# SCHEDULE *XX* – THE SERVICES

1. **Service Specifications**

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| **Service Specification No.** | DRAFT Market Engagement Process -published 05th August 2020 |
| **Service** | Genomic Laboratory Non-invasive prenatal testing (NIPT) Service |
| **Commissioner Lead** | *NAME*, Public Health England (PHE) |
| **Provider Lead** | *TBC via Procurement Process(es)* |
| **Period** | *01/04/2021 – 31/03/2024* |
| **Date of Review** | *As detailed throughout specification and TBC*  |

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| Population Needs |
| Context and evidence base* + 1. The UK National Screening Committee (UK NSC), through the NHS Fetal Anomaly Screening Programme (NHS FASP) has recommended that NIPT be assessed as an additional option to the current screening pathway for Down’s syndrome, Edwards’ syndrome and Patau’s syndrome for women with chance results greater than or equal to 1 in 150 (1 in 2 to 1 in 150).
		2. The recommendation from the UK NSC is to undertake an evaluative approach to introducing the offer of NIPT, as an additional option, for those women with a higher chance result of 1 in 2, to 1 in 150 following combined or quadruple screening.
		3. The UK National Screening Committee ("UK NSC") commissioned a full review of the published scientific and cost evidence (systematic review) relating to NIPT, for information this was presented to the UK NSC in June 2015. A formal announcement following the UK NSC recommendations was made by the Department of Health on 29 October 2016. Please see the PDF at the following hyperlink for a brief summary on the purpose of NIP testing from the UK NSC; <https://legacyscreening.phe.org.uk/policydb_download.php?doc=602>.
		4. A further review was undertaken in 2019 to include the offer of NIPT screening in twin pregnancies as part of the evaluation roll out. In addition, the UK NSC also updated the approved technology for use in NIPT screening as an additional option to the current screening pathway for Down’s syndrome, Edwards’ syndrome and Patau’s syndrome for women with chance results greater than or equal to 1 in 150 (1 in 2, to 1 in 150). The Provider must supply the class of tests which were evaluated in the two Warwick [reviews](https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1002/pd.5621?af=R). These were based on sequencing and microarray methodologies. Elements of the test process may be modified but the overall methodology must remain sequencing and microarray based. This will be effective for the duration of the contract
		5. NIPT is a technique that can be used to screen for Down’s syndrome, Edwards’ syndrome and Patau’s syndrome during pregnancy. It involves taking a sample of blood from the pregnant woman. The mother’s blood contains a mixture of her DNA and the placental DNA. This is known as the total cell free DNA (cfDNA). In most cases, the placental DNA will be the same as the baby’s DNA. The contribution of DNA from the placenta is called cfDNA.
		6. cfDNA can be detected in maternal plasma as early as 5 to 7 weeks gestation. However, test results are more accurate after 10 weeks because the amount of cfDNA increases over time. cfDNA remains in the maternal circulation for only a few hours after each pregnancy, making it suitable for pregnancy-specific testing.
		7. The evaluative roll will last for three years after which recommendations will be made by the UK NSC about the future commissioning arrangements for NIPT.
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| Outcomes |
| 2.1 Public Health England Responsibilities* + 1. PHE is the expert national public health agency, providing the evidence, support and advice needed locally, nationally and internationally. PHE fulfils the Secretary of State for Health and Social Care duties and remains responsible for four critical functions: protecting the public’s health; improving the public’s health; improving population health by supporting sustainable health and care services; and supporting the capacity and capability of the public health system in England. PHE broader priorities include: support and advice on the Government’s prevention and levelling up priorities, specifically including work on childhood obesity, mental health, smoking, health inequalities and the needs of the most vulnerable groups in society, and NHS-led national screening programmes. These priorities are set out in an annual strategic remit letter:

<https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882570/PHE_Remit_Letter_from_Jo_Churchill_to_Duncan_Selbie.pdf>. 2.2 Specific defined outcomes* + 1. For clarity the service will be an evaluative roll out. The Provider will be expected to provide feedback and information reporting as set out in section XXXX of this specification, as well as adapting the service as required by PHE throughout the term of the contract. This will enable the programme leads to evaluate the roll out at the stage identified in the section XXX of this specification; ensuring any required changes to the pathway and/or screening process can be made efficiently and effectively. If it becomes necessary, the UK NSC would also be able to make a recommendation to cease use of NIPT as part of the screening pathway.
		2. The main aims and objectives of this laboratory service are:

