



North Carolina  
**SPICE**  
Statewide Program for  
Infection Control & Epidemiology

## OUTBREAKS AND SAFE INJECTION PRACTICES

Statewide Program for Infection Control and Epidemiology  
(SPICE)  
UNC School of Medicine



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## OBJECTIVES

1. Discuss the consequences of unsafe injection practices
2. Describe outbreaks
3. Discuss safe injection best practices
4. Describe One and Only Campaign



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## UNSAFE INJECTION PRACTICES CONSEQUENCES

The infographic illustrates the consequences of unsafe injection practices. It features four blue callout boxes with icons: a person with a fever for 'Patient illness and death', a gavel for 'Legal charges/malpractice suits', a 'REMOVED' stamp for 'Loss of clinician license', and a person in a uniform for 'Criminal charges'. In the center is a newspaper clipping from the 'Post-Herald' with the headline 'OUTBREAK!' and sub-headline 'Outbreak: Bacteria Causes Infections in Patients'.

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A-Z Index A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

### Healthcare-associated Infections (HAIs)

Healthcare-associated Infections > Outbreak and Patient Notifications

**Outbreaks and Patient Notifications in Outpatient Settings, Selected Examples, 2010-2014**

The following table includes selected examples of recent outbreaks and patient notification events. These events occurred in a variety of outpatient settings including primary care clinics, pediatric offices, cosmetic surgery centers, pain remediation clinics, imaging facilities, cancer (oncology) offices, and ambulatory surgery centers. These events include: infection transmission to patients, medication errors, and referrals to bloodborne pathogens, referral of patients to malpractice suits filed by patients.

**Selected examples of recent outbreaks and patient notification events (n=24)**

- Primary care clinics (4)
- Cosmetic surgery centers (3)
- Pain remediation clinics (4)
- Cancer clinics (3)
- Oral surgery (2)
- Orthopedic clinics (2)

... Facilities and healthcare personnel are expected to follow the *Outpatient Settings: Minimum Expectations for Infection Prevention Checklist (Appendix A)* a tool to assess infection prevention practices. In order to prevent patient harm, facilities should conduct regular audits to review practices to assure they are in compliance.

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## HEPATITIS VIRUS TRANSMISSION IN HEALTHCARE (2008 – 2017) - EXCERPT

- 60 outbreaks (two or more cases) of viral hepatitis related to healthcare reported to CDC during 2008-2017; of these, 57 (95%) occurred in non-hospital settings.

Hepatitis C (HCV) Outbreaks by Setting						
Setting	Year	State	Persons Notified for Screening <sup>1</sup>	Outbreak-Associated Infections <sup>2</sup>	Known or suspected mode of transmission <sup>3</sup>	Comments
Prolotherapy clinic (48)	2015	CA	>1,500	5	Syringe reuse contaminating medication vials used for >1 patient Use of single-dose vials for >1 patient	
Insulin infusion clinic (47)	2015	CA	92	9	Unsafe practices related to assisted blood glucose monitoring including use of fingerstick devices for >1 person and inadequate cleaning and disinfection of glucometer before reuse.	
Pain management clinic (48)	2015	MI	122	2	Syringe reuse contaminating medication vials used for >1 patient	
Cardiology clinic (49)	2015	WV	>2,000	5	Use of single-dose vials for >1 patient	



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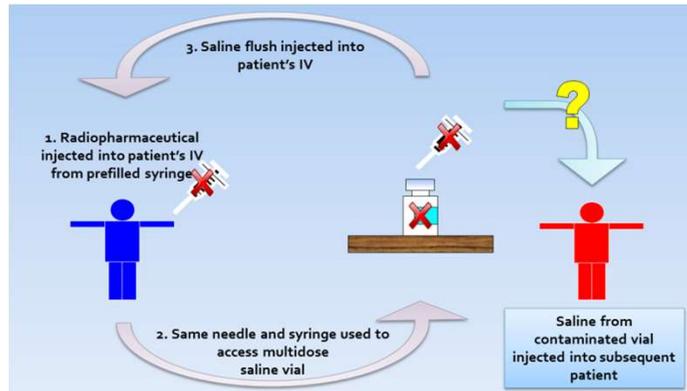
## NC VIRAL HEPATITIS OUTBREAKS: REPORTED TO CDC (2008-2017)

