CSiM | CENTER FOR STEWARDSHIP IN MEDICINE

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Racial Inequity in Stewardship: A Case Study in Acute Respiratory Tract Infection

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Agenda

- Why this matters
- A case study in ARTI
- Important questions

Definitions

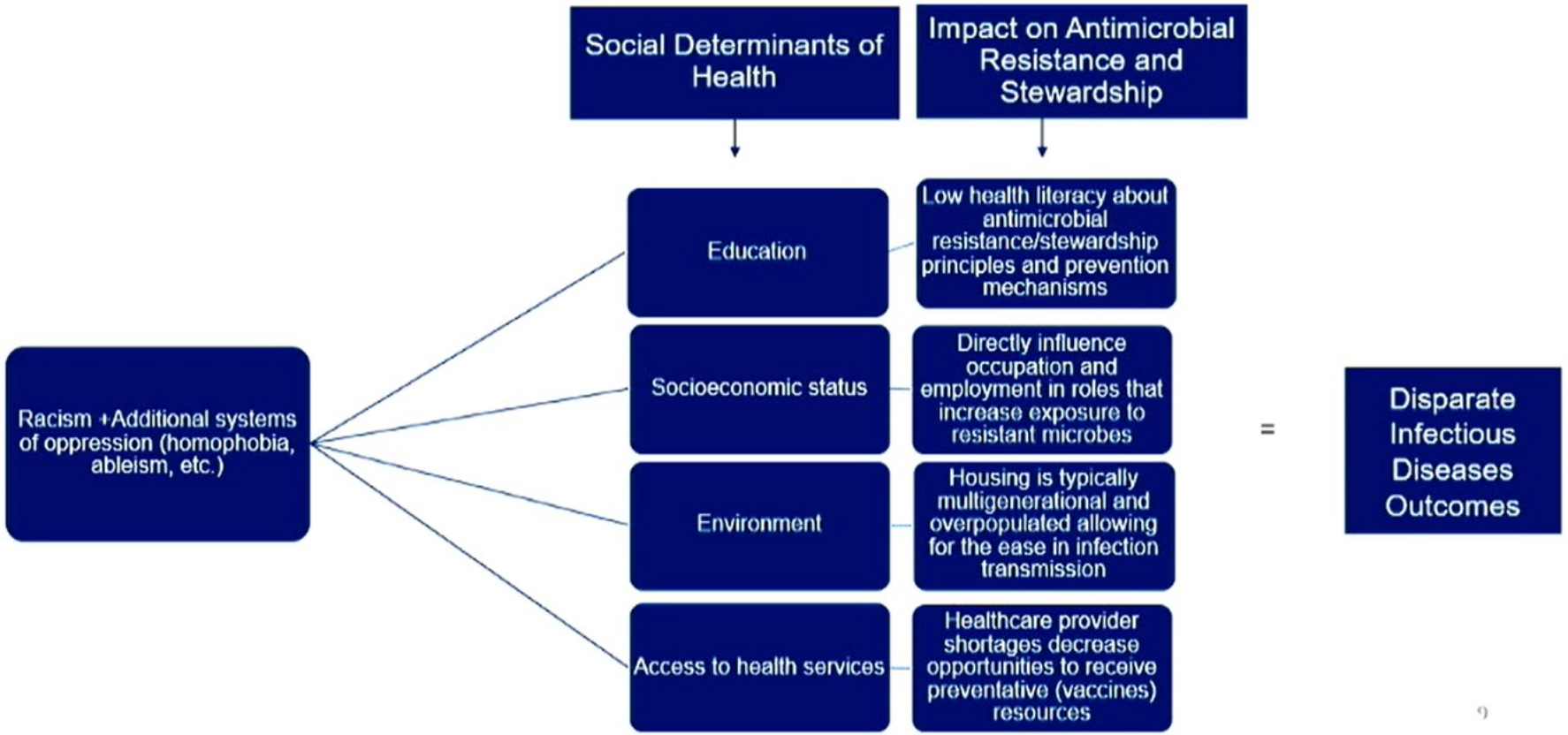
- **Health Equity**
  A state in which everyone has a fair and just opportunity to attain their highest level of health.

- **Health Disparity**
  Preventable differences in disease burden, injury, violence, services, outcomes, or any opportunity to achieve optimal healthcare by some variable (eg, age, race, or insurance) which may or may not be clinically justifiable.

What is health equity? Centers for Disease Control and Prevention. https://www.cdc.gov/healthequity/whatis/index.html
Seibert, AM, *et al.* (2022). *Antimicrobial Stewardship & Healthcare Epidemiology, https://doi.org/10.1017/ash.2022.329.*

Equity in AMS: Exceedingly Complex!

