Northern Ireland Infectious Diseases in Pregnancy Screening programme report

April 2020 – March 2021

HSC Public Health Agency

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Contents

1.0 Glossary

ANSC	Antenatal Screening Co-ordinator. There is an ANSC appointed in each of the five trusts across Northern Ireland who is responsible for co-ordinating the care of women screened positive for infection and their babies.
BHIVA	The British HIV Association is the leading UK association representing professionals in HIV care. Since 1995, they have been committed to providing excellent care for people living with and affected by HIV. BHIVA is a national advisory body on all aspects of HIV care and provide a national platform for HIV care issues. Their representatives contribute to international, national and local committees dealing with HIV care.
BSO	The Business Services Organisation has been established to provide a broad range of regional business support functions and specialist professional services to the health and social care sector in Northern Ireland.
CBT	Cognitive behavioural therapy are types of talking therapy which can help people manage their problems by changing the way they think and behave. It's most commonly used to treat anxiety and depression, but can be useful for other mental and physical health problems. Women with needle phobias can benefit from this type of therapy.
HAART	Highly Active Antiretroviral Therapy is an aggressive treatment regimen used to suppress HIV viral replication and the progression of HIV disease. The usual HAART regime combines three or four different drugs.
HBeAg	The hepatitis e antigen, or HBeAg, is a marker of an actively replicating HBV virus infection**.** Those with a positive HBeAg have active replication in their liver cells i.e. more of the virus circulating in their blood and as a result they are more infectious, with a higher likelihood of transmitting HBV to others.
HBIG	Hepatitis B immunoglobulin is recommended as a post exposure prophylaxis for babies whose mothers are HBeAg positive and/or have a high hepatitis B viral load. It provides a temporarily induced immunity by the transfer of immunoglobulins.
HBV	Hepatitis B virus causes an infection in the liver. It can cause both acute and chronic infections.
HIV	Human immunodeficiency virus belongs to a group of viruses called retroviruses. HIV attacks the immune system leaving the infected person vulnerable to serious infections and cancers. HIV is present in

	blood, genital fluids and breast milk. One way of passing on the infection is from a mother to her baby during pregnancy, birth or through breast feeding.
IDPS	Infectious diseases in pregnancy screening programme - currently screens for HIV, hepatitis B, syphilis and rubella susceptibility in Northern Ireland.
MDT	Multidisciplinary team - obstetricians, ANSCs and the wider maternity team, GUM, hepatology, pharmacists and paediatricians all work together to ensure standards are achieved and women and their babies receive optimum care.
MMR	Measles, Mumps and Rubella vaccine. The MMR vaccine is a safe and effective combined vaccine. It protects against three serious illnesses: measles; mumps; rubella (German measles) These highly infectious conditions can easily spread between unvaccinated people. Rubella infection in early pregnancy can have serious implications for the baby.
MTCT	Mother to child transmission - also called perinatal or vertical transmission. It occurs when an infection is passed from a mother to her baby either during the antenatal period, intra-natal period or in the postnatal period through breastfeeding.
NIBTS	The Northern Ireland Blood Transfusion Service provides IDPS testing for women booked prior to twenty weeks gestation.
NICE	The National Institute for Health and Care Excellence - provides national guidance and advice to improve health and social care.
NIMATS	The Northern Ireland Maternity System is a web based electronic system used regionally to capture geographical and clinical data on pregnant women and their babies. This includes the offer and acceptance of screening tests and the test results.
PHA	The Public Health Agency is a multi-disciplinary, multi-professional body with a strong regional and local presence. It has four key functions: • Health and social wellbeing improvement. • Health protection. • Public health support to commissioning and policy development. • Health and social care research and development.
RVL	The Regional Virus Laboratory provides IDPS testing for women booked after twenty weeks gestation and also provide confirmatory testing for samples screened positive in the NIBTS.
TTT	Test turnaround time - the time from receipt of a blood sample in the laboratory until a result is reported to maternity services. The National

	Standard states that the IDPS samples should have a result reported within 8 working days.
UKAS	United Kingdom accreditation service is the national accreditation body for the United Kingdom, appointed by government, to assess organisations that provide certification, testing, inspection and calibration services. Both the NIBTS and RVL laboratories are UKAS accredited.
WHO	The World Health Organisation's primary role is to direct international health within the United Nations' system and to lead partners in global health responses.

Northern Ireland Infectious Diseases in Pregnancy Screening Programme Annual Report: 1st April 2020 – 31st March 2021

2.0 Executive summary

This Annual Report for the Northern Ireland Infectious Diseases in Pregnancy Screening (IDPS) Programme, provides an overview of performance in relation to the UK national standards[1]. Performance data in relation to the screening offer, uptake and actions taken on receipt of positive/rubella susceptible results from 1st April 2020 to 31st March 2021 are outlined.

The programme is commissioned and quality assured by the Public Health Agency (PHA). Monitoring against nationally agreed standards for screening is an important element of quality assurance for the IDPS programme and allows those involved in its organisation and delivery to identify potential areas for improvement.

2.1 Background

The IDPS programme in Northern Ireland offers screening for: Human immunodeficiency virus (HIV); hepatitis B; syphilis; and rubella susceptibility.

In keeping with the National Institute for Health and Care Excellence (NICE) guidance,[2] the screening blood tests are routinely offered to pregnant women at the booking appointment, ideally by 10 weeks gestation or at the earliest opportunity thereafter when a woman presents to maternity services. The objective of IDPS is to enable early identification of the three infections listed above, thus allowing early intervention and reduction of the risk of mother to child transmission (MTCT) of the infection. Pregnant women who are identified as susceptible to rubella with no documented evidence of two previous measles, mumps, and rubella (MMR) vaccinations are offered an MMR vaccination postnatally, prior to discharge from hospital, to help prevent rubella infection in future pregnancies. They are also offered a second MMR, if necessary, by the GP at least 4 weeks later, depending on their previous vaccination history which the GP should have access to.

2.2 Headline results

Performance of the Northern Ireland IDPS Programme between 1st April 2020 and 31st March 2021 against the national standards is summarised below.

2.2.1 Standards 1-3: Identifying population and coverage

These standards measure the number of eligible pregnant women offered and accepting screening for HIV, hepatitis B, syphilis and rubella susceptibility and who have a confirmed result within the reporting period. The acceptable performance level is ≥ 95% and the achievable level is ≥ 99%.

