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Infectious Diseases in Corrections

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# IDCR

**INFECTIOUS DISEASES IN CORRECTIONS REPORT**  
JOINTLY SPONSORED BY MEDICAL EDUCATION COLLABORATIVE, INC.

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## ABOUT IDCR

IDCR, a forum for correctional problem solving, targets correctional physicians, nurses, administrators, outreach workers, and case managers. Published monthly and distributed by email and fax, IDCR provides up-to-the moment information on HIV/AIDS, hepatitis, and other infectious diseases, as well as efficient ways to administer treatment in the correctional environment. Continuing Medical Education credits are provided by Medical Education Collaborative (MEC). This activity is jointly sponsored by IDCR and Medical Education Collaborative (MEC). IDCR is distributed to all members of the Society of Correctional Physicians (SCP) within the SCP publication, *CorrDocs* ([www.corrdocs.org](http://www.corrdocs.org)).

IDCR and AAHIVM have united to improve the quality of health care delivery in the nation's correctional facilities by leveraging the knowledge, experience and resources of two diverse and accomplished groups of HIV and correctional health care experts.

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Department of Corrections

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## PANDEMIC FLU PREPAREDNESS AND RESPONSE IN CORRECTIONS FACILITIES

**Rachel D. Schwartz, PhD**  
Institute for Biosecurity  
Saint Louis University School of Public Health

**Disclosures:** Research Grant: Roche Pharmaceuticals

### Introduction

In 2003, one person in China and three in neighboring Vietnam became infected with Avian Influenza (H5N1). All died. Last year, 95 human cases with 41 deaths from Avian influenza were reported to the World Health Organization (WHO), and already this year, there have been 94 cases with 63 deaths in Africa and Asia - including Turkey and Azerbaijan. Although the total number of cases has been low, and transmission has been primarily from animal to human, the high mortality rate and lack of effective treatments or vaccines for Avian influenza (H5N1) have fanned concerns that the virus could mutate to become transmittable between humans, and wreak the kind of worldwide devastation caused by the 1918-1919 Spanish Influenza pandemic - a global outbreak that caused approximately 50 million deaths worldwide, and created socio-economic and political havoc.

The historical pattern of pandemic influenza cycling suggests that it is not a matter of if, but when, the next pandemic will emerge and some experts worry that H5N1 or a similar virus will be responsible. The potential threat of a global influenza pandemic has triggered efforts to increase outbreak surveillance, preparedness and response planning, as well as the research and development of therapeutic interventions. In the US many state and local institutions, hospitals, schools, utilities, corporations, communities and families are receiving support and tailored information to assist them in developing procedures to prepare for widespread influenza yet, to date, the unique issues of correctional institutions have largely been ignored.

Currently, over 9 million people are held in penal institutions throughout the world, with over 2 million in the US.<sup>1</sup> Rather than being insular and isolated, the populations of both jails and prisons are dynamic with inmates frequently entering and leaving these facilities. The fluidity of movement of individuals between correctional facilities and their communities can have seri-

ous public health implications were pandemic influenza to strike. Within the confined facilities of a jail or prison it is not difficult to image how the entry of even a single person, inmate or staff, incubating highly infectious pandemic influenza could spark a devastating outbreak - akin to the lethal waves of influenza that spread among the barracks of soldiers in the early twentieth century.

With so much at stake, and so many variations in types of correctional facilities, flexibility in planning for pandemic influenza is critical as each jail and prison must adapt responses to their own specific circumstances, while taking advantage of the strategies that apply to all. In this paper we consider some of the unique issues faced by correctional facilities in their efforts to plan for pandemic preparedness and response. We examine the physical and social make-up of the inmate population; access to medications, including antivirals and vaccines; surveillance and reporting; access to hospitals and medical facilities; infection control and containment; and staff absenteeism.

### The incarcerated population at risk

Many incarcerated persons may be at relatively higher risk for influenza infection. According to the American College of Physicians (2001), the incarcerated population is disproportionately made up of members of vulnerable and underserved groups and is primarily male, minority, and younger adult but with a growing number of elderly inmates. Many inmates suffer from immunological and infectious diseases including HIV/AIDS, Hepatitis C Virus infection, tuberculosis and others.<sup>2</sup> Drug resistance is a growing problem (e.g. multi-drug resistant TB, methi-

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# LETTER FROM THE EDITOR

Dear Corrections Colleagues,

As winter approaches, the near ubiquity of cold and flu symptoms reminds us all how easily infections may spread from person to person; in correctional medicine, the challenge to prevent an outbreak of communicable disease is that much greater. Close living quarters, community food preparation, and shared cleaning and toiletry facilities put inmates at greater risk for rapid spread of viral infections. This issue of IDCR focuses on preparing for pandemic flu in a correctional setting, controlling the spread of varicella zoster virus (VZV) infection, and includes the recently updated *MMWR* guidelines for adult vaccinations.

In her article focusing on pandemic flu in corrections, Rachel Schwartz introduces key concepts to help prepare for pandemic flu in a prison environment. Though important for any community, the advance development of specific plans to deal with a pandemic flu outbreak are crucial to maintaining the viability of a correctional facility, its staff, and its inmate population. The author outlines elements of preparedness unique to a correctional environment; these include increased surveillance of potential cases at commitment, the designation of specific areas which may serve as isolation and/or quarantine space in the throes of an outbreak, and the need to work closely with security personnel to formulate practical guidelines individualized to each facility. Such plans must be integrated into each facility's emergency response plan and should be adaptable to other potential infectious outbreaks (e.g. previous SARS experiences).

Joseph Bick's article updates us on important advances in the control of VZV. Vaccinations are available to protect against primary varicella and also to booster the immune system to minimize the development of zoster in those who had been previously infected. Cases of varicella in a correctional facility often incite fear among staff and inmates. Bick argues that an active employee immunization program including VZV helps minimize the crisis. This illuminates the facet of correctional medicine involved in protecting our staff.

*MMWR* recently published new guidelines for adult immunizations, including important recommendations especially relevant to inmate populations. The development of the human papillomavirus (HPV) vaccine has the potential to significantly decrease the cases of cervical cancer seen among our female inmates. Inmates have higher rates of sexually transmitted infections, including HPV, than the general population, and therefore will benefit from this vaccine series, which is recommended for women through 26 years of age. Also relevant to incarcerated populations is the new recommendation of including a pertussis component with tetanus vaccine. Pertussis can be spread easily in a facility such as a prison, where someone with a chronic cough can be contagious for a prolonged period of time prior to diagnosis. This vaccine should be encouraged among staff and inmates.

