Exploring The School Nurse's Role In Promoting Antibiotic Stewardship

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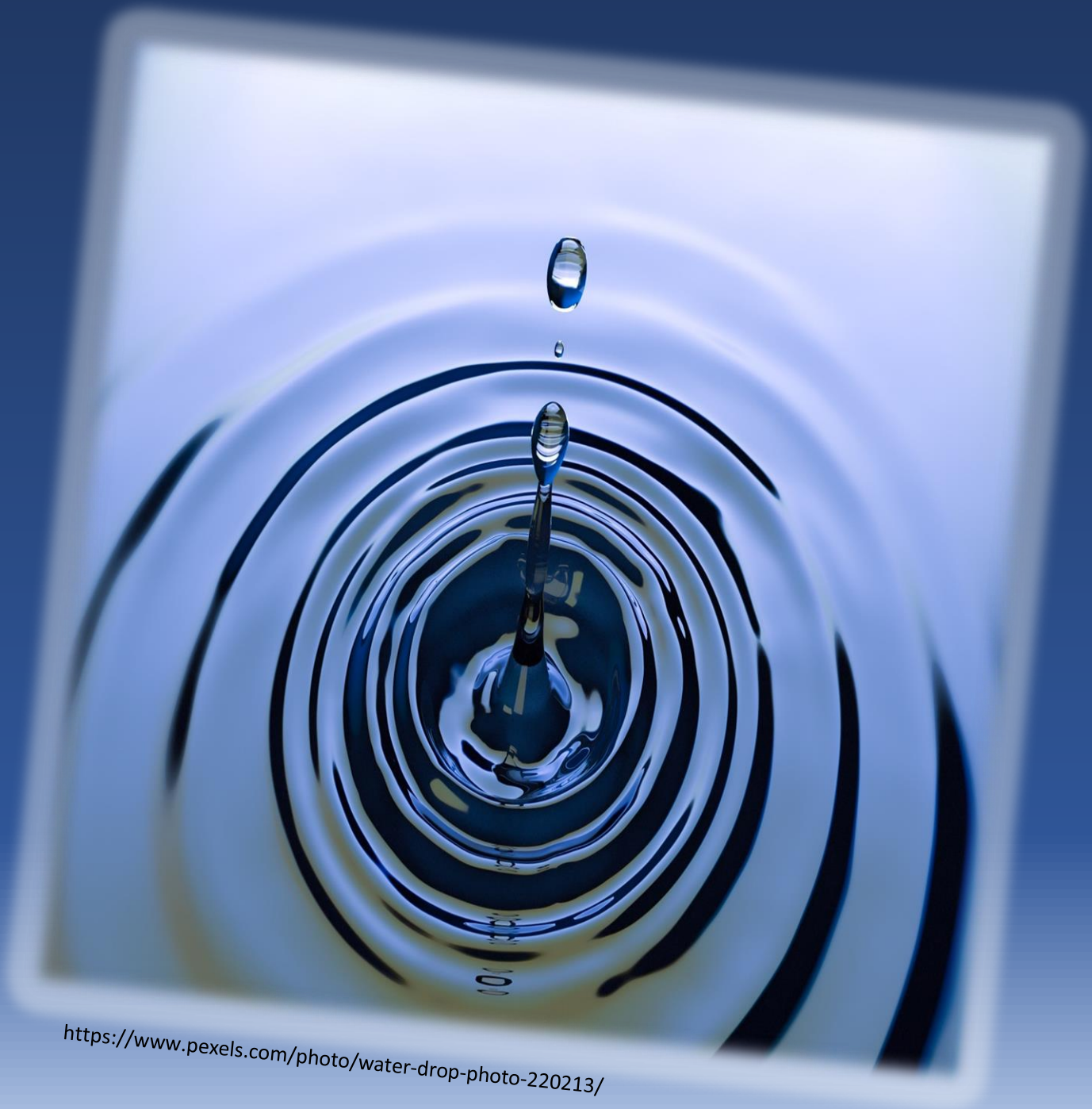
OBJECTIVES

1. Participants will demonstrate an understanding of the significance and impact of antibiotic resistance on the communities they serve.
2. Participants will discern when antibiotics should be utilized to treat common pediatric illnesses.
3. Participants will identify ways that they can promote antibiotic stewardship in their communities.

http://www.ralf-heiser.info/newgcfwd-confused.html

Antibiotic Resistance?

In elementary school students with minor wounds, can cleansing the wound with potable tap water instead of applying over the counter topical antibiotics decrease the incidence of community acquired antibiotic resistant bacteria?