Table 1 and figure 1 below, show that the Northern Ireland programme has performed above the achievable level for this standard, with only a small number of women declining screening and a few women transferring from Great Britain who

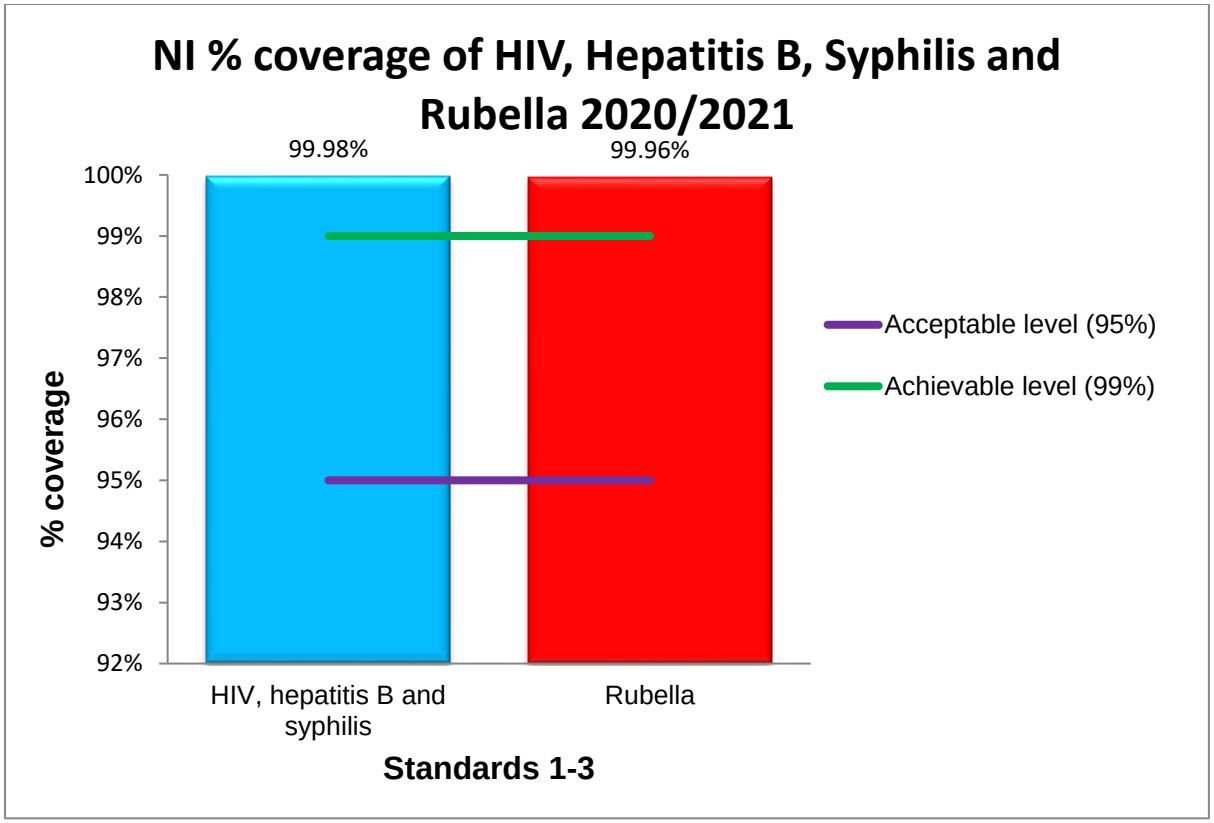
had screening results for HIV, hepatitis B and syphilis, but were not screened for rubella susceptibility (The rest of the UK stopped screening for rubella in 2016).

Table 1: Coverage: the proportion of women eligible for screening for whom a confirmed result is available at the end of the reporting period.

Infection	Total number of eligible women in 2020/21	Number of women screened in 2020/2021	Percentage screened
HIV, hepatitis B and syphilis	22,333	22,328	99.98%
Rubella	22,336	22,328	99.96%

Source: HSC Trust Antenatal Screening Co-ordinator data

Figure 1: Programme coverage 2020/2021



Source: HSC Trust Antenatal screening Co-ordinator data

2.2.2 Standard 4: Test turnaround time (TTT)

This standard measures the number of results for each infection (confirmed screen positive or negative) reported to maternity services within 8 working days of sample

receipt in the laboratory. The acceptable performance level is ≥ 95.0% and the achievable level ≥ 97.0%.

Table 2 below shows that the Northern Ireland Programme exceeded the achievable level for this standard.

The Northern Ireland Blood Transfusion Service (NIBTS) provides IDPS testing for women booked prior to 20 weeks gestation. The Regional Virus Laboratory (RVL) provides IDPS testing for women booked after 20 weeks gestation and also provides confirmatory testing for samples screened positive in the NIBTS. Both of these laboratories provided results for all HIV and hepatitis B (positive and negative) samples within the 8 working days test turnaround time.

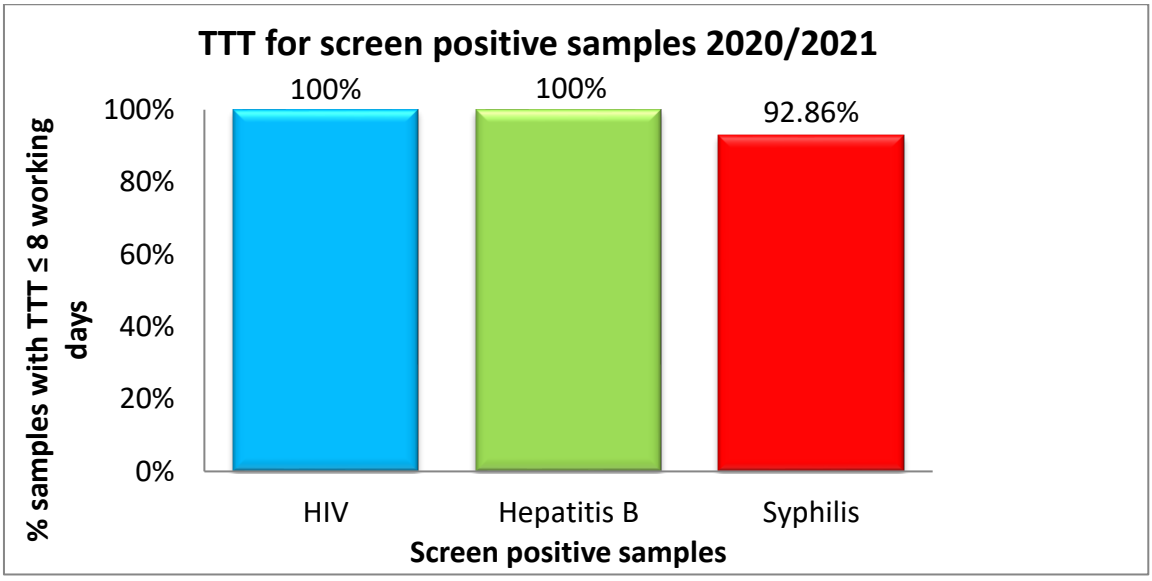
Table 2: Percentage of samples meeting the TTT standard (both positive and negative results)

TTT all results positive and negative	HIV	Hepatitis B	Syphilis
2020/21 NIBTS figures	100%	100%	100%
2020/21 RVL figures	100%	100%	100%

Source: NIBTS and RVL laboratories

Although this is not part of the National standards the percentage of screen positive samples that achieved a TTT of ≤8 working days is illustrated below. This reflects a small number of syphilis samples <5 that did not have a TTT of ≤8 working days.

Figure 2: Test turnaround time for screen positive samples



Source: NIBTS and RVL laboratories

2.2.3 Standard 5: Timely assessment of women confirmed as screen positive

This standard measures the number of women with confirmed screen positive results for HIV, hepatitis B or syphilis who attended for a screening assessment appointment within 10 working days of the result receipt by maternity services. The acceptable performance level is ≥ 97.0% and the achievable level is ≥ 99.0%.

