

2021 RESIDENT POSTER CONTEST

2021 Resident Poster Contest

The CAFP Foundation is pleased to support the 8th Annual Resident Poster Contest virtually on the CAFP Community Conversation, Sunday, May 23rd at 5:00pm. The purpose of the poster competition is to promote scholarly activity by family medicine residents and to provide a unique opportunity for residents to share their research with a network of family doctors.

Find the posters online at www.familydocs.org/resident-poster-contest.

Eligibility:

- Resident physician at a California Family Medicine Residency Program
- CAFP/AAFP Member

Poster Categories:

1. Original Research: summarize the results of a well-defined research project
2. Case Report: present a clinical case scenario

Additional Information:

- The topic must be of value to family medicine and within the scope of family medicine.
- Accepted entries are invited to display their posters at the Clinical Forum.
- Up to 20 entries are selected for display at the Forum. Of those, the top 10 are invited to give a 2-minute/2-slide oral presentation. The top 2 posters are awarded prizes.
- Each abstract undergoes a blinded review process by family physicians on the Foundation Board of Trustees and other volunteer reviewers.

Evaluation Criteria:

- Clarity in the research and/or clinical question, study design and discussion/conclusion
- Originality of project or question
- Relevance to family medicine
- Impact on future work
- Potential to improve patient care or resident skills, knowledge and performance

Questions? Contact Pamela Mann at pmann@familydocs.org.

Acne, Anxiety, and Adenoma

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Introduction

Cushing's syndrome is defined as a collection of signs and symptoms due to prolonged exposure to glucocorticoids, namely cortisol. Whereas Cushing's disease describes when Cushing's syndrome is caused by an excess of ACTH, likely from a pituitary adenoma. This case highlights notable signs, symptoms, and recognition of Cushing's disease, inpatient workup, and inpatient management. Additionally, this emphasizes the importance of maintaining a broad differential diagnosis and the role family physicians play in facilitating patient care.

Case Study

AM is a 22-year-old female with no significant PMH, complaining of 3-4 months of increasing anxiety, weakness, headaches with blurred vision, facial acne, weight gain, and more abundant stretch marks, who presented to our ED on the recommendation of her endocrinologist. A few months prior, her PCP referred her to a dermatologist and was given a trial of SSRIs, which did not improve symptoms. Additional outpatient labs for PCOS, revealed elevated testosterone. She was subsequently referred to endocrine. Further lab findings prompted the specialist to refer the patient to the hospital for immediate treatment. Her blood pressure had been increasing over the last month as well. Of note, the patient has a history of Phentermine use >1 year ago.

Physical Exam:

Vitals: T 98.3 HR 82, RR 18, BP 174/134 100% on RA
General: Well developed, female with rounded facies, facial hirsutism, facial acne, with central obesity
Cardiovascular: RRR. Normal S1/S2. No murmurs/rubs/gallops or S3/S4 noted
Respiratory: CTAB. No wheezes/rhonchi/rales
Gastrointestinal: Soft, NTND
Musculoskeletal: Moving all 4 limbs. Normal strength and tone.
Extremities: Thin appearing UE and LE compared to abdomen. No edema of peripheral extremities
Neuro: Alert and oriented. No focal deficits. CN II-XII grossly intact. Strength 5/5 bilateral UE & LE
Skin: multiple dark lower abdominal and lower back striae; erythematous patches noted on face, throughout back, and lower extremities

Diagnosis and Management

DDx:

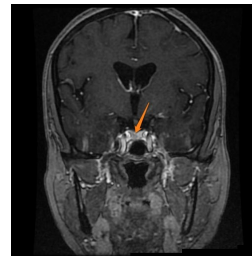
Cushing's Syndrome vs. Cushing's Disease, consider adrenal mass as possible cause vs. exogenous use

Labs:

CBC unremarkable. CMP for mild hypokalemia. Free cortisol urine: 41H, AM cortisol (post dexamethasone) 16.7H, Prolactin 18.4 wnl, ACTH 56.6H, DHEA-S 322.0 wnl

Imaging:

MRI Pituitary: No large pituitary masses were seen. There is a small area of decreased enhancement within the left side of the pituitary on image 8 of series 12 measuring 2 mm. This may represent an artifact, or a tiny pituitary microadenoma. The remainder of the brain was normal.



Final Diagnosis:

Cushing's Disease 2/2 pituitary microadenoma

Treatment/Management:

Inpatient endocrine and neurosurgery were consulted immediately. After further imaging, the patient underwent urgent transsphenoidal resection of the pituitary. She was started on hydrocortisone replacement therapy, and was discharged from the hospital shortly after, with slow improvement in symptoms overall. She currently continues low dose steroids and has close follow up with PCP and endocrinology.

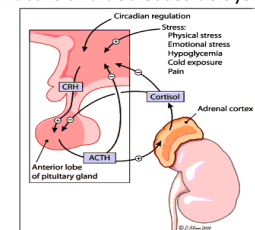


Discussion

Corticotropin releasing hormone (CRH) is released from the hypothalamus, which stimulates ACTH secretion from the anterior pituitary gland. ACTH signals positive feedback to the adrenal cortex, which releases cortisol and regulates this pathway via a negative feedback loop to the hypothalamus. In Cushing's disease, a pituitary adenoma can signal excessive ACTH release, leading to high levels of cortisol.

The family physician played an important role in first recognizing the patient's earliest symptoms. Patients with Cushing's disease, can present with signs such as depression, increased striae, decreased libido, menstrual irregularities, acne, hirsutism, fatigue, and most commonly—weight gain. Given the wide range of symptoms, it is easy to overlook the primary diagnosis. This patient had initially been referred to multiple specialists, but after subsequent workup, revealed hypercortisolism. If hypercortisolism is not attributed to exogenous use, further workup is warranted. The family physician inpatient team enabled multispecialty care during admission, which lead to urgent surgical intervention.

Ultimately, this case underscores the importance of maintaining a broad differential. When working up a patient with such physical exam and biochemical findings, avoidance of anchoring and recognizing personal bias helps facilitate adequate patient care and decreases delays in diagnoses.



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The Role of Routine Echocardiogram in Patients with COVID-19

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Introduction

In December 2019, the first cases of Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), a virus that causes the Coronavirus Disease 2019 (COVID-19), were reported in Wuhan, Hubei Province, China. The disease has quickly escalated into a global pandemic, with more than 21 million cases in the United States as of January 2020. While most common clinical manifestations include fever, cough, fatigue, and/or myalgia, the range of symptoms can include mild upper respiratory tract illness to severe pneumonia with acute respiratory distress syndrome (ARDS) requiring intensive care with mechanical ventilation.

Evidence has suggested involvement of extra-pulmonary organs including the gastrointestinal tract, liver, as well as the heart. Myocardial involvement is seen in more than 20% of patients and is associated with higher risk of mortality. While patients with underlying cardiovascular illnesses are likely to have severe manifestations of the disease, studies on the role of SARS-CoV-2 in declining systolic functionality of the heart after recovery are limited. Because patients may exhibit no noticeable symptoms of myocarditis, high clinical suspicion can lead to efficient diagnosis and treatment. Herein, we present a case of myocarditis in a patient with mild coronary vascular disease who had tested positive for COVID-19 three weeks prior to returning to the hospital, at which time a significant systolic dysfunction was found on 2D echocardiogram.

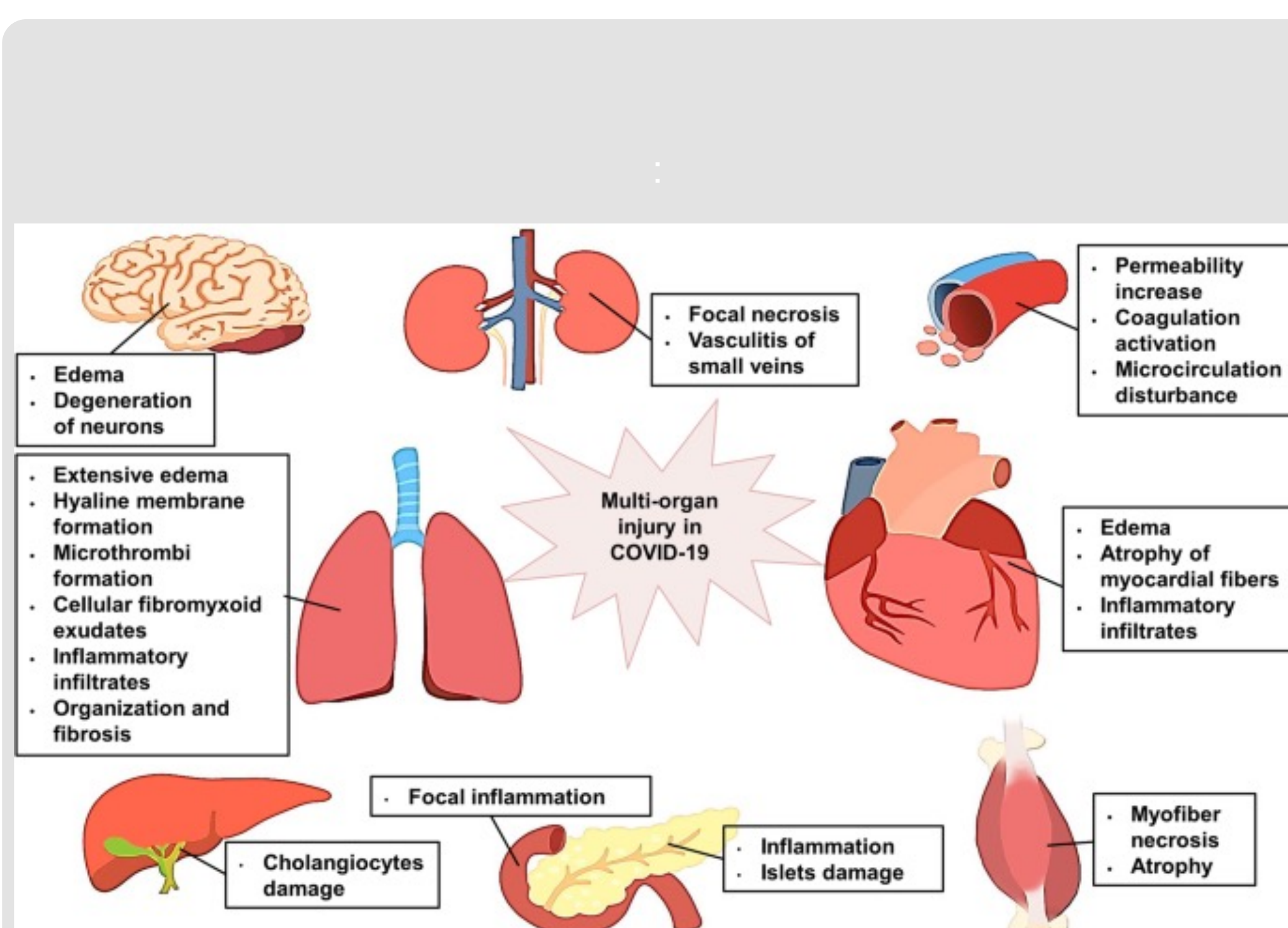


Figure 1. Multiorgan involvement in COVID-19 infection (6)

Case Presentation

A 58-year-old male with recent history of COVID-19 and no history of cardiovascular disease or any other significant medical history presented to the emergency room. Patient was diagnosed with COVID-19 three weeks prior and at this visit tested negative via PCR. His presenting complaint was non-bloody diarrhea associated with epigastric pain and chills, for which CT abdomen without contrast showed mesenteric and pericolic stranding, suspicious for infectious or inflammatory enterocolitis. The patient denied chest pain and dyspnea upon arrival. Vitals revealed body temperature of 100.9°F and leukocytosis. He was also found to be hypotensive with blood pressure of 100/63, had a pulse rate of 88 BPM, and pulse oximetry showed 94% SaO₂ on room air. Electrocardiogram showed sinus rhythm with slight upsloping ST-segment elevations in leads V3-V6, without criteria for STEMI or obvious ischemic changes. Initial troponin was 12 and repeat troponin trended down to 5.8. Patient's clinical presentation and elevated troponins were suspicious for acute myocarditis.

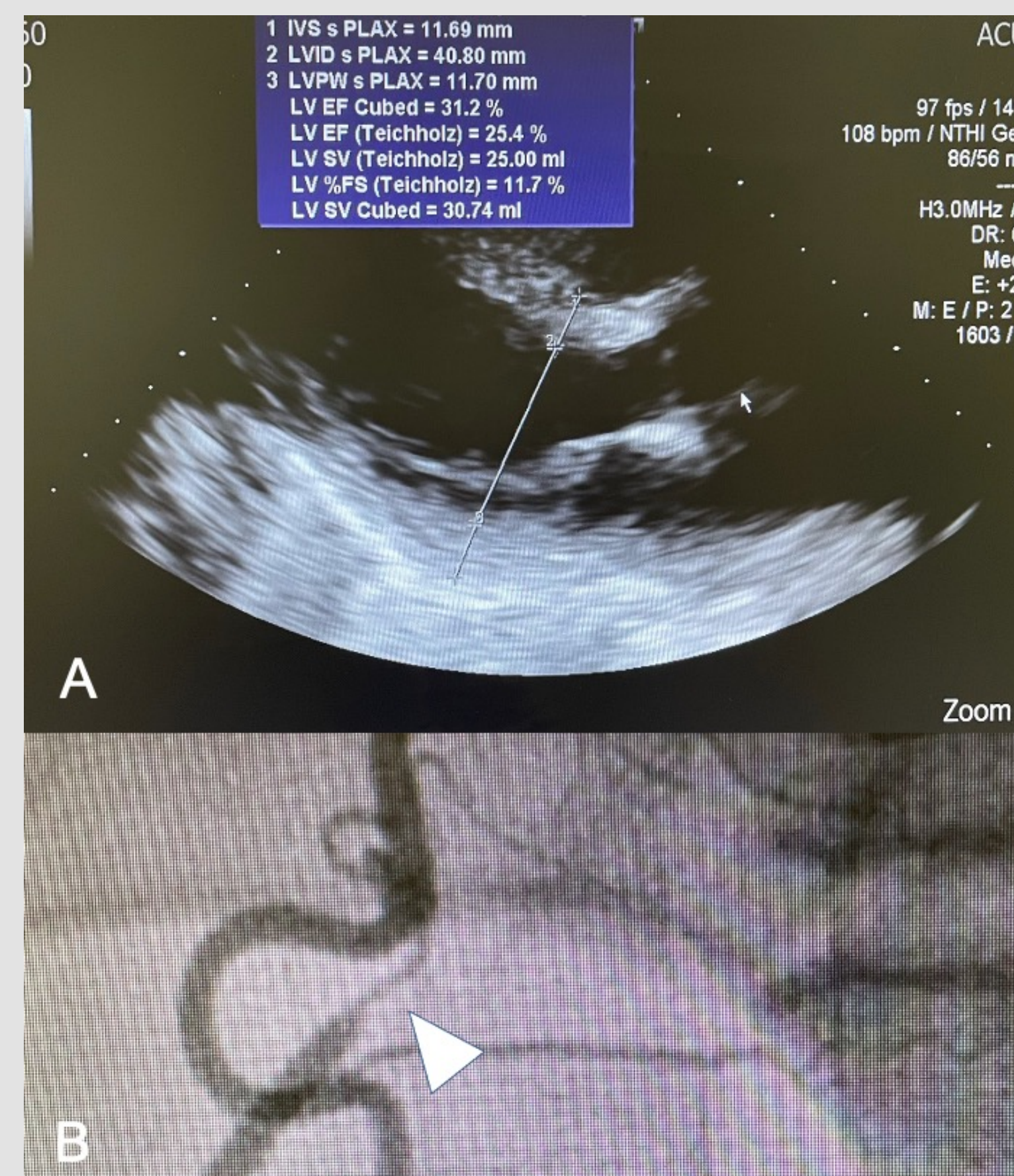


Figure 2. (A) 2D Echocardiogram showing LV EF 25.4%. (B) Coronary angiography showing lesion in mid-RCA (white arrowhead).

Chest X-ray showed mild bilateral perihilar opacities, suggesting atelectasis or possibly early infiltrates. There were no focal consolidation or pleural effusions noted. A 2D echocardiogram was obtained which showed normal left ventricle size, global hypokinesis, and an estimated left ventricular ejection fraction of 25.4%, suggesting severely reduced systolic function. Patient underwent cardiac catheterization with DES x2 for significant blockage of the mid-RCA. While the elevated levels of troponin was concluded to be due to possible post-COVID-19 myocarditis vs. NSTEMI, the severe reduction in systolic function was determined out of proportion to, and thus less likely to be secondary to pre-existing coronary artery disease. The patient had no known history of cardiac conditions and denied symptoms of cardiovascular dysfunction.

Treatment in the intensive care unit (ICU) consisted of Ciprofloxacin 800mg/day, Flagyl 1500mg/day, Protonix 40mg/day, IV fluids, and Levophed drip. Once the patient was determined to be clinically stable, he was discharged on levofloxacin, flagyl, ticagrelor, aspirin, atorvastatin, brilinta, metoprolol, and pantoprazole.

Discussion

We describe a patient presenting with suspected acute myocarditis, with electrocardiogram showing ST-segment upsloping elevations, elevated serial troponins, and evidence of systolic dysfunction on echocardiogram. The significant decline in systolic function in our patient, with no history of cardiovascular diseases and a recent history of COVID-19 infection, implies possible myocardial injury due to SARS-CoV-2. While cardiac catheterization revealed significant blockage of the RCA, the overall impression from the procedure was a mild CAD. This finding was determined to be out of proportion to a severe decline in systolic function as shown by a 25% ejection fraction on 2D echocardiogram. Therefore, higher suspicion was placed on viral myocarditis.

Common etiologies of significant myocardial inflammation include autoimmunity and viral infections. Myocardial injury resulting from SARS-CoV-2 is associated with a notable increase in risk of mortality. Studies have suggested involvement of the cardiovascular system in COVID-19, although the mechanism remains unclear. One possible explanation is direct myocardial injury due to extra-pulmonary migration of infected alveolar macrophages seen on endomyocardial biopsy by Tavazzi et. al, which was also observed in autopsy samples of patients with Middle East respiratory syndrome coronavirus (MERS-CoV). The myocardium can also be involved indirectly due to the cytokine storm that results from infection, evidenced by an increase in interleukins 6, 10, and 2R as well as tumor necrosis factor-alpha (TNF- α) which are associated with myocardial compromise. Another possible mechanism for extrapulmonary manifestations of COVID-19 is based upon the expression of the metallo-peptidase Angiotensin Converting Enzyme-2 (ACE-2) in a variety of tissues including epithelial cells in lung alveoli, small intestine, and vasculature, and smooth muscle cells. The spike-like capsid, from which the name "Coronavirus" is derived, binds and downregulates ACE-2, decreasing metabolism of angiotensin II to cardioprotective angiotensins 1-7.

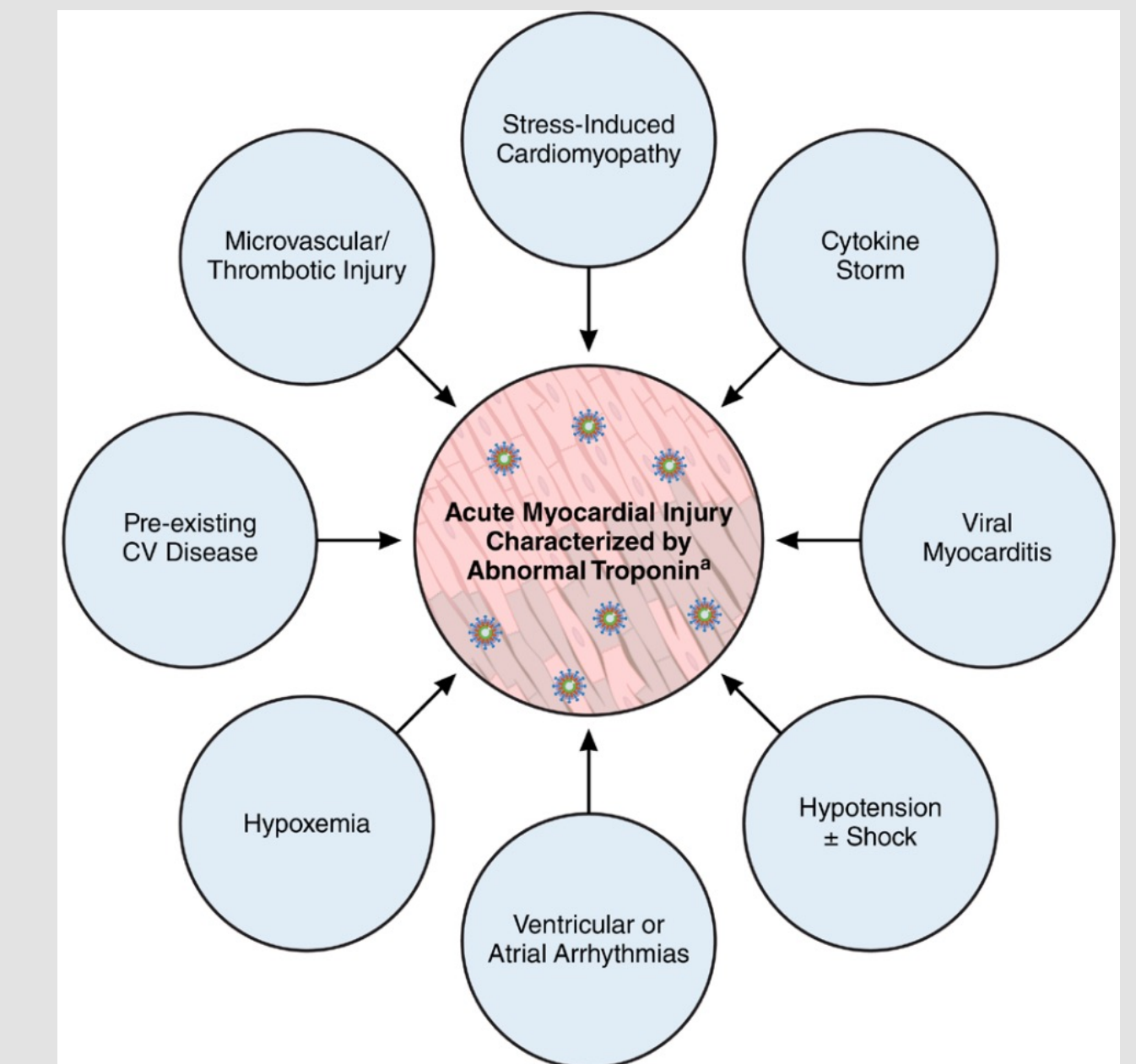


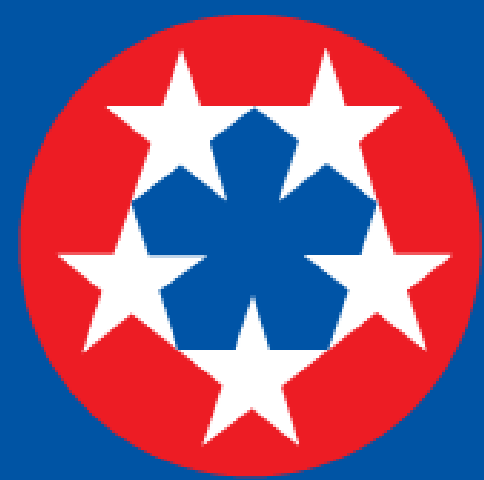
Figure 3. Possible mechanisms of myocardial injury in COVID-19 infection (7)

Conclusion

The importance of the above patient case lies in highlighting the significant decline in systolic function of the heart after recovery from COVID-19, and how incorporating 2D echocardiograms into the routine screening process for COVID-19 patients can help obtain an early diagnosis. Because patients may exhibit no noticeable symptoms of myocarditis, high clinical suspicion can lead to efficient diagnosis and treatment. Abnormalities found on 2D echocardiogram, as seen in our case, can be utilized to guide the next steps, including obtaining a cardiac MRI and endomyocardial biopsy to confirm the diagnosis.

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Introduction

Background/Project Rationale

Benzodiazepines (BZDs) have become one of the most used and misused drug classes due to their wide range of action and low toxicity profile. As per the National Survey on Drug Use and Health, 12.6% of U.S. adults (30.6 million adults) report past-year BZD use, with misuse accounting for 17.2% of overall use. Although BZDs are highly effective as short-term treatments for certain disorders, they also are potentially addictive agents. Providers must be aware of withdrawal symptoms beyond rebound anxiety and seizure precipitation. This case report demonstrates the development of tactile hyperesthesia and dysgeusia, lesser known but documented complications of BZD withdrawal, while showcasing a successful individualized dose taper in a geriatric patient.

Non-Specific Symptoms	Frequency %
Insomnia	71%
Anxiety	56%
Mood Swings	49%
Myalgia / Twitching	49%
Headache , Tremor	38%
N/V , Anorexia	36%
Sweating, Blurred Vision	22%

Hypersensitivity	Frequency %
Noise	38%
Light	24%
Smell / Touch	15% / 7%
Smell / Taste	15% / 4%

Complications	
Psychosis	7%
Seizures	4%

Qualitative Changes	
Movement	24%
Vision, Taste	13%
Derealization	24%

Case Presentation

A 69-year-old female with past medical history of gastric ulcer, osteoarthritis, generalized anxiety disorder, and major depressive disorder presented to the primary care clinic for BZD use disorder. Her current dose of Alprazolam had been slowly increased throughout the 18-year duration from 0.5 mg to 2 mg daily, with no other psychotropic medications for concurrent anxiety and depression. The patient had unsuccessful discontinuation attempts due to a strong desire to control her panic attacks with Alprazolam and previous withdrawal symptoms of dizziness, palpitations, and mood disturbances. She reported diminishing ability to take care of obligations at home.

Vitals were unremarkable. Despite the mental status exam demonstrating a normal mood and affect, composite measures of depression and anxiety include Patient Health Questionnaire-9: 11 and General Anxiety Disorder-7: 11. Her physical examination was unremarkable. The most recent labs (complete blood count, lipid panel, comprehensive metabolic panel) had been completed a few months prior and were within normal limits except for slight elevations in the total cholesterol, triglycerides, and low-density lipoproteins. As per DSM-V, the patient met the criteria for severe BZD use disorder.

Data

Outcome/Results

Considering the potential risks associated with long-term BZD use, a slow taper was initiated with a longer-acting equivalent. The patient was started on the equivalent dose of Chlordiazepoxide 100 mg per day with an add on trial of Paroxetine.

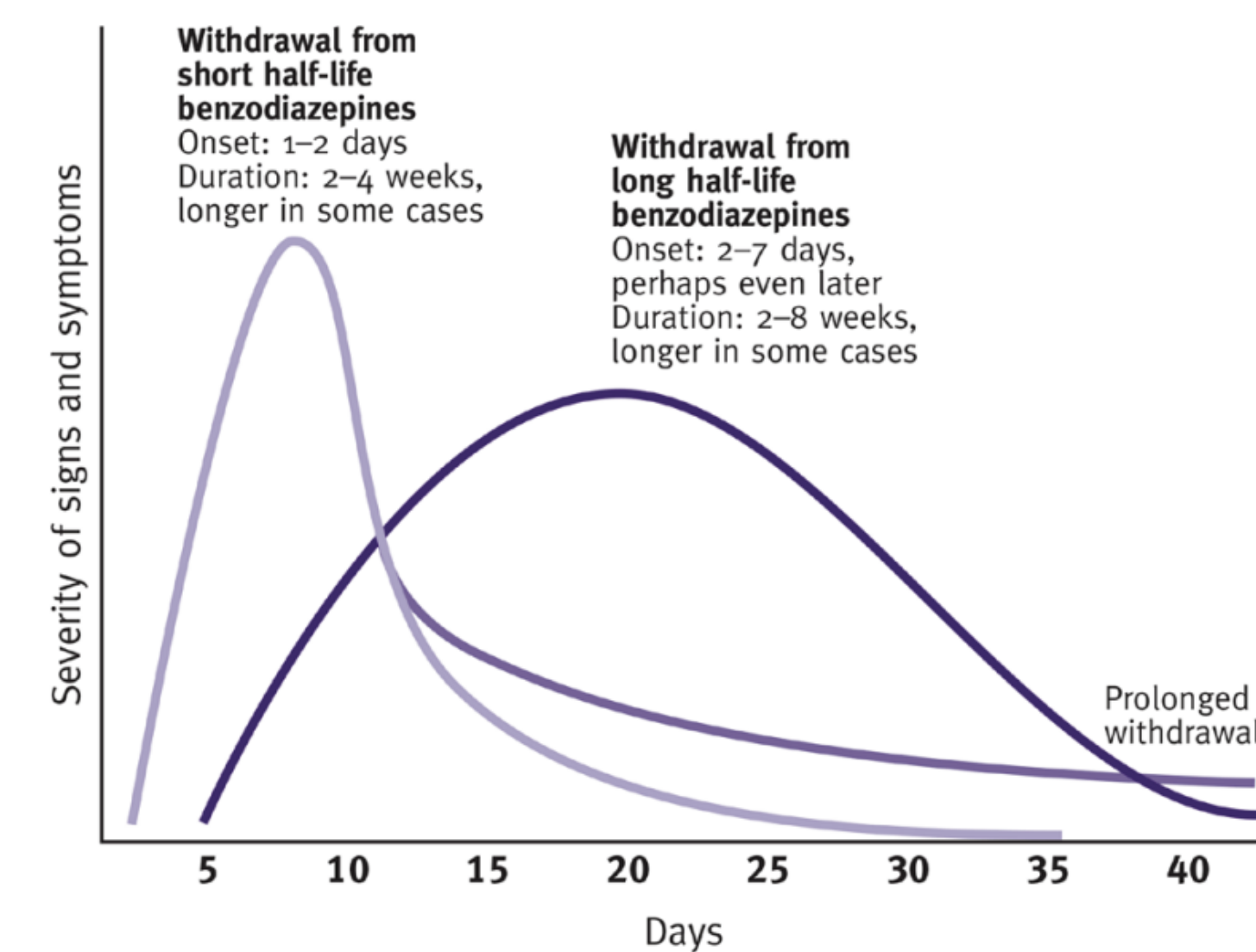
Weeks	Total Daily Librium	Withdrawal Symptoms	Intervention / Ancillary Measures	PHQ-9 / GAD-7 Scoring
Week 1	100 mg	N/A	Switched Xanax to Librium Started Paxil 10 mg PO Q day	11/11
2-3	75 mg	Tactile hyperesthesia, dysgeusia, facial twitching, and anxiety	Tolerating Paxil 100 mg Add Gabapentin 300 mg OP Q AM	5/3
4-5	75 mg	Ongoing but improving altered taste sensation, tongue numbness, and twitching	Gabapentin 300 mg Continue Librium 75 mg	5/3
6-8	60 mg	Sensory abnormalities Ongoing vivid dreams, nightmares and fatigue	Add Prazosin 1 mg Increase dosage in Paxil	5/3
9-11	60 mg	Improving sensory abnormalities; vertigo	Continue Paxil Decrease Gabapentin to 100 mg	5/3
12-15	50 mg	Improvement of eye twitching; improvement of vertigo	Continue Librium 50 mg Continue Paxil	5/3
16-19	40 mg	Improvement of facial twitching and dysgeusia	Librium 40 mg Continue Paxil / Discontinue Prazosin	1/2
20-23	30 mg	No complaints of facial twitching, dysgeusia or hyperesthesia	Librium 30 mg Continue Paxil Discontinue Gabapentin	1/2
24-43	25 mg	None	Librium 25 mg / Continue Paxil	1/2
44-51	20 mg	None	Librium 20 mg / Continue Paxil	1/2
52-63	15 mg	Mild anxiety Underwent cholecystectomy	Librium 15 mg/ Continue Paxil Hydroxyzine 25 mg PO TID PRN anxiety	1/2
64-79	5 mg	None	Librium 5 mg / Continue Paxil Restart Gabapentin 300 mg	4/0
80-87	5 mg	None	Librium 5 mg every 3 days Continue Paxil	5/0
88-90	5 mg	Recurrence of intermittent dysgeusia	Librium 5 mg every 4 days Continue Paxil Decrease Gabapentin to 100 mg	5/0
91	0 mg	None	Increased Gabapentin to 200 mg Hydroxyzine 25 mg PO PRN anxiety	5/0

Conclusion

Proposed Impact on Clinical Practice

Physiological dependence on BZDs is accompanied by a withdrawal syndrome commonly characterized by sleep disturbances, irritability, increased anxiety, and panic attacks. Perceptual distortion and dysgeusia are infrequently reported as symptoms of BZD withdrawal. The pathogenesis of these distortions is poorly understood but may be indirectly related to the sudden decrease in γ -aminobutyric acid (GABA) signaling during benzodiazepine withdrawal. Upon review of the available literature, there was a rarity in cases describing perceptual distortions upon discontinuation or tapering of a BZD. Primary care providers must be attentive to development of rare withdrawal symptoms and accordingly modify their treatment plan to most effectively treat patients.

