



Tropical temperatures in the Elkerliek Hospital Helmond, The Netherlands



Dr. JLP van Duijnhoven, clinical chemist



Outline

- Elkerliek hospital, Helmond, The Netherlands
- Life in the Clinical Chemical Lab
- Case report
- Crisis management
- Impact for employees
- What did we learn ?



Elkerliek hospital, Helmond, The Netherlands

- General hospital: 500 beds
- Two locations (15 klm)
- 2000 employees (1300 fte), 120 physicians
- 17.000 admissions / year
- 300.000 polyclinical visits / year
- Annual budget 120 M€
- Approx. 1% Dutch hospital care

Dept. of Clinical Chemistry

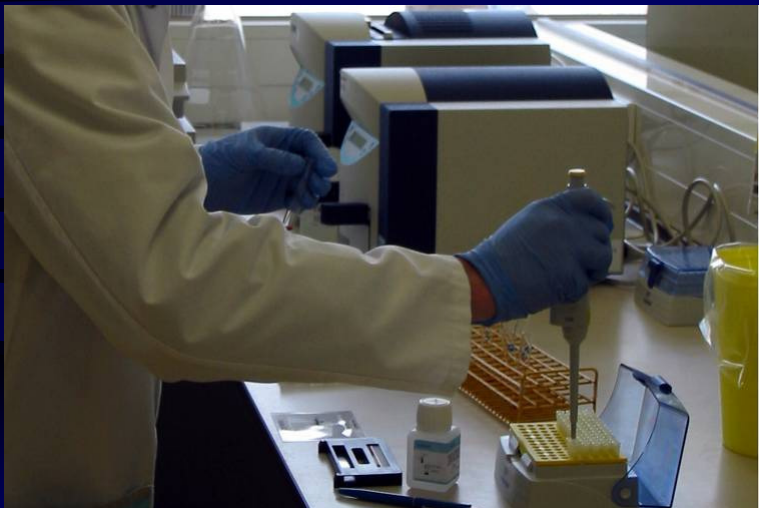
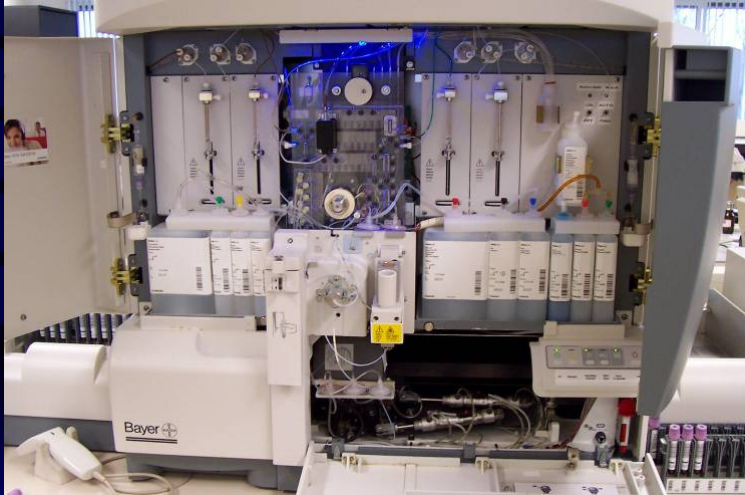
- 100 employees (70 fte), 3 clinical chemists
- (poly)clinic, 100 general practitioners a.o.
- 325.000 blood drawings / y
- 1.5 M laboratory tests / y
- 3000 blood transfusions
- Budget 5 M€ for reagents and personnel / y



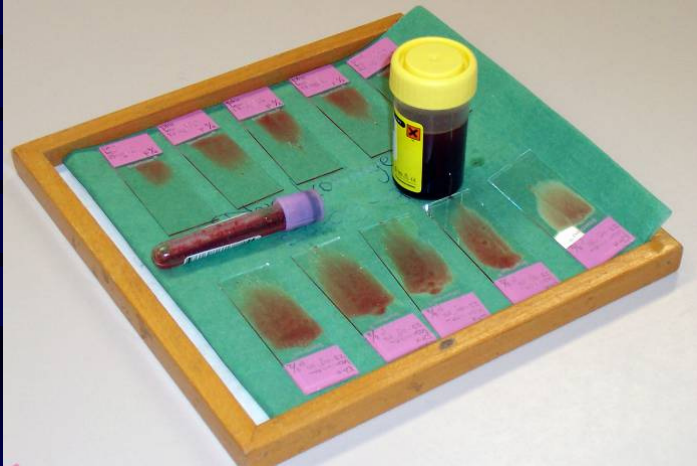












Monday July 7, 2008

- On call: 19:00 Internist
- 40 y female patient, acute liver failure
- Stat coagulation factor V
- Admitted on July 5, emergency department
- Recent holiday in Uganda, swimming sweet-water
- DD: tropical disease (malaria, typhoid fever ?)