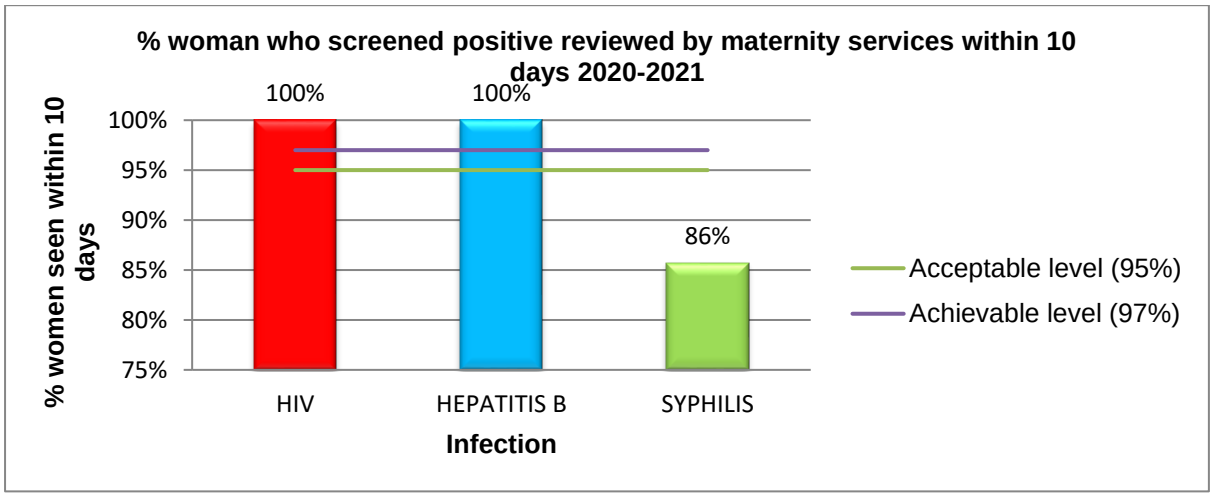
The Northern Ireland IDPS programme achieved 100% (surpassing the achievable level for women screened positive for HIV and hepatitis B however, achieved only 93% (below the acceptable level) of women screened positive for syphilis (table 4, figure 4).

Table 4: Women screened positive and reviewed by maternity services within 10 working days, 2020/21

	HIV			Hepatitis B			Syphilis		
	Total positive results	Total achieving standard	%	Total positive results	Total achieving standard	%	Total positive results	Total achieving standard	%
Women confirmed as screen positive for infection, attending for assessment within 10 working days of result receipt	7	7	100	25	25	100	14	12	85.71

Source: ANSCs across Trusts

Figure 4: Women screened positive and reviewed by maternity services within 10 working days, 2020/21



Source: ANSCs across trusts.

2.2.4 Standard 6: Diagnosis/intervention - Timely assessment of women with hepatitis B.

This standard measures the number of pregnant women who are confirmed as screen positive for hepatitis B attending for specialist assessment by a hepatologist within six weeks of the positive result being reported to the maternity service including:

- all women who are newly diagnosed hepatitis B positive.
- women already known to be hepatitis B positive with high infectivity markers detected in the current pregnancy.

The acceptable performance level is ≥ 70.0% and the achievable level is ≥ 90.0%.

It should be noted that all women in Northern Ireland who are confirmed screen positive for hepatitis B are referred to hepatology, even if previously known to have hepatitis B with low infectivity markers. Although the national standard only focuses on the timeliness of review by hepatology for women newly diagnosed or with high infectivity markers for hepatitis B, data are also provided for women known to have hepatitis B with low infectivity markers.

During 2020/21, 100% of women, either newly diagnosed with hepatitis B, or with high infectivity markers were seen by the hepatology service within six weeks of a positive result being issued (exceeding the achievable level) (table 5, figure 5).

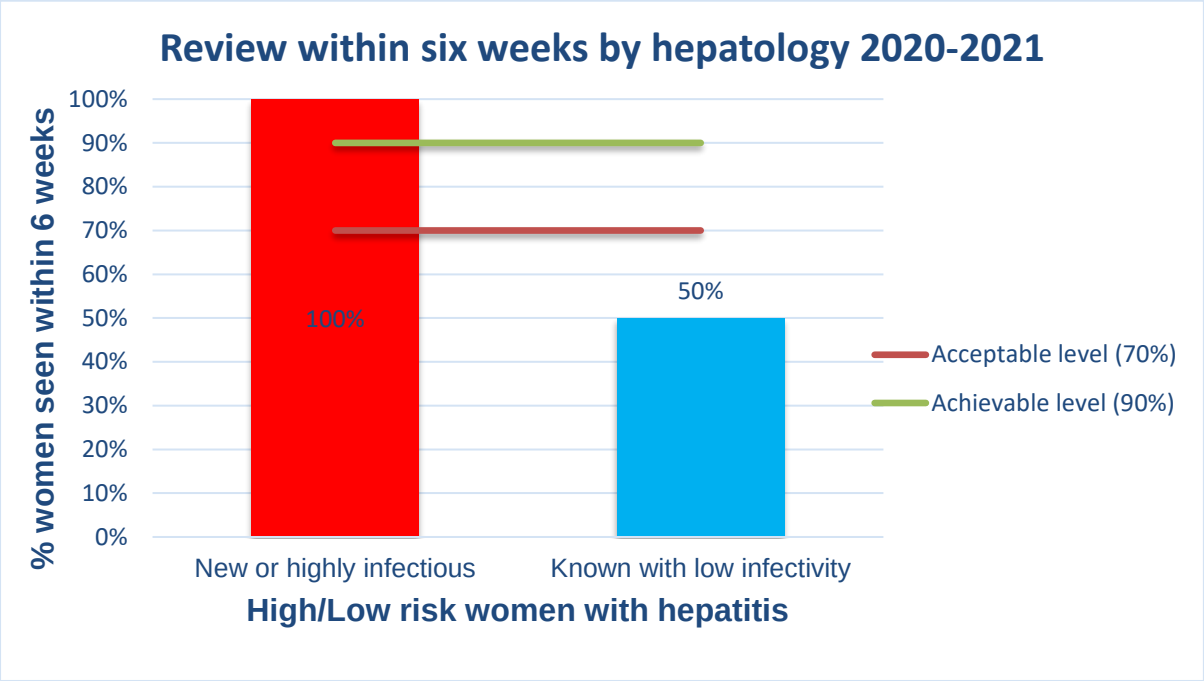
Of the women with a previous hepatitis B diagnosis and low infectivity markers only 50% were seen within the six weeks. As noted above these women are not included in the National standard.

