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Changing the Culture of Obtaining Urine Cultures; Diagnostic Stewardship Intervention Leading to Sustained Reduction in Inpatient CAUTI Rates

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Mentor: Trevor Van Schooneveld

Program: Internal Medicine

Type: Original Research

Background: Catheter associated urinary tract infections (CAUTI) are associated with adverse clinical and economic outcomes. Asymptomatic bacteriuria (ASB) is common in patients with indwelling catheters and indiscriminate urine cultures (UC) can lead to misidentification of CAUTI. Diagnostic stewardship efforts may impact inappropriate UC and misdiagnosis of CAUTI.

Methods: A UTI evaluation panel was implemented in April 2015 requiring clinician documentation of UTI symptoms or criteria supporting UC in the absence of symptoms or pyuria. Urine culture was reflexed if all the following were present: documented symptoms and patient criteria, pyuria (>10 WBC), and no contamination (>100 squamous cells). Monthly CAUTI data was collected using NHSN methodology from 2014 to

2022. CAUTI rates were evaluated pre, post intervention, and during the COVID-19 pandemic to determine CAUTI rate changes were sustained during the pandemic.

Results: CAUTI rates per 1000 catheter days decreased 40% between pre- and post-intervention (p=0.0001). There was no difference in rates between the COVID and post-periods (p=0.61). There was still a significant decrease of 33% from pre-intervention compared to pandemic period (p=0.02). Decreases in number of cultures obtained per 1000 patient days and

contaminated urine cultures were maintained between post intervention and pandemic time periods (Table 1).

Conclusion: We reduced urine cultures and CAUTI using a diagnostic stewardship strategy including documentation of patient criteria and symptoms and urine microscopic evaluation which was sustained during the COVID-19 pandemic. We did not evaluate the impact of this strategy on the treatment of ASB.

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Table 1. Changes in Rates of CAUTI per 1000 Catheter Days Between Periods

| Study period | Study Period | Model Estimated Risk | 95% Confidence interval | P value |
|------------------------------|-----------------------------------|----------------------|-------------------------|---------|
| Pre-UTI Panel (1/14-3/15) | Post- UTI Panel (4/15-3/2020) | 0.60 | 0.47,0.76 | 0.0001 |
| Pre-UTI Panel (1/14-3/15) | COVID-19 Pandemic (4/2020-6/2022) | 0.67 | 0.51,0.90 | 0.02 |
| Post-UTI Panel (4/15-3/2020) | COVID-19 Pandemic (4/2020-6/2022) | 1.13 | 0.87,1.46 | 0.61 |

Patient, Provider, and Interpreter Perspectives on Interpreter Modality and Barriers to Interpreter Use in a Pediatric Inpatient Setting

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Type: Original Research

Background: There are a growing number of patients and families who use a language other than English (LOE). Standard of care for best patient outcomes requires that these families receive professional interpretation for every encounter. Unfortunately, they do not always receive this.

Methods: Thirty subjects were chosen randomly to be interviewed in person or via video: ten caregivers of recently admitted pediatric patients (all via video, with interpreters) who use a LOE, ten professional interpreters, and ten pediatric healthcare providers (physicians, nurses, and therapists). The interview transcriptions and translations were analyzed using the qualitative software Dedoose.

Results: All interpreters and providers preferred in-person interpretation. Reasons included ability to see nonverbal language, greater trust and rapport with families, better accuracy, more thorough communication, less technical difficulties, and greater ability to assess family's understanding. Families also preferred in-person, for similar reasons. Most participants preferred video second. Barriers faced by providers included time, difficulty getting an in-person interpreter or any interpreter at all, and difficulty knowing if family is understanding. They described choosing interpreter use and modality based on accessibility, time, family preference, and clinical situation. They have used ad hoc interpreters and have had families decline interpreters for various reasons. Interpreter challenges included being overly busy, complex terminology, providers not adjusting to a family's health literacy level, navigating cultural and dialect differences, and providers not trained in communicating via interpreters.

Conclusion: Despite a clear preference for in-person interpreters, access is limited. Participants described multiple barriers to interpretation and challenges to be addressed in future research.

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Benefits of Routine Inpatient EEG in Practice: Experience from a Level 4 University Hospital

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Program: Neurological Sciences

Type: Original Research

Background: Inpatient routine EEG (rEEG) is commonly studied. We aim to improve the current practices by studying the use of rEEG in inpatient settings and its effect on treatment outcomes and management at a large university hospital.

Methods: Inpatient rEEGs from January-July 2021 were included, and patients <16 years, rEEGs repeated on same patient were excluded. Indications, floor status, abnormality, day of study, neurology

consultation, results, treatment changes, discharge status and prior anti-epileptic use were analyzed using SAS 9.4.

