Fewer Hospitalizations, More Health: Widening Gaps in Unnecessary Hospitalizations During covid-19

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UC Center Sacramento
Disclosures

• No conflicts of interest

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  – NIH/National Institute on Aging (NIA) Midcareer Investigator Award in Patient-Oriented Research (1K24AG047899-06),
  – NIH/NIA UCLA Resource Center for Minority Aging Research/Center for Health Improvement of Minority Elders (2P30AG081684)
  – NIH/NCATS UCLA Clinical & Translational Science Institute (UL1TR001881).

• I am not an expert in policy
Objectives

• Call attention to the crisis of overuse/“low-value care”

• Describe pandemic impact on unnecessary (potentially avoidable) admissions

• Encourage thinking/discussion on how to ensure that efforts to reduce low-value care reduce rather than increase disparities
Geriatricians = Advocates by Nature

• Dual roles
  – Fighting for more ("better") care
  – Protecting them from unnecessary and potentially harmful care
Overtreatment/Low-Value Care

- *Waste that comes from subjecting patients to care that, according to sound science and the patients’ own preferences, cannot possibly help them* *

- Total annual cost = : $12.6-28.6 billion* 

“Low-Value Care”

• Care rooted in
  – outmoded habits*
  – supply-driven behaviors
  – ignoring scientific findings

• Examples include
  – excessive use of antibiotics
  – use of surgery when watchful waiting is better
  – going to see your doctor just because it is pleasant to do so**

*Prasad VK, Cifu AS. (2019). Ending Medical Reversal
Rates of LVC are highest for non-Latino whites* but for selected services, Blacks and Hispanics More Likely To Receive Low-Value Care


UCLA Value-Based Care Research Consortium

• Launched in 2018
• Mission:
  – design and implement interventions to
    • reduce wasteful spending
    • ensure that patients receive appropriate and high-quality care
    • reduce racial and ethnic disparities in the receipt of high-value care
  – serve as a bridge between health system operations and health services researchers
    • promoting data-driven decision making
    • supporting UCLA and UC Health's learning health system efforts
VBCRC Example: Reducing Pre-op Testing at Safety-Net Health System

John Mafi
Associate Professor UCLA

Coronavirus cases rise to 94 in L.A. County as officials issue more emergency restrictions
Two anecdotes from this time
Outpatient Visits Plummeted in March 2020

Impact of Pandemic on Hospital Admissions

EXHIBIT 1

Total medical admissions in 2019 and 2020 and non-COVID-19 medical admissions in 2020 in a group of US hospitals, by week

<table>
<thead>
<tr>
<th>Week 5</th>
<th>Week 7</th>
<th>Week 9</th>
<th>Week 11</th>
<th>Week 13</th>
<th>Week 15</th>
<th>Week 17</th>
<th>Week 19</th>
<th>Week 21</th>
<th>Week 23</th>
<th>Week 25</th>
<th>Week 27</th>
</tr>
</thead>
<tbody>
<tr>
<td>February</td>
<td>March</td>
<td>April</td>
<td>May</td>
<td>June</td>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total admissions 2019
Total admissions 2020
Non-COVID-19 admissions 2020

**Source** Data from Sound Physicians hospital admissions. **Notes** Data represent 1,056,951 admissions in 201 hospitals in 36 states. Non-COVID-19 admissions exclude all suspected or confirmed COVID-19 admissions based on physicians’ response to a specific prompt in the electronic medical record at admission starting in week 10, which corresponds to the beginning of the pandemic. The percentage decline is relative to the average weekly admissions during February (weeks 5–8). Week 5 corresponds to February 2–8 and week 27 to July 5–11, 2020.

Unnecessary Hospitalizations = Epitome of Low-Value Care

• Tremendous variation in criteria for admission
• Unnecessary hospitalizations =
  – *majority of the $935 billion of annual medical waste.*\(^1,2\)
• Inpatient medical errors are the third leading cause of death in the U.S.\(^3\)
• Hospitalization causes disability\(^4\)

\(^1\)National Health Expenditure Data | CMS
How much of this decrease is a “good thing”?

**EXHIBIT 1**

Total medical admissions in 2019 and 2020 and non-COVID-19 medical admissions in 2020 in a group of US hospitals, by week

**SOURCE** Data from Sound Physicians hospital admissions. **NOTES** Data represent 1,056,951 admissions in 201 hospitals in 36 states. Non-COVID-19 admissions exclude all suspected or confirmed COVID-19 admissions based on physicians’ response to a specific prompt in the electronic medical record at admission starting in week 10, which corresponds to the beginning of the pandemic. The percentage decline is relative to the average weekly admissions during February (weeks 5-8). Week 5 corresponds to February 2-8 and week 27 to July 5-11, 2020.

