Pneumococcal Vaccine - Who Needs It?

Dr Christine Connors, Public Health Registrar, Disease Control, Darwin

*Streptococcus pneumoniae* (pneumococcus) causes significant morbidity and mortality worldwide. In developing countries it is a leading cause of death from pneumonia in young children. In developed countries, it is the commonest cause of community acquired pneumonia and has significant mortality in adults. It is estimated that in the United States, more than 20% of children will have had an episode of pneumococcal otitis media by three years of age. In the Northern Territory (NT), the incidence of invasive pneumococcal disease is very high in Aboriginal people. In Central Australia the incidence of invasive pneumococcal disease in Aboriginal children less than five years of age is 1110 per 100,000 (i.e. 1.11% of this age group) compared to 78 per 100,000 for non-Aboriginal children less than five years. Pneumococcus is responsible for 40% of community-acquired bacteremic pneumonia in adults admitted to Royal Darwin Hospital, with a mortality of 21%.

Analysis of invasive pneumococcal disease is currently underway in the NT. The aim is to formulate appropriate guidelines for and emphasise the use of pneumococcal vaccine, and to monitor appropriate treatment regimes.

Pneumococcal vaccines were first trialed in 1945. The current 23-valent vaccine has been available since 1983. In the United States it is estimated that only 10% of risk groups have been vaccinated. In the Top End only 26 doses have been dispensed through the hospitals over the past 18 months. Controversy regarding efficacy and duration of protection may contribute to its underutilisation. Studies assessing efficacy have produced conflicting results, although the methodology of some of these studies was poor. In adults the efficacy ranges from 55% to 77%, with the best response in young healthy adults. The risk group with the highest mortality and the most accepted indication for pneumococcal vaccine is patients with anatomic or functional asplenia. The association with chronic disease is less well documented, however most authorities are in agreement regarding recommendation for its use in “high risk” groups. A major reason for low vaccine coverage in these groups may well be missed opportunities or uninfomed health care staff.

In the NT, pneumococcus is causing significant morbidity in Aboriginal children. Pneumococcus causes pneumonia, bacteremia, meningitis and otitis media. Fortunately the mortality is low, with no deaths amongst the 52 cases in the Top End over the past three years. However, the high hospitalisation rates, complications...
of chronic otitis media, and the role of infection in the malnutrition cycle, have stimulated discussion regarding vaccination of children. The current vaccine has been trialed in children in a number of studies, but the results have been disappointing and consistent with the generally poor immunogenicity of polysaccharide vaccines in children under two.65 Pneumococcus has multiple serotypes, of which 23 are in the current vaccine. The "paediatric" serotypes are the common ones which cause 70% of invasive disease in children in developed countries. Antibody response to these serotypes is very poor amongst young children, although the response gradually improves with age.7 Following a vaccination program in Papua New Guinea (PNG) there was significant decrease in mortality amongst children with respiratory disease.5 A recent study from PNG confirmed that the serotypes causing invasive disease in children were more of the "adult" types and antibody response to these types is much better in young children.9 The serotypes for invasive disease in N.T. children are a mixture of "paediatric" and "adult" types. The numbers are not sufficiently large at present to meaningfully analyse, but ongoing monitoring of invasive serotypes is important to assess the common types in the N.T.

The current vaccine has not been shown to affect carriage rates. It does not reduce the incidence of otitis media, although in PNG it possibly reduced otitis media due to vaccine serotypes without affecting overall rates. The vaccine appears unable to influence events at the mucosal surface. It appears to work by facilitating phagocytosis and thus clearing of bacteria from alveoli. The major effect is in preventing bacteremia and reducing mortality. New protein conjugated vaccines in which polysaccharides are attached to protein carriers are being produced and trialed overseas. A conjugated vaccine should be more immunogenic in young children and holds greater promise of decreasing morbidity, however the vaccine will be limited to 6-8 serotypes.

Currently there are well defined and accepted "high risk" groups for invasive pneumococcal disease, and preliminary analysis of adult cases in the Top End suggests that the majority of cases had one of these risk factors. Assessment of individual patients to determine their risk is important, particularly if a patient has been hospitalised for chronic illness in the previous five years.5

Current recommendations for pneumococcal vaccination are:

- Anatomic or functional asplenia. (Ideally vaccine should be administered two weeks prior to splenectomy.)


- Adults with chronic illness: chronic alcoholism, diabetes, chronic lung disease, chronic liver disease, cardiac failure.

- Surgically incorrectable cerebrospinal fluid leaks.

The vaccine is given in a single dose (0.5 ml) subcutaneously or intramuscularly. Booster doses are only required for patients at highest risk (asplenia and immunocompromised patients) and should be repeated after five years. Severe adverse reactions are rare, about five per million doses. Minor side effects such as mild local pain and erythema are common. Note that risk groups are similar to those recommended for influenza vaccination and the two vaccines can be given simultaneously.18

Vaccination of identified risk groups should be occurring now. Vaccination of Aboriginal adults without risk factors is not recommended at present but further analysis is needed. Vaccination of Aboriginal children with the current vaccine does not seem appropriate at this time. An effective vaccine which can decrease morbidity as well as mortality in infants less than two years is what is required. Monitoring of invasive serotypes to determine the pattern in childhood illness is essential, and would allow the future possibility of protein conjugated vaccine trials in the N.T.

