

2017 Capstone Projects

Cropp, MR. *Bacterial Vaginosis: A Clinical Review* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (K. Graham)

Introduction: Bacterial vaginosis is the most common cause of vaginal discharge and is due to a shift in vaginal flora. Clinical diagnosis is typically made using Amsel criteria. Treatment entails a short course of oral or intravaginal antibiotics. Bacterial vaginosis is thought to be transmitted sexually and has correlations to many other sexually transmitted infections. This clinical review will examine the pathophysiology, risk factors, diagnosis, treatment, and consequences of bacterial vaginosis with a focus on the relationship between bacterial vaginosis and the human papillomavirus.

Method: Uptodate, CDC, Clinical Key, MEDLINE EBSCOhost, Cochrane database, and PubMed were searched using the terms bacterial vaginosis, bacterial vaginitis, BV, Amsel criteria, human papillomavirus, and HPV. Resources referenced in reliable articles were also utilized.

Results/Conclusion: Bacterial vaginosis is a very prevalent condition caused by a change in vaginal flora and is thought to be sexually transmitted. New diagnostic techniques are being developed, but Amsel criteria are still the most commonly used. Treatment is with antibiotics, but recurrence is common. Probiotic use and periodic presumptive treatment may help treat recurrent cases. Further research to determine the relationship and effects of the associations between bacterial vaginosis and other gynecologic issues is necessary.

Van Asten, A. *Type 2 Diabetes Mellitus and Coronary Artery Disease: A Complex Combination* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (S. Sieck)

Tens of millions of Americans are living with diabetes mellitus—and even more are undiagnosed or "pre-diabetic." Diabetes carries risk for numerous macrovascular and microvascular complications. Among the most prominent causes of morbidity and mortality of diabetes mellitus are cardiovascular complications. This clinical review will discuss the epidemiology and prevalence of type 2 diabetes mellitus (T2DM), the pathophysiologic relationship between T2DM and cardiovascular disease (CVD), current recommendations for cardiovascular risk factor management in the setting of T2DM with specific emphasis on blood glucose control, the impact of optimal management of diabetes on the risk of coronary events, as well as the role of screening for asymptomatic heart disease in patients with type 2 diabetes mellitus.

Zeamer, L. *A Clinical Review of Migraine Headaches* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (M. Rathgaber)

Introduction: Migraine is a highly prevalent chronic disease that can be debilitating to those affected by it. Studies have found it to be a leading cause of disability and one of the main complaints presenting to healthcare providers. Due to its widespread prevalence and significant impact, healthcare providers must have a thorough understanding of this disease and its management. This review will discuss the epidemiology, pathophysiology, and pharmaceutical management of episodic and chronic migraine headaches.

Method: Cochrane Database, PubMed, MEDLINE, and ClinicalKey were searched using the terms: migraine, migraine headache, treatment, management, prophylaxis, medication, pathophysiology, cause, etiology, epidemiology, cost, and burden. Bibliographies of relevant articles were reviewed.

Results/Conclusion: Migraines are highly prevalent, especially in women, early to middle-aged adults, those of lower income, and Native Americans. The mechanism is not well understood, but is believed to be neurovascular, involving neuronal disturbances that lead to changes in cerebral blood flow. Management of this disease is challenging due to limited understanding and lack of migraine-specific interventions. New migraine medications targeting CGRP, a proposed mediator of migraine, are in development and have shown promise in clinical trials. Further research of this disease and possible treatments are needed in order to improve its management.

Rydeen, LC. *Pharmacotherapy for Smoking Cessation* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (A. Baumgartner)

Introduction: Smoking tobacco is the most common substance use disorder and continues to be the leading cause of preventable death in the United States. Many smokers, up to 70%, desire to quit, however, only 6% are able to quit. To aid in smoking cessation, there are currently seven U.S. Food and Drug Administration approved drugs for smoking cessation: varenicline, bupropion, and five types of nicotine replacement therapies (NRTs). This review will discuss effective pharmacotherapy for smoking cessation based on individual patient needs.

