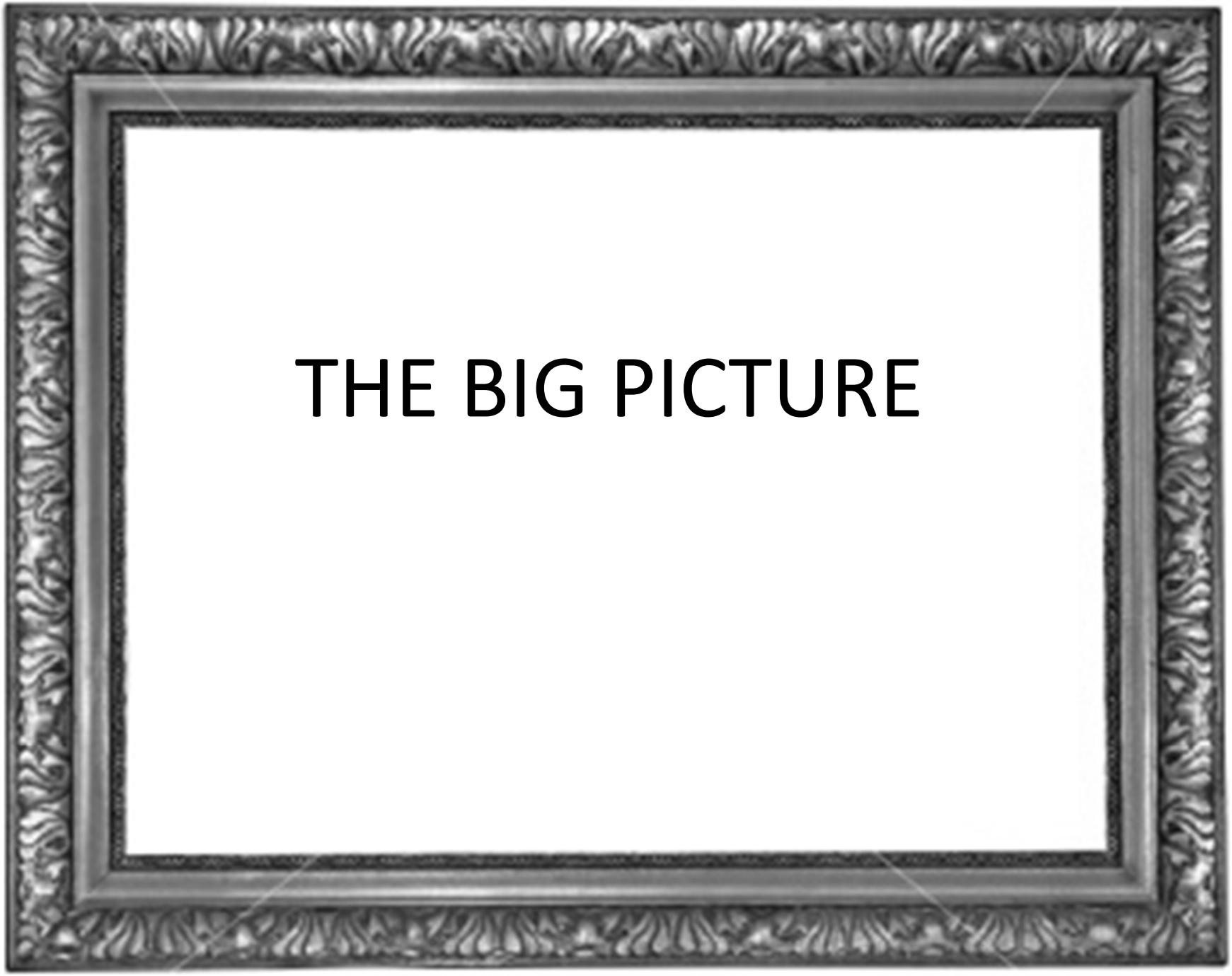
Module D

OUTBREAKS AND SAFE INJECTION PRACTICES IN HOME HEALTH AND HOSPICE SETTINGS

OUTLINE

1. The big picture
2. Outbreaks and best practices
3. Beyond the outbreaks
4. Resources


THE BIG PICTURE


HEPATITIS C?
CALL
Law Firm
OCTOBER 27, 2011
LAS VEGAS SUN
CBS Denver 4
Home News Sports Health Top Spots Photos Video Traffic
Latest News Investigates Consumer Investigator Money Saver Only On CBS4 Blogs
NEWS
Children At Fort Collins Clinic Need To Be Tested After Syringe Mix-Up
April 13, 2011 4:51 PM
NEWS 14 Carolina
Your news now.
Cluster of hepatitis B cases reported at nursing home
GLENCARE OF MT. OLIVE ASSISTED LIVING
St Petersburg Times
Health
Hepatitis C outbreak at Brandon holistic clinic blamed on syringes
By Richard Martin and Hilary Lehman, Times staff writers
In Print: Saturday, March 20, 2010
WWLP.com NEWS
USA TODAY
News » Health & Behavior
10 veterans test positive for hepatitis after colonoscopies
Hepatitis B outbreak in West Virginia
KTLA.COM INFO
SoCal Health Clinic Patients Possibly Exposed To Hepatitis, HIV
CNN Health
VA clinic testing veterans p
exposed to hepatitis, HIV
Students Fail To Change Blood Testing Device
Blood Sugar Test Goes Bad At NM Event
KOAT 7 Estrella TV ALBUQUERQUE
ALBUQUERQUE, N.M. -- A group of New Mexico medical school students failed to properly change blood testing devices used for blood glucose sampling, and now officials say dozens of people might be at risk.
WEEKLY
Jury awards $104 million in damages to a hepatitis C outbreak victim
oms River oncologist's license revoked following
epatitis B outbreak among patients

UNSAFE INJECTION PRACTICES HAVE DEVASTATING CONSEQUENCES

UNSAFE INJECTION-RELATED OUTBREAKS SINCE 2001

- 48 recognized outbreaks
  - Viral hepatitis (n=21) or bacterial infections (n=27)
  - 90% (n=43) occurred in outpatient settings
    - 10 in pain management clinics
    - 9 in outpatient oncology clinics
- >150,000 patients potentially exposed

**CDC Grand Rounds 11/14/12 & Guh et al, Medical Care 2012*

HEPATITIS B VIRUS OUTBREAKS RELATED TO BLOOD GLUCOSE MONITORING, 2001-2011

- 23 recognized outbreaks due to the assisted monitoring of blood glucose (AMBG)
  - ~2,000 notifications
  - >170 incident infections
- Accounted for 92% of all hepatitis B virus outbreaks in long term care facilities

