Introduction

Community-acquired methillin-resistant Staphylococcus aureus (CA-MRSA) has emerged as a common inciting pathogen of skin and soft tissue infection (SSTI) [1]. This emergence has posed a problem regarding appropriate prescription practices and an uncertainty as to what physicians should be utilizing empirically treat SSTIs [2]. One study demonstrated that between 1997-2002 and 2003-2008, rates of antibiotic prescriptions targeting methillin-sensitive Staphylococcus aureus (MSSA) for SSTIs decreased, while rates of antibiotics targeting MRSA increased [3]. An additional study correlated antibiotic prescription patterns in the treatment of abscesses and cellulitis to patient age, region of residence, and hospital department prescribing the antibiotic [4]

In recent years, there is a push within the medical community to have better stewardship of these antibiotics to limit resistant microorganisms [5,6]. Limiting use of these antibiotics has shown to decrease inappropriate antibiotic use without increasing harm to patients, but what remains unclear is whether the prescribing relationships previously studied have continued in recent years; or with the advent of stewardship programs across the nation, this paradigm has shifted [7].

Methods

We conducted a retrospective analysis of visits for the diagnosis of SSTI utilizing the 2011-2016 National Ambulatory Medical Care Survey (NAMCS). Data analyzed included sex, age, race, insurance type, metropolitan statistical area status, type of infection, geographic region, provider training level, insurance type, and antibiotic used for treatment.

Results

Table 1: Characteristics of visits receiving antibiotic prescription by selected patient and visit characteristics from 2011-2016

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total Prescriptions</th>
<th>Prevalent Prescription by Sex</th>
<th>Prevalent Prescription by Age, race, insurance type</th>
<th>Prevalent Prescription by Metropolitan Statistical Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total visits</td>
<td>15,573,417</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>7,451,661</td>
<td>4.8%</td>
<td>55.1%</td>
<td>9.1%</td>
</tr>
<tr>
<td>Female</td>
<td>8,121,756</td>
<td>5.2%</td>
<td>44.9%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Age, race, insurance type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-17 years</td>
<td>1,035,466</td>
<td>6.7%</td>
<td>61.3%</td>
<td>8.7%</td>
</tr>
<tr>
<td>18-44 years</td>
<td>7,203,605</td>
<td>4.7%</td>
<td>54.5%</td>
<td>9.7%</td>
</tr>
<tr>
<td>45+ years</td>
<td>7,334,346</td>
<td>4.8%</td>
<td>54.2%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Insurance type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No insurance</td>
<td>9,730,718</td>
<td>6.2%</td>
<td>58.1%</td>
<td>9.7%</td>
</tr>
<tr>
<td>Insurance</td>
<td>5,842,699</td>
<td>3.7%</td>
<td>41.9%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Region, Metros. statistical area</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>4,230,617</td>
<td>2.7%</td>
<td>46.5%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Midwest</td>
<td>4,964,205</td>
<td>3.2%</td>
<td>53.4%</td>
<td>9.9%</td>
</tr>
<tr>
<td>South</td>
<td>6,378,695</td>
<td>4.2%</td>
<td>50.1%</td>
<td>10.5%</td>
</tr>
</tbody>
</table>
| Characteristics of visits receiving antibiotic prescription by selected patient and visit characteristics from 2011-2016

Discussion

- Providers in the West prescribe antibiotics with MSSA coverage over MRSA coverage, similar to previous work between visits 1993-2005 [8]. Providers in the Midwest also utilize MRSA coverage more frequently.
- Providers in the South had higher utilization of MRSA class drugs, consistent with previous visits between 1997 and 2005 [4]. Providers in the Northeast utilized roughly equivalent prescriptions between the two classes.
- Prior data had suggested providers in the Northeast were more likely to prescribe MRSA class antibiotics [8].
- Patients treated with antibiotics with MRSA coverage on average received a greater number of antibiotics.
- May indicate providers are treating empirically then shifting to appropriate antibiotic classes derived from cultures or are stepping up coverage due to lack of response to initial therapy.
- Patients treated for SSTI with MSSA class antibiotics had a higher mean age.
- It is unclear if age is a risk factor for MRSA SSTI

Conclusions

- Providers more frequently utilize antibiotics with MRSA coverage for SSTIs.
- Antibiotic class chosen was correlated with region, with providers in the South more likely to utilize antibiotics with MRSA coverage.
- Visits receiving at least one antibiotic with MRSA coverage received more antibiotics on average.
- Individuals receiving antibiotics with MRSA coverage alone were older than those receiving MSSA with MRSA coverage.

References

American Indian Adherence Rates to Medical Therapy Following Revascularization Procedures for STEMI

Chris Zumwalt, MS4; Riley Moore, MS4; James Beal, Ph.D., Abe Sahmoun, Ph.D., Thomas Haldis, M.D., Cornelius Dyke, M.D.

Abstract
- The American Indian (AI) population suffers from cardiovascular disease (CVD) mortality rates that are 20% higher than the general population.
- Guideline-directed medical therapy (GDMT) adherence is essential for secondary prevention of ischemic events following revascularization.
- Our study compared GDMT adherence rates between AIs and non-AIs and found that trends of lower adherence rates exist in the AI population within 2 years following percutaneous intervention (PCI).
- GDMT adherence rates (defined as antiplatelet + statin + beta blocker for GDMT-1, and GDMT-1 + ACEI/ARB for GDMT-2) were found to have no statistical difference between the two populations at any time point within two years.
- No statistically significant difference was observed in the GDMT adherence rates between AI and non-AI patients during follow-up after PCI for STEMI.
- Despite a lack of statistical significance, noticeable trends of lower GDMT adherence rates and higher opioid rates in the AI population are concerning.
- Further studies into AI adherence to secondary prevention medical therapy after MI is warranted in order to identify and attempt to decrease the CVD morbidity and mortality burden in this underrepresented population.

Introduction
- When compared to any other ethnic group, American Indians (AIs) have been found to have higher rates of disease (CVD) risk, leading to increased rates of morbidity and cardiovascular mortality in these groups.
- It is recommended that patients who undergo PCI follow guideline directed medical therapy GDMT, which consists of antiplatelet, statin, and antilipase medications.
- GDMT has been proven to improve long term outcomes following PCI.
- Recent data have demonstrated that Northern Plains Indians receive GDMT after CABG at statistically similar rates as non-AI populations.
- This data however has also shown a significant decrease in the adherence rates to statins at 1-year post-op in the AI population when compared to non-AI populations.
- The goal of this study was to determine the rates of adherence to GDMT in patients treated with PCI in AI and non-AI populations.
- Additionally, this data was used to compare adherence rates of GDMT in post-PCI and post-CABG patients within the AI population.