Results: The mean age for 250 patients included in the study was 57.27 yrs, where 54.22% were males, and 45.78% were females. Indications listed were 26.5% altered mental status, 59.83% seizures, and 13.65% other. 87.36% of ICU patients had an abnormal EEG vs 73.13% of floor patients. A significant association was found between floor and EEG results. Abnormalities were 44% generalized slowing, 23.6% focal slowing, 9.2% epileptiform activity, and 23.2% others. Treatment was changed in 21.03% with abnormal EEG vs 5.56% with normal EEG. AEDs were added in

18.46% with abnormal EEG vs 3.7% with normal EEG. A significant association was found between Neurology consultation with treatment change and AED addition, respectively. "Abnormal EEG" was significantly associated with further study. A significant association (p=0.0351) was found between EEG results and discharge status. Prior AED use had no association with EEG results.

Conclusion: It is helpful to consult Neurology. Longer duration of rEEGs may not show abnormalities/seizures. Prior AED use does not affect outcomes. Routine EEG facilitates discharges and guides further workup.

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Evaluation of Diabetic Eye Screening and Access at Two Outpatient Family Medicine Clinics in Omaha, Nebraska

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Mentor: Hannah Christiansen

Program: Family Medicine

Type: Original Research

Background: Diabetic retinopathy (DR) is a leading cause of vision loss. A previous pilot study examined an intervention allowing for same-day walk-in DR screenings without dilation; prior to this study, patients without an eye exam were referred to the internal ophthalmology/optometry department, requiring them to schedule a visit 3-6 months in advance. This pilot resulted in significantly increased number of referrals placed but did not result in significantly increased number of

completed diabetic eye exams, suggesting that the off-site location of DR imaging presented a barrier to screening completion.

Methods: This retrospective cohort study of 6,736 patients with a diagnosis of diabetes mellitus (type 1 or 2) between ages of 18-75 examined screening completion rate at a patient-centered medical home (PCMH) clinic with access to in-clinic DR imaging (OneWorld Community Health Centers) compared to that of a PCMH clinic without access to in-clinic imaging (Family Medicine at the DOC) over the course of 12 months.

Results: Incompletion rates of DR screening of patients with and without access to in-

clinic screening were nearly identical (60.04% and 59.49%, respectively).

Conclusion: This study suggests that in-clinic screening does not contribute to DR screening completion. Limitations include the lack of in-clinic screening for 3 of 12 months at OneWorld (which likely underestimates true DR screening completion). This study also did not consider patients who are screened by an optometrist/ophthalmologist (rather than their PCP). Investigation of completion rates within the same clinic before and after introducing in-clinic imaging could better evaluate screening access.

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Thoracic SMARCA4-Deficient Undifferentiated Tumors with Unusual Presentations

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Mentor: Ana Yuild-Vlades

Program: Pathology

Type: Original Research

Background: Thoracic SMARCA4-deficient undifferentiated tumor (SMARCA4-UT) is a recently described aggressive neoplasm defined by SMARCA4 inactivating mutations. SMARCA4-UT is a poorly differentiated neoplasm characterized by cells with

rhabdoid morphology, high mitotic activity, and abundant necrosis. Cases often present in young adults with a heavy smoking history. Here we describe three cases of SMARCA4-UT in older adults, including one presenting as a metastatic lesion mimicking a primary bone sarcoma.

Methods: Three cases of SMARCA4-UT were identified utilizing a natural language search in CoPath. hematoxylin and eosin-stained sections and a broad range of

immunohistochemical stains including SMARCA4 were evaluated.

Results: The patients were aged 58, 70, and 70. Two patients had a significant smoking history while the third was unknown. The lesions presented as a paratracheal mass, enlarged mediastinal lymph nodes, and an iliac bone mass. The iliac mass was originally incorrectly diagnosed as an undifferentiated sarcoma, but the patient was subsequently also found to have a lung mass

and mediastinal adenopathy. An FNA biopsy from a mediastinal lymph node demonstrated similar morphology to the iliac mass (Figure 1A). All cases showed pleomorphic rhabdoid cells, frequent mitoses, and necrosis (Figure 1B & 1C). SMARCA4 immunohistochemistry was negative in all cases (Figure 1D).

Conclusion: Thoracic SMARCA4-UT should be considered in the differential diagnosis of pleomorphic rhabdoid tumors in older adults with a smoking history. Although most present as lung and/or mediastinal masses, they may occasionally present as a metastasis and mimic an undifferentiated sarcoma, representing a potential diagnostic pitfall.

