Meeting social needs and pursuing equity patient-by-patient and neighborhood-by-neighborhood

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Disclosure

I have no relevant financial interests to disclose.
A case from my residency

- 9 year old girl in 3rd grade
- **Moderate persistent asthma** diagnosed at age 4
  - Prescribed fluticasone at her last primary care visit 2 years ago
  - F/u advised for 1-2 months
- “Lost to follow up”
  - No primary care but ED visits and hospitalization since last visit

Fast forward to tonight – I’m the senior resident in the ED. I’m holding the trauma pager. All of a sudden, it buzzes and beeps.
A case from my residency cont.

- Running to the trauma bay – here is what else we know:
  - Difficulty breathing last 12-24 hours
  - Symptoms progressed quickly
  - Family called 911
  - Squad raced to her home, arriving within minutes
  - Transported to ED on oxygen, continuous albuterol
A case from my residency cont.

• In the bay, severe distress
  – Aggressive supportive measures
    • O2, albuterol, steroids
  – Spontaneous respirations cease
  – Cardiac arrest
  – 30+ minutes of CPR with no ROSC

• Pronounced dead roughly 1 hour after she arrived
A case from my residency cont.

• What did we learn later?
  – Home filled with mold/roaches
    • Unresponsive landlord
  – Barriers to prescription and clinic visit adherence
    • Transportation challenges
    • Unpredictable work schedules
  – Lived < 1 mile from hospital

What can we learn from this as we seek better, more equitable outcomes?
Objectives

1. Define the social determinants, health equity, and population health
2. Discuss the evidence connecting the social determinants to health outcomes
3. Introduce strategies pediatricians and practices can use to identify and respond to social needs

Intersperse discussion with wisdom from pediatric population health sages
“It is not enough, however, to work at the individual bedside in the hospital. In the near or dim future, the pediatrician is to sit in and control school boards, health departments, and legislatures.”

- Abraham Jacobi

Moving beyond the bedside to learn about and act on equity gaps in our own backyard.
Asthma and Cincinnati Children’s (CCHMC)

• 1,200 children hospitalized at CCHMC for asthma each year
  – ~ 70% from Hamilton County
  – ~ 70% Medicaid or self-pay
  – ~ 65% African American
  – ~ 60% have household income < $30,000

• Typical length of stay 24-36 hours
  – 20% will be readmitted
  – 40% will return to the ED
Children from high morbidity areas:

- More likely to be exposed to cockroaches
- More likely to lack reliable transportation
- More likely to live in poverty
- More likely to have a depressed parent

**Social determinants of health**
Social determinants of health (SDH)

“Conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems.”

http://www.who.int/social_determinants/en/
Cincinnati/Dayton
The 52 Places Traveler: The Arts Are Flourishing in Cincinnati

Cleveland/Akron

Columbus

Toledo

Appalachia
SDH – risks and assets

• Social environment
  – Social capital and cohesion
  – Adverse childhood experiences (ACEs)
  – Discrimination

• Economic environment
  – Socioeconomic status
  – Poverty

• Physical environment
  – Indoors
  – Outdoors

Relative differences in risks and assets drive differences in outcomes
Equity vs. Equality

- **Equity** is “absence of avoidable or remediable differences among groups of people”
- Care often **equal** even if risk differs → avoidable outcome differences (**disparities**)
- Equitable care matches need to resource (targeting SDH)

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http://www.who.int/healthsystems/topics/equity/en/
Family perspective on SDH
Parents of children hospitalized for asthma exacerbations

“My window is broken, there are roaches, and my landlord isn’t responsive to my concerns.”

“It takes about 4 hours [to get to pharmacy] ... two hours to get there walking and two hours to get back... I just can't do it.”

“I don’t have transportation. I had to catch the bus everywhere, and it was really, really hot the next day. By him having a breathing problem, I was kind of scared to catch the bus.”