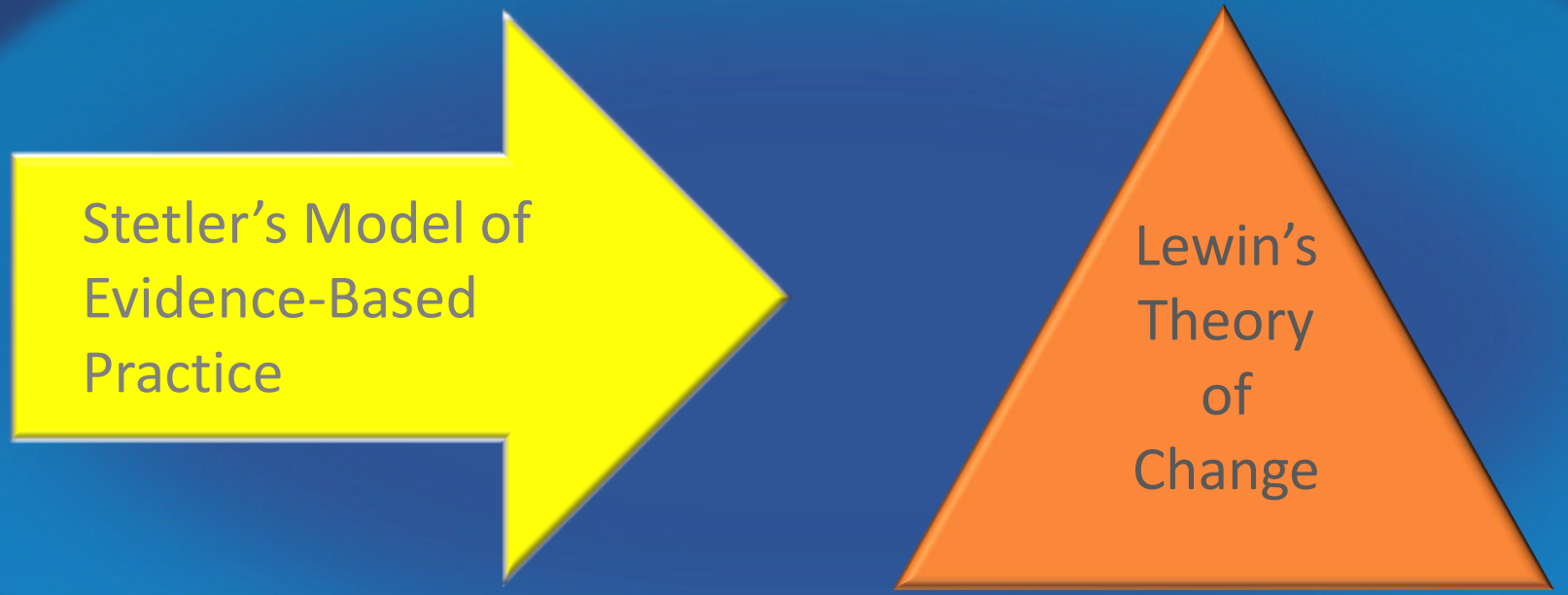
https://www.pexels.com/photo/water-drop-photo-220213/

SIGNIFICANCE TO SCHOOL NURSING

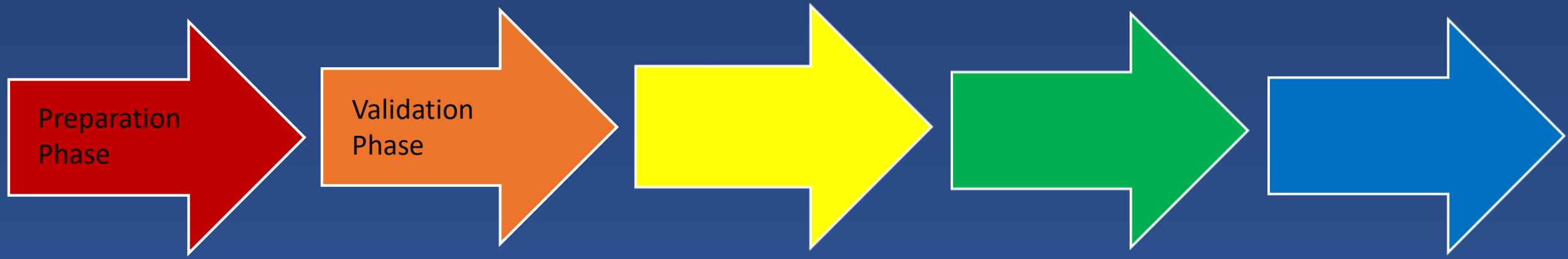
https://social-cache.com/author/admin

- Affects the student, family, and community
- Increased medical expenses
- Decreased productivity
- Increased absenteeism
- Concerns about transmission
- Increased cleaning costs

