Primary Care RAP January 2020 Written Summary

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INTRO: WOUND DRESSINGS

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Pearls:

- **The key to wound healing is the 3 W's: wet, warmth, well kept.**
- **Foam dressings generally meet these criteria with little downside other than cost, making them a good default for most wounds.**

- What wounds need to heal:
    - WET - not overly wet but also don't want to dry it out
    - WARMTH - too much cooling at the cellular level can slow things down
    - WELL KEPT - keep the world/bacteria off the wound
- What about wet-to-dry dressing?
    - Accounts for 40% of home health orders
    - 70% of the time this type of dressing is ordered inappropriately
    - True indication: mechanical debridement of a wound. When the dressing becomes dry and you remove it, the wound is debrided
    - For most other wounds, it does keep it wet but also dries out, causes cooling when initially applied and does not keep bacteria out
    - Bottomline: Wet-to-dry dressing not a go-to dressing for most wounds
- Good dressing for most wounds → foam dressings
    - More than 300 companies
        - Some good examples - Mepilex, Aquacel
    - Hits all 3 W's:
        - Wet - absorbs 5-7 times weight in liquid, which means a couple of days of good moisture control
        - Warmth - don't have to take off, which keeps the wound from cooling
        - Well kept - fairly impermeable material
    - Few downsides other than cost - more expensive than gauze wraps. You're not going to harm the patient and may be able to bridge them to a wound care clinic
    - Minimal good data to support one foam dressing or product over the other

    - No special way to apply the dressings. Can usually wrap the foam with an ACE bandage or kerlix

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Respiratory Failure: Pre- and Post-ICU

Nirav Shah MD, Mizuho Morrison DO, Tom Robertson MD

Pearls:

- **There are two types of respiratory failure: hypoxic and hypercarbic. Distinction between the two types determines differential diagnosis and treatment.**
- **The spectrum of respiratory support is nasal cannula → face mask +/- non-rebreather → high flow nasal cannula v. non-invasive ventilation (CPAP/BiPAP) → mechanical ventilation.**
- **Remember pulmonary rehabilitation (guided breathing exercises, upper body strengthening and dietary counseling) as an important tool both for post-disease exacerbation and as a means of prevention.**

- **Respiratory failure is a spectrum:**
    - Clinical diagnosis
        - <u>Observation</u> - accessory muscle use, difficulty completing a sentence due to breathlessness, sitting forward trying to catch their breath
    - Types - narrows your differential and determines your treatment
        - 1. Hypoxic respiratory failure: low oxygen, no problem ventilating (getting rid of carbon dioxide)
            - Examples - pneumonia, interstitial lung disease
            - Five causes of hypoxia
                - 1. High altitude
                - 2. Hypoventilation
                - 3. Diffusion disorder
                - 4. Shunting
                - 5. V/Q mismatch
        - 2. Hypercarbic respiratory failure: elevated PCO2, more an issue of ventilation and not oxygenation (but they can have lower oxygen levels, too)

- **Treatment:** nasal cannula → face mask +/- non-rebreather → high flow nasal cannula v. non-invasive ventilation (CPAP/BiPAP)
    - Nasal Cannula
        - Fast
        - Readily available
        - Delivers up to 5-6L/min of oxygen
            - Pearl: pushing this amount of flow leads to turbulent flow instead of laminar flow → not really getting as much benefit and need to use a different method of delivery
    - Face Mask
        - Control the FiO2 (fractional content of oxygen) up to 60%
            - Room air is 21% FiO2
        - Can also use with a non-rebreather face mask that allows even higher oxygen content
            - A good temporizing measure until you figure out a next step. If used in someone with COPD can actually make things worse if left on.
    - High flow nasal cannula
        - Another way to increase both flow and oxygen content up to 100% FiO2
        - Also get some ventilation support
        - Does not have to be done in the ICU, and they may even be able to walk around
    - Non-invasive ventilation
        - Delivery up to 100% FiO2
        - Provides some ventilation support
        - Good evidence supports use in: acute exacerbations of COPD and CHF, immunosuppressed hypoxemic respiratory failure, obstructive sleep apnea, obesity hypoventilation syndrome, neuromuscular disease-related respiratory failure, asthmatics (data is limited)
        - Contraindications:
            - Hemodynamic instability
            - Poor seal on the mask (facial hair or facial trauma)
            - Impaired mental status
            - Nausea/vomiting, ileus, abdominal distension
            - Untreated pneumothorax
        - Other considerations:
            - Comfort for the patient - it's like sticking your head out the window of a car driving 60 miles an hour
            - Spend 15-20 minutes in the room helping the patient get through the initial transition period
            - Pearl: Evaluate after 2 hours to ensure the patient is improving with this therapy
        - Types: CPAP and BiPAP
            - CPAP - continuous positive airway pressure

