



Centre de Coordination de la Lutte  
contre les Infections Nosocomiales  
de l'Interrégion Paris-Nord



# Nosocomial HCV infections

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# HCV transmission in health care settings

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Patient 1

or

Health care worker

Invasive procedure

Patient 2

# Patient to patient HCV transmission

- Haemodialysis (Malavaux 1999;Delarocque 2002)
- Digestive endoscopy (Bronowicki 1997)
- Diabetic children (Desenclos 1998)
- Anesthesiology (Thallis 2003)
- transplantation (Pereira 1992)
- Surgery (Heisen 2000)

# Patient to patient transmission mechanism

- Most unknown
- Shared injection material
- Shared injection products
- breaks in barrier precautions
- breaks in material disinfecting

# Transmission from a health care worker (HCW) to patients

- Orthopaedic Surgery (Ross 2002)
- Cardiothoracic Surgery (Esteban 1996)
- Gynaecology (PHLS 1999, Ross 2002)
- Anaesthesiology (Ross 2000)

# HCW to patient transmission mechanism

- Percutaneous injury
- Shared injection material with patients

# Notifications of nosocomial HCV infection

- 13 notifications since 2001
- 18 hospital acquired cases
- 9 through anaesthesia
- 4 hemodialysis patients
- 1 hepatic transplantation
- 1 in invasive radiology
- 1 shared finger stick device
- 2 unknown mechanisms

# Outbreak identification

- In November 2001, a 35-year old woman was examined for acute hepatitis C
- She underwent orthopedic surgery 2 months before in a private clinic
- In December 2001, the case was notified at the regional center for NIC and health authority
- An investigation was launched at the clinic to screen patients operated on the same session for HCV



# Epidemiological investigation (1)

## *Description of the cluster*

- Of 5 patients operated on the same session, 4 were HCV ⊕ 3 months later (n°1,2,4,5)
- Patient n°2 was the notified case
- Patient n°1 had unknown chronic hepatitis C (tattoo 3 years before) => probable source-patient

# Epidemiological investigation

## *Description of patients characteristics*

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Patients	N°1	N°2	N°3	N°4	N°5
Age	44	36	29	26	78
Sexe	M	F	F	F	F
Procedures	Osteosynthesis	Synoviectomy	Ingrowing nail	Verruca	Skin graft
General anesthesia IV	Fentanyl Propofol Tracrium	Fentanyl Propofol	0	Fentanyl Propofol	Fentanyl Propofol
VHC serostatus	+	+	-	+	+

