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South Carolina Influenza Surveillance 2005-06 Season

Lena M. Bretous, MD, MPH
Medical Epidemiologist

Enhanced Avian Influenza A Surveillance

The CDC and SC DHEC continue to encourage 'enhanced' surveillance for patients with influenza like illnesses (ILI) who are at increased risk for avian influenza A. Risk patients include those with recent travel history, within 10 days of respiratory symptom onset, to an H5N1 affected country. The medical community needs to maintain vigilance in the clinical setting and consider the following actions:

1) Consistently obtain international travel history and other exposure risk information for persons with the following symptoms and circumstances:
   - Fever of >38C
   - One of more of the following: cough, sore throat, shortness of breath
   - History of contact with poultry, suspected or known human case in an H5N1 affected country.
2) Obtain rapid diagnostic laboratory tests for patients who are at risk for avian influenza
3) Rapidly implement infection control measures, as listed on the CDC website.
4) Immediately report the suspected case to the local health department for consultation and assistance in obtaining the appropriate testing. Please note that all suspected cases of human avian influenza must be reported to the local health department, which then consults with CDC.

Current Status of Confirmed Human Avian Influenza A Cases Reported to the WHO

According to the WHO (World Health Organization), as of September 19, 2005, the cumulative number of confirmed human cases of avian influenza A (H5N1) are: 91 in Viet Nam, 17 in Thailand, four in Cambodia and two in Indonesia.

(Continued on page 3)

Immunization Update

Jesse E. Greene, MSN, RN, Director
DHEC Immunization Division

Influenza Vaccines

News of FDA's licensing of GlaxoSmithKline's (GSK) influenza vaccine and the company's announcement to sell about 8 million doses in the U.S. this season, coupled with Sanofi pasteur's 50 to 60 million doses and MedImmune's 3 million doses of FluMist™, has produced a brighter outlook for the national Influenza vaccine supply for the 2005-06 season. If Chiron secures FDA approval, company officials indicate they plan to produce 18 26 million doses for use in the U.S.

MedImmune still has quantities of its FluMist™ available for pre-booking and Sanofi Pasteur continues to pre-book orders for its pediatric influenza vaccine in the pre-filled syringes. Distributors for the influenza vaccines produced by Chiron and GSK have been taking orders for those products as follows: FFF -800-843-7477, McKesson 1-800-446-3008. Other distributors include PSS Caligore, GIV, ASD, Priority, and Seacoast.

(Continued on page 2)

INSIDE THIS ISSUE

Update on Tuberculosis in South Carolina

Eric R. Brenner, MD
Rick Ervin, MD

Abstract - This issue of Epi Notes includes two articles about tuberculosis (TB) in South Carolina. This article presents a general update about epidemiologic trends and TB control in the state, along with lists of additional

(Continued on page 4)

(IMMUNIZATION cont'd from page 1)

The Prevention and Control of Influenza, recommendations of the Advisory Committee on Immunization Practices (ACIP) were published in the Morbidity and Mortality Weekly Report (MMWR) on July 29, 2005. The entire document may be found on the following website: www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm

Persons at increased risk for influenza complications are again the focus of this year's influenza vaccination strategy. Influenza vaccine is being distributed to providers' offices. Please note that the live attenuated influenza vaccine (LAIV) FluMist™ cannot be stored in a dorm-style refrigerator.

On September 2, 2005, CDC announced, "Given the uncertainties in doses and distribution, CDC recommends that the following priority groups receive inactivated influenza vaccine until October 24, 2005. Beginning October 24, 2005, all persons will be eligible for vaccination". This document may be found on the following website: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5434a4.htm

- Persons aged 65 and older, with and without chronic health conditions
- Residents of long-term care facilities
- Persons aged 2-64 years with chronic health conditions
- Children aged 6-23 months
- Pregnant women
- Health-care personnel who provide direct patient care
- Household contacts and out-of-home caregivers of children aged <6 months

It should be noted that vaccination with the live, nasal-spray flu vaccine (FluMist™) is always an option for healthy persons aged 5-49 years who are not pregnant. This vaccine is not subject to prioritization and can be given to healthy 5-49 year olds at any time.

Meningococcal Vaccines

In January 2005, a tetravalent meningococcal polysaccharide-protein conjugate vaccine MCV4, trade name Menactra™ manufactured by Sanofi Pasteur, Inc., was licensed for use among persons aged 11 – 55 years. The Centers for Disease Control and Prevention (CDC) published revised recommendations of the Advisory Committee on Immunization Practices (ACIP) regarding the Prevention and Control of Meningococcal Disease http://www.cdc.gov/mmwr/PDF/rr/rr5407.pdf on May 27, 2005.

Due to rapid increase in demand for this vaccine, the manufacturer has introduced order limits in both the public and private sectors. As a result, CDC placed caps on monthly MCV4 allocations to states. These allocations will be relaxed as the manufacturer increases production of MCV4. Therefore, during initial implementation of this new vaccine, vaccine providers are reminded that the recommendations for the routine vaccination of adolescents with MCV4 prioritize:

1. Adolescents at the 11- to 12-year health-care visit, and
2. Adolescents prior to high school entry (approximately aged 15 years), if they have not previously received MCV4.

Routine vaccination is also recommended for certain persons who have increased risk for meningococcal disease. Use of MCV4 is preferred among persons aged 11 – 55 years; however, use of tetravalent polysaccharide vaccine (MPSV4) is recommended among children aged 2 – 10 years and persons aged >55 years. If MCV4 is unavailable, MPSV4 is an acceptable alternative for persons 11 – 55 years.

The following persons are at increased risk for meningococcal disease:

- College freshmen living in dormitories
- Microbiologists who are routinely exposed to isolates of N. meningitidis
- Military recruits
- Persons who travel to or reside in countries in which N. meningitidis is hyperendemic or epidemic, particularly if contact with the local population will be prolonged
- Persons who have terminal complement component deficiencies
- Persons who have anatomic or functional asplenia

Due to both federal and state funding deficits, DHEC implemented meningococcal vaccines through the S.C. Vaccine Assurance For All Children (VAFAC) Immunization Partnership as VFC-only. This means that VAFAC providers may order meningococcal vaccines for those children and adolescents under age 19 years, for whom the vaccine is recommended by ACIP and prioritized in the descriptions above, and who are either Medicaid enrolled, Uninsured (no insurance), American Indian or Alaskan Native. Additionally, the Under-insured (insurance plan does NOT cover the vaccine) are VFC-eligible if vaccinated in Federally Qualified Health Centers (FQHC) or Rural Health Clinics (RHC).

For additional information contact the DHEC Immunization Division at 1-800-277-4687.

Antiviral Drugs for Prophylaxis and Treatment of Influenza

Shirley Jankelovich, MD,
Medical Epidemiologist

At this time, there are no significant changes in CDC recommendations for the use of anitvirals for prophylaxis and treatment of influenza. The latest guidance is published in the MMWR "Prevention and Control of Influenza", July 29, 2005, Vol 54, RR-8. This document may be found at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm.

(INFLUENZA cont'd from page 1)

There have been a total of 59 confirmed deaths reported to the WHO.

It is likely that influenza A (H5N1) infection among birds has become endemic to the Asian region and that human infections will continue to occur. So far, no sustained human-to-human transmission of the influenza A (H5N1) virus has been identified, and no influenza A (H5N1) viruses containing both human and avian influenza virus genes, indicative of gene reassortment, have been detected.

Influenza Culture Laboratory Surveillance
Influenza laboratory surveillance will be the same as last year. The DHEC Bureau of Laboratories will continue to provide influenza culture testing kits to providers and laboratories already enrolled in the laboratory surveillance network. If you would like to participate in the influenza culture laboratory surveillance network, please contact Dr. Jennifer Meredith in the DHEC Bureau of Laboratories at 803-896-0870.

