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Post-Exposure Prophylaxis in the Office Setting Expanding the Role of Practicing Physicians in the Public-Private Disease Control Partnership

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Broadly speaking, medicine seeks to provide (i) accurate diagnosis, effective treatment, and informative prognosis, as well as (ii) various preventive interventions of which immunization is the most notable. Healthcare providers can also, in special circumstances, prescribe preventive measures, which can be given even after exposure to certain infectious diseases, but before infection, or clinical manifestations develop. Depending on the infection in question, these measures may consist of antibiotics, vaccines, or immune globulins (singly or in combination) and are referred to as "Post-exposure prophylaxis" or simply "PEP." A familiar example of PEP is provision of a suitable antibiotic to household contacts of persons with invasive meningococcal infection. This is one of the classic examples of PEP, as data that form the basis for the practice come from studies conducted over 30 years ago (The Meningococcal Disease Surveillance Group, 1976). Another classic, and nowadays even more common, example of PEP is the provision of antibiotics to household contacts of patients with pertussis.

In the past, provision of PEP has largely been the province of public health efforts provided in the community. However, in February 2011 the South Carolina Board of Medical Examiners (SCBME) updated its policy which now not only explicitly approves, but indeed recommends that practicing physicians provide PEP in situations where PEP is recommended by recognized professional and public health organizations (SCBME, 2011)¹. (*See box, page 5.*) This is usually done in collaboration with DHEC in a *public-private partnership*.

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Update on CLABSI Reporting

From the Healthcare Associated Infections Section, SC DHEC Division of Acute Disease Epidemiology

Central-line associated blood stream infections (CLABSIs) are serious infections that occur when bacteria enter the bloodstream through a vascular catheter. Approximately 80,000 CLABSIs occur in the U.S. each year, with an annual cost of \$296 million to \$2.3 billion over the anticipated cost of care. These infections have been shown to prolong hospitalization for 5-20 days, with an attributable cost of \$34,000-56,000 per patient. Since October 1, 2008, Medicare has not allowed payment for costs associated with vascular catheter-associated infections that were not present on admission.

In South Carolina, currently 81 facilities report CLABSIs and certain surgical site infections (SSIs) to the Department of Health and Environmental Control (DHEC) through the National Healthcare Safety Network (NHSN). Data are tracked by NHSN using a Standardized Infection Ratio (SIR), which compares the actual

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Web Resources to Bookmark

Compiled from DHEC Website (www.scdhcc.gov)

How do I manage an animal bite where there is a concern about rabies:

Find it: SCDHEC.gov home page >> In the News >> [Physician Guide to Rabies Post-Exposure Prophylaxis](#)

Click it: [DHEC Guide to Managing Animal Exposures and Rabies Postexposure Prophylaxis](#)

What diseases are reportable, and when?

Find it: SCDHEC.gov home page >> [Diseases and Conditions](#) >> Resources and Programs >> Click Reportable Conditions.

Click it: [SC List of Reportable Conditions](#) and [Laboratory List of Reportable Conditions](#) (PDF). The [Reportables.htm](#) page can be read on a phone, tablet, etc.

Where can I find a quick reference with information for health professionals on diseases and DHEC resources?

Healthcare Professionals Quick Reference:

Find it: SCDHEC.gov home page >> [Diseases and Conditions](#). Click any of the Conditions that interest you, OR

Find it: SCDHEC.gov home page >> [Diseases and Conditions](#) >> Resources and Programs >> [Healthcare Professionals' Quick Reference](#)

Click it: [Healthcare Professionals' Quick Reference](#).

Acute Disease Epidemiology A-Z Quick Index (covers all of the reportable conditions)

Find it: SCDHEC.gov home page >> [Diseases and Conditions](#) >> Resources and Programs >> [A-Z Disease Resources](#).

Click it: [A-Z Disease Resources](#)

How bad is the flu this year?

Find it: SCDHEC.gov home page >> Data, Reports & Statistics >> [Flu \(Influenza\)](#)

Click it: [South Carolina Influenza Activity and Surveillance \[Current\] Season](#)

Where are the latest Health Alerts?