Course of Withdrawal



There are three basic approaches to a benzodiazepine taper: (1) Utilize the same medication for tapering; (2) Switch to a longer-acting equivalent; (3) Utilize adjunctive medications to help mitigate potential withdrawal symptoms. There remains insufficient evidence to support the use of a particular BZD for tapering in geriatric adults. This patient was switched to a long-acting BZD, Chlordiazepoxide with a gradual decrease of the dose. As no clear evidence suggests the optimum rate of tapering, it is essential to individualize schedules. This patient's schedule was consequently individualized, with a 25% dose reduction in 2 weeks followed by reductions of 5-10% as tolerated. Gabapentin, Paroxetine, Hydroxyzine, and Prazosin were used as adjunctive agents to mitigate discomfort. As this protocol was successful, further studies with a larger number of patients are needed to confirm the applicability, efficacy, and safety of adjuncts.

Conclusion

Discontinuation of long-term BZD use in older adults is feasible. Family medicine physicians must be cognizant of the rare adverse effects of BZD withdrawal. Current reports do not provide enough evidence to make specific recommendations regarding the prevention of BZD withdrawal-induced perceptual distortions or dysgeusia. Taper protocols for complicated withdrawal phenomena require further research.

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Multisystem Inflammatory Syndrome in a Child Associated with COVID-19

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Introduction

- Children who have COVID-19 generally have less severe symptoms, but detrimental effects are possible.
- Multisystem Inflammatory Syndrome in Children (MIS-C) is a rare and potentially life-threatening effect of COVID-19 infection.^{1,2,3,4}
- Early recognition and treatment of MIS-C are crucial.

Case Presentation

HISTORY:

- 8-year-old healthy immunized female presented with:
 - 5 days of fever, lethargy, decreased appetite, dry cough, and full body rash.
 - 2 days of periumbilical abdominal pain, nausea, vomiting, diarrhea, and eye redness.
- Family member had COVID-19 3 weeks prior.

PHYSICAL EXAM:

- Vitals:** T_{max} 39.6°C (103°F), RR 20-33, BP 77-91/35-55, HR 140-160, saturating 97-100% on room air.
- General :** Appeared ill and fatigued.
- HEENT:** Mucous membranes dry, erythematous cracked lips. Bilateral conjunctival injection, erythema and edema of upper and lower eyelids. No cervical lymphadenopathy.
- Heart:** Sinus tachycardia. No murmurs, rubs, or gallops.
- Lungs:** Clear, unlabored breathing.
- Abdomen:** Normoactive bowel sounds, soft, no masses or organomegaly. Nondistended. Tenderness in RUQ, negative Murphy's sign. Negative Rovsing's and Obturator's signs. No rebound or guarding.
- Extremities:** No edema, cyanosis, or clubbing.
- Neuro:** AAOx3. Nonfocal.
- Integumentary:** Erythematous, flat, non-blanching, warm, polymorphic rash, confluent on back, chest, extremities, and bilateral soles, and macular on neck and left cheek.

LABS AND IMAGING:

- Serum:** WBC 10.6 / Plt 101 / BUN 16 / Cr 0.5 / ALP 340 / AST 52 / ALT 119 / T. bili 3.5 / Lipase 3 / ESR 28 / CRP 10.9 / Fibrinogen 544 / D-dimer 2138 / LDH 193 / Lactic acid 2.0 / Procal 7.84 / Troponin <0.03 / BNP 314
- Urine:** Pregnancy and UA negative.
- Imaging:** Abd US, CXR, CT abd/pelvis with PO + IV contrast all negative.
- EKG:** Sinus tachycardia to 156.
- Pending:** Respiratory swab, blood cultures.

Differential Diagnoses

- Acute appendicitis, Kawasaki Disease (KD), bacterial sepsis, toxic shock syndrome, Staph scalded skin syndrome, Hemophagocytic lymphohistiocytosis (HLH)/macrophage activation syndrome (MAS).

Treatment Course

- ED:** Given 2 doses of Tylenol, 2 normal saline boluses, cefoxitin for empiric broad coverage and transferred for ICU-level care.
- Hospital:** Admitted to the PICU in acute hypoxemic respiratory failure and decompensated shock and started on HFNC, dopamine and epinephrine drips, ceftriaxone and clindamycin, one dose of IVIG and aspirin. Echocardiogram showed LV dysfunction and RCA dilatation and milrinone was added. Antibiotics were stopped after blood and urine cultures were negative for 48 hours. COVID-19 serology and PCR were both positive. Methylprednisolone was added for 5 days given that patient continued to require vasopressor support and rheumatology was consulted. Anakinra was started.

	Kawasaki Disease (KD)	Toxic Shock Syndrome	MIS-C
Common Presenting Symptoms	Fever ≥5 days + ≥4 (complete) or 2-3 (incomplete): conjunctivitis, rash, adenopathy, strawberry tongue, hand/foot swelling	Fever, rash, hypotension, weakness, confusion, GI symptoms (esp diarrhea)	Fevers 1+ days, GI symptoms (abd pain, N/V, diarrhea), rash, conjunctivitis, mucus membrane involvement
Etiology	Vasculitis w/inflammatory dysregulation	Release of bacterial toxins	Inflammatory dysregulation, details TBD
Average Age	1-4yo	Any	9-13yo
Population Most Affected	Asian males	Menstruating females	Black and Hispanic, any gender
Cardiac Changes	Coronary artery (CA) abnormalities	Usually none	Decreased LV function, CA abnormalities

Table 1. Comparison of Kawasaki Disease, Toxic Shock Syndrome, and MIS-C.^{1,2,5}

Outcome

- Patient fully recovered after 2-week hospital course. EKG and echocardiogram prior to discharge showed return of cardiac function.

Discussion

- MIS-C is rare, with reported incidence as low as 2/100,000.¹
- Diagnosis requires age <21 years old with fever, lab evidence of inflammation, requiring hospitalization, with at least 2 organ system involvement; AND no alternative plausible diagnoses; AND positive for current or recent COVID-19 infection by RT-PCR, serology, or antigen test; or exposure to suspected or confirmed COVID-19 case within 4 weeks prior to the onset of symptoms.^{2,3}
- The pathophysiology of MIS-C is currently not well understood.¹
- Labs typically show lymphocytopenia, cardiac involvement with elevated troponin and/or BNP, and elevated inflammatory markers.
- Imaging often reveals lung consolidations, abdominal free fluid, adenopathy, and/or mesenteric inflammation, and depressed LV function and coronary artery abnormalities on echocardiogram.^{2,4}
- Patients are managed similarly to Kawasaki disease with IVIG if they meet criteria for complete or incomplete KD.
- Epinephrine or norepinephrine are preferred for shock with steroids added if refractory. Milrinone can be added for LV dysfunction.
- Broad spectrum antibiotics should be started but stopped once bacterial infection is excluded. There is unclear benefit of antivirals (e.g. remdesivir), IL-1 inhibitors (Anakinra, canakinumab), IL-6 inhibitors (tocilizumab), and convalescent plasma.
- The minimum dose of aspirin should be given if features of Kawasaki Disease are present and systemic anticoagulation is recommended for the presence of LV dysfunction.^{1,3}
- Prognosis is uncertain, with an estimated 1.7% death rate. Most patients regain cardiac function prior to discharge, however, long term effects are unknown.¹

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INTRODUCTION

- ❖Pregnancy is a unique, intimate situation that can influence the woman, partners, and their offspring.
- ❖Syphilis can cross the placenta at any time during the pregnancy & overall risk of transplacental syphilis infection is 60-80%.^{1,2}
- ❖Congenital Syphilis has severe and very diverse sequelae including stillbirths, neonatal death, cerebral palsy, hydrocephalus, sensorineural hearing, musculoskeletal deformity, and bone lesions.²
- ❖Often separated into early and late stages, congenital syphilis can affect bone development in various manners including osteomyelitis.²

HISTORY

- ❖11-week-old previously healthy female infant presented originally to outside hospital (OSH) with chief complaint of decreased movement of the right arm and irritability.
- ❖Mother reported the patient to be more irritable than usual and decreased movement of the right arm for 2-3 days, denying any known trauma from herself or other family members.
- ❖OSH X-rays of bilateral upper extremities showed periostitis of diaphysis of the right radius and fracture of distal left radial metaphysis but X-ray of complete fetal osseous survey showed no evidence of fractures, dislocation, lytic, or sclerotic lesions.
- ❖With concern for non-accidental trauma (NAT), the patient was transferred to pediatric tertiary care hospital for higher level of care.
- ❖On a full 10 system ROS, the patient only endorsed the chief complaints, otherwise negative.
- ❖Patient was admitted for concern for NAT and further workup.

PHYSICAL EXAMINATION

- ❖Vitals : Temp 99.4F, HR 144, RR 30, SpO2 98% on room air.
- ❖General: Non-toxic appearing female infant in no acute distress
- ❖Head: Normocephalic and atraumatic. Soft and non-bulging fontanelles. No nasal discharge.
- ❖Neck: Some neck lymphadenopathy.
- ❖Lungs: No chest retractions with normal breath sounds.
- ❖Heart: Regular rate and rhythm with normal S1/S2.
- ❖Extremities: Warm, well-perfused, brisk capillary refill, with no clubbing, or cyanosis. **Noticeable decreased tone in right arm with no focal neurologic findings, otherwise moving all extremities spontaneously.**
- ❖Skin: No rash or bruising.

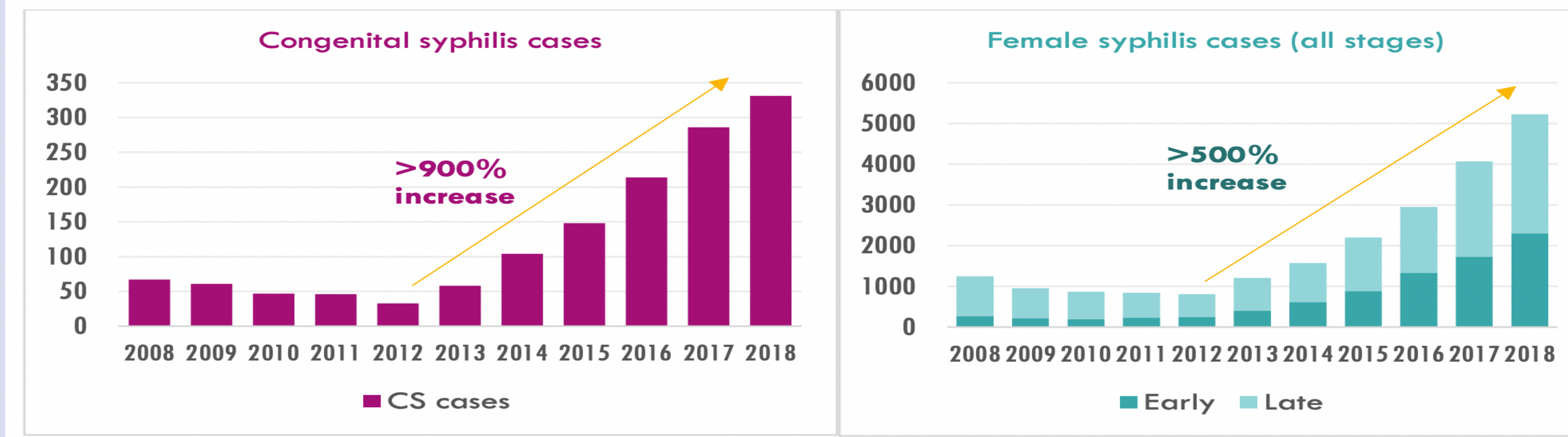
DIFFERENTIAL DIAGNOSES

- | | |
|------------------------|-----------------------|
| ❖ Nonaccidental Trauma | ❖ TORCH infection |
| ❖ Neoplasm | ❖ Osteomyelitis |
| ❖ Accidental Trauma | ❖ Congenital Syphilis |

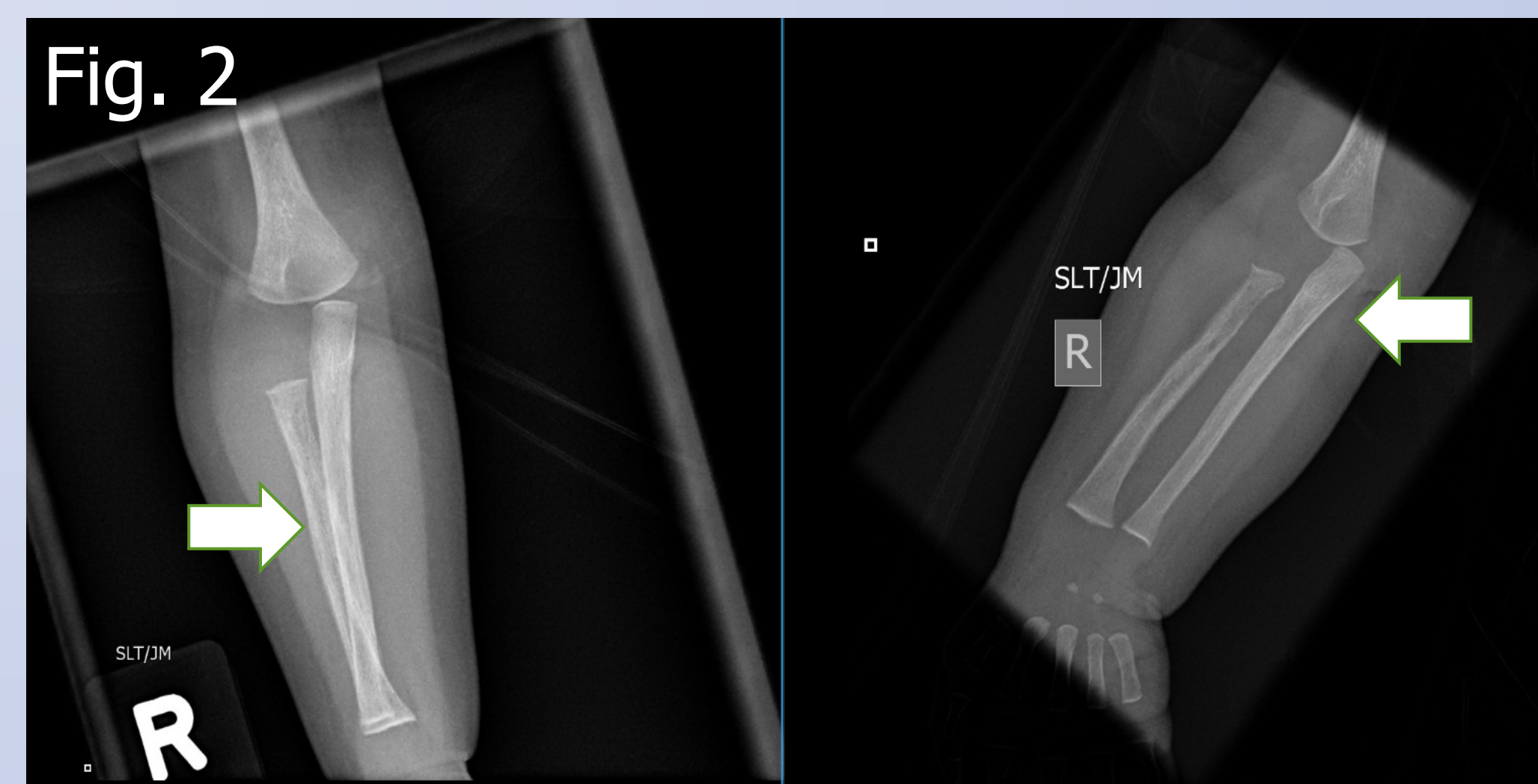
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2. Merck Manual Congenital Syphilis
3. USPSTF Syphilis Screening For Infection in Pregnant Women

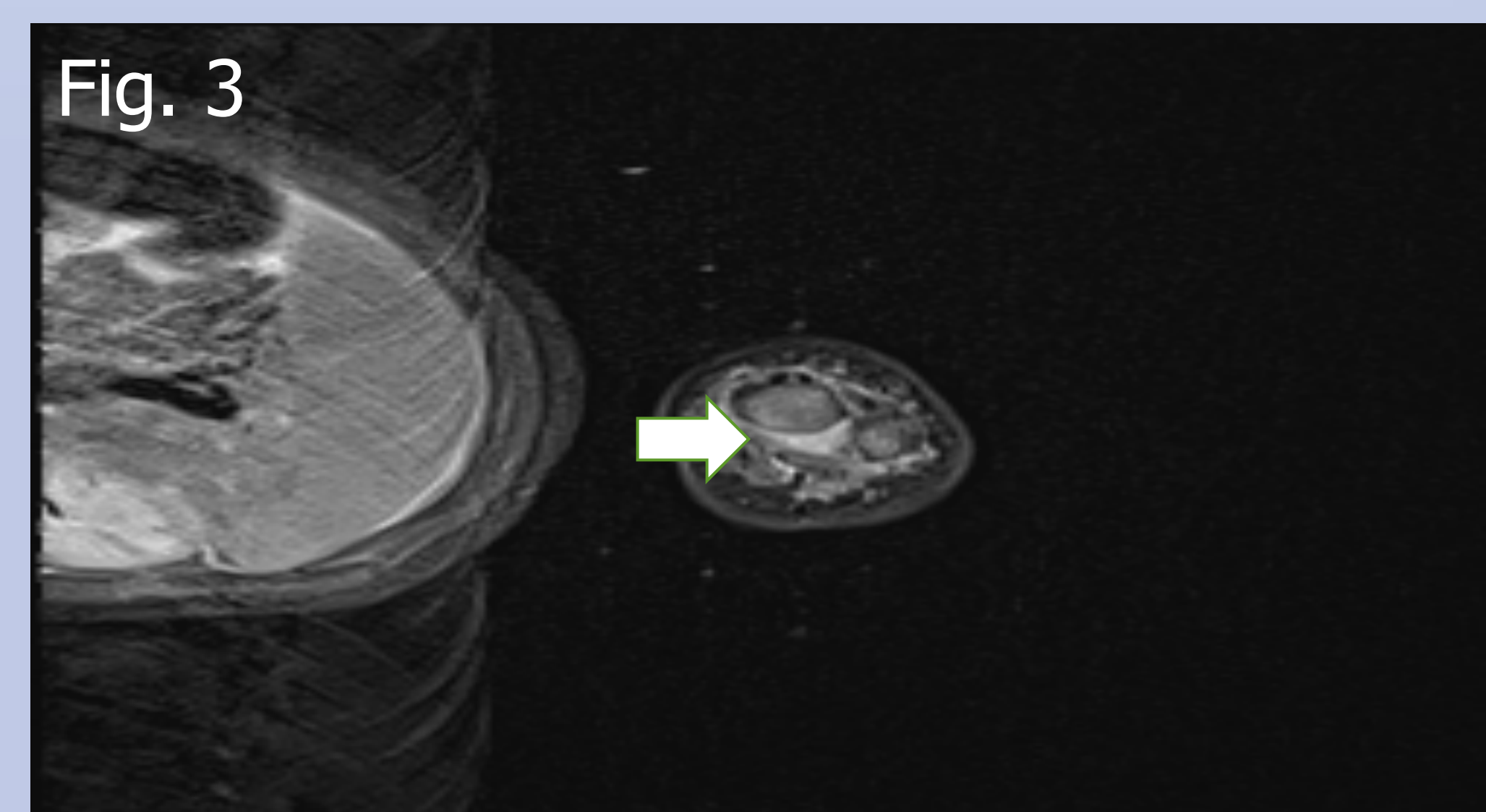
Figure 1: Congenital Syphilis and Female Syphilis, California 2008 – 2018