Table 5: Attendance for specialist assessment with a hepatologist within 6 weeks of positive result, 2020/21

Women screened positive for hepatitis B seen by hepatology services within six weeks of receipt of result	Total number screened positive	Number meeting standard	Percentage
Women, either with a new diagnosis of Hepatitis B or already known with high infectivity markers	9	9	100%
Women testing positive for hepatitis B previously diagnosed and with low infectivity markers	16	8	50%

Source: ANSC data submitted from Trusts

Figure 5: Diagnosis / Intervention



Source: ANSCs across Trusts

A review of the women, screened positive for hepatitis B, previously diagnosed with low infectivity markers, who were not seen within six weeks, showed that the COVID-19 pandemic had an effect on this. Hepatology clinics were cancelled and key hepatology staff were redeployed. There were also cases (n=<5) of women themselves cancelling and re-booking their appointment taking them outside the six-week timeframe.

2.2.5 Standard 7: Intervention/treatment - Timely neonatal hepatitis B vaccination and immunoglobulin.

This standard measures the number of babies born in the reporting period, to women with hepatitis B, receiving their first vaccination within 24 hours of birth and the number of babies receiving hepatitis B immunoglobulin (HBIG) within 24 hours. The acceptable performance level is ≥ 97.0% and the achievable level is ≥ 99.0%. Due to the small numbers involved only percentages are shown. (Table 6)

Table 6: Intervention/treatment of the neonate, 2020/21

Year	Proportion of babies born receiving the hepatitis B vaccine within 24 hours of birth	Proportion of babies receiving HBIG within 24 hours.
2020/2021	95.23%	66.67%

Source: Health protection, surveillance PHA

During 2020/21, 95.23% of babies born to women screened positive for hepatitis B received the hepatitis B vaccine within 24 hours of birth and 66.67% of the babies born to higher risk mothers, requiring HBIG received it (table 6).

Although this is below the acceptable performance for this standard, it should be noted that this was due to some babies (n=<5) being ineligible to receive the vaccine/ HBIG and there are no caveats in the National standards to remove these babies. It should also be remembered that when numbers are small it has a greater proportional effect on percentages with each number that does not meet the standard.

2.3 Rubella Susceptibility screening data

Data relating to the rubella screening programme in Northern Ireland is as follows:

- 4,679 / 22,326 (20.96%) women tested susceptible to rubella in 2020/2, which is similar to previous years.
- 2,738 / 4,323 (63.34%) of women who delivered during 2020/21 and tested susceptible to rubella were given the MMR vaccination prior to discharge from hospital following deliver, which is slightly lower than 68% in the previous year
- 33 / 4,323 (0.76%) of women who delivered during 2020/21 and tested susceptible to rubella provided evidence that they had received 2 MMR vaccinations in the past.
- Taking account of the women who provided evidence this gives a performance rate for MMR administration prior to discharge from hospital of 64.10%.

2.4 Conclusion

This report provides evidence of a high level of programme performance against most standards, whilst also highlighting some areas for improvement. Recommendations have been made in relation to these. A regional audit of cases falling outside the acceptable standard levels should be undertaken to identify specific areas for improvement to ensure accessibility of services for all women across all Trusts and that national standards are met [1].

For the reporting period 2020/21 Northern Ireland has:

Exceeded achievable performance levels for the following national standards:

- Standards 1-3: Identifying population and coverage for HIV, hepatitis B and syphilis (99.97%).

- Standard 4: Test turnaround time (TTT) for all samples testing both positive and negative (100.00%).

- Standard 5**:** Timely assessment of women confirmed as screen positive for HIV and hepatitis B within 10 working days of result receipt (100.00%).

- Standard 6: Diagnosis/intervention - Timely assessment of women with either with a new diagnosis of Hepatitis B or already known with high infectivity markers, within 6 weeks of positive result receipt by hepatology (100.00%).

Did not achieve the acceptable performance level for the following National standards:

- Standard 5: Timely assessment of women confirmed as screen positive for syphilis although the numbers are small (92.86%).

- Standard 7: Intervention/treatment - Timely neonatal hepatitis B vaccination and immunoglobulin of babies born to women screened positive for hepatitis B during 2020/21(see detail above).

3.0 Introduction

The Northern Ireland Infectious Diseases in Pregnancy Screening (IDPS) Programme offers screening to all eligible pregnant women for HIV, hepatitis B and syphilis infections and for susceptibility to rubella infection.

This report provides an overview of the IDPS programme in Northern Ireland for the year from 1st April 2020 to 31st March 2021, including performance data in relation to national standards.

3.1 Aims of the screening programme

- To ensure that all eligible pregnant women in Northern Ireland are offered and recommended screening for HIV, hepatitis B and syphilis infections and rubella susceptibility.
- To ensure that high quality, up to date information on infection screening in pregnancy is given to all eligible women, in an appropriate format that is easy to understand, to enable them to make an informed choice about their screening options[3].
- To ensure early detection and treatment of HIV and syphilis infection in pregnancy in order to improve the health of the mother and significantly reduce the risk of mother to child transmission (MTCT) during pregnancy, at birth or postnatally.
- To ensure early detection of hepatitis B in pregnancy so that onward referral to specialist services can happen in a timely manner and treatment commenced, if necessary, to reduce the risk of MTCT.
- To ensure that babies born to mothers screened positive for hepatitis B are vaccinated within 24 hours of birth and hepatitis B immunoglobulin (HBIG) given if necessary.
- To ensure that rubella susceptible mothers are adequately informed that they should avoid rubella contact in pregnancy and that they are offered MMR vaccination postnatally, unless they have been previously adequately vaccinated. This will help to provide protection against rubella infection in future pregnancies.

3.2 Rationale for the screening programme

3.2.1 HIV

HIV infection can be transmitted from an infected mother to her baby during pregnancy, at the time of birth or by breast feeding. The risk of transmission in the absence of intervention ranges from 15 - 45% [4].The risk of MTCT of HIV can be reduced to less than 1% through appropriate interventions[5]. Screening in pregnancy aims to identify HIV infected mothers and, with early treatment and management, reduce the risk of MTCT.

Currently the World Health Organization (WHO)[6] and the British HIV Association (BHIVA)[7] recommend that all pregnant women should be commenced on Highly Active Antiretroviral Therapy (HAART) as soon as possible after diagnosis, in the second trimester (or earlier if the viral load is very high) and that they should continue on the treatment for life. Correct management of the mother following diagnosis in pregnancy, and of the baby following delivery, is imperative in order to minimise MTCT. Breastfeeding is not recommended for women with HIV, even if they are on treatment.

Care is provided by a multidisciplinary team (MDT) encompassing obstetricians, antenatal screening coordinators (ANSCs) and the wider maternity team, genito-urinary medicine (GUM) consultants and their teams, neonatologists, paediatric infectious disease specialists and pharmacists. Regional guidelines for the management of HIV positive pregnant women in Northern Ireland were published in August 2020 [8].

3.2.2 Hepatitis B

Hepatitis B infection in a baby can occur at or around the time of birth (perinatal transmission). Babies acquiring infection at this time have a high risk of becoming chronically infected with the virus (carriers). As well as being infectious to others, they are at increased risk of developing chronic liver disease and some will die prematurely from cirrhosis or hepatocellular (liver) cancer. The development of the carrier state after perinatal transmission can be prevented in over 90% of cases by appropriate vaccination, starting within four hours of birth [9].

