

# **Northeast Texas Internal Medicine Academic Journal: First Research Consortium Proceedings**



## **First Research Consortium Proceedings**

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**Paris Regional Health Internal Medicine Residency Program in affiliation with the  
Texas College of Osteopathic Medicine**

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## Introduction

In the second year of the Internal Medicine Residency Program at Paris Regional Health, affiliated with the Texas College of Osteopathic Medicine, research results were shared and celebrated at this first Research Consortium. This event was developed as a departmental platform for trainees to share their scholarly projects, foster intradepartmental awareness and collaborations, supplement the existing resident research curriculum, encourage peer learning amongst trainees, and allow departmental celebration of the trainees' and faculty's accomplishments.

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## Calcitriol-Mediated Hypercalcemia in Squamous Cell Lung Carcinoma: A Paradigm of PTHrP-Independent Malignancy-Associated Hypercalcemia

**Authors:** Mahapatra S, Dagar M, Gurty S, Gil-Salazar M, Fatima S, Amjed I, Greenwell M

### *Introduction*

Among hospitalized patients, malignancy remains a leading cause of hypercalcemia, affecting approximately **10 to 30%** of individuals with cancer. PTHrP secretion accounts for approximately **80%** of cases, while osteolytic bone destruction accounts for about **20%**. Ectopic calcitriol production accounts for fewer than **1%** of malignancy-related hypercalcemia. In a pivotal study by **Chukir et al**, examining **101** patients with PTH-independent hypercalcemia from solid tumors, PTHrP elevation was noted in **62.8%** of cases, calcitriol elevation in **45%**, and concurrent elevation of both markers in **34.2%**. Squamous cell lung cancer rarely presents with isolated calcitriol elevation. Prior literature documents cases: a **2017** report described calcitriol **76 pg/mL** with concurrent PTHrP at **30 pmol/L**; a **2020** case with concurrent elevation responded to prednisolone; a **2023** case presented with calcitriol **130 pg/mL** and PTHrP at **2.1 pmol/L**; and a **2024** case documented transformation with concurrent elevation. However, completely undetectable PTHrP with isolated calcitriol has not been previously reported in squamous cell lung carcinoma. Glucocorticoids serve as first-line therapy, whereas bisphosphonates fail because the mechanism involves enhanced intestinal calcium absorption rather than bone resorption.

### *Case Presentation*

A **78-year-old** man with stage **IIIB** squamous cell lung carcinoma, initially diagnosed in **2022**, presented with progressive generalized weakness, shortness of breath, and confusion. Laboratory evaluation revealed corrected serum calcium **13.88 mg/dL**, iPTH **6.3 pg/mL**, and PTHrP **< 2 pmol/L**. **1,25-Dihydroxyvitamin D** was measured at **256.8 pg/mL**, the highest reported level in squamous cell carcinoma of the lung. Serum lipase was significantly elevated at **1097 U/L**, with CT findings consistent with acute pancreatitis. Management included intravenous hydration, calcitonin, pamidronate **30 mg**, and zoledronic acid **2 mg**. Despite maximal medical therapy, serum calcium remained persistently elevated between **11.22 and 13.88 mg/dL**. When laboratory results revealed isolated calcitriol-mediated hypercalcemia, given the patient's severely declining clinical

status, he and his family elected to pursue comfort-focused care, precluding glucocorticoid therapy. The patient subsequently transitioned to hospice.

### ***Discussion***

This is the first documented squamous cell lung carcinoma with isolated calcitriol-mediated hypercalcemia and completely undetectable PTHrP. The **2023** squamous cell case had minimally elevated PTHrP at **2.1 pmol/L**, whereas this patient's PTHrP **< 2 pmol/L** is truly undetectable. Calcitriol **256.8 pg/mL** exceeds all previously reported squamous cell cases. Unlike prior responsive cases, this patient exhibited profound bisphosphonate resistance. The mechanism involves ectopic **1-alpha-hydroxylase** production by malignant cells or macrophages. This case establishes squamous cell lung carcinoma as a source of completely PTHrP-independent calcitriol-mediated hypercalcemia at unprecedented magnitude, underscoring the importance of measuring both markers in refractory cancer-related hypercalcemia.

