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Update - Pandemic influenza A (H1N1) 2009 and seasonal influenza

As of 14 August 2009, 2 844 laboratory-confirmed cases of pandemic influenza A (H1N1) 2009 infection have been reported in South Africa. All nine provinces have reported cases, with the majority (56%, n=1 579) residing within Gauteng and Western Cape (24%, n=690) provinces (Table). Males were slightly more affected accounting for 53% (n=1 496). Ages range from infants less than one month old to 87 years (median 17 years), with 66% (n=1 887) of cases aged between 10 and 24 years (Figure 1). As of 6 August 2009, WHO reported a total of 177 457 laboratory-confirmed cases of pandemic influenza A (H1N1) and 1,462 deaths world-wide.

A marked increase in the frequency of laboratory confirmed cases of pandemic influenza A (H1N1) 2009 has been observed in recent weeks (Figure 2), whereas seasonal influenza detection has declined markedly since the peak during the week starting 8 June (Figure 3). A total of 1 326 seasonal influenza detections were made as of 14 August 2009; the majority 1 261 (95%) of which were influenza A virus. To date 1 133 (89%) of these have been identified as influenza A(H3N2). Patients were aged from one month to 82 years with a median of 24 years.

Distinct from seasonal influenza, the current pandemic has documented the occurrence of severe and sometimes fatal infection in otherwise healthy young persons. Although these are rare events and the majority of illness continue to be mild, rapidly progressive disease has been noted in this group of persons. There are currently no reliable predictors of progression to severe disease in this group. Persistent vomiting and high fever for three days or more would tend to suggest ongoing viral replication

and the possibility of progression. Pregnancy, particularly in the third trimester has been identified as a particular risk factor for complications related to influenza A(H1N1) with foetal loss and maternal complications (see updated guidelines for risk category).

Within South Africa to 14 August 2009, a total of 6 pandemic influenza A(H1N1) related deaths have been confirmed by the NICD. Four of six deaths occurred in patients aged between 15 and 27 years, while the others were aged 42 and 63 years. All patients were admitted with severe respiratory symptoms including pneumonia. A secondary bacterial pneumonia due to *Staphylococcus aureus* infection was confirmed in one patient. A history of predisposing factors to serious illness was reported in four of the six patients: two females with third trimester pregnancy (one of whom was HIV-positive), and two patients with reported obesity (one with documented co-morbid hypertension and diabetes mellitus). The final two patients were previously healthy and reported no underlying illness. Two patients presented early after onset of symptoms with relatively mild influenza-like illness; however, subsequently deteriorated two to five days following consultation. It is important for clinicians to provide clear instructions to patients to closely monitor their illness and to return to healthcare facilities early if symptoms worsen.

It is evident the pandemic has established itself in South Africa; with sustained community transmission occurring in most major cities. It is now important for health workers to actively move away from the strategy of laboratory confirmation of all cases (including mild cases), as this is extremely resource-

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intensive and leaves little capacity for the monitoring and management of severe cases. The current recommendation is to stop routine laboratory testing of all suspected cases, and to only conduct testing if a clinical decision warrants these investigations. Laboratory testing of mild illness is not recommended, as it provides very little advantage to the clinical management of individual patients. It is, however, important to collect specimens and closely monitor unusual events, such as: clusters of cases of severe or fatal pandemic influenza A(H1N1) infection, clusters of respiratory illness requiring hospitalization, or unexplained or unusual clinical patterns associated with serious or fatal cases. Investigations into these categories will enable continued monitoring of virological characteristics, and will inform case management, future vaccine development, and public health interventions for the current outbreak.

Infection with pandemic influenza A(H1N1) 2009 must be considered as part of the differential diagnosis in all patients presenting with: community acquired pneumonia, acute respiratory distress syndrome (ARDS), any severe acute respiratory infection (SARI) or myocarditis. Consideration must be given for urgent empiric treatment with a neuraminidase inhibitor such as oseltamivir or zanamivir without waiting for laboratory confirmation. Bacterial secondary infection has been documented in a proportion of pandemic influenza associated pneumonia, most commonly due to infection with

Streptococcus pneumoniae or *Staphylococcus aureus*. Clinicians are encouraged to access the latest guidelines on pandemic influenza A(H1N1) via the NICD website (www.nicd.ac.za, see Revised Health Workers Handbook version 3), and to check regularly for updates as the South African situation evolves.

