Health Care Maintenance In The Developing World

Rosemary Quirk, MD, DTMH
Regions Hospital
University of Minnesota
I will not discuss off label use and/or investigational use in my presentation.

I have no financial relationships to disclose.

Employee of: Health Partners/Regions Hospital
Consultant for: Health Frontiers NGO
Stockholder in, Honoraria: N/A
Research support from: N/A
What are the top 5 causes of death in low and middle-income countries?
Top Causes of Death (WHO)

**Low-income countries**
- Coronary disease
- Lower respiratory tract infections
- HIV/AIDS
- Perinatal complications
- Stroke
- Diarrhea, malaria, TB, COPD, traffic accidents

**Middle-income countries**
- Stroke
- Coronary disease
- Chronic lung disease
- Lower respiratory tract infections
- HIV/AIDS
- Perinatal complications
- Stomach cancer, lung cancer, traffic accidents
WHO Worldwide Statistics

- 58 million people died in 2005
  - 35 million from a chronic disease
  - 80% of chronic disease deaths occurred in low and middle income countries

- By 2020: chronic disease will account for 73% of all deaths, 60% of global disease burden
Global health literature commonly refers to the “chronic disease pandemic” occurring in low and middle income countries.
Projected deaths by major cause and World Bank income group, all ages, 2005

- Low income countries:
  - Communicable diseases, maternal and perinatal conditions, and nutritional deficiencies
  - Chronic diseases*
  - Injuries

- Lower middle income countries:
  - Communicable diseases, maternal and perinatal conditions, and nutritional deficiencies
  - Chronic diseases*
  - Injuries

- Upper middle income countries:
  - Chronic diseases*
  - Injuries

- High income countries:
  - Chronic diseases*
  - Injuries

* Chronic diseases include cardiovascular diseases, cancers, chronic respiratory disorders, diabetes, neuropsychiatric and sense organ disorders, musculoskeletal and oral disorders, digestive diseases, genito-urinary diseases, congenital abnormalities and skin diseases.
Which of These Are True?

A. Chronic disease affects men > women in low and middle-income nations
B. 50% of deaths from chronic disease occur in people < 70 years old
C. Poor people, not rich, bear greatest disease burden
D. Prevention is cost effective
E. B and C only
F. All except A
Why is preventative care so critical in low-resource countries?
1. Clean water and basic sanitation
2. Immunizations
3. Essential drugs
4. Maternal/child health, family planning
5. Food supplies, nutrition
6. Education about prevailing health problems and how to prevent/control them
7. Prevention/control of endemic diseases
8. Treatment of common diseases and injuries
Today’s Grim Reality

- There are more CV disease deaths in India and China than in all developed countries put together

- Diabetes prevalence in low and middle-income countries will double by 2030
  - In India, diabetes prevalence projected to triple to 60M by 2025

- By 2030, 70% of ESRD patients will be in low-income countries
Chronic Diseases of Greatest Concern

- **CARDIOVASCULAR**: ischemic heart disease, hypertension
  - Cause half of global chronic disease deaths
- **STROKE**
- **CANCER**
- **CHRONIC LUNG DISEASE**
- **DIABETES**
Widespread Risk Factors

- Obesity
  - Globalization of processed foods
  - 4 of every 10 pesos Mexicans spend on food are spent in Wal-mart
- Smoking and alcohol
  - Globalization of cigarette, alcohol industry
- Rising prevalence of hyperlipidemia, HTN, DM
- Urbanization and resulting inactivity
  - >50% of world’s population lives in cities, towns
  - Urban dwellers more sedentary and more likely to eat energy-dense food
- Pollution and environmental factors
- Aging
Total cholesterol trend in Beijing residents age 25-64 years (WHO data)
Dharavi, Mumbai

2 square kilometers (0.8 square mi.)
containing 600,000-1 million people
Funding Problem

- International aid and public health efforts in low-resource countries have historically focused on infectious diseases, nutrition, maternal and child health
  - Deaths from these illnesses will decrease by 3% over the next 10 years

- Meanwhile, minimal aid goes to diagnosis or control of chronic disease
  - Deaths from chronic disease will increase by 17% over the next 10 years
New Paradigm

- **Double Burden**
  - WHO describes “epidemiological transition” leading to a double burden of disease
  - Double Burden = chronic disease plus the “continued weight of endemic infectious diseases”
What are the obvious barriers to chronic disease management & prevention in low-resource countries?
**Lao Levels of Care**

- **Ministry of Health Vientiane**
  - National Hospital Vientiane
    - CT scan, labs, blood cultures, EKG, ECHO, neurosurgeon, vents, dialysis, many meds
  - National Hospital Vientiane
  - Military & Police Hospitals Vientiane

- **Provincial Hospitals**
  - Provincial Hospital Khammouan
  - Provincial Hospital Xayabourri
  - Provincial Hospital Sekong
  - Provincial Hospital Oudomxay
  - Provincial Hospital Bokeo

- **District Hospitals**
  - Vaccines, oral quinine, ORS, chloroquine, PCT, amoxicillin, charts, bednets
  - District Hospitals