	Year	State	Persons Notified	Persons Infected	Breach	Comments
Assisted Living Facility		NC	87	8	Use of fingerstick devices for >1 resident Use of blood glucose meter for >1 resident without cleaning and disinfection	6 died as a result of Hepatitis complications
SNF	2010	NC	116	6	Unclear	
SNF	2010	NC	109	6	Unclear; however 4/6 received ABGM	
Cardiology Clinic	2008	NC	>1200	5	Syringe reuse and contamination of MDV	An additional 2 new infections were identified in probable source patients



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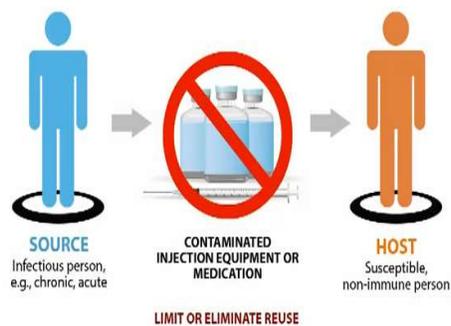
## CLINICAL PICTURE: CARDIOLOGY CLINIC



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## STANDARD PRECAUTIONS: SAFE INJECTIONS

Unsafe Injection Practices Can Lead to Transmission of Life-Threatening Infections



The continued occurrence of outbreaks of hepatitis B and hepatitis C viruses in ambulatory settings indicated a need to re-iterate safe injection practice recommendations as part of Standard Precautions.

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## STANDARD PRECAUTIONS: INJECTION SAFETY PRACTICES



- All injections should be prepared and administered aseptically, in a dedicated clean area, avoiding touch or droplet contamination, away from potential sources of contamination (e.g., sinks)
- A syringe should only be used to administer medication to one patient
- Syringes should never be reused to access a medication container
- Medications that are labeled a single dose or for single-patient use should only be used for one patient

<http://www.oneandonlycampaign.org/partner/north-carolina>



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## STANDARD PRECAUTIONS: INJECTION SAFETY PRACTICES

- Do not enter a vial with a used syringe or needle
- Bags or bottles of intravenous solution not be used as a common source of supply for more than one patient (e.g. flush)
- Cleanse the access diaphragm of medication vials before inserting a device into the vial
- Dedicate multi-dose vials to a single patient whenever possible
- Dispose of used sharps at the point of use in a sharps container that is closable, puncture-resistant and leak-proof
- Use facemasks when placing a catheter or injecting material into the epidural or subdural space (e.g., during myelogram, epidural or spinal anesthesia)



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## INJECTION AND MEDICATION SAFETY

**SAFETY STEPS**  
FOLLOW THESE INJECTION SAFETY STEPS FOR SUCCESS!

**BEFORE THE PROCEDURE**  
Carefully read the label of the vial of medication.

- If it says single-dose and it has already been accessed (e.g., needle punctured), **throw it away**.
- If it says multiple-dose, **double-check the expiration date and the beyond-use date** if it was previously opened, and visually inspect to ensure no visible contamination.
- When in doubt, throw it out.

**DURING THE PROCEDURE**  
Use aseptic technique.

- Use a new needle and syringe for every injection.

**AFTER THE PROCEDURE**  
Discard all used needles and syringes and MDVs after the procedure is over.

**MDVs should be discarded when:**

- the beyond-use date has been reached
- doses are drawn in a patient treatment area
- any time vial sterility is in question