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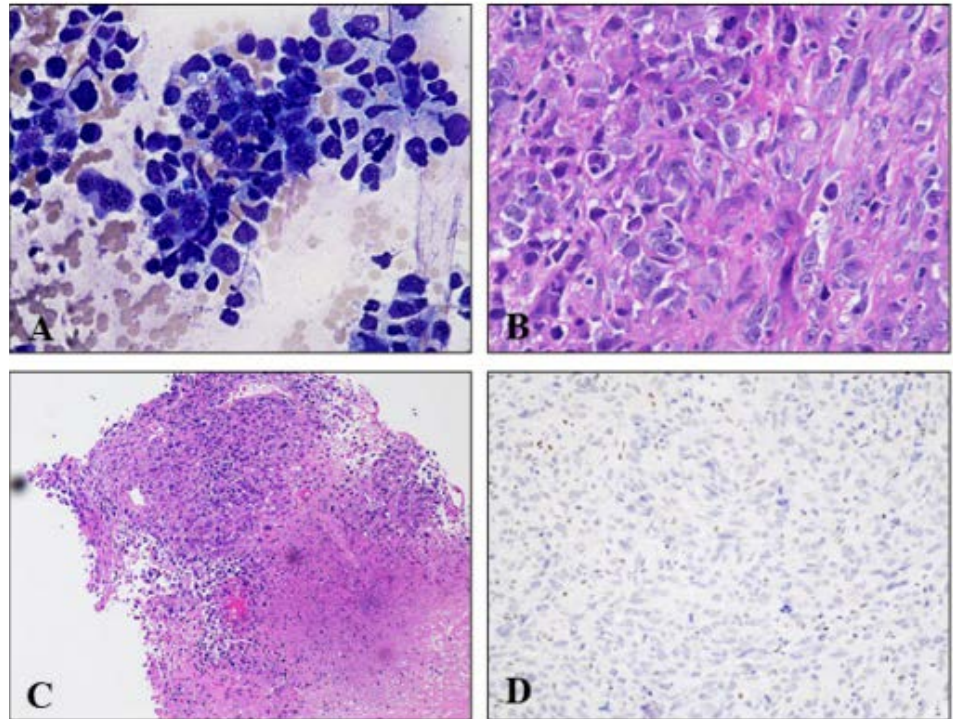


Figure 1: Histological analysis of a mediastinal lymph node demonstrated similar morphology of iliac mass with pleomorphic rhabdoid cells, frequent mitosis, and necrosis (Figure 1A-C) but is negative for SMARCA4 immunohistochemical staining (Figure 1D) and is suggestive of SMARCA4-UT.

Association Between Patient Demographics and No-Show Rates at a Family Medicine Residency Clinic in Downtown Omaha

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Mentor: Les Veskrna

Program: Clarkson Family Medicine

Type: Original Research

Background: The Clarkson Family Medicine Residency clinic operates as part of a patient-centered medical home near the Old Market of Omaha, Nebraska. Many of these patients are low-income individuals at risk for negative health outcomes due to decreased access to healthcare. This clinic, as do many healthcare practices, has a high rate of missed appointments. “No-show” appointments negatively impact both clinics and the patients they serve. This project aims to identify if certain demographics are associated with a higher risk of missing an appointment.

Methods: A 3-month retrospective chart review of patients scheduled at the Clarkson Family Medicine clinic was performed using data between July 1, 2022 and September 30, 2022. A chi-squared test was used to test for

statistical significance between demographics and no-show appointments.

Results: A total of 3,896 clinic visits were reviewed. The overall no-show rate was 15.68%. Factors associated with a higher incidence of no-show rates included gender (male: 18.28%; female: 14.16%; $p=0.000662$), patient age (0-18 years: 26.13%; 19-40 years: 19.60%; ≥ 41 years: 11.83%; $p<0.00001$), and insurance type (none: 26.67%; private: 12.30%; public 16.23%; $p<0.00001$).

Conclusion: Independent factors of gender, age, and insurance type had a statistically significant relationship with no-show appointments. The data indicated that males, younger patients, and uninsured patients missed a higher percentage of appointments. These findings may assist in developing future studies to identify barriers to care for patients who are at a higher risk of missing appointments.

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Establishing the Problem: Identifying Barriers to Workflow Among Internal Medicine Resident Physicians within the VA Medical Center

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Mentor: Evan Symons

Program: Internal Medicine

Type: Original Research

Background: Workflow inefficiencies, particularly those related to the electronic health record ‘CPRS’, have been a major focus in feedback from Internal Medicine (IM) resident physicians working at the Omaha Veterans’ Affairs (VA) facility. We surveyed current IM resident physicians to elucidate which factors have been especially cumbersome to daily workflow at the Omaha VA facility.