Mothers with a very high hepatitis B viral load i.e. greater than 10 million will require treatment in the antenatal period to reduce the risk of transmission of the hepatitis B virus (HBV) to the baby. Hepatology will assess the risk to the baby in these cases and may advise against breastfeeding.

3.2.3 Syphilis

Syphilis infection readily crosses the placenta and may be transmitted to the foetus at any stage of pregnancy. The risk of transmission varies with syphilis stage and is greatest in early disease. Infection during pregnancy can result in miscarriage, stillbirth or congenital syphilis. Maternal infection is detectable and treatable so, with early detection in pregnancy, transmission to the baby can be prevented. See links to the National British Association for Sexual Health and HIV (BASHH) guidelines and the Northern Ireland guidelines for the management of syphilis in pregnancy and care of the new-born[10] [11].
Babies born with congenital syphilis may have an early manifestation of the disease (within the first two years of life) with common symptoms such as[12]:

- rash;
- haemorrhagic rhinitis;
- generalised lymphadenopathy;
- hepatosplenomegaly;
- skeletal abnormalities;

or a later manifestation (after two years of life), such as:

- interstitial keratitis;
- Clutton's joints;
- Hutchinson's incisors;
- mulberry molars (maldevelopment of cusps of first molars);
- high palatal arch;
- rhagades (peri-oral fissures);
- sensorneural deafness;
- frontal bossing;
- short maxilla;
- protuberance of mandible;
- saddle nose deformity;
- sterno-clavicular thickening;
- paroxysmal cold haemoglobinuria;
- neurological involvement (intellectual disability, cranial nerve palsies);

3.2.4 Rubella

Rubella, sometimes referred to as German measles, is generally a mild disease caused by a togavirus. However, rubella during pregnancy can be serious, especially in early pregnancy, as infection may cause abnormalities in the unborn baby known as congenital rubella syndrome (CRS). These can include mental impairment, cataract, deafness, cardiac abnormalities, intrauterine growth retardation and inflammatory lesions of the brain, liver, lungs and bone marrow[13].

Screening maternal blood for rubella susceptibility allows identification of women susceptible to rubella, who can then be advised to avoid rubella contact in pregnancy and be offered the Measles, Mumps and Rubella (MMR) vaccination after delivery. Of note, vaccination during pregnancy is contraindicated[14]. Giving MMR postnatally can help to provide protection against rubella in future pregnancies.

National guidance on immunisation against infectious diseases (the Green Book) Chapter 28[15] states that: **"**All seronegative women of childbearing age who need to be protected against rubella should be offered MMR vaccine. Satisfactory evidence of protection would include documentation of having received two doses of rubella-containing vaccine or a positive antibody test for rubella".

Women screened susceptible to rubella without evidence of two previous MMR vaccinations are offered the MMR vaccination postnatally before discharge from hospital, with their GP giving the second one, if necessary, at least four to six weeks later, if the GP has no evidence of any previous MMR vaccinations. We continue to encourage women screened susceptible to rubella to obtain their MMR vaccination evidence from their GP, but numbers actually doing this remain fairly low.

4.0 IDPS programme delivery

IDPS is a complex programme involving a wide range of professionals working in maternity units, laboratories, pharmacy, hepatology, genito-urinary medicine, neonatology and paediatric services. Along with the PHA, these partner

organisations work closely together to ensure pregnant women have access to safe, effective, high quality and equitable screening. Information in the form of a leaflet entitled “protecting you and your baby” will be given to the women in the appropriate language prior to the offer of screening tests [16].

Screening tests for HIV, hepatitis B and syphilis infections, and rubella susceptibility are routinely offered to all pregnant women at the maternity booking appointment by the booking midwife, or at the earliest opportunity when a pregnant woman presents to maternity services. A blood sample is taken by a health professional, usually a midwife or maternity support worker.

If a woman declines screening at the booking visit she will be referred to the ANSC for further counselling and re-offer of the tests. If she presents unbooked in labour the screening tests will still be offered if possible within an hour of admission to the maternity unit or postnatal if already delivered.

The lead ANSC in each HSC Trust, with support from at least one deputy ANSC, oversees the screening programme and ensures that positive results are followed up and appropriate referrals made. The lead/deputy ANSC arrangement means that essential duties are addressed continually e.g. if the lead ANSC is absent.

At a regional level, the PHA is responsible for commissioning and quality assuring the IDPS programme

4.1 Processing samples less than 20 weeks gestation

All IDPS blood samples taken before 20 weeks gestation (up to and include 19+6 weeks gestation) are sent to NIBTS for testing and are processed as follows:

- If the initial screening result is reactive in NIBTS the sample is sent to RVL for confirmatory testing.
- If the sample is not confirmed screen positive by RVL it will be classified as inconclusive and an email will be sent to the ANSCs via the agreed generic email address requesting a repeat test in three to four weeks’ time.
- The ANSC will review and counsel the woman and arrange the repeat test which will be sent directly to RVL.
- If this results in a negative screen this will be classified as a false positive result and no further action will be required unless risk factors are identified.
- If the repeat result is positive the normal process for a confirmed screen positive screening result will be followed.
- If the repeat sample is also inconclusive then advice from and/or referral to an infectious disease clinician is arranged for future management[17].

4.2 Processing of samples greater than or equal to 20 weeks gestation

All IDPS screening blood samples taken ≥ 20 weeks gestation are sent directly to RVL, as per historical agreement, using the late booking form and processed as follows[18]:

- If the initial screening result is reactive a confirmatory test will be performed in RVL using a different testing assay.
- Samples unconfirmed as positive using the second assay will be classified as inconclusive and a repeat sample may be requested in 3-4 weeks' time.
- The ANSC will review and counsel the woman and arrange the repeat test which will be sent directly to RVL.
- If this results in a negative screen this will be classified as a false positive result and no further action will be required unless risk factors are identified.
- If the repeat result is positive the normal process for a confirmed screen positive screening result will be followed.
- If the repeat sample is also inconclusive then advice from and/or referral to an infectious disease clinician is arranged for future management [17]

5.0 Failsafe

A failsafe is a backup mechanism, in addition to usual care, which ensures that if something does not go according to plan in the screening pathway, processes are in place to identify what has happened and act to ensure a safe outcome.

Failsafe processes minimise the risks in the screening pathways used by population screening programmes. There are a number of failsafe processes within the IDPS programme in Northern Ireland.

5.1 The failsafe report

A failsafe report is operational in each Trust to identify pregnant women who have not completed antenatal infection screening (AIS), including rubella susceptibility screening. The failsafe report is produced electronically from the Northern Ireland Maternity System (NIMATS) on a weekly basis and is sent from Business Services Organisation (BSO) to the Trust ANSCs, or their deputies, for review and appropriate action. It identifies all women booked for care where:

- The screening bloods have not been initiated on NIMATS.
- They have declined the screening tests.
- Results from the screening tests are missing >14 days from the booking date.

It is the responsibility of the ANSC or deputy ANSC to review the failsafe report on a weekly basis and take appropriate action to either initiate the bloods, review women who decline screening or arrange repeat screening tests as necessary.

