

Northern Ireland Infectious Diseases in Pregnancy Screening Programme



**Annual report
April 2016 - March 2017**



**Public Health
Agency**

About this publication:-

Document Title	Northern Ireland Infectious Diseases in Pregnancy Screening Programme Performance Report April 2016 – March 2017
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Approved by	Agency Management Team PHA (AMT) on 12/02/19 To go to board for approval.
Final Approved date	Approved by PHA Board on 21/02/19

Contents

Section	Title	Page number
1	Executive summary	4
1.1	Background	4
1.2	Headline results	4 - 6
1.3	Acknowledgement	6
2	Introduction	6
2.1	Aims of the screening programme	6
2.2	Rationale for the screening programme	6
2.3	HIV	7
2.4	Hepatitis B	7
2.5	Syphilis	8
2.6	Rubella	8
3	IDPS programme delivery	9
4	Failsafes	9
4.1	The failsafe report	10
4.2	The mismatch report	10
4.3	Generic email accounts	10
5	Programme developments	10
5.1	Electronic transfer of results	10
5.2	NIBTS change testing assays for rubella testing	11
6	Data collection	11
Table 1	Screening data collected 2016/2017	11
Table 2	Screening data percentages	12
6.1	Limitations	12
7	Programme standards and performance	13
Table 3	Northern Ireland performance against National standards.	13-15
8	Condition specific performance data	15
8.1	HIV performance data	15
8.2	Hepatitis B performance data	16

8.2.1	Regional hepatitis B audit	16
8.2.2	Recommendations	16
8.3	Vaccination of babies	17
8.4	Syphilis performance data	17
8.5	Rubella performance data	17
8.5.1	Rubella audit	18
8.5.3	Results	18
9	Trends	19
9.1	Trends in rubella susceptibility	19
Table 4	Rubella susceptibility in pregnancy. Trends in Northern Ireland 2010 – 2017	20
9.2	Trends in HIV, hepatitis B and syphilis positive results	19
Figure 1	Trends in HIV, hepatitis B and syphilis positive results	19
10	Summary and future developments	19-20
11	Abbreviations	21

NORTHERN IRELAND INFECTIOUS DISEASES IN PREGNANCY SCREENING PROGRAMME

Performance report

1st April 2016 – 31st March 2017

1 EXECUTIVE SUMMARY

This initial Annual Report of the Northern Ireland Infectious Diseases in Pregnancy Screening (IDPS) programme provides an overview of performance in relation to UK National Standards. These standards were updated in 2016¹. Performance data in relation to the screening offer, uptake and positive/rubella susceptible results from 1st April 2016 to 31st March 2017 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. As evidenced by the data in this report, the programme is performing well and in line with most national standards.

1.1 Background

The IDPS programme offers screening for: human immunodeficiency virus (HIV), hepatitis B, syphilis and susceptibility of pregnant women to rubella.

In keeping with the National Institute for Health and Care Excellence (NICE) guidance², the screening blood tests are routinely offered at the mother's pregnancy booking appointment, ideally by 10 weeks gestation or at the earliest opportunity thereafter where the woman presents to maternity services. The objective of screening is to enable early identification of these conditions among pregnant women, to allow early intervention and reduce the risk of mother-to-child transmission (MTCT). Pregnant women identified as susceptible to rubella are offered postnatal measles, mumps, and rubella (MMR) vaccination to prevent infection in future pregnancies³.

1.2 Headline results

Performance of the IDPS programme between 1st April 2016 and 31st March 2017 is summarised below:

- **Standard 1-3:** Identifying population and coverage.
 - 24,866 women were identified as eligible for screening of infectious diseases in pregnancy. Of these women, 24,860 (99.98%) consented to screening and had a confirmed screening result within the reporting period.

¹ The new standards were formally endorsed for Northern Ireland in October 2018.

² www.nice.org.uk/guidance/cg62/chapter/appendix-d-antenatal-appointments-schedule-and-content

³ In 2016 screening for rubella susceptibility was discontinued in England, Scotland and Wales. However, following a review of the implications of this change in practice, the Northern Ireland Screening Committee recommended that screening should continue here.

