The Role of Rural Health Nurses in Sustainable Development

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International Rural Health & Rural Nursing
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Geneva, Switzerland and the United Nations
Objectives

1. Identify 3 health/illness outcomes in rural settings related to environmental (air, water, soil) exposures.

2. Relate the illnesses to the Millennium Development Goals (MDGs) and dialogue on Post-2015 Sustainable Development Goals (SDGs).

3. Describe sectoral activities such as mining, construction, energy (sources), their relative contributions to air pollution, greenhouse gas emissions and identify potential health indicators for the sectors.

4. List actions for nursing practice (assessment and management), research, education and advocacy for environmental health globally and locally.
Key Messages

1. **Health is an important *input* to sustainable development** – healthy people are better able to learn, work and contribute to their economies and societies.
   - **Universal access** to health services is key input to better health.

2. **Sustainable Development can *improve health*** – smart strategies for transport, housing, energy & agriculture reduce NCDs and diseases of poverty, and enhance health (e.g. physical activity).
   - **This is not automatic! "Health in green economy"** opportunities have not been fully exploited.
   - **Health *risks* and *benefits* of different economic development *strategies* need more explicit consideration.

3. **Health indicators can measure the success of sustainable development goals and support governance.**
“No amount of medical knowledge will lessen the accountability for nurses to do what nurses do, that is, manage the environment to promote positive life processes.”
Nursing, health and the environment IOM Report

• 1995 published: Pope, Snyder, Mood.

• General environmental health competencies for nurses
  – Basic knowledge & concepts
  – Assess and refer
  – Advocacy, ethics, and risk communication
  – Legislation & regulation

• Freedom from illness or injury related to exposure to toxic agents and other environmental conditions that are detrimental to human health
Environmental factors cause over 25% of global burden of disease – important determinants for the largest diseases.

Source: WHO Burden of Disease statistics
Health costs climbing faster than health gains – but disease prevention still neglected

Each year from 2000-2008:

- Life expectancy rose 0.5%
- Health costs rose 6%

Factors influencing health

- Environment
- Tobacco
- Alcohol
- Unsafe Sex
- Physical Inactivity
- Illicit drugs

Other

Treatment & Overhead

Prevention < 5%

World-wide health expenditures

US $ 5.3 Trillion

Source: Estimated from OECD, WHO, and Prevention Institute data
Development & key global health risks

Figure 7: Percentage of disability-adjusted life years (DALYs) attributed to 19 leading risk factors, by country income level, 2004.

- Childhood underweight
- Unsafe sex
- Alcohol use
- Unsafe water, sanitation, hygiene
- High blood pressure
- Tobacco use
- Suboptimal breastfeeding
- High blood glucose
- Indoor smoke from solid fuels
- Overweight and obesity
- Physical inactivity
- High cholesterol
- Occupational risks
- Vitamin A deficiency
- Iron deficiency
- Low fruit and vegetable intake
- Zinc deficiency
- Illicit drugs
- Unmet contraceptive need

Water/energy/housing
Housing/energy
Diets/fast foods
Transport/physical inactivity
Unhealthy workplaces
Diets/fast foods
Smart development choices can reduce pollution/injury and improve health
What needs to be done?

Rural health in a Green Economy:
Example 1: 'Green' transport can reduce chronic disease, injuries and improve health equity

- Transport reliant on private vehicles increases congestion, pollution, and physical inactivity.
- Safe walking/cycling and rapid transit networks can reduce injury, cardiovascular disease & support healthy physical activity.
- Cycling to work reduced premature mortality by 30% among commuter groups in Shanghai & Copenhagen.
- Rapid transit/NMT improves access to schools, jobs & services for poor, children, women, elderly & disabled, improving equity.
Example 2: Clean household energy for the world's poor is central to improving women's and child health

- Avert 1 million deaths/yr from COPD & cancers (mostly women);
- Halve rates of childhood pneumonia;
- Reduce time spent fuel gathering & promote gender equality;
- Support UN 'Year of Sustainable Energy' & MDGs;
- Reduce deforestation, air pollution & climate change emissions of methane/black carbon & CO₂.
Example 2: Healthier housing can reduce diseases of poverty and chronic disease

Climate-friendly housing design can reduce deaths and illness from extreme heat/cold exposures, dampness & vectors.

Natural ventilation can protect health from respiratory diseases/TB; asthmas and allergies.

Better planning & green spaces improve mental health and strengthen communities.
Example 3: 'Greening' health facilities can expand coverage of maternal, child & emergency services

- 21-59% of health clinics in six African countries had NO electricity at all. Women give birth in the dark, by candlelight, by car headlights.