“I was in the hospital with no money with no one, no food, no gas. It was just horrible because I was breastfeeding [other child], and I’m basically eating nothing but cereal or a little scrap that she [patient] don’t eat that I could sneak in before the doctors come and see.”
Moving toward equity by better understanding place

**Geomarker**: objective, contextual or geographic measure that influences or predicts the incidence of outcome or disease
Asthma utilization and housing code violations

Census tract asthma utilization rate per 1,000 children*

- Low
- Low-medium
- Medium-high
- High

*Calculated from 8,736 emergency department visits and hospital admissions in 113 Greater Cincinnati census tracts between 2009-2012
Overlaid housing code violations

Housing code violation density accounted for 22% asthma use rate variation after adjustment for poverty

Asthma utilization and housing code violations
- Housing code violations

Census tract asthma utilization rate per 1,000 children*
- Low
- Low-medium
- Medium-high
- High

*Calculated from 8,736 emergency department visits and hospital admissions in 113 Greater Cincinnati census tracts between 2009-2012
## Linking risk to action

### Health service environment
- Access to services
- Pharmacy desert
- Vehicle availability
- Public transportation

### Physical environment
- Housing code violations
- Vacancy or renter rate
- Population density
- Exposure to pollution

### Economic environment
- Poverty rate
- Household income
- Home ownership
- Educational attainment

### Psychosocial environment
- Crime rate
- Mental health access
- Collective efficacy
- Non-English speaking rate

### Interventions
- Medication delivery
- Home visitation
- Medicaid rides
- Telemedicine

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Health service environment</th>
<th>Physical environment</th>
<th>Economic environment</th>
<th>Psychosocial environment</th>
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<tbody>
<tr>
<td>Financial services</td>
<td>Access to services</td>
<td>Housing code violations</td>
<td>Poverty rate</td>
<td>Crime rate</td>
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<td>Legal advocacy</td>
<td>Pharmacy desert</td>
<td>Vacancy or renter rate</td>
<td>Household income</td>
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<td>Public benefit procurement</td>
<td>Vehicle availability</td>
<td>Population density</td>
<td>Home ownership</td>
<td>Collective efficacy</td>
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<td>Resilience training</td>
<td>Public transportation</td>
<td>Exposure to pollution</td>
<td>Educational attainment</td>
<td>Non-English speaking rate</td>
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<td>Community health worker</td>
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<td>Community agency referrals</td>
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<td>Resilience training</td>
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<td>Community partnerships</td>
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Moving toward medical-social action in and out of healthcare setting
“Medicine, as a social science, as the science of human beings, has the obligation to point out problems and to attempt their theoretical solution... The physicians are the natural attorneys of the poor, and social problems fall to a large extent within their jurisdiction.”

- Rudolf Virchow

Confront medical alongside social issues to get to common root causes of population health
Population health

“The health outcomes of a group of individuals, including the distribution of such outcomes within the group.”

Kindig & Stoddart (AJPH, 2003)

Avondale

Hyde Park

Neighborhoods separated by 3 miles
Life expectancy gap of 20 years
Inequitable distribution of key child outcomes

- Marked variation across neighborhoods
- Consistent patterns across conditions

What about all-causes of acute utilization?
Assessing all causes of child hospitalizations

• Measure: census tract-level inpatient bed-day (IPBD) rate

\[
\text{IPBD rate} = \frac{\# \text{ days children from given census tract spend hospitalized}}{\# \text{ children within census tract}}
\]

– Normalized by 1,000 children and annualized
– Allowing calculation of IPBD rates across all causes, conditions, sub-specialties

• Assessed in association with census tract child poverty rate (US Census)
  – Categorized tracts into quintiles according to child poverty rates
**Countywide bed-day disparities**

