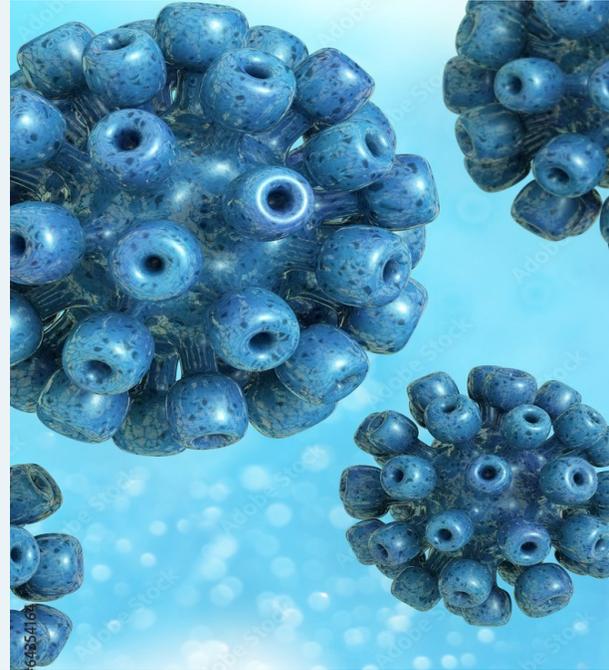


## Hepatitis B and C Transmission Prevention in Healthcare Settings

By: Calli Laskowski, MPH

### Background and Epidemiology of Hepatitis B and C:

Preventing the transmission of hepatitis B and C in healthcare settings serves to protect both patients and healthcare providers from infection. Hepatitis B virus (HBV) and hepatitis C (HCV) are both transmitted via contact with blood or other bodily fluids ([CDC, 2020](#), [CDC, 2022](#)). The incubation period, or the period of time between exposure to the virus and onset of clinical symptoms is approximately 12 weeks for hepatitis B and 2-12 weeks for hepatitis C. The population at risk is similar for both hepatitis B and C and includes people living with HIV, people who inject drugs, men who have sex with men, people who have ever received hemodialysis or organ transplants prior to widespread infectious disease testing, people with potential household, sexual, or occupational exposure, and infants born to people living with hepatitis B or C ([CDC, 2020](#), [CDC, 2022](#)). [\(Page 2\)](#)



## Multidrug-resistant Organisms and Enhanced Barrier Precautions in Skilled Nursing Facilities

By: Cara Bicking Kinsey, PhD, MPH, RN, CIC

### What are Multidrug-resistant Organisms?

Multidrug-resistant organisms (MDROs) are common pathogens that have developed resistance to multiple antibiotics and can infect or colonize the gut, skin, or other body sites. They can be transmitted in healthcare settings, including skilled nursing facilities, and contribute to resident morbidity and mortality, and increased healthcare costs. Preventing transmission of MDROs poses a unique challenge for skilled nursing facilities.

### What are Enhanced Barrier Precautions?

In recognition and support of providing a safe, home-like environment for skilled nursing facility residents, the Centers for Disease Control and Prevention (CDC) and the Pennsylvania Department of Health, Bureau of Epidemiology (PA DOH, BOE) recommend Enhanced Barrier Precautions (EBP) for residents colonized with an MDRO and residents at-risk of acquiring MDROs, in situations where contact precautions do not apply. At-risk residents include those with open wounds or indwelling devices who are not known to be infected or colonized by an MDRO. [\(Page 3\)](#)

## Hepatitis B and C Transmission Prevention (continued)

In Pennsylvania, there were 823 cases of hepatitis B and 11,144 cases of hepatitis C reported to CDC in 2021 (PA-NEDSS, 2023).