Method: EBSCOhost Murphy Library web access portal, Cochrane database, PubMed, and ClinicalKey were searched. Bibliographies of relevant articles were reviewed. Seven Cochrane reviews, numerous systematic reviews and meta-analysis, many randomized control trials, and a select number of observational studies were reviewed.

Results/Conclusion: Varenicline is the most efficacious pharmacotherapy for smoking cessation (OR 3.85, 95% CI 2.69-5.50). Other first-line pharmacotherapies are NRT (RR 1.87, 95% CI 1.43-2.44) and bupropion (OR 1.77, 95% CI 1.19-2.16). There are many new therapies being researched and developed, most notably electronic cigarettes (ECs). While EC use continues to increase, the safety and efficacy is unknown. Further research and development of smoking cessation strategies is needed to improve quit rates among smokers.

Keywords: Pharmacotherapy for smoking cessation, varenicline, bupropion, nicotine replacement therapy, new agents for smoking cessation, electronic cigarettes, barriers to smoking cessation, smoking cessation and pregnancy, smoking cessation and gender, smoking cessation and age, smoking cessation and weight gain, smoking cessation and COPD, lorcaserin for smoking cessation, cytisine for smoking cessation, and smoking cessation vaccination.

Lemke, LM. *Herpes Zoster: A Clinical Review* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017 (P. Campbell)

Introduction: Herpes zoster is caused by reactivation of the varicella zoster virus and affects approximately 1 in 3 Americans in their lifetime. This clinical review will address risk factors, epidemiology, presentation, diagnosis, and treatment of herpes zoster. Vaccination against herpes zoster will be discussed in depth.

Methods: Uptodate, CDC, AAFP, Cochrane Database, Medline, PubMed, and Clinical Key were searched using the terms herpes zoster or shingles, varicella, vaccine, vaccination, risk factors, incidence or prevalence, postherpetic neuralgia, antiviral, and corticosteroid. Applicable resources from reference lists were also utilized.

Results/Conclusion: The greatest risk factor for development of herpes zoster is increasing age. Diagnosis is largely clinical, and antiviral treatment should be initiated within 72 hours of appearance of the rash. The Zostavax® vaccine, recommended for adults ages 60 and older, reduces the incidence of herpes zoster by 51.3% and the incidence of postherpetic neuralgia by 66.5%. It is most cost-effective when given at age 70. Vaccination rates continue to be low due to multiple factors, including cost and lack of patient education. A new vaccine, HZ/su, is still in clinical trials, but has shown to be more effective at reducing the incidence of herpes zoster and postherpetic neuralgia than Zostavax®.

Benjamin, BM. *A Clinical Review of Carpal Tunnel Syndrome with a Focus on the Use of Local Corticosteroid Injections for Treatment* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (M. Devine)

Introduction/Objective: Carpal tunnel syndrome is the most common compressive mononeuropathy seen in clinical practice, and can lead to inconvenient sensory and motor neurological symptoms. This purpose of this review is to discuss the background of carpal tunnel syndrome and focus on the use of local corticosteroid injections for conservative treatment.

Methods: An extensive search of the literature was performed using the Cochrane Database of Systematic Reviews and MEDLINE. Initial searches included the following search terms: “carpal tunnel,” “treatment,” “therapy,” “ultrasound,” “conservative,” “surg*,” “splint*,” “steroid,” and “injection.”

Results/Conclusions: Physical exam findings have sub-optimal sensitivities and specificities in the diagnosis of carpal tunnel syndrome, so the gold standard of diagnosis is clinical suspicion in combination with electrodiagnostic testing. Although splinting is the often used first-line treatment for mild-moderate carpal tunnel syndrome, the support is lacking. Local corticosteroid injections provide short term symptom relief (up to six months), and may have benefit the patient by prolonging the need for surgical intervention. They have been shown to be relatively safe, however, further randomized controlled trials are needed to investigate the ideal location, the effects on surgical outcomes, and to identify a reliable scale to assess symptom and functional improvement.

