



# Injection Safety-Associated Outbreaks and Events

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# Common unsafe injection practices

- Direct syringe reuse
  - Using the same syringe from patient to patient (with/without the same needle)
- Indirect syringe reuse
  - Using the same syringe to access medications from vials that will be used on subsequent patients (with/without the same needle)
- Single-use medication reuse
  - Using single-dose medications for more than one patient
  - Purchase vials containing quantities in excess of those needed for a single patient
- Inappropriate handling of multi-use medication



# Nonhospital Health Care–Associated Hepatitis B and C Virus Transmission: United States, 1998 –2008

- 33 outbreaks of HBV and HCV nationally in nonhospital settings
- “In the outbreaks involving the outpatient clinics and several hemodialysis centers, the purported mechanism of patient-to-patient transmission was primarily syringe reuse or other infection control lapses that resulted in contamination of injectable medications or flush solutions.”



## Documented Outbreaks of HBV or HCV Transmission in Nonhospital Health Care Settings, United States, 1998 –2008

Setting	Year Investigated	Infection(s)	Infection Control Breaches Reported
Pain Remediation Clinic	2010	Hepatitis	Syringe reuse
Outpatient Radiology Facility	2010	Meningitis	Healthcare providers did not wear facemasks when performing spinal injection procedures; Contents from single-dose vials used for >1 patient
Allergy Clinic	2009	Skin and Soft Tissue Infection	Inappropriate selection and dilution of skin disinfectant
Hematology-Oncology Clinic	2009	Hepatitis	Medication preparation in a blood processing area; Contents from single-dose vials and saline bags used for >1 patient
Outpatient Pain Clinic	2009	Bloodstream Infection Meningitis Epidural/Presacral Abscess	Syringe reuse; Contents from single-dose vials used for >1 patient; Healthcare providers did not wear facemasks when performing spinal injection procedures
Primary Care Clinic	2009	Joint Infection	Mishandling of multi-dose vials used for >1 patient ; Inadequate hand hygiene; Incorrect cleaning and disinfection of medical equipment
Cardiology Clinic	2008	Hepatitis	Syringe reuse
Pain Remediation Clinic	2008	Bloodstream Infection	Contents from single-dose vials used for >1 patient; Lack of hand hygiene before procedures; Not appropriately cleaning the injection site prior to injection
Ambulatory Surgical Center	2008	Hepatitis	Syringe reuse; Contents from single-dose vials used for >1 patient
Multiple Gastroenterology Clinics	2007	Hepatitis	Syringe reuse; Contents from single-dose vials used for >1 patient
Pediatric Oncology Clinic	2007	Bloodstream Infection	Contents from single-dose vials used for >1 patient; Predrawing saline flush solutions



# Audit of Certified Ambulatory Surgery Centers

- 68 CMS-certified ASCs inspected in 3 states
- 46 of 68 ASCs had at least 1 lapse in infection control

## Types of Lapses Identified in the Pilot Ambulatory Surgical Centers

<b>Infection Control Lapses Identified</b>	<b>Number/Total Number (%)</b>
Hand hygiene and use of personal protective equipment	12/62 (19.4)
<b>Injection safety and medication handling</b>	<b>19/67 (28.4)</b>
Equipment reprocessing	19/67 (28.4)
Environmental cleaning	12/64 (18.8)
Handling of blood glucose monitoring equipment	25/54 (46.3)



## Hepatitis C Virus Outbreak, Nevada, 2007-2008 (1)

- Outbreak in endoscopy clinic
- 8 patients infected with clinic-acquired HCV
- Transmission resulted from contaminated single-use vials used for multiple patients



## Hepatitis C Virus Outbreak, Nevada, 2007-2008 (2)

- 63,000 patient exposures and notifications
- Costs associated with outbreak: \$16 million–\$21 million