X-RAY OF RIGHT FOREARM



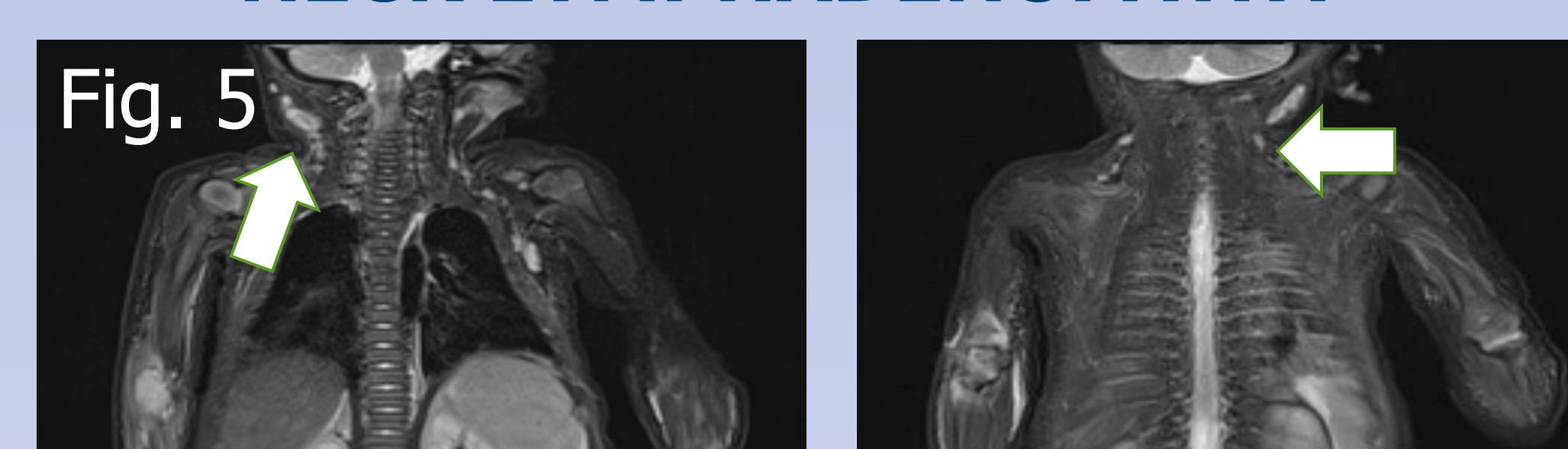
LEFT DISTAL RADIUS OSTEOMYELITIS AND SUBPERIOSTEAL ABSCESS



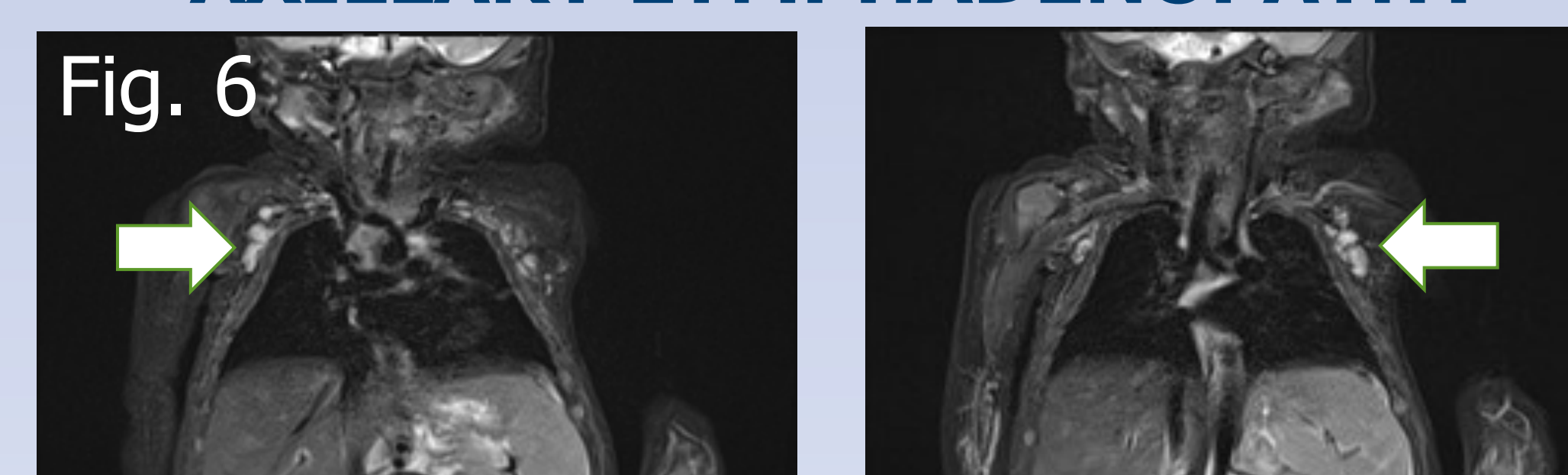
INGUINAL LYMPHADENOPATHY



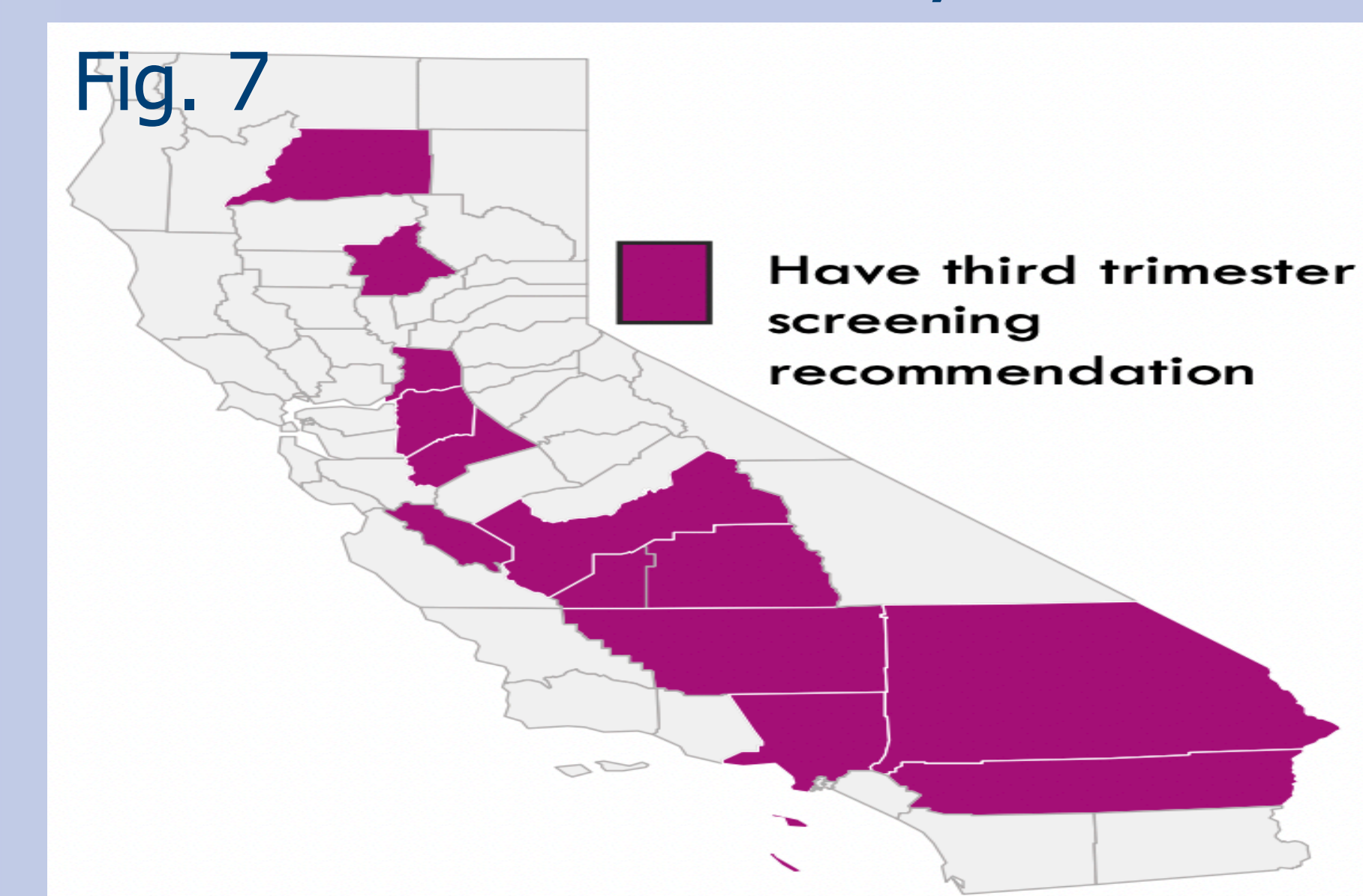
NECK LYMPHADENOPATHY



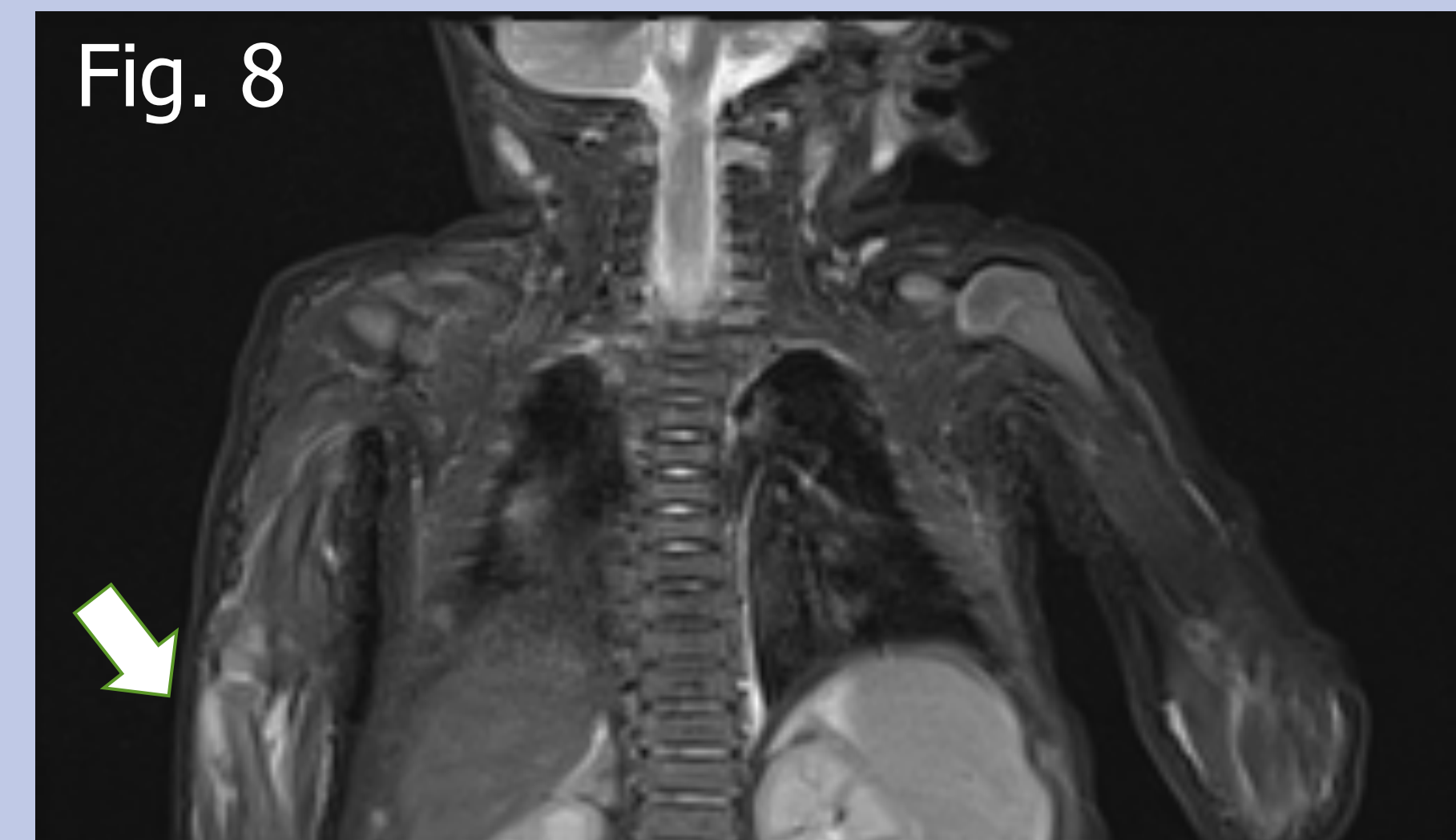
AXILLARY LYMPHADENOPATHY



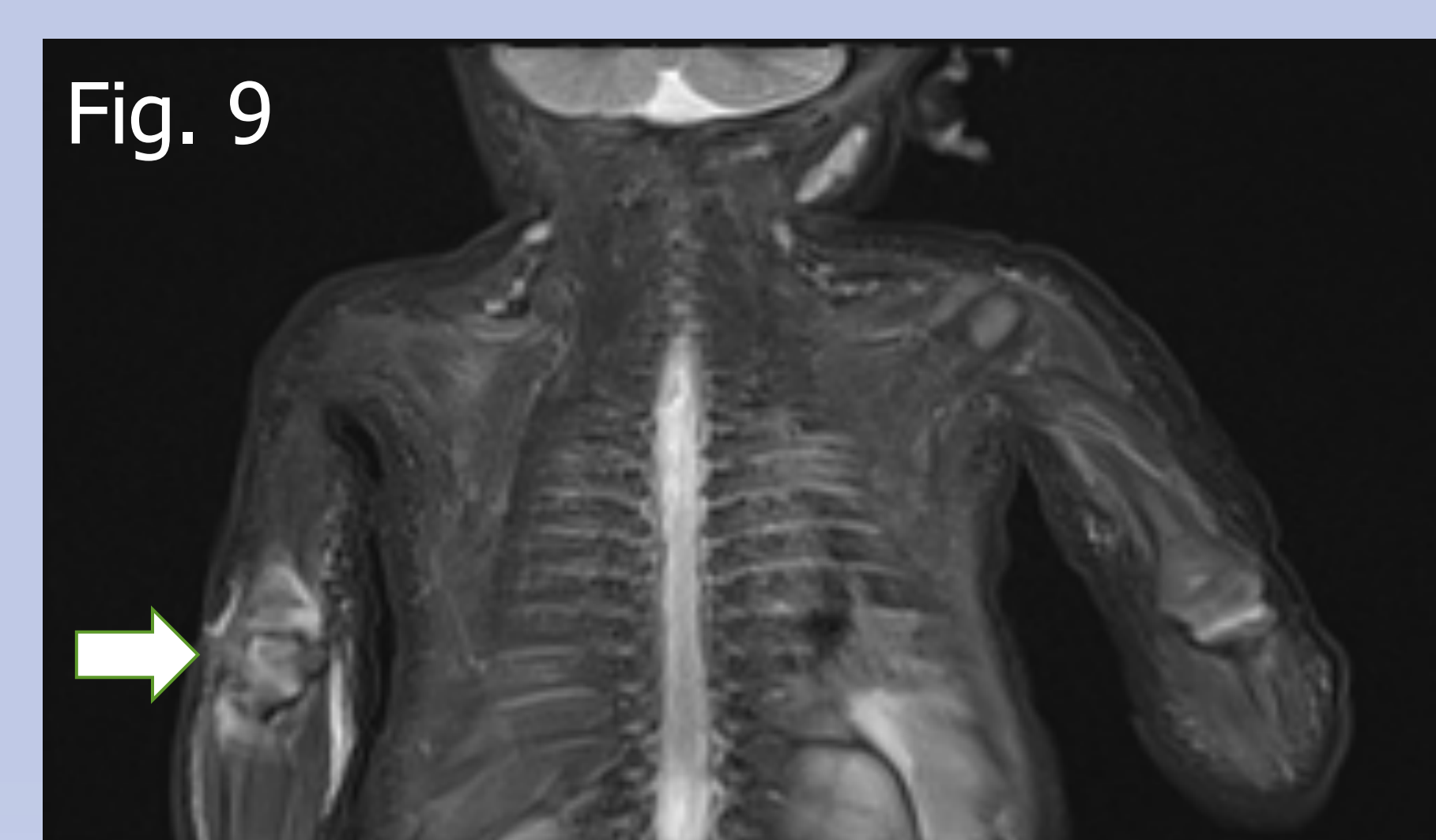
CA Counties with 3rd Trimester Syphilis Screening Recommendation, 2018



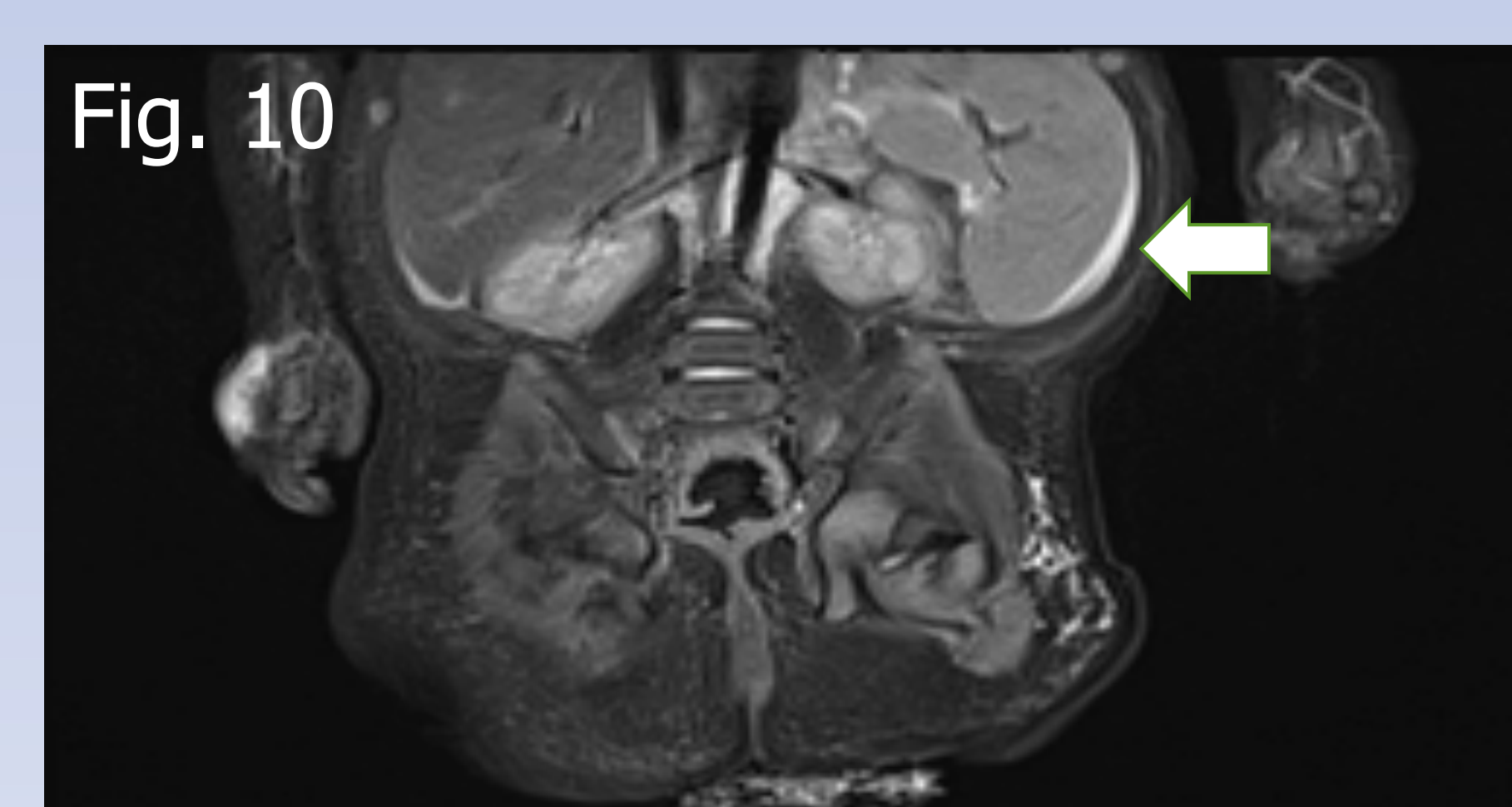
RIGHT PROXIMAL RADIAL OSTEOMYELITIS WITH SUBPERIOSTEAL ABSCESS



RIGHT ELBOW SEPTIC ARTHRITIS



SPLENOMEGALY



IMAGING

- ❖**X-rays:** Salter-Harris Type 2 fracture of left distal radius, irregular cortical margins along right proximal radial metaphysis, diaphysis with medullary lucencies concerning for infection or neoplasm more than fracture, smooth periosteal reaction of right second through fifth metatarsals. (Fig. 2)
- ❖**CT abdomen:** borderline hepatosplenomegaly.
- ❖**MRI of whole body:** osteomyelitis with periosteal abscess in left distal radius, right radial osteomyelitis with subperiosteal abscess (Fig. 8), septic right elbow arthritis with synovitis (Fig. 9), possible cellulitis of right hand, splenomegaly (Fig. 10), and prominent neck, axillary, and inguinal lymph nodes concerning for disseminated osteomyelitis (Fig 4-6).

LABS

- ❖**Negative:** Amylase/Lipase, UDS, Leukocytosis, Blood Culture, Fungal culture, Joint cultures, RVP, I&D gram stain & culture of right elbow & left wrist.
- ❖**Elevated:** ESR, CRP, AST, ALT, Alk Phos.
- ❖**Positive:** Syphilis titers 1:1024.
- ❖**Lumbar puncture** by IR: Elevated lymphocytes and VDRL at 1:4.

FINAL DIAGNOSIS

Disseminated Congenital Neurosyphilis with Syphilitic Osteomyelitis

TREATMENT & OUTCOMES

- ❖Forensics and infectious disease consulted for further workup.
- ❖Orthopedic surgery completed irrigation and debridement of bilateral upper extremity.
- ❖Ophthalmology consulted and saw no retinal hemorrhages.
- ❖Additional episode of acute respiratory distress, tachycardia, and fevers shortly after 1st penicillin dose due to Jarisch-Herxheimer reaction.
- ❖Completed 14 total days of IV penicillin G.
- ❖Discharged from the hospital with instructions for outpatient care.

PATIENT MANAGEMENT & DISCUSSION

- ❖At the 2 months post-discharge visit in the residency clinic, syphilis titer decreased to 1:32 and ESR to 2. At 6 months, titer at 1:32.
- ❖Plan for admission at 6 months of age for continued full workup including repeat LP to monitor titers, long bone X-rays.
- ❖Per CDPH, female syphilis cases increased 550% and congenital syphilis cases increased 900% from 2012 to 2018. (Fig. 1)¹
- ❖Furthermore, San Bernardino County ranked 7th in congenital syphilis cases among counties in California.¹
- ❖Presenting symptoms of Congenital Syphilis are so varied and outcomes could be detrimental.
- ❖Early syphilis screening during prenatal care is recommended in all women. (USPTF Grade A Recommendation)³
- ❖This case highlights the importance of maternal syphilis screening and considering syphilis as part of the differential diagnosis in newborns presenting with irritability.
- ❖In addition, women who are at high risk for syphilis or live in areas of high syphilis morbidity should be screened again early in the third trimester (~28 weeks' gestation) and at delivery. (Fig. 7)¹



Investigating Socioeconomic Associations Among Children and Adolescents With Attention-Deficit/Hyperactivity Disorder Within the United States



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California Academy of Family Physicians 2021

INTRODUCTION & BACKGROUND

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common childhood neurobehavioral disorders in the United States [1]. The Diagnostic and Statistical Manual of Mental Disorders categorizes ADHD as a disease with pervasive developmentally inappropriate symptoms including, but not limited to hyperactivity, impulsivity and a severe lack of attention [2]. An ADHD diagnosis allows eligible children to receive educational assistance in school as well as medications to help alleviate some of the disorder's negative influence on behaviour and learning. However, not all groups of children are equally as likely to receive a formal diagnosis and/or receive the appropriate treatment.

With a reported prevalence between 2 and 5%, ADHD has a complex etiology not simply limited to heritable factors; social, economic, demographic and environmental factors have been postulated to play a significant role as well [3]. Unfortunately, individuals with ADHD are at an increased risk of a plethora of negative outcomes including poor educational achievement and substance abuse [4] While pharmacologic and non-pharmacologic interventions are effective in targeting ADHD symptoms, not enough measures exist addressing some of the causal factors behind the diagnosis. By identifying these factors, it allows for the identification/tackling of symptoms at an early stage and the proper follow-up once a formal diagnosis is made in high-risk groups, to prevent some of the pitfalls later in life associated with ADHD. This study aimed to identify associations between socioeconomic, environmental and demographic factors and ADHD, to identify both high-risk groups and areas where more efforts/resources can be directed.

METHODS

Data Collection

This study utilized the Public Use Data Files from the National Survey of Children's Health (NSCH), a population-based cross-sectional survey sponsored by the Health Resources and Services Administration Maternal and Child Health Bureau. Data was collected through mail- and web-based surveys conducted in English or Spanish from 2016, 2017, and 2018 for children under 18 years of age, answered by adult proxy respondents to perform a retrospective analysis of data through census collection. Weighted prevalence estimates were calculated overall and by demographic and clinical subgroups (n = 5,986,076; 9.8%). The de-identified data housed by the Census Bureau's NSCH webpage was obtained by following the appropriate protocols and initiatives in place to ensure confidentiality was maintained at all times through collection, mining and organization of the data. Data sets were available to download in SAS format after consenting to maintain confidentiality and not try to identify individuals. Data included health conditions, birth information, healthcare services, experience with healthcare providers, healthcare insurance coverage, education, family and household information.

Statistical Analysis

This study looked at associations that were statistically significant among those carrying a diagnosis of ADHD compared to those without. The Chi-square test and Fisher's exact test were employed to compare the categorical data between those carrying a diagnosis and those not carrying a diagnosis of ADHD. A p-value of 0.05 was established as statistical significance.

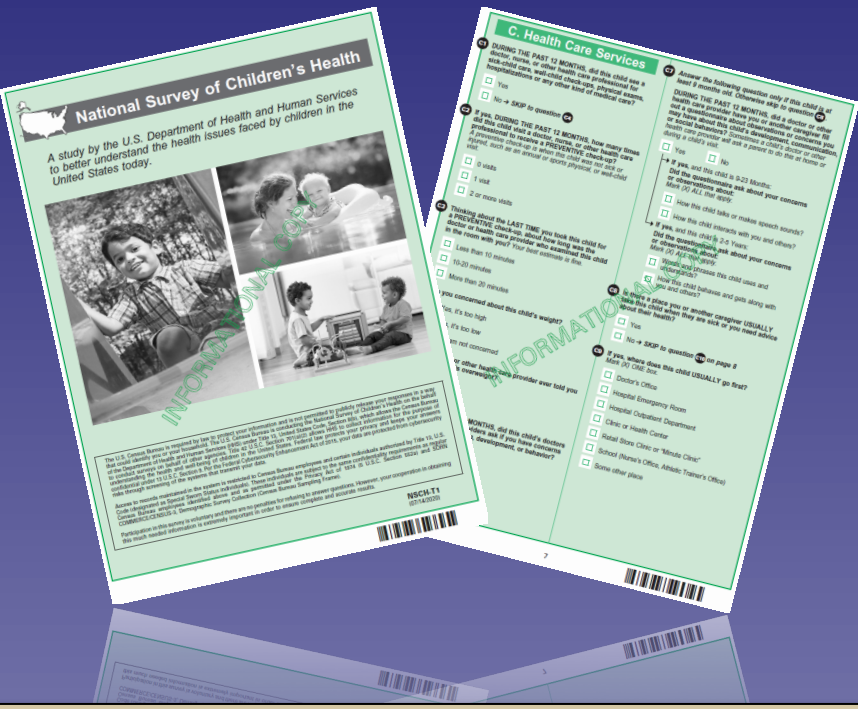


Figure 1

National Survey of Children's Health. A survey that provides data on multiple, intersecting aspects of children's lives including physical and mental health, access to quality healthcare, and the child's family, neighbourhood, school and social contact.

RESULTS

Table 1

Prevalence of ADHD by Gender, Race, Nativity, and Birth

Characteristic	Parent-reported child currently or ever having ADHD		Parent-reported child never having ADHD		p-value
	Weighted Prevalence [95% CI]		Weighted Prevalence [95% CI]		
Gender (%)					<0.0001
Male	68.89	[66.83 – 70.95]	49.29	[48.48 – 50.11]	
Female	31.11	[29.05 – 33.17]	50.71	[49.89 – 51.52]	
Race/Ethnicity					<0.0001
Hispanic	19.49	[17.21 – 21.70]	25.70	[24.81 – 26.60]	
Non-Hispanic White	56.57	[54.29 – 58.85]	50.34	[49.55 – 51.14]	
Non-Hispanic Black	16.85	[14.90 – 18.80]	13.15	[12.56 – 13.75]	
Other	7.13	[6.30 – 7.95]	10.80	[10.38 – 11.22]	
Nativity					0.0621
Born in the US	96.52	[95.36 – 97.67]	95.20	[94.84 – 95.57]	
Born outside the US	3.48	[2.33 – 4.64]	4.80	[4.43 – 5.16]	
Premature	17.02	[15.29 – 18.74]	11.01	[10.47–11.55]	<0.0001
Birth Weight (<2500 g)	12.27	[10.85 – 13.68]	9.03	[8.53 – 9.52]	<0.0001
Child's Health Fair/Poor	5.14	[3.72 – 6.55]	1.28	[0.89 – 1.67]	<0.0001
Daily Activities Consistently Affected	19.18	[17.48 – 20.90]	2.19	[1.92 – 2.45]	<0.0001
Two or More ER Visits	8.94	[7.32 – 10.56]	3.61	[3.27 – 3.95]	<0.0001
Concern About Weight					<0.0001
Weight is too high	12.30	[10.95 – 13.64]	8.40	[7.93 – 8.87]	
Weight is too low	8.53	[7.29 – 10.56]	2.35	[2.10 – 2.60]	

Table 2

Prevalence of ADHD by Family Structure and Living Conditions

Characteristic	Parent-reported child currently or ever having ADHD		Parent-reported child never having ADHD		p-value
	Weighted Prevalence [95% CI]		Weighted Prevalence [95% CI]		
Family Structure					<0.0001
Two Parent House	59.86	[56.79 – 62.91]	75.78	[74.78 – 76.69]	
Single Mother	25.48	[22.90 – 28.06]	15.47	[14.61 – 16.32]	
Eat Meals Together Daily	37.42	[35.25 – 39.58]	41.91	[41.08 – 42.74]	<0.0001
Difficult Covering Basics like Food/Housing	10.38	[9.06 – 11.69]	4.39	[4.06 – 4.72]	<0.0001
Smoker in Household	24.28	[22.27 – 26.29]	14.80	[14.23 – 15.36]	<0.0001
Park or Playground	72.62	[70.85 – 74.40]	76.02	[75.33 – 76.70]	0.0003
Recreation Center	48.45	[46.26 – 50.65]	50.17	[49.36 – 50.98]	0.15
Library or Bookmobile	66.90	[64.88 – 68.91]	68.79	[68.03 – 69.55]	0.08

Table 4

Prevalence of ADHD and Behavioural Therapy Compliance

Characteristic	ADHD Child Received Behavioral Therapy in Last 12 months		ADHD Child Did Not Receive Behavioral Therapy in Last 12 months		p-value
	Weighted Prevalence [95% CI]		Weighted Prevalence [95% CI]		
Race/Ethnicity					0.0023
Hispanic	43.58	[36.88 – 50.28]	56.42	[49.72 – 63.12]	
Non-Hispanic White	40.11	[37.98 – 42.23]	59.89	[57.77 – 62.02]	
Non-Hispanic Black	52.75	[46.10 – 59.40]	47.25	[40.60 – 53.90]	
Other	44.24	[38.44 – 50.03]	55.77	[49.97 – 61.56]	
0-99% of Federal Poverty Line	48.91	[43.83 – 59.98]	51.09	[46.02 – 56.17]	0.018
Less than High School	45.99	[34.27 – 57.72]	54.01	[42.28 – 65.73]	0.70
College Degree or Higher	42.65	[40.01 – 45.29]	57.35	[54.71 – 59.99]	0.70
Insurance Coverage	43.32	[41.11 – 45.54]	56.68	[54.46 – 58.89]	0.36

Table 3

Prevalence of ADHD and Medication Compliance

Characteristic	ADHD Child Currently Taking ADHD Medication		ADHD Child Not Currently Taking ADHD Medication		p-value
	Weighted Prevalence [95% CI]		Weighted Prevalence [95% CI]		
Race/Ethnicity					<0.0001
Hispanic	47.06	[40.21 – 53.91]	52.94	[46.09 – 59.79]	
Non-Hispanic White	60.44	[58.30 – 62.57]	39.56	[37.43 – 41.70]	
Non-Hispanic Black	61.50	[55.39 – 67.61]	38.50	[32.39 – 44.61]	
Other	56.53	[50.86 – 62.20]	43.47	[37.80 – 49.14]	
0-99% of Federal Poverty Line	57.27	[52.31 – 62.24]	42.73	[14.23 – 15.36]	0.58
Less than High School	64.61	[52.64 – 76.59]	35.39	[75.33 – 76.70]	0.28
College Degree or Higher	57.73	[55.04 – 60.41]	42.27	[39.59 – 44.96]	0.28
Insurance Coverage	58.90	[56.67 – 61.13]	41.10	[38.87 – 43.33]	<0.0001

Key Points

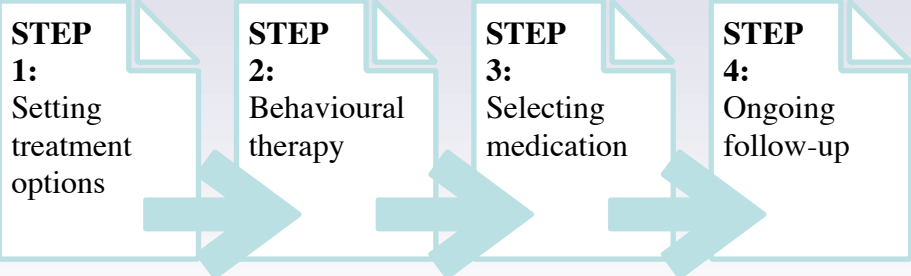
- Male gender, non-Hispanic children, prematurity, low birth weight, poor health, multiple ER visits and parental concern about weight (anorexia/obesity) showed an association with being diagnosed with ADHD.
- Single-parent household, reduced shared meals between parent and child, difficulty covering basic necessities, like food and housing, the presence of a smoker in the household and the lack of a park/playground in the neighbourhood showed an association with being diagnosed with ADHD.
- Fewer children diagnosed with ADHD within the Hispanic community were on medications.
- ADHD within the Hispanic and non-Hispanic White communities did not receive behavioural therapy as expected.
- More ADHD children within the Black community received both ADHD medications and behavioural therapy.
- Education level of the parent was not associated with a child having a diagnosis of ADHD.

DISCUSSION & CONCLUSION

The NSCH can be used to provide essential child health data so that substantive efforts, funding, and resources can be dedicated towards enhancing health policy and practise, specifically the diagnosis and treatment of ADHD. It can be beneficial in providing early education to parents whose child may be at increased risk of developing ADHD, directing adequate attention towards high-risk populations, and ensuring intervention is in place in order to prevent ADHD associated pitfalls later in life. In addition, it can help improve numerous conditions related to a child's physical and emotional well-being including, but not limited to home, family, community, school and education, access to healthcare and social context.

Figure 2

ADHD Treatment Approach. There is no known cure for ADHD, but many options exist to manage the symptoms. Treatments range from behavioural therapy to medication.



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Improving Patient Safety Through Policy Awareness

Opioid Pain Management Risk Reduction at a Federally Qualified Health Center

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Introduction

The US Department of Health and Human Services has declared the opioid crisis a public health emergency [1]. Regulations for scheduled medications have been legislated at both federal and state levels. Primary care resident physicians in specialties such as Family Medicine and Pediatrics routinely prescribe opioid medications for pain management. The US opioid epidemic necessitates evaluating physician knowledge on opioid medications [2].

Hypotheses

- 1.) Informing Family Medicine and Pediatric Resident Physicians about state and federal legislation will increase their knowledge of regulations designed to improve safety and reduce risk for patients on non-cancer opioid therapy.
- 2.) Targeted education to resident physicians will increase their knowledge of Medication-Assisted Treatment (MAT) for patients with Opioid Use Disorder

Methods

Literature Review

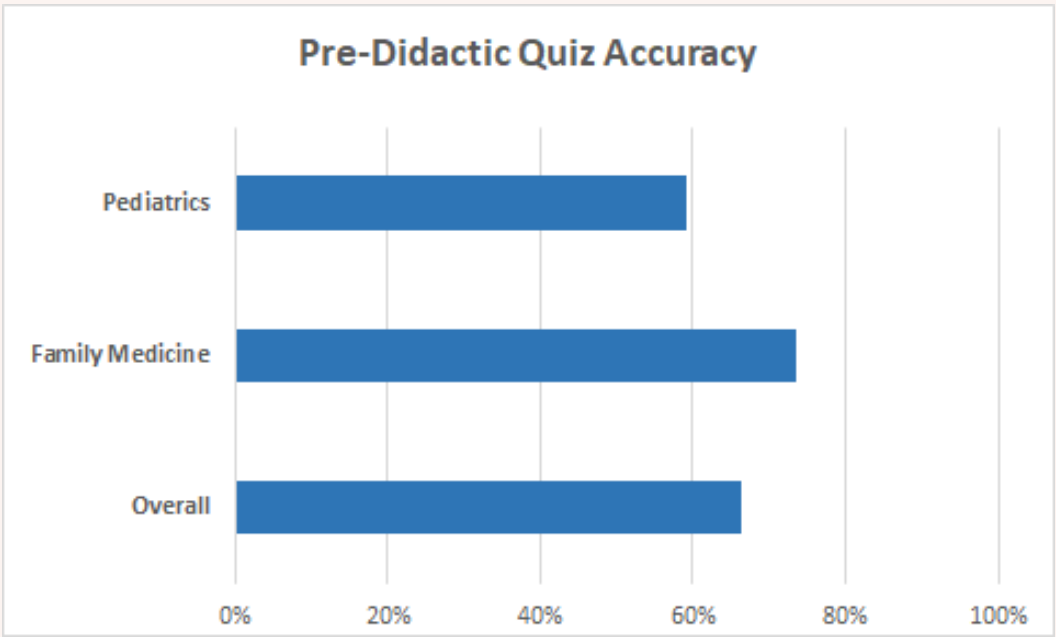
Medical literature review for "opioid use disorder," "opioid risk reduction strategies," and "patient safety and clinician education for prescribing 'scheduled' medications" was performed. A legislative database search of California State and Federal legislation regarding scheduled medications for pain management was also performed.

Assessing Baseline Knowledge

35 Family Medicine and 35 Pediatric resident physicians were assessed with a blinded 10-question 30-variable pre-didactic survey, administered via Qualtrics computer software, on laws and regulations regarding opioid pain management, Medication Assisted Treatment, and FDA warnings regarding opioid use in pediatric patients.

The set of 10 questions was multiple choice based with 30 total variables. There was one question (10.4) on concussion legislation that was not covered in the didactics and used as a control.

Survey results analyzed using Microsoft Excel showed that all residents (n=70) overall scored an average accuracy of **66.5%**, with Family Medicine residents (n=35) scoring an average of **73.6%**, and Pediatric residents (n=35) scoring an average of **59.1%**.



Didactic Session

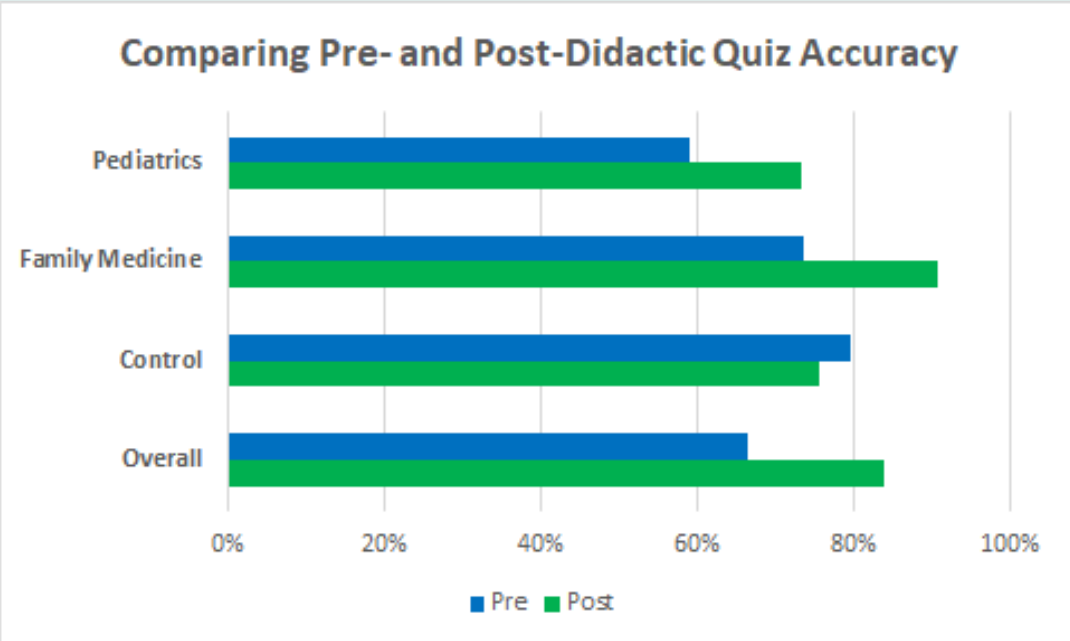
A case-based didactic PowerPoint presentation was used for education regarding opioid pain management, opioid use disorder, MAT, and applicable legislation that obligates clinician compliance.

