Antibiotic Resistance Education

Health Education Evaluation At Work

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Alliance Working for Antibiotic Resistance Education

About Oregon AWARE

- The Oregon Alliance Working for Antibiotic Resistance Education (AWARE) is a coalition whose mission is to encourage the appropriate use of antibiotics and aims to reduce the problem of antibiotic-resistant bacteria in Oregon.

- Key messages :

- Never use antibiotics for viral infections like colds or flu, because antibiotics have no effect against viruses, and that this type of use can cause serious side effects.
- Taking antibiotics when they're not necessary puts members of the community at risk for developing resistant infections.
- If a doctor prescribes an antibiotic, then the patient should finish the prescription even if their symptoms have lessened or disappeared.
- Never share antibiotics, take leftover antibiotics or use them without a prescription.

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Program Purpose

- Antibiotic resistance has been called one of the world's most pressing public health problems.
- Repeated and improper uses of antibiotics are primary causes of the increase in drug-resistant bacteria.
- Children are of particular concern because they have the highest rates of antibiotic use.
- Antibiotics were prescribed in 68% of acute respiratory tract visits – and of those, 80% were unnecessary according to CDC guidelines.
- $1.1 billion is spent annually on unnecessary adult upper respiratory infection antibiotic prescriptions

http://www.cdc.gov/getsmart/antibiotic-use/fast-facts.html

It was on a short-cut through the hospital kitchens that Albert was first approached by a member of the Antibiotic Resistance.

http://www.terra-thrive.com/wp-content/uploads/2013/08/antibiotic-resistant-cartoon.jpg

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Curriculum Purpose

- Furthers the goal of educating the general public about the judicious use of antibiotics and the burden of antibiotic resistance in Oregon.
- Informs young adults that will soon make their own healthcare choices about judicious use.
- Provides comprehensive health and science review/information.

http://cdno4.gettingsmart.com/wp-content/uploads/2013/04/Education-Featured.jpg

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But MOSTLY…

http://www.dvdactive.com/images/reviews/screenshot/2005/12/untitled.jpg

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CURRICULUM OVERVIEW

http://www.debaronson.com/sites/default/files/u7/Bookgirl476x290.jpg

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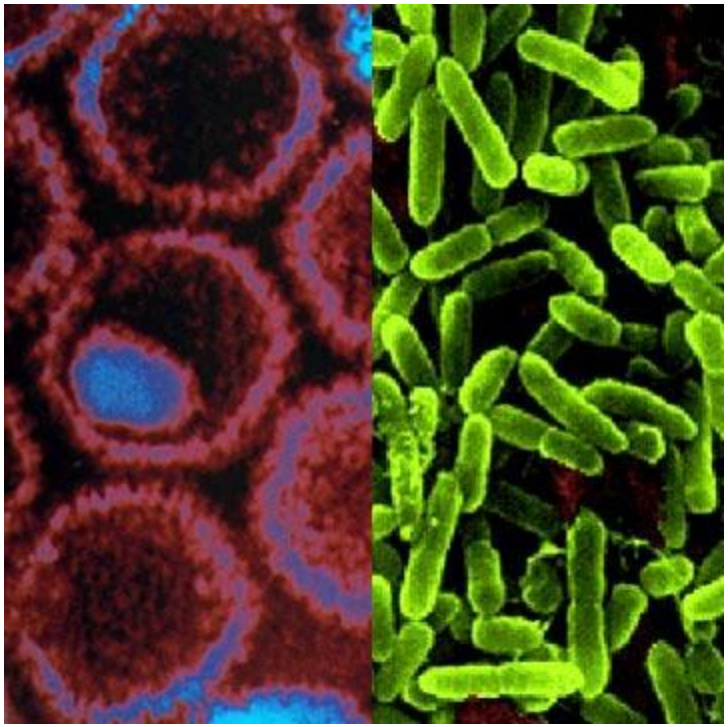
Module One:



- What are microbes?
- What are viruses?
- What are bacteria?
  - Structure
  - Where do they live?
- Bacteria and humans
  - Bacterial identification
  - Colonization
  - Host cell defenses
  - How bacteria cause infection

