Climate and health: an emergency medicine perspective

DELIVERING CLIMATE-SMART HEALTH CARE

AMY COLLINS M.D.
JONATHAN SLUTZMAN M.D.
Delivering climate-smart health care
Welcome and Introduction

- Emergency medicine physician
  MetroWest Medical Center
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With thanks to the planning committee

• Cecilia Sorensen MD
• Elena Grossman MPH
• Renee Salas MD, MS, MPH
• Mona Sarfaty MD, MPH
Webinar agenda and logistics

- Dr. Amy Collins
- Dr. Jonathan Slutzman
- Q&A
- Wrap up

- Questions and comments can be sent to the speakers through the chat or question function
- This webinar will be recorded and archived for those that aren’t able to join us today
- Physician CMEs are available
Delivering climate-smart health care

PART ONE: AMY COLLINS M.D.
My fourth grader, his teacher, idling and polar bears
Health care contributes to climate change

10% of U.S. greenhouse gas emissions

- Energy use for heating, cooling, lighting & water use
- Waste anesthetic gases
- Meat production & food transport
- Employee commutes
- Waste hauling, treatment, & landfill gases
- Supplies & materials
- Fleet vehicles
If the U.S. health care sector were ranked as a nation.....

- It would rank 13th in the world for emissions,
- More than all of the U.K.

Common greenhouse gas emission sources in health care

**SCOPE 1**
- Onsite energy
- Fleet vehicles
- Waste anesthetic gas
- Refrigerants

**SCOPE 2**
- Purchased electricity
- Purchased steam

**SCOPE 3**
- Business travel
- Medical devices and equipment
- Pharmaceuticals
- Employee commute
- Waste disposal
- Meat procurement
- Other

Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), nitrogen trifluoride (NF₃), and sulphur hexafluoride (SF₆)

Scope 3 Other: These are the most common emissions for health care, but there are other relevant categories in Scope 3. To review all 15 categories covered in Scope 3, visit the GHG Protocol Scope 3 Guidance.

Source: Practice Greenhealth
Supply chain

- Supply chain is the 2nd largest expense in health care following labor
- Supply chain costs may overtake labor by 2022 (Strategic Marketplace Initiative, 2014)
- Purchasing volume of the top 4 health care group purchasing organizations is over $189 billion (Becker’s Hospital Review, 2017)
Waste

- U.S. hospitals generate 14,000 tons of waste/day
- 20-25% of this waste is plastic waste
- 15% is infectious or hazardous waste
- Single use disposables and packaging

https://www.hprc.org/hospitals
Hospital food
Healthy food in health care
Antibiotic overuse in animal agriculture and antibiotic resistance

https://noharm-uscanada.org/CCCAS
Chemicals in health care

- Mercury
- PVC/DEHP
- Cleaning chemicals
- Sterilants and disinfectants
- Laboratory chemicals
- Flame retardants
- Lab chemicals
- Pharmaceuticals
- Pesticides
Set a greenhouse gas goal for the hospital / health system

Invest in renewable energy

Reduce, reuse, recycle

Include climate risks in emergency preparedness plans

Reduce OR and ED energy use & waste

Choose local, sustainable foods & reduce food waste

Carpool, bike, walk, or take public transport

Educate your community

How to take action
Practice Greenhealth

- Less waste
- Safer chemicals
- Environmentally preferential purchasing
- Healthier food
- Leaner energy
- Less water
- Climate and health
- Transportation
- Green design and construction
- Greening the OR
- Engaged leadership

https://practicegreenhealth.org
Health Care Climate Challenge

The Health Care Climate Challenge mobilizes health care institutions around the world to protect public health from climate change.

178 institutions across the globe representing the interests of 17,000 hospitals and health facilities have already committed to this challenge.
What is the climate challenge?

• **Mitigation**: reduce health care’s climate footprint

• **Resilience**: prepare for impacts of extreme weather and shifting burden of disease

• **Leadership**: educate staff and public about climate and health and promote policies to protect public from climate change

https://noharm-uscanada.org/healthcareclimatechallenge
## Climate leadership from the health care sector

<table>
<thead>
<tr>
<th>Organization</th>
<th>Environmental Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland Clinic</td>
<td>Carbon neutral by 2027 (Scopes 1 and 2 only)</td>
</tr>
<tr>
<td>NYC Carbon Challenge</td>
<td>NYC Carbon Challenge: Reduce greenhouse gas emissions 50% by 2025 (Scopes 1 and 2 energy only)</td>
</tr>
<tr>
<td>Gunderson Health System</td>
<td>100% energy independence from grid</td>
</tr>
</tbody>
</table>
| Kaiser Permanente | Carbon neutral by 2020 (Scopes 1 and 2 only)  
Carbon positive by 2025 |
| Rochester Regional Health | 100% renewable electricity |
| Boston Medical Partners | 25% by 2020 (Scopes 1 and 2 energy only)  
100% by 2050 |
Climate-smart health care = low carbon + resilient health care

