The Undercurrent of Implicit Bias in our Age of EMR Efficiency

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Disclosures

- **Research funding:** CSL Behring, Takeda Pharmaceuticals
Implicit bias discussions are NOT easy
So why is this guy qualified?
Disclosures

• **Research funding:** CSL Behring, Takeda Pharmaceuticals

• **Pertinent Disclosure:** I have perpetuated my biases through the EMR and made erroneous assumptions based on reading other providers’ notes.
Objectives

• At the end of this presentation the learner should be able to:

1) Recognize that electronic medical records (EMR) are not simply inert data but instead can impart subconscious cues to future readers.

2) Distinguish ways that our implicit biases may be triggered by EMR documentation.

3) Propose methods to recognize and then mitigate these undercurrents of bias in the EMR.

Text alexboucher027 to 37607 to join and participate in audience response (PollEverywhere)
Implicit Biases in Documentation
"We went over all her options including coming into observation for IV antibiotics and careful monitoring versus a plan to go home after receiving one dose of IV antibiotics here. She has opted for the latter and given her experience in the healthcare system, this is prudent. She tells me she lives close enough to the hospital if anything were to get worse. She feels comfortable with this plan and politely refused to come in, which is of course very reasonable and within her rights."

-A woman in her 60s with active malignancy and complicated UTI because of recurrent home catheterizations
What first impressions come to mind when you read this text?

Nobody has responded yet.

Hang tight! Responses are coming in.
"This is typically her pattern, when she becomes frustrated she will lash out at nursing staff with verbal abuse. This is not uncommon for her in the ED, usually toward the nursing staff. **Would recommend that (eventually, after this acute episode of illness is resolved) the patient's primary hematology clinic write into her care plan that verbal abuse of the staff will not be tolerated.**"

--A woman in her 20s seeking care for acute pain (underlining was present in the EMR).
What are your first impressions for this note?

Nobody has responded yet.

Hang tight! Responses are coming in.
"This is typically her pattern, when she becomes frustrated she will lash out at nursing staff with verbal abuse. This is not uncommon for her in the ED, usually toward the nursing staff. Would recommend that (eventually, after this acute episode of illness is resolved) the patient's primary hematology clinic write into her care plan that verbal abuse of the staff will not be tolerated."

--ED evaluation of a young adult female with sickle cell disease (underlining was present in the EMR).

- In reality, she had been in the ED several dozen times in the 12 months prior and similar documentation was present only two other times.
Definitions

- **Stereotype**: A standardized mental picture that is held in common by members of a group
  - represents an oversimplified opinion or uncritical judgment
- **Bias**: A personal and sometimes unreasoned judgement (i.e. prejudice)
  - Does NOT specify positive or negative
- **Culture**: Customary beliefs, social norms, and material traits of a racial, religious, or social group
Stereotypes, Bias, and Culture
Stereotypes are generalizations (possibly negative) while biases take it a step further, where judgements or decisions are not objective or supported by facts/evidence.

https://www.countrynavigator.com/blog/stereotypes-bias-and-culture/
Stereotypes are generalizations (possibly negative) while biases take it a step further, where judgements or decisions are not objective or supported by facts/evidence.

https://www.countrynavigator.com/blog/stereotypes-bias-and-culture/
Ripple effect
Do Words Matter?
The most significant feature of sickle cell anemia is not its characteristic bizarre deformation of erythrocytes but the fact that it is apparently the only known disease completely confined to a single race…

Nevertheless, it appears that the sine qua non for the occurrence of sickle cell anemia is the presence of a strain, even remote, of Negro blood.

SICKLE CELL ANEMIA, A RACE SPECIFIC DISEASE, January 4, 1947, JAMA
Demographic differences in EMR documentation

- Individuals who are Black, non-English-speaking, and/or had Medicaid had less documentation to determine lung cancer screening eligibility\(^4\)

- Differential social risk factor screening by race (N=651 community health centers in 21 states)\(^5\)
  - Hispanic Black \(\text{OR}=2.26\) [95% CI=1.64, 3.11]; non-Hispanic Black \(\text{OR}=1.49\) [95% CI=1.11, 1.99]) vs non-Hispanic White
  - Hispanic White \(\text{OR}=0.72\) [95% CI=0.57, 0.92]) vs non-Hispanic White