REFERENCES

New Protocol for the Treatment of Uncomplicated Genital Chlamydial Infection
Dr Frank Bowden, Head, AIDS/STD Unit.

Azithromycin was licensed for use in Australia in December 1993 but has not yet been marketed for use (see Donovanosis Trial in this issue). The AIDS/STD Unit has organised the importation of a quantity of the drug for use in the Northern Territory. It is anticipated that it will be available in early July 1994. As the supplies are limited, the following indications for azithromycin use will apply until further notice:

Age: 16 years and over

Sex: Male or female (Women must not be pregnant or breast-feeding).

Patient Profile: Patient unlikely to complete a full course of doxycycline or erythromycin or is known to be intolerant to these medications.

Diagnosis: Uncomplicated chlamydial cervicitis or urethritis must be strongly suspected in index case on clinical grounds but laboratory confirmation is not necessary for dispensing the drug. However, contacts should only be treated with azithromycin when laboratory confirmation of index case is obtained.

Pelvic inflammatory disease (PID) should be treated with the standard regimens.

Dosage: Single dose, azithromycin, 1.0 gram orally.

Other Treatment: A single dose of amoxycillin 3.0 g and 1.0 g probenecid for the presumptive treatment of gonorrhoea should also be given.

Availability: The drug will be available through the pharmacy of the Royal Darwin, Alice Springs, Gove, Tennant Creek and Katherine Hospitals. In addition supplies will be available through District Medical Officers and Communicable Disease Officers in each district.

This policy will change when the drug is more freely available.

Rotavirus increases noted
Dr. Douglas Lush, Epidemiology Registrar, NCEPH and Disease Control, Darwin

Royal Darwin Hospital laboratory has reported a recent increase in rotavirus (RV) latex positive results over a two month period. In April there were 18 reports and in May a further 49. Only nine were reported during this same two month period in 1993.

From the beginning of December 1993 to the middle of April 1994 Alice Springs Hospital laboratory reported 96 RV positive tests (11, 38, 24, 16 and 8 in those consecutive months). This was a marked increase from the previous year where only three isolates were recorded over the 3 month period December 1992 to February 1993. It is unseasonal for RV to occur in the Alice Springs summer months as it tends to be more prevalent in the cooler months. Seasonal variation in the tropics is less pronounced. Characteristics of the RV cases in Alice Springs showed 60% were male, 97% were Aboriginal, and 96% were less than two years of age. The majority of the cases from Alice Springs are non typable by conventional means, possibly the result of re assortment of two existing strains types. Testing is being undertaken on samples from Darwin to see if they are the same 'new' strain first recorded in Alice Springs in December 1993. These findings may improve knowledge of the of RV and may have implications on the progress towards vaccine development, but require further research.

Katherine Hospital reported 23 RV cases in April and a further three in May, this was comparable with their finding of 18 over the same period in 1993. In contrast Gove District Hospital has had 4 cases up until June of this year, with 19 being reported in the first five months of last year.

Many thanks to the Regional Hospital Laboratories for providing the data on RV testing.
EDITORIAL COMMENT

Rotaviruses (RV), of which there are at least five distinct antigenic sero groups, are an important cause of diarrhoea in young children. The infection follows one or two days after the ingestion of the viral particles. The infection flourishes in the absorptive epithelial cells of the small intestine. Cell damage and replacement with secretory cells leads to profuse watery diarrhoea that may be accompanied by a low grade fever or vomiting. Viral excretion occurs for seven to ten days and treatment consists of appropriate rehydration and attention to electrolyte balance. RV occurs worldwide and is the agent most responsible for children under two years of age seeking medical attention in the developed world. Of interest, enteric adenovirus is thought to be the second most important agent of diarrhoeal disease in children. Death from dehydration is uncommon in the developed world, but is a major cause of mortality worldwide. The following article addresses the complexity of the virus, infection control, laboratory diagnosis and vaccine possibilities.

REFERENCES

1. Kapikian, AZ, Viral Gastroenteritis. JAMA 1993;269:627-630

Rotavirus - a view from the laboratory

Dr Brian Dwyer, Clinical Microbiologist - Royal Darwin Hospital

Rotaviruses (RV) have long been recognised to be an important cause of gastroenteritis in many mammalian species. The identification of human RV as the most frequent cause of viral gastroenteritis in infants and young children was made initially by Bishop and her colleagues at the Royal Children's Hospital in Melbourne in 1973. Although the mechanisms of immunity are imperfectly understood and are now recognised to be very complex, enduring resistance to symptomatic reinfection is found in older children and adults.