- Building design and construction
- Renewable energy/energy efficiency
- Waste minimization/sustainable waste management
- Sustainable transport and water policies
- Low carbon procurement for pharmaceuticals, medical devices, food etc.
- Resilience strategies
- Design and models of care driven by local providers and public health needs
Why should physicians advocate for climate-smart health care?
First, Do No Harm

- Patients
- Employees
- Communities
- Environment 🌍

Do any of our hospital operations contribute to the conditions we are treating?
Do any of our operations adversely effect either environmental or public health?
Are physicians **obliged** to lead sustainability efforts in health care organizations?
“Physicians and health organizations have obligations to use their influence, expertise and resources to protect health, which includes promoting sustainability.”
Why should emergency medicine physicians care about the impact?
We are part of the problem!

- 24/7 operations
- Large spatial footprint
- Large workforce
- Large patient volumes
- Transportation
- Supply chain
- Pharmaceuticals
- Waste
- High risk patient populations
- Clinical practice
Why should emergency medicine physicians lead sustainability efforts in hospitals?
Why emergency medicine should lead, in my opinion

• As shift workers we have the time
• Hospital based clinicians
• Face to face with all the impacts and opportunities
• Wellness and burnout
• Mission based, non-clinical work
• It’s fun and rewarding!
Health Care Without Harm Physician Network

- To create a network of physicians interested in promoting climate-smart health care through mitigation, resilience and leadership
- To lead and support physician action to reduce the environmental impact of health care delivery

https://noharm.org/physiciannetwork
Physicians for a Sustainable Future

https://www.facebook.com/groups/PhysiciansForASustainableFuture/
What you can do today

• Get educated, look around for opportunities
  • Find out if your hospital has a green team
    ◦ If so, join it
    ◦ If not, start one
  • Find out if your hospital is a member of Practice Greenhealth
  • Join the Health Care Without Harm Physician Network
  • Ask your hospital to commit to the Health Care Climate Challenge
Jonathan Slutzman M.D.

- Instructor in Emergency Medicine, Harvard Medical School and Massachusetts General Hospital
- Former Associate in Environment and Risk Management at ICF International and Arthur D. Little
- Member of Health Care Without Harm Physician Network Advisory Committee
- Research interest: measuring the environmental and financial costs of health care services
Delivering Climate-Smart and Environmentally-Responsible Healthcare

Engaging the ED’s Expertise for Climate Change Mitigation and Response

Jonathan E. Slutzman, MD
Massachusetts General Hospital
Harvard Medical School
@SlutzmanMD
Resilience

The ability of systems to mount a robust response to unforeseen, unpredicted, and unexpected demands and to resume or even continue normal operations.
Resilience
Resilience
Resilience
Resilience
Climate Change is a disease of ...
Climate Change is a disease of …

• Infections
Climate Change is a disease of ...

• Infections
• Respiratory distress
Climate Change is a disease of ...

- Infections
- Respiratory distress
- Food insecurity
Climate Change is a disease of ...

• Infections
• Respiratory distress
• Food insecurity
• Waterborne illness
Climate Change is a disease of ...

- Infections
- Respiratory distress
- Food insecurity
- Waterborne illness
- Heat stress
Climate Change is a disease of ...

• Infections
• Respiratory distress
• Food insecurity
• Waterborne illness
• Heat stress
• Mental illness
Climate Change is a disease of ...

- Infections
- Respiratory distress
- Food insecurity
- Waterborne illness
- Heat stress
- Mental illness
- Displacement and trauma
Climate Change is a disease of ...

• Vulnerability
• Disaster Response
Climate Change is a disease of ...

• Vulnerability
Climate Change is a disease of...

