

The Climate Crisis: Why Healthcare Should Lead

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1. The climate crisis is a health crisis, and healthcare is part of the problem
1. Healthcare workers want healthcare to lead on sustainability
1. Adopting sustainability into healthcare's mission achieves a triple bottom line



Wildfires of 2020



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Protecting Kids from Wildfire Smoke: Actions for California Schools

As smoke and wildfire seasons intensify, schools must take urgent action to protect kids' health. Improvements in indoor air quality and readiness planning are also critical for COVID-19 – and ongoing climate challenges.

Why take action?

Wildfire smoke contains fine, inhalable particles called PM2.5, as well as dangerous levels of heavy metals and other toxins. It may be as much as 10 times more dangerous for kids than other forms of air pollution.

Wildfire smoke can increase emergency room visits for asthma and upper respiratory infections in kids. It can also reduce immune function, lead to cardiovascular and lung diseases later in life, and create long-term cancer risks.

Since air pollution levels are also associated with reduced school performance, improving schools' air quality doesn't just help protect kids' health – it also safeguards their learning. Better air quality infrastructure can also help protect against COVID-19 and other illnesses.

Don't just close.

When schools close due to wildfire smoke, kids – especially from lower-income communities and communities of color – are set back. Kids could be left without access to learning resources, meals, or school support services. Schools, particularly those with improved filtration, may also have better air quality than

What can schools do?

KNOW YOUR INDOOR AIR QUALITY



Monitoring indoor air quality is an important way to tailor interventions and keep kids safe. Ideally, this should also be done at home. More information: bit.ly/3wyg3tP

IMPROVE HVAC SYSTEMS



Installing, improving, and maintaining HVAC systems is critical for mitigating exposure to smoke – as well as other emerging challenges, like disease-spreading pathogens and heat. Use MERV13+ filters or highest possible filter compatible with system. More information: bit.ly/3Czx7SS

GET AIR PURIFIERS



Where HVAC installation isn't an option or additional filtration is needed, classrooms should get portable mechanical air cleaners. Avoid purchasing purifiers that have ionizers, as they can create ozone. More information on devices certified for sale in CA: bit.ly/37wrhU

CREATE CLEAN AIR ROOMS



Schools should consider creating large clean air rooms, such as cafeterias, gyms, or auditoriums – which can also serve as clean air shelters for community members outside of school hours. Ideally, ALL classrooms should be clean air rooms to keep kids safe. More information: bit.ly/3ykggRt

CONDUCT A BASELINE ASSESSMENT



Conducting a baseline assessment of infrastructure and vulnerabilities, such as a hazard mitigation plan, is important for disaster preparedness and can open up additional funding. More information: bit.ly/3CM0RLH



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A Call To Action

Climate Resilient California Schools

Safeguarding Children's Health and Opportunity to Learn in TK-12

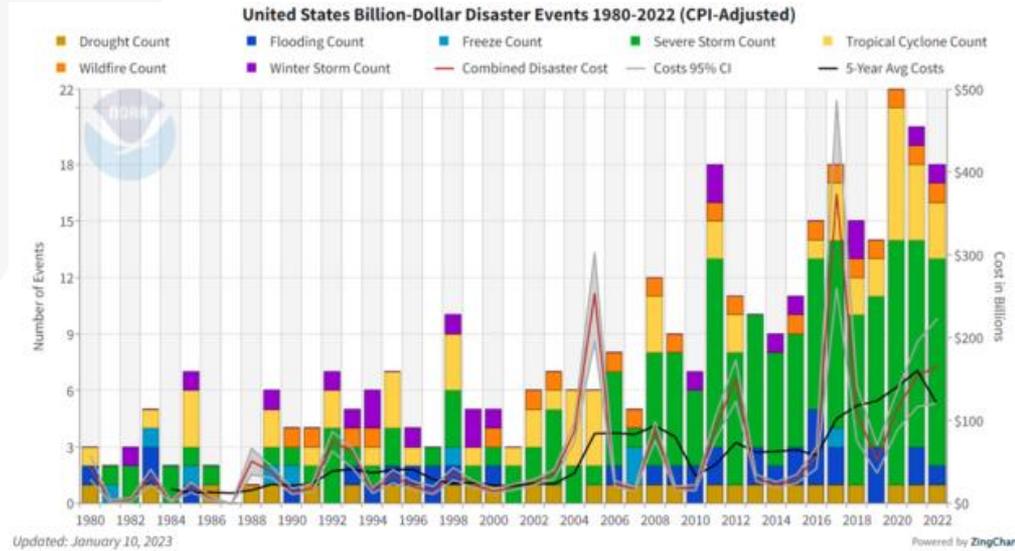
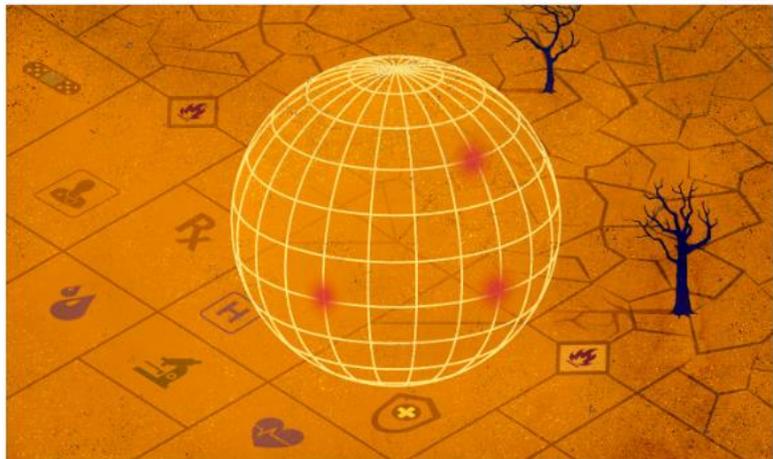