The Complexity of RV

The RV are recognised to form five main serogroups, A to E. In most of Australia, type A infections are usually seen. In China, Type B infections have been recognised to be of importance in both adults and children. They do not have any current epidemiological importance in Australia. Type C infections are for the most part rare, although they are encountered in parts of Europe, Thailand and Japan and are significant for their past presence in Central Australian Aboriginal children. Type C RV is also an important diarrhoea agent in pigs. Types D and E have not been recognised as agents of human disease.

The RV of serogroup A can be further subgrouped into types I and II, as well as combinations of both – and neither of these subgroups. Furthermore there is another serotyping system, genetically independent of the subgrouping system. Group A RV have eleven distinct serotypes, of which four are seen in human infections. In Australia, almost all cases of infection are due to serotype 1 and occasionally serotypes 2 and 4 have been observed. Within serotype 1 it is now recognised that there are a number of additional sub serotypes.

It is indeed remarkable that so much diversity can be found in such a "simple" living organism! The genome of the RV is made of double standard RNA, contained as a core within the double layered shell of the 70nm virus particle. RV are easily discerned on electron microscopy because of their characteristic appearance and size. The genome is segmented into eleven segments and is capable of high frequency reassortment. Reassortment may be facilitated by coinfection of a mammalian cell by two strains of rotavirus. Although there may be some change in serotype composition of infecting strains from year to year changes in strains are more readily seen by analysis of electrophorotyping of the genomic RNA. The eleven segments will migrate in a pattern unique to the strain. Strains of animal origin tend to appear different from human strains because of variation in the relative migration distances of segments 10 and 11. When examined by electrophorotyping over time, the group A RV, especially of subtype 1, appear capable of endless change.

Infection Control

A concern for hospitals and health care settings is the transmission of RV in these environments. Hospital admissions for RV diarrhoea (which reflect the incidence of severe cases) account for 30% of paediatric diarrhoea in the developed world and 40% in the developing world. The available evidence does not support airborne (including aerosol transmission) of this virus. The virus is transmitted by the faecal-oral
route with excretion occurring 7 to 10 days after onset of illness, however, excretion for greater than 30 days has been reported in immunocompromised patients. The virus may survive for significant periods on many types of inanimate surfaces.

The central themes of infection control and prevention for RV diarrhoea are those for undiagnosed diarrhoea and include:

- prompt handwashing with soap after caring for a diarrhoeal patient and prior to caring for an other person or handling of any food
- cleaning of any contaminated surface with soap and water
- isolation or separation of RV diarrhoeal patient from other infants and children in hospital, care centre or home
- careful and hygienic disposal of faecal matter, avoiding contamination of food and water supplies and never change nappies on surfaces where food is prepared.

Laboratory Diagnosis

The preferred specimen is faecal material placed in a legibly labelled, sterile, leak-proof container. The container lid should be tight fitting. After sealing the container it should be placed in a biohazard bag and the request slip placed in carrying sleeve. Unless the specimen is likely to be delayed for greater than 24 hours in transport to the laboratory, special refrigeration is not necessary. The microbiology request must specifically request examination for RV.

The diagnosis of RV infection is made by the microbiology laboratory on faeces using a rapid latex particle agglutination test (LA). This test is imperfect and may detect as few as 70% of acute cases. There is no data available to indicate whether diagnostic sensitivity is affected by the stage of the disease, although it is probable that florid watery diarrhoea is more likely to yield a positive result than resolving, mild diarrhoea. Electron microscopy is regarded as the benchmark test or “gold standard”, but is very time consuming and is unavailable as a routine test. An ELISA test may be more sensitive but is currently unavailable in the Northern Territory public health system. Neverthe-

less, LA is of value when diagnosing the majority of cases especially during diarrhoeal outbreaks.

The typing of RV strains is undertaken at the Royal Children’s Hospital in Melbourne. It may be possible to distinguish types from different locations or community groups and to identify possible sources or foci where closer attention to control of transmission may be appropriate.

A Vaccine

Vaccines for the prevention of RV diarrhoea are currently undergoing trials. Unfortunately the results to date have not been encouraging and the best “mix” of antigens remains elusive. Immunity to RV is complex and may also depend on age dependent host defenses such as gastric peptic activity and perhaps intestinal receptor development.

References

4 Bishop RF. Personal communication
Responses to Hepatitis C Questionnaire.

by Doug Lush, NCEP Epidemiology Registrar, Darwin

In April of 1994 a questionnaire was sent to a number of doctors in the Darwin region to assess their practices regarding the testing for, and management of, patients with Hepatitis C (HCV) antibodies. Of the 61 questionnaires mailed out 28 (46%) have been returned completed.

Of the 28 doctors who completed the questionnaire 18 worked in private practice, 8 in governmental practice and 1 worked in a non governmental organization. The following is a compilation of their responses:

Why would you test for HCV?

23 (82%) when given a history of injecting drug use.
7(25%) for household contact with HCV.
24(86%) for known sexual contact with HCV.
23(83%) on patient request.

Prior to taking a test for HCV doctors would:

22(78%) take a history of ‘at risk’ behaviour.
10(36%) educate the patient about the disease.
17(61%) first exclude other causes of hepatitis.