- **Standard 4:** The test turnaround time, i.e. the number of screening test results available within 8 working days of the sample being received by the laboratory (excludes samples requiring a repeat test). Programme performance was:
 - **For all results, both positive and negative**, 23,857/24,489 (97.4 %) were available in 3 days⁴.
 - **For positive results** available within 8 working days
 - HIV - 17/17 (100%)
 - Hepatitis B - 25/27 (93%) (maximum turnaround was 18 working days)
 - Syphilis - 17/20 (85%) (maximum turnaround was 13 working days)

- **Standard 5:** The proportion of women with screen positive results seen by maternity services within 10 working days of the positive result being reported to them.
 - 64 women tested positive for one of the three infections which equates to a rate of 2.6 per 1,000 women screened. The number seen within 10 working days was as follows:
 - HIV - 17/17 (100%)
 - Hepatitis B - 25/27 (89%) (maximum was 17 working days to be seen)
 - Syphilis - 20/20 (100%)
 - The proportion of women identified as susceptible to rubella increased from 6.9% in 2015/2016 to 19.3% in 2016/2017. This increase is likely to be attributable to the introduction of a new chemiluminescent immunoassay (CLIA) for Rubella susceptibility testing in April 2016.

- **Standard 6:** Timely assessment for those women with hepatitis B.
 - 27 women were confirmed as hepatitis B positive.
 - 22/27 (82%) were offered an appointment within the recommended 6 weeks of the referral being received by hepatology services.
 - 17/27 (62.9%) were seen by hepatology services within 6 weeks of the referral being received.
 - This standard is reported in line with a previous local agreement, that hepatitis B positive women should be reviewed within 6 weeks of the referral being received by hepatology.

- **Standard 7:** Intervention and treatment of babies.

⁴ NIBTS work towards a standard turnaround time of 3 days for non-referred (negative) samples, so were unable to produce data for 8 day turnaround. Incomplete data are available for turnaround time for late booking samples (i.e. taken at gestation >20 weeks) referred directly to the Regional Virology Laboratory that were negative. This turnaround time denominator does not include samples of all late bookers or rejected samples.

The PHA Health Protection Service monitors vaccine coverage for the neonatal hepatitis B vaccination programme for infants born to hepatitis B positive mothers. By one year of age an infant should have received three doses of monovalent hepatitis B vaccine (at birth, one and two months of age) and four doses (three doses plus fourth dose at 12 months) by two years of age.

- Of the 27 babies born to hepatitis B positive mothers who booked between 1st April 2016 and 31st March 2017, 100% received a first dose of monovalent hepatitis B vaccine within 24 hours of birth and 100% of babies born to hepatitis B e antigen (HBeAg) positive mothers received hepatitis B immunoglobulin (HBIG) at birth.
- 25/25 (100%) of babies born (birth cohort 2016/2017), received three doses of hepatitis B vaccination by the age of 1 year.
- 27/31 (87.1%) of infants born to hepatitis B positive mothers (birth cohort 2015/2016) received 4 doses of hepatitis B vaccination by two years of age.

1.3 Acknowledgement

Ms Jackie McGeagh retired from her role as the Regional Antenatal Screening Co-ordinator in 2016. Jackie was one of the first antenatal screening co-ordinators to be appointed in Northern Ireland back in 2003 and was involved in piloting the introduction of HIV screening in pregnancy. We would like to acknowledge and thank Jackie for her dedication and commitment to the programme over the years and also take this opportunity to wish her all the best in retirement.

2.0 INTRODUCTION

The Northern Ireland IDPS programme offers screening to all pregnant women for human immunodeficiency virus (HIV); hepatitis B; syphilis infection and for susceptibility to rubella infection. This report provides an overview of the IDPS programme for the year from 1st April 2016 to 31st March 2017, including performance data in relation to uptake and positive/rubella susceptible results.

2.3 Aims of the screening programme are to:

- Reduce the risk of mother to child transmission (MTCT) of the above infections during pregnancy, at birth or postnatally.
- Promote a positive health outcome for mother and child.
- Prevent infection in future pregnancies.

2.4 Rationale for the screening programme

The screening tests for infectious diseases offered in pregnancy, look for possible health problems that could affect a mother's health and the health of her baby. Having the tests can help when making decisions about care, both before and after birth, to protect the health of the mother and baby.

Whilst the vast majority of women screened will not be infected with these conditions, or be susceptible to the rubella virus, the benefits of screening are substantial. The diagnosis, treatment and management offered to mothers or vaccination given, once the baby is born, means the health of the mother can be improved and the chances of the baby being infected can be greatly reduced. The importance of being tested for each of these conditions is outlined below.