- 5-12% of clinics surveyed in the same six countries lacked access to clean water (from an "improved" protected well or piped source).

- Small solar panels generate basic electricity for lights, cold chain/vaccines, diagnostics, telecommunications, water pumps.
What needs to be done?

Health as a measure of our Sustainable Development 'vision'…
The Millennium Development Goals – ending in 2015

- The Millennium Development Goals are eight international development goals that were established following the Millennium Summit of the United Nations in 2000, following the adoption of the United Nations Millennium Declaration.
- Included 3 health goals: 4, 5 and 6
- Major progress made on all goals
- The only goal achieved was access to clean water
- The major gap is in access to sanitation
Sustainable Development Goals

The SDG final “zero draft” will be reviewed by the UN General Assembly from September 16 to 29. UN Secretary-General Ban Ki-moon will then submit a synthesis report in November, in order to prepare the ground for the final adoption of SDGs in September 2015.


ZERO DRAFT – 19 July 2014

- End poverty in all its forms everywhere
- End hunger, achieve food security and adequate nutrition for all, and promote sustainable agriculture
- **Attain healthy life for all at all ages**
- Provide equitable and inclusive quality education and life-long learning opportunities for all
- Attain **gender equality**, empower women and girls everywhere
SDGs Zero draft (cont)

- Secure **water and sanitation** for all for a sustainable world
- Ensure access to affordable, sustainable, and reliable **modern energy** services for all
- Promote strong, inclusive and sustainable economic growth and **decent work** for all
- Promote sustainable **industrialization**
- Reduce inequality within and among countries
- Build inclusive, **safe and sustainable cities and human settlements**
- Promote sustainable consumption and production patterns
- Promote actions at all levels to address **climate change**
- Attain conservation and sustainable use of marine resources, oceans and seas
- Protect and restore terrestrial ecosystems and **halt all biodiversity loss**
- Achieve **peaceful and inclusive** societies, rule of law, effective and capable institutions
- Strengthen and enhance the means of implementation and global partnership for sustainable development

[Logo: Rio+20 The future we want]
The Health Sector can lead with *evidence* and *indicators* of Sustainable Development

- Evidence on health impacts of green economy strategies/innovations
- Wider use of Health Impact Assessment (HIA) to ensure health as an outcome of policies
- Define health-relevant goals, indicators, and tools for measuring/monitoring results
Health Metrics - Examples of indicators for Health and Sustainable Development

- **Sustainable Cities:**
  % of urban population exposed to air pollution above recommended WHO Air Quality limits.

- **Safe and Healthy transport:**
  % of the population with access to (living within 1km) rapid transit/public transport.
  % of urban roadways with dedicated walking and cycling infrastructure.

- **Energy** - % of households using clean fuels/cooking and heating technologies.

- **Green jobs** - % of workplaces/jobs meeting basic occupational health and safety standards – including air, water, exposure to chemicals and radiation, lighting & ventilation.

- **Water** - % of global population with access to climate resilient safe drinking water and improved sanitation.

- **Food** - % of population with access to healthy foods, % undernourished; % obese; % inadequate micronutrients and dietary balance.

- **Health care** – % of health care facilities with access to clean energy and water supplies.

- **Governance** – % of large projects integrating health co-benefits considerations into their planning and implementation, e.g. through a health impact assessment (HIA).

Dora, Carlos et al. *Indicators linking health and sustainability in the post-2015 development agenda* [www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60605-X/fulltext?_eventId=login](www.thelancet.com/journals/lancet/article/PIIS0140-6736(14)60605-X/fulltext?_eventId=login)
The Health Sector can lead by *example* demonstrating Sustainable Development

- Sustainable efficient energy and with health facility as center for distributive power – in emergencies & for the community
- Measure, monitor and reduce carbon footprint
- Conserve water, harvest rainwater, recycle
- Provide clean water, support community sanitation
- Prevent and control infections while using safer chemicals and handling hazardous chemicals/drugs safely
- Implement environmentally preferable procurement
- Safely manage health care waste to protect patients, workers and surrounding communities: reduce, reuse, recycle

$ earning Waste segregation in Nepal  
$ saving LED lighting in Hospital in China
2 global health examples

• Climate Change: an ancient health determinant

• Mercury: the messenger linking health and environment
Climate, an ancient health determinant

“Whoever wishes to investigate medicine properly, should proceed thus: in the first place to consider the seasons of the year, and what effects each of them produces ... Then the winds, the hot and the cold, especially such as are common to all countries, and then such as are peculiar to each locality”

On Airs, Waters and Places. Hippocrates (Circa 400 B.C)
“Climate change is the biggest global health threat of 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
www.thelancet.com/climate-change
Climate Change and Public Health

Vector-borne Diseases

Waterborne diseases

Allergies

Asthma

Heat Stress

Food Insecurity

Source: Living Water International / Flickr

www.water.cc
Many of the major killers are climate sensitive

- Each year:
  - Undernutrition kills 3.7 million
  - Diarrhoea kills 1.8 million
  - Malaria kills 1.1 million

Each of these is highly sensitive to temperature and precipitation:
How sensitive is health to climate?