Positive Rapid Influenza Test Surveillance
SC influenza rapid test reporting requirements are the same this year as they were last year. Positive rapid antigen test results may be reported by summary numbers of positive rapid test results and type of influenza (A, B or A/B) that the test detects. No specific patient information is needed. The health care provider may still use the DHEC Disease Reporting Cards to report summary numbers of positive rapid tests OR a weekly summary worksheet provided by your local health department. These weekly summary sheets may be faxed or emailed at the end of every week to your local health department. Please note, reporting positive rapid antigen tests by summary number does not replace the mandatory reporting of positive influenza viral cultures by name with other personally identified information on the Disease Reporting Card to DHEC. Last year there was some confusion about reporting positive cultures to DHEC if the specimen was processed at the DHEC Bureau of Laboratories. Please continue to report positive influenza culture tests to your local health department via the DHEC Disease Reporting Cards or phone, even if the specimen was processed at a DHEC lab. The DHEC Bureau of Laboratories does not report positive culture specimens to local health departments. For positive rapid antigen summary worksheets, please contact your local health department.

Influenza-Like Illness (ILI) Sentinel Surveillance
ILI Sentinel Provider Surveillance is a surveillance network comprised of volunteer providers from internal medicine, family practice, emergency medicine, OB/GYN, and university health center practices. Enrolled providers receive work folder packets and submit weekly reports to CDC via Internet or fax. Submitted reports consist of numbers of ILI patients seen out of the total number of patients seen in a week. ILI cases are only counted in the absence of other known causes of illness. No influenza culture is required for reporting ILI cases. Enrolled providers receive complimentary subscriptions to the MMRW weekly and the Emerging Infectious Diseases Journal. To enroll in the ILI Sentinel Provider network, contact your local health department and please specify 'ILI' surveillance.

Pediatric Influenza-related deaths surveillance
Beginning in 2005, pediatric influenza-related deaths of children up to 17 years of age was made a nationally notifiable disease and mandated as reportable to SC DHEC. Physicians are to report such deaths to their local health department. Information required will include previous medical history, clinical history, laboratory influenza testing results (both positive and negative), site of medical care (inpatient or outpatient), and history of current influenza vaccine status.

Resources for latest information on Avian Influenza:
WHO site: http://www.who.int/csr/disease/avianinfluenza/en/
CDC Avian Influenza site:
http://www.cdc.gov/flu/avian/index.htm

Resources for latest information on SC Influenza Activity and Surveillance:
DHEC Influenza website:
http://www.scdhec.gov/health/disease/acute/flu.htm
DHEC Health Alert Network:
http://www.scdhec.gov/health/disease/han/notifications.htm

Reporting of Streptococcus Pneumoniae, Invasive Disease

Amy E. Belflower, MSPH
Surveillance and Quality Assurance Epidemiologist

Prior to the year 2000, 60,000 cases of invasive *S. pneumoniae* were reported in the U.S. each year with 40% of these infections being non-susceptible (intermediate susceptibility or resistant) to at least one antibiotic. By 2002, the number of annual cases of *S. pneumoniae* decreased to 37,000 reported cases due to the introduction of the pneumococcal conjugate vaccine for children. However, 34% of these infections were still non-susceptible to at least one antibiotic and 17% were resistant to three or more antibiotics. Data from the CDC Active Bacterial Core Surveillance (ABCs) Report for 2003 shows national resistance percentages for various antibiotics to invasive *S. pneumoniae as follows*:

- 17.3% of cases were resistant to erythromycin
- 17.0% to TMP/Sulfa
- 9.8% to penicillin
- 5.7% to tetracycline
- 0.8% to cefotaxime
- 0.3% to levofloxacin (CDC)

The current 2005 South Carolina List of Reportable Conditions identifies Invasive *Streptococcus pneumoniae* as reportable within 7 days to SC DHEC. Reporting of antibiotic resistance patterns is also requested for all cases. Currently, analysis of reportable disease data from our Carolinas Health Electronic Surveillance System (CHESS) shows that only 33% of *S. pneumoniae* reports in SC include antibiotic resistance information. For national surveillance and monitoring purposes, it is

(Continued on page 10)

(TUBERCULOSIS cont'd from page 1)

resources and references. The companion article presents and explains a change in DHEC's policy regarding tuberculin testing for persons at low risk for TB. TB is not spread uniformly throughout the state. In 2004 eight counties reported more than 10 cases (York, Charleston, Richland, Florence, Horry, Berkeley, Greenville and Beaufort) while 7 counties did not report a single case (Abbeville, Barnwell, Fairfield, McCormick, Pickens, Saluda, and Union.) More detailed information regarding TB cases and case rates by county are available at the DHEC web site (4). Similarly, in 2004 TB was more common in men than in women (157 vs. 76 cases), in blacks than in whites (141 vs.73 cases [+ 19 cases in Asians]) and in adults than in children under age 18 (215 vs. 18 cases). The relative rarity of TB in children (figure 2) indicates that TB is generally well controlled in South Carolina and that most cases currently diagnosed are the result of transmission that occurred years or even decades ago.

TB in the Foreign Born: In South Carolina in 2004, TB was diagnosed in 59 persons (25% of total cases) who were born in other countries. The most common countries of origin for these were Mexico (22 cases), the Philippines (10 cases), and Honduras (8 cases). As TB continues to decrease in the native-born population, it is likely that TB in the foreign-born will progressively account for an ever greater proportion of cases diagnosed in the state. This is consistent with national trends, as in the United States as a whole over 50% of TB cases are now diagnosed among the foreign-born. Despite the national picture and a slow increase in TB disease in the foreign-born in SC, tuberculosis remains primarily a disease of our minority populations.

TB and HIV: As was recognized in the 1980s at the very beginning of the AIDS epidemic, co-infection with HIV and M. tuberculosis spells “double-trouble”. Patients whose cell-mediated immune system have been weakened by HIV and are co-infected with M. tuberculosis are at extraordinarily high risk of progressing from latent TB infection (LTBI) to active TB disease. While the risk of progression from asymptomatic LTBI to disease is ~10% over the lifetime of persons with “normal” immune systems, this risk is of the order of 10% per year for persons with untreated HIV infection. It thus remains essential for all persons diagnosed with HIV infection to receive a tuberculin skin test, preferably as soon as possible after the diagnosis of HIV has been made! Fortunately recent advances in HIV anti-retroviral therapy have diminished the impact of HIV on the epidemiology of tuberculosis. In 2004, 196 (84%) of the 233 TB cases reported in SC cases were tested for HIV, and of these, 11 (6%) were found to be co-infected. Simultaneous treatment of HIV and tuberculosis is difficult because of complex pharmacological issues relating to tolerance, toxicity, multiple-drug interactions and pharmacokinetics (5,6). In general co-treatment of TB and HIV therefore requires referral to an expert consultant. In 1999-2000 SC experienced an outbreak of TB among persons infected with HIV which required extensive efforts to contain (7-9).

Diagnostic Methods: For decades standard diagnostic tools for diagnosing pulmonary TB (other than the chest X-ray or other radiological imaging methods) included AFB smears and cultures, and the tuberculin skin test (TST). These remain important but in recent years these have been supplemented by several newer “high-tech” methods. For example, the DHEC mycobacteriology laboratory, which processes approximately 9500 specimens per year, uses fully automated liquid media incubators to culture mycobacteria from clinical specimens, and DNA gene-probes and High-Performance Liquid Chromotography (HPLC) to identify *M. tuberculosis* and to distinguish it from other pathogenic mycobacteria. As a result, turnaround time for positive culture results has been greatly reduced in most cases. A technical revolution also appears to be in the making regarding the venerable TST as there are now several FDA licensed methods to perform in-vitro lymphocyte-based immunological assays which, essentially, perform a tuberculin skin test in a test tube. These methods are not currently used by DHEC because of collection to processing time limitations, but are likely to be used in the future as their sensitivity, specificity, utility and cost-effectiveness in different settings is better evaluated (10-12).