        - Used for sleep apnea to stent open airways and in CHF exacerbations to offload work of the heart
    - BiPAP -
        - Used for ventilatory issues to help patients get rid of carbon dioxide by adding a differential expiratory pressure
        - Mainly used for COPD exacerbations
- **Post-recovery from respiratory failure**
    - Consider what was the cause of the exacerbation and address that issue (ie: environment, medications, infection)
    - Patients will be deconditioned after prolonged hospitalization and may need pulmonary rehab
        - Pulmonary rehab:
            - 2-3 times per week meetings to learn breathing exercises and other exercises to improve the strength of their upper body
            - Also learn about dietary modifications because carbohydrates generate carbon dioxide
            - Don't have to have an exacerbation to do pulm rehab. If they qualify for the program, the earlier the better!

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Cholestasis of Pregnancy

Matthew Zeitler MD, Neda Frayha MD

Pearls:

- **ICP is a disease characterized by generalized pruritus without rash and liver function abnormalities typically in the 2nd or 3rd trimester of pregnancy.**
- **There are significant risks to the mother and fetus (including stillbirth) with no clear guidelines around monitoring or timing of delivery.**

- **Intrahepatic cholestasis of pregnancy (ICP):**
    - Liver disease of pregnancy characterized by generalized pruritus without the presence of a rash + elevated serum bile acids +/- abnormal liver function tests
    - Most common pregnancy specific liver disease
    - Typically presents in 2nd or 3rd trimester with about 80% after 30 weeks

    - Incidence ranges from 0.32% to 5.6%, higher incidence in Latina population with some reports as high as 15% in some Latin American countries
- **Risk Factors:**
    - Advanced maternal age (>35)
    - Multiple gestations
    - Conception after in vitro fertilization
    - Preexisting liver disease
    - Personal or family history of cholestasis
- **Etiology:**
    - Environmental
    - Genetic
        - Low dietary selenium and vitamin D
    - Hormonal - estrogens have a cholestatic effect (ie: third trimester, ovarian hyperstimulation, twin pregnancies)
- **Pathophysiology:**
    - Bile acids are the end products of hepatic cholesterol metabolism and inherently cytotoxic. They may cause unbearable itching for the mother and increase risk for comorbid conditions for mother:
        - Gestational diabetes
        - Preeclampsia, HELLP
        - Acute fatty liver of pregnancy
    - Also bad for the baby:
        - Intrauterine demise
        - Meconium-stained amniotic fluid
        - Preterm delivery
        - Neonatal respiratory distress syndrome
    - The higher the bile acids, the more severe the complications for mother and baby
        - Bile acids > 40 = increased risk for meconium-stained amniotic fluid
        - Bile acids > 100 = increased risk for stillbirth
- **Presentation:**
    - Itching classically started in the palms and soles that then generalizes and is worse at night
    - Absence of rash differentiates from other dermatoses of pregnancy
    - May also have dark urine and pale chalky stools
    - Rarely you can get jaundice
    - If you see encephalopathy or other stigmata of liver failure, think about other causes of liver disease, NOT ICP
- **Diagnosis:**
    - Elevated bile acids in about 90% of cases → symptoms may precede lab abnormality by several weeks
    - Elevated AST/ALT/alk phos/bilirubin
        - Liver function tests are changed in pregnancy
    - Imaging (ultrasound, CT) should be normal

- **Differential:**
  - Other dermatoses of pregnancy (if there is rash)
  - HELLP, preeclampsia, acute fatty liver of pregnancy
- **Treatment:**
  - Ursodeoxycholic acid or UDCA: 300-500mg twice daily but can titrate up to three times per day up to a max dose of 2000mg daily
    - Unclear mechanism but reduces bile acid in mom, baby and amniotic fluid
    - Start once you have bile acids > 10
    - Improves symptoms, lab abnormalities and potentially fetal outcomes
  - Other options (best in consultation with OB or maternal fetal medicine specialists):
    - Cholestyramine
    - Rifampin
    - S-Adenosyl Methionine
  - Antihistamines like hydroxyzine can also help with symptoms
- **Timing of delivery:**
  - Up to delivery would measure LFT's weekly because when bile acids > 100, there is a dramatic increase in risk of stillbirth
  - Very limited evidence and lots of practice variation around fetal monitoring and delivery → even with testing, nothing has been shown to predict who will have an adverse outcome
    - Typically at 34 weeks, weekly neonatal stress test or biophysical profiles
    - Instructions for mothers to do kick counts
  - Delivery is generally around 36 to 37 weeks that takes into account shared decision making
- **Postpartum:**
  - Typically symptoms and lab tests normalize days after delivery
  - Good to check labs 6-8 weeks to make sure things are normalizing
  - Very likely to recur (60-90%) but is hard to know if it will be as severe
  - Be careful with high dose estrogen-containing contraceptives because it can increase the risk of cholestasis