Halbach, KE. *Preventing Breast Cancer in High-risk women: A Clinical Review* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (S. Sieck)

Introduction/Objective: Breast cancer is the leading cancer diagnosis and second leading cause of cancer related deaths for females. High-risk women are identified through risk assessment models and have numerous options for prophylaxis including lifestyle modifications, chemoprevention, and surgery. This paper discusses the effectiveness of these options on risk reduction.

Methods: MEDLINE, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, and PubMed were searched using the MeSH terms listed below.

Results: Losing weight and increasing activity have innumerable health benefits, including lowering the risk of breast cancer. The selective estrogen receptor modulators (SERMs) also reduce risk, with tamoxifen being more effective than raloxifene but having higher rates of endometrial cancer and thromboembolic events. The aromatase inhibitors (AIs) anastrozole and exemestane also reduce risk, but are associated with increased rates of osteoporosis. Two surgical options for risk reduction are mastectomy and oophorectomy. Mastectomy is the most effective of all risk reduction options, but is associated with high rates of post-op pain, infection, and seroma.

Conclusion: Lifestyle modifications, chemoprevention, and surgery all reduce a patient's risk for breast cancer, but the latter two are not without significant risk. An oncologist should weigh the risks and benefits with each individual patient.

MeSH terms: breast cancer, risk factors, high-risk, prophylaxis, chemoprevention, tamoxifen, raloxifene, anastrozole, exemestane, SERMs, aromatase inhibitors, lifestyle modifications, mastectomy, oophorectomy.

Ramler, JL. *A Clinical Overview of Parapneumonic Effusion and Empyema in Pediatrics* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (K. Graham)

Community acquired pneumonia is one of the leading causes of hospitalization for children. Parapneumonic effusions or empyema affect 2 to 12 percent of children with pneumonia, and children hospitalized with bacterial pneumonia have a 40% risk of developing a pleural effusion. In the United States, it is estimated that more than 60% of parapneumonic effusion/empyema cases are caused by *Streptococcus pneumoniae*. Introduction of the 7-valent pneumococcal conjugate vaccination did not lower incidence of parapneumonic effusion and empyema, but new data demonstrates a decline with the 13-valent pneumococcal vaccine. For children hospitalized with parapneumonic effusion and empyema, management varies widely between institutions. Empiric antibiotic selection should be a parenteral third-generation cephalosporin for children with large effusions or empyema. Vancomycin or clindamycin (based on local susceptibility data) should be provided in addition to β -lactam therapy if infection caused by *Staphylococcus aureus* is suspected. If empyema is present, the patient has respiratory compromise, or the opacification on chest radiograph is more than half the hemithorax, tube drainage with fibrinolytic instillation should be performed. Since studies of level 1 evidence show no statistical

difference of outcomes between fibrinolytics and video-assisted thoracoscopic surgery, fibrinolytics may be considered first line therapy for empyema in children.

MeSH terms: Parapneumonic effusion, Empyema, Pleural effusion, Pediatrics, Complicated Pneumonia, Pneumococcal vaccine, Fibrinolytics, Video-Assisted Thoracoscopic Surgery, Antibiotic therapy, *Streptococcus pneumoniae*, Hospitalized Children

Hoffman, LH. *An overview of neonatal abstinence syndrome* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (M Rathgaber)

INTRODUCTION: Neonatal abstinence syndrome (NAS) is a serious medical condition experienced by newborn infants that were exposed to addictive, psychoactive substances in utero, most commonly opioids.

METHODS: A literature search was performed utilizing the MEDLINE and Cochrane databases. The search terms used included: “neonatal abstinence syndrome,” “neonatal abstinence,” “neonatal drug withdrawal,” “newborn withdrawal,” “maternal addiction,” “maternal narcotic addiction,” “prenatal drug exposure,” “opioid exposed newborn,” and “opioid exposed neonate.”

