International & Environmental Webinar
Oct. 3, 2012
Noon – 1:30 p.m. ET

Reflection for Today’s Program

Lord, make me an instrument of your peace.
Where there is hatred, let me sow love;
where there is injury, pardon;
where there is doubt, faith;
where there is despair, hope;
where there is darkness, light;
and where there is sadness, joy.
Lord, make me an instrument of your peace.

Amen.
Your Presenters for Today’s Program

Camille Grippon
Director, Ecology and Global Ministries
Bon Secours Health System, Inc.
Marriottsville, Md.

Josh Karliner
Global Projects Director, Health Care Without Harm
Convener of the Global Green and Healthy Hospitals Network

Sr. Mary Ellen Leciejewski, OP
CHW Ecology Program Coordinator
Dominican Hospital
Santa Cruz, Calif.

Seema Wadhwa
Director, Healthier Hospitals Initiative
Director of Sustainability, Inova Health System

Global Green and Healthy Hospitals
Part One – Healthy Planet, Healthy People
Joshua Karliner
International Team Coordinator
Health Care Without Harm
✓ Making the link between the environment and health
✓ Evolving the Hippocratic Oath
✓ Leveraging the purchasing power of health care
✓ Promoting policy and regulatory frameworks for sustainability and equity
✓ Activating health messengers for broader societal transformation
✓ Implementing a disease prevention agenda

Can you have healthy people on a sick planet?
How sick is the planet?
Diagnosis

CHEMICAL DEPENDENCY
HIGH LEVEL OF STRESS AND OVERCONSUMPTION

1960-2007
- Ecological Footprint

2007-2050, Scenarios
- Moderate business as usual
- Rapid reduction

1970s

2050
- 2.3X

TODAY
- 1.5X

BALANCE
- 1.1

# of Planet Earths


OBESITY PROBLEM

2005 World Consumption Cartogram

Countries have been colored to indicate their effective consumption based upon WWF Global Footprint Network and UN World Food Statistics. Original base map is ESRI ArcWorld. Geometry constrained to the Robinson equal area projection. Created with ArcMap 9.3, WorldGeo & Pol.
Climate Change Impacts Are Happening Faster than Predicted

Arctic sea ice in 2005 (white) compared to the concentration of ice in September 1979 (outlined in yellow).
2010 – a harbinger of things to come?

Pakistan floods ~ 20 m affected
Chinese floods ~ 12m displaced
Russian drought and fires – wheat harvest down ~ 30%
56,000 extra deaths in Moscow and Western Russia

(Munich Re estimate)

Record temperatures in 17 countries.

Behavior is not changing: We are moving beyond a 2 degree warming scenario
Can you have healthy people on a sick planet?

Our health, well-being and sustainable future depend on this intricate, delicate web of ecosystems and life

*Ban Ki-Moon, UN Secretary General*
The Environment is a Major Social Determinant of Human Health

Environmental Factors = ¼ of global burden of disease ---WHO
… ongoing development crisis

- 2 billion people without access to clean cooking fuels
- More than 1.5 billion people without electricity
- More than 1 billion have poor access to fresh water
- About 800 million people chronically undernourished
- 2 million children die per year from diarrhea
- 30,000 deaths each day from preventable diseases

Nearly one-tenth of all preventable deaths in 2004 were caused by toxic substances -- WHO
<table>
<thead>
<tr>
<th>21st Century Chronic Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>The lifetime risk of cancer is 1 in 2 for men and 1 in 3 for women. 1 in 12 and 1 in 11 respectively will develop invasive cancer before the age of 60. (ACS 2005)</td>
</tr>
<tr>
<td>The risk of breast cancer has tripled from more than 1 in 20 to 1 in 7 in the last forty years. (ACS 2003)</td>
</tr>
<tr>
<td>Non-Hodgkin’s Lymphoma has nearly doubled since the 1970s. (RPCI 2005)</td>
</tr>
<tr>
<td>Endometriosis, linked to dioxin exposure, now affects 10-15% of the US female population. (Holloway 1994, Suchy &amp; Stepan 2004)</td>
</tr>
</tbody>
</table>

“Climate change is the biggest global health threat of the 21st century... The impacts will be felt all around the world – and not just in some distant future but in our lifetimes and those of our children.”

