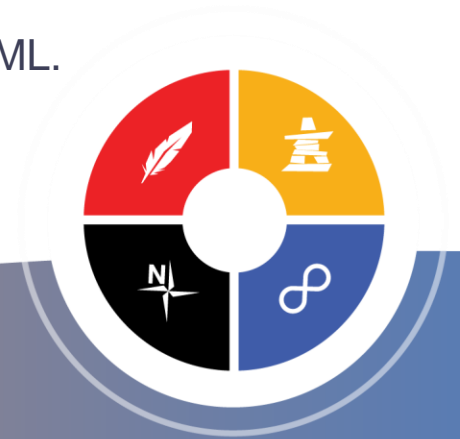


Indigenous Services Canada

Crown-Indigenous Relations
and Northern Affairs Canada

STBBI Testing in Alberta: Dried Blood Spot

Information on slides provided by our partners at NML.



Government
of Canada

Gouvernement
du Canada

Canada



Land Acknowledgment

- In the spirit of Truth and Reconciliation, FNIHB Alberta Region acknowledges that we call Alberta the traditional and ancestral territory of many peoples, presently subject to Treaties 6, 7, and 8 - namely the Cree, Dene, Blackfoot, Sauteaux and Nakota Sioux who have inhabited and cared for these lands long before today and the homeland of the Metis.
- We also acknowledge the many indigenous communities that have been forged in urban centers across Alberta.
- We take this time to thank them, and to the land for all that it provides us.

Dried Blood Spot (DBS) Testing

- **Dried blood spot** (DBS) testing is a method of blood collection that can be used for diagnosis of hepatitis B and C, HIV and antibody screening for syphilis.
- Whole blood samples are collected from a finger prick, dropped on to a filter paper and then dried for transportation to a laboratory for analysis.
- Dried blood spot testing for hepatitis C and HIV is as reliable and accurate as other blood-based testing methods. Specificity and sensitivity are over 95%, usually 96-98%
- This approach has become more widely available as it has the potential to compliment existing testing options due to the ease of sample collection and stability of the collected sample.
- The DBS method is commonly known as the method used to test all newborns for PKY (Pkenylketonuria). The test involves pricking the heel of the newborn.

Change to Reporting

March 8, 2023

To: All Alberta Medical Officers of Health

Dear Colleagues:

Re: Dried Blood Spot (DBS) Testing for HIV/HBV/HCV and reporting requirements

Dried Blood Spot (DBS) testing is being used in some parts of Alberta and can be a valuable tool to assist in diagnosing Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV), especially in remote communities and in hard to reach populations. DBS testing performed at an accredited laboratory is considered an appropriate clinical specimen for the confirmation of HIV/HBV/HCV infection. The following DBS test results meet the confirmed case definition and reporting requirements as outlined in the [Alberta Health Public Health Disease Management Guidelines](#):

Confirmed cases

- HCV antibody positive & HCV RNA positive
- HIV antibody positive & HIV RNA positive
- HBsAg positive & HBV DNA positive

The associated guidelines will be updated to reflect this change and will be posted on the Alberta Health public website at: www.alberta.ca/notifiable-disease-guidelines.aspx. If you have any questions or concerns, please contact the Alberta Health Communicable Disease Nurse Consultants at Health.CD@gov.ab.ca.

Sincerely,



Mark Joffe, MD, FRCPC
Chief Medical Officer of Health
Alberta Health

FNIHB Protocol for Dry Blood Spot Testing



Indigenous Services
Canada

Services aux
Autochtones Canada

FNIHB CDC – AB Region

Protocol for Dry Blood Spot Testing for HIV, Hepatitis C and B, and Syphilis in Alberta

Background

Sexually Transmitted and Blood borne infections (STBBIs) are caused by viruses such as human immunodeficiency virus (HIV), Hepatitis C (HCV), Hepatitis B (HBV), and bacteria such as *Treponema pallidum*, also known as syphilis. These viruses and bacteria are carried by blood and blood products. Viruses and bacteria can also be present in other bodily fluids such as semen, and vaginal secretions.

Dried blood spot (DBS) testing is an option within Alberta that increases access to testing for HIV, HCV, HBV, and syphilis. DBS samples are easy to collect, store, and transport. Whole blood samples are collected by pricking a finger, dropping blood onto a linter paper, drying and transporting to the laboratory. Clients can choose whether to submit their samples for one, some, or all four of the available tests.