2.5 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%⁵. The risk of MTCT of HIV can be reduced to < 0.5% through appropriate interventions. Screening in pregnancy aims to identify HIV infected mothers and, with early treatment and management, reduce the risk of MTCT.

In June 2016 the World Health Organisation (WHO)⁶ issued new guidance on the use of antiretroviral drugs for the treatment and prevention of HIV infection. They recommended that all pregnant women should be commenced on antiretroviral therapy (ART) 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 prevent MTCT. Breastfeeding is not recommended for affected women.

Care is provided by a multidisciplinary team (MDT) encompassing obstetricians, antenatal screening co-ordinators, the wider maternity team (including genitourinary consultants and their teams), neonatologists, paediatric infectious disease specialists and pharmacists. The majority of HIV positive pregnant women are delivered in the BHSCT. However, in cases where a woman has requested to deliver in her own Trust, this has been facilitated.

2.6 Hepatitis B

Hepatitis B infection 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 immediately at birth⁷.

⁵ <http://www.who.int/hiv/topics/mtct/about/en/>

⁶

http://apps.who.int/iris/bitstream/handle/10665/186275/9789241509565_eng.pdf;jsessionid=8DF7A3839376199A6F5DFA2034A31FC1?sequence=1

⁷ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/628602/Greenbook_chapter_18.pdf

Screening in pregnancy aims to identify women who have hepatitis B infection and to provide effective interventions, including onward referral to a hepatologist and immunisation of the baby, to reduce the risks of perinatal transmission.

Treatment with antiviral drugs during pregnancy has also been shown to be effective in reducing the risk of MTCT in some women, depending on their hepatitis B e antigen marker and viral load. In these cases the baby will require hepatitis B immunoglobulin (HBIG) as well as vaccination at birth.

All previous sexual partners, previous siblings and household contacts are also identified, if possible, and offered screening and / or immunisation to reduce the risk of hepatitis transmission to them.

2.7 Syphilis

Syphilis infection readily crosses the placenta and may be transmitted to the fetus 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 attached guidelines for management of syphilis in pregnancy^{8 9}.

Babies born with congenital syphilis may have an early manifestation of the disease (within the first 2 years of life) or a later manifestation (after 2 years of life), including stigmata of congenital syphilis.

2.8 Rubella

Rubella 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 handicap, cataract, deafness, cardiac abnormalities, intra-uterine growth retardation and inflammatory lesions of the brain, liver, lungs and bone marrow.¹⁰

Screening maternal blood for rubella susceptibility allows identification of rubella susceptible women who can then be offered the Measles, Mumps and Rubella (MMR) vaccination after delivery. Of note, vaccination during the current pregnancy is not possible given that MMR, being a live vaccine, is contraindicated during pregnancy¹¹. Giving MMR postnatally provides protection against rubella in future pregnancies.

⁸ <https://www.bashguidelines.org/media/1053/syphilis-2015.pdf>

⁹ <http://www.publichealth.hscni.net/sites/default/files/Regional%20syphilis%20guidelines.pdf>

¹⁰ <https://www.gov.uk/government/publications/vaccine-in-pregnancy-advice-for-pregnant-women/mmr-measles-mumps-rubella-vaccine-advice-for-pregnant-women>

¹¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/147968/Green-Book-Chapter-21-v2_0.pdf

3.0 IDPS PROGRAMME DELIVERY

IDPS is a complex programme involving a wide range of professionals working in maternity units, laboratories, pharmacy, hepatology, genito-urinary medicine, and neonatology and paediatric services. Together with the PHA, these partner organisations work closely together to ensure that pregnant women have access to safe, effective, high quality and equitable screening.

Screening tests for HIV, hepatitis B, syphilis infections and rubella susceptibility are routinely offered to all pregnant women at the maternity booking appointment, 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.

The lead antenatal screening co-ordinator (ANSC) in each Trust, with support from at least one deputy ANSC, oversees the screening programme and ensures that positive results are followed up. The lead/deputy ANSC arrangement ensures that essential duties are addressed continually e.g. if the lead ANSC is absent.

At a regional level, within the PHA, there is a regional antenatal infectious disease screening programme coordinator and a consultant in public health who oversee quality assurance of the programme.