Racial and Ethnic Disparities in Potentially Avoidable Hospitalizations During the covid-19 Pandemic*

Measuring Potentially-Avoidable Admissions

- Ambulatory Care Sensitive Conditions (ACSCs)*
  - could be avoided by timely and effective outpatient management
    - Discharge ICD-10 codes: COPD/asthma, hypertension, CHF, pneumonia, complications from diabetes, UTI
ACSC Admissions Historically Higher for Black and Hispanic Persons
ACSC Hospitalizations Declining but Observation Stays Increasing

**Exhibit 1** Hospitalizations for ambulatory care–sensitive conditions per 10,000 people among black and white Medicare beneficiaries, 2011–15

**Exhibit 2** Observation stays for ambulatory care–sensitive conditions per 10,000 people among black and white Medicare beneficiaries, 2011–15

What Happened During Pandemic?

AIMS:

1. Measure whether and to what extent potentially avoidable hospitalizations changed by race/ethnicity during the early covid-19 pandemic

2. Identify the most frequent diagnoses comprising potentially avoidable hospitalizations during the early covid-19 pandemic

Hypothesis: Potentially avoidable hospitalizations decreased during the covid-19 pandemic, and proportionately less among racial/ethnic minorities
Methods

• Single-center: UCLA Health
• Pre-post study of adults admitted to inpatient status
  – Internal medicine services only

  Pre: March-August 2019 (n= 6,248)
  Post: March-August 2020 (n= 4,838)

• Primary outcome: Number of potentially avoidable hospitalizations by race/ethnicity
  – Defined per published AHRQ guidelines
  – Ambulatory care sensitive conditions (ACSCs)
    • Discharge ICD-10 codes: COPD/asthma, hypertension, CHF, pneumonia, complications from diabetes, UTI
Results:
Potentially-avoidable admissions decreased

- Total admissions decreased 23%
- Rate of potentially-avoidable admissions decreased from 8.9% (pre) to 7.2% (post)
- Absolute reduction from 557 to 347 – 38% reduction
Decrease in Potentially-Avoidable Admissions Varied by Race/Ethnicity

Table 2. Number of Potentially Avoidable Hospitalizations Stratified by Race/Ethnicity Before the Pandemic and During the Pandemic

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Prepandemic period, $^a n$ (%)</th>
<th>Pandemic period, $^a n$ (%)</th>
<th>Absolute %, change (95% CI)$^b$</th>
<th>Intragroup p-value$^c$</th>
<th>Intergroup p-value$^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>100 (12.6)</td>
<td>92 (14.4)</td>
<td>−8.0 (−39.9, 16.2)</td>
<td>0.56</td>
<td>0.015</td>
</tr>
<tr>
<td>Asian</td>
<td>31 (5.3)</td>
<td>26 (5.9)</td>
<td>−16.1 (−75.7, 20.4)</td>
<td>0.47</td>
<td>0.22</td>
</tr>
<tr>
<td>Latinx</td>
<td>96 (7.5)</td>
<td>65 (5.6)</td>
<td>−32.3 (−59.8, −12.2)</td>
<td>&lt;0.001</td>
<td>0.20</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>330 (9.2)</td>
<td>164 (6.3)</td>
<td>−50.3 (−60.9, −41.2)</td>
<td>&lt;0.001</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>557 (8.9)</td>
<td>347 (7.2)</td>
<td>−37.7 (−47.1, −29.3)</td>
<td>&lt;0.001</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: Boldface indicates statistical significance (p<0.05).

$^a$Number of potentially avoidable hospitalizations; numbers in parentheses are percentage of total admissions for that race/ethnicity during that period.

$^b$In a number of potentially avoidable hospitalizations from the prepandemic to the pandemic times.

$^c$Testing if absolute % change is statistically different from 0% within each racial/ethnic group.