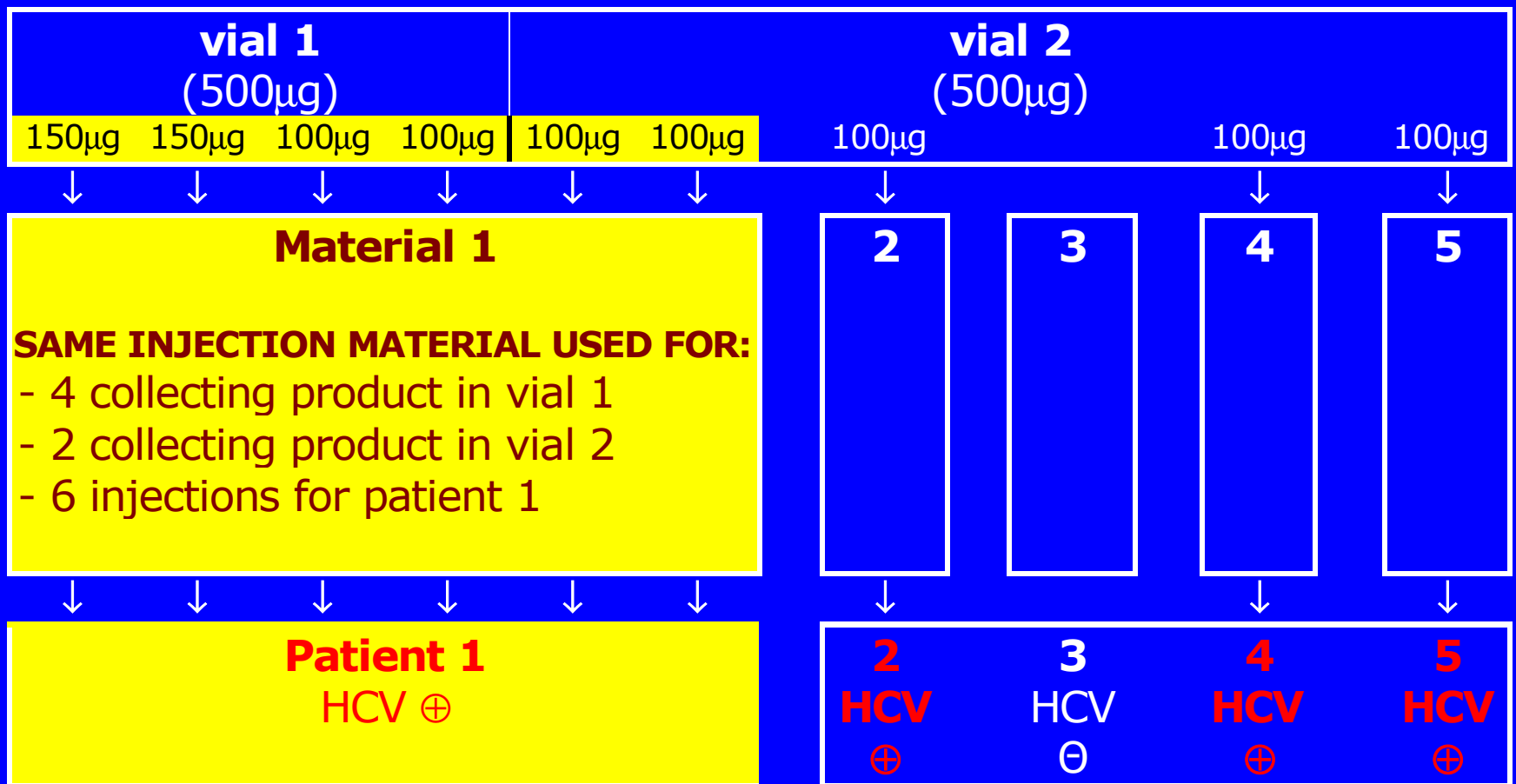
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# Epidemiological investigation (2)

## *Search for the source of contamination*

- None received blood or blood products
- No common surgical material
- Staff members = HCV  $\ominus$
- All HCV positive patients (N°1, 2, 4 and 5) received general anesthetic injections of the same multidose vial of Fentanyl<sup>®</sup>
- Patient n°3 = HCV  $\ominus$

# Partition of fentanyl vial between the 4 patients



# Immediate control measures

- Stop reusing disposable needles syringes
- Use monodose vials of fentanyl<sup>®</sup>
- No reuse multidose vials
- Use peripheral venous catheters with anti-reflux system