### Background of Hepatitis B and C Transmission in Healthcare Settings:

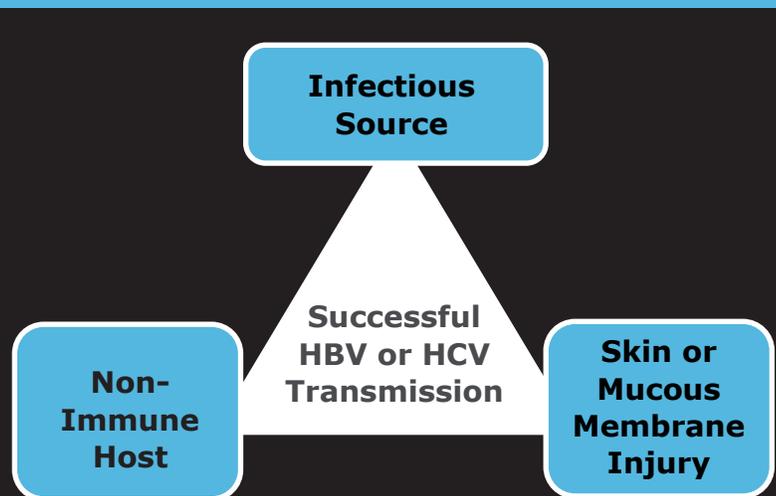
A CDC analysis identified 66 healthcare-associated outbreaks of viral hepatitis from 2008-2019 nationally which were associated with 267 cases and over 125,000 at-risk people notified for screening ([CDC, 2020](#)). In Pennsylvania specifically, there were three hepatitis B and seven hepatitis C outbreaks in healthcare settings during this time frame which were associated with 51 cases and over 947 at-risk people notified for screening ([CDC, 2020](#)). In PA, the most common locations for these outbreaks were long-term care facilities, outpatient facilities, and hemodialysis settings; and the most common causes were the shared use of fingerstick devices and glucometers, lapses in hand hygiene, and the reuse of single-use vials and syringes for multiple patients ([CDC, 2020](#)). These outbreaks, both at the national and state levels, are entirely avoidable and can be prevented by employing effective strategies.

### Prevention of Hepatitis B and C Transmission in Healthcare Settings:

Askarian et al. writes "Hepatitis virus transmission requires a non-immune host, an infectious source, and skin or mucous membrane injury. These three aspects are the main fields for preventional interventions." The hepatitis B vaccination is a very effective way to confer immunity and will reduce the number of non-immune hosts. In addition, employing standard precautions and working to prevent needlestick injuries can reduce skin or mucous membrane injuries ([Askarian et al., 2011](#)).

To protect healthcare providers from contracting HBV and HCV, universal or standard precautions, like practicing good hand hygiene and wearing gloves, masks, eye protection, and a gown when one could be exposed to infectious fluids, should always be implemented ([Broussard et al., 2017](#)). Additionally, ensuring healthcare providers are vaccinated against hepatitis B, and preventing needlestick injuries by avoiding re-sheathing needles will also work to prevent transmission to healthcare providers. To prevent HBV and HCV transmission to patients, it is important to never reuse single-dose/single-use vials, fingerstick devices, or insulin administration equipment for multiple patients ([CDC, 2011](#), [CDC, 2012](#)). Glucometers should not be shared between multiple patients, but if they must be, they need to be cleaned and disinfected according to the manufacturer's instructions after each use.

**If just one of these aspects, or points on the triangle, are eliminated, hepatitis virus transmission is prevented.**



[...continued on Page 3](#)

(continued from Page 2)

Some glucometers, however, are recommended strictly for single patient use so it is important to check the manufacturer's instructions prior to use ([CDC, 2011](#)).

HBV and HCV transmission from healthcare providers to patients can also be prevented by working to prevent drug diversion for IV medications ([Pfrimmer, 2015](#)). CDC has created a campaign called *One and Only* to promote safe injection practice and prevent the spread of bloodborne pathogens like HBV and HCV which emphasizes using one needle, one syringe, only one time (Figure) ([CDC, 2019](#)). By employing these prevention strategies, healthcare settings will be safer for both patients and healthcare providers alike.

