Disparities in Critical Care at Home and Abroad

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Disclosure

- No conflicts in relation to this presentation
- Advisory board: Decision Health, Inc.
- Research grant: Merck
Objectives

• Identify the factors contributing to health disparity in critical illness and how they affect the continuum of critical illness

• Define factors and types of disparities in the critical care team
Definitions

• Difference
• Disparity
• Bias
• Health disparity
• Health care disparity
Definitions

• Difference: the degree to which one person is not the same as another

• Disparity: a condition of being unequal; a difference
  ▪ Usually in context of being unfair
Definitions

• Bias: prejudice in favor of or against a person, or group compared with another, usually in a way considered to be unfair
  ▪ Feelings
  ▪ Opinions
  ▪ Preconceptions

• Bias can lead to disparity
Types of Disparity

- Racial/ethnic
- Socioeconomic status (SES)
- Age
- Talent
- Professional rank
- Quality
- Political views
Health Disparity and Health Care Disparity

- Health (health status) disparity
  - Difference in burden of illness, injury, disability or mortality in one group relative to another
  - Population-specific differences in presence of disease, health outcomes or access to healthcare
  - Inequalities that occur in the provision of healthcare and access to healthcare across different racial, ethnic and socioeconomic groups
Health Care Disparity

- Differences in the quality of health care that are not due to access-related factors or clinical needs, preferences or appropriateness of intervention (Institute of Medicine)
- Differences between groups in insurance, access and use of care, and quality of care (Kaiser Family Foundation)
- Differences which systematically and negatively impact less advantaged groups
Disparity in Health Care

• Differences due to genetic influences
• Differences remediable by social, policy, and practice interventions
Factors in Health Disparities

- Race/ethnicity
- Socioeconomic status
- Gender
- Sexual orientation
- Age
- Disability
- Geographic location (rural vs urban)
- Disease
Challenges in Health Disparity

• Definitions (Office of Management and Budget, 1997)
  ▪ Race: Black, White, Asian, American Indian/Alaskan native, Native Hawaiian
  ▪ Ethnicity: Hispanic/Latino, non-Hispanic/Latino

• Socioeconomic status: income, education, wealth, childhood income level, parental education
Health Disparity Knowledge

• Descriptive research identifying disparities
• Research on underlying causes of disparities
• Research to address and resolve disparities

• Where is Critical Care in determining and addressing health disparities?
Disparity Across the Continuum of Critical Illness

- Incidence of illness
- Clinical presentation
- Clinical management
- Outcomes
- Research
Which one of the following factors is associated with disparity in clinical management of patients in the ICU?

a. Race
b. Comorbid conditions
c. Gender
d. Genetics
Disparity in Incidence of Critical Illness

- Male gender and black race have higher incidence of ICU conditions
  - Observed in sepsis, cardiac arrest, ALI
- Contributing factors
  - Genetic susceptibility
  - Chronic comorbid conditions
  - Socioeconomic status, access to care
Disparity in Clinical Presentation

• Gender and race differences found
  ▪ Males more likely to have sepsis from Gram (+) organisms
  ▪ Cardiac arrest at younger age in blacks

• Factors
  ▪ Access to care
  ▪ Preventive health
  ▪ Chronic comorbid conditions
Disparity in Access to Health Care

• Implications for critical care
  ▪ Poorly controlled chronic illness
  ▪ Later presentation/more severe disease

National Center for Health Statistics, 11/15
Disparity in Access to Health Care

Uninsured people under age 65

National Center for Health Statistics, 11/15
Disparity in Clinical Management

- Women prescribed less β-blockers, anti-platelet therapy for cardiovascular disease (US)
- Women less often offered surgery for vascular disease (US)
- Less revascularization in MI for women (US, UK)
- Lower probability of listing women for renal transplant (France)

--Crit Care Nurse 2012;32:8
Disparity in Clinical Management

• Differences associated with race and gender in critical care
  ▪ Admission to ICU
  ▪ Interventions (tracheostomy, dialysis, central lines)

• Factors
  ▪ Healthcare delivery (safety net hospitals)
  ▪ Insurance/socioeconomic status
  ▪ Preferences for care
Disparity in the ICU

• Pulmonary artery catheter use, 1998
  ▪ Higher use with white race, private insurance and admission to surgical ICU

--JAMA 2000;283:2559
Disparity in the ICU

- Effect of insurance status on mortality and procedures in the critically ill (Pennsylvania)
- Adjusted for patient characteristics