### ***References***

Anastasopoulou C, Mewawalla P. Malignancy-Related Hypercalcemia. StatPearls; **2025**.  
Chukir T, et al. J Clin Endocrinol Metab. **2020**;**105(4)**:e11115–23. Farooki A. Front Endocrinol. **2023**;**14**:1088984. Kometas ML, Maalouf NM. J Endocr Soc. **2025**;**9(9)**:bvaf104.  
Yu R. Curr Probl Cancer Case Rep. **2024**;**14**:100289. Prakash A, et al. World J Clin Oncol. **2023**;**14(11)**:544–8. Ogawa T, et al. Case Rep Pulmonol. **2020**;**2020**:1–6. Nemr S, et al. Case Rep Oncol Med. **2017**;**2017(1)**:2583217.

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**Abstract PRRC 01-26**

## **Colitis in the Cannabis Era: A Case Series**

**Authors:** Dagar M, Amjed I, Rodriguez C, Gil-Salazar M, Konwe B

### ***Introduction***

Cannabis use has increased dramatically. Beyond cannabinoid hyperemesis syndrome (CHS), growing evidence suggests it may trigger inflammatory changes in the colon. This series highlights three distinct presentations of acute colitis temporally associated with cannabis exposure to guide targeted, high-value care.

## Case Presentation

**Case 1:** A 29-year-old male presented with severe cramping lower abdominal pain, watery diarrhea, and a fever of 101°F. Labs revealed leukocytosis (WBC  $21.6 \times 10^3/\mu\text{L}$ ) and mild hypokalemia ( $\text{K}^+$  3.5 mmol/L). CT revealed segmental wall thickening consistent with ascending colitis. UDS was positive for THC. Symptoms improved with supportive care and cessation. **Case 2:** A 48-year-old female presented with 3–4 days of severe abdominal pain, nausea, and watery diarrhea. Urine toxicology was positive for cannabis and benzodiazepines. CT revealed mild diffuse colitis with submucosal fat density. Symptoms improved with supportive care. **Case 3:** A 49-year-old woman presented with abdominal pain, nausea, and vomiting. Labs revealed WBC  $14.5 \times 10^3/\mu\text{L}$ , glucose 177 mg/dL, venous blood gas pH 7.46,  $\text{pCO}_2$  26.2 mmHg, bicarbonate 18.4 mmol/L, and anion gap 14. Urinalysis showed ketonuria; UDS was positive for cannabis and amphetamines. CT showed pancolitis. Presentation was consistent with cannabis-induced colitis complicated by CHS and DKA.

## Discussion

Cannabis activates **CB1** and **CB2** receptors in the gut. While preclinical studies suggest anti-inflammatory effects, it is postulated that high-dose exposure may paradoxically trigger inflammation via vanilloid receptor 1 activation and substance P release. All three patients showed a temporal association between cannabis use and acute onset of colitis, with improvement after abstinence. Clinicians should consider cannabis as a potential differential diagnosis in unexplained colitis.

## References

Gorelick DA. N Engl J Med. **2023;389(24):**2267–75. Chetty K, et al. CJC Open. **2021;3(1):**12–21. Duncan M, et al. Am J Physiol-Gastrointest Liver Physiol. **2008;295(1):**G78–87. Rubio-Tapia A, et al. Gastroenterology. **2024;166(5):**930-934.e1. Oruganti P, et al. Cureus. **2020.**

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## Abstract PRRC 02-26

### Using hybrid house-call to identify high risk diabetics: A Quality Improvement Project

**Authors:** Gil-Salazar M, Bourmand R, Lee T, Nair P, Pillai S

## ***Introduction***

Between **1990 and 2018**, the number of US diabetes diagnoses quadrupled. Emergency departments (EDs) face increasing strain from high-acuity users. A hybrid house-call model was implemented to offer an alternative care pathway for adults with acute or symptomatic diabetes.

## ***Methods***

We reviewed encounter data for adults ( $\geq 18$  years) between **January 2022 and January 2024** for diabetes-related symptoms (**E11.65, E10.65, Z71.89, E08.00, E11.10**). Variables included demographics, vital signs, and visit modality.

## ***Results***

A total of **85** adult encounters were included (average age **51**). Visit modalities included clinic-based care (**44%**), hybrid house-call visits (**36%**), and virtual encounters (**20%**). Overall, **94%** (**n=80**) were safely managed without ED referral. Only **5** encounters (**6%**) were advised to seek ED evaluation. **93%** were discharged with primary care follow-up. No adverse events or unplanned hospitalizations were identified.