- Goals of care discussions less frequent in elderly racial/ethnic minorities\(^6\)

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\(^4\) Marcotte Am J Manage Care (2023)
\(^5\) Torres Am J Prev Med (2023)
\(^6\) Uyeda J Pain Symptom Manage (2023)
Stigmatizing Language in the EMR

- Jan 1, 2019 – Jun 30, 2021
- >9,000 patients, >12,000 encounters (ED, inpatient)
- 10 negative, 9 positive words
- 5 M Health Fairview hospitals
  - 3 on campus
  - 2 in suburbs
- Ages 0 – 104
- Each word used once in an encounter
- Fairview demographics from same time period:
  - White 68.1%
  - Black/AA 16.8%

<table>
<thead>
<tr>
<th>Category</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Patients</td>
<td>9,135 (100)</td>
</tr>
<tr>
<td>Total Encounters</td>
<td>12,238 (100)</td>
</tr>
<tr>
<td>Mean Age at First Encounter (years, standard deviation)</td>
<td>52 (22.3)</td>
</tr>
<tr>
<td>Age at First Encounter in years (%)</td>
<td></td>
</tr>
<tr>
<td>0-20</td>
<td>937 (10.3)</td>
</tr>
<tr>
<td>21+</td>
<td>8198 (89.7)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>4166 (45.6)</td>
</tr>
<tr>
<td>Male</td>
<td>4790 (52.4)</td>
</tr>
<tr>
<td>Unknown</td>
<td>179 (2)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>6730 (73.7)</td>
</tr>
<tr>
<td>Black/African American</td>
<td>1369 (15)</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>213 (2.3)</td>
</tr>
<tr>
<td>Asian</td>
<td>294 (3.2)</td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>21 (0.2)</td>
</tr>
<tr>
<td>Mixed Race (3 or More Reported)</td>
<td>8 (0.1)</td>
</tr>
<tr>
<td>Choose Not to Answer</td>
<td>429 (4.7)</td>
</tr>
<tr>
<td>No Information Available</td>
<td>70 (0.8)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
</tr>
<tr>
<td>Not Hispanic/Latino</td>
<td>7813 (85.5)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>266 (2.9)</td>
</tr>
<tr>
<td>Not Reported</td>
<td>1056 (11.6)</td>
</tr>
</tbody>
</table>
### Differences in Word Use in EMR Based on Patient’s Race

<table>
<thead>
<tr>
<th>Term</th>
<th>White</th>
<th>Black/AA</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angry</td>
<td>1506 (17.14%)</td>
<td>364 (17.63%)</td>
<td>1.03</td>
<td>(0.9, 1.19)</td>
<td>0.64</td>
</tr>
<tr>
<td>Argumentative</td>
<td>421 (4.79%)</td>
<td>104 (5.04%)</td>
<td>1.05</td>
<td>(0.8, 1.39)</td>
<td>0.71</td>
</tr>
<tr>
<td>Disrespectful</td>
<td>68 (0.77%)</td>
<td>51 (2.47%)</td>
<td><strong>3.25</strong></td>
<td>(2.14, 4.92)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Hostile</td>
<td>323 (3.68%)</td>
<td>80 (3.87%)</td>
<td>1.06</td>
<td>(0.75, 1.48)</td>
<td>0.75</td>
</tr>
<tr>
<td>BDFS</td>
<td>852 (9.7%)</td>
<td>247 (11.96%)</td>
<td><strong>1.27</strong></td>
<td>(1.03, 1.56)</td>
<td>0.03*</td>
</tr>
<tr>
<td>SPC</td>
<td>653 (7.43%)</td>
<td>190 (9.2%)</td>
<td>1.26</td>
<td>(0.99, 1.61)</td>
<td>0.06</td>
</tr>
<tr>
<td>BDFS &amp; SPC</td>
<td>1320 (15.02%)</td>
<td>370 (17.92%)</td>
<td><strong>1.23</strong></td>
<td>(1, 1.52)</td>
<td>0.04*</td>
</tr>
<tr>
<td>Noncompliant</td>
<td>2402 (27.33%)</td>
<td>794 (38.45%)</td>
<td><strong>1.66</strong></td>
<td>(1.42, 1.95)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Compliant</td>
<td>3104 (35.32%)</td>
<td>590 (28.57%)</td>
<td><strong>0.73</strong></td>
<td>(0.64, 0.84)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Ambitious</td>
<td>6 (0.07%)</td>
<td>7 (0.34%)</td>
<td>4.98</td>
<td>(1.55, 15.94)</td>
<td>0.01*</td>
</tr>
<tr>
<td>Resilient</td>
<td>230 (2.62%)</td>
<td>46 (2.23%)</td>
<td>0.85</td>
<td>(0.6, 1.19)</td>
<td>0.34</td>
</tr>
<tr>
<td>Polite</td>
<td>1551 (17.65%)</td>
<td>236 (11.43%)</td>
<td><strong>0.60</strong></td>
<td>(0.51, 0.71)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Respectful</td>
<td>101 (1.15%)</td>
<td>30 (1.45%)</td>
<td>1.27</td>
<td>(0.82, 1.95)</td>
<td>0.28</td>
</tr>
<tr>
<td>Negative Terms</td>
<td>4953 (56.36%)</td>
<td>1430 (69.25%)</td>
<td><strong>1.74</strong></td>
<td>(1.5, 2.03)</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Positive Terms</td>
<td>4530 (51.55%)</td>
<td>805 (38.98%)</td>
<td><strong>0.60</strong></td>
<td>(0.52, 0.69)</td>
<td>&lt;0.001*</td>
</tr>
</tbody>
</table>

