

STERILIZATION ON MSF EMERGENCY SETTING

Pascale CHOQUENET
Médecins Sans Frontières – Paris France
Milan – 5th June 2008

MSF = Doctors Without Borders

- International Humanitarian Organisation
- Medical NGO (Non Governmental Organisation)
- MSF : 5 operational sections
France, Belgium, Spain, Switzerland, Nederland
- MSF is treating people in more than 80 countries
- MSF France : 26 countries
- All medical cares are free of charge

MSF PROGRAMS

■ Reasons for MSF intervention ?

- ✓ **Disasters** : earthquakes, flooding....
- ✓ **Violence** : armed conflicts, social violence
- ✓ **Epidemic and endemic diseases**
 - Prevention : vaccination : measles, meningitis...
 - Treatment : HIV, Tuberculosis, Malaria
 - Famine : nutrition programs

SURGICAL PROGRAMS

- MSF France : 14 surgical programs
19500 surgeries in 2007

- KIND OF SURGERY

- ✓ 37 % Trauma surgery (gunshot wound, stab wound, RTA...)
 - 14% Orthopedic, osteosynthesis
 - 23% Soft tissues
- ✓ 33 % Minor surgery : debridement, dressings for burns...
- ✓ 16 % Obstetric surgery : caesarean section
- ✓ 11 % Visceral surgery
- ✓ 3 % Specialized surgery : maxillo-facial, plastic...

EMERGENCY REPLY

■ HOSPITAL KIT

- Located in Bordeaux – France

- In the field within 48 h

- Several units

 - ✓ Triage - Emergency Unit

 - ✓ Hospitalization Unit

 - ✓ Operating Theatre Unit

 - ✓ Intensif care Unit

- **Sterilization Unit** is required in all cases

HOSPITAL KIT

■ COMPOSITION

- ✓ Equipment / Consumable separated
- ✓ Single-use medical devices included for the first days, but use limited due to the waste management
- ✓ Reusable : gowns, operating sheets... have to be sterilized

■ SETTING

- ✓ Medical facilities (local hospital, clinic...) available
- ✓ Inflatable TENTS



STERILIZATION in the field

■ CONSTRAINTS

- PREMISES : design and construction not adapted for proper sterilization activity
- AIR : no air treatment

■ LIMITATIONS

- ELECTRIC POWER
- WATER SUPPLYING
 - Quantity
 - Quality : no appropriate water treatment

PREMISES

Design
and
Construction

are not adapted for
proper sterilization
activity



EQUIPMENT

- Equipment is depending on these constraints
 - ✓ CLEANING : no washing machine for instruments
 - ✓ STERILIZATION : no sophisticated autoclave
- 3 Different AUTOCLAVES are available in the fields
 - ✓ « All american » : 39 liters
 - ✓ TBM 90 liters
 - ✓ Matachana 80 liters
- The standard MSF Kit includes a vertical TBM 90 liters



TBM 90 L

- Big pressure cooker
- Vertical chamber
- Energy : electricity or gas
- Water : 8 or 16 L
- Pressure : 2 cycles possible
1 bar – 121°C
2 bar – 134° C
- No vacuum pump
- Water cooling system



08/17/2007 09:10

MATACHANA 80 L

- Horizontal chamber
- Vacuum pump
- Softener for vacuum pump
- No steam generator
- Printer for graph :
temperature and pressure
curves
- Requires :
 - more electricity
 - more water
 - more maintenance
- Always requested for
osteosynthesis programs



08/17/2007 09:23

PROCEDURES

- To write the sterilization procedures
- We have to appropriately balance :


Good Practices of medical devices sterilization
Constraints in the fields

And it is not so easy...

PROCEDURES

PRE-DISINFECTION

■ **So far** : chlorine was used to disinfect instruments

- Inhibited by organic material
- Dilution non respected
-  efficiency of disinfection ?
- Corrosive : instruments and equipment destroyed

■ **NOW** : new procedures

- Efficient detergent-disinfectant
- Just at the end of surgery
- Time : 15 minutes
- Dilution : 50 ml / 10 liters of water
- **One bath = one patient**

PROCEDURES

MANUAL CLEANING

■ **So far** : only detergent was used to wash instruments

- One disinfection step was missing in the process

■ **NOW : new procedure** : addition of a second disinfection step

- To simplify the procedures : we use the same detergent-disinfectant
- Just after pre-disinfection
- Brushing in the bath
- Time : 15 minutes
- Dilution : 50 ml / 10 liters of water
- Throw away after use

PROCEDURES

- **DRYING** : with a clean linen, non fluffy linen

- **PACKAGING**

Kraft paper, linen, Poupinel boxes, drums : recently given up
Containers : not used, not adapted to the kind of autoclave
maintenance not possible

NOW

- Grid basket
- Pack wrapped with double crepe paper sheet
- or non woven sheet : heavy boxes (orthopedic boxes...)
- Envelope folding
- Closed by steam indicator tape

- **LOADING** : instruments and linen separated

PROCEDURES

■ STERILIZATION CYCLE : plateau

- 134° - 10 minutes instruments
- 121° - 20 minutes linen

■ STORAGE

- in closed plastic boxes, on shelves or cupboard
- in clean area
- only **2 weeks** after the sterilization day due to the bad environment and the quality of equipment.



MAIN ISSUES in the field

- Due to the efficiency of the autoclaves
 - Drying
 - Adequate controls to validate cycles
- Staff training
- Maintenance of equipment

CONCLUSION

- The Hospital Kit including a Sterilization Unit is a quick and efficient way to emergency reply.
- We are quite aware of the importance of sterile medical devices supply ; it is a must in infection control process for the safety of our patient and the efficiency of our health care.
- Even on emergency field, the use of non-sterile instruments is unacceptable.
- We have to be sure good procedures of sterilization are implemented and preserved over time.
- Each step of the sterilization process is very important because, even with good procedures, set up a high quality level of sterilisation is a hard challenge due to these special conditions.

Thank you for your attention