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Climate Change and Extreme Heat Events: How Health Systems Should Prepare

Authors: Lisa Patel, MD, MEd, Kathryn C. Conlon, MPH, PhD, Cecilia Sorensen, MD, Samia McEachin, Kari Nadeau, MD, PhD, Khyati Kakkad, MD, and Kenneth W. Kizer, MD, MPH [Author Info & Affiliations](#)

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DOI: 10.1056/CAT.21.0454 | VOL. 3 NO. 7



200 major medical journals, including the New England Journal of Medicine, BMJ, and the Lancet, published the same editorial on the same day calling climate change **the greatest threat to public health in the 21st century**

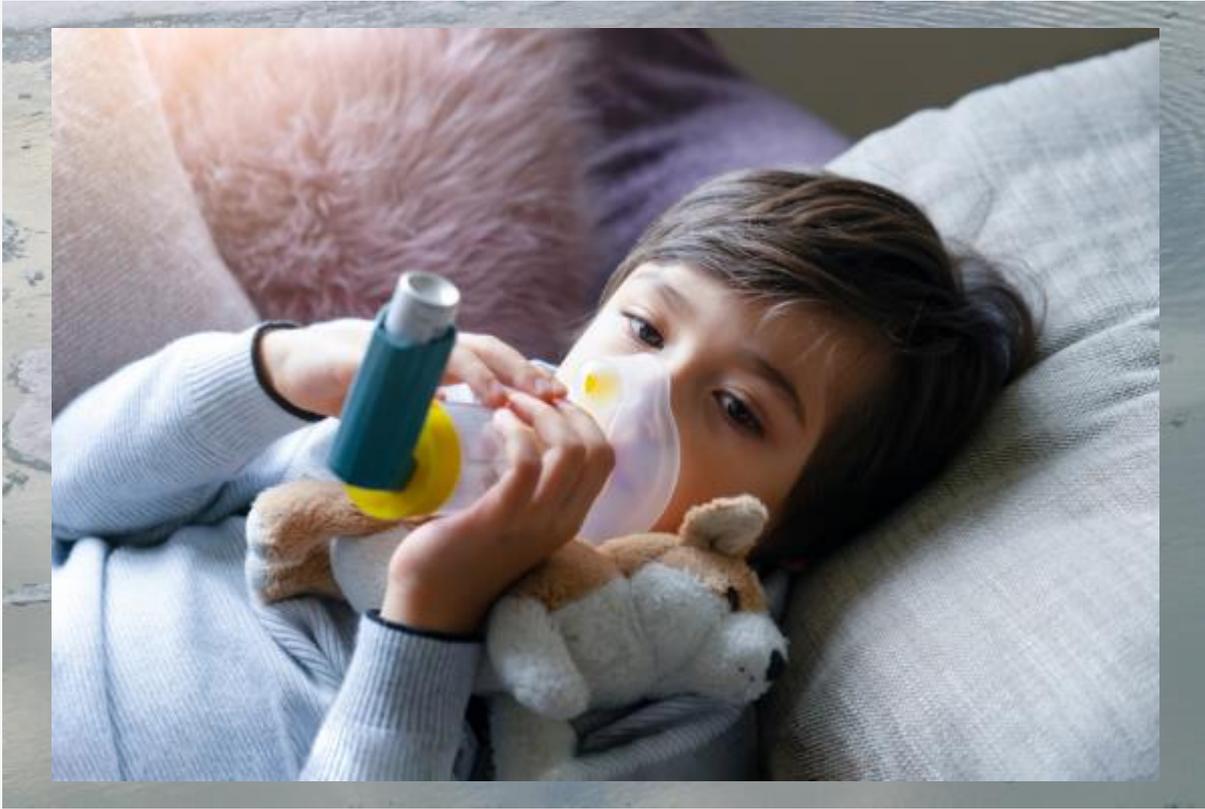
#HealthyClimate

“The greatest threat to global public health is the continued failure of world leaders to take action to keep the global temperature rise below 1.5°C and to restore nature.”