 * + 1. To allow women to access the NIPT service with rapid turnaround times to enable appropriate clinical decisions to be taken, at an appropriate time during pregnancy.
		2. Support the model for the Fetal Anomaly Screening Programme, as recommended by UK NSC for evaluation as an additional option to the current screening pathway for Down’s syndrome, Edwards’ syndrome and Patau’s syndrome for women with chance results greater than or equal to 1 in 150 (1 in 2 to 1 in 150).
		3. To provide evidence and feedback to NHSFASP to enable developments and changes to be made in term to facilitate the evaluative roll-out.
		4. To provide the evidence to allow the UK NSC to assess the evaluation of the NIPT service.
		5. Set out the roles and responsibilities of the NIPT Provider in delivering the service and meeting the key performance indicators. The NIPT Provider agrees, as further detailed in the description of the NIPT Services below, to be responsive to the findings of the evaluative roll out as it proceeds. The NIPT Provider commits to working with NHS fetal anomaly screening programme ("NHS FASP") to develop, adapt and modify the laboratory pathways, ordering systems, sample management processes and data requirements as the evaluative rollout progresses.
		6. Further, the specification sets out the NIPT Provider’s need to comply with data reporting requirements set out in this specification to fulfil both the on-going quality assurance of laboratory services for NHS FASP and shorter-term reporting to inform and support the evaluative rollout of NIPT as part of the screening pathway.
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| Scope |
| 3.1 Aims and objectives of service* + 1. In delivering the aims and objectives of this service the provider will meet all the key indicators (e.g. sample turnaround times) as set out *later in* this specification.
		2. Taken from the UK NSC recommendation in 2016, the overall aims and objectives of the service are described below.
		3. Pregnant women are already offered a screening test for Down’s syndrome, Edwards’ syndrome and Patau’s syndrome from 10-14 weeks of pregnancy (the combined test, involving an ultrasound scan and blood test), or a screening test for Down’s syndrome only (the quadruple test, involving a blood test alone) if booking between 14-20 weeks.
		4. If the screening test shows that the chance of having a baby with Down’s syndrome, Edwards’ syndrome and Patau’s syndrome is higher than 1 in 150, this is called a higher- chance result. Currently, women who have a higher chance result have the option of having an invasive diagnostic test (amniocentesis or CVS).
		5. The proposed change is for Non-Invasive Prenatal Testing to be offered to women who are deemed at higher chance following the current primary screen. NIPT is not diagnostic and an invasive diagnostic test is still required to receive a definitive diagnosis
		6. Key findings supporting the UK NSC recommendation:
		7. an invasive diagnostic test carries a small risk of miscarriage. The evidence suggests that NIPT will reduce the number of women being offered an invasive test.
		8. however, while we know that the accuracy of NIPT is good, we don’t yet know how it will perform in an NHS screening programme pathway (hence the evaluative roll out service commissioned here),
		9. for women who choose to have NIPT, this will add in an extra step in the screening programme. The impact of this, and the choices women make at different points in the pathway, is something that we hope to gain a better understanding of through further evaluation.
		10. A recommendation has therefore been made to evaluate the introduction of non-invasive prenatal testing (NIPT) to Down’s syndrome, Edwards’ syndrome and Patau’s syndrome screening. This will include scientific, ethical and user input to better understand the impact on women, their partners and the screening programme around the offer of cfDNA or invasive testing following a screening test result where:
		11. the screening test chance result for trisomy 21 (T21) is greater than or equal to 1 in 150
		12. the combined test chance result for trisomy 18 (T18) and trisomy 13 (T13) is greater than or equal to 1 in 150.

3.2 Laboratory Service description* + 1. A Provider of NIPT will be as a minimum be a Genomic Laboratory Hub (GLH).
		2. In order to perform NIPT, the NIPT Provider must be ISO 15189:2012 accredited and must participate in ISO 17043 NIPT accredited external quality accredited (EQA) scheme.
		3. Where NIPT services are sub-contracted the sub-contractor should be a defined as a Local Genomic Laboratory (LGL) and will comply with the requirements set out in this specification. For clarity, it is the responsibility of the contract holder (GLH) to ensure specification compliance of any sub-contractor (LGL) and the GLH shall be fully responsible for the delivery of this service and service specification, never mind its own contractual relationship with an LGL should the service in whole or in part be sub-contracted.
		4. Where such NIPT services have been sub-contracted out the GLH NIPT lead shall ensure the sub-contractor complies with the provisions and requirements as set out in this specification.

