An outbreak of septicaemia in a neonatal intensive care unit, Country Y, 2005

The investigation team

Sepsis in neonatal intensive care units

- Neonates prone to sepsis:
  - High susceptibility to infections
  - Use of intravenous lines
  - Breaks in infection control practices
- Pathogens involved often resistant
- High case fatality ratio

A cluster of sepsis in neonatal intensive care unit A, Hospital X, Country Y, 2005

- Unit A: 20-bed high-tech neonatal intensive unit
- Hospital X: A tertiary care centre
- 6 December 2005
  - Parents of a girl who died from sepsis in the unit reported the occurrence in a national newspaper (They were journalists)
- 7 December 2005
  - The head of the unit and the Minister of Health requested assistance to investigate a cluster of 6 cases of neonatal sepsis with *Klebsiella sp.*

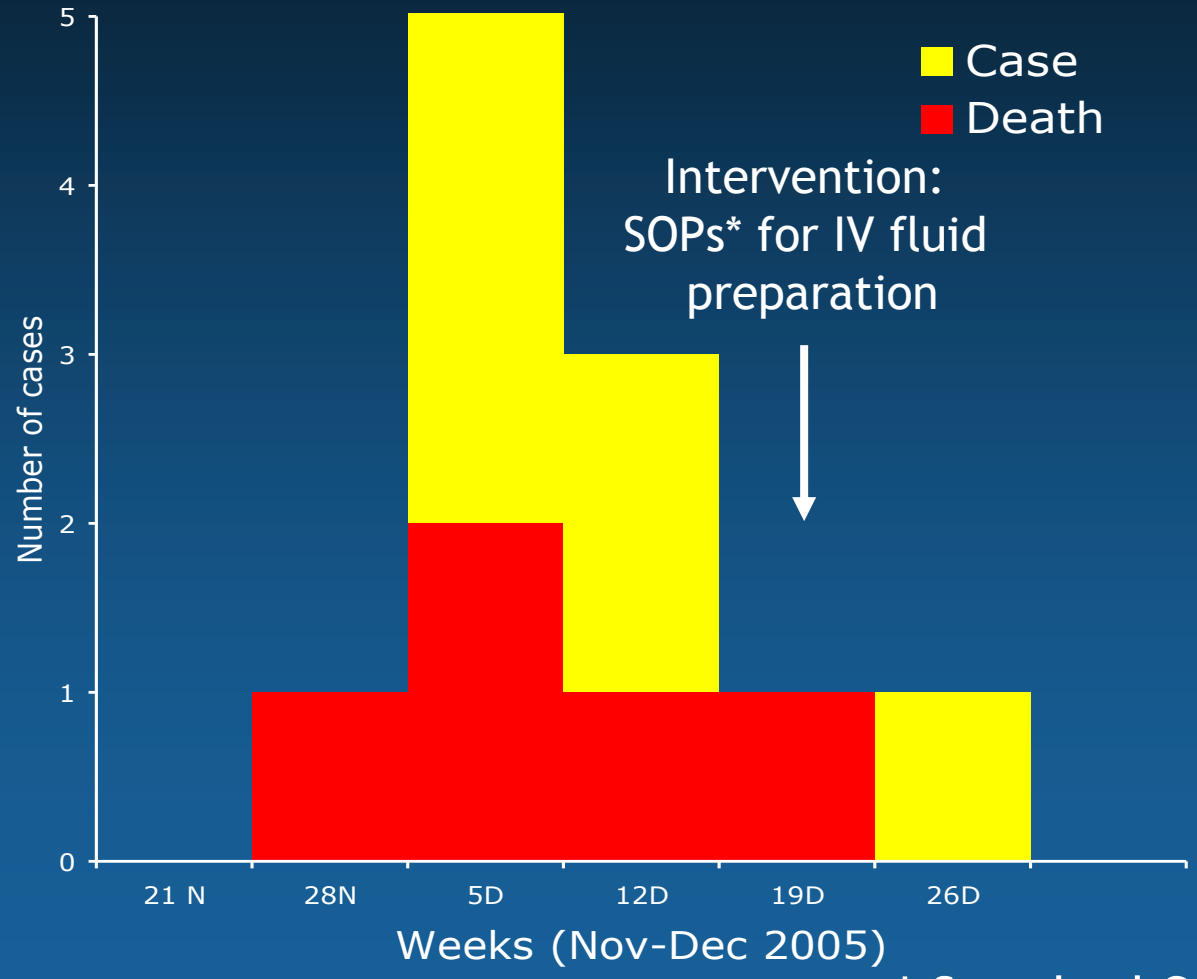
Investigation methods

- Case definition
  - Neonatal septic syndrome and isolation of *Klebsiella sp.* from the bloodstream in a neonate of unit A since 20 November 2005
- Case search
  - Chart reviews
  - Review of microbiology records
- Retrospective cohort study