Over 200 health journals worldwide call for urgent action to protect health.



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What We Do



Diversifying and growing the movement.

We are growing our numbers, diversity, and power. We recognize our collective voice must represent the unique insights and life experiences of every community.



Fostering collective action.

We make sure the health voice is heard when and where it matters. We advocate federally and support our State Network's advocacy in states and local communities.



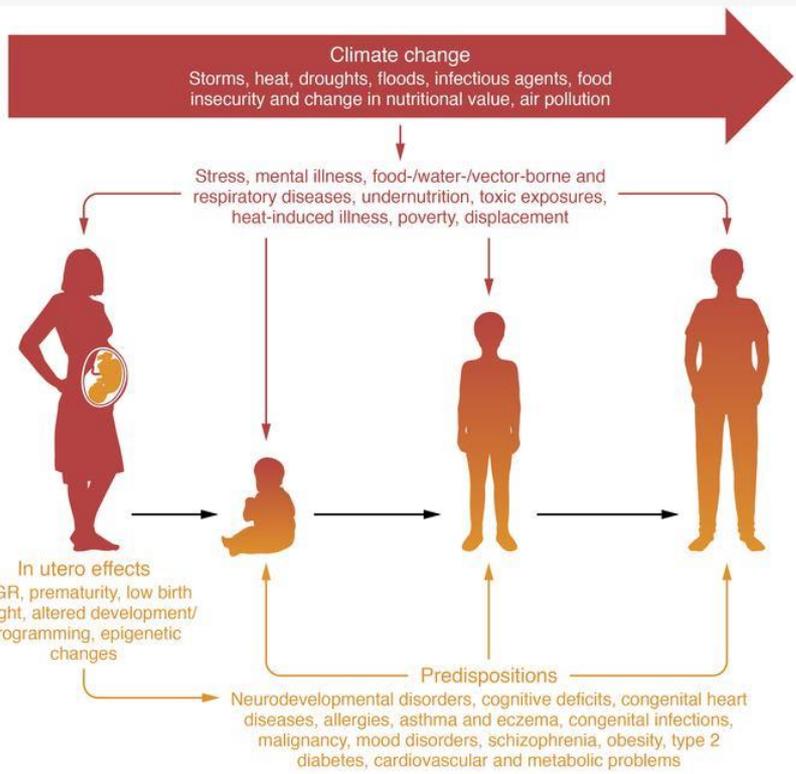
Promoting health and equity in climate policy.

From air pollution regulations to building and transportation electrification to an improved food economy, we advocate for proposed climate policies that advance health and equity.



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Health Effects of Climate Change



Climate change will leave no organ untouched –no life stage unaffected

Brain

Mental and psychosocial health, anxiety, stroke

Multi-system

Vector-borne disease, heat-related illness, heat-drug interaction, interpersonal violence, exacerbation of social and health inequities

Lungs

Respiratory illnesses, chronic obstructive pulmonary disease (COPD), asthma

Heart

Heart failure, ischemic heart disease, exacerbation of existing cardiovascular disease

Genitourinary

Exacerbation of existing kidney disease, adverse pregnancy outcomes

Gastrointestinal

Malnutrition, water-borne disease, food-borne disease, food scarcity, decreased food quality

Musculoskeletal

Injury due to weather related events

Credit: *Radiology* (2023). DOI: 10.1148/radiol.230229



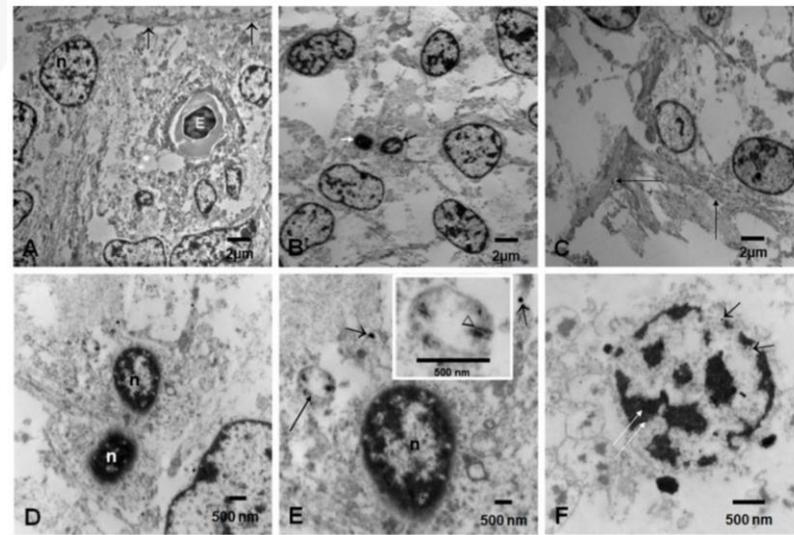
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Credit: *J Clin Invest.* 2020;130(2):562-564. <https://doi.org/10.1172/JCI135005>.

