DEPARTMENT OF VIROLOGY, IALCH, KZN
Clinicians Handbook

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01/08/2015	**Version 06 Obsolete. Changes highlighted.**

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Clinician's Handbook

Department of Virology
Inkosi Albert Luthuli Central Hospital
PO Box X03
Mayville
4058
Durban

August 2015

Reviewed July 2015 by Dr K Govender and Dr NB Msomi

Contents

1. Introduction

The Department of Virology (DOV) at Inkosi Albert Luthuli Central Hospital (IALCH) is an Academic Department in the National Health Laboratory Service (NHLS) in KwaZulu-Natal (KZN) and the University of KwaZulu-Natal (UKZN). We provide a diagnostic and clinical consultative service in KZN. This handbook will help the clinician in the diagnostic work-up of patients by improving the quality of specimens and request forms received by us. This handbook is updated annually.

2. Physical Location

The Department of Virology is located at:

Level 5
Pathology Laboratory Building
Inkosi Albert Luthuli Central Hospital
800 Vusi Mzimela (Bellair) Road
Mayville

3. Contact Details

Tel: 031- 240 2599/2600
Fax: 031- 240 2858
Email: dovkzn@gmail.com

4. Operating Hours

The DOV is open from Monday to Friday from 07h30 to 16h30. Please contact the DOV consultant or on-call registrar for after-hours emergencies/consultation through the IALCH Switchboard on 031-240 1000. Calls will be forwarded to the relevant registrar.

5. Quality Statement

The DOV strives to provide quality results. We comply with ISO 15189 for medical laboratories through a Quality Management System and are accredited by SANAS.

6. Confidentiality

The laboratory has a policy on protection of personal information. All DOV staff sign a confidentiality agreement in which they agree to maintain patient confidentiality. Access to the Laboratory Information System (LIS) is denied to any person not employed by the NHLS in accordance with the NHLS IT Policies.
All results can be viewed electronically by the requesting clinician using the KZN DOH Intranet and /or the Internet (web access) which is restricted to ensure confidentiality and protection of information

7. Scope of Tests and Turn-around Time

The Turn-around-Time (TAT) from time of receipt of specimen in the DOV to the time of result is as follows:

- National Priority Programme (NPP) tests such as HIV-1 Qualitative PCR and HIV VL: 5 working days
- HIV ELISA: 5 working days
- Other Viral PCR and serology tests: 10 working days
- HIVDR: 28 working days

Any additional test request on specimens must be requested within at least 3 days of specimen collection. All additional requests must be discussed telephonically with the DOV registrar on call. An urgent request e.g. viral PCR on CSF will be done urgently depending on clinical indication as decided by the attending doctor and registrar on call.

The storage times of specific specimens in the DOV are:

- Viral Serology: 7 days – then discarded
- HIV-1 Qualitative PCR: DBS stored for 3 months then discarded. Whole blood discarded immediately after testing.
- HIV Viral Load: discarded immediately after testing
- Viral PCR: 7 days depending on quantity of specimen then discarded (except for CSF which is stored for longer).

If a repeat test on a primary specimen is required due to a possible analytical error or further tests are required, the requesting clinician will be informed on the final report.

The tests done by the DOV are:

1. HIV-1 Qualitative PCR
2. HIV Viral Load
3. HIV 1/2 Antibody/Antigen (Screen)
4. HIV 1/2 Antibody/Antigen (Confirmatory)
5. HIV Drug Resistance (HIVDR)
6. Hepatitis A IgM
7. HBV Surface Ag (sAg)
8. HBV Surface Antibody (sAb)
9. HBV Core Total Antibody
10. HBV Core IgM (cIgM)
11. HBV eAg
12. Hepatitis C Antibody
13. Herpes Simplex Virus(HSV) IgM
14. HSV 1&2 PCR
15. Varicella Zoster Virus(VZV) IgM
16. Varicella Zoster Virus PCR
17. Cytomegalovirus(CMV) IgM and IgG
18. Cytomegalovirus CMV PCR (Qualitative)
19. Cytomegalovirus CMV PCR (Quantitative)
20. Epstein Barr Virus VCA IgM and NA IgG
21. Toxoplasma IgG and IgM
22. Parvovirus IgM and IgG
23. Parvovirus PCR
24. Rubella IgM and IgG
25. Respiratory Viruses PCR (Influenza A/B, Para-influenza, Adenovirus, RSV)
26. JC Virus PCR

The tests listed above will be restricted according to the level of patient care. Each level of care will have access to their own, plus those at levels below, as shown in Table 1.