Methods
- Data was collected via a retrospective analysis chart review of patients diagnosed with STEMI (ICD-9 410, ICD-10 I21.3) who underwent PCI within the timeframe of June 1, 2012 to June 1, 2017 at Sanford Medical Center Fargo.
- Using the Sanford Health electronic medical record (Epic Systems Corporation; www.Epic.com), adherence to GDMT was assessed at discharge, 30 days, 1 year, and 2 years post PCI.
- A total of 47 AIs and 54 non-AI patients were followed through 2 years.
- Propensity matching of the groups was accomplished by using the Risk Score for 30-Day readmission after PCI as well as hypertension, diabetes, and current dialysis status.
- GDMT-1 was defined as antiplatelet + beta blocker + statin.
- GDMT-2 was defined as anti-platelet + beta blocker + statin + ACE-I or ARB.
- GDMT-3 was defined as dual anti-platelet + beta blocker + statin + ACE-I or ARB and was only assessed at discharge and 30 days post-PCI.
- Insulin, oral hypoglycemics, and opioids were also assessed.

Results
- The incidence of prescribed ACE inhibitor/ARB, aspirin, beta-blocker, statins, opioids, and insulin were not significantly different at any follow-up point between the two groups.
- Oral hypoglycemics were prescribed significantly less in the non-AI group vs. the AI group at 30 days, 1 year, and 2 years (p = 0.04, p = 0.04, p = 0.01 respectively)
- There were no differences in GDMT1, GDMT2, and GDMT3 adherence rates between the two groups at any follow-up point in the study.
- Opioid use was similar between the two groups up until the 2-year time point, when AI use was at 42.6% vs 27.8% in non-AIs.

Conclusions
- There is no significant difference in the adherence rates of GDMT between AI patients and non-AI patients through 2 years of follow-up in North Dakota populations.
- Both populations had high rates of adherence throughout the 2 year timeframe (91.5% AI vs. 92.6% non-AI at 2 years).
- There was a trend of lower GDMT adherence rates in the AI populations seen at both 1 and 2 year follow-up, which mirrors the trend of lower GDMT adherence rates found by Kruger et al. in CABG patients in Northern Plains AI populations as noted by figure 4.
- Unlike the AI and non-AI patients following CABG, where significantly lower rates of statin use were observed in the AI population, our data demonstrated no significant difference in statin use between AIs and non-AIs following PCI.
- Future studies should further examine the adherence rates between PCI and CABG patients in the AI populations, as follow-up for longer periods of time with larger sample sizes may reveal a significant difference between GDMT adherence in AIs and non-AIs.

Figure 1: Guideline-directed medical therapy-1: any antiplatelet and beta-blocker and statin.

Figure 2: Guideline-directed medical therapy-2: any antiplatelet and beta-blocker and statin and ACE-I or ARB.

Figure 3: Comparison of GDMT-1 between CABG and PCI. Total at discharge 83.3% PCI vs. 85.2% CABG, p = 0.0624; at 1 year 83.2% PCI vs. 79.9% CABG, p = 0.7568. CABG adherence rates from (7); at discharge 83.3% AI vs. 69.3% non-AI, p = 0.0105; at 1 year 75.0% AI vs. 84.2% non-AI, p = 0.0104.
Prophylactic Pancreatic Duct Stent Retrieval: Retrospective Analysis of Outcomes and Spontaneous Dislodgement Rates

Stephanie Melquist MD, MPH1, Emeujevoke Okoh MD2
1. University of North Dakota School of Medicine and Health Sciences Department of Internal Medicine, 2. Sanford Health Department of Gastroenterology

Background
- Post-ERCP pancreatitis affects up to 10% of people undergoing endoscopic retrograde cholangiopancreatography (ERCP).
- High risk patients for post ERCP pancreatitis (PEP) should receive prophylactic stenting of the pancreatic duct.
- Advanced Endoscopists have varying practices on stent use, stent selection and protocol for removal.
- Newer stent technology allows for spontaneous dislodgement of stents in short period of time (Figure 1 A-B).
- The ASGE recommends use of PD stent to prevent PEP, but does not have guidelines upon removal of the stents.

Methods
- Charts were reviewed for type of pancreatic duct stents, follow-up imaging performed, time to follow-up endoscopy and complications of retained pancreatic stent (Figure 2).

Results
- 25 patients met study criteria
  - 14 Female, 11 Male, Age (24-85, median 50)
  - All patients were high risk for PEP
- ERCP was performed by 11 different expert endoscopists
  - Repeat EGD in 1 day
  - Follow-up KUB in weeks (varied time frame)
  - No follow-up
  - Planned endoscopy for other indications than PD stent retrieval
- 64% of stents spontaneously dislodged (n=16)
- 60% dislodged within 16 weeks (n=15/25)
- 36% of stents removed by endoscopy within 6 weeks (n=9)

• Characteristics of temporary stents that self extricated
  - OR of spontaneous dislodgement is improved with no internal flaps
    - OR 1.5 (95% CI 0.251-8.977) (p=0.657)
  - OR of retention with internal flaps
    - OR 0.66 (95% CI 0.111-3.989) (p=0.657)
  - OR of spontaneous dislodgement with external structure (flaps or pigtail)
    - OR 8.75 (95% CI 1.21-63.43) (p=0.0319)

• NO COMPLICATIONS OF RETAINED STENTS
  - Infection, pancreatitis, pancreatic duct damage, perforation, stent obstruction, proximal stent dislocation

Discussion
- Rates of spontaneous dislodgement are significantly improved with the use of stents with external structures including flaps and pigtail
- Spontaneous dislodgement rates are lower than expected due to endoscopist practice and early repeat EGD
- If allowed 16 weeks, 96% of stents placed would have spontaneously dislodged, likely omitting the need for follow-up
- No complications were noted, and no incidence of PEP
- Identifying whether follow-up of these stents is necessary can save millions of dollars in repeat endoscopy, follow-up imaging, risks associated with anesthesia and endoscopic procedures
- This pilot project will provide baseline information to design a prospective clinical trial evaluating spontaneous dislodgement rates of prophylactic pancreatic duct stents, and appropriate timing of follow-up imaging.