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Breast Cancer Screening: When to Begin?

Alison Chetlen DO, Neda Frayha MD

Pearls:

- **Dr. Chetlen leans into earlier annual mammography at age 40 given:**
  - **Improved technology (radiography and cancer treatment) since the time of the randomized control trials that societies still use to develop guidelines**
  - **Seriously flawed data from a Canadian trial that influenced USPSTF guidelines**
  - **New studies that have long-term follow-up showing clear mortality benefit from earlier screening**

- **Goals of screening to reduce deaths from breast cancer by:**
  - Detecting earlier when smaller and when more effective to treat
    - If a woman waits until the cancer is palpable, usually it is larger and more likely to have spread to the lymph nodes (especially for premenopausal women)
  - Largest and longest running breast cancer trials found that the annual mammography screening cuts breast cancer deaths by ⅓ in all women ages 40 and over

        - Studies are all Scandinavian with well over 100,000 women with follow-up times of 10-29 years
        - All conclude that screening for breast cancer earlier results in earlier detection and reduced mortality
- **Statistics that Dr. Chetlen uses to talk with patients and colleagues:**
    - In the US, 1 in 8 women will be diagnosed with breast cancer over their lifetime
    - Number of breast cancer cases in 2017 was 253,000 with an estimated 40,600 deaths
    - No decade of life (ie: 40's, 50's, 60's) accounts for more than 25% of cancers diagnosed each year → there are no sudden jumps in incidence beyond the age of 50
    - Breast cancer incidence increases steadily with age
        - Age 40: 1 in 1000 will be diagnosed with breast cancer
        - Age 50: 2 in 1000 will be diagnosed with breast cancer
        - Age 60: 3 in 1000 will be diagnosed with breast cancer
    - The breast cancer found in women less than 40 are smaller in size, lower stage, less likely to receive chemotherapy
    - 75% of women diagnosed with breast cancer have no identifiable risk factors
- **Pearl: Facts and figures can be found on the Society of Breast Cancer Imaging's website (https://www.sbi-online.org/endtheconfusion/Home.aspx)**
- **Guidelines:**
    - ACOG: annual mammograms starting at age 40
    - USPSTF, AAFP, ACP: biennial screening mammography for women 50-74. Decision to start before age 50 should be an individual one. Women who place higher value of potential benefit over the potential harms may choose biennial screening between ages 40-49.
    - American College of Radiology and Society of Breast Imaging: women at average risk should begin annual screening at age 40. Women of higher risk and African American women should begin risk assessment and screening at age 30.
    - American Cancer Society: annual screening mammography at age 45, biennial at age 55.
- **Benefits of early detection:** Likely to exceed that of data from early randomized control trials because significant improvement since the 1970's
    - Technology has improved
        - Early trials relied on single-view mammogram → standard today is two-views which increased detection by 20%
        - New improvements in mammo grids, newer target materials, automatic exposure control
        - Film screen to digital mammography
        - 2D to 3D mammography (tomosynthesis)
    - Longer term trials more recently found a greater mortality benefit than older, shorter term trials
- **Controversy around the USPSTF recommendations:**