Family Medicine residents received a 90-minute didactic session, including 3 case studies, and a question and answer session over Zoom teleconference on 4/24/2020.

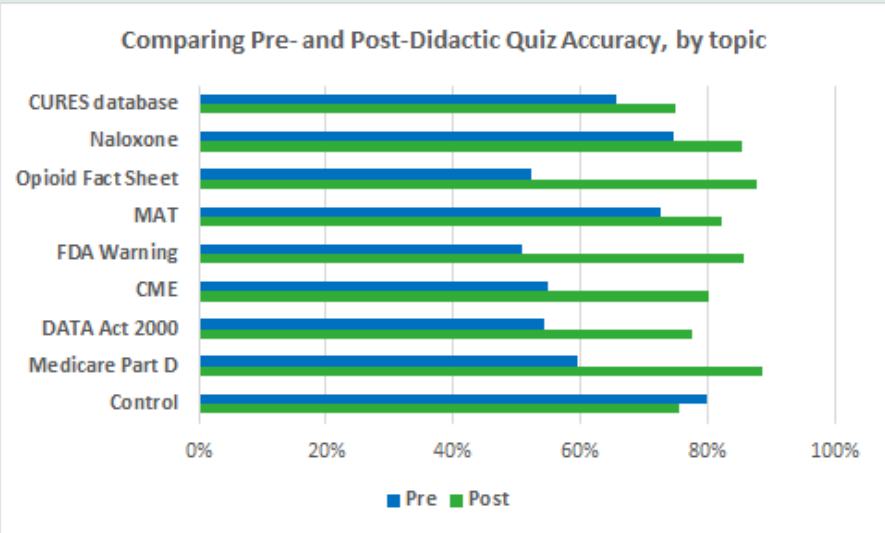
Due to time constraints, Pediatric residents received a 45-minute didactic session simplified from the Family Medicine didactic presentation, including 3 case studies and a question and answer session over Zoom teleconference on 5/27/2020.

Results

Residents were assessed using the same pre-didactic 10-question survey. Residents overall scored an average accuracy of 84.0% (+17.5%), with Family Medicine residents (n=30) scoring an average of 90.1% (+17.3%), and Pediatric residents (n=19) scoring an average of 73.2% (+14.1%).



Post-didactic changes were analyzed by topics using Microsoft Excel. There was an average overall improvement of +22.2%, including Controlled Substance Utilization Review and Evaluation System (CURES) database laws (+9.1%), Naloxone prescription and counseling (+10.6%), Opioid Fact Sheet for athletes (+35.6%), MAT (+9.4%), FDA warning on codeine (+35.0%), CME-related legislation (+25.4%), DATA Act of 2000 (+23.2%), and Medicare Part D regulations (+29.0%).



Discussion

There is a current knowledge gap for primary care resident physicians on the topics of opioid pain management, opioid use disorder, MAT, and applicable legislation that obligates clinician compliance.

Didactic sessions increased clinician knowledge of how to comply with federal and state laws, provide naloxone education, and safely provide prescriptions for patients on opioid therapy.

The COVID-19 pandemic removed opportunity for in-person didactic format and reduced the number of Pediatric Resident physicians available to attend the elective didactic session.

In addition to didactics, other ways to obtain information on current legislations include local health care systems (LLU IHPL), licensing boards (MBC, OMBC), and national professional organizations (AAFP, AAP, ASAM, AAAP).

Conclusion

Didactic education regarding pain management, opioid use disorder, MAT, and applicable legislation that obligates clinician compliance improved competency of primary care resident physicians to implement patient safety measures for patients on non-cancer related opioid therapy.

Educational Materials

10-question survey with answer key:
<https://bit.ly/3jDQAZH>



90-minute presentation for Family Medicine:
<https://bit.ly/2MHLkrl>



45-minute presentation for Pediatrics:
<https://bit.ly/3rwEaFz>



Policy at a Glance, Jan 2021 (LLU IHPL):
<https://bit.ly/39ZlsPY>



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Food Insecurity in the San Fernando Valley

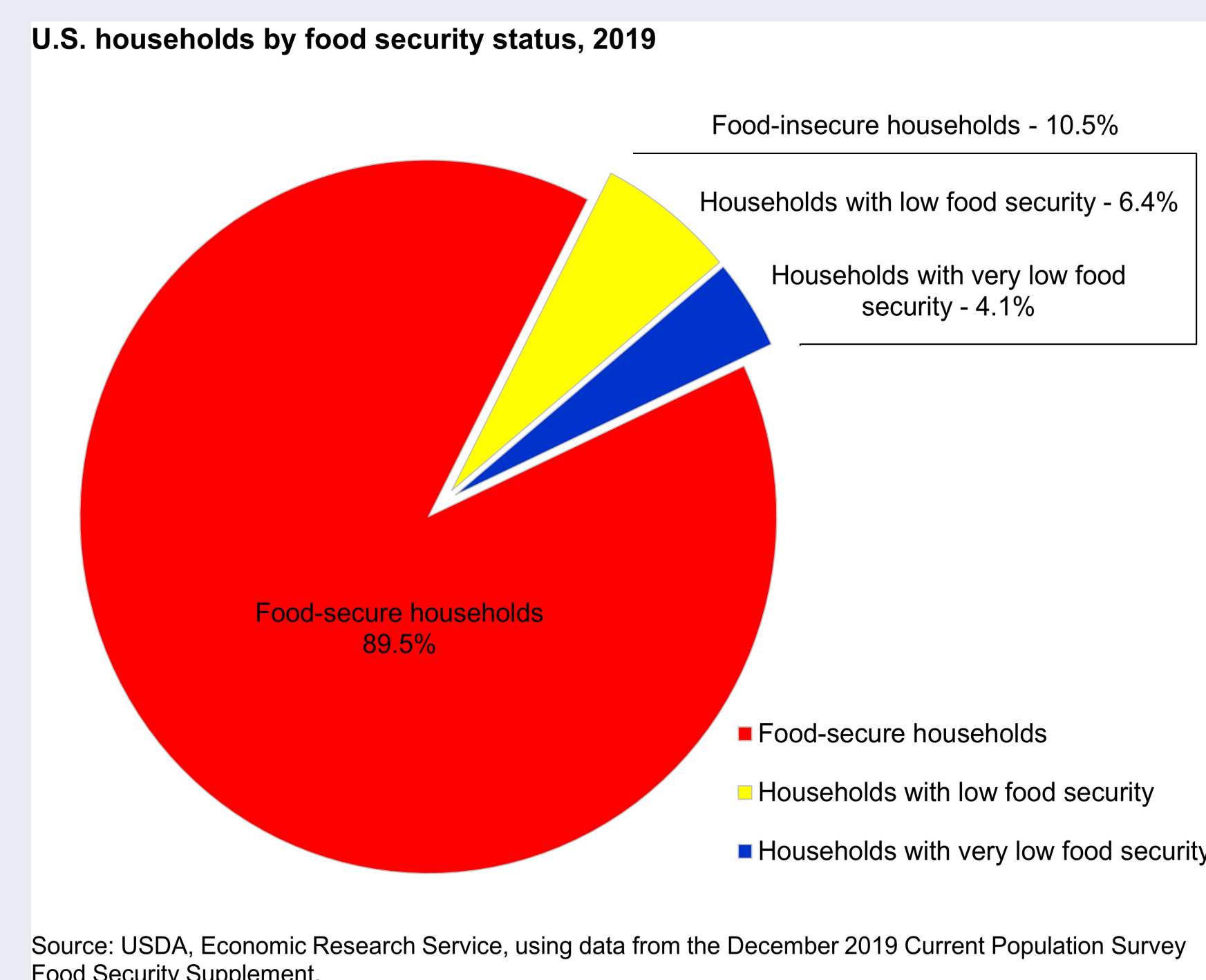
Introduction

What is food insecurity?

Food insecurity (FI) is a lack of access to sufficient nutritional food in both quantity and quality.

What is the significance of food insecurity?

FI has been shown to be associated with psychological distress, cardiovascular risk factors such as hypertension and hyperlipidemia, and severe self-reported chronic diseases and obesity in young adulthood.



What is the prevalence of food insecurity?

According the USDA's Food Security Status of U.S. Households, more than 13 million U.S. households were food insecure at some time during 2019. In 2019, 37.4% of our patients at the Mid-Valley Family Medicine Clinic screened positive for food insecurity.

Hypothesis

We aim to improve access to food resources utilizing various modalities in order to apply innovative methods to reduce barriers to access for those with food insecurity. By improving access to food resources, we aim to ultimately reduce the number of patients screening positive for food insecurity.

Methods

Our method has two components:

1. Target patients directly

Hunger vital sign, a validated screening tool for food insecurity, was implemented during clinic visits.



Patients who screened positive are:

- Provided with handouts with maps of various food banks.
- Option to connect with our CalFresh Coordinator who assists in the enrollment process for SNAP/CalFresh.

2. Target patients indirectly

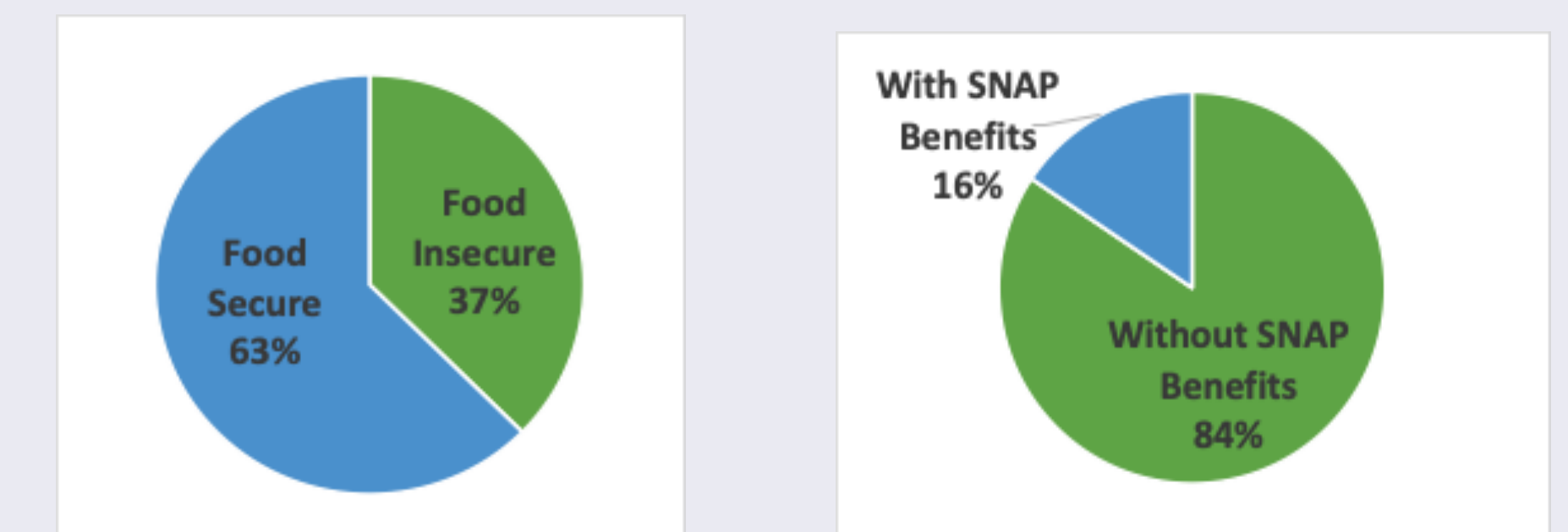
Provide availability of patient-centered QR codes that directly link to maps of various food banks as well as instructions on how to sign up for SNAP/CalFresh benefits.



Ultimately, surveys will be provided to evaluate patient satisfaction with these methods and to assess for future areas of improvement.

Results

- A sample size of 91 patients.
- 37.4% of patients screened positive for food insecurity.



- 84.4% do not have SNAP/CalFresh Benefits
- 90% had positive experience w/ the SNAP/CalFresh applications.
- 70% were below California's Poverty Line
- 6 of 10 patients interviewed were able to obtain benefits after applying with our CalFresh Coordinator.

Discussion

There is a significant number of patients at Mid-Valley Family Medicine Clinic who are food insecure and who do not have SNAP/CalFresh Benefits. Providing assistance in the enrollment process for SNAP/CalFresh has shown relative success in increasing individuals with these benefits. Because of the COVID-19 pandemic, distribution of QR code-based resources has been placed on hold in the Winter surge. Implementation is planned for Spring 2021. We are hopeful to see how QR code-based resources will help our patient population.

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Detrimental Impact of Social Determinants of Health on Hospitalized Patients with COVID-19



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Emanate Health Family Medicine Residency Program

Introduction

- Sars-COV-2, the virus responsible for COVID-19, has a diverse clinical presentation and course
- Studies on different populations suggest that COVID-19 has underscored health outcome disparities among minorities
- However, data on the particular social determinants which contribute to such health outcomes in hospitalized patients with COVID-19 is scarce

Objective

To examine the relationship between various social determinants of health such as ethnicity, financial class, primary language, age and zip code on the course and progression of COVID-19 infections.

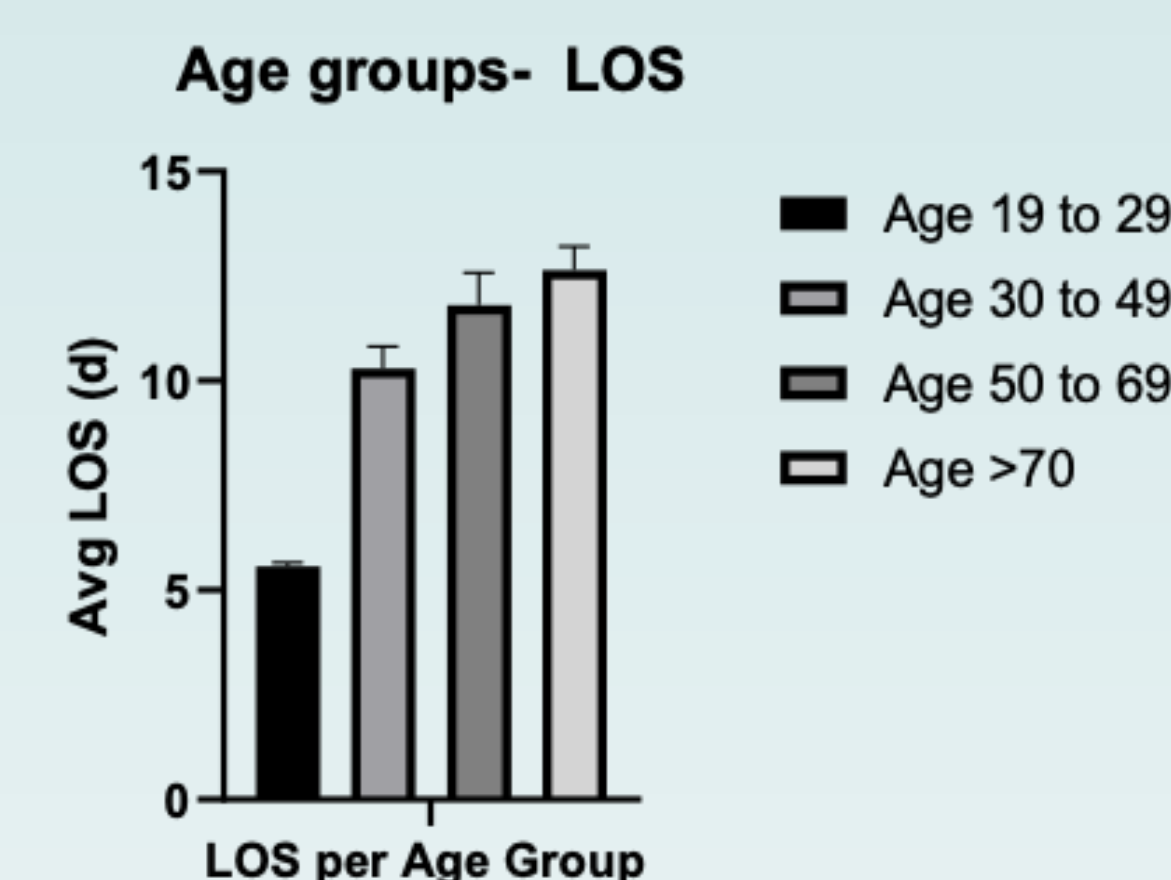
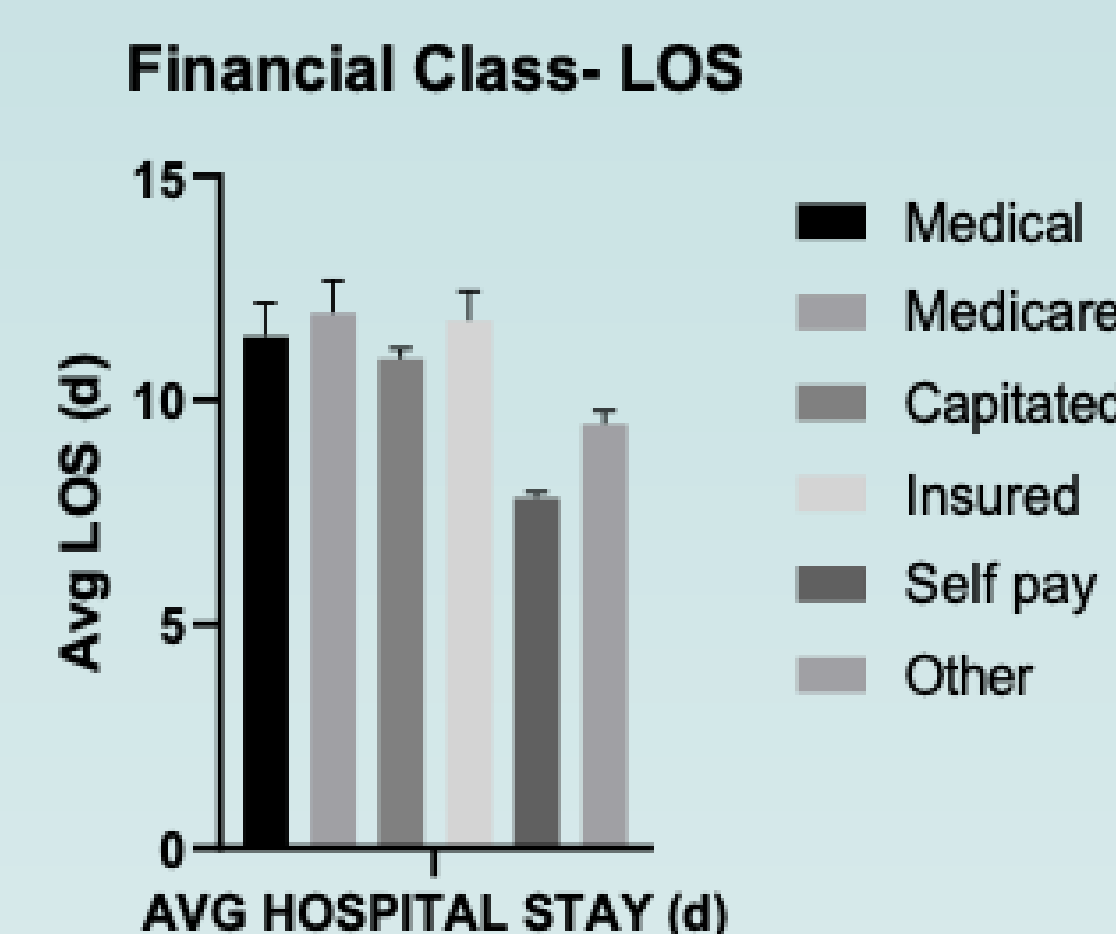
Methods

Study design and setting:

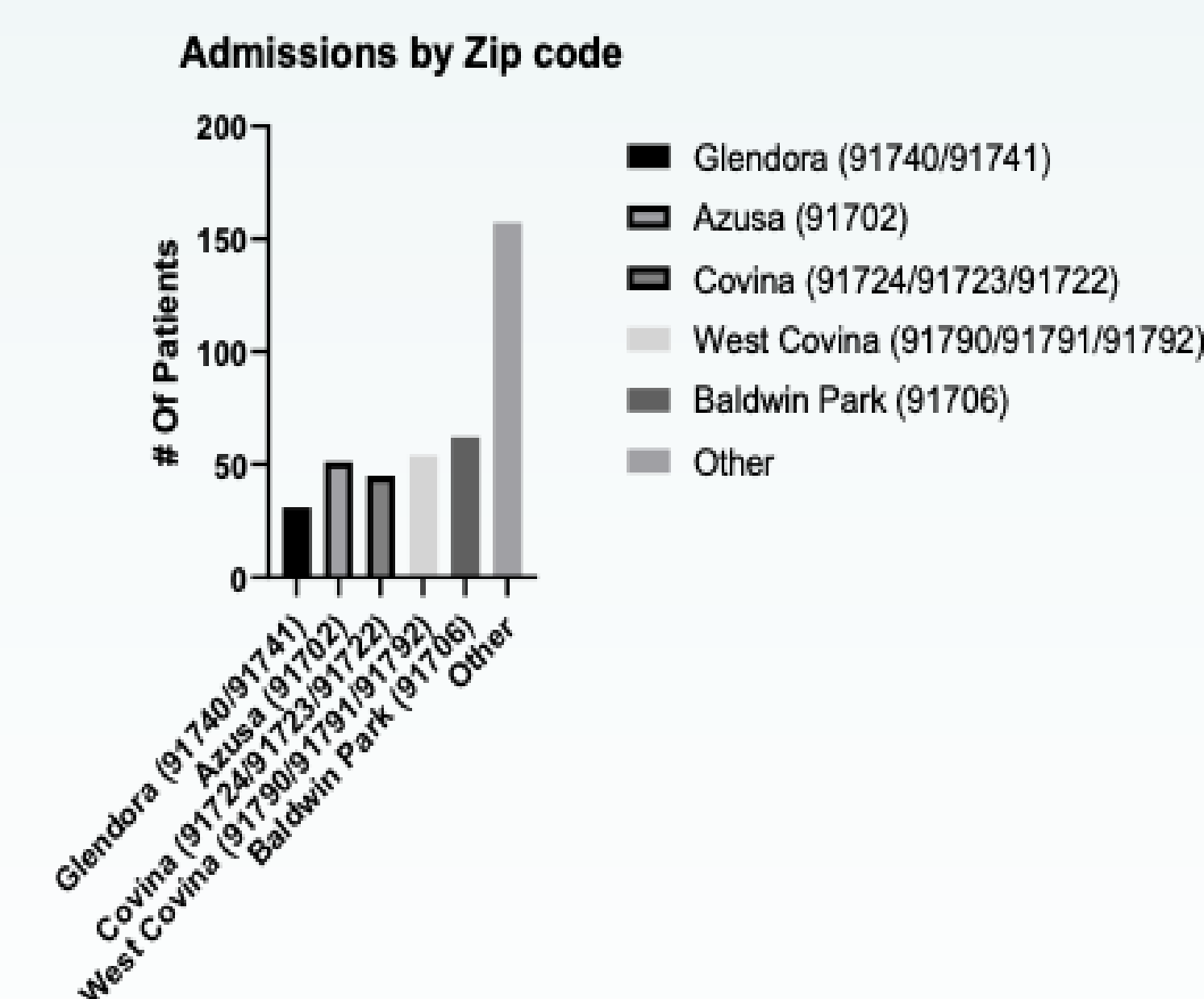
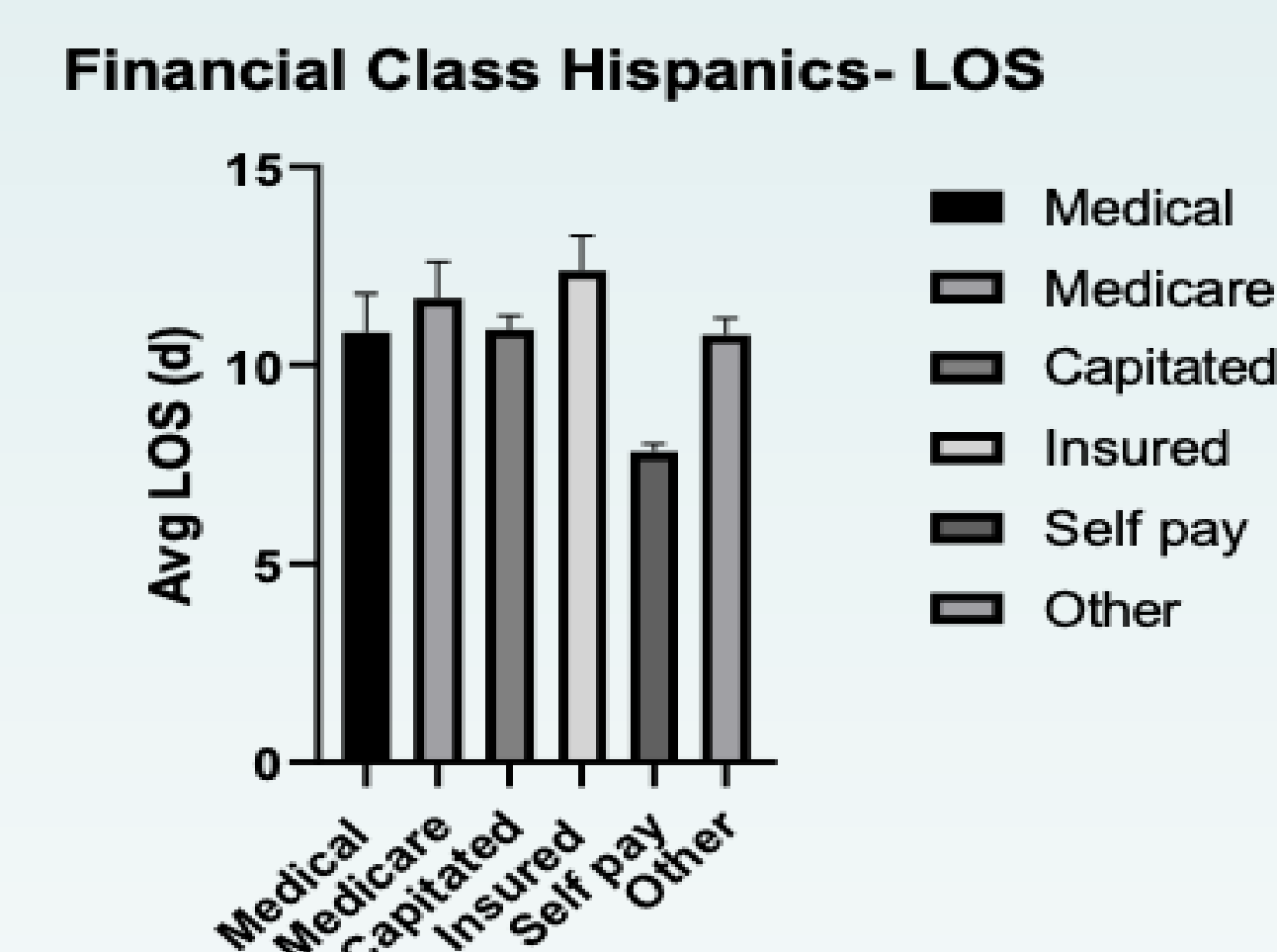
- Retrospective cohort analysis of data from patients who tested positive for the coronavirus admitted to the Emanate Health hospital system across all three campuses at Queen of the Valley Hospital, Inter-Community Hospital and Foothill Presbyterian Hospital.
 - Data extracted from hospital electronic medical records (EMR) and analyzed for zip code, financial class, ethnicity, primary language and age as related to length of stay and mortality rate.
- Participants:**
- Patients (18 years of age or older) admitted to the Emanate Health hospital system in the San Gabriel Valley between 3/17/20-6/30/20 (n=400) who tested positive for COVID-19.

Results

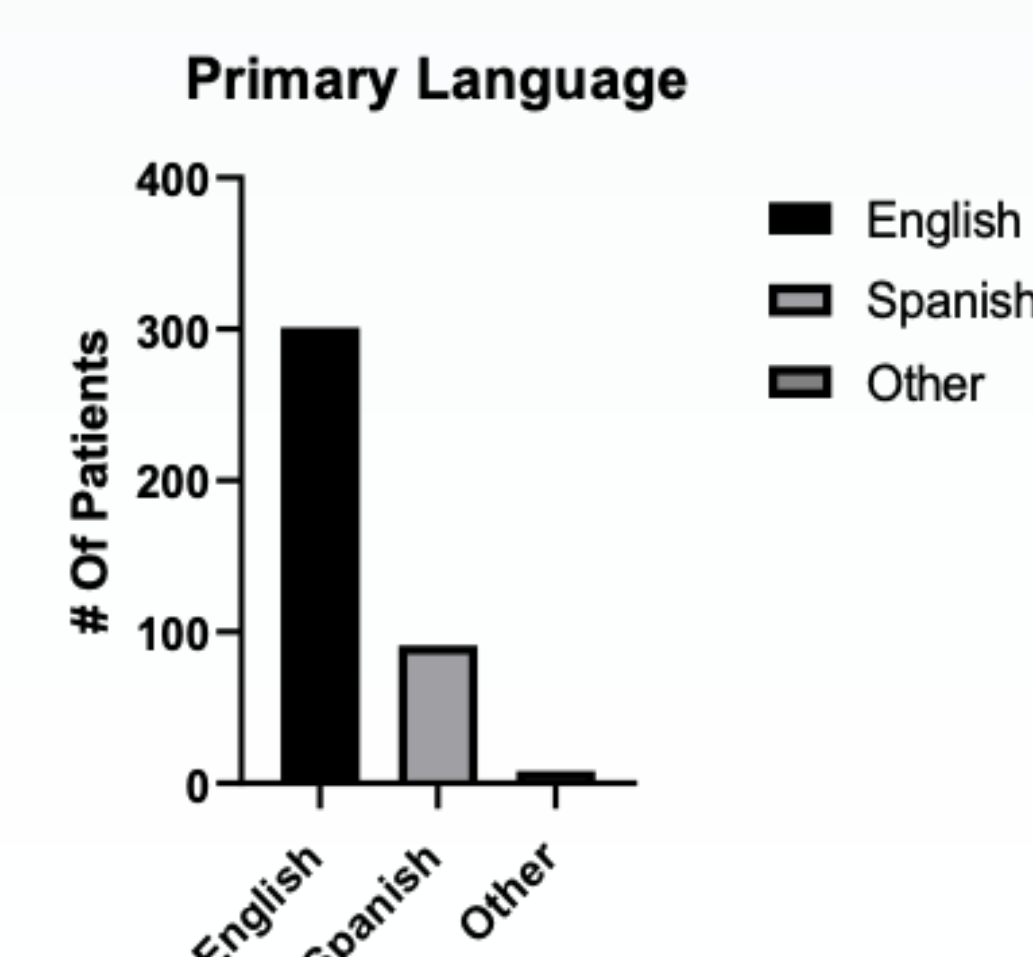
The hospital length of stay and ICU admission for patients of different financial classes (MediCal, Medicare, capitated insurance, insured, self pay, other) was statistically significant.



