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CHIEF DIRECTORATE: HEALTH INFORMATION, EVALUATION AND RESEARCH

STATISTICAL NOTES is primarily a management tool. It is produced and circulated monthly to health managers and healthcare providers.

It is produced on the principle that health data should be translated into information that is useful for improving health provision and quality of care; for better planning and management at all levels and to inform policy development.

Timeous and accurate information should enable improvements in the services that we provide. Colleagues, reporting health events timeously is extremely important. The success of our health information system depends on good reporting.

Please write in if there is anything that can be done to support your reporting practice.

Submissions from directorates which collect data are welcome. The most updated information should be submitted by the 1st day of each month. It should be on both hard copy and disk or email.

ENQUIRIES AND SUBMISSIONS:

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CRIMEAN-CONGO HAEMORRHAGIC FEVER

1.1 Introduction

Crimean-Congo haemorrhagic fever is a zoonosis that results in acute disease of humans¹. In the latter part of 1996, in South Africa, an outbreak occurred which received widespread and sensationalistic media coverage. However, since then new cases continue to be reported.

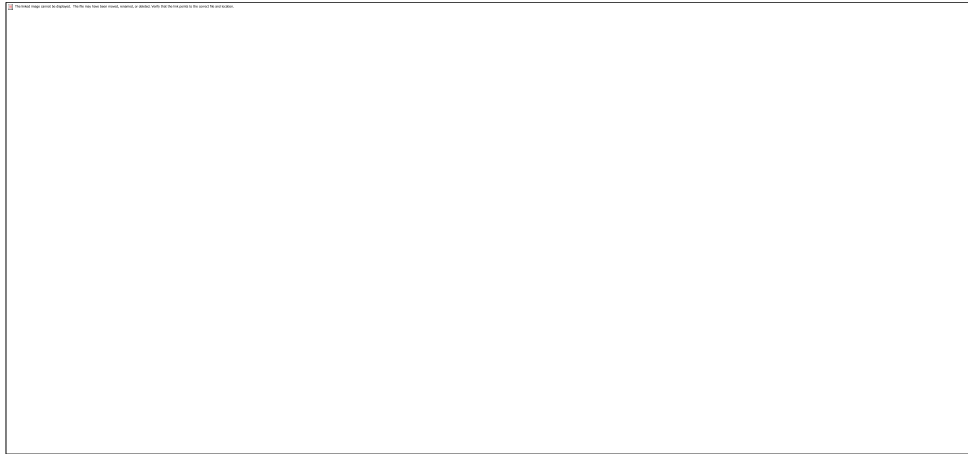
1.2 Current situation

From January to June 2000, the National Institute of Virology (NIV) reported five cases of Crimean-Congo Haemorrhagic Fever. Four of these patients died. The cases came from the North-West Province, Gauteng and Northern Cape.

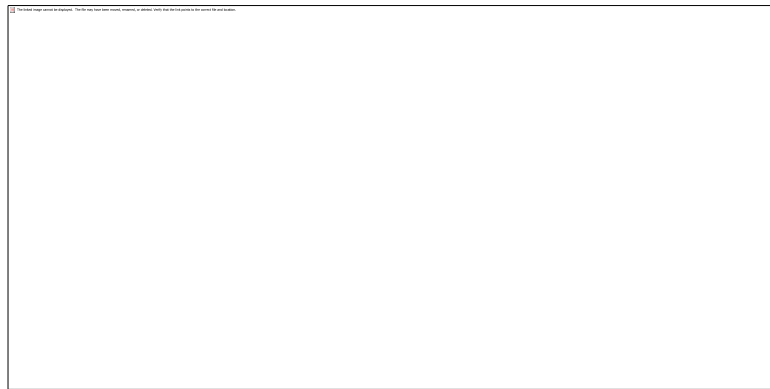
Since 1982, a total of 155 cases of CCHF have been diagnosed at the NIV³. These cases have occurred in the Free State, Western Cape, Eastern Cape, Northern Province, Gauteng, Mpumalanga and KwaZulu-Natal². The patients' age ranged from 10 to 86 years³. The source of infection in more than half the patients was tick bite. The increase in number of cases identified since 1981 is probably the result of increased awareness, greater surveillance of the disease and the availability of a specific diagnostic service at the Special Pathogens Unit, NIV⁴.

"Editorial comment – The case fatality rate for CCHF in South Africa is approximately 25%.^{5"}

Data compiled from 1990 indicates that the majority of cases are males of age group 26-30 (figures 1 & 2).