For asymptomatic anti HCV positive patients doctors would:

6(21%) refer their patient to a physician.
7(25%) repeat the test after a specified time.
25(89%) order liver function tests.
26(93%) educate the patient about HCV and its transmission.
22(79%) arrange for regular follow up.

For symptomatic anti HCV positive patients doctors would:

22(79%) refer the patient to a physician.
2(7%) repeat the test.
16(57%) arrange for regular liver function tests.

Twenty-three (82%) of doctors requested information about the current guidelines for the management of HCV.

Hepatitis C: Guidelines for the management of patients.

Based on current knowledge, adapted to the Northern Territory.

The Hepatitis C Virus

The hepatitis C virus (HCV) is a member of the flavivirus group. HCV causes a hepatitis that is often asymptomatic, may lead to a carrier state and is associated with cirrhosis and occasionally hepatocellular carcinoma many years after the primary infection. The virus was not identified until 1988 and commercial test kits were not available until 1990. Blood and organ donations in Australia have been screened for HCV since 1990. There are at least 6 major strains of the virus and they are known to differ in their geographic distribution.

Modes of Transmission

* Injecting drug use - by way of sharing of injecting equipment. This is believed to be the most common mode of transmission occurring in Australia and probably in the Northern Territory.

* Blood and blood product transfusions, organ and tissue transplantations. All donors have been screened in Australia for HCV antibody since 1990 making the current risk in Australia extremely low. The institution of donor screening in other countries is variable.

* Biohazard Injuries. The risk of being HCV infected following a needle stick injury with infected blood is about 3%. The risk is low compared to Hepatitis B, but much higher than for HIV.

* Mother to child transmission. Although the exact risk is not known it is thought to be low. There is known to be an increased risk with concurrent HIV infection.

* Percutaneous inoculation when infection control measures are not followed. Tattooing, body-piercing, scarification, circumcision and other procedures where there is potential for inoculation of infected blood
all have a potential for transmitting HCV.

* Sexual transmission. There have been reports of both heterosexual and homosexual transmission. The frequency of transmission is low and is certainly lower than for Hepatitis B and HIV infection. There is little available information of the role of concurrent STD’s and genital ulceration in the transmission of HCV, but increased risk of transmission should be assumed in these circumstances.

Infection with HCV.

* The majority of infections with HCV are asymptomatic

* When hepatitis does develop the incubation period tends between two and four months

* A chronic infection develops in more than half of those who become infected

* Chronic infection is characterized by fluctuations in disease activity

* 20-30% of carriers progress to cirrhosis within 20 years

* A small proportion of carriers progress to hepatocellular carcinoma (HCC), which is rare in the absence of cirrhosis

Clinical Features.

* Symptomatic HCV may present with malaise, lethargy, upper abdominal pain, jaundice and weight loss and is generally indistinguishable from other forms of viral hepatitis.

* HCV cirrhosis may not be clinically apparent until it progresses to end stage liver failure, taking many years.

Diagnostic Considerations.

* Diagnosis may be confirmed by testing for antibodies to HCV using an enzyme immunoassay (EIA)

* In newly acquired infection there is a window period of several months before the antibodies are detected (this may include a few weeks following clinical illness)

* Tests for the presence of the HCV virus are not routinely available

* False positive results do occur and if suspected they can usually be identified by supplementary testing

* Patients with auto-immune liver disease may produce false positive results

Indications for Testing.

Test persons 1) in recognized high risk groups for acquiring HCV, 2) patients with clinical hepatitis and 3) those with liver disease not clearly attributable to other causes.

High risk groups include:

* history of injecting drug use

* recipients of blood, blood products or organs (prior to 1990 in Australia, varies in other countries)

* renal dialysis patients

* patients attending STD clinics

* patients with a history of imprisonment

* patients with tattoos, scarification, and other body piercing

Management of Persons with HCV Antibody.

People found to be HCV antibody positive should 1) be reviewed over a period of months, 2) educated in ways of maintaining or improving their personal health and 3) educated in ways of reducing transmission to others.

Education and Counselling.

Many people are alarmed when told that they are HCV antibody positive. Some patients will require long term counselling and support.

Clients should be told about life style changes they can adopt that may decrease the severity, impact and/or progression of the disease. These include:

* reduced alcohol intake

* maintaining a balanced diet

* moderate exercise

* reduce risk of infection by other HCV strains or other pathogens by adhering to correct infection control procedures, not sharing needles or injecting equipment, and by safe sex practices.

* vaccination against Hepatitis B in those not already infected or immune.

HCV Patients should also be informed about what they
can do to minimize the chances of transmission of HCV to other people. They should be advised:

* not to donate organs or blood
* not to share injecting equipment or other equipment which penetrates the skin
* not to share personal toiletry items such as toothbrushes or razors
* to inform relevant health care workers of their HCV status e.g. dentist
* to ensure all wounds are properly cleaned and dressed.
* to clean up their own blood spills and wash contaminated areas with detergent and water and to adequately dispose of all blood stained material
* to reduce the possible risk of sexual transmission by condom use
* to have sexually transmitted disease diagnosed and treated promptly
* to consider abstaining from sexual intercourse if genital ulceration is present

Pregnancy and Breast Feeding.