References
15. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1165-70
18. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1181-84
20. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1191-95
22. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1207-12
23. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1215-20
25. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1227-31
27. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1237-41
31. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1261-64
32. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1267-70
33. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1271-75
34. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1277-82
35. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1283-87
38. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1301-05
41. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1321-26
42. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1327-31
43. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1333-37
44. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1339-43
45. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1345-49
47. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1357-62
48. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1364-68
49. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1370-74
52. Fr pancreatic duct stent placement. Gastrointestinal Endoscopy 2015; 81: 1388-92
Diet enriched in Palmitic Acid rescues motor function, Tyrosine Hydroxylase, and Dopaminergic neurons from MPTP in C57Bl/6 mice

Jared Schommer, Diane Darland, Kumi Nagamoto-Combs, Colin Combs, and Othman Ghribi
Department of Biomedical Sciences, University of North Dakota School of Medicine & Health Sciences
Grand Forks, ND 58202-9037 www.med.und.edu

Abstract

Introduction: Synucleinopathies, a group of neurodegenerative disorders, are pathologically characterized by the abnormal accumulation of α-synuclein (α-syn) protein in intracellular neurites and cell bodies and gliotic inclusions known as Lewy bodies. The role of α-syn in the pathogenesis of synucleinopathies is not well understood but extensive experimental data points to a neurotoxic role of high levels of the protein in its soluble and aggregated form. The cause(s) of synucleinopathies are likely multifactorial with genetic predisposition and environmental factors contributing to the pathogenesis of the diseases. It is now becoming evident that the nature of our dietary intake influences disease-related genes and may thus potentially increase or reduce our risks of developing synucleinopathies. In the present study, we determined the contribution of the individual fatty acid palmitic acid to thoroughly elucidate its effects on PD-like pathology in cells and mice.

Methods: In an effort to present the effects of palmitic acid on hallmarks of PD-like synucleinopathy and a palmitic acid enriched diet on the progression of MPTP-induced Parkinsonism in a mouse model we utilized many techniques including: differentiation of mouse PSC’s into mature dopaminergic neurons, MPTP injections in animals on diet regimens containing altered levels of palmitic acid, bright-field microscopy, immunofluorescence, western blotting, Real Time RT PCR, Immunohistochemistry, and motor behavior tests such as the pole test and the grip strength test.

Results: We demonstrate that a PA enriched diet is protective against MPTP induced motor strength deficits in C57Bl/6 mice. The diet also decreases α-syn content and increases TH content in MPTP injected animals.

Conclusions: Our results show that a diet enriched in PA is protective against the MPTP-induced motor dysfunction. TH decrease, α-syn increase, and DA neuron loss in C57Bl/6 mice.

This data is very significant for it suggests that dietary intervention may be protective against synucleinopathy risk. This finding could save individual millions of dollars and the avariance of family hardships for individuals suffering with or those associated with those individuals that have these debilitating diseases.

Acknowledgements

This work was supported by a grant from the NIH (RO1AG045264).

1. Mouse Dopaminergic Neurons Express Tyrosine Hydroxylase

2. Palmitic Acid decreases α-syn and TH in mouse dopaminergic neurons

3. PA diet is protective against MPTP-induced motor strength deficits in C57Bl/6 mice

4. PA diet decreases α-syn content in MPTP injected animals

5. PA diet increases TH content in saline- and MPTP-injected mice

6. PA diet increases survival of TH positive neurons in MPTP injected animals

Conclusion:

Our results demonstrate that PA:

- Decreases α-synuclein and TH levels in mouse dopaminergic neurons
- Is protective against MPTP-induced motor dysfunction
- Decreases α-synuclein levels in MPTP treated animals
- Increases TH and PS-6-TH levels in saline- and MPTP-injected animals
- Increases TH-positive neuronal survival in the substantia nigra of mice

Such results suggest that a PA diet is protective against the MPTP-induced motor dysfunction, α-synuclein accumulation, TH depletion, and TH neuron loss.

Together, our results suggest that a PA-enriched diet may be protective against toxin-induced synucleinopathies.
A comparison of nationwide 30-day readmission rates in patients with unruptured cerebral aneurysms that received either surgical clipping or endovascular coiling

Rakan E. Dodin, Michael A. Cerjance, James R. Beal, Ph.D, Åke E. Sahmoun, Ph.D

Abstract

• Background:
  – Both endovascular coiling (EVC) and surgical clipping (SC) used
  – Study aimed to assess patient variables that predict type of procedure
  – Does a difference in 30-day readmissions exist?

• Methods:
  – Retrospective analysis 1418 patients in 2016 NRD
  – Primary outcome: differences in age, gender, hospital LOS, primary payer, income, hospital teaching status, hospital size
  – Secondary outcome: differences in 30-day readmissions

• Results:
  – Hospital LOS shorter in EVC (0.000)
  – More Medicare use in EVC (0.018)
  – Lower 30-day readmits in EVC (0.012)

• Conclusion:
  – On average older population undergoing EVC
  – EVC lower perioperative morbidity accounts for lower 30-day readmit rates
  – Lower perioperative morbidity leads to shorter stays

Methods

– Retrospective analysis 1418 patients in 2016 NRD
– Primary outcome: differences in age, gender, hospital LOS, primary payer, income, hospital teaching status, hospital size
– Secondary outcome: differences in 30-day readmits

Discussion

• Hunt-Hess grades IV-V in elderly → EVC recommended
  – Consideration of long-term durability not necessary

• EVC now is first-line for Medicare beneficiaries regardless eligibility for SC
  – Less morbidity due to minimally invasive nature
  – SC higher periprocedural morbidity and treatment may not reduce risk of subarachnoid hemorrhage

• 30-day readmit rates significantly higher in patients with longer ICU and hospital stays; infection often most common cause
  – Indirectly supported by our data