The peak in 1996 (figure 2), reflects an outbreak that occurred amongst individuals working in an ostrich abattoir, Oudtshoorn. Confirmed cases included 14, probable 4 and possible 2. All confirmed and possible cases fell ill⁶.



- The data presented in figures 1 and 2 was obtained through the notification system. These cases are also reported to and verified by 7 diagnostic laboratories. The results of which are published in the monthly issue of the Surveillance Bulletin.

Several lessons were learnt from this outbreak. These have been expanded upon in the "Lessons in infectious diseases"⁷ and include:

1. Viral haemorrhagic fever despite being rare require constant vigilance and extraordinary measures to diagnose infection, isolate patients and maintain surveillance of contacts.
2. The longer the delay in diagnosis, the greater the cost and the subsequent management of the outbreak.
3. Travel and population movements have become a major factor in the transferral of infectious diseases throughout the world and compound the diagnosis.
4. Viral haemorrhagic fevers are not readily spread from person-to-person or via ticks.
5. The possibility of transmission of infection to health-care workers via infected blood as well as the lack of awareness of the diagnosis in the early stages of an outbreak, re-

emphasize the importance of universal precautions to prevent blood-borne transmission of infectious diseases with all patients irrespective of diagnosis.

1.3 History

The first case of CCHF in South Africa was diagnosed in 1981. The virus was isolated from the blood of a schoolboy who died after being bitten by a tick in the North-West Province^{4,8}.

Internationally, the disease was first recognised in the steppe region of western Crimea in 1944 when 200 peasants and soldiers developed a haemorrhagic disease⁹. In 1956, an identical virus was isolated from a child from the Congo. Later in 1969 the Congo and Crimean haemorrhagic fever viruses were shown to be identical, hence the name Crimean-Congo haemorrhagic fever (CCHF).

Crimean-Congo haemorrhagic fever is transmitted by the *Hyalomma* group of ticks (bont-legged) and is widespread. The virus has been found in Africa, Asia, the Middle East, and Eastern Europe¹. In order to control nosocomial infection, correct infection control procedures need to be followed to protect both the patients and the health-workers.

1.4 The virus, the reservoirs, and the vectors

The virus is a member of the *Nairovirus* genus¹. Following its diagnosis in South Africa, an investigation was launched to determine the prevalence of the virus. Results of antibody surveys on sera from human, livestock and wild vertebrates confirmed that the virus is widespread and corresponds to the distribution of the bont-legged ticks.

The bont-legged ticks show a wide distribution. They have two stages in their life-cycle. The larvae attach themselves to a host where they feed and moult into the nymph stage. The larvae and nymphs feed on small mammals up to a hare size and ground-frequenting birds. The nymph feeds, once it is engorged it drops off onto the ground and moults into the adult. The adult attaches itself to a second host. The adults prefer to feed on large animals. Once it has fed, it detaches itself, and drops to the ground where the female lays eggs (figure 3). In South Africa there are three species. The unfed adults are dark brown to black in colour reddish or orange-brown and white-banded legs⁹.

The virus may infect a wide range of domestic and wild animals. Passerine birds are generally resistant to infection but they play a major role in disseminating the ticks. In comparison, ostriches are susceptible and may show high prevalence of infection in endemic areas.

Domestic and wild animals do not appear to get sick from infection despite the virus being present in their blood and tissues for a few days. During this time, the animals are infective for both humans and ticks. After 3 to 7 days the virus disappears from the blood and a few days later antibodies to the virus appear. The animals are then immune and cannot infect ticks or humans⁹.

Humans become infected in several ways. Firstly, they can be bitten by an infected bont-legged tick; secondly, squashing a tick between the fingers; thirdly, coming into contact with blood or tissues of an infected animal or person.

Certain activities place humans at risk of infection. These include: hiking/camping on heavily tick-infected veld; castration, dehorning and slaughtering operations of young livestock and handling, treating or performing post-mortem examinations on infected animals⁸.