**Thompson et al, Annals Int Med 2009; www.cdc.gov/hepatitis/Outbreaks*

NC EXPERIENCE, 2001 - 2012

Year	Setting	Type	Exposed (n)	Incident Infections (n)	Lapse	Note
2003	Nursing Home	hepatitis B virus	192	11	ABGM	
2008	Cardiology Clinic	hepatitis C virus	1200	5	Syringe Reuse Contaminating MDV	Strengthened .0206
2010	Assisted-living Facility	hepatitis B virus	87	8	ABGM	6/8 patients died, “Act to Protect Adult Care Home Residents”
2010	Skilled Nursing Facility	hepatitis B virus	116	6	Unknown	
2010	Skilled Nursing Facility	hepatitis B virus	109	6	ABGM	

ABGM – Assisted Blood Glucose Monitoring

OUTBREAK CAUSES & BEST PRACTICES

OUTBREAK CAUSES

1. Syringe reuse (direct and indirect)
2. Misuse of single-dose/single-use vials
3. Failure to use aseptic technique
4. Unsafe diabetes care

SYRINGE REUSE

- Direct Reuse
  - Insulin pens, IV tubing, vaccines
- Indirect Reuse or “double dipping”
  - Common cause of large hepatitis outbreaks
  - Syringe that had been used to inject medication into a patient and reused to enter a medication vial
  - Contents of the vial are then used for subsequent patients

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

CDC
MMWR
Morbidity and Mortality Weekly Report
www.cdc.gov/mmwr

Weekly May 16, 2008 / Vol. 57 / No. 19

Viral Hepatitis Awareness — May 2008

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

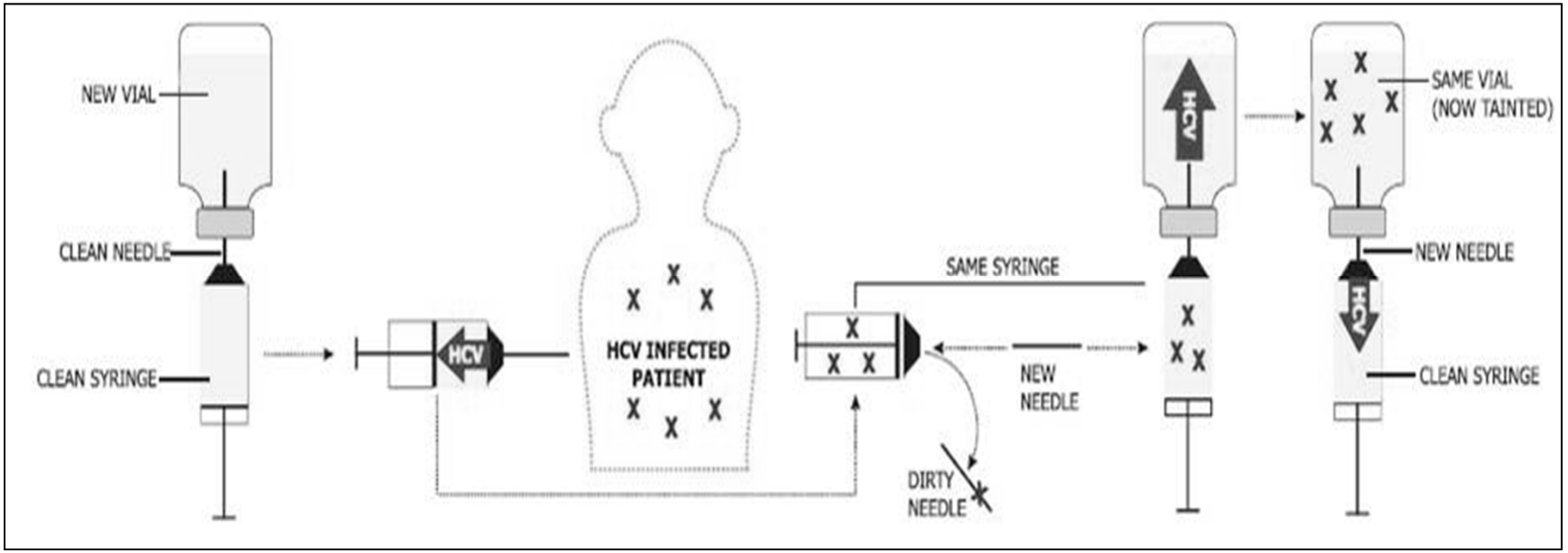
Acute Hepatitis C Virus Infections Attributed to Unsafe Injection Practices at an Endoscopy Clinic — Nevada, 2007

On January 2, 2008, the Nevada State Health Division (NSHD) contacted CDC concerning surveillance reports

THE NEVADA OUTBREAK: MECHANISM

Two breaches contributed to transmission:

- Re-entering propofol vials with used syringes
- Using contents from these single-dose vials on more than one patient



MMWR 2008 57(19);513-517

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!

2. MISUSE OF SINGLE-DOSE/SINGLE-USE VIALS (SINGLE DOSE VIAL)

- CDC is aware of at least 19 outbreaks involving single dose vial use
  - 7 outbreaks involved BBPs
  - 12 involved bacterial infections (majority of patients requiring hospitalization)
- All outbreaks occurred in outpatient settings
  - Almost half in pain remediation clinics (n=8)

INVASIVE *S. AUREUS* INFECTIONS ASSOCIATED WITH PAIN INJECTIONS AND REUSE OF SINGLE DOSE VIAL – ARIZONA AND DELAWARE, 2012

Clinic Type	Suspected Breaches	Outcomes
Pain Clinic (AZ)	• Prepared 'morning' and 'afternoon' contrast solution from single dose vials at start of day for multiple patients • Failed to wear facemasks during spinal injections	• 3 MRSA infections among patients receiving 'afternoon' solution • All patients hospitalized, ranging from 4-41 days • 1 additional patient found deceased in home; invasive MRSA could not be ruled out
Orthopedic Clinic (DE)	• single dose vial accessed over the course of several hours for multiple patients until all contents were withdrawn	• 7 methicillin-susceptible *S. aureus* infections • All patients required debridement of infected sites and antimicrobial therapy • Average length of hospitalization was 6 days

Invasive Staphylococcus aureus Infections Associated with Pain Injections and Reuse of Single-Dose Vials, Arizona and Delaware, 2012; Morbidity & Mortality Weekly Report. 2012;61(27):501-504