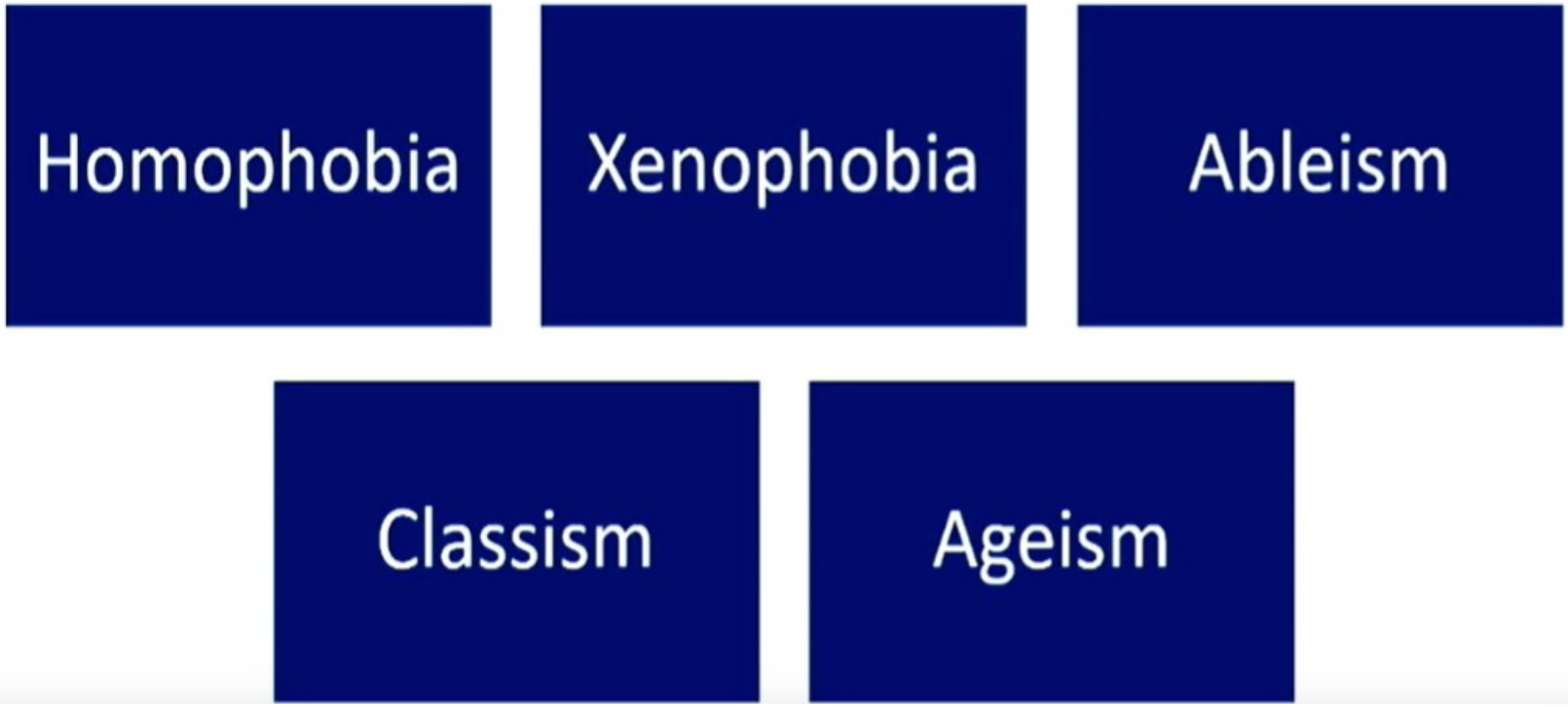
The Role of Social Determinants of Health (SDoH) in Antimicrobial Resistance and Stewardship Inequitable Outcomes[7-9]



Slide credit: Jacinda Abdul-Mutakabbir, PharmD MPH. SHEA 2024.

Equity in AMS: Exceedingly Complex!

Additional Systems of Oppression[3]



Slide credit: Jacinda: Abdul-Mutakabbir, PharmD MPH. SHEA 2024.