## Multidrug-resistant Organisms and Enhanced Barrier Precautions in Skilled Nursing Facilities (continued)

By: *Cara Bicking Kinsey, PhD, MPH, RN, CIC*



**High-contact resident care activities where gown and gloves should be used for Enhanced Barrier Precautions (EBP)**

- Dressing
- Bathing or showering
- Transferring
- Changing linens
- Providing general hygiene assistance
- Assisting with toileting or changing briefs
- During the care and use of central lines, urinary catheters, feeding tubes, and tracheostomy tubes
- During wound care

[New CDC recommendations](#) describe Enhanced Barrier Precautions (EBP) as healthcare workers using gowns and gloves during high-contact resident care activities and providing a private room or a roommate with fewer risk factors, while allowing unrestricted movement in the facility. EBP remains an option for residents as long as all body fluids are controlled.

### Use EBP for:

- 1) any resident infected or colonized with a targeted or epidemiologically important multidrug-resistant organisms (MDRO) when contact precautions are not otherwise applicable; and
- 2) any resident with a wound or indwelling medical device, regardless of MDRO colonization status.

### Why do we need EBP?

Protecting at-risk residents requires EBP to be used both on those known to carry MDROs, as well as those at increased risk of becoming newly infected with an MDRO. When applied to colonized or infected residents, EBPs are effective at preventing transmission of MDROs. Unfortunately, MDRO colonization can remain undetected for long periods, which poses a unique and insidious risk to residents with wounds and indwelling medical devices. Expanding use of EBP to include at-risk residents can prevent further spread.

Furthermore, MDRO colonized residents can later become clinically ill because of those MDROs, which can complicate their treatment and impact quality of life.

[...continued on Page 4](#)

## Multidrug-resistant Organisms and Enhanced Barrier Precautions in Skilled Nursing Facilities (continued)

### When do we need to use Contact Precautions and not EBP?

Follow your facility policy and [CDC Guidelines \(Section III.B.1. and Appendix A\)](#). Contact Precautions are recommended if the resident has acute diarrhea, draining wounds, or other sites of secretions or excretions that are unable to be covered or contained. Contact precautions may be indicated for a limited period of time during a suspected or confirmed MDRO outbreak investigation.

If neither of these apply and the resident does not have another indication for Contact Precautions (like *Clostridioides difficile*, scabies, or norovirus), then Enhanced Barrier Precautions could be used, unless otherwise directed by public health authorities.

### We are using Modified Contact Precautions for residents with an MDRO.

#### What do we do now?

In previous BOE communications, we recommended modified contact precautions (mCPs) for residents of nursing homes with MDRO colonization or infection.

Both mCP and EBP are based on risk-based protocols that balance protection for at-risk residents to prevent MDRO spread while respecting quality of life needs. With the introduction of EBP, the term mCPs will no longer be used in BOE communications; this allows for usage of a term that more accurately reflects current trends in infection control and aligns with CDC language.

More information and resources to assist in your implementation of EBP are available on the [CDC website for PPE in Nursing Homes](#) and [CDC FAQs for EBP](#) and will be forthcoming from the Division of HAIP.

### The CDC provides the following examples of indwelling medical devices:

Central Line  
Urinary Catheter  
Feeding Tube  
Tracheostomy or Ventilator

*"At the Masonic Villages at Elizabethtown, we implemented Enhanced Barrier Precautions (EBP) on September 1 2022, because we wanted to ensure that our staff was using best practices in reducing the spread of multi-drug resistant organisms in our facility. We believe our success can be attributed to providing education that was easy to understand and implementing interventions that were reasonable and realistic for our staff to carry out. The key trend that we have observed since implementation is that those residents who have been placed on EBP have been freed from the need of isolation while at the same time staff are protected and less likely to transmit a potentially harmful organism to others. We believe other nursing homes could be successful by starting with a single action such as gathering a list of all current residents with a history of a multi-drug resistant organism and/or openings from the outside of their skin to the inside. Once you have your list, communication between medical, nursing and infection control staff is the key to keeping your list updated and your efforts in infection control sustained."*