The screening tests are processed by the Northern Ireland Blood Transfusion Service (NIBTS) . If a sample is screen positive it is then transferred to the Regional Virology Laboratory (RVL) in BHSC who provide confirmatory testing for HIV, hepatitis B, and syphilis . All screening samples taken at or after 20 weeks of pregnancy are managed in line with an agreed late booking protocol and tested by the RVL.

4.0 FAILSAFES

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 thereafter action is taken 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.

4.1 The failsafe report

A failsafe is operational in each Trust to identify pregnant women who have not completed the antenatal infection screening (AIS) including rubella susceptibility. 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 deputy 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 AIS tests.
- Results from the AIS tests are missing >14 days from the booking date.

4.2 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.

This allows the ANSCs or their deputies to identify the above women and take appropriate action to ensure that these women are followed up in a timely manner.

4.3 Generic email accounts

Generic email accounts have been set up for all 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. Rubella susceptibility is reported via a hard copy result being sent to the test request source area.

5 PROGRAMME DEVELOPMENTS

The key developments within the IDPS programme during 2016 - 2017 included:

5.1 Electronic transfer of results

The successful rollout of the electronic link between the NIBTS and NIMATS in 2015 enabled the electronic transfer of the AIS results from NIBTS into the record results section on NIMATS. Since then, work has progressed on the electronic transfer of the blood group and antibody screen. This work, completed in early in 2017, means that all screening blood tests sent to NIBTS in pregnancy are automatically transferred onto NIMATS. This, importantly, has reduced the risk of manual error when inputting results, as well as reducing the workload associated with inputting results. While the processing of hard copy results remains a considerable burden a future benefit of this electronic transfer system is that a paperless system will eventually be adopted.

At present the same link is not possible for late booking results which go directly to RVL; these results still have to be manually inputted onto NIMATS. However, a new Laboratory Information Management System (LIMS) is being introduced that, in due course, will encompass all laboratory results regionally. This issue has been raised for consideration by the LIMS implementation group.

5.2 NIBTS change testing assays for Rubella testing

In April 2016 NIBTS awarded the contract for rubella testing to Abbotts Diagnostics. It has been assessed as suitable for use in diagnostic screening by the National Health Service Blood Transfusion (NHSBT) evaluation group. All National External Quality Assessment Services (NEQAS) exercises performed to date by NIBTS using the “new” assay have been satisfactory, with no errors. Of note, the chemical assay employed by this company is different from previous testing assays. This change is likely to explain the increase in the number of samples now testing as rubella susceptible.

6 DATA COLLECTION

NIMATS is in use across all maternity units in Northern Ireland. At the booking visit, once consent has been obtained and the screening tests taken, the tests are initiated on NIMATS. This allows results to be automatically downloaded from NIBTS to NIMATS as they become available. This information is then used to provide performance data for: offer, uptake (the proportion (%) of women who accepted the offer), tested and both positive and negative results. The denominator for data performance analysis is the total number of women booked for maternity care, per quarter, for each maternity unit in all Trusts.

Completed data (Table 2) are reported quarterly by the five Health and Social Care Trusts (HSCT) to the PHA for collation and analysis at both individual Trust and overall Northern Ireland levels.

Table: 1 screening data collected 2016/2017

1	Total number of women booked for maternity care per quarter for each maternity unit in all Trusts
2	Number of women offered testing
3	Number of women declining testing
4	Total number of women tested
5	Number of positive screening test results for HIV, hepatitis B surface antigen and syphilis, and the number of rubella susceptible (non-immune) test results

For each of the four infections the following is collated by the PHA:

Table: 2 screening data percentages

1	Percentage offered screening – coverage. number of women offered the test / number of women booked x 100
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2	Percentage uptake. number of women accepting the offer of screening / number of women offered x 100
3	Percentage tested. number of women tested / number of women offered x 100
4	Percentage HIV, Syphilis, Hepatitis B positive. number positive test results / number of HIV, hepatitis B and syphilis tests performed x 100
5	Percentage Rubella susceptible (non-immune). number rubella susceptible test results / number of rubella tests performed x 100

6.1 Limitations

These data must be interpreted with caution due to a number of caveats. For example, several factors may affect the number of 'bookings' and the number of results recorded. These include:

- A woman may initially book for maternity care in one unit but transfer to another unit. Her NIMATS data will be transferred across to the second unit, along with her blood results. However, there is the potential that the blood results could be counted twice - in the initial booking unit and again in the unit she is transferred to.
- A woman may transfer into Northern Ireland from elsewhere in the United Kingdom (UK) or from the Republic of Ireland (ROI) and may already have had her booking bloods taken. These tests would not usually be repeated. However, the results will still be counted in the figures (although rubella testing in the rest of the UK has ceased and women transferring in are tested for rubella susceptibility).

