

*Public Health Campaign for Patient
Education on Antibiotic Necessity to Limit
Overuse and Resistance*



Group 5:
*Ruthie Schreiber
Kliti Shentolli
Farhana Chowdhury
Maria Barak
Genna Giordano*

“Every year, doctors write an estimated 100 million antibiotic prescriptions for conditions they cannot treat. In part, that's because 36 percent of Americans incorrectly believe antibiotics are an effective treatment for viral infections...”

<https://www.healthline.com/health/antibiotics/addiction-how-patient-demand-helps-drive-epidemic>

“A survey of 1000 pediatricians found that half often felt pressure from patients' parents to prescribe antibiotics for illnesses not requiring antimicrobial therapy. Of greater concern, one-third of the pediatricians surveyed admitted that they generally comply with such requests, even in cases they believed did not warrant antibiotics. Two large studies of adult patients in family practice settings also clearly demonstrated that physicians are much more likely to prescribe medication when they thought the patient expected a prescription...”

https://journals.lww.com/em-news/Fulltext/2002/02000/Patients_who_Demand_Antibiotics_and_the_Doctors.12.aspx

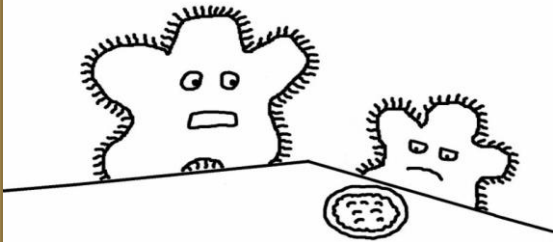
The Main Problem

-Lack of knowledge→ Lack of understanding

Antibiotics= Bacterial (NOT VIRAL)

-Patients: “Why can’t I use antibiotics to cure anything?!”

-Providers want to appease patients



"But Timmy, you have to eat your antibiotics, or you'll never become a big and strong bacteria."



Antibiotics: History

- Penicillin (1928)
- The Golden Era of Antibiotics



Antibiotics: Actions & Classification

- Disruption of processes & structures of bacterium
 - ~Bactericidal Antibiotics vs. Bacteriostatic Antibiotics
 - ~Narrow-Spectrum Antibiotics vs. Broad-Spectrum Antibiotics
- Antibiotic Resistance



The Issue with Current Interventions

-“Wait-and-see”

-Lack of insurance reimbursement

-FDA

... but is it enough?

*Antibiotic Resistance= growing Public Health concern

*Shift focus from clinicians→educating the patients



Who will benefit from our program?

-Clinicians

-Patients

-EVERYONE!

KNOWLEDGE

IS



POWER

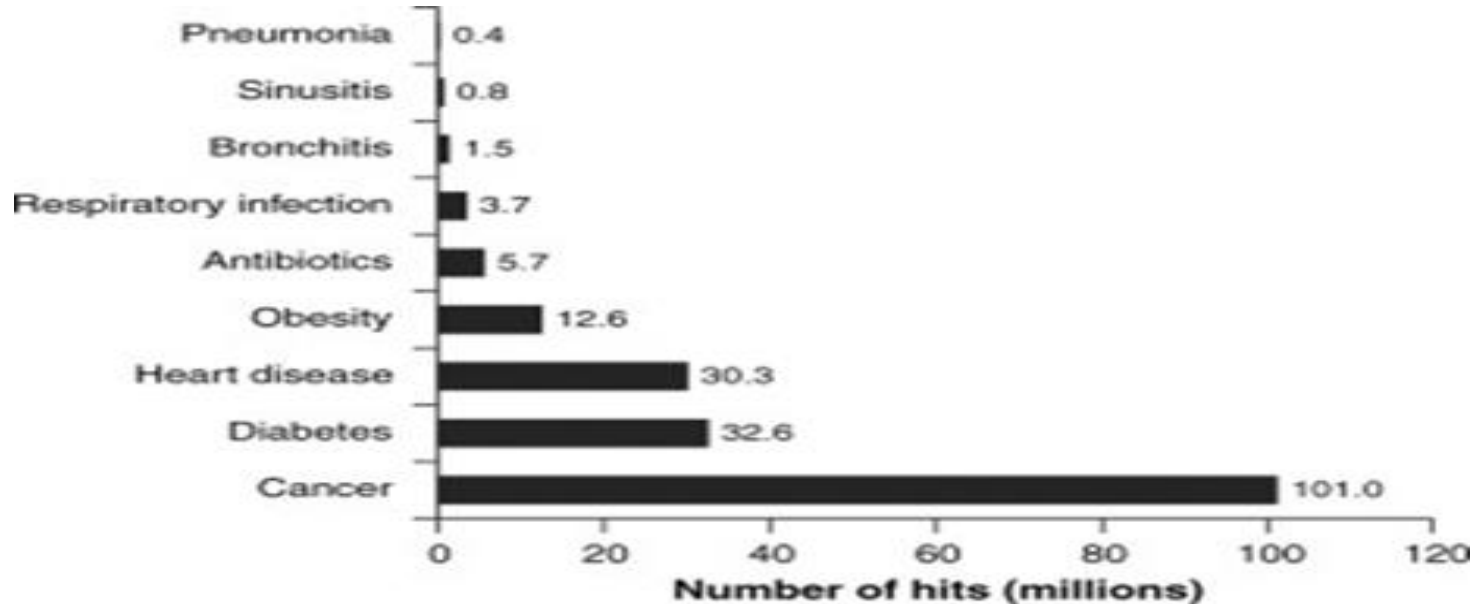
Some ideal changes we would like to make