**Click for more information:**  
FAQs Regarding Safe Practices for Medical Injections

**1 ONE NEEDLE, ONE SYRINGE, ONLY ONE TIME**

CDC, <https://www.cdc.gov/injectionsafety/providers.html>



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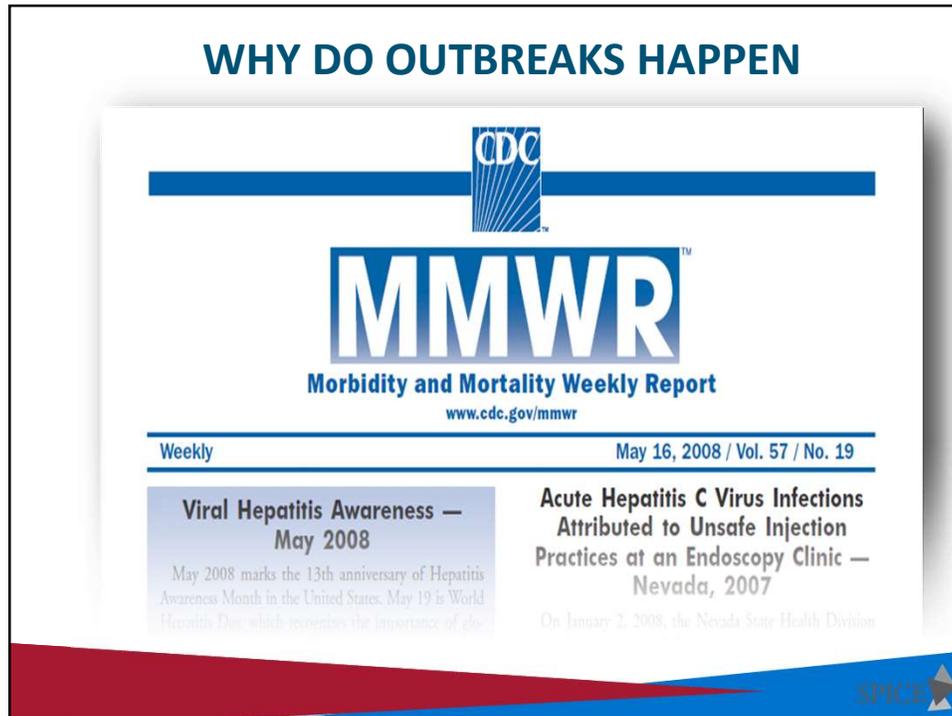
## STANDARD PRECAUTIONS: INJECTION SAFETY/POINT OF CARE TESTING

- If blood glucose meters must be shared
  - Purchase glucose meters designed for healthcare use
  - The device should be cleaned and disinfected after every use, per manufacturer's instructions, to prevent carry-over of blood and infectious agents
  - If the manufacturer does not specify how the device should be cleaned and disinfected then it should not be shared
  - "The disinfection solvent you choose should be effective against HIV, Hepatitis C, and Hepatitis B virus. Outbreak episodes have been largely due to transmission of Hepatitis B and C viruses. However, of the two, Hepatitis B virus is the most difficult to kill. Please note that 70% ethanol solutions are not effective against viral bloodborne pathogens and the use of 10% bleach solutions may lead to physical degradation of your device. [View a list of Environmental Protection Agency \(EPA\) registered disinfectants effective against Hepatitis B](#)"
- Use single-use auto-disabling (retractable) fingerstick devices

<http://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html>



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## THE BIG FOUR + ONE

-  1. Syringe re-use, directly or indirectly
-  2. Inappropriate use of single dose or single use vials
-  3. Failure to use aseptic technique (contamination of injection equipment)
-  4. Unsafe diabetes care/ assisted blood glucose monitoring (ABGM)
- 5. Plus 1 = Drug Diversion**

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## # 1: SYRINGE RE-USE

Most common cause of outbreaks in the outpatient setting is inappropriate use of syringes

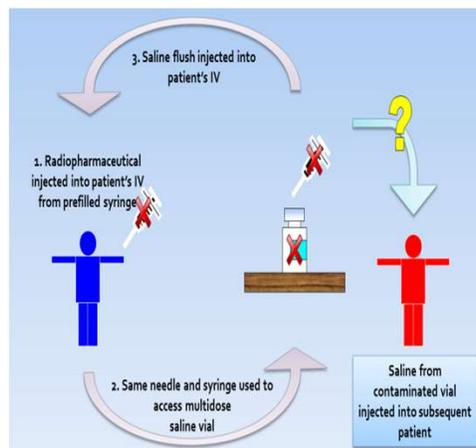
- Direct reuse:
  - Using the same syringe to administer medication to more than one patient, even if the needle is changed or the injection was administered through an intervening length of tubing