RESULTS: Common symptoms of NAS include irritability, hypertonicity, tremors, tachypnea, vomiting, fever, difficulties feeding, and failure to thrive. The incidences of opioid abuse and NAS are increasing across the nation resulting in increased length of NICU stays for infants, increased length of hospital stays, and the use of extensive fetal monitoring. Treatment often consists of a combination of both non-pharmacologic and pharmacologic measures, as well as assistance from social services, child protective services, or chemical dependency. Morphine and methadone are the current first-line pharmacologic agents for infants with NAS. Methadone is the current gold-standard opioid maintenance therapy with emerging research supporting the use of buprenorphine.

CONCLUSION: To successfully prevent NAS, a greater emphasis needs to be placed on adequate screening, education, and standardization of care, and more research is needed.

Keywords: *buprenorphine, drug withdrawal, heroin, methadone, morphine, neonatal abstinence, neonatal abstinence syndrome, opioid, opioid abuse, prenatal, withdrawal*

Page, JR. *Acute Manifestations of Sickle Cell Disease: Treatment and Prophylaxis* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (M. Devine)

Sickle cell disease is a hemoglobinopathy that is estimated to affect 100,000 people in the United States, as well as millions of people throughout the world. These patients are often affected by severe acute and chronic manifestations, including vaso-occlusive pain, fever and infection, anemia, splenic sequestration, acute chest syndrome and stroke. While there are some conventionally accepted therapies, including hydroxyurea and blood transfusions, there remains a lack of effective treatments for these patients. Primarily, the majority of sickle cell disease patients in the United States are of African-American or Hispanic descent, and are more likely to be of low socioeconomic status, be underinsured or uninsured, and have worse access to

specialized healthcare. Additionally, there is a distinct lack of quality research of current and future treatment methods of sickle cell disease. This review aims to analyze the acute manifestations of sickle cell disease, outline the most current treatments and prophylaxes, and analyze the barriers to better care of these patients.

MeSH Terms: Sickle cell disease, Sickle cell anemia, Hemoglobinopathies, Hydroxyurea, Blood Transfusion, Vaso-occlusive pain, Vaso-occlusive crisis, Fever, Infection, Anemia, Splenic sequestration, Stroke, Disparity, Healthcare, Cost

Fitzgerald, PD. *Novel Therapies in the Treatment of Acne Vulgaris* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (A. Baumgartner)

Acne vulgaris is a common skin disease, especially in adolescents. The treatment of acne has largely remained unchanged since the 1970s. Increasing evidence suggests that acne vulgaris has significant effects on patient quality of life. This, along with new discoveries in acne pathogenesis and bacterial resistance, has spurred a rising market of acne therapeutic modalities. The guidelines and algorithms for acne treatment are well agreed upon at this point. However, these guidelines may soon be changing as new medications and therapies are showing positive results. This review of novel treatments for acne vulgaris will highlight some of the exciting new options in acne management.

KEYWORDS: acne vulgaris, acne vulgaris treatment, acne vulgaris management, acne vulgaris therapy, acne treatment, acne vulgaris novel agents, isotretinoin, antibiotic resistance.

Eichenberg, SE. *Babesiosis: A Case Report and Clinical Review* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (P. Campbell)

Introduction/Objective: Babesiosis is an intraerythrocytic protozoan infection caused by *Babesia sp.*, most notably *Babesia microti*. It is endemic to the Northeastern and Midwestern parts of United States and is a nationally reportable disease. The focus of this project is to describe a case report and clinical review of babesiosis. **Method:** Literature searches were performed via PubMed and Cochrane Library with additional assistance from Mayo Library for article retrieval. Keywords can be found in Appendix A. **Results:** *B. microti* is transmitted via ticks of endemic areas throughout the summer months. Clinical manifestations of babesiosis include nonspecific, febrile illness with characteristic laboratory abnormalities. Disease can range from asymptomatic infection to fulminant disease. Diagnosis is made via peripheral blood smears, PCR, or serologic testing. Treatment with atovaquone plus azithromycin or quinine plus clindamycin leads to resolution of disease. **Conclusion:** The case report demonstrates the typical clinical manifestations of babesiosis, as well as the unique development of hemophagocytic lymphohistiocytosis (HLH). Accurate and timely diagnosis of babesiosis requires a high index of suspicion by providers of endemic areas, and preventative measures may reduce disease occurrence. Future research will continue to focus on transfusion-transmitted disease and possibly vaccination.