1) Behaviour changes

a) Patients' behaviour:

- Most patients are misinformed about the use and function of antibiotics.
- It's become a cultural and common belief that its ok to take antibiotics as treatment for almost every symptom.
- "There's no harm in taking antibiotics".
- There's a lot of medical information out there for patients to access however, most medical texts on the web require the same reading level as that of a 10th grader. (Average reading level for U.S adults is equal to that of an 8th grader).

Volume of information of different medical conditions on the web.



<https://www.sciencedirect.com/science/article/pii/S1198743X14613288>

b) Physician's behaviour:

- According to Journal of the American Medical Association (JAMA), over 30% of antibiotics prescribed in the U.S are unnecessary, most of which are for respiratory conditions caused by viruses.
- Why do physicians prescribe so many antibiotics then?
 - Patient satisfaction and pressure (avoid arguments, keep patients satisfied)
 - Time constraints (limited time, need to see more patients).
 - Decision fatigue (shortage of physicians, working longer hours, tired).
 - Uncertain diagnoses (sometimes you're just not sure, decrease medical error, avoid lawsuits)

2) Environmental/social changes:

a) Cost:

- Use of redundant antibiotics can drive up medical costs.
- The cost nationwide from antibiotics alone is \$163 million annually.
- By avoiding unnecessary prescription of antibiotics, we can also decrease national spending on healthcare.



b) Agriculture:

- Approximately, 70% of all medically important antibiotics in the United States are sold for use in animals and plants.
- These antibiotics are given to healthy animals on a routine basis to prevent disease brought on by crowded, unsanitary conditions.
- The FDA restricted the use of antibiotics for growth and production promotion in animals.
- California passed “The Keep Antibiotics Effective Act”- stop the routine use of antibiotics for disease prevention purposes.

Plan on obtaining additional information within a certain population.

1) **People who suffer from common cold, viral sore throats, bronchitis, and sinus and ear infections.**

- Send out surveys to that group to see how many of them believe that antibiotics should be the first treatment option in help with their current condition. How many believe otherwise.
- Have these surveys available online, in doctors' offices, hospitals, emergency rooms etc.
- These surveys will tell us where specifically (location) to focus our educational efforts.

2) **Data collection from farmers.**

- Collect data on which animals receive them, which veterinarians prescribe them, or what diseases or infections they are intended to treat or prevent.
- Collecting this type of data needs to be more controlled and not by sending surveys.
- Benefit from STAAR Act (passed on March 1st, 2018)- strengthens existing federal investments in surveillance, data collection and research efforts to help prevent bacteria from developing resistance.

Few Key stakeholders



GENERAL PUBLIC



HEALTHCARE
PROVIDERS



ANIMAL SAFETY
PROFESSIONALS



POLICY MAKER

General Public: “Everyone”



Are antibiotics needed?