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## SYRINGE RE-USE

- Indirect reuse or “double dipping”:
  - Accessing a medication vial or bag with a syringe that has already been used to administer medication to a patient, then reusing the contents from the vial or bag for another patient



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## ENDOSCOPY CENTER, NEVADA (2008)

- 9 clinic-associated hepatitis C virus cases
- 106 possible clinic-associated cases
- 63,000 potential exposures
- \$16–21 million total cost



### MMWR

Morbidity and Mortality Weekly Report  
[www.cdc.gov/mmwr](http://www.cdc.gov/mmwr)



<p>Weekly <span style="float: right;">May 16, 2008 / Vol. 57 / No. 19</span></p> <p><b>Viral Hepatitis Awareness — May 2008</b></p> <p style="font-size: 0.7em;">May 2008 marks the 13th anniversary of Hepatitis Awareness Month in the United States. May 19 is World Hepatitis Day, which recognizes the importance of global commitments to prevent liver disease and cancer.</p>	<p><b>Acute Hepatitis C Virus Infections Attributed to Unsafe Injection Practices at an Endoscopy Clinic — Nevada, 2007</b></p> <p style="font-size: 0.7em;">On January 2, 2008, the Nevada State Health Division (NSHD) contacted CDC concerning surveillance reports</p>
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## DANGEROUS MISPERCEPTIONS

-  1. Changing the needle makes a syringe safe for reuse.
-  2. Syringes can be reused as long as an injection is administered through an intervening length of IV tubing.
-  3. If you don't see blood in the IV tubing or syringe, it means that those supplies are safe for reuse.

Once they are used, both the needle and syringe are contaminated and must be discarded!



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## # 2: INAPPROPRIATE USE OF SINGLE-DOSE/SINGLE-USE VIALS

- Vials labeled as single use:
  - **NO PRESERVATIVE**
  - Can be accessed one time only and for one patient only and remaining contents must be discarded
- CDC is aware of at least 19 outbreaks involving single dose vial use
  - All occurred in outpatient setting with almost half in pain remediation clinics



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## SINGLE DOSE VIALS: CDC POSITION STATEMENT, 2012



- Vials labeled by the manufacturer as “single dose” or “single use” should only be used for a single patient.
- Ongoing outbreaks provide ample evidence that inappropriate use of single-dose/single-use vials causes patient harm.
- Leftover parenteral medications should never be pooled for later administration
  - In times of critical need, contents from unopened single dose vials can be repackaged for multiple patients in accordance with standards in United States Pharmacopeia General Chapter <797>

[www.cdc.gov/injectionsafety/CDCposition-SingleUseVial.html](http://www.cdc.gov/injectionsafety/CDCposition-SingleUseVial.html)