**-Mary Pat Frick, BSN, RN,**  
Infection Preventionist

[...continued on Page 5](#)

## Multidrug-resistant Organisms and Enhanced Barrier Precautions in Skilled Nursing Facilities (continued)

### Recommendations and Challenges

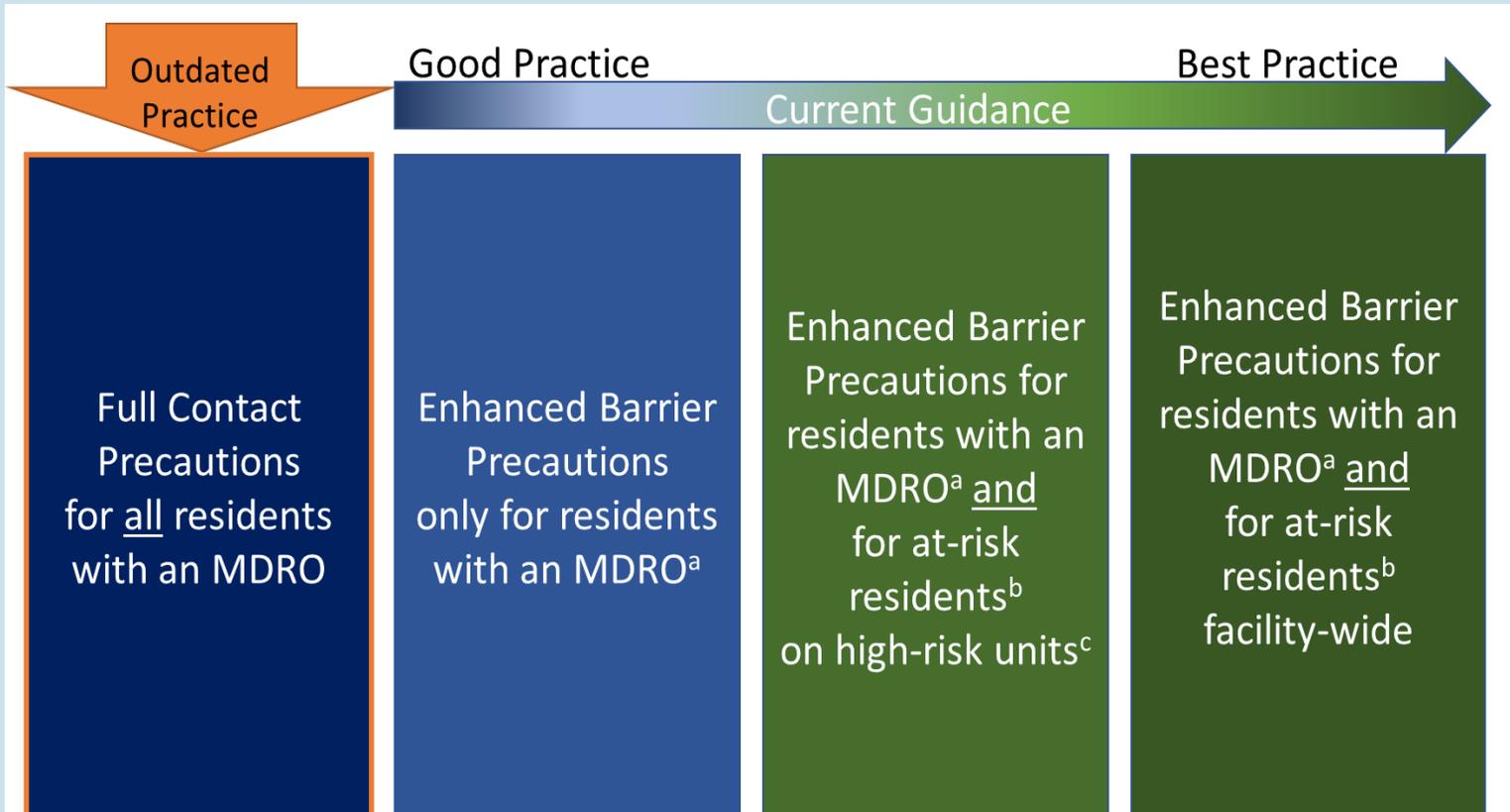
The Pennsylvania Department of Health recognizes that implementing EBP in skilled nursing facilities comes with challenges. Effective use of EBP requires staff training in the proper use of personal protective equipment (PPE) and protocols related to EBPs. It also requires that PPE and hand hygiene supplies are available at the point of care. Standard precautions still apply to care of all residents.