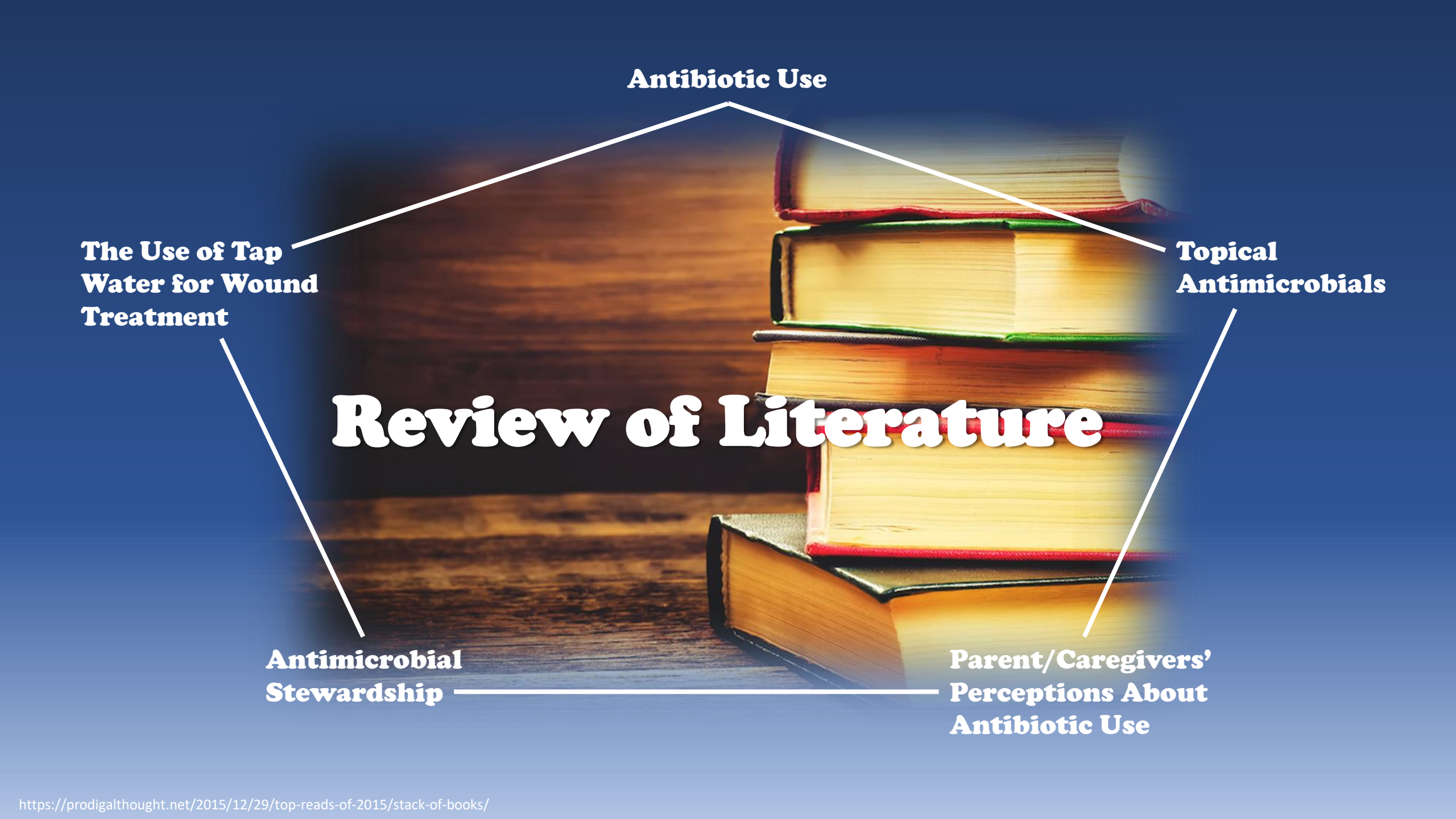
Theoretical Frameworks



Stetler's Model Of



Evidence-Based Practice



https://prodigalthought.net/2015/12/29/top-reads-of-2015/stack-of-books/

Stetler's Model Of

Evidence-Based Practice

http://www.sciencecodex.com/predicting_superbugs_countermoves_to_new_drugs-148197