Common Condition	Common Cause			Are Antibiotics Needed?
	Bacteria	Bacteria or Virus	Virus	
Strep throat	✓			Yes
Whooping cough	✓			Yes
Urinary tract infection	✓			Yes
Sinus infection		✓		Maybe
Middle ear infection		✓		Maybe
Bronchitis/chest cold (in otherwise healthy children and adults)*		✓		No*
Common cold/runny nose			✓	No
Sore throat (except strep)			✓	No
Flu			✓	No

* Studies show that in otherwise healthy children and adults, antibiotics for bronchitis won't help you feel better.

Can I feel better without antibiotics?



**BE
ANTIBIOTICS
AWARE**

SMART USE, BEST CARE

Respiratory viruses usually go away in a week or two without treatment. To stay healthy and keep others healthy, you can:



Clean Hands



Cover Coughs



Stay Home When Sick



Get Recommended
Vaccines

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.



Do antibiotics have side effects?



**BE
ANTIBIOTICS
AWARE**

SMART USE, BEST CARE

Anytime antibiotics are used, they can cause side effects. When antibiotics aren't needed, they won't help you, and the side effects could still hurt you. Common side effects of antibiotics can include:



Rash



Dizziness



Nausea



Yeast
Infections



Diarrhea

More serious side effects include *Clostridium difficile* infection (also called *C. difficile* or *C. diff*), which causes diarrhea that can lead to severe colon damage and death. People can also have severe and life-threatening allergic reactions.

Antibiotics save lives. When a patient needs antibiotics, the benefits outweigh the risks of side effects.

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.



常見病情	常見病因			是否需要抗生素？
	細菌	細菌 或病毒	病毒	
鏈球菌性喉炎	✓			是
百日咳	✓			是
尿道感染	✓			是
鼻竇感染		✓		可能需要
中耳感染發炎		✓		可能需要
支氣管炎/呼吸道感染 (出現在其他方面健康的兒童和成人身上)*		✓		否*
常見感冒/流鼻涕			✓	否
咽喉痛 (鏈球菌除外)			✓	否
流感			✓	否

* 研究表明，在其他方面健康的兒童及成人身上，支氣管炎所用的抗生素無法讓病情好轉。

Affection fréquente	Cause fréquente			Les antibiotiques sont-ils nécessaires ?
	Bactérie	Bactérie ou Virus	Virus	
Angine streptococcique	✓			Oui
Coqueluche	✓			Oui
Infection des voies urinaires	✓			Oui
Infection des sinus		✓		Peut-être
Infection de l'oreille moyenne		✓		Peut-être
Bronchite (chez les enfants en bonne santé et les adultes)*		✓		Non*
Rhume/écoulement nasal			✓	Non
Mal de gorge (sauf streptocoque)			✓	Non
Grippe			✓	Non

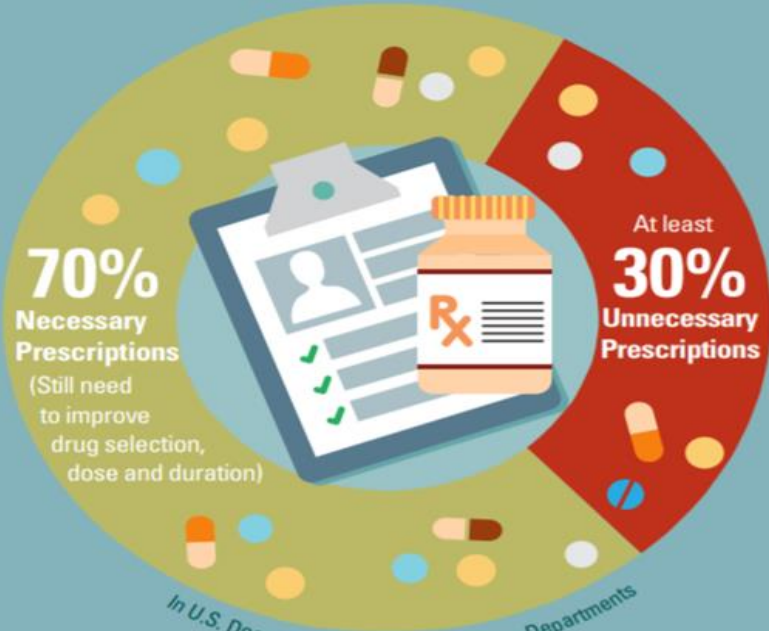
*Des études ont montré que chez les enfants en bonne santé et les adultes, les antibiotiques ne sont pas utiles en cas de bronchite.