C:\Users\annette.mchugh\AppData\Local\Microsoft\Windows\INetCache\Content.Word\FASP T21, T18, T13 NIPT pathway.pngTesting repertoire * + 1. The NIPT Provider shall perform NIPT and FASP reporting on T21, T18 & T13 only in singleton and twin pregnancies with no inclusion of fetal sex or other chromosomal findings.
		2. The NIPT Provider shall only undertake NIPT as part of the NHS screening programme:
		3. for those women with a higher chance result of 1 in 2 to 1 in 150 from combined or quadruple testing offered; and
		4. where there is evidence provided by the NIPT Provider that the woman been offered the clinical options as described in the NHS FASP pathway (Appendix 1) prior to their sample being taken (the "NIPT Eligibility Criteria").
		5. Women who have received a higher chance result from either combined or quadruple tests who choose to have NIPT may accept the offer of screening for:
		- Down’s syndrome only,
		- Edwards’ syndrome and Patau’s syndrome only, or
		- All 3 conditions.
		1. The Eligibility Criteria check will be performed by the maternity services that refer the service user to the NIPT Provider.

Sample collection, handling and processing * + 1. The NIPT Provider must create, maintain and comply with ISO 15189 and Human Tissue Act 2004 compliant Standard Operating Procedures (SOPs) setting out processes in respect of sample receipt, storage, extraction, preparation, sequencing, microarray, analysis (including bioinformatics), transportation, and a reporting protocol for NIPT (including specific sample requirements) and the further details required as set out in in this specification.
		2. The Provider will follow the flow chart as defined in Section xx of this specification and meet all the key indicators as specified in section xxx of this specification.
		3. The NIPT Provider will purchase sample kits and distribute these to the Clinical Services (referring services); these sample kits will not be chargeable to the Clinical Services.
		4. All timings referred use Day 1 definition as the day the NIPT Provider receives the sample; Day 1 is NOT the day the NIPT Provider receipts the sample if samples are not receipted immediately upon receiving.
		5. Samples are not able to be refrigerated and storage should comply with the Human Tissue Act 2004.
		6. The Clinical Services will notify the NIPT Provider that a sample is being sent; the NIPT Provider should develop (during mobilisation) and provide (during the contract term) a means of communication for this to occur and a record maintained.
		7. If samples are delayed, exception reporting will be undertaken to determine the cause however if at fault the NIPT Provider will be held accountable in line with *Relevant* *Clause to be added*.
		8. The NIPT Provider must provide evidence of and report in the Monthly Performance Report on its compliance with such SOPs.
		9. The SOPs for NIPT shall detail:
	1. the provision of specialist cell stabilising blood tubes by the NIPT Provider as applicable to Clinical Services;
	2. the provision of appropriate standardised request forms (paper and/or electronic) by the NIPT Provider as applicable to Clinical Services, which meet NHS FASP minimum data requirements;
	3. the provision of transportation and storage of samples from Clinical Services to the NIPT Provider as applicable;
	4. the competency/grade level of staff which will be required at each step of the NIPT process;
	5. processing times for each stage of the workflow which are consistent with the NIPT Turnaround Times;
	6. all manual processing of NIPT within the NIPT pathway of the NIPT Provider including Quality Control (QC) laboratory protocol for each step of the NIPT process;
	7. the processes designed should minimise cross contamination;
		1. processes to ensure that if there is a single test failure in a particular sample run that: only the sample which failed will need to be re-tested or a repeat sample obtained; and none of the other samples tested in that run are affected. These processes should include stop points and re-start points which allow for the repeat of certain steps in the process should a technical failure in the laboratory process occur;
		2. the number of re-tests that can be run on a single patient sample (minimum of 10 ml sample) without requiring a new sample to be taken;
	8. the policy for informing NHS FASP, Clinical Services and Public Health England of any downtime in test availability (for example extended holiday periods, instrumentation failure or equipment maintenance). This policy should include a requirement to notify Clinical Services in advance (where technically possible) of any of the foregoing and advise NHS FASP, and Public Health England of any impact on NIPT Turnaround Times. The NIPT Provider will be required to have contingency plans in place to cover such eventualities;
	9. procedures for monitoring, labelling and tracking samples from sample receipt to reporting results back to Clinical Services, including details of expected timeframes which shall be in line with the NIPT Turnaround Times. The procedure should include a process for cross-referencing samples received against results reported;
	10. all consumables required to run NIPT from receipt of patient sample to reporting the result to Clinical Services and include information as to whether a "kit" is used or separate elements;
	11. the quality assurance processes which build in robust quality-control (QC) fail safes into the laboratory pathway for NIPT and set out how samples that fail to meet the QC thresholds are identified.
	12. all instruments and equipment used in the screening process;
	13. the technology method used for NIPT
	14. the process to collect and follow up outcomes for all NIPT performed as part of the NHS screening programme including to confirm screening results by either following up IPD results or assessment of baby at birth for confirmation (this will be collected in collaboration NCARDRS);
	15. the number of DNA samples it can process in a single batch and processes demonstrating that:
	16. DNA samples will be run regularly in batches of scalable numbers; and
	17. the analysis protocol is able to adjust to scaling up in numbers in order to meet the NIPT Turnaround Times; and
	18. a mechanism for the NIPT Provider to obtain ordering information and other data where NIPT services have been let to a NHS LGL to provide NIPT so that the NIPT Provider can fulfil its reporting obligations in accordance this service specification.
		1. The NIPT Provider shall:
1. receive and acknowledge receipt of the NIPT order in accordance with the SOPs;
2. only processes orders which meet the NIPT Eligibility Criteria;
3. check that all the NIPT Minimum Data has been supplied and submitted correctly alongside the complete sample;
4. check that the sample and accompanying patient referring card/specimen labels provided is complete; if the information is not complete, the Provider must seek this correct information whilst storing and holding the sample(s) provided;
5. Check that the choices made regarding conditions that the screening offer is accepted for is clearly documented on the request form. If it is not clear or the relevant parts of the form have been left blank it is the responsibility of the laboratory to clarify the screening required with the requestor before the sample is analysed;
6. perform the relevant QC on the sample at all steps of the pipeline to determine if the sample is of sufficient quality to proceed to NIPT and at all steps of the procedure;
7. perform NIPT in accordance with the applicable Standards for NIPT, set out in this Schedule 4 (Service Specification) of the Contract; and
8. return the complete results to Clinical Services in accordance with the NIPT Turnaround Times,
9. collectively referred to as the **"NIPT Gateway Services"**, and the NIPT Provider shall monitor the performance of the NIPT Subcontractor in respect of the NIPT Gateway Services.

