

# INFECTION RISKS OF UNSAFE INJECTION PRACTICES AND A SPOTLIGHT ON ASSISTED BLOOD GLUCOSE MONITORING

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<https://spice.unc.edu/>

<https://spice.unc.edu/ask-spice/>

# OBJECTIVES

- ▶ Describe risks associated with unsafe injection practices
- ▶ Review outbreaks associated with unsafe injection practices
- ▶ Discuss Assisted Blood Glucose Monitoring (ABGM) focus of:
  - ▶ Outbreaks associated with ABGM
  - ▶ Infection Prevention Breaches of ABGM
  - ▶ Infection Prevention practices for safe ABGM
- ▶ Describe infection prevention practices aimed towards prevention of infections by unsafe injection practices

# CONSEQUENCES OF UNSAFE INJECTION PRACTICES



Legal charges/ malpractice suits



Loss of clinician license



Criminal charges



Patient illness and death

# SAFE INJECTION PRACTICES



a **SAFE** injection...

Does not harm the recipient.

Does not expose the provider to any avoidable risks.

Does not result in waste that is dangerous to the community.

Definition from World Health Organization

**"Safe injection practices are part of Standard Precautions and are aimed at maintaining basic levels of patient safety and provider protections."**

Centers for Disease Control and Transmission (CDC)  
<https://www.cdc.gov/injectionsafety/index.html>

# TOP UNSAFE INJECTION PRACTICES



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)



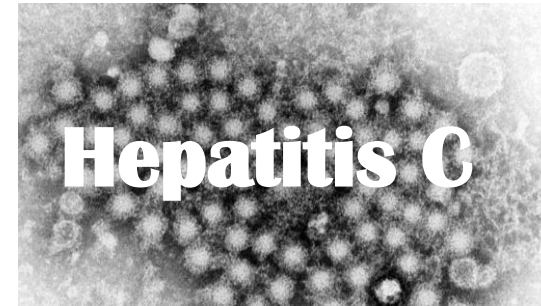
4. Unsafe diabetes care/ assisted blood glucose monitoring (ABGM)



5. **Plus 1 = Drug Diversion**

# OUTBREAKS

## ▶ Hepatitis B and C Outbreaks reported to CDC 2008-2019



**25 Outbreaks**

**183 Outbreak-associated cases**

**13,246 persons notified**

**43 Outbreaks**

**328 Outbreak-associated cases**

**>112,406 persons notified**

<https://www.cdc.gov/hepatitis/outbreaks/pdfs/healthcareinvestigationtable.pdf>

# HEPATITIS B AND C OUTBREAKS

"Suboptimal universal precautions"

"Use of fingerstick devices for >1 resident"

"Reuse of syringes to access single-dose vials"

"Failure to use gloves and perform hand hygiene between fingerstick procedures"

"Drug Diversion"



"Use of single-dose vials for >1 patient"

"Use of blood glucose meter for >1 resident without cleaning and disinfection"

"Lapses identified included environmental cleaning, hand hygiene"

"Cross-contamination of clean supplies with contaminated blood glucose monitoring equipment"

"Preparation of medications in same area where blood specimens were processed"

<https://www.cdc.gov/hepatitis/outbreaks/pdfs/healthcareinvestigationtable.pdf>



# OUTBREAKS

## ► Bacterial Infections

41 Outbreak-associated cases

33 Required additional surgery  
due to infection

25 Patients needed inpatient  
rehab or skilled nursing care



"Investigators identified multiple violations of recommended infection prevention practices, including lack of hand-washing stations or alcohol-based rub in the exam rooms, exposed syringes or syringes with injectable substances drawn up to 4 days in advance, inappropriate handling and reuse of single-use and multidose vials, and exam tables where injections occurred being cleaned 'at most' once per day."