This issue will hopefully assist in developing key infection control programs in correctional facilities a pandemic flu plan and an active immunization program. Please contact me at [michael.poshkus@doc.ri.gov](mailto:michael.poshkus@doc.ri.gov) with any questions or if you wish to share your individualized plans. I look forward to your responses.

Sincerely,

Michael T. Poshkus, M.D.  
 Medical Program Director, RI Department of Corrections  
 Assistant Clinical Professor, Infectious Disease Division, Brown University

## Faculty Disclosure

*\*Disclosures are listed at the beginning of the articles.*

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## PANDEMIC PREPAREDNESS...

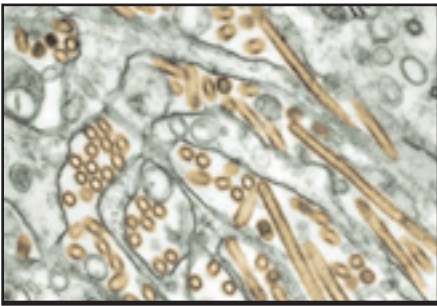
(continued from page 1)

cillin-resistant *Staphylococcus aureus*), as are mental illness and a lack of consistent health care prior to entering and upon release from the corrections system.<sup>3</sup>

Scientific and historical evidence indicates that infectious disease outbreaks in such closed environments tend to be "explosive in nature, with high attack rates as well as significant morbidity and mortality 4," and that prison overcrowding - a serious problem in many facilities - is a major contributor to disease spread.<sup>5</sup> If, as most pandemic planners now posit, 30% of the general population is likely to contract pandemic influenza, it may be further assumed that incarcerated populations will suffer at least the same rate of infection or higher.

### Surveillance and reporting

Successful infectious disease response is predicated upon effective surveillance and reporting. In the event of a rapidly spreading airborne viral infection, such as influen-



H5N1 Avian Flu Virus  
Source: CDC

za, accurate reporting of cases is essential to the mounting of appropriate public health responses. How well institutions such as correctional facilities, nursing homes, businesses, hospitals and schools will perform is unclear. There is particular concern that some jails and prisons are ill-prepared to quickly recognize and report an emerging influenza outbreak. In its July 2002 report, the National Institute of Justice and the National Commission on Correctional Health Care (NCCHC) note that of 41 state departments of corrections surveyed, "less than half...reported having data on the number of inmates with chronic diseases such as diabetes, asthma or hypertension." Furthermore, "few systems can measure the prevalence of communicable disease..." - information crucial in tracking the progress of disease and devising treatment strategies.

To meet this challenge prisons and jails must develop and enhance their surveillance capabilities. Essential elements include the education of medical personnel in disease recognition and reporting. Procedures detailing who within the correctional system should be contacted regarding suspected cases (and how this communication should be made) need to be formu-

lated. Further, it should be made clear who in the system is responsible for alerting local and state authorities of suspected or confirmed cases.

### Access to hospital services and care

Most pandemic influenza models assume that hospitals and other health care facilities will be ill-equipped to respond to a pandemic. Within a short time of the onset of the disease in the population, such centers will be overwhelmed by the influx of patients and by the high absentee levels among staff. In fact, Hick, Daniel, and O'Laughlin note that despite significant medical advances since the last pandemic (1968-69), the decrease in inpatient beds, increased emergency department crowding, and contraction of intensive care unit bed capacity, staff and overall resources may lead to a situation in which "many patients of a modern pandemic may receive medical care similar to that provided to patients during the 1918 pandemic."<sup>6,7</sup>

At a minimum, hospitals will be forced to institute altered standards of care, limiting or halting elective procedures, and resorting to triage systems in which treatment is given only to those most likely to survive.<sup>6</sup> This will be especially important when shortages of ventilators and other acute care supplies develop, a likely scenario given that these are often required in the treatment of pandemic influenza cases.

These strains on the health care infrastructure will have implications for correctional facilities. Under such conditions, hospitals may be unlikely to accept patients from corrections facilities for treatment. Even if hospital transfer is an option, shortages of custody staff stretched thin by increased inmate hospitalization and illness among their own ranks would make it extremely difficult to provide the security needed to make patient transfers possible.

An additional concern is the possibility that in the event of pandemic influenza, inmates will be considered a relatively low priority in so far as allocation of preventative and therapeutic interventions that may be in short supply. Antivirals and vaccines may be rationed, and prisoners, despite their heightened risk for infection, are at risk for being passed over. Unfortunately, there is precedent for such discrimination: in light of a shortage of seasonal influenza vaccine for the general population, the governor of one state ordered vaccine supplies used in correctional facilities to be distributed instead to the general population, over the objections of prison authorities.

In order to help ensure that vaccine and medication supplies are available to inmate-patients, correctional authorities need to partner with government officials and explain to the relevant authorities (and the general populace) the individual and

public health justification for providing prisoners access to these medications and vaccines.

### Treatment and containment strategies

It is probable that in the setting of an overwhelmed health care system, most corrections authorities will need to assume care for sick inmates within their facilities. Each facility must prepare and exercise a plan that provides for the housing and care of sick inmates far beyond the present capacity of their infirmaries. The plan will have to take into account the possibility that quarantine may be necessary, requiring dedicated facilities and training in implementation for staff. Staff (including health care and custody) and inmates will also need training in basic hygiene, infection-containment and control measures. The use of personal protective equipment (PPE) must be enforced among staff and inmates (see *idcr-o-gram*).

Locking down correctional facilities for security or isolation/quarantine over a long stretch may not be necessary during a pandemic but in the case of sporadic outbreaks it is possible public health authorities will restrict movement into and out of correctional facilities. For example, health care workers in China and Canada were confined to their hospitals during the SARS outbreak. Some experts have also suggested that under such conditions, authorities may wish to retain all inmates until they are deemed healthy, regardless of release dates. It may also be necessary to institute mandatory quarantine of new inmates before they are introduced into the general population, or are moved between facilities.

### Absenteeism

Recent research into pandemic response has led to estimates of 40% absenteeism as standard for populations who grow ill or stay home to care for others or protect themselves. In preparation, it will be crucial to develop some redundancy in staff (ideally at least 3 deep) so that if the warden is unavailable, a trained designee will be able to step in and carry out the warden's responsibilities effectively. In the case of health care workers, this will require cross-training. Such plans are more likely to be successfully implemented during a time of need if they are outlined and explained to the staff ahead in advance.

Clearly, some absenteeism is unavoidable, given that staff will fall ill, as will family members who require care. The goal must therefore be to minimize absenteeism among the well, in part, by providing a safe working environment with the availability of PPE, and to encourage the return of those who have recovered from the disease (i.e. enforce 100% vaccine coverage to staff). Annual seasonal influenza vaccination drives among employees will help prepare

Continued on page 4

**PANDEMIC PREPAREDNESS...**  
(continued from page 3)

staff for vaccination in the case of a pandemic, if a vaccine become available. To further augment staff numbers, corrections administrators should also consider contacting retirees and reliable volunteers and training them to step in when they are needed.