    - In 2009, they argued the benefit of screening before 40 did not outweigh the potential harms
    - Used data from randomized control trials to estimate a mortality reduction of only 15% in women aged 40-49 vs. 32% for women ages 60-69.
    - The data included a significantly flawed Canadian national breast cancer screening study trial that showed no benefit for women women 40-60.
        - Randomization occurred after a physical exam and palpation of the breasts, which meant blinding was not guaranteed
        - Women with palpable masses should not have been included in the screening trial because screening by definition means asymptomatic women (ie: no breast mass)
        - The physicist rated the mammography quality as far below state of the art at the time (ie: older equipment with out-of-date technology leading to poorer detection of cancer)
- **Concerns about overdiagnosis:**
    - We can't yet tell reliably which cancers will be aggressive and lead to death versus those cancers which are more benign
    - Women do experience short-term anxiety regarding breast cancer screening in general but it rapidly declines and has no measurable effect on their health
        - 96% of women who experienced a false positive screening mammogram support screening and would continue screening mammography
        - False positive actually increased their intention to undergo future breast cancer screening
- **A scenario of 1000 women receiving screening mammograms:**
    - 100 are asked to come back for additional mammogram views, physical exam, ultrasound → 81 are called negative → 19 may undergo invasive needle biopsy → 5 diagnosed with breast cancer
    - Out of the 1000 women, 90% of those called back do NOT result in biopsy. Many centers offer same-day biopsy. Biopsy takes a few minutes with results returning in 2-3 days.
- **To the reader than says, "You're talking to a radiologist - what about financial gain?"**
    - 3D mammography is cost effective compared with 2D with recent study reporting overall savings of $28 per woman screened due to better images leading to less recall for further imaging and better less costly treatment (ie: early detection of breast cancer may mean no need for more expensive chemotherapy)

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Marijuana and Lung Disease

Kathryn Robinett MD, Tom Robertson MD, Neda Frayha MD

Pearls:

- **If people have respiratory issues, smoking MJ is going to make it worse; but conclusive data linking it to COPD, pneumonia and lung cancer does not exist.**
- **Recreationally (ie: a bit on the weekends) is probably not putting you at risk for lung cancer based on the data we have currently.**

- **Marijuana use and COPD:**
    - Hard to know if MJ use is an independent risk factor because some studies didn't really look at concurrent tobacco use. Other studies that did look at tobacco and MJ use with COPD did not find an association.
- **Marijuana use and other lung changes:**
    - Although no FEV1 does not drop, daily users of MJ still have same symptoms associated with chronic bronchitis: productive cough, shortness of breath
        - Still hard to tease out of with available data
    - There is some data showing people who smoke MJ have higher forced vital capacities potentially because they are taking deep breaths from water pipes and holding it in, much like physiology seen in swimmers. Unlike swimmer, this is not good for your lungs.
    - Increased risk of spontaneous pneumothorax and pneumomediastinum barotrauma
- **Marijuana use and HIV**

  - 2019 prospective cohort study of 2700 men, half with HIV, found that MJ use was associated with increased risk of infectious pulmonary disease and chronic bronchitis independent of tobacco use. This risk was additive with tobacco use. No such risk in those without HIV.
    - Theory is that HIV may predispose someone to be more vulnerable to marijuana
- **Marijuana use and pneumonia**
  - Not an independent risk factor but the challenge is quantifying people who smoke "enough" MJ and enough data
  - THC is an immunosuppressant
  - MJ joints are often contaminated with aspergillus or some pathogenic gram-negative rod
  - Biopsies of lung from those who are daily smokers show changes like goblet cell hyperplasia consistent with inflammation seen in tobacco smokers
- **Marijuana use and lung cancer**
  - One study showed a signal for an association while another showed synergy between MJ and tobacco use
  - No study that shows MJ use as an independent risk factor
- **Bottomline for primary care providers:**
  - If people have respiratory issues, smoking MJ is going to make it worse
  - Recreationally (ie: a bit on the weekends) is probably not putting you at risk for lung cancer based on the data we have currently

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Anaphylaxis

Jason Liebzeit MD, Neda Frayha MD

Pearls:

- **Epinephrine (0.3-0.5mg) is the treatment for anaphylaxis. Everything else is adjunctive. Don't withhold that epinephrine if you're thinking anaphylaxis!**

- **Clinical Scenario:** *27 year old woman who had driven in and she is red as a beet, is kind of diaphoretic throwing up actively, and the one thing that she keeps saying is "Don't intubate me. Don't intubate me. Please don't intubate me."*
- **Anaphylaxis:**
    - No one consistent definition → allergic reaction that involves multisystem severe reactions with life threatening symptoms like low blood pressure or throat swelling
    - Diagnostic criteria from The National Institute of Allergy and Infectious Disease includes 2 out of the 4 symptoms after exposure to either unknown or likely allergen:
        - Hypotension
            - Lightheadedness, dizziness
        - Involvement of skin or mucosal tissues
            - Hives
            - Urticarial rash
            - Swelling of eyes, lips tongue
        - Respiratory compromise
            - Wheezing
            - Shortness of breath
        - GI symptoms
            - Nausea
            - Vomiting
            - Diarrhea
- **Presentation:**
    - Adults tend to present with typical symptoms
    - Pearl: Children uncommonly manifest with any respiratory / airway involvement at their initial presentation. More likely to present with fatigue and lethargy, low blood pressure.
- **Common causes:**
    - 1. Food (0.3% to 7.5%of kids, 3 million people in the US)
        - Peanuts
        - Tree nuts
        - Shellfish
        - Fruits - in particular mangoes
    - 2. Bee stings, wasp stings, fire ant bites
    - 3. Medications
- **Pathophysiology:**