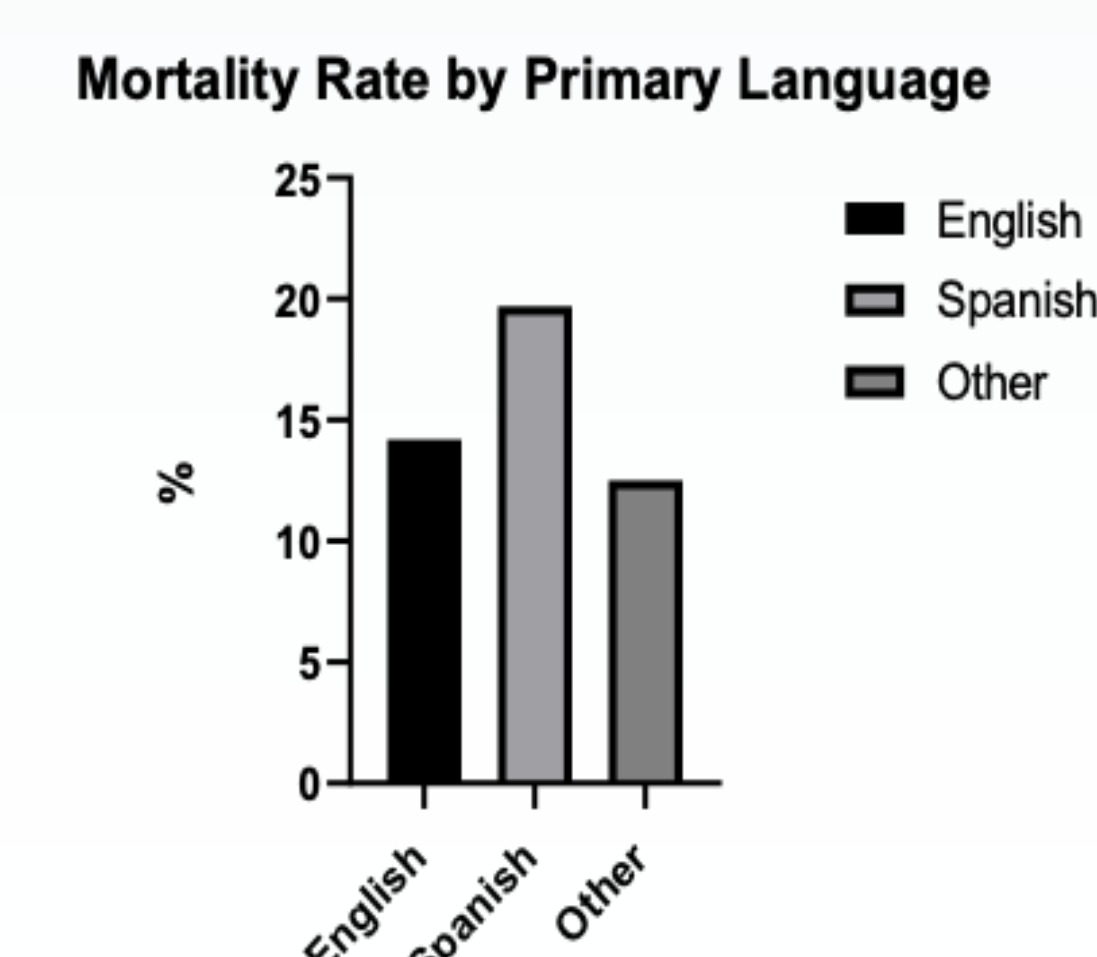
The hospital length of stay increased with age and was statistically significant when grouped by ages 19-29, ages 30-49, ages 50-69 or ages 70+.



Patients admitted to the Emanate Health hospital system were grouped into five main zip codes. Baldwin Park and West Covina had the highest admissions and Glendora had the lowest hospital admissions of the group.

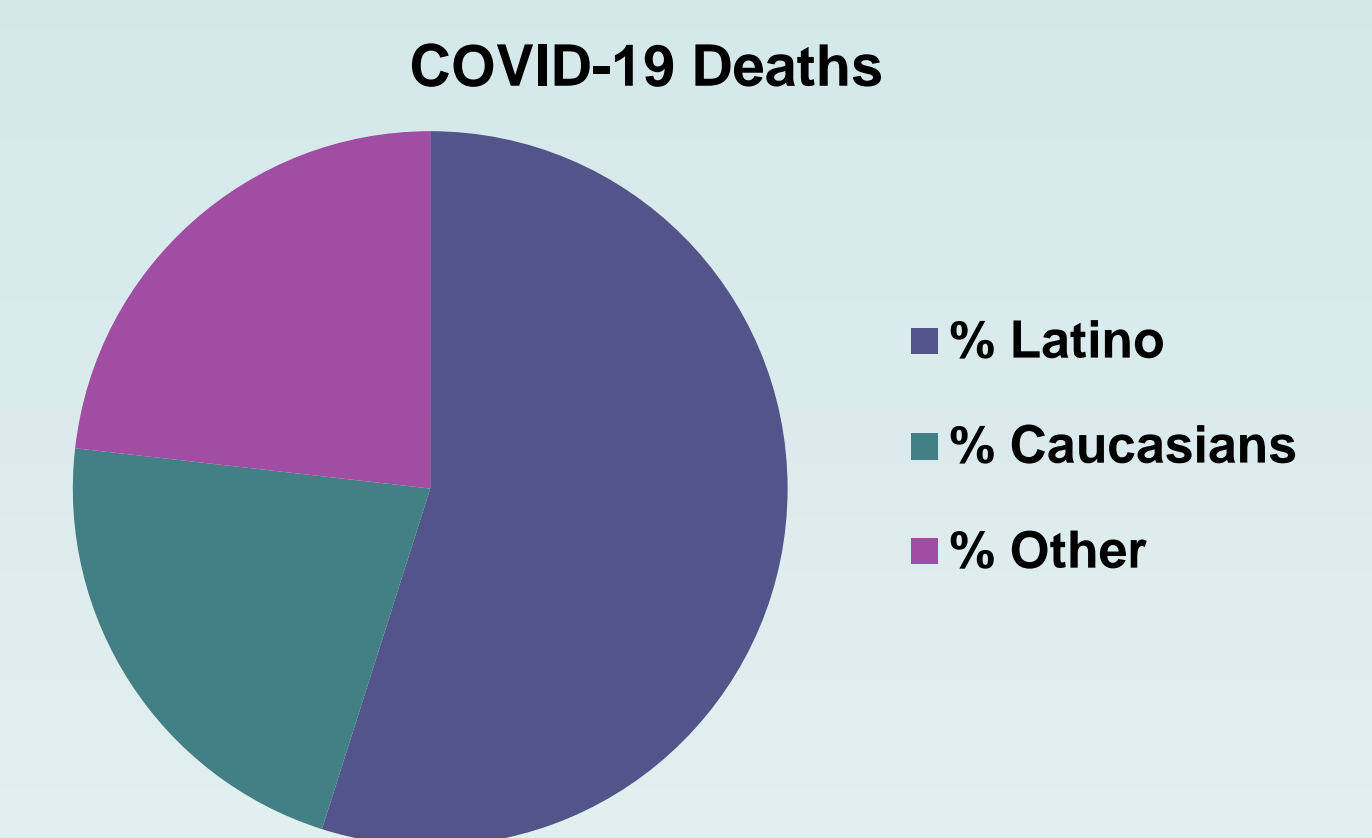
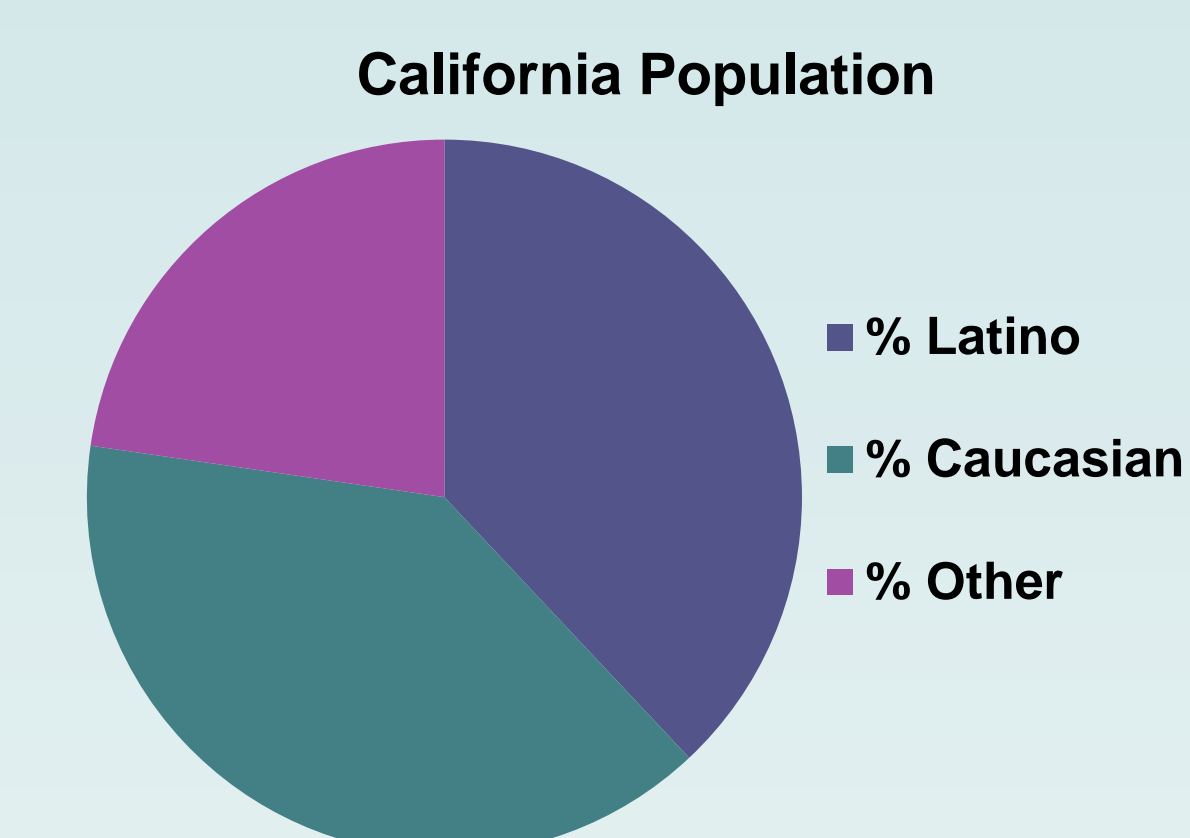


English was the primary language of most patients, but the mortality rate was higher for patients whose primary language was Spanish.



Discussion

- Latinos are 2.5 times more likely to die from COVID-19 infections across the country when adjusted for age in comparison to Caucasians.
- California is 39.3% Latino, but Latinos make up 54.9% of COVID-19 cases and 46.1% of deaths in the state as of January 2021. This is in comparison to Caucasians who constitute 38% of the state's population and 21.9% of deaths.



- Adequate access to healthcare has been demonstrated in the literature as a social disparity causing health inequities. 9.3% of the San Gabriel Valley population was diagnosed with type II diabetes in 2017 compared to 12.1% of the population of LA County, but more patients (3.7%) were hospitalized with uncontrolled diabetes when compared to LA County overall (3.4%).
- Uncontrolled diabetes exacerbating the pathophysiologic effects of COVID-19 infections in these patients may be a potential contributor, given the compared higher admission rate with uncontrolled diabetes and lower diagnostic rate of the chronic condition.
- COVID-19 further exposed the gaps in health equality among different socioeconomic groups and the need to address these social determinants of health that have historically prevented these groups from having the same opportunities for health.

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Validation of saliva specimen over nasopharyngeal swab for Coronavirus Disease 2019 amidst shortage of swabs in a tertiary hospital



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Introduction

- The Coronavirus Disease 2019 (COVID-19) pandemic was marked by increasing demand for rapid diagnostic testing as infection spread across the United States (U.S.)¹.
- The gold standard test for Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) diagnosis is real-time reverse transcriptase (RT-PCR); the predominant specimen used is nasopharyngeal (NP) swab².
- The NP sample has several limitations: shortages of testing material, risk of exposure of healthcare professionals, requirement of personal protective equipment, and patient discomfort.
- Our objective is to add to the growing body of evidence that saliva based (SB) testing can be used as an accurate and reliable sample in place of NP swab for detection of SARS-CoV-2 by RT-PCR

Methods

Study design: Prospective cohort study

Setting: Drive-through COVID-19 testing site

Population: 100 participants aged 17-83, mean age 42.8

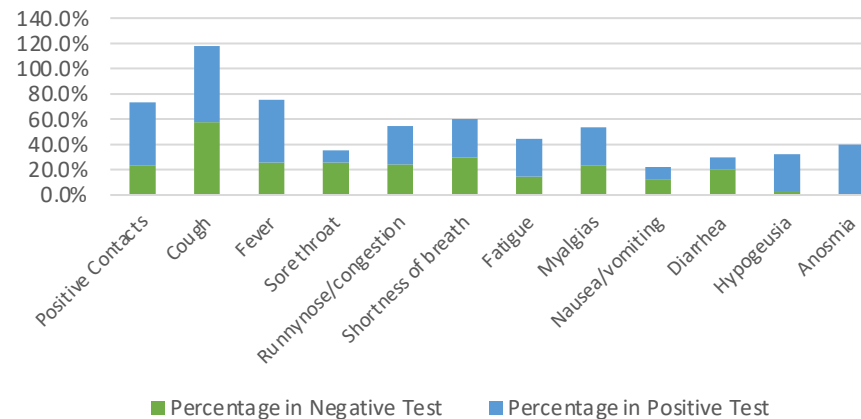
Inclusion criteria: Patients >13 years of age who were either symptomatic or had confirmed exposure to a COVID-19 patient

Exclusion criteria: Patients who were asymptomatic, pregnant, hospitalized, or homeless

All patients were tested with both NP swab and saliva test. NP swab was performed by healthcare professional while saliva specimens were self-collected into a sterile urine cup.

Results

Percentage of Patients Reporting Symptoms in Negative or Positive Test



Comparison between saliva and NP testing

Saliva	NP		Total
	Positive	Negative	
Positive	6	3	9
Negative	1	90	91
Total	7	93	100

- Saliva-based testing when compared to NP swabs:
- Sensitivity: 85.7% (95% CI 42.13%-99.64%)
- Specificity: 96.8% (95% CI 90.86%-99.33%)
- PPV: 66.67% (95% CI 38.69%-86.37%)
- NPV: 98.90% (95% CI 93.61%-99.82%)
- Overall concordance rate: 96.0%
- Cohen's kappa coefficient: 0.7286 (95% CI, 0.468-0.989)
- Sensitivity when compared to any positive test:
 - Saliva-based: 90% (95% CI 55.5%~99.7%)
 - Nasopharyngeal: 70% (95% CI 34.7%~99.3%)

Discussion

- In the midst of a national shortage of supplies, using saliva as a specimen is pivotal in order to achieve large-scale and repeated testing for detection of SARS-CoV-2.
- In our study, the strong concordance rate between both types of samples indicates that the use of saliva is as reliable as NP swab testing.
- Saliva collection is non-invasive and does not require trained healthcare personnel to collect the sample.
- Limitations:
 - In the absence of a true diagnostic gold standard, it is difficult to ascertain definitive sensitivities and specificities. In our study, 20% of total positive results were detected by saliva alone. This is suggestive of possible false-negatives with NP swabs. This further corroborates that NP swabs may be unreliable as a gold standard.
 - An increased sample size would have provided a more accurate sensitivity calculation and lowered the confidence intervals. This data alone is not enough to make a compelling case for saliva testing.

Conclusion

- SB testing can increase patient compliance due to lack of discomfort and ability to self-administer and drop-off results for sample collection.
- The detection of SARS-CoV-2 through saliva specimens will protect healthcare workers, reduce staffing needs, and minimize PPE waste. This in turn reduces costs associated with testing.
- This study encourages the use of saliva-based testing for the laboratory diagnosis of COVID-19. However, the present study highlights the importance of testing larger samples of participants in order to promote saliva to an established alternative to nasopharyngeal swab testing.

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Baking Soda Pica Causing Ventricular Fibrillation

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Sutter Health Family Medicine Residency Program

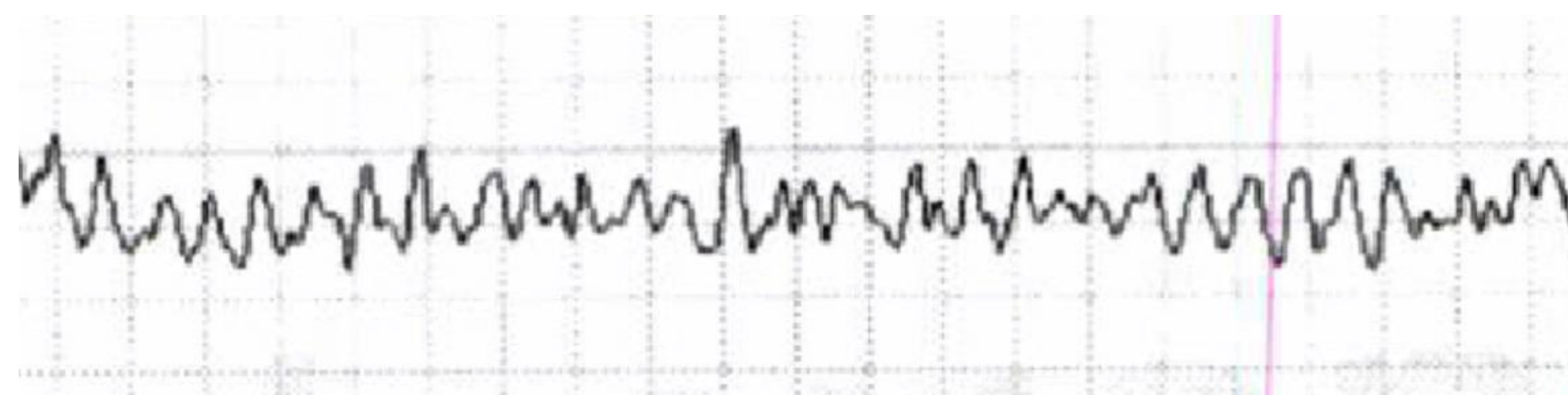
Introduction

Pica is the repeated ingestion of nonfood substances. Examples include ice, starch, and baking soda. Although baking soda is a common household item, if taken in excess, it can cause severe metabolic derangements and lead to adverse outcomes. Presented here is a patient who experienced ventricular fibrillation due to hypokalemia secondary to baking soda pica.

Case Presentation

A 37-year-old woman was brought to the hospital following cardiac arrest. She had been pulled over by the police for driving inappropriately on the road, and then she suddenly became unresponsive.

Upon EMS arrival, she was found to be in ventricular fibrillation and managed per ACLS protocol with subsequent return of spontaneous circulation. Downtime was approximately 20 minutes. She was intubated and transferred to the hospital.



Patient's EKG from EMS report showed ventricular fibrillation.

Initial physical exam was notable for

- Vitals: BP 116/69, HR 91, T 96.6 F, RR 27, SpO₂ 99% on 100% FiO₂
- Neurological exam: pupils 4mm and nonreactive. Cough and gag reflexes present. Mild withdrawal to pain. Glasgow Coma Scale 3.

Pertinent admission laboratory and imaging results are shown below.

145	98	8
1.8	18	0.98

6.1	9.6	324
	36.4	

Arterial Blood Gas
Patient on 100% FiO₂

pH	6.96
P _{CO2}	43.2 mmHg
P _{O2}	271.6 mmHg
HCO ₃ ⁻	9.6 mmol/L

Magnesium 2.2 mg/dL

Lactate 22.7 mmol/L

Urine toxicology positive for

- Benzodiazepine
- Opiates

Blood alcohol level <10 mg/dL

Chest X-ray, CT brain and cervical spine did not show notable abnormalities.

EEG did not show evidence of clinical or subclinical seizures.

Hospital Course

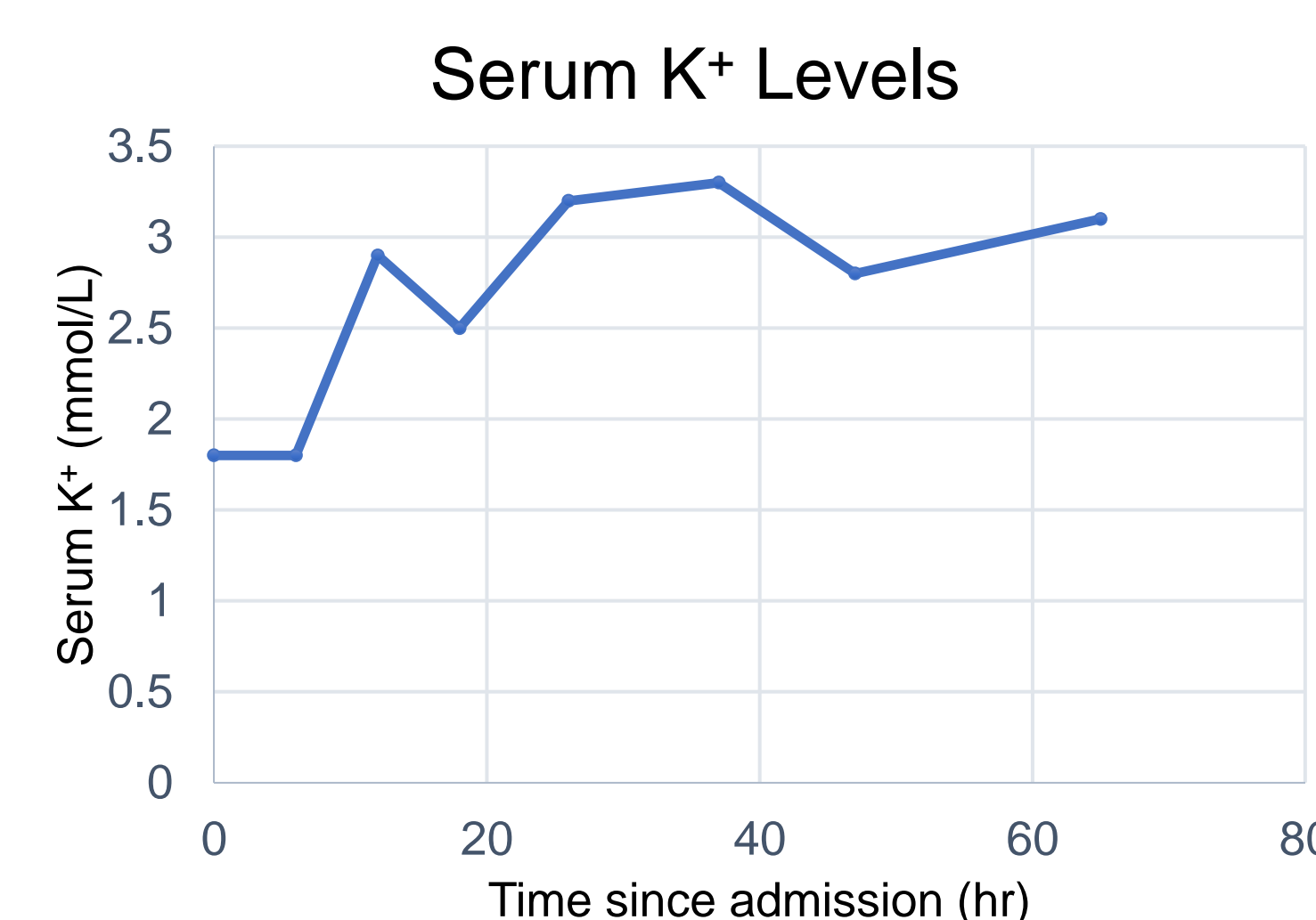
The patient's cardiac arrest was attributed to her low potassium of 1.8 mmol/L. She was placed on cardiac monitoring and started on potassium repletion. Her clinical status improved, and she was extubated on hospital day 2. A repeat arterial blood gas showed improvement in her acid-base status but mild metabolic alkalosis. During workup for her hypokalemia, it was discovered that the patient had been ingesting an abundance of baking soda for years.

The patient began ingesting baking soda 11 years ago during her second pregnancy. She was found to have iron-deficiency anemia at that time, and iron supplements helped with cravings. She had ingested baking soda intermittently since then and began to ingest large quantities during her most recent pregnancy one year ago and continued to do so postpartum. At the time of her cardiac arrest, she was consuming half a can of baking soda daily. Of note, the patient was found to have normocytic anemia during hospitalization. Workup including iron, folate, and vitamin B₁₂ levels were all within normal limits.

Medical history is notable for a history of depression and polysubstance use. The patient denied taking medications or attempting overdose on the day of the event. Family history is notable for several relatives who use baking soda regularly for heartburn.

After an extensive discussion with the patient regarding the cause for her cardiac arrest, the patient expressed that she would stop ingesting baking soda in the future.

The patient's hypokalemia improved with repletion, and she did not have any additional arrhythmias during hospitalization. On hospital day 4, the patient left the hospital against medical advice.



The patient's serum potassium gradually improved during her hospitalization.

Arterial Blood Gas
Patient on 2L O₂

pH	7.472
P _{CO2}	39.7 mmHg
P _{O2}	97.4 mmHg
HCO ₃ ⁻	27.9 mmol/L

Arterial blood gas on hospital day 2 showed mild metabolic alkalosis.



Discussion

Pica, the persistent ingestion of non-nutritive substances, is often associated with anemia and pregnancy^{1,2}. The patient presented in this case has those risk factors. Additionally, having family members who regularly ingest baking soda might have played a role in normalizing this behavior.

Baking soda contains a significant amount of sodium and bicarbonate. When consumed in large quantities, it can lead to metabolic derangements including hypernatremia, hypokalemia, and metabolic alkalosis, causing cardiac, respiratory, and neurologic events^{3,4}.

Metabolic alkalosis is usually seen when the kidneys are unable to adequately excrete excessive bicarbonate. The patient in this case presented with anion gap metabolic acidosis due to the cardiac arrest she had experienced prior to admission. She demonstrated metabolic alkalosis upon returning to baseline on hospital day 2, suggesting that even though her renal function was normal, she still had metabolic alkalosis secondary to chronic and significant baking soda ingestion.

Hypokalemia, the most common serious complication of baking soda intoxication, is due to the combined effect of alkalosis causing intracellular shift of potassium and bicarbonate diuresis leading to potassium loss⁵. Hypokalemia can cause significant QT prolongation which increases the risk of torsade de pointes, ventricular fibrillation, and sudden cardiac death. In this patient, severe hypokalemia led to ventricular fibrillation.

It is important for physicians to screen for and educate patients about pica, as patients may not always be aware of its deleterious effects. Family physicians have the advantage of developing long-term relationships with patients and are well suited to identify behaviors such as pica. It may be beneficial to inquire about pica during prenatal care and evaluation for anemia. A thorough medical, family, and social history, along with continued patient education and support, improves patient care and prevents adverse outcomes.

Acknowledgment

Many thanks to Dr. Nathaniel Gordon for his guidance on caring for the patient during her hospitalization.

Many thanks to Dr. Dineen Greer for her support and feedback on the poster.

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A Case of Recycling Gone Wrong: Sudden Arm Pain

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CASE DESCRIPTION

- **Who:** 47-year-old right-handed male
- **Chief complaint:** Severe left upper arm pain
- **Event:** Patient heard a loud tearing sound from his left arm after lifting a 50 to 60-pound recycling bin two weeks prior.
- **Quality/severity:** Constant pain with moderate to severe intensity, 5-7/10. The pain radiates down to his elbow. He had bruising, which is now resolved.
- **Aggravating factors:** Activity and lifting
- **Alleviating factors:** Norco and ibuprofen with some pain relief, and an elbow sling for comfort.
- **Associated factors:** Weakness

PHYSICAL EXAM

Vitals: BP 139/86 | Pulse 78 | Temp 97.3 °F | RR 16 |
Ht 5' 11" | Wt 199 lb | SpO2 99% |

Constitutional: Well-developed, no acute distress

Psychiatric: Mood and affect normal.

HEENT: normocephalic, EOMI, neck supple

Cardiovascular: Normal rate and intact distal pulses.

Pulmonary/Chest: Effort normal. No respiratory distress.

RUE focused exam

Inspection: Notable pop-eye deformity. No swelling or ecchymosis

Palpation: There is tenderness at the right distal anterior bicep region and anterior fossa. No tenderness at the shoulder, olecranon, or epicondyles.

Range of motion: Shoulder and elbow with full range of motion.

Strength: Right elbow 3/5 in flexion, supination, and pronation; 5/5 in extension. Right shoulder 5/5 throughout.

Neurovascular: Normal sensation. Normal reflexes. normal distal pulses/cap refill.

Special tests: Negative Tinel's on elbow. Positive hook test.

OBJECTIVES



IMAGING: On ultrasound, there is a large defect in the distal biceps with tenderness on palpation. Both stumps separated by hypoechoic fluid collection measuring 2.25 cm x 3.7 cm. There is no bony avulsion on the radial head attachment site. On MRI, there is a complete distal biceps tendon rupture with tendinous retraction 9.5 cm proximal to the radial tuberosity, surrounding peritendinous hematoma proximally, and distal bicipitoradial bursitis.



DIFFERENTIAL

- | | |
|--------------------------------|---|
| • Distal Biceps Tendonitis | • Median Mononeuritis |
| • Distal Biceps Tendon Rupture | • Bicipitoradial Bursitis |
| | • Lateral Antebrachial Cutaneous Nerve Entrapment |

TX COURSE

Diagnosis: Left distal biceps rupture

Outcome: Approximately 3 weeks after initial presentation, the patient underwent a distal biceps tendon rupture repair with orthopedic surgery and placed in immobilizing splint post operatively. He was followed up in orthopedic clinic 2 weeks postoperatively for an incision check. He was counseled to be non-weight bearing for 6 weeks.

Follow-up: Once pain-free range of motion is achieved, the patient was instructed to begin a gradual, step-by-step return to activity and referred to physical therapy to improve strength and in flexibility of the biceps.