Find it: SCDHEC.gov home page >> In the News >> [Health Alert Network](#) >> [Latest Public Health Notifications](#)

Click it: [Public Health Notifications](#) (posted by year)

What shots are required for school or childcare this year?

Find it: SCDHEC.gov home page >> [Healthy Living & Prevention](#) >> Topics >> [Immunizations](#) >> [Immunization Division](#) >> From the Box on the left: [Childhood, Adolescent & Adult Immunizations](#) >> [Immunization Requirements for School and Day Care, 2011-2012](#).

Click it: [Immunization Requirements for School and Day Care 2011-2012](#) (pdf)

The screenshot shows the DHEC homepage with a navigation bar at the top featuring links for Health, Environment, Services, Permits, Regulatory, and A-Z. A search bar is also present. The main content area includes a red banner with the text "Get a flu vaccine. It's the best way to prevent the flu. protect yourself. protect your family. prevent the flu." Below the banner are three main sections: "Quit Smoking", "Get Smart About Antibiotics", and "Get a Flu Vaccine". Each section has a corresponding image and a brief description. To the right, there is a sidebar titled "In the News" listing various news items like "Bath Salts' Drug Debate" and "Listeria/Cantaloupe-associated outbreak". Another sidebar titled "People Want to Know" lists topics such as "Vital Records" and "Emergency Medical Services". At the bottom, there are links for "Regulatory Compliance" and "Emergency Preparedness & Response".

If you are a health professional interested in receiving health notifications from the **South Carolina Health Alert Network**, please contact Shana Dorsey, HAN Coordinator at 803-898-0431 or email DADE-OC@dhec.sc.gov.

Epi Clips

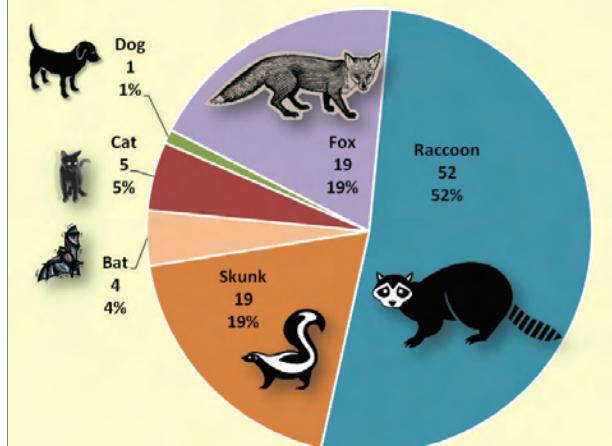
Compiled by staff in the SC DHEC Division of Acute Disease Epidemiology

Reports received by SC DHEC for animal bites, where rabies PEP was recommended by a healthcare provider:

January 1 through November 30, 2011

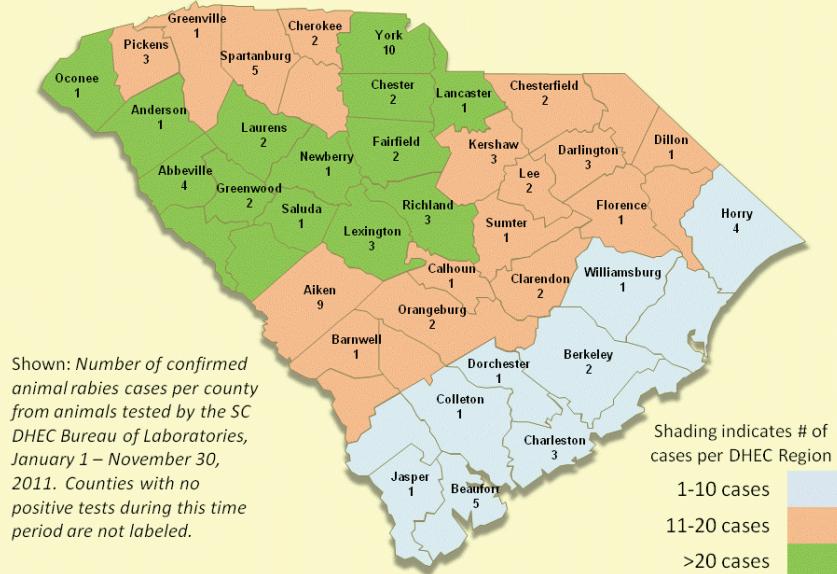
Mammal Species	# of Bites for which PEP was recommended (%)
Bat	16 (24.6)
Cat	4 (6.2)
Dog	26 (40.0)
Fox	3 (4.6)
Raccoon	13 (20.0)
Other Wild	3 (4.6)

