Public Health Screening Programme

Annual Report

1 April 2021 to 31 March 2022

Health Services
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Section 1

Pregnancy & Newborn and Child Vision Screening

Chapter 1 - Pregnancy Screening

Summary

Antenatal haemoglobinopathies screening for sickle cell and thalassaemia aims to identify couples who are at risk of having an affected child and thereby offer them information on which to base reproductive choices. **Infectious diseases in pregnancy screening** aims to identify infection and ensure a plan for treatment and management of affected individuals and their babies is put in place at the earliest opportunity. Screening allows undiagnosed infection to be identified and treatment to be given, which can reduce the risk of mother to child transmission, improve the long-term outcome and development of affected children, and ensure that women, their partners and families are offered appropriate referral, testing and treatment. **Trisomies and other congenital anomalies screening** aims to detect Down's syndrome (T21), Edwards' syndrome (T18), or Patau's syndrome (T13) and other congenital anomalies in the antenatal period. This provides women and their partners with informed choice regarding continuation of pregnancy. It also allows, where appropriate, management options (such as cardiac surgery or delivery in a specialist unit) to be offered in the antenatal period.

Pregnancy screening programmes are offered universally to all pregnant women during antenatal visits. During 2021/22, 11,353 NHSGGC residents booked to attend antenatal clinics and 10,249 (90.3%) of first antenatal booking appointments were offered before or equal to 12 weeks and 6 days gestation.

The ethnic origin of pregnant women was identified as follows, Scottish 7,558 (66.6%), Other British 544 (4.8%), Pakistani 651 (5.7%), Indian 299 (2.6%), African and Other African 587 (5.2%), Chinese 92 (0.8%) and 105 (0.9%) of any other ethnic group

A number of data sources were used in producing this report; BadgerNet; Trakcare and both local and national laboratory reports.

Gestational Diabetes Mellitus (GDM) and Obesity

Within NHSGGC, the assessment of pregnant women and risks associated with GDM are based on a BMI>= 35, previous macrosomic baby (weighing >4 kg at birth), family history of diabetes, previous gestational diabetes and mother's ethnic origin. Just over a third of pregnant women 4,241 (37.8%) were recorded as having 'any risk' of GDM and were eligible to be offered an OGTT at 24-28 weeks gestation**.**

At the time of their booking appointment, 4,467 (39.3%) of pregnant women had a normal weight, 1,808 (15.9%) were overweight and 3,375 (29.7%) obese.
The total number of women who were within the severely obese categories with BMI>35 was 1,306 (11.5%). The BMI was not recorded for 192 women (1.8%)

Haemoglobinopathies Screening

Of the 11,353 women booked for their first antenatal booking, 11,332 (99.8%) were offered haemoglobinopathies screening and 10 refused. The blood is checked for risk of thalassaemia for all women who consented

The Family Origin Questionnaire (FOQ) is completed as part of routine early antenatal risk assessment. For low prevalence areas like NHSGGC, it provides the basis for testing for haemoglobin variants and in the interpretation of results and the need for partner testing.

Across NHSGGC, 9,614 (84.7%) samples had a completed FOQ recorded on BadgerNet and this varied across sites with the Princess Royal Maternity only completing the FOQ for 78.5% of pregnant women.

Infectious diseases

Uptake across NHSGGC was greater than 99% for all the screening tests. The screening identified less than 5 women infected with HIV (all of these women were previously known) and 40 infected with HBV (31 were previously known) and 7 women infected with syphilis

Trisomies and other congenital anomalies screening

Of the 11,353 women booked at antenatal clinics, 10,547 (96.3%) were tested either for the 1st or 2nd Trimester during 2021-22. 256 (3.2%) high chance results were recorded for the 1st Trimester and 104 (4.4%) for the 2nd Trimester Down's syndrome screening**.**

Amniocentesis

Of the 221 amniocentesis samples analysed 37 abnormalities were detected (16.7%) and of these 30 had a diagnosis of Trisomy 21 (Down's syndrome).

Chorionic Villus Biopsies (CVS)

79 chorionic villus biopsies were analysed and 21 abnormalities were detected (26.6%) and 17 had a diagnosis of Trisomy 21 (Down's syndrome).

Congenital anomalies screening

10,038 (88.4%) pregnant women consented for a fetal anomaly scan. 9,999 (99.6%) of scans were performed and 541 (5.4%) anomalies were detected.

The phrase less than five has been used in line with NHS Scotland information governance which is intended to protect privacy and avoid identifying individuals.

Pregnancy Screening – Trends over 5 years

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Number of pregnant women booked in NHSGCC	12386	12370	11561	10472	11353
Pregnancy – booked by 12 weeks and 6 days	83.2%	88.1%	90.3%	91.3%	90.3%
Gestational Diabetes with any risk during pregnancy	29.3%	33.1%	33.3%	36.2%	37.8%
Haemoglobinopathies Family Origin Questionnaire completed	67.5%	74.0%	77.5%	80.3%	84.7%
Infectious Diseases screening uptake	99.9%	99.9%	99.9%	99.9%	99.9%
Trisomy & other congenital anomalies screening	82.6%	83.7%	85.7%	96.3%	96.3%

Chapter Contents

1.1. Aims of Pregnancy Screening Programmes

Antenatal haemoglobinopathies screening for sickle cell and thalassaemia aims to identify couples who are at risk of having an affected child and thereby offer them information on which to base reproductive choices.

Infectious diseases in pregnancy screening aims to identify infection and ensure a plan for treatment and management of affected individuals and their babies is put in place at the earliest opportunity. Screening allows undiagnosed infection to be identified and treatment to be given, which can reduce the risk of mother to child transmission, improve the long-term outcome and development of affected children, and ensure that women, their partners and families are offered appropriate referral, testing and treatment.

Trisomy and other congenital anomalies screening aims to detect Down's syndrome chromosomal conditions (Down's syndrome (T21), Edwards' syndrome (T18), or Patau's syndrome (T13)) and other congenital anomalies in the antenatal period. This provides women and their partners with informed choice regarding continuation of pregnancy. It also allows, where appropriate, management options (such as cardiac surgery or delivery in a specialist unit) to be offered in the antenatal period.

1.2. Eligible Population

The pregnancy screening programmes are offered universally to all pregnant women during antenatal visits.

1.3. The Screening Tests

Appendix 1.1 illustrates the gestational age when pregnancy tests are carried out. All pregnant women are offered pregnancy screening for the following conditions.

Antenatal haemoglobinopathies screening

The pregnant woman and her partner are asked to complete a family origin questionnaire, Appendix 1.2. The information from the questionnaire is used to assess the risk of either parent being a carrier for sickle cell and other haemoglobin variants.

In addition, a blood test is taken at the first antenatal booking to screen the woman for sickle cell, thalassaemia and other haemoglobin variants. Where testing shows that the woman is a carrier, the baby's father will also be offered testing. The full screening pathway is shown in Appendix 1.3. Scotland is a low prevalence area for haemoglobinopathy screening and details are included in Appendix 1.4.

Screening for sickle cell disorders and thalassaemia should be offered to all women as early as possible in pregnancy, and ideally by 10 weeks for parents to make an informed decision on whether to continue with the pregnancy.

Infectious diseases in pregnancy screening

Testing for HIV, hepatitis B and syphilis infection is carried out at first antenatal booking when a blood sample is taken. The full screening pathway is shown in Appendix 1.5**,** Appendix 1.6**,** Appendix 1.7**,** Appendix 1.8 **and** Appendix 1.9.

Trisomy (T13, T18, T21) and other congenital anomalies

Screening for **trisomy** can be carried out using two different screening methods depending on gestational age. The screening tests, using blood and ultrasound scans, together with maternal risk factors, are used to derive an overall risk of having a baby with chromosomal condition. Following a higher-chance screening result for one of the chromosomal conditions, women are offered another test, non-invasive prenatal testing (NIPT), or a diagnostic test. The full screening pathway is shown in Appendix 1.10. Ultrasound scanning is used to look for other **congenital anomalies** between 18 and 21 weeks.

The decision to accept screening for chromosomal and other congenital anomalies raises particular ethical issues for women. Uptake of trisomy or other congenital anomalies screening depends on whether women would wish further investigation or management.