Available evidence indicates that vertical transmission (from infected mother to child during pregnancy) is about 10%, being higher in the presence of concurrent HIV infection. Maternal antibodies may be found in newborns blood and repeat testing is advised at 6 months of age and then 3 monthly until 18 months if antibody is still present.

Transmission by breast milk has not been clearly demonstrated. Parents should be advised that there is a theoretical risk of transmission occurring from an infected mother to a non-infected infant through breast feeding. Recommendations must be balanced by considering the potential benefits of breast feeding the infant against the small theoretical risk of acquiring the HCV infection.

Household Contacts.

The risk of transmission of HCV within a family or household under ‘normal’ living conditions is small. Testing of family or household members may be advised in some contexts and this should be decided on an individual basis.

Notification of HCV Antibody.

All acute clinical cases and cases of seroconversion are required by legislation to be notified at a Territory and National level and this is conducted through the Northern Territory Disease Control Centre.

A confidential register of patients with HCV antibody is kept within the Disease Control Center (DCC) in Darwin. When antibodies to HCV are detected in a blood sample a notification form (see following page) is sent to the requesting doctor from the laboratory along with the test result. This form should be fully completed and returned to DCC in Darwin. An appointment can be arranged by the treating doctor for the client to be seen for counselling at DCC if this is requested on the notification form.

Medical Management of HCV Antibody Positive People.

Medical management involves the continued evaluation of HCV antibody positive person to determine the progression or resolution of the disease.

*Base line liver function tests (LFT's) should be taken. Plasma alanine aminotransferase levels (ALT) are the most sensitive for this test.

Normal Liver Function Tests: LFT’s repeated in 6 months time along with repeat HCV antibody. If repeat Hepatitis C serology is negative and LFT's are normal, monitoring may be discontinued.

Mildly abnormal LFT's (ALT less than twice normal). Repeat the LFT's at 3 and 6 month intervals and repeat the HCV serology at 6 Months. If the LFT’s do not deteriorate and the HCV serology remains positive the patient should have 6 monthly checks with LFT's. If the ALT exceeds twice normal limits for a period of greater than 6 months and the patient has symptoms or signs of liver disease then referral to a specialist is advised.

Markedly abnormal LFT's (ALT greater than twice normal). Repeat LFT's at 3 and 6 months along with repeat HCV serology at 6 months. If LFT’s remain elevated and patient has signs and symptoms of liver disease then patient should be referred to specialist.

*If HCV antibody test is negative at 6 months and the ALT remains elevated, other chronic liver diseases should be considered.

*If HCV antibody test remains positive then the patient is probably a carrier and should be monitored at least yearly; more frequently if there is a deterioration in condition.

Alpha-interferon is the only agent that has been demonstrated to have any major effect on the disease. The exact role of alpha-interferon continues to be evaluated and is not yet fully defined. Less than a third of patients who receive the drug maintain response after treatment is stopped.
Hepatitis C Notification. (strictly confidential).

Doctors name __________________________ spec. code: ___________ Test Date __/__/____

Doctors address ____________________________________________ Postcode ____________ Tel ____________

Patient Details. (requesting Doctor to complete in full and return to Disease Control Centre, Darwin)

Family name __________________________ Sex ☐ Male ☐ Female Postcode ____________

First name __________________________ Date of Birth __/__/____ Occupation ____________

Aboriginal ☐ Yes ☐ No Place of Birth __________________________ Time in N.T. Yrs. __ Mths __

This patient has. (please tick one box only)

☐ 1. ACUTE HEPATITIS C. A clinical illness consistent with acute hepatitis C in the last 6 months, or a documented seroconversion within the last 6 months.

☐ 2. CHRONIC HEPATITIS C. Abnormal LFT's and anti-HCV positive for more than 6 months.

☐ 3. HEPATITIS C: TYPE UNKNOWN OR ASYMPTOMATIC. Anti-HCV positive, but either not fulfilling the criteria for acute or chronic disease, or insufficient information is available.

Reason for testing.

☐ Screening programme (specify)
   ☐ blood bank
   ☐ antenatal
   ☐ STD clinic
   ☐ drug/alcohol program
   ☐ other (specify) __________________________

☐ biohazard injury: date of injury __/__/____

Investigations.