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http://www.sciencemuseum.org.uk/on-line/lifecycle/images/1-2-5-0-0-0-0-0-0-0-0.jpg

MODULE TWO:

- Antibiotics
  - How they work
  - How bacteria become resistant
    - Mutations in bacterial genes
    - Selection pressure (evolution)
    - Exchange of genetic material between bacteria
- Strategies for overcoming antibiotic resistance in bacteria
    - Appropriate use
    - Research and development of new antibiotics
    - Healthy habits

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Access/Delivery

- Traditional Use
- Team Instruction
- Self Study

http://borntomanifest.com/wp/wp-content/uploads/2014/06/two-choices.jpg

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Additional Resources

- Interactive Activities/Games
- Videos
- Lab Exercises
- Additional Lesson Plans
- Resources for Student Research

http://www.ipmglobal.net/resource-management/project-management-software-timesheets.htm

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Implementation and Results

Pilot and General Curriculum Release

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Pilot Release

Pilot presentations: June 4, 2012/June 5, 2012
Salem-Keizer/Hermiston School Districts
N = 48 students

Question Number	Percentage Correct Pre-Test	Percentage Correct Post-Test	Percentage of Improvement
1	91.7%	95.8%	4.47%
2	62.5%	66.7%	6.72%
3	83.3%	100%	20.04%
4	91.7%	100%	9.05%
5	95.8%	100%	4.38%
6	45.8%	81.2%	77.29%
7	9%	58.3%	547%
8	66.6%	91.7%	37.68%
9	41.6%	100%	140.38%
10	25%	58.3%	133.20%
11	83.3%	91.7 %	10.08%
12	75%	100%	33.33%
13	75%	100%	33.33%
14	8.3%	58.3%	602.40%
15	91.7%	100%	9.05%

Instructor Feedback

- Was the content about the differences between viruses and bacteria clear and age appropriate for 9th and 10th grade biology students?
- Yes: 44 No: 0 Other: Maybe module 2 (4 comments)
- Did the information flow in a meaningful, logical way?
- Yes: 44 No: 0 Other: 4
- Do you believe you received enough information to answer the posttest questions?
- Yes: 48 No: 0
- What part of the presentation did you enjoy the most (other than the speaker)?
- Diagrams (17)
- Resistance (13)
- how big of a problem antibiotics are/global issues (13)
- process of how bacteria become resistant (5)

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Instructor Feedback

- Was any part of the presentation too easy?
- Yes: 4 No: 44

- What would make this presentation more "interesting" in the classroom setting?
- should be more interactive (24)
- simplify visuals for viruses vs. bacteria (2)
- pictures/more visually appealing slides (8)
- no comment (14)
-
- Is there any part of the presentation you believe should not be included, and, if so, what(which) part(s):
- Just make slides more interesting (4)
- a lot of unnecessary information on slides (4)
- antibodies (antibiotic?) description got out of control (4)
- too many examples (4)
-
- *Everyone generally agreed that all of the information should be included.

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Public Release

- Curriculum released in October 2012
- Online/In-Person Options Offered
- 11 Schools Adopt Curriculum in 2012
- 15 Schools Request/Adopt in 2013
- 6 Schools Request/Adopt in 2014

Curriculum delivery method

	Pre-Test		Post-Test	
	Mean Raw Score	Mean Percent Correct	Mean Raw Score	Mean Percent Correct
AWARE Guest lecturer (n= 288)	9.51	63.4490	13.70	91.381707
Online only (n=192)	9.46	63.125	13.01	86.769741

- Students educated through lecture showed statistically higher improvement than students educated online (4.2 points improved for students in lectures, 3.6 online, p=0.005.
- Although students in both groups showed statistical improvement in knowledge between pre- and post-tests.
- There was no statistical difference in pre-test scores for these groups, suggesting that differences in improvement are attributable to teaching forum.

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Grade level success

	Pre-Test		Post-Test	
	Mean Raw Score	Mean Percent Correct	Mean Raw Score	Mean Percent Correct
Grade 9 (n=205)	8.96	59.7403	13.24	88.3250
Grade 10 (n=275)	9.87	65.8179	13.56	90.4236

- Students in Grade 9 improved more than students in Grade 10 (4.3 points vs. 3.7, p=0.01).
- Students in both groups showed statistical improvement in knowledge between pre- and post-tests.
- Students in Grade 9 had significantly lower pre-test scores (p=0.0007), suggesting that the greater improvement for students in grade 9.