Positive Rabies Test Results by Animal Species, South Carolina, January 1-November 30, 2011



Animal testing data courtesy of
Sue C. Ferguson, REHS/RS
Director, Division of General Sanitation
SC DHEC Bureau of Environmental Health

Positive Animal Rabies Testing in SC, YTD 2011



Post-Exposure Prophylaxis in the Office Setting

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In the last few years, a similar intervention has been introduced in relation to certain sexually transmitted diseases. This is referred to "Expedited Partner Therapy" (EPT), which is the practice of treating the sex partners of patients diagnosed with chlamydia, gonorrhea or trichomoniasis by providing prescriptions or medications to the patient to take to his/her partner without the health care provider first examining the partner. The CDC devotes an entire web page (www.cdc.gov/std/ept) to EPT, which contains useful links to numerous informative statements and endorsements of EPT from the American Medical Association, the American College of Obstetricians and Gynecologists and other medical organizations, as well as legal points of view from the American Bar Association.

Recognizing the importance of both PEP and EPT, the SCBME has now clarified that "PEP" or "Epi-treatment" of Sexually Transmitted Diseases can and should be provided "even in the absence of a previously established patient-physician relationship." The full text of the Medical Board's policy is shown in the box on page 5.

The rest of this article provides further information and context concerning the importance of such modes of therapy which need to be provided both (i) to prevent disease in persons so treated, as well as (ii) to help interrupt the "chain of transmission" of the infectious

EPT

"Expedited Partner Therapy" is the practice of treating the sex partners of patients diagnosed with chlamydia, gonorrhea, or trichomoniasis by providing prescriptions or medications to the patient to take to his/her partner, without the health care provider first examining the partner.

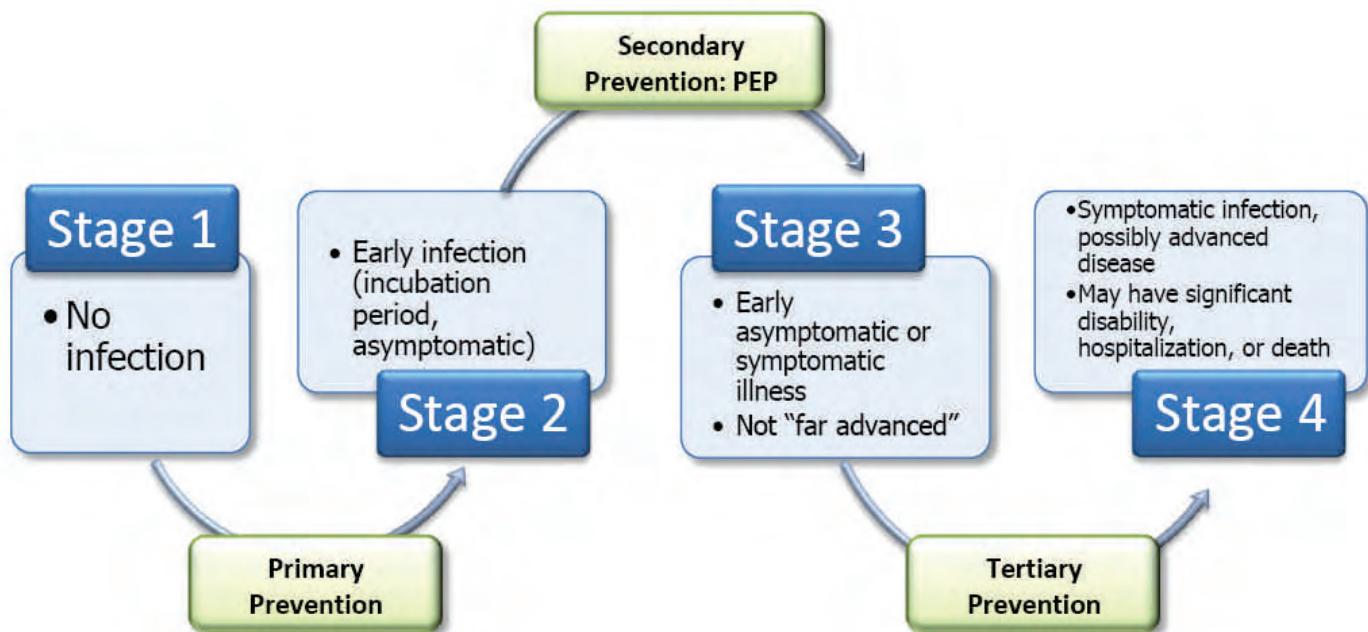
agent in question and thus further protect family members, sex partners, and indeed the public at large.