**DBS can
test for the
following:**

HCV Antibody

HCV RNA

HIV Antibody

HIV RNA and viral load

HBsAg

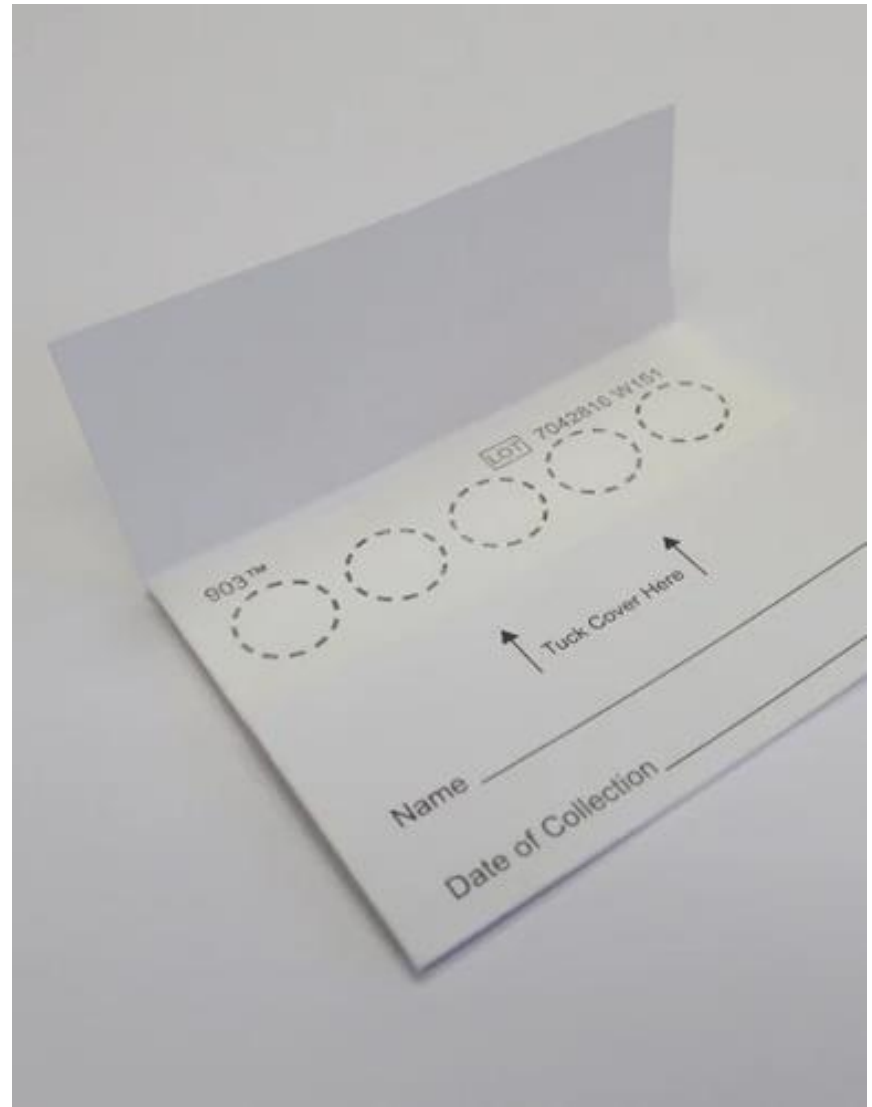
Syphilis Antibody (screen only)

Limitations of DBS testing

- Results may take up to 5 to 6 weeks
- Window periods (the period between exposure to when STBBIs can be detected by DBS testing)
 - Syphilis antibody: may take 3-4 months
 - HIV: may take 4-6 weeks
 - HCV: may take 6 weeks
 - HBV: 30-180 days
- Confirmatory serology is required for syphilis
- Obtaining an adequate blood specimen may be challenging

DBS Specimen Card

- Specialized cotton linter paper without hardeners or additives manufactured for the purpose of collecting blood
- Each lot undergoes a rigorous quality control process
- Collection card has 5 circles
- Handle the DBS card by the edges; do not touch areas used to collect the blood



Safety

Always use Universal Safety Precautions.