Table 1: Restriction of patient investigation according to level of care

Level	Test name	Comment
Level 1: Primary health care	HIV 1/2 Antibody/Antigen (Screen)	A confirmatory will be added by the laboratory if screening is positive
	HIV Rapid	Done by on-site laboratories
	HIV Viral Load	

	HIV-1 Qualitative PCR	
	Hepatitis A IgM	
	HBV Surface Ag (sAg) Rapid	Done by on-site laboratories
	HBV Surface Ag (sAg) ELISA	
	Hepatitis C Antibody	
	HBV Surface Antibody (sAb)	
	Rubella IgG	
	Rubella IgM	
	HIV Drug resistance	
Level 2: District level	HSV 1&2 PCR	
	Varicella Zoster Virus PCR	
	Cytomegalovirus CMV PCR (Qualitative)	
	Parvovirus PCR	
	Enterovirus PCR	
	Parvovirus IgM	
	Varicella Zoster Virus (VZV) IgM	
	Herpes Simplex Virus (HSV) IgM	
	Cytomegalovirus (CMV) IgM	
	Toxoplasma IgG and IgM	Serological testing is used to diagnose current infection. IgM will be done first. An IgG will be done where the IgM is positive to differentiate primary infections from reactivations.
	Cytomegalovirus (CMV) IgG	
	Parvovirus IgG	
	HBV Core Total Antibody	These are reflex tests that will be added by the Laboratory depending on the sAg results.
	HBV Core IgM (cIgM)	
	HBV eAg	
Level 3: Regional Hospital	Hepatitis C Viral Load*	Tests referred out. Only indicated to confirm positive HCV IgG and to monitor Treatment.
	Hepatitis B Viral load*	Tests referred out. Only indicated for suspected treatment failure as evidenced by deranged ALT
	Respiratory viruses PCR	
	Cytomegalovirus (CMV) Viral load	Only indicated for patients being monitored on anti-CMV treatment and post-transplant patients.
Level 4: Academic Hospital	Epstein-Barr Virus (EBV) Viral Load*	Tests referred out. Only indicated for post-transplant patients.
	JC Virus PCR	
	Epstein-Barr Virus IgG	
	Epstein Barr Virus IgM	

*Highly specialized tests for referral e.g. Hepatitis B Viral Load, Hepatitis C Viral Load, Epstein-Barr Virus (EBV) Viral Load testing will be arranged on a case-by-case basis after discussion with the registrar on call.

8. Specimen Collection

We will inform you by e-mail of any change regarding specimen collection requirements prior to the change.

All specimens for the DOV must be sent to your local laboratory where the specimen and patient details from the request form will be captured into the laboratory information system. Your local laboratory will verify specimen and request form quality by following rejection criteria below.

Test requests from IALCH must be done electronically using the Hospital Information System. These specimens must have a correctly placed barcode, placed into individual specimen packets and sent to us via the pneumatic tube system or by the IALCH porters. The specimens should reach us at least within 2 hours of collection. It is your responsibility to ensure that the electronic request corresponds to the unique bar-coded specimen.

Patients should have verbal/written informed consent where appropriate before specimen collection. Standard safety precautions must be adhered to by all staff when collecting and handling any specimen. The appropriate PPE must be used. All specimens must be collected using aseptic/sterile technique. Any collection device and contaminated material used during specimen collection must be discarded appropriately into sharps containers and/or bio-hazard waste disposal boxes. The staff must adhere to the hospital protocols and their professional body Health and Safety regulations.

Each specimen must be placed in a specimen packet and the request form inserted into the separate pouch to prevent contamination if there is breakage and/or leakage of the specimen during transport.

All specimens should be transported on ice and should reach the DOV at least within 2 to 6 hours.All specimens must be transported in accordance to the National Road Safety Act 6.2.

The specimen will then be sent to us where it is tested or sent away to other NHLS Laboratories for testing if we are unable to do the test.

All urgent or telephonically discussed specimens must be clearly indicated on the hard-copy request form/electronic request to facilitate the request.

8.1 Request Form and Specimen Criteria

Tests will only be done on specimens accompanied by a correctly completed request form. The test requested must be specific. Requests such as ‘Viral Screen’, ’Viral Hepatitis’, ’TORCH’ etc will not be accepted. Please use the viral differential diagnoses provided in the tables below when requesting a test.