Technical and Analytical platforms and Capability * + 1. The Business Continuity Plan and procedures which the NIPT Provider is to have in place, maintain and comply with in accordance with Clause 5 of Schedule 2 (General Terms and Conditions) of the Contract must include a contingency procedure to ensure continuity of NIPT in the event of service failure.
		2. The NIPT Provider should report to Public Health England if it proposes to make any upgrades in development of laboratory equipment and consumables and other similar items used in the performance of NIPT, what the upgrade is for, and an estimated launch date to NHS FASP and Public Health England.

Bioinformatics, Annotation and Validation * + 1. The NIPT Provider shall set out in the SOPs required under Paragraph 3.4.9:
1. full details of the process for validation/verification of NIPT results using the ISO 15189:2012 guidance. This must include as a minimum the "ISO 15189:2012 Standard 5.5.1 Selection, Validation and Verification of Examination Procedures" document for NIPT;
2. the specific parameters used to generate final NIPT results. This must include parameters (for example, a priori risk) used to determine the lower and higher chance result;
3. the key quality parameters used in their analysis of NIPT results to pass or fail each sample (for example, minimum/maximum library yield QC, minimum samples for analysis, specific sequencing data quality control, minimum fetal fraction); and
4. the auditing processes and procedures on reporting of NIPT Turnaround Times.