1.4. Delivery of NHSGGC Pregnancy Screening Programmes

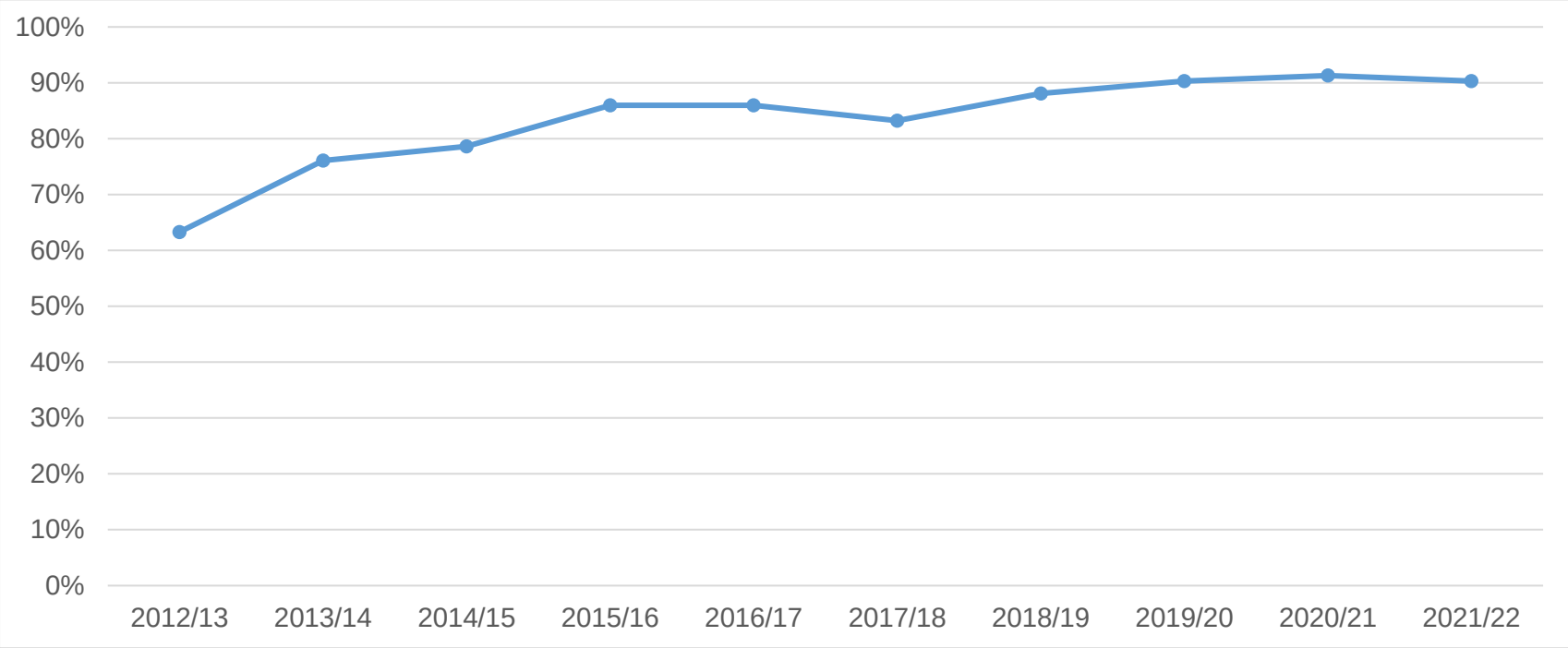
Each NHS Board has a statutory requirement to submit data on antenatal activity. In NHSGGC, 11,353 women booked to attend antenatal clinics and overall 90.3% (10,249) managed to book before or equal to 12 weeks and 6 days gestation. The booking details for 32 women were not known but are included in the total number of bookers (11,353). Work continues to encourage all pregnant women to book earlier through the Central Booking Line (**Table 1.1**)

Table 1.1: Number of women booked for their first antenatal appointments in NHSGGC 1 April 2021 to 31 March 2022 by gestation age.

Maternity Unit	<=12Wks 6Days	13Wks 0Days - 16Wks 6Days	17Wks 0Days - 20Wks 6Days	21Wks 0Days - 24Wks 6Days	25Wks 0Days - 30Wks 6Days	>=31Wks 0Days	Total	% <=12Wks 6Dys
Princess Royal Maternity Hospital (PRM)	3097	203	64	39	40	39	3495	*88.6*
Queen Elizabeth University Hospital (QEUH)	4344	248	99	45	70	53	4868	*89.2*
Royal Alexandra Hospital (RAH)	2808	71	27	26	17	31	2990	*93.9*
Total	**10249**	**522**	**190**	**110**	**127**	**123**	**11353**	*90.3*

Badgernet, September 2022

Figure 1.1: 10 year trend percentage of women booked by 12 weeks and 6 days in NHS GGC, April 2012 – March 2022



Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Total %	63.3%	76.1%	78.6%	86.0%	86.0%	83.2%	88.1%	90.3%	91.3%	90.3%

Within NHSGGC, booking for the 1st antenatal appointment varied according to area of residence. 3,973 of pregnant women living in the most deprived areas booked by 12 weeks and 6 days compared to 1,800 of women living in the least deprived areas. Work continues to engage with and support women from more deprived areas to book earlier. (**Table 1.2**)

Table 1.2: Gestational age at first antenatal booking appointment by deprivation categories for period 1 April 2021 to 31 March 2022

SIMD 2016 Quintile	<=12 Wks 6Days	13Wks 0Days - 16Wks 6Days	17Wks 0Days - 20Wks 6Days	21Wks 0Days - 24Wks 6Days	25Wks 0Days - 30Wks 6Days	>=31 Wks 0Days	Unknown	Total	% <=12Wks 6Dys
1 -Most Deprived	3973	277	113	71	64	56	26	4580	*86.7*
2	1853	101	27	17	23	19	5	2045	*90.6*
3	1195	55	19	8	13	6		1296	*92.2*
4	1428	45	13	8	9	14	1	1518	*94.1*
5 -Least Deprived	1800	44	18	6	18	28		1914	*94.0*
Total	**10249**	**522**	**190**	**110**	**127**	**123**	**32**	**11353**	*90.3*

Source: BADGERNET, September 2022

The majority of pregnant women 61% (6956) were between the ages 25-34 of age and only 299 (2.63%) were under 20 years of age. 24.6% were over 35 years of age (**Table 1.3**)

Table 1.3: Age at first antenatal booking appointment by HSCP areas for period 1 April 2021 to 31 March 2022

	CHP Sector Decode								
Maternal Age At Booking	East Dunbartonshire	East Renfrewshire	Glasgow City CHP - North East Sector	Glasgow City CHP - North West Sector	Glasgow City CHP - South Sector	Inverclyde	Renfrewshire	West Dunbartonshire	Total
<20	10	9	65	52	74	17	39	33	299
20-24	44	38	287	225	343	97	184	140	1358
25-29	177	154	599	494	686	203	515	235	3063
30-34	333	321	605	674	819	212	608	267	3839
35+	317	265	362	509	648	138	398	157	2794
Total	**881**	**787**	**1918**	**1954**	**2570**	**667**	**1744**	**832**	**11353**

Source: BADGERNET, September 2022

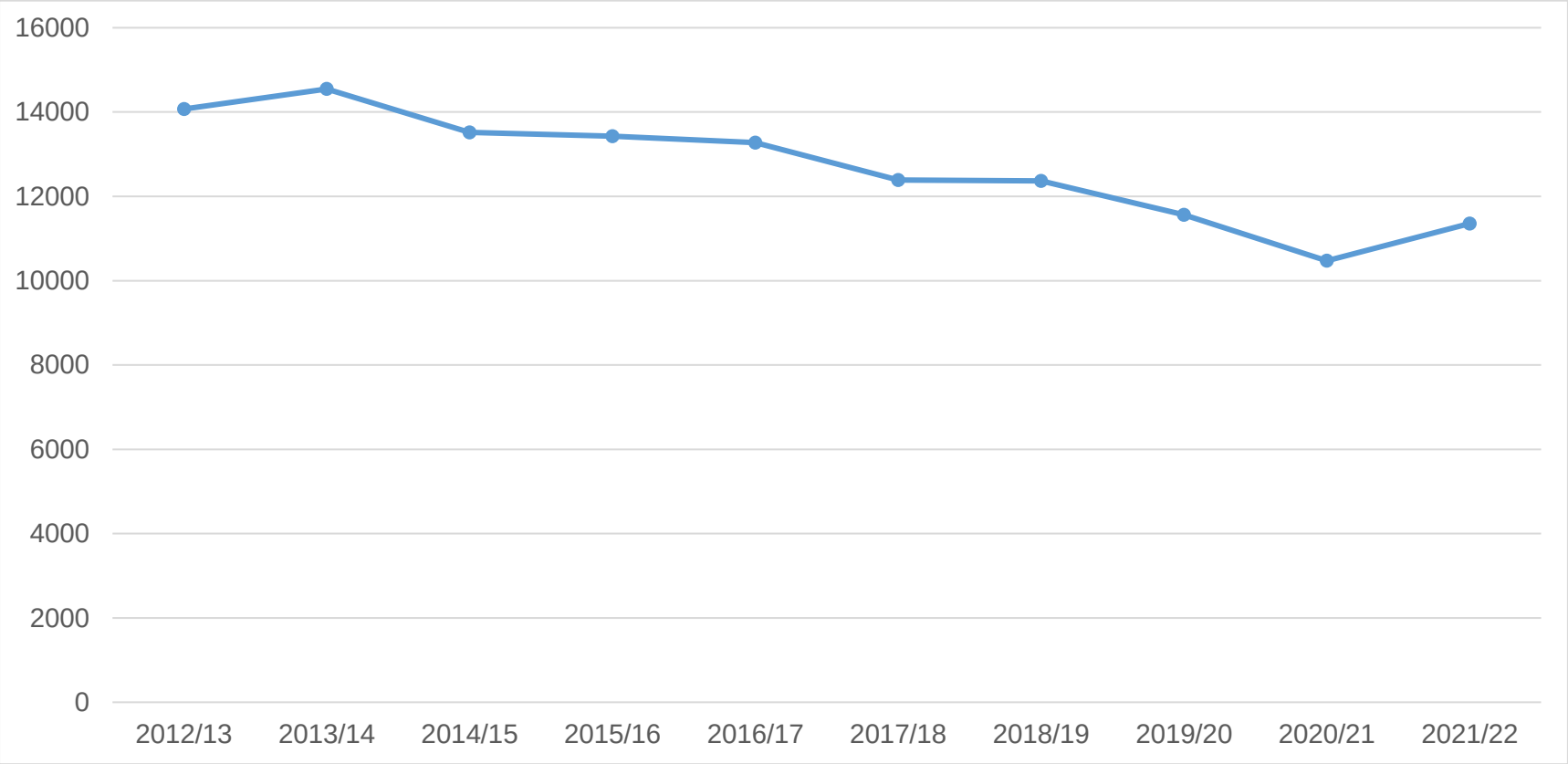
The ethnic origin of pregnant women was identified as follows, Scottish 7,558 (66.6%), Pakistani 651 (5.7%), Other British 544 (4.8%), African and Other African 587 (5.2%). The rest included Indian 299 (2.6%) Chinese 92 (0.8%) and 105 (0.9%) of any other ethnic group **(Table 1.4).**

Table 1.4: Number of NHSGGC residents booked for their first antenatal appointment by ethnic origin during 1 April 2021 to 31 March 2022