## ***Conclusion***

Traditionally high ED utilizers were successfully managed in outpatient settings. Future initiatives should focus on enhancing virtual support integration.

## ***References***

Uppal TS, et al. JAMA Netw Open. **2022;5(5):e2213867**.

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## **Abstract PRRC 03-26**

### **Scope Out Cancer: A Rural Health Quality Improvement Initiative**

**Authors:** Rodriguez C; Gil-Salazar M; Dagar M; Fatima S; Azam A; Namputhiri S; Barber C; Pillai S; Stewart D

## ***Introduction***

In Lamar County, Texas, only **6%** of eligible adults have undergone colorectal cancer screening. This initiative engaged over **fifty** high school students to design a community-focused educational initiative to improve knowledge and screening intent.

## ***Methods***

Pre- and post-intervention surveys were used to measure mean knowledge scores and self-reported likelihood to undergo screening.

## ***Results***

There was a significant increase in mean knowledge scores (**2.85 to 3.55, p = 0.00004**) and screening intent (**2.58 to 2.89, p = 0.03**). Reported barriers included time, low perceived risk, and fear of colonoscopy.

## ***Conclusion***

Collaborative community education involving students is feasible and scalable for rural preventive health.

## ***References***

Poster presented at American College of Physicians National Conference; April **2026**; San Francisco, CA.

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## **Abstract PRRC 04-26**

### **Case Report of Chronic Pancreatitis and Autoimmune Cholangitis in a 78-Year-Old Male**

**Authors:** Rodriguez C; Shelton J

## ***Introduction***

A **78-year-old** male presented with painless jaundice and elevated alkaline phosphatase (ALP). Initial EUS and ERCP suggested chronic pancreatitis.

## ***Case Presentation***

Despite benign cytology, ALP remained elevated for **2 years**. The patient eventually developed a **3-week** history of pruritus and fatigue. ERCP was suggestive of autoimmune primary sclerosing cholangitis. IgG-4 was significantly elevated to **610** (normal **1-123**).

## ***Discussion***

In the absence of inflammatory bowel disease, autoimmune cholangitis was diagnosed. The patient was started on a slow prednisone taper with improvement.

## ***References***

Poster presented at **32nd** Annual Research Appreciation Day at UNT Health; March **2025**; Fort Worth, TX.

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**Abstract PRRC 05-26**

## **Case Report of Spontaneous Coronary Artery Dissection in 33-Year-Old G4P4 Female**

**Authors:** Rodriguez C; Hashmi A; Singh L

## ***Introduction***

A **33-year-old** female presented with chest pain and palpitations **4 days** after delivery. She had NSTEMI (troponins up to **25,000+**) and hypokalemia (**2.8**).

## ***Case Presentation***

Initial catheterization showed no stenosis but kinking of the mid LAD. She returned **eight days** later with chest pain and troponins at **2381**. CTA revealed dissection of the mid-distal left circumflex artery with stenosis.

## ***Discussion***

Spontaneous coronary artery dissection should be considered in postpartum patients with chest pain, even when initial findings are unimpressive.

## ***References***

Poster presented at **32nd** Annual Research Appreciation Day at UNT Health; March **2025**; Fort Worth, TX.

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## **Abstract PRRC 06-26**

# **Calcium Crisis: Unveiling Calcitriol's Role in Rare Primary Pancreatic Lymphoma**

**Authors:** Dagar M, Azam AT, Gil-Salazar M, Pillai S, Green A

## ***Introduction***

Calcitriol-mediated hypercalcemia accounts for less than **1%** of malignancy cases. Primary pancreatic lymphoma (PPL) is an exceptionally rare malignancy (< **1%** of extranodal lymphomas).

## ***Case Presentation***

An **89-year-old** female presented with weakness and severe hypercalcemia (**13.2 mg/dL**). Labs showed suppressed PTH (**12 pg/mL**) and markedly elevated calcitriol (**105 pg/mL**). Calcium normalized on **day 3** with IV fluids but rose to **11.8 mg/dL** post-discharge. CT revealed pancreatic cancer, and cytology confirmed B-cell lymphoma (**CD45** and **CD20** positive). She was treated with low-dose prednisone (**10 mg/day**) and cinacalcet (**30 mg/day**) but transitioned to palliative care.