$^d$Comparing the absolute % change with that of non-Hispanic White patients.
Exploring Diagnoses Contributing to this Difference

Table 3. Number of Admissions for ACSCs During the Early COVID-19 Pandemic (March–August 2020) Stratified by Race

<table>
<thead>
<tr>
<th>Variables</th>
<th>African American, n (%)</th>
<th>Asian, n (%)</th>
<th>Latinx, n (%)</th>
<th>White, a n (%)</th>
<th>Total, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHF</td>
<td>47 (-15)</td>
<td>12 (-14)</td>
<td>26 (-41)</td>
<td>70 (-55)</td>
<td>155 (-42)</td>
</tr>
<tr>
<td>COPD/asthma</td>
<td>4 (-77)</td>
<td>6 (20)</td>
<td>5 (-44)</td>
<td>13 (-71)</td>
<td>28 (-63)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>25 (127)</td>
<td>2 (0)</td>
<td>17 (6)</td>
<td>33 (-58)</td>
<td>77 (20)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>5 (-71)</td>
<td>0 (-100)</td>
<td>2 (-75)</td>
<td>8 (-11)</td>
<td>15 (-40)</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>8 (700)</td>
<td>1 (-67)</td>
<td>4 (-50)</td>
<td>18 (-58)</td>
<td>31 (-44)</td>
</tr>
<tr>
<td>UTI</td>
<td>3 (-70)</td>
<td>5 (0)</td>
<td>11 (0)</td>
<td>22 (-49)</td>
<td>41 (-41)</td>
</tr>
<tr>
<td>Total</td>
<td>92 (-8)</td>
<td>26 (-16)</td>
<td>65 (-32)</td>
<td>164 (-50)</td>
<td>347 (-38)</td>
</tr>
</tbody>
</table>

Note: Numbers in parentheses represent the absolute percent change from the prepandemic times for that specific ACSC and race/ethnicity.

aNon-Hispanic White.

ACSC, ambulatory care-sensitive condition; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; UTI, urinary tract infection.
Bryan Vuong, MS3

If everyone had the same rate of avoidable hospitalizations as non-Latino whites, there would be cost savings amounting to $3.9 million.
### Foregone Wages due to Unequal Reductions in Potentially-Avoidable Hospitalizations

<table>
<thead>
<tr>
<th></th>
<th>2019 Foregone Wages</th>
<th>2020 Foregone Wages</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>African American</strong></td>
<td>$24,022.89</td>
<td>$26,231.35</td>
<td>+9.2%</td>
</tr>
<tr>
<td><strong>Asian</strong></td>
<td>$10,988.50</td>
<td>$13,278.91</td>
<td>+20.8%</td>
</tr>
<tr>
<td><strong>Latinx/ Hispanic</strong></td>
<td>$26,895.62</td>
<td>$18,081.93</td>
<td>-32.8%</td>
</tr>
<tr>
<td><strong>Minority Total</strong></td>
<td>$61,907.01</td>
<td>$57,592.18</td>
<td>-7.0%</td>
</tr>
<tr>
<td><strong>White</strong></td>
<td>$104,476.67</td>
<td>$83,235.04</td>
<td>-20.3%</td>
</tr>
</tbody>
</table>
Major Caveats

- Small sample sizes
- Single institution
- ACSC imperfect measure of “potentially avoidable” or “unnecessary” admission
Excess Out of Hospital Mortality by Condition

https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm
What can we learn

• Potentially avoidable hospitalizations decreased substantially (38%) during early covid-19 pandemic

• Large difference in reduction of potentially avoidable hospitalizations between non-Hispanic Whites and African Americans (-50% v. -8%)
  – Another example (following up on Dr. Bibbins-Domingo presentation) of how both positive and negative impacts of the pandemic and our public health response are being experienced unequally

Emphasizes what we already know (but hard to operationalize):

*As we implement programs to reduce low-value care (improve high value care) we must be careful not to widen existing disparities*
Policies to Reduce Low Value Care Remain Mostly Untested *

- pay-for-performance initiatives
- value-based insurance design
- clinical decision support
- provider feedback
- risk-sharing contracts

Programs Intended to Improve Value can Backfire and Accelerate Disparities

*Phony Diagnoses Hide High Rates of Drugging at Nursing Homes*

1 in 9 Residents Diagnosed With Schizophrenia

Schizophrenia diagnoses are soaring in nursing homes, but related behaviors like delusions and hallucinations are not.