**Conclusions**

During an influenza pandemic, inmates may be particularly vulnerable to infection due to the close quarters in which most live as well as the relatively high prevalence of co-morbid health conditions. While intensive efforts to prevent and contain an outbreak in prisons and jails can be justified as good public health policy, popular opinion during the chaos of a pandemic may threaten this logic and lead to rationing of scarce resources away from correctional settings.

Correctional systems of all sizes need to consider their current state of preparedness for pandemic influenza and other similar catastrophes. It is difficult to fully prepare for the worst and few, if any, correctional facilities can adequately plan to meet the challenges of a pandemic of influenza without substantial coordination with local health authorities. However, by outlining some of the problems correctional facilities will likely face during an outbreak we hope to help administrators of jails and prisons to begin to consider how they would function during such a catastrophe.

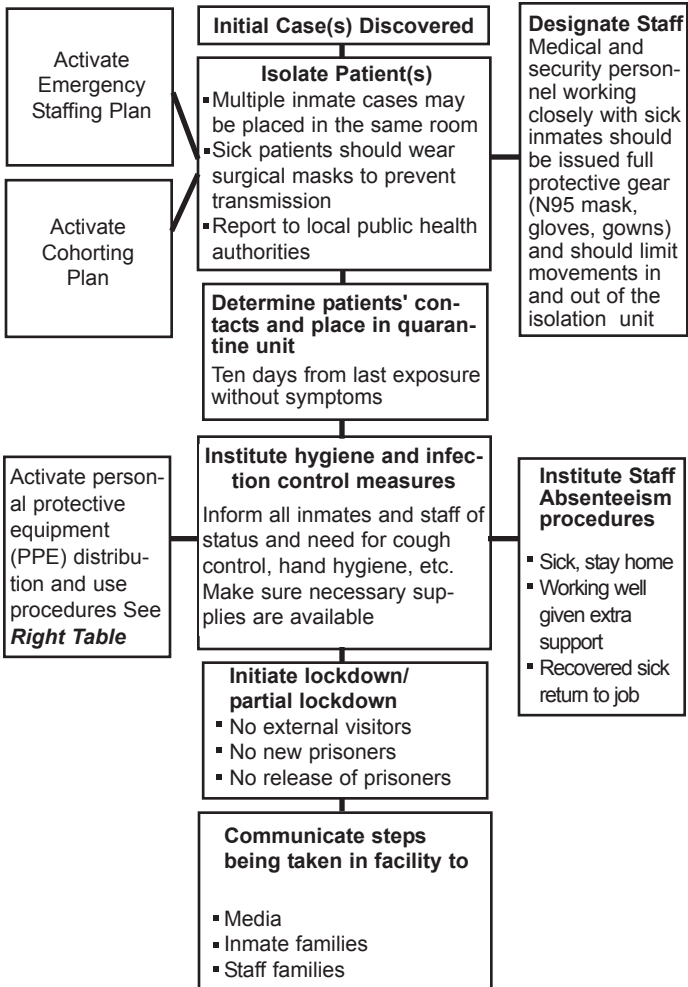
The specter of pandemic influenza is one that is almost too horrific to imagine; however, now, on the cusp of winter, is the perfect time for correctional facility health and custody leaders to assess how well-prepared the facility is to deal with such an outbreak - remembering, it is not a question of if, but when.

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**IDCR-O-GRAM**

**An Approach to Immediate Response to First Pandemic Influenza in Corrections Facilities**



**Recommendations for Personal Protective Equipment During Pandemic Outbreak in Corrections Setting**

	Masks+	Gowns	Gloves	Goggles/ face shields
<b>Direct patient contact including performing procedures</b>	N-95	Yes	Non-sterile	Yes
<b>Within 3 ft. of patient no direct contact</b>	N-95	No	No	No
<b>Patient with Avian Flu</b>	Surgical	No	No	No
<b>Contact outside 3 feet *</b>	Surgical	No	No	No

+While N-95 masks are somewhat more protective than surgical masks, they must be carefully fitted, are more expensive, and less comfortable than surgical masks.

\*Current research indicates use of surgical masks outside the immediate area of sick patient could be helpful in limiting transmission. Masks could be distributed to inmates and personnel in affected cell-block, but is not required.

**Note:** These precautions are specifically recommended for Avian Influenza but have been indicated for use in other types of Influenza pandemics. These precautions should be taken as part of infection controls that include proper airborne precautions, hand-washing etiquette, and decontamination of surfaces exposed to infectious particles. Guidelines on PPEs are continually updated and are available at <http://www.cdc.gov/flu/avian/index.htm>

## CASE STUDY - INFECTION CONTROL OF VARICELLA ZOSTER VIRUS (VZV)

**Joseph Bick, MD**

Chief Medical Officer  
California Medical Facility  
California Department of Corrections

Assistant Clinical Professor  
Section of Infectious and  
Immunologic Diseases  
University of California, Davis

**Disclosures:** The author has nothing to disclose.

It is 5:00 p.m. on Friday afternoon, and you are looking forward to a well-deserved weekend with your family. As you prepare to leave the facility, you receive a frantic call from your Director of Nursing. A late bus has just arrived, and one of the prisoners on the bus has a vesicular rash. Also on the bus are six HIV-infected patients, a patient on high dose prednisone, and a patient who is status post bone marrow transplant. The nurse who is doing the intake screening just learned that she is six weeks pregnant.

You:

**A.** Call the warden, lock down the facility, and notify homeland security that you have just received a case of probable smallpox.

**B.** Kick yourself forever having gotten involved in this crazy world of correctional healthcare.

**C.** Reassure your DON, and head to reception confident in your ability to differentiate between the common causes of vesicular rashes and to implement the appropriate management plan.

### Clinical Features

*Varicella zoster virus* (VZV) is the cause of two distinct clinical syndromes: primary varicella, or chicken pox, and recrudescing varicella, also referred to as zoster or shingles. Prior to the widespread use of the varicella vaccine, virtually everyone became infected with VZV, with more than 90% of cases occurring before the age of fifteen. Following the licensing of the varicella vaccine in 1995, the number of varicella cases in the United States has declined by approximately 85%. In addition, hospitalizations for varicella-related illness have declined by more than 70%, and deaths attributable to varicella have decreased significantly.

Most people who become infected with VZV will be symptomatic, and those who recall a history of chickenpox can be assumed to be immune to re-infection. Approximately 80% of adults will remember having had varicella, and among the 20% who do not recall having had the disease, serology will demonstrate prior infection in over 80%.