## **Conclusion**

PPL should be considered in the differential for calcitriol-mediated hypercalcemia. Cinacalcet is a promising therapeutic option.

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## **Abstract PRRC 07-26**

### **Immunotherapy or Iatrogenesis? Rapid Respiratory Failure from Lenalidomide-Induced Pneumonitis**

**Authors:** Dagar M, Fatima S, Azam A

#### **Introduction**

Lenalidomide rarely causes interstitial pneumonitis, which can range from mild dyspnea to severe respiratory failure. Early recognition and discontinuation are critical.

#### **Case Presentation**

A **73-year-old** woman with multiple myeloma on daratumumab, lenalidomide, and dexamethasone presented with **one week** of dyspnea. She was febrile to **38.2°C** with **SpO<sub>2</sub> 88%** on room air (improving to **94%** on **3 L/min**). Procalcitonin was **0.09 µg/L**. Oxygen needs escalated, requiring mechanical ventilation within **24 hours**. Infectious workup was negative. Following lenalidomide discontinuation and methylprednisolone, oxygenation improved within **48 hours**.

#### **Discussion**

Diagnosis relies on temporal association and exclusion of infection. Severe cases benefit from systemic corticosteroids. Rechallenge is not recommended as recurrence is common.

#### **References**

Finch K, et al. J Oncol Pharm Pract. **2023;29(4)**:971–4. Amraoui K, et al. Eur Respir Rev. **2013;22**:93–5. Thornburg A, et al. Chest. **2007;131(5)**:1572–4. Geyer HL, et al. Chest. **2011;140(2)**:529–33.

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**Abstract PRRC 08-26**

## **Gut speaks through the Heart: A rare case linking Colon Cancer with persistent Staphylococcal Bacteremia and Endocarditis**

**Authors:** Adhikari A, Dagar M, Mahapatra S, Kumar V, Konwe B

### ***Introduction***

While *Streptococcus gallolyticus* is classically linked to colorectal cancer, *Staphylococcus aureus* endocarditis may also suggest underlying GI malignancy.

### ***Case Presentation***

A **65-year-old** male presented with a **10-day** history of dyspnea, fatigue, and intermittent bright red blood per rectum. Hemoglobin was **4.7 g/dL**. CT showed a large ascending colon mass and hepatic metastasis. Blood cultures grew *S. aureus* and remained positive after **five days** of antibiotics. TEE was suspicious for early infective endocarditis. He completed a **six-week** course of IV antibiotics.

### ***Discussion***

Persistent *S. aureus* bacteremia without a clear source should raise suspicion for occult malignancy. Post-IE patients have a **2.45-fold** increased colorectal cancer risk. Early TEE and colon evaluation are essential.

### ***References***

Sun HY, et al. Clin Infect Dis. **2016;63(6)**:791–797. Fernández-Cruz A, et al. Medicine (Baltimore). **2017;96(2)**:e5849. Boleij A, et al. Clin Infect Dis. **2011;53(9)**:870–878.

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**Abstract PRRC 9-26**

## When GVHD Meets Mold: Fulminant *Bipolaris* Phaeohyphomycosis After Allogeneic Stem-Cell Transplantation

**Authors:** Dagar M, Dronadula V, Gil-Salazar M, Azam A, Mahapatra S, Mathews J

### *Introduction*

Phaeohyphomycosis is an invasive infection caused by dematiaceous molds. *Bipolaris* species are rare but highly pathogenic in immunocompromised hosts.

### *Case Presentation*

A **32-year-old** man with GVHD on immunosuppressants presented with headaches. Labs showed pancytopenia (WBC  **$3.1 \times 10^9/L$** , Hgb **10.4 g/dL**, Plt  **$27 \times 10^9/L$** ). MRI showed innumerable ring-enhancing lesions. Fungitell was  **$>500 \text{ pg/mL}$** . Biopsy confirmed *Bipolaris*. Despite amphotericin B and isavuconazole, he developed progressive encephalopathy and passed away.

### *Discussion*

Cell-wall melanin enhances resistance to oxidative killing and promotes neural invasion. Imaging mimics malignancy. While *Cladophialophora bantiana* causes nearly **half** of cerebral cases, *Bipolaris* remains aggressive. Outcomes are poor once CNS dissemination occurs.