<table>
<thead>
<tr>
<th></th>
<th>Odds ratio</th>
<th>P value</th>
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<tbody>
<tr>
<td>Mortality, 30 day</td>
<td>1.25</td>
<td>0.020</td>
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<tr>
<td>Central line</td>
<td>0.81</td>
<td>0.005</td>
</tr>
<tr>
<td>Tracheostomy</td>
<td>0.42</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Hemodialysis</td>
<td>0.55</td>
<td>0.005</td>
</tr>
<tr>
<td>Bronchoscopy</td>
<td>0.78</td>
<td>0.176</td>
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</table>

--AJRCCM 2011;184:809
Is Disparity in the Eye of the Beholder?

- Arterial catheters in medical patients on mechanical ventilation (139 ICUs)

<table>
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<tr>
<th>Primary Cohorts</th>
<th>No. of Matched Pairs</th>
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<tr>
<td>MV medical patients</td>
<td>13603</td>
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<tr>
<td>MV medical patients by illness severity</td>
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<tr>
<td>Lowest tertile MPM$_0$-III</td>
<td>4223</td>
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<tr>
<td>Middle tertile MPM$_0$-III</td>
<td>4564</td>
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<tr>
<td>Highest tertile MPM$_0$-III</td>
<td>4783</td>
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<td>Secondary cohorts</td>
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<td>MV medical patients in combined medical-surgical ICUs</td>
<td>4336</td>
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<tr>
<td>All patients</td>
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<td>All patients in combined medical-surgical ICUs</td>
<td>29014</td>
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<tr>
<td>Patients requiring vasopressors</td>
<td>10840</td>
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<tr>
<td>Patients with septic shock</td>
<td>2358</td>
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<tr>
<td>MV surgical patients</td>
<td>5202</td>
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--JAMA Intern Med 2014;174:1746
Disparity in Outcomes

• Mortality
  ▪ Differences associated with gender and race
  ▪ Likelihood of dying once critically ill and hospitalized does not differ

• Functional outcomes
  ▪ Limited data
  ▪ Non-white patients less likely to be discharged to LTACH
Global Disparity in Critical Care

- Resources
- Personnel
- Training
- Protocols/processes

If you would lift me up you must be on higher ground.

--Ralph Waldo Emerson
## Global Healthcare

<table>
<thead>
<tr>
<th>Country</th>
<th>Expenditure/person (US $)</th>
<th>% of GDP</th>
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<tbody>
<tr>
<td>US</td>
<td>9403</td>
<td>17</td>
</tr>
<tr>
<td>UK</td>
<td>3935</td>
<td>9</td>
</tr>
<tr>
<td>Canada</td>
<td>5292</td>
<td>10</td>
</tr>
<tr>
<td>Australia</td>
<td>6031</td>
<td>9</td>
</tr>
<tr>
<td>Cuba</td>
<td>817</td>
<td>11</td>
</tr>
<tr>
<td>Mexico</td>
<td>677</td>
<td>6</td>
</tr>
<tr>
<td>El Salvador</td>
<td>280</td>
<td>7</td>
</tr>
<tr>
<td>South Africa</td>
<td>570</td>
<td>9</td>
</tr>
<tr>
<td>Sudan</td>
<td>130</td>
<td>8</td>
</tr>
<tr>
<td>India</td>
<td>75</td>
<td>5</td>
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</table>
What is an ICU?
Global Disparity

Havanna, Cuba
Disparity in Access to ICU Care

- ICU beds did correlate with GDP

--- *Intensive Care Med 2014;40:342*
Disparity in ICU Access

- ICU beds based on estimated need

ICU Beds per 100 Deaths due to Acute Illness

<table>
<thead>
<tr>
<th>City</th>
<th>High income</th>
<th>Upper middle income</th>
<th>Lower middle income</th>
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<tr>
<td>Boston</td>
<td>4.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paris</td>
<td>2.22</td>
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<td></td>
</tr>
<tr>
<td>Recife</td>
<td>3.68</td>
<td></td>
<td></td>
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<tr>
<td>Bogota</td>
<td>3.96</td>
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<tr>
<td>LiaoCheng</td>
<td>0.56</td>
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<tr>
<td>Chennai</td>
<td>0.81</td>
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</tr>
<tr>
<td>Kumasi</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
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--Intensive Care Med 2014;40:342
Disparity in Critical Care Research

• Is there disparity in funding critical care research in the US?