Once infected with VZV, the incubation period prior to symptoms is 10-21 days. The most common symptoms of primary varicella are a low-grade fever, malaise, and rash. The rash classically begins as macules and papules on the face and trunk, and rapidly progresses to vesicles, which can involve the entire body. A hallmark of **primary vari-**

**cella** is the development of successive crops of lesions over several days. The number of vesicles ranges from a few to more than a thousand, and tend to increase with the age of the patient. Immunocompromised individuals tend to have a larger number of lesions, and are also at increased risk for visceral involvement. Denuded lesions can become secondarily infected with bacteria, and rarely staphylococcus or group A streptococcus can cause serious secondary infections. Another very serious complication of chickenpox is varicella pneumonia, which can occur in up to 20% of adults who develop primary varicella. VZV can also involve the heart, liver, kidneys, and central nervous system (CNS).

Primary varicella is highly contagious, and is most commonly transmitted by small droplet aerosols from the nasopharyngeal secretions of children in school or daycare who have active chickenpox. In the correctional setting, visiting children can be a source of varicella. VZV can also be transmitted from a person with zoster when a non-immune person comes into direct contact with the lesions of zoster or has exposure to aerosolized virus from clothing or linen.

Those who have primary varicella are contagious beginning 48 hours before the development of a rash and continuing until all lesions have crusted. New lesions will most commonly continue to appear for several days, and complete crusting generally occurs within seven to ten days. After resolution of the initial illness, VZV remains dormant in the dorsal root ganglia. Once infected, individuals will harbor VZV for life.

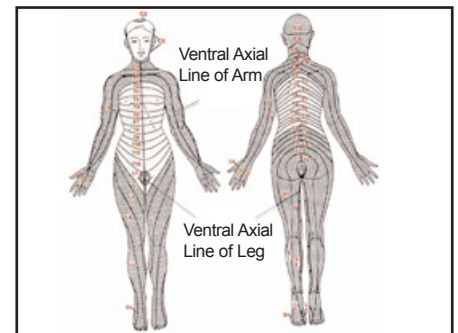
*Herpes zoster* (shingles) is due to reactivation of VZV from the dorsal nerve root ganglia. Approximately 300,000 cases of zoster develop in the United States each year. By the age of 75 years, 30-40% of persons will have experienced an episode of zoster. The incidence of zoster is markedly increased in those who have HIV infection, those receiving corticosteroids or other immunosuppressant therapy, and those who have a malignancy. Zoster or a history of zoster in a person who is not elderly or in anyone at increased risk for HIV infection (such as the incarcerated) should prompt a recommendation for HIV testing.

Unlike chicken pox, zoster is characterized by a unilateral distribution of vesicular lesions in the distribution of a single or several adjacent dermatomes. A vesicular rash that crosses the midline is extremely unlikely to be due to zoster. Infrequently, a more disseminated form of zoster can develop. This variant is more likely to occur in persons who have profound immunosuppression as in the setting of stem cell transplant. A prodrome of pain, numbness, or pruritus

can occur for hours to days before the appearance of lesions. New vesicles typically continue to form for three to five days, scabbing generally occurs by seven to ten days, and complete healing may require two to four weeks. Although any dermatome can be involved, those most commonly affected are from the mid-thoracic to the lower lumbar area. Zoster involving the ophthalmic branch of the trigeminal nerve is referred to as zoster ophthalmicus, and is an ophthalmologic emergency. Any involvement of the trigeminal nerve requires urgent ophthalmologic referral. Ophthalmic zoster can result in uveitis, keratitis, scleritis, and/or optic neuritis.

Zoster can lead to bacterial infection or scarring at the site of the skin lesions. Careful attention to skin hygiene can decrease the risk of secondary infection. Uncommon complications include cutaneous dissemination, pneumonitis hepatitis, encephalitis, myelitis, motor neuropathies, and granulomatous CNS vasculitis.

Zoster is commonly accompanied by acute neuritis and/or postherpetic neuralgia. Both can be severe, disabling, and refractory to treatment. The frequency of postherpetic neuralgia increases in those who develop zoster at an older age. Pain lasting more than one month is uncommon in those less than 30 years old, but is seen in 60-70% of those over age 60. A common sequela is



Different dermatomes of the body that can be affected by shingles.

Source: CDC

hyperesthesia. Patients may report that gusts of wind or the pressure of thin bed sheets leads to sharp intense pain.

### Differential Diagnosis

Prior to the last reported indigenous case of smallpox in 1977, it was important to include this virus in the differential diagnosis of a vesicular rash. An important difference between the two illnesses is that the rash of varicella has macules, papules, vesicles, and scabs in varying degrees of evolution. In smallpox, all lesions are in the same stage.

Other illnesses that should be considered in the differential diagnosis of varicella include impetigo, disseminated herpes simplex, disseminated herpes zoster, dermatitis herpetiformis, and disseminated coxsack-

## INFECTION CONTROL OF VARICELLA... (continued from page 5)

ievirus. These conditions are detailed in **Table 1** on page 7.

### Treatment

The risk for secondary bacterial infection of the skin during VZV disease can be diminished with good skin hygiene. Fingernails should be cut short to decrease the likelihood of inoculating the skin with endemic bacteria such as MRSA. Outside of the correctional setting, daily soaks are commonly recommended. This is not practical in the correctional setting, but access to showers and soap should be facilitated. Antipruritic medications can provide some relief.

Antiviral treatment of adults who have primary varicella leads to small but statistically significant improvement in the days of new lesion formation, the time to onset of cutaneous healing, the time to 100% crusting, and the total number of lesions. Studies have yielded conflicting data concerning whether antiviral therapy decreases the likelihood of chronic pain and the time to cessation of zoster associated pain. To be of benefit, treatment should be initiated as soon as possible after the development of rash, preferably within 24 hours.

Regimens that have demonstrated efficacy in the treatment of acute varicella and zoster include acyclovir (800 mg by mouth five times per day), famciclovir (500 mg orally three times daily) and valacyclovir (1000 mg by mouth two to three times daily). Intravenous treatment should be offered to those who develop visceral disease, those with disseminated zoster, and immunocompromised persons who develop varicella or disseminated zoster.

Medications that may provide some relief for zoster associated pain include nonsteroidal anti-inflammatory medications, tramadol, narcotics, and medications that interfere with the transmission of painful impulses such as tegretol, amitriptyline, and gabapentin. Several studies have demonstrated a benefit of prednisone treatment during zoster in terms of accelerating resolution of acute neuritis, return to normal sleep, return to unaroused sleep, and cessation of analgesic use. The risk, benefit ratio of prednisone should be weighed carefully and most patients can be managed without corticosteroids. The data on decreasing the prevalence of chronic pain with corticosteroids is less conclusive.