<table>
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<tr>
<th>Child poverty quintile</th>
<th>IPBD rate per 1,000 children per year</th>
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</thead>
<tbody>
<tr>
<td>Low</td>
<td>88</td>
</tr>
<tr>
<td>Low-medium</td>
<td>113</td>
</tr>
<tr>
<td>Medium</td>
<td>131</td>
</tr>
<tr>
<td>High-medium</td>
<td>144</td>
</tr>
<tr>
<td>High</td>
<td>171</td>
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- Median IPBD rate 118 per 1,000 children per year (IQR 87-165)
- IPBD rate and poverty rate correlated
  - \( r=0.36; \) \( p<0.001 \)
- If each tract had the same IPBD rate as the low poverty tracts:
  - 33% fewer bed-days
  - \(~8,000\) fewer days per year \((~22\) years\)
Relatively more IPBDs
County mean
Relatively fewer IPBDs

Condition-specific disparities (relative differences)
Specialty-specific disparities (relative differences)

- Relatively more IPBDs
- Relatively fewer IPBDs

County mean
Prescription fill rates by ZIP code poverty
Green – low poverty; Red – high poverty
Where do we go from here?

• Achieving population health could benefit from getting to **shared root causes** across conditions and specialties
• Deeper **understanding of community** to guide assessments, referrals, interventions, and partnerships
• Harness **professional responsibility and motivation** to move toward **action**
“I will remember that I remain a member of society, with special obligations to all my fellow human beings, those sound of mind and body as well as the infirm.”

- Hippocratic Oath, Modern Version

Special obligation to act to improve population health outcomes and narrow equity gaps
CCHMC Strategic Plan: Help Cincinnati’s 66,000 children be the healthiest in the nation through strong community partnerships

Reduce disparities in hospital admissions across neighborhoods

Eliminate infant mortality

Ensure all 5 year olds have a “healthy mind and body”

Children read proficiently by 3rd grade
County-wide bed-day hot spots
“Hot spots” close to the hospital – Avondale

Morbidity
- One of the highest IPBD rates for conditions managed by every CCHMC sub-specialty

Risks
- 36% living below federal poverty level
- Median household income of $18,120

Assets
- Schools and social service agencies
- Primary care and school-based health centers
- Pharmacies

Avondale early site for improvement efforts

Measure: reduce the IPBD rate by 10% in target neighborhoods (Avondale + 2 others) by 2020
Translation to outcomes
• 18% decrease in IPBD rate for Avondale and Price Hill
• No decrease in comparison neighborhoods
Theory for action to identify and respond to social needs so as to reduce disparities in child morbidity

- **Society**
  - Academic-community partnerships driving action, pattern recognition

- **Community**
  - Community-driven solutions developed through trust, co-design

- **Health system**
  - Daily learning from each adverse outcome (from every “failure”)

- **Child/Family**
  - Child and family at the center of equity-minded care
Child and family at center of equity-minded care

- Making it easy to have the right treatment at the right time and the right place (e.g., medication delivery)
- Building relationships with families and community partners central to care
- Risk assessment, stratification, and prediction
  - Building segmentation capabilities that makes sense for clinical setting
Daily learning from each adverse outcome

• EHR-driven alerts when patients admitted from target neighborhoods → morning huddles
  – Case review to determine “root causes” of admission
  – Identification of preventive care gaps to be closed
  – Determination of transition needs before discharge

• Treat inequity as “serious safety event”
Building trust and solutions through co-design

- **Caring Families Group** – parent-to-parent coaching to increasing in-home healthy behaviors (e.g., reading at home)
- **Justice Promoters** – neighbor-to-neighbor coaching around legal rights (e.g., renter-landlord interactions)
- **Healthy Homes Block by Block** – neighbors connecting with neighbors to deliver books and safety supplies, and to provide education and coaching toward thriving families

All Children Thrive Learning Network
[https://www.actnowcincy.org/](https://www.actnowcincy.org/)
Cincinnati Child Health-Law Partnership (Child HeLP) – a Medical-Legal Partnership

