SHS + UHN ASP ANTIMICROBIAL STEWARDSHIP PROGRAM

Intendance d'un des piliers des soins de santé : Les antimicrobiens

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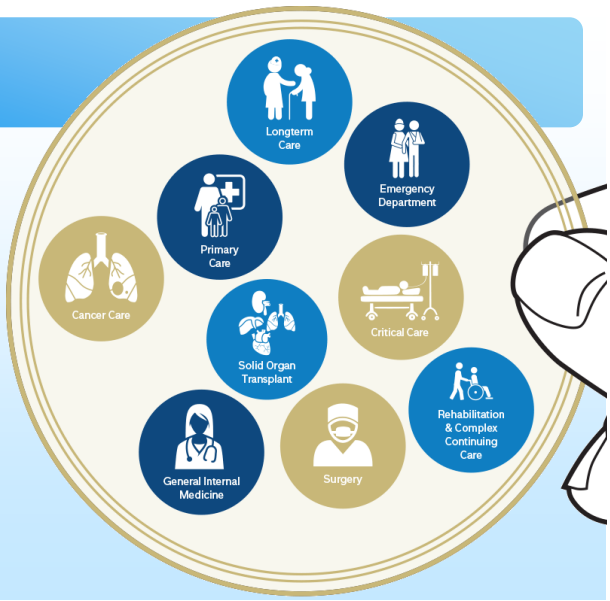
Mount Sinai Hospital Sinai Health System Joseph & Wolf Lebovic Health Complex

UHN Toronto General Toronto Western Princess Margaret Toronto Rehab

Notre équipe

- Cliniciens
- Opérationnels
- Chercheurs
- Apprenants



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Il y a 8 ans, notre programme se limitait aux tournées quotidiennes de 2 personnes à l'USI de l'hôpital Mount Sinai

	2008		2009	
	February (DDD/100 pt days)	March (DDD/100 pt days)	February (DDD/100 pt days)	March (DDD/100 pt days)
Antibacterials That Cover Non-Lactose Fermenting Gram Negative Bacilli	53.55	56.46	45.59	45.09
Antibacterials That Cover Lactose Fermenting Gram Negative Bacilli	38.76	30.54	36.83	45.40
Ratio of NLF Covering/LF Covering Antibiotics	1.3816	1.8487	1.2379	0.9932
Antimicrobial Costs	$36,178.93		$19,102.31	

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Il a grandi en complexité et en volume

Indicators	FY 08/09 (Pre-ASP)	FY 09/10	FY 10/11	FY 11/12	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY16/17 Performance Q1	Q2	Q3	Q4	YTD	YTD of Previous Year
Antimicrobial Usage and Costs														
Total Antimicrobial DDDs/100 Patient Days	**177**	**171**	**144**	**167**	**170**	**172**	**164**	**156**	**142**	**142**			**142**	**162**
Systemic Antibacterial DDDs/100 Patient Days	142	128	111	128	127	123	136	116	108	106			107	128
Systemic Antifungal DDDs/100 Patient Days	31	24	20	33	35	41	25	32	29	26			28	30
Total Antimicrobial Costs	$332,724	$285,975	$193,129	$279,859	$291,470	$424,044	$232,814	$274,258	$59,907	$53,895			$113,802	$117,348
Total Antimicrobial Costs/Patient Day	**$69.01**	**$59.23**	**$40.95**	**$59.22**	**$62.37**	**$85.36**	**$62.54**	**$61.45**	**$49.55**	**$46.91**			**$48.26**	**$57.44**
Systemic Antibacterial Costs	$174,339	$142,134	$95,773	$125,339	$134,811	$108,886	$92,928	$68,246	$15,318	$14,278			$29,596	$42,209
Systemic Antibacterial Costs/Patient Day	$36.16	$29.44	$20.31	$26.94	$28.85	$21.92	$20.71	$15.29	$12.67	$12.43			$12.55	$20.66
Systemic Antifungal Costs	$143,100	$132,519	$88,998	$141,877	$144,811	$296,573	$134,504	$189,661	$42,494	$35,494			$77,988	$65,693
Systemic Antifungal Costs/Patient Day	$29.68	$27.45	$18.87	$30.50	$30.99	$59.70	$40.53	$42.50	$35.15	$30.89			$33.07	$32.16
Antibacterial Days of Therapy/100 Patient Days*	n/a	n/a	n/a	n/a	n/a	111	109	115	107	105			106	104
Antifungal Days of Therapy/100 Patient Days*	n/a	n/a	n/a	n/a	n/a	17	21	27	20	21			20	19
Patient Care Outcomes														
Hospital-Acquired C. difficile Cases (rate per 1,000 pt days)	NA	NA	NA	5 (1.07)	8 (1.71)	4 (0.91)	7 (1.59)	5 (1.12)	0 (0.00)	0 (0.00)			0 (0.00)	3 (1.47)
ICU Average Length of Stay (Days)	5.84	5.57	5.67	5.51	5.24	6.10	5.26	4.45	4.18	4.33			4.26	3.71
ICU Mortality Rate (as a %)	20.1	17.6	16.3	16.5	17.04	15.3	13.9	14.2	9.5	12.7			11.1	13.8
ICU Readmission Rate Within 48 Hrs (as a %)	3.2	2.9	2.7	2.7	1.86	3.2	2.6	2.1	3.2	0.0			0.9	2.4
ICU Ventilator Days	NA	3286	2934	2677	2749	3069	2597	2504	552	616			1168	1025
ICU Multiple Organ Dysfunction Score (MODS)	4.00	4.04	4.12	4.25	4.62	4.87	4.73	4.43	3.6	3.95			3.78	4.28