Ethnic Category	Total	%
1A. Scottish	7558	*66.6*
1B. Other British	544	*4.8*
1C. Irish	100	*0.9*
1K. Gypsy/ Traveller	5	*0.0*
1L. Polish	188	*1.7*
1Z. Any other white ethnic group	574	*5.1*
2A. Any mixed or multiple ethnic background	89	*0.8*
3F. Pakistani, Pakistani Scottish or Pakistani British	651	*5.7*
3G. Indian, Indian Scottish or Indian British	299	*2.6*
3H. Bangladeshi, Bangladeshi Scottish or Bangladeshi British	21	*0.2*
3J. Chinese, Chinese Scottish or Chinese British	92	*0.8*
3Z. Other Asian, Asian Scottish or Asian British	145	*1.3*
4D. African, African Scottish or African British	464	*4.1*
4Y. Other African	123	*1.1*
5C. Caribbean, Caribbean Scottish or Caribbean British	9	*0.1*
5D. Black, Black Scottish or Black British	21	*0.2*
5Y. Other Caribbean or Black	11	*0.1*
6A. Arab, Arab Scottish or Arab British	245	*2.2*
6Z. Other Ethnic Group	105	*0.9*
98. Refused / Not provided by patient	3	*0.0*
99. Not Known	69	*0.6*
NULL	37	*0.3*
Grand Total	**11353**	

Source: BADGERNET, September 2022

Figure 1.2: 10 year trend of total number of pregnant women in NHS GGC, April 2012 – March 2022



Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Total number of women	14074	14547	13518	13427	13278	12386	12370	11561	10472	11353

1.5. Gestational Diabetes Mellitus (GDM)

Pregnant women are assessed for their diabetes status at the time of booking and the BMI (Body Mass Index) is recorded. There were 68 women with Type 1 diabetes and 71 with Type 2 diabetes. This is an overall 0.5% increase from last year. **(Table 1.5)**

Table 1.5: Number and percentage of women booked for their first antenatal appointments by body mass index and current diabetes status 1 April 2021 to 31 March 2022

	Current Diabetes				
Body Mass Index Categories	No	Yes Type 1	Yes Type 2	Total	% Diabetic
BMI<18.5	295			295	0.0
18.5<=BMI<25	4431	29	7	4467	0.8
25<=BMI<30	1771	13	24	1808	2.0
30<=BMI<35	3344	18	13	3375	0.9
35<=BMI<40	812	4	13	829	2.1
40<=BMI<45	324	2	10	336	3.6
BMI>=45	136	2	3	141	3.5
Unknown	101		1	102	
Total	**11214**	**68**	**71**	**11353**	1.2

Source: Badgernet, September 2022

Women with gestational diabetes are at increased risk of having a large baby, a stillborn baby or a baby who dies shortly after birth.

Within NHSGGC, the assessment of pregnant women and risks associated with GDM are based on a BMI>= 35, previous macrosomic baby (weighing >4 kg at birth), family history of diabetes, previous gestational diabetes and mother's ethnic origin.

Just over a third of pregnant women 4,241 (37.8%) were recorded as having 'any risk' of GDM and were eligible to be offered an OGTT at 24-28 weeks gestation**. (Table 1.6)**

Table 1.6: Number of women booked for first antenatal appointments in NHSGGC 1 April 2021 to 31 March 2022 and GDM risk factors excluding current diabetes

Maternity Unit	BMI >=35	Previous Macrosomic Baby	Family History Diabetes	Previous Gestational Diabetes	Origin Mother Risk	Any Risk*	Bookers Total	% Any Risk
Princess Royal Maternity Hospital (PRM)	417	51	615	349	651	1458	3444	*42.3*
Queen Elizabeth University Hospital (QEUH)	439	71	784	309	996	1852	4816	*38.5*
Royal Alexandra Hospital (RAH)	416	32	461	139	163	931	2954	*31.5*
Total	**1272**	**154**	**1860**	**797**	**1810**	**4241**	**11214**	*37.8*

Source: Badgernet, September 2022
* Summed individual risks may exceed any risk total

1.6. Body Mass Index (BMI) and Pregnant Women

At the time of their booking appointment, 4,467 (39.3%) of pregnant women had a normal weight, 1,808 (15.9%) were overweight and 3,375 (29.7%) obese.

The total number of women who were within the severely obese categories with BMI>35 was 1,306 (11.5%)

The BMI was not recorded for 192 women (1.8%) **(Table 1.7).**

Table 1.7: Number and percentage of women booked for their first antenatal appointments by body mass index and by maternity unit from 1 April 2021 to 31 March 2022

	Maternity Unit							
BMI Category	Princess Royal Maternity Hospital (PRM)	%	Queen Elizabeth University Hospital (QEUH)	%	Royal Alexandra Hospital (RAH)	%	Total	%
Underweight BMI<18.5	77	*2.2*	147	*3.0*	71	*2.4*	295	*2.6*
Normal 18.5<=BMI<25	1353	*38.7*	2040	*41.9*	1074	*35.9*	4467	*39.3*
Overweight 25<=BMI<30	588	*16.8*	724	*27.2*	496	*28.9*	1808	*15.9*
Obese 30<=BMI<35	1009	*28.9*	1459	*15.8*	907	*16.3*	3375	*29.7*
Severely Obese 35<=BMI<40	269	*7.7*	287	*5.9*	273	*9.1*	829	*7.3*
Severely Obese 40<=BMI<45	115	*3.3*	116	*2.4*	105	*3.5*	336	*3.0*
Severely Obese BMI>=45	53	*1.5*	45	*0.9*	43	*1.4*	141	*1.2*
Unknown	31	*0.9*	50	*1.0*	21	*0.7*	102	*0.9*
Total	**3495**		**4868**		**2990**		**11353**	

1.7. NHSGGC Antenatal Haemoglobinopathies Screening Programme

Haemoglobinopathies

All pregnant women will be offered screening for haemoglobinopathies based on a low prevalence screening model. The haemoglobinopathies are a large group of inherited blood disorders which affect the haemoglobin (oxygen carrying) component of blood. They fall into two main groups – the haemoglobin variants (such as sickle cell disorders) which are associated with the production of abnormal forms of haemoglobin, and the Thalassaemia's in which there is an abnormality in the amount of haemoglobin produced.

Sickle cell disorders are caused by a haemoglobin variant HbS - if the child has this in combination with a normal haemoglobin variant, he or she will carry the 'trait' which is likely inherited from a parent/s. However, if he or she has two copies of the HbS and no normal haemoglobin, this may result in severe life threatening symptoms. Those with beta thalassaemia major require regular blood transfusions to maintain life. Hb D (Hb AD) is one of the haemoglobinopathy carrier traits. The person has inherited haemoglobin A from one parent and haemoglobin D from the other. They will not have an illness, not experience symptoms but the carrier status is important for future reproduction. Hb E (HbAE) is another haemoglobinopathy carrier trait. The person has inherited haemoglobin A from one parent and haemoglobin E from the other. They will not have an illness, not experience symptoms but the carrier status is important for future reproduction.

The screening pathways for haemoglobinopathy screening are in Appendix 1.2, Appendix 1.3 and Appendix 1.4.

Samples taken for haemoglobinopathies screening

Of the 11,353 women booked for their first antenatal booking, 11,332 (99.8%) were offered haemoglobinopathies screening and 10 refused. The blood is checked for risk of thalassaemia for all women who consented. **(Table 1.8)**

The Family Origin Questionnaire (FOQ) is completed as part of routine early antenatal risk assessment. For low prevalence areas like NHSGGC, it provides the basis for testing for haemoglobin variants and in the interpretation of results and the need for partner testing.

Across NHSGGC, 9,614 (84.7%) samples had a completed FOQ recorded on BadgerNet and this varied across sites with the Princess Royal Maternity only completing the FOQ for 78.5% of pregnant women. Laboratory staff test samples for haemoglobinopathies and thalassaemia even if the FOQ is missing **(Table 1.8).**

Table 1.8: NHSGGC haemoglobinopathies screening from 1 April 2021 to 31 March 2022

Maternity Unit	Total	HBO Offered	HBO Refused	HBO Consent Not Known	HBO Test Performed	FOQ Completed	FOQ Not Completed	% FOQ Completed
Princess Royal Maternity Hospital(PRM)	3495	3490	3	0	3490	2743	747	*78.5*
Queen Elizabeth University Hospital(QEUH)	4868	4859	3	3	4856	4188	668	*86.0*
Royal Alexandra Hospital (RAH)	2990	2983	4	5	2978	2683	295	*89.7*
Total	**11353**	**11332**	**10**	**8**	**11324**	**9614**	**1710**	*84.7*

Source: BadgerNet, September 2022

The maternal samples tested for haemoglobinopathies identified 13 fetus **at risk** and 101 were identified as **not at risk**. Partner testing was **not required** in 9 cases and 13 partners **should have been offered testing**. **(Table 1.9)**

Table 1.9: NHSGGC haemoglobinopathies screening outcome (HBO performed only) 1 April 2021 to 31 March 2022