**Diarrhoea**

Incidence of diarrhoeal disease is strongly related to climate variables. In Lima, Peru, diarrhoea increased 8% for every 1°C temperature increase.

*(Checkley et al, Lancet, 2000)*

Cumulative emissions of greenhouse gases

Countries scaled according to cumulative emission in carbon equivalent to 2002. Patz et al, Ecohealth, December 2007
Health impacts of climate change

WHO regions scaled according to WHO estimates of mortality per million people in the year 2000, attributable to the climate change that occurred from 1970s to 2000. Patz et al, Ecohealth, December 2007
Climate Change and Public Health
Pakistan Floods in 2011: 20 million people affected
Climate Change and Public Health
Hurricane Katrina Devastation, September 2005

Memorial Medical Center

St. Rita’s Nursing Home
Climate Change and Public Health
Hurricane Sandy in New York
10 million affected; $50 billion in damages
Climate Change and Public Health
Methow Valley Fire, Washington State, USA July 2014
400 square miles burned; 1,000 homes evacuated

27 July 2014 The Seattle Times

“Climate change is leading to a hotter, drier Eastern Washington and a longer fire season. Combined with poor forest conditions, it means the fire footprint in our state could more than double in the next 40 years.”

“Imagine the impacts on Washington communities – more smoke, more homes and people endangered, and a greater strain on firefighting resources.” Michael S. Stevens
Why is Healthcare a Critical Wedge Sector in Climate Change?

- Healthcare is on the front lines of climate change impacts
- Healthcare has an enormous climate footprint (9% of US GHG, 25% of public sector GHG in England)
- Healthcare represents 18% of entire U.S. economy and 8-10 % of the global economy
- Healthcare is the only sector with a mission-related imperative to address climate change and can frame it as a health issue
- Healthcare professionals are trusted messengers in society
What can the Health Sector Do?

• Be prepared and resilient in the face of extreme weather and other health impacts
• Lead by example in climate mitigation strategies (energy efficiency, solar, co-generation)
• Educate and activate health professionals, patients and communities
• Play a leadership role in climate policy
Resilience and Preparedness
Leading by example

**Kaiser Permanente commits to reduce its greenhouse gas emissions by 30% by 2020**

- Supporting wind power demand by purchasing Green-e Energy Certified Renewable Energy.
- Investing in on-site solar power generation
- Generating 2MW of power onsite at several medical centers using cogeneration technology.
- Investing $2.4 million in new lights and window-film installations, expected to save roughly $1 million per year in energy costs.

*These measures will improve the overall health of our communities and reduce our operating costs at the same time.*

*Rame Hemstreet, Chief Energy Officer at Kaiser Permanente*

**Spaulding Rehabilitation Hospital Boston combines mitigation and adaptation**

- Low energy, high performance building
- Healing environment: natural light, ventilation, views
- Ground floor and parking ramp set 30” above 1 in 500-year flood level
- Critical patient programs above ground floor
- Mechanical, electrical, emergency systems on roof out of harm’s way
- Operable windows keyed open in event of systems failure
- Plantings and retaining walls act as protective ‘reef’
Leadership and Education
Catholic Healthcare and Climate Change

“As Catholic healthcare providers, climate change is a moral concern and our faith demands prudent action to reduce our climate footprint, protect human life and dignity...and raise our voice on behalf of creation and the poor.”
Policy leadership at local level
Boston Green Ribbon Commission

- Partners HealthCare and Boston Medical Center CEOs co-chairing commission for healthcare sector
- 18 hospitals / systems participating
- Leadership in City and State climate policy goals
- Commitment to energy and GHG reduction by 25% by 2020
Policy leadership at national level
Informing and affecting legislation

Rep. Fred Upton, protect our kids’ health.
Don’t weaken the Clean Air Act.