It should also be noted that a positive screening result for syphilis will reflect all stages of disease, as well as a previous infection that has been successfully treated. Further diagnostic testing and clinical assessment is required to ascertain the stage of infection and whether treatment is required.

For HIV and hepatitis B results, all positive results are counted even if it is for a case previously known to be positive.

All screening blood tests are sent to NIBTS for testing and if this is positive the sample is sent to RVL for a confirmatory test. The reported data do not include false positive results (i.e. when the subsequent diagnostic test is negative). In the event of an initial screen positive result on the first testing assay which is not then confirmed as positive in the second confirmatory test, counselling and reassurance is given to the woman and a repeat test will be performed in a further 3-4 weeks' time. 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.

7 PROGRAMME STANDARDS AND PERFORMANCE

Public Health England (PHE) published revised Infectious Diseases in Pregnancy Screening Programme Standards on the 30th March 2016 and the revised Handbook for Laboratories on the 25th July 2016. Within the update some standards were unchanged, apart from clarification around the definition (STD 1), some were revised (STD 4 and 6) and some new standards were added (STD 2, 3, 5, 7).

Table: 3 Northern Ireland performances against National IDPS programme standards April 2016 – March 2017¹² .

Northern Ireland performance against National IDPS programme standards April 2016 – March 2017				
	Standard	Acceptable level	Achievable level	Northern Ireland 2016- 2017
1	Identifying population and coverage: HIV screening - to provide assurance that screening is offered to all eligible women and each woman accepting screening has a confirmed screening result. (Existing standard)	≥ 95.0%,	≥ 99.0%.	24,860 / 24,866 (99.98%) ¹³
2	Identifying population and coverage: hepatitis B screening - to provide assurance that screening is offered to all eligible women and each woman accepting screening has a confirmed screening result. (New standard with revised criteria and definition)	≥ 95.0%	≥ 99.0%	24,860 / 24,866 (99.98%)
3	Identifying population and coverage: syphilis screening - to provide assurance that screening is offered to all eligible women and each woman accepting screening has a confirmed screening result. (New standard with revised criteria and definition)	≥ 95.0%,	≥ 99.0%	24,860 / 24,866 (99.98%)

¹²

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/529070/IDPS_Programme_Standards_2016_to_2017.pdf

¹³ As discussed in 6.1. Caution is required as across Trusts there may be inconsistency in removal of transfers in data reported.

4	<p>Test: turnaround time (HIV, hepatitis B, syphilis) - the proportion of antenatal screening samples for HIV, hepatitis B and syphilis where a result is available (confirmed positive or negative) and reported to maternity services within 8 working days of sample receipt in the screening laboratory in line with the IDPS laboratory handbook.¹⁴</p> <p>(Revised standard)</p>	≥ 95.0%	≥ 97.0%	<p>All samples positive and negative: 23,857 / 24,489 (97.4%) within 3 days (NIBTS data only)</p> <p>Positive samples: HIV - 17/17 (100%)</p> <p>hepatitis B - 25/27 (93%)</p> <p>syphilis - 17/20 (85%)</p>
5	<p>Time to intervention: timely assessment for screen positive and known positive women -The proportion of pregnant women attending for specialist assessment within 10 working days of the positive result or known status being reported to maternity services. (New standard)</p> <p><i>Specialist assessment</i> is a face-to-face appointment with a member of</p>	≥ 97.0%	≥ 99.0%	<p>HIV -17/17 (100%)</p> <p>hepatitis B - 24/27 (89%)</p> <p>syphilis - 20/20 (100%)</p>

¹⁴ NIBTS work towards a standard turnaround time of 3 days for non-referred (negative) samples, so were unable to produce data for 8 day turnaround. Incomplete data is available for turnaround time for late booking samples (i.e. taken at gestation >20 weeks) referred directly to RVL that were negative. This turnaround time denominator does not include samples of all late bookers or rejected samples where a repeat has been requested.