<https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/abs/bacterial-septic-arthritis-infections-associated-with-intraarticular-injection-practices-for-osteoarthritis-knee-painnew-jersey-2017/30A118A895FC59A29DDBE7B4A21BB656>



# OUTBREAKS

▶ November 2023

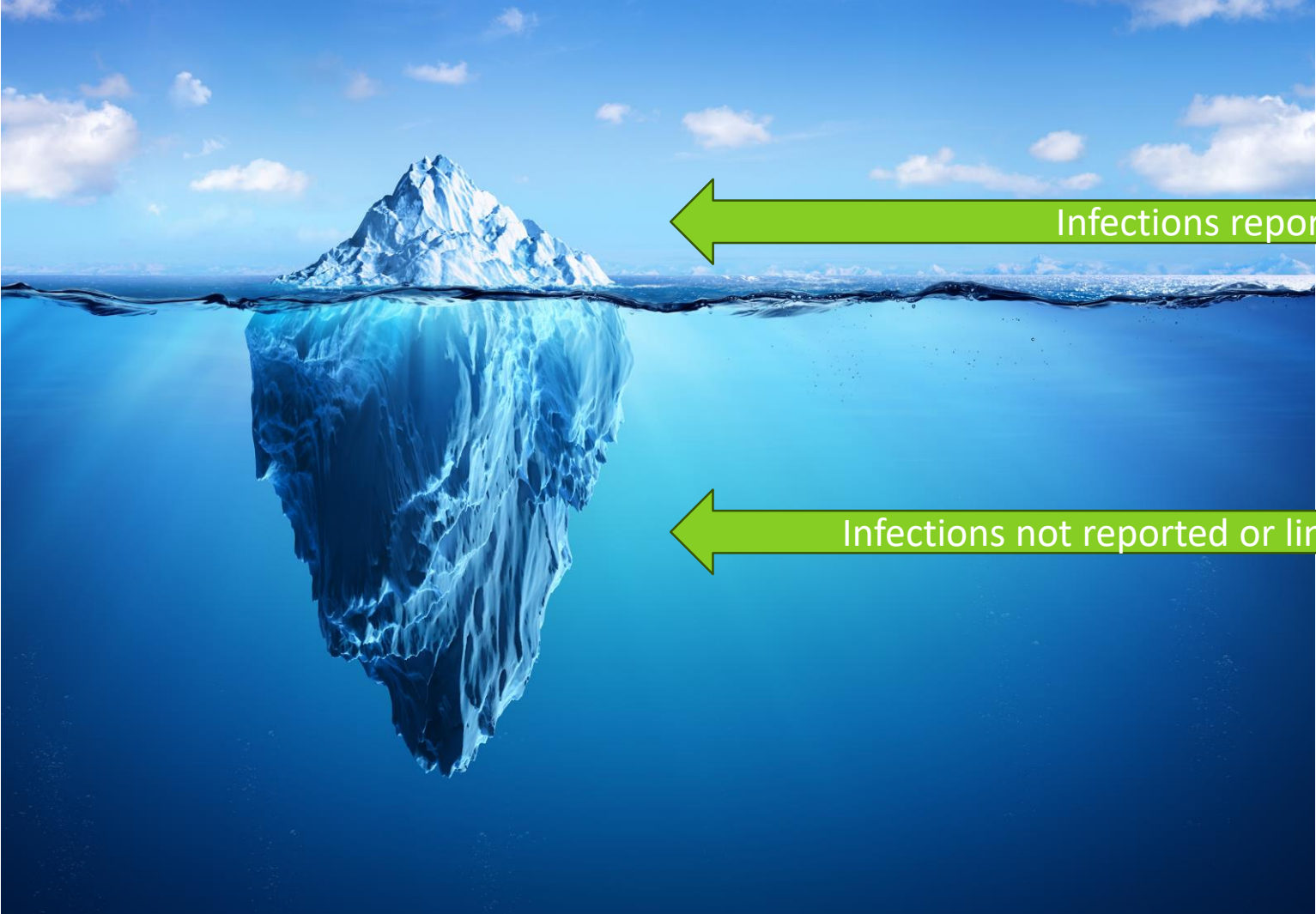


The image is a screenshot of an NBC News website article. The top navigation bar includes the NBC News logo, categories like 'ISRAEL-HAMAS WAR', 'POLITICS', 'U.S. NEWS', 'WORLD', 'BUSINESS', 'HEALTH', 'NBC NEWS TIPLINE', 'VIDEO', 'WATCH LIVE', a user profile icon, and a menu icon. The article is categorized under 'HEALTH NEWS'. The main headline reads: 'Nearly 450 patients at a Massachusetts hospital may have been exposed to HIV and hepatitis'. Below the headline is a sub-headline: 'The potential exposure occurred when IV medications were administered improperly, but there are no reported infections yet, the hospital said.'