This includes:

- Treating all blood samples as though they are infectious
- Washing hands (before and after collection)
- Wearing gloves
- Taking precautions to avoid injury
- Disposing of contaminated sharps and waste appropriately



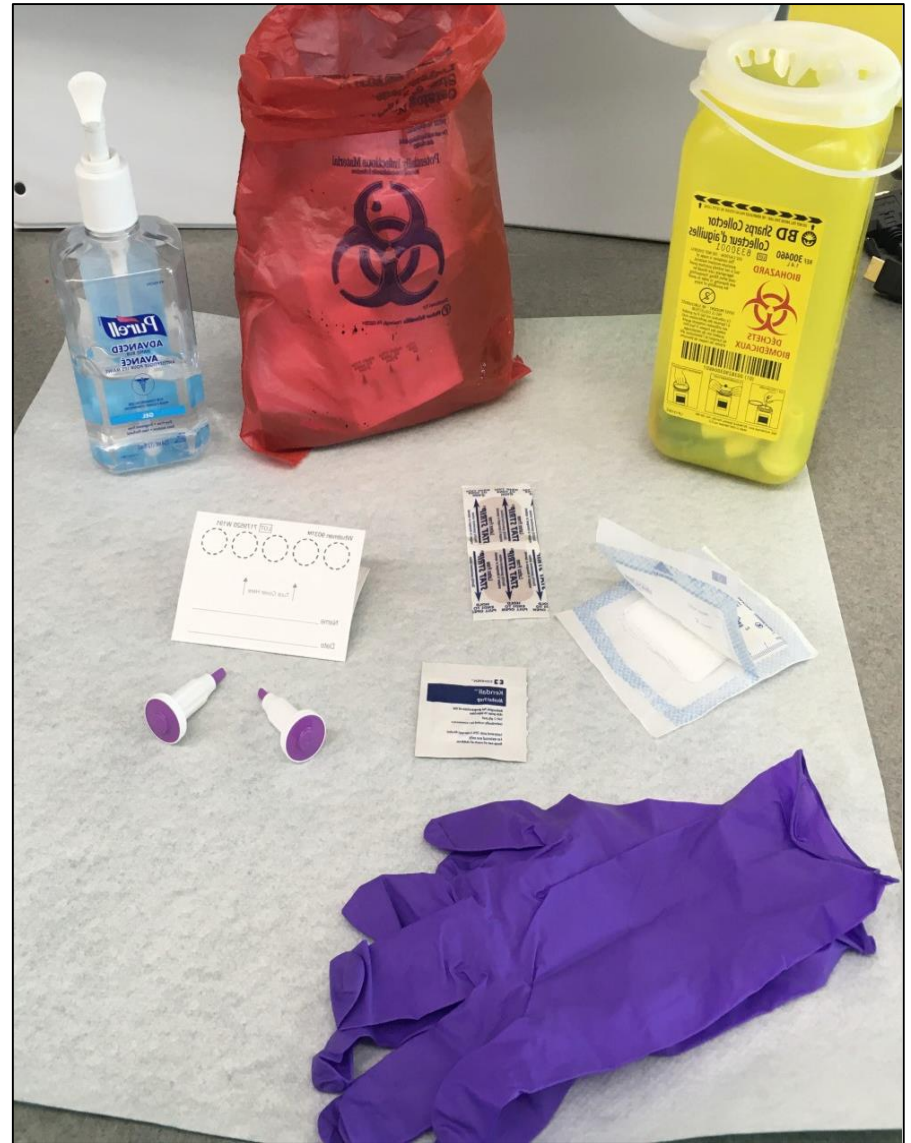


How to collect a specimen for DBS



DBS Supply Checklist

- DBS Card (provided by NML)
- Packing supplies (provided by NML)
- Drying rack (provided by NML)
- Lancet (provided by NML)
- Gauze
- Gloves and other PPE
- Alcohol prep pad
- Band aid
- Hand sanitizer
- Sharps container
- Table protection
- Garbage



Step 1: Preparation for DBS

- Clearly label the DBS card with the:
 - Date
 - Time of collection
 - Client name
 - Date of birth
 - PHN
- Complete a lab requisition with patient identifiers
- Open the DBS card and have it ready for specimen collection:
 - Collection site (client's hands) should be as warm as possible
 - Perform hand hygiene and don PPE
 - Tester performs hand hygiene and dons PPE
 - Client should be seated comfortably with their hand below waist level

Completing a lab requisition for DBS

- Obtain the lab requisition using the MRP for your community or the FNIHB MOH (Dr. Sarin)
- Ensure that all patient identifiers are filled out correctly on the requisition
- Check off the boxes for the test(s) you want run
- Ensure that at least two identifiers are completed on the DBS card (Name and DOB, Name and PHN)
- Package the requisition with the DBS card and submit to the lab for processing. Let client know it may take up to 6 weeks for results.