5.2 The mismatch report

Since the establishment of an electronic link between NIMATS and the NIBTS IT system, a "mismatch report" is now available on NIMATS. This report highlights all:

- Positive results;

- Rubella susceptible results;
- Rhesus negative blood group results and any positive antibody screens;
- Rejected tests which need repeated;
- Results where there is no Health and Care (H&C) number for the mother;
- Results where the details on NIMATS do not match those on NIBTS;
- Tests that have not been initiated on NIMATS and therefore cannot cross the systems electronically;

It is the responsibility of the ANSCs or their deputies to review this report on a daily basis (Monday to Friday) and ensure:

- Arrangements are made to review women with positive results within 10 days of results receipt.
- A NIMATS “rubella letter” and rubella leaflet [19] are sent to women screened susceptible to rubella.
- The NIMATS “Anti-D 30week letter” is sent out to women with a rhesus negative blood group and that women with a positive antibody screen are informed of same and followed up appropriately.
- A notification is sent to the appropriate midwife/maternity support worker to arrange for rejected tests to be repeated.
- Results for women with no H&C are verified and accepted across the interface.
- Unmatched results are verified and accepted across the interface or rejected as appropriate.
- Results not initiated on NIMATS are initiated and accepted across the interface.

5.3 Generic email accounts

Generic email accounts have been set up for all HSC Trust antenatal screening teams, so that when a positive result for HIV, hepatitis B or syphilis is identified, in either NIBTS or RVL, a secure email is sent to these email addresses alerting the ANSC or their deputy of the positive result and the need for action to be taken.
It is the responsibility of the ANSC or deputy to review the generic email account daily (Monday to Friday).
On receipt of an email informing them about a positive result the ANSC or deputy should contact the woman and arrange a review appointment within 10 working days to inform her of the result, take confirmatory bloods and arrange referral to specialist services.

6.0 Programme developments

The key developments within the IDPS programme during 2020/21 include:

- March 2020 - the COVID-19 pandemic resulted in global lockdowns affecting many services within the NHS. Many screening programmes were paused during the pandemic however, since the IDPS programme is time critical it was not paused and continued as usual throughout the pandemic.

- April 2020 - the quarterly report template for ANSCs to use to report data was revised to collect data on rubella and MMR uptake.

- June 2020 - the late booking form was revised to include a code to assist with the collection of late booking data and was published on the RVL site for use.

- October 2020 - the revised HIV guidelines were published on the PHA website.

- December 2020 - an incident database was commenced to monitor and record incidents.

- February 2021 - the annual report 2017/18 was published on the PHA website [20].

7.0 Programme standards and performance

See below for a comparison between Northern Ireland and England for their performance against the National standards[1].

Table 6: Northern Ireland performances against National IDPS programme standards April 2020 – March 2021

Standard		Northern Ireland 2020/2021	England 2020/2021
1-3	**Coverage:** The total number of pregnant women booked for antenatal care during the reporting period, or presenting in labour, without previously having booked for antenatal care, for whom a confirmed screening result was available for HIV, hepatitis B or syphilis. Excluding women who: • Miscarry between booking and testing. • Opt for termination between booking and testing. • Transfer out between booking and testing (do not have a result). • Transfer in who have a result from a screening test performed elsewhere in the NHS in this pregnancy.	HIV, hepatitis B and syphilis: 99.98% (22,328 / 22,333) Rubella: 99.96% (22,328 / 22,336) *[1] **Acceptable level** ≥ 95.0%, **Achievable level** ≥ 99.0%	HIV, hepatitis B and syphilis. 99.8%
4	**Test turnaround times: HIV, hepatitis B, syphilis:** The number of results for each infection (confirmed positive or negative) reported to maternity services ≤ eight working days of sample receipt in the laboratory, excluding samples received that are not fit for analysis and a repeat sample is requested from the screening team.	100% **Acceptable level** ≥ 95.0% **Achievable level** ≥ 97.0%	99.4%

[1] Figure includes women transferring from UK not offered screening for rubella

5	**Referral: timely assessment of screen positive and known positive women:** The number of women with confirmed positive results for HIV, hepatitis B or syphilis who attend a screening assessment appointment ≤ 10 working days of result receipt by maternity services.	**HIV:** 100% **Hepatitis B:** 100% **Syphilis:** 93% **Acceptable level** ≥ 95.0% **Achievable level** ≥ 99.0%	**HIV:** 91.6% **Hepatitis B:** 93.3% **Syphilis:** 93.3%
6	**Diagnosis/intervention: timely assessment of women with hepatitis B:** The number of eligible pregnant women with hepatitis B who are booked in the reporting period, who have been seen by a hepatologist within 6 weeks, including: • all women who are newly diagnosed with hepatitis B. • women already known to have hepatitis B with high infectivity markers detected in the current pregnancy, with high infectivity defined as follows: ◦ HBsAg positive and HBeAg positive ◦ HBsAg positive, HBeAg negative and anti-HBe negative ◦ HBsAg positive where e-markers have not been determined ◦ having acute hepatitis B during pregnancy ◦ HBsAg seropositive and known to have an HBV DNA level equal or above $1x10^6$IUs/ml in an antenatal sample	100% **Acceptable level** ≥ 70.0% **Achievable level** ≥ 90.0%	85.9%
7	**Intervention/treatment: timely neonatal hepatitis B vaccination and immunoglobulin:** The number or percentage of babies born in the reporting period to women screened positive for hepatitis B receiving their first vaccination +/- immunoglobulin within 24 hours of birth.	Hepatitis B vaccination: 95.2% HBIG: 66.7% **Acceptable level** ≥ 97% **Achievable level** ≥ 99%	Hepatitis B vaccination: 99.2% HBIG: 97.6%

Source: Data from ANSCs and verified by NIBTS and RVL laboratories

8.0 Coverage data

All women are offered screening for HIV, hepatitis B, syphilis and rubella in each pregnancy regardless of known infection status.

In Northern Ireland, there is usually no difference in the acceptance of testing for HIV, hepatitis B, syphilis or rubella. Data from 2020/21 show that women who declined screening declined for all of the screening tests offered. The only slight difference in 2020/21 is that a very small number of women (n=≤ 5), transferred care from mainland UK and didn't have rubella screening completed, as this is no longer offered in England, Wales or Scotland due to a recommendation from the UK National Screening Committee in 2016. Northern Ireland is the only country in the UK where this is still part of the infectious diseases in pregnancy screening programme.

In 2020/21 the number of eligible women who were offered and accepted screening for HIV, hepatitis B, syphilis or rubella susceptibility has remained consistently high (above the achievable level) with only a small number declining screening.

- 22,326 / 22,333 (99.97%) of all eligible women were screened for HIV, hepatitis B and syphilis.

- 22,326 / 22,336 (99.96%) of all eligible women were screened for rubella. Women transferring from Great Britain should be offered screening for rubella since it is no longer offered there. In a few cases (n=≤5) this did not happen.

- Seven women declined screening for all four infections, which is consistent with previous years

9.0 HIV performance data

9.1 HIV confirmed screen positive samples

- Seven women were confirmed screen positive for HIV infection during 2020/21.

- All women who tested positive for HIV during 2020/21 were women who were previously known to have an HIV infection.