Methods: We drafted a list of CPRS components and institutional variables, which were then formulated into a Likert-style questionnaire. Participants were asked to gauge how frequently they had difficulty using each item. Additionally, participants ranked their level of agreement with statements regarding daily tasks essential to medical practice. These questions were distributed to current IM residents using Microsoft Forms. A public link was used to preserve anonymity.

Results: A total of 21 responses were obtained (91 participants total, 23% response rate) which is comparable to established

survey response rates. Locating intake and output data is challenging for most respondents (50% responding ‘constant issues’; 35% responding issues occur ‘frequently’). Difficulty logging onto a workstation was experienced ‘occasionally’ or greater in 90% of survey participants. (Figure 1). By comparison, patient list selection, reviewing notes, and forwarding pagers cause less frequent impediments.

Conclusion: A majority of IM resident physicians experience disruptions to daily workflow by potentially modifiable factors at the Omaha VA facility. Interventions to mitigate these factors can be prioritized based on the percentage of residents affected and the relative event frequency.

<https://doi.org/10.32873/unmc.dc.gmerj.5.1.037>

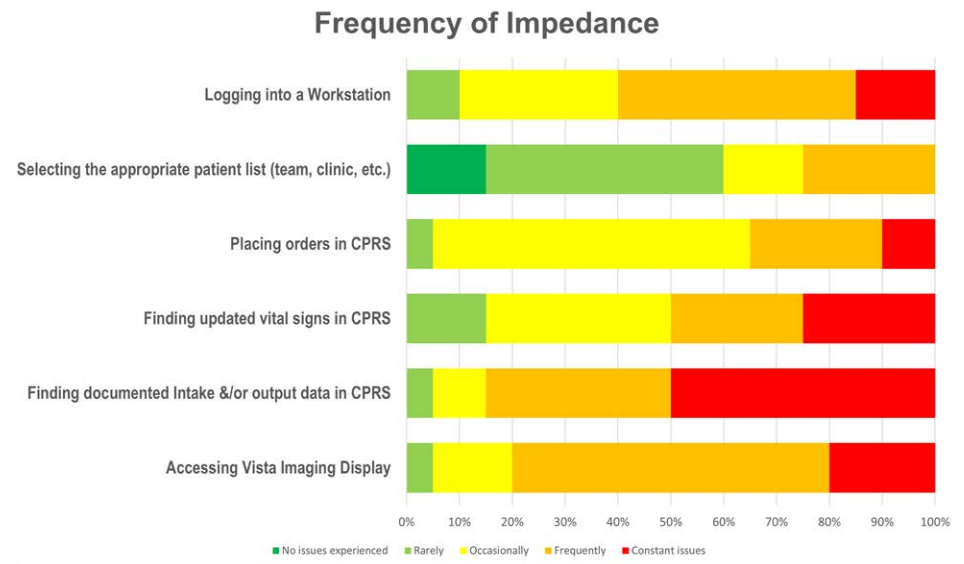


Figure 1. Participant responses to the prompt: “Please estimate how often you have experienced difficulty when using each of the following items

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Immunotherapy-Induced Glomerulonephritis: Whodunit?

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Mentor: Ketki Tendulkar

Program: Nephrology

Type: Case Report

Background: Kidney immune-related adverse events are well recognized side effects of immune checkpoint inhibitor therapy.

Case: A 72-year-old man was referred for evaluation of acute kidney injury (AKI) after being treated with adjuvant nivolumab for melanoma. Serum creatinine increased

from 1.0 mg/dL to 3.1 mg/dL with 300 mg of proteinuria. A presumed diagnosis of interstitial nephritis was made based on eosinophiluria. Nivolumab was stopped and he was started on prednisone and lisinopril and his kidney injury resolved. Six months later he was started on talimogene laherparepvec (T-VEC) for progressive disease. Four months into treatment, he developed edema, 10 g of proteinuria, and AKI. Kidney biopsy showed mesangio- and focal endocapillary proliferative glomerulonephritis. Immunofluorescence (IF) was positive for C3 and trace C1q and

electron dense mesangial deposits were present. T-VEC was discontinued, he was treated with rituximab, and prednisone for immune complex glomerulonephritis. He achieved resolution of kidney injury and proteinuria.

Conclusion: Programmed death 1 inhibitors (PD1i) have been described to cause AKI, most commonly due to tubulointerstitial nephritis (TIN). The improvement after stopping nivolumab and onset of proteinuria after T-VEC administration raises the possibility of a T-VEC induced immune