Fossil fuel pollution and health

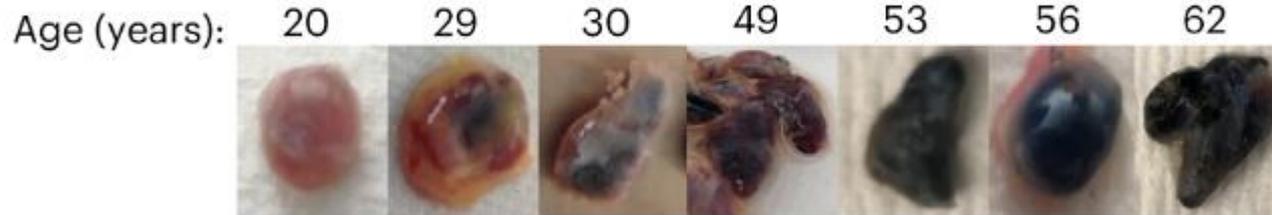
U.S. healthcare is also responsible for:

- 9% of the country's air pollution
- 12% of acid rain emissions
- 10% of smog-forming emissions



Calderón-Garcidueñas, L.; Pérez-Calatayud, A.A.; González-Maciel, A.; Reynoso-Robles, R.; Silva-Pereyra, H.G.; Ramos-Morales, A.; Torres-Jardón, R.; Soberanes-Cerino, C.d.J.; Carrillo-Esper, R.; Briones-Garduño, J.C.; et al. Environmental Nanoparticles Reach Human Fetal Brains. *Biomedicines* **2022**, *10*, 410. <https://doi.org/10.3390/biomedicines10020410>

b



The effects of air pollution are easy to see in these lymph nodes from people of different ages. [Nature, Vol. 28, Dec. 2022, pp. 2482-3]



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Victim of Arizona Heat



Timothy Young is organizing this fundraiser.



A study of 700 hospitals along the Gulf Coast shows a 22% increase risk in flooding due to climate change

Wildfires of unprecedented scale will expose new populations to the threats of wildfire smoke

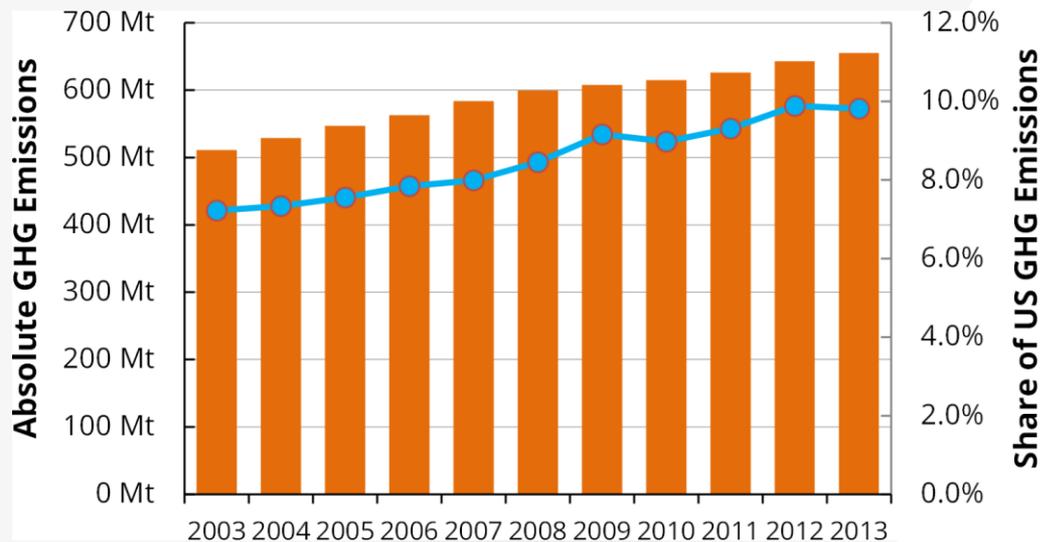


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People suffered 2nd and 3rd degree burns from falling on the pavement in Arizona.

One study estimates half of Phoenix could end up in the emergency room if the power grid fails during a heat wave

Why does sustainable healthcare matter?