- Cross-linking immunoglobulins after exposure to an antigen → mast cell degranulation → release of inflammatory modulators (histamine, platelet aggregator factor), cytokines
- Release of inflammatory modulators leads to:
  - Vasodilation
  - Swelling of lips and tongue
  - Smooth muscle contraction
  - Direct cardiotoxicity leading to decreased cardiac index
- Either Ig-E dependent (anaphylaxis) or Ig-E independent (anaphylactoid)

- **Diagnosis:**
  - Clinical diagnosis
  - Serum histamine and tryptase levels will be elevated but none of them will be helpful
- **Treatment:**
  - ABC's
  - Epinephrine
    - For adults: 1mg/ml 1:1000 solution 0.3 to 0.5mg, must be given intramuscularly NOT subcutaneously because it takes longer to reach peak concentrations (8 min IM v. 34 minutes SubQ)
    - For children, minimum 0.1mg (0.01mg/kg)
    - Spring-loaded epinephrine auto-injector use:
      - Remove the caps on both ends
      - Make sure you know which end of the device the needle comes out before sticking your hand on either end of the device
      - Press the end of where the needle comes on the lateral thigh
      - Pearl: designed to penetrate through clothing but ideally you would have bare clean skin
      - Administers 0.3mg of epinephrine intramuscularly
    - Repeat every 5-15 minutes as needed → if you find yourself repeating it more than once, you should be thinking about what is preventing the epi from working or that the reaction is severe enough to warrant a drip
  - Antihistamines and H2-blockers may help with cutaneous symptoms but not with GI or respiratory symptoms
  - Fluids if hypotensive
  - Albuterol in hopes of alleviating bronchospasm
  - Antiemetic if in GI distress (though the body's response to getting rid of the allergy may be vomiting in the case of something ingested)
  - Glucagon to reverse the effect of someone potentially on beta blockers who is not responding to epinephrine
  - Steroids - does not treat the initial reaction but may help blunt a biphasic reaction
- **Post-treatment**
  - Epi lasts for about 1-2 hours so may be a good idea to watch them until it is out of system to make sure there isn't immediate return of symptoms

- Biphasic reaction: return of anaphylactic reaction anywhere from 1-72 hours, incidence is 3-20% with no clear indicator of who will have one or not
- Patient should always have an epi auto-injector on-hand
- Referral to allergist especially if unsure what triggered the reaction

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Medical Assistants, Please

Michael Baca-Atlas, MD, Neda Frayha MD

Pearls:

- **Medical assistants are the largest occupational group in US ambulatory clinics with a broad scope of practice that varies by geography and clinic.**
- **Some of the key strategies for successfully working with MA’s is to create a safe environment for open communication to build trust and foster mutual respect.**

- **Reader question:** How do you respectfully navigate the relationship with your medical assistants?
- **Medical Assistants (MA’s):**
  - Largest occupational group in US ambulatory clinics
  - Average annual salary is $40,000 and many are hourly wage workers
  - Training is usually bachelor’s or below
  - Approximately 15% are certified with the American Association of Medical Assistants
- **Potential impact of MA’s:**

- 50% of patients leave a visit without understanding physician advice
- 25% of patients are unable to express their concerns at all
- 42% of primary care physicians reported lack of adequate time with patients