"Improper administration of their IV medications"

<https://www.nbcnews.com/health/health-news/nearly-450-patients-massachusetts-hospital-possibly-exposed-hiv-hepato-rca125517>

# OUTBREAKS



← Infections reported

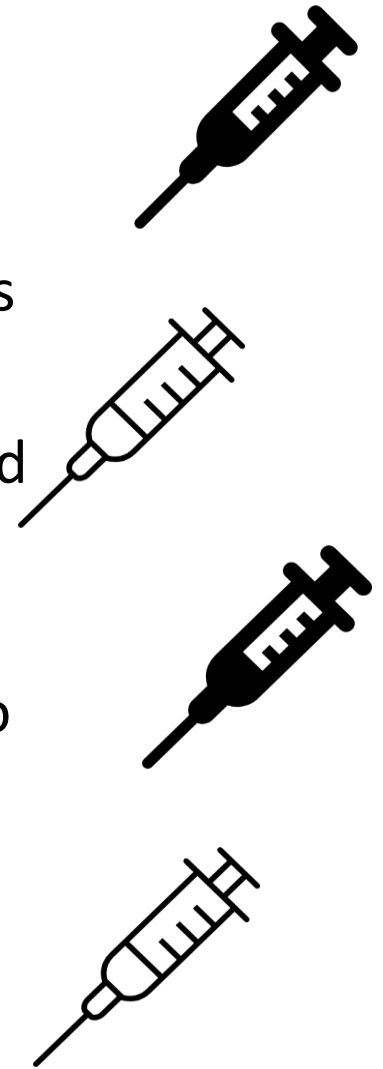
← Infections not reported or linked to outbreak

# HEPATITIS B AND C

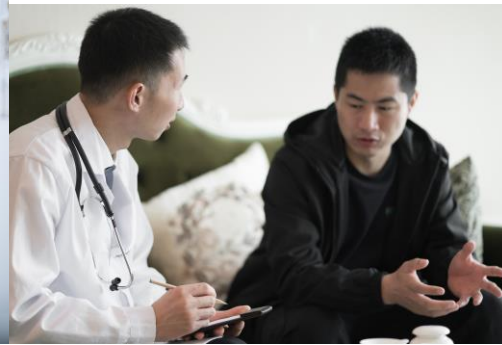
- ▶ Hepatitis C is a short-term illness, but for more than half of people who become infected with the hepatitis C virus, it becomes a long-term, chronic infection.
- ▶ Chronic hepatitis C can result in serious, even life-threatening health problems like cirrhosis and liver cancer.
- ▶ No vaccine
- ▶ Hepatitis B infected individuals sometimes have symptoms, which can include fatigue, poor appetite, stomach pain, nausea, and jaundice.
- ▶ For many people, hepatitis B is a short-term illness.
- ▶ Hepatitis B can become a long-term, chronic infection that can lead to serious, even life-threatening health issues like liver disease or liver cancer.
- ▶ Vaccine preventable illness

# HEPATITIS B VACCINE

- ▶ 80-100% effectiveness
- ▶ 2, 3, or 4 vaccine series
- ▶ Infants should get their first dose at birth and will usually complete the series at 6–18 months of age.
- ▶ Anyone 59 years of age or younger who has not yet gotten the vaccine should be vaccinated.
- ▶ Recommended for adults 60 years or older at increased risk of exposure to hepatitis B who were not vaccinated previously. Adults 60 years or older who are not at increased risk and were not vaccinated in the past may also be vaccinated.
- ▶ **Recommended for healthcare workers**
- ▶ May be given as a stand-alone vaccine, or as part of a combination vaccine.
- ▶ Hepatitis B vaccine may be given at the same time as other vaccines.