Conceptual Framework for Basis Post-exposure Prophylaxis Recommendations

Figure 1 presents a schematic view of the "stages" in the natural history of an infectious process, i.e., stages through which an infection may typically progress in the absence of any medical intervention. Preventive measures (so called *primary*, *secondary*, and *tertiary* prevention) thus serve to prevent progression from one stage to the next (Friis & Sellers, 2004). This model clarifies that PEP can best be conceptualized as a *secondary prevention* strategy, which prevents progression from asymptomatic infection to clinically manifest infection.

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Figure 1: 4 stages in the natural history of infection. Primary, secondary, and tertiary prevention are shown "blocking" the arrows, thus preventing progression to the next stage of illness.



Post-Exposure Prophylaxis in the Office Setting

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POST EXPOSURE PROPHYLAXIS POLICY

The SC Board of Medical Examiners, at its February 2011 meeting, voted to amend its policy regarding PEP as follows:

Post-Exposure Prophylaxis (PEP) or Epi-treatment of Sexually Transmitted Diseases (STDs), including Expedited Partner Therapy (EPT), is often recommended by numerous medical professional and public health organizations (notably the Centers for Disease Control [CDC], the American Public Health Association/ World Health Organization's Control of Communicable Diseases Manual, the American Academy of Pediatrics Red Book, or the South Carolina Department of Health and Environmental Control [DHEC]) to protect specific persons from acquiring contagious/communicable diseases from close contact with infected persons. The SC Board of Medical Examiners approves and recommends the prescribing of PEP or Epi-treatment (including EPT) of STDs in accordance with the most current established guidelines as published by these organizations, even in the absence of a previously-established patient-physician relationship (SCBME, 2011)

As shown in Table 1, the measures constituting *primary*, *secondary*, and *tertiary* prevention vary, depending on the infectious disease in question.

Table 1: Examples of Primary, Secondary and Tertiary Prevention for Selected Infectious Diseases

Disease	Type of Prevention		
	Primary	Secondary	Tertiary
Tuberculosis	<p>Wearing a mask when in room with a person with infectious TB.</p> <p>BCG vaccine is used as primary prevention in many countries, despite limited efficacy.</p>	<p>INH serves as preventive therapy: it is used against latent TB infection (LTBI) in order to prevent subsequent progression of LTBI to TB disease.</p>	<p>Treatment of TB disease to avoid destruction of lung tissue, dissemination of infection, or death.</p>
Hepatitis B	<p>Routine hepatitis B immunization (e.g. per standard infant vaccination schedule or for HCWs).</p> <p>Precautions when using "sharps" in clinical settings.</p> <p>Condoms to avoid sexual transmission.</p>	<p>PEP with HB Immune Globulin and/or vaccine following various exposures (e.g., needle sticks; sexual exposure; birth to a HBsAg positive mother.)</p>	<p>Anti-viral therapy to try to eradicate infection.</p> <p>Liver transplantation to avoid Hepatitis B virus-associated liver failure and death.</p>
Meningococcal Disease	<p>Immunization with meningococcal vaccine.</p>	<p>Antibiotic PEP for household (and selected other) contacts to cases in order to prevent recently acquired naso-pharyngeal colonization/ infection from progressing to invasive meningococcal infection.</p>	<p>Treatment of invasive meningococcal infection to prevent severe sequelae or death.</p>