Healthcare professionals



Current role of
Healthcare
professionals

Improve Antibiotic Use to Combat Antibiotic Resistance



In U.S. Doctor's Offices and Emergency Departments

CDC is working to reduce unnecessary antibiotic use

Steps for provider to reduce antibiotic-resistance

- ❖ Infection control practices
- ❖ Judicious use of antibiotics
- ❖ Frequent and timely communication among health care providers
- ❖ Develop antimicrobial stewardship program to make clinical decision and this teams consist of physicians, pharmacists, clinical care staff and microbiologists

Animal Safety Professionals



FOOD



VETERINARY

<http://www.myrolematters.com/stakeholders.html>

ANIMALS IN THE USA CONSUME MORE THAN TWICE AS MANY MEDICALLY IMPORTANT ANTIBIOTICS AS HUMANS



Source: Animal consumption figure of 8,893,103kg from FDA, 2012. Human consumption of 3,379,226kg in 2012 based on calculations by IMS Health. The figures are rounded from 72.5% used in animals and 27.5% used in humans.

Review on Antimicrobial Resistance

Global Problem

Some antimicrobials used to treat infection in

ANIMALS



are the same as those used for

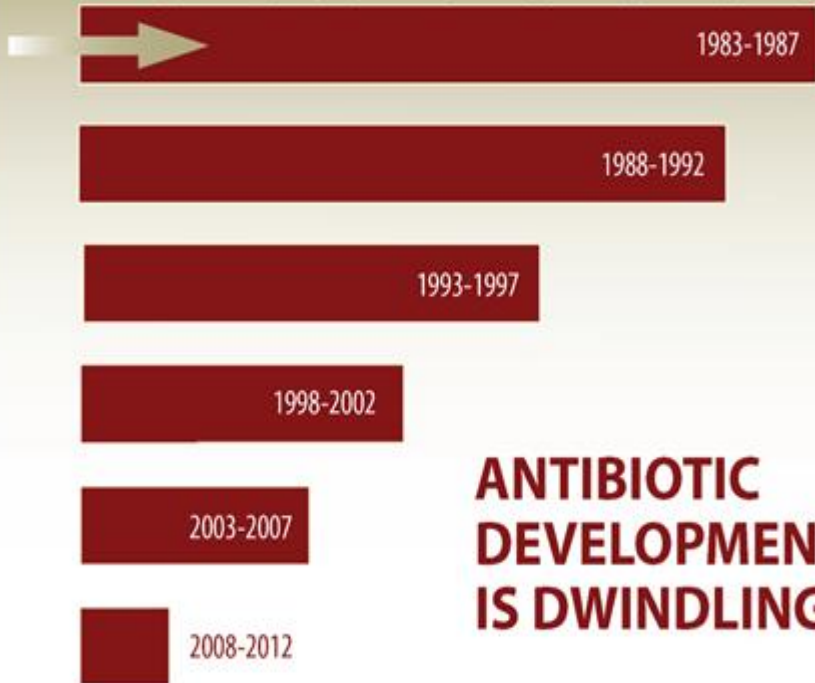
HUMANS



A ONE HEALTH
approach to stop overuse
reduces antimicrobial
resistance

Total Number of New Antibacterial Agents

0 2 4 6 8 10 12 14 16



**ANTIBIOTIC
DEVELOPMENT
IS DWINDLING**

Source: *The Epidemic of Antibiotic-Resistant Infections*, CID 2008;46 (15 January)
Clin Infect Dis. (2011) May 52 (suppl 5):S397-S428. doi: 10.1093/cid/cir153