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By The New York Times | Source: Centers for Medicare & Medicaid Services MDS 3.0 Frequency Reports
Examining Low-Value Care Across UC Health: VBCRC/UCOP Collaboration

Carlos Oronce  
VA Advanced HSR Fellow, Dept. of Medicine STAR Fellow/PhD Candidate

University of California Quality and Population Health (Rachael Sak and Sam Skootsky)

Center for Data-driven Insights and Innovation (CDi2) (Lisa Dahm, Ayan Patal, Ray Pablo).
35% of Measured Services Are Low-Value (2019 data)

Top 5 Services Ordered:
1. Annual EKG
2. Vitamin D screening
3. Preoperative labs
4. Antibiotics for URI
5. Imaging tests for eye disease
### Volume of Low-Value Services across UC Health by Category, 2019

<table>
<thead>
<tr>
<th>Category</th>
<th># of Measures</th>
<th>Total # of Services Measured</th>
<th>Total # of Low-Value Services</th>
<th>Waste Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening Tests</td>
<td>8</td>
<td>26,952</td>
<td>6,926</td>
<td>26%</td>
</tr>
<tr>
<td>Common Treatments</td>
<td>5</td>
<td>3,903</td>
<td>3,642</td>
<td>93%</td>
</tr>
<tr>
<td>Diagnostic Testing</td>
<td>19</td>
<td>6,551</td>
<td>2,408</td>
<td>37%</td>
</tr>
<tr>
<td>Disease Management</td>
<td>11</td>
<td>7,999</td>
<td>1,744</td>
<td>22%</td>
</tr>
<tr>
<td>Preoperative Evaluation</td>
<td>4</td>
<td>4,691</td>
<td>2,837</td>
<td>60%</td>
</tr>
</tbody>
</table>

Next steps: examine by race/ethnicity
Repeating Theme:

As we implement programs to reduce low-value care (improve high value care) we need to ensure we do not widen existing disparities.
Time To Set Aside The Term ‘Low-Value Care’—Focus On Achieving High-Value Care For All

Danielle J. Brooks, Carmen E. Reyes, Alyna T. Chien

MAY 21, 2021

10.1377/hblog20210518.804037
Workgroup Recommendations

1. Clearly affirm that all patients must derive high value from health care.
2. Seek active engagement from African Americans and Latinx populations to develop appropriate concepts, terms, solutions, and communications strategies.
3. Be willing to shift overall emphasis of the “low-value care movement” from care processes to structural strategies (for example, removing bias from clinical guidelines; including equity on quality dashboards) and ensuring care is equitable in terms of access, processes, and outcomes.
4. Build on the annual National Healthcare Quality and Disparities Reports to measure and report levels of equity at several levels of the health system: nationally, by state, by community, and by health system.
5. Develop policy and research to support findings and create space in the market to identify opportunities for changes in practice and behaviors.
6. Include measurement of equity reporting on health outcomes as a standardized practice, to improve meaningful outcomes that produce high-value, high-quality care.*

Thank you for your interest.

csarkisian@mednet.ucla.edu
Backup Slides
ED visits decreased regardless of "hot spot" status

**EXHIBIT 2**

Trends in emergency department (ED) visits among fee-for-service Medicare beneficiaries for all conditions (excluding COVID-19) for 2018-19 (prior) compared with 2019-20 (pandemic), US overall and stratified by hot spot

- **Surge 1**
- **Surge 2**

- **Prior**
- **Pandemic**

- **Overall**
  - Never a hot spot
  - Early hot spot
  - Late hot spot

Race/ethnicity not strongly associated with drop in ED visits

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>2018-19</th>
<th>2019-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of ED visits</td>
<td>12,912,699</td>
<td>10,729,891</td>
</tr>
<tr>
<td>COVID-19 hot spot status of county</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early</td>
<td>33.8%</td>
<td>33.5%</td>
</tr>
<tr>
<td>Late</td>
<td>33.5</td>
<td>33.5</td>
</tr>
<tr>
<td>Never</td>
<td>32.7</td>
<td>33.0</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>42.4</td>
<td>43.2</td>
</tr>
<tr>
<td>Female</td>
<td>57.6</td>
<td>56.8</td>
</tr>
<tr>
<td>Age, years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;65</td>
<td>20.4</td>
<td>18.9</td>
</tr>
<tr>
<td>65–70</td>
<td>18.0</td>
<td>18.1</td>
</tr>
<tr>
<td>71–75</td>
<td>16.8</td>
<td>17.3</td>
</tr>
<tr>
<td>76–80</td>
<td>15.1</td>
<td>15.6</td>
</tr>
<tr>
<td>81–85</td>
<td>12.9</td>
<td>13.2</td>
</tr>
<tr>
<td>85+</td>
<td>16.9</td>
<td>16.9</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>77.7</td>
<td>78.2</td>
</tr>
<tr>
<td>Black</td>
<td>12.2</td>
<td>11.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>6.1</td>
<td>5.9</td>
</tr>
<tr>
<td>Other</td>
<td>4.0</td>
<td>4.2</td>
</tr>
<tr>
<td>Chronic Conditions Data Warehouse score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>0–5</td>
<td>28.7</td>
<td>28.1</td>
</tr>
<tr>
<td>6–8</td>
<td>24.2</td>
<td>24.1</td>
</tr>
<tr>
<td>9+</td>
<td>44.9</td>
<td>45.7</td>
</tr>
<tr>
<td>Dual Medicare and Medicaid eligibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicare only</td>
<td>75.8</td>
<td>76.5</td>
</tr>
<tr>
<td>Medicare and Medicaid</td>
<td>24.2</td>
<td>23.5</td>
</tr>
<tr>
<td>Original reason for Medicare eligibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>66.9</td>
<td>68.1</td>
</tr>
<tr>
<td>Disability</td>
<td>33.1</td>
<td>31.9</td>
</tr>
</tbody>
</table>
Non-covid inpatient mortality