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Post-Exposure Prophylaxis in the Office Setting

Table 2: Selected Infectious Diseases for which PEP and/or EPT are often required.

Type of pathogen	Disease	Examples of Indications for PEP	Typical PEP regimens*	Most common and/or of greatest likely importance for office-based physician.	Refs **
Zoonotic viral infection	Rabies	Person bitten by an animal proven to be, or suspected to be rabid (and animal not available for testing and/or observation)	HRIG Day Zero + Vaccine on days 0, 3, 7 & 14	~400 rabies PEP/yr in SC. PEP most often initiated in ED with follow-up vaccine doses administered in office or by pharmacist	(CDC, 2008a, 2010a)
Viral infections transmitted from person to person	Influenza	Household contacts***	Oseltamivir	YES	(CDC, 2011)
	Hepatitis A	Household contacts. Patrons of restaurant with an infected worker.	1 dose of Hepatitis A vaccine or IG	Now uncommon in SC	(CDC, 2007b)
	Hepatitis B	Household contacts. HCWs suffering needles sticks. Discreet sexual exposure.	Hepatitis B vaccine often (not always) in conjunction with HBIG.	HCW exposures more likely handled in Employee Health Setting. Newborn exposures handled in hospital setting.	(CDC, 2001, 2005c, 2006, 2008b)
Bacterial Infections	Pertussis	Household contacts. Selected day-care, school or other contacts.	Azithromycin	YES	(CDC, 2005b)
	Invasive Meningococcal Disease	Household contacts. Selected day-care, school or other contacts.	Ciprofloxacin, Rifampin or Ceftriaxone	YES	(CDC, 2005a)
	Tuberculosis	Household contacts. Selected work or other contacts.	INH or Rifampin	Most TB contacts managed (along with nearly all SC TB cases) in DHEC clinics.	(CDC, 2000, 2003)
Sexually Transmitted Infections ****	Gonorrhea	Sexual partner(s)	Ceftriaxone or Cefixime (+ treatment for possible or likely Chlamydia co-infection)	YES	(CDC, 2010b)
	Chlamydia	Sexual partner(s)	Azithromycin or Doxycycline (+treatment for possible or likely gonococcal co-infection)	YES	
	Trichomonas	Sexual partner(s)	Metronidazole	YES	

(*) Full details on PEP regimens (e.g., selection and doses of antibiotics) may be found in standard references, as well as in the links in the references section. In many instances, PEP may be provided through a single dose of immune globulin, vaccine or antibiotic.

(**) Most references in this table are to recommendations that appeared in CDC's *Morbidity and Mortality Weekly Report*, accessible from <http://www.cdc.gov/mmwr>. Recommendations are also available via standard texts, including the *Red Book* (American Academy of Pediatrics, 2009) or *Control of Communicable Diseases Manual* (American Public Health Association, 2008).

(***) The table lists "Household contacts" to cases of influenza as "examples" of persons for whom PEP with oseltamivir may be prescribed. However, the most detailed guidelines on the subject (Centers for Disease Control and Prevention, 2011) further nuance the recommendation by indicating that PEP should be considered especially for those who are at higher risk of influenza complications but have not been vaccinated against the influenza strains circulating at the time of exposure. Persons at such risk include those who (i) are ≤2 or ≥65 years of age, (ii) have certain chronic medical conditions, (iii) are morbidly obese, and (iv) women who are pregnant or post-partum (within 2 weeks of delivery).