* Designates a significant p-value (≤0.05).

BDFS, Combined analysis of “bitch”, “damn”, “fuck”, and “shit”; CI, confidence interval; SPC, “swearing”, “profanity”, or “cursing”; OR, odds ratio

Ivy ZK, et al. Submitted for publication
Additional Findings

- Curse words appeared 54% more frequently than cursing/swearing/profanity
  - “Upon entering her room to draw labs, she stated “I have been f***ing calling for help and you guys have been f***ing ignoring me.”

- Presence of curse words and overall negative terms seemed to increase ~5% for Black individuals vs White individuals after George Floyd
  - Unclear cause (defensive documentation?)
  - Seems to be at odds with more inclusive tone at system level

- Serial negative terms were ~2x as likely as serial positive terms in patients with multiple encounters

Ivy ZK, et al. Submitted for publication
"This is typically her pattern, when she becomes frustrated she will lash out at nursing staff with verbal abuse. This is not uncommon for her in the ED, usually toward the nursing staff. Would recommend that (eventually, after this acute episode of illness is resolved) the patient's primary hematology clinic write into her care plan that verbal abuse of the staff will not be tolerated. “

--Follow up note of mine on this specific interaction:

"We had the discussion today, since she was feeling more awake, about mutual respect that should be provided in the ED and by her, and it sounds like this is not happening in either direction right now. This led to some frustration, as she points out that ED nursing and other providers only write down what she says and may downplay their behavior towards her, whether they intend to treat her like they do or not."
How do we disrupt the status quo?
Ideas for Change

1. Increase awareness of implicit biases
Increase Awareness of Implicit Bias

• Providers may be unaware of biases
  – 243 ED providers surveyed (2018)
    o 75% unaware of 2014 NHLBI Sickle Cell Disease (SCD) guidelines
    o 98% confident in SCD care knowledge
    o ED staff-reported barriers: opioid epidemic (62.1%), patient behavior (60.9%), crowding (58.0%), concern about addiction (47.3%), and implicit bias (37.0%)
Quotation Caution

• Quoting patients may imply skepticism or distrust\(^8\)
  – He said he “lost” his oxycodone prescription.
  – Patient said she had a “reaction” to the medication.

