecognized, but Already There" by Richard N. Olans,¹ Rita D. Olans,² and Alfred DeMania Jr.³
- Spotlight on Leadership**: "Keeping Patients Safe: Antibiotic Resistance and the Role of Nurse Executives in Antibiotic Stewardship" by Mary Lou Manning, PhD, CRNP, CIC, FAAN, Devina Giannuzzi, MBA, RN, NEA-BC.

National Recognition of Nurses' Widespread Antibiotic-Related Responsibilities

Suggestions from the Workgroup

The workgroup identified four key questions and developed suggestions to address each of them.

What are the roles that bedside nurses can and should play in working to improve antibiotic use?

- Obtain appropriate cultures, using proper technique, before antibiotics are started. Understand how the microbiology laboratory processes those samples.
- Use microbiology results to help guide the optimal selection of antibiotics and guide decisions to stop therapy in cases where culture results represent colonization, rather than infection.
- Help inform decisions to start antibiotics promptly at the time early signs of likely bacterial infections, including sepsis, are identified.
- Help ensure that practices to ensure good antibiotic use are embedded in other quality improvement efforts. For example, for sepsis, help ensure that antibiotics are started promptly and then reviewed once additional data, especially cultures, are available.
- Prompt, and participate in, discussions about antimicrobial usage including antibiotic de-escalation by evaluating each patient's clinical status and readiness for change from intravenous to oral therapy, when possible.
- Take a more detailed allergy history, especially around penicillin allergy. Help educate patients and families about what constitutes an accurate antibiotic allergy history.

ANA & CDC. (2017). *Redefining the Antibiotic Stewardship Team: Recommendations from the American Nurses Association/Centers for Disease Control and Prevention Workgroup on the Role of Registered Nurses in Hospital Antibiotic Stewardship Practices*. 16 Retrieved from Silver Springs, MD: <http://www.nursingworld.org/ANA-CDC-AntibioticStewardship-WhitePaper>

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Outline

Overview of antibiotic resistance and antibiotic stewardship programs (ASPs)

Describe nurses' involvement in ASPs

Results from a multisite qualitative that aimed to explore barriers and facilitators to nurse-driven antibiotic stewardship

Publication



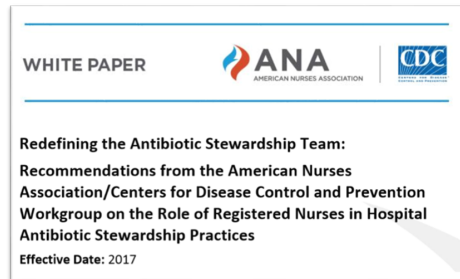
Funding: This research was funded by the APIC Heroes Implementation Research Scholar Award Program 2017-18, which was supported by an educational grant from BD (PI: Carter)

A Webber Training Teleclass
Hosted by Paul Webber paul@webbertraining.com
www.webbertraining.com

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Study Aims



1) Explore nurses' current antibiotic-related roles and responsibilities; and 2) gain input on recommendations that have been proposed that advance and formalize nursing-driven antibiotic stewardship.

Funding: This research was funded by the APIC Heroes Implementation Research Scholar Award Program 2017-18, which was supported by an educational grant from BD (PI: Carter).

19

Nurse-Driven Antibiotic Stewardship Practice Recommendations

- #1 {
 - Documenting drug allergy information accurately
- #2 {
 - Encouraging the safe conversion of intravenous (IV) to oral (PO) antibiotics.
- #3 {
 - Initiating an antibiotic "time-out" with prescribers.