(****) Syphilis contacts must receive injected penicillin G benzathine as PEP. However, these persons are also typically examined, as well as tested, at the time of treatment.

Post-Exposure Prophylaxis in the Office Setting

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Post-Exposure Prophylaxis in Every Day Practice

Over time, physicians may deal with many dozens of different viral, bacterial, or other pathogens. From a practical point of view, however, the number of infections for which physicians in practice may provide PEP or EPT is generally limited. Table 2 (previous page) lists 10 conditions for which PEP or EPT may be indicated. Highlighted items are conditions that are commonly encountered and/or conditions of greatest importance in primary care practice setting.

Examples of Public-Private Partnerships for Provision of PEP and EPT

Though standard references from the CDC, the AAP, APHA, and others recommend PEP and/or EPT in certain situations, they do not address the question of *who should actually be responsible for writing the prescriptions*. Fortunately, for providers in South Carolina, much of this ambiguity has now been resolved thanks to the 2011 Board of Medical Examiners policy (see Box , page 5) **which now allows, and indeed recommends that PEP and EPT prescriptions can be written by practicing physicians even in the absence of an established patient-provider relationship.**

By way of examples, Table 3 presents three situations in which PEP or EPT is indicated for contacts to ill/infected persons. It suggests a practical division of responsibility in which the patient's primary care physician assumes responsibility of providing PEP for the immediate family, while DHEC would assume responsibility for a broader public health investigation and provision of PEP in a wider circle of contacts (e.g., in school, work or other setting as may be appropriate.)

Table 3: Examples of Public-Private Collaboration for Provision of PEP or EPT

Case	Situation	Shared Responsibility for PEP/EPT	
		Patient's Primary Care Physician (\$)	DHEC (public health)
1	8 year-old child diagnosed with pertussis by his primary care physician by means of PCR and culture for <i>Bordetella pertussis</i> . Child's mother has heard from parents of classmates that other children in school are also suspected as having pertussis.	Provides PEP with azithromycin prescriptions for the household members (e.g. for two parents, two sibling and a live-in aunt)	In collaboration with principle and school nurse, investigates the child's elementary school. Identifies other cases. Arranges for information letters to parents. Recommends PEP for subset of school children (and selected other contacts)
2	21 year-old year college student hospitalized with meningococcal meningitis. Lives in college dorm Monday-Thursday and at home Friday-Sunday. Just back from trip with college volleyball team.	Prescribes PEP prescriptions for household members (student's immediate family).	Coordinates investigation with the college and makes recommendations as to which dorm members such as roommates, suite-mates, others (e.g. girl friend, fellow team members) should receive PEP. Coordinates PEP as indicated with college health service and/or families of the other students in question.

(§) In some settings, PEP may be prescribed by an Emergency Department (ED) physician rather than by the patient's primary care provider: e.g. toxic patient with meningeal signs found to have Gram negative diplococci in ED spinal tap and admitted with provisional diagnosis of meningococcal meningitis. ED physicians may also provide PEP prescriptions on the spot for family members who have brought the patient to the ED as well as for other family members at home.

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Post-Exposure Prophylaxis in the Office Setting

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Table 3: Examples of Public-Private Collaboration to Provision of PEP or EPT (continued)

Case	Situation	Shared Responsibility for PEP/EPT	
		Patient's Primary Care Physician (\$)	DHEC (public health)
3	26 year-old woman found to have chlamydial cervicitis by her OB-GYN physician.	Treats patient for chlamydial infection and for possible gonococcal co-infection. Provides EPT for her partner by writing prescriptions for the same drugs which she can carry to him.	In simplest scenario (e.g. patient with uncomplicated infection and only one partner) DHEC typically not involved. However, in more complex scenarios, (e.g. patient also identified via laboratory surveillance to have co-infection with syphilis or HIV) DHEC may assist with partner notification, interviews, testing and treatment as indicated

Summary

Control of certain infectious diseases requires treatment of not only cases, but also PEP for household and other contacts at risk of becoming cases themselves. **In South Carolina, the State Board of Medical Examiners approves and recommends that physicians² provide PEP for family members (or EPT for sex partners) at risk. DHEC may then focus its increasingly limited resources on assuring that PEP will be provided to other community contacts at risk as indicated by a public health investigation.** Such public-private collaboration is in the best interests of patients' families and of the community at large. This *modus operandus* is emerging as the standard of care in efforts to control selected infectious diseases of public health importance.