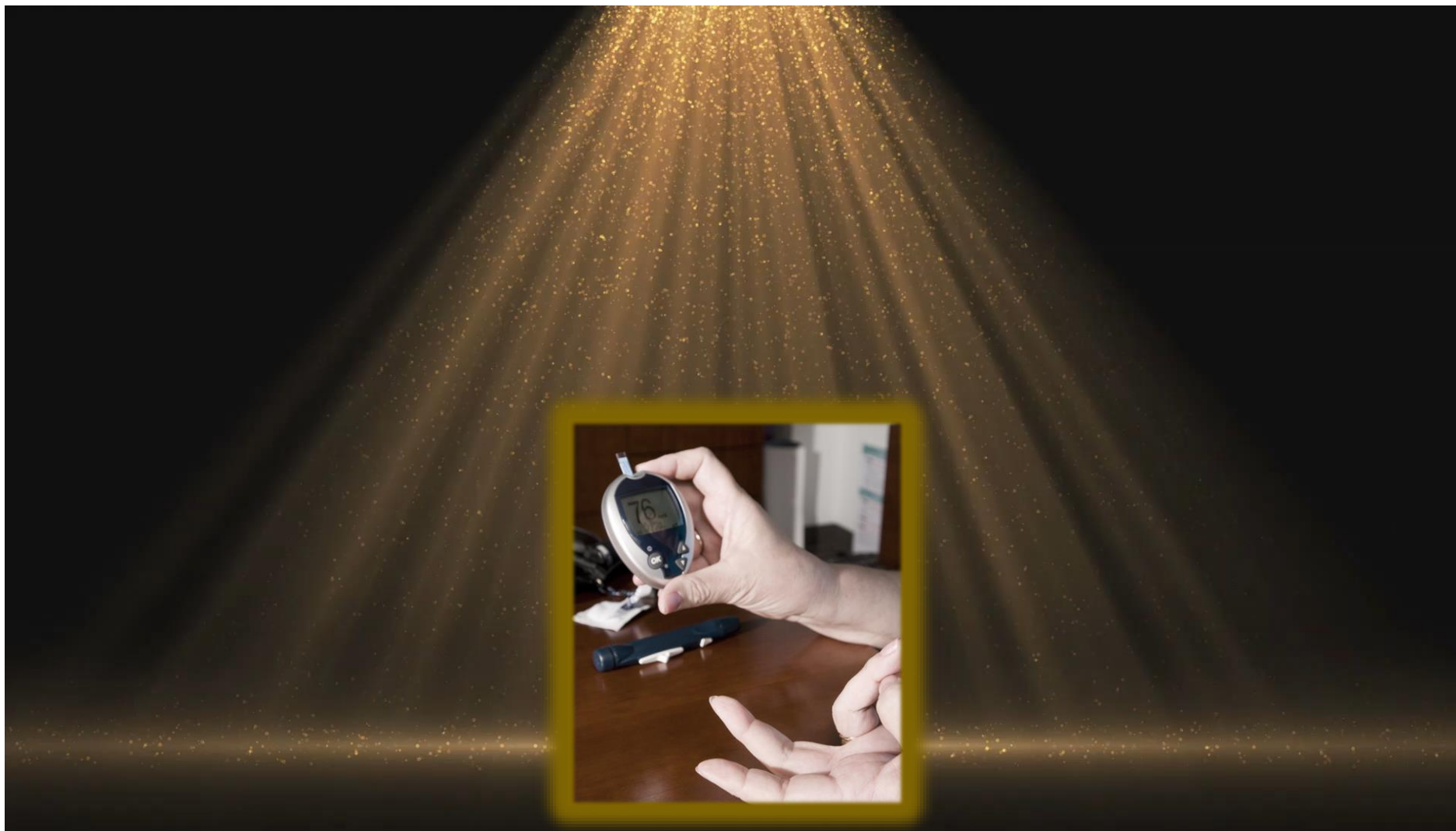
# PATIENT PERSPECTIVE



- ▶ "Extreme anxiety"
- ▶ "Emotional distress"
- ▶ "Decreased quality of life"
- ▶ Admission to acute care
- ▶ Admission to long term care
- ▶ Illness
- ▶ Death

<https://www.nbcnews.com/health/health-news/nearly-450-patients-massachusetts-hospital-possibly-exposed-hiv-hepati-rcna125517>

# SPOTLIGHT ON ASSISTED BLOOD GLUCOSE MONITORING





# OUTBREAK FOCUS ON ASSISTED BLOOD GLUCOSE MONITORING

- ▶ Per CDC, outbreaks of hepatitis B virus (HBV) infection associated with blood glucose monitoring have been identified with increasing regularity, particularly in long-term care settings.
- ▶ In the last 10 years alone, there have been at least 15 outbreaks of HBV infection associated with providers failing to follow basic principles of infection control when assisting with blood glucose monitoring.
- ▶ Due to under-reporting and under recognition of acute infection, the number of outbreaks identified to date are likely an underestimate.