Example lab requisition for DBS

Provide Clinical History or Reason for Testing below - Testing will NOT proceed if this section is incomplete

Reason for Testing Send DBS Cards to ProvLab, Calgary Attn: Dr. Kevin Fonseca		List Countries visited within past 3 months of symptom onset OR provide relevant travel history <input type="checkbox"/> No Travel	
Symptoms (Check all that apply) <input type="checkbox"/> Fever <input type="checkbox"/> Rash (type) _____ <input type="checkbox"/> Gastrointestinal <input type="checkbox"/> Respiratory (specify) _____ <input type="checkbox"/> Neurologic <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> Polyarthritits		Date of return (yyyy-Mon-dd)	Relevant immunizations and dates
Date of onset OR Duration of symptoms		Immunocompromised <input type="checkbox"/> No <input type="checkbox"/> Yes (details) _____	
Viral Serology		Parasite Serology	Molecular Detection (NAT)
<input type="checkbox"/> CMV IgG CMV IGG <input type="checkbox"/> EBV Panel EBV AB <input type="checkbox"/> HSV IgG HSV IGG <input type="checkbox"/> Measles IgG MEAS IGG <input type="checkbox"/> Mumps IgG MUMPS IGG <input type="checkbox"/> Parvovirus B19 IgG PARVO IGG <input type="checkbox"/> Rubella IgG RUB IGG PROV <input type="checkbox"/> Varicella zoster IgG VZV IGG	<input type="checkbox"/> HAV IgG HAV IGG PROV <input type="checkbox"/> HAV IgM HAV IGM PROV Hepatitis B <input type="checkbox"/> HBsAg HBV SAG PROV <input type="checkbox"/> HBsAb HBV SAB PROV <input type="checkbox"/> HBc IgM Ab HBC IGM PROV <input type="checkbox"/> HBc Total Ab HBC TOT PROV <input type="checkbox"/> HBe Ag HBEAG PROV <input type="checkbox"/> HBe Ab HBEAB PROV Hepatitis C <input type="checkbox"/> HCV Serology HCV AB	<input type="checkbox"/> Strongyloides STRONG <input type="checkbox"/> Toxoplasma TOXO IGG Bacterial Serology <input type="checkbox"/> Brucella BRUC <input type="checkbox"/> Diphtheria antitoxin DIPHTH <input type="checkbox"/> Mycoplasma pneumoniae MPNEU IGM <input type="checkbox"/> Syphilis SYPH PROV <input type="checkbox"/> Tetanus antitoxin TET ATOX	<input type="checkbox"/> Bordetella Panel BP PCR <input type="checkbox"/> CSF Viral Panel CSF PANEL <input type="checkbox"/> Enterovirus/Echovirus EV PEV PCR <input type="checkbox"/> Eye Viral Panel EYE PANEL <input type="checkbox"/> Gastroenteritis Viral Panel GI PANEL <input type="checkbox"/> Herpes simplex virus HS VZ PCR <input type="checkbox"/> Measles virus MEAS PCR <input type="checkbox"/> Mumps virus MUMPS PCR <input type="checkbox"/> Respiratory Pathogen Panel <input type="checkbox"/> Varicella zoster virus HS VZ PCR <input type="checkbox"/> Syphilis SYPH PCR
<input type="checkbox"/> CMV IgM CMV IGM <input type="checkbox"/> Measles IgM MEAS IGM <input type="checkbox"/> Mumps IgM MUMPS IGM <input type="checkbox"/> Parvovirus B19 IgM PARVO IGM <input type="checkbox"/> Rubella IgM RUB IGM PROV	<input type="checkbox"/> HIV Serology HIV AB	Fungal Serology <input type="checkbox"/> Blastomyces BLAST ID <input type="checkbox"/> Coccidioides <input type="checkbox"/> Cryptococcal Antigen <input type="checkbox"/> Galactomannan <input type="checkbox"/> Histoplasma HISTO ID	Restricted Molecular Testing <input type="checkbox"/> Adenovirus AD PCR <input type="checkbox"/> BK virus BKV PCR <input type="checkbox"/> Cytomegalovirus CMV PCR <input type="checkbox"/> Epstein-Barr virus EBV PCR <input type="checkbox"/> HBV DNA HBV QUANT <input type="checkbox"/> HCV RNA HCV QUANT <input type="checkbox"/> HIV QUAL HIV QUAL <input type="checkbox"/> HIV Viral Load HIV QUANT <input type="checkbox"/> JC Virus HPOLYVIR PCR
Specify Other Serology and Molecular Tests Check test(s) required:			
<input type="checkbox"/> HIV <input type="checkbox"/> Hepatitis C <input type="checkbox"/> Syphilis <input type="checkbox"/> Hepatitis B			