Eckelman 2020:

US healthcare system is responsible for ~25% of GLOBAL healthcare GHG emissions

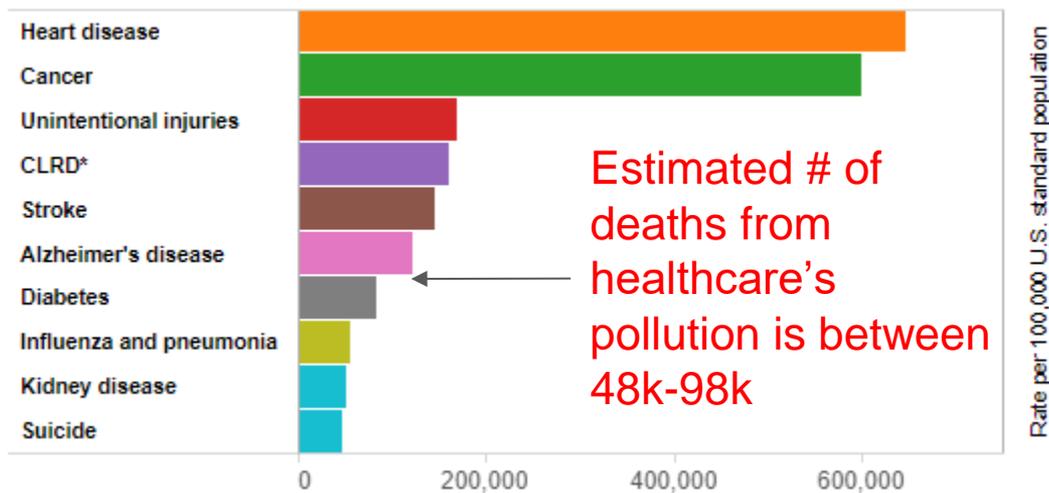
2018 greenhouse gas emissions resulted in the loss of **388,000 disability-adjusted life-years**.

Study showed no correlation between level of GHG emissions and health system quality → there is plenty of room to decrease or GHG emissions without compromising care



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Number of Deaths for the 10 Leading Causes of Death:
United States, 2017†



Healthcare workers want healthcare to lead on sustainability



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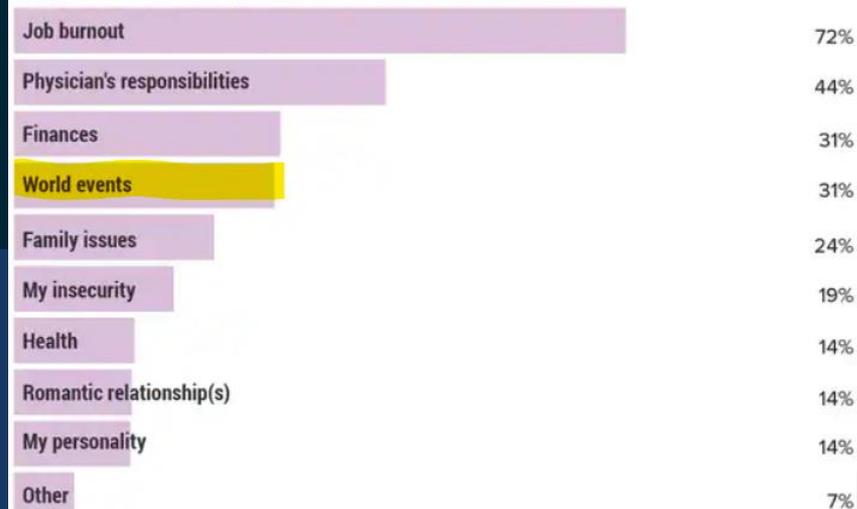
43% of workers are experiencing persistent eco-anxiety, resulting in work demotivation and lost focus.

Source: *Conference Board*

Medscape Physician Burnout & Depression Report 2024: 'We Have Much Work to Do'

Jon McKenna | January 26, 2024 | Contributor Information

Factors That Contribute Significantly to Physicians' Depression



Respondents could choose up to three.



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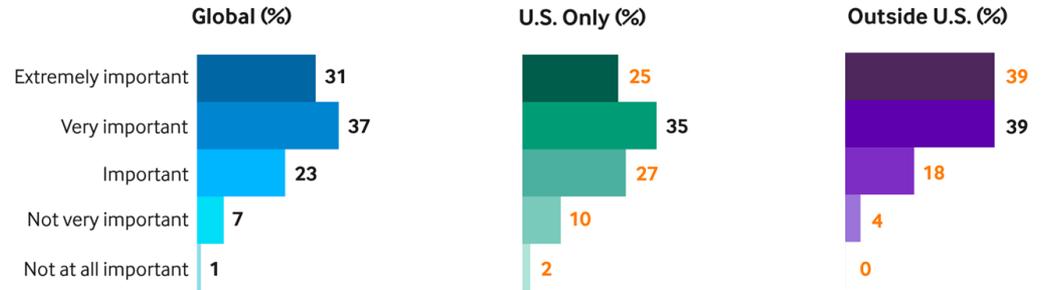
Climate Change Action: Important but Lagging

Authors: Kathy Gerwig and Lisa Patel, MD, MESC, FAAP [Author Info & Affiliations](#)

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High Personal Importance for Sustainable Policies and Processes

How important is it to you personally that your organization implements environmentally sustainable policies and processes?