Another exciting development in mycobacteriology has been the development of “TB Genotyping” (commonly called “DNA fingerprinting”). Last year DHEC joined a national network under which all new SC isolates of *M. tuberculosis* will be genotyped. This new tool will allow for more refined analysis of patterns of transmission and evaluation of TB control efforts (13).

Treatment of TB: While many of the broad principles of TB treatment have remained unchanged for decades (e.g. always treat TB with at least two drugs to which the patients organisms are likely to be susceptible; never add a single drug to a failing regimen), many of the details continue to evolve. DHEC follows the most recent official guidelines for treatment of TB in the United States that are the product of a collaborative effort among the American Thoracic Society, the Infectious Disease Society of America, and the CDC (14). Aside from detailed information regarding treatment regimens, drug dosages, and more, the guidelines also enunciate a basic principle that had been widely accepted for some time in the world of TB control but had never been so explicitly stated, namely that: *“The responsibility for successful treatment is clearly assigned to the public health program or private provider, not to the patient.”* This principle follows from the fact that an infectious TB patient who fails to take his medications properly may infect others with consequences which may be disastrous both from a personal and from a public health point of view, (e.g. leading to fatal miliary or meningeal tuberculosis in infants, or leading to a community or institutional outbreak). This new guiding principle thus provides a formal rationale for the use of Directly Observed Therapy (DOT) which has been discussed in the TB literature for many years (15) and which has gradually emerged as the “standard of care” towards which TB programs should aim.

(Continued on page 5)

(TUBERCULOSIS cont'd from page 4)

Treatment of Latent TB Infection (LTBI): Worldwide, it is estimated that 2 billion persons (about 1 person in 3 on the planet!) have LTBI. Estimates for the United States and for South Carolina may be of the order of 10-15 million and 120,000-200,000 respectively. Fortunately persons with LTBI are not ill and do not transmit M. tuberculosis to others, and only a minority of infected persons will ever actually develop disease and thus become potentially infectious. In poor countries, resources available for TB must be used to treat persons with disease. In the USA and other industrialized countries, treatment of LTBI (TLTBI) is recognized as a useful adjunctive public health tool but is reserved in priority for certain subsets of persons with LTBI: most notably either (a) for infected persons at high risk of progressing from LTBI to disease such as recent convertors and persons with known medical risk factors (e.g. co-infection with HIV and M. tuberculosis), or (b) occasionally for healthy persons who though they may not intrinsically be at high risk, nonetheless live or work in a setting in which the consequences of their progression from LTBI to TB disease would potentially be very serious (e.g. for a nurse who works in a newborn nursery) and where anticipated benefits of therapy exceed the assessed risk of drug toxicity.

Evidence based review of regimens for TLTBI were published by the CDC in 2003 and included a range of options including (a) INH for either 6 or 9 months (given either daily or twice-weekly); (b) rifampin alone for 4 months; and (c) regimens built around 2-months of rifampin and pyrazinamide (16). The latter seemed appealing because of their short duration, but subsequent reports showed that their toxicity, especially in HIV-negative (!) patients made them unacceptable (17). In DHEC TB clinics patients treated for LTBI most commonly receive a 6-month course of INH given either daily or twice-weekly (and, resources allowing, and for the highest risk patients, by directly observed therapy). However certain higher risk patients are treated for 9 months, notably children and patients co-infected with HIV.

Drug resistance: An important issue for clinicians treating TB is the prevalence of drug resistance. Fortunately most M. tuberculosis isolates available from South Carolina TB patients are found to be susceptible to INH, rifampin, ethambutol and pyrazinamide, the most important "first-line" TB drugs (Table 1). Treatment of drug-resistant TB is complex and costly and requires treatment with 2nd line drugs which are less efficacious, usually more toxic, produce more side effects, and are more costly in terms of drug cost and laboratory monitoring.

Contact Investigation: Whenever indicated, DHEC performs an investigation of contacts surrounding newly diagnosed cases. These investigations can (a) uncover other cases in the source case's entourage, and (b) identify contacts who were infected by the index case and who thus need to be treated for LTBI. Priority for investigations includes contacts of cases of smear- and culture-positive pulmonary tuberculosis (those most likely to have been infectious). Contacts to cases with forms of extra-pulmonary tuberculosis which are not infectious (e.g. TB osteomyelitis) would be of lower priority. However, contacts to a young child with any form of TB would always be examined in the hopes of identifying the "source" of the child's infection. Generally a concentric circle approach is used in which closest (e.g. household) contacts are examined first. The need to proceed to wider circles of contacts is then determined by a review of results of the initial investigation. Where indicated, investigations may include not only "household contacts", but also "work contacts" and contacts from "leisure-time" activities.

Organization of TB Control in South Carolina: Tuberculosis services are organized around county health departments as well as along the lines of DHEC's former "Health District" and newer "Health Region" structures. Each county health department has one (or more) designated lead TB public health nurse who coordinates evaluation of suspects, care of known cases, investigation of contacts, provision of TLTBI, and liaison with key local professionals and institutions also involved with TB Control (e.g. hospital infection control practitioners). DHEC also organizes a network of physicians who hold clinics and are responsible for medical management of patients from each county. Dr. Richard Ervin of Florence currently serves as the Medical Director for the program and oversees care in 13 counties. Other clinicians include Drs. Richard Ballew, former Medical Director (14 counties), Arnold Denler (8 counties), Kathryn Arden (7 counties) Jay Prashad (2 counties), and Lloyd Hayes (2 counties). DHEC's TB program in Columbia is directed by JoAnn Palmer and includes a staff of nursing, social work and program consultants as well as a computerized registry of cases.

TB resources: A variety of useful TB resources are available to physicians, nurses and other professionals. These include excellent web sites (18), numerous documents from the CDC (19), and several recent comprehensive texts (20). With the support of the American Lung Association - Southeast Region, DHEC also offers an intensive 4-day "TB Today" course which is attended by 30-40 professionals at each of the two sessions given every year. For matters relating to an individual patient, an entrée into the DHEC TB Control system can always be made through the "TB Nurse" in any county health department. More generally, consultation about public health or clinical matters related to TB, application for enrollment in the "TB Today" course, or requests for a presentation about tuberculosis (e.g. for a medical conference) can be arranged by calling DHEC's Division of TB Control in Columbia at 803-898-0558.

References:

1. Trends in Tuberculosis — United States, 2004. MMWR March 18, 2005 / Vol. 54 / No. 10.

2. World TB Day — March 24, 2005. MMWR March 18, 2005 / Vol. 54 / No. 10.

3. See for example the web page of the Global Fund to fight AIDS, Tuberculosis, and Malaria: www.theglobalfund.org

(Continued on page 6)

(TUBERCULOSIS cont'd from page 5)

4. See www.scdhec.gov/health/disease/tb/docs/2004tbcase.pdf and www.scdhec.gov/health/disease/tb/docs/tbcases0.pdf

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6. Acquired Rifamycin Resistance in Persons with Advanced HIV Disease Being Treated for Active Tuberculosis with Intermittent Rifamycin-Based Regimens. MMWR March 15, 2002 / Vol. 51 / No. 10

7. Drug-Susceptible Tuberculosis Outbreak in a State Correctional Facility Housing HIV-Infected Inmates — South Carolina, 1999–2000 . MMWR November 24, 2000 / Vol. 49 / No. 46

8. McLaughlin SI, Spradling P, Drociuk D, et al.. Extensive transmission of Mycobacterium tuberculosis among congregated, HIV-infected prison inmates in South Carolina, United States. Int J Tuberc Lung Dis. 2003 Jul;7(7):665-72.

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10. Whalen, CS. Diagnosis of Latent Tuberculosis Infection: Measure for Measure. JAMA, 2005; 293:2785-2787.