# ASSISTED BLOOD GLUCOSE MONITORING

Notes from the Field: Deaths from Acute Hepatitis B Virus Infection Associated with Assisted Blood Glucose Monitoring in an Assisted-Living Facility --- North Carolina, August--October 2010

## ▶ 8 cases

- ▶ All were hospitalized
- ▶ 6 died from hepatitis complications
- ▶ Outbreak linked to:
  - ▶ Sharing of reusable fingerstick lancing devices approved for single patient use only
  - ▶ Shared use of blood glucose meters without cleaning and disinfection between patients



# ASSISTED BLOOD GLUCOSE MONITORING

## ▶ NC Viral Hepatitis Outbreaks

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### Healthcare Setting

### Breach in Infection Prevention

Long Term Care

Assisted blood glucose monitoring (ABGM)

Exposed - 504

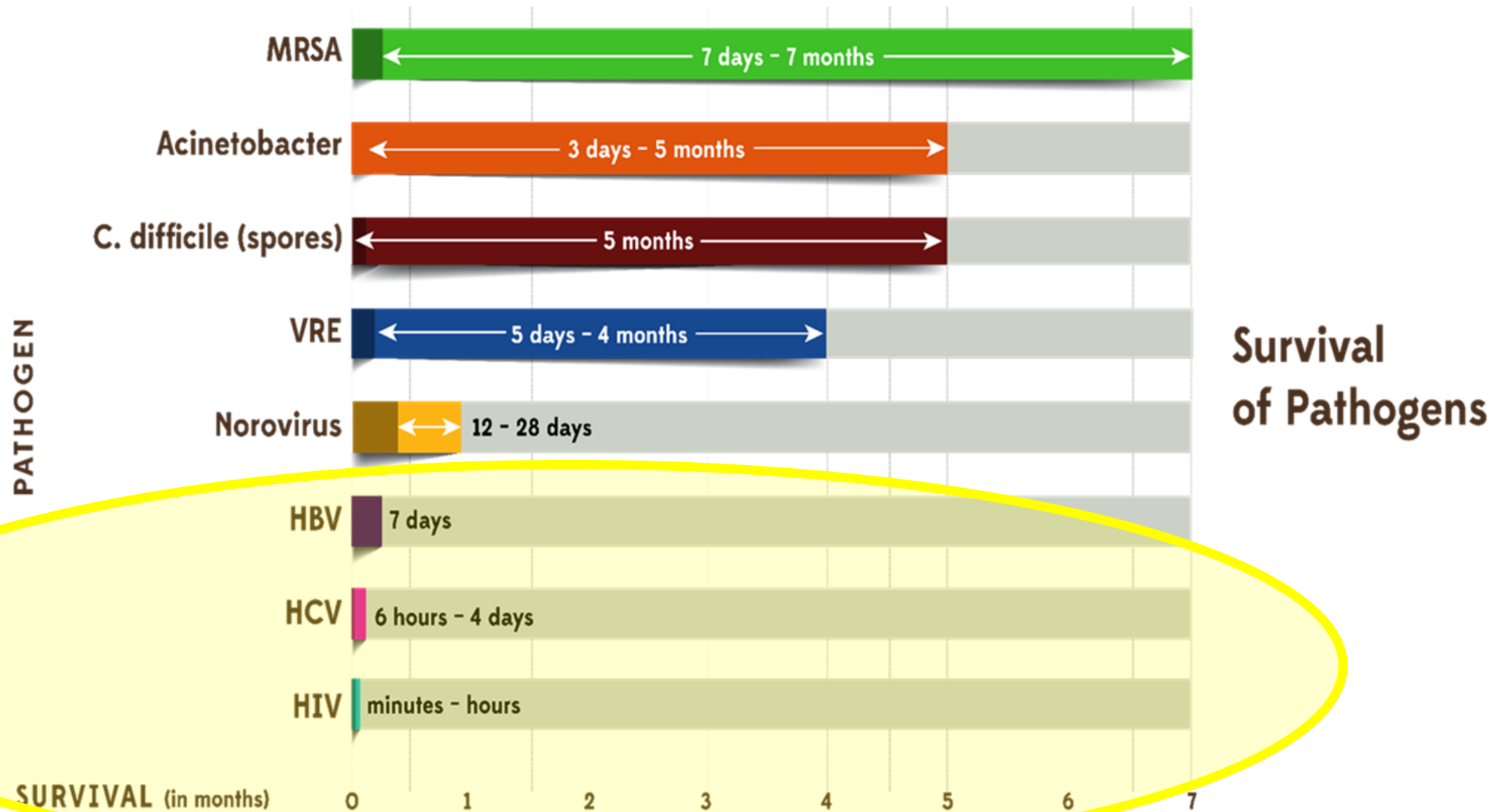
Infections - 31

Deaths - 6

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*Reported To CDC 2008-2017*

# SURVIVAL ON SURFACES



# BEST PRACTICES FOR ASSISTED BLOOD GLUCOSE MONITORING

## ▶ Finger sticks

▶ Single-use, auto-disabling finger stick devices that are disposable should be used to prevent reuse.

▶ Dispose of used lancets; NEVER reuse lancets.

▶ Wash hands prior to performing finger stick

▶ Use an alcohol pad to scrub finger and allow to dry prior to finger stick.



# BEST PRACTICES FOR ASSISTED BLOOD GLUCOSE MONITORING

- ▶ 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.



# CLEANING AND DISINFECTION OF GLUCOMETER

- ▶ If sharing glucometers, they must be cleaned and disinfected after **EACH** use.
- ▶ **MUST** follow manufacturer's instruction for use (IFU).