EXHIBIT 4

Adjusted in-hospital mortality rates for non-COVID-19 medical admissions in a group of US hospitals, by minority or poverty status in the patient’s ZIP code, February–June 2020

Impact of Pandemic on Hospital Admissions

Figure 1: Overall Admissions Decreased in March and April but Remained Above 90% Since June

Trend in observed total hospital admissions as a percent of predicted admissions (Dec. 29, 2019 – Dec. 5, 2020)

Measuring Potentially-Avoidable Admissions

- Agency for Healthcare Research and Quality (AHRQ) measure
  - Ambulatory Care Sensitive Conditions (ACSCs)
  - could be avoided by timely and effective outpatient management
    - Discharge ICD-10 codes: COPD/asthma, hypertension, CHF, pneumonia, complications from diabetes, UTI*

- Effective primary care is associated with lower hospitalization for ACSCs**


Table 1

<table>
<thead>
<tr>
<th>Variables</th>
<th>Admissions for ACSCs</th>
<th>All admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prepandemic period</td>
<td>Pandemic period</td>
</tr>
<tr>
<td>Age, years</td>
<td>70.9</td>
<td>66.6</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>293 (52.6)</td>
<td>158 (45.5)</td>
</tr>
<tr>
<td>Admissions, n</td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>100</td>
<td>92</td>
</tr>
<tr>
<td>Asian</td>
<td>31</td>
<td>26</td>
</tr>
<tr>
<td>Latinx</td>
<td>96</td>
<td>65</td>
</tr>
<tr>
<td>Non-Hispanic White</td>
<td>330</td>
<td>164</td>
</tr>
<tr>
<td>Total</td>
<td>557</td>
<td>347</td>
</tr>
</tbody>
</table>

Note: Boldface indicates statistical significance (p<0.05).

*p-values for changes in admissions by race/ethnicity are calculated from bootstrap CIs and presented in Table 2.
ACSC, ambulatory care—sensitive condition.
Intervention to Reduce Pre-op Testing for Cataract Surgery

Research Original Investigation

Low-Value Preoperative Care for Patients Undergoing Cataract Surgery at a Safety-Net Health System

Figure 1. Multicomponent Intervention Timeline

- **2015 Q1**: QI nurse presents data on preoperative overuse to anesthesia and ophthalmology chiefs, garnering their support.
- **2015 Q2**: Anesthesiology chief
- **2015 Q3**: Ophthalmology chief
- **2015 Q4**: Anesthesiology chief
- **2016 Q1**: Ophthalmology chief

**QI nurse activities**
- Reviews cataract surgery patients’ medical records.
- Educates trainees and recruits a resident champion to help rewrite preoperative guidelines.
- QI nurse and clinical chiefs instruct LVN to stop scheduling preoperative visits by October 13, 2015.

- Team emails preoperative guidelines to eliminate routine preoperative testing by October 13, 2015.

**PDSA 1**
- Monitor intervention impact via medical record review.
- Resends preoperative guidelines to faculty, trainees, and staff.
- Monitor intervention impact via medical record review.
- Resends preoperative guidelines to faculty, trainees, and staff.

**PDSA 2**
- Monitor intervention impact via medical record review.
- Resends preoperative guidelines to faculty, trainees, and staff.

**PDSA 3**
- Monitor intervention impact via medical record review.
- Resends preoperative guidelines to faculty, trainees, and staff.