11. Kang YA, Lee HW, Yoon H et al. Discrepancy Between the Tuberculin Skin Test and the Whole-Blood Interferon _ Assay for the Diagnosis of Latent Tuberculosis Infection in an Intermediate Tuberculosis-Burden Country. *JAMA. 2005;293:2756-2761*

12. Pai M, Gokhale K, Joshi R et al. Mycobacterium tuberculosis Infection in Health Care Workers in Rural India Comparison of a Whole-Blood Interferon _ Assay With Tuberculin Skin Testing. JAMA. 2005;293:2746-2755

13. See special November 2002 issue of CDC's Emerging Infectious Diseases devoted to TB genotyping. Full text available at www.cdc.gov/ncidod/EID/vol8no11/contents_v8n11.htm.

14. CDC /ATS CD/ IDSA. Treatment of Tuberculosis. June 20, 2003 / Vol. 52 / No. RR-11

15. Iseman MD, Cohn DL, Sbarbaro JA.. Directly observed treatment of tuberculosis. We can't afford not to try it. N Engl J Med. 1993 Feb 25;328(8):576-8.

16. Targeted Tuberculin Testing and Treatment of Latent Tuberculosis Infection. MMWR June 20, 2003 / Vol. 52 / No. RR-11

17. Update: Adverse Event Data and Revised American Thoracic Society / CDC Recommendations Against the use of Rifampin and Pyrazinamide for Treatment of Latent Tuberculosis Infection – United States, 2003. MMWR August 8, 2003 / Vol. 52 / No. 31.

18. Recommended TB web sites include those of the CDC: www.cdc.gov/nchstp/tb/; and of the three National TB Centers in San Francisco, New Jersey, and New York respectively at: www.nationaltbcenter.edu; www.umdnj.edu/ntbcweb; and www.harlemtbcenter.org

19. Numerous publications and guidelines regarding TB can be downloaded from the CDC web site (see Ref 17 above), and copies of many of these can be obtained from DHEC's TB Control Division. Particularly useful for starters is the CDC "Core Curriculum on Tuberculosis": www.cdc.gov/nchstp/tb/pubs/corecurr/default.htm

20. Among Multi-authored texts we recommend: Tuberculosis, Ed Rom & Garay, 2004 (2nd edition), Lippincott, Williams & Wilkins. Among single-authored texts we recommend the tour de force: A Clinician's Guide to Tuberculosis, Iseman, 2000 Lippincott, Williams & Wilkins.

Figure 1
TB Cases Reported in SC: 1979-2004

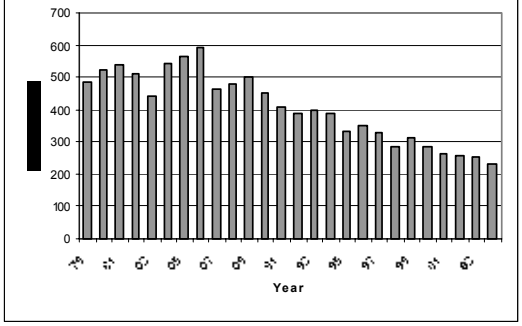

Figure 2
SC TB Cases by Age Group: 2004

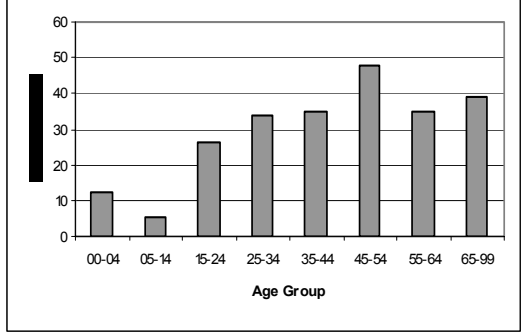

Table 1

TB Drug Resistance in South Carolina: 2004

Drug	Isolates Tested	Resistant N	Resistant %
Isoniazid	162	4	(2.5)
Rifampin	162	0	(0.0)
Pyrazinamide	149	0	(0.0)
Ethambutol	162	0	(0.0)
Streptomycin	157	2	(1.3)

To PPD or Not to PPD – An Issue Revisited On the Utility of Tuberculin Skin Tests for Low Risk Persons

Rick Ervin, MD
JoAnn D. Palmer, BA
Eric R. Brenner, MD

A tuberculin skin test issue in 1996 - Almost 10 years ago in these same pages we reviewed the question of whether the 40,000 odd "routine tuberculin skin tests" (TST) which were administered yearly to pre-school aged children in South Carolina did or did not contribute appreciably to tuberculosis (TB) control efforts in the state. The review concluded that these tests might detect about two asymptomatic cases every year and might further prevent one additional case from occurring during the next 80 years or so. As several hundred cases of tuberculosis are diagnosed in SC every year, this suggested that routine TSTs could not be expected to have any substantial impact on future TB trends (1). Accordingly, we subsequently published new guidelines for skin testing of children in Health Departments (2). Briefly, these advised that children seen in DHEC clinics did not routinely need to be skin tested, but that skin testing was always recommended (a) for children being evaluated for an illness compatible with TB, (b) who were being evaluated as contacts to a recently identified case of TB, and (c) for selected other children with clear risk factors, for example those known to be infected with HIV, or those from families who had immigrated within the past 5 years from high-incidence TB countries.

A tuberculin skin test issue in 2005 – In the last 18 months, DHEC's Division of TB Control has considered an issue reminiscent to that described above: whether DHEC clinics ought or ought not to skin test low-risk adults who may just "walk-in-for-a-test" (self-referrals) or who may even have been referred by a physician or employer for a "routine skin test". Several difficulties have been identified related to such tests.

- **Low yield:** Most people "just dropping in" have negative skin tests so that the yield of "positive tests" is very low.
- **Low predictive value of positive tests** – The few patients found to have positive TSTs may then typically find themselves referred for further evaluation with a chest x-ray and subsequently for prescription of a course of preventive therapy with isoniazid. However, as the prevalence of latent TB infection (LTBI) is low in low-risk populations, many or most of the rare positive tests will in fact be false-positives and thus much of this additional "medical intervention" may serve no personal health or public health purpose.
- **Low priority activity yet time consuming for front-line TB nurses who must focus on high-priority activities** - Current work loads for DHEC County TB nurses are high and require a focus on high-priority TB activities including: (a) supervision of therapy for proven cases of tuberculosis (often involving Directly Observed Therapy as dictated by current standards of care); (b) evaluation of TB suspects (e.g. persons with fever, persistent cough, weight loss and with or without chest x-rays already shown to be abnormal) who need a prompt and thorough evaluation for tuberculosis; (c) investigation of contacts to known cases of tuberculosis where the prevalence of TST positivity is known to be high (of the order of 33% in DHEC investigations); (d) supervision of treatment of latent TB infection for high-risk infected persons (e.g. infected contacts; persons co-infected with HIV and M. tuberculosis, etc.) In this setting provision of TB services to persons who are not cases, not suspects, and not contacts is problematic and detracts from the high-priority TB control activities listed above.
- **Declining resources available for public health at the local level –** As listed above, the rationales for needing to reduce testing of low-risk persons are epidemiologic, bio-statistical, and programmatic considerations which also reflect the need to emphasize "best practices". An additional reality is that county health departments currently lack the funding and staffing resources that were available only a few years ago, and this provides yet another reason for the need to reduce "low-yield" / "low-priority" activities.

Guidelines for DHEC practice – When persons present to DHEC clinics requesting a TST, staff should initially proceed not with a TST, but rather with a "risk assessment" which includes questions about medical risk factors (e.g. presence of cancer, end-stage renal disease requiring dialysis, HIV infection etc) and questions about population risk factors (e.g. has recently lived in a homeless shelter or jail, previously unrecognized contact to a person with infectious TB, etc). Persons who do not have any of these risk factors may be educated about the matter and discharged. A detailed algorithm has been provided to County Health Departments to assist them in conducting these risk assessments.

Continued role of tuberculin skin testing – The new guidelines notwithstanding, health departments and DHEC TB nurses should continue to skin test: (a) all cases of TB (who may not have been tested prior to diagnosis), (b) all TB suspects being evaluated for TB disease, (c) all TB contacts being investigated, and (d) all high-risk individuals presenting to TB clinic for any reason. In addition at both the county and state levels, DHEC supports and promotes tuberculin skin testing programs as are needed in a variety of high-risk (or potentially high-risk) settings (e.g. hospitals, nursing homes, and prisons) where employees and/or residents need to be skin tested

(Continued on page 8)

(PPD cont'd from page 7)

as part of a comprehensive institutional TB Control program.