Statistically significant differences are noted in orange

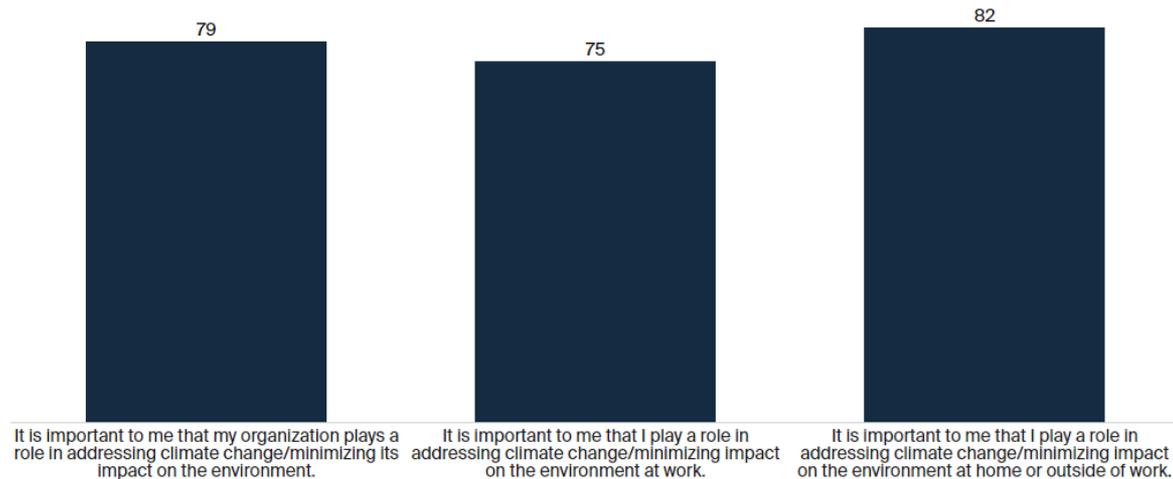
Base: Global – 764; U.S. only – 424; Outside U.S. – 340 (may not total 100 due to rounding)

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A majority of clinicians surveyed feel it's important that the health system they work for plays a role in addressing climate change.

Percentage of surveyed clinicians who "agreed" or "strongly agreed" with the following statement



[Download data](#)

Note: N = 1,001 U.S. clinicians employed at a hospital or health system.
Data: Commonwealth Fund 2023 Climate and Health Care Workforce Survey.

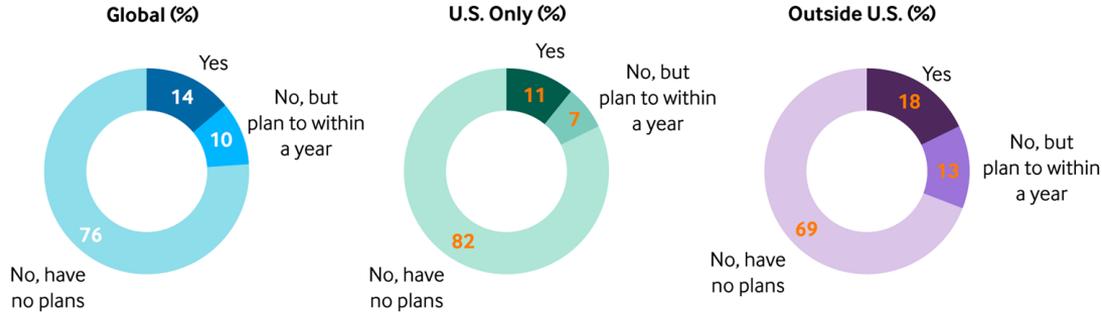
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Published April 17, 2024 | NEJM Catal Innov Care Deliv 2024;5(5) | DOI: 10.1056/CAT.24.0155 | VOL. 5 NO. 5

Few Dedicated Executives for Sustainability

Does your organization have a Chief Sustainability Officer or an executive position with similar responsibilities?



Statistically significant differences are noted in orange

Base: Global – 764; U.S. only – 424; Outside U.S. – 340

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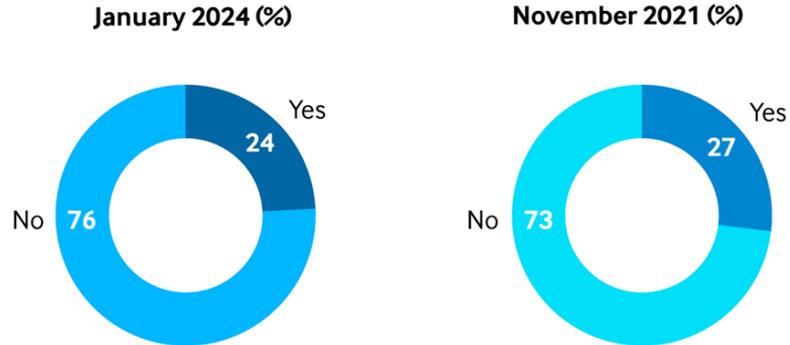
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Climate Change Efforts Have Held Steady Over 3 Years

Has your organization taken steps to lessen its impact on climate change?