9.2 TTT for all HIV samples tested, positive and negative

- 21,908/21,908(100%) of HIV samples both positive and negative, tested in NIBTS had a TTT of within eight working days of receipt.

- 675/675 (100%) of all late booker HIV samples both positive and negative, tested in RVL had a TTT of within eight working days of receipt.

9.3 TTT for screen positive HIV samples

- 37/37 (100%) of samples initially screened positive in NIBTS and referred to RVL for confirmatory testing had a TTT of within eight working days.

- There were ≤ 5 late booking samples (20+ weeks gestation) tested and confirmed positive for HIV in RVL.

- 7/7 (100%) of samples confirmed screen positive for HIV were reported to maternity services within eight working days either by NIBTS or RVL.

9.4 HIV referral: timely assessment of women who screen positive for HIV

During 2020/2021, 7/7 (100%) of women confirmed screen positive for HIV were seen by maternity services for initial assessment within 10 working days from receipt of a positive result. This figure has consistently been 100% since 2016 which is an excellent achievement for the IDPS programme.

10.0 Hepatitis B performance data

10.1 Hepatitis B positive samples

- 25 women in total were confirmed screen positive for hepatitis B infection.

- There were ≤ five late booking samples (20+ weeks gestation) tested and confirmed positive for hepatitis B in RVL.

- 9/25 (36%) of women with a confirmed screen positive hepatitis B result, were women who were newly diagnosed or women who were previously diagnosed but had high infectivity markers.

- 16/25 (64%) of women with a confirmed screen positive hepatitis B result were women who were previously diagnosed and had low infectivity markers.

10.2 TTT for all Hepatitis B samples tested in either NIBTS or RVL

- 21,908/21,908 (100%) of hepatitis B samples both positive and negative, tested in NIBTS had a TTT of within eight working days of receipt.

- 675/675 (100%) of hepatitis B samples both positive and negative, tested in RVL had a TTT of within eight working days of receipt.

10.3 TTT for screen positive hepatitis B samples

- 43/43 (100%) of samples initially screened positive in NIBTS and were referred to RVL for confirmatory testing and had a TTT of within eight working days.

- 23/43(54%) of samples were confirmed positive for hepatitis B by RVL and were reported to maternity services by NIBTS within eight working days of receipt.

- All late booking samples tested in RVL and confirmed screen positive for hepatitis B, had a TTT of within eight working days of receipt.

10.4 Hepatitis B referral: timely assessment of all women who were confirmed screen positive for hepatitis B

During 2020/21 all women 25/25 (100%) confirmed screen positive for hepatitis B were seen by maternity services for initial assessment within the 10 working days from receipt of the positive result. This figure has consistently been 100% since 2018 which is an excellent achievement for the IDPS programme.

10.5 Diagnosis/intervention: timely assessment of women with hepatitis B

All women in Northern Ireland who are confirmed as screen positive for hepatitis B are referred to hepatology, even if previously known to be positive for the condition. In relation to referral to specialist services, the national standard focuses on the timeliness of review by hepatology for newly diagnosed women or women previously known to have hepatitis B, if they have high infectivity markers. However, within this report data are included for all women confirmed as screen positive for hepatitis B.

- 9/9 (100%) of eligible women newly diagnosed or women with high infectivity markers in Northern Ireland were seen by hepatology within six weeks.

- 8/16 (50%) of eligible women confirmed as screen positive for hepatitis B, previously diagnosed and who have low infectivity markers, were seen within six weeks.

Although we achieved a maximum performance of 100% for the new/higher risk women, performance for the review of the known lower risk women was 50%. However, this national standard and associated thresholds relate to the higher risk cohort of those positive for hepatitis B only, they do not apply to the lower risk cohort of those positive for hepatitis B.

An audit by the ANSCs of the women who were not seen within the required timeframe of six weeks showed that the COVID-19 pandemic had an effect on these cases with hepatology clinics being cancelled and the redeployment of key hepatology staff meaning that the monitoring of timely review of the pregnant women did not take place. There were also a small number of cases (n=<5) where the patient cancelled and rebooked the appointment taking this outside the six-week timeframe.

10.6 Vaccination of babies at birth.

The PHA Health Protection Service monitors vaccine coverage for the neonatal hepatitis B vaccination programme for infants born to hepatitis B positive mothers.

- 95.2% eligible babies born to women who tested positive for hepatitis B received a first dose of monovalent hepatitis B vaccine within 24 hours of birth.

- 66.7% of those babies who also required the hepatitis B immunoglobulin (HBIG) at birth received it within 24 hours.

Although this is below the acceptable performance for this standard, it should be noted that this was due to some babies (n=<5) being **ineligible** to receive the vaccine/ HBIG and there are no caveats in the national standards to remove these babies from the data. It should also be remembered that when numbers are small it has a greater proportional effect on percentages with each number that does not meet the standard.

10.7 Follow on vaccinations of babies after discharge [21]

Coverage of hepatitis B vaccine is measured at 12 months and 24 months

In 2020/21, (birth cohort April 2019 – March 2020), **82.8%** of babies born to mothers screened positive for hepatitis B, received five doses of hepatitis B vaccine by **12** months.

In 2020/21, (birth cohort April 2018 – March 2019), **54.3%** of babies born to mothers screened positive for hepatitis B, received six doses of hepatitis B vaccine by **24** months.

Hepatitis B surface antigen (HBsAg) testing

Coverage measured at 24 months of age (birth cohort April 2018 – Mar 2019), showed that **68.6%** of babies born to mothers screened positive for hepatitis B, had tested negative by 24 months of age.

11.0 Syphilis performance data

11.1 Syphilis positive results

- 14 women in total were confirmed as screen positive for syphilis infection.
- There were no late booking women ≥ 20 weeks gestation and tested in RVL.
- 9/14 (64%) of women were newly diagnoses with syphilis.
- 5/14 (36%) of women were known to have a previous syphilis infection.

11.2 **TTT for all** syphilis samples tested in NIBTS both positive and negative

- 21,907/21,908 (100%) of syphilis samples both positive and negative, tested in NIBTS had a TTT of within eight working days of receipt.
- 675/675 (100%) of syphilis samples both positive and negative, tested in RVL had a TTT of within eight working days of receipt.

11.2 Syphilis - Time to intervention

14/14 (93%) of women confirmed as screen positive for syphilis were seen by maternity services within 10 working days of the result being received by them.