Clinical interpretation, reporting, returning of results and measuring outcomes * + 1. The NIPT Provider shall, ensure that they perform the NIPT and return the result to Clinician (referring) Services (the maternity service that will provide the service user(s) with the test result(s)) within seven (7) days of receipt of the sample at the NIPT Provider ("NIPT Turnaround Times"). **The NIPT Provider shall turnaround in five (5) days from receipt of sample at the NIPT Provider to reporting of the result(s) to Clinician Services. Receiving of the sample equals day one (1)**.
		2. If there is a sample testing failure, the NIPT Provider shall, report this immediately to Clinical Services, advise if a second sample needs to be obtained from a patient, and advise of any impact of such failure on NIPT Turnaround Times.
		3. The NIPT Provider must provide, as part of its regular report to PHE and NHS FASP such information as necessary to fulfil the NIPT Provider's obligations) and shall report directly to NHS FASP:
		4. examples of NIPT reports (include 'higher chance', 'lower chance' and 'no result');
		5. details of current NIPT 'no result' numbers and reasons for 'no result' and provide evidence for both first sample and re-sample requests;
		6. information on the NIPT Provider's false positive and false negative rate;
		7. details on the NIPT Provider's performance against the NIPT Turnaround Times and any failures to meet the NIPT Turnaround Times and the reason for such failure;
		8. instances where samples require to be repeated, where additional samples need to be obtained due to test failure, and the impact on the overall NIPT Turnaround Times; any failures to meet the laboratries’ QC thresholds.
		9. The NIPT Provider shall develop a documented evaluation, reporting and audit programme to assess screening safety and performance as defined by NHS FASP requirements. This will include providing returns to Down's syndrome screening quality assurance support service (DQASS) and National Congenital Anomaly and Rare Disease Registration Service (NCARDRS) and providing to PHE, NHS FASP and Clinical Services:
		10. annual data returns and reports on national standards;
		11. details of such returns to DQASS and NCARDRS; and
		12. other requirements during the evaluative roll-out as defined by NHS FASP, all within the timescales specified by NHS FASP

Population covered* + 1. The population covered will be eligible patients registered with a General Medical Practice (GP) in England. Eligibility will be checked and confirmed by the referring service (Clinical Services).

Any acceptance and exclusion criteria and thresholds* + 1. As per Section 3.8.

Interdependence with other services/providers* + 1. The service will be interdependent with the referring healthcare services, which will not in their total be listed here, but will generally be maternity services where the patient is registered with their GP, or where they have chosen to receive treatment.
		2. The interdependencies with PHE, NHS FASP and NHS England and NHS Improvement (NHSE&I) are described throughout this document and will not be repeated here.
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| Applicable Service Standards |
| Applicable national standards * + 1. The GLH, and LGL if a sub-contractor, must be ISO 15189:2012 accredited for NIPT, and participate in ISO 17043 accredited EQA NIPT scheme for aneuploidies.

Applicable standards set out in Guidance and/or issued by a competent body (e.g. Royal Colleges)* + 1. No standards are applicable at the time of tender publish however this may be varied throughout the evaluative roll out.

Applicable local standards* + 1. No standards are applicable at the time of tender publish however this may be varied throughout the evaluative roll out.
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| Applicable quality requirements  |
| Applicable Quality Requirements * + 1. *(See Schedule 4A-C (TBC))*