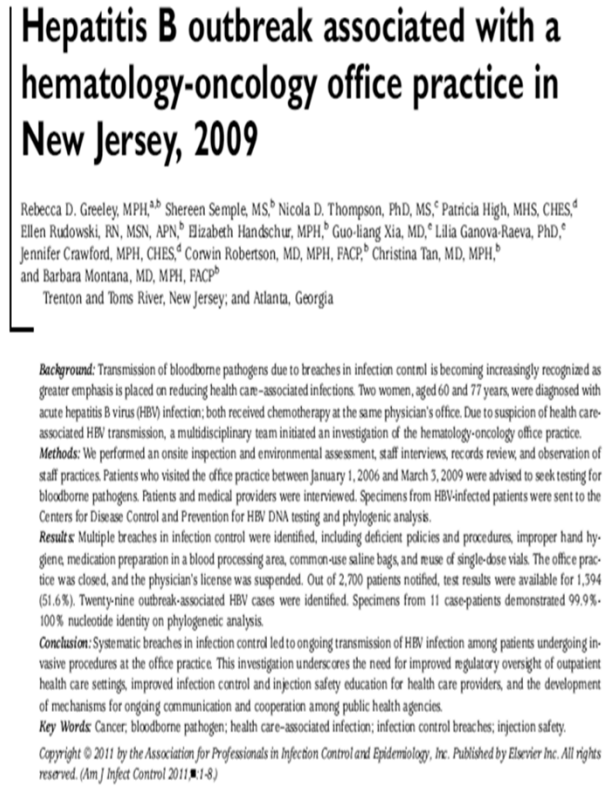
SINGLE DOSE VIALS: CDC POSITION STATEMENT, 2012

- 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

3. FAILURE TO USE ASEPTIC TECHNIQUE

Handling and preparing supplies used for injections in a manner that prevents microbial contamination between the injection materials and the non-sterile environment



Hepatitis B outbreak associated with a hematology-oncology office practice in New Jersey, 2009

Rebecca D. Greeley, MPH,[a,b] Shereen Semple, MS,[b] Nicola D. Thompson, PhD, MS,[c] Patricia High, MHS, CHES,[d] Ellen Rudowski, RN, MSN, APN,[b] Elizabeth Handschur, MPH,[b] Guo-liang Xia, MD,[e] Lilia Ganova-Raeva, PhD,[e] Jennifer Crawford, MPH, CHES,[d] Corwin Robertson, MD, MPH, FACP,[b] Christina Tan, MD, MPH,[b] and Barbara Montana, MD, MPH, FACP[b]

Trenton and Toms River, New Jersey; and Atlanta, Georgia

Background: Transmission of bloodborne pathogens due to breaches in infection control is becoming increasingly recognized as greater emphasis is placed on reducing health care–associated infections. Two women, aged 60 and 77 years, were diagnosed with acute hepatitis B virus (HBV) infection; both received chemotherapy at the same physician's office. Due to suspicion of health care-associated HBV transmission, a multidisciplinary team initiated an investigation of the hematology-oncology office practice.

Methods: We performed an onsite inspection and environmental assessment, staff interviews, records review, and observation of staff practices. Patients who visited the office practice between January 1, 2006 and March 3, 2009 were advised to seek testing for bloodborne pathogens. Patients and medical providers were interviewed. Specimens from HBV-infected patients were sent to the Centers for Disease Control and Prevention for HBV DNA testing and phylogenic analysis.

Results: Multiple breaches in infection control were identified, including deficient policies and procedures, improper hand hygiene, medication preparation in a blood processing area, common-use saline bags, and reuse of single-dose vials. The office practice was closed, and the physician's license was suspended. Out of 2,700 patients notified, test results were available for 1,394 (51.6%). Twenty-nine outbreak-associated HBV cases were identified. Specimens from 11 case-patients demonstrated 99.9%-100% nucleotide identity on phylogenetic analysis.

Conclusion: Systematic breaches in infection control led to ongoing transmission of HBV infection among patients undergoing invasive procedures at the office practice. This investigation underscores the need for improved regulatory oversight of outpatient health care settings, improved infection control and injection safety education for health care providers, and the development of mechanisms for ongoing communication and cooperation among public health agencies.

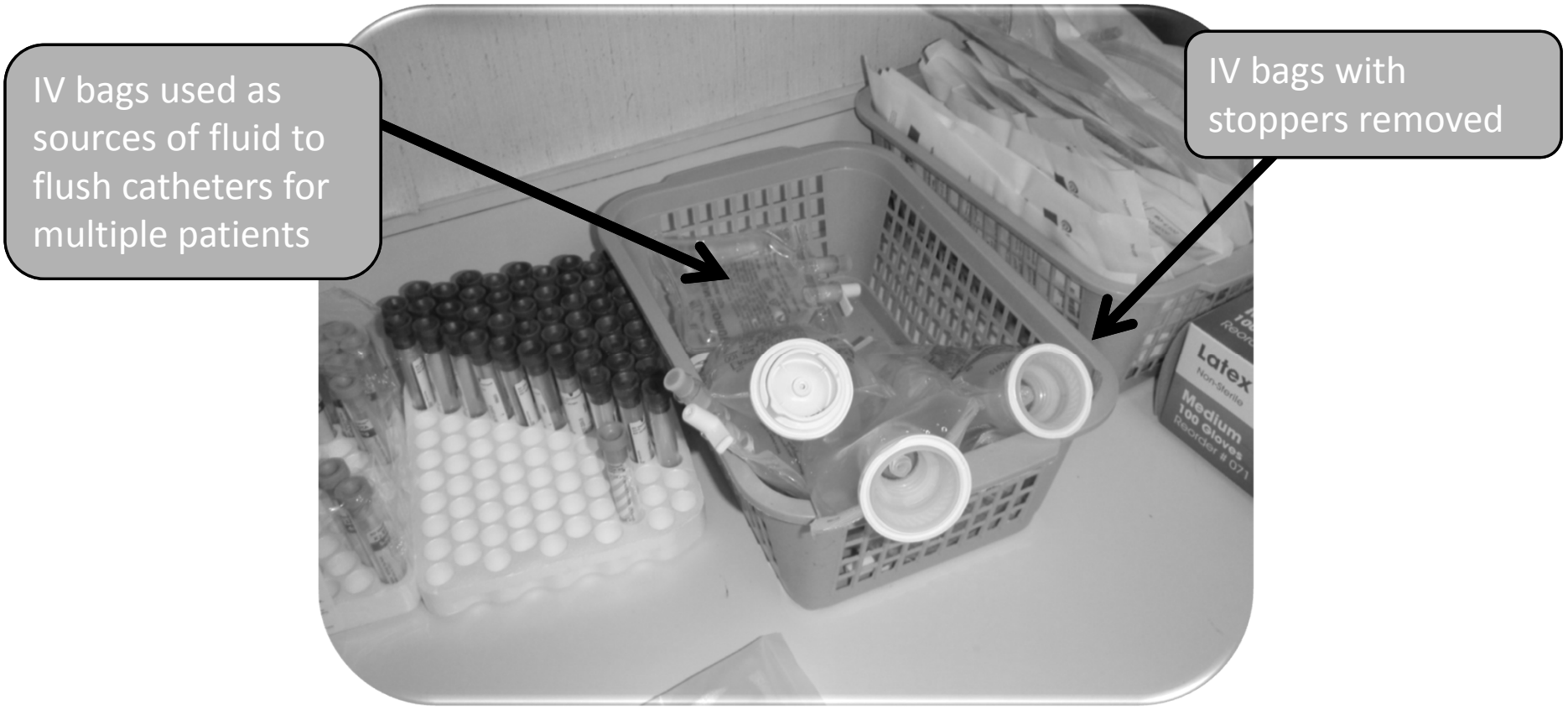
Key Words: Cancer; bloodborne pathogen; health care–associated infection; infection control breaches; injection safety.