Previous Hepatitis C test? ☐ Yes ☐ No date __/__/____ ☐ pos ☐ neg

Hepatitis B serology if known. Date __/__/____
Surface antigen (HBsAg) ☐ Pos ☐ Neg
Surface Antibody (HBSAb) ☐ Pos ☐ Neg
Core Antibody (HBCAb) ☐ Pos ☐ neg

Liver function test, if known
   date __/__/____ ☐ normal ☐ abnormal
   If abnormal please send a copy or full details

Hepatitis D serology if known. Date __/__/____
   ☐ pos ☐ neg

Liver Biopsy if performed. Date __/__/____
   Result __________________________

Risk factor assessment. (tick all appropriate options please)

☐ blood, ☐ blood product or ☐ tissue recipient
   ☐ in Australia: year ___________
   ☐ Overseas: Country __________ yr __________

☐ history of imprisonment
☐ injecting drug user
   ☐ current user
   ☐ past user: year of last use ___________

☐ dialysis patient
☐ tattoos

☐ biohazard injury
☐ health care employee
☐ ritualized scarification
☐ child of sero-positive mother
☐ sex industry worker
☐ multiple sex partners (specify no per year) ___________
☐ contact with known Hepatitis C carrier
☐ no known risk factors
☐ other (specify) __________________________

☐ please tick if you wish for your patient to be offered Hepatitis C counselling at DCC Darwin.
☐ please tick if you would like further information about Hepatitis C. (specify) __________________________
Measles Alert and Control Protocol to NT Hospital Staff

Disease Control Staff and Dr Brian Dwyer, Microbiology Laboratory, Royal Darwin Hospital.

There are a number of cases of probable measles being seen in the community at the moment. Some of these children have presented through hospital A & E departments. Because the diagnosis of measles can present diagnostic difficulties, especially in very young children, and confirmatory results are not immediately available **control measures must be started on clinical suspicion of disease** and the Disease Control Centre must be notified.

**Laboratory Diagnosis**
The diagnosis of measles can be confirmed using a combination of the following tests:

1. **Nasopharyngeal aspirate.**
   
   The aspirate should be sent in its correctly labelled collection jar and the request should be for both measles virus IF (immuno-fluorescence) and measles virus culture. Some of the aspirate should be collected on a swab and placed in virus transport medium and stored at 4°C.

2. **Blood for measles antibodies.**
   
   The optimum specimen set is a pair of sera collected 7-14 days apart with the first serum taken on suspicion of diagnosis.

**NOTE:** Measles notification is a statutory requirement throughout Australia.

**Clinical diagnosis**
Because measles is now relatively uncommon, few recent medical graduates have seen measles. The following clinical features help to prompt a provisional diagnosis of measles:

- Refer to the clinical case definition of probable measles.

  The majority of people with measles feel and look unwell, have a fever, often with sore throat, nasal discharge, injected conjunctivae and a brassy cough. The measles rash usually appears 2-4 days after the onset of these prodromal symptoms. In dark skinned people the rash may not be visible, but the other symptoms and signs should be present. **Cough is an important diagnostic feature.**

- Since the introduction of the second generation measles vaccine in 1979, measles in vaccinated individuals is uncommon but is still possible, including severe measles.

  - The diagnosis of measles can be made in the majority of cases on the clinical and epidemiological evidence:

    1. exposure to a known case (epidemiologically linked);

    2. the presence of fever plus cough or coryza or conjunctivitis or Koplik spots, often preceding the development of a non-itchy, non-vesiculating, maculopapular rash by up to several days. The rash commences on the head and neck and spreads centrifugally. The rash typically does not involve the palms of the hands.

    In the Top End, the following illnesses should be considered in the differential diagnosis - parvovirus infection, rubella, Ross River virus and Barmah Forest virus infections, enterovirus infection, drug reactions, scarlet fever and Kawasaki disease. In Central Australia, mosquito-borne infections are usually seen only after heavy rains.

    - **Koplik spots are a distinct and diagnostic feature of very early measles.**

      The spots appear at the onset of the illness before the measles rash appears, and often have disappeared after one to two days. The spots are found on the buccal mucosa around the opening of the parotid duct (opposite the second upper molar). The spots are about the size of a sugar crystal and are white on a red background. There is no ulceration or bleeding, and the spots are not removed by gentle wiping. Koplik spots have been reported in up to 80% of measles cases in epidemics. Their absence does not exclude measles. Their presence, if diagnosed accurately, is very strong supporting evidence for the measles causing a febrile syndrome of cough, coryza and conjunctivitis.

**Measles control measures**
These must be implemented on the clinical suspicion of measles. Refer to the Disease Control flow chart for the appropriate management of a suspected case of measles presenting to A&E or the outpatients department.

- All hospital staff, especially those working in A&E, the outpatients departments or in paediatrics should check and update their immunisation to measles, mumps, rubella, diphtheria and tetanus.
A Trial of Azithromycin in the Treatment of Genital Donovanosis

AIDS/STD Unit, Darwin

Introduction

A trial to determine the efficacy of azithromycin in the treatment of genital donovanosis is now open for enrolments. The trial is being conducted by the AIDS/STD Unit in collaboration with the Menzies School of Health Research. It is open to individuals with donovanosis from the Darwin, East Arnhem and Katherine Districts. The study aims to show that azithromycin given in a weekly dose for four weeks or as a daily dose for seven days will lead to regression of the lesions.

Background

Donovanosis is an indolent, ulcerative sexually transmitted disease caused by a gram negative organism, *Calymmatobacterium granulomatis*. The disease occurs throughout the Northern Territory but is more common in Central Australia than in the Top End. Donovanosis causes severe mutilating lesions if it is not treated and its role in the enhancement of transmission of HIV is presumed although not documented.