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Check off the test(s) you want to run.



Step 2: Locating the puncture site (finger)

- The middle finger or ring finger is the preferred puncture site
- Avoid the thumb because it has a pulse
- Avoid the index finger because it may be more sensitive or hardened
- Avoid the pinkie finger and sides or top of fingers because tissue depth is insufficient to prevent bone injury

Note: The puncture should occur across the fingerprints, not parallel to them, as shown in the figure.



Step 3: Perform Puncture

- Lay the client's hand flat on the disposable pad with their palm facing upwards
- Disinfect the puncture site using an alcohol swab and allow to air dry
- Hold the lancet by the sides, taking care not to press down on the release
- Twist to pull off the protective tab of the lancet
- Position the lancet firmly against the finger and push the button on the top of the lancet with your thumb until a click is heard
- Allow a drop of blood to collect at the site
- Wipe the first drop away with gauze



Step 4: Adding blood to the DBS card

- Apply gentle pressure to the finger and allow a large drop of free-flowing blood to collect at the puncture site.
 - Do not 'milk' the finger as this may cause hemolysis.
- Touch the filter paper gently against the large drop of blood
- Allow enough blood to soak through and completely fill or saturate a circle
- When finished, apply pressure to the puncture site with gauze and apply bandage when bleeding stops
- Disinfect tabletop and perform hand hygiene



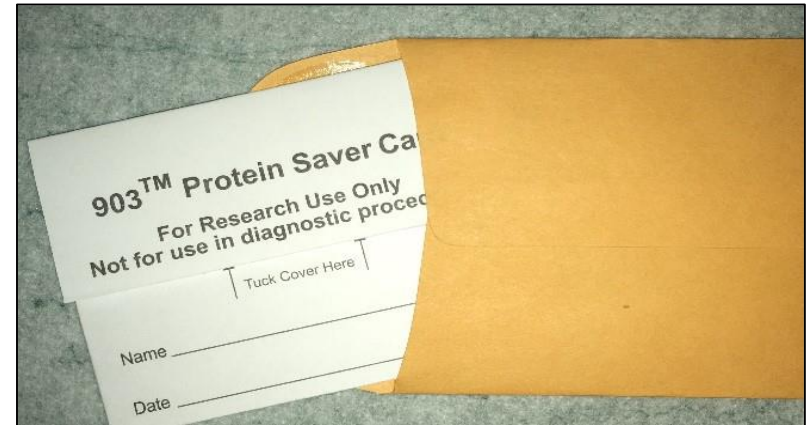
Step 5: Drying a DBS card

- Avoid touching or smearing the blood spots
- Fold the cardboard flap back completely and place in rack provided to allow airflow around the specimen. Do not heat, stack or allow DBS cards to touch other surfaces or each other.
 - Drying racks can be used multiple times, discard if they become dirty or contaminated.
- DBS cards must dry for a **minimum of 3 hours** up to 18 hours at room temperature.
- If samples need to be transported for drying, the preferred method is to use a tote (plastic container) as pictured, with the racks fastened inside.
 - incomplete drying may lead to incorrect test results.
 - cards are non-infectious once dried



Step 6: Packing a DBS card

- Place the dried DBS card(s) in envelope(s) provided.
 - Do not seal the envelope(s)
 - Do not use bags other than the ones provided
- Place envelopes in Bitran bag provided, with:
 - Humidity card
 - If any of the circles on the humidity card indicator turns pink, the desiccant must be replaced prior to shipping.
 - Desiccant pack (1 large or 3 small)
- Place lab requisition(s) and Bitran bag(s) into a courier package.
- Transport to lab according to your community practice.