Although the use of EBP can take additional

effort, planning and resources, the approach offers a balance of protection and quality of life for residents infected or colonized with an MDRO and at-risk residents. Efforts in training, PPE, and resident evaluation can help maintain a better quality of life in a safer environment for all residents throughout a facility. Preventing the spread of MDROs may help to manage long term PPE use and personnel time by limiting the number of residents who require specialized medical care or treatment.

**The figure below shows the continuum of transmission-based precaution options for residents of skilled nursing facilities related to preventing transmission of multi-drug resistant organisms (MDROs); with a good option listed on the left and the best option on the right.**

More information and resources to assist you in your implementation of EPB are available on the [CDC website for PPE in Nursing Homes](#) and [CDC FAQs for EBP](#) and will be forthcoming from the Division of HAIP.



<sup>a</sup> For residents who are colonized or infected with an MDRO and do not otherwise need full contact precautions

<sup>b</sup> At-risk residents are those with wounds or indwelling medical devices

<sup>c</sup> High-risk units are those that include residents who are colonized or infected with an MDRO or those where medical acuity is high, like ventilator care units

# Antimicrobial Resistant Organisms Reported in Pennsylvania

Carbapenemase	Quarter 1 - 2023 (01/01/2023 – 03/30/2023)				
	CRE	CRAB	CRPA	Unknown	Total by Mechanism
KPC	12	0	0	2	14
NDM	11	0	0	1	12
IMP	0	0	0	0	0
OXA-like	3	18	0	12	33
VIM	0	0	1	0	1
Carbapenemase detected by phenotype, no genotype detected	0	0	0	0	0
Total by Organism	24	18	1	14	57*
		Clinical	Colonized	Total	
<i>Candida auris</i>		4	8	12	

**Abbreviations:** CRE=Carbapenem-resistant *Enterobacteriales*; CRAB=Carbapenem-resistant *Acinetobacter baumannii*; CRPA=Carbapenem-resistant *Pseudomonas aeruginosa*. Learn more about carbapenemases and CRE at [CRE Technical Information | CRE | HAI | CDC](#)

\*Data include all counties in PA except for Philadelphia. The counts were captured through voluntary reporting by health care facilities and laboratories, including the PA Bureau of Laboratories. To view Philadelphia's surveillance data, please visit their website at <https://hip.phila.gov/data-reports-statistics/healthcare-associated-infections>.

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Reported Health care-Associated Hepatitis B and C Outbreaks | CDC. (2020). . Retrieved December 14, 2022, from <https://www.cdc.gov/hepatitis/outbreaks/healthcarehepoutbreaktable.htm>

## Bureau of Epidemiology

Division of Healthcare-Associated Infection Prevention  
Pennsylvania Department of Health, Health & Welfare Building  
625 Forster Street Harrisburg, PA 17120 Phone: 717-787-3350

Contact Us At: [RA-DHHAI@pa.gov](mailto:RA-DHHAI@pa.gov)



## May is Hepatitis Awareness Month

During May, [CDC](#) and their public health partners work to shed light on the impact of these hidden epidemics by raising awareness of viral hepatitis while encouraging testing and vaccination. [Hepatitis Awareness Month](#) activities help to improve everyone's understanding of viral hepatitis transmission and risk factors; and to decrease social stigma against viral hepatitis.