### *References*

Revankar SG, et al. Clin Infect Dis. **2004;38(2)**:206-216. Kantarcioglu AS, et al. Mycoses. **2004;47(1-2)**:4-13. Rosow L, et al. Transpl Infect Dis. **2011;13(4)**:419-423.

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**Abstract PRRC 10-26**

## Temporal Association Between Cancer and Pulmonary Embolism Mortality: A Two-Decade National Study

**Authors:** Dagar M, Fatima S, Mahapatra S, Azam A

## ***Introduction***

Pulmonary embolism (PE) is a major cause of death in cancer patients. This study examines **20-year** trends in PE-associated mortality among U.S. adults aged **25 years** and older.

## ***Methods***

Using CDC WONDER data (**2003–2023**), deaths due to PE (**I26**) in cancer patients (**C00–C97**) were analyzed. Temporal trends were assessed via Joinpoint regression.

## ***Results***

From **2003–2023**, PE caused **204,414** deaths in cancer patients. Lung (**24.0%**) and gastrointestinal (**21.3%**) cancers were the most common. Females had an AAPC of **2.3584%**; males had an AAPC of **1.5271%**. Hispanic individuals had the highest AAPC at **2.7463%**, followed by White (**2.0498%**) and Black (**2.0357%**) individuals. California (**9.8%**) and Texas (**7.8%**) carried the highest state burdens. Most demographic groups showed rising trends.

## ***Conclusion***

PE-related mortality has steadily increased over two decades, necessitating targeted prevention.

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## **Abstract PRRC 11-26**

### **Cardio-Myositis Spectrum in Immunotherapy: Lessons from Pharmacovigilance Data**

**Authors:** Dagar M, Azam A

## ***Introduction***

Immune checkpoint inhibitors (ICIs) can trigger serious immune-related adverse events (irAEs), including myocarditis and myositis.

## **Methods**

FAERS data from **2003 to 2025** were analyzed. Disproportionality was measured using Proportional Reporting Ratios (PRR).

## **Results**

Pembrolizumab was associated with myocarditis (PRR **40.66**) and myositis (PRR **21.35**). Nivolumab showed similar signals for myocarditis (PRR **35.57**) and myositis (PRR **24.32**). Ipilimumab showed strong signals (myocarditis PRR **35.74**). Tremelimumab had the highest PRR for myocarditis (**53.93**). Death was reported in **25–57%** of myocarditis cases and **23–55%** of myositis cases across all ICIs.

## **Conclusion**

ICIs are significantly linked to serious cardiac irAEs. Early recognition is essential to reduce mortality.

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## **Abstract PRRC 12-26**

### **CDK4/6 Watchlist: Hematologic, GI, Cardiac, and Pulmonary Alerts for Clinicians**

**Authors:** Dagar M, Gil-Salazar M, Fatima S, Mahapatra S, Adhikari A

## **Introduction**

CDK4/6 inhibitors (Ribociclib, Palbociclib, Abemaciclib) have distinct adverse event (AE) profiles.

## **Methods**

FAERS data from **2015 to 2025** were analyzed using disproportionality analysis (PRR).

## Results

Ribociclib showed the strongest associations with neutropenia (PRR **22.01**, **n=771** hospitalizations) and QT prolongation (PRR **22.82**, **n=219**). Abemaciclib primarily caused GI toxicity (PRR **5.64**, **n=813**). Palbociclib was associated with neutropenia (PRR **11.58**, **n=721**) and GI toxicity (PRR **2.17**). Pneumonitis was uncommon but required hospitalization when it occurred (**n=167** for Ribociclib; **n=217** for Abemaciclib).

## Conclusion

Ribociclib carries the highest risk for hematologic and cardiac complications, while Abemaciclib predominantly causes GI toxicity.

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## Abstract PRRC 13-26

### The Silent Invader: Pituitary Failure Unmasking Late Metastatic Renal Cell Carcinoma

**Authors:** Dagar M, Kommuru S

#### Introduction

Pituitary metastasis from Renal Cell Carcinoma (RCC) is rare and often mimics more common sellar lesions. Endocrine deficits may be the first clue.