Experiments

<table>
<thead>
<tr>
<th>Variables</th>
<th>Endovascular coiling (n=579)</th>
<th>Surgical clipping (n=999)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total hospitalizations (n=1418)</td>
<td>58.6% (53.0, 63.5)</td>
<td>41.0% (36.5, 46.5)</td>
<td>0.000</td>
</tr>
<tr>
<td>Age, mean ± SEM</td>
<td>59.3 ± 8.6</td>
<td>56.3 ± 8.7</td>
<td>0.001</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>0.001</td>
</tr>
<tr>
<td>Male</td>
<td>28.0% (21.6, 35.9)</td>
<td>24.1% (20.1, 28.1)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>72.0% (74.2, 69.0)</td>
<td>75.9% (71.1, 79.9)</td>
<td></td>
</tr>
<tr>
<td>Hospital length of stay (days)</td>
<td>1.8 ± 1.1</td>
<td>5.0 ± 4.4</td>
<td>0.001</td>
</tr>
<tr>
<td>Income</td>
<td></td>
<td></td>
<td>0.002</td>
</tr>
<tr>
<td>≤ 4,120,000</td>
<td>29.4% (23.9, 35.4)</td>
<td>25.4% (23.5, 33.4)</td>
<td></td>
</tr>
<tr>
<td>4,121,000 – 5,920,000</td>
<td>28.8% (24.3, 33.5)</td>
<td>26.0% (22.3, 34.8)</td>
<td></td>
</tr>
<tr>
<td>5,921,000 – 19,200,000</td>
<td>24.5% (21.3, 27.8)</td>
<td>24.3% (19.1, 28.5)</td>
<td></td>
</tr>
<tr>
<td>&gt;19,200,000 or more</td>
<td>18.4% (15.6, 21.3)</td>
<td>21.7% (17.8, 26.5)</td>
<td></td>
</tr>
<tr>
<td>Total charges ($)</td>
<td>109,640 ± 5,044</td>
<td>177,380 ± 6,040</td>
<td>0.001</td>
</tr>
<tr>
<td>Primary payer</td>
<td></td>
<td></td>
<td>0.016</td>
</tr>
<tr>
<td>Medicare</td>
<td>42.9% (35.4, 49.7)</td>
<td>36.3% (31.9, 42.9)</td>
<td></td>
</tr>
<tr>
<td>Medicaid</td>
<td>10.7% (7.5, 13.8)</td>
<td>10.9% (8.0, 13.8)</td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>39.3% (35.3, 43.8)</td>
<td>41.4% (36.7, 46.9)</td>
<td></td>
</tr>
<tr>
<td>Self-pay, no charge, other</td>
<td>6.5% (4.9, 8.2)</td>
<td>4.6% (3.5, 6.6)</td>
<td></td>
</tr>
<tr>
<td>Hospital size based on no of beds</td>
<td>0.046</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>14.4% (8.6, 20.5)</td>
<td>16.7% (11.5, 23.2)</td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>85.6% (75.6, 94.4)</td>
<td>83.3% (78.4, 88.7)</td>
<td></td>
</tr>
<tr>
<td>Hospital teaching status</td>
<td></td>
<td></td>
<td>0.064</td>
</tr>
<tr>
<td>Metropolitan non-teaching</td>
<td>4.9% (2.7, 7.2)</td>
<td>4.8% (2.5, 7.5)</td>
<td></td>
</tr>
<tr>
<td>Metropolitan teaching</td>
<td>95.1% (98.3, 97.3)</td>
<td>95.2% (96.5, 97.8)</td>
<td></td>
</tr>
<tr>
<td>Readmission for any reason</td>
<td>4.5% (2.7, 7.3)</td>
<td>10.7% (6.7, 14.6)</td>
<td>0.012</td>
</tr>
</tbody>
</table>

Conclusions

• Patients who received EVC were older on average
  • This same cohort was more likely to be on Medicare
  • EVC is minimally invasive and thus lower perioperative morbidity
  • This helps explain shorter hospital LOS
  • This may also partially account for lower 30-day readmission rates in EVC group

Results

• 58.5% EVC; 41.5% surgical clipping
  • 76.5% of patients females
  • Average age EVC 59.3 ± 0.6; SC 56.3 ± 0.7 (0.000)
  • Hospital LOS in EVC 1.8 ± 0.1; SC 5.0 ± 0.4 (0.000)
  • Higher Medicare utilization rates in EVC (0.018)
  • SC group more likely to be readmitted within 30 days (0.012)
Background: Cholecystectomy is one of the most common surgical procedures in the United States yet there are relatively significant adverse outcomes with the procedure. Known risk factors for readmission include increased age, male sex, Medicare, Medicaid, surgery performed on weekends, and surgery performed at centers with lower surgical volumes. Current models assessing readmission risks have poor predictive values. We instead suggest assessing patients’ risk factors on an individualized level. Our study is being conducted to add additional information regarding patient specific risk factors for hospital readmissions following cholecystectomy.

Methods: We conducted a retrospective review of 77,345 patients who underwent laparoscopic or open cholecystectomies by utilizing the HCUP National Readmissions Database from January 1, 2016 to November 30, 2016. We excluded: patients who died during index admission, hospital length of stay, or number of days until the event was missing. We assessed cholecystectomy readmissions with regards to all-cause readmissions within 30 days of the procedures index admission date for all readmissions.

Results: We found that age ≥65, male gender, Medicare insurance, increasing mortality risk, elective admission setting, non-routine discharge, and increased length of stay as risk factors for readmission following cholecystectomy. Teaching status of the hospital was found to not be a risk factor. Readmission increases health care costs and consumes resources. Future studies should focus on obtaining more data on these risks. This will assist in creating an individualized risk model to improve patient outcomes.

Conclusions: 1. Our study identified male sex, increased age, Medicare, increased mortality risk, elective admission setting, routine discharge, and increased length of stay as risk factors for readmission following cholecystectomy.

Acknowledgements

References

Inappropriate antibiotic prescribing was common among all five respiratory conditions studied with an overall rate of 35% (Figure 1).

Inappropriate antibiotic use was highest for uncomplicated acute bronchitis and lowest for the 7-day sinusitis measure (Figure 1).

Characteristics predicting inappropriate prescribing patterns were analyzed for a total of 366 providers (Table 1).

Male sex was correlated with higher rates of inappropriate antibiotic prescribing across a composite of all four respiratory conditions – using both 7-day and 10-day sinusitis criteria (Table 1).

There were no significant differences in mean prescribing rates between provider types, specialties, or regions (Table 1).

Significant differences were identified between mean prescribing rates for all conditions except AURI and the 7-day sinusitis measure (Table 2).
Suicide-Related Over-the-Counter Analgesic Exposures Reported to US Poison Control Centers, 2000 - 2018

Alexandra G. Hopkins, BA1,2, Henry A. Spiller, MS, D.ABAT3,4, Sandhya Kistamargi, MPH1, Matoa Zhu, MD, MPH, PhD1,3, Nichole L. Michaels, PhD, MPH1,3, Alexandra R. Funk, PharmD, D.ABAT4, Gary A. Smith, MD, DrPH1,3
1Center for Injury Research and Policy, The Abigail Wexner Research Institute at Nationwide Children’s Hospital, 2University of North Dakota School of Medicine and Health Sciences, 3The Ohio State University College of Medicine, Department of Pediatrics, 4Central Ohio Poison Center at Nationwide Children’s Hospital

Abstract

Objective: To investigate suicide-related over-the-counter (OTC) analgesic medication exposures among individuals ≥6 years old reported to United States (US) poison control centers.