- Partnership between CCHMC and Legal Aid Society of Greater Cincinnati
  - In-clinic office staffed by attorneys and paralegals 5 days/week
  - Housing concerns, public benefit denials/delays, education services, family/custody issues
- Interdisciplinary advocacy training
- Patient to population health; client to population justice for >6,000 referred families
  - Reduced SDH-related risks
  - Early evidence of ↓ hospitalizations, bed-days
  - Unit → Building level change

https://www.cincinnatichildrens.org/service/g/gen-pediatrics/services/child-help
Medical-Legal Partnerships in Ohio

• 20 total MLPs – Children’s Hospitals are leading the way!
Other statewide efforts

The Healthy Neighborhood, Healthy Families Initiative

Kelly Kelleher, MD, MPH, Jason Reece, PhD, Megan Sandel, MD, MPH
Our final “sage”

• Today, she would have just graduated high school
  – What would her life look like?
  – Would she experience the same challenges as her parents? Her neighbors?

• Preventing death shouldn’t be measure of success, achieving true potential should

Learning from and being motivated by failure
Moving beyond the bedside to learn about and act on equity gaps in our own backyard

• Consistent risk assessment and identification
  – Promote empathy and tolerance
• Know community risks and assets
  – Refer and partner accordingly
• Research and QI aimed at or aware of equity
• Be an active citizen, a consistent advocate on behalf of patients
  – Vote, vote, vote - [https://www.voteforohiokids.org/](https://www.voteforohiokids.org/)
  – Contact elected officials or run to unseat them!

OCTOBER 9 IS DEADLINE TO REGISTER BEFORE NOVEMBER ELECTION
Confront social alongside medical issues to get to common root causes of population health

• Importance of working progressively upstream to support thriving children
  – Manage acute manifestation of disease
  – Secondary prevention
  – Primary prevention
  – Focus on health > health care

• Seek to prevent extreme outcomes but also address more latent ones
Special obligation to act to improve population health outcomes and narrow equity gaps

• Equity gaps ever present and often driven by underlying SDH
• A patient-by-patient and neighborhood-by-neighborhood understanding of social needs (and assets) can push us toward equitable health outcomes
• Patients are often our best teachers – they may change our personal and professional outlook so we must be prepared to listen!
A 5 year old boy walks into your clinic. He is having difficulty breathing and cannot seem to catch his breath. You hear wheeze on your physical examination, and you make the decision to treat him for an acute asthma exacerbation with inhaled bronchodilators and systemic corticosteroids. Prior to discharge from the hospital, what do you make sure to ask about and intervene (if appropriate)?

A. Access to health care resources (e.g., primary care follow up, pharmacy)
B. Housing conditions (e.g., exposure to pests, moisture)
C. Understanding of disease state
D. Potential triggers of current condition
E. All of the above
CME Question #2

Provide a definition for the term “population health.”

A. State of complete physical, mental, and social well being, and not merely the absence of disease or infirmity
B. The health outcomes of a group of individuals, including the distribution of such outcomes within the group
C. The science of protecting and improving the health of people and their communities.
D. The ability of an individual or a defined population to obtain or receive appropriate health care.
E. None of the above
CME Question #3

You and your colleagues are re-designing the care you provide in your clinical setting. You understand that there are different needs across your patient panel, needs that you want to be able to effectively address. You decide to study your care processes and alter them to best meet need with resource. You are actively seeking to move toward what?

A. Equity
B. Equality
C. Justice
D. All of the above
E. None of the above
CME Question #4

Which is most commonly included in measures of socioeconomic status or SES?

A. Income & Wealth
B. Race
C. Religion
D. Country of origin
E. Age
CME Question #5

Current geographic technologies which include mapping could be used to understand place-based social determinants of health and if incorporated more directly into patient-centered care, it would:

A. Provide clinicians with cookie cutter instructions to hand out to patients.
B. Provide clinicians with detailed risks based upon neighborhood attributes and resources.
C. Provide links to community resources and potential referrals.
D. Increase the “precision” of our clinical interventions post-discharge adding precision to risk assessment and mitigation.
E. B, C, D
Questions or comments?
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