American Journal of Infection Prevention, 2011

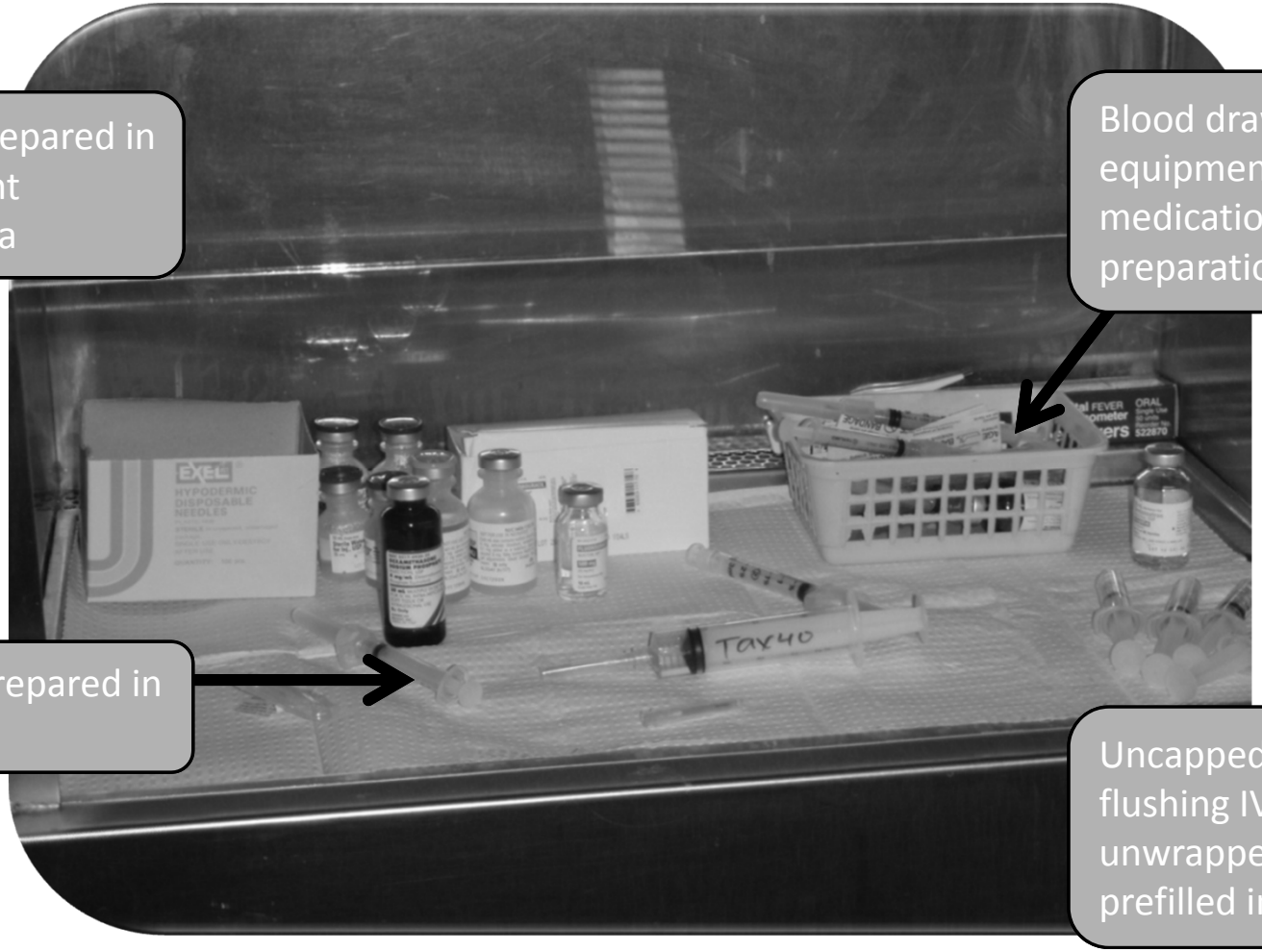
NEW JERSEY – ONCOLOGY OFFICE

Single use vials stored and used on subsequent days for multiple patients

NEW JERSEY – ONCOLOGY OFFICE



NEW JERSEY – ONCOLOGY OFFICE



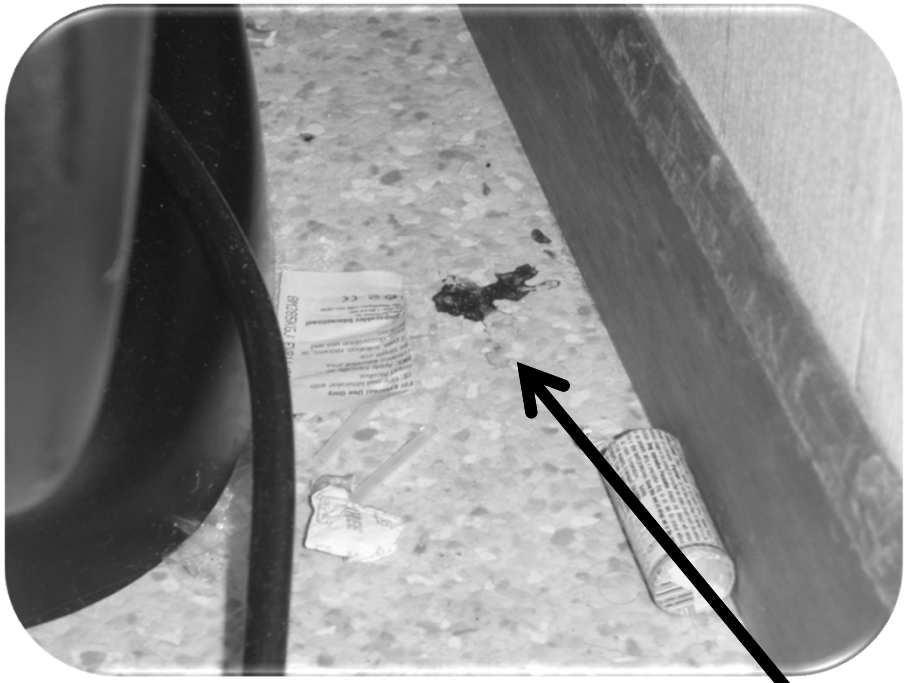
Medication prepared in hood in patient treatment area