Base: January 2024 – 764; November 2021 – 792

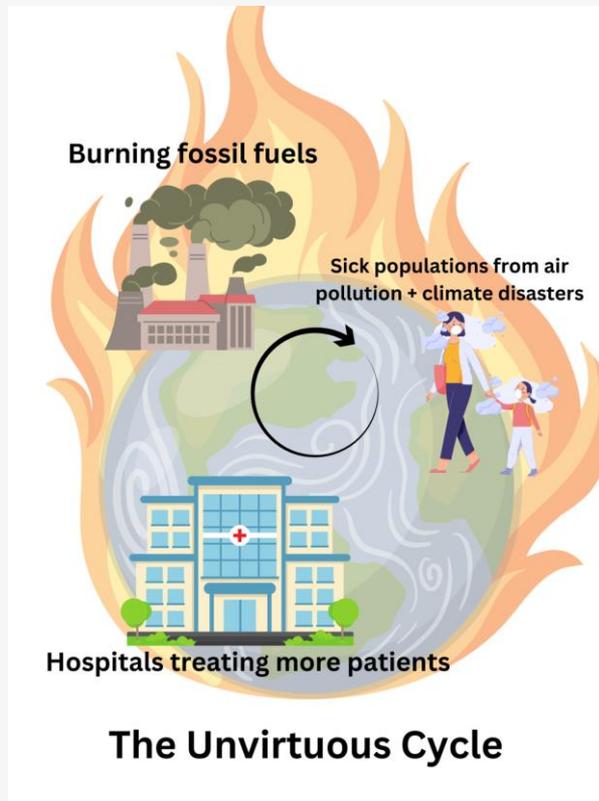
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Sustainable healthcare achieves a triple bottom line



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The IRA represents one of the most significant federal actions to address climate change in decades and provides a necessary lever to drive change within the health sector.

nam.edu/Perspectives

Once operational, the system will provide approximately 30% of the electricity needed to support the AdventHealth corporate campus and is projected to save the organization approximately \$20 million over 20 years in operational savings. It is estimated that initial project costs will be recouped in 12-15 years

HHS Office of Climate Change and Health Equity Inflation Reduction Act (IRA) Case Study

Organization name: AdventHealth

Organization tax status: Tax-exempt not-for-profit

Facility name: AdventHealth Corporate Campus

Facility location: Altamonte Springs, Florida

Brief description of facility: The faith-based health system's corporate campus provides meeting and workspace for more than 2,000 team members who work to support the system's operations and 95,000+ employees across 50+ hospitals across the country.



The Project

Brief description of project partially financed by the IRA:

This project is a 3-megawatt (MW) solar photovoltaic (PV) system, comprised of over 7,500 solar panels. The system will encompass four building rooftops, two parking garages, and multiple solar canopies throughout the surface parking lot. Additionally, the campus will feature 31 dual-port electric vehicle charging stations. Upon completion, projected by the end of 2024, the solar PV installation at the AdventHealth Corporate Campus will be one of the largest privately owned solar projects in Florida.

IRA funding mechanism(s):

Investment Tax Credit for Energy Property.

HHS Office of Climate Change and Health Equity Inflation Reduction Act (IRA) Case Study

Organization name: Boston Medical Center Health System

Organization tax status: Tax-exempt not-for-profit

Facility name: Boston Medical Center

Facility location: Boston, Massachusetts

Brief description of facility: Boston Medical Center (BMC) is a 616-bed academic medical center located in Boston, Massachusetts and is the primary teaching affiliate for Boston University School of Medicine. As the largest safety-net hospital in New England, BMC offers comprehensive healthcare services to individuals regardless of their socioeconomic status. Over 70% of the BMC patient population is covered by public insurance and over 70% self-identify as people of color. BMC provides over 1.2 million outpatient visits per year annually and is the largest provider of trauma services in New England. BMC's affiliated health plan, WellSense, has over 750,000 members.

Boston Medical Center HEALTH SYSTEM



The Project

Brief description of project partially financed by the IRA:

Clean Power Prescription is a first-of-its-kind pilot program that provides solar energy credits to BMC Health System patients who report difficulty affording household utility payments. The credits are generated by a 356 kW solar array on the campus of Boston Medical Center. Patients enrolled in the pilot receive a monthly credit on their electric bills, totaling \$600 over the course of twelve months.

IRA funding mechanism(s):

Investment Tax Credit for Energy Property with Category 4 Low-Income Communities Bonus Credit and Energy Community Bonus Credit (our site is a brownfield). We were approved for the Low-Income Communities Bonus Credit in the 2023 cycle.

“The Clean Power Prescription also advances BMC’s mission by addressing both economic and environmental justice. In addition to helping our patients, the pilot project has generated significant benefits in terms of philanthropy, faculty recruitment, and faculty/staff morale.”