The Lancet
Climate change amplifies existing health risks

- Heat-related illnesses and death
- Extreme weather-related injuries and mortality
- Aggravated chronic illnesses
- Infectious diseases: vector-, zoonotic-, water- and food-borne diseases
- Asthma, respiratory allergies, and chronic respiratory disorders
- Malnutrition and child development complications
- Stress-related and mental health disorders
- Population displacement and migration
- Instability and conflict

“Countries that have contributed least to greenhouse-gas emissions will be the first and hardest hit by climate change.” - Dr. Margaret Chan, Director General WHO

“Health impacts will be disproportionately greater in vulnerable populations, including the poor, the very young, the elderly and the medically infirm.” - WHO
What is the role and the responsibility of the health sector in addressing the most profound crisis of our time?

“The health sector must add its voice – loud and clear…we must fight to place health issues at the center of the climate agenda. We have compelling reasons for doing so. Climate change will affect, in profoundly adverse ways, some of the most fundamental determinants of health: food, air, water.”

- Dr. Margaret Chan, Director General of the World Health Organization, December 2007
Hospitals--- from part of the problem to part of the solution

The Paradox: Hospitals Create Environmental Health Problems

- NHS in England, is responsible for 26% of total public sector GHG emissions. Eight percent of US emissions are from healthcare. Ten percent of Brazil’s energy consumption comes from hospitals.

- The U.S. healthcare sector is the largest consumer of carcinogenic chemicals.

- China spends $10 billion a year on health care construction.

- Half the world’s population is exposed to the negative health impacts of medical waste.
How do we break the vicious circle?

A Look at the Economics

In 2007, world health expenditures reached $5.3 trillion USD, which was $639 per person per year or 8-10% of global GDP.

Total expenditure on health per capita, 2007 *
(in US$)

* Based on data updated in March 2010.
Hospitals Can Lead by Example and Promote Public Health by Reducing their Environmental Footprint

Hospitals Around the World Are Already Going Green
Introducing Healthier Hospitals Initiative

www.HealthierHospitals.org

www.healthierhospitals.org
Why HHI?

- **Acceleration strategy** at the intersection of sustainability, patient and worker safety
- Using **proven strategies** to demonstrate Success!
- **Moving the $135 billion** market a unique and explicit goal
- **Over 500** founding sponsor hospitals – 9% of hospital sector
- Modeled after IHI 100,000 Lives Campaign in enrollment strategy
- Linking sustainability with the “quality” movement in healthcare
- **No barrier to entry** – no enrollment fee
- **Leveraging $20 billion** spent in purchasing materials

Media Coverage
Baseline

Sign and submit an executive commitment statement.

The HHI Engaged Leadership Challenge is measured through qualitative measures, as outlined below. Levels 1, 2 and 3 are identified by the number of qualitative activities achieved. Organizations committed to effective sustainability leadership shall adopt ten or more of the following Engaged Leadership strategies over time. To maximize effectiveness, the Healthier Hospitals Initiative recommends selecting at least one indicator from each of the four Engaged Leadership clusters and integrating additional sustainability features as the program develops.

Level 1
Implement three of the leadership activities from the reference list.

Level 2
Implement six of the leadership activities from the reference list.

Level 3
Implement 10 of the leadership activities from the reference list.
Healthier Foods

Baseline
Facility (or system) has signed the Healthy Food in Health Care Pledge OR has formally adopted a sustainable food policy.

Balanced Menus
Challenge: Decrease amount of meat purchased by 20 percent, within three years from baseline. (Meat = beef, pork, poultry and lunch meat; measure = lbs.)

Healthy Beverages
Challenge: Increase the percentage of healthy beverage purchases by 20 percent of total beverage purchases annually over baseline year OR achieve healthy beverage purchases of 90 percent of total beverage purchases for use throughout the hospital, patient, retail, vending and catering) within three years. (Include promotion of tap water over bottled water when possible; measure = dollars.)

Local/Sustainable Food Challenge:
Increase the percentage of local and/or sustainable food purchases by 20 percent annually over baseline year OR achieve local and/or sustainable food purchases of 18 percent of total food dollar purchases, within three years. (Measure = dollars.)

Leaner Energy

Baseline
Input energy data to ENERGY STAR® Portfolio Manager to establish baseline and track subsequent energy use and greenhouse gas emissions from metered energy use.

Level 1
Reduce greenhouse gases by decreasing weather-adjusted energy intensity from metered energy use by three percent from baseline.

Level 2
Reduce greenhouse gases by decreasing weather-adjusted energy intensity from metered energy use by five percent from baseline.