- **Village Health Centers**
  - IV quinine, BP cuff, IV chloramphenicol, microscope, IVF, oral antibiotics, one generalist
  - Village Health Centers

- **Community Health Workers**
  - Soap, education
  - Community Health Workers

- **CBC, ceftriaxone, IV amp/gent, CXR, U/S, Widal test, oxygen, bag and mask, surgeon, generalists, local pharmacies**
Exercise

- Study the following cases

- List challenges to managing chronic disease in a low-resource country (Laos)
**Case #1**

- **CC:** Weakness, edema and dyspnea

- **HPI:** 26y/o Lao farmer with nephrotic syndrome x 5 months presents with worsening SOB and edema. Intermittently treated with Lasix by a pharmacist in her province. Saw a physician at the provincial hospital several months ago, was prescribed prednisone but failed to follow-up. Now comes in with severe edema, N/V, low urine output and fever.

- **PMH:** Nephrotic syndrome
- **Meds:** Lasix 40mg/day

- **Ex:** 90/30  RR 30  88% RA  126  T39
  Conjunctiva pale, heart tachycardic with pericardial rub, rales heard on lung exam, abdomen has fluid wave, legs have 3+ pitting edema

- **Lab:** Hgb 8, WBC 24K, creatinine 6.2
**Rx:** IV ceftriaxone, IVF for sepsis. Family pays $50 for one 3-hour dialysis session.

**Conclusion:** Sepsis makes dialysis difficult. Patient’s condition worsens. Family stops treatment and takes patient home to die.

List challenges to managing chronic disease in this setting
Case #2

- **CC:** Chest pain, dyspnea
- **HPI:** 62y/o farmer reports chest pain at rest, radiating down L arm, with difficulty breathing and associated sweating. He has chronic SOB on exertion. Also notes orthopnea and ankle edema.
- **PMH:** Uncontrolled HTN x 15 years, kidney stones
- **SOC:** Drinks a bottle of Lao whiskey QD and has smoked 1ppd since age 18
**Meds:** Intermittently given several weeks of BP meds by rural pharmacist

**Exam:** 210/110, RR 30, 90% RA, 90, T37
Dyspneic with active chest pain, JVP up, heart has 2/6 mitral murmur, lungs with rales, 1-2+ leg edema

**Lab:**
- $1 EKG - active changes
- $3 ECHO - EF 30%, dilated LV, MR
- $2 CXR - wide mediastinum, CHF
- $1 BUN/creatinine 26/1.6

**List challenges to managing chronic disease in this setting**
Challenges To Health Care Maintenance

- Lack of trained doctors, nurses, providers
  - Education level often poor, no subspecialists
- Lack of primary care infrastructure/clinics
- Late patient presentation due to poverty
- High cost of diagnostics, medications, care
- Unreliable labs, imaging
- Unavailable treatments
- Patients not educated about risk factors, disease
- Lack of country-specific EBM
What can you do overseas to address chronic disease?
Recognize The Problem
What Else?

- TEACH and EDUCATE
  - Many health care providers and patients in low-resource countries still see all disease as acute
  - Participate in long-term educational efforts

- TREAT HYPERTENSION

- COUNSEL PATIENTS ABOUT SMOKING

- PROVIDE COUNSELING ABOUT DIET, EXERCISE, ALCOHOL
Prevention is Cost Effective

- WHO suggests 80% of premature heart disease, stroke and Type II DM is **PREVENTABLE**
  - Through weight control, healthy diet, physical activity, HTN and hyperlipidemia treatment, smoking cessation
  - It costs $7.50/year to treat a patient with a thiazide and beta-blocker
  - Cost per life saved using aspirin in India: $3

- 40% of cancers are **PREVENTABLE**
  - Primarily through smoking cessation, weight control
World Efforts

- Daily "polypill" containing statin, ACE inhibitor, aspirin, folic acid and other anti-hypertensives
  - Simultaneously control HTN, dyslipidemia and thrombogenic tendency
  - UK and India have formulated a Red Heart Pill (statin, ASA, ACE-I and thiazide – cost is $1/month) and are presently recruiting 5 – 7,000 patients for a clinical trial; polypill estimated to halve CV deaths

- Place limits on tobacco, processed food industries with national laws
WHO Goals For Control of Chronic Diseases

- 2% annual reduction in chronic disease death rates worldwide between 2005 and 2015

- 36 million lives would be saved
  - 17 million < age 70 years
  - Averted deaths would translate into huge labor force gains and economic development
How To Get There

- Shift away from acute, episodic model of care
- Educate providers and patients
- Use legislation to change national health policy
  - Tobacco control, treatment standards
- Finance EBM in low-resource countries
- Give doctors/providers ways to share medical information with each other and with patients
  - Internet, email, cell phones
How To Get There

- Engage patients in their care
  - Develop programs to improve adherence to treatment

- Monitor quality, outcomes

- Link health care to other community resources

- Ask NGOs to support national structures rather than operate independently

- Train more nurses, doctors and subspecialists and supplement salaries
Questions?