Packing a DBS card: Quick Guide



DO –batch card shipment if collecting on multiple days



DO –Store up to one week at room temperature



DO –Store at 4C (or lower) if greater than one week



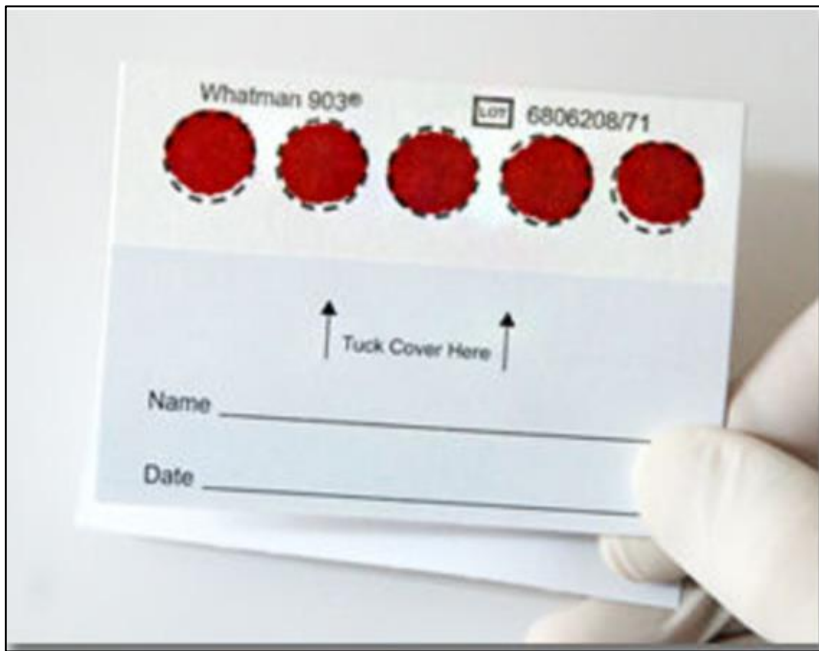
Cards are **non-infectious** once dried



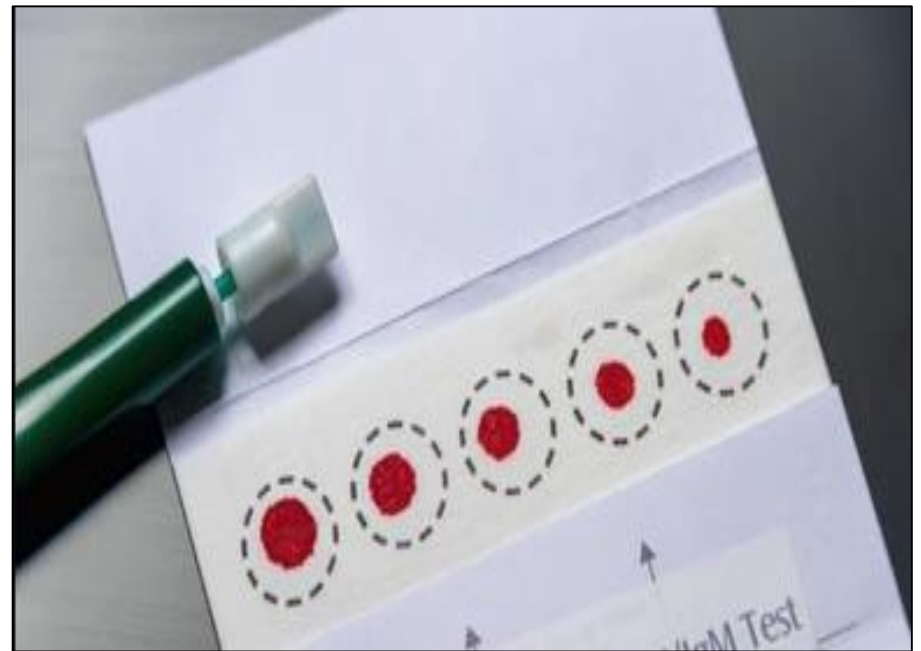
Shipment of cards **does not require** Transportation of Dangerous Goods training