AMERICAN LUNG ASSOCIATION.
IN MICHIGAN

www.LungUSA.org

Defending the Clean Air Act as a health issue

Reframing coal addiction as a health issue

Full Cost Accounting for the Life Cycle of Coal
The opportunity for improving health determinants

We can reduce:

The 800,000 annual deaths from urban air pollution

The loss of 1.9 million deaths, and 19 million years of healthy life, from physical inactivity

The 1.2 million deaths and over 50 million injuries from road traffic accidents

While mitigating climate change
Mercury as Messenger

- Mercury, a potent neurotoxin affects the brain, spinal cord, kidney and liver.
  - Bio-accumulates in fish
  - Crosses the placental barrier
  - Attacks the nervous system
  - Causes developmental deficits

- The largest sources of mercury contamination in the environment come from *artisanal gold mining and coal-fired power plants*.


- Following a seventeen year global campaign, the Minamata Convention on Mercury, a global treaty agreed to in January 2013.

*The USA became the first country to sign the Minamata Convention in October 2013.*
Mercury

Mercury containing products and devices:
- Sphygmomanometers
- Thermometers
- Esophageal dilators
- Thermostats

Cost-effective, accurate alternatives exist for virtually every mercury-containing product currently used in healthcare.
What can Nurses do?

• Evaluate and select alternatives to mercury-containing devices in health care settings including homes.
• Ensure that mercury spill kits are available and staff/schools are trained in use.
• Organize community take-back of mercury fever thermometers with digital replacement
• Plan for storage of hazardous mercury waste until authorities take control.
• Educate and activate other health professionals, patients and communities
• Play a leadership role in energy and mining policy to reduce mercury contamination
• Join the Mercury-Free 2020 Campaign!
National, regional and megacity policy development

National policy
- Philippines (2008)
- Argentina (2009)
- Chile (2011)
- Mongolia (2011)

In Process
- India
- South Africa
- Costa Rica
- Others

Regional and Mega-city Policy

**Mega-cities**
- Buenos Aires
- São Paulo
- Mexico City
- Delhi

**Provinces/States**
- Kwa Zulu Natal—South Africa
- Santa Catarina and Sao Paulo—Brazil
Progress: Countries with education, training, pilot and replication activities

- Brazil
- Chile
- China
- Ecuador
- Indonesia
- Latvia
- Lebanon
- Nepal
- Nicaragua
- Senegal
- Syria
- Tanzania
- Thailand
- Vietnam

Mercury-Free Health Care
An Initiative to Substitute Mercury-based Medical Devices Around the World
www.mercuryfreehealthcare.org
Hospitals, health systems and health organizations representing the interests of more than 5,000 hospitals from five continents have come together to form an international network to mitigate healthcare’s footprint.

WWW.GREENHOSPITALS.NET
Latin America
311 Hospitals, 16 Health Systems and 12 Organizations representing the interest of 705 Hospitals and 699 Health Centers)

North America
2 Organizations representing the interest of 900 Hospitals and 13 major Health Systems

Europe
12 Hospitals, 14 Health Systems and 6 Organizations representing the interest of 458 Hospitals and 43 Health Centers)

Asia
26 Hospitals, 3 Health Systems and 4 Organizations representing the interest of 2207 Hospitals and 3099 Health Centers)

Pacific
4 Hospitals, 2 Health Systems and 2 Organizations representing the interest of 31 Hospitals and 302 Health Centers)

Global
2 Organizations representing the interest of 900 Hospitals

Totals: By June 2014, GGHH has 419 members from 30 countries representing the interest of 5204 Hospitals and 4143 Health Centers

HCWH Regional Offices
Strategic Partners
Global Green and Healthy Hospitals
Agenda: 10 Goals

- Leadership
- Chemicals
- Waste
- Energy
- Water
- Transportation
- Food
- Pharmaceuticals
- Buildings
- Purchasing
Pause to think and discuss

• What are the health risks in your communities from environmental exposures?
• What interventions are needed to improve health outcomes?
• What are the health indicators that can be used to measure the impacts of interventions?

• Rural nurses have a responsibility to teach their community what they have learned about health
  – Practical examples for indoor air quality
• Rural nurses can recommend health interventions and health assessments to address the health needs in their communities in the context of development.
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Universal access to health services is essential to Sustainable Development.

Health co-benefits (and risks) need to be considered in green economy policies and investments.

Health indicators can provide the metrics for sustainable development monitoring and evaluation.

Celebrate Success!

• Get the lead out! Of gasoline resulted in decreased lead levels in children and increasing IQs
• Needlestick Safety & Prevention Act 2000 reduced nsi by 1/2
• Closure of 700 medical waste incinerators led to reductions in dioxin emissions and body burden
• OSHA PEL on EtO – but should it be eliminated?
• DDT ban resulted in the Bald Eagle’s removal from endangered species list
• Minamata Convention on Mercury to phase-out mercury-containing measuring devices by 2020
The Environment and Us

• REMEMBER WE ARE ALL RAIN WATER

• “Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.” Margaret Mead

THANK YOU!