A look to the future – This new policy will be phased in gradually. Like other guidelines, these may be considered "work in progress" since future changes in the epidemiology of TB, especially at the local level, may in the future provide rationale for change in practice.

(**Note:** the article "Update on Tuberculosis in South Carolina" also presented in this issue can provide a broader perspective in which to view the issue presented here.)

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Pertussis Deaths in Infants

Shirley Jankelovich, MD,
Medical Epidemiologist

Two recent deaths in young infants in South Carolina due to pertussis highlight the need for greater vigilance by physicians for this disease. In both cases, pertussis was not recognized in the infant. In both cases, the source of infection was a household member in whom pertussis was not recognized. A recent study showed that household members of infants with pertussis were the source of pertussis in 75% of cases, with mothers being the most frequent source of infection (32% of cases) [(1)]. Siblings, fathers and grandparents were sources of infection in 20, 15 and 8% of cases, respectively. In the majority of these cases, pertussis in the household member was unrecognized.

A very important point regarding recognition of pertussis is that the clinical presentation of pertussis may be atypical in many infected infants, children and adults. Clinical symptoms are influenced by many factors including age, presence of antibody against pertussis (previous exposure to pertussis, previous immunization, presence of passively acquired maternal antibody), antibiotic administration and concomitant infection. For example, very young infants may present only with a mild cough, apnea and/or hypoxia. Infants, children and adults with antibody against pertussis may have a brief or unrecognized catarrhal stage, absence of a whoop, and a shorter duration of cough and no posttussive vomiting.

Of all age groups, infants less than 4 months old are most likely to die from pertussis [(2,3)]. Furthermore, the mortality rate in these young infants has been increasing. Of the 77 pertussis deaths reported to the CDC in the 1980's, infants less than 4 months old accounted for 64% of deaths. In the 1990's, infants accounted for 82% of the 103 deaths reported. High pertussis infant mortality is most likely due to the severe complications of pertussis in this age group. Complications include pneumonia, apnea, hypoxia, seizures, encephalopathy and rapidly progressive refractory pulmonary hypertension.

Physicians have a very important role in protecting these vulnerable infants through recognition, treatment or prophylaxis of pertussis in infants and their household contacts.

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Human Lymphocytic Choriomeningitis Virus Infection Associated with Rodents

Marcia L. Headrick, DVM, MPH, DACVPM, FACE

Lymphocytic choriomeningitis virus (LCMV) has been recognized as a pathogen in wild rodents, with occasional spread to humans. Although many LCMV-associated human illnesses are asymptomatic or mild, severe illnesses can occur, including neurologic damage and death, particularly to fetuses born to infected pregnant women, or those who have weakened immune systems. LCMV infection in pet rodents has also been recognized, most recently (May 2005) in relation to the fatal infection of three of four organ transplant recipients in Rhode Island and Massachusetts (MMWR, 54:537-9, 2005]. In their investigation of this incident, the Centers for Disease Control and Prevention (CDC) identified an infection rate of approximately 3% among hamsters sampled at an Ohio distributor that was the source of the organ donor's pet hamster.

In response to these findings, CDC issued Interim Guidance for Minimizing Risk for Human LCMV Infection Associated with Rodents [MMWR, 54: Dispatch, July 29, 2005]. The facility of the distributor was quarantined until it can be documented as free of LCMV infection. Traceback efforts and records from the affected distributor did not indicate shipment of any rodents to SC. However, physicians should be aware of the potential hazards associated with pet rodents to their patients. A Q & A type fact sheet is available from CDC at http://www.cdc.gov/healthypets/lcmv_rodents.htm.

(Continued on page 9)

(LCMV cont'd from page 8)

There is no definitive test for a live animal that can provide reliable answers about its LCMV status. Because of the possibility that pet rodents in homes may be infected with LCMV, CDC recommendations should be followed for pet rodent care, including precautions for pregnant women and persons with weakened immune systems. Physicians should be aware that pet animals, including rodents, can also carry other human pathogens such as *Salmonella*. Good husbandry, veterinary care, and hand-washing are important for preventing transmission of multiple diseases from pets to humans.

PulseNet

Julie H. Schlegel, MSPH
Foodborne Epidemiologist

The South Carolina Department of Health and Environmental Control (DHEC) is part of a national network of local health departments, state health departments and federal agencies submitting data to PulseNet, a Centers for Disease Control and Prevention (CDC) national database of foodborne disease-causing bacteria molecular subtypes. Molecular subtyping (or "fingerprinting") by pulsed-field gel electrophoresis (PFGE) can be used to distinguish strains of organisms such as *Escherichia coli* O157:H7, *Salmonella*, *Shigella*, *Listeria*, or *Campylobacter* at the DNA level.

PulseNet plays a vital role in surveillance for and the investigation of foodborne illness outbreaks that were previously difficult to detect. When similar patterns are found through PulseNet, outbreaks can be detected even if the affected persons are geographically far apart. This allows for a more timely and thorough outbreak investigation and prevention of further illness.

In South Carolina, DHEC has used PulseNet data in many outbreaks. For example, PulseNet helps us identify cases that are linked to nationally distributed food products or exposures. Food consumption and practices have changed during the past 20 years in the United States. We are observing a shift from the typical point source or "church supper" outbreak, which is relatively easy, to detect to the more diffuse, widespread outbreaks that occur over many communities with only a few illnesses in each community.

Close collaboration between the private and public health sectors is critical to both the foodborne outbreak investigation process and the effectiveness of PulseNet. Individual physicians play a vital role in alerting the public health system about a potential foodborne outbreak by reporting illnesses to DHEC and by collecting stool specimens to aid in diagnosis. Laboratories play a vital role by testing and submitting isolates to the DHEC Bureau of Laboratories for further testing, including PFGE testing and submission to PulseNet.

More information about the CDC's PulseNet is available at:
http://www.cdc.gov/pulsenet/

To report cases of reportable diseases, complete a DHEC Disease Report Card. For questions or consultation regarding cases call your local county health department or the DHEC Division of Acute Disease Epidemiology at (803) 898-0861.

Sources:
http://www.cdc.gov/pulsenet/

Preventing Illnesses and Injuries Associated with Animal Contact Settings

Marcia L. Headrick, DVM, MPH, DACVPM, FACE

Venues where humans and animals commonly interact include public stables, petting zoos, traveling photo opportunities, schools, children's parties, livestock shows and animal rides. These activities normally increase in the summer because of the general increase in outdoor activities and family vacations/outings. Although there is always some risk involved when interacting with animals, awareness of the hazards and careful behavior will decrease the chances of turning a routine activity into a disaster.

Although enteric bacterial illnesses are the most commonly reported health risks associated with animals in public settings, multiple other health risks are of concern. For example, allergies can be associated with animal dander, scales, fur, feathers, urine, and saliva. Additional health concerns include injuries, rabies exposures, and other infections. Both wild and domestic animals are unpredictable and can cause serious injuries, particularly to small children. Also, animals infected with enteric pathogens (e.g., *E. coli* O157:H7, *Salmonella*, and *Campylobacter*) frequently exhibit no signs of illness and may shed pathogens intermittently.

Injuries

Injuries associated with animals in public settings include bites, kicks, falls, scratches, stings, crushing of the hands or feet, and being pinned between the animal and a fixed object. These injuries have been associated with multiple species, including big cats (e.g., tigers), monkeys, domestic animals, and zoo animals.