  - ▶ CANNOT USE ALCOHOL PREP PADS for cleaning and disinfection- this is not an EPA registered disinfectant
- ▶ **MUST** follow manufacturer's instructions for use (IFU)
- ▶ Follow **CONTACT** time for disinfectant
  - ▶ Sometimes called "dwell time," this is the amount of time a disinfectant needs to sit on a surface, without being wiped away or disturbed, to effectively kill germs.
- ▶ Once completely cleaned and disinfected, glucometer must be placed in a clean area and away from inadvertent contamination

# CLEAN VS DIRTY

- ▶ It's important and imperative to know:
  - ▶ What surface is clean
  - ▶ What surface is dirty
  - ▶ How to keep them separated
- ▶ Meters dedicated to individual residents should be stored in the resident's room if feasible.
- ▶ If not feasible to store in the room, disinfect after use, label with the resident's name and store in a manner to prevent contamination and inadvertent use on another resident.
- ▶ All non-critical reusable equipment (i.e shared glucometer) should be stored between use in a manner to prevent inadvertent contamination by the environment or healthcare personnel hands





# INFECTION PREVENTION PRACTICES FOR SAFE INJECTIONS

## ▶ Syringe re-use, directly or indirectly

- ▶ 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



## ▶ Inappropriate use of single dose or 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



## ▶ Failure to use aseptic technique (contamination of injection equipment)

- ▶ Keep contaminated items and surfaces away from the preparation area.
- ▶ Designate a 'clean' medication preparation area that is not adjacent to contaminated items
- ▶ Perform hand hygiene before handling medications.