Policy Maker

Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

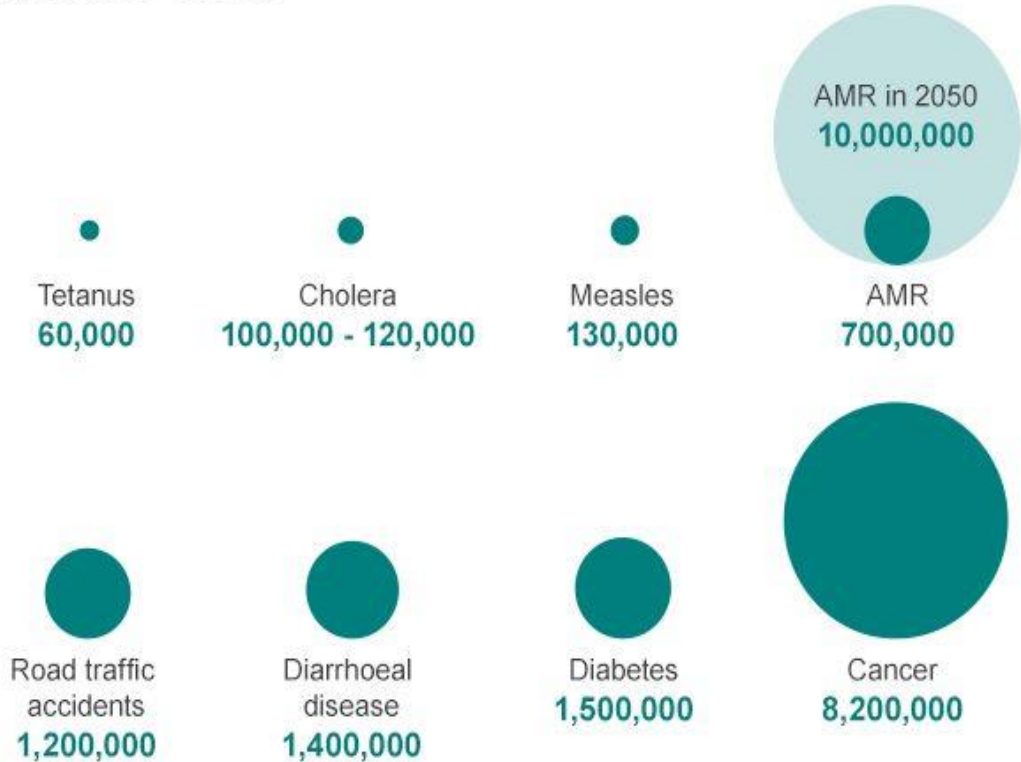
At least  **2,049,442** illnesses,
 **23,000** deaths

**bacteria and fungus included in this report*

Current
Health Issue

Future Health Issue

Deaths attributable to antimicrobial resistance every year compared to other major causes of death



Source: Review on Antimicrobial Resistance 2014

<https://www.bbc.com/news/health-30416844>

Plan for Financing Our Program

- ❖ U.S. Department of Health & Human Services
- ❖ CDC- Public Health System Financing
- ❖ President's Budget
- ❖ Prevention and Public Health Fund

Local:

- ❖ New York State Department of Health
- ❖ Fund for Public Health in New York City

Inputs Needed To Make The Intervention Work.

Time: In order to develop an effective intervention, it will take about 6 months.. This will give us time to form a blueprint of our intervention that includes the time needed to collect our research/data, to form a diverse effective team that includes members from different professional backgrounds including physicians, microbiologist, pharmacists and more.

Money: The intervention will be funded by a grant supplied by the New York State Department of Health. Our total budget for the intervention is 20,000. This number has been calculated after considering:

-Funding for materials and supplies for the intervention

Ex: surveys, posters, printing, brochures

-Staff

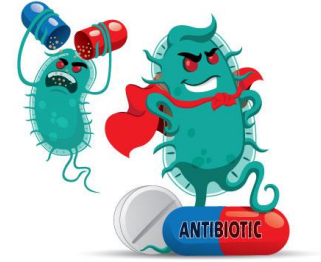
-Facility

Physical space: An office space will be rented using the budget money to run the intervention.





The Actual Intervention:



What exactly is involved? The intervention itself will include our mission, our strategies, who our population of interest is along with what proposed changes of actions we are aiming for. The intervention will be implemented in the New York Tri State area and will run for 1 year. If shown to effective and gains recognition, then we can obtain more grants to expand to other regions. The intervention will be purposed to the population using posters and wallpapers that can be displayed in healthcare organizations specifically physician offices that specializes in primary care. We will also be setting up informational stands for the public in different locations throughout the city by providing educational brochures along with having physicians and microbiologist on site to answer any questions people may have.