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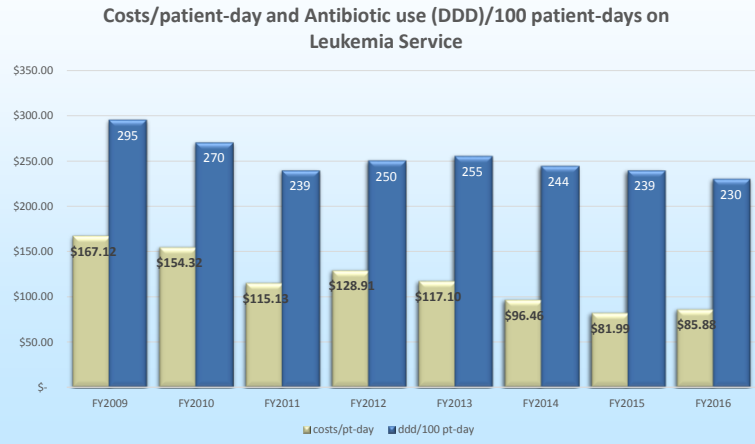
À l'aide d'approches multiples, nous avons contribué à réduire de 22 % le recours aux antibiotiques chez les patients hospitalisés atteints de leucémie, et de 49 % le coût des antibiotiques



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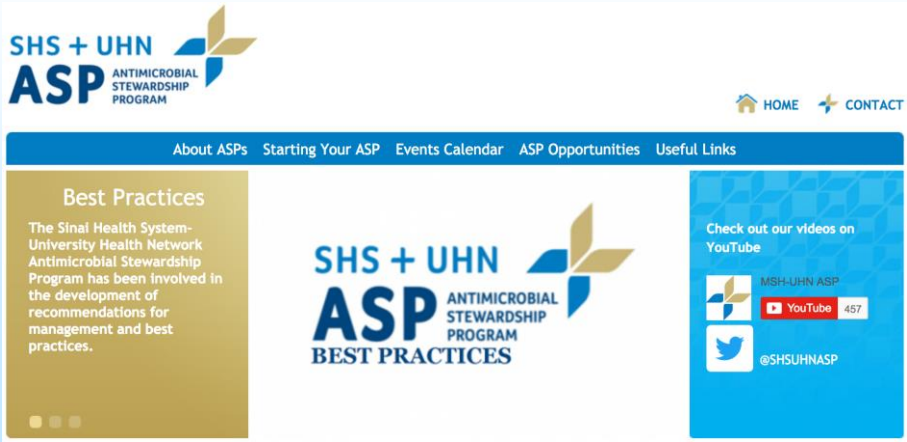