Amborn, NE. *Point of Care Ultrasound in the Hospitalized Patient* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (K. Graham)

The performance of ultrasound at the bedside by a healthcare provider rather than a sonographer, with the goal of improving assessment and procedure accuracy, is termed point-of-care ultrasound (POCUS). POCUS is rapid, affordable, and non-invasive, but is not currently the standard of care. This clinical review analyzed the reliability and accuracy of POCUS in the diagnosis and management of decompensated heart failure, pulmonary embolism, pneumonia, and fluid disturbances in hospitalized patients. Articles were identified using Medline, Cochrane, ClinicalKey, and PubMed databases. Current research finds POCUS beneficial as an extension of a physical exam to answer binary questions and help guide differential diagnoses. POCUS is shown to be superior to chest x-ray in the diagnosis of pneumonia, particularly in elderly patients. POCUS is sensitive and specific for identifying acutely decompensated heart failure. POCUS can also be used to accurately estimate central venous pressure, monitor fluid status, and stratify patients who would benefit from computed tomography pulmonary angiogram in the diagnosis of pulmonary embolism. Additional research is needed to delineate the amount of education needed to accurately perform POCUS, but for trained health care providers, POCUS offers a rapid, affordable, and non-invasive imaging option for management of hospitalized patients.

MeSH terms: ultrasound, point-of care ultrasound, heart failure, pulmonary embolism, pneumonia, fluid imbalance, volume status, hospitalized patients, central venous pressure

Peeters, EM. *A Clinical Review of the Treatment of Acute Pulmonary Embolism* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (M. Devine)

Introduction: Pulmonary embolism (PE) is a very prevalent disease in the United States with a mortality rate of 10-30%. This review will discuss the treatment options for acute PE. **Method:** MEDLINE and Cochrane databases were searched to find relevant articles using keywords listed below. **Results:** Non-vitamin K oral anticoagulants (NOACs) have similar rates of venous thromboembolism recurrence but fewer bleeding events compared to warfarin, particularly apixaban and rivaroxaban (HR 0.31; 95% CI 0.15-0.62) (HR 0.55; 95% CI 0.35-0.89). Optimal duration of anticoagulation is three months for provoked PE and extended for unprovoked if the bleeding risk is low/moderate. Systemic thrombolytics significantly reduces mortality for massive PE (0% vs 100%; P= 0.02), but lose significance for submassive PE (OR 0.55; 95% CI 0.28-1.08). Other treatment options include surgical embolectomy, catheter-directed techniques, and vena cava filters. **Conclusion:** Appropriate treatment can be determined by the severity of the PE and bleeding risk. First-line treatment for massive PE is thrombolytics, an alternative is surgical embolectomy. Submassive PE can be managed with anticoagulation. Observation is appropriate for subsegmental PE if the risk of recurrence is low, but anticoagulation is recommended if the risk is high. NOACs are recommended over warfarin because of reduced bleeding risk.

Keywords: pulmonary embolism, thromboembolism, treatment, anticoagulation, thrombolytic, NOAC, catheter-directed, embolectomy, inferior vena cava filter.

Wypyszynski, AM. *Medical Cannabis* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (P. Campbell)

Introduction Cannabis has been used throughout history. Despite its illegal status, it remains a widely utilized drug in the United States. Many states have legalized marijuana for a variety of medical indications, however the efficacy and safety of medical cannabis is not well established.

Methods A literature search using MEDLINE, PubMed, and Cochrane databases was completed for cannabis/marijuana/cannabinoids in pain, chemotherapy-induced nausea and vomiting, HIV/AIDS anorexia, multiple sclerosis, epilepsy, and glaucoma. Systematic reviews or randomized control trials were identified and reviewed for each indication.