Endnotes

1. Organizations promulgating authoritative guidance for postexposure prophylaxis include the Centers for Disease Control and Prevention, the American Academy of Pediatrics, the American Public Health Association, the Infectious Disease Society of America, and the American Thoracic Society.
2. The SC Board of Nursing has not issued a specific advisory opinion on the prescribing of PEP or EPT by advanced practice registered nurses in the absence of a provider-patient relationship.

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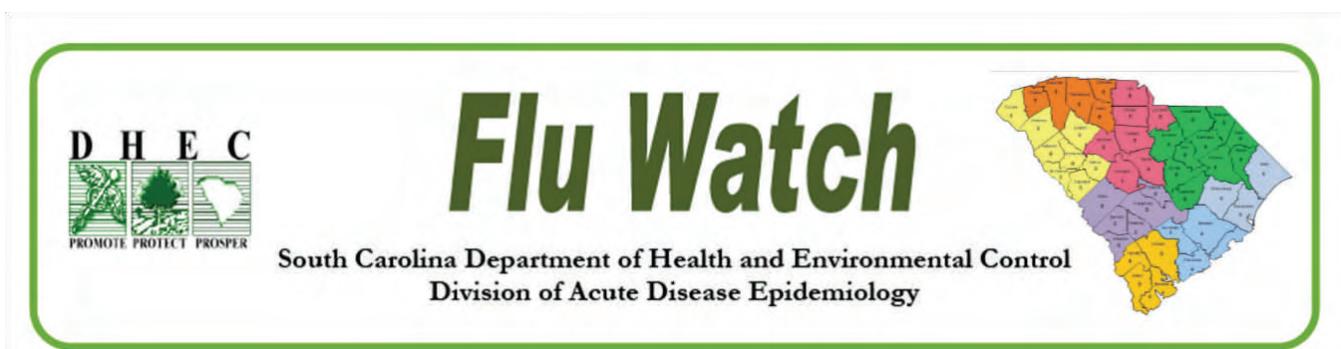
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Keep up with this flu season. Check the FluWatch page each week:

www.scdhec.gov/health/disease/acute/flu.htm



Summary of Conditions reported to SC DHEC January 1 through November 30, 2011

Compiled by Claire Youngblood, MA, Data Manager
 Division of Acute Disease Epidemiology

Condition	Confirmed	Probable[‡]	Suspect[‡]
Animal Bite, PEP Recommended	65	0	0
Aseptic meningitis	178	1	1
Campylobacteriosis	374	14	0
Cholera	1	0	0
Creutzfeldt-Jakob Disease	0	1	0
Cryptosporidiosis	63	62	1
Dengue Fever	1	2	2
Ehrlichiosis, chaffeensis	2	1	0
Ehrlichiosis, Human granulocytic	0	0	1
Ehrlichiosis/Anaplasmosis, undetermined	0	1	0
Encephalitis, LaCrosse	0	1	0
Giardiasis	108	3	2
Group A Streptococcus, invasive	103	0	0
Group B Streptococcus, invasive (<90 days of age)	46	0	0
Haemophilus influenzae, invasive	71	0	8
Hansen disease (Leprosy)	0	0	0
Hemolytic uremic syndrome, postdiarrheal	3	0	0
Hepatitis A, acute	11	0	4
Hepatitis B, acute	35	0	28
Hepatitis B virus infection, Chronic	97	376	12
Hepatitis B virus infection, Perinatal	0	0	0
Hepatitis C, acute	1	0	0
Hepatitis C Virus Infection, past or present	3,235	13	143
Hepatitis Delta co- or super-infection, acute	1	0	0
Hepatitis E, acute	2	0	1
Influenza, human isolates	496	0	0
Legionellosis	21	0	2
Listeriosis	7	0	0
Lyme disease	24	11	182
Malaria	5	0	1
Mumps	2	0	1
Neisseria meningitidis, invasive (Mening. disease)	9	0	0
Novel Influenza A Virus Infection	7	0	0
Pertussis	80	56	13
Q fever (all: acute, chronic, not specified)	1	2	1
Rubella	0	1	0