Equality vs Equity

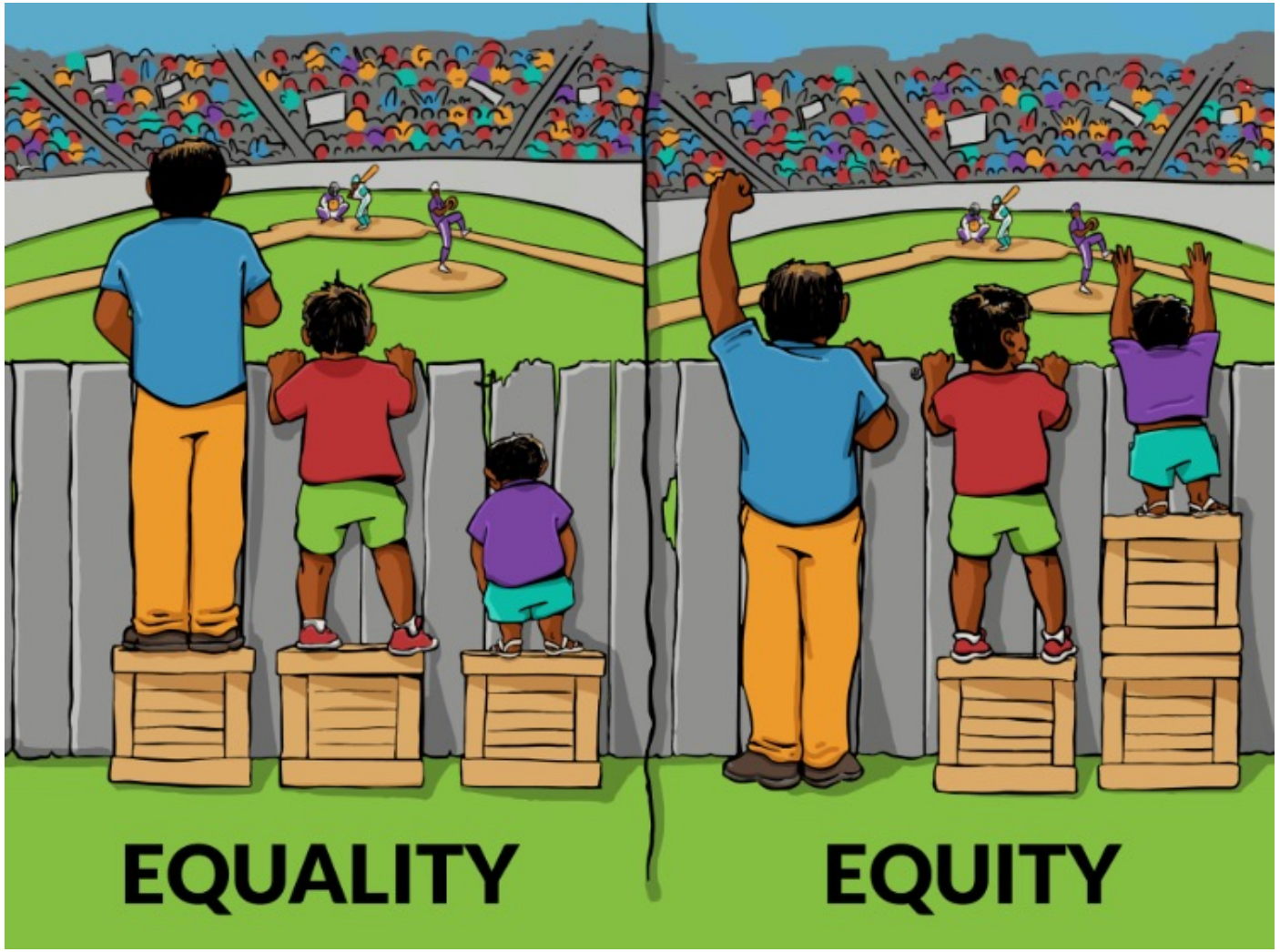
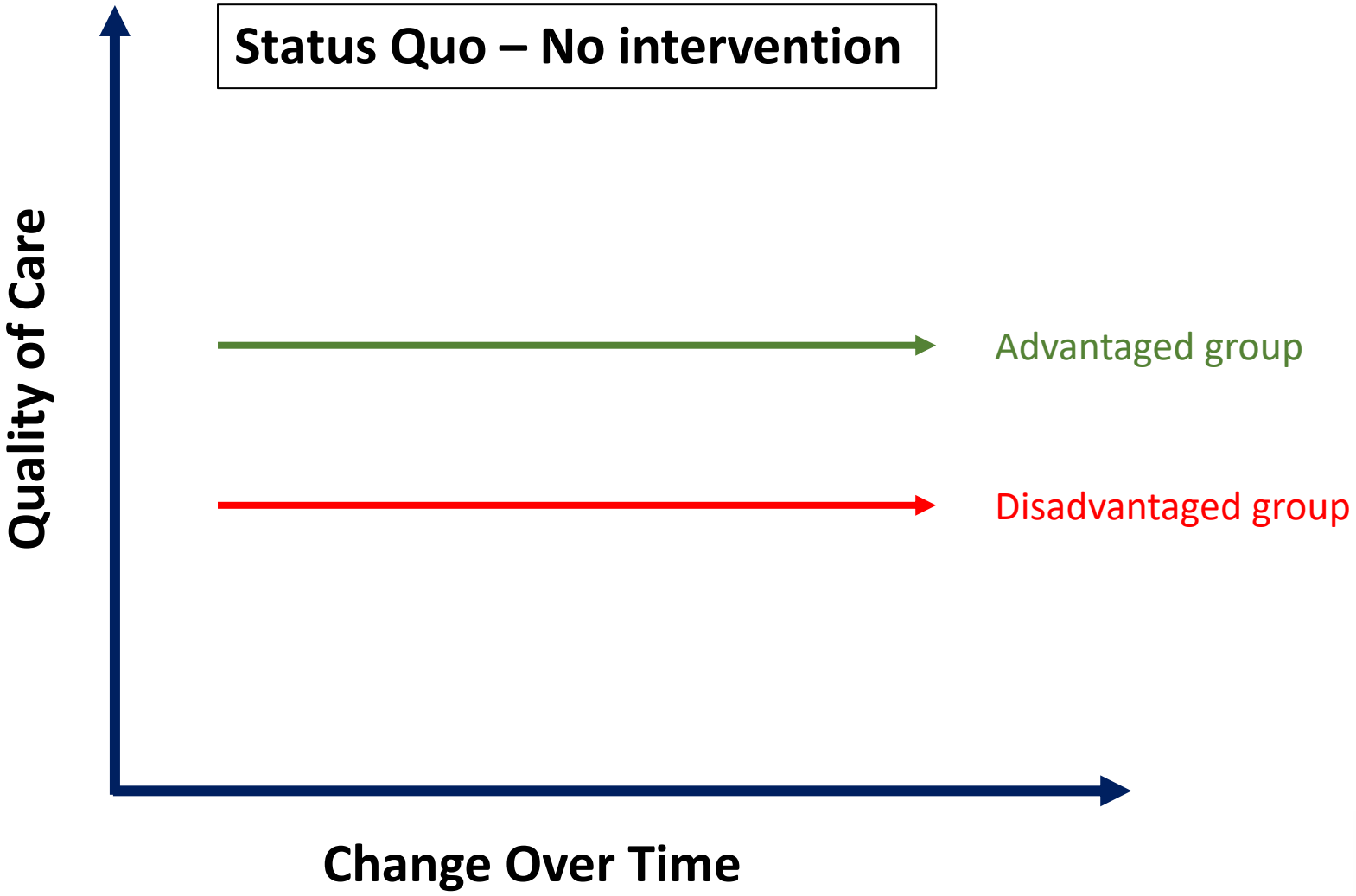