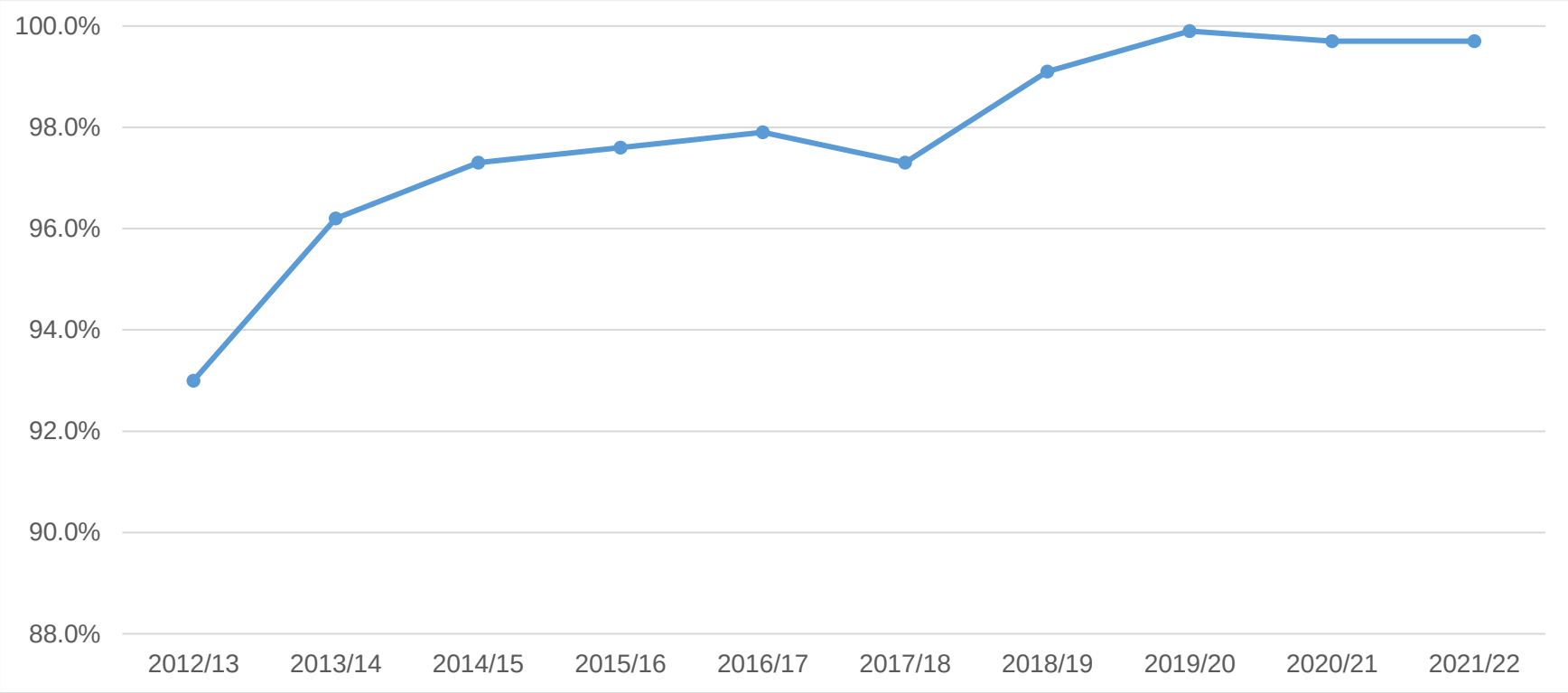
	Maternity Unit			
Screening Outcome	Glasgow Princess Royal Maternity	Queen Elizabeth University Hospital	Royal Alexandra Maternity Hospital	Total
01:Fetal At Risk	9	3	1	13
02:Fetal Not At Risk	36	55	10	101
03:Positive	1	0	0	1
04:Negative	3364	4668	2854	10886
05:Partner Testing Not Required	3	3	3	9
06:Partner Testing Should Be Offered	10	3	0	13
Unknown	77	129	115	321
Grand Total	**3500**	**4861**	**2983**	**11344**

Source: BadgerNet, September 2022

Table 1.10: KPIs for Pregnancy and Newborn Screening - Haemoglobinopathy 2021-2022

KPI	Performance threshold	NHSGGC 2020-2021
1.1 Coverage	Essential : ≥95% Desirable : ≥ 99%	99.8
1.3 Completion of FOQ	Essential : ≥ 95% Desirable : ≥99%	84.7 %

Figure 1.3: 10 year uptake trend for Haemoglobinopathy screening, April 2012 – March 2022



Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
% uptake	93.0%	96.2%	97.3%	97.6%	97.9%	97.3%	99.1%	99.9%	99.7%	99.7%

1.8. NHSGGC Infectious Diseases in Pregnancy Screening

Infectious Diseases

These include Hepatitis B, Syphilis and Human Immunodeficiency Virus (HIV):
Hepatitis B infection can be passed on from mother to baby during birth. HBV is a virus that affects the liver. Babies can be immunised at birth to prevent being infected from mothers.

Syphilis is an infection that can damage the health of both mother and baby if not treated with antibiotics.

Human Immunodeficiency Virus (HIV) infected women can pass HIV to their babies during pregnancy, childbirth and through breastfeeding. Many women with HIV will not know that they are infected unless they are tested.

Screening tests and results for Infectious diseases

An estimate of the percentage uptake of each of the tests has been calculated by dividing the number requesting the test by the total number of samples.

The number of women referred for booking cannot be used as the denominator to calculate uptake as it is does not accurately represent the number of women who have been offered screening. Some women would not have been offered screening because they have had an early pregnancy loss. A small number of women will transfer out of the health board area.

Uptake across NHSGGC was greater than 99% for all the screening tests. The screening identified 4 women infected with HIV (all 4 were previously known) and 40 infected with HBV (31 were previously known) and 7 women infected with syphilis **(Table 1.11)**

Table 1.11: NHSGGC Infectious diseases tests and results 2021/2022

1 April 2021 - 31 March 2022					Results			
	Total number of samples	**No. requesting individual test**	**No. not requesting individual test**	**uptake**	**Antibody detected[1,2,]**		**antibody not detected**	
	(N)	(N)	(N)	%	(N)	%	(N)	%
HIV	13965	13961	<5	99.9	4[1]	0.03	13957	99.9
HBV	13965	13960	5	99.9	40[2]	0.3	13920	99.7
Syphilis	13965	13963	<5	99.9	7	0.05	13956	99.9

Sources: West of Scotland Specialist Virology Centre Oct 2022
Notes:
1. All <5 of the HIV infections were previously known about
2. 31 of the 40 HBV infections were previously known about

1.9. Key Performance Indicators for Infectious Diseases in Screening

The objectives of the KPIs for syphilis, HIV and hepatitis B screening in pregnancy are to: -

1. Maximise the uptake of screening among pregnant women ('coverage');
2. Maximise the timely reporting of results ('turnaround') and
3. Ensure timely assessment and intervention of women where appropriate.
4. Ensure the first dose of hep B vaccine +/- immunoglobulin is given within 24hrs of birth to babies born to mothers with chronic hepatitis B.

Hepatitis B

2.1 Coverage	13961/13965 = 99.9%
2.2 Turnaround	99.2% of results reported within 8 days
2.3 Treat/ intervene	40 positive women reported, of them:- 31 were known about previously and already attending specialist services; 9 'new' diagnosis (many had been diagnosed abroad, this was the first time testing positive within GGC): – • 8 referred and attended specialist services during their pregnancy; • 1 - very late booker, see by specialist services post-natally Local protocol in place for the management of women identified in pregnancy covering referral for specialist care, checking viral load at 26 weeks, actions required depending on viral load and paediatric involvement at delivery.
2.4 Timely assessment	As above
2.5 Timely neonatal vaccination and immunoglobulin	34/35 = 97% of babies received first dose of hep B vaccine +/- immunoglobulin within 24hrs of birth

Syphilis

3.1 Coverage	13963/13965 = 99.9%
3.2 Turnaround	99.2% of results reported within 8 days
3.3 Treat/intervene	Failsafe in conjunction with sexual health services ensures all positive women are followed up promptly.

HIV

4.1 Coverage	13960/13965 = 99.9%
4.2 Turnaround	99.2% of results reported within 8 days
4.3 Treat/intervene	Not applicable All <5 positive women, all already known to be HIV positive and attending services

1.10. NHSGGC Trisomy and Other Congenital Anomalies Screening Programme

Trisomies are characterised by an extra copy of a chromosome (trisomy 21, Down's syndrome; trisomy 18, Edwards' syndrome; trisomy 13, Patau's syndrome) and older mothers' are more likely to have a baby with a chromosomal condition, although it can occur in women of any age.

1.11. 1st and 2nd Trimester Trisomy screening

Of the 11,353 women booked at antenatal clinics, 10,547 (96.3%) were tested either for the 1st or 2nd Trimester during 2021-22 as shown in **Table 1.12**

Table 1.12: 1st and 2nd Trimester Screening for NHSGGC residents

NHS Greater Glasgow and Clyde	2021/2022	2020/2021	2019/2020	2018/2019	2017/2018
First Trimester	8,158	7,849	7,801	7,961	8,227
Second Trimester	2,389	2,236	2,152	2,393	2,209
Total Screens	10,547	10,085	9,916	10,354	10,436
% Second trimester	22.7	22.2%	21.7%	23.1%	21.2%

Source: Antenatal Screening Service for Fetal Down's Syndrome Lothian Laboratory and Bolton Lab 2022

The 1st Trimester samples are taken during 11 weeks +2 days to 14 weeks +1 day of pregnancy. The samples are sent to Lothian Laboratory and during 2021/2022, 8,158 (77.3%) samples were tested. There were 0 late samples and 170 samples (2.1%) had incomplete request details.

256 (3.2%) of samples were reported as having a high chance of T21 and 51 (0.6%) had a high chance of T18/13. **(Table 1.13)**

Table 1.13: 1st Trimester Trisomy screening samples 2021/2022

2021/2022	Number of Samples	% samples	Late sample	% Late samples	In complete Request details	% In complete Request details	Total Increased chance results T21, T18/13	% Total Increased chance results T21, T18/13
1st Trimester	8,158	77.3%	0	0.0%	170	2.1%	307	3.8%

Source: Antenatal Screening Service for Fetal Down's Syndrome Lothian Laboratory September 2022

The 2nd Trimester samples are taken up to 20 weeks+0 days gestation and sent to Bolton Laboratory. During 2021/2022, 2,389 (21.0%) of samples were taken in the 2nd Trimester.