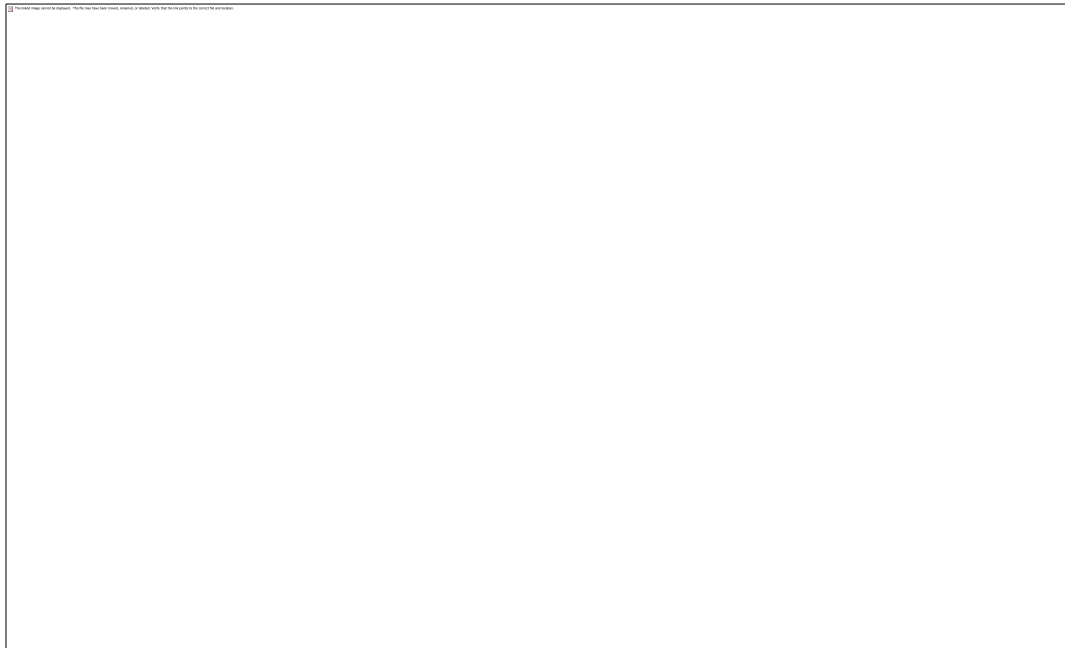


Figure 3: Life-cycle of the bont-legged tick

1.5 Clinical features

The disease starts within 13 days following exposure to infection. The length of the incubation period depends on the mode of acquisition of the infection. Infection via tick bite has a one to 9 days incubation period whilst contact with infected blood or tissue is usually 5 to 6 days, with a maximum of 13 days.

The onset of symptoms is sudden, with dizziness, chills, neck pain and stiffness, muscular pains, photophobia and sore eyes, nausea and headache. After a few days the patient may feel better for a day or two or may progress onto the more serious stage of the disease which is characterised by nasal bleeding, vomiting blood, blood in the stools and a blotchy red rash². The mortality rate from CCHF is approximately 30% with death occurring in the second week of illness¹.

Ordinary tick-bite fever is similar to Congo fever but it is less severe and has a longer incubation period.

1.6 Diagnosis and Treatment

Diagnosis is performed in high biosafety level laboratories. Enzyme-linked immunoassay (ELISA or EIA) is used to detect IgM and IgG antibodies from 6 days of illness. In patients with low antibody response, diagnosis is achieved by virus detection in blood or tissue samples grown in cell culture¹.

Patients should be treated under conditions of barrier-nursing in order to protect medical personnel. Standard treatment consists of blood volume monitoring and component replacement as required.

1.7 Prevention and Control

There are several control measures that can be utilised depending on the method of exposure. Campers and hikers should visit places that are less likely to be tick infested, e.g. berg as opposed to a bush-veld ranch and at times of the year when the ticks are less active, e.g. winter. Farmers/game rangers and anyone who is unavoidably exposed to ticks should treat their clothing with insect repellent, e.g. synthetic pyrethrins or pyrethroids. All persons coming into contact with animal blood, e.g. abattoir staff should wear protective clothing. All equipment used should be sterilised. Control of ticks through dipping or spraying is an important way of controlling Congo Fever¹.

Admission of patients with CCHF places other patients at a risk of nosocomial infection. Patients with suspected or confirmed CCHF should be isolated and cared for using barrier-nursing techniques. Sharps and body wastes should be safely disposed. Healthcare workers or family members who have had contact with infected blood or tissue need to be followed up with daily temperature and symptom monitoring for at least 14 days after exposure.

Notification plays a fundamental role in the control of CCHF. As CCHF is a notifiable disease, all suspected and confirmed cases are required to be reported to the Health Systems Research & Epidemiology cluster of the Department of Health. However, despite the importance of the disease and its status, provinces do not always report the occurrence of the disease.