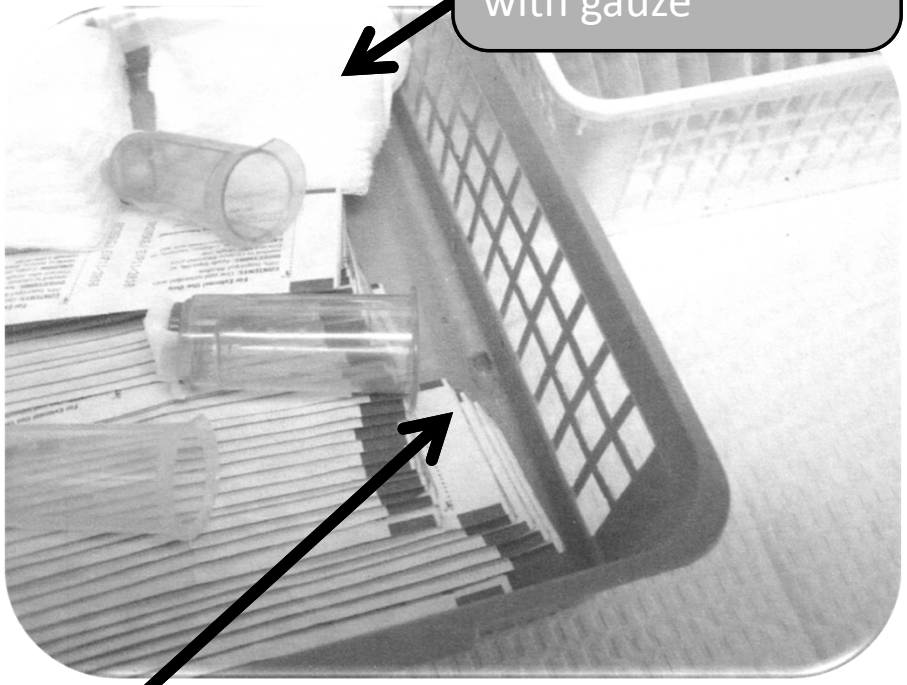
Blood drawing equipment in area of medication preparation

Medication prepared in advance

Uncapped syringes for flushing IVs unwrapped and prefilled in advance

NEW JERSEY – ONCOLOGY OFFICE

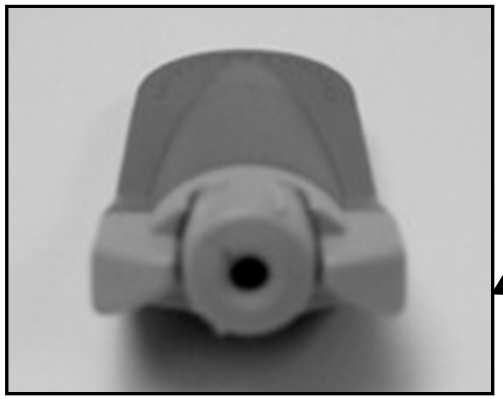




Reused Vacutainer holders in contact with gauze

Blood contamination

4. UNSAFE DIABETES CARE



Use of fingerstick devices or insulin pens on multiple persons

Sharing of blood glucose meters without cleaning and disinfection between uses

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

UNSAFE INJECTIONS: CAUSES & BEST PRACTICES

1. 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

2. 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

UNSAFE INJECTIONS: CAUSES AND BEST PRACTICES

3. Failure to use aseptic technique

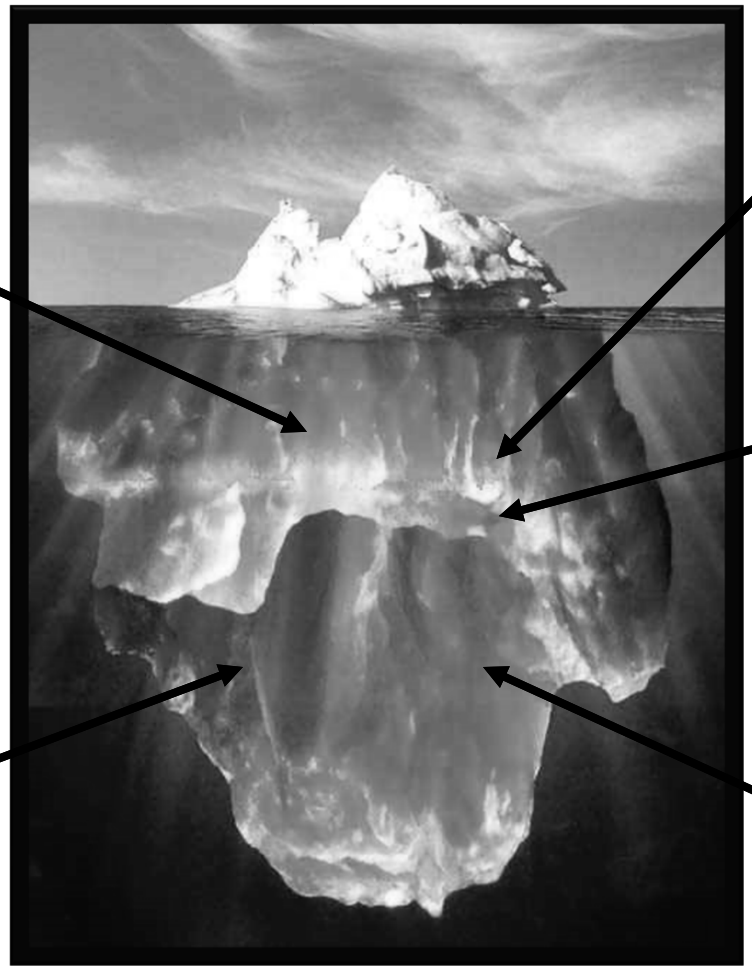
- Use aseptic technique when preparing or administering medications

4. 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

BEYOND OUTBREAKS

MOST OUTBREAKS ARE NEVER DETECTED



Asymptomatic infection

Under-reporting of cases

Under-recognition of healthcare as risk

Long incubation period; difficult to identify single healthcare exposure

Barriers to investigation, resource constraints

ROLE OF HEALTHCARE-ASSOCIATED TRANSMISSION: BEYOND OUTBREAKS

- Among patients ≥55:
- Those with acute hepatitis B virus or hepatitis C virus are 2.7x more likely to report having had injections in a health care setting
- Approximately 37% of acute hepatitis B virus and hepatitis C virus infections attributable to unsafe injections in health care settings

Perz et al, Hepatology 2012.'Accepted Article', doi: 10.1002/hep.25688

GROWING RESERVOIR

- Aging population – more frequent interactions with the healthcare system
- "…growing reservoir of infected individuals who can serve as a source of transmission to others if safe injection practices and other basic infection control precautions are not followed"

Perz et al, Hepatology 2012.'Accepted Article', doi: 10.1002/hep.25688

2010 SURVEY OF PROVIDER PRACTICES

5,500 healthcare professionals

- 1% “sometimes or always” reuse a syringe on a second patient (direct)
- 1% “sometimes or always” reuse a multidose vial after accessing it with a reused syringe (indirect)
- 6% use single-dose/single use vials for more than one patient

Pugliese et al 2010. AJIC. Available at: http://www.cdc.gov/injectionsafety or http://www.ajicjournal.org/article/PIIS0196655310008539/abstract

WHY ARE WE MISSING THE MARK?