There were 30 unsuitable samples (1.3%) and 104 high chance results were reported (4.4%). **(Table 1.14)**

Table 1.14: 2nd Trimester Down's syndrome screening samples 2021/2022

2021/2022	Number of samples	% Samples	Number of high chance results	% High chance results	Unsuitable samples	% Unsuitable samples
2nd Trimester	2,389	21.0%	104	4.4%	30	1.3%

Source: Bolton Labs September 2022

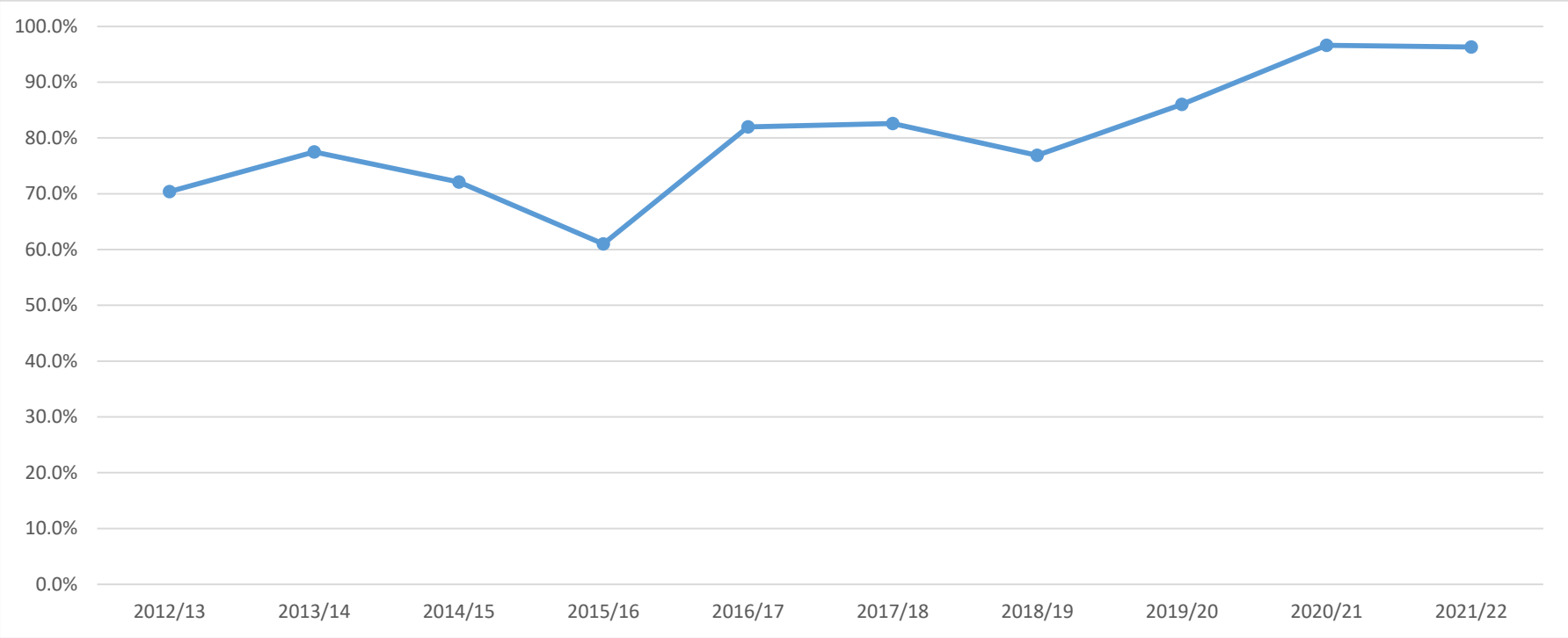
Key Performance Indicators for 1st Trimester Trisomy screening

The following data has been reviewed to provide evidence for the NSS Pregnancy and Newborn Screening Key Performance Indicators (KPIs), for 2021/2022 from the Lothian Laboratory for Scotland. **(Table 1.15)**

Table 1.15: KPIs for 1st Trimester Down's syndrome screening

KPI 5.2 Turnaround time	Overall 99.1 % of results were reported within 72 working hours of sample receipt for all Health Boards, fulfilling the desirable target of ≥ 99
KPI 5.3 Completion of laboratory request forms	The proportion of laboratory request forms with complete data, as defined by the KPI list of required fields, is 97.9 %, which fulfils the essential performance criteria.
KPI 5.5 Screen Positive Rate (T21/T18/T13) (SPR)	The overall screen positive rate is % for NHSGGC 3.3%
KPI 5.6 Detection Rate (DR)	The Detection Rate for West of Scotland Health Boards was 83.8%

Figure 1.3: 10 year uptake trend for Down Syndrome Screening, April 2012 – March 2022



Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
% Uptake	70.4%	77.5%	72.1%	61.0%	82.0%	82.6%	76.9%	86.0%	96.6%	96.3%

1.12. Amniocentesis

221 amniocentesis samples were analysed by the Cytogenetics Laboratory and 37 abnormalities were detected (16.7%) and of these 30 had a diagnosis of Trisomy 21 (Down's syndrome) **(Table 1.16)**

Table 1.16: Amniocentesis Referrals 1 April 2021 to 31 March 2022

	Referral Type					
	Biochemical Screening	**Maternal Age**	**Abnormalities on Scan**	**NIPT**	**Other**	**Total**
Number of women (= number of tests)	55	0	117	12	37	221
% total referral reasons	25	0	53	5	17	
Number with normal results	51	0	96	1	37	185
Number with diagnostic trisomy	4	0	15	11	0	30
% number with diagnostic trisomy	7	0	13	92	0	
Number of other non trisomy abnormalities	1*	0	6	0	0	7
Total number of abnormalities	5	0	21	11	0	37
% total number of abnormalities	13.5	0	57	30	0	

*Also has trisomy 21 (incidental finding of balanced reciprocal translocation)

Chorionic Villus Biopsies (CVS)

79 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2021/22. 21 abnormalities were detected (26.6%) and 17 of those had a diagnosis of Trisomy (Down's syndrome) **(Table 1.17)**

Table 1.17: Chorionic Villus Biopsy referrals and outcomes 1 April 2021 to 31 March 2022

	Referral Type					
	Biochemical Screening	**Maternal Age**	**Abnormalities on Scan**	**NIPT**	**Other**	**Total**
Number of women (= number of tests)	12	1	38	0	28	79
% total referral reasons	15	1	48	0	35	
Number with normal results	10	0	23	0	26	59
Number with diagnostic trisomy	2	0	15	0	0	17
% total with diagnostic trisomy	1.6	0	40	0	0	
Number of other non trisomy abnormalities	0	0	2	0	2	4
Total number of abnormalities	2	0	17	0	2	21
% total number of abnormalities	9.5	0	81	0	9.5	

1.13. Other Congenital Anomalies Screening

Fetal Anomalies Scan

All women are offered an ultrasound scan between 18 and 21 weeks to confirm the gestation age and identify any possible problems that may require medical intervention during pregnancy or after birth. The number of women who gave consent for a fetal anomaly scan was 10,038 (88.4%) of all bookers and 9,999 (99.6%) of scans were performed **(Table 1.18).**

Table 1.18: Uptake rate for other congenital anomalies (fetal anomaly scan) for the period 31 March 2021 to 1 April 2022

Maternity Unit	Total	FAS Consented	% FAS Consented	FAS Performed*	% FAS Performed
Princess Royal Maternity Hospital (PRM)	3495	3081	*88.2*	3063	*99.4*
Queen Elizabeth University Hospital (QEUH)	4868	4289	*88.1*	4271	*99.6*
Royal Alexandra Hospital (RAH)	2990	2668	*89.2*	2665	*99.9*
Total	11353	10038	*88.4*	9999	*99.6*

Source: BadgerNet, September 2022

Of the 9,999 fetal scans performed, 541 (5.4%) anomalies were suspected. **(Table 1.19)**

Table 1.19: Outcome of fetal anomaly scans performed for the period 1 April 2021 to 31 March 2022

Maternity Unit	Number of bookers	Number of Fetal Scans performed*	Anomaly Not Suspected	Anomaly Suspected	% Anomaly Suspected
Princess Royal Maternity Hospital (PRM)	3495	3063	2916	147	*4.8*
Queen Elizabeth University Hospital (QEUH)	4868	4271	4046	225	*5.3*
Royal Alexandra Hospital (RAH)	2990	2665	2496	169	*6.3*
Total	11353	9999	9458	541	*5.4*

Source: BadgerNet, September 2022

1.14. Pregnancy screening – 5 year trends

The table below shows various pregnancy screening over a 5 year period.

Table 1.20: Pregnancy Screening – Trends over 5 years

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Number of pregnant women booked in NHSGCC	12386	12370	11561	10472	11353
Pregnancy – booked by 12 weeks and 6 days	83.2%	88.1%	90.3%	91.3%	90.3%
Gestational Diabetes with any risk during pregnancy	29.3%	33.1%	33.3%	36.2%	37.8%
Haemoglobinopathies Family Origin Questionnaire completed	67.5%	74.0%	77.5%	80.3%	84.7%
Infectious Diseases screening uptake	99.9%	99.9%	99.9%	99.9%	99.9%
Trisomy & other congenital anomalies screening	82.6%	83.7%	85.7%	96.3%	96.3%