Reported statistics for both seasonal and pandemic influenza A (H1N1) 2009 must be interpreted in light of the following. Firstly, the current recommended strategy for laboratory diagnostics is to test only moderate to severe cases where a diagnosis will inform the clinical management of a patient. Although routine testing of mild cases is no longer recommended as policy, the cumulative totals reported here likely includes a number of cases of mild disease due to testing practices. Secondly, Statistics for pandemic influenza include confirmations made by both public sector laboratories (NHLS: NICD and the Division of Medical Virology, Tygerberg) and private sector laboratories, including: Ampath – Drs du Buisson, Bruinette, Kramer Inc. and Dr Bouwer & Partners Inc., Lancet Laboratories, PathCare Laboratories - Drs Dietrich, Voigt, Mia and Partners, and Vermaak and Partners Pathologists, whereas seasonal influenza is measured through surveillance activities managed by the NICD.

Source: Epidemiology Division; Respiratory Virus and Viral Diagnostics Units, NICD; Department of Virology, NHLS, Stellenbosch University, Ampath, Pathcare, Lancet, Vermaak and Partners.

Table: Number of pandemic influenza A(H1N1) 2009 and seasonal influenza isolates by province, updated 14 August 2009, South Africa

Province	Influenza				
	Pandemic A(H1N1) 2009 †	Seasonal A(H1N1) ‡	A(H3N2) ‡	A (awaiting further typing) ‡	B ‡
Eastern Cape	88	0	17	1	0
Free State	25	0	9	6	2
Gauteng	1 579	4	850	72	52
KwaZulu Natal	297	0	38	1	1
Limpopo	58	0	69	9	0
Mpumalanga	47	0	21	1	0
Northern Cape	5	0	8	0	0
Northwest	43	0	3	3	0
Western Cape	690	1	118	30	10
Unknown	12	0	0	0	0
Total	2 844	5	1 133	123	65

† An individual in whom pandemic influenza A(H1N1) 2009 infection has been laboratory-confirmed by a designated reference laboratory. Includes confirmations made by both public sector laboratories and private sector laboratories (see article for full list of testing laboratories).

‡ Data obtained from the "Viral watch" sentinel-site surveillance for seasonal influenza, Severe Acute Respiratory-tract Infection Surveillance Programme, routine specimens submitted to the NICD for investigation for respiratory viruses, and surveillance for pandemic influenza A (H1N1) 2009.

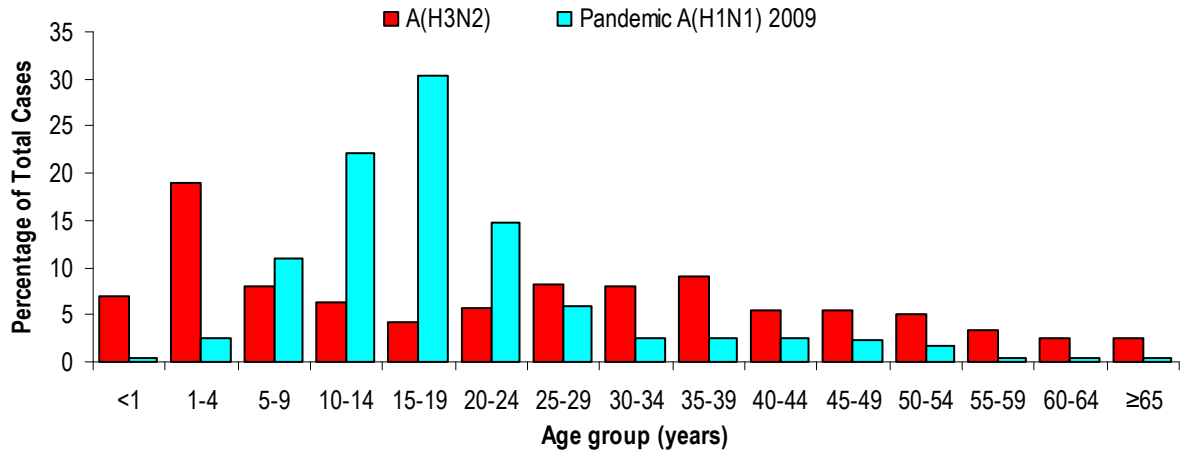


Figure 1: Comparing age distribution of laboratory-confirmed cases of pandemic influenza A (H1N1) 2009† and seasonal influenza A(H3N2)‡, South Africa, updated 14 August 2009*