Level 3
Reduce greenhouse gases by decreasing weather-adjusted energy intensity from metered energy use by ten percent from baseline OR if facility is already an ENERGY STAR rated facility (> 75), maintain ES status.
Less Waste

Baseline

- **Regulated Medical Waste Reduction:** Reduce regulated medical waste (RMW) to either less than 10 percent of total waste or less than three lbs. per adjusted patient day.
- **Recycling:** Achieve a 15 percent recycling rate compared to total waste.
- **Construction and Demolition Diversion:** Implement a construction and demolition debris recycling program for major renovations and new construction to achieve at least 80 percent recycle and diversion rate.

Safer Chemical

Baseline
Achieve mercury-free status or develop and implement mercury elimination plan.

- **Green Cleaning:** Purchase 90 percent Green Seal or EcoLogo certified cleaning products in these four categories: carpet, window, all purpose, and bathroom.
- **DEHP/PVC Reduction:** Eliminate DEHP/PVC from at least one product line.
- **Healthy Interiors:** Ensure that 25 percent of the annual volume of freestanding furniture and medical furnishings* purchases based on cost, eliminate the intentional use of halogenated flame retardants, formaldehyde, perfluorinated compounds and PVC (also known as vinyl).

Smarter Purchasing

Baseline
Pledge to support Group Purchasing Organization (GPO) in contracting for, and to start purchasing applicable products based on, the environmentally preferred attributes in the Standardized Environmental Questions for Medical Products.

Surgical kit review: Review at least 30 custom surgical O.R. kits or 80 percent of O.R. kit types, whichever is greater in efforts to eliminate unneeded materials.

Single use device reprocessing: Increase expenditure of reprocessed FDA-eligible single use devices by 50 percent.

Electronic Products Environmental Assessment Tool (EPEAT): Specify and report expenditures on EPEAT registered devices.

Tools and Resources
Tools and Resources

- Mentor Hospital Program
- Forums
- Mentor Calls
- Sharing Successful Strategies
- Case Studies

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www.healthierhospitals.org
Global Green and Healthy Hospitals

Part 2—What is GGHH?

Joshua Karliner
International Team Coordinator
Health Care Without Harm

Hospitals Around the World Are Already Going Green
A Global Umbrella Network of Sustainability in Health Care
The Ten Goals

1. **LEADERSHIP**: Prioritize Environmental Health
2. **CHEMICALS**: Substitute Harmful Chemicals with Safer Alternatives
3. **WASTE**: Reduce, Treat and Safely Dispose of Healthcare Waste
4. **ENERGY**: Implement Energy Efficiency and Clean Renewable Energy Generation
5. **WATER**: Reduce Hospital Water Consumption and Supply Potable Water
6. **TRANSPORTATION**: Improve Transportation Strategies for Patients and Staff
7. **FOOD**: Purchase and Serve Sustainably Grown, Healthy Food
8. **PHARMACEUTICALS**: Safely Manage and Dispose of Pharmaceuticals
9. **BUILDINGS**: Support Green and Healthy Hospital Design and Construction
10. **PURCHASING**: Buy Safer and More Sustainable Products and Materials

Hospitals, health systems and health organizations representing the interests of more than 4,000 hospitals from five continents have come together to form the network.
• Join the Network – commit to 2 goals
• Annual reporting on progress
• Tools and Resources for implementation
• Post case studies
• Online forum

WWW.GREENHOSPITALS.NET

Founding Members

*Health Organizations and Systems*

• Australian Hospitals and Health Care Association (Australia)
• Chinese Hospital Association (Construction Branch)
• Department of Health, Thailand (GREEN and CLEAN Hospitals Program)
• FHI360 (Global)
• Healthier Hospital Initiative (US)
• Health Promoting Hospitals Network, Environment Task Force (Global)
• Health Secretariat, Mexico City (Mexico)
• Indonesia Hospitals Association (Indonesia)
• National Health Service, Sustainable Development Unit (UK)
Individual Hospital Members

More than 100 Individual Hospitals already signed up or in process.

Argentina, Brazil, Canada, Colombia, Costa Rica, England, India, Nepal...

Rolling Launches Around the World
United States Launch
Healthier Hospitals Initiative
Australia Launch

The Sydney Morning Herald

“Hospitals act to cut dangerous waste”

China Launch
Brazil Launch

![Brazil Launch Image]

Europe Launch

![Europe Launch Image]

Join us in Malmö

> REGISTER NOW!