Methods: Data from the National Poison Data System for the years 2000-2018 were retrospectively analyzed. The NPDS is a database of calls to US PCCs maintained by the American Association of Poison Control Centers (AAPCC).

Results: From 2000-2018, United States poison control centers recorded 549,607 suicide-related cases involving over-the-counter analgesics, including 327,781 cases (59.6%) admitted to the hospital and 1,745 deaths (0.3%). Most cases involved a single substance (67.5%), and occurred among females (72.7%) and individuals 6-19 years old (49.7%). Overall, the rate of exposures increased significantly by 33.5% from 2000-2018, driven by the increasing exposure rate among 6-19-year-old females. From 2000-2018, exposure rates for acetaminophen and ibuprofen increased, while that for acetylsalicylic acid decreased. The proportion of exposures resulting in a serious medical outcome or healthcare facility admission increased for all types of OTC analgesics. Acetaminophen and acetylsalicylic acid accounted for 48.0% and 18.5% of cases, respectively, and 64.5% and 32.6% of deaths, respectively. Both acetaminophen and ibuprofen had greater odds of healthcare facility admission (ORs 2.56 and 2.63, respectively) and serious outcomes (ORs 2.54 and 4.90, respectively) compared to ibuprofen.

Conclusion: The rate of suicide-related over-the-counter analgesic cases is increasing. Acetaminophen and acetylsalicylic acid cases are associated with greater morbidity and mortality. Prevention efforts should include implementing unit-dose packaging requirements and restrictions on package sizes and purchase quantities for acetaminophen and acetylsalicylic acid products to reduce access to large quantities of these analgesics.

Background

- Intentional poisonings are the third leading mechanism for all suicide deaths behind firearms and alcohol.

- Acetaminophen and other OTC analgesics are often readily available in large quantities in homes throughout the US.

- Previous research has shown that drug availability can be a factor when considering the medications used for suicide.

- While OTC analgesics are used safely by millions of people each year, intentional self-poisonings can result in severe adverse outcomes, including death.

- Some countries have reduced intentional overdoses by implementing strategies to limit the accessibility of acetaminophen and acetylsalicylic acid. No such restrictions exist in the US.

Methods

- Data regarding OTC analgesic exposures with suicidal intent were obtained from the NPDS and retrospectively analyzed. The NPDS is a database of calls to US PCCs maintained by the American Association of Poison Control Centers (AAPCC).

- “Intentional—suspected suicidal” OTC analgesic exposures reported for ages ≥6 that occurred between January 1, 2000 and December 31, 2018 were included in the study.

- Age groups were divided into the following intervals: 6 to 15 years, 16 to 24 years, 25 to 54 years, 55 to 84 years, and 85 years and older.

- Acetaminophen alone and acetaminophen/ASA combinations were considered acetaminophen exposures.

- Annual exposure rates were calculated using data from the US Census Bureau utilizing July 1 population estimates.

- Trends were analyzed using simple linear regression and piecewise linear regression, as appropriate.

Results

Table 1. Characteristics of suicide-related exposures to OTC analgesic medications by age group, NPDS 2000-2018

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>Total Exposures (row %)†</th>
<th>6 - 19</th>
<th>20 - 29</th>
<th>30 - 39</th>
<th>40 - 49</th>
<th>50 - 59</th>
<th>60 Years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>273240 (100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>221066 (80.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>51900 (19.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender Unknown</td>
<td>334 (0.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>226 (0.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown Unknown</td>
<td>91 (0.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of Exposure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Substance</td>
<td>120254 (73.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poly Substance</td>
<td>51906 (26.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Substance Code</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>123578 (45.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetylsalicylic Acid</td>
<td>37068 (12.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetaminophen Alone</td>
<td>334158 (12.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetylsalicylic Acid Alone</td>
<td>71986 (26.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>53225 (35.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>201254 (73.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of Health Care Received</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No HCF care received</td>
<td>2965 (1.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not followed</td>
<td>78063 (28.6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>admits and released</td>
<td>273240 (100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admitted</td>
<td>120254 (55.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>39797 (14.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical Outcome</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Effect</td>
<td>95420 (34.9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor Effect</td>
<td>48347 (17.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Serious Outcome</td>
<td>41685 (15.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>17133 (6.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unable to follow</td>
<td>34158 (12.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Conclusions

- The overall rate of suicide-related OTC exposures per 100,000 US population showed a significant 33.5% increase during the 19-year study period.
- The increasing trend was primarily driven by the increasing exposure rate among 6-19-year-old females.
- The most striking change in suicide-related OTC analgesic cases occurred after 2011, when the rate of exposures for 6-19 year olds increased significantly by 75.5%.
- Across all ages, suicide-related OTC analgesic exposures were more commonly associated with acetaminophen.
- The proportion of exposures resulting in a serious medical outcome or HCF admission increased significantly for all types of OTC analgesics.
- Acetaminophen and acetylsalicylic acid accounted for 48.0% and 18.5% of cases, respectively, and 64.5% and 32.6% of deaths, respectively.
- Prevention efforts should include implementing unit-dose packaging requirements and restrictions on package sizes and purchase quantities for acetaminophen and ASA products to reduce access to large quantities of these analgesics.

References

Importance of having a personal health care provider to diabetes management

Christy Jesme, MSII,† Abe E Sahmoun, PhD,†
† University of North Dakota School of Medicine and Health Sciences Grand Forks, ND

Introduction
• Diabetes affects approximately 10.5% of Americans.
• Primary care physicians play a crucial role in diabetes management and are responsible for implementing evidence-based guidelines to improve outcomes for diabetic patients.
• Compared to individuals without a primary care physician, Americans with a primary care doctor receive higher quality care, have lower mortality risk, and better self-reported health.
• To our knowledge, this study is the first to directly compare individuals with at least one health care provider to those without a personal health care provider among diabetics.

Objective
• To examine whether diabetic individuals without a personal health care provider have lower rates of recommended testing and monitoring of their diabetes.

Methods
• We used survey weighted logistic regression to create a propensity score of not having a personal health provider, adjusting for confounders. We generated national estimates by using survey estimation weights, primary sampling unit clusters, and sampling strata that accounted for the complex survey design of the BRFSS and for nonresponse.
• We compared having at least one personal health provider to not having one.

Results
Of the 51,456 national respondents, 3,035 (7.6%) reported not having a personal health provider.