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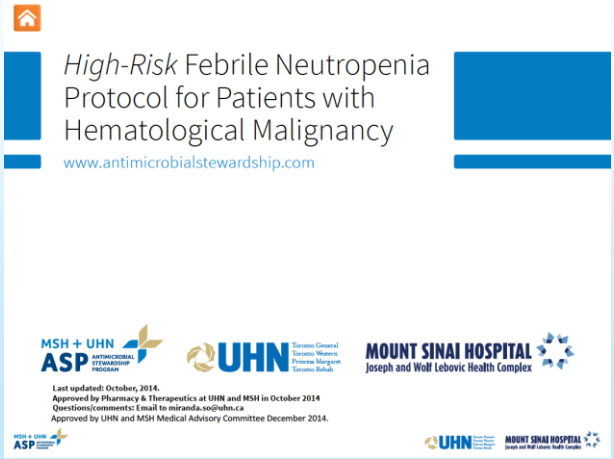

High-Risk Febrile Neutropenia Protocol for Patients with Hematological Malignancy

www.antimicrobialstewardship.com

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Last updated: October, 2014.
Approved by Pharmacy & Therapeutics at UHN and MSH in October 2014
Questions/comments: Email to miranda.so@uhn.ca
Approved by UHN and MSH Medical Advisory Committee December 2014.

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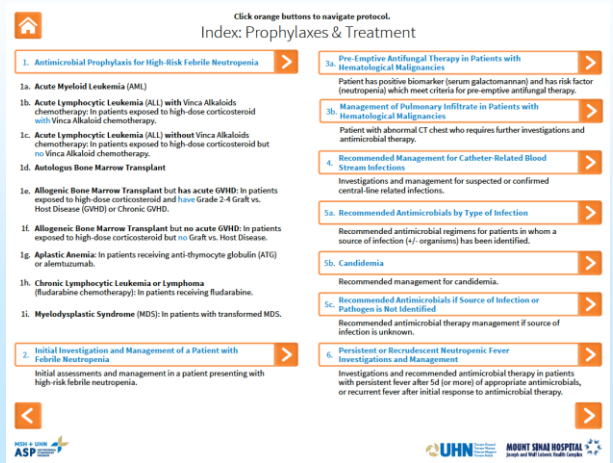

Click orange buttons to navigate protocol.

Index: Prophylaxes & Treatment

1. Antimicrobial Prophylaxis for High-Risk Febrile Neutropenia
   - 1a. Acute Myeloid Leukemia (AML)
   - 1b. Acute Lymphocytic Leukemia (ALL) with Vinca Alkaloids chemotherapy: In patients exposed to high-dose corticosteroid with Vinca Alkaloid chemotherapy.
   - 1c. Acute Lymphocytic Leukemia (ALL) without Vinca Alkaloids chemotherapy: In patients exposed to high-dose corticosteroid but no Vinca Alkaloid chemotherapy.
   - 1d. Autologus Bone Marrow Transplant
   - 1e. Allogenic Bone Marrow Transplant but has acute GVHD: In patients exposed to high-dose corticosteroid and have Grade 2-4 Graft vs. Host Disease (GVHD) or Chronic GVHD.
   - 1f. Allogeneic Bone Marrow Transplant but no acute GVHD: In patients exposed to high-dose corticosteroid but no Graft vs. Host Disease.
   - 1g. Aplastic Anemia: In patients receiving anti-thymocyte globulin (ATG) or alemtuzumab.
   - 1h. Chronic Lymphocytic Leukemia or Lymphoma (fludarabine chemotherapy): In patients receiving fludarabine.
   - 1i. Myelodysplastic Syndrome (MDS): In patients with transformed MDS.
2. Initial Investigation and Management of a Patient with Febrile Neutropenia
   - Initial assessments and management in a patient presenting with high-risk febrile neutropenia.
3a. Pre-Emptive Antifungal Therapy in Patients with Hematological Malignancies
   - Patient has positive biomarker (serum galactomannan) and has risk factor (neutropenia) which meet criteria for pre-emptive antifungal therapy.
3b. Management of Pulmonary Infiltrate in Patients with Hematological Malignancies
   - Patient with abnormal CT chest who requires further investigations and antimicrobial therapy.
4. Recommended Management for Catheter-Related Blood Stream Infections
   - Investigations and management for suspected or confirmed central-line related infections.
5a. Recommended Antimicrobials by Type of Infection
   - Recommended antimicrobial regimens for patients in whom a source of infection (+/- organisms) has been identified.
5b. Candidemia
   - Recommended management for candidemia.
5c. Recommended Antimicrobials if Source of Infection or Pathogen is Not Identified
   - Recommended antimicrobial therapy management if source of infection is unknown.
6. Persistent or Recrudescent Neutropenic Fever Investigations and Management
   - Investigations and recommended antimicrobial therapy in patients with persistent fever after 5d (or more) of appropriate antimicrobials, or recurrent fever after initial response to antimicrobial therapy.