Goals and Interventions

Goal 1

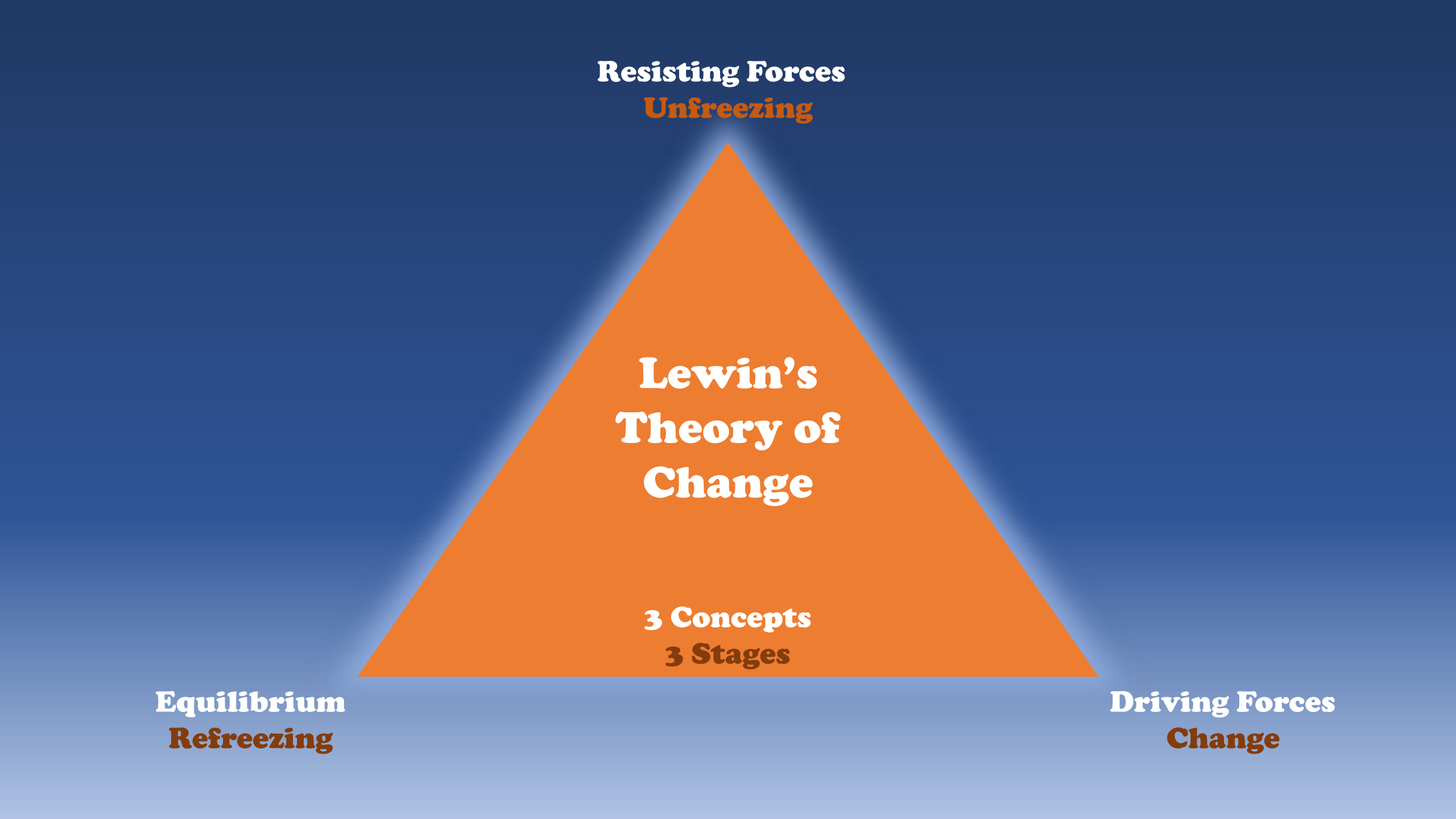
Over the counter triple antibiotic will no longer be used prophylactically in the treatment of minor cuts and scrapes resulting in a decrease in newly diagnosed cases of MRSA in the school setting.

Over the counter triple antibiotic ointment will no longer be provided in the school setting

Goal 2

Non-medical personnel will gain a better understanding of antibiotic resistance, antibiotic stewardship, and why antibiotics should not be used prophylactically.

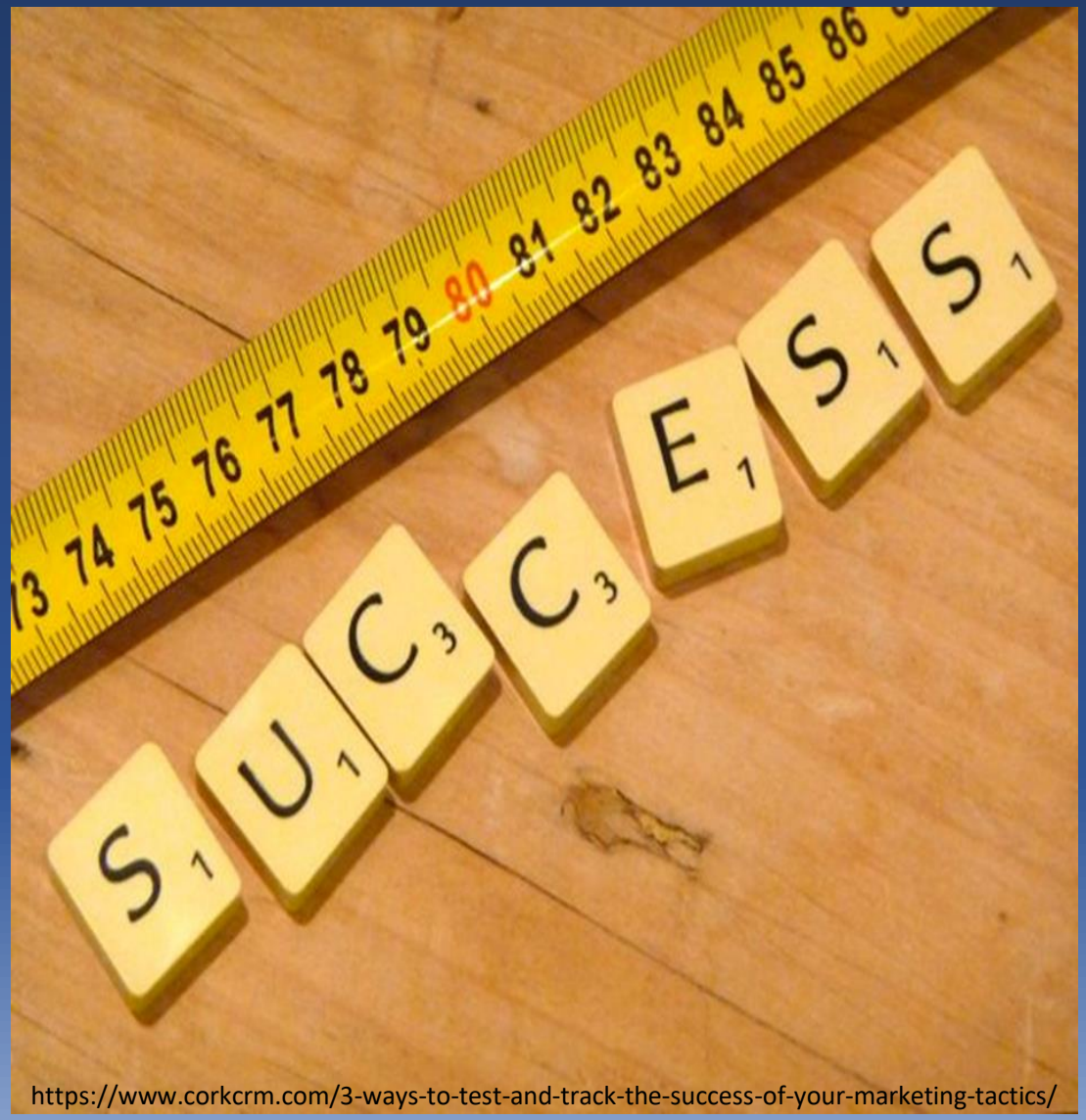
Non-medical staff will receive training on antibiotic resistance, antibiotic stewardship, and why antibiotics should not be used prophylactically