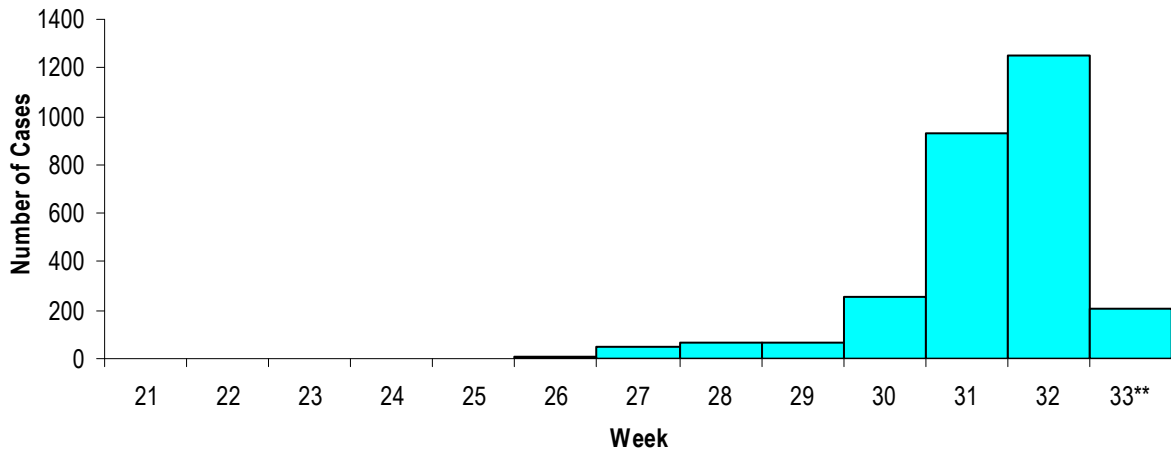


Figure 2: Epidemic curve showing laboratory-confirmed cases of all pandemic influenza A (H1N1) 2009† reported to NICD by week, South Africa, updated 14 August 2009*

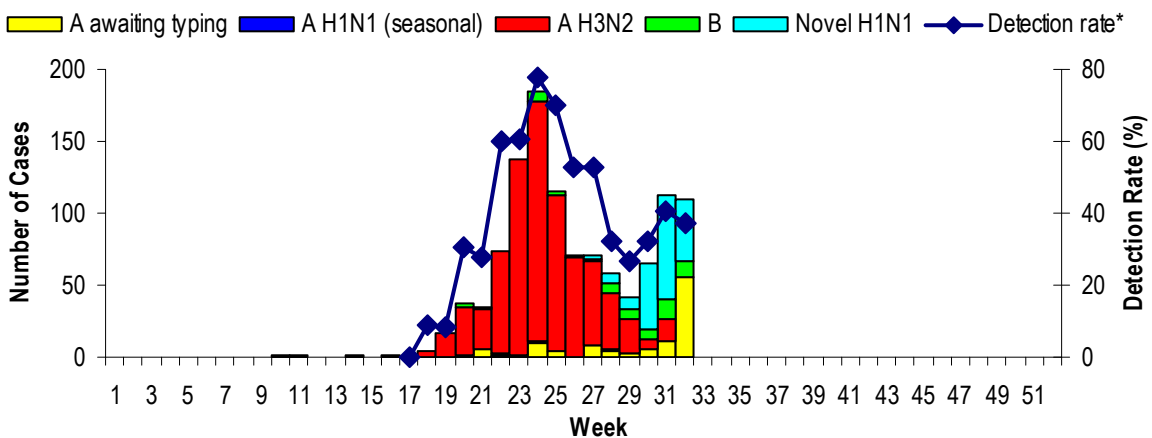


Figure 3: Laboratory-confirmed cases of pandemic influenza A (H1N1) 2009 and seasonal influenza‡ cases detected by viral-watch sentinel site surveillance by week, South Africa, updated 14 August 2009*

*Weeks run from Monday to Sunday. Date of specimen collection (or date of onset of illness if absent) is utilized to calculate week.
 **Data for week 33 is incomplete. †Pandemic influenza A(H1N1) 2009 infection has been laboratory-confirmed by a designated reference laboratory, including: confirmations made by both public sector and private sector laboratories (see article for full list of testing laboratories). ‡Seasonal influenza data obtained from “Viral watch” sentinel-site surveillance for seasonal influenza, Severe Acute Respiratory-tract Infection Surveillance Programme, routine specimens submitted to the NICD for investigation for respiratory viruses, and surveillance for pandemic influenza A(H1N1) 2009.

