**Doctor’s Orders: Student Perceptions of Antibiotic Resistance and Authority**

Hannah Creasey¹, Ella Lee², Lisa Wiltbank³ and Kimberly Booth³

Lewis & Clark College¹, South Dakota State University², North Dakota State University³

---

**Intro to Antibiotic Resistance (ABR):**
- ABR occurs when microbes evolve to be able to resist the effects of antibiotics—rendering treatments ineffective¹
- An estimated 2,049,442 illnesses and 23,000 deaths in humans have been caused by ABR²
- Some diseases considered cured are forming strains resistant to antibiotics. Now, new antibiotics must be developed¹
- Non-science major students were sampled because they are more representative of the general public and are likely our future politicians, teachers, business people, etc.
- ABR research has yet to evaluate impacts of instruction

**Purpose:**
Determine impact of instruction on the following in regards to ABR:
1) Student usage of antibiotics
2) Student development of scientifically-informed rationale
3) Student adherence to authority, specifically medical professionals

**Methods:**
- Three surveys (pre, post, end-of-semester) given to non-majors in biology course (BIOC 111) spring 2017 (n=364)
- Two coders initially coded data only for students who completed all three surveys (n=105)
- Pre Survey (n=295) Before instruction
- Post Survey (n=215) After instruction
- End-of-Semester (n=172) 10 weeks later
- Students Finish Antibiotic Prescription:
  - **Survey Question:** “You are diagnosed with strep throat, which is caused by the bacteria Streptococcus pyogenes. You begin to feel better within 48 hours of taking an antibiotic. Will you continue taking ALL 10 days of the antibiotic as prescribed by your doctor? Why or why not?”
  - **Students already had a high likelihood of adhering to prescription length, no change was shown after instruction**

**Student Reasoning for Finishing Antibiotic Prescription:**
- **Code:**
  - **Student References:**
    - Mention—Correct: Correct description of ABR and mentions the words “antibiotic resistance”
    - Mention—Incorrect: Incorrect description of ABR and mentions the words “antibiotic resistance”
    - Idea—Correct: Correct description of ABR but does not mention the words “antibiotic resistance”
    - Idea—Incorrect: Incorrect description of ABR but does not mention the words “antibiotic resistance”

**Conclusions:**
- After instruction, frequency of students who correctly mentioned ABR **increased** and that effect persisted through the end of the semester
- Even in the pre-surveys, for both mentions and ideas, there were more correct than incorrect

---

**Use of the Term “Antibiotic Resistance”:**

**Code:**
- **Student References:**
  - Mention—Correct: Correct description of ABR and mentions the words “antibiotic resistance”
  - Mention—Incorrect: Incorrect description of ABR and mentions the words “antibiotic resistance”
  - Idea—Correct: Correct description of ABR but does not mention the words “antibiotic resistance”
  - Idea—Incorrect: Incorrect description of ABR but does not mention the words “antibiotic resistance”

**Adherence to Authority:**
- **Code:**
  - **Student References:**
    - Just Doctor—No Rationale: Adherence to medical professionals’ authority. Provides no other rationale other than that they were instructed by their doctor/nurse
    - Doctor+Rationale Correct (Non ABR): Adherence to medical professionals’ authority AND scientifically accurate information (other than ABR) that informed this decision
    - Doctor+Rationale Correct (ABR): Adherence to medical professionals’ authority AND scientifically accurate information (about ABR) that informed this decision

---

**References:**

**Acknowledgments:** We would like to thank the CEED NEU for this opportunity. This project was funded by NSF grant number DUE #1560142. Any opinions, findings, conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

**Literature Cited:**