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Methods

Qualitative study

- Two urban academic hospitals
 - Pediatric
 - Adult

Data collection

- Focus groups & interviews
- March – June 2017
- Clinical nurses, nurse managers, infection preventionists
 - Intensive care units & medical surgical units

Data analysis

- Conventional content analysis

Study Participants

Participant Role & Unit	Hospital		Total
	Adult	Pediatric	
Clinical Nurse			
ICU	16	10	26
Medical/Surgical	14	9	23
Nurse Manager			
ICU	0	1	1
Medical/Surgical	2	2	4
Infection Preventionist	5	2	7
Total	37	24	61

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Findings: Nursing Antibiotic-Related Responsibilities

Current Responsibilities

- Administering antibiotics timely
- Knowing the indication for antibiotic
- Educating patients on the indication for antibiotics and side effects

Recommendation #1 Findings: Nurses May Document Drug Allergy Information Accurately

Challenges

- Perception that the information reported by patients is intended for nurses to document in the medical record
- Focus on documentation rather than interpretation

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Recommendation #1 Findings: Nurses May Document Drug Allergy Information Accurately

Strategy to Overcome Identified Challenges

“[Nurses] should definitely initiate a conversation and ascertain more information. I think it’s then up to the physician, and you know, or—and, or the pharmacist to—to see if it’s a really true allergy, or do they want to desensitize the patient.”

Recommendation #2 Findings: Nurses May Encourage the IV to PO Switch

Challenges

- Knowledge needs
- Prescriber pushback
- Patient-level considerations

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Recommendation #2 Findings: Nurses May Encourage the IV to PO Switch

Strategy to Overcome Identified Challenges

“Education would be needed for providers and for nursing, on what...those antibiotics would be...this is the same PO, so we could use that.”

Recommendation #3 Findings: Nurses May Initiate an Antibiotic Time-Out

Challenges

- Duplicative work
- Prescriber pushback
- Knowledge gaps
- Workflow considerations

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Recommendation #3 Findings: Nurses May Initiate an Antibiotic Time-Out

Strategy to Overcome Identified Challenges

“Specify and provide guidance on the specific elements of antibiotic management that nurses should review...we need... an algorithm, and we need to educate ourselves, [because] otherwise we’re not going to feel ...empowered.”

Discussion

- Knowledge needs
 - Nurses reported knowledge needs
 - Antibiotic management, in general, and nurses’ roles and responsibilities related to antibiotics
 - Tailoring the 5 rights of medication administration to antibiotics
 - Previous work identified additional opportunities for improvement
 - 171 (37%) familiar with phrase antimicrobial stewardship
 - 255 (55%) able to identify a drug intolerance



Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Nursing Education Fails to Prepare Nurses to Become Stewards of Antibiotic Use

Pre-Licensure

"...Infection control issues, such as drug resistant organisms and management."

American Association of Colleges of Nursing. (2008). The Essentials of Baccalaureate Education for Professional Nursing Practice. In American Association of Colleges of Nursing (Ed.). Washington, DC.

Post-Licensure

State	Requires CE to renew RN license	Number of CE hours to renew RN license	Number of CE hours required for re-entry	CE hours required for HIV/AIDS
Alabama	Yes	24 contact hours for active license	24 hours/2 years ¹	No
Alaska	Yes	30 hours	30 hours	No
Arizona	No	None	60 hrs / 5 yrs re-entry course	No
Arkansas	Yes	15 hrs every 2-yr renewal	20 hours within the past two yrs plus re-entry course	No
California	Yes	30 hours within 2 years	30 hrs within past 2 years, after 8 yrs of lapsed status, NCLEX is required	Yes ²
Colorado	No	None	No	No
Connecticut	No	None	Board discretion for lapsed license	No
Delaware	Yes	30 contact hours biennially	30 hrs for RNs / 15 hrs for APRNs if less than 2 yrs, greater than 1 yr	No
District of Columbia	Yes	24 contact hrs in an area relevant to the area of practice within the past 2 yrs	12 hours / year	No
Florida	Yes	24 contact hours within 2 years ³	1 hour per month if inactive	2 hours HIV/AIDS case, 1 hr of which must be completed prior to first reentry
Georgia	No	None	No	No

American Nurses Association. (2013). States Which Require Continuing Education for RN Licensure. Retrieved from

<http://www.nursingworld.org/MainMenuCategories/Policy-Advocacy/State/Legislative-Agenda-Reports/NursingEducation/CE-Licensure-Chart.pdf>