1.8 MORE INFORMATION

1. Contact the National Institute of Virology, Special Pathogens Unit, Sandringham
2. Go to the web site <http://www.uct.ac.za/depts/mmi/stanard/congo.html>
3. Visit "Congo fever, come fascinating facts by Bob Swanepoel at <http://www.uct.ac.za/depts/mmi/stannard/bob.html>
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3. Anonymous. Crimean-Congo haemorrhagic fever. *South African Virus Laboratories Surveillance Bulletin*. March 2000. 2.
4. Burt, F. Virology Highlights – Crimean-Congo haemorrhagic fever in South Africa. <http://www.niv.ac.za/hlight/oudtschf.htm>.
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6. <http://www.uct.ac.za/microbiology/congoof2.htm>
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8. Gear, J.H.S., Thompson, P.D., Hopp, M., Andronkou, S., Cohn.R.J., Ledger, J., Berkowitz, F.E. 1981. Congo-Crimean haemorrhagic fever in South Africa. *South African Medical Journal*, 62 (Oct). 576-580.
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NOTIFIABLE MEDICAL CONDITIONS

Table 1: Number of notified cases and deaths from January to May 2000 as compared to the same period in 1999 (as at 08-06-2000)

MEDICAL CONDITION			1999 ¹		2000 ^{1,2}	
ICD09 Code	ICD10 Code	Name	Deaths	Cases	Deaths	Cases
AFP	AFP	Acute flaccid paralysis ³	1	52	1	60
022	A22	Anthrax	-	-	-	-
023	A23	Brucellosis	-	1	-	-
001	A00	Cholera	2	46	-	7
090	A50	Congenital syphilis	-	59	-	2
0650	A98	Crimean-Congo haemorrhagic fever ⁴	1	2	4	5
	A36	Other haemorrhagic fevers of Africa	-	-	-	-
032	A36	Diphtheria	-	-	-	-
005	A02 & A05	Food poisoning	5	332	-	7
HIB	HIB	<i>Haemophilus influenzae</i> type B	-	7	-	-
984	T56	Lead poisoning	-	-	-	-
040L	A48	Legionellosis	-	1	-	-

030	A30	Leprosy	-	12	-	1
084	B54	Malaria #	230	32015	015	280
						36717
						717
055	B05	Measles	1	143	0	20
036	A39	Meningococcal infection	12	68	1	12
0029	A01	Paratyphoid fever	-	-	-	-
020	A20	Plague	-	-	-	-
989	T57 & T60	Poisoning agricultural stock remedies	1	105	-	65
045	A80	Poliomyelitis (ICD10: Acute poliomyelitis)	-	-	-	-
071	A82	Rabies ⁴	6	6	6	6
390	I00	Rheumatic fever	-	6	-	-
037	A35	Tetanus (ICD10: Other tetanus)	-	4	-	-
7713	A33	Tetanus neonatorum	-	1	-	-
076	A71	Trachoma		-	-	-
010	A16.7	Tuberculosis primary	14	3366	9	1162
011	A16.2	Tuberculosis pulmonary	958	20670	345	7175
012	A16.9	Tuberculosis of other respiratory organs	6	676	2	318
013	A17.0 & G01	Tuberculosis of meninges	26	118	10	64
014	A18.3	Tuberculosis of intestines, peritoneum	1	43	1	14
015	A18.0	Tuberculosis of bones and joints	1	63	-	7
016	A18.1	Tuberculosis of genito-urinary system	-	24	-	4
017	A18.8	Tuberculosis of other organs	22	337	3	87
018	A18.9	Tuberculosis miliary	20	110	7	55
010-8		Tuberculosis total	1048	25407	377	8886
0020	A01	Typhoid fever (ICD10: Typhoid fever and other)	2	44	-	2
080	A75.0	Typhus fever (lice-borne)	-	-	-	-
081	A75.2	Typhus fever (ratflea-borne)	-	-	-	-
0701	B15.9	Viral hepatitis type A (ICD10: Acute hepatitis A)	1	300	-	20
0703	B16.9	Viral hepatitis type B (ICD10: Acute hepatitis B)	3	89	2	21
0705	B17.8	Viral hepatitis non-A non-B (ICD10: Other V H)	-	1	-	1
0709	B19	Viral hepatitis unspecified	1	33	-	1
0701-9		Viral hepatitis total	5	423	2	43

033	A37	Whooping cough	-	28	-	1
061	A95	Yellow fever	-	-	-	-

Source: Health Systems Research and Epidemiology, Department of Health.