Hepatitis A outbreak

An outbreak of hepatitis A has been identified in an institution for drug abuse rehabilitation and was notified to the health authorities in Northern Cape Province this month. Following investigation, it was noted that the first case, a 35-year-old male, was admitted to hospital on 28th April 2009, and was subsequently laboratory confirmed as hepatitis A IgM positive. The patient presented with jaundice, abdominal pain, loss of appetite and fever. A second case, 22-year-old male, was admitted to hospital in May after presenting with jaundice, nausea and loss of appetite. Two additional suspected cases, 23-year-old and 25-year-old males, became symptomatic in June and July, respectively. They all presented with jaundice, dark urine, loss of appetite and were subsequently diagnosed as hepatitis A acute infection. Another two additional suspected cases were identified later in July, one of whom was later confirmed as acute hepatitis A infection; laboratory results for

the second case are pending. It is likely that there was person-to-person spread and a possible point source, as some cases presented within one incubation period. It would be useful to demonstrate whether or not the infection was linked to intravenous drug use. It is likely that there are other residents that might have been exposed to the same risk factors but who were immune and therefore did not develop disease. Immunoglobulin and hepatitis A vaccine were offered to close contacts of cases and non-immune staff. Health promotion with emphasis on hand hygiene and environmental inspection were conducted.

Hepatitis A is a notifiable condition in SA. It is usually a self-limiting disease. Person-to-person spread via the faecal-oral route is the most common method of transmission. However, infection may also result from exposure to a common vehicle such as contaminated food or water. The incubation period of HAV is 15 – 50 days (average 28 days). Individuals are most infectious two weeks before onset of jaundice and may remain infectious for 1 – 2 weeks following the onset of jaundice. Clinical presentation varies and is influenced by factors such as age and presence of underlying risk factors for severe disease. Several clinical presentations are recognized and include:

- asymptomatic infection – most children
- symptomatic hepatitis with jaundice (40-80%)
- symptomatic hepatitis without jaundice

- fulminant hepatitis with acute liver failure

In 85% of individuals who develop jaundice it is preceded by sudden onset of a prodromic illness characterised by non-specific symptoms, including one or more of the following: loss of appetite, fatigue or malaise, diarrhoea, abdominal pain, nausea or vomiting, fever, arthralgia and myalgia, flu-like symptoms – cough, coryza, pharyngitis, photophobia, and headache.

Response to an outbreak of hepatitis A:

General considerations:

Response to an outbreak will depend on a number of factors. These include:

- site of the outbreak
- likely source of the outbreak i.e. person-person vs. common source
- affected population
- availability of resources
- time since the identification of the last case

Outbreaks in closed institutions:

Closed institutions are at high risk for spread of infection. Aggressive use of immunoglobulin in such settings amongst exposed individuals may prevent further cases and should be provided to non-immune staff and residents within 14 days of the last identified case. If >14 days, further secondary cases are unlikely to be prevented and active surveillance for new cases should be introduced. High-risk individuals may still benefit from immunoglobulin up to 4 weeks post-exposure. In such settings screening of residents and staff for hepatitis A immunity (hepatitis A IgG) may be cost-effective prior to widespread use of immunoglobulin. However, it is essential that results are obtained rapidly to avoid unnecessary delays in the intervention. In addition to immunoglobulin use, such institutions should consider hepatitis A vaccination of non-immune staff and residents to ensure long term protection. All hepatitis A outbreaks should prompt a thorough environmental assessment including inspection of food sources, water quality and general hygiene. If a common-source outbreak is suspected but unknown, further epidemiologic investigation may be required to determine the common source.

Source: Outbreak Response Unit, NICD; Pixley Ka Seme District and Communicable Disease Control, Northern Cape Province

Meningococcal disease update

Sporadic cases of meningococcal disease continue to be reported across the country, in keeping with trends in previous years. By the end of epidemiological week 31, a total of 203 laboratory-confirmed cases were reported to the Respiratory and Meningeal Pathogens Reference Unit (RMPRU), NICD (Table).