How many sessions:

Public educational stands will be set up, with a total of 5 sessions held throughout the year and each session will be held for 2 hours.

How many times per week/month/year:

Each session will be held every two months and these public sessions will be held throughout all 5 boroughs in the New York Tri State area, mainly in regions in busy areas where we can reach the most people.

The ABC's of Antibiotics

Ask
 "Are these antibiotics necessary?"
 "What can I do to feel better?"



Bacteria
 Antibiotics do not kill viruses.
 They only kill bacteria.



Complete the Course
 Take all of your antibiotics exactly as prescribed (even if you are feeling better).



Do not pressure your healthcare provider for antibiotics.

You do **not** need antibiotics for:

- ✗ Colds or flu;
- ✗ Most coughs and bronchitis;
- ✗ Sore throats not caused by strep;
- ✗ Runny noses; or
- ✗ Most ear aches.

Using antibiotics the wrong way can cause bacteria to grow into superbugs. This could make your next infection much harder to treat.



Infection Prevention *and You*



Learn more about antibiotic resistance at apic.org/infectionpreventionandyou and cdc.gov/getsmarter.

Flyers and Brochures



What is antibiotic resistance?

THE PROBLEM

Antibiotics treat infections by killing bacteria, but now the bacteria are fighting back. Our medicines are becoming less effective, which means more deaths and more complications for people receiving treatment in hospital. We have to tackle the problem before it gets worse.

HOW THIS HAPPENED


There are many reasons why antibiotics lose their effectiveness, but here are two key ones:

Firstly, we take medicines that we don't need. Antibiotics don't help most colds or coughs get better but we still request antibiotics for them.

Secondly, we make things worse when we don't take antibiotics exactly as prescribed for instance, missing doses. Never save antibiotics for future use or give them to someone else.

WHAT CAN WE DO?

Antibiotic resistance is one of the biggest threats facing us today but you can help. Please visit www.antibioticguardian.com and find out about simple steps you can take to save our antibiotics.



A world without antibiotics

PRE-ANTIBIOTIC AGE

In a world before antibiotics, as recently as the 1930s, people often died from infections like pneumonia or meningitis. Simple medical procedures/operations were risky due to the chance of infection. Antibiotics changed that.

ANTIBIOTIC AGE

Since the 1940s our antibiotics have allowed us to fight infections and save millions of lives. But they are becoming ineffective against many infections because we aren't using them properly.

POST-ANTIBIOTIC AGE

If bacteria become "resistant" to our antibiotics many routine treatments will again become increasingly dangerous. Setting broken bones, basic operations, even chemotherapy all rely on access to antibiotics that work. Antibiotic resistance is one of the biggest threats facing us today but we have a chance to fight back. Find out how at www.antibioticguardian.com.



Antibiotic resistance

What can I do?

BE AN ANTIBIOTIC GUARDIAN

Antibiotics are some of our most precious medicines, used to treat both humans and animals. The Antibiotic Guardian campaign was launched to kick-start collective action from both healthcare professionals and members of the public to work together to slow the spread of antibiotic resistance.

By pledging to become an Antibiotic Guardian you choose to perform a simple action which protects antibiotics against the threat of antibiotic resistance.

TAKE THESE SIMPLE ACTIONS

- Don't ask for antibiotics, treat your cold and flu symptoms with pharmacist advice and over the counter medicines
- Take antibiotic exactly as prescribed, never save them for later, never share them with others.
- Spread the word, tell your friends and family about antibiotic resistance

SIGN UP AND LEARN MORE

Join together at www.antibioticguardian.com and choose a pledge that feels right for you. Remember that your actions protect antibiotics.

Why Primary care?



We want to reach the population where antibiotics are prescribed the most. According to the CDC, in just 2015 alone 269 million antibiotics were dispensed from outpatient pharmacies in the United States. And from this 30% were found to be unnecessary. When we took a closer look, it was found that antibiotics are prescribed the most in primary care specialties, specifically in family medicine.