AUTHOR'S COMMENTS

Exam findings can include a "reverse Popeye" deformity in 45% of cases. Palpation usually reveals tenderness at the distal biceps tendon. Elbow motion is preserved. Pain present and strength is diminished with forearm supination and resisted elbow flexion. Special tests to evaluate the distal biceps tendon (DBT) for tear include the biceps squeeze and hook tests. Ultrasound is specific, sensitive, and superior compared to MRI for diagnosis. All patients with DBT rupture should be referred for expedited surgical referral given the potentially significant functional limitations associated with injury.

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The Era of Immunotherapy: Nivolumab-Induced Adrenalitis And Encephalitis Presenting As Psychosis

EISENHOWER HEALTH

Karen Antwiler, MD, MBBS; Anna Askari MD, MSBS; Mary Jo Groves, MD; Jeffrey M. Levine, MD

Introduction

Great progress has been made in the treatment of metastatic renal cell carcinoma with the addition of immune checkpoint inhibitor (ICI), Nivolumab. Nivolumab is a monoclonal antibody that specifically targets the programmed cell death-1 (PD-1) receptors on immune cells. It prevents the PD-1 mediated transmission of inhibitory signals that would normally weaken T cell activity, thereby restoring antitumor activity. Use of ICIs, whose mechanisms and manifestations are quite different from other oncological agents, elicit new and unexpected side effects called immune-related Adverse Events (irAEs). As the use of novel immunotherapy for the management of cancer accelerates, it is critical for clinicians to be aware of the toxicities associated with these agents. This case is unique in that it highlights two serious, sequential adverse events from checkpoint inhibition in a single patient.

Case Report

A 66-year-old man with stage 4 renal cell carcinoma status post left sided nephrectomy on nivolumab for the past 3 weeks, deep vein thrombosis, and hypothyroidism presented to the emergency department with a 5 week history of nausea, anorexia, confusion, and personality changes. He had no prior psychiatric history. Physical examination was significant for moderate dehydration, disorientation to time and place, and paranoid ideations. Upon workup in the emergency department, the patient was found to have undetectable morning cortisol. He was admitted to the Family Medicine Inpatient Service for treatment of adrenal insufficiency and was started on physiological replacement doses of corticosteroids. MRI of the brain was unremarkable. The patient's psychosis continued to worsen with paranoid delusions, hallucinations, and delirium. High dose olanzapine and haloperidol mitigated his symptoms but did not resolve them. Psychiatry was consulted after ruling out other causes, and a presumptive diagnosis of ICI autoimmune encephalitis was made. The patient's mentation gradually improved with steroids, and by discharge his only remaining psychiatric symptom was pleasant confabulation. At discharge, he continued a physiologic dose of hydrocortisone 20 mg in the morning and 10 mg in the evening. He has not developed any further irAEs or recurrence of the psychosis.

Discussion

This is the first report of monotherapy with Nivolumab inducing sequential acute adrenal insufficiency and autoimmune encephalitis. With an irAE incidence of 15%, checkpoint inhibitor-induced cortisol deficiency may go undiagnosed in patients presenting acutely to an emergency department. This case highlights the importance of considering urgent cortisol measurement on any acutely ill patient on a checkpoint inhibitor with new onset non-specific symptoms on presentation. Random serum cortisol should be drawn preferably with a paired plasma ACTH followed by immediate glucocorticoid replacement therapy without waiting for results as this is a medical emergency. Confirmation of cortisol deficiency and detailed investigation of the etiology can be completed electively once the patient is stabilized.

Direct causality of the encephalitis being due to ICI is a clinical diagnosis. The rapid progression of neurological symptoms with recent Nivolumab therapy, neurological improvement after immunosuppressive therapy, and comorbid adrenal insufficiency is not expected in other types of autoimmune encephalitis. This case report raises several important clinical issues. There is considerable variation in the presentation of ICI induced autoimmune encephalitis that can obscure its diagnosis. If a patient is suspected of having autoimmune encephalitis after receiving an immune checkpoint inhibitor, steroid therapy should be initiated immediately to prevent significant mortality. Treatment can be escalated with IVIG and plasmapheresis if no clinical improvement from steroids.

Patients on ICIs can be provided with educational materials that they can share with primary care providers who may not be familiar with these new agents. IrAEs exhibit variable patterns, and precipitating factors have not been identified. Clinical vigilance is paramount for diagnosis. With the increasing prevalence of ICI usage, it is vital for primary care providers to be aware of the features and diagnostic criteria for irAEs. As demonstrated in this case, early recognition and treatment is essential to optimize clinical outcomes and minimize the effect of irAEs.

Conclusion

Much remains to be understood about the mechanism and risk factors predisposing to irAEs. As the use of checkpoint inhibitors expands, it is inevitable that the number of patients with irAEs will increase. Primary care providers need to be aware of irAEs associated with checkpoint inhibitors. Due to potential for life threatening adverse events, the effectiveness of early recognition and treatment of irAEs is vital, while preserving the ability to continue oncologic treatment.

Adverse event	Any grade, n (%)	Grades I–II, n (%)	Grades III–IV, n (%)
Any adverse event	60 (71.4)	53 (63.1)	35 (41.7)
Any immune-related event	47 (56.0)	39 (46.4)	25 (29.8)

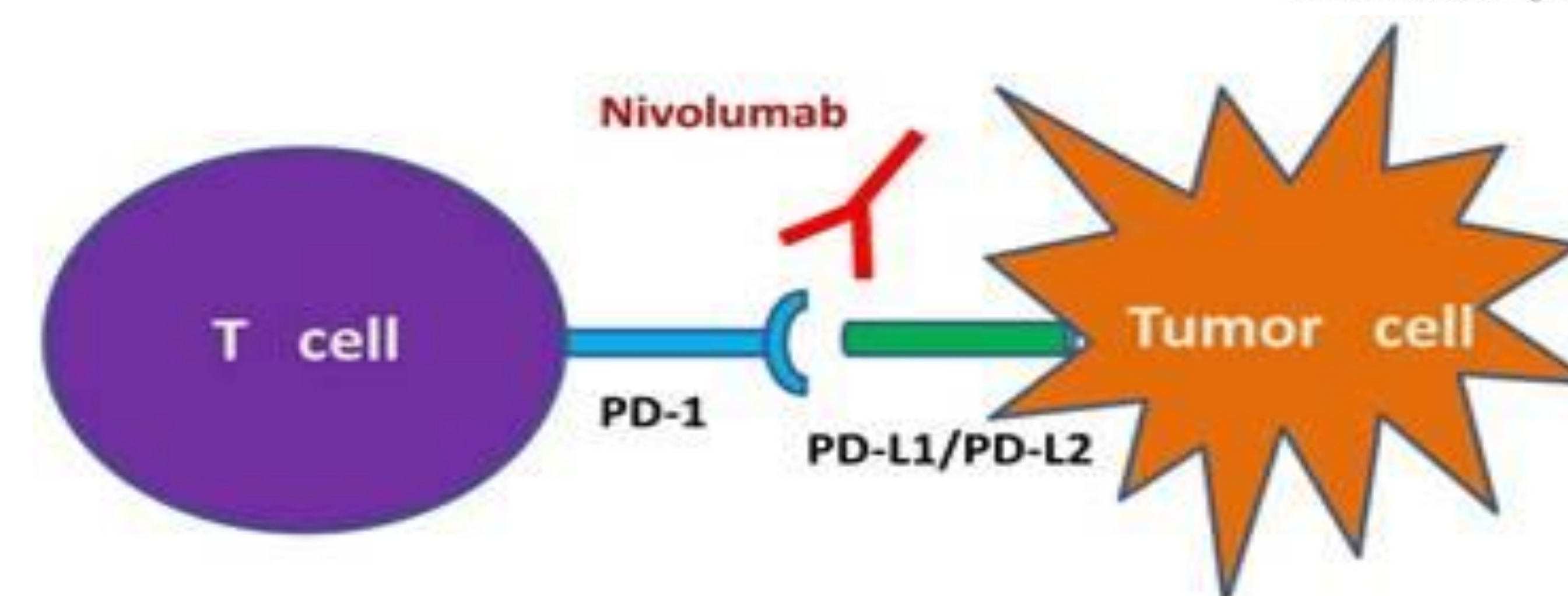
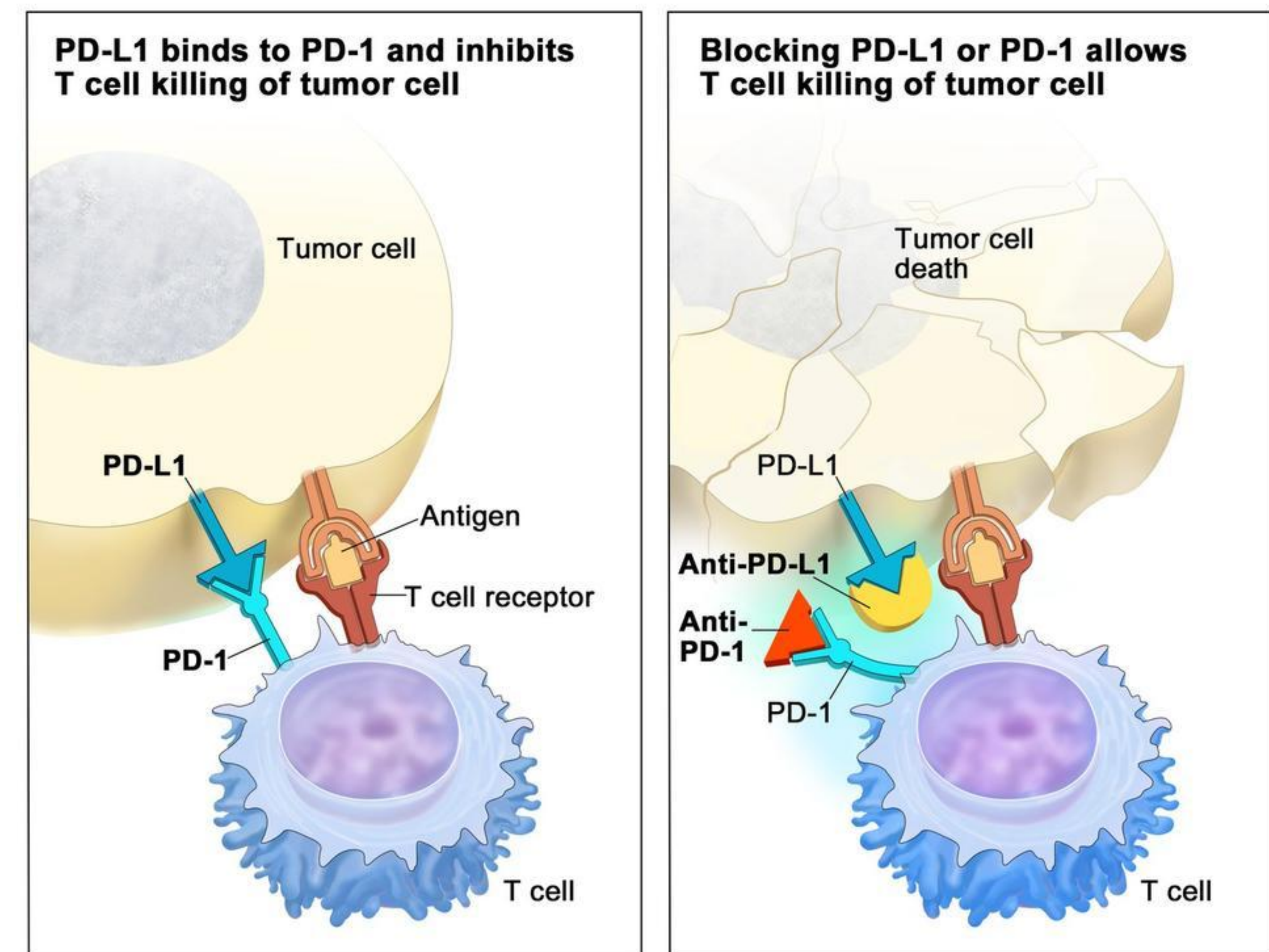
Immune-related adverse event			
Dermatologic/skin			
Pruritus	8 (9.5)	8 (9.5)	0 (0)
Rash	20 (23.8)	13 (15.5)	7 (8.3)
Gastrointestinal			
Diarrhoea	24 (28.5)	20 (23.8)	4 (4.8)
Colitis	6 (7.2)	1 (1.2)	5 (6.0)
Endocrine			
Hypothyroidism	2 (2.4)	2 (2.4)	0 (0)
Hypopituitarism	6 (7.1)	1 (1.2)	5 (6.0)
Hypophysitis	1 (1.2)	0 (0)	1 (1.2)
Adrenal insufficiency	1 (1.2)	0 (0)	1 (1.2)
Abnormal hepatic function	1 (1.2)	0 (0)	1 (1.2)
Musculoskeletal			
Arthritis	8 (9.6)	5 (6.0)	3 (3.6)
Other ^a	20 (23.8)	11 (13.0)	9 (10.7)

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Acknowledgements

We would like to thank our attending physician, Dr. Mary Jo Groves, and our consulting psychiatrist, Dr. Jeffrey M. Levine, for their guidance while caring for this patient and for encouraging us to write this case report. We appreciate them both for reading over this case report and providing feedback.



A Case Report of Recurrent Sigmoid Volvulus in Pregnancy

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Introduction

Sigmoid volvulus in pregnancy is a very rare entity with less than 200 cases reported in the literature, yet is life-threatening with high rates of morbidity and mortality for the mother and fetus. It is more common during the third trimester of pregnancy. The increasing size of the uterus may elevate a mobile sigmoid colon from the pelvis and produce a partial obstruction either due to pressure or kinking of this portion of the bowel. The extremely low incidence along with masking of the clinical presentation by a gravid uterus lead to delay in diagnosis, which is the main reason for devastating outcomes including bowel ischemia, necrosis, perforation and both fetal and maternal death. An effective multidisciplinary approach and prompt diagnosis are critical.

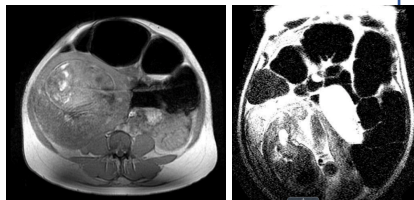


Fig 1A, B: Axial and coronal segments demonstrating gravid uterus and sigmoid volvulus resulting in obstruction of the colon which is prominently dilated with air fluid levels.

Case Report

A 34-year-old woman, gravida 5, para 4, presented during week 33 of an otherwise uneventful pregnancy, with intermittent sharp abdominal pain and constipation, and no history of nausea, vomiting, fever. Her previous pregnancies consisted of 2 normal spontaneous vaginal deliveries and 2 C-sections. On examination, she was afebrile, with abdominal tenderness. Sterile vaginal examination showed a closed cervix with no contractions on the tocometer. Laboratory studies revealed elevated WBC count of 13,700. She was admitted and given fleet enema and bisacodyl suppository, with no change in abdominal pain. It was clear that the patient was not in preterm labor as the cervix remained closed. Her pain continued to worsen the next day and it was necessary to explore other etiologies of the abdominal pain. Abdominal ultrasound showed fluid collection in the left lower quadrant of the abdomen measuring 2.3 x 3.0 x 7.7 cm. MRI of the abdomen showed suspected sigmoid volvulus resulting in obstruction of the colon which is prominently dilated with air-fluid levels (Fig 1A,B). She underwent urgent colonoscopy with successful detorsion and decompression of the sigmoid volvulus (Fig 2A,B). She then reported improvement of abdominal pain with 2 subsequent bowel movements. However, the next day, similar symptoms of the abdominal pain returned. With high suspicion of recurrence, she underwent another colonoscopy with another successful detorsion of the sigmoid volvulus. Fetal hearts were monitored continuously before and after the procedures. Due to the recurrence of the volvulus, she was scheduled the next day for a C-section and exploratory laparotomy concomitantly via vertical midline incision which resulted in the delivery of a viable female infant with APGARs 8 and 9 and bowel resection of sigmoid and descending colon and colostomy formation (Fig3). She was discharged on postoperative day 3 without post-operative complications.

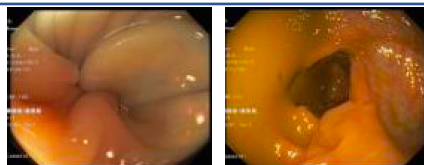


Fig 2A: Colonoscopy image demonstrating luminal appearance of a volvulus seen at 30 cm from the anal verge. (left)

Fig 2B: Colonoscopy image demonstrating luminal appearance post detorsion and decompression of the sigmoid colon.



Fig 3: Intraoperative photograph of a dilated sigmoid colon with a segment of descending colon measuring 35 x 9 cm together in length without evidence of necrosis or perforation.

Discussion

In the general population, the mortality rate for SV ranges from 0-40% (1,2). Furthermore, the prospective mortality rates for pregnancy with SV demonstrated 20% maternal and 40% fetal mortality; however, maternal and fetal mortality in these patients is directly correlated to the degree of bowel ischemia and subsequent sepsis (3). A grave associated complication of SV is sigmoid gangrene, seen in 6.1-30.2% of all SV patients. The mortality rate increases from 0-40% to 3.7-80%, nearly doubling (1,2). Given that SV is a medical emergency, initial management in our case resembled conservative therapy for a nonpregnant case consisting of fluid resuscitation, NPO status, pain management and colonoscopic decompression. Conservative therapy with endoscopic detorsion and decompression is efficacious in 75% - 95% of cases (4). In fact, there have been effective endoscopic interventions during pregnancy to relieve obstruction and there are less than 10 cases of persisting sigmoid volvulus in the same pregnancy (4). On the contrary, with pregnancy as the alluring factor for recurrence there was an increased likelihood of another episode of volvulus. While colonoscopy during pregnancy is relatively safe in the third trimester, it still has the risks of bleeding, perforation, infection and possibly inducing early labor (5). The multidisciplinary team including OB/GYN, FM, GI, MFM, Surgery, and Neonatology physicians reviewed the case and agreed that caesarean section followed by sigmoid resection with colostomy was ideal given the fact that the volvulus was refractory to nonsurgical management. Although difficult to diagnose based on presenting symptoms, pregnant patients with unresolving symptoms of abdominal distension, pain and constipation should be further evaluated for SV especially during the second and third trimesters. A high index of clinical suspicion is vital in pregnant women with signs and symptoms of intestinal obstruction to avoid any delay in diagnosis and treatment.

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An Alternative Approach to the Treatment of Nodular Basal Cell Carcinoma Using Cryosurgery and Imiquimod Cream: A Case Report

Peter Kaganjo MD, UCR School of Medicine
Donald Scott, MD, Scott Dermatology

Introduction

- *Basal cell carcinoma (BCC) arises in the basal layer of the skin. Nodular BCC (usually cystic in structure with aggregates of basaloid cells filled with mucin), a subset of BCC, occurs in sun-exposed skin
- *Prompt treatment of nodular BCC is important to avoid local invasion and destruction of surrounding skin
- *The first line of treatment for nodular BCC on trunk or extremities is usually surgical excision. However, surgical excision on sensitive areas such as eyelids and nose can lead to disfigurement.
- *Imiquimod is an immunomodulating topical cream that is approved by the FDA for treatment of superficial BCC under 2.0 cm. This case report documents successful use of Imiquimod for other classifications of BCC.

Case Presentation

- *68 years old F presented with a 4cm granulated lesion located on the right nasal ala. Patient showed recurrence of the lesion after treatment with 5-Fluorouracil (5-FU) 5 years earlier.
- *Nodular BCC was confirmed with shave biopsy of the lesion.
- *Patient was offered surgical excision (Mohs). Given the size and location of the lesion, surgery was expected to require extensive nose and upper lip reconstruction and/or permanent disfigurement.
- *Patient opted for less invasive approach — trial of cryosurgery and Imiquimod cream
- *Lesion was treated with cryosurgery during weekly office visits and Imiquimod cream three times daily at home.
- *After 4 weeks of treatment, the lesion size reduced by half. The lesion had visually resolved completely after 8 weeks of treatment.
- *Repeat punch biopsy at week 14 did not show recurrence of BCC



Discussion

- *This reports a novel application of cryosurgery and Imiquimod cream treatment for the following reasons:
 - Imiquimod is a standard treatment for superficial BCC up to 2 cm. In this application it was a component of the treatment of a 4cm nodular BCC.
 - The treatment cycle in this case was 8 weeks vs the typical 6 week treatment recommended by Imiquimod.
 - While these are promising results, treatment should be repeated in additional cases to confirm outcomes can be replicated. Considerations for application include non-surgical options, or in case of disfigurement or severe cosmetic outcomes.

Summary

- *Nodular BCC lesions in sensitive areas may be treatable with combination therapy of cryosurgery and Imiquimod
- *The selection of candidates for this approach should be based on special circumstances such as location of the lesion and availability of close follow up
- *Future studies could elucidate if this is a viable treatment option for select candidates, and if it can be replicated on similar lesions

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Acknowledgements

- *Dr. Scott's office staff & Scott Dermatology for help with images



New Horizons: Examining the efficacy of a 2-day ultrasound course on proficiency and confidence in incoming Family Medicine residents

Berenice S. Jimenez, MD; UC San Diego Medical Center

Introduction

As dramatic and rapid advancements to medical technology continue to impact patient care, one field that has gained increasing attention has been in ultrasound. Ultrasonography has become increasingly inexpensive and portable, and this has allowed non-radiologists to begin exploring bedside techniques and point-of-care ultrasound (PoCUS).



Several specialties, such as Emergency Medicine, have ACGME training requirements in PoCUS that focus on the diagnosis of various life-threatening illnesses in a rapid timeframe.¹ The Family Medicine community, however, has been slower to incorporate bedside ultrasound training into daily practice. One barrier to the adoption of PoCUS curricula has been the lack of data regarding how to incorporate training in residency. However, literature supporting the efficacy of training workshops for diagnostic and procedural skills has been rapidly growing.

Short-term PoCUS training programs are proven to deliver adequate knowledge and skills to a novice. A study by Clay et al. focused on United States Internal Medicine residents, found that a single day of intensive PoCUS training at the beginning of the year yielded significant improvement in PoCUS interpretation skills.



Hypothesis

This study hypothesized that after an introductory workshop for incoming Family Medicine residents at the University of California, San Diego, residents would be more proficient and confident in their ultrasound skills.

Methods

This was a nonrandomized prospective cohort study with incoming first-year residents serving as their own historical controls. Interns participated in a 2-day bedside ultrasound workup led by Emergency and Family Medicine faculty as part of a comprehensive 5-day orientation designed to prepare new interns for residency.

Interns completed an original 25-question assessment covering provider confidence, ultrasound basics, procedural skills, and image interpretation prior to and following the training. Tested topics were based on current recommended curriculum guidelines outlined by the American Academy of Family Physicians (AAFP).

Results

Out of 10 interns that were participating in orientation events with the UCSD Family Medicine program, only 9 were available for the workshop and participated in this study. Of the interns who participated, 7 had received ultrasound training prior to this study.

Proficiency

Overall, residents had higher proficiency test scores following the ultrasound workshop. For the twenty questions devoted to proficiency, the group had a collective average of 59% correct before training compared to 79% correct following training.

Other Findings

- Before training, 13 out of 20 proficiency questions had at least 7 of the 9 residents answer correctly.
- Of the remaining questions, there were only 3 where the number of residents that answered correctly doubled following training. These tested probe selection, knobology, and cardiac anatomy.

Confidence

Following the two-day ultrasound workshop, residents rated themselves as more confident on all five topics tested.

Confidence Question Topic	Pre-Training Mean Score (1-5)	Post-Training Mean Score (1-5)
Knobology	2.44	3.88
Cardiac EF	1.67	2.75
FAST exam	1.67	3.25
Fetus Position and AFI	1.89	2.38
Pleural Sliding	2.33	4.25

Table 1: Confidence scores by question. Residents scored their confidence level from 1 to 5.

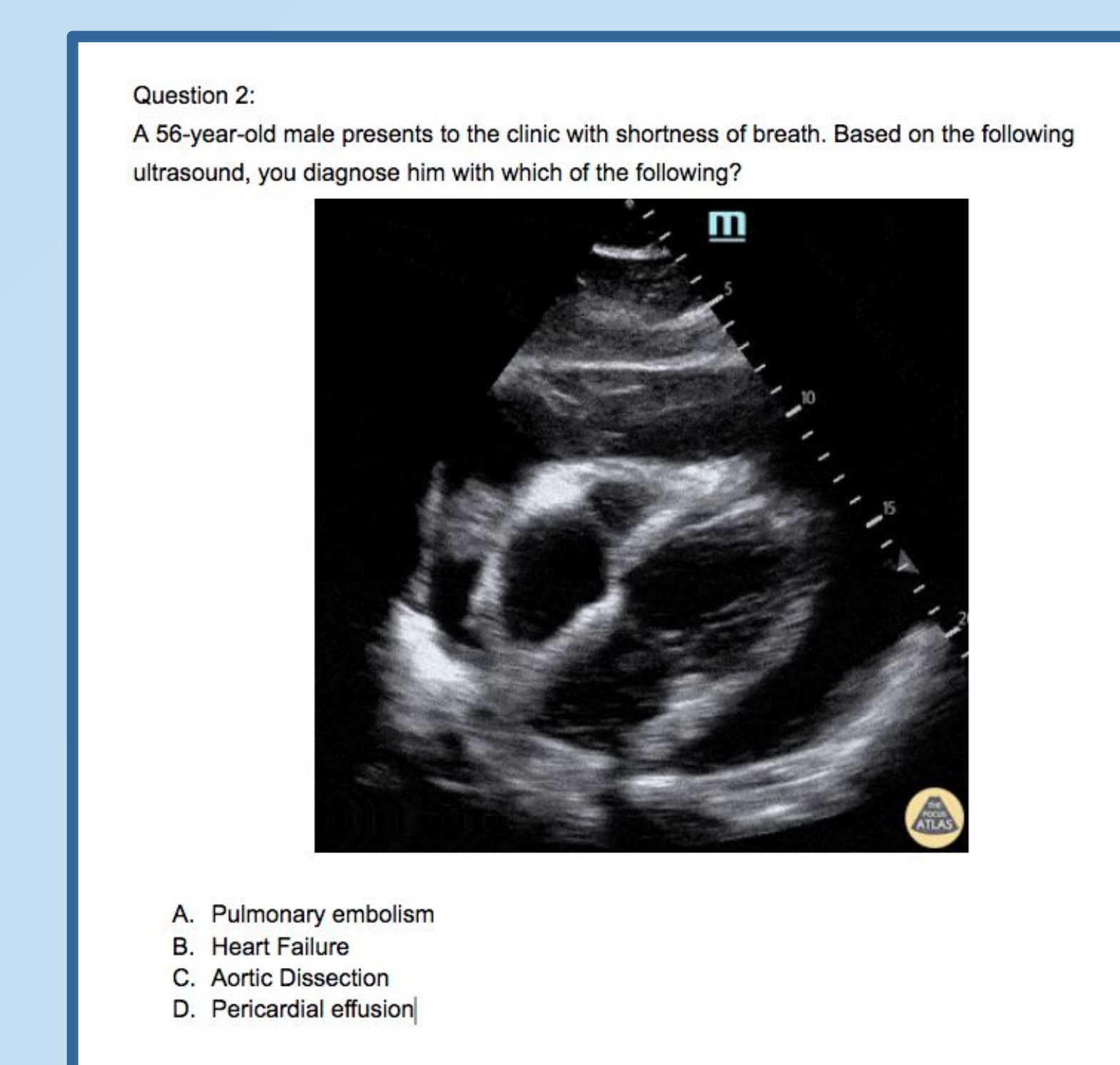


Figure 1: Sample image-based proficiency question

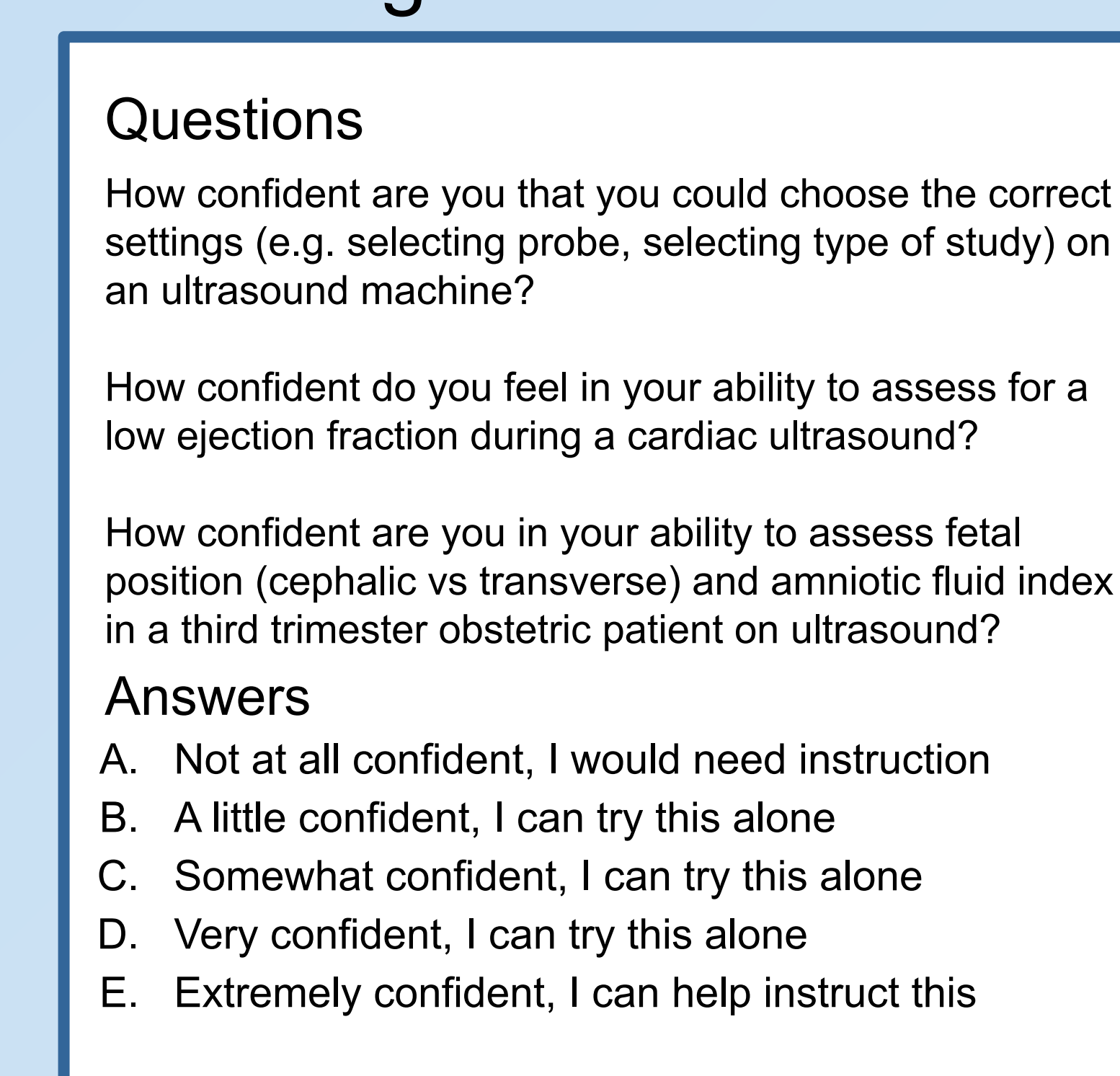


Figure 2: Sample confidence questions and available answers

Discussion

This was a small study with several limitations, but with exciting potential. Although there was only a modest increase in proficiency by the group of residents that participated in this study, this may be due in part to the test itself and variable medical school training.³ The pre-training scores were higher than expected, with a large majority of residents able to answer more than half of the questions before having done the workshop. Despite prior training, residents still felt more confident in their skills following the workshop overall.