All details on the request form and specimen must be legible. The minimum details required per patient request form are:

- A properly completed NHLS request form
- Patient surname and full name
- Legible clinical history
- Date and time of collection
- Gender
- Date of birth
- Exact name of Hospital/ward/clinic
- Patient hospital/clinic number
- Name, Signature and contact details of requesting Doctor or Nurse
- Exact name of test requested
- Specimen type

Specimens must be labeled properly and legibly with adequate information to link the correct specimen to the request form. Specimens without proper identification will not be processed since it is a medico-legal hazard to test a specimen which does NOT link to an exactly identifiable patient.

Specimens from staff who sustained a needle-stick injury or splash must NOT be labeled with their name and surname. These specimens must have a confidential number according to the KZN DOH Policy.

8.2 Rejection Criteria

Specimens will not be tested for the following reasons:

- Any problem listed in 6.1 Request form and specimen criteria, above
- Inappropriate clinical indication
- Incorrect Specimen type, tube, container and transportation conditions
- Specimen leaking
- Expired tubes
- Old and/or haemolysed specimens
- Incorrectly and/or incompletely labeled specimen
- Mismatched details between specimen and request form
- Illegible handwriting
- Insufficient volume of specimen - at least 2 mL of specimen is required for most tests done by the DOV.
- No test requested
- Problem with health care worker confidentiality (in context of occupational exposure)
- Test not offered
- Icteric specimen
- Lipaemic specimen

9. Requirements for Specimen Collection for Viral Serology Tests

Blood must be collected in a **standard yellow- or red-topped tube** with separating gel. A separate tube must be sent for each test. Specimens should reach the laboratory on the day of collection. If delays are expected, specimens should reach the testing laboratory within 48-72 hours of collection and kept at 2-8ºC during this time. Centrifugation of specimens by your local laboratory to separate serum from the clotted blood prior to storage or transportation to us will prevent haemolysis and deterioration of the serum quality.

10. Requirements for Specimen Collection for Molecular Virology Tests

10.1 HIV Viral Load

Blood must be collected in a **plasma separation tube (i.e. EDTA white –topped tube with gel)**. Specimens for HIV Viral load must reach the testing laboratory on the day of collection. If delays are expected, specimens should reach the testing laboratory at least within 48- 72 hours of collection and kept at 2-8ºC during this time. Centrifugation of blood specimens by your local laboratory (in order to separate plasma from the clotted blood) prior to storage or transportation to the testing laboratory will prevent haemolysis and deterioration in plasma quality.

10.2 HIV-1 Qualitative PCR

The Dried Blood Spot (DBS) Card is the best specimen type. DBS Cards should be stored and transported in a specimen packet with a desiccant pouch at room temperature. The DBS specimen has good long term stability if collected and stored appropriately. However, we still require timeous

transport of these specimens to prevent TAT delays. The quality of whole blood specimens is affected by storage and transportation and these specimens must reach us on the day of collection on ice and must be stored between 2-8ºC.

10.3 Viral PCR

Each specimen (Table 1) must be collected using aseptic/sterile technique. The lid of all specimen containers must properly tightened to prevent leakage and contamination.The specimen container must be labeled with the correct patient details which must match the request form properly. Specimens must be transported on ice, kept at 2–8ºC and must reach the DOV at least within 4 hours of collection.

Certain specimens (e.g. respiratory specimens, urine, biopsies) must be placed in **Viral Transport Medium** (VTM) during transit. VTM prevents specimens from drying and prevents the growth of microbial contaminants. It is available from your local laboratory. VTM must be kept at 2–8ºC. Frozen VTM must be thawed before use.

10.4 HIV Drug Resistance Testing

The patient clinical details must be discussed with the DOV Registrar on call so that specimen collection, completion of request forms and clinical advice can be discussed. Two plasma separation tubes (white – topped EDTA tube with gel) must be sent, as per transport conditions described for HIV viral load, above. All specimens must be accompanied by a complete HIVDR form.