Results There is moderate quality evidence that oral and smoked cannabis reduce pain, and that oral cannabinoids improve spasticity in multiple sclerosis. Low quality evidence exists for cannabinoid use in chemotherapy-induced nausea and vomiting. Cannabis has limited evidence for anorexia in HIV/AIDS, and insufficient evidence in epilepsy and glaucoma. Cannabis has numerous side effects and the long-term effects are unknown.

Conclusion Current literature shows potential for medical cannabis, specifically in pain and multiple sclerosis. Research in its long-term effects, use in at-risk populations, and public health implications, however, is lacking. As medical marijuana continues to grow in the US, it is crucial that further studies be completed to determine right the role of cannabis in medicine.

Boedeker, W. *A Clinical Review of Endometriosis* [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (S. Sieck)

Introduction: Endometriosis is an inflammatory disease of extra-uterine endometrial tissue with a variable presentation, including symptoms of pelvic pain, dysmenorrhea, and dyspareunia^{1,3}. It is estimated to have a prevalence of 10%². This clinical review will explore epidemiology, pathophysiology, diagnosis, and treatment of endometriosis.

Methods: Medline, Pubmed, and the Cochrane Database were searched using the terms “endometriosis”, “epidemiology,” “pathophysiology,” “diagnosis,” “treatment,” “prognosis,” “cost,” and “finances.” Articles were analyzed for validity and reliability.

Results: Pathophysiologic theories include retrograde menstruation, coelomic metaplasia, stem-cell theory, estrogen dependence and progesterone resistance, and immunologic predisposition. A non-invasive means for diagnosing endometriosis is under investigation, with weak evidence for the combined use of serum IL-6 with endometrial PGP 9.5 and pelvic exam with TVUS²⁴. Myriad treatment options include a range of pharmacotherapy and surgery.

Conclusion: It is recommended to treat endometriosis in a stepwise approach, beginning with NSAIDs and combination contraceptives and graduating to danazol, GnRHAs, aromatase inhibitors, and surgery. Future research should elucidate more targeted approaches to diagnosis and treatment.

Bedard, MJ. Clozapine for Treatment-Resistant Schizophrenia [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (M. Rathgaber)

Schizophrenia is a psychiatric disorder affecting about 1% of the world's population. It is treated with 1st and 2nd generation antipsychotics, but one-third of patients continue to have debilitating symptoms despite proper treatment. For these patients with treatment-resistant schizophrenia (TRS) clozapine therapy has been the gold standard for many years. Future research with new 2nd generation antipsychotics may find a treatment with superior efficacy and a milder side-effect profile, but current research supports the use of clozapine. Clozapine remains the gold-standard therapy for treatment-resistant schizophrenia, despite new research investigating other second-generation antipsychotics. Judicious use and monitoring of clozapine is warranted for risk of adverse effects like neutropenia. Knowledge and understanding of the mental illness and its treatments is essential for primary care. The future of clozapine care lies in community clinics to monitor serum levels, treatment effects, side-effects, and provide consistent support.

Zabadal, ZJ. A Clinical Review and Pharmaceutical Management of Alcohol Use Disorder [capstone paper]. La Crosse: University of Wisconsin Master of Physician Assistant Studies; 2017. (A. Baumgartner)

Alcohol Use Disorder (AUD) is diagnosed based on recognition of at least two out of eleven criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-V).¹ AUD, as defined by the DSM-V, is present in 14% of adults, with only 19.8% receiving treatment.⁷ The focus of this review is to provide a brief overview of AUD including the selection of the most appropriate pharmaceutical management. AUD is characterized by neurochemical and physical changes in the brain. Chronic alcohol use induces a body-wide inflammatory state and causes various health issues. Recognition of the signs and symptoms of AUD, along with implementation of screening tools (CAGE, SISQ, AUDIT, and AUDIT-C) are essential for patients to receive proper treatment. FDA-approved medications for AUD include naltrexone, acamprosate, and disulfiram, with naltrexone and acamprosate displaying moderate improvement in drinking consumption. Off-label medications such as topiramate, gabapentin, baclofen, and ondansetron have also been studied with mixed results. This paper outlines how to recognize and pharmaceutically treat AUD, including the rationale behind the selection of each drug.