- **Growth in this workforce driven by:**
  - Complexity of office-based practice
  - Shift or nursing to the inpatient setting
  - Cost containment and focus on value-based care has led to a focus on team-based care
  - Relative ease of training and predictable hours while working in a field that helps people
- **What can MA's do?**
  - Out of scope: independent assessments, providing medical advice, administering medications to patients
  - In scope: scheduling appointments, managing records, billing insurance, calling in pharmacy refills, obtaining/recording vital signs, assisting in medical examinations, immunizations, obtaining basic labs tests and ECGs
- **Ideas for working with MA's:**
  - 2014 study from Annals of Family Medicine put forth a framework → Be nice and respectful to everyone!
    - Complex responsive process of relating between clinicians and MAs: humans are naturally reciprocal in our interactions so an environment that fosters mutual respect and communication is ideal
    - Trust and verify: build trust by socializing and creating a safe place for collaboration/communication so that there is less and less need to verify
  - Huddle before each patient
- **Pitfalls to watch for:**
  - Frustration around inequality of financial compensation
  - Feeling that MA's are not able to build trust
- **Expanding role of MA's:**
  - Ultrasound in point-of-care testing
  - New point-of-care lab testing
  - Detailed protocols that allow MA's to operate more independently within a defined scope
  - Compensation models for MA's doing high level work as a means to retain and provide professional advancement opportunities

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Sexual Assault

Mizuho Spangler DO & Kari Sampsel MD

Pearls:

- ❏ **Sexual assault victims are trauma patients and should be evaluated for associated injuries.**
- ❏ **The pelvic examination should not be deferred if there is concern for genitourinary trauma.**

History

- Give yourself the time and space to allow the patient to tell you their story.
- Re-victimization occurs when a patient is shamed or judged for being a victim of sexual assault - Do not use victim-blaming statements or perpetuate rape myths.
- **Our responses can have a profound psychological impact on patients for years afterwards.**

Exam

- Remember that patients who are involved in a sexual assault are victims of trauma and should be evaluated thoroughly for other injuries.
- The pelvic exam should be best performed by a sexual assault expert who has access to a sexual assault evidence kit and can perform a forensic exam.
- Do not defer pelvic examination in order to preserve a forensic exam if you think the patient has a significant pelvic injury (i.e. vaginal laceration).

Prophylaxis

- Pregnancy
    - Levonorgestrel (Plan B) can be used to prevent pregnancy within 72 hours
    - Ulipristal (Ella) is effective up to 5 days of intercourse
- Gonorrhea/Chlamydia
    - Azithromycin 1gm PO PLUS Cefixime 800 mg PO OR Ceftriaxone 250 mg IM.
- HIV
    - Post-exposure prophylaxis (PEP) must be started within 72 hours to be effective.
    - The quicker PEP is started the more likely it is to be effective
    - PEP includes dolutegravir, 50 milligrams, once a day along with the combination pill, emtricitabine and tenofovir, which is 200 milligram and 300 milligrams, respectively, once per day.
    - Patients should be discharged with a prescription for a 28 day course.

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- Evaluation and Management of the Sexually Assaulted or Sexually Abused Patient https://www.acep.org/globalassets/new-pdfs/sexual-assault-e-book.pdf
- National Guidelines for Post Exposure Prophylaxis after non-occupational and occupational exposure to HIV: Australasian Society for HIV medicine http://www.ashm.org.au/pep-guidelines/ NPEPPEPGuidelinesDec2013.pdf
- Center for Disease Control and Prevention (CDC) http://www.cdc.gov/hiv/law/pdf/Hivtranmsmision.pdf
- https://www.forensicnurses.org/search/custom.asp?id=2100
- Characteristics associated with sexual assault at mass gatherings. PMID: 26315648 PMCID: PMC4752638 DOI: 10.1136/emermed-2015-204689

Chiropractic Care

John Allen MD, Tom Robertson MD, Neda Frayha MD

Pearls:

- **Chiropractic care for lower back pain has mixed data about its effectiveness compared to standard of care. It is generally safe (except for specific conditions listed below) with minimal side effects and is covered by insurance.**

- **Reader question:** *"What is the evidence behind chiropractic care for back pain?"*
- **Background:**
    - Chiropractic is a form of complementary and alternative medicine with a broad scope of practice dependent on where you train and where you practice
        - Some states allow ordering of lab tests, interpreting lab tests, prescription of medications and delivery of babies
        - Some feel they are primary care providers
    - Started in 1895 with the idea that misregulation of the spine due to subluxation / misalignment led to disease. Reduction of that subluxation through spinal adjustment leads to better health.
- **Two schools of thought:**
    - 1. Vitalism - innate intelligence of the body and ability to heal. Changes in nerves due to spine subluxation lead to organic disease like diabetes and hypertension
        - May dissuade patients from seeking allopathic medical treatment
        - May also not believe in germ theory so dissuade against vaccination
    - 2. Mixed chiropractic care - blend of modern medicine that is complementary to allopathic care
- **Training and education:**
    - Minimum of 3 years of undergrad with a minimum 3.0 GPA in the sciences for a 4-year chiropractic school