There are several limitations to this study, most notably the small group evaluated and the unvalidated test created specifically for this study. Furthermore, the workshop was geared towards Emergency Medicine residents, with additional topics covered by Family Medicine faculty. In the future, a validated test specific to Family Medicine could be developed to guide training and examine proficiency. In addition, a study using a workshop specifically for Family Medicine may yield more robust results in the future.

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Conducting a Health Needs Assessment at a Family Medicine Residency Clinic

Emmeline Ha, MD; Andrew Schechtman, MD
Stanford-O'Connor Family Medicine Residency, San Jose, CA

BACKGROUND

In 2019, a needs assessment for the Stanford Family Medicine Residency clinic was conducted with the hopes of improving the curriculum's community outreach. Goals of the assessment were: to gather quantitative and qualitative data to increase resident understanding of their patient population, to influence residency recruitment to better represent our patients' demographics, and to guide future resident community projects.

METHODS

- Gathered de-identified demographic data of the patient population through electronic medical record reports. Obtained social determinants of health data from the Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE) survey, which had been integrated to clinic workflow prior to this study.
- Created and distributed an anonymous "Health Needs Assessment" survey (**Figure 1**) to a random sample of clinic patients for one week in April 2019. Questions included ranking importance of health issues, opinions about health need priorities, and feedback for improving clinic experience.
- Completed descriptive analysis on all data collected. Patient's zip codes were mapped using the American Academy of Family Physician's Health Landscape software, and geographic analysis was then compared to Santa Clara Public Health's Public Health Interactive Maps. Qualitative responses from patient feedback were grouped into overlying themes and distributed to clinic providers.
- Conducted outcomes survey in 2021, following two years of publicizing findings within the residency program. Survey examined the health assessment's effect on resident attitudes towards their clinic population and the impact on their individual scholarly projects.

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RESULTS

- Clinic demographic and patient social determinants of health results were summarized into an infographic for easy-view (**Figure 2**). This infographic was distributed to all residents and clinic staff, shared during residency applicant recruitment, and posted online on the residency website.
- Geographic mapping of patient ZIP codes showed that most patients live in Santa Clara and west San Jose, which has a greater density of health disparities compared to Santa Clara County's public health data (**Figure 3**).
- 123 patients submitted "Health Needs Assessment" surveys. Top health issues, barriers to health, and needs for improving health are summarized in Table 1. Most patients provided positive feedback regarding clinic care delivery and empathy. Suggestions for clinic improvement included increased access/availability, better communication, and improved environment decor/logistics (**Figure 4**).
- 22 / 28 residents responded to the outcomes survey. 73% reported that the needs assessment had a positive influence on their perspective towards the clinic and its patients. 25% had their scholarly projects directly influenced by the assessment's results (**Figure 5**)

Figure 1. Health Needs Assessment survey distributed to patients in April 2019.

Indian Health Center – Family Health Center Health Needs Assessment

DISCLAIMER: The purpose of this survey is to assist us in improving our health care delivery and services for all of our patients, including you. Any information obtained in this survey will not be identified to your name or medical chart and will not affect your visit today. Thank you for your participation!

Please select the top five health issues that you find important to you and your family.

<input type="checkbox"/> Diabetes	<input type="checkbox"/> Joint or back pain
<input type="checkbox"/> Heart disease/High blood pressure	<input type="checkbox"/> Women's health/Prenatal care
<input type="checkbox"/> Stroke	<input type="checkbox"/> Mental health
<input type="checkbox"/> Lung disease/Quit smoking	<input type="checkbox"/> Alcohol/Drug use
<input type="checkbox"/> Cancer	<input type="checkbox"/> Sexual health
<input type="checkbox"/> Healthy weight	<input type="checkbox"/> Routine check ups/Vaccinations
<input type="checkbox"/> Nutrition	<input type="checkbox"/> Vision/Dental health
<input type="checkbox"/> Other: _____	

What do you feel are barriers to getting health care for you or your family? Select all that apply.

<input type="checkbox"/> Cost/Insurance issues	<input type="checkbox"/> Fear (eg. not ready to talk about medical problem)
<input type="checkbox"/> Cultural/language barriers	<input type="checkbox"/> Too much paperwork
<input type="checkbox"/> Lack of available doctor	<input type="checkbox"/> Don't understand the need to see a doctor
<input type="checkbox"/> Location/transportation	<input type="checkbox"/> Time (eg. clinic hours, job/school schedule)
<input type="checkbox"/> Other: _____	
<input type="checkbox"/> None	

What do you need more of to improve your or your family's health? Select all that apply.

<input type="checkbox"/> Free or affordable health screenings	<input type="checkbox"/> Safe place to live/walk/play
<input type="checkbox"/> Access to healthier food	<input type="checkbox"/> Recreation facilities
<input type="checkbox"/> Access to transportation	<input type="checkbox"/> Stress reduction
<input type="checkbox"/> Job opportunities/training	<input type="checkbox"/> Mental health support
<input type="checkbox"/> Education opportunities	<input type="checkbox"/> Care support (children, elderly)
<input type="checkbox"/> Stable/affordable housing	<input type="checkbox"/> Cultural or religious community
<input type="checkbox"/> Other: _____	

What does our clinic do well for you or your family's health?

What could our clinic do better to improve your or your family's health? Please suggest any specific projects, services, or assistance we could offer.

Return to: Dr. Ha
Updated 4/2019

Figure 2. Infographic of clinic demographic information using assessment results.

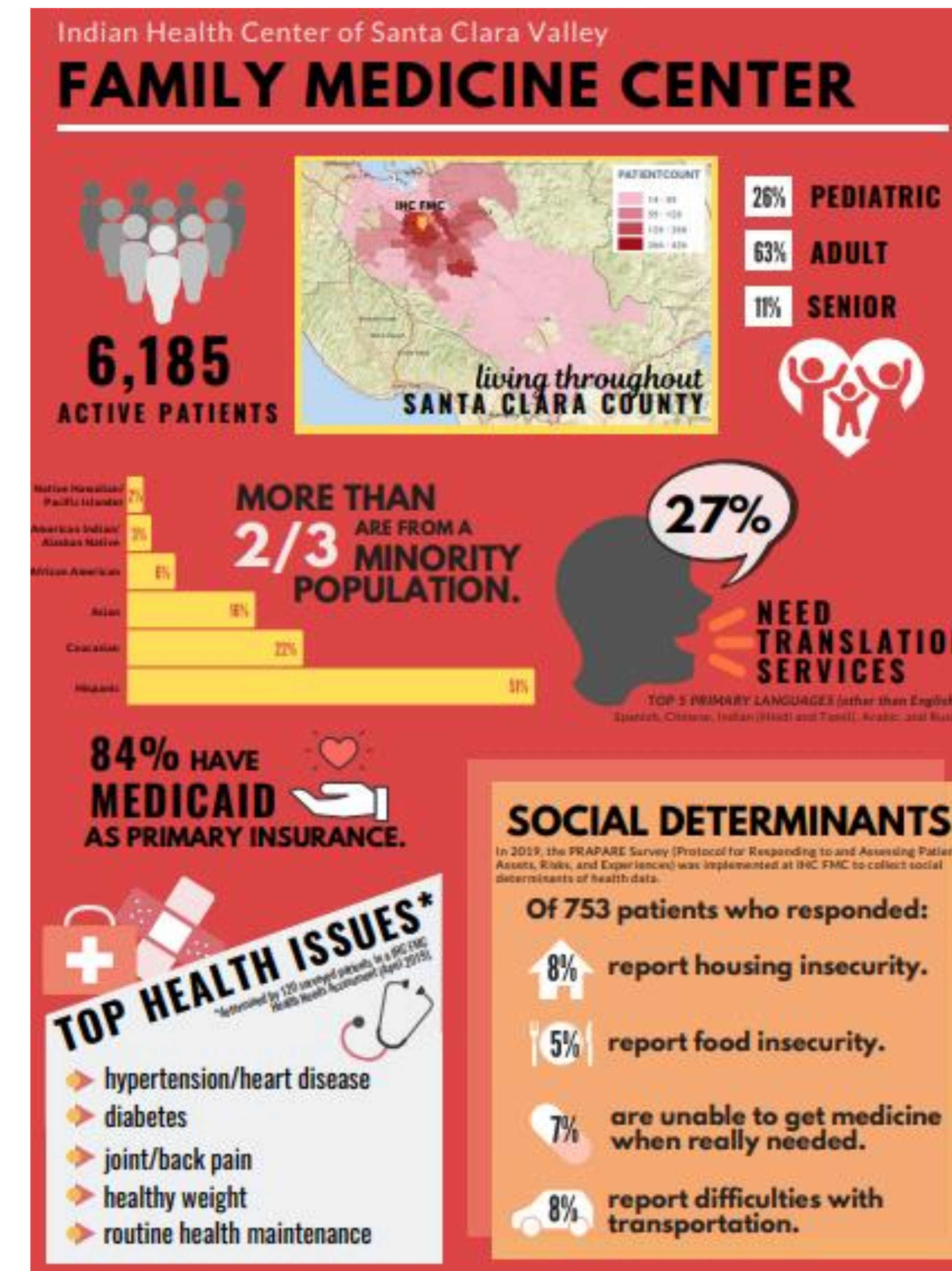


Figure 3. Distribution of clinic patients in Santa Clara County (top) corresponds with lower life expectancy distribution map published by Santa Clara County (bottom).

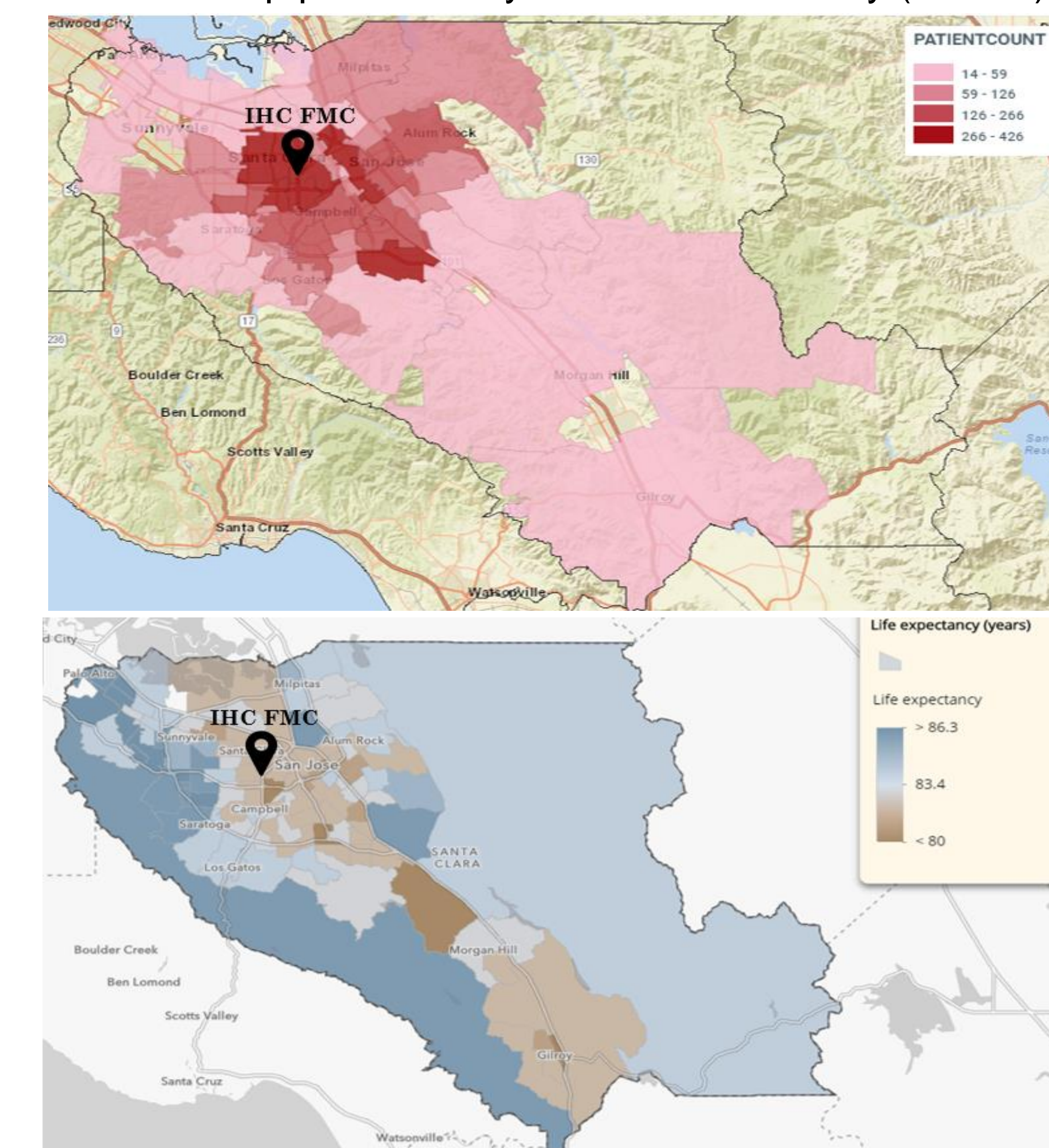


Table 1. Patient results from needs assessment survey.

Top Five Health Issues Important to Patients	Heart disease/High Blood pressure
	Diabetes
	Joint or back pain
	Healthy Weight
Top Three Barriers to Health	Routine check ups/vaccinations
	Cost/Insurance Issues
	Time (e.g. clinic hours, job/school schedule)
	Lack of available doctor
Top Five Needs in order to Improve Health	Free or affordable health screenings
	Stress reduction
	Access to healthier food
	Stable/affordable housing
	Mental health support / Care support (children/elderly)

Figure 4. Suggestions for improvement proposed by patients.

Increase Access
• More open appointments
• Late hours vs. weekend availability
Communication
• Improved answering service (e.g rerouting, forward directly to FMC during business hours)
• Online capabilities (e.g. scheduling appointments)
• Prescriptions: on time refills, clarifying dose changes (e.g. after visit summaries)
• Trans education/training for staff
Environmental
• Add plants
• Better parking

Figure 5. Impact of assessment results on resident attitudes and education.

"Did results from the needs assessment positively influence your perspective of our clinic and its patients?"

75% YES

"The infographic was very helpful for recruitment season and for my own understanding of our clinic population/actual break-down." – PGY-1

"Did the needs assessment results or infographic influence your FCM or QI project in any way?"

25% YES

"I looked at the needs that patients reported to try to address some of the gaps in care, such as more availability of appointment times." – PGY-2

CONCLUSIONS

Patient-centered and community-oriented approaches facilitate critical insight into assessing and prioritizing health problems. This simple health needs assessment yielded actionable insights that helped Stanford Family Medicine residents better understand the needs of their clinic patients. This understanding influenced clinic improvement initiatives and future resident projects.

No ultrasound? No problem. A review of "no test" medication abortions in a family medicine resident clinic

Cecilia Huang, MD; Fari Valji, MD; Rose Swords, MD; Pamela Wade, MSN; Elana Craemer, MD, MPH
Long Beach Memorial Family Medicine Residency

Introduction

- Access to abortion care is limited, and the Covid-19 pandemic has made access to timely medical abortion more difficult
- The delivery of primary care has changed dramatically in the past year through telemedicine, and so should abortion care
- Data suggests that a "no test" model for medication abortions (MABs) in the first trimester is safe and effective ¹
- This model eliminates in-office testing with pelvic exam and ultrasound for eligible patients
- With the utilization of the "no touch, no test" method, access to medical abortions is improved, and Covid-19 exposure risk to patients decreased

Objective

To demonstrate feasibility and efficacy of no test MABs in a family medicine residency clinic

Method

Retrospective chart review of MABs performed in a family medicine residency in Long Beach, CA, that met the following criteria:

- No pelvic exam or ultrasound in this pregnancy
- Gestational age (GA) < 63 days by LMP
- No contraindications to medication abortion, including previous ectopic pregnancy, pelvic inflammatory disease, tubal surgery, IUD in place

Charts de-identified, data extracted, and data analyzed by two resident physicians

Results

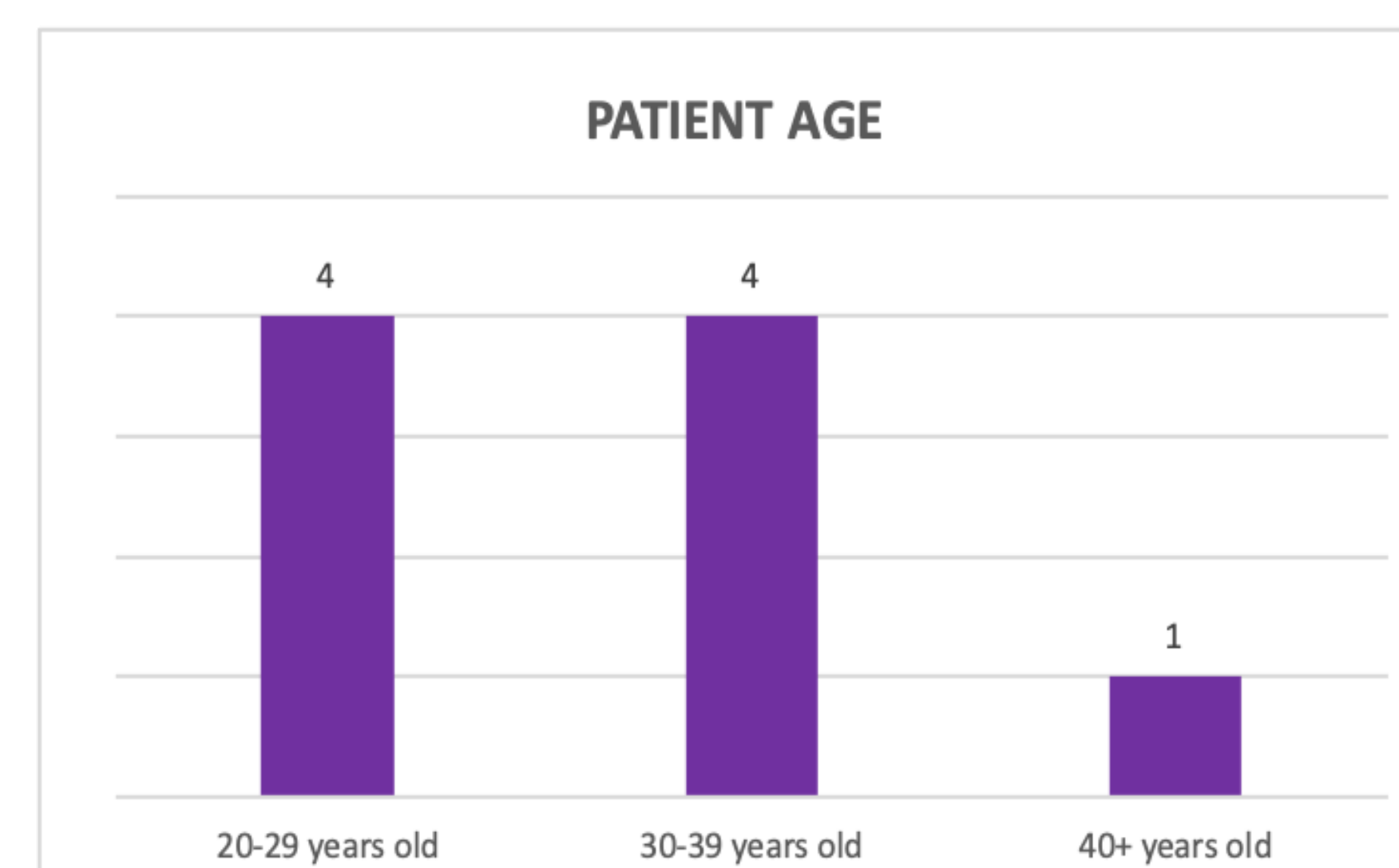


Fig 1. Patients seeking no touch medication abortions included those in their 20s, 30s, and 40s.

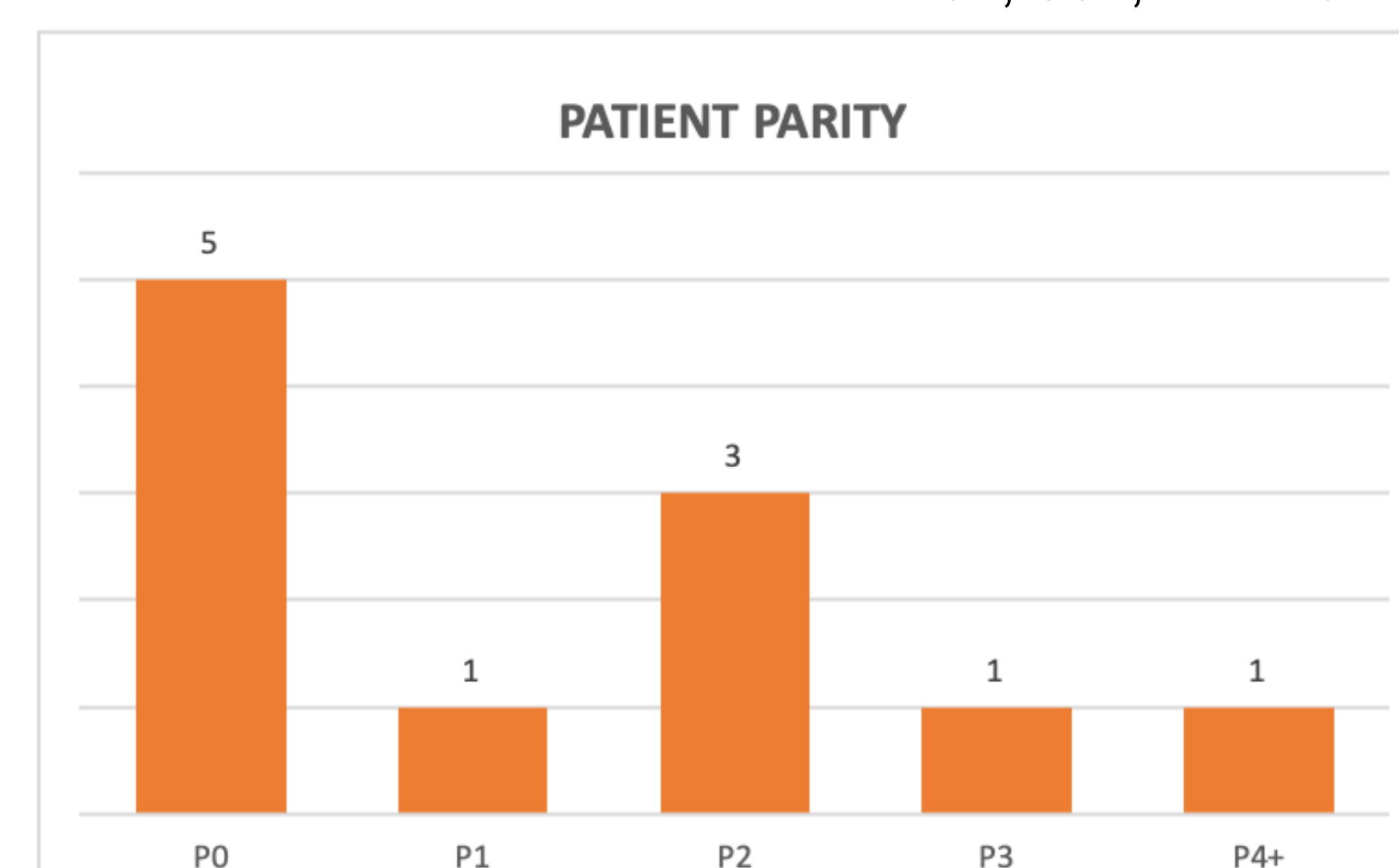


Fig 2. Parity of patients ranged from nulliparous to greater than 4 previous births

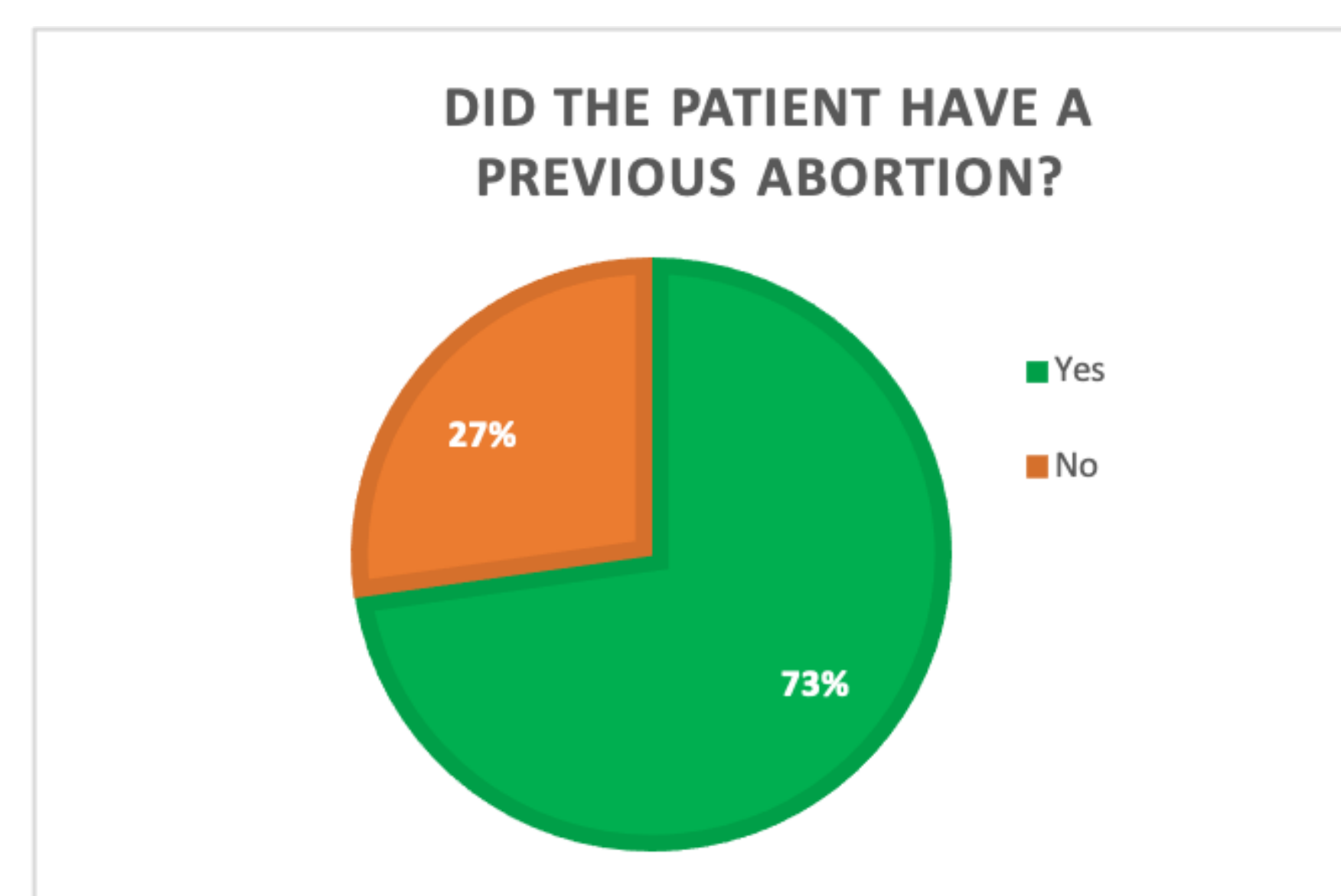


Fig 3. Of 11 encounters, 73% (8 encounters) included a patient who had a previous abortion.

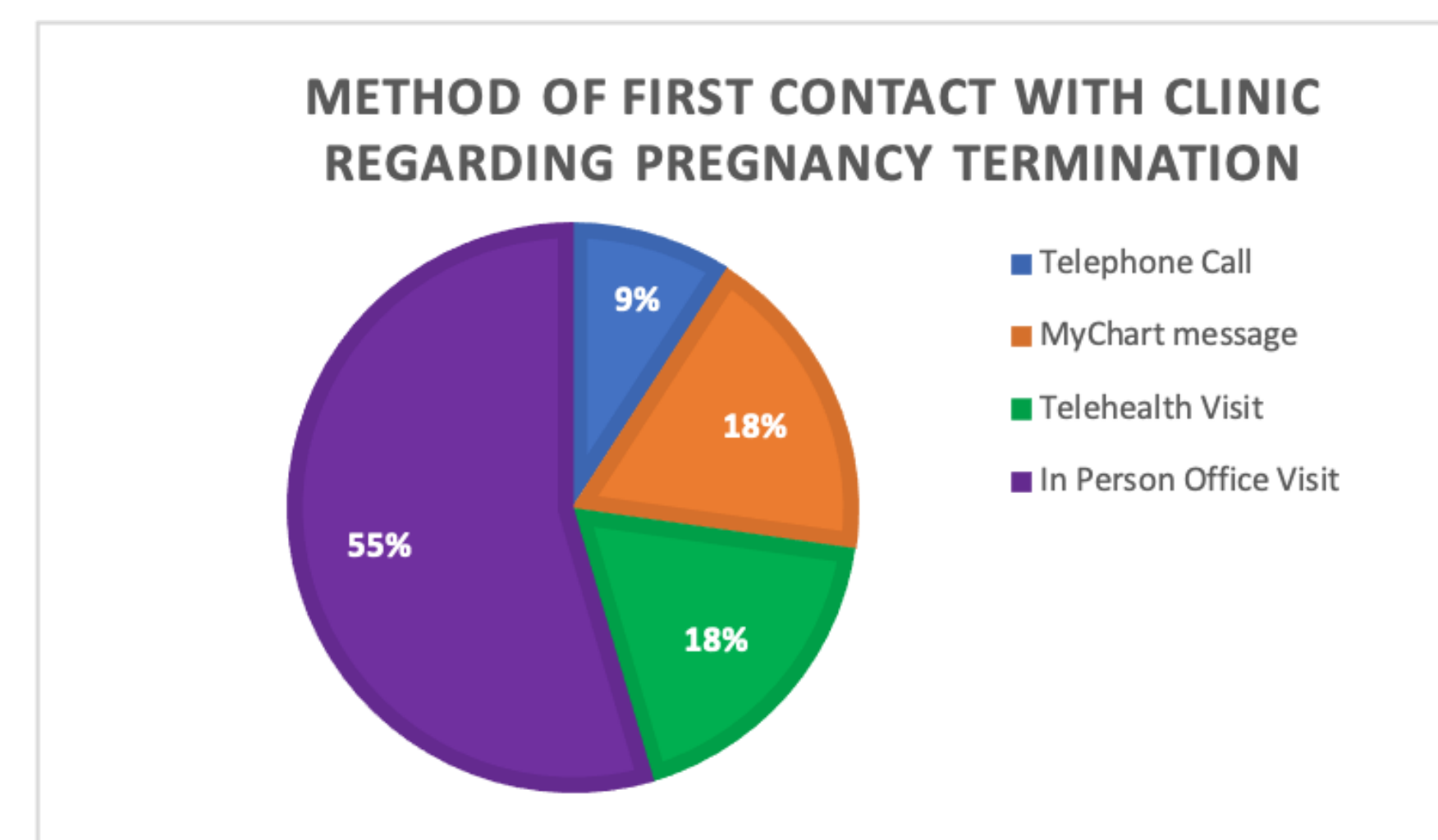


Fig 4. Patients contacted the clinic about medication abortions both in-person (55% or 6 encounters) and via telemedicine (45% or 5 encounters) including telephone calls, confidential EMR messages, and video visits.