Table 2: Specimen Collection Methods

Specimen	Collection Method
Blood	Specimen must be collected in an **EDTA (purple-topped) tube** with or without gel depending on specific viral PCR
Biopsies	Biopsy is added to a sterile universal container with VTM.
Bone Marrow	Bone marrow aspirate is added to a sterile universal container with VTM.
Bronchoalveolar Lavage (BAL)	BAL is added to a sterile tube with VTM.
Cerebrospinal Fluid (CSF)	CSF is added to a sterile tube. Specimens must be sent in their original containers. Do not aliquot specimens. No VTM is needed. CSF must be at least >0.5 ml. It must reach the laboratory within 24 hours of collection
Ulcer swab	Remove a sterile swab (without gel) from container. Rub swab tip in the lesion/ulcer in a circular motion and place tip into VTM. Break off upper portion of swab and tighten container lid. Dacron swabs are preferable for PCR testing since cotton and wood may inhibit the PCR.
Nasal washings/ Naso-pharyngeal aspirate	Use a sterile syringe to aspirate. Expel specimen into VTM. Tighten container lid.
Stool	Place about 1 gram portion of stool into a sterile container. No VTM is needed. Tighten lid and secure properly.
Throat swab	Remove a sterile swab (without gel) from container. Use a tongue depressor and good light. Rub swab tip against posterior pharyngeal wall of pharynx and place tip into VTM. Break off upper portion of swab and tighten container lid. Dacron swabs are preferable for PCR testing since cotton and wood may inhibit the PCR.
Urine	Add an equal volume of urine to VTM. Tighten lid and secure properly.
Vesicle Swab	Puncture vesicle, using a sterile needle, to disrupt roof of vesicle. Rub swab tip over lesion/ulcer in a circular motion and place tip into VTM. Break off upper portion of swab and tighten container lid.

Vesicle/Eye Fluid	Aspirate at least 0.2 ml vesicle/blister fluid using an insulin syringe. VTM should be decanted to about 0.5ml to avoid over-dilution of specimen. Once specimen is collected, aspirate VTM into and out of syringe several times. Release fluid into container and tighten lid. Do not leave needle and syringe in container. These should be discarded in an appropriate sharps container.
Dried Blood Spot	This is the preferred specimen type as blood specimens are prone to degradation. Blood obtained from heel or finger prick should be spotted onto the filter card to fill the entire spot. 3 to 5 spots are required. Powder free gloves must be used. Spots must be left to dry on tissue paper or a drying rack for at least 3 hours. The card must be placed in a sealable plastic bag with desiccant sachet. Care must be taken not to allow card to touch each other to avoid contamination.

11. Tables of Viral Differential Diagnosis

Table 3: HIV

Test	Purpose	Comments
HIV ELISA	Diagnosis in adults and children >18 months	- HIV PCR is not routinely done for adults - Send a HIV PCR for discrepant ELISA results. - Dried blood spots are the preferred specimen type
HIV PCR	Diagnosis of infants ≤18 months	
HIV Viral load CD-4 Count	Monitoring of Patients on ARV's	- Follow the South African Antiretroviral Treatment Guidelines for monitoring of patients on ARVs

Table 4: Viral infections of the CNS

Diagnosis	Common Viral causes	Tests offered	Rare viral causes Please discuss with DOV registrar on call prior to ordering
Aseptic Meningitis	Enteroviruses Mumps Note: There is no antiviral treatment available	Enterovirus PCR on CSF	HSV Arboviruses VZV EBV
Encephalitis	HSV. CMV and VZV may be considered in an immunocompromised patient Suggest starting IV acyclovir empirically	HSV PCR CMV PCR VZV PCR On CSF only	Rabies Viral zoonoses (See Table 14) Measles

Myelitis	Acute Flaccid Paralysis (AFP) – Poliovirus and other Enteroviruses	AFP is notifiable. Two stool specimens collected 24 hours apart and within 14 days of AFP onset must be sent for AFP surveillance. This must be accompanied by the AFP case investigation form.	VZV HTLV associated myelopathy HIV Myelopathy Radiological features should suggest a vacuolar myelopathy
AIDS with PML	JC Virus Note: There is no antiviral treatment available	CSF for JCV PCR	

PML=Progressive multifocal Leukoencephalopathy

Table 5: Viral Infections of the Eye

Suspected Diagnosis	**Viral causes to consider**	**Comment**
Conjunctivitis Keratoconjunctivitis Scleritis	Adenovirus Enteroviruses Note: There is no antiviral treatment available HSV, VZV. Suggest starting IV acyclovir empirically. Measles	Send conjunctival swab or vitreal fluid for HSV, VZV, CMV, Adenovirus PCR
Retinitis	CMV, VZV, HSV (necrotizing retinitis in AIDS) HIV(microangiopathy)	