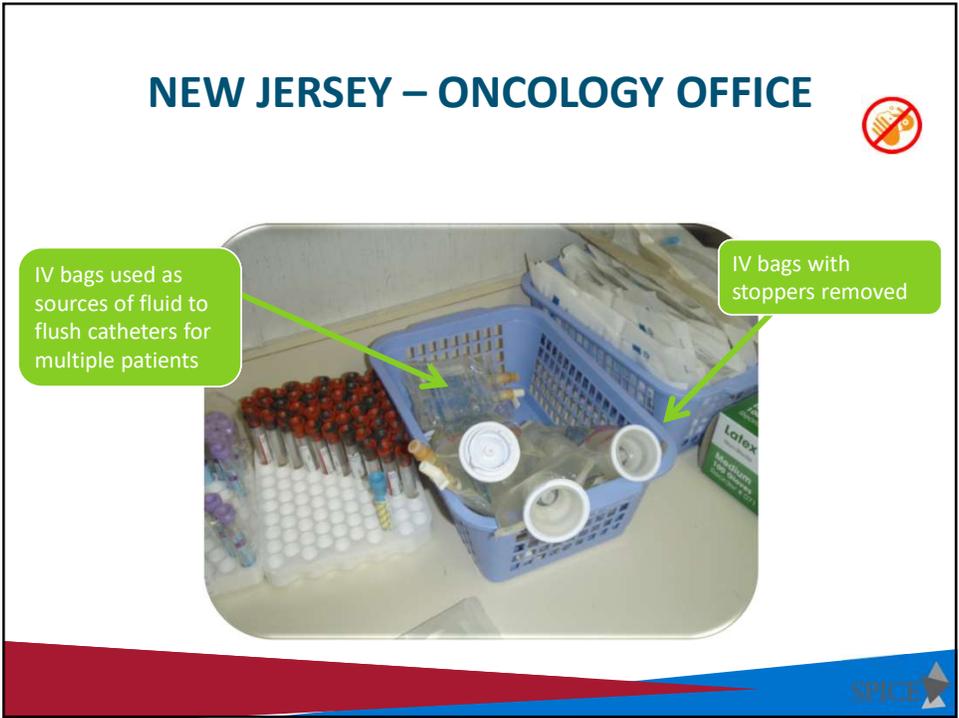
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## # 3: FAILURE TO USE ASEPTIC TECHNIQUE

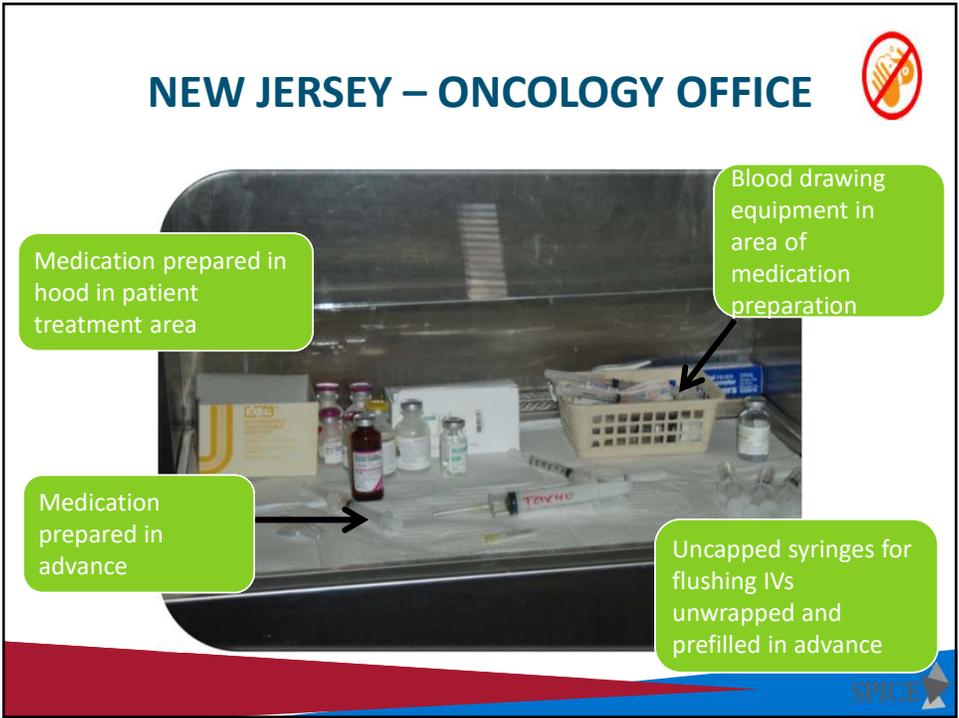
- Two women diagnosed with HBV infection, receiving chemotherapy at the same physician practice
- Multidisciplinary team investigation
- Office closed; physician license suspended
- 2,700 patients notified
- 29 outbreak-associated cases of HBV



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## NEW JERSEY – ONCOLOGY OFFICE





Blood contamination



Reused Vacutainer holders in contact with gauze



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## # 4: UNSAFE DIABETES CARE





Sharing of blood glucose meters without cleaning and disinfection between uses



Use of fingerstick devices or insulin pens on multiple persons



Failure to perform hand hygiene or change gloves between procedures



Patel et al. ICHE 2009; 30:209-14, Thompson et al. JAGS 2010, MMWR 2005; 54:220-3

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## Fingerstick Devices

- Fingerstick devices, also called lancing devices, are devices that are used to prick the skin and obtain drops of blood for testing.
- There are two main types of fingerstick devices: those that are designed for reuse on a single person and those that are disposable and for single-use.