• Vulnerability
• Disaster Response
We know disasters
Climate Change Disaster Preparedness

• Leverage emergency department
• All-hazards planning
• Economic case
Health care is the solution ... and the problem
“Emergencies” get a pass
Emergency Medicine touches everything
Emergency Medicine touches everything

- Purchasing
- Energy Management
- Waste
- Transportation
Sustainable Healthcare is Resilient Healthcare

(Image credit: Robin Guenther, AIA LEED Fellow, CleanMed 2018)
The hidden harm of health care: air, water, and other pollution

By JONATHAN E. SLUTZMAN / SEPTEMBER 25, 2018
Life Cycle Assessment
Life Cycle Assessment

INTERNATIONAL STANDARD

ISO
14040

Second edition
2006-07-01

Environmental management — Life cycle assessment — Principles and framework

Management environnemental — Analyse du cycle de vie — Principes et cadre
Life Cycle Assessment
Fig. 2. Environmental impacts of cesarean section (C/S) and vaginal (Vag) births. * Waste calculated for the disposable custom packs and placenta disposal.
LCA in Strategic Planning

Current state

Intervention

Future state
Can we catch up?
Can we catch up?

Eco-efficiency of disposable and reusable surgical instruments—a scissors case

Suphanitika Ibsen · Timi Dettmer · Sami Kuru · Christoph Herrmann
Can we catch up?

SUSTAINABLE DEVELOPMENT

Eco-efficiency of disposable and reusable surgical instruments—a scissors case

Sutphenika Ilbisen · Tino Dettmer · Sami Kara · Christoph Herrmann

Life Cycle Assessment and Costing Methods for Device Procurement: Comparing Reusable and Single-Use Disposable Laryngoscopes

Jodi D. Sherman, MD,* Lewis A. Raibley IV, BS, MBA,† and Matthew J. Eckelman, PhD‡
Can we catch up?

Sustainable Development

Eco-efficiency of disposable and reusable surgical instruments—a scissors case
Sphamila Ilberson · Tina Dettmer · Sani Kara · Christoph Herrmann

Life Cycle Greenhouse Gas Emissions of Anesthetic Drugs
Jodi Sherman, MD,* Cathy Lo,† Vanessa Lamers,‡ and Matthew Eckelman, PhD§

Life Cycle Assessment and Costing Methods for Device Procurement: Comparing Reusable and Single-Use Disposable Laryngoscopes
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Can we catch up?
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Einweg- versus Mehrweg-Patientenabdeckung im Operationssaal
Ökobilanz: Vergleich von Zellstoff-Polyethylens- und Baumwoll-Mischabdeckung

M. Dotzenkofer1, R. Griebhammer2, M. Scherrer1 und F. Daschner1
1 Institut für Umweltmedizin und Krankenhaushygiene (Direktor: Prof. Dr. F. Daschner), Universitätsklinikum Freiburg
2 Öko-Institut e.V., Freiburg

Life-Cycle Assessment of single-use versus reusable surgical drapes (cellulose/polyethylene – mixed cotton system) proved superior. It is difficult to compare and weigh various environmental aspects like the polluting cultivation of cotton in distant countries (reusable drapes) and the higher final was conducted. An ecological consideration is that of the mix of cover, which was determined to be the most

Life Cycle Assessment and Costing Methods for Device Procurement: Comparing Reusable and Single-Use Disposable Laryngoscopes

Jodi D. Sherman, MD,* Lewis A. Raibley IV, BS, MBA,† and Matthew J. Eckelman, PhD‡

A Life Cycle Assessment of Reusable and Single-Use Central Venous Catheter Insertion Kits

Anasth Intensive Care 2010; 38; 536-544

The financial and environmental costs of reusable and single-use plastic anaesthetic drug trays

F. McGAIN*, S. MICALISTER†, A. McGAVIN‡, D. STORY§
Department of Anaesthesia and Intensive Care, Western Hospital, Melbourne, Victoria, Australia
Can we catch up?

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SUSTAINABLE DEVELOPMENT

Einweg- versus Mehrweg-Patientenabdeckung im Operationssaal

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1 Institut für Uniformmedizin und Krankenhausthygiene (Direktor: Prof. Dr. F. Daeschner), Universitätsklinikum Freiburg
2 Öko-Institut e.V., Freiburg

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wurde eine Literaturrecherche durchgeführt. Aus hygienischer Sicht ist demnach die Mischabdeckung nach derzeitigem Wissensstand als sicherer Verfahren einzustufen.

CME

Comparative Life Cycle Assessment of Disposable and Reusable Laryngeal Mask Airways

Matthew Eckelman, PhD,* Margo Mosher,† Andres Gonzalez,† and Jodi Sherman, MD†

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Department of Anaesthesia and Intensive Care, Western Hospital, Melbourne, Victoria, Australia
Can we catch up?
Greening the ED
Questions, Answers and Discussion
Climate and emergency medicine resources

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Thank you!

Any questions or comments please contact Dr. Amy Collins acollins@hcwh.org