### Prevention

**Primary Varicella.** A live attenuated varicella vaccine (Varivax™, Merck and Company, Inc.) was licensed in 1995 by the Federal Drug Administration (FDA) for use in healthy persons 12 months of age or older who have not had varicella. One dose of the vaccine is highly immunogenic, leading to the development of protective antibody titers in 95% of healthy children and 88% of healthy adults. Mild vaccine associated symptoms (fever,

rash, and/or local symptoms) occur in 4-8% of individuals.

Individuals with a history of varicella (i.e. chickenpox as a child) do not need to receive the vaccine, as prior infection confers protection against re-infection. Pregnant women with a history of previous varicella infection should be considered immune. Pregnant women without a history of previous varicella infection are at risk of infection, which can lead to severe complications of the pregnancy. For this reason, particular attention must be paid to prevent non-immune pregnant women from exposure to individuals with active varicella disease.

As preventive use of the VZV vaccine has become increasingly common, more persons have reached adulthood without having been either infected or vaccinated. In addition, immunity following vaccination may wane over time, leaving some adults at risk for acquiring VZV at a later age. The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) has recently added a recommendation for a second dose of varicella vaccination. The first dose should be offered between the ages of 12 and 18 months, and the second between the ages of 4 and 6 years. In addition, ACIP now recommends that persons over 13 years old who do not have a history of varicella infection or of vaccination should receive two doses of varicella vaccine at an interval of 4-8 weeks. The ACIP is also recommending that adolescents and adults who previously received one dose of the vaccination should receive a booster, regardless of how long ago the initial dose was.

Adults who are vaccinated for VZV can develop a rash within 2 to 6 weeks of receiving the vaccine. The rash can be vesicular, macular, or papular, and can be localized to the site of the vaccination or disseminated. Employees should be educated that they may develop a rash following vaccination and instructed to inform employee health staff if a rash is seen. Employees who develop a rash are potentially contagious to non-immune individuals, and should be medically furloughed until the rash resolves. Lesions will typically heal in 2 to 3 days.

### Zoster

Recently, a trial was performed to determine if vaccination of VZV infected adults would decrease the incidence of zoster. Over 37,000 volunteers >60 years old participated in this study and were followed up for an average of three years. Those who were vaccinated had a 52.3% decrease in the incidence of zoster. Those who were vaccinated and developed zoster had a 61.1% decrease in the incidence post herpetic neuralgia. In May of 2006 the FDA approved the use of this live attenuated varicella vaccine (Zostavax™, Merck and Company, Inc.), a stronger version of the chickenpox vaccine, for the prevention of zoster in people > 60

years of age who have previously been infected with VZV. The vaccine is given as a single injection under the skin, preferably in the upper arm.

Both Varivax and Zostavax are contraindicated in persons with a history of anaphylactic or anaphylactoid reaction to gelatin, neomycin, or any other component of the vaccine, a history of primary or acquired immunodeficiency states including leukemia, lymphomas, or other malignant neoplasms affecting the bone marrow or lymphatic system. They are also contraindicated in persons with AIDS or other clinical manifestations of infection with human immunodeficiency viruses, persons on immunosuppressive therapy including high-dose corticosteroids, and in women who are or may be pregnant.

### Infection Control

Transmission of varicella from health care workers to patients is a well-recognized phenomenon that can have devastating consequences. Providing varicella vaccination to non-immune employees can decrease the likelihood of transmission in either direction between staff and inmate/patients. Vaccination is especially important for employees who are in contact with those inmate/patients who are at greatest risk for varicella-related complications. This includes pregnant inmates and those who are immunocompromised (for example, those who are HIV-infected).

Another benefit of an active varicella vaccination program is that it simplifies the required response to the diagnosis of varicella within the facility. Employees who are known to be immune to VZV (either naturally or via vaccination) will not be subject to medical furlough following possible exposure episodes.

Because varicella is spread through the air, it is essential to isolate those who have contagious VZV disease. Inmate-patients with active VZV should be placed in a private room that has negative air pressure relative to the hallway and kept there until all vesicular lesions have dried. Employees who have active VZV should be medically furloughed for a similar period of time.

If negative pressure rooms are not available, it may be acceptable to confine the inmate-patient in a cell or dormitory with inmates who are known to be immune by virtue of having had VZV in the past. Employees who are not known to be immune should not participate in the care of persons who have VZV unless wearing a respirator.

A contact investigation should be performed to identify non-immune persons who may have shared the air with the person who has active varicella. Because of the highly immunogenic nature of the vaccine, testing to demonstrate immunity is not recommended among those who have been vaccinated.

*Continued on page 7*

**INFECTION CONTROL OF VARICELLA...**

*(continued from page 6)*

If an exposed person does not recall a history of vaccination or active VZV disease, stat serology (results within 72 hours) should be obtained. Persons who are VZV IgG negative can be considered to be non-immune. Exposed susceptible inmate-patients should be cohorted and medically confined to a housing unit beginning 10 days after exposure and ending 21 days after exposure. Exposed susceptible staff should be medically furloughed during the same time frame.

**Post Exposure Prophylaxis**

Non-immune persons who have been exposed to varicella and who are considered to be at high risk for severe disease and complications should be offered varicella zoster immunoglobulin. High risk non-immune adults include pregnant women and those who are immunocompromised (HIV infected, recipients of organ transplants, those receiving immunosuppressive agents, etc). Varicella zoster immunoglobulin should be administered as soon as possible, within 96 hours of exposure. Non-immune adults should also be vaccinated for varicella unless contraindicated (HIV infection with CD-4 counts < 200 or 15%). Varicella vaccine should not be given until at least five months after varicella immunoglobulin.

In 2004, the only U.S. licensed manufacturer of VZIG discontinued production. In 2006, an investigational VZIG product, VariZIG™ (Cangene Corporation, Winnipeg, Canada) became available under an investigational new drug application (IND). Investigational VariZIG™ is distributed by FFF Enterprises (Temecula, California; 24-hour telephone, 800-843-7477).

**Conclusion**

*5:16 p.m.*

You take a deep breath, and enter the bus screening area. Since you had chickenpox as a child, you know that you do not need to worry about "catching" it again. The triage nurse is in tears, and her union rep is helping her fill out a stress claim.

While evaluating the 20 year-old inmate who has a rash, you learn that two weeks ago his girlfriend and their two year-old child visited him in the county jail. He recalls that the child had a fever, and was not her usual playful self. Neither he nor his girlfriend has vaccinated the child, because they believe that immunizations are dangerous. You examine the patient and find that he has over 100 scattered skin lesions on his face, chest, back, and arms. The lesions include macules, papules, vesicles, pustules, and scabs. He has a temperature of 101.6, malaise, anorexia, and pruritus. He does not recall having had chickenpox as a child. You diagnose him with primary varicella, and have him separated from the rest of those who need evaluation. You ask the Nursing Director to contact your local referral hospital and arrange for a negative pressure respiratory isolation room. You also ask her to ensure that those assigned to transport the patient have all had chicken pox.