26th 27th 28th SEPTEMBER
Global Green and Healthy Hospitals

Part 3– Case Studies from Around the World

Joshua Karliner
International Team Coordinator
Health Care Without Harm
England’s National Health Service

**Footprint:** 18 million tons of CO2 per year, 26% of public sector emissions

**Target Reduction:**
- 10% by 2015
- 26% by 2020
- 80% by 2050

Gunderson Lutheran has an aggressive plan to be carbon neutral by 2014!
Hospital Fernandez, Argentina

- 400 bed public hospital in Buenos Aires
- Mercury-free
- Substituting dental amalgam in most cases
- Eliminated various cancer-causing chemicals—DEHP-PVC, BPA, gluderaldehyde
- Green cleaning
CHILE

Clinica Davila, Largest solar project in the country
*264 solar thermal collectors heat more than 70,000 liters of water per day
*Savings: US $200,000 per year.

Hospital Clínico de la Universidad de Chile first public health establishment in Chile to install solar panels.
*Savings of $100k a year in water heating costs.
*Reduction of 108 thousand liters of oil per year,
*Reduction of 270 tons of CO2 emissions
*Beginnings of a national hospital energy initiative.

Hospital CLVV
San Ramon, Costa Rica

- Mercury free
- Green purchasing policy
- Onsite waste water treatment plant
- Worm composting for food waste
- Butterfly garden for patients and staff
- Waste segregation and autoclaving
- Paper, glass and electronics recycling
- Energy conservation
- Green garden management
- Environmental education for the community.
Bir Hospital, Nepal – before

HCWH collaboration with Health Care Foundation Nepal (HECAF)
Bir Hospital- afterwards

New technologies- biodigestion

Bir Hospital

2011
New technologies - biodigestion
• Established for food
• Designs for large and small facilities
• Biogas - renewable fuel
• Slurry can go to sewer
• Testing to come for pathogens, esp TB
• Negotiating with first maternity hospital
• Vermiculture - worm composting for soft waste

Recycling garden built on top of biodigester at Bir-the house in the background is for safe

Butaro Hospital
• MASS Design Group
• Butaro, Rwanda
• 6,400 m²
Salam Centre for Cardiac Surgery
- Tomassetti
- Soba (Khartoum, Sudan)
- 4,100 m²

SPC Health Care Ministry
Vermicomposting to Organic Fertilizer

INNOVATIONS
Processed Vermi-cast to Organic Pesticide

Compost tea brewer
AUTOCLAVE STERILIZER
... to treat infectious wastes

purchase of vial crusher and shredder

Vial/Glass Crusher

Shredder for Bio-degradable waste
(reduces volume by 50 %)

Crushed vials

Shredded waste
INNOVATIONS

Crushed vials/glass mixed with cement used as construction materials.

Tetra Packs used as bags, apron, folders, etc.
Tetrapaks … as roofing/insulator

TRASH TO WORKS OF ARTS
TRASH TO WORKS OF ARTS

Materials: X-ray films

Materials: Plastic straw

OTHER INITIATIVES:

- Use of vinegar for surface cleaning and disinfection
- Kamias juice (from cucumber tree fruit) used to clean bathroom floors, etc
- Biogas technology for placenta and food waste- used to fuel the laundry drier
- Backwash water from hemodialysis Reverse Osmosis used to wash hospital linen
- Use of “low ph water” acid as surface disinfectant
Perpetual Succour Hospital, Cebu

Roof garden- serves as an insulator; provides therapeutic ambience

Future site: 500 sqm vegetable roof garden

St. Paul Hospital, Tuguegarao

Garden:
General Santos Doctors’ Hospital

Employees made use of the fertile soil to grow vegetables ...
St. Joseph Southern Bukidnon Hospital

BANANA PLANTATION

… profit from this project will support our charity patients

St. Paul Hospital Cavite
➢ Total elimination of mercurial thermometers and BP apparatus
➢ Require affiliating students to use non-mercurial thermometers
Global Green and Healthy Hospitals Network – Catholic Healthcare’s Opportunity

Sister Mary Ellen Leciejewski, OP
Dignity Health
Ecology Program Coordinator
September 14, 2012

Process

- Deliver items to barrels
- MedShare tags & picks up barrels & equipment
Process

• Deliver items to the warehouse
  ![Image 1](image1.png)

• Track and weigh items
  ![Image 2](image2.png)
Shipments arriving at various destinations
Dignity Health – Who We Are

Headquartered in San Francisco
5th largest health system
10,000 physicians and 55,000 employees
40 acute care hospitals and 150 ancillary care sites
Committed to delivering compassionate, high-quality, affordable health care services with special attention to the poor and underserved.
Provided $1.4 billion in charity care, community benefit and unreimbursed patient care (FY11)

Mission

• MedShare
  - Bridge the gap between our surplus and the need to improve healthcare around the world.