12.0 Rubella performance data

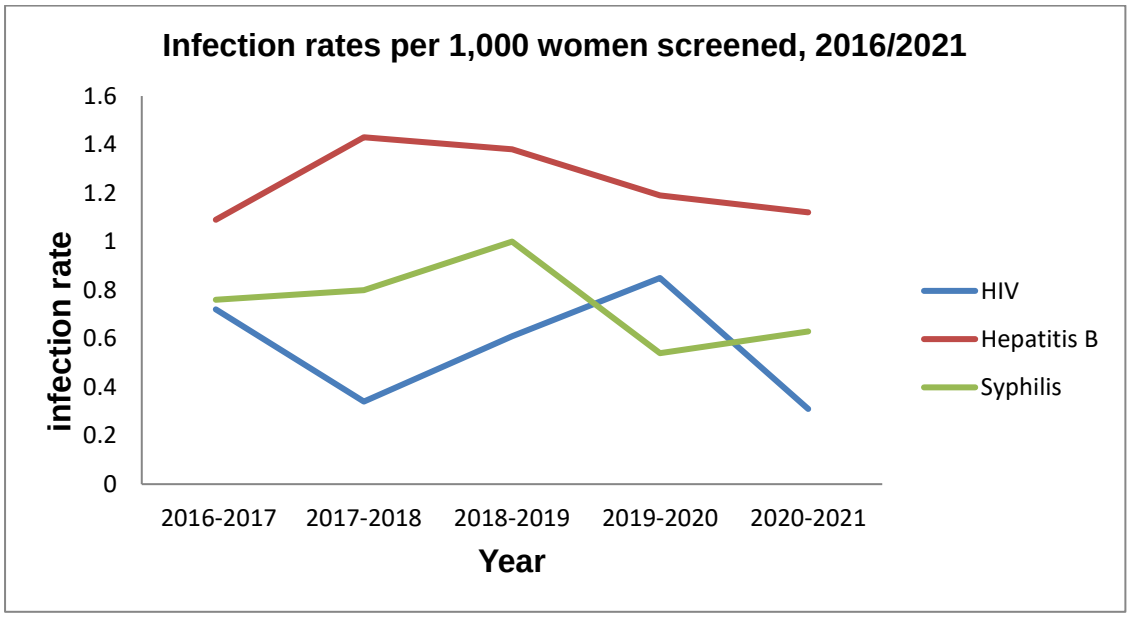
- 4,679 / 22,326 (20.96%) of women screened susceptible to rubella in 2020/21, which is similar to recent years.
- 2,738 / 4,323 (63.34%) of women who delivered during 2020/21 and screened susceptible to rubella accepted and were given the MMR vaccination prior to discharge from hospital following delivery.
- 33 / 4,323 (0.76%) women who delivered during 2020/21 and screened susceptible to rubella provided evidence that they had received two MMR vaccinations in the past.
- Taking account of the women who provided evidence this gives a performance rate for MMR administration prior to discharge from hospital of 64%.
- The COVID-19 pandemic also impacted on the administration of the MMR vaccination postnatal.

13.0 Trends in infection rates for HIV, hepatitis B and syphilis

Antenatal infection rates for HIV, hep B and syphilis for 2020/21 are shown below.

- 0.31 per 1,000 eligible pregnant women screened had a confirmed screen positive result for HIV.
- 1.12 per 1,000 eligible pregnant women screened had a confirmed screen positive result for hepatitis B.
- 0.63 per 1,000 eligible pregnant women screened had a confirmed screen positive result for syphilis.

Figure 6: Antenatal Infection rate for HIV, hepatitis B and syphilis in Northern Ireland from, 2016/2021



Source: Health Protection Surveillance, PHA

Figure 6 shows that there have been slight fluctuations in the infection rates for each condition over the last five years in Northern Ireland,

14.0 Conclusions

In Northern Ireland, all pregnant women are offered screening for HIV, hepatitis B and syphilis infection, as well as screening for rubella susceptibility. This is usually offered at the booking appointment or as early in pregnancy as possible after presenting to maternity services. Pathways are in place for women with positive screening results to be referred to specialist services for review and treatment if necessary, thus improving the health of the mother and reducing the risk of MTCT of HIV, hepatitis B and syphilis. Women who are susceptible to rubella are identified and offered MMR vaccination postnatally to help protect future pregnancies, unless they can provide evidence of two previous MMR vaccinations.

This report provides evidence of a high level of programme performance against most of the UK national standards, whilst highlighting areas for improvement in some other standards.

For the reporting period 2020/21 Northern Ireland has:

Exceeded the achievable performance levels for the following National standards:

- Standards 1-3: Identifying population and coverage for HIV, hepatitis B and syphilis (99.97%).

- Standard 4: Test turnaround time (TTT) for all samples tested both positive and negative (100%).

- Standard 5: Timely assessment of women confirmed as screen positive for HIV or hepatitis B within 10 working days of result receipt (100%).

- Standard 6: Timely assessment of women with either a new diagnosis of hepatitis B (or already known, but with high infectivity markers) within six weeks of positive result receipt by hepatology (100%). This is a marked improvement from 86.67% in 2018/19 and 61.54% in 2019/20.

Did not achieve an acceptable level for the following national standards:

- Standard 5: timely assessment of women confirmed as screen positive for syphilis (93%). However, the numbers involved are small (<five). A review showed that all reasonable efforts were made to arrange appointments within the 10 days.

- Standard 7: Timely neonatal hepatitis B vaccination and immunoglobulin of babies born to women screened positive for hepatitis B, during 2020/21 (95.23% for vaccination and 66.7% for HBIG). As explained above this is due to a small number of babies< five being ineligible for the vaccine/HBIG.

Other performance data (in addition to that measured by the national standards):

- The review by hepatology, of previously known women with hepatitis B and low infectivity markers, was low with only 50% of them being seen within six weeks of result notification. It is recognised that the COVID-19 pandemic had an effect on this performance, with clinics being cancelled and staff being re-deployed.

Rubella

Although the proportion of women susceptible to rubella in 2020/21 (20.96%) has remained similar since 2017 (20%), the uptake of the MMR vaccination postnatally has decreased slightly from 66% in 2019/20 to 63.34% in 2020/21. Women have been encouraged to present evidence of previous MMR vaccinations, obtained from their GP, which would result in MMR vaccination not being required. Data from the Northern Ireland Maternity System does not suggest that many women are actively doing this (0.76%).

15.0 Recommendations

15.1 Timely review of women who are confirmed screen positive for infection

A process of continuous audit via exception reporting on the quarterly returns should continue to review cases where a woman falls outside the national standard for review within 10 working days of a confirmed screen positive result being received by maternity services. This can help to identify potential barriers, help efforts to

improve service accessibility and ensure that all women are reviewed in a timely manner.

15.2 Timely assessment of women confirmed screen positive for hepatitis B

Although we did achieve 100% review of the higher risk women confirmed positive for hepatitis B, our performance for the lower risk women was only 50%. While this is not currently a national standard a current review of the national standards in England is likely to update this, and we should aim to improve this performance. A process of continuous audit should be in place to review cases where a woman confirmed screen positive for hepatitis B, falls outside the national standard of review by hepatology within 6 weeks of the positive result being received by maternity services.

Close working and communication with hepatology services and identifying potential barriers can help efforts to improve service accessibility and allow all women to be reviewed in a timely manner.

15.3 Test turnaround times

A review of cases where a positive result does not meet the TTT of 8 working days should take place to identify areas of potential delay or areas where improvements could be made. This is included in the quarterly exception report submitted by NIBTS and RVL

15.4 MMR vaccinations post-delivery

Women should continue to be encouraged to provide evidence of their MMR vaccinations to remove the need for MMR vaccination to be required postnatally.

Reasons for deferral of the MMR vaccination at delivery should be investigated by the ANSCs to see if improvements could be made on the number of rubella non-immune women getting their first MMR vaccination prior to discharge.

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