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## FINGERSTICK DEVICES

- **Reusable Devices:**
  - These devices often resemble a pen and have the means to remove and replace the lancet after each use, allowing the device to be used more than once. Some of these devices have been previously approved and marketed for multi-patient use, and require the lancet and disposable components (platforms or endcaps) to be changed between each patient. However, due to failures to change the disposable components, difficulties with cleaning and disinfection after use, and their link to multiple HBV infection outbreaks, CDC recommends that these devices never be used for more than one person. If these devices are used, it should only be by individual persons using these devices for self-monitoring of blood glucose.
- **Single-use, auto-disabling fingerstick devices:**
  - These are devices that are disposable and prevent reuse through an auto-disabling feature. In settings where assisted monitoring of blood glucose is performed, single-use, auto-disabling fingerstick devices should be used.



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## Blood Glucose Meters

- Whenever possible, blood glucose meters should be assigned to an individual person and not be shared.
- If blood glucose meters must be shared;
  - The device should be cleaned and disinfected after every use, per manufacturer's instructions, to prevent carry-over of blood and infectious agents.
  - If the manufacturer does not specify how the device should be cleaned and disinfected then it should not be shared.



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## INSULIN PENS

- Insulin Pens containing multiple doses of insulin are meant for single-resident use only, and must never be used for more than one person, even when the needle is changed
- Insulin pens must be clearly labeled with the resident's name or other identifiers to verify that the correct pen is used on the correct resident
- Facilities should review their policies and procedures and educate their staff regarding safe use of insulin pens

*State Operations Manual Appendix PP -Guidance to Surveyors for Long Term Care Facilities*



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## SURVEY OF PHYSICIAN AND NURSE PRACTICES AROUND INJECTION SAFETY

- 370 Physicians
- 320 Nurses
- Eight States Included
  - NC, NY, NJ, Nevada, Colorado, Tennessee, Wisconsin, Montana
- Types of healthcare settings:
  - Acute care, long term care, outpatient settings

<https://www.sciencedirect.com/science/article/pii/S0196655317306806?via%3Dihub>



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## SURVEY FINDINGS

Topic Is Acceptable Practice	Physician Response	Nurse Response
Reuse of syringe for > one patient	12.4%	3.4%
Reentering a vial with a used needle/syringe	12.7%	6.7%
Using SDVs for multiple patients	34%	16.9%
Using source bags as diluent for multiple patients	28.9%	13.1%



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## SUMMARY: BEST PRACTICES



### Syringe reuse (direct and indirect)

- Never administer medications from the same syringe to multiple patients
- Do not reuse a syringe to enter a medication vial or solution
- Limit the use of multi-dose vials and dedicate them to a single patient whenever possible



### Misuse of single-dose/single-use vials

- Do not administer medications from a single dose vial or IV solution bag to more than one patient, more than one time



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## SUMMARY: BEST PRACTICES



### Failure to use aseptic technique

- Use aseptic technique when preparing or administering medications



### Unsafe diabetes care

- Use insulin pens and lancing devices for only one patient
- Dedicate glucometers to a single patient. If they MUST be shared, clean and disinfect after each use



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## # 5: DRUG DIVERSION

- When prescription medicines are obtained or used illegally



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## DRUG DIVERSION FACTS

- Drug diversion costs / year (2007):
  - \$120 **billion** in lost productivity
  - \$72.5 **billion** in medical insurer costs
  - \$61 **billion** in criminal justice costs
  - \$11 **billion** in health care costs
- HCPs with a drug/alcohol dependency
  - 15% of pharmacists
  - 10% of nurses
  - 8% of physicians



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## DRUG DIVERSION: THREE TYPES OF HARM

- Substandard care delivered by an impaired provider
- Denial of essential pain medication or therapy
- Risks of infection
  - Bloodborne Pathogen
  - Bacterial contaminants.