Resisting Forces
Unfreezing
Lewin's Theory of Change
3 Concepts
3 Stages
Equilibrium
Refreezing
Driving Forces
Change

Let's Do This!!!

Measure 1

There will be a 30% decrease in the number of newly diagnosed community acquired MRSA cases



https://www.corkcrm.com/3-ways-to-test-and-track-the-success-of-your-marketing-tactics/

Measure 2

A post test regarding antibiotics will be administered with 75% of the staff receiving a score of 75% or greater.

Limitations

https://1wpnews.wordpress.com/2013/02/27/top-10-limitations-of-wordpress-com

- Must depend on parents/caregivers to report new cases of MRSA
- Prophylactic use of triple antibiotics may occur outside of the school setting
- Attitudes toward antibiotic use

Where do we go from here???

https://cogniflex.com/facts-Adderall/

What We Want

http://www.seriouswheels.com/2005/2005-Ford-Mustang-Production-SA-Blue-1280x960.htm

What We Need

https://www.walmart.com/ip/20-Genesis-Boys-Krome-2-0-Bike-Blue/54901047

Pediatric Treatment Recommendations from the CDC

https://www.cdc.gov/antibiotic-use/community/for-hcp/outpatient-hcp/pediatric-treatment-rec.html

What School Nurses Should Know About Urinary Tract Infections

- If a UTI is suspected a sample should always be obtained for culture before starting antibiotic treatment
- Antibiotics should always be taken as prescribed
- It is NOT acceptable to save doses for the next infection

Case Study #1

Kaitlyn is a nine-year-old who presents to the school nurse's office complaining of runny nose and cough. You notice on exam that her sinus drainage is mucopurulent. Her temperature is 100.2˚ Fahrenheit (37.9 ˚ Celsius). Mom reports that Kaitlyn's symptoms started five days ago with a headache and she slept most of that day. What do you think Kaitlyn's diagnosis might be and do you think Kaitlyn's physician would prescribe an antibiotic for treatment? Why or why not?

CDC Guidelines for Acute Bacterial Sinusitis

- **SEVERE SYMPTOMS**-Purulent nasal drainage and temperature of 102.2 ° Fahrenheit (39 ° Celsius) or greater for at least three days

- **WORSENING SYMPTOMS**-Fever increases or new onset of fever, daytime cough becomes worse, nasal discharge becomes worse

- **PERSISTENT SYMPTOMS**-Nasal discharge and/or daytime cough last for more than 10 days

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What School Nurses Should Know About Acute Bacterial Sinusitis

- It is acceptable and even recommended to postpone antibiotic treatment for mild to moderate symptoms lasting less than 10 days

- All doses of antibiotic should be administered, even though the child should be symptom free for seven days while taking the antibiotic

Case Study #2

Lucas is a seven-year-old who presents to the school nurse's office Monday morning complaining of pain in his left ear. He rates his pain as a nine on a scale from 1-10. When you ask how long his ear has been hurting he tells you that he's had pain all weekend. He reports his dad gave him some medicine which helped but he did not see a doctor. His temperature is 102.4° Fahrenheit (39.1 ° Celsius). Upon exam, his left TM has moderate bulging and redness is noted. What do you think Lucas' diagnosis might be and do you think that Lucas' physician would prescribe an antibiotic for treatment? Why or why not?

CDC Guidelines for Acute Otitis Media

- Moderate to severe bulging of the TM (tympanic membrane) or ear drainage that is not due to otitis externa
- Mild bulging of the TM with recent onset of ear pain (in the last 48 hours)
- Intense redness of the TM

*** Diagnosis should not be made in children without fluid in the middle ear confirmed with pneumatic otoscopy and/or tympanometry***

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What School Nurses Should Know About Acute Otitis Media

- An antibiotic is not required for EVERY child having ear pain
- A low grade fever is not a definitive indicator of AOM
- An exam must be conducted to determine the diagnosis of AOM
- Watchful waiting is appropriate in a child with mild symptoms
- Prophylactic antibiotic administration is not recommended for children with recurrent ear infections

Case Study #3

Ashley is a 12-year-old that presents to the school nurse's office complaining of a sore throat. When questioned about other symptoms she reports that she has had a cough but no other symptoms. Further examination yields a temperature of 99.2° Fahrenheit (37.3 ° Celsius), there is no swelling or exudate noted on her tonsils. What diagnosis do you suspect? Do you think Ashley's nurse practitioner would prescribe an antibiotic for treatment? Why or why not?