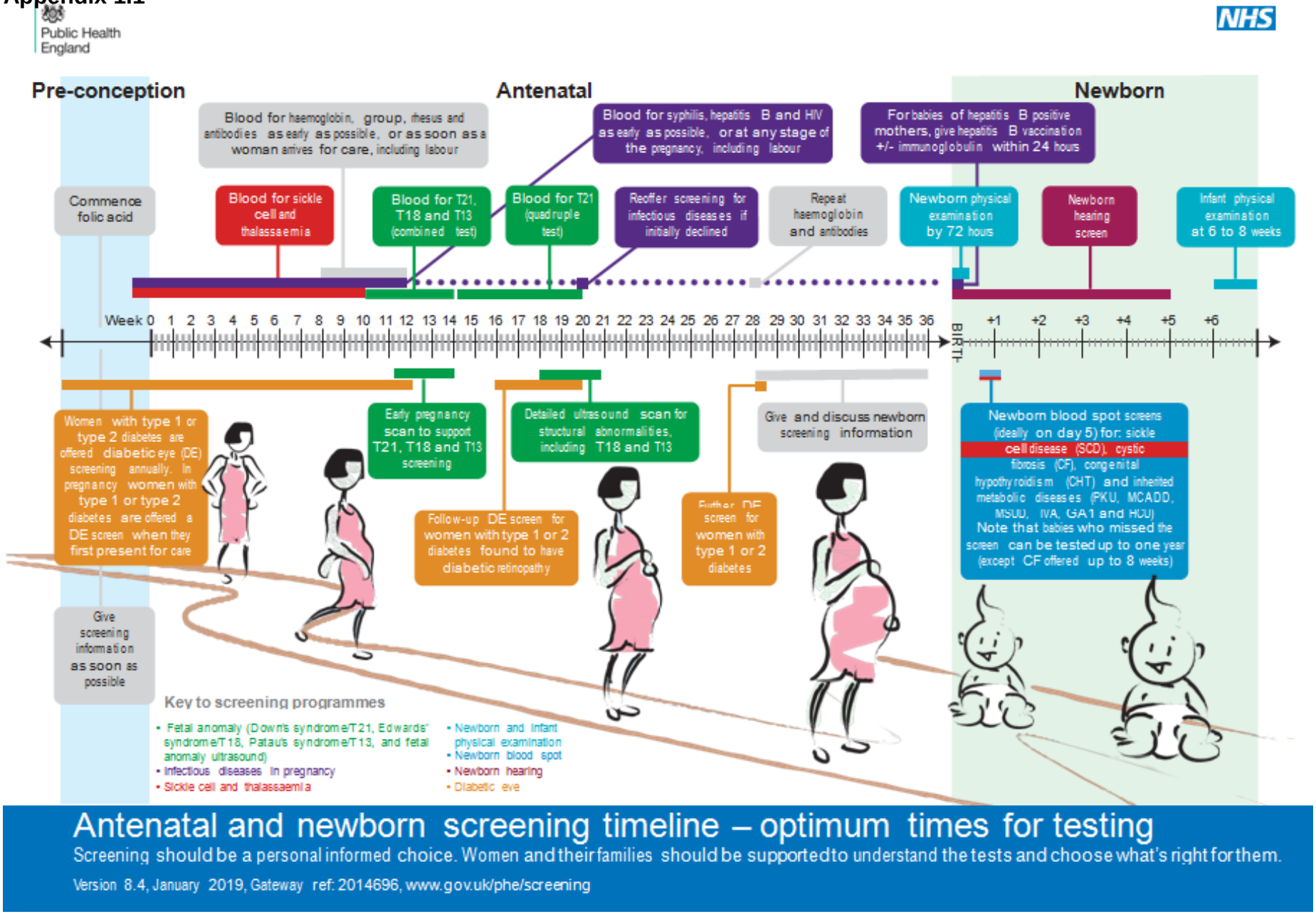
1.15. Information Systems

The report contains data extracted from BadgerNet, Trakcare and Laboratories.

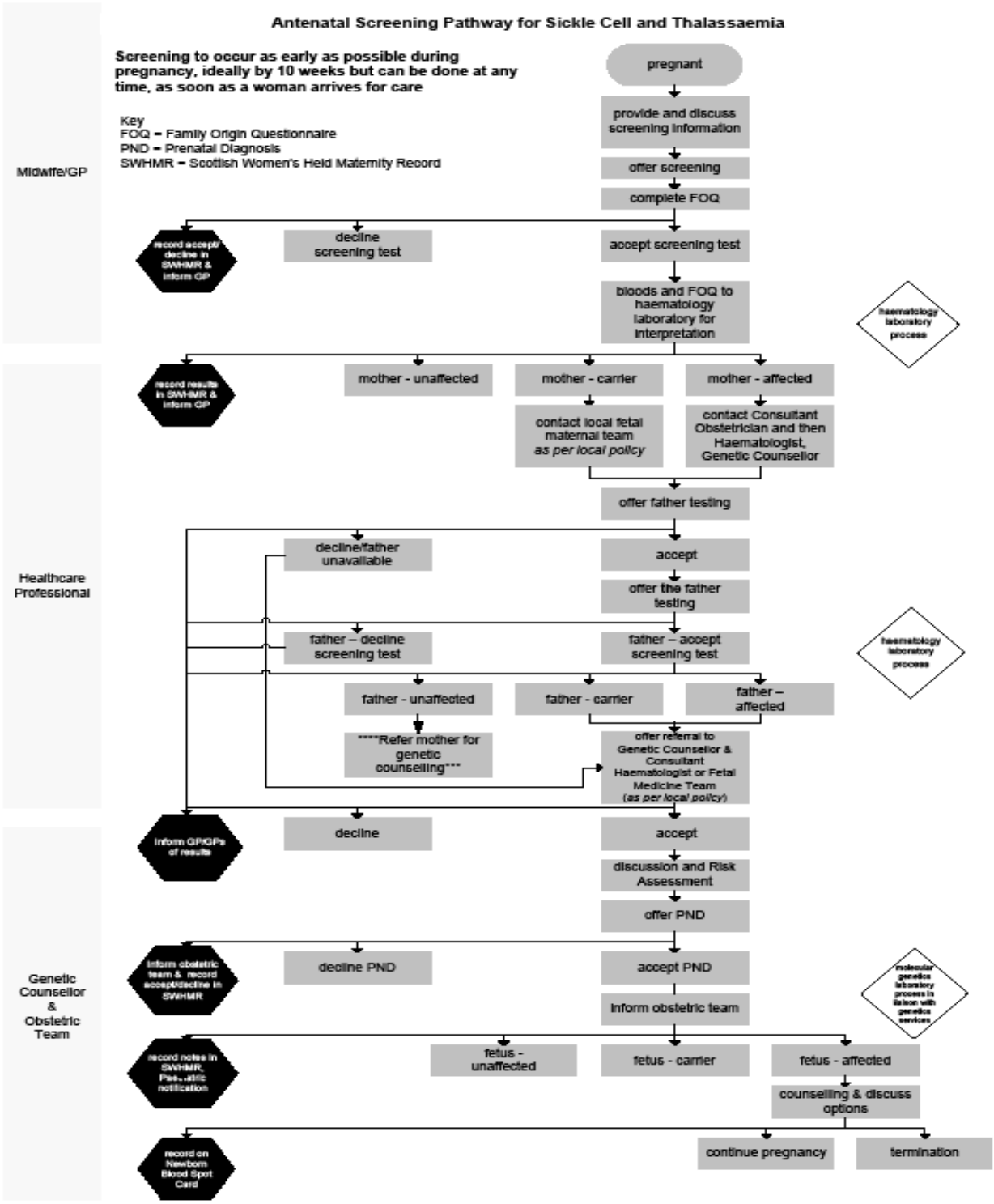
1.16. Challenges and Priorities

- Meeting the testing and reporting timelines for pregnancy screening programmes
- Reviewing all pregnancy data from BadgerNet and addressing any quality issues.
- Developing national reports for all Pregnancy Screening from Badger Net.
- Setting up reports to capture all Pregnancy Screening Programmes against the NSD Key Performance Indicators
- Implementing changes to meet programme KPIs.

Appendix 1.1


Public Health England
NHS
Pre-conception
Antenatal
Newborn
Blood for haemoglobin, group, rhesus and antibodies as early as possible, or as soon as a woman arrives for care, including labour
Blood for syphilis, hepatitis B and HIV as early as possible, or at any stage of the pregnancy, including labour
For babies of hepatitis B positive mothers, give hepatitis B vaccination +/- immunoglobulin within 24 hours
Commence folic acid
Blood for sickle cell and thalassaemia
Blood for T21, T18 and T13 (combined test)
Blood for T21 (quadruple test)
Reoffer screening for infectious diseases if initially declined
Repeat haemoglobin and antibodies
Newborn physical examination by 72 hours
Newborn hearing screen
Infant physical examination at 6 to 8 weeks
Week 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
BIRTH
+1 +2 +3 +4 +5 +6
Women with type 1 or type 2 diabetes are offered diabetic eye (DE) screening annually. In pregnancy women with type 1 or type 2 diabetes are offered a DE screen when they first present for care
Early pregnancy scan to support T21, T18 and T13 screening
Detailed ultrasound scan for structural abnormalities, including T18 and T13
Give and discuss newborn screening information
Newborn blood spot screens (ideally on day 5) for: sickle cell disease (SCD), cystic fibrosis (CF), congenital hypothyroidism (CHT) and inherited metabolic diseases (PKU, MCADD, MSUD, IVA, GA1 and HCU)
Note that babies who missed the screen can be tested up to one year (except CF offered up to 8 weeks)
Follow-up DE screen for women with type 1 or 2 diabetes found to have diabetic retinopathy
Further DE screen for women with type 1 or 2 diabetes
Give screening information as soon as possible
Key to screening programmes
• Fetal anomaly (Down's syndrome/T21, Edwards' syndrome/T18, Patau's syndrome/T13, and fetal anomaly ultrasound)
• Infectious diseases in pregnancy
• Sickle cell and thalassaemia
• Newborn and infant physical examination
• Newborn blood spot
• Newborn hearing
• Diabetic eye
Antenatal and newborn screening timeline – optimum times for testing
Screening should be a personal informed choice. Women and their families should be supported to understand the tests and choose what's right for them.
Version 8.4, January 2019, Gateway ref: 2014696, www.gov.uk/phe/screening

Appendix 1.2


Antenatal Screening Pathway for Sickle Cell and Thalassaemia
Screening to occur as early as possible during pregnancy, ideally by 10 weeks but can be done at any time, as soon as a woman arrives for care
Key
FOQ – Family Origin Questionnaire
PND – Prenatal Diagnosis
SWHMR – Scottish Women's Held Maternity Record
Midwife/GP
Healthcare Professional
Genetic Counsellor & Obstetric Team
pregnant
provide and discuss screening information
offer screening
complete FOQ
decline screening test
accept screening test
record accept/decline in SWHMR & inform GP
bloods and FOQ to haematology laboratory for interpretation
haematology laboratory process
record results in SWHMR & inform GP
mother - unaffected
mother - carrier
mother - affected
contact local fetal maternal team as per local policy
contact Consultant Obstetrician and then Haematologist, Genetic Counsellor
offer father testing
decline/father unavailable
accept
offer the father testing
father – decline screening test
father – accept screening test
haematology laboratory process
father - unaffected
father - carrier
father – affected
"***Refer mother for genetic counselling***"
offer referral to Genetic Counsellor & Consultant Haematologist or Fetal Medicine Team (as per local policy)
Inform GP/GPs of results
decline
accept
discussion and Risk Assessment
offer PND
Inform obstetric team & record accept/decline in SWHMR
decline PND
accept PND
Inform obstetric team
molecular genetics laboratory process in liaison with genetics services
record notes in SWHMR, Paediatric notification
fetus - unaffected
fetus - carrier
fetus - affected
counselling & discuss options
record on Newborn Blood Spot Card
continue pregnancy
termination

Appendix 1.3

Screening for Haemoglobinopathies
Family Origin Questionnaire (FOQ)

NHS SCOTLAND

Hospital Name .....
CHI No. .....
Estimated Delivery Date .....
Surname .....
Forename .....
Date of Birth .....
Address 1 .....
Address 2 .....
Postcode .....