Quality Assurance* + 1. The NIPT Provider will provide evidence on request to Public Health England and NHS FASP of its (and the NIPT Subcontractors') UKAS accreditation.
		2. The NIPT Provider must evidence to NHS FASP, when requested by either party, that their quality management system incorporates all the requirements of the screening pathway as set out in both Appendix 1 and the NHS FASP Guidance as may be updated from time to time. The NIPT Provider shall manage incidents in accordance with the [NHS Screening Safety Incidents Framework](https://www.england.nhs.uk/wp-content/uploads/2015/04/serious-incidnt-framwrk-upd.pdf) and the [PHE Managing Safety Incidents in NHS Screening Programmes](https://www.gov.uk/government/publications/managing-safety-incidents-in-nhs-screening-programmes) guidance (https://www.gov.uk/government/publications/managing-safety-incidents-in-nhs-screening-programmes).
		3. The NIPT Provider shall participate in the ISO 17043 accredited EQA NIPT scheme for aneuploidies. The NIPT Provider shall, on request, share its data on EQA performance and the reports on the outcomes of the screening samples set to them via the NEQAS scheme, with NHS FASP, NCARDRS, and Public Health England. If the NIPT Provider has subcontracted NIPT to an NIPT Subcontractor, it shall obtain the performance data and reports relating to such NIPT Subcontractor and provide this to the aforementioned parties.
		4. The NIPT Provider will be responsive to the findings of the evaluative roll out as it proceeds, usually communicated by NHS FASP. Therefore, the NIPT Provider commits (and shall ensure the commitment of any NIPT Subcontractor) to working with NHS FASP to adapt and modify the laboratory pathways, processes and data requirements and SOPs created by the NIPT Provider in accordance the evaluative rollout, as it progresses in accordance with PHE NHSE&I and NHS FASP instructions. The NIPT Provider shall also be required to perform data reporting to fulfil both the on-going quality assurance of laboratory services for NHS FASP in the long term and in the shorter term to inform and support the evaluative rollout of NIPT as part of the screening pathway. **If the NIPT Provider fails to develop or change the service as required throughout this evaluative roll-out, upon instruction from NHS FASP, PHE or NHSE&I, PHE reserve the right to terminate the contract due to failure to provide the contracted service.**
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| Governance and organisational structure |
| * + 1. The NIPT Provider shall be fully compliant, with the NHS FASP specific requirements and standards. These requirements and standards will be more fully described in the NHS FASP operational guidance ("NHS FASP Guidance"). The NIPT Provider shall work with Public Health England and NHS FASP to develop the NHS FASP Guidance following the Signature Date.
		2. The NIPT Provider shall provide evidence on request to Public Health England and NHS FASP of its laboratory organisational structure for performing NIPT (including the structure of any NHS LGL subcontracted to carry out NIPT in accordance with Paragraph 12 ("NIPT Subcontractor") and how its provision of NIPT sits in the context of the overall Services provided by the GLH. On receipt of such evidence, NHS FASP shall assess whether to approve such organisational structure or require changes prior to engaging the NIPT Provider to perform NIPT. In the event of any changes to the organisational structure of the NIPT Provider and/or the NIPT Subcontractor during the Term, the NIPT Provider shall provide details of such changes and shall determine whether to approve the same or request further changes. This organisational structure shall include details of:
		3. the named clinical lead for the GLH (and where NIPT has been subcontracted the clinical lead for the NIPT Subcontractor) as further detailed in Paragraph 10, who shall form part of the Service Delivery Team; and
		4. the management and governance structure.
		5. The named clinical lead referred to in Paragraph 9.1 for NIPT screening for T21,T18 and T13 must be a suitably qualified clinician or clinical scientist who:
		6. is either at the level of a laboratory director or is directly responsible thereto;
		7. has management oversight and responsibilities; and
		8. is FRCPath qualified,

referred to as the "NIPT Screening Lead" ("**NIPT Screening Leads**").* + 1. The NIPT Provider shall participate, and shall procure the participation of any NIPT Subcontractor, in cross-organisational and multi-disciplinary arrangements for the governance, management, communication and development of the screening pathway. This will include the sharing of data and information, as specified by NHS FASP on its and any NIPT Subcontractors' performance and quality in respect of NIPT (which shall include the submission of Monthly Performance Reports), with NHS FASP, the National Congenital Anomaly and Rare Diseases Registration Service ("NCARDRS"), Public Health England, and Public Health England Screening Quality Assurance Services. If NIPT has been subcontracted in accordance with Paragraph 12, the NIPT Provider shall require the NIPT Subcontractor to provide it with sufficiently detailed information on its performance and quality in order for the NIPT Provider to fulfil its obligations under this Paragraph 11.
		2. The NIPT Provider can only subcontract NIPT to an NHS LGL, and only with the prior written approval of Public Health England prior to any service commencement or entering in to contract(s). Where an NHS LGL is acting as an NIPT Subcontractor, the NIPT Provider shall ensure that the relevant NHS LGL Subcontract contains:
			1. details of service level agreements and risk assessed protocols between the NIPT Provider and such NIPT Subcontractor;
			2. provisions that set out the responsibilities and working arrangements for screening samples sent by Clinical Services to the NIPT Subcontractor;
			3. arrangements and obligations on the NIPT Subcontractor in respect of:
		3. confirming sample receipt;
		4. meeting NIPT Turnaround Times;
		5. ensuring all screening results reach the responsible Clinical Services and the instructing NIPT Provider (as further detailed in the NHS FASP Guidance);
		6. reporting to the NIPT Provider all the information that the NIPT Provider is required to provide to Public Health in accordance with service specification;
		7. performing the NIPT Gateway Services;
		8. complying with the SOPs created by the NIPT Provider in accordance with 3.4.3 above and the NHS FASP Guidance;
			1. performance monitoring and reporting mechanisms to enable the NIPT Provider to monitor the compliance of the NIPT Subcontractor; and
			2. a requirement on the NIPT Subcontractor to be ISO 15189:2012 accredited for NIPT, and participate in ISO 17043 accredited EQA NIPT schemes,