Summary of Conditions reported to SC DHEC January 1 through November 30, 2011

Condition	Confirmed	Probable [‡]	Suspect [‡]
S. aureus, vancomycin intermediate susc (VISA)	3	0	0
Salmonellosis	1,486	10	0
Scombroid Fish Poisoning	1	0	0
Shiga toxin-producing Escherichia coli (STEC)	17	0	14
Shigellosis	57	50	0
Spotted Fever Rickettsiosis	12	23	95
Strep pneumoniae, invasive	406	0	2
Streptococcal disease, invasive, IPD	1	0	0
Streptococcal toxic-shock syndrome	2	0	0
Tetanus	0	1	0
Toxic-shock syndrome, staphylococcal	0	3	0
Tuberculosis	95	0	0
Typhoid fever (Salmonella typhi)	1	0	0
Vancomycin-resistant enterococcus	1	0	0
Varicella (Chickenpox) (reportable only in outbreaks)	13	0	0
Vibrio parahaemolyticus	7	0	0
Vibrio spp., non-toxigenic, other or unspecified	2	0	0
Vibrio vulnificus infection	2	0	0
West Nile Fever	0	1	0
Yersiniosis	5	0	0

‡ Not all conditions on this list have an "official" probable or confirmed status defined. Case status indicated on these pages is based upon what is reported in the Carolina's Health Electronic Surveillance System.

Data are preliminary, and include only those reports for which a final cases status of confirmed, probable, or suspect has been assigned. Conditions with zero cases may have no reports, or may be the subject of on-going investigations. Most recent complete full -year data are available from the SC DHEC Annual Report on Reportable Conditions: http://www.scdhec.gov/health/disease/docs/Annual_Report_on_Reportable_Conditions.pdf. Questions may be directed to the Surveillance Section of the SC DHEC Bureau of Disease Control's Division of Acute Disease Epidemiology.

Update on CLABSI Reporting

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number of infections with baseline experience (assumed predicted numbers) for the facility. This yields a ratio of actual to predicted infections. An SIR greater than 1.0 indicates that more hospital acquired infections (HAIs) were observed than predicted; an SIR less than 1.0 means fewer HAIs were observed than predicted.

In March 2011, the CDC released data showing that, of 17 states with a mandate for reporting CLABSIs to NHSN, South Carolina was the only state to demonstrate a significant decrease in CLABSI SIRs. South Carolina's CLABSI rate dropped 30% July to December 2009 when compared to January

to June 2009, in continuously reporting facilities. (<http://www.cdc.gov/VitalSigns/HAI/>)

Furthermore, South Carolina is one of only a few states validating the data entered by healthcare facilities. Employees in the Healthcare Associated Infections Section of DHEC visit each facility and perform chart reviews to confirm the accuracy of data entered. By performing these validations, South Carolinians can have confidence that the data are meaningful and correct.

Read more about HAIs, including the SC DHEC HIDA Annual Report for 2010: <http://www.scdhec.gov/health/disease/hai/>



South Carolina Department of Health
and Environmental Control

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DISEASE REPORTING

For immediately reportable conditions, call your local county health department or, for after hours, call 1-888-847-0902. Routine reports may be phoned in to your local health department or mailed on a completed DHEC DISEASE REPORTING CARD (DHEC 1129.) Local county health department numbers are listed on the Official List of Reportable Conditions.

For a copy of the current Official List of Reportable Conditions, call 803-898-0861 or visit www.scdhec.gov/health/disease/index.htm.

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