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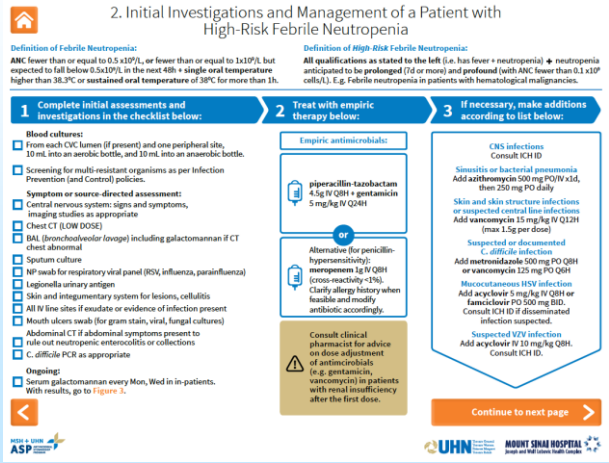

2. Initial Investigations and Management of a Patient with High-Risk Febrile Neutropenia

Definition of Febrile Neutropenia:
ANC fewer than or equal to 0.5 x10⁹/L, **or** fewer than or equal to 1x10⁹/L but expected to fall below 0.5x10⁹/L in the next 48h + **single oral temperature** higher than 38.3°C or **sustained oral temperature** of 38°C for more than 1h.

Definition of *High-Risk* Febrile Neutropenia:
All qualifications as stated to the left (i.e. has fever + neutropenia) + neutropenia anticipated to be **prolonged** (7d or more) and **profound** (with ANC fewer than 0.1 x10⁹ cells/L). E.g. Febrile neutropenia in patients with hematological malignancies.

1 Complete initial assessments and investigations in the checklist below:

Blood cultures:
- From each CVC lumen (if present) and one peripheral site, 10 mL into an aerobic bottle, and 10 mL into an anaerobic bottle.
- Screening for multi-resistant organisms as per Infection Prevention (and Control) policies.

Symptom or source-directed assessment:
- Central nervous system: signs and symptoms, imaging studies as appropriate
- Chest CT (LOW DOSE)
- BAL (*bronchoalveolar lavage*) including galactomannan if CT chest abnormal
- Sputum culture
- NP swab for respiratory viral panel (RSV, influenza, parainfluenza)
- Legionella urinary antigen
- Skin and integumentary system for lesions, cellulitis
- All IV line sites if exudate or evidence of infection present
- Mouth ulcers swab (for gram stain, viral, fungal cultures)
- Abdominal CT if abdominal symptoms present to rule out neutropenic enterocolitis or collections
- *C. difficile* PCR as appropriate

Ongoing:
- Serum galactomannan every Mon, Wed in in-patients. With results, go to Figure 3.

2 Treat with empiric therapy below:

Empiric antimicrobials:

piperacillin-tazobactam 4.5g IV Q8H + **gentamicin** 5 mg/kg IV Q24H

or

Alternative (for penicillin-hypersensitivity): **meropenem** 1g IV Q8H (cross-reactivity <1%). Clarify allergy history when feasible and modify antibiotic accordingly.

Consult clinical pharmacist for advice on dose adjustment of antimicrobials (e.g. gentamicin, vancomycin) in patients with renal insufficiency after the first dose.

3 If necessary, make additions according to list below:

CNS infections
Consult ICH ID

Sinusitis or bacterial pneumonia
Add **azithromycin** 500 mg PO/IV x1d, then 250 mg PO daily

Skin and skin structure infections or suspected central line infections
Add **vancomycin** 15 mg/kg IV Q12H (max 1.5g per dose)

Suspected or documented *C. difficile* infection
Add **metronidazole** 500 mg PO Q8H **or vancomycin** 125 mg PO Q6H

Mucocutaneous HSV infection
Add **acyclovir** 5 mg/kg IV Q8H **or famciclovir** PO 500 mg BID. Consult ICH ID if disseminated infection suspected.