Infections

Multiple bacterial, viral, fungal, and parasitic agents have been associated with animal contact. These organisms are transmitted through various modes. Exposure to animal feces can result in infection with *E. coli* O157:H7, *Salmonella*, and *Campylobacter.* Infections from animal bites are common and frequently require extensive

Continued on page 10)

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treatment or hospitalization. Bacterial pathogens that are frequently associated with animal bites include *Pasteurella*, *Staphylococcus*, *Streptococcus*, *Capnocytophaga canimorsus*, *Bartonella henselae* (cat-scratch disease), and *Streptobacillus moniliformis* (rat-bite fever). Certain monkey species (especially macaques) that are kept as pets or used in public exhibitions can be infected with herpes B virus, either asymptomatically or with mild oral lesions. Human exposure through bites or fluids can result in a fatal meningoencephalitis. Because of difficulties with laboratory testing to confirm monkey infection and high herpes B prevalence, monkey bites can require intensive public health and medical follow-up.

Skin contact with animals in public settings might also result in human infection. Ringworm infection caused by *Trichophyton* species and *Microsporum gypseum* have been documented among pet and livestock owners. Ringworm infection in 23 persons and multiple animal species were traced to a *Microsporum canis* infection in a hand-reared zoo tiger cub. Orf virus infections (contagious ecthyma or sore mouth) have occurred in goats and sheep at a children's petting zoo and in a lamb used for an Easter photo opportunity. In 2003, multiple cases of monkeypox occurred among persons who had had contact with infected prairie dogs either at a child care center or a pet store.

Ecto- and endoparasites pose concerns when humans and exhibit animals interact. *Sarcoptes scabiei* is a skin mite that infests humans and animals, including swine, dogs, cats, foxes, cattle, and coyotes. Although human infestation from animal sources is usually self-limiting, skin irritation and itching may occur for multiple days and be difficult to diagnose. Animal fleas bite humans, which increases the risk for infection or allergic reaction. In addition, fleas are the intermediate host for a tapeworm species that can infect children. Multiple other animal helminths might infect humans through fecal-oral contact or through contact with animals or contaminated earth.

Tuberculosis (TB) is another disease of concern in certain animal settings. Twelve circus elephant handlers at an exotic animal farm were infected with *Mycobacterium tuberculosis*, and one handler had signs consistent with active disease after three elephants died of TB. Medical history and testing of the handlers indicated that the elephants had been a probable source of exposure for the majority of the human infections. At a zoo, seven animal handlers who were previously negative for TB tested positive after a *Mycobacterium bovis* outbreak in rhinoceroses and monkeys.

Zoonotic pathogens may also be transmitted by direct or indirect contact with reproductive fluids, aborted fetuses, or newborns from infected dams. Live-birthing exhibits, usually involving livestock (e.g., cattle, pigs, goats, or sheep), are popular at agricultural fairs. Although the public usually does not have direct contact with animals during birthing, newborns and their dams are frequently available for petting and observation afterward. Q fever (*Coxiella burnetii*), leptospirosis, listeriosis, brucellosis, and chlamydiosis are serious zoonoses that can be associated with contact with reproductive materials. *C. burnetii* is a rickettsial organism that most frequently infects cattle, sheep, and goats. The disease can cause abortion in animals, but more frequently the infection is asymptomatic. During parturition, infected animals shed substantial numbers of organisms that might become aerosolized. The majority of persons exposed to *C. burnetii* develop an asymptomatic infection, but clinical illness can range from an acute influenza-like illness to life-threatening endocarditis. A Q fever outbreak involving 95 confirmed case-patients and 41 hospitalizations was linked to goats and sheep giving birth at petting zoos. These petting zoos were in indoor shopping malls, indicating that indoor-birthing exhibits might pose an increased risk for Q fever transmission.

Chlamydophila psittaci infections cause respiratory disease (commonly called psittacosis) and are usually acquired from psittacine birds. For example, an outbreak of *C. psittaci* pneumonia occurred among the staff at a Zoo.

Rabies Exposures

Contact with mammals may expose persons to rabies through contamination of mucous membranes, bites, scratches, or other wounds with infected saliva or nervous tissue. Although no human rabies deaths caused by animal contact in public exhibits have been recorded, multiple rabies exposures have occurred, requiring extensive public health investigation and medical follow-up. Persons have received rabies postexposure prophylaxis (PEP) after being exposed to rabid or potentially rabid animal species (including cats, goats, bears, sheep, ponies, and dogs) at sites including pet stores, county fairs, petting zoos, schools, and rodeo events. Prompt assessment and treatment are critical for this disease, which is usually fatal.

(STREPTOCOCCUS PNEUMONIAE cont'd from page 3)

important to include antibiotic resistance to contribute to our knowledge of the developing and dynamic antibiotic resistance problem in the United States. Also, due to cited geographic variation of the prevalence of drug resistant *S. pneumoniae* (CDC), it is important to gather antibiotic resistance information for South Carolina specifically. For questions related to reports of *S. pneumoniae*, please contact your regional DHEC Public Health Office.

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The Overwhelming Challenge of Community Associated MRSA (CA-MRSA)

George Kotchmar, MD, FAAP
Professor of Clinical Pediatrics, USC School of Medicine
Shirley Jankelevich, MD
Medical Epidemiologist, SC DHEC Divisions of Acute Disease Epidemiology and Immunizations
Dixie Roberts, MPH, RN
Director, SC DHEC Division of Acute Disease Epidemiology

Health care professionals recognize *Staphylococcus aureus* as an important cause of disease and understand that antibiotic-resistant strains pose a threat to the community. No longer can methicillin resistant *S. aureus* (MRSA) be regarded as an exclusive nosocomial pathogen. With community associated MRSA (CA-MRSA), resistance and virulence have converged with a clone not seen before 2000 with molecular analysis pointing to a community origin. Recent 2001-2004 data from the Texas Children's Hospital revealed of the 3,586 community-associated staphylococcal infections presenting to the Emergency Department, 2,661 were methicillin resistant (74%) with 95.9% skin and soft tissue infections and 4.1% (110) systemic infections (osteomyelitis was the most common invasive CA-MRSA infection).

The epidemiologic definition of CA-MRSA disease is the development of infection with MRSA in the outpatient setting in a person with a medical history who in the past year has had 1) NO admission to a hospital, nursing home, skilled nursing facility, hospice; 2) NO dialysis or surgery; 3) NO history of MRSA infection or colonization and 3) NO permanent indwelling catheters or medical devices that pass through the skin into the body.

Outbreaks of CA-MRSA infections have occurred primarily in persons who often have close contact and have included prison inmates, military recruits, soldiers and crewmembers of a naval ship, players of contact sports (wrestling and football team members), children in daycare, and men who have sex with men.

CA-MRSA and health care associated MRSA (HCA-MRSA) infections have distinct clinical differences. While HCA-MRSA usually cause heterogeneous invasive infections, CA-MRSA infection is usually limited to skin and soft tissue but occasionally may be invasive. CA-MRSA infections usually present as folliculitis, pustular lesions and furuncles/ carbuncles/ abscesses. Many lesions are often mistaken for spider bites. Although the CA-MRSA epidemic spans the gamut of known skin and soft tissue infections from cellulitis to furuncles to frank abscess, a distinctive syndrome includes rapidly progressive cellulitis. Several invasive CA-MRSA syndromes deserve special mention, as they appear to be novel or at least not found in the recent literature. Necrotizing pneumonia with or without pleural empyema with CA-MRSA strains has been implicated in a destructive pneumonitis with loss of pulmonary architecture, microabcesses, and pulmonary vasculitis. Although streptococcal infections are a well-known cause of necrotizing fasciitis, this syndrome has been recently recognized as one that can be caused by CA-MRSA. At Texas Children's Hospital, septic thrombophlebitis caused by CA-MRSA has been described with clinical features reminiscent of endocarditis with sustained bacteremia and multiple embolic phenomena. Other fulminant invasive CA-MRSA infections include pyomyositis, osteomyelitis, arthritis, bursitis, and a new and devastating purpura fulminans syndrome.