1. Notifications are coded according to date of onset (if known), or else date of notification.
2. The data for this year are incomplete.
3. Case investigations as reported by the provinces to the Expanded Programme on Immunisation.
Figures may change after classification by the Polio Expert Committee.
4. Laboratory-confirmed cases as supplied by the National Institute for Virology
5. – Data incomplete

The malaria figures for KwaZulu/Natal, the Northern Province and Mpumalanga are obtained from the Malaria Control Programmes that are in place in these provinces.

COMMENTS ON THE NOTIFICATIONS DATA

1. General

Due to problems and delays experienced with the implementation of a Y2K compliant software program in the provinces, the notification figures are far below the expected number of cases and deaths for the year 2000. This is particularly noticeable for Tuberculosis. Although these problems have now been solved, some of the records yet need to be captured before more realistic figures can be generated. Provincial visits were carried out to support provinces in catching up with the backlog. Nevertheless a much more comprehensive process is currently underway to review the South African notifications system towards more timeliness, completeness and accuracy. This is done jointly by the Health System Research and Epidemiology directorate and the Communicable Disease Control Programme of the Department of Health through its National Health Information System Committee. One of the key features of the review process is a shift towards more active surveillance (as is now the case for AFP, rabies, CCCHF and all other haemorrhagic fevers, HIB and malaria – for which data is received through laboratory, based surveillance).

The June issue of Statistical Notes will present more updated figures on Notifiable Medical Conditions

2. Specific Comments on some of the Notifiable Diseases

2.1. CONGENITAL SYPHILIS

Congenital syphilis became a notifiable medical condition in 1999 in South Africa. This was done in an attempt to increase availability of data and to monitor the extent of the problem and at the same time, the availability and

efficiencies of interventions put in place to prevent the occurrence of syphilis in newborns. Since then, more than 2500 (2620) cases have been notified ranging from one case during the year in which congenital syphilis became a notifiable medical condition to 435 cases in 1992. The number of reported cases then seemed to stabilise until and up to 1994 around a plateau level of around 425 reported cases per year. The cumulative frequency of cases in 1994 was 53.2% showing that the majority of cases that ever occurred in South Africa, were notified before 1995 (decreasing below the 10% margin for every consecutive year until 1999).

Congenital syphilis - Mother to child infection

The incidence of this disease can shed light regarding availability and usage of health care resources, as well as maternal health. The disease is largely preventable if pregnant women are tested and those infected, treated with penicillin early on pregnancy. Pregnancies among infected untreated women usually result in perinatal death. Despite the widespread availability of penicillin and the improving health care service, congenital syphilis (CS) is still prevalent.

To improve the detection and reporting of CS, it should be ensured that all health personnel responsible for the disease investigation and reporting are well conversant with the surveillance case definition; ensure that all pregnant women are serologically tested at the time of delivery and the results are available before the mother and infant are discharged from the hospital and lastly, teach the community how to evaluate and treat infants suspected of having CS and how to report these cases. The Centre for Disease Control (CDC) has supplied a reviewed definition for reporting CS in 1989 and this led to more cases being identified.

The health department has the responsibility of regularly evaluating the surveillance data and the reporting system. A low prevalence figure should not be assumed to demonstrate successful prevention and treatment before evaluating case finding activities appropriate to the level of syphilis morbidity in the area.

2.2 Anthrax

This is an acute infectious disease most common in agricultural regions. It is caused by a spore-forming bacterium *Bacillus anthracis* and occurs in animals, although it can also infect humans who are exposed to infected animals or their products. Regions mostly affected include South and Central America, Southern and Eastern Europe, Asia, Africa, the Caribbean and the Middle East. The disease is rare in the United States.

There are three forms in which this disease can be transmitted: cutaneously by handling infected animals or their products; through inhalation of anthrax spores and eating undercooked meat from infected animals. Symptoms differ according to the mode of disease contraction. Skin infection begins as a raised itchy bump that resembles an insect bite. This later develops into a painless

ulcer 1-3 cm in diameter, with a black necrotic (dying) centre. Lymph nodes around the infected area may swell. About 20% of untreated cases result in death.

Transmission through inhalation resembles common cold. Symptoms may progress to severe difficulty in breathing and shock after some days. Untreated inhalation anthrax results in death in 1-2 days after onset of the acute symptoms. Gastrointestinal anthrax is characterized by acute inflammation of the intestinal tract. Initial signs include nausea, loss of appetite, vomiting and fever. This is followed by bloody vomitus, abdominal pains and severe diarrhoea. About 25% to 60% of cases result in death.