Image credit: dividedwefall.org/equity-vs-equality

Equality vs Equity

Slide credit: Jacinda :Abdul-Mutakabbir, PharmD MPH. SHEA 2024.

Why is this important?



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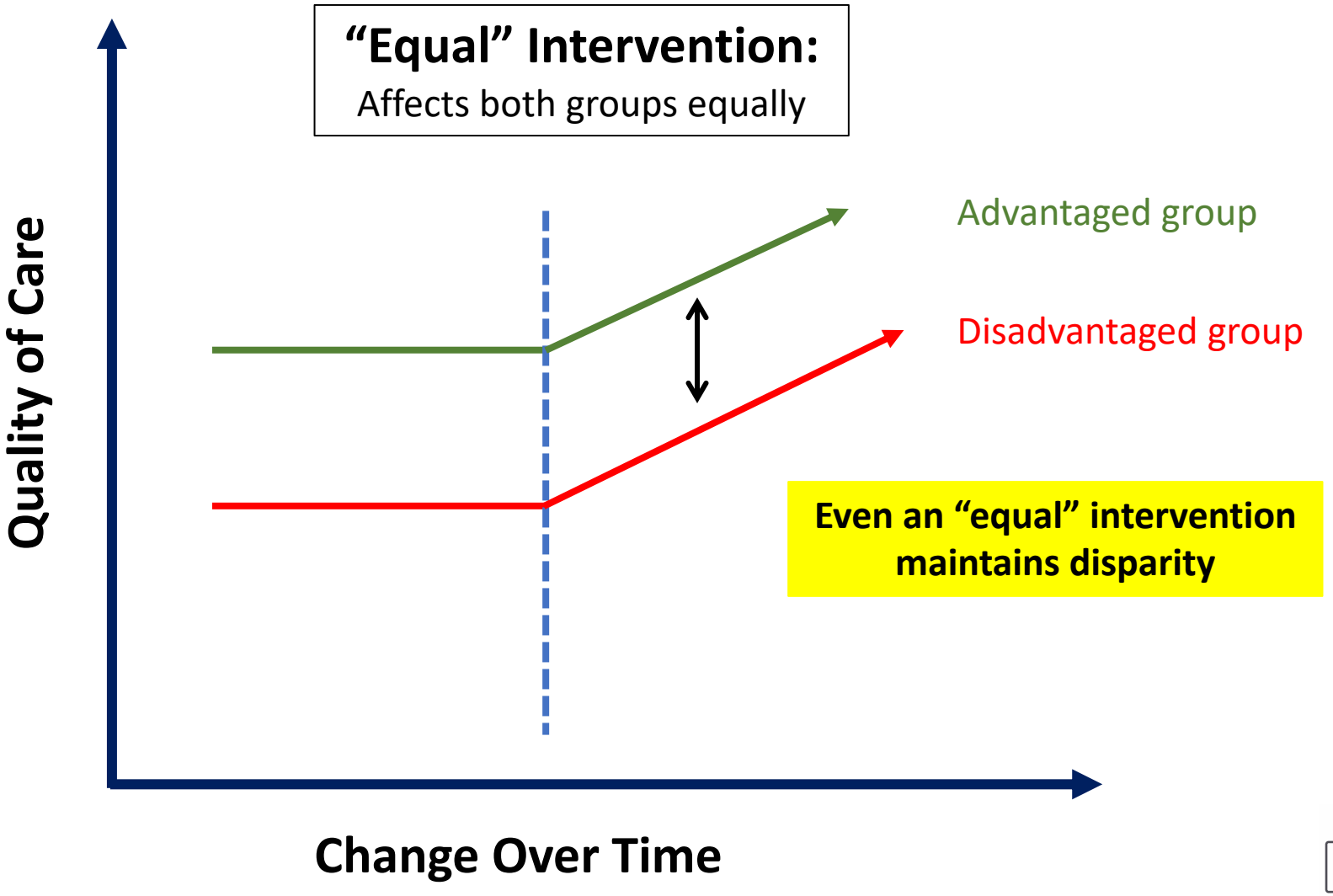

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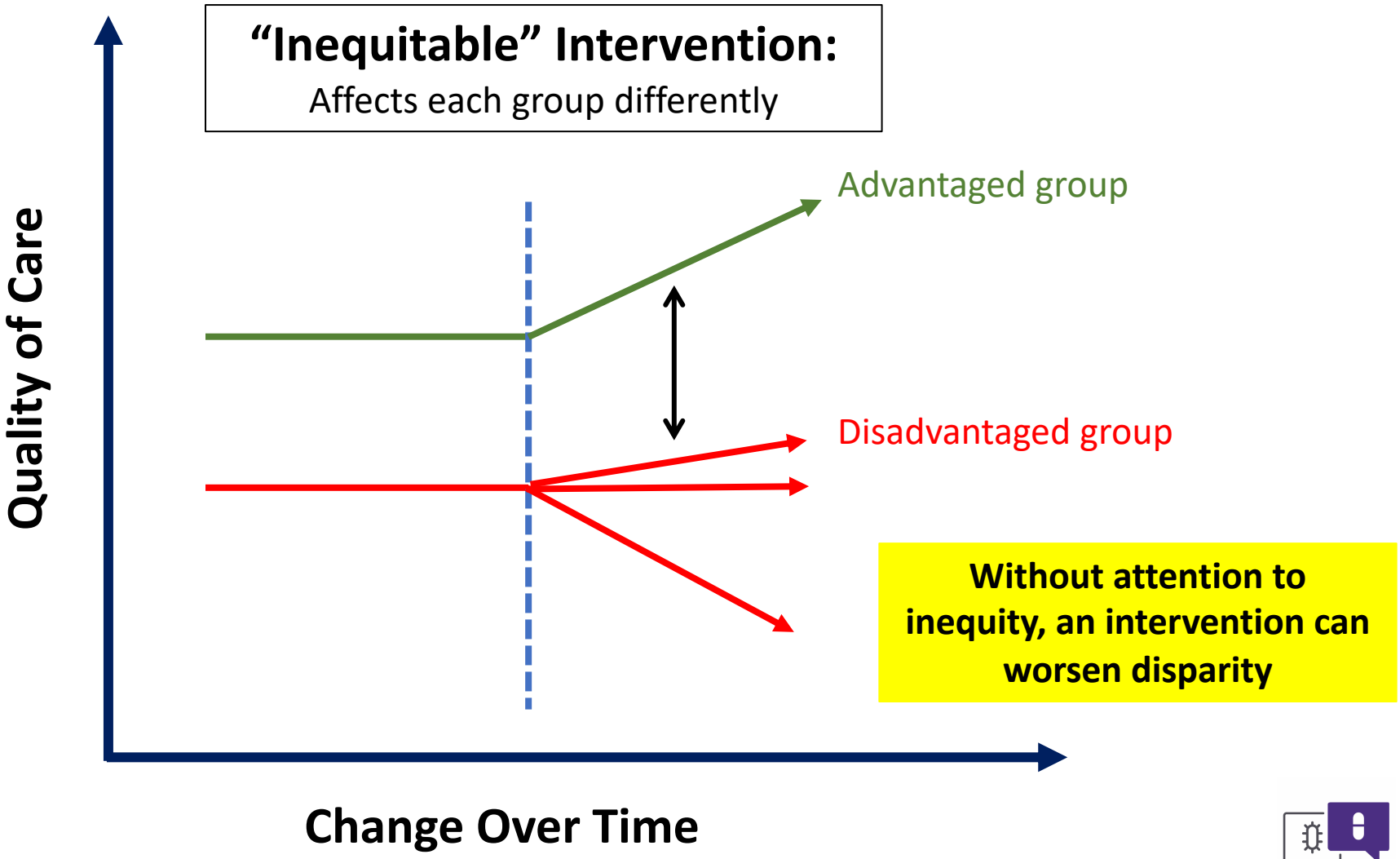