Screening test declined ☐

This form must be attached securely to the haematology laboratory request form with the antenatal blood samples. A second copy of the form should be added to the patient's maternity record. (A third copy can be added to the hospital records if applicable). The completion of this form is an ESSENTIAL part of the screening process.

What are your family origins?

Please tick all boxes in ALL sections that apply to the woman and the baby's father

		Woman	Baby's father
A.	**AFRICAN OR AFRICAN CARIBBEAN (BLACK)**		
1/	Caribbean Islands	☐	☐
2/	Africa (excluding North Africa)	☐	☐
3/	Any other African or African-Caribbean family origins (please write in…)		
B.	**SOUTH ASIAN (ASIAN)**		
1/	India or African-Indian	☐	☐
2/	Pakistan	☐	☐
3/	Bangladesh	☐	☐
C.	**SOUTH EAST ASIAN (ASIAN)**		
1/	China including Hong Kong, Taiwan, Singapore	☐ #	☐ #
2/	Thailand, Indonesia, Burma	☐ #	☐ #
3/	Malaysia, Vietnam, Philippines, Cambodia, Laos	☐ #	☐ #
4/	Any other Asian family origins (eg Caribbean-Asian) (please write in…)		
D.	**OTHER NON-EUROPEAN (OTHER)**		
1/	North Africa, South America etc	☐	☐
2/	Middle East (Saudi Arabia, Iran etc)	☐	☐
3/	Any other Non-European family origins (please write in….)		
E.	**SOUTHERN & OTHER EUROPEAN (WHITE)**		
1/	Sardinia	☐ #	☐ #
2/	Greece, Turkey, Cyprus	☐ #	☐ #
3/	Italy, Portugal, Spain	☐	☐
4/	Any other Mediterranean country	☐	☐
5/	Albania, Czech Republic, Poland, Romania, Russia etc	☐	☐
F*	**UNITED KINGDOM (WHITE) refer to guidance at the back**		
1/	England, Scotland, N Ireland, Wales	☐	☐
G*	**NORTHERN EUROPEAN (WHITE) refer to guidance at the back**		
1/	Austria, Belgium, Ireland, France, Germany, Netherlands	☐	☐
2/	Scandinavia, Switzerland etc	☐	☐
3/	Any other European family origins, refer to chart (eg Australia, N America, S Africa) (please write in…)		
	*Hb Variant Screening Requested by F and/or G *(ie request from low risk group)*	☐	☐
	# Higher risk for alpha zero thalassaemia		
H.	**DON'T KNOW (incl. pregnancies with donor egg/sperm)**	☐	☐
I.	**DECLINED TO ANSWER**	☐	☐
J.	**ESTIMATED DELIVERY DATE (please write in if not above)**		
K.	**GESTATION AT TIME OF TEST**		

OFFER haemoglobin variant screening to all women if they or their baby's father have answers in a shaded box

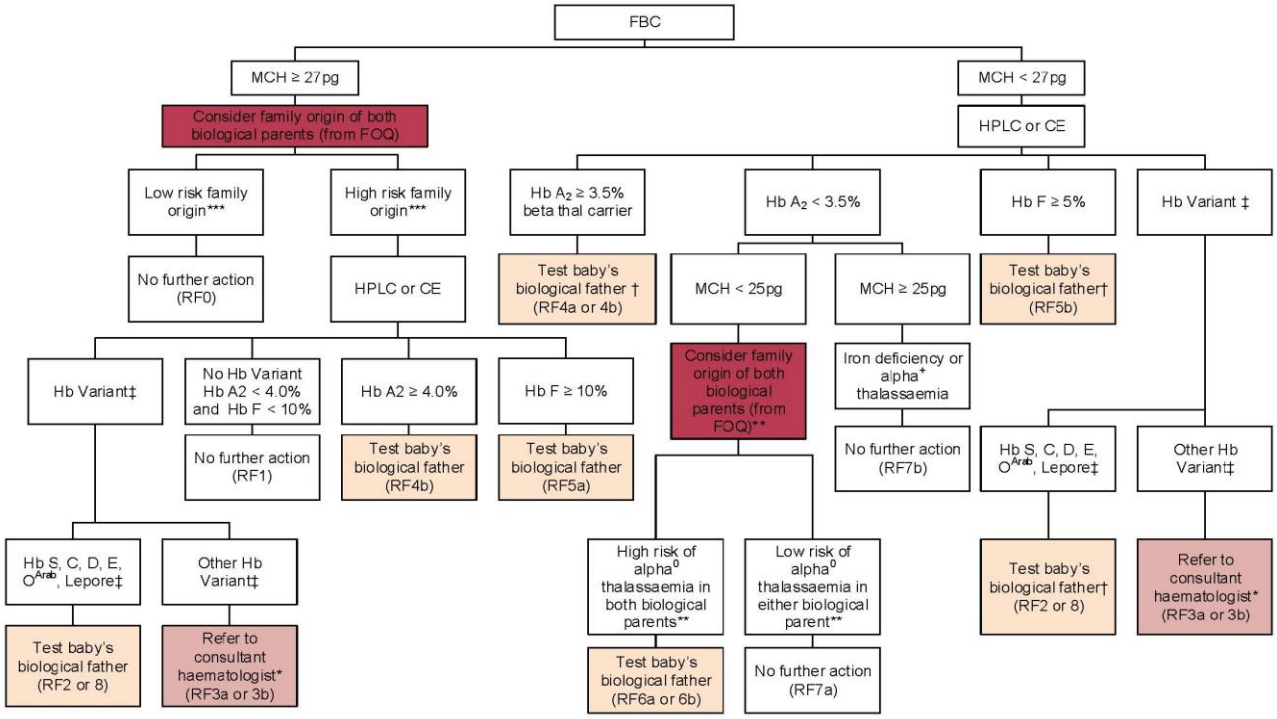
Signed _____ Print Name _____

Job Title _____ Contact Tel No _____ Date _____

(By Health Care Professional completing the form)

Appendix 1.4

Haemoglobinopathy Screening in Low Prevalence Areas



* Refer analytical results to consultant for an opinion on the need for a clinical referral or consult the laboratory support s ervice helpline.

** Consider at high risk if any ethnic origins in China (including Hong Kong), Taiwan, Thailand, Cambodia, Laos, Vietnam, Indonesia, Burma, Malaysia, Singapore, Philippines, Cyprus, Greece, Sardinia, Turkey, or if ethnic/family origin is uncertain or unknown. Reconsider low risk couples if fetal anaemia/hydrops seen on ultrasound scanning or if family history of hydrops fetalis.

*** Low risk or high risk as determined by the family origin questionnaire. **Note: If baby's father is in high risk group, test the mother's sample regardless of her family origins.**

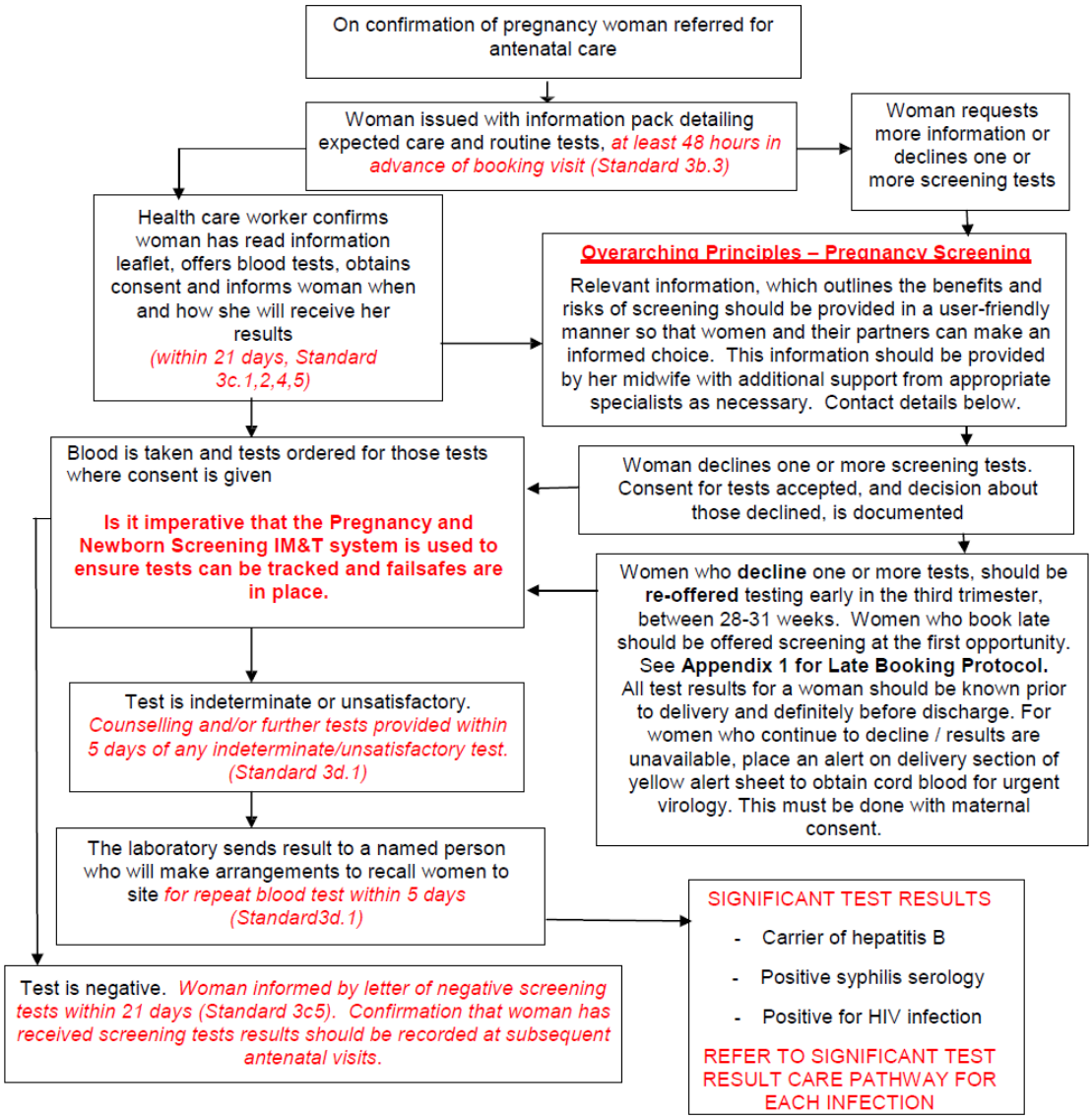
† In all cases consider coexisting α^0 thalassaemia if both parents are from a high risk area and MCH <25pg.