#### Case Presentation

A **67-year-old** man treated for RCC **7 years** earlier presented with vision loss and fatigue. MRI revealed a **1.8 × 2.0 × 2.6 cm** sellar mass. Histopathology confirmed metastatic clear-cell RCC. Postoperative sodium was **149 mmol/L**.

Lab values	Result	Reference range
Morning cortisol	<b>2.9 µg/dL</b>	<b>5–25 µg/dL</b>

ACTH	5 pg/mL	10–60 pg/mL
TSH	0.18 µIU/mL	0.4–4.5 µIU/mL
LH	<0.2 mIU/mL	1.7–8.2 mIU/mL
FSH	0.9 mIU/mL	1.5–12.5 mIU/mL
Total testosterone	120 ng/dL	240–950 ng/dL
Prolactin	49 ng/mL	4–15 ng/mL

### *Discussion/Conclusion*

Metastasis can occur up to **30 years** after initial diagnosis. Treatment includes surgery for relief, but hormonal deficits often persist. Endocrine evaluation is vital for sellar masses.

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### **Abstract PRRC 14-26**

## **Mural Thrombus in Abdominal Aorta Masquerading as an NSTEMI**

**Authors:** Azam A, Konwe B, Namputhiri S, Dagar M, Pillai S

### *Introduction*

Mural thrombi in the abdominal aorta have a prevalence of **0.8% to 9.0%** and can mimic other pathologies.

### *Case Presentation*

A **72-year-old** man presented with abdominal pain and elevated troponins (**4,693 ng/L**, rising to **9,102 ng/L**) but no ECG changes. CT revealed a mural thrombus causing **50%** stenosis of the SMA. Lactic acid was **1.2 mmol/L**. Echo showed EF **64%** and RVSP **32 mmHg**. He responded to anticoagulation (Apixaban).

## **Discussion**

Visceral ischemia can cause troponin elevations, mimicking NSTEMI. CT or MRI angiography is the preferred diagnostic modality. Troponins should only be ordered when ACS is clinically suspected to avoid diagnostic confusion.

## **References**

Fueglistaler P, et al. Vasc Med. **2008**;**13(2)**:91–97. Fayad ZY, et al. Ann Vasc Surg. **2013**;**27(3)**:282–290. Gagliardi RJ, et al. Radiol Bras. **2019**;**52(4)**:257–261.

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## **Abstract PRRC 15-26**

### **Cardiovascular Outcomes following Herpes Zoster Vaccination: A Systematic Review and Meta-Analysis**

**Authors:** Maniya T, Farid M, Abid H, Abbasi B, Afzal S, Afzaal U, Bibi M, Fatima R, Khalid H, Kumari N, Mustafa O, Nofal A, Raja R, Sohail H, Iqbal J, Hussain A

## **Introduction**

Herpes zoster vaccination (HZV) is primarily used to prevent shingles, but its association with cardiovascular outcomes is an area of recent study.

## **Methods**

Meta-analysis of **9** studies from PubMed, Embase, and Cochrane. Pooled odds ratios (OR) were calculated using a random effects model; **p < 0.05** was significant.

## **Results**

HZV was associated with significantly reduced risk of stroke (OR: **0.79**, **p=0.0002**), MI (OR: **0.76**, **p=0.0005**), MACE (OR: **0.77**, **p=0.004**), CAD (OR: **0.77**, **p<0.00001**), cardiac arrest (OR: **0.65**, **p=0.04**), and ACM (OR: **0.56**, **p<0.00001**). No significant association was observed for HF (OR: **0.81**, **p=0.24**).

## **Conclusion**

HZV is consistently associated with reduced cardiovascular mortality and events, representing a potential low-cost tool for prevention.

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## **Abstract PRRC 16-26**

### **When Hunger Meets the Heart: Escalating Malnutrition-Associated Cardiac Arrest Mortality in the United States**

**Authors:** Maniya T, Imtiaz N, Sohail H, Raja R, Nofal A, Mustafa O, Kumari N, Khalid H, Fatima R, Bibi M, Afzaal U, Afzal S, Abbasi B, Abid H, Iqbal J, Hussain A

## **Introduction**

Malnutrition is an underrecognized but critical risk factor for cardiac arrest. This study investigates national trends and disparities in mortality.

## **Methods**

CDC WONDER data analysis of malnutrition-associated cardiac arrest mortality among U.S. adults from **1999 to 2023** per **1,000,000** persons.