FLORIDA DEPARTMENT OF HEALTH

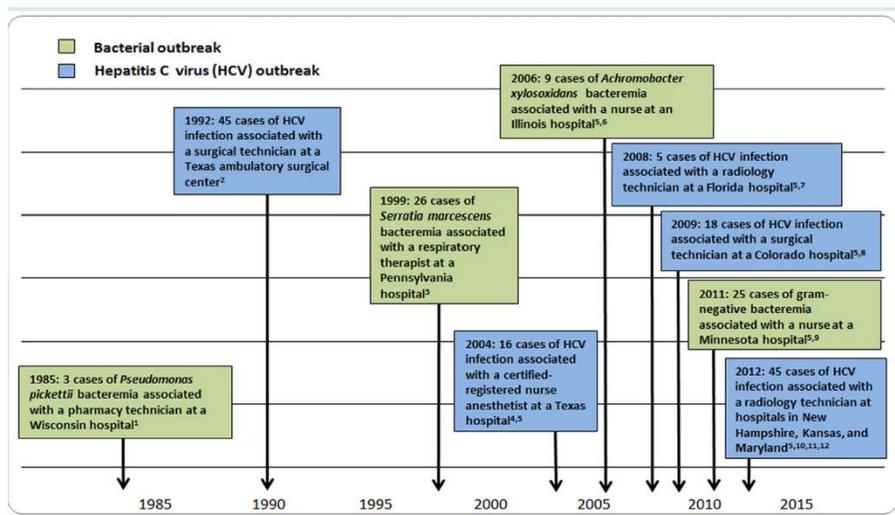
DEPARTMENT OF CONSUMER AFFAIRS  
BOARD of REGISTERED NURSING

Licensee Name: NABLO MARCI ANN  
 License Type: Registered Nurse  
 License Number: 593208  
 License Status: ACTIVE [Definition](#)  
 Expiration Date: October 31, 2011  
 Issue Date: January 10, 2002  
 County: OUT OF STATE  
 Actions: No

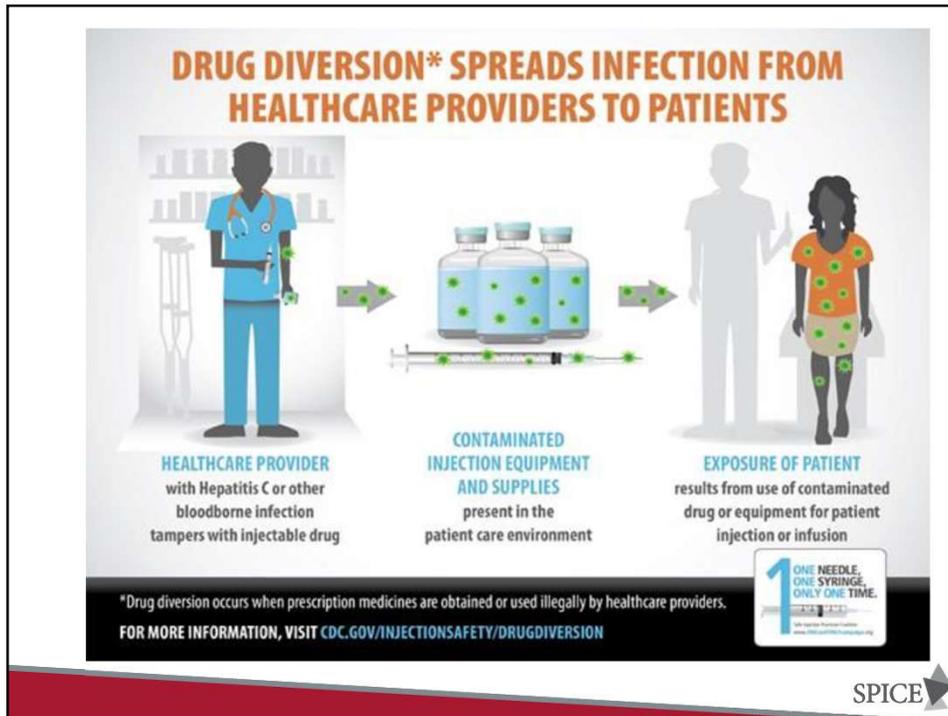
confronted about these allegations  
 admitted diverting Fentanyl from t  
 that NABLO admitted getting urine from a staff member  
 (g) and hiding it in her bra; that NABLO'S haw was searched

