Strategy for Safe and Sustainable Medical Waste Management

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*Health Care Without Harm*
*Kathmandu January 2011*
Alternative Technology Options

- Needle Destroyers
- Autoclaves
- Advanced Steam Treatment Systems
- Microwave Units
- Dry Heat Systems
- Alkaline Hydrolysis
- Others
Autoclaves of all sizes

- **Autoclaves**
  - Very small autoclaves
    - 4 L pressure cooker
      - $25 - $50
  - Small to medium-size autoclaves
    - 100 L autoclave
      - $1000 - $5000
    - 40 L sterilizer
      - $125-$600
  - Large centralized autoclaves
    - 260 L waste autoclave
      - $25,000 - $35,000
  - Optional Shedders
    - 14,000 L waste autoclave
      - $200,000 - $250,000
    - $20,000 - $150,000
POLICY ISSUES

• Legislation
• Implementation
• Enforcement
National situation Nepal

- 2002 guidelines
  - Based on WHO blue book
  - Emphasis on incineration
  - Problems with implementation

- Changes since then:

- POPs Convention (2003)
  - Nepal is party
  - Aim to eliminate POPs including dioxins
  - Dioxins produced by medical waste incinerators
  - Best available technology is non-incineration

- WHO
  - Blue book update (2011)
    - Emphasis on steam-based technologies
  - HCWM policy (2004)
    - Small-scale incineration only if no other option
Policy update: POPs Convention

- Nepal is a party to the Stockholm Convention
- Aim to eliminate POPs including dioxins
- Dioxins produced by medical waste incinerators
- Best available technology is steam-based
WHO updates

- Small-scale incineration interim method where no other options are available
- Updated blue book emphasises steam-based technologies
- Recommends replacing PVC and mercury
Decline in Medical Waste Incinerators in the U.S.

Original national action plan

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The implementation gap

- Plan: proposal, funding, reporting
- Lack of centralised support for implementation
  - Funding, training, monitoring
- Lack of experience at all levels
- Need integrated strategies, partnerships
The need for a new strategy

- Incorporate lessons learned from previous plan
- Higher priority and clear responsibilities
- Include latest global policy guidance
- Reduce waste volume and hazardousness
  - Recycling and elimination of mercury, other toxics
- New training paradigm
- Better support for facilities
- Latest technologies and practices
- Proper reporting and compliance testing
Reducing waste volume and hazardousness

• Procurement policies
  – Certification of all injection equipment
  – Mercury-free equipment
  – Alternatives to PVC, glutaraldehyde etc
  – Low waste products
  – Take-back for unwanted and out of date pharmaceuticals

• Changing prescription practices
  – Reducing injections to reduce sharps waste
Segregate and destroy needles

- 36% HIV in South Asia from unsafe injections (WHO)
- 12% of needle stick injuries happen during waste disposal
- Uncut syringes can be illegally repackaged and resold

- Never recap needles
- Cut syringes immediately
- Disinfected syringes can be recycled

- Link with Safe Injection Global Network, WHO
Advantages of autoclaves for medical waste disinfection

• Familiar technology in hospitals
• Reliable and economical
• Available in many sizes and levels of sophistication
• Can easily test them, prove they are working effectively
Biological indicators

- Internationally accepted as the best test of efficacy
- Contain heat resistant bacterial spores
- Incubate for 24 hours
- Any surviving spores will grow and turn the solution yellow
Substituting mercury

- Thermometers and blood pressure meters
- Highly toxic to nervous system, environment
- Spills common
- 1200 mercury thermometers broke in Bir every year
- Waste hard to handle
Decline in Mercury Use in Healthcare

U.S.A.
5000 health care facilities
all major pharmacy chains
29 states have laws restricting
mercury-based products


Philippines and Argentina first
developing countries to pass
mercury-free legislation

WHO policy to replace mercury

Global treaty process to ban all uses

HCWH and WHO aim to replace all
mercury thermometers by 2017
Seven Steps to Mercury-Free Health Care

1. Education and training
2. Pilot hospitals
3. Replication in other hospitals
4. Mega-city/provincial policies
5. National policies
6. Models for replication in regions
7. Contributing to global policy

Each country and region has their own sequence and approach
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*Health centers and clinics not included

**Partial list based on available information, the true number of countries and hospitals is likely much greater

***Assumes that all hospitals in the country have been committed to phase-out via national policy

****Assumes all Central Government hospitals committed through national guidelines, plus Delhi city hospitals; does not include private sector
National Policy Development

• Philippines (2008)
• Argentina (2009)

In Process
• India
• South Africa
• Costa Rica
• Taiwan
• Uruguay

• Why not Nepal??
Implementation support

- Facility level support
- Assessment
- Budgeting
- Training
- Model wards
- Upscaling
- Monitoring, audits, reporting

- Integrated strategies
- Municipalities
- Common treatment facilities
- Sharing information between similar facilities
- International experience
- Rewards and penalties
New training paradigm

The usual way
• 2-3 day lecture course
• A few practical demonstrations or site visits
• No testing or follow-up
• Return to a hospital with poor system

A new way
• Centres of excellence
• Core of experienced staff to train others
• Allow placements
• Train administration too- even directors!
• Testing and follow-up
• Integrate training with implementation
Compliance and monitoring

• Essential to successful system
• Prevents bad practices
• Proves safety of technology
• Provides data for improving systems
• Hospital can decide own penalties and rewards
• Independent testing at national level
Decline in Construction of New Medical Waste Incinerators in the U.S.

EPA original projection of new medical waste incinerators (without the HMIWI rule) vs. Actual Number of new medical waste incinerators built since the HMIWI rule, as of 2008
WHO Core principles

Integral part of health system strengthening

The safe and sustainable management of health-care waste is a public health imperative and a responsibility of all. Improper management of health-care waste poses a significant risk to patients, health-care workers, the community and the environment.

This problem can be solved. The right investment of resources and commitment will result in a substantive reduction of disease burden and corresponding savings in health expenditures.
Funding- WHO Core Principles

Governments should:
- allocate a budget to cover the costs of establishment and maintenance of sound health-care waste management systems
- request donors, partners and other sources of external financing to include an adequate contribution towards the management of waste associated with their interventions
- implement and monitor sound health-care waste management systems, support capacity building, and ensure worker and community health.

Donors and partners should:
- include a provision in their health program assistance to cover the costs of sound healthcare waste management systems.

Non-governmental organizations should:
- undertake programs and activities that contribute to sound health-care waste management.
Discussion topics

Reasons for lack of implementation
• Policy flaws?
• Practical problems?
• Technical failures?
• Human resources?
• Lack of priority for gov’t?
• Lack of priority in hosp’l?
• Lack of enforcement?
• Lack of finance?
• Lack of leadership?
• Lack of expertise?

Actions for the future
• Laws or guidelines?
• Clear responsibilities?
• Monitoring and enforcement?
• Mercury ban?
• Implementation plan and timetable?
• Task force?
• Model hospitals/centres of excellence?
• Implement’n support?