Suspected VZV infection
Add **acyclovir** IV 10 mg/kg Q8H. Consult ICH ID.

Continue to next page

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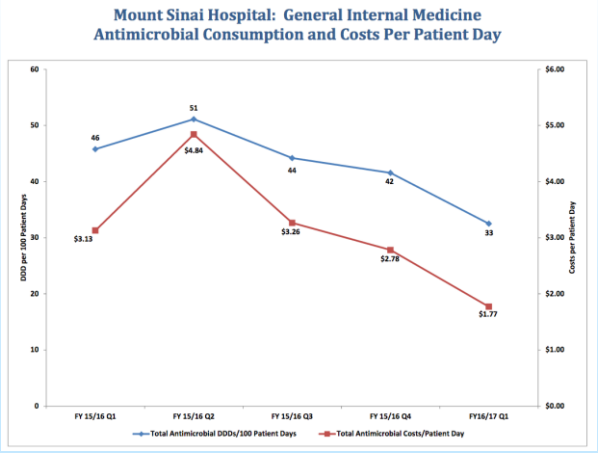
Nous n'utilisons plus seulement des données pour montrer que nous changeons les comportements



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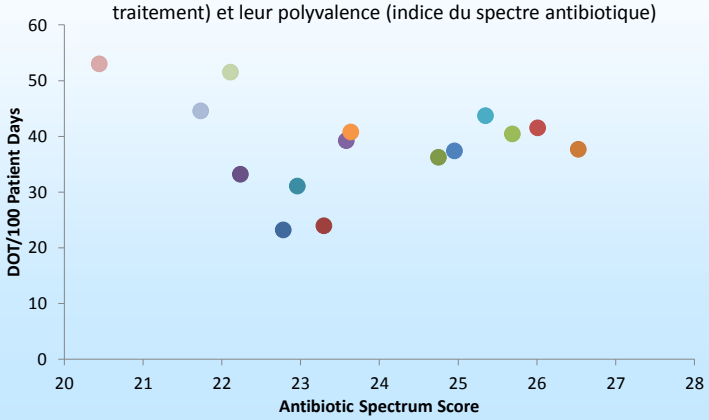
Mais nous utilisons des données pour changer les comportements sur le terrain

Données par médecin sur la quantité d'antibiotiques prescrits (jours de traitement) et leur polyvalence (indice du spectre antibiotique)



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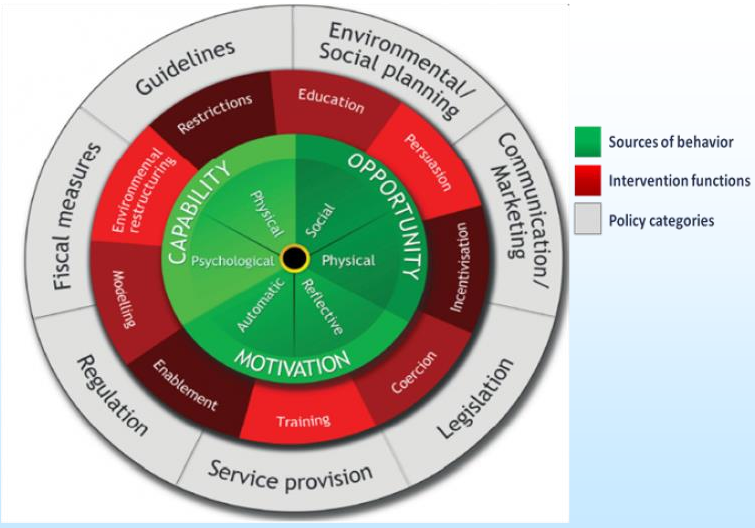

S. Michie, L. Atkins et R. West, *The Behaviour Change Wheel: A Guide to Designing Interventions*, Silverback Publishing, 2014.