## **Results**

Total deaths: **100,695**. Mortality rose sharply after **2014** (APC: **12.72**). Men had higher rates than women. NH Black individuals had the highest AAMR (**26.1**), followed by Hispanic (**18.8**) and NH White (**15.0**) individuals. Regional variation was substantial; the West had the highest rates (**24.6**). Top **90th** percentile states had **seven** times the mortality of bottom **10th** percentile counterparts.

## **Conclusion**

The substantial rise in malnutrition-associated cardiac arrest mortality represents a growing public health crisis requiring targeted nutritional strategies.

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## Abstract PRRC 17-26

# Ondine's Curse: Central Hypoventilation and Recurrent Respiratory Failure Following Brainstem Infarct

**Authors:** Fatima S, Dagar M, Konwe B

### *Introduction*

Central alveolar hypoventilation (CAH), or Ondine's curse, involves the loss of autonomic respiratory drive. It is a rare sequela of ischemic stroke.

### *Case Presentation*

A **73-year-old** woman with a brainstem infarct developed severe hypercapnic respiratory failure and encephalopathy **72 hours** later. She required reintubation after failed extubation due to recurring respiratory distress and oromotor weakness. Clinical course was consistent with central hypoventilation.

### *Discussion*

CAH following stroke is exceedingly rare. Disruption of medullary and pontine respiratory centers causes apnea during sleep despite normal wakeful breathing. Diaphragmatic pacemakers have a **50–70%** success rate. Supportive care with mechanical ventilation and tracheostomy remains the cornerstone of treatment.

### *References*

Lim W, et al. Cureus. **2021;13(8):**e17153. Mendoza M, et al. Neurology. **2013;80(2):**e13-6. Sivakumar, et al. Case Reports in Neurological Medicine. **2018;4894820.**

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## Abstract PRRC 18-26

# Cardiopulmonary Toxicity in Merkel Cell Carcinoma: Delayed Radiation Pneumonitis After PD-1 Inhibitor Exposure in a Patient With Controlled HIV

**Authors:** Fatima S, Dagar M, Gil-Salazar M

## *Introduction*

Radiation pneumonitis (RP) typically occurs within **1–6 months**. Prior immune checkpoint inhibitor (ICI) therapy may potentiate lung injury, leading to atypical timing.

## *Case Presentation*

A **61-year-old** man with Merkel cell carcinoma and HIV (**400 cells/μL**) presented with **3–4 days** of dyspnea. He received thoracic radiation one year prior and pembrolizumab thereafter. Labs showed WBC **4.9 K/μL**, hemoglobin **11 g/dL**, and BNP **314 pg/mL**. CT showed a **5.2 × 0.9 cm** left upper lobe lesion. Imaging **one month** later localized the injury to the prior radiation field, confirming delayed RP.

## *Discussion*

PD-1 inhibitors may augment radiation responses through immune priming. Checkpoint inhibition is associated with pneumonitis in **3–5%** of patients. This case challenges the traditional **1–6 month** timeframe for RP.

## *References*

Nakajima S, et al. Medicine Case Reports and Study Protocols. **2020;1(1):e0004**. Zeng L, et al. iScience. **2025;28(7):112882**. Teng F, et al. BMC Med. **2020;18(1):275**.

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**Abstract PRRC 19-26**

## **Provider to provider (P2P): Closing the Loop**

**Authors:** Fatima S, Pillai S, Singh L

## **Introduction**

*Salmonella* infection can be severe in the immunocompromised. Care coordination between hospitalists and primary care is vital.

## **Methods**

A case review of coordination effectiveness in a rural healthcare setting.

## **Results**

A **63-year-old** male on Adalimumab presented with a **one-month** history of fevers and **2-week** history of abdominal pain. He had visited his primary care **2 times** and had blood cultures drawn **4 days** before ER visit. He was in distress requiring **1–2L** of oxygen. On **Day 3** of admission, his primary care doctor called to report *Salmonella enterica* in clinic cultures. Switching to Ceftriaxone **2g** led to clinical improvement over **five more days**. He completed **7 more days** of antibiotics as an outpatient.

## **Discussion**

In rural towns, the barrier to communication is negligible. This P2P interaction allowed for immediate targeted therapy and management planning.