*5:31 p.m.*

You turn your attention to the bus screening nurse. Your pulse quickens when she tells you that she does not remember having had chicken pox. You know that chickenpox is one diagnosis for which the sensitivity and specificity of a mother's history is superb, and so you ask the nurse to call her mom. You resume the investigation of those who traveled on the bus with your chickenpox patient.

*5:42 p.m.*

There are a total of 12 new arrivals, including the 6 patients who are known to be HIV infected, one who is receiving 60 mg per day of prednisone for some type of kidney disorder, and one who is 18 months post stem cell transplant for ALL. You are informed that all the patients' charts were mistakenly left at the last institution. The inmates are working together on some paperwork; one of them asks you if you know how to spell "deliberate indifference".

Ten of the inmate-patients recall having had chicken pox as a child. You advise them that

they are immune, have no risk of being re-infected, and that they do not need any special treatment related to this exposure. You inform custody that these ten inmates can be housed without regard to this exposure.

Two of the patients do not recall a history of chickenpox; one is HIV infected and the other is your stem cell transplant patient. You order a stat blood draw for varicella zoster serology (IgG) to be obtained from both of these patients. You authorize overtime for the phlebotomist to personally drop the specimens off at the local reference lab that evening, with instructions that you need results back no later than Monday afternoon. You place a medical hold on these two patients, and inform custody that although these patients are not contagious and do not need special housing, they must not leave the institution until they have been evaluated further.

*6:02 p.m.*

Returning to the reception nurse, you are immensely relieved to learn that her mother clearly recalls nursing her through chickenpox when your employee was four years old. You reassure the nurse that there is no risk to her or her unborn baby from this exposure, write her a brief note, and suggest that she follow-up with her physician for good measure.

*6:15 p.m.*

You stroll confidently to the parking lot, hoping to salvage some of the evening with your family. As you pull out of the parking lot, you answer a new page from the watch commander. She informs you that one of her sergeants has determined that an inmate has scabies, has quarantined the man's 300 man dorm, and is demanding that all 300 inmates be treated immediately with DDT...



Go to [www.AAHIVM.org](http://www.AAHIVM.org) to learn about membership, continuing education and the new partnership with IDCR

**Table I: Differential diagnosis of primary varicella**

Etiology	Comments
Primary varicella	Characteristic skin rash with successive crops of macules, papules, vesicles, pustules, and scabs. Low-grade fever, malaise, anorexia, pruritus. Treatment: supportive, acyclovir derivatives.
Impetigo	Can be associated with small vesicles. Usually secondary to staphylococcus or group A beta-hemolytic streptococci. Often follows superficial skin break or abrasion. Can be associated with cellulitis or bacteremia. Gram stain and culture of unroofed lesions may demonstrate the bacterial etiology. Treatment: antibacterial agents.
Disseminated herpes simplex	Uncommon. Usually in setting of skin condition such as eczema or atopic dermatitis. Diagnosis can be made clinically or by culture of unroofed lesion. Treatment: acyclovir derivatives.
Disseminated herpes zoster	May be seen in those with lymphoproliferative disorders. Rarely in setting of HIV. Treatment: acyclovir derivatives.
Disseminated coxsackievirus	Commonly morbilliform with a hemorrhagic component. Occurs during enterovirus season (summer/fall). Lesions appear on palms, soles, and pharynx. Treatment: supportive.
Dermatitis herpetiformis	Chronic, pruritic papulovesicular lesions involving extensor surfaces of elbows, knees, buttocks, back, scalp. Diagnosis assisted by biopsy. Treatment: dapson, gluten restriction.



# VACINE 101

Recommended Adult Immunization Schedule, by Vaccine and Age Group				
Vaccine	Age Group	19 - 49 years	50-64 years	>65 years
Tetanus, diphtheria, pertussis (Td/Tdap)		1 dose booster every 10 years Substitute 1 dose of Tdap for Td		
Measles, mumps, rubella		1 or 2 doses		1 dose
Varicella		2 doses (0,4-8 weeks)		2 doses (0,4-8 weeks)
Human Papilloma Virus (HPV)		3 doses 19-26 y/o females		
Influenza		1 dose annually		1 dose annually
Pneumococcal (polysaccharide)		1-2 doses		
Hepatitis A		2 doses (0, 6-12, or 0, 6-18 months)		
Hepatitis B		3 doses (0, 1-2, 4-6 months)		
Meningococcal		1 or more doses		

For all people in this category who meet the age requirements and who lack evidence of immunity (i.e. lack prior vaccine documentation or have no evidence of prior infection)
  Recommended if some risk factor is identified (i.e. based on occupational, medical, lifestyle, or other indication)

Recommended Adult Immunization Schedule, by Vaccine and Medical and Other Indications						
Vaccine	Indication	Pregnancy	Diabetes, heart disease, chronic pulmonary disease, chronic liver disease	HIV Infection	Health Care Workers	
Tetanus, diphtheria, pertussis (Td/Tdap)		1 dose booster every 10 years Substitute 1 dose of Tdap for Td				
Measles, mumps, rubella			1 or 2 doses			
Varicella			2 doses (0, 4-8 weeks)		2 doses (0, 4-8 weeks)	
Human Papilloma Virus (HPV)			3 doses for women through 26 y/o (0,2,6 months)			
Influenza		1 dose annually				
Pneumococcal (polysaccharide)		1-2 doses	1-2 doses		1-2 doses	
Hepatitis A		2 doses (0, 6-12 months, or 0, 6-18 months)				
Hepatitis B		3 doses (0, 1-2, 4-6 months)		3 doses (0, 1-2, 4-6 months)		
Meningococcal			1 dose		1 dose	

For all persons in this category who meet the age requirements and who lack evidence of immunity (i.e. lack of documentation of vaccination or have no evidence of prior infection)
  Recommended if some other risk factor is present (i.e. based on occupational, medical, lifestyle, or other indications)
  Contraindicated

Modified from CDC. Recommended Adult Immunization Schedule- United States, October 2007-September 2007. MMWR Morb Mortal Wkly Rep. 2006;55(40):Q1-Q4.  
 For further information see the CDC's Recommended Adult Immunization Schedule- United States, October 2007-September 2007 available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5540-Immunization1.htm>