Strengths

- Recommended qualitative methods employed to ensure the trustworthiness of data
 - Verbatim transcriptions
 - Triangulation of data sources, investigators
 - Ongoing assessments of the application of codes

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Limitation

- Transferability of study findings
 - Study conducted in two hospitals that were part of the same healthcare system in New York

Conclusions

- Nurses expressed enthusiasm to partner in antibiotic stewardship efforts
- Challenges to nurse-driven antibiotic stewardship
 - Lack of consistently defined nurse-driven antibiotic stewardship responsibilities (CDC core elements vs. CDC/ANA white paper vs. Joint Commission)
 - Knowledge needs
 - Prescriber pushback
 - Workflow considerations

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Valuable Educational Resources

The collage features four educational resources:

- Antimicrobial Stewardship Educational Workbook:** A workbook from the Healthcare Improvement Scotland, Scottish Antimicrobial Prescribing Group, and NHS Education for Scotland.
- CIDRAP (Center for Infectious Disease Research and Policy):** A website offering news, perspectives, and educational multimedia on topics like MERS-CoV, Avian Influenza, and Foodborne Disease.
- CDC TRAIN:** A training platform for "CDC Training on Antibiotic Stewardship: Section 1".
- CDC Antibiotic Prescribing and Use:** A resource from the CDC Centers for Disease Control and Prevention, including the "Be Antibiotics Aware" campaign.

COLUMBIA UNIVERSITY MEDICAL CENTER
 35

Acknowledgements

APIC
 Association for Professionals in Infection Control and Epidemiology

Thank you to the those who participated in this study!

Nurses Role in Antibiotic Stewardship
ANA/CDC Working Group Conference
July 28, 2016

COLUMBIA UNIVERSITY MEDICAL CENTER
 36

A Webber Training Teleclass
 Hosted by Paul Webber paul@webbertraining.com
 www.webbertraining.com

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Questions?

Thank you!



www.webbertraining.com/schedulep1.php

April 10, 2018	<p><i>(FREE European Teleclass ... Denver Russell Memorial Teleclass Lecture)</i> <u>HOPES, HYPES, AND MULTIVALLATE DEFENCES AGAINST ANTIMICROBIAL RESISTANCE</u> Speaker: Prof. Neil Woodford, Imperial College London and Public Health England <i>Broadcast annually in memory of our very good friend and tireless Teleclass Education supporter, Prof. A. Denver Russell.</i></p>
April 12, 2018	<p><u>UNDERSTANDING RISK PERCEPTIONS AND RESPONSES OF THE PUBLIC, HEALTHCARE PROFESSIONALS, AND THE MEDIA: THE CASE FOR CLOSTRIDIUM DIFFICILE</u> Speaker: Dr. Emma Burnett, University of Dundee, Scotland</p>
April 18, 2018	<p><i>(South Pacific Teleclass)</i> <u>GENETIC SIMILARITIES BETWEEN ORGANISMS ISOLATED FROM THE ICU</u> Speaker: Prof. Slade Jenson, Western Sydney University, Australia</p>
April 19, 2018	<p><u>TOPICAL ANTIBIOTICS TO PREVENT POST-OPERATIVE SURGICAL INFECTION ... IS THE PARADIGM CHANGING?</u> Speaker: Dr. Hilary Humphreys, The Royal College of Surgeons in Ireland</p>
May 3, 2018	<p><i>(FREE ... WHO Teleclass - Europe)</i> <u>SPECIAL LECTURE FOR 5 MAY</u> Speaker: Prof. Didier Pittet, University of Geneva Hospitals</p>

A Webber Training Teleclass
Hosted by Paul Webber paul@webbertraining.com
www.webbertraining.com

Nurse-driven Antibiotic Stewardship: Multisite Qualitative Study of Perceived Barriers to Recommended Practices

Prof. Eileen J. Carter, New York-Presbyterian Hospital

Thanks to Teleclass Education
PATRON SPONSORS