- Knowledge Gaps
  - Poor training
  - Lax or nonexistent policies and procedures
- Knowledge not translated into practice
  - Drug shortages
  - Economic/time pressure
- Malfeasance
  - Drug Diversion

SUMMARY

KNOW AND PRACTICE THESE SIMPLE RULES

Safe injections

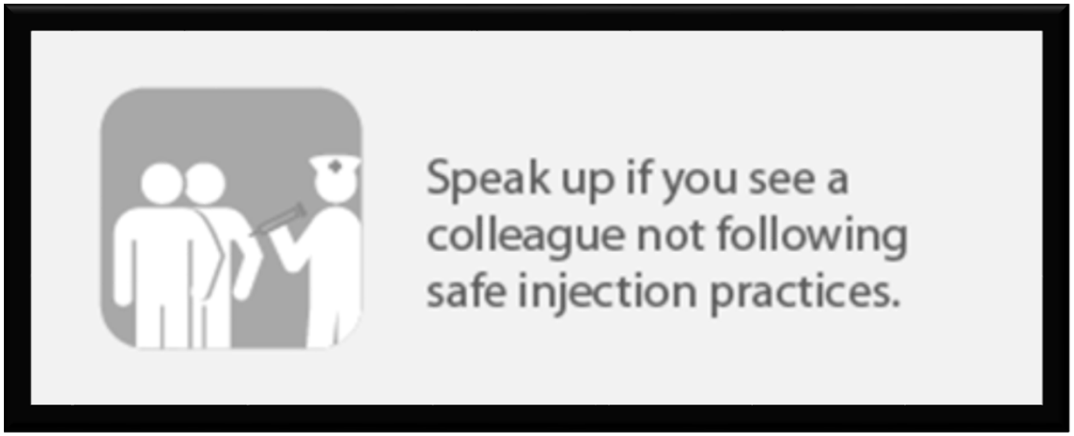
- Needles and syringes are single use devices. They should not be used for more than one patient or reused to draw up additional medication.
- Do not administer medications from a single-dose vial or IV bag to multiple patients.
- Limit the use of multi-dose vials and dedicate them to a single patient whenever possible.

Safe diabetes care

- Fingerstick devices should never be used for more than one person.
- Blood glucose meters should be assigned to an individual person.
  - If shared, it must be cleaned and disinfected per manufacturer's instructions
- Injection equipment (e.g., insulin pens, needles and syringes) should never be used for more than one person.

BEYOND GOOD PRACTICE

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



Injection Safety is Every Provider's Responsibility!

www.oneandonlycampaign.org

ACKNOWLEDGMENTS

Slides adapted from the following sources:

- Perz J, Patel PR, Srinivasan A. A “Never” Event: Unsafe Injection Practices. www.emergency.cdc.gov/coca/ppt/UnsafeInjectionPractices032708.ppt
- Shaefer M. Injection Safety. Presented at APIC North Carolina Fall Education Conference October 5, 2009, Durham, NC.
- Perz J and Thompson N. Viral hepatitis exposure & public health response. Presented at NACCHO Toolkit Development Workshop January 7, 2009 Las Vegas, NV
- Perz, CDC Public Health Grand Rounds, 11/14/12
- Montana, B. Keeping the Infection out of Injection. NJ Department of Health and Senior Services
- Moore, Zack. Various Slides. NC DHHS.