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School Specific Scores

	Pre-Test		Post-Test	
	Mean Raw Score	Mean Percent Correct	Mean Raw Score	Mean Percent Correct
School A (n= 53)	9.33	62.265094	13.03	86.918679
School B (n= 55)	10.58	70.545273	13.79	91.999455
School C (n=54)	9.74	64.938333	13.35	89.011481
School D (n= 53)	9.50	63.395660	13.54	90.313585
School E (n= 52)	8.73	58.205000	13.32	88.845962
School F (n= 54)	9.51	63.455741	13.24	88.270556
School G (n= 56)	8.87	59.167679	13.26	88.451607
School H (n=25)	9.08	60.534000	13.19	87.999600
School I (n= 29)	10.44	69.655517	14.13	94.252759
School J (n= 30)	9.53	63.555333	13.56	90.444667
School K (n= 19)	8.63	57.542632	13.63	90.876842

- When comparing scores from different high schools, there were no major statistical differences.

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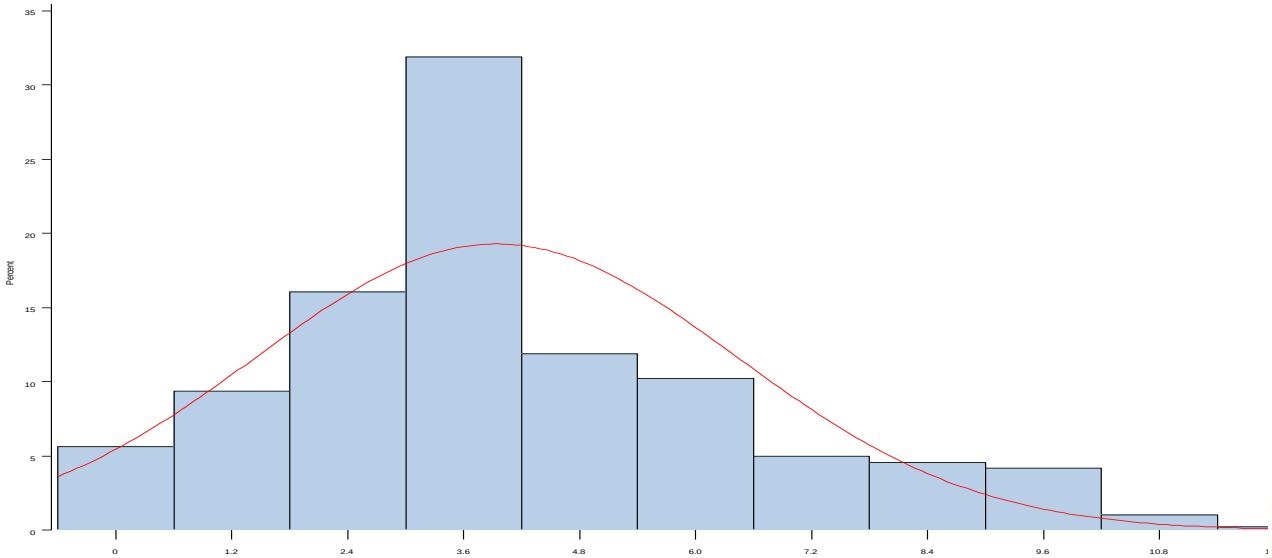
Overall improvement

- Students increased their scores on the 15-point test from an average of 9.5 points on the pre-test to 13.4 on the post-test (median improvement was from 10 to 14 points)



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Summary

Benefits

- Flexible curriculum
- Easy to access
- Proven success with multiple forms of implementation
- Interactive
- Hot topic/Current event focused

Barriers

- Difficulty measuring level of adoption in download only schools
- Pre/Post Test through
- Multiple year adoption
- Marketing to teachers/schools

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Questions? Comments?

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Curriculum Access Information:

www.healthoregon.org/antibiotics

Click on “Educators”

Fill out curriculum request form

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