Table 6: Gastroenteritis

Diagnosis	**Viral Causes**	**Comment**
Childhood diarrhea Epidemic diarrhoea	Rotavirus Adenovirus Calicivirus Astrovirus	It is not useful to do tests for gastroenteritis. Testing only necessary as part of outbreak investigation Note: There is no antiviral treatment available

Table 7: Viral Hepatitis

Viral Causes	**Tests offered**
Hepatitis B	See Table 8 for Hepatitis B Serological markers HBV VL is used to investigate patients with suspected treatment failure
Hepatitis C	Screen with Hepatitis C IgG. HCV VL is used for confirmation of positive serology and monitoring of patient on treatment.
Hepatitis A	Hepatitis A IgM Used for investigation of outbreaks of acute hepatitis

Table 8: Serological Markers of HBV Infection and Interpretation

sAg	eAg	Core IgM	Total Core Ab	sAb	Interpretation
P	N	N	N	N	Early Infection
P	P/N	P	P	N	Acute Infection
N	N	P	P/N	N	Diagnostic Window
P	P	P/N	P	N	High Infectivity
P	N	N	P	N	Carrier/chronic *
N	N	N	P	P	Immune, Past Infection
N	N	N	N	P	Immune due to vaccination or recent HBIG

***Persistent detection of HBsAg for more than 6 months indicates chronic hepatitis. N=Negative, P=Positive.**

Table 9: Viral Infections of the skin and mucus membranes

Rash	Viral causes	Tests offered
Macular-papular	Measles Rubella Note: There is no antiviral treatment available Parvovirus	Measles is notifiable. Blood specimens for surveillance must be sent to NICD with Measles case investigation form Rubella: Blood for Serology. Pregnant women < 20 weeks gestation with signs and symptoms of rubella or exposure to Rubella/"rash-illness" should be investigated. Please contact the DOV. Vesicle and ulcer swabs can be sent in VTM for PCR. See Table 1 above.
Petechial Rash	Viral Zoonoses -See Table 14	
Vesicular and/or ulcerative	VZV HSV Enteroviruses	

Please note:

- **There is no antiviral treatment available for most viral infections in pregnancy.**
- **Viruses do NOT cause Bad Obstetric History or Recurrent Abortions.**
- **Therefore, these tests are not to be used for screening. They are indicated for ill patients who require a diagnosis.**

Table 10: Viral infections in Pregnancy and the neonate

Diagnosis	Viral causes	Tests offered
Pregnant women < 20 weeks gestation with signs and symptoms of rubella or exposure to Rubella/"rash-illness"	Rubella Parvovirus	Rubella – blood for IgM and IgG. If positive, please contact the DOV for further advice to facilitate clinical decisions. Parvovirus serology – blood for IgM

Congenital abnormalities (e.g. microcephaly, cataracts, deafness)	Rubella Toxoplasma VZV CMV	Investigation of neonate should be directed by peri-natal history and clinical findings Positive IgM in the first 2 – 3 weeks of life suggests an intrauterine infection.
Foetal hydrops or persistent, severe neonatal anaemia	Parvovirus	Positive IgM in the first 2 – 3 weeks of life indicates intrauterine infection.
Pregnant woman with severe pneumonia	Influenza VZV	Send a respiratory specimen for multiplex respiratory PCR. If the patient has primary varicella (i.e. chickenpox), VZV PCR can be done on vesicle fluid and respiratory specimens.
Neonatal sepsis	HSV, Enteroviruses CMV, Rubella, VZV Toxoplasma	Depending on clinical picture, send for serological testing and/or PCR testing CMV PCR of the urine is only indicated in the first three weeks of life. Thereafter, the presence in urine may represent shedding of postnatal acquired CMV and is therefore not clinically significant. These requests will be cancelled due to lack of clinical indication.

Table 11: Myocarditis

Associated viruses	**Comment**
Coxsackie virus Echo virus Influenza	Please contact the virology registrar. Blood for Coxsackie and Echovirus serology is not offered and is not clinically useful.