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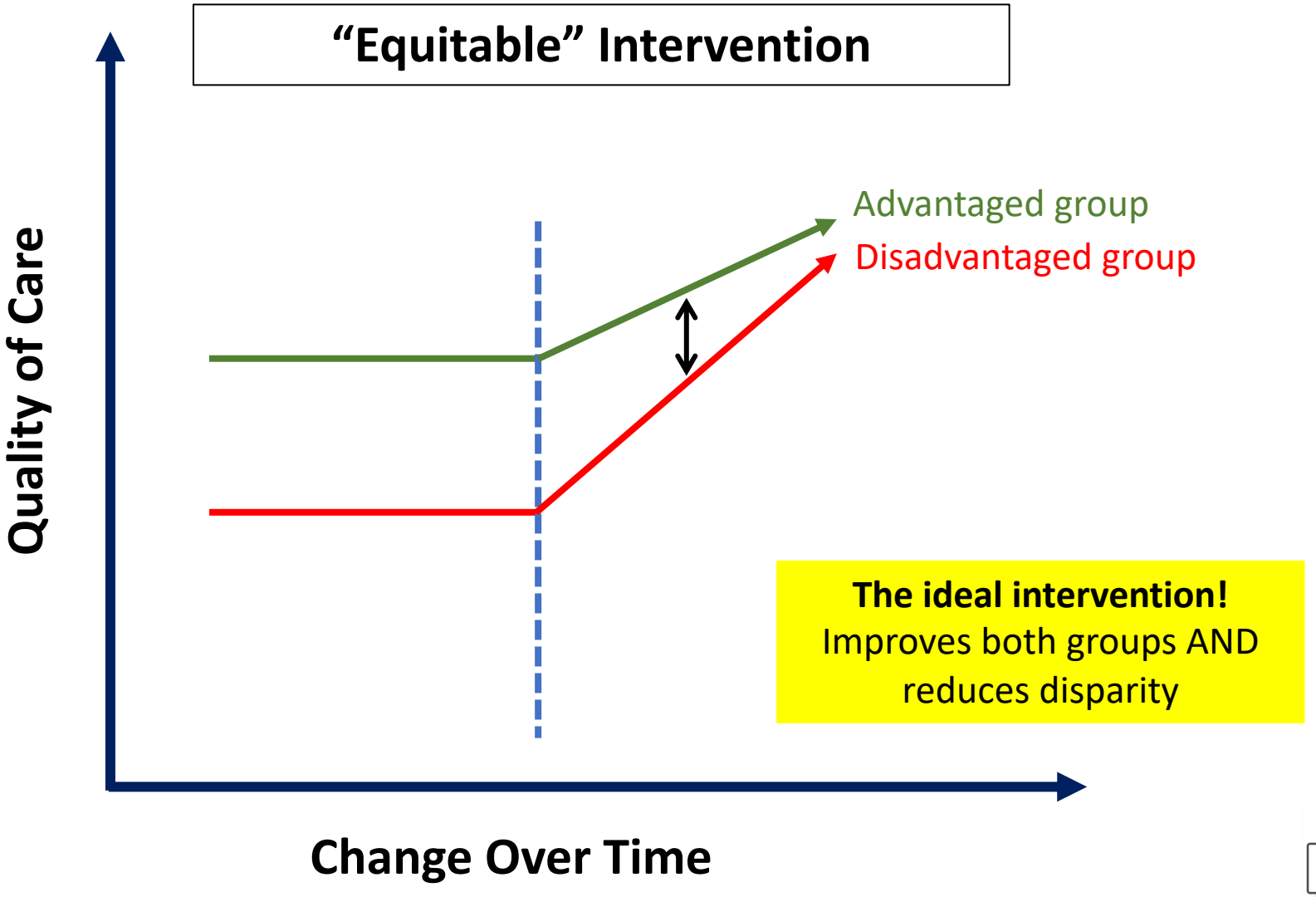