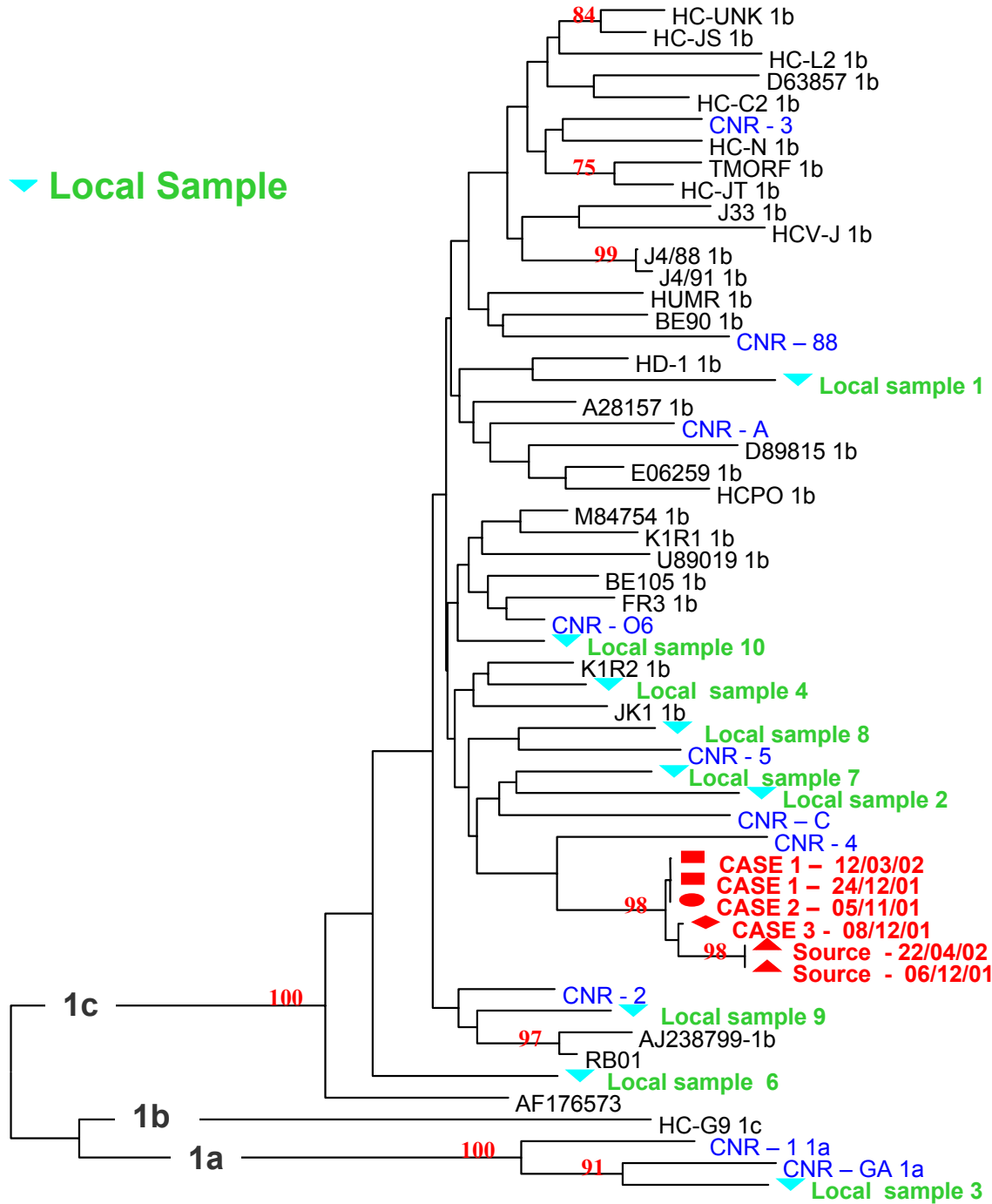
# Phylogenetic analysis

Serum were sent to the viral hepatitis national reference center for phylogenetic analysis and comparison

Patients #1,2,4 and 5 were infected with genotype 1b

Molecular characterization of HCV showed close homology between the 4 viruses

▼ Local Sample



# Information and screening campaign

- **To professional**
  - Recommendations for practices via website/internet
  - \*\*\*National Agency for security of health products was required to propose advises for multidose fentanyl and other anesthetic products
- **To exposed patients:**
  - media-based information
  - personnel mailing : explanation of the problem and recommendation for HCV screening



# Screening of exposed patients

- Retrospective cohort of 1086 patients from 1997 to 2001.
  - 796 patients tested for VHC who returned the results : 7 HCV positive patients
- ↙ No cluster of HVC positive patients

# Conclusion

- Healthcare related HCV infections are now better described.
- Despite recommendations, breaches in medical practices are associated with HCV transmission.
- Control efforts of blood born virus infection are needed based on experts steering groups.