CDC Guidelines for Group A Strep (GAS)

- A diagnosis of Group A Strep should not be made based on clinical symptoms alone
- Group A Strep screenings are only recommended for symptomatic children 5-15 years of age
- A sore throat and AT LEAST TWO of the following symptoms should be present to screen for Group A Strep
  - Tonsillar exudate or swelling
  - Absence of a cough
  - History of fever
  - Tender or swollen anterior cervical lymph nodes

Case Study #3

Ashley is a 12-year-old that presents to the school nurse's office complaining of a sore throat. When questioned about other symptoms she reports that she has had a cough but no other symptoms. Further examination yields a temperature of 99.2° Fahrenheit (37.3 ° Celsius), there is no swelling or exudate noted on her tonsils. What diagnosis do you suspect? Do you think Ashley's nurse practitioner would prescribe an antibiotic for treatment? Why or why not?

What School Nurses Should Know About Pharyngitis and GAS

- Not every student with a sore throat should be screened for strep throat
- Strep throat should not be diagnosed based on clinical features alone
- Strep throat is primarily seen in students 5-15 years of age
- The carrier state is common in children so asymptomatic children should not be screened for strep throat


Share Your Thoughts!!!

World Antibiotic Awareness Week
November 12-18, 2018

http://www.who.int/campaigns/world-antibiotic-awareness-week/2017/posters/misuse-of-antibiotics1.jpg?ua=1

http://www.who.int/campaigns/world-antibiotic-awareness-week/2017/posters/seek-advice.jpg?ua=1

https://www.freepik.com/index.php?goto=74&idfoto=1430602

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References

Aldeyab, M.A., Scott, M.G., Kearney, M.P., Alahmadi, Y.M., Magee, F.A., Conlon, G., & McElnay, J.C. (2014). Impact of enhanced antibiotic stewardship on reducing methicillin-resistant staphylococcus aureus in primary and secondary healthcare settings. *Epidemiology and Infection 142*(3), 494-500. doi:10.1017/S0950268813001374

Alumran, A., Hou, X., Sun, J., Yousef, A.A., & Hurst, C. (2014). Assessing the construct validity and reliability of the parental perception on antibiotics (PAPA) scale. *BMC Public Health 14*(73), 1-19. doi:10.1186/1471-2458-14-73

American Academy of Family Physicians (AAFP) (2013). *Clinical practice guidelines: Otitis media.* Retrieved from https://www.aafp.org/patient-care/clinical-recommendations/all/otitis-media.html

Amirthalingam, S., Yi, K.S., Ching, L.T., & Mun, N.Y. (2015). Topical antibacterials and global challenges on resistance development. *Tropical Journal of Pharmaceutical Research 14*(5), 919-924.

Bell, B.G., Schellevis, F., Stobberingh, E., Goossens, H., & Pringle, M. (2014). A systematic review and meta-analysis of the effects of antibiotic consumption on antibiotic resistance. *BMC Infectious Diseases 14*(13). Retrieved from http://www.biomedcentral.com/1471-2334/14/13

Boatright, C., Holcomb, L., & Replogle, W. (2015). Treatment patterns for pediatric acute otitis media: A gap in evidence-based theory and clinical practice. *Pediatric Nursing 41*(6), 271-276.

Bonham, J. (2016). Assessment and management of patients with minor traumatic wounds. *Nursingstandard.com 31*(8), 60-69. doi:10.7748/ns.2016.e10573

Bultas, M.W., & McLaughlin, L. (2013). Using evidence-based practice in the school health room. *NASN School Nurse 28*(1), 34-40. doi: 10.1177/1942602X12465964

Burnes, B. (2004). Kurt Lewin and the planned approach to change: A re-praisal *Journal of Management Studies 4*(6), 977-1002

Centers for Disease Control (CDC) (2018, May 14). *Antibiotic prescribing and use in the doctor's office.* Retrieved from https://www.cdc.gov/antibiotic-use/community/for-hcp/outpatient-hcp/pediatric-treatment-rec.html

Centers for Disease Control (CDC) (2013). *Antibiotic resistance threats in the United States 2013.* Retrieved from http://cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf

Centers for Disease Control (CDC) (2018, May 14). *Be antibiotics aware:Smart use, best care.* Retrieved from https://www.cdc.gov/features/antibioticuse/index.html

Centers for Disease Control (CDC) (2016, November 7). *Get smart about antibiotics.* Retrieved from http://www.cdc.gov/getsmart/community

Chau, E.A. (2012). Managing minor wounds. *NASN School Nurse 27*(5), 238-239. doi:10.1177/1942602X12456553

Chon, S.Y., Doan, H.Q., Mays, R.M., Singh, S.M., Gordon, R.A., & Tyring, S.K. (2012). Antibiotic overuse and resistance in dermatology. *Dermatologic Therapy 25*(1), 55-69.