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ARTIC (Adopting Research To Improve Care)
Commencer par une maquette qui a belle allure

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D'abord le cadre général

Health Sciences North
Horizon Santé-Nord

CHEO RESEARCH INSTITUTE | INSTITUT DE RECHERCHE

The Ottawa Hospital | L'Hôpital d'Ottawa

SickKids

St. Joseph's Healthcare Hamilton

Hamilton Health Sciences

CAHO
Council of Academic Hospitals of Ontario

KGH Kingston General Hospital

London Health Sciences Centre

St. Michael's
Inspired Care.
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ARTIC 2.0 : Ensuite, ajouter des précisions au modèle

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Ontario Health Quality Ontario

Hamilton Health Sciences

CAHO
Council of Academic Hospitals of Ontario

Lakeridge Health

London Health Sciences Centre

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Intendance des antimicrobiens dans les soins primaires (IASP)

- Projet pilote mené par Dre France Légaré pour le programme d'IASP au sein d'unités de formation à la médecine familiale du Québec
- Axé sur le recours aux antibiotiques pour les infections respiratoires aiguës
- Intervention : tutoriel en ligne de 2 h → séminaire interactif de 2 h sur la prise de décision partagée

F. Légaré et coll., CMAJ, vol. 184 (2012), p. E726-734

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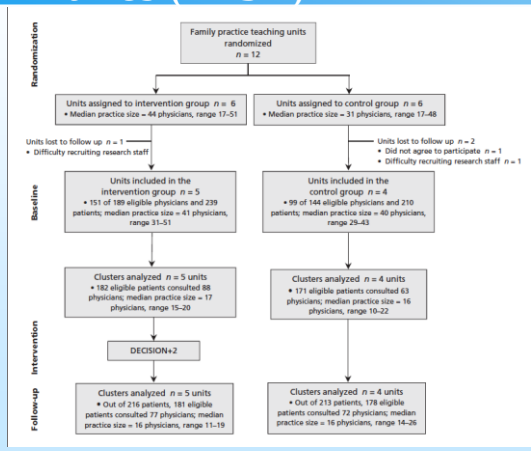

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Intendance des antimicrobiens dans les soins primaires (IASP)

- Projet pilote mené par Dre France Légaré pour le programme d'IASP au sein de 5 unités de formation à la médecine familiale (77 médecins) du Québec
- Axé sur le recours aux antibiotiques pour les infections respiratoires aiguës
- Intervention : tutoriel en ligne de 2 h ➜ séminaire interactif de 2 h sur la prise de décision partagée

F. Légaré et coll., CMAJ, vol. 184 (2012), p. E726-734

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Table 3: Proportion of patients deciding to use antibiotics immediately after consulting with their physician before and after the intervention, by study group, family practice teaching unit, type of physician and patient age group

	% of patients deciding to use antibiotics immediately after consultation					
	At baseline		After intervention			
Variable	Intervention units $n = 5$	Control units $n = 4$	Intervention units $n = 5$	Control units $n = 4$	Absolute difference	Adjusted relative risk* (95% CI)
Teaching unit						
All units	41.2	39.2	27.2	52.2	25.0	0.5 (0.3 to 0.7)
Type of physician						–
Resident	37.5	44.4	28.6	46.7	18.1	0.6 (0.4 to 0.9)
Teacher	44.1	36.8	25.7	56.3	30.6	0.5 (.3 to 0.7)
Patient age group						
Adults	41.9	39.8	26.6	50.7	24.1	0.5 (0.4 to 0.8)
Children	40.0	36.8	27.1	65.5	38.4	0.4 (0.3 to 0.7)

Note: CI = confidence interval.
*Adjusted for cluster design, baseline values and patient age group (for analyses at teaching-unit and physician levels).

F. Légaré et coll., CMAJ, vol. 184 (2012), p. E726-734

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Intendance des antimicrobiens dans les soins primaires (IASP)

- Projet pilote mené par Dr Warren McIsaac pour le programme d'IASP au sein de 3 équipes de santé familiale académiques
- Utilise l'enseignement, les outils d'aide à la décision, les audits et la rétroaction pour changer les comportements (toux, sinusite, mal de gorge, infection urinaire)
- Financé par le Fonds d'innovation SHS-UHN du Plan de diversification des modes de financement