For Anthrax treatment to be effective, it should be initiated early. Penicillin is preferred but tetracycline, chloramphenicol and erythromycin can also be used. Anthrax vaccine is recommended for individuals who come in contact with animals and their products. The vaccine is reported to be 93% effective. The vaccine intended for animals should not be used in humans. Mild local reactions can occur in recipients with a past history of anthrax infection.

GUIDELINES FOR OUTBREAK INVESTIGATION

- **An outbreak** is declared when "the occurrence of disease within an area is clearly in excess of the expected levels for a given time period".
- **An outbreak investigation** is then carried out to :
 - characterise the problem,
 - apply control and prevention measures,
 - attend to public, political and legal concerns and
 - look at programmatic implications.

Every outbreak also constitutes an opportunity to carry out research and train epidemiologists.

- **The following steps** should be undertaken whenever an outbreak is suspected:
 - prepare for fieldwork:

this includes gathering equipment, drug supplies, identifying an investigation team, local contact persons and support resources, clarifying roles, and ensuring logistic and administrative arrangements are made
 - Confirm the outbreak or epidemic by verifying the diagnosis
 - construct a working case definition

- identify and count cases
- perform descriptive epidemiology (by answering the questions who, what, where, when?)
- develop and evaluate hypotheses
- consider additional analysis
- implement control/prevention measures
- consider surveillance issues
- communicate findings

It is important to note that circumstances may often dictate that the sequence of events, as outlined above, is delineated. It might be more crucial for example to implement control measures at the onset of investigation and carry on with other tasks subsequently. However, a systematic approach must always be used during the investigation. Hence it is advisable, in order to avoid oversights, to list the various activities, keeping in mind that these are dynamic and that control measures should be put in place as soon as possible.

OUTBREAK NEWS

Extract from Weekly epidemiological record – 23 June 2000, 75th year

No. 25, 2000, 75, 201. <http://www.who.int/wer>

"Acute haemorrhagic fever syndrome, Afghanistan. An outbreak of acute haemorrhagic fever syndrome has been reported from an isolated village in Gulran district. Disease symptoms are compatible with Crimean-Congo haemorrhagic fever (CCHF). An international team, co-ordinated by WHO, arrived in the affected area on 16 June to control and investigate the outbreak. The team comprises experts from the WHO collaborating centre at the National Institute of Virology (NIV- South Africa), Epicentre (France) and WHO.

Preliminary findings indicate that cases began at the beginning of May and are continuing to occur. Twenty-five suspect cases including 15 deaths were identified by the team. Samples were collected and transported to NIV where diagnostic laboratory tests will be performed to establish the etiology of the outbreak.

The team has provided basic protective materials, disinfectants and instructions for their use in care for patients with bleeding symptoms. An isolation area, identified at the hospital in Heart to deal with haemorrhagic patients, will be equipped by WHO. Training in barrier nursing will be provided to medical and nursing staff."

NEWS UPDATE

1. Health Research

NORTH WEST HEALTH RESEARCH CONFERENCE

THE PROVINCIAL HEALTH DEPARTMENT IN THE NORTH WEST organised a HEALTH RESEARCH CONFERENCE IN August (22 AUGUST 2000). THIS CONFERENCE, the first of its kind IN the province, mapped out the way forward for better co-ordination of health research activities in the North west.

2nd EASTERN CAPE HEALTH RESEARCH CONFERENCE: 25-26 Aug 2000

THE EASTERN CAPE HELD ITS SECOND ANNUAL health research CONFERENCE that was ORGANISED BY the provincial health research committee. The CONFERENCE focused on collaborative research as a challenge for health professionals. THE UNIVERSITY OF TRANSKEI faculty of health sciences, Umtata, hosted this second CONFERENCE.

The Interim Health Research Ethics Committee has been appointed by the minister.

THIS COMMITTEE WILL BE RESPONSIBLE FOR:

- ESTABLISHING HEALTH RESEARCH ETHICS PROCEDURES/GUIDELINES
- MONITORING ETHICAL ASPECTS OF HEALTH RESEARCH CONDUCTED IN S.A
- REVIEWING ACTIVITIES OF ETHICS COMMITTEES IN THE COUNTRY.

- **The Windows** version of **EPI-INFO (2000)** is now **available**.
- Visit the Department of Health website and download it:
www.health.gov.za/epi_info.zi

2. Directorate: HSR & Epidemiology

Welcome to two new staff members!

- Mudzanani Nthambeleni Leonard –Medical Natural Scientist
 - Caron Johnson – Medical Natural Scientist
-