Important … and nuanced

- Identifying inequity in antimicrobial stewardship is particularly complex because *more is not better* – despite provider and/or patient beliefs

- As a result, the *directionality of disparity may be unexpected* – i.e. a group facing disparities may get a more correct intervention, but perhaps for ignoble reasons

- **The crux:** A *disparity in any direction* warrants questioning and investigation

A Case Study in Inequity:

Acute Respiratory Tract Infection

In Adults

Antimicrobial Stewardship & Healthcare Epidemiology (2022), **2**, e184, 1–4
doi:10.1017/ash.2022.329

SHEA

Commentary

Urgent-care antibiotic prescribing: An exploratory analysis to evaluate health inequities

Allan M. Seibert MD[1], Adam L. Hersh MD PhD[2], Payal K. Patel MD MPH[1], Michelle Matheu MD[1], Valoree Stanfield MPH[3], Nora Fino MS[4], Lauri A. Hicks DO[5], Sharon V. Tsay MD[5], Sarah Kabbani MD[5] and Edward Stenehjem MD, MSc[1]

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Antibiotic Rx in Adult ARTI

- Study Population:
  - Intermountain Health (Mountain West)
  - 38 Urgent-care clinics
  - 7/1/2018 – 6/30/2019
  - Adult patients (18+ years)
- Collected EHR data on patient characteristics:
  - Age, race, ethnicity, preferred language, clinician-patient sex combination, clinician type, and patient BMI
- Antibiotic prescribing rates collected for:
  - Respiratory conditions overall
  - Tier 3 respiratory conditions ("antibiotic inappropriate ARTIs")
    - Bronchitis, asthma & allergy, viral URI, influenza, etc.

Antibiotic Rx in Adult ARTI

- Outcome Measure:
  - Potential disparity = absolute difference between groups of > 5%
- Results:
  - Evaluated 122,930 respiratory UC encounters
  - Patient demographics:
    - 98% patients identified as White
    - 89.6% identified as non-Hispanic
    - 98.3% preferred English language
      - Of non-English speakers, 77.1% preferred Spanish

Antibiotic Rx in Adult ARTI

Table 2. Antibiotic Prescribing for Urgent-Care Respiratory Encounters in Patients Aged ≥18 Years Between July 1, 2018, and June 30, 2019

Characteristic	Overall Received Abx	Tier 3 Received Abx[a]
White race, no. (%)		
No	**1,017 (39.5)**	**189 (14.9)**
Yes	**64,697 (50.1)**	**12,402 (22.8)**
Ethnicity, no. (%)		
Hispanic	**5,311 (43.9)**	1,043 (18.9)
Non-Hispanic	**62,348 (50.0)**	11,990 (22.8)
Patient preferred language, no. (%)		
English	**68,025 (49.6)**	13,032 (22.4)
Non-English	**965 (43.2)**	241 (20.3)

Conclusions:

Non-White, Hispanic, and non-English speaking patients received fewer antibiotic prescriptions for ARTI

Statistically significant differences noted in patient age and clinician gender (not shown above)

In Pediatrics

Racial and Ethnic Differences in Antibiotic Use for Viral Illness in Emergency Departments

Monika K. Goyal, MD, MSCE,[a] Tiffani J. Johnson, MD, MSc,[b] James M. Chamberlain, MD,[a] T. Charles Casper, PhD,[c] Timothy Simmons, MStat,[c] Evaline A. Alessandrini, MD, MSCE,[d] Lalit Bajaj, MD, MPH,[e] Robert W. Grundmeier, MD,[b] Jeffrey S. Gerber, MD, PhD, MSCE,[b] Scott A. Lorch, MD, MSCE,[b] Elizabeth R. Alpern, MD, MSCE,[f] for The Pediatric Care Applied Research Network (PECARN)