Limitations: Healthy individuals may have chosen to forego having a personal health provider. Including these individuals in the "no personal health provider" comparison group would bias our findings. To guard against this confounder, we used a propensity score weighting approach to eliminate this bias. Recall bias is likely in self-reporting surveys.

Strengths: Use of a large sample size allowed computing stable estimates. All the respondents were sampled randomly, which increases the generalizability of the conclusions. There are only small number of studies that have used individual-level empirical data to assess the association between having a personal health provider and diabetes management.

Conclusions
• Adults who reported not having a personal health provider are significantly less likely to receive recommended testing and monitoring of their diabetes.
• Despite reports recommending that each person have a primary care physician, a significant percentage of the population does not.
• There should be incentives that encourage people to have a personal health provider in order to prevent serious and costly complications from diabetes.

References
Biomechanical Evaluation of the Accuracy in Radiographic Assessment of Femoral Component Migration Measurement after Total Hip Arthroplasty

Mikayla D. Forness1,2, Zachary J. Podoll1,2, Benjamin C. Noonan2,3,4, Alexander C. M. Chong1,2,4

1Sanford Sports Science Institute, Sanford Health, Fargo ND; 2University of North Dakota School of Medicine and Health Sciences, Grand Forks, ND; 3Sanford Orthopedics and Sports Medicine, Fargo, ND; 4Sanford Health, Department of Graduate Medical Education, Fargo, ND

Introduction

The stability of the prosthetic components after total hip arthroplasty (THA) is critical for long-term implant performance. Implant subsidence is one criteria utilized to monitor for prosthesis loosening after THA with initial implant subsidence assessment often done utilizing plain radiographs. The specific aim of this study was to identify the most reliable references when using plain radiographs to establish an image magnification with the goals of being easy to use, inexpensive, reliable, and accurate. It is hypothesized that using femoral stem length to generate the radiographic image magnification factor will be a more reliable reference for determining femoral stem migration after THA.

Methods

• Two femoral stem implants (stem lengths: 127 mm, 207 mm) were utilized to simulate hemiarthroplasty of the hip with composite femurs. (Figure 1)
• Different combinations of femoral stem distances from the radiographic film (ODD), source-detector differences (SDD), hip rotation, and hip flexion were elected. (Figure 2)
• Standardized anterior-posterior pelvis for each parameter combination setup were taken
• Radiographic measurements were performed by each examiner with 1 day between measurements
• Radiographic image magnification factors were generated from two references (head diameter and stem length).
• Radiograph measurement reproducibility and stem seating length errors using these magnification factors were evaluated

Experiments

• The 2 stem lengths produced a total of 92 X-ray images with varying SDD, ODD, hip flexion, and hip rotation
• 3 examiners measured the femoral head diameter, femoral stem length, and femoral stem seating length of all images a 5 times separated by 1 day
• Stem Seated length error was then calculated using 8 separate formulas using magnification factors derived from the known femoral head (Mag_FHD) and femoral stem length (Mag_FSL); Errors shown in Table 1

Discussion

• Other studies utilizing reference points, lines, and/or markers show variation in measurement 4-12 mm if compared with radiostereometry (gold standard)
• Plain films are limited to 2-D image of a 3-D object
• Even with standardized patient positioning, small changes are inevitable. It was found that small changes in hip rotation, flexion, and ODD lead to significant changes in calibrated measurement error
• Can plain film radiographic parameters truly provide reliable information of THA subsidence?
• Limitations: Sawbones without soft tissue, only two models of implants used, measurement landmarks of stem seated length given limitation in some of the X-ray views

Results

• High level of repeated measurements reliability was found for head diameter (99 ± 0%) and stem length (90 ± 7%) measurements, whereas seating length measurements were less reliable (76 ± 6%)
• Stem length error using the femoral head magnification factor yielded 11% accuracy
• Stem seating length error using both magnification factors were not reliable (< 7% accuracy)
• All parameters, except SDD, showed significant effect on calibrated measurement error

Conclusions

Current methods of assessing the implant subsidence after THA are inaccurate and unreliable. Clinicians should recognize these limitations and be cautious when diagnosing implant stability using plain radiographs alone.
Respiratory-related symptom prevalence among users and non-users of e-cigarettes: A retrospective analysis
Zachary Schmiess1 BS, Carissa Klarich1 BA, & Noelle Torrance1 BS, James Beal Ph.D1 & Abe Sahnoun Ph.D1
University of North Dakota School of Medicine and Health Sciences1

Abstract
• In late 2019, a cluster of temporally-related pulmonary illnesses called E-cigarette or Vaping-Associated Lung Injuries (EVALI) were reported to the CDC
• Symptoms of EVALI include cough and shortness of breath
• This retrospective study compares the prevalence of respiratory-related symptoms among users and non-users of e-cigarettes

Methods
• Data was obtained from the 2018 Behavioral Risk Factor Surveillance System (BRFSS), exposure/outcome and SAS v9.4 software accounted for the complex sample survey design
• Summary statistics and bivariate comparisons were applied to our data analysis. All significance tests were two-sided, with a P-value < 0.05 for significance

Results
• 269,432 survey respondents were included, with 18% (n=48,598) reporting e-cigarette use
• Respondents reporting e-cigarette use were between 18-64 years (93.6%), male (55.5%), and white (66.1%), and reported a cough most days (24.1%), cough productive of phlegm or mucus (23.1%), and shortness of breath (30.3%) as compared to 15.0% (P= 0.000), 12.7% (P= 0.000), and 22.3% (P= 0.000) in non-users of e-cigarettes, respectively
• Respondents reported asthma in 19.0% of cases, as well as current smoker, former smoker, and never cigarette-smoker in 29.9%, 26.5%, and 31.6%, respectively

Discussion
• Our data revealed a significant increase in reported prevalence of respiratory-related symptoms among users of e-cigarettes
• They reported a cough most days, a cough productive of phlegm or mucus, and/or shortness of breath significantly more than non-users
• The literature shows a significant increase in the prevalence of similar respiratory-related symptoms as well
• This may suggest a potential relationship between e-cigarette use and the development of respiratory symptoms
• Respondent demographics of individuals with a higher prevalence of e-cigarette use included individuals under the age of 65, male, white, attended college or technical school, had health insurance, and lived in a metropolitan area
• As our study is cross-sectional, future cohort studies are necessary to determine if this relationship is causal
• Secondary characteristics reported by respondents that could contribute to respiratory-related symptoms include a history of asthma and current or former cigarette smoking
• Future studies would benefit from exclusion criteria that include a history of respiratory disease or cigarette smoking
• As we do not fully understand the relationship between e-cigarette use and the development of respiratory symptoms and EVALI, it is apparent that this is an important area to expand on existing research due to the increasing prevalence of e-cigarette use and the potential health burden of e-cigarette morbidity and mortality