*Calymmatobacterium granulomatis* is sensitive to a variety of antibiotics including doxycycline, erythromycin, cotrimoxazole, chloramphenicol and ceftriaxone, however, long term treatment (i.e. three months) is required. Primary response is the rule but relapse occurs, especially if treatment is not continued after the lesions have healed. The most effective regimen has not been established and poor compliance with therapy is a major cause of treatment failures.

Azithromycin

Azithromycin is a new, long-acting azalide antibiotic that is chemically related to erythromycin (see below). It was licensed for use in Australia in December 1993. It has a long plasma half-life (between 48 and 96 hours) and concentrations in tissue may be up to 100-fold greater than those in the serum.

Azithromycin is now the first line drug for treatment of sexually transmitted *Chlamydia trachomatis* in the U.S.A. The drug also has activity against other sexually transmitted pathogens including *Neisseria gonorrhoeae, Chlamydia trachomatis, Haemophilus ducreyi* and *Ureaplasma urealyticum* but its role in curative treatment of these pathogens is yet to be established. It is effective against a wide variety of aerobic and anaerobic gram positive organisms (including *Streptococcus pneumoniae*) and inhibits a number of important gram negative organisms, such as *Haemophilus influenzae*. It is active against *Treponema pallidum* in the rabbit model but no human data is available.

In a large study of azithromycin the most common side effects were diarrhoea (3.6%), abdominal pain (2.5%) and other gastrointestinal symptoms. Transient increases in AST and ALT were noted in less than 2%. There were no specific neurologic, audiometric or ophthalmologic abnormalities reported. Several seriously ill AIDS patients who were treated with prolonged courses of therapy have developed reversible hearing loss.

Its safety profile in pregnancy is unknown as pregnant women and lactating mothers have been excluded from studies. Animal studies have shown no teratogenic foetal effects. It is currently recommended for use in individuals over 16 years of age.

There is no published literature on its effectiveness against *Calymmatobacterium granulomatis* but it is reasonable to assume that it will be effective due to its shared properties with erythromycin. The major anticipated benefit ofazithromycin is its long half-life and ability to concentrate in the tissues. It is likely that once weekly dosing would be adequate to treat donovanosis. Supervised treatment becomes a possibility and the high cost of the drug would be easily offset if it were proved effective.

The trial

Patients are eligible for enrolment if they meet the following inclusion criteria:

**Age:** 16-70 years

**Sex:** Male or female (Women must not be pregnant or breast-feeding).

**Diagnosis:** Clinical grounds, initially, but the patient must be prepared to undergo a biopsy to prove the diagnosis.

**Other illness:** Patient must not be currently taking antibiotics or have received a course of antibiotics within the past month.

**Informed consent:** Patients unable to give informed consent are excluded.

**Follow-up:** 6 weeks of follow-up is required and patients likely to be lost to follow-up should not be enrolled.
Location:
This study is presently open to patients residing within the Darwin, East Arnhem and Katherine Regions. The study is currently being considered in Alice Springs and Barkly but approval from the local ethics committee has not yet been obtained.

If you have a patient who could be suitable please contact either Dr. Frank Bowden on 228007, Dr. Jackie Mein (22 8834), Sue Dubow (22 8005) or Ivan Bastian (22 8503) immediately.

Please do not commence the patient on any antibiotics prior to enrolment.

A detailed trial protocol is available on request.

References


6. Pfizer communication.
Alice Springs Region
1 January to 31 March
1993 and 1994

Barkly Region
1 January to 31 March
1993 and 1994
East Arnhem Region
1 January to 31 March
1993 and 1994

Katherine Region
1 January to 31 March
1993 and 1994
NT wide
1 January to 31 March
1993 and 1994

No. of cases

AME - Amoebiasis
ARF - Acute Rheumatic Fever
ARV - Arbovirus (not RRV)
BRU - Brucellosis
CAM - Campylobacter
CHA - Chancroid
CHL - Chlamydia
CHO - Cholera
DEN - Dengue Fever
DIP - Diphtheria
DON - Donovanosis
GLO - Gliomaculopathy
GON - Gonorrhoea
HAB - Haemophilus influenzae type b
HEG - Herpes genital
HEO - Herpes other
HIV - HIV Infections
HPA - Hepatitis A
HPB - Hepatitis B
HPC - Hepatitis C
HPE - Hepatitis E
HYD - Hyalid Disease
LEG - Legionnaires Disease
LEP - Leprosy
LET - Leprosiopiosis
LIS - Listeriosis
LYV - Lymphogranuloma Venereum
MAL - Malaria
MEA - Mollases
MEN - Meningitis
MUM - Mumps Parotitis
NSU - Non-specific urethritis
ORN - Ophthalmosis
PIR - Pertussis
PLA - Plague
POL - Poliomyelitis
QFE - Q Fever
RAB - Rabies
RRV - Ross River Virus
SAL - Salmonella
SHI - Shigella
SYP - Syphilis
TET - Tetanus
TUB - Tuberculosis
TYF - Typhoid
VHF - Viral Haemorhagic Fever
VHU - Viral Hepatitis (Unspecified)
YEF - Yellow Fever
YER - Yersiniosis
Arbovirus Update

Arboviruses, short for arthropod-borne viruses, are a group of viruses which are transmitted to humans via arthropods - mainly mosquitoes but also ticks, sandflies, midges and gnats. Usually humans are an unimportant host in the virus cycle. There are over 100 viruses classified as arboviruses which produce disease in humans. Arboviruses are further classified into families and genera of which Alphavirus and Flavivirus are the best known.