Saturday July 5, 2008

- 05:27 ER
- Fever, headache, occasionally pain muscles and abdomen, shortness of breath, nausea
- General chemistry: mildly elevated liver enzymes (ALAT 141 U/L, ASAT 139 U/L)
- Hematology: low platelets ($72 \cdot 10^9/L$), slightly low leukocyte count ($3.3 \cdot 10^9/L$), slightly toxic leukodiff
- Coagulation: D-dimer elevated (3 mg/L)
- Blood cultures, malaria (2x), HIV, HAV, HBV, HCV, CMV and EBV: all negative

Saterdag July 5, 2008

- Temp. 40°C, not acutely ill
- Medical examination: no abnormalities
- X-thorax: no abnormalities

- Returned Uganda June 27, Juli 2 first visit GP
- Lariam, malaria prophylaxis
- Spouse not ill
- DD: viral infection, tropical fever, Q-fever?
- Hospital admission general ward (Internal Medicine)

Sunday July 6, 2008

- Sharp rise liver enzymes: ALAT 1526 U/L, ASAT 2016 U/L, LDH 3000 U/L
- Platelets $57 \cdot 10^9/L$, leucocytes $3 \cdot 10^9/L$
- Malaria and blood cultures: negative
- No further abnormalities

Monday July 7, 2008

- Extremely high liver enzymes: ALAT 6300 U/L, ASAT 10.050 U/L, LDH 15.500 U/L
- Renal failure: creatinin 199 umol/L
- Platelets 54 - 104*10E9/L, leucocytes 9.4 – 15.5*10E9/L, 20 bands in diff
- CRP rising: 52 mg/L,
- Fibrinogen 1 gr/L, APTT 55 sec, PT 29 sec, D-dimer 21 mg/L: DIC ? Liver failure? F V ?
- Stool cultures neg.
- Serology: yellow fever, rickettsiae, dengue, schistosoma, amoeba, leptospirae a.o.

Monday July 7, 2008

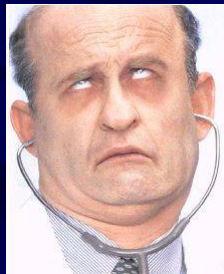
- F V not available stat
- Patient in isolation room
- Transferred during evening to UMC Leiden:
tropical infection ?
liver-transplant ?

Tuesday July 8, 2008

- Internist persuaded F V no further relevance
- Request retain stored samples for serology

Wednesday July 9, 2008

- Early in the morning invitation Board ...
- Hamburg: Marburg virus !



Crisis management team:

- Board of the hospital (chairman)
- All supervisors of employees involved
- Hospital hygienist
- Microbiologist
- Internist (not personally in contact)
- Communication-officer
- Patient services-officer
- Welfare worker
- Hospital medical officer (for employees)

Collaboration:

- GGD (Community health service)
- Academic Hospital Leiden
- Academic Hospital Nijmegen
- RIVM
- CDC
- WHO

Immediate actions:

- Identification of all employees involved:
Physicians, nurses, lab, house-keeping, nutrition,
laundry-service
- Isolation of all (possibly) infected materials
- Briefing of employees involved
- Briefing all employees
- Coordinated press-conference (timing !)
- Specific tel. numbers for information

Decontamination of analyzers



Replace tourniquets



Collection of sample material



Plans:

- Communication employees by supervisors
- Internal communication (e.g. FAQ)
- External communication (e.g. FAQ)
- Flow communication crisis-team in general
- Flow communication in case of fever

Employees involved

- 45 in total Elkerliek hospital
- 13 laboratory-technicians
- ISO 15189 accreditation helpful !
- Unprotected contact patient
(blood drawing, malaria sample preparation)
- Open sample tubes, manual pipetting
- Admission not during weekend: +3
- No closed tube sampling: +3
(limited due to high liver enzymes)

Impact for employees involved:

- No travelling outside of The Netherlands (July!)
- In case of hospital visit: preferably Elkerliek
- No need to stay at home (sick-leave)
- Report use of medication, changes to be reported
- Body temperature twice daily for three weeks
- Daily contact with hygienist: temp and well-being
- Direct contact 24/7 internist in case of fever (>38)
- What to do in case of fever

Three exciting weeks ...

- Daily contact supervisor with employees involved
- Support by colleagues (also fear ..)
- Professional support (welfare, physical therapy)
- Support for partner and children
- Flowers, cinema-tickets
- Surveillance mental problems (PTSD)



Juli 29 !

- No sec. infections
- No cases of fever ...
- Closing meeting employees involved
- Press release local
- Closing diner a month later

Lessons learned

- Routine hygienic practice in this case adequate
- In retrospect state-of-the art medical treatment
- Install small contact-group for employees
- In general: awareness risk infection healthcare

Lessons learned

- Identification of contact-individuals (non-employees)
- Air-conditioning isolation wards
- Clothing-protocol isolation wards
- Communication parents young employees
- Instruction communication partner/children
- Follow-up non-employees involved by GGD (CHS)
- Improve communication GGD

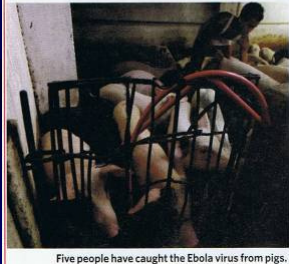
Unique experience ...

Ebola virus hits more pig farmers in the Philippines

Four more workers at pig farms in the Philippines have contracted the Ebola-Reston subtype of Ebola virus, in addition to a case reported two weeks ago.

All five, identified by the presence of antibodies to the virus in their blood, worked with sick pigs and were probably infected more than six months ago. Ebola Reston was discovered last year in pigs on Luzon, the largest island in the Philippines (see *Nature* 457, 364-365; 2009). The virus has yet to trigger any symptoms in humans, but could mutate into more virulent forms inside pigs or other animal carriers.

R. RANCO/OUTLINE



Five people have caught the Ebola virus from pigs.