Çoban, B., Ülkü, N., Kaplan, H., Topal, B., Erdoğan, H., & Baskin, E. (2014). Five-year assessement of causitive agents and antibiotic resistances in urinary tract infections. *The Turkish Archives of Pediatrics 2014*(49), 124-129. doi: 10:5152/tpa.2014.1505.

Cohen, J.F., Cohen, R., Levy, C., Thollot, F., Mohamed, B., Bidet, P., & Chalumeau, M. (2015). Selective testing strategies for diagnosing group A streptococcal infection in children with pharyngitis: A systematic review and prospective multicenter external validation study. *Canadian Medical Association Journal 187*(1), 23-30. doi: 10.1503/cmaj.140772

Cornish, L., & Douglas, H. (2016). Cleansing of acute traumatic wounds: Tap water or normal saline? *Wounds UK 12*(4), 30-34.

Crombie, H. (2012). Nurses can help prevent antibiotic resistance. *Primary Health Care 22*(5), 16-21.

Del Rosso, J.Q., Webster, G.F., Rosen, T., Thiboutot, D., Leyden, J.J., Gallo, R., Walker, C., Zhanel, G., & Eichenfield, L. (2016). Status report from the Scientific Panel on Antibiotic Use in Dermatology of the American Acne and Rosacea Society part 1: Antibiotic prescribing patterns, sources of antibiotic exposure, antibiotic consumption and emergence of antibiotic resistance, impact of alternations in antibiotic prescribing, and clinical sequelae of antibiotic use. *The Journal of Clinical and Aesthetic Dermatology 9*(4), 18-24.

DeMuri, G.P., & Wald, E.R. (2014). The group A streptococcal carrier state reviewed: Still an enigma. *Journal of the Pediatric Infectious Diseases Society 3*(4), 336-42. doi: 10.1093/jpids/piu030

Drekonja, D.M., Filice, G.A., Greer, N., Olson, A., MacDonald, R., Rutks, I., & Wilt, T.J. (2015). Antimicrobial stewardship in outpatient settings: A systematic review. *Infection Control and Hospital Epidemiology 36*(2), 142-152.

Fernandez, R., & Griffiths, R. (2012). Water for wound cleansing. *Cochrane Database of Systematic Reviews 2012*(2), 1-10. doi:10.1002/14651858.CD003861.pub3

Greener, M. (2014). Caring for small wounds in the school setting. *British Journal of School Nursing 9*(2), 68-70.

Hayward, G., Heneghan, C., Perera, R., & Thompson, M. (2012) Intranasal corticosteroids in management of acute sinusitis: A systematic review and meta-analysis. *Annals of Family Medicine 10*(3), 241-249. doi: 10.1370/afm.1338

Howard, R. (2001). The appropriate use of topical antimicrobials and antiseptics in children. *Pediatric Annals 30*(4), 219-223.

Infectious Diseases Society of America (2017). *Promoting antimicrobial stewardship in human medicine*. Retrieved from http://www.idsociety.org/stewardship_policy/

Jones, R.N., Li, Q., Kohut, B., Biedenbach, D.J., Bell, J., & Turnidge, J.D. (2006). Contemporary antimicrobial activity of triple antibiotic ointment: A multiphased study of recent clinical isolates in the United States and Australia. *Diagnostic Microbiology and Infectious Disease 54*(2006), 63-71.

Kautz-Freimuth, S., Radaèlli, M., Samel, C., Civello, D., Altin, S.V., & Stock, S. (2015). Parental views on acute otitis media (AOM) and its therapy in children-Results of an exploratory survey in German childcare facilities. *BioMedical Central (2015)*15: 199. doi:10.1186/s12887-015-0516-3

Kayas, L., Yolbas, İ., Ece, A., Kayaş, Y., Balik, H., & Kocamaz, H., (2011). Causative agents and antibiotic susceptabilities in children with urinary tract infection. *Journal of Microbiology and Infectious Diseases 1*(1), 17-21. doi: 10.5799/ahinjs.02.2011.01.0005

Korting, H.C., Schöllmann, C., & White, R.J. (2011). Management of minor acute cutaneous wounds: Importance of wound healing in a moist environment. *Journal of the European Academy of Dermatology and Venereology 2011*(25), 130-137. doi:10.1111/j.1468-3083.2010.03775x

Lane, J.C.E., Mabvuure, N.T., Hindocha, S., & Khan, W. (2012). Current concepts of prophylactic antibiotics in trauma: A review. *The Open Orthopaedics Journal 6*(3), 511-517.

Lapolla, W.J., Levender, M.M., Davis, S.A., Yentzer, B.A., Williford, P.M., & Feldman, S.R. (2011). Topical antibiotic trends from 1993 to 2007: Use of topical antibiotics for non-evidence-based indications. *Dermatologic Surgery 37*(10), 1427-1433. doi:10.1111/j.1524-4725.2011.02122.x

Lenhoff, A. (2016). In the news: Antibiotic resistance. In *Medical Laboratory Observer.* Retrieved March 24, 2017, from http://MLO-Online.com

Lewin, K. (1947). Frontiers in group dynamics: Concepts, method and reality in social science; Social equilibria and social change. *Human Relations 1*(5), 5-41. doi: 10.1177/001872674700100103

Lipsky, B.A., Dryden, M., Gottrup, F., Nathwani, D., Seaton, R.A., & Stryja, J. (2016). Antimicrobial stewardship in wound care: A position paper from the British Society for Antimicrobial Chemotherapy and European Wound Management Association. *Journal of Antimicrobial Chemotherapy 71*(11), 3026-3035. doi:10.1093/jac/dkw287

Loyd-Jones, M. (2012). Wound cleansing: Has it become a ritual or is it a necessity? *British Journal of Community Nursing 17*(2), S22-S26.