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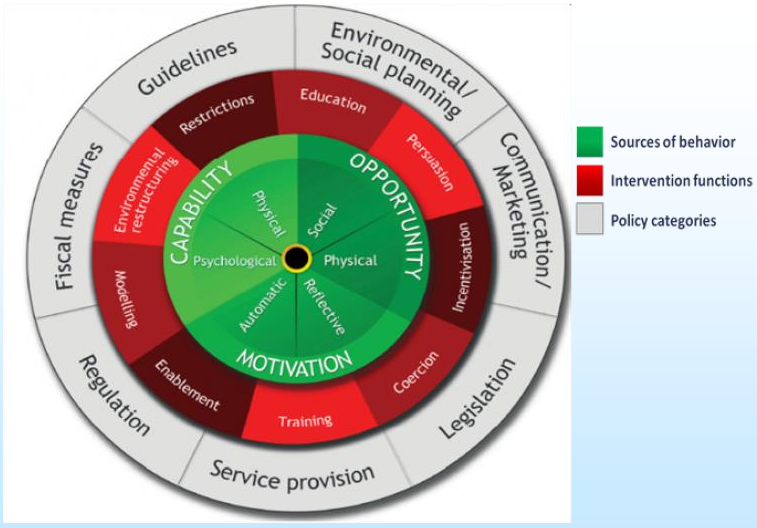
Intendance des antimicrobiens dans les soins primaires (IASP)

- En voie d'être élargi à ~60 médecins de famille de la région du Grand Toronto affiliés à la plateforme de recherche UTOPIAN
- Sera déployé au cours des 2 prochaines années
- Sera réduit aux infections des voies respiratoires



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JEDI et SABR

- JEDI = Judicious Evaluation of antimicrobial Decision making
  - Audit et rétroaction hebdomadaires de la pertinence des ordonnances d'antimicrobiens
- SABR = Stewardship At Bedside Rounds
  - Cartographie de base de la prise de décision
  - Initiation du personnel infirmier à un rôle d'intendance actif
  - Intégration du cadre de prise de décision sur les antimicrobiens dans les tournées de l'équipe
  - Encouragement de l'équipe à passer au programme d'intendance des antimicrobiens

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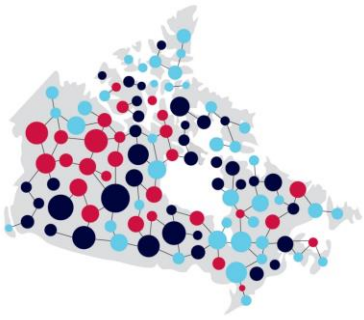
CANresist.com

CANresist

Canadian Network for Antimicrobial Resistance
Réseau canadien contre la résistance aux antimicrobiens



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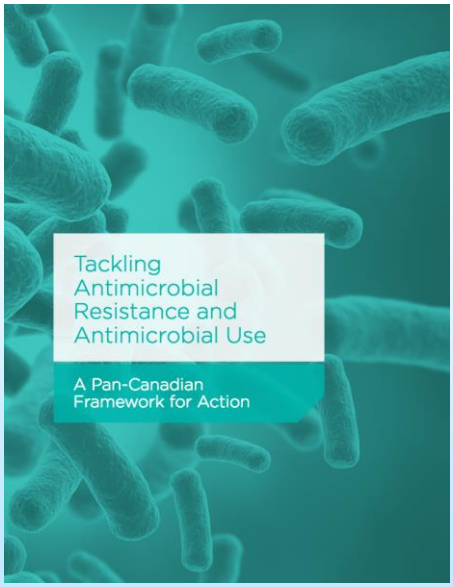

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CANresist
Canadian Network for Antimicrobial Resistance
Réseau canadien contre la résistance aux antimicrobiens

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Résumé

- À la base, la RAM et l'intendance des antimicrobiens concernent le changement des comportements
- Les comportements de prescription d'antimicrobiens sont complexes; les changer nécessite des approches variées (voir la Roue du changement de comportement)
- *CANresist* nous concerne tous… c'est probablement notre meilleure chance de faire pencher la balance au Canada

SHS + UHN ASP ANTIMICROBIAL STEWARDSHIP PROGRAM

Mount Sinai Hospital
Sinai Health System
Joseph & Wolf Lebovic Health Complex

UHN Toronto General Toronto Western Princess Margaret Toronto Rehab