Conclusions
• Our results show a higher reported prevalence of respiratory-related symptoms in e-cigarette users vs. non-users
• Further studies are warranted to account for confounding factors

Experiments

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cigarette Use</th>
<th>No Cigarette Use</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total respondents (n=269,432)</td>
<td>22.7% (20,664)</td>
<td>77.3% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>Age group</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>18-24</td>
<td>93.6% (20,664)</td>
<td>77.3% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>25-34</td>
<td>9.6% (1,546)</td>
<td>86.6% (19,980)</td>
<td>000</td>
</tr>
<tr>
<td>35-44</td>
<td>6.4% (1,464)</td>
<td>85.2% (19,980)</td>
<td>000</td>
</tr>
<tr>
<td>Gender</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Female</td>
<td>59.6% (11,646)</td>
<td>44.5% (34,564)</td>
<td>000</td>
</tr>
<tr>
<td>Male</td>
<td>40.4% (11,646)</td>
<td>55.5% (34,564)</td>
<td>000</td>
</tr>
<tr>
<td>Race</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>White</td>
<td>66.1% (20,664)</td>
<td>67.3% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>Black</td>
<td>12.7% (3,393)</td>
<td>12.3% (2,519)</td>
<td>000</td>
</tr>
<tr>
<td>Hispanic</td>
<td>15.4% (3,393)</td>
<td>17.3% (2,519)</td>
<td>000</td>
</tr>
<tr>
<td>Asian</td>
<td>5.3% (1,384)</td>
<td>4.9% (1,284)</td>
<td>000</td>
</tr>
<tr>
<td>Other</td>
<td>6.7% (1,784)</td>
<td>7.7% (1,734)</td>
<td>000</td>
</tr>
<tr>
<td>Education attainment</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>High School graduate or higher</td>
<td>12.8% (20,664)</td>
<td>14.3% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>Graduated High School</td>
<td>32.7% (20,664)</td>
<td>33.5% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>Attended College or Technical</td>
<td>37.9% (20,664)</td>
<td>38.8% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>Attended College or University</td>
<td>17.7% (20,664)</td>
<td>18.9% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>BMI</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Underweight</td>
<td>2.6% (21,46)</td>
<td>2.1% (23,41)</td>
<td>000</td>
</tr>
<tr>
<td>Normal</td>
<td>33.3% (21,46)</td>
<td>33.9% (23,41)</td>
<td>000</td>
</tr>
<tr>
<td>Overweight</td>
<td>33.1% (21,46)</td>
<td>33.2% (23,41)</td>
<td>000</td>
</tr>
<tr>
<td>Obesity</td>
<td>31.1% (21,46)</td>
<td>33.2% (23,41)</td>
<td>000</td>
</tr>
<tr>
<td>Health Insurance status</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Yes</td>
<td>83.6% (20,664)</td>
<td>83.6% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>No</td>
<td>16.4% (2,177)</td>
<td>16.4% (3,172)</td>
<td>000</td>
</tr>
<tr>
<td>Total Asthma</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Yes</td>
<td>12.3% (2,177)</td>
<td>13.1% (3,172)</td>
<td>000</td>
</tr>
<tr>
<td>No</td>
<td>87.7% (20,487)</td>
<td>86.9% (199,426)</td>
<td>000</td>
</tr>
<tr>
<td>Metropolitan Status</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Yes</td>
<td>70.4% (20,664)</td>
<td>70.4% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>No</td>
<td>29.6% (20,664)</td>
<td>29.6% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>Cigarette Smoking Status</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Never smoking or ex</td>
<td>15.3% (20,664)</td>
<td>15.3% (202,598)</td>
<td>000</td>
</tr>
<tr>
<td>Former</td>
<td>23.9% (15,275)</td>
<td>23.9% (23,275)</td>
<td>000</td>
</tr>
<tr>
<td>Daily smoking</td>
<td>59.8% (15,275)</td>
<td>59.8% (23,275)</td>
<td>000</td>
</tr>
<tr>
<td>Annual Income</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>&lt; $20,000</td>
<td>24.1% (5,157)</td>
<td>25.1% (5,017)</td>
<td>000</td>
</tr>
<tr>
<td>$20,001-40,000</td>
<td>31.6% (5,157)</td>
<td>31.6% (5,017)</td>
<td>000</td>
</tr>
<tr>
<td>&gt; $40,000</td>
<td>44.3% (5,157)</td>
<td>44.3% (5,017)</td>
<td>000</td>
</tr>
<tr>
<td>Did a cough in past month</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Yes</td>
<td>24.1% (5,157)</td>
<td>24.1% (5,017)</td>
<td>000</td>
</tr>
<tr>
<td>No</td>
<td>75.9% (5,157)</td>
<td>75.9% (5,017)</td>
<td>000</td>
</tr>
<tr>
<td>Did cough up phlegm or mucus</td>
<td>000</td>
<td>000</td>
<td>000</td>
</tr>
<tr>
<td>Yes</td>
<td>30.9% (5,157)</td>
<td>30.9% (5,017)</td>
<td>000</td>
</tr>
<tr>
<td>No</td>
<td>69.1% (5,157)</td>
<td>69.1% (5,017)</td>
<td>000</td>
</tr>
</tbody>
</table>
| Table 1. Variables examined amongst users and non-users of e-cigarettes per 2018 BRFSS questionnaire

References
Demographic and Behavioral Factors Associated with Malignant Melanoma

Anaas Mergoum, MD, PharmD and Abe E Sahmoun PhD
University of North Dakota School of Medicine and Health Sciences Grand Forks, ND

Background

Malignant melanoma is considered the most dangerous form of skin cancer. Recent studies have shown rising incidence of melanoma that represents a real increase in disease burden and not over-diagnosis as a result of increased diagnostic intervention. The identification of subgroups at a high risk of malignant melanoma may result in primary prevention.

Objective: The aim of this study was to determine demographic and behavioral risk factors associated with malignant melanoma.

Methods

We utilized the 2018 Behavioral Risk Factor Surveillance System (BRFSS) to compare individuals who reported being diagnosed with malignant melanoma to individuals with non-melanoma skin cancer. BRFSS is a random representative sample of United States adult residents regarding health-related risk behaviors, chronic health conditions, and use of preventive services. The median survey response rate was 49.9% [range: 38.8%-67.2%]. We generated national estimates by using survey estimation weights, primary sampling unit clusters, and sampling strata that accounted for the complex survey design of the BRFSS and for nonresponse.