ONE AND ONLY CAMPAIGN

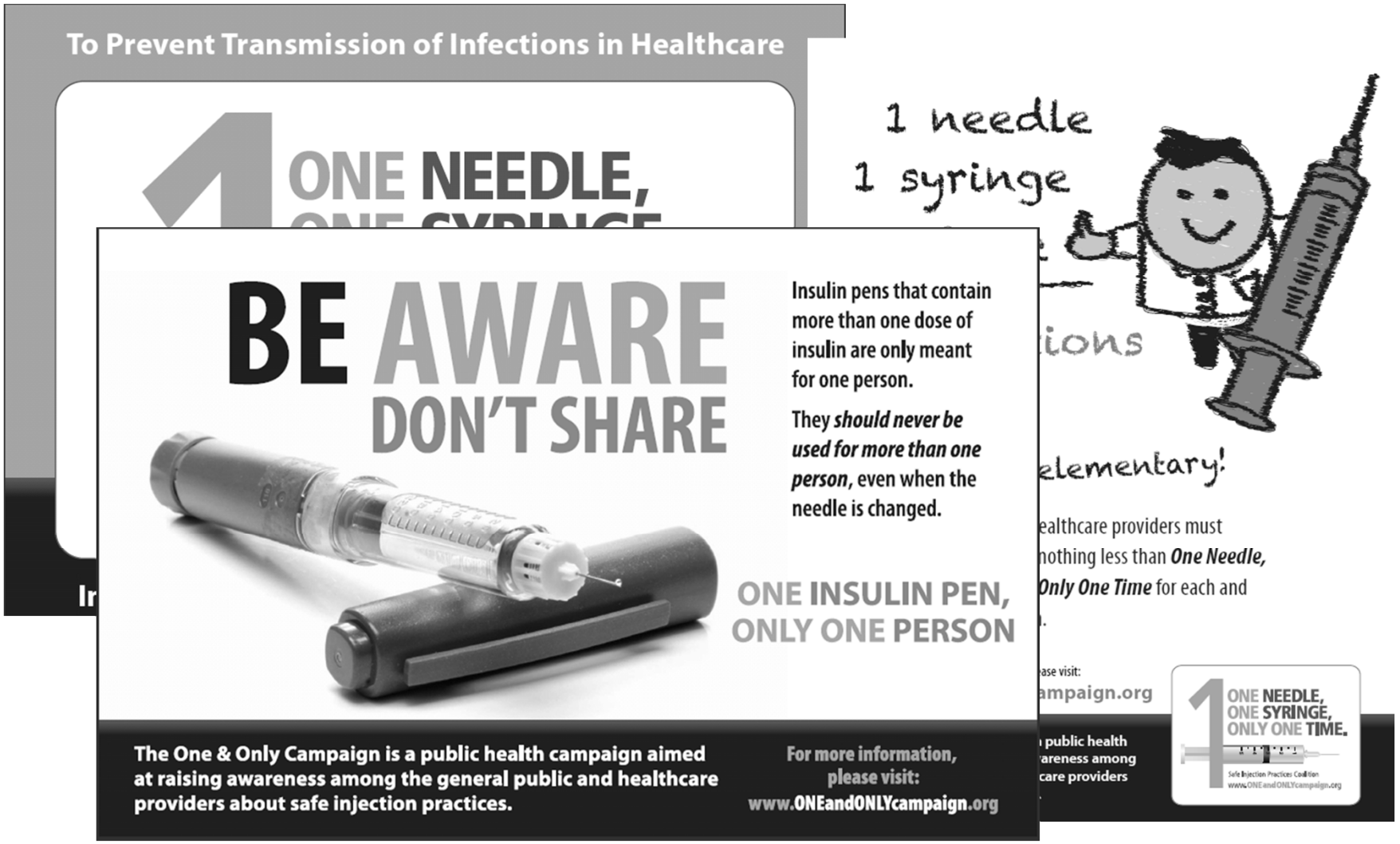
CAMPAIGN RESOURCES

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

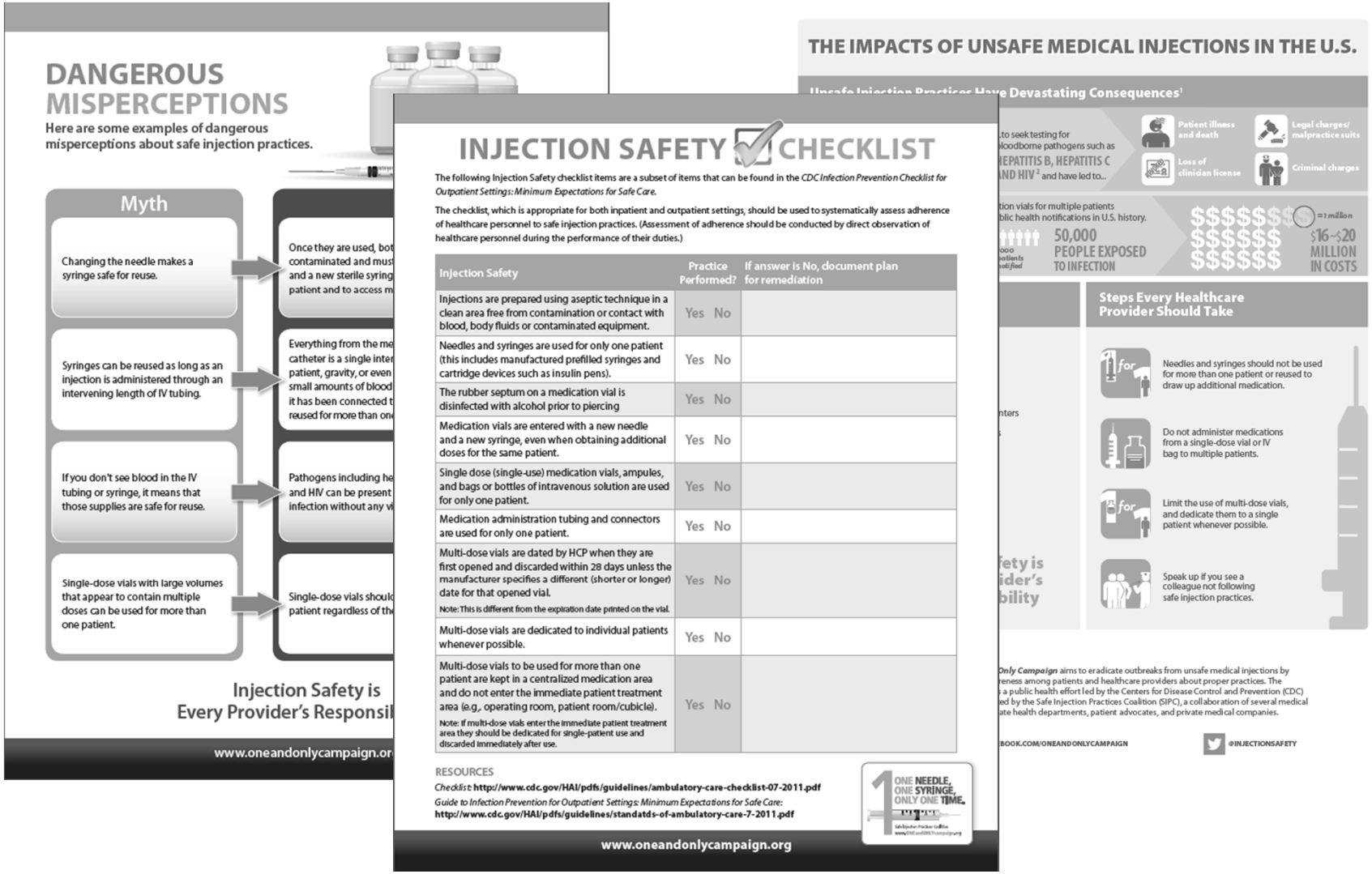
VIDEOS


A Patie
00:37 / 13:01
Maybe they thought safe injection practices were no big deal...

POSTERS


To Prevent Transmission of Infections in Healthcare
ONE NEEDLE,
1 needle
1 syringe
BE AWARE
DON'T SHARE
Insulin pens that contain more than one dose of insulin are only meant for one person.
They should never be used for more than one person, even when the needle is changed.
ONE INSULIN PEN, ONLY ONE PERSON
The One & Only Campaign is a public health campaign aimed at raising awareness among the general public and healthcare providers about safe injection practices.
For more information, please visit:
www.ONEandONLYcampaign.org
elementary!
ONE NEEDLE, ONE SYRINGE, ONLY ONE TIME.

PRINT MATERIALS



DANGEROUS MISPERCEPTIONS

Here are some examples of dangerous misperceptions about safe injection practices.

Myth	
Changing the needle makes a syringe safe for reuse.	Once they are used, bot contaminated and mus and a new sterile syring patient and to access m
Syringes can be reused as long as an injection is administered through an intervening length of IV tubing.	Everything from the me catheter is a single inter patient, gravity, or even small amounts of blood it has been connected t reused for more than on
If you don't see blood in the IV tubing or syringe, it means that those supplies are safe for reuse.	Pathogens including he and HIV can be present infection without any vi
Single-dose vials with large volumes that appear to contain multiple doses can be used for more than one patient.	Single-dose vials shoul patient regardless of th

Injection Safety is Every Provider's Responsil

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INJECTION SAFETY CHECKLIST

The following Injection Safety checklist items are a subset of items that can be found in the *CDC Infection Prevention Checklist for Outpatient Settings: Minimum Expectations for Safe Care.*

The checklist, which is appropriate for both inpatient and outpatient settings, should be used to systematically assess adherence of healthcare personnel to safe injection practices. (Assessment of adherence should be conducted by direct observation of healthcare personnel during the performance of their duties.)