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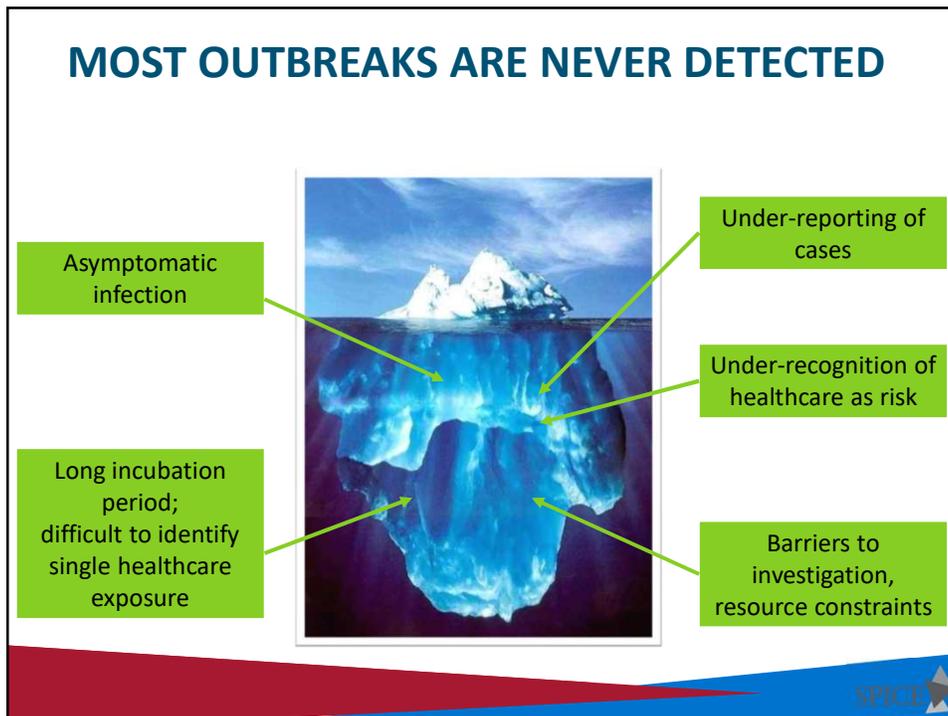
### U.S. Outbreaks Associated with Drug Diversion, 1983–2013



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# BEST PRACTICE

- Designate someone to provide ongoing oversight
- Develop written infection control plan
- Provide training
- Conduct quality assurance assessments



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# ONE AND ONLY CAMPAIGN

The screenshot shows the homepage of the One & Only Campaign. At the top is a navigation bar with links for 'About the Campaign', 'Safe Injection Practices', 'Healthcare Provider Information', 'Patient Information', 'Campaign Resources', 'News', and 'Contact Us'. The main content area features a large banner with the text 'HELP ENSURE PATIENT SAFETY. MAKE EVERY INJECTION A SAFE ONE.' and an image of a healthcare provider and a patient. Below the banner is an 'About the Campaign' section with a description of the campaign's goals. There is also a 'Become a Member' section. At the bottom, there are three columns: 'Featured Content' with links to medical care and CDC blog posts, 'Spread the Word' with information on ordering materials, and 'Translated Campaign Resources' with information on Spanish and Japanese versions. A footer contains a sign-up form for email updates and a privacy policy link.



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## CAMPAIGN RESOURCES

- Print Materials
- Audio & Visual
- Social Media
- Toolkits



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## QUESTIONS?



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