The increased ability of CA-MRSA to spread among contacts and cause severe invasive disease is thought to be due to a distinct cytotoxin, called Panton-Valentine leucocidin (PVL) that is not found in HCA-MRSA. CA-MRSA isolates have a significantly different antibiotic resistance pattern from HCA-MRSA. The most important difference is that CA-MRSA isolates are not susceptible to B-lactam antibiotics because it harbors one of two novel methicillin-resistance cassette gene elements called SCCmec IV or V. However, CA-MRSA isolates are often susceptible to several non-B-lactam antibiotics that include vancomycin, clindamycin, doxycycline, gentamycin, and trimethoprim-sulfamethoxazole (TMP/ SMX), but are frequently resistant to erythromycin and ciprofloxacin.

Currently, microbiology laboratories should routinely test *S. aureus* isolates for susceptibility to macrolides, clindamycin, and trimethroprim-sulfamethazole in addition to B-lactam antibiotics. Most CA-MRSA isolates are resistant to macrolides but remain susceptible to clindamycin. In vitro resistance to both erythromycin and clindamycin predicts clinical failure with either agent. In vitro resistance to erythromycin but susceptibility to clindamycin by routine testing may not predict clinical effectiveness of clindamycin because of a property associated with erythromycin resistant CA-MRSA called inducible resistance to clindamycin. Treatment failures with clindamycin have occurred with MRSA isolates that possess clindamycin-inducible resistance. Clindamycin inducible resistance can be detected by a special, but simple test called the D-test. If this test is not available in the laboratory, the clinician should ask the laboratory unable to perform the D-test to report MRSA strains that it determines to be resistant to erythromycin as clindamycin resistant also.

The CDC recommendations for treating CA-MRSA infections are forthcoming. Interim recommendations are discussed below in an algorithm (Figure 1). In the September 2004 issue of the American Academy of Pediatrics (AAP) News

(Continued on page 12)

(CA-MRSA continued from page 11)

(www. aapnews.org) an expert opinion guideline is available, including an updated "Management of skin and soft tissue infections: Principles".
Physicians should seek information from their clinical laboratories about the prevalence of CA-MRSA outpatient infections in their communities. Physicians should: 1) always culture purulent skin or soft tissue lesions before further management; 2) always adequately drain abscesses at presentation and send material for culture and susceptibility testing ("D"-zone testing is necessary if erythromycin resistance and clindamycin susceptibility are reported); 3) always determine severity of infection at presentation and need for hospitalization and empirical antimicrobial therapy; 4) always provide discharge instructions emphasizing the need for return if no clinical improvement within 48 hours.

Outbreaks of MRSA in group settings (e.g. childcare facilities, sports teams, residential institutions, etc.) should be reported to your local DHEC Epidemiology Office. During an outbreak, the molecular differences between CA-MRSA and HCA-MRSA permit distinction of isolates though a specialized molecular techniques called PFGE (pulsed field gel electrophoresis). For certain MRSA outbreak situations, DHEC's Division of Acute Disease Epidemiology will request PFGE on a sample of outbreak isolates from the DHEC Bureau of Laboratories.

For more information on prevention and control, see the CDC web site http://www.cdc.gov/ncidod/hip/ARESIST/ca_mrsa.htm.
Specific measures to control an outbreak of CA-MRSA and for management of household contacts can be found on the CDC website (http://www.cdc.gov/ncidod/hip/ARESIST/ca_mrsa.htm).

In areas where MRSA accounts for more than 10% of community associated *S. aureus* isolates, most authorities recommend considering modification for initial empiric therapy of severe infections most likely attributed to *S. aureus*. An increasing burden of MRSA disease, especially involving clones that cause more severe invasive infections, will have an enormous influence on the clinical approach to suspected staphylococcal infection. At a minimum, vigilance and a decrease in the threshold for obtaining cultures to document MRSA are warranted. Although an optimal management approach for CA-MRSA infections has not been established, the guidelines presented here represent the current view of many authorities. Seriously ill, hospitalized patients with suspected staphylococcal infection and significant CA-MRSA risk should be treated empirically with an antimicrobial regimen including vancomycin, with future clinical trials determining if another agent will displace vancomycin as the drug of choice. Also, with an increase in CA-MRSA infections, clinical trials are needed to assess the precise role of antimicrobial agents in the treatment of uncomplicated skin and soft tissue infections, to define agents most clinically effective and cost-effective. Pending future clinical trials, we hope these guidelines will be helpful in initiating empirical therapy for CA-MRSA infections, an identified public health challenge growing in our community.

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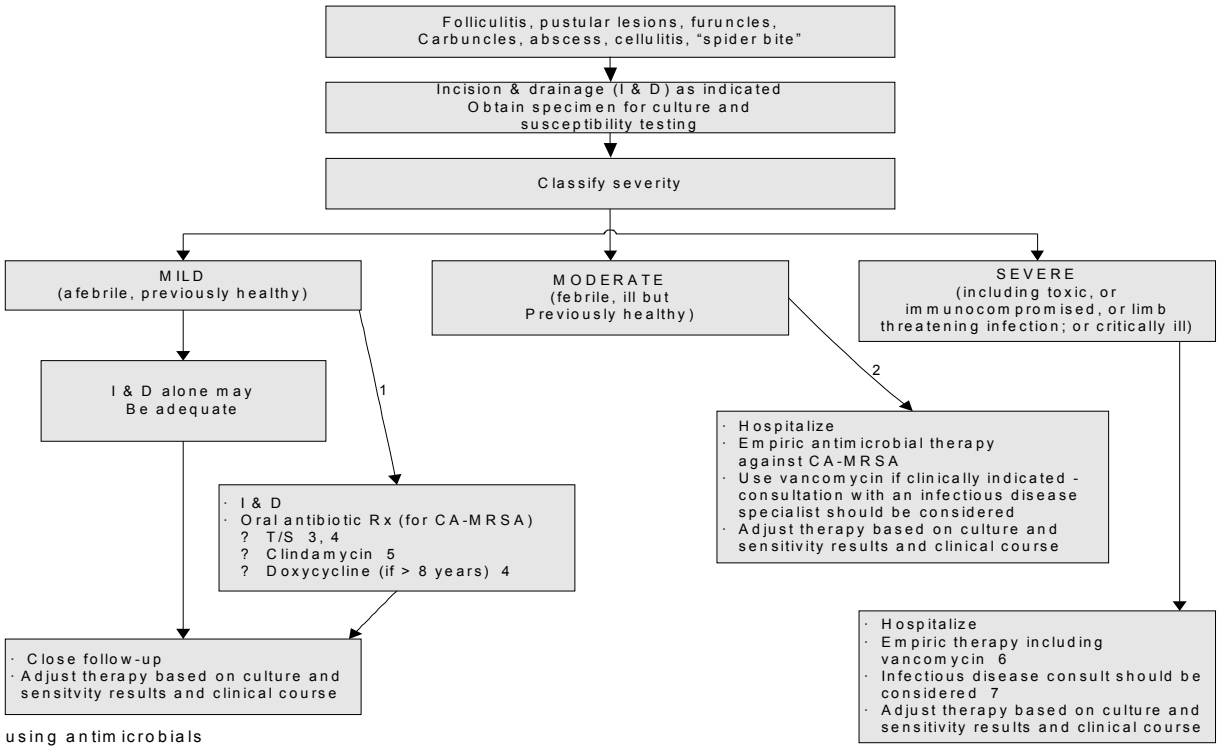
Figure 1: A Suggested Initial Management Approach for Suspected Community-Associated Methicillin-Resistant Staphylococcus aureaus (CA-MRSA) Skin and Soft Tissue Infections (Communities in Which CA-MRSA Strains are Prevalent)



1. If using antimicrobials
2. If area of involvement is extensive, or if systemic symptoms are clinically concerning, or it there are compliance/follow-up concerns.
3. T/S=trimethoprim/sulfamethoxazole
4. T/S and doxycycline are not recommended treatments for Group A *Steptococcus* infection.
5. Do D-test if CA-MRSA isolate is erythromycin-resistant, clindamycin susceptible. There are a significant number of D-test positive CA-MRSA isolates in South Carolina.
6. Broad empiric therapy may be appropriate; consult with an infectious disease specialist should be considered. *AAP Red Book* recommends use of nafcillin + gentamicin in addition to vancomycin for empiric therapy of life-threatening infections.
7. Experience with new agents is limited, new applications of old agents are limited, and experience with these agents in children is limited.