# INFECTION PREVENTION PRACTICES FOR SAFE INJECTIONS



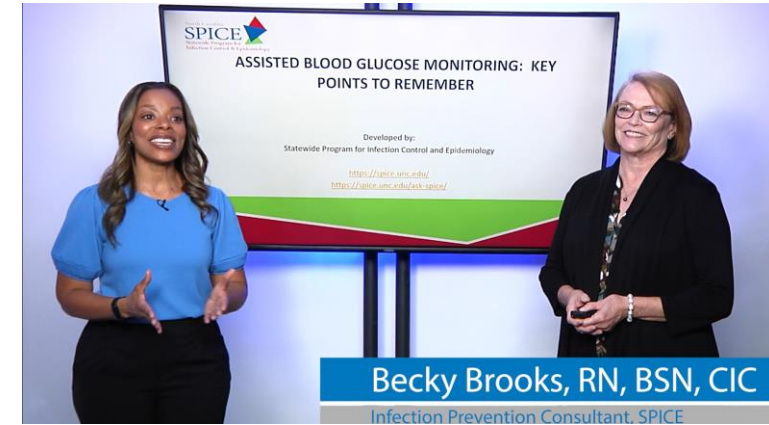
- ▶ Unsafe diabetes care/ assisted blood glucose monitoring (ABGM)
  - ▶ Use insulin pens and lancing devices for only one patient
  - ▶ Dedicate glucometers to a single patient. If they MUST be shared, clean and disinfect after each use



- ▶ Drug Diversion
  - ▶ Institute drug diversion monitoring systems and security measures to assist in averting and/or identifying diversion activity.

# TRAINING, OVERSIGHT, AND COMPETENCY

- ▶ Adequately train staff in safe injection practices
- ▶ Review regularly individual schedules for persons requiring assistance with blood glucose monitoring and/or insulin administration.
- ▶ Provide a full hepatitis B vaccination series to all previously unvaccinated staff persons whose activities involve contact w/ blood or body fluids.
- ▶ Report to public health authorities any suspected instances of a newly acquired bloodborne infection, such as hepatitis B, in a patient, facility resident, or staff member.



## HICPAC RECOMMENDED CORE PRACTICES: INJECTION AND MEDICATION SAFETY TOOLKIT



Welcome to this second toolkit in the Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings Series

Developed by:  
NC Statewide Program for Infection Control and Epidemiology (SPICE)

# MONITORING AND FEEDBACK

- ▶ Establish responsibility for oversight of infection control activities. Provide staff members who assume responsibilities for fingersticks and injections with infection control training.
- ▶ Assess adherence to infection control recommendations for blood glucose monitoring by periodically observing staff who perform or assist with these procedures and tracking use of supplies.

Point of Care Testing (e.g., glucometer, PT/INR)	Competent		N/A
	YES	NO	
13. Perform hand hygiene			
14. Don gloves			
15. Single-use, auto-disabling fingerstick device used for one patient only & discarded into sharps container			
16. Individual patient dedicated glucometer (preferred) is stored to avoid cross-contamination and inadvertent use on additional patients (ideally, in the patient room)—best practice is to clean/disinfect prior to storage per manufacturer's instructions			
17. Shared glucometers/equipment must be cleaned and disinfected after every use per manufacturer's instructions (if the manufacturer does not specify how the device should be cleaned and disinfected, then it should not be shared)			
18. Gloves removed			
19. Hand hygiene performed			

Comments or follow up actions:

\_\_\_\_\_  
Employee Signature

\_\_\_\_\_  
Validator Signature

\_\_\_\_\_  
Date

CDC at <http://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html>  
One and Only Campaign at <http://www.oneandonlycampaign.org/>

NC SPICE; 9-2016

<https://spice.unc.edu/wp-content/uploads/2017/03/Injection-Safety-Competency-SPICE.pdf>

ALSO IT'S EXTREMELY IMPORTANT TO....



# ONE AND ONLY CAMPAIGN

- ▶ The *One & Only Campaign* is a public health effort to eliminate unsafe medical injections.
- ▶ Led by CDC and the Safe Injection Practices Coalition (SIPC), the campaign seeks to raise awareness among patients and healthcare providers about safe injection practices
- ▶ Provides resources such as:
  - ▶ Videos
  - ▶ Guideline pocket cards
  - ▶ Safe Injection Practices Checklist
  - ▶ Posters
  - ▶ Education for patients



<https://www.cdc.gov/injectionsafety/one-and-only.html>







# REFERENCES

- ▶ <https://www.cdc.gov/hepatitis/outbreaks/pdfs/healthcareinvestigationtable.pdf>
- ▶ <https://www.cdc.gov/hepatitis/>
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- ▶ <https://www.cdc.gov/injectionsafety/blood-glucose-monitoring.html>
- ▶ <https://www.cdc.gov/injectionsafety/one-and-only.html>
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- ▶ Images from: <https://phil.cdc.gov/>, Microsoft stock photos and NC SPICE