PEDIATRICS Volume 140, number 2, August 2017:e20170203

Antibiotic Rx in Pediatric ARTI

- Study Population: PECARN Registry
  - Retrospective cohort study
  - Included 7 Pediatric Emergency Departments
  - Date range: 1/1/2013 – 12/31/2013
  - Included all patients <18 years with “viral ART” diagnosis code
  - Excluded all patients with concurrent code for bacterial infection
- Registry collects EHR data on patient characteristics

Antibiotic Rx in Pediatric ARTI

- Outcome Measure:
  - Antibiotic administration in the ED (IV, IM, or PO), *or*
  - Antibiotic prescription on ED discharge
- Exposure: Race + ethnicity
- Results:
  - Evaluated 39,445 ED Visits for Viral ARTI
  - Patient demographics:

TABLE 1 Demographics of Study Population

Demographic	*N* = 39 445
Race and ethnicity, *N* (%)	
NH white	7526 (19.1%)
NH black	19 906 (50.5%)
Hispanic	8000 (20.3%)
Other	3063 (7.8%)
Missing	950 (2.4%)

Antibiotic Rx in Pediatric ARTI

Overall, 2.6% of children received abx for viral ARTIs:

- 4.3% of Non-Hispanic White patients
- 1.9% of Non-Hispanic Black patients
- 2.9% of other Non-Hispanic patients

TABLE 2 Bivariable and Multivariable Analysis of the Association of Race and Ethnicity with Antibiotic Provision for Viral ARTIs

Demographic		OR (95% CI)	aOR[a] (95% CI)
Race and ethnicity			
NH white	Unadjusted	Reference	Reference
NH black	Unadjusted	0.41 (0.35–0.49)[b]	0.44 (0.36–0.53)[b]
Hispanic	Unadjusted	0.57 (0.47–0.69)[b]	0.65 (0.53–0.81)[b]
Other	Unadjusted	0.64 (0.50–0.82)[b]	0.68 (0.52–0.87)[b]

Adjusted: Age, insurance, triage acuity, ED provider, ED site

Conclusions:
Non-Hispanic, White children are more likely to receive *unnecessary* antibiotics for viral respiratory infections than minority counterparts.

Right thing, wrong reason?

Therefore, as has been suggested in other studies that have found similar results with respect to racial and ethnic differences that generally favor white children over minority children, our findings may be due to a caregiver's or a provider's perception that "more is better," whether the "more" is clinically indicated."

Goyal, et al. *Pediatrics*. 2017;140(2):E20170203

In contrast…

Racial Differences in Antibiotic Prescribing by Primary Care Pediatricians

PEDIATRICS Volume 131, Number 4, April 2013

"Black children were **less likely to receive an antibiotic prescription** from the same clinician per acute visit (23.5% vs 29.0%, OR 0.75; 95% CI 0.72 – 0.77)."

"Black children were **less likely to receive diagnoses that justified antibiotic treatment,** including acute OM, acute sinusitis, and group A streptococcal pharyngitis."

"When an antibiotic was prescribed, **black children were less likely to receive broad-spectrum antibiotics at any visit** (34.0% vs 36.9%, OR 0.88; 95% CI 0.82 – 0.93) **and for acute otitis media** (31.7% vs 37.8%, OR 0.75; 95% CI 0.68-0.83)."

More Questions than Answers

More Qs than As

- In what other infections does this inequity exist?

Association of Race/Ethnicity and Sex With Differences in Health Care Use and Treatment for Acne

John S. Barbieri, MD, MBA,[1] Daniel B. Shin, PhD,[1] Shiyu Wang, MS,[1] David J. Margolis, MD, PhD,[1,2] and Junko Takeshita, MD, PhD, MSCE[1,2]

JAMA Network | Open

Research Letter | Infectious Diseases

Variation by Race in Antibiotics Prescribed for Hospitalized Patients With Skin and Soft Tissue Infections

Alysse G. Wurcel, MD, MS; Utibe R. Essien, MD, MPH; Christina Ortiz, BS; Xiaoqing Fu, MS; Christian Mancini, BS; Yuqing Zhang, DSc; Kimberly G. Blumenthal, MD, MSc

Asymptomatic bacteriuria & UTI?

More Qs than As

In what other people groups does inequity exist?

- Gender identity
- Sexual orientation
- Age
- Weight/BMI
- Religion
- Disability

More Qs than As

What is the cause?

- Patient and family expectations?
- Physician *perception* of patient/family expectations?
- Use of shared decision-making? Language impact?
- Practitioner implicit bias?

Conclusions

- Identifying inequity is important because we cannot fix what we do not know or understand
- Teasing apart the presence of inequity in *stewardship* is complex, as “more” is not necessarily “better” – and the directionality of inequity may be surprising
- This field is young, and we have seen just the tip of the iceberg

Thank you!

Please feel free to reach out with questions –

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