These cases showed diversity in serogroups, which is in keeping with sporadic endemic disease in the country. Serogroup data were available for 156/203 (77%) of cases. The predominant serogroup nationally for 2009 to date was serogroup W135

(51%, 80/156). Other serogroups included: A (1%, 2/156), B (24%, 37/156), C (14%, 22/156), and Y (9%, 14/156).

The winter season is when we typically identify an increase in cases of meningococcal disease. As such, there should be a high index of suspicion for meningococcal disease, which may present with nonspecific early signs and symptoms. Disease typically has a rapid progression and should be managed as a medical emergency in order to reduce morbidity and mortality.

Table. Number of laboratory-confirmed meningococcal disease cases reported by week 31, 2008 and 2009, by province.

Province	2008	2009
Eastern Cape	15	15
Free State	11	6
Gauteng	129	101
KwaZulu-Natal	11	15
Limpopo	2	1
Mpumalanga	20	18
Northern Cape	4	5
North West	8	5
Western Cape	31	37
South Africa	231	203

Source: Respiratory and Meningeal Pathogens Reference Unit and Outbreak Response Unit, NICD

Rabies

Rabies was confirmed in a domestic dog by the fluorescent antibody test (FAT) on the brain sample that was submitted to the Agriculture Research Council - Onderstepoort Veterinary Institute. The dog was a pet and resided on a property in the suburb of Linden, Johannesburg, in Gauteng Province. The animal was euthanased after displaying symptoms that were compatible with clinical rabies, including aggression, drooling and biting at imaginary objects. The source of the rabies virus infection is not clear, as the animal has apparently never left the property, there have been no known exposures to potential rabid animals, and there was no rabies known in the area before this

incident. According to the owner, the animal was vaccinated some years ago. Further typing of the sample may reveal whether the virus is of the mongoose or canid biotype, which may suggest the likely source and potential for further cases in the area. There are mongooses in the 'koppies' (small hills) in the area and it is possible that there is sporadic wildlife rabies.

Rabies post-exposure prophylaxis was given to three humans who had contact with the dog. This is not the first confirmation of rabies in dogs in Gauteng Province. Recently rabies was confirmed in

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a puppy brought from Limpopo Province to a household in a Gauteng suburb. Dog bites are common in Gauteng and generally follow provoked attacks. While it is critically important to timeously administer rabies post-exposure prophylaxis if there is a risk of rabies following an animal encounter, a provoked attack from an otherwise healthy animal in most suburban settings in Johannesburg is unlikely to carry a risk of rabies. No additional cases of rabies were confirmed in the last month.

A total of 9 human rabies cases has been laboratory-confirmed for South Africa to date this year, with cases from the Eastern Cape (n=4); KwaZulu-Natal (n=3), Limpopo (n=1) and Mpumalanga (n=1) Provinces. In addition, two probable cases of human rabies have been recorded from Mpumalanga Province, but these could unfortunately not be

confirmed by laboratory testing. Concerns are mounting for the rabies situation in Mpumalanga Province. There are indications of a massive outbreak of the disease in dogs in the province, where it is now being reported from districts that have not recorded rabies cases for many years. Rabies should be considered as a differential diagnosis for all viral encephalitis cases. Specialised laboratory testing is always required to confirm infection in patients. The following specimens should be submitted to the NICD for testing for antemortem cases: saliva; cerebrospinal fluid; nuchal skin biopsies and serum; and for post-mortem cases, brain and nuchal skin biopsies.

Source: Outbreak Response and Special Pathogens Units, NICD; Veterinary Faculty and Rabies Unit University of Pretoria and Agriculture Research Council-Onderstepoort Veterinary Institute, Pretoria

Trypanosomiasis

East African trypanosomiasis (EAT) was confirmed on a peripheral blood smear in a 44-year-old female traveller returning from the Mana Pools area of the Zambezi Valley in Zimbabwe, who presented with an acute febrile illness. A trypanosomal chancre, initially diagnosed as a possible spider bite, was present in the popliteal fossa, and there was a history of tsetse fly bites. The clinical condition of the patient initially worsened after commencement of suramin therapy. There was a significant pancytopenia (Hb 9.9 g/dl, WCC $1.5 \times 10^9/l$, platelets $35 \times 10^9/l$, later $15 \times 10^9/l$), and deterioration of renal and hepatic function (urea 14.6 mmol/l, creatinine 361 $\mu\text{mol/l}$, total bilirubin 72 $\mu\text{mol/l}$, ALT 511 U/l, AST 943 U/l) but with supportive care and continuation of suramin therapy, the patient's condition improved, with full recovery. Examination of the cerebrospinal fluid confirmed the absence of central nervous system involvement.