Luciano, K. (2016). Acute bacterial sinusitis in children: Evaluation and treatment. *Clinician Review 26*(5), 31-37.

Martin, J.M., Green, M., Barbadora, K.A., & Wald, E. (2004). Group A streptococci among school-aged children: Clinical characteristics and the carrier state. *Pediatrics 114*(5), 1212-1219. doi: 10.1542/peds.2004-0133

Maor, Y., Raz, M., Rubinstein, E., Derazne, E., Ringel, S., Roizin, H., Rahav, G., and Regev-Yochay, G. (2010). Changing parents' opinions regarding antibiotic use in primary care. *European Journal of Pediatrics 2011*(170), 359-364. doi:10.1007/s00431-010-1301-9

Morgan, D.J., Okeke, I.N., Laxminarayan, R., Perencevich, E.N., & Weisenberg, S. (2011). Non-prescription antimicrobial use worldwide: A systematic review. *Lancet Infectious Disease 11*(9), 692-701. doi:10.1016/S1473-3099(11)70054-8

McGrath, L.J., Becker-Dreps, S., Pate, V., & Brookhart, M.A. (2013). Trends in antibiotic treatment of acute otitis media and treatment failure in children, 2000-2011. *PLOS ONE 8*(12).

Nicks, B.A., Ayello, E.A., Woo, K., Nitzki-George, D., & Sibbald, R.G. (2010). Acute wound management: Revisiting the approach to assessment, irrigation, and closure considerations. *International Journal of Emergency Management 2010* (3), 399-407. doi: 10.1007/s12245-010-0217-5

Nolan, B.V., Levender, M.M., Davis, S.A., Feneran, A.N., Fleischer, A.B., & Feldman, S.R. (2012). Trends in the use of topical over the counter products in the management of dermatologic disease in the United States. *Dermatology Online Journal 18*(2). Retrieved from http://escholarship.org/uc/item/3pk0x5zv

Patwardhan, V., Kumar, D., Goel, V., & Singh S. (2017) Changing prevalence and antibiotic drug resistance pattern of pathogens seen in community-acquired pediatric urinary tract infections at a tertiary care hospital of North India. *Journal of Laboratory Physicians 9*(4), 264-268. doi: 10.4103/JLP.JLP_149_16

Salazar, M.L., English, T.M., & Eiland, L.S. (2012). Caregivers' baseline understanding and expectations of antibiotic use for their children. *Clinical Pediatrics 51*(7), 632-637. doi:10.1177/0009928124392 43

Santos, E., Queirós, P., Cardoso, D., Cunha, M., & Apóstolo, J. (2014). The effectiveness of cleansing solutions for wound treatment: A systematic review. *JBI Database of Systematic Reviews and Implementation Reports 12*(10), 121-151.

Sarrell, E.M., & Giveon, S.M. (2012). Streptococcal pharyngitis: A prospective study of compliance and complications. *ISRN Pediatrics 2012,* 1-8. doi: 10.5402/2012/796389

Stetler, C.B. (1994). Refinement of the Stetler/Marram model for application of research findings to practice. *Nursing Outlook 42*(1), 15-25.

Stetler, C.B. (2001). Updating the Stetler model of research utilization to facilitate evidence-based practice. *Nursing Outlook 49*(6), 272-279. doi:10.1067/mno.2001.120517

Van Brusselen, D., Vlieghe, E., Schelstraete, P., De Meulder, F., Vandeputte, C., Garmyn, K., Laffut, W., & Van de Voorde, P. (2014). Streptococcal pharyngitis in children: To treat or not to treat? *European Journal of Pediatrics 2014*(173), 1275-1283. doi: 10.1007/s00431-014-2395-2

Venekamp, R.P., Damoiseaux, R.A., Schilder, A.G (2017). Acute otitis media in children. *American Family Physician 95*(2), 109-110.

Venekamp, R.P., Sanders, S.L., Glasziou, P.P., DelMar, C.B., & Rovers, M.M. (2015). Antibiotics for acute otitis media in children (review). *Cochrane Database of Systematic Reviews 2015*(6). doi: 10.1002/14651858.CD000219.pub4

Weiss, E.A., Oldham, G., Lin, M., Foster, T., & Quinn, J.V. (2013). Water is a safe and effective alternative to sterile normal saline for wound irrigation prior to suturing: A prospective, double-blind, randomized, controlled, clinical trial. *BMJ Open 3*(1), 1-6. doi:10.1136/bmjopen-2012-001504

Wun, Y.T., Lam, T.P., Lam, K.F., & Sun, K.S. (2012). Antibiotic use: Do parents act differently for their children? *The International Journal of Clinical Practice 66*(12), 1197-1203. doi:10.1111/j/1742-1241.2012.03013