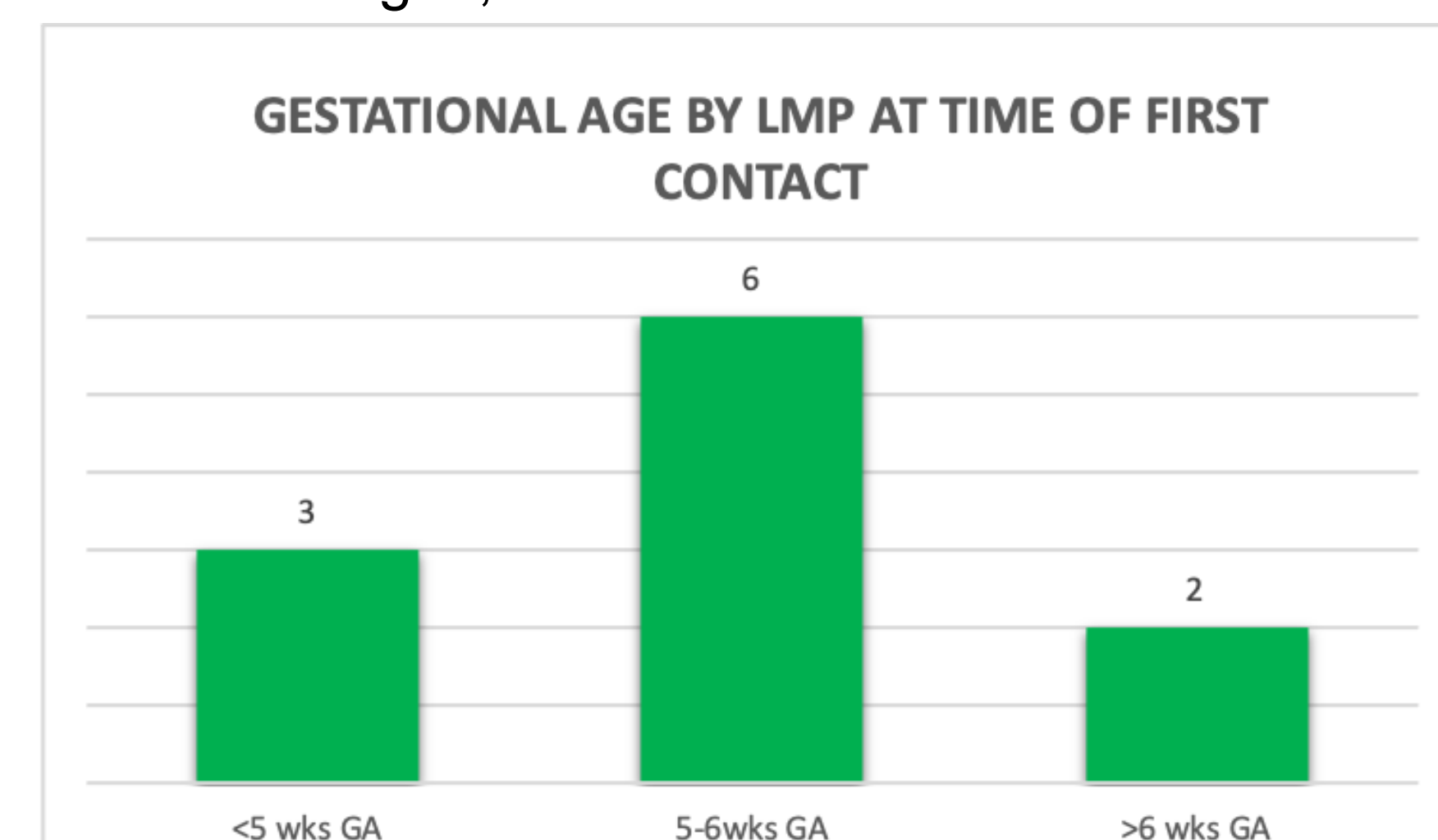


Fig 5. The majority of initial patient encounters (82% or 9 encounters) took place when gestational age was 6 weeks or less (<=42 days).

LEVEL OF TRAINING OF ABORTION PROVIDER

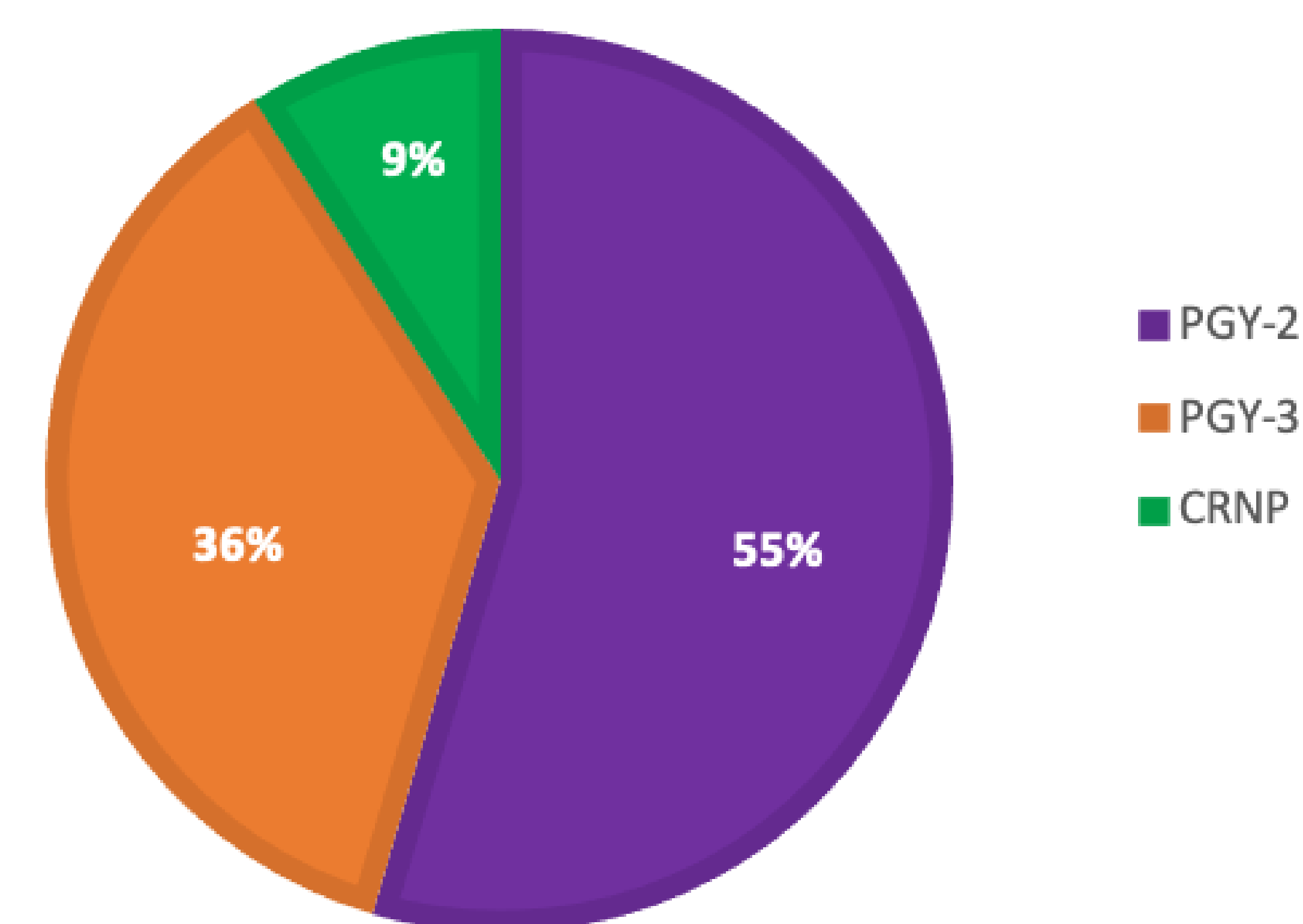


Fig 6. There were 9 individual providers who performed 11 total encounters. Most were conducted by 2nd or 3rd year Family Medicine residents, and one was conducted by a nurse practitioner.

POST-ABORTION BIRTH CONTROL METHODS

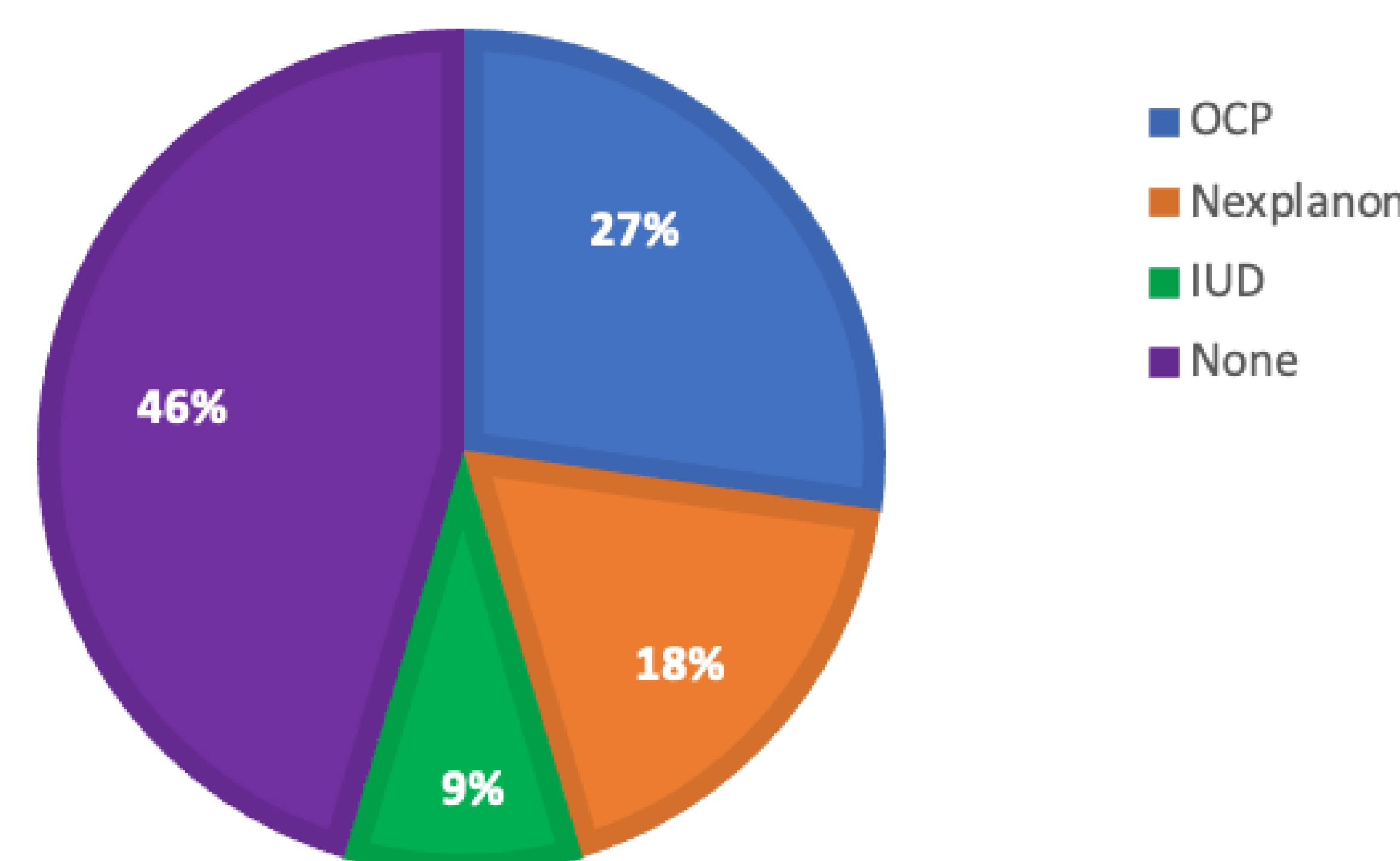


Fig 7. After completion of pregnancy termination, 54% (6 encounters) included prescription of birth control of which 27% (3 encounters) were combined oral contraceptives, 18% (2 encounters) with subsequent Nexplanon implantation, and 9% (1 encounter) with a subsequent Paraguard IUD insertion. 46% (5 encounters) did not include any prescription of birth control. All encounters included discussion and shared decision making with patients regarding post-abortion birth control.

MEDICATION ABORTION OUTCOMES

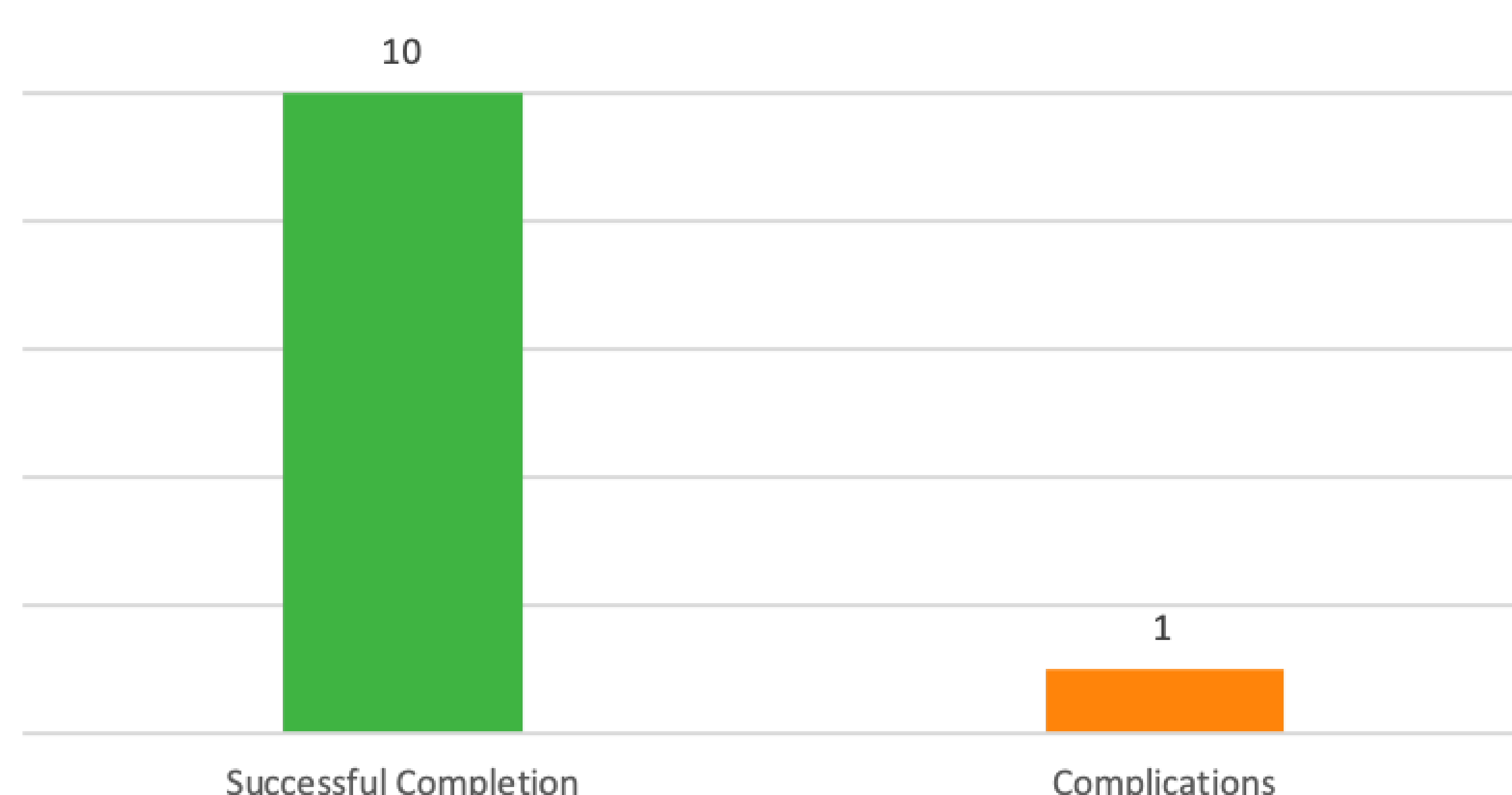


Fig 8. Of 11 total encounters for "no touch" medication abortions, 10 encounters resulted in successful termination of pregnancy after one dose of mifepristone and misoprostol. One encounter resulted in a failed medication abortion and required subsequent D&C to terminate the pregnancy.

Discussion

- Ten of the eleven "no test" MABs resulted in successful pregnancy termination which was confirmed with a home pregnancy test by patient report
- One MAB failed mifepristone and misoprostol, initially seen at 6w1d, and the pregnancy was terminated via dilation and curettage
- There were no reported complications of clinically significant bleeding or infection
- Without initial ultrasounds or pelvic exams, MABs could be and were offered through both telehealth and in person encounters
- Our preliminary data demonstrate that "no test" MABs can be safely and practically implemented in a family medicine residency clinic setting without evidence of worse outcomes
- This method can expand access to care and allow family medicine residents to provide safe, broad spectrum primary care, even in settings that don't have onsite ultrasound
- This chart review also contributes to the growing data and patient stories that demonstrate that removing the current REMS on mifepristone will not negatively impact safety and can further expand patients' access to care

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Protocols Referenced:

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- <https://rhedi.org/checklist-for-medication-abortion-with-minimal-contact/>
- <https://www.reproductiveaccess.org/wp-content/uploads/2020/03/03-2020-no-touch-MAB.pdf>

Effect of treatment on prediabetic patients in Fresno county

Melissa Ng, Celina Chau, Lauren Hsiao, Susan Hughes, Iris Price, Arlin Venturina

Introduction

- Early identification and treatment is necessary to prevent diabetes progression
- CA Central Valley incidence rate is 8.8%
- CA incidence rate is 7.8%

Objective

- Compare lifestyle changes to lifestyle with metformin for preventing progression to diabetes

Methods

- Retrospective chart review
- One clinic
- HbA1c used as outcome
- Logistic regression analysis

Results

- 313 subjects
- 58% female
- 58% Hispanic
- Prediabetes
 - Mean age 51 (SD 11)
 - HbA1c 6% (SD 0.2)

Red: lifestyle only n=147

Green: lifestyle + metformin n=67

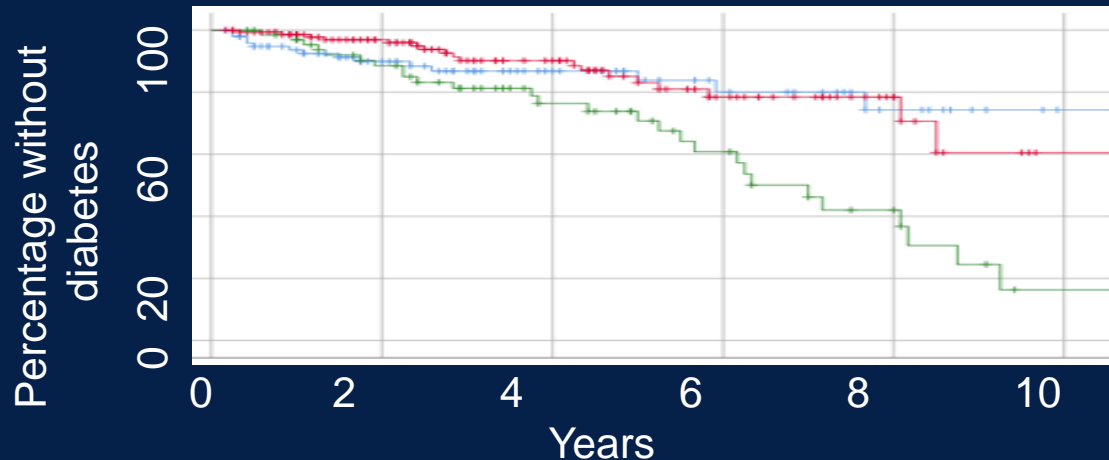
Blue: no intervention n=99

Findings

- 61 developed diabetes
- Lifestyle modification was better than lifestyle with metformin

Conclusions

- Retrospective limitations impacted validity of study
- Established framework for future work



Background

- AMA Declaration of Professional Responsibility: *"Physicians commit themselves to...advocate for social, economic, educational and political changes that ameliorate the suffering and contribute to human well-being."*
- Numerous health inequities impact the socioeconomically disadvantaged, ethnic minority patient population at our Federally Qualified Health Center residency clinic and county community hospital.

Purpose

- Assess family medicine residents' background and attitudes towards health equity and advocacy
- Evaluate family medicine residents' perspectives on existing health equity and advocacy curriculum
- Develop a sample health equity & policy curriculum that can be incorporated into residency education
- Identify ways to incorporate additional training and hands-on experience for residents in these topics

Methods

- A needs assessment of residents' attitudes towards health equity and advocacy and perspective on existing residency curriculum was conducted via a web-based survey (n=20).
- A review of current existing residency curriculum was conducted via discussion with faculty.
- Curricular materials from STFM, medical journals, other residencies / medical schools, and community organizations were evaluated and compiled.
- Author met with several local community organizations to identify opportunities for partnership and experiential learning.

Results

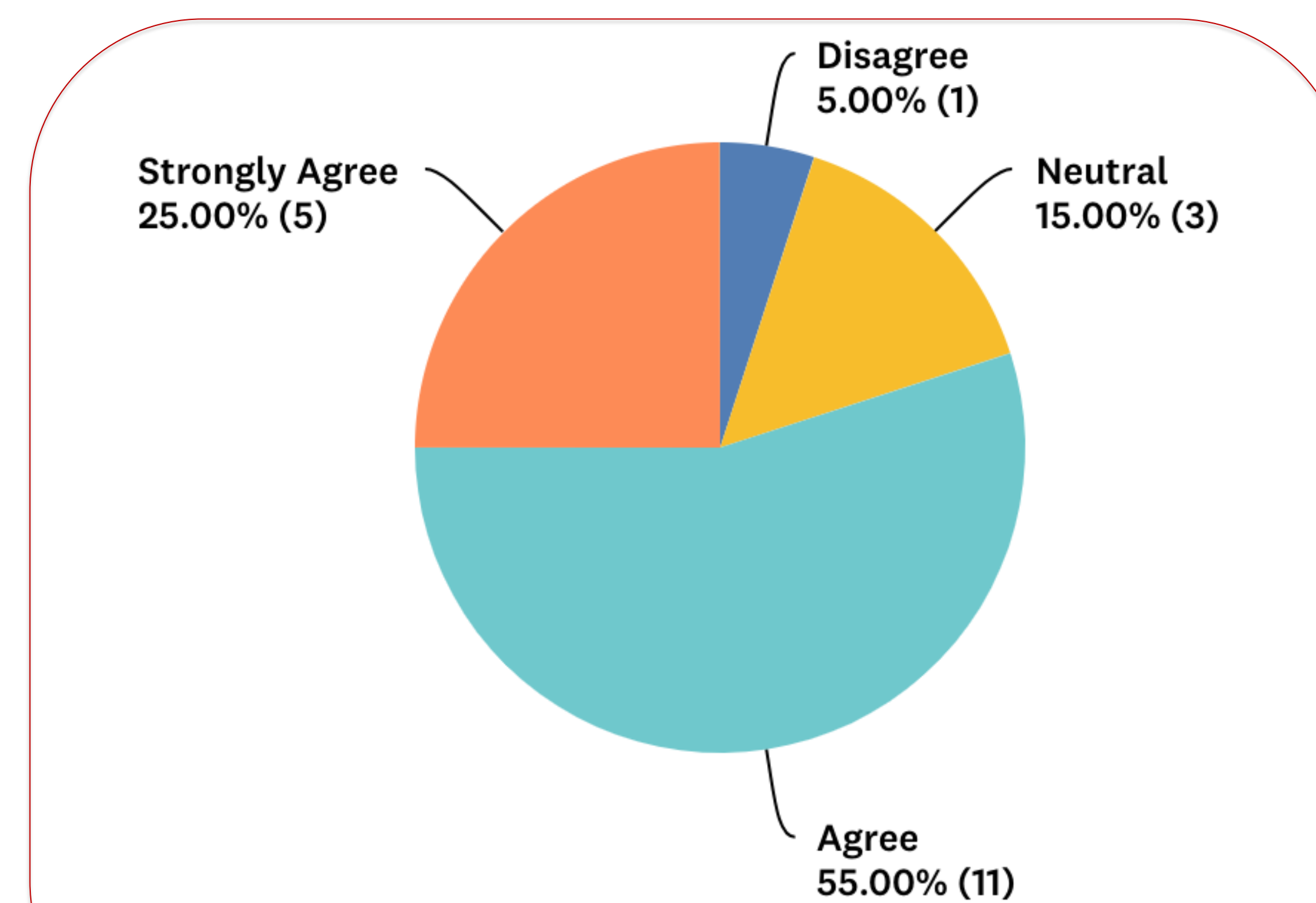


Figure 1: Resident perspective on whether health equity and advocacy training should be mandatory in residency

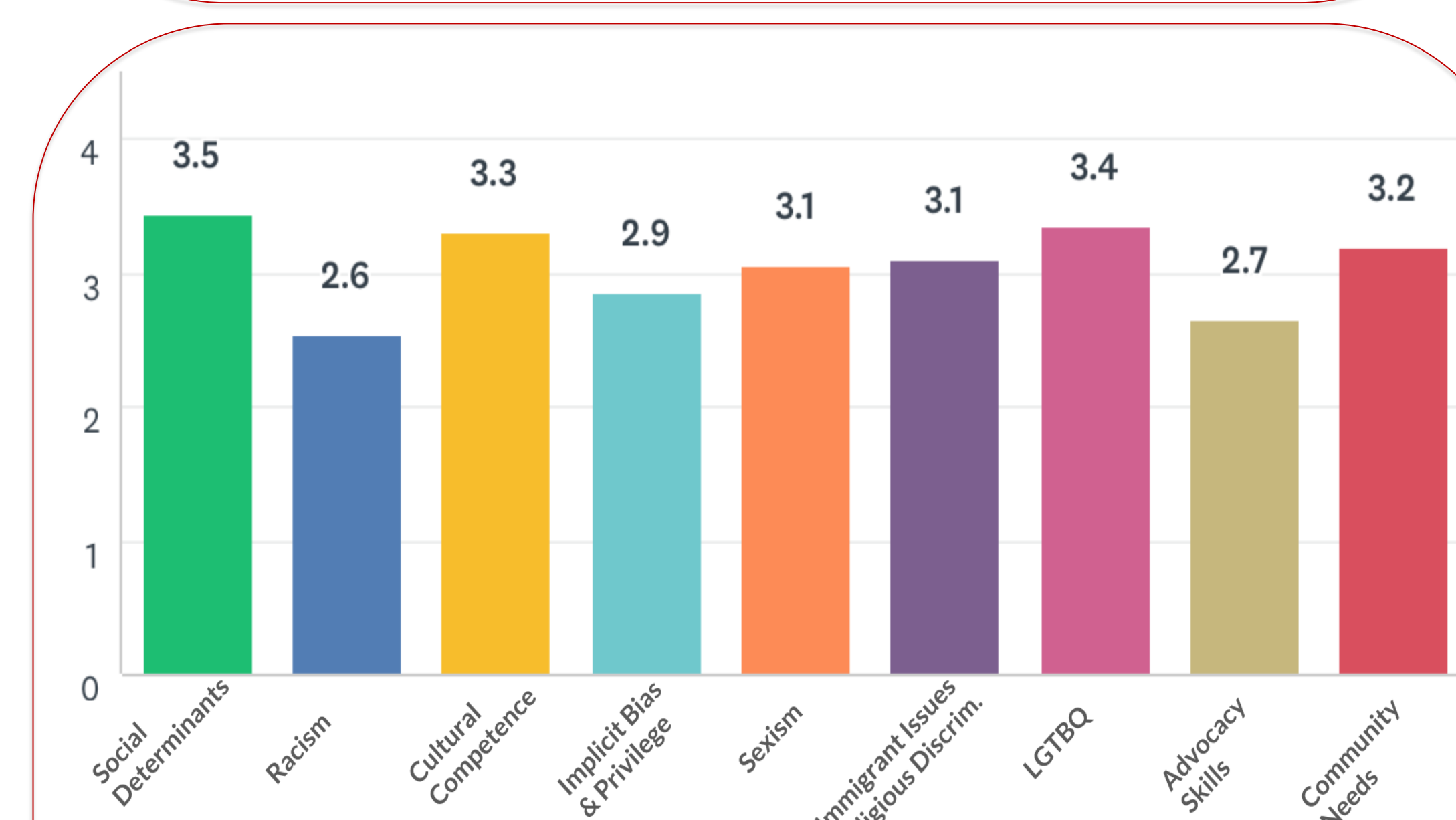


Figure 2: Average weighted-score of resident responses regarding adequacy of key topics covered in the existing curriculum. (Strongly disagree (SD) = 1, disagree (D) = 2, neutral (N) = 3, agree (A) = 4, strongly agree (SA) = 5)

Our initial needs assessment revealed that 40% of residents had prior experience with health equity and advocacy. A majority (90%) believed formalized training in health equity and advocacy is important in residency, but few (10%) thought the existing curriculum appropriately covered these topics.

Topic areas for improvement included racism, advocacy skills, implicit bias & privilege, sexism, immigrant issues/religious discrimination, and community needs.

Curriculum Design and Evaluation

TOPICS

- Social determinants of health
- Implicit bias
- Racism
- Sexism
- Policy & insurance
- Immigration
- Housing
- Advocacy skills
- Community needs and organizing

DESIGN

- 2-week selective rotation: Concentrated independent learning for 2nd or 3rd year resident
- Mixture of readings, online modules, lectures, workshops, and community engagement with local partners
- Needs assessment indicates residents most prefer lectures or hands-on experiential learning

ASSESSMENT

- Will have interested residents enroll in curriculum and provide feedback
- Creation of standardized surveys to evaluate whether learning objectives are being met
- Ongoing modification of curricular content in response to feedback

NEXT STEPS

- Further development of local community partnerships and opportunities for hands-on community engagement
- Development of additional curricula to incorporate throughout three years of residency training for all residents

Discussion

Residents recognize the importance of health advocacy and equity but feel the current curriculum does not appropriately address certain topic areas. An elective rotation was created for residents to gain additional experience in health equity beyond the core curriculum and has already garnered interest. Faculty and residents are additionally collaborating to further enhance health equity training through the development of community partnerships and engagement in political advocacy at the local and state level, as well as actively developing residency-wide curricula.

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