## SAVE THE DATES

### 19th Annual Association of Nurses in AIDS Care

Scaling the Heights of HIV/AIDS Nursing  
October 26-29, 2006  
Las Vegas, NV  
Visit: [http://www.anacnet.org/conf\\_natl-conf.php](http://www.anacnet.org/conf_natl-conf.php)

### Infectious Disease in Corrections Report (IDCR) Symposium

"Managing Infectious Disease: An Expert Panel"  
Pre-conference before the NCCHC Conference  
Saturday Afternoon, October 28, 2006  
CME credits available  
Hyatt Regency Hotel Atlanta, GA  
Visit: <http://www.ncchc.org/education/national2006/atlanta.html>

### 57th Annual Meeting of the American Association for the Study of Liver Diseases

October 27-31, 2006  
John B. Hynes Convention Center  
Boston, MA  
Visit: [https://www.aasld.org/eweb/DynamicPage.aspx?webcode=06\\_Livermeeting](https://www.aasld.org/eweb/DynamicPage.aspx?webcode=06_Livermeeting)

### National Commission on Correctional Health Care (NCCHC) Conference

October 28-November 1, 2006  
Hyatt Regency Hotel Atlanta, GA  
Visit: <http://www.ncchc.org/education/national2006/atlanta.html>

### 134th Annual American Public Health Association (APHA) Meeting and Exposition

November 4-8, 2006  
Boston, MA  
Visit: <http://www.apha.org/meetings/>

### 6th National Harm Reduction Conference

November 8-12, 2006  
Oakland, CA  
Visit: <http://www.harmreduction.org/6national/>

### University of Texas Medical Branch (UTMB) HIV Mini-Fellowship

November 13-15, 2006  
Moody Gardens Hotel and Convention Center  
Galveston, TX  
\$50.00 Registration Fee  
CME and CNE credits available  
Contact: Victoria Korschgen  
E-mail: [vikorsch@utmb.edu](mailto:vikorsch@utmb.edu)  
Phone: (409)747-2768

### 14th Conference on Retroviruses and Opportunistic Infections

February 25-28th, 2007  
Los Angeles, CA  
Visit: <http://www.retroconference.org/2007/>

## NEWS AND LITERATURE REVIEWS

### An HIV/STD Risk Reduction Intervention for Male Prison Releasees: A glass two-thirds full.

Many correctional facilities provide HIV/STD risk reduction counseling to inmates but few, if any, extend such interventions beyond release -when releasees have the greatest opportunity to engage in the very behaviors they are being trained not to do. Project START, a multi-site trial funded by the Centers for Disease Control and Prevention (CDC), compared a single session pre-release HIV/STD risk reduction counseling intervention with a pre-release and post-release series of sessions focusing not only on risk behaviors but also on community re-entry needs. The single session intervention was conducted two weeks prior to release and the multi-session intervention consisted of two pre-release sessions plus four sessions conducted 1, 3, 6 and 12 weeks after release. Both employ techniques of motivational interviewing, prevention case management and harm reduction. Participants were incarcerated men age 18 to 29 years, housed at state prisons in California, Mississippi, Rhode Island or Wisconsin and expected to be released to an unrestricted environment within 14 to 60 days of study entry.

A total of 522 men were enrolled and released. Half were Black, non-Hispanic, over 90% were single and unprotected sex in the three months prior to incarceration prior to incarceration was reported by 87.6%. Only 11 men reported sex with a man prior to incarceration and 2 men were known to be HIV-infected. Two thirds (67%) of those randomized to the multi-session intervention received five or more of the sessions.

There were no differences in reported risk behaviors between the study arms at weeks 1 and 12 post-release. At week 24, statistically significant differences were observed in reported rates of unprotected vaginal or anal sex during the most recent encounter and with any partner favoring the multi-session intervention. Of the men assigned this intervention, 68% reported these risk behaviors compared to 78% of those assigned to the single-session arm (odds ratio=0.40; 95% CI=0.18, 0.88). Interestingly, the multi-session intervention had the greatest effect at reducing reported unprotected sex with a main sex partner (someone the participant felt an emotional attachment or commitment to). In contrast, the intervention had no significant effect on risk behavior with non-main partners. Re-incarceration was common with 44% returning to prison or jail by six months. At week 12 but not 24, the multi-session group had significantly higher re-incarceration rates.

These results demonstrate the relative effectiveness of a risk reduction intervention that spans the periods of incarceration and release. Yet, they also highlight the

difficulty of positively modifying behavior in this setting as 68% of those in the 'successful' arm of the study reported unprotected sex. Further, all behaviors were self-reported and it is conceivable that those receiving the more intensive intervention may have felt a greater need to provide socially desirable responses - unfortunately, biological specimens to test for STDs were not included in the overall study protocol. Nonetheless, this is an important study, lessons from which can be applied to the design of existing or planned risk reduction programs for prison/jail releasees, as well as future research investigations.

*Relative Efficacy of a Multisession Sexual Risk-Reduction Intervention for Young Men in 4 States. Wolitski RJ et al. American Journal of Public Health. 2006;96(10):1854-61.*

### US HIV Treatment Guidelines Updated

A US Department of Health and Human Services (DHHS) panel on October 10th announced important revisions to the department's Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents. Reflecting the findings of several from recently reported antiretroviral clinical trials, the guidelines have expanded the "preferred" options for initial treatment of HIV infection by adding the ritonavir (Norvir) boosted protease inhibitors (PI) atazanavir (Reyataz) and fosamprenavir (Lexiva) to lopinavir/ritonavir (Kaletra) and efavirenz (Sustiva) as favored regimen anchors. These drugs are to be used with dual nucleoside reverse transcriptase (NRTI) combinations and the guidelines now list both tenofovir/emtricitabine (Truvada) and zidovudine/lamivudine (Combivir) as the only preferred companion NRTIs (see table below). Several alternative options, considered inferior by the panel, are listed as they may be preferable in some circumstances. In general, these revisions move these guidelines closer to those issued by the International AIDS Society-USA (<http://www.iasusa.org/pub/>), which tend to recommend classes of antiretrovirals rather than specific antiretroviral agents to first-line therapy.

In addition to the revisions to the recommended HIV therapies for treatment-naïve patients, the guidelines have added information regarding the use of darunavir (Prezista) and tipranavir (Aptivus) and information on expanded access to the investigational medications TMC-125, a non-nucleoside reverse transcriptase inhibitor (NNRTI) and MK-0518, an inhibitor of the HIV integrase.