and all such provisions and arrangements must align with the SOPs set by the NIPT Provider in accordance with Paragraph 19. * + 1. The NIPT Provider must provide details to Public Health England of their information governance processes (including those of all NIPT Subcontractors).
		2. The NIPT Provider shall comply, and shall procure the compliance of all NIPT Subcontractors, with the screening policy and pathways of NHS FASP, as will be set out in the NHS FASP Guidance to support the evaluative rollout of NIPT as an additional option within NHS FASP.
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| Workforce Development and Personnel |
| * + 1. The NIPT Provider must ensure, and evidence on request, that all its staff participating in NIPT (including, all of the NIPT Subcontractor's staff who participate in NIPT) undertake Continued Professional Development (CPD) and revalidation, including the recommended eLearning modules relevant to laboratory staff for the NHS FASP programme. The NIPT Provider must ensure (and must ensure compliance of the NIPT Subcontractor) that all staff participating in NIPT shall complete the Down's, Edwards' and Patau's Screening e-Learning Resource (<https://phescreening.blog.gov.uk/2017/03/24/new-e-learning-module-for-screening-for-downs-edwards-and-pataus-syndromes/>) module by the end of the Mobilisation Period. Such e-Learning Resource should be completed by each member of staff (within the NIPT Provider and NIPT Subcontractor) every 24 months. Any other specific courses which NHSE&I requires staff participating in NIPT to complete during the Term shall be advised to the NIPT Provider from time to time. The NIPT Provider shall thereafter advise any NIPT Subcontractors of any such additional courses and ensure that the NIPT Subcontractors' staff participate in such courses.
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| Data Reporting |
| ***Data requirements from genomic laboratories to support NIPT evaluation questions***

| **Data title** | **Data source** | **Data collection system** | **Data collection- frequency** |
| --- | --- | --- | --- |
| What is the impact if any of maternal age, demographics (post code), geography, ethnicity, gestational age, any differences between singleton and twins numerical chance result value or other morphology e.g. USS findings on the above choices? | Maternity providerCytogenetics laboratoryGenomics laboratory | NCARDRS | QuarterlyAnnual |
| Test arrival in laboratory (time from sample draw to receipt in the genomic laboratory | Genomic laboratory | NIPT experimental metric 3 -agreed single process with NCARDRS(See NIPT 3 standard below) | Surveillance-monthly QuarterlyAnnual |
| Test turnaround time (receipt of sample to NIPT result) | Genomic laboratory | NIPT experimental metric- 4 agreed single process with NCARDRS(see NIPT 4 standard below) | Surveillance-monthly QuarterlyAnnual |
| What is the ‘no result’ rate of the NIPT test? *(UK NSC question)*Singleton and twinsDefined as a no result from first or second NIPT sample | Genomics laboratory | Agreed single process with NCARDRS | Surveillance- monthly  |
| Number of higher chance NIPT results | Genomics laboratory | NCARDRS | MonthlyQuarterlyAnnual |
| Positive and negative predictive values for T21, T18 and T13 in the tested population | Cytogenetics laboratoryGenomic laboratory | NCARDRS | Annual |
| Training logEvaluation of training- e learning and face to face sessions | Maternity/ biochemistry laboratory providers/ genomics laboratory providers | IEPP | Monthly Quarterly Annual |

***Surveillance***PHE aim to set up a surveillance system during the evaluative period where real time learning can occur about NIPT tests that do not produce a result- no result and inconclusive or indeterminate results. Inconclusive or indeterminate results happens when the result is in a middle range which is neither positive nor negative. The rate of indeterminate results was found to range from 0 to 11%. The Warwick evidence review estimated that offering NIPT as a second stage screening test following combined screening would result in 385 initial test failures. These no results and inconclusive results potentially delay the screening pathway and we would need to understand the extent and impact of this on women. Getting a ‘no result’ can occur at any stage of the following process* problems with sample collection (inadequate blood volume, haemolysis, incorrect labelling) or transportation (delayed arrival of sample in laboratory) [estimated rate of 0.03 to 11.1%]
* low fetal fraction -usually below 4% [estimated rate of 0.5 to 6.1%]