Shipment can be at room temperature if previous storage conditions have been followed

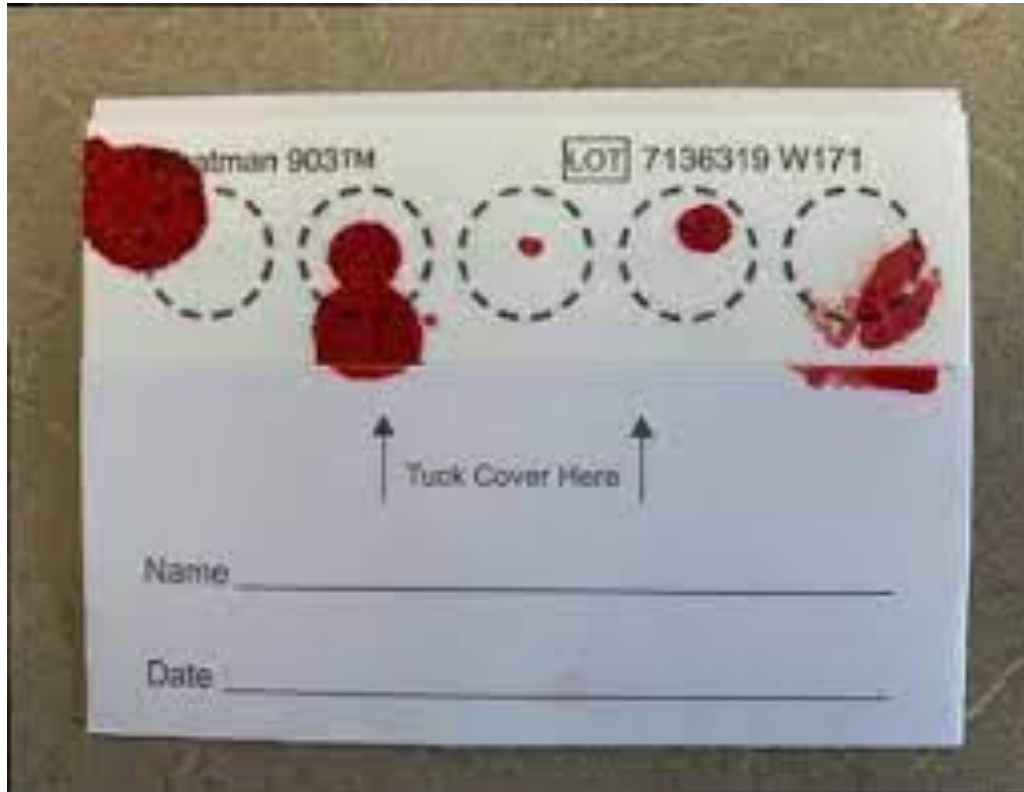


It is critical that the entire circle is uniformly saturated. The lab requires at least 3 saturated circles to run the test.



Three complete circles are better than five incomplete ones.

Sample Quality



Poor Quality - Unacceptable

Poor Quality - Unacceptable



#3 Layering



#4 Insufficient Drying



#5 Contamination

Management of Results

- DBS results can take up to 4-5 weeks
- Non – reactive results for HIV, HCV, HBV and syphilis:
 - Inform client of result (s)
 - Discuss potential need for retesting (i.e. window periods or exposure after testing)
- Reactive results for HIV, HCV and HBV:
 - Same process as regular serology
- Reactive result for syphilis:
 - Needs to be confirmed by serology
 - Once serological results are received, follow usual community process



FNIHB STBBI Contact Information



- **Jenna Kocik: Regional STBBI Coordinator**
Email: Jenna.kocik@sac-isc.gc.ca
Phone: 587-341-5276
- **Primrose Sotocinal: Regional STBBI Nurse**
Email: Primrose.Sotocinal@sac-isc.gc.ca
Phone: 780-224-7293
- **Lidia Arapis: Regional CDC Nurse**
Email: lidia.arapis@sac-isc.gc.ca
Phone: 613-296-6783
- **Nicole Allam: Regional CDC Nurse**
Email: nicole.allam@sac-isc.gc.ca
Phone: 431-242-0112