• Dignity Health
  - Deliver compassionate, high quality, affordable health services;
  - Serve and advocate for our sisters and brothers who are poor and disenfranchised;
  - Partner with others in the community to improve the quality of life.
Process

- Set up barrels
- On-site training
<table>
<thead>
<tr>
<th>Benefits</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Mission</td>
<td>• Cost</td>
</tr>
<tr>
<td>• Support of local and global clinics &amp;</td>
<td>• Finding a champion</td>
</tr>
<tr>
<td>mission teams</td>
<td>• Leadership support</td>
</tr>
<tr>
<td>• Sustainability</td>
<td>• Finding or creating an MSRO</td>
</tr>
<tr>
<td>• Volunteer opportunities</td>
<td></td>
</tr>
<tr>
<td>• Good press</td>
<td></td>
</tr>
<tr>
<td>• Staff enthusiasm</td>
<td></td>
</tr>
</tbody>
</table>

- Sends no waste overseas
- Reuses as much as possible before recycling
- Completely destroys data
- Ensures that employees are protected during recycling and disposal process
- Complies with federal, state and local regulations
### E-Waste Soluble Recycling

<table>
<thead>
<tr>
<th>Toxic Metals</th>
<th>E-Waste Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxic Metals</strong></td>
<td><strong>E-Waste Units</strong></td>
</tr>
<tr>
<td>0.0010 Mercury</td>
<td>Bulk Item: 1</td>
</tr>
<tr>
<td>0.0072 Arsenic</td>
<td>Desktop: 299</td>
</tr>
<tr>
<td>0.0005 Barium</td>
<td>Handheld: 1</td>
</tr>
<tr>
<td>0.0007 Cobalt</td>
<td>Hard Disk: 623</td>
</tr>
<tr>
<td>0.0064 Lead</td>
<td>Lighting: 17</td>
</tr>
<tr>
<td>0.0157 Copper</td>
<td>Miscellaneous: 191</td>
</tr>
<tr>
<td>0.0077 Chromium</td>
<td>Monitor: 209</td>
</tr>
<tr>
<td>4.3857 Antimony</td>
<td>Part: 1</td>
</tr>
<tr>
<td>0.0007 Molybdenum</td>
<td>Printer: 90</td>
</tr>
<tr>
<td>0.0176 Nickel</td>
<td>Server: 3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>Tower: 95</td>
</tr>
</tbody>
</table>

### E-Waste Toxic Components and their Damage to Human Health

<table>
<thead>
<tr>
<th>Toxic Materials</th>
<th>Birth Defects</th>
<th>Brain Damage</th>
<th>Heart, Liver, Lung &amp; Spleen Damage</th>
<th>Kidney Damage</th>
<th>Nervous Reproduction System Damage</th>
<th>Blunted System Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cadmium</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Lead</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Lithium</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mercury</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
</tr>
<tr>
<td>Nickel</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Palladium</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Platinum</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Silver</td>
<td>X</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Without safe recycling, most of these toxic components will end up in land fill — poisoning the soil and water.

### Recycle & Reuse Diversions

<table>
<thead>
<tr>
<th>Recycle</th>
<th>Reuse</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>E-Waste Merchandise Sale</strong></td>
<td><strong>E-Waste Redeployment</strong></td>
</tr>
<tr>
<td>Units</td>
<td>Weight</td>
</tr>
<tr>
<td>1,384</td>
<td>22,032</td>
</tr>
</tbody>
</table>

### Environmental, Landfill Natural Resource Reductions

| Less CO₂ | 520.84 | Tons |
| Air contamination prevented | 12,472 | Tons |
| Landfill diversion | 41,338 | Pounds |
| Virgin Materials | 39,566 | Pounds |
| Water pollution prevented | 100,008 | Gallons |

*Includes computers, monitors and cell phones only.*
Thank You

Global Catholic Response

Camille A. Grippon
Director, Ecology & Global Ministries

Good Help to Those in Need
A Culture of Sustainability

• Bon Secours’ *Good Help* Beyond the US
• HHI and GGHHN Platform
• Interconnectedness between Health and the Environment
• New Construction

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Madre de Cristo Construction

Before

![Before image]

After

![After image]
Health and the Environment

- Poor Air Quality
- Contaminated Water Sources
- Food Insecurity

➢ Service Care Delivery

Process Recommendations

✓ Get to know the HHI Network & the GGHHN Agenda
✓ Understand the local context
✓ Understand your Health System area of influence internationally
✓ Find local allies
✓ Conduct Assessments & Vetting Visits
Gracias!

Q&A