	the multidisciplinary team (for example screening coordinator/specialist midwife/clinical nurse specialist). The assessment as per local protocol will support and inform appropriate triage of women for clinical management by the medical team in pregnancy (for example a HIV physician, hepatologist, gastroenterologist, infectious diseases physician or consultant in genitourinary medicine)			
6	Time to intervention: timely assessment of women with hepatitis B -The proportion of pregnant women who are hepatitis B positive attending for specialist assessment with a hepatologist within 6 weeks of the referral being received by hepatology. (In line with previous local agreement) ¹⁵	≥ 70.0%	≥ 90.0%	17/27 (63%)
7	Intervention and treatment: timely administration of the first dose of neonatal hepatitis B +/- immunoglobulin (HBIG) - The proportion of babies born in the reporting period to women with hepatitis B receiving first dose of vaccination +/- immunoglobulin within 24 hours of birth. (New standard)	≥ 97%	≥ 99%	27/27 babies (100%)

8 CONDITION SPECIFIC PERFORMANCE DATA

8.1 HIV performance data

- The number of pregnant women eligible for infectious disease screening who accepted screening for HIV infection, leading to a conclusive result, was 24,860/24,866 (99.98% of all eligible women), therefore exceeding the IDPS programme uptake KPI of ≥ 95%.
- 17 pregnant women tested positive for HIV (0.7 per 1000 women tested) between 1st April 2016 and 31st March 2017.
- 6 women declined testing.

¹⁵ This varies from the definition of the current national standard, which became effective in NI in Oct 2018.

- All 17 women were reviewed by maternity services for onward referral, as required, within the 10 day standard.
- 17/17 (100%) positive HIV tests had a turnaround time of within 8 working days, i.e. the sample received in the laboratory to the result being reported.

8.2 Hepatitis B performance data

- The number of pregnant women eligible for infectious disease screening who accepted screening for hepatitis B infection, leading to a conclusive result, was 24,860/24,866 (99.98% of all eligible women). This exceeded the IDPS programme uptake key performance indicator (KPI) of achievable level of $\geq 99\%$.
- 27 pregnant women tested positive for hepatitis B (1.1 per 1000 women tested) between 1st April 2016 and 31st March 2017.
- 14 were newly diagnosed or women already known to be hepatitis B positive with high infectivity markers detected in the current pregnancy.
- 13 women were previously diagnosed with currently low infective markers for hepatitis B.
- 6 women declined testing.
- 25/27 positive hepatitis B tests had a turnaround time of within 8 working days, i.e. the sample received in the laboratory to the result being reported (maximum turnaround was 18 working days).
- All 27 (100%) women were referred to hepatology services.

8.2.1 Regional hepatitis B audit

A regional annual hepatitis B audit was performed to review the timeliness of assessment for women identified as hepatitis B positive (standard 5 and 6). This audit provided results as listed above in table 3, but also showed that 22/27 (82%) positive women were offered an appointment within the 6 weeks of the referral being received by hepatology. However only 17/27 (63%) women were actually seen by within 6 weeks. Delays in review were due to patient related factors and also system related factors. These included patients cancelling or not attending appointments, and delays in the initial reporting of the result, in the review of the women by maternity services and in the referral being received by hepatology or error in referral grading.

8.2.2 Recommendations

- All referrals to hepatology should be emailed securely and copied to the hepatology nurse specialist so that they can ensure that an appropriate appointment has been made for the woman.
- A standardised approach to monitoring women identified as positive for hepatitis B should be adopted by the region, so that women falling outside the expected timeframe for review will be easily and quickly identified.
- More detailed review may be required at a local level to identify potential problems for patients when accessing regional services.

- Analysis of laboratory issues affecting the turnaround times of the hepatitis B positive results needs to be undertaken.

8.2.3. Vaccination of babies

The PHA Health Protection Service routinely monitors vaccine coverage of the neonatal hepatitis B vaccination programme for infants born to hepatitis B positive mothers. By one year of age an infant should have received three doses of monovalent hepatitis B vaccine (at birth, one and two months of age) and four doses by two years of age (three doses plus fourth dose at 12 months).