Injection Safety	Practice Performed?	If answer is No, document plan for remediation
Injections are prepared using aseptic technique in a clean area free from contamination or contact with blood, body fluids or contaminated equipment.	Yes No	
Needles and syringes are used for only one patient (this includes manufactured prefilled syringes and cartridge devices such as insulin pens).	Yes No	
The rubber septum on a medication vial is disinfected with alcohol prior to piercing	Yes No	
Medication vials are entered with a new needle and a new syringe, even when obtaining additional doses for the same patient.	Yes No	
Single dose (single-use) medication vials, ampules, and bags or bottles of intravenous solution are used for only one patient.	Yes No	
Medication administration tubing and connectors are used for only one patient.	Yes No	
Multi-dose vials are dated by HCP when they are first opened and discarded within 28 days unless the manufacturer specifies a different (shorter or longer) date for that opened vial. Note: This is different from the expiration date printed on the vial.	Yes No	
Multi-dose vials are dedicated to individual patients whenever possible.	Yes No	
Multi-dose vials to be used for more than one patient are kept in a centralized medication area and do not enter the immediate patient treatment area (e.g., operating room, patient room/cubicle). Note: If multi-dose vials enter the immediate patient treatment area they should be dedicated for single-patient use and discarded immediately after use.	Yes No	

RESOURCES

Checklist: **http://www.cdc.gov/HAI/pdfs/guidelines/ambulatory-care-checklist-07-2011.pdf**

Guide to Infection Prevention for Outpatient Settings: Minimum Expectations for Safe Care: **http://www.cdc.gov/HAI/pdfs/guidelines/standatds-of-ambulatory-care-7-2011.pdf**

ONE NEEDLE, ONE SYRINGE, ONLY ONE TIME.

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THE IMPACTS OF UNSAFE MEDICAL INJECTIONS IN THE U.S.

Devastating Consequences[1]

to seek testing for bloodborne pathogens such as HEPATITIS B, HEPATITIS C AND HIV[2] and have led to...

Patient illness and death

Legal charges/ malpractice suits

Loss of clinician license

Criminal charges

tion vials for multiple patients blic health notifications in U.S. history.

50,000 PEOPLE EXPOSED TO INFECTION

=1 million

$16–$20 MILLION IN COSTS

Steps Every Healthcare Provider Should Take

Needles and syringes should not be used for more than one patient or reused to draw up additional medication.

Do not administer medications from a single-dose vial or IV bag to multiple patients.

Limit the use of multi-dose vials, and dedicate them to a single patient whenever possible.

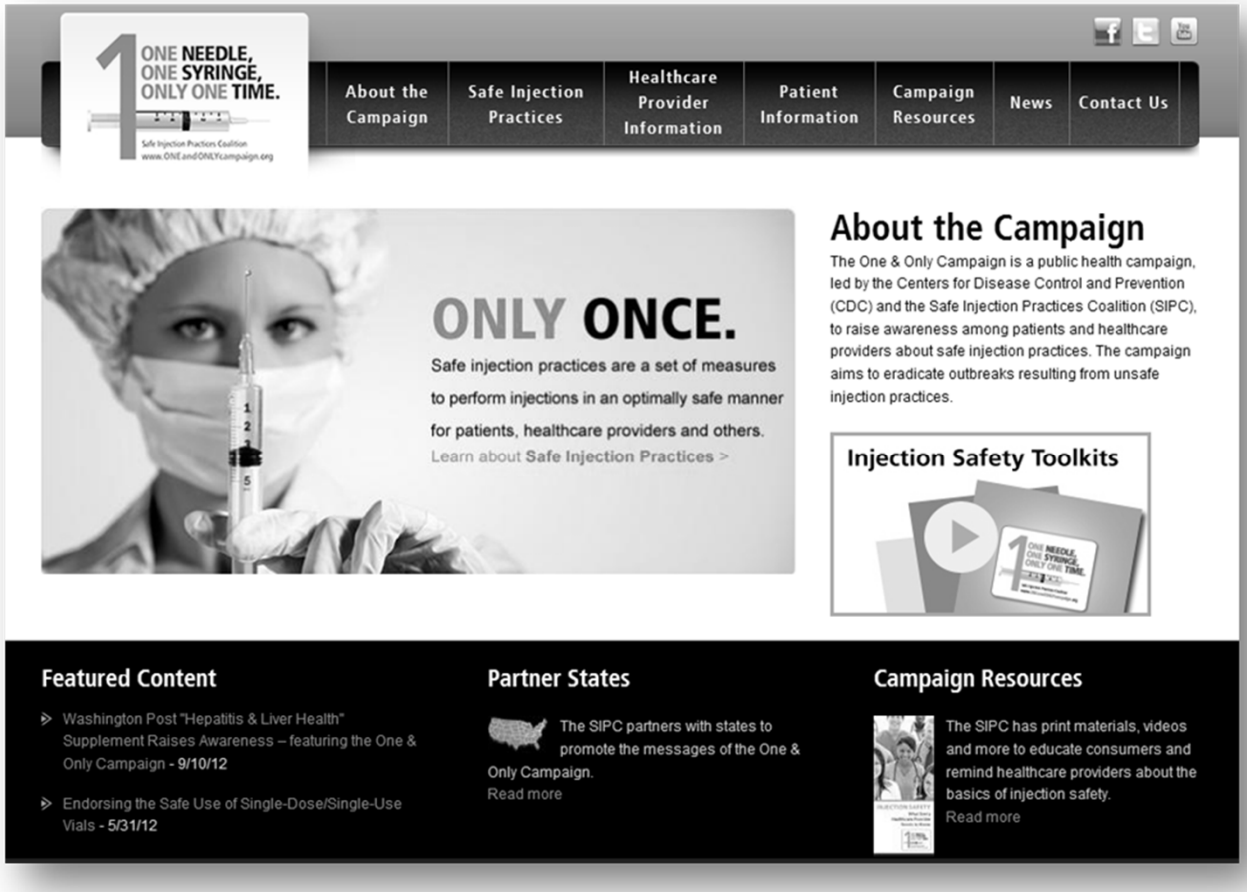
Speak up if you see a colleague not following safe injection practices.

Only Campaign aims to eradicate outbreaks from unsafe medical injections by reness among patients and healthcare providers about proper practices. The a public health effort led by the Centers for Disease Control and Prevention (CDC) ed by the Safe Injection Practices Coalition (SIPC), a collaboration of several medical ate health departments, patient advocates, and private medical companies.

BOOK.COM/ONEANDONLYCAMPAIGN

@INJECTIONSAFETY

WWW.ONEANDONLYCAMPAIGN.ORG



North Carolina Information and State Contact:

http://oneandonlycampaign.org/partner/north-carolina

THANK YOU!