### Las Vegas doctor gets life sentence for hepatitis C outbreak

BY ALEXIA SHURMUR

LAS VEGAS | Thu Oct 24, 2013 5:43pm EDT

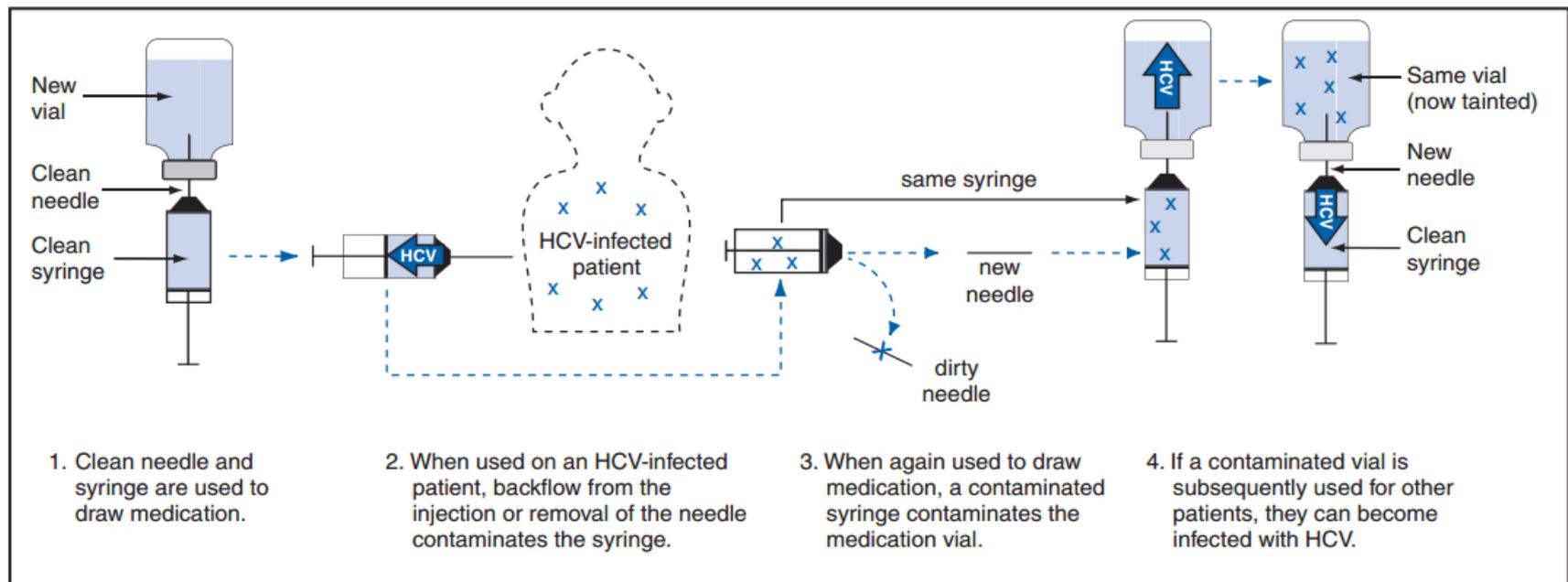
Outbreak of hepatitis C at outpatient surgical centers: public health investigation report [December 2009]. Southern Nevada Health District Outbreak Investigation Team, Las Vegas.

<http://www.southernnevadahealthdistrict.org/download/outbreaks/final-hepc-investigation-report.pdf>. Accessed 9/30/14.

<http://www.reuters.com/article/2013/10/24/us-usa-doctor-sentencing-idUSBRE99N1HR20131024>

# Hepatitis C Virus Outbreak, Nevada, 2007-2008 (3)

**FIGURE 2. Unsafe injection practices and circumstances that likely resulted in transmission of hepatitis C virus (HCV) at clinic A — Nevada, 2007**





## Hepatitis C Outbreak, Santa Barbara County, 2015

- Pain management clinic, single physician's practice
- Closed practice due to observed poor infection control practices, including injection safety issues
- Hundreds of patient notification letters sent
  - $\geq 248$  tested for Hepatitis B, Hepatitis C and HIV
- 6 HCV infections
  - 5 of those patients seen on same day



## Outbreaks in Los Angeles County Ambulatory Care Settings, 2000-2012

- Retrospective analysis of HAI outbreak investigations in LAC ambulatory care settings
- 22/28 (78.6%) of investigations found at least one infection control violation
- 16/28 (57.1%) implicated a source related to infection control
- Total case count: 168
  - 59 cases (35.1%) were hospitalized
  - 5 cases (3%) died

# Outbreaks in Los Angeles County, cont.

Infection control breaches noted in outbreak investigations, Los Angeles County, 2000–2012

Infection control breach	Number of outbreak investigations (% of total)
<b>Injection safety</b>	10 (35.7)
<b>Injection preparation technique and environment</b>	7 (25.0)
<b>Single-use medication policies</b>	2 (7.1)
<b>Logging exposure events</b>	2 (7.1)
<b>Equipment processing and sterilization</b>	10 (35.7)
<b>Medication documentation</b>	7 (25.0)
<b>Environmental cleaning</b>	6 (21.4)
<b>Hand hygiene</b>	5 (17.9)
<b>Personal protective equipment</b>	3 (10.7)
<b>Documentation of infection control policies and procedures</b>	5 (17.9)
<b>Credentials of staff</b>	5 (17.9)
<b>Single-use equipment (e.g., blood glucose meters)</b>	4 (14.3)
<b>Knowledge and adherence to policies and procedures</b>	4 (14.3)



Setting type	Year investigation started	Number of cases	Suspected agent type	Suspected agent	Comment
Dialysis center	2002	7	Bacterial	Methicillin-resistant Staphylococcus aureus	Hypothesized contamination of medicine by preparation in patient care area
Ophthalmologist office	2002	15	Bacterial, viral	Streptococcus pneumoniae, Adenovirus	Investigation of conjunctivitis; possible transmission by healthcare workers' hands, breaks in aseptic technique, and use of multidose vials
Clinic/OB-GYN	2009	2	Chemical	Lidocaine	Two cases experienced severe reactions to lidocaine received during abortion procedure; investigation suggested error in medicine dosing
Radiology office	2009	5	Bacterial	Methicillin-sensitive Staphylococcus aureus	Investigation suggested poor aseptic technique during medication preparation as cause of joint infections
Assisted living facility with contracted home health agency	2010	3	Viral	Hepatitis B	Three insulin-dependent diabetic cases all serviced by the home health agency
Pain clinic	2010	2	Viral	Hepatitis C and B	Cross-contamination of multidose vial of saline hypothesized as source
Orthopedist office	2011	3	Bacterial	Staphylococcus aureus	Orthopedist reported 3 patients who received joint injections with multidose vials
Dialysis center	2011	3	Bacterial	Mixed bacteria	Reprocessing of multi-use dialyzers associated with cases and found to be insufficiently disinfected
Plastic surgeon	2012	7	Bacterial	Mycobacterium fortuitum	Investigation found use of can opener to open medication vial and kitchen-grade microwave to warm saline