The following is an update on recent trends in these viruses in the NT. The data on these mosquito borne arboviruses represent laboratory confirmed cases.

1 Alphaviruses

Ross River virus disease

Figure 1 shows the trends in laboratory confirmed Ross River virus (RRV) disease from January 1993 to May 1994. A total 271 cases were reported from 1 January to 18 May 1994. Reliable data are available since the 1990/91 outbreak of approximately 440 notified cases. Seasonal peaks corresponding to the wet season have occurred each year from December through early May. Although case numbers are low, transmission occurs throughout the dry season as well.

The majority of RRV cases in 1994 occurred in the Darwin region (86%) followed by East Arnhem (8%) and Katherine (5.5%). Only one case was reported from Alice Springs region and none from the Barkly. 64% of cases occurred in the 30-49 year age group.

Symptomatic infection with RRV is largely confined to the non-Aboriginal population.

Figure 2 shows the percentage increase or decrease in laboratory confirmed cases of RRV each month compared to the average number of notifications for the same month from 1991-93. Over twice the number of cases occurred in December and January 1994, but reports steadily decreased to below average for March through the first two weeks of May.

Barmah Forest Virus disease

Barmah Forest virus (BFV) disease is the second to RRV as the most commonly occurring symptomatic arbovirus infection in the NT. BFV disease has been reported mainly from East Arnhem and Darwin regions. The demographic characteristics of BVF parallel those of RRV disease. An increasing number of doctors are testing for BFV when a patient presents with acute polyarthritis.

Figure 1

RRV disease January 1993 - May 1994
2 Flaviviruses

Australian encephalitis
Seroconversions to Murray Valley encephalitis virus (MVE) and Kunjin virus in the NT sentinel chicken flock have occurred monthly since the beginning of the year. The last reported human case occurred in May 1993. However, the sentinel chicken data indicate that personal protection against mosquito bites should be maintained throughout the year.

Dengue fever
18 cases of dengue fever have been reported since 1 January 1991; one case in 1991, 10 in 1992, 5 in 1993 and two so far in 1994. All were imported cases. Aedes aegypti, the most important vector of the dengue viruses, was eradicated from the NT in the mid-1950s. Vigilant entomological surveillance has prevented re-introduction of the mosquito vector.

Doctors are reminded to include the following details on the pathology request form when ordering serology for suspected dengue fever:

- history of overseas and/or interstate travel in the three weeks preceding symptom onset;
- history of previous Yellow Fever vaccination (Yellow Fever is a flavivirus and cross reaction may occur);
- history of seroconversion to another flavivirus, i.e. MVE, Kunjin virus, Japanese encephalitis,
Deafness Association of the N.T. Inc.
in incorporating Deaf Children's Association of the N.T.
& Better Hearing Australia (Darwin Group)

Shop 14 Casuarina Plaza
258 Trower Road
CASUARINA NT 0810

Phone: (089) 452016
Fax: (089) 451880
TTY: (089) 452016

Office Hours
Mon - Fri
8.30 - 12.30

"Health Protection For You" - Rubella Awareness Video

In Cantonese, Thai, Portuguese
and English with English Sub-Titles

There was a successful campaign in English in the 1970's in Australia raising awareness of the dangers of rubella (German measles) virus to the unborn child, the disease then being the cause of over 90% of deaf/blind babies being born, often with accompanying defects such as brain and heart damage. As a result only 5% of the English speaking population remain at risk due to non-immunity. However, the risk to non-English speaking S.E. Asian women may be much higher due to a lack of awareness of the dangers of rubella during pregnancy.

The Deafness Association of the NT, has for the past two years carried out a campaign among the large migrant population in the Northern Territory raising awareness of the dangers of rubella by distributing pamphlets and posters in 15 languages throughout the Territory to doctors, pharmacists, migrant organisations etc. The natural outcome of this campaign was that the Association has gone on to produce a 5-minute video in three languages plus a sub-titled English version with the help and support of the NT Department of Health & Community Services and the NT Interpreter & Translator Services as part of the campaign to improve the health of migrant women.

The Video was launched by the Minister for Health, Mike Reed, on 29th November 1993.

ORDER FORM

"Health Protection For You" - Rubella

Available from: The Deafness Association of the Northern Territory
Shop 14 Casuarina Plaza
Trower Road
CASUARINA NT 0810

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