    - 4000 hours of hands-on clinical training
- **Treatment types:** manipulation and mobilization
    - Manipulation: vigorous adjustments, shorter distance, high velocity applied directly to a spinal process
    - Mobilization: gentler, something that could be resisted if uncomfortables
- **Literature for chiropractic care:**
    - Lots of literature of varying quality
    - Some good evidence for the following indications:
        - Headache - three arm randomized blinded trial showed both the spinal manipulation and sham arms had improvements in headache over medication along, suggesting a large placebo effect.
        - Back pain - decent evidence for acute back pain that is not better than standard care; VA systematic review of evidence found trend towards effect for spinal manipulative therapy with a good deal of study heterogeneity. No predictive decision tools around which patients may benefit and which will not.
    - AAFP and ACP support spinal manipulation therapies of osteopathic colleagues but have not recommended chiropractic care for chronic or acute low back pain
- **Safety?**
    - Patients who should NOT seek our chiropractic care:
        - C1 C2 instability
        - Rheumatoid arthritis
        - Osteoporosis
        - Known fractures
        - Multiple myeloma
        - Paget's disease
        - Spinal tumors
        - Unstable bleeding disorders
    - 40-60% of patients are going to experience some sort of adverse outcome, most of them minor (ie: soreness at site of manipulation, headache)
    - Other risk: vertebrobasilar accident and dissections
- **Payment?**
    - Covered by almost all insurances

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Paper Chase #1 - Outcomes Associated with Apixaban Use in Patients with End-Stage Kidney Disease and Atrial Fibrillation in the United States

Tom Robertson MD, Steve Biederman MD

Siontis KC, Zhang X, Eckard A, et al. Outcomes Associated With Apixaban Use in Patients With End-Stage Kidney Disease and Atrial Fibrillation in the United States. Circulation. 2018;138(15):1519-1529. doi:10.1161/CIRCULATIONAHA.118.035418

Pearls:

- **In ESRD patients on dialysis with atrial fibrillation, apixaban was associated with a lower risk of major bleeding compared with warfarin.**

- **Objective:** To determine patterns of apixaban use and its outcomes in dialysis-dependent patients with ESRD and atrial fibrillation.
- **Method:** Retrospective cohort analysis of Medicare patients with ESRD who were taking off-label apixaban for atrial fibrillation compared to matched controls on warfarin.
- **Results:**
    - 25,000 patients

- Stroke event rate and survival free of strokes was similar with hazard ratio favoring apixaban non-significantly
- Statistically significant lower rates of bleeding in apixaban group
- Trend toward reduced mortality in the apixaban group
- Standard dose 5mg BID had lower rates of stroke and embolic events while the 2.5mg BID had lower rates of bleeding and non-inferior rates of stroke or embolic events compared to warfarin

- **Bottomline:** In ESRD patients on dialysis with atrial fibrillation, apixaban was associated with a lower risk of major bleeding compared with warfarin.

Paper Chase #2 - An Open, Randomized, Comparative Study of Oral Finasteride and 5% Topical Minoxidil in Male Androgenetic Alopecia

Tom Robertson MD, Steve Biederman MD

Arca E, Açikgöz G, Taştan HB, Köse O, Kurumlu Z. An open, randomized, comparative study of oral finasteride and 5% topical minoxidil in male androgenetic alopecia. Dermatology (Basel, Switzerland). 2004;209(2):117-125. doi:10.1159/000079595

Pearls:

- **Both drugs were effective and safe in treating androgenic alopecia but oral finasteride was more effective.**

- **Objective:** To compare the efficacy of oral finasteride and topical minoxidil for males with androgenic alopecia
- **Background:** Androgenic alopecia is the most common form of male pattern baldness in men 95% of the time. Pathogenesis involves increased conversion of testosterone to dihydrotestosterone (DHT), which is inhibited by finasteride
- **Method:** open randomized control trial of finasteride v. minoxidil for treatment of androgenic alopecia
- **Results:**
    - 60 patients
    - 80% of the finasteride group had hair growth compared to just 52% of the minoxidil group
    - Side effects were minimal and went away after discontinuation of drug
- **Bottomline:** Both drugs were effective and safe in treating androgenic alopecia but oral finasteride was more effective.