Reported cases of neonatal sepsis, Unit A, Hospital X, Country Y, 2005

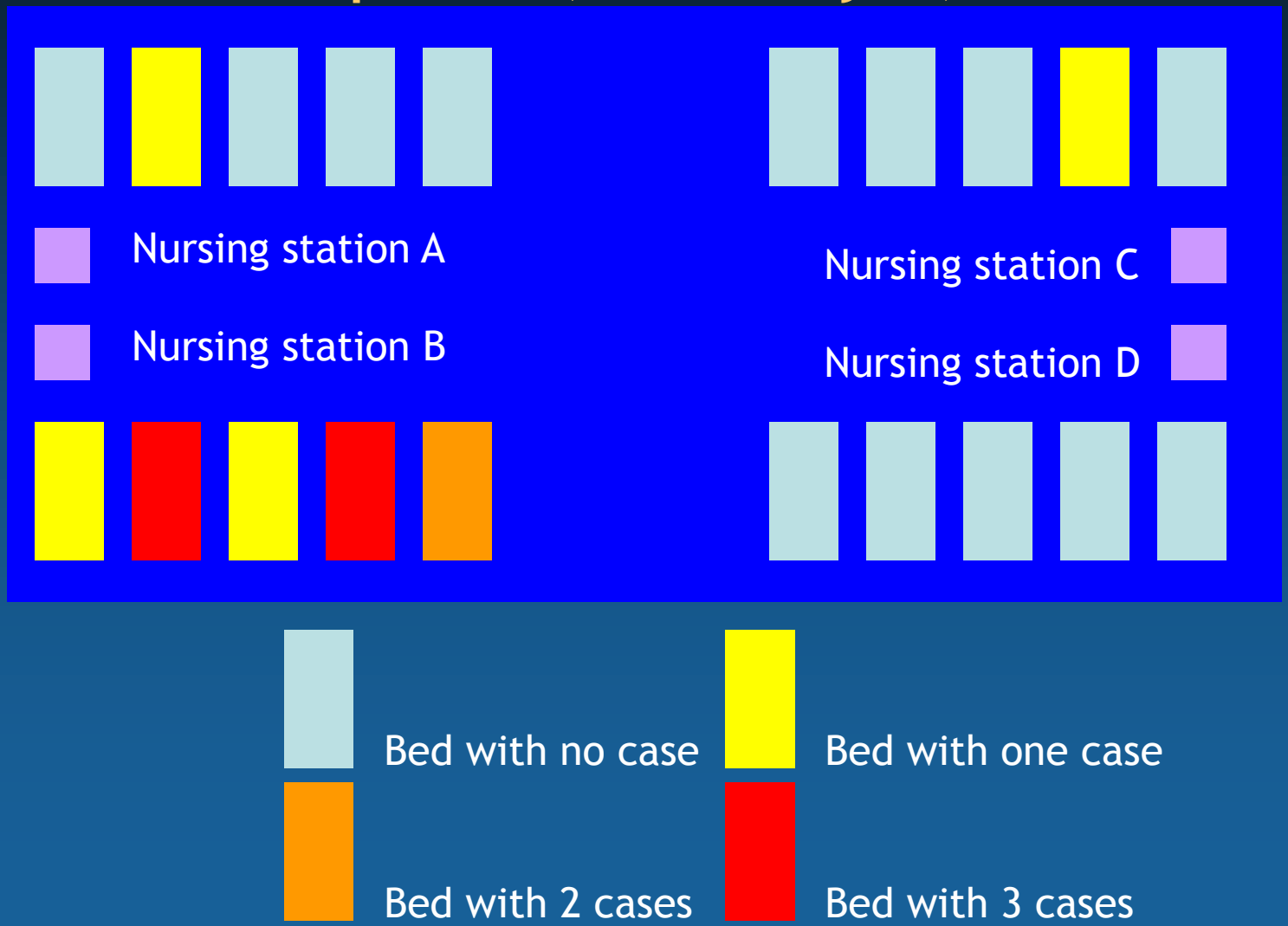
- 12 cases
- 5 deaths
  - Case fatality: 42%
- Sex:
  - 6 female (50%)
- Median age:
  - 12 days, range 3-34

Neonatal sepsis by week of onset, Unit A, Hospital X, Country Y, 2005



* Standard Operating Procedures

Cases of neonatal sepsis by bed, Unit A, Hospital X, Country Y, 2005



Risk of neonatal sepsis according to selected exposures, Unit A, Hospital X, Country Y, 2005

Exposures	Attack rate		Relative risk	Confidence intervals
	Among exposed (%)	Among unexposed (%)		
Antibiotics	82	61	1.3	1.1- 1.7
Central IV line	76	89	0.85	0.74 - 0.97
Nurse Z	89	16	5.7	2.6 - 13 *
Nurse Y	80	76	1.1	0.91 - 1.2
Ventilation	79	74	1.0	0.85 - 1.4
Frozen plasma	79	72	1.1	0.85 - 1.4
Born < 30 weeks	79	75	1.1	0.78 - 1.4

Follow up, outbreak in Unit A, Hospital X, Country Y, 2005

- Nurse Z
  - Recently appointed because of shortages of staff
  - No experience in intravenous fluids preparation
  - Usually in charge of the nursing station B
  - Did not follow aseptic techniques
- Neonates received unnecessary intravenous infusions
  - Fresh frozen plasma
- No guidelines to prepare IV fluids
- Molecular biology investigations in progress

An outbreak of neonatal sepsis in Unit A, Hospital X: Conclusions

- Outbreak associated with a nurse who did not follow aseptic techniques when preparing IV fluids
- There was no reference guidelines available to prepare IV fluids
- Enforcement of good infection control practices terminated the outbreak
  - No cases since SOPs
- Excessive use of IV infusions

Recommendations

- Develop standard operating procedures (SOPs) for the preparation of IV fluids in neonatal units
- Disseminate these SOPs nationwide
- Train health care workers in SOPs
- Limit unnecessary IV infusions