• Readers fill the context with implicit biases
• Note writer maintains plausible deniability
• Quoting may be skewed towards racial minorities\(^9\)

Ideas for Change

1. Increase awareness of implicit biases
2. Think slow
Dual Process Theory aka “Thinking, Fast and Slow”

- **System 1 (Fast Thinking):** Emotional automatic response to information
  - Critical for emergency medicine, ICU, anesthesia, etc
  - Developed from mental shortcuts (heuristics)
    - Heuristics built from culturally biased information, increases risk of anchoring

- **System 2 (Slow Thinking):** Deliberate processing that takes more effort
  - Allows for recognition of faulty lines of thinking (if aware of their presence)
  - Requires some focus so other tasks are pushed aside
Ideas for Change

1. Increase awareness of implicit biases
2. Think slow
3. Recognize loaded terms/stacking
Mr. R is a 28-year old sickle cell patient with chronic left hip osteomyelitis who comes to the ED stating he has 10/10 pain “all up in my arms and legs.” He is narcotic dependent and in our ED frequently. At home he reportedly takes 100 mg OxyContin BID and oxycodone 5 mg for breakthrough pain. Over the past few days, he says that he has taken 2 tabs every 4–6 hours. About 3 months ago, patient states that the housing authority moved him to a new neighborhood and he now has to wheel himself in a manual wheelchair up 3 blocks from the bus stop.

Yesterday afternoon, he was hanging out with friends outside McDonald’s where he wheeled himself around more than usual and got dehydrated due to the heat. He believes that this, along with some “stressful situations,” has precipitated his current crisis. Pain is aching in quality, severe (10/10), and has not been helped by any of the narcotic medications he says he has already taken.
Mr. R is a 28-year old man with sickle cell disease and chronic left hip osteomyelitis who comes to the ED with 10/10 pain in his arms and legs. He has about 8–10 pain crises per year, for which he typically requires opioid pain medication in the ED. At home, he takes 100 mg OxyContin BID and oxycodone 5 mg for breakthrough pain. Over the past few days, he has taken 2 tabs every 4–6 hours. About 3 months ago, he moved to a new apartment and now has to wheel himself in a manual wheelchair up 3 blocks from the bus stop.

He spent yesterday afternoon with friends and wheeled himself around more than usual, which caused dehydration due to the heat. He believes that this, along with recent stress, precipitated his current crisis. The pain is aching in quality, severe (10/10), and not alleviated by his home pain medication regimen.
Words May Affect Treatment Rendered

• 413 med students/residents (IM, EM)
  – 43% female
  – 55% White, 27% Asian, 10% Black/AA, 8% Other race or not reported

• Attitudes towards patients had inverse correlation with training year
  – Black/AA trainees (“in-group”) had slightly better attitudes

• Less aggressive pain management in stigmatizing case
Ideas for Change

1. Increase awareness of implicit biases
2. Think slow
3. Recognize loaded terms/stacking
4. Take caution with copy-forwarding
Copy-Forward Risks

• **Value:** Work is expedited with EMR burden and billing requirements

• **Risks:**
  1. Use of outdated information
  2. Inverse relationship of the amount of copy-forwarding to the value of information provided
  3. Easy source of bias distribution to readers unknown
Ideas for Change

1. Increase awareness of implicit biases
2. Think slow
3. Recognize loaded terms/stacking
4. Take caution with copy-forwarding
5. Add context
Add Context for Characterizations

"The (80+ year old) patient has not been very compliant with follow-up, which is why he did not receive any treatment for his metastatic colon cancer until last month, and he did not receive formal chemo teaching prior to starting capecitabine."

- Seems to be unifocal blame on why there was a delay in starting treatment and an implied excuse for why he did not receive formal chemo teaching.

**Patient only spoke Russian and lived alone**

Implicit biases are ingrained in medical culture

- Documentation is a hidden, ubiquitous source of bias
  - Copy-forwarding, loaded language may compound risks
- “Thinking slow” can reduce bias, ensure more equitable care
- Stigmatizing language may have value, but context must be offered
  - Displace readers’ biases by removing guesswork

Summary

Words (and documentation) matter.
So why is this guy qualified?
So why are we qualified?
Future Directions

• Seek funding for interventional studies using nudge theory, heuristic avoidance
  – Develop EMR tools to encourage (nudge) alternatives to stigmatizing language
  – Determine ideal node in communication string to alter trajectory for patients at high risk for stigmatization (e.g. triage nurse in ED)
  – Review whether clinical outcomes (admission Y/N, length of stay, patient-centered outcomes) are affected
If you wait for others to initiate change, you automatically become a follower.

PEYTON MANNING
Thank you for engaging on this challenging topic.

Questions/comments?

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References