Table 12: Viral Infections in Immuno-compromised Patients from Haematology, Oncology, Transplant Units

Diagnosis	**Viral Cause**	**Other information**
Graft Rejection/ GVHD/Post – transplant patient	CMV EBV	Baseline serology is usually done in these patients to establish serostatus and risk for reactivation/infection PCR can be done to investigate for infection
Pneumonitis	CMV Adeno Respiratory viruses VZV	Rising CMV Viral loads post-transplant pre-empts disease
Hepatitis	Hepatitis A,B,C CMV	Hepatitis Serology and molecular testing see Table 7 and 8 Rising CMV Viral loads post-transplant pre-empts disease
Haemorrhagic Cystitis	BK virus Adenovirus	PCR testing of urine is indicated
Post-transplant Lympho-proliferation	EBV	Rising EBV Viral loads post-transplant is suggestive

Table 13: Respiratory Infections

Suspected Diagnosis	Viral causes	Comments
Influenza-like illness- Fever, myalgia, Fatigue, Cough, Pharyngitis	Influenza Parainfluenza Adenovirus RSV Rhinovirus	It is not useful to do tests for an "influenza-like illness" Testing is recommended for severe acute respiratory infections. Respiratory specimens include: • Endotracheal aspirates • Bronchoalveolar Lavages • Nasopharyngeal Aspirates • Throat Swabs • Sputum • Lung Biopsy If Measles is suspected, send 5ml blood for serology and 10ml urine to NICD. Measles is notifiable.
Pneumonia (especially in infants, elderly and immunocompromised)	Influenza, RSV, Adenovirus, Parainfluenza , CMV, VZV, HSV, Measles	
Bronchiolitis and Laryngotracheo-bronchitis (LTB, Croup)	RSV Parainfluenza Adenovirus Influenza Measles	

Table 14: Suspected Viral Haemorrhagic Fever (VHF) and viral Zoonosis

Syndrome	Viral causes to consider	Comments
Fever, Arthritis, Rash with or without encephalitis	Dengue Rift Valley Fever West Nile virus Chikungunya virus	Must have a history of travel to an endemic area, contact with known cases, or with livestock etc and clinical evidence of Haemorrhage and fever. Specimens must be sent directly from patient bedside to National Institute of Communicable Disease (NICD)
Viral Haemorrhagic Fever	Crimean Congo Haemorrhagic Fever (CCHF), Lassa virus, Lujo virus, Ebola virus, Rift Valley Fever Dengue Haemorrhagic Fever Yellow Fever	Refer to National and KZN DOH Policies: 1. Management of patients with suspected VHF. 2. Management of animal bites and Rabies in Humans All suspected cases must be discussed with DOV registrar on call to facilitate patient investigation.
Encephalitis	Rabies virus	

The Clinician and Peripheral Laboratory must contact the Department of Virology

12. Referral of Specimens to other Laboratories for testing (Send-away Tests)

A test which is not done by the DOV will be requested from another Laboratory in the NHLS.
All tests on specimens from these patients must be discussed with the DOV to enable clinical advice regarding the need for the specific test.

The TAT will depend on the other Laboratory. Generally results will be made available electronically at least within 25 working days, unless urgent. The results for specimens from patients with suspected Viral Haemorrhagic Fever will usually be available within 24-48 hours depending on the clinical urgency.

13. Laboratory Results

The TrakCare Laboratory Information system will print hard-copy of all results at all requesting local laboratories.

Any urgent result such as for VHF will be communicated immediately to the Clinician by the Department of Virology.

All results can also be searched for and viewed electronically using the KZN DOH Intranet and /or the Internet (web access). This access is restricted to ensure confidentiality and protection of information. The access can be arranged by application to your Peripheral Laboratory Manager.

Requesting clinicians may contact DOV registrar on call for assistance or advice on patient investigation and result interpretation.

14. Compliments and complaints

Please use the contact details listed below, or alternatively, e-mail our Quality Assurance Supervisor at neshni.ramjugath@nhls.ac.za.

Department of Virology
Level 5
Pathology Laboratory Building
Inkosi Albert Luthuli Central Hospital
800 Bellair Road
Mayville
4058

Reception: 031- 240 2599/2600
Fax: 031- 240 2858
Registrar on Call: 031-240 2737/2738/2537

Clinical queries can be sent to dovkzn@gmail.com
(Checked daily at 12h00 and 16h00)

Afterhours: 031-240 1000 – Virology Registrar on call

Clinician's Handbook is available at
http://healthweb.kznhealth.gov.za/labs1.htm
http://virology.ukzn.ac.za/Libraries/Programmes/Handbook_2015