## **Plans for the future**

We plan to identify physician practice patterns for communicating results and formulating a throughput to enhance quality patient care.

## **References**

Gruenewald R, et al. Clin Infect Dis. **1994;18(3)**:358-63. Callen J, et al. BMJ Quality & Safety. **2011;20**:194-199. Jones CD, et al. J GEN INTERN MED. **2015;30**:417–424.

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## **Abstract PRRC 20-26**

**Trough Monitoring Versus AUC-Guided Bayesian Dosing for Vancomycin in a Rural Setting: Reduced Monitoring Burden and Toxic Exposure Without Loss of Efficacy**

**Authors:** Azam A, Rast T, Green A, Saju S, Moody E

## **Background**

In **2020**, consensus guidelines from IDSA, ASHP, PIDS, and SIDP recommended transitioning from trough-based to area under the curve (AUC)/minimum inhibitory concentration (MIC)-guided vancomycin dosing supported by Bayesian forecasting software to improve efficacy and reduce nephrotoxicity. However, evidence supporting this shift in resource-limited rural hospitals remains scarce.

## **Objective**

To evaluate the real-world impact of implementing InsightRx Bayesian-supported AUC-guided vancomycin dosing on total vancomycin exposure, laboratory monitoring requirements, number of doses administered, time to therapeutic target, and safety (acute kidney injury [AKI] and supratherapeutic levels) compared with conventional trough-based monitoring in a rural community hospital.

## **Design, Patients and Setting**

Retrospective before-after cohort study of **244** consecutively eligible adult inpatients ( $\geq 18$  years) who received intravenous vancomycin for **>24 hours** during **two 3-month** periods (October–December 2024 [trough-based,  $n=114$ ] and October–December 2025 [AUC/Bayesian,  $n=130$ ]). Patients receiving vancomycin solely for surgical prophylaxis, those on chronic renal replacement therapy, pregnant patients, and those with end-stage renal disease were excluded from the AKI analysis. Conducted at Paris Regional Health, a **160-bed** rural community hospital serving a **250,000**-person referral area in Northeast Texas.

## **Measurements**

Primary outcomes: total vancomycin exposure (grams, VANGRM), total serum vancomycin concentrations obtained (SER), and total doses administered (DOSE). Secondary outcomes: incidence of new-onset AKI (KDIGO criteria, excluding pre-existing AKI or hemodialysis), doses to therapeutic target (DTT), days of therapy (DOT), and incidence of supratherapeutic exposure (MODEL\_OD: at least one trough **>20 mg/L** or **AUC >600 mg·h/L**).

## **Results**

Baseline characteristics were similar between groups (median age **66.5 vs. 68** years,  **$p=0.19$** ; **53.5% vs. 52.3%** male,  **$p=0.85$** ; median weight **85 vs. 79 kg**,  **$p=0.06$** ). After

adjustment for age, gender, and weight using quantile or negative binomial regression as appropriate: total exposure did not differ significantly (adjusted estimate **-0.79 g, p=0.27**). SER was reduced by **16%** (incidence rate ratio [IRR] **0.84, 95% CI 0.71–0.99, p=0.03**). DOSE was reduced by **23%** (IRR **0.77, 95% CI 0.66–0.89, p=0.0005**). DTT was reduced by a median of **1.5** doses (**p<0.0001**). Incidence of new-onset AKI and DOT did not differ. Patients in the AUC/Bayesian group had 80% lower odds of supratherapeutic levels (OR **0.203, p<0.0001**). Assumptions for regression models were verified (no multicollinearity, overdispersion addressed via negative binomial, normality violation addressed via nonparametric and quantile approaches).

### **Conclusion**

Implementation of AUC-guided Bayesian vancomycin dosing in a rural hospital maintained equivalent total drug exposure while significantly reducing laboratory draws, number of doses, time to therapeutic target, and supratherapeutic levels without increasing AKI. These findings support the **2020** guidelines and demonstrate that Bayesian software delivers meaningful benefits even in resource-constrained rural settings.

### **References**

Liu C, Bayer A, Cosgrove SE, et al. Clinical practice guidelines by the Infectious Diseases Society of America for the treatment of methicillin-resistant *Staphylococcus aureus* infections in adults and children. *Clin Infect Dis.* **2011**;52(3):e18-e55.

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