It is mandatory that all patients with EAT, even those without clinical evidence of CNS involvement, have a lumbar puncture. Irrespective of the patient's initial clinical condition, the procedure must be delayed until parasites are absent on the peripheral blood smear, to avoid the introduction of trypanosomes into the CNS. Apart from the normal chemistry and

cell count process, the cerebrospinal fluid (CSF) must be examined according to a specific protocol, namely, microscopic examination within 10 minutes of the LP procedure as the parasites are fragile and may disintegrate, and ideally, a double centrifugation technique should be used to maximize the chance of detection of very scanty parasites. The presence of any trypanosomes would support the diagnosis of EAT-related meningo-encephalitis. A minor increase in the CSF protein and presence of mononuclear cells is less predictive of meningoencephalitis. EAT is an acute, fulminant illness and must be considered in all travelers presenting with an acute febrile illness with negative tests for malaria, and a history of tsetse fly exposure; the presence of an indurated, erythematous skin lesion is highly suggestive. Peripheral parasitaemia may be low, blood smears may be initially negative and concentration using the buffy coat smear technique improves the sensitivity of detection. Suramin remains the treatment of choice for the haemolympathic stage of EAT, and melarsoprol for the CNS stage.

Source: Travel Medicine and Parasitology Units, NICD, and Ampath Laboratories

Viral haemorrhagic fever

An outbreak of Rift Valley fever was confirmed in sheep in the Mbombela district of Mpumalanga Province in May 2009. No confirmed human cases have been linked to this outbreak. Small focal outbreaks of Rift Valley fever have been reported in KwaZulu-Natal, Mpumalanga, Limpopo and North West Provinces during 2008-2009.

A total of 17 human cases were confirmed in 2008, and only 3 cases in 2009 to date. All the confirmed cases had occupational exposure to infected animals and included veterinarians, veterinary students, farmers and farm workers.

Source: Special Pathogens Unit, NICD

Measles outbreak

Measles cases continue to be reported from Tshwane district Gauteng. Between 16 March and 15 August 2009 there have been 62 laboratory-confirmed measles cases reported from Tshwane district. Twenty four cases were reported in July and there were 17 confirmed cases in the first half of August (until 15 August). Approximately 38% (23/61) of patients with available data on laboratory of diagnosis were diagnosed in the private sector. Of 58 patients with available data on age: 16 (28%) were aged < 5 years, 13 (22%) were aged 5-14 years and 25 (43%) were aged 15-34 years. A number of patients have presented as part of case clusters in schools, households or chronic care facilities.

Clinicians in Gauteng should be on high alert for suspected measles cases. The clinical case definition is fever > 38 degrees centigrade, rash, and one of cough, coryza or conjunctivitis. All suspected

measles patients should have a blood and urine specimen sent to the laboratory for measles diagnosis. Cases should also be urgently notified so that the Department of Health can follow up on all cases and offer measles vaccination to contacts.

The Department of Health is planning a measles vaccination campaign in all primary and secondary schools in Tshwane from 24 August onwards. In addition, measles vaccination is being offered to all children aged < 5 years in Tshwane district as part of child health week from 7 to 20 September. Parents should be encouraged to take their children to the local clinic to be vaccinated if unsure about their child's vaccination status.

Source: Epidemiology and Surveillance Unit, Respiratory Virus and Viral Diagnostics Units, Molecular Measles Unit, NICD; Communicable Disease Directorate, Tshwane District and Gauteng Province, and EPI Directorate, National Department of Health

This communiqué is published by the National Institute for Communicable Diseases (NICD) on a monthly basis for the purpose of providing up-to-date information on communicable diseases in South Africa. Much of the information is therefore preliminary and should not be cited or utilised for publication.