• Is there disparity in clinical trial enrollment, reporting, representativeness?
  ▪ Ethnicity
  ▪ Age
  ▪ Gender
  ▪ Negative trials
Critical Care Costs and Research Funding

<table>
<thead>
<tr>
<th></th>
<th>Conservative estimate</th>
<th>Liberal estimate</th>
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<tbody>
<tr>
<td>Hospital costs</td>
<td>17.4</td>
<td>39</td>
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<tr>
<td>Total healthcare costs</td>
<td>5.2</td>
<td>11.2</td>
</tr>
<tr>
<td>NIH Funding</td>
<td>1.7</td>
<td>6.3</td>
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</table>

---"Crit Care Med 2012;40:1072"
Clinical Trial Issues

• Data for new sepsis definitions

<table>
<thead>
<tr>
<th></th>
<th>UPMC</th>
<th>Kaiser</th>
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</thead>
<tbody>
<tr>
<td>White</td>
<td>76%</td>
<td>66%</td>
</tr>
<tr>
<td>Black</td>
<td>14%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Other</td>
<td>10%</td>
<td>24.4%</td>
</tr>
</tbody>
</table>

• ProCESS trial: 68% white, 25% black
• ARDSNet trial: 73% white, 18% black, 6% Hispanic
• NICE-SUGAR trial: no ethnic information

--JAMA 2016;315:775
Disparities in the Critical Care Team

• Types
  ▪ Compensation
  ▪ Promotion
  ▪ Workload

• Factors
  ▪ Age
  ▪ Gender
  ▪ Ethnicity
Intensivist compensation is highest in which of the following regions of the US?

a. South central (Texas, Oklahoma)
b. West (California)
c. Northwest (Washington, Idaho, Montana)
d. Northeast (New York, Maine, Massachusetts)
Intensivist Compensation

---Medscape 2016
Intensivist Gender Disparity

--Medscape 2016
Age Disparity

- Doctors age 46 to 55 work more hours than older and younger peers
- Doctors age 36 to 45 work fewer hours
Disparity in the Critical Care Team
Disparity Exists in Critical Care

• What can we do about it?

Don't judge each day by the harvest you reap but by the seeds that you plant.

— Robert Louis Stevenson
Reducing Health Disparities in Critical Care

• Personal level
  ▪ Increase cultural competence
  ▪ Awareness of unconscious bias

• Institution level
  ▪ Standardized admission criteria
  ▪ Guidelines/protocols
  ▪ Ascertainment of patient preferences

It is not the mountain we conquer but ourselves.  
---Edmund Hillary
Reducing Health Disparities in Critical Care

- Community level
  - Immunization programs
  - CPR training
  - Volunteer-run clinics
  - Access to post acute care facilities

- National level
  - Access to care
  - Guideline/protocol development
  - Quality and safety measures
  - Research agendas
Reducing Health Disparities in Critical Care

- Globally
  - Guidelines/protocols for resource-limited areas
  - Sharing of knowledge
  - Giving
    - Time
    - Money
    - Equipment
Reducing Health Disparities in Critical Care

- Globally
  - Advocacy
    - Reduced costs of medications, supplies
    - Global perspective for research
  - Sponsor attendance at conferences for those with few resources
  - Sponsor colleagues from resource-limited areas at your institution
If your lactate is elevated, please raise your hand....
Pilot Project

- Sepsis initiative at Gitwe Hospital, Rwanda
- Identify essential aspects of sepsis care
- Focused training
- Usefulness of “Sepsis First Aid” kit (1+1+1)
  - 1 L fluid
  - 1 antibiotic
  - 1 hour
• $9 billion surplus medical products every year
Contributors

• Alcon Manufacturing, Ltd.
• Baylor College of Medicine
• Christus Health System
• Clear Lake Regional Hospital
• Conroe Regional Medical Center
• Goodwill Industries of Houston
• Houston Hospice
• Houston Methodist
• Jesse H. Jones Rotary House
• Kelsey Seybold
• Kingwood Medical Center
• MD Anderson Cancer Center
• Medline Industries, Inc.
• Memorial Hermann Hospital System
• Shriners Hospitals for Children
• St. Joseph’s Medical Center
• St. Luke’s Episcopal Hospital System
• Texas Children’s Hospital
• Texas Orthopedic Hospital
• The Woman’s Hospital of Texas
• Waste Management
The Bright Side

• We are more alike than we are different!
Thank you for your attention