Oral Antibiotic Prescribing by Provider Type in the United States In 2014

Provider type	Number of antibiotic prescriptions in 2014 (millions)
Family Practice Physicians	58.1
Physician Assistants & Nurse Practitioners	54.4
Internal Medicine	30.1
Pediatricians	25.4
Dentistry	24.9
Surgical Specialties	19.9
Emergency Medicine	14.2
Dermatology	7.6
Obstetrics/Gynecology	6.6
Other	25.0
All Providers	266.1

How We Plan To Evaluate Our Program

- **CDC Annual Reports on Outpatient Antibiotic Use** (<https://gis.cdc.gov/grasp/PSA/AUMapView.html>)
 - Reports annually on number and type of antibiotics prescribed per 1000 people by state
- Development of **patient surveys** to administer to patients to compare beliefs on antibiotics before & 1 year after implementation of program. Examples of questions include :
 - *Have you taken an antibiotic in the past year? If so, what did you take it for?*
 - *True or false → Antibiotics kill bacteria, Antibiotics kill viruses, Antibiotics will make me feel better if I have a cold or the flu*
 - *Do you believe there are any harms associated with antibiotic use? If so, what kind? If no, why not?*
 - *Is it okay to use antibiotics given to you by a friend or family member who had a similar illness?*
(<http://apps.who.int/medicinedocs/documents/s22245en/s22245en.pdf>)
- Data currently exists on volume of antibiotics prescribed, but not on their appropriate use, so potentially could **survey insurance companies** on number of antibiotics linked to ICD-10 codes of URI, bronchitis, pharyngitis, influenza, etc.

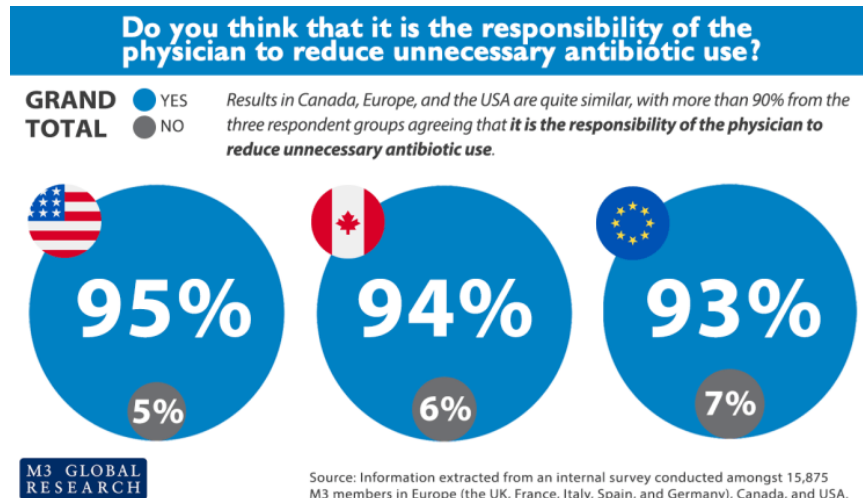
Maintenance & Funding...

- If statistics after 1 year show decrease in rate of antibiotic prescriptions could present findings to CDC in regards to how it would help their Antibiotic Resistance Solutions Initiative and ask for funding
- Can also present findings to Association for Professionals in Infection Control & Epidemiology (APIC), WHO, FDA who also have initiatives for antibiotic resistance
- If program is successful, healthcare providers will experience less time spent on having to education patients on antibiotics and less antibiotic-related complications, thus will be more likely to participate in our program and promote our educational materials (i.e. patient handouts, information posters in offices, etc.)
- Health insurance companies may also want to participate due to having to cover less antibiotic-related complications and antibiotic resistant infections



Planning for Failure... What to do if our intervention is unsuccessful?

- Simplify educational information
- Enlarge target population (i.e. from PCP and community health centers to specialists, hospitals, etc.)
- Fear tactics → Such as the case with vaccines, switch from informing on medical necessity to informing on health dangers (i.e. graphic pictures of cancer on cigarettes in other countries)
- Look back to healthcare providers to implement more judicious guidelines for antibiotic prescriptions
- Encourage peer review in hospitals and private offices
- Switch from “wait and see” prescriptions, which also depend on patient understanding of antibiotics, to delayed prescriptions (i.e. If you’re not feeling better, call clinician or go back for another visit)



<https://m3globalresearch.blog/2017/08/30/overuse-unnecessary-antibiotics/>

<https://www.youtube.com/watch?v=dETK7Jc-XWA&app=desktop>



Any Questions?

**THANKS
FOR
LISTENING**