Coverage data shows that for the 2016/2017 reporting period:

- Of the 27 babies born to hepatitis B positive mothers who booked and were screened in 2016/2017, 100% received a first dose of monovalent hepatitis B vaccine within 24 hours of birth and 100% of babies born to HBeAg positive mothers received hepatitis B Immunoglobulin HBIG at birth.
- 25/25 (100%) of babies born (birth cohort 2016/2017), 100% received three doses of hepatitis B vaccination by one year of age.
- 27/31 (87.1%) of infants born in 2015/16 had received their 4th dose by two years of age.

8.3 Syphilis performance data

- The proportion of pregnant women eligible for infectious disease screening who accepted screening for syphilis infection, leading to a conclusive result, was 24,860/24,866 (99.98%) exceeding the IDPS programme coverage KPI of $\geq 95\%$.
- 20 women tested positive for syphilis, which equates to 0.8 per 1000 women tested between 1st April 2016 and 31st March 2017.
- All 20 (100%) of these positive syphilis cases were reviewed by maternity services for onward referral within 10 working days of the positive result being received by maternity services.
- 17 out of the 20 positive syphilis results had a test turnaround time of within 8 working days of the test being received by the laboratories (maximum turnaround was 13 working days).

8.4 Rubella performance data

- The proportion of pregnant women eligible for infectious disease screening who accepted screening for rubella susceptibility, leading to a conclusive result, was 24,860/24,866 (99.98%) exceeding the IDPS programme uptake KPI of $\geq 95\%$ acceptable level and reaching the 99% achievable level.
- 4,799/24,860 (19.3%) of women tested between 1st April 2016 and 31st March 2017 were susceptible to rubella.

8.4.1. Rubella audit

It is advised that women testing as susceptible to rubella are offered MMR vaccination postnatally before discharge from hospital. A regional audit was therefore conducted to determine how many women actually received the MMR vaccination.

8.4.2. Results

- Of 3,519 women susceptible to rubella who delivered between 1st April 2016 and 31st March 2017, it was reported that 2,820 (80%) received the MMR vaccination prior to discharge from hospital postnatally.
- There were several potential maternal, neonatal and other related factors documented as to why MMR had not been given prior to discharge. These included deferral for vaccine to be given by GP, a history of 2 vaccines being given previously or previous immunity, maternal or neonatal illness, contraindication – such as anaphylaxis, decline and no availability of the vaccine/staff to prescribe.

9. TRENDS

9.1 Trends in Rubella susceptibility

Over time, the number and proportion of women testing as susceptible to rubella has increased, in particular during 2016/2017 (table 4). This increase is attributable, in the main, to the introduction of a new testing assay in April 2016 as mentioned in section 5.2.

The Joint Committee of Vaccination and Immunisation (JCVI) state that two doses of rubella-containing vaccine is sufficient evidence of rubella immunity. Whilst antenatal testing numbers suggest increasing numbers of susceptible women, uptake of two doses of MMR vaccine has not fallen by the same proportion..

In May 2016 the Northern Ireland Screening Committee recommended that screening for rubella in pregnancy should continue and that appropriate action should be taken where there is no documented history of two MMR in line with the Green Book¹³

Table 4

Rubella susceptibility in pregnancy: trends in Northern Ireland 2010 – 2017 (source- PHA health protection team)

	Number of	Number	Proportion	Test	Cut off for
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¹³