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HHS Office of Climate Change and Health Equity Inflation Reduction Act (IRA) Case Study

Organization name: Valley Children's Healthcare

Organization tax status: Tax-exempt not-for-profit

Facility name: Valley Children's Hospital

Facility location: Madera, CA

Brief description of facility: Valley Children's is a pediatric healthcare system serving more than 1.3 million children in Central California. 75% of patients are Medicaid-insured and 77% belong to Hispanic, Black, Asian, and other racial and ethnic minority groups. It operates a stand-alone 358-bed children's hospital, including 28 regional NICU beds at partner hospitals, specialty care centers, pediatric primary care practices and women's health services. The network includes more than 670 physicians and 3,500 staff members.



“Aging energy infrastructure and public safety power shutdowns due to wildfires created vulnerabilities for the hospital. The renewable energy microgrid will reduce reliance on the traditional power grid, save money on energy costs, and ensure operational continuity during regional power outages.”

The Project

Brief description of project partially financed by the IRA:

Valley Children's is installing the largest pediatric healthcare-based renewable energy microgrid in the country, set to begin operation in 2025. The \$30 million microgrid, comprised of a 1.32 MW solar PV, a 2.2 MW fuel cell, and a 1.4 MWh battery, will ensure the hospital and its campus remain operational during regional power outages.

IRA funding mechanism(s):

Investment Tax Credit for Energy Property with Domestic Content Bonus Credit and Category 1 Low-Income Communities Bonus Credit.



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Figure 1. Summary of Key Measures and Strategies for Healthcare Decarbonization

HIGH-LEVEL AIM				
Reduce organizational emissions by 50% by 2030 and to net zero by 2050				
High-Priority Measures		Key Strategies		
	Core Measures	Elective Measures	Reduce Waste	Reduce Emissions Intensity
Energy	<ul style="list-style-type: none"> Total GHG emissions from energy use 	<ul style="list-style-type: none"> Energy use intensity of health care facilities ENERGY STAR® score of health care facilities 	<ul style="list-style-type: none"> Conserve and optimize energy efficiency 	<ul style="list-style-type: none"> Transition to zero-carbon fuel sources Meet and exceed the current green building/retrofitting standards
Transportation	<ul style="list-style-type: none"> Total GHG emissions of owned and leased vehicles 	<ul style="list-style-type: none"> Total GHG emissions from staff and patient travel 	<ul style="list-style-type: none"> Centralize oversight to actively manage transportation reduction 	<ul style="list-style-type: none"> Transition to sustainable transportation systems
Anesthetic Gas	<ul style="list-style-type: none"> Total GHG emissions from inhaled anesthetics 	<ul style="list-style-type: none"> Mean fresh gas flow rates 	<ul style="list-style-type: none"> Minimize fresh gas flow rates Decommission or avoid construction of central nitrous oxide piping 	<ul style="list-style-type: none"> Manage anesthetic choices
Pharmaceuticals & Chemicals	<p>Overarching Scope 3 Measure:</p> <ul style="list-style-type: none"> Total GHG emissions from (or total spend on) goods and services 	<ul style="list-style-type: none"> Metered-dose inhaler outpatient prescriptions as a percentage of all inhaler prescriptions Percent purchased goods and services supplied by companies performing carbon disclosures with a science-based target for emissions reduction 	<ul style="list-style-type: none"> Prevent disease exacerbation Launch appropriate use campaigns 	<ul style="list-style-type: none"> Maximize lower carbon alternatives for inhalers
Medical Devices & Supplies			<ul style="list-style-type: none"> Ensure resource stewardship 	<ul style="list-style-type: none"> Adopt and expand circular economy policies and practices related to reuse, reprocessing, repair, repurposing, and recycling Adopt preferential purchasing with suppliers or service providers that perform carbon disclosures and have set a science-based target for decarbonization
Food		<ul style="list-style-type: none"> Total GHG emissions from food procurement 	<ul style="list-style-type: none"> Adopt food waste prevention and diversion programs 	<ul style="list-style-type: none"> Design plant-forward menus and retail options

Reducing Healthcare Carbon Emissions

A Primer on Measures and Actions for Healthcare Organizations to Mitigate Climate Change



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U.S. Department of
Health and Human Services

Enhancing the health and well-being of all Americans

Compendium of Federal Resources for Health Sector Emissions Reduction and Resilience

<https://bit.ly/SustainableHealthCare>



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SUSTAINABILITY SOLUTIONS FOR HEALTH CARE

Practice Greenhealth is the leading membership and networking organization for sustainable health care, delivering environmental solutions to hospitals and health systems across the United States.

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**ACTION COLLABORATIVE ON
DECARBONIZING THE
U.S. HEALTH SECTOR**



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OUR PLANET, CLIMATE, AND HEALTH: DRIVING COLLECTIVE ACTION



March 1-4, 2025



National Academy of Medicine



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Thank you!



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