Results

Of the 2,180 individuals reporting skin cancer, 36.9 % (n=780) were diagnosed with malignant melanoma.

Males were significantly more likely to be diagnosed with melanoma than female, 45.9% vs. 28.4% (P< .0001).

Age, race, education attainment, health insurance, having a primary care doctor, and cost as a barrier to seeing a doctor were not risk factors for being diagnosed with malignant melanoma.

Figure 1. Effect of time of exposure to sun on Melanoma patients (%)

Strengths: Use of a large sample size allowed computing stable estimates. This national dataset included several confounders. All the respondents were sampled randomly, which increases the generalizability of the conclusions. There are only small number of studies that have used individual-level empirical data to determine demographic and behavioral risk factors associated with malignant melanoma.

Limitations: Recall bias is likely in self-reporting surveys. Only few states have asked the questions related to skin cancer.

Discussion

• Among the Melanoma respondents, males are more likely to be affected than women. Previous studies reported that such as Markovic et al., where males were 1.5 times more likely to develop melanoma.1

• Exposure to sun more than 2 hours increase significantly the risk of Melanoma. This was studied previously Elwood et al, which interestingly concluded that intermittent sun exposure was a risk factor for melanoma vs chronic continuous pattern.2,3

Conclusions

• This study showed that male gender and long summer hours in the sun were significant predictors of malignant melanoma.

• Prevention efforts should emphasize the use of sun screen protection particularly for men.

• However, more studies are needed since we still don’t truly know the basis in the increase in the lifetime risk of developing melanoma in United States

References


A Low-Cost and Effective Tool to Calculate a Community’s Substance Use Disorder-Related Hospitalization Risk
Quinci Paine MSIV, Margarita Consing MSIII and Gabriela Balf MD, MPH

Background
Substance used disorders (SUD) and the opioid crisis remain an ongoing public health problem in North Dakota. Solutions promoted nationwide have been difficult to implement in a predominantly rural state, complicated by the geographical, technological, and staffing challenges. In a paradigm shift, Green et al focused on the existing resources to combat this crisis and designed The Calculating for an Adequate Systems Tool (CAST) in 2017. This study, done in 2019, used the CAST tool on a reportedly successful community, Towner County, ND, to quantify the strengths and weaknesses of its SUD crisis response.

Methods
The CAST assesses county-level SUDs care systems for the four SAMHSA Continuum of Care categories with the addition of a fifth category, referral. The tool estimates needs in 32 components of the five categories based on region and community characteristics. The estimated needs are then compared to the existing resources, highlighting under- and overutilized areas. The result was a global county risk of hospitalization due to SUD, which was then compared to the national median.

The CAST and its handbook are practical and freely available.

Sources of information:
• National databases
• Key community leaders
• Construction of proxies with help of the tool’s authors

The CAST calculated a global risk score of 13 for Towner County, placing it in the medium range and correlates with a 0-25% increase in hospitalization rate compared to the national median.

Components of the categories of care that exceeded estimated need:
• Promotion category
  – Media based advocacy
  – Marketing advertisements
• Prevention category:
  – Community based programs
  – Housing vouchers
  – Needle exchange programs
  – Prescription drug disposal events/locations

Conclusions
• The CAST, its handbook, and most of the required data are freely available online.
• Identifies needed or redundant resources and optimizes resource allocation.
• May reduce hospitalization rate and improve community SUD care outcomes

Limitations to this study include:
• Development of proxies due to lack of available in rural counties.
• Towner county’s services may be used by patients from other counties and vice versa, potentially affecting data.

Further research opportunities include application of the CAST system to other rural counties.
Patterns of Emergency Department Antibiotic Utilization for ARTIs in Adult U.S. Populations

Schroeder, A. Lewis, S. Sahmoun, A. Beal, J.

Background

- Antimicrobial resistance causes >2.8 million antibiotic resistant infections yearly in the U.S., resulting in 35,000 deaths
- Significant costs associated with infections, ranging from impact on patient to a monetary standpoint
- 2001-2010: no significant change in antibiotic prescribing rates in Emergency Department (ED) whereas outpatient setting saw a decrease in the rate of antibiotic use
- Purpose was to evaluate antibiotic utilization for acute respiratory tract infections (ARTIs) in ED setting from 2011-17
- Expected a decrease in inappropriate antibiotic prescribing since 2011 due to pressure to practice antibiotic stewardship

Methods

- Retrospective analysis of adult ARTIs visits to EDs and prescription rates between 2011-2017 utilizing National Hospital Ambulatory Medical Center Survey-Emergency Department (NHAMCS-ED) datasets
  - 4,632 unweighted visits, representing >28 million visits
- Antibiotics based upon NHAMCS-ED’s Multum Lexicon Drug Database coding system
- Diagnoses appropriately treated included:
  - Otitis media, Tonsillitis, Sinusitis, Pharyngitis, Non-viral Pneumonia
- Diagnoses inappropriately treated included:
  - Nasopharyngitis, Unspecified URI, Bronchitis, Bronchiolitis, Viral pneumonia, Influenza

Results

- Majority of patient demographics:
  - Females (65.2%)
  - 25-44 years of age (45.3%)
  - White (64.0%)
  - Government insurance (50.9%)
  - Metropolitan statistical area (MSA) (81.5%)
  - Not seen within the last 24 hours (97.3%)
- More likely to receive antibiotic if:
  - ≥45 years old (p=0.005)
  - Male (p=0.039)
  - Living in a non-MSA area (p=0.002)
- Not associated with receiving an antibiotic:
  - Race, insurance status, CBC, Xray, blood cultures
- 57.2% of visits resulted in antibiotic prescription
- Prescribing rates of antibiotics for ARTIs in the ED declined significantly since 2011 from 65.8 to 54.3% in 2017 (p=0.046)

Discussion

- Males more likely to receive an antibiotic, despite females more commonly visiting the ED, comparable to previous studies
- Non-MSA status more likely to receive antibiotics
- ARTIs are more commonly a clinical diagnosis explaining the insignificance of lab work-up
- Study limitations
  - Large estimated sample size
  - Small percentage of patients >65 years

Conclusion

- Prescribing rates of antibiotics for adult ARTIs in the ED decreased significantly since 2011
- Future studies:
  - Observing prescribing rates of specific antibiotic agents and associated hospital antibiograms
  - More participants in each subgroup to elucidate trends or prescribing biases based on age
  - Assessment of therapy duration