assay failure for a variety of reasons- failure at DNA extraction, amplification or sequencing [estimated rate of 0 to 12.2%]**No result NIPT pathway**PHE aim to collect information regarding the above steps, how these are managed in the laboratory, whether rates are technology dependent or not, by how long does a no result extend the pathway for the woman and how do factors like gestational age, BMI and a fetus with a confirmed trisomy contribute to no results. This will require matching each no result with pregnancy outcomes. Genomic laboratories would report no result cases to PHE screening via the NCARDRS process using a web-based portal. For this surveillance arm we require monthly reporting. **Data fields required for reporting on surveillance** *(this would be in the form of a drop-down menu)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Case identifier |  |  |  |  |
| Maternal BMI |  |  |  |  |
|  |  |  |  |  |
| NIPT no result/indeterminate result | 1st NIPT sample (need gestational age at sampling) | 2nd NIPT sample |  |  |
| IPD |  |  |
| No further testing  |  |  |
|  |  |  |  |
| 2nd NIPT sample (need gestational age at sampling) | IPD |  |
| No further testing  |  |
|  |  |  |  |  |
| Reasons for no results/indeterminate results | Sampling problems | Sample not received | Free text |
| Sample in wrong tube | Free text |
| Sample lacks identifiers or has incorrect identifiers eg mislabelling | Free text |
| Sample insufficient blood volume | Free text |
| Sample haemolysed | Free text |
| Too long in transit/ delayed arrival in lab | Free text |
|  |  |  |  |
| Internal quality control processes | DNA extraction | Free text |
| Library prep | Free text |
| Sequencing | Free text |
|  |  |  |  |
| Analysis | Low fetal fraction | Value of fetal fraction | Free text |
| Equipment failure | Free text |
| Technical failure | Free text |
|  |  |  |  |
| Results | Communication failure eg problem with email | Free text |
| Automated report problems | Free text |
|  |  |  |  |
| Other reasons | Free text |  |  |

Singleton pregnancyTwin pregnancy – chorionicity – mono, di and zygosity if availableAdd to results – failure to select the correct testing algorithm for the pregnancy

|  |  |
| --- | --- |
| **Metric** | **NIPT 3:** **Timely NIPT sample receipt in the genomic laboratory**  |
| Description | The proportion of all NIPT samples received in the genomic laboratory within 24- 48 hours |
| Rationale | All samples must arrive within the screening laboratory as soon as possible after the sample is taken. This enables the laboratory to analyse the sample at the earliest opportunity and also reduces the risk of sample deterioration due to prolonged despatch  |
| Definition |

|  |  |
| --- | --- |
| *number of NIPT samples received by the laboratory* ≤ *2 days of sample collection/draw* | expressed as a percentage, where: |
| *number of NIPT samples received by the laboratory*  |

|  |  |
| --- | --- |
| *number of NIPT samples received by the laboratory* ≤ *1 day of sample collection/draw* | expressed as a percentage, where: |
| *number of NIPT samples received by the laboratory*  |

*sample received* is when the sample is recorded as received on the laboratory information management system For the purposes of this standard, day of sample collection is day 0  |
| Performance thresholds | Acceptable level: ≥ 97.0% *received by the laboratory* ≤ *2 days of sample collection/draw*Achievable level: ≥ 97.0% *received by the laboratory* ≤ *1 day of sample collection/draw* |
| Mitigations/ qualifications | None  |
| Reporting arrangements | Reporting focus: [maternity service](#MaternityService)Data source: genomic laboratory Responsible for submission: genomic laboratory |
| Reporting period | MonthlyDeadlines:  |

|  |  |
| --- | --- |
| **Metric** | **NIPT 4: The test turnaround time NIPT**  |
| Description | The proportion of all NIPT results reported within the specified timescale  |
| Rationale | The laboratory must analyse the sample and report the result at the earliest opportunity to facilitate timely choices |
| Definition |

|  |  |
| --- | --- |
| *number of NIPT results reported* ≤ 7 calendar days | expressed as a percentage, where: |
| *number of NIPT samples received by the laboratory*  |

|  |  |
| --- | --- |
| *number of NIPT results reported* ≤ 5 calendar days | expressed as a percentage, where: |
| *number of NIPT samples received by the laboratory*  |

For the purposes of this standard, day of sample receipt is day 1 The denominator and numerator includes samples that are analysed where the result is ‘no result’ |
| Performance thresholds | Acceptable level: ≥ 95.0% of results are reported ≤ 7 calendar daysAchievable level: ≥ 95.0% of results are reported ≤ 5 calendar days |
| Mitigations/qualifications | Denominator excludes initial samples received by the laboratory that are not analysed as they are not fit for analysis either because of poor sample quality or lack of information to accurately identify the sample and a repeat sample is requested |
| Reporting arrangements | Reporting focus: genomic laboratoryData source: genomic laboratoryResponsible for submission: genomic laboratory |
| Reporting period | MonthlyDeadlines:  |

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