Paper Chase #3 - Polypill for Cardiovascular Disease Prevention in an Underserved Population

Tom Robertson MD, Steve Biederman MD

Muñoz D, Uzoije P, Reynolds C, et al. Polypill for Cardiovascular Disease Prevention in an Underserved Population. N Engl J Med. 2019;381(12):1114-1123. doi:10.1056/nejmoa1815359

Pearls:

- **A polypill-based strategy led to greater reduction in systolic blood pressure and LDL cholesterol level compared with usual care in a socioeconomically vulnerable minority population as well as reduction in prescription of other blood pressure and lipid medications.**

- **Objective:** To evaluate the efficacy of a polypill containing atorvastatin amlodipine losartan and hydrochlorothiazide for lowering blood pressure and LDL
- **Background:**
  - Fewer than half of adults with hypertension are being treated and have their hypertension controlled
  - ⅓ of adults are eligible in the US for statin therapy with only a minority receiving it
- **Method:** Two group open label randomized control trial comparing polypill with usual care. Participants were adults without a known history of cardiovascular disease, stroke, cancer, or diabetes
  - Polypill =
    - Atorvastatin 10mg
    - Amlodipine 2.5mg
    - Losartan 25mg
    - HCTZ 12.5mg
- **Results:**
  - 300 patients in each arm
  - 96% black
  - 75% had annual income below $15,000
  - Median adherence was 86%
  - In the polypill group:
    - 44% had a reduction in their blood pressure or lipid medication
    - 9mmHg reduction in sBP
    - 15mg/dL reduction in LDL
- **Bottomline:** A polypill-based strategy led to greater reduction in systolic blood pressure and LDL cholesterol level compared with usual care in a socioeconomically vulnerable minority population as well as reduction in prescription of other blood pressure and lipid medications.

Paper Chase #4 - Effect on Treatment Adherence of Distributing Essential Medicines at No Charge - The CLEAN Meds Randomized Clinical Trial

Tom Robertson MD, Steve Biederman MD

Persaud N, Bedard M, Boozary AS, et al. Effect on Treatment Adherence of Distributing Essential Medicines at No Charge. JAMA Intern Med. October 2019. doi:10.1001/jamainternmed.2019.4472

Pearls:

- **There was increased adherence and improvement in some but not all disease-specific outcomes.**

- **Objective:** To determine whether providing essential medicines at no charge to outpatients who reported not being able to afford medicines improves adherence
- **Background:** Estimated 40-60% of patients are not adherent to their medications with one common cited barrier being cost.
- **Method:** multicenter unblinded randomized control trial in Canada. Adults who self-reported med non-adherence related to costs, randomized them to receive essential meds for free versus usual medication access. Followed patients for one year looking at adherence (self-report) as well as disease-specific markers (ie: A1c, LDL, systolic blood pressure)
- **Results:**
  - 800 patients
  - 38% adherence in the free medicine group, 27% in the usual care group
  - Disease-specific markers:
    - sBP lower by 7mmHg
    - LDL unchanged
    - A1c down 0.38% (p-value of 0.05)
- **Bottomline:** There was increased adherence and improvement in some but not all disease-specific outcomes.

Paper Chase #5 - Frequently Hospitalized Patients' Perceptions of Factors Contributing to High Hospital Use

Tom Robertson MD, Steve Biederman MD

O'Leary KJ, Chapman MM, Foster S, O'Hara L, Henschen BL, Cameron KA. Frequently Hospitalized Patients' Perceptions of Factors Contributing to High Hospital Use. J Hosp Med. 2019;14(9):E1-E6. doi:10.12788/jhm.3175

Pearls:

- **Participants perceived fluctuations in their course to be related to psychological, social and economic factors. They also found episodes of illness uncontrollable and unpredictable.**

- **Objective:** To obtain patients' perspectives of factors associated with the onset and continuation of high hospital use
- **Method:** Semi-structured interviews of patients who were frequently readmitted and specifically in this study broken down between sickle cell and non sickle cell patients
- **Results:**
  - 26 enrolled (10 with sickle cell and 16 without)
  - Themes:
    - All patients had at least one major chronic medical problem
    - Psychological stress, social support and financial constraints were identified as factors influencing the course of their illness
    - Having social support was perceived as helpful in keeping them out of the hospital
    - Participants found their symptoms to be sudden, unpredictable and outside their control
    - They tried to control their symptoms and only sought care only when clear this approach was not going to work
    - None had a desire to be back in the hospital
- **Bottomline:** Participants perceived fluctuations in their course to be related to psychological, social and economic factors. They also found episodes of illness uncontrollable and unpredictable.