<https://www.gov.uk/government/publications/rubella-the-green-book-chapter-28>

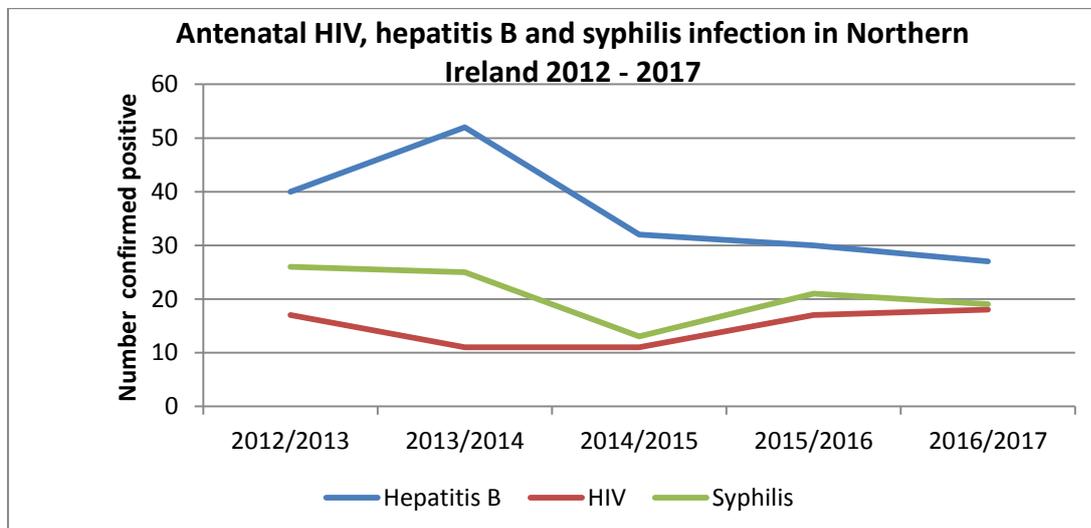
	women tested during pregnancy	rubella susceptible	rubella susceptible		susceptibility
2010	26,120	749	2.9	EIA	>10
2011/12	26,153	1067	4.1	EIA	>10
2012/13	25,368	1555	6.1	EIA	>10
2013/2014	25,621	1629	6.4	EIA	>10
2014/2015	25,487	1706	6.7	EIA	>10
2015/2016	25,156	1937	7.7	EIA	>10
2016/2017	24,860	4799	19.3	CLIA	>10

EIA- electro/ enzyme immunoassay
CLIA- chemiluminescent immunoassay

9.2 Trends in antenatal HIV, hepatitis B and syphilis infections.

Figure 1 shows the trends in antenatal HIV, hepatitis B and syphilis infections over the last 5 years. It highlights an overall downward trend for hepatitis B and syphilis, and a slightly upward trend for HIV.

Figure 1
Trends in antenatal HIV, hepatitis B and syphilis infection in Northern Ireland 2012 - 2017 (source –health protection team PHA)



10 SUMMARY AND FUTURE DEVELOPMENTS

In Northern Ireland, pregnant women are offered screening for HIV, hepatitis B, syphilis infection and rubella susceptibility early in pregnancy, or as soon as possible after accessing maternity care. Pathways are in place for women with positive screening results to reduce the risk of MTCT of HIV, hepatitis B and syphilis. Women who are susceptible to rubella are identified and offered postnatal MMR vaccination to protect future pregnancies.

This report provides evidence of a high level of programme performance in relation to most of the national standards at regional level for 2016/2017, whilst some areas for improvement have also been highlighted.

The programme is achieving the required standard for the offer, uptake and testing among pregnant women and in the test turnaround times for the results of these tests. Whilst the vast majority of women testing positive for these infections are reviewed by specialist teams in a timely manner, and within the acceptable national standards, work will continue on improving timeliness of assessment and intervention, particularly for women who are hepatitis B positive.

In order to improve the quality of reported data in the future, work will continue with laboratory services, NIMATS support officers and Trusts to reduce double counting and to enable test turnaround times to be more accurately reflected in laboratories. In order to assist with this, the late booking form will also be reviewed to enable more accurate coding of these samples.

11 ABBREVIATIONS

Abbreviations	Meaning
IDPS	Infectious Diseases in Pregnancy Screening Programme
HIV	Human Immunodeficiency Virus
NICE	National Institute for Clinical Excellence
MTCT	Mother to child transmission
MMR	Measles, Mumps and Rubella
CLIA	Chemiluminescent Immunoassay
PHA	Public Health Agency
HBeAg	Hepatitis B e antigen
HBIG	Hepatitis B Immunoglobulin
DNA	Did not attend
WHO	World Health Organisation
MDT	Multidisciplinary team
ART	Antiretroviral therapy
BHSCT	Belfast Health and Social Care Trust
CRS	Congenital Rubella Syndrome
NIBTS	Northern Ireland Blood Transfusion Service
RVL	Regional Virology Laboratory
ANSC	Antenatal screening co-ordinator
NIMATS	Northern Ireland Maternity System
AIS	Antenatal infection screening
BSO	Business Services Organisation
HSCT	Health and Social Care Trust
H&C	Health and Care
LIMS	Laboratory Information Management System
PHE	Public Health England
STD	Standard
KPI	Key Performance Indicator
EIA	Electro/ enzyme immunoassay