## Society for Healthcare Epidemiology

SHEA updated their hand hygiene recommendations in 2022. Product of a collaborative effort led by SHEA, the Infectious Diseases Society of America (IDSA), and the Association for Professionals in Infection Control and Epidemiology (APIC). Read summary and access link to update at [Hand Hygiene is Focus of Updated Advice to Prevent Healthcare-Associated Infections](#)

## American Society for Healthcare Engineering (ASHE)

ASHE published an update to their Construction [Infection Control Risk Assessment 2.0 Matrix](#) in 2021. IPs are encouraged to review and integrate the revisions into their construction documents. The revisions developed by a multidisciplinary team of IPs, industrial hygienists, a construction team, and facility managers expands the descriptive language in the matrix tables. This includes adding activities and descriptions to the construction activity type to add or clearly discern activities such as maintenance of building systems, duration of activity, invasive electrical work above ceilings and more.

## Advisory Committee on Immunization Practices (ACIP)

ACIP met in October of 2022 and February of 2023 and approved new [recommendations](#) for mpox vaccination, changes to pneumococcal vaccine dosing, and the 2023 child and adolescent immunization schedules.

## 2019 HAI REPORT AVAILABLE ONLINE

The 2019 HAI Report from the Healthcare-Associated Infection Prevention and Antimicrobial Stewardship Division is now available to view [online](#) here. This report contains summary measures for several CDC defined healthcare-associated infections from a variety of hospitals.

## SAVE THE DATE!

Oct. 19–20, 2023

## FOR PENNSYLVANIA'S FIRST ANNUAL HAI SUMMIT

This virtual event with content focused on scientific advances related to healthcare-associated infections, multidrug resistant organisms, and antimicrobial stewardship.

## Pennsylvania Patient Safety Reporting System (PA-PSRS)

Reporting of healthcare-associated infections (HAIs) is required by law. The Health Care-Associated Infection Prevention and Control Act of 2007, or "Act 52," requires Long-Term Care facilities to electronically report resident-specific HAIs using nationally recognized standards (revised McGeer Criteria). These HAIs are reported through the Pennsylvania Patient Safety Reporting System (PA-PSRS).

As a requirement of Act 52, a Serious Event disclosure letter must be completed for all reported HAIs to notify the resident and/or the family of the event, and provide a written verification of the event itself within seven days of confirmation of the HAI.

The reports you submit to PA-PSRS are confidential. While you can view your own reports, the collective reports are only accessible by the PA Department of Health and the Patient Safety Authority (PSA).

**If you have any questions about reporting into PA-PSRS,** please contact one of the PSA Infection Preventionists.

**JoAnn Adkins**  
[joaadkins@pa.gov](mailto:joaadkins@pa.gov) 717-756-0696

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**Christine Bingman**  
[cbingman@pa.gov](mailto:cbingman@pa.gov) 570-492-2051

**PSRS Help Desk**  
[Support\\_papsrs@pa.gov](mailto:Support_papsrs@pa.gov) 717-547-7990

**CANDIDA AURIS**

Emerging Infection  
While in the U.S. since 2016, the first PA case occurred in 2020 and

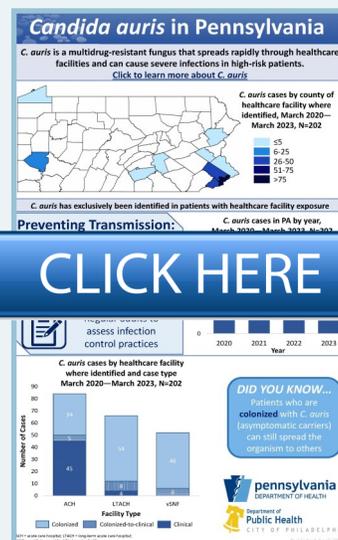
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pennsylvania DEPARTMENT OF HEALTH

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