*The US Department of Health and Human Services. October 2006. Available at <http://aidsinfo.nih.gov/>.*

## RESOURCES

### CDC's Provisional ACIP Recommendations for Prevention of Varicella

[www.cdc.gov/nip/vaccine/varicella/varicella\\_acip\\_recs\\_prov\\_june\\_2006.pdf](http://www.cdc.gov/nip/vaccine/varicella/varicella_acip_recs_prov_june_2006.pdf)

### U.S. Government Avian and Pandemic Flu Information

<http://www.pandemicflu.gov/>

### CDC-Pandemic Influenza Information for Health Professionals

<http://www.cdc.gov/flu/pandemic/healthprofessional.htm>

### World Health Organization- Epidemic and Pandemic Alert and Response

[http://www.who.int/csr/disease/avian\\_influenza/en/index.html](http://www.who.int/csr/disease/avian_influenza/en/index.html)

### National Institute of Corrections- Pandemic Preparedness

[http://nicic.org/WebTopic\\_450.htm](http://nicic.org/WebTopic_450.htm)

### Bureau of Justice Assistance- Preparing the Justice System for a Pandemic of Influenza and Other Public Health Emergencies

[http://www.ojp.usdoj.gov/BJA/pandemic/pandemic\\_main.html](http://www.ojp.usdoj.gov/BJA/pandemic/pandemic_main.html)

### 2006 Recommendations of the International AIDS Society-USA Panel Treatment for Adult HIV Infection.

<http://jama.ama-assn.org/cgi/content/full/296/7/827>

### CDC's Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5514a1.htm>

### The latest in virology-related CME

[www.virologycme.com](http://www.virologycme.com)

## SELF-ASSESSMENT TEST FOR CONTINUING MEDICAL EDUCATION CREDIT

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for continuing Medical Education through the joint sponsorship of Medical Education Collaborative, Inc. (MEC) and IDCR. MEC is accredited by the ACCME to provide continuing medical education for physicians.

Medical Education Collaborative designates this educational activity for a maximum of 1.5 AMA PRA Category 1 Credit(s)<sup>™</sup>. Physicians should only claim credit commensurate with the extent of their participation in the activity. Statements of credit will be mailed within 6 to 8 weeks following the program.

**Objectives:**

- The learner will be able to describe the clinical presentations of varicella zoster (VZV).
- The learner will be able to cite major considerations in preparing for pandemic influenza in correctional facilities.
- The learner will be able to list major modifications to the US Department of Health and Human Services HIV treatment guidelines.

- |   |   |
|---|---|
| <p>1. Differences between varicella (zoster) and variola (small pox) include which of the following:</p> <p>A. Varicella has macules, papules, vesicles and scabs in varying degrees of evolution.</p> <p>B. Variola lesions are typically all in the same stage.</p> <p>C. The last case of variola was reported in 1977 while varicella is common.</p> <p>D. All of the above.</p> <p>2. All of the following statements regarding post-exposure prophylaxis for pregnant health care workers exposed to varicella zoster are correct EXCEPT:</p> <p>A. If she had chickenpox as a child she should not receive post-exposure prophylaxis.</p> <p>B. If non-immune, she should ideally receive varicella zoster immunoglobulin (VZIG) and then at least five months later the varicella vaccine.</p> <p>C. If she is non-immune and wore gloves when bandaging the source patient's zoster lesions, she is at no risk of infection.</p> <p>D. If non-immune, she needs to be furloughed beginning 10 days after exposure and ending 21 days after exposure.</p> <p>3. Revisions announced in October 2006 to the Department of Health</p> | <p>and Human Services guidelines for initial treatment of HIV infection include which of the following?</p> <p>A. Ritonavir boosted-fos-amprenavir and -atazanavir have been added to the preferred regimens list.</p> <p>B. Both tenofovir/emtricitabine or zidovudine/lamivudine are the only preferred NRTI combinations.</p> <p>C. Both efavirenz and lopinavir/ritonavir continue to be listed as preferred agents.</p> <p>D. All the above.</p> <p>4. Which of the following are appropriate responses to an outbreak of pandemic influenza in a correctional facility:</p> <p>A. Isolate the patients with infection</p> <p>B. Designate staff to handle sick inmates and distribute personal protective equipment</p> <p>C. Determine contacts of infected patients and place in quarantine</p> <p>D. Communicate steps being taken to control the outbreak to media and families of staff and inmates</p> <p>E. All the above.</p> <p>5. Only fitted N-95 masks and not fitted standard surgical masks are protective against infection with influenza virus (TRUE or FALSE)?</p> <p style="text-align: center;">TRUE or FALSE</p> |
|---|---|

**In order to receive credit, participants must score at least a 70% on the post test and submit it along with the credit application and evaluation form to the address/fax number indicated. Statements of credit will be mailed within 6-8 weeks following the program.**

**Instructions:**

- Applications for Credit will be accepted until November 30, 2007.
- Late applications will not be accepted.
- Please anticipate 6-8 weeks to receive your certificate.



Please print clearly as illegible applications will result in a delay.

Name: \_\_\_\_\_ Profession: \_\_\_\_\_

License #: \_\_\_\_\_ State of License: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ Telephone: \_\_\_\_\_

Please Check which credit you are requesting  ACCME or  Non Physicians

**I certify that I participated in IDCR monograph - Oct/Nov 2006 Issue**

Please fill in the number of actual hours that you attended this activity.

Date of participation: \_\_\_\_\_

Number of Hours (max. 1.5): \_\_\_\_\_

Signature: \_\_\_\_\_

**Please Submit Completed Application to:**

Medical Education Collaborative  
 651 Corporate Circle, Suite 104, Golden CO 80401  
 Phone: 303-420-3252 FAX: 303-420-3259  
 For questions regarding the accreditation of this activity, please call (303)420-3252

## COURSE EVALUATION

**I. Please evaluate this educational activity by checking the appropriate box:**

Activity Evaluation					
	<i>Excellent</i>	<i>Very Good</i>	<i>Good</i>	<i>Fair</i>	<i>Poor</i>
Faculty					
Content					
How well did this activity avoid commercial bias and present content that was fair and balanced?					
What is the likelihood you will change the way you practice based on what you learned in this activity?					
Overall, how would you rate this activity?					

**II. Course Objectives**

Were the following overall course objectives met? At the conclusion of this presentation, are you able to:

- |   |            |           |                 |
|---|------------|-----------|-----------------|
| • The learner will be able to describe the clinical presentations of varicella zoster (VZV).                                      | <b>YES</b> | <b>NO</b> | <b>SOMEWHAT</b> |
| • The learner will be able to cite major considerations in preparing for pandemic influenza in correctional facilities.           | <b>YES</b> | <b>NO</b> | <b>SOMEWHAT</b> |
| • The learner will be able to list major modifications to the US Department of Health and Human Services HIV treatment guidelines | <b>YES</b> | <b>NO</b> | <b>SOMEWHAT</b> |

**III. Additional Questions**

a. Suggested topics and/or speakers you would like for future activities.

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b. Additional Comments

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