Additional notes:

- Use quinolones, linezolid, daptomycin, tiglecycline, or quinupristin-dalfopristin (Q/D) in consultation with an infectious disease specialist where experience is limited.
- If initial parenteral therapy, consider switching to oral therapy based on susceptibility results if the patient is afebrile for 24 hours, clinically improved, able to take oral therapy, and close follow-up is possible. For severe infections, consult with an infectious disease specialist should be considered.
- Duration of treatment for most skin and soft tissue infections is 7-10 days, but may vary depending on severity of infection and clinical response.
- Consider hospitalization for infants less than 1 month of age.
- Obtain blood cultures on febrile infants with skin infection, and others as clinically indicated.

Adapted from the Minnesota Department of Health *Disease Control* Newsletter, Vol 32, Number 6, 2004. (http://www.health.state.mn.us/divs/idepc/newsletters/dcn/index.html)

Revised School and Childcare Exclusion Lists

Michelle L. Myer, MSN, RN, CPNP
Epidemiology and Bioterrorism Nurse Consultant

Each January SC DHEC is required to publish lists of those health conditions with which children and staff should not attend school or out-of-home childcare settings. These Exclusion Lists, which also address attendance for individuals exposed to certain communicable illnesses, are available on the DHEC Bureau of Disease Control's website, at: http://www.scdhec.gov/health/disease/exclusion.htm.

The **School Exclusion List** applies to most students in grades 1-12. The Childcare Exclusion List applies to all children in out-of-home childcare, to children in 3-, 4-, or 5-year-old kindergarten, and to medically fragile students in grades 1-12. For the purposes of school exclusion, **"medically fragile students"** are those with special healthcare needs or developmental delays who require close assistance with feeding or other personal hygiene activities by which communicable illnesses may easily be spread.

SC Law: Children with contagious diseases shall not attend school or childcare in out-of-home settings.

No superintendent, principal, teacher of any school or provider of child care in an out-of-home setting, as defined in S.C. Code Ann. Section 20-7-2700, and no parent, master or guardian of any child or minor shall permit any such child or minor having any contagious or infectious disease or syndrome requiring isolation to attend any private, parochial, church or Sunday school when the disease or syndrome of the child or minor is on the Official School and Child Care Exclusion List of Contagious or Communicable Diseases. For the purpose of this regulation, the **Department of Health and Environmental Control shall publish in January of each year an Official School and Child Care Exclusion List of Contagious or Communicable Diseases**, to include specific conditions for duration of school or child care exclusion and criteria for return for a child with any of these excludable diseases. (Regulation 61-20)

http://www.scstatehouse.net/coderegs/c061a.htm

The 2005-2006 School and Childcare Exclusion Lists were **revised in January 2005**, as well as in January 2004. Both revisions addressed specific concerns raised by the 2003-2004 Lists, which had been developed from out-of-home childcare exclusion guidance found in the 2003 Red Book. **Some changes and clarifications include:**

- **Exclusion standards for some conditions are now more clearly based on age or health status of students.** For example, students six years of age and older with pediculosis may remain at school until the end of the school day. Children in kindergarten or childcare must be excluded as soon as their head lice are discovered. For re-admission after some GI illnesses, younger children may require negative stool cultures; while older students may return to school once symptoms subside.
- **Conditions added to the Exclusion Lists:**
  - **Ringworm of the Body:** Exclude for *Tinea corporis* that cannot be covered, until after initiation of oral or topical antifungal treatment. Additional exclusion may be appropriate for some sports and physical education activities.
  - **Ringworm of the Scalp:** Exclude for *Tinea capitis* until after initiation of oral antifungal treatment. Topical treatments such as selenium sulfide shampoo (1% or 2.5%) decrease fungal shedding and may be recommended by schools or childcare providers to help curb the spread of infection.
- **Conditions Removed.** For the School Exclusion List, symptoms such as irritability, lethargy, and "not feeling well enough to participate in activities" were removed, since these are not reliable indicators of communicable illness in older students.
- **Employees.** Childcare exclusion rules for staff also apply to food-handlers working in out-of-home childcare settings.
- Both Exclusion Lists now address **"Do Not Exclude"** conditions such as common colds, warts, fifth disease, pinworms and non-purulent conjunctivitis.
- Because schools' **reporting** of outbreaks greatly facilitates local and state disease control efforts, information was added regarding mandated reporting of those excludable conditions that appear on the SC List of Reportable Conditions.
- **Parent Brochures** were developed to help parents understand when children may need to be excluded from school or out-of-home childcare

(Continued on page 15)

(EXCLUSION cont'd from page 13)

attendance. These brochures also address appropriate, judicious use of antibiotics. Parent brochures, which can be printed on legal paper for distribution to families, are found on the Exclusion List website: http://www.scdhec.gov health/disease/exclusion.htm.

The Division of Acute Disease Epidemiology would appreciate any feedback from healthcare providers on the School or Childcare Exclusion Lists. These will next be revised at the end of January 2006 for the 2006-2007 school year. Contact us at: Exclusion@dhec.sc.gov.

Year-to-Date Summary of Reportable Conditions*
January 1, 2005 - September 27, 2005

CONDITION	CONFIRMED	PROBABLE	TOTAL
Aseptic meningitis	41	21	62
Bacterial meningitis, other	2		2
Brucellosis	1		1
Campylobacteriosis	140	1	141
Cryptosporidiosis	14	1	15
Cyclosporiasis	2		2
Dengue Fever	1		1
Ehrlichiosis, Human granulocytic	5	1	6
Ehrlichiosis, Human monocytic	1	3	4
Ehrlichiosis, Human, Other&unspec		3	3
Encephalitis, West Nile	1		1
Enterohem. E.coli O157:H7	6		6
Giardiasis	82	2	84
Group A Streptococcus, invasive	28		28
Group B Streptococcus, invasive	15		15
Haemophilus influenzae, invasive	23		23
Hemolytic uremic synd,postdiarrheal	2		2
Hepatitis A, acute	25	4	29
Hepatitis B virus infection, Chronic	404	75	479
Hepatitis B, acute	108	20	128
Hepatitis C Virus Infection, chronic or resolved	1802	1626	3428
Hepatitis C, acute		3	3
HTLV-I infection	1		1
HTLV-II infection	1		1
Influenza, human isolates	51		51
Kawasaki disease	1	1	2
Legionellosis	10	1	11
Listeriosis	10		10
Lyme disease	13	8	21
Malaria	7		7
Mumps	1		1
Neisseria meningitidis, invasive (Mening. disease)	12	1	13
Pertussis	277	27	304
Q fever		1	1
Rocky Mountain spotted fever	12	44	56
Salmonellosis	843	244	1087
Shigellosis	76	3	79
Strep pneumoniae, invasive	121	2	123
Streptococcal disease, invasive, other	17		17
Vancomycin-Resistant Enterococcus	1103	5	1108
Varicella (Chickenpox)	142	259	401
Yersiniosis	2		2
Scombroid fish poisoning	2		2
Vibrio spp., non-toxigenic, other or unspecified	3		3
HIV/AIDS	639		639
TB (new cases)	177		177

*This report does not include reportable STD conditions.

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SC DHEC
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FOR 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

THE EPI NOTES NEWSLETTER IS NOW AVAILABLE ON LINE AT
www.scdhec.gov/health/disease/index.htm

Bureau of Disease Control
J. Gibson, MD, MPH, Director
803-898-0861

Bureau of Disease Control Divisions
Division of Acute Disease Epidemiology
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Editorial Staff
Editors: Libby C. Greene, MSN, APRN, BC
Claire Youngblood, MA
Design and Layout: Gloria A. McCurry