‡ Consider co-existing beta thalassaemia

Appendix 1.5

Offering Routine Antenatal Communicable Disease Screening Tests

"The primary aim of screening women for these conditions is to ensure a plan for treatment and management for affected individuals and their babies".
NHS QIS Clinical Standards, Pregnancy and Newborn Screening



N.B. If a woman feels she has been/continues to be at risk of exposure to HIV, she should be offered re-testing 3 monthly in pregnancy.
If a mother develops symptoms of hepatitis or a sexually transmitted infection she should be referred to SNIPs/or sexual health advisor.

Source: **[CG] Routine ANC screening Virology (nhsggc.org.uk)**
Last reviewed: 25/07/2022
Next review date: 25/07/2024

Appendix 1.6

Managing Infectious Diseases Screening Tests In Late Bookers

Late bookers are women who present for the first time on or after 24 weeks pregnancy. This is the stage at which the baby is potentially viable if early labour occurred.

The results of the infectious disease screening tests could affect the management at or after delivery, therefore **all infectious diseases screening test results** for a woman should be **known prior to delivery and certainly before discharge.**

If a woman presents to maternity services as a late booker i.e. on or after 24 weeks it is important to ensure that screening has been offered and results are received:

1) The woman presents to the antenatal clinic, and there is no immediate risk of delivery

- Seek informed consent for screening (HIV, Syphilis and hepatitis B)
- Fill **one 9ml purple topped EDTA bottle** and complete a virology request form, clearly indicating which tests (HIV, Syphilis and hepatitis B) are to be carried out. Even if a woman does not consent to all three tests, please fill one 9ml purple topped EDTA bottle. Do not send two 5ml bottles, or other combinations to make up to 9 ml, the machines in the lab won't accept them and the sample will not be processed.
- Ensure tests are recorded on the maternity electronic record.
- Mark the sample as URGENT and telephone the West of Scotland Specialist Virology Centre to let them know it is in the system. (0141 201 8722). Alternatively, email west.ssvc2@nhs.scot. State that the patient is a late booker, provide the lab with a contact phone number and state if you are want to receive the result on Clinical Portal or by phone.
- Send the sample to the virus lab, via normal routine processes.
- Ensure that the name and contact details of the person and a deputy who will be responsible for any positive results are clearly appended
- Note that to view a result on portal a CHI number is essential

2) The woman presents to maternity assessment i.e. in pain, bleeding etc therefore the risk of delivery is high

- Seek informed consent for screening (HIV, Syphilis and hepatitis B)
- Fill **one 9ml purple topped EDTA bottle** and complete a virology request form, clearly indicating which tests (HIV, Syphilis and hepatitis B) are to be carried out. Even if a woman does not consent to all three tests, please fill one 9ml purple topped EDTA bottle. Do not send two 5ml bottles, or other combinations to make up to 9 ml, the machines in the lab won't accept them and the sample will not be processed.
- Ensure tests are recorded on the maternity electronic record at next
- Mark the sample as 'URGENT' and telephone the West of Scotland Specialist Virology Centre before you send the sample.

- In hours (9.00 – 17.00 Monday to Friday), telephone the lab on 0141 201 8722 and:-
- Out of hours (including Saturday and Sunday).
    - Please telephone the on-call virologist via the Switchboard 0141 211 4000 and discuss the above. Do not email the lab out of hours or at the weekend.
- If the timing of the local transport systems does not facilitate urgent transfer order a taxi to ensure the sample reaches the laboratory. (see NHSGGC Amended Protocol Ordering and Use of Taxis and Couriers October 2011 [Staffnet link])
- In normal hours the lab is able to process and produce results within 1-2 hours of receipt. Note that reactive samples will need to be confirmed on the next day.
- Note that to view a result on Clinical Portal, a CHI number is essential.

3) The woman presents in labour

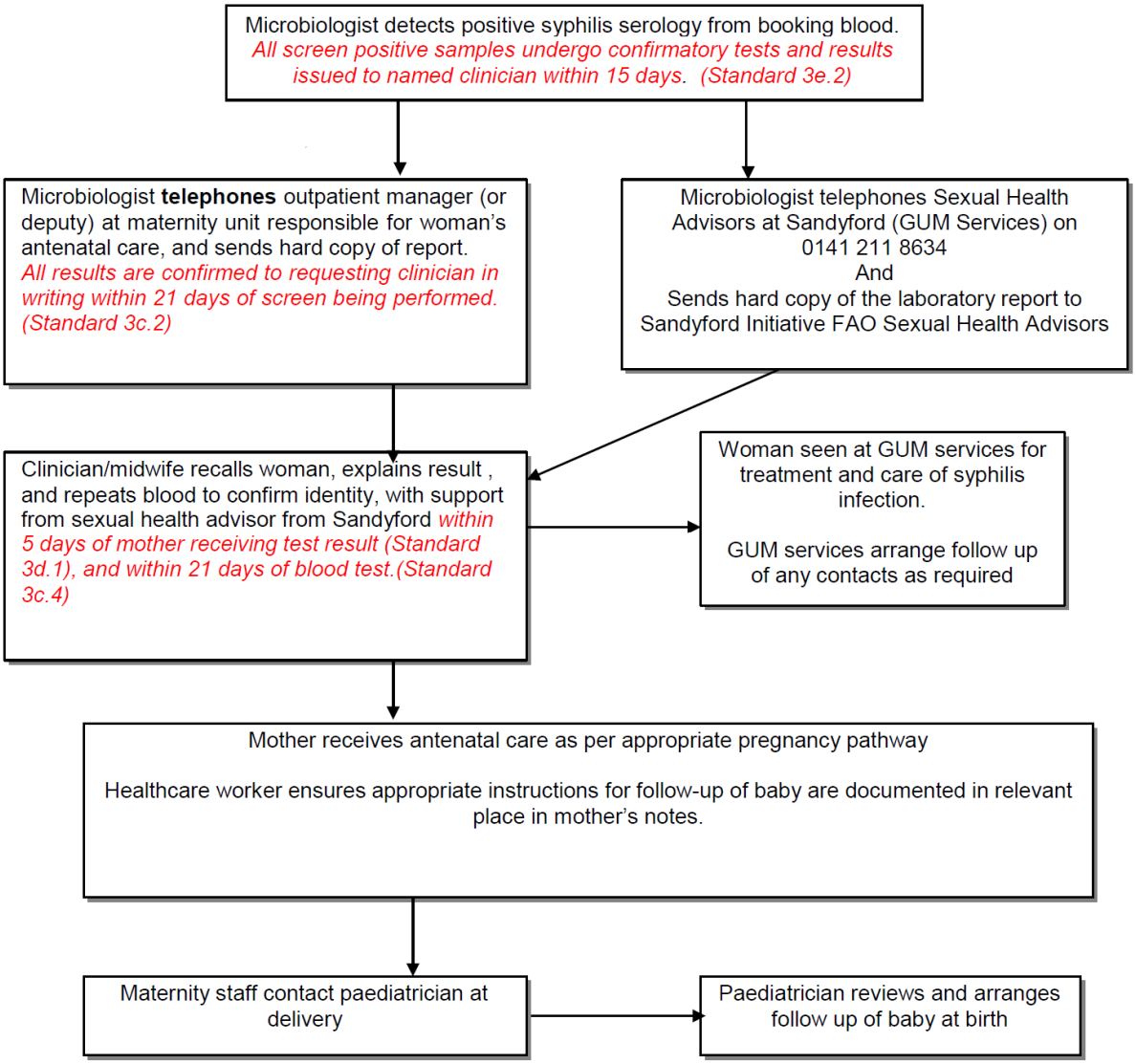
It is the responsibility of the labour ward staff to ensure that virology screening tests are offered and results received. Even intrapartum diagnosis can significantly, positively modify neonatal outcome therefore it is important to ensure women are offered screening tests no matter how late.

It is essential that you telephone the virology lab as soon as possible to discuss emergency testing of the woman.

- Seek informed consent for screening (HIV, Syphilis and hepatitis B)
- Fill **one 9ml purple topped EDTA bottle** and complete a virology request form, clearly indicating which tests (HIV, Syphilis and hepatitis B) are to be carried out. Even if a woman does not consent to all three tests, please fill one 9ml purple topped EDTA bottle. Do not send two 5ml bottles, or other combinations to make up to 9 ml, the machines in the lab won't accept them and the sample will not be processed.
- Ensure tests are recorded on the maternity electronic record at next
- Mark the sample as 'URGENT' and telephone the West of Scotland Specialist Virology Centre before you send the sample.
- In hours (9.00 – 17.00 Monday to Friday), telephone the laboratory on 0141 201 8722 and:-
- Out of hours (including Saturday and Sunday) Please telephone the on-call virologist via the Switchboard 0141 211 4000 and discuss the above.
- Order a taxi to ensure the sample reaches the laboratory. (see NHSGGC Amended Protocol Ordering and Use of Taxis and Couriers October 2011 [Staffnet link])
- As with **ALL** emergency blood tests ensure results are followed up immediately they are available. In normal hours the lab is able to process and produce results within 1-2 hours of receipt.
- Communication with paediatricians is essential as their management may be significantly altered by these results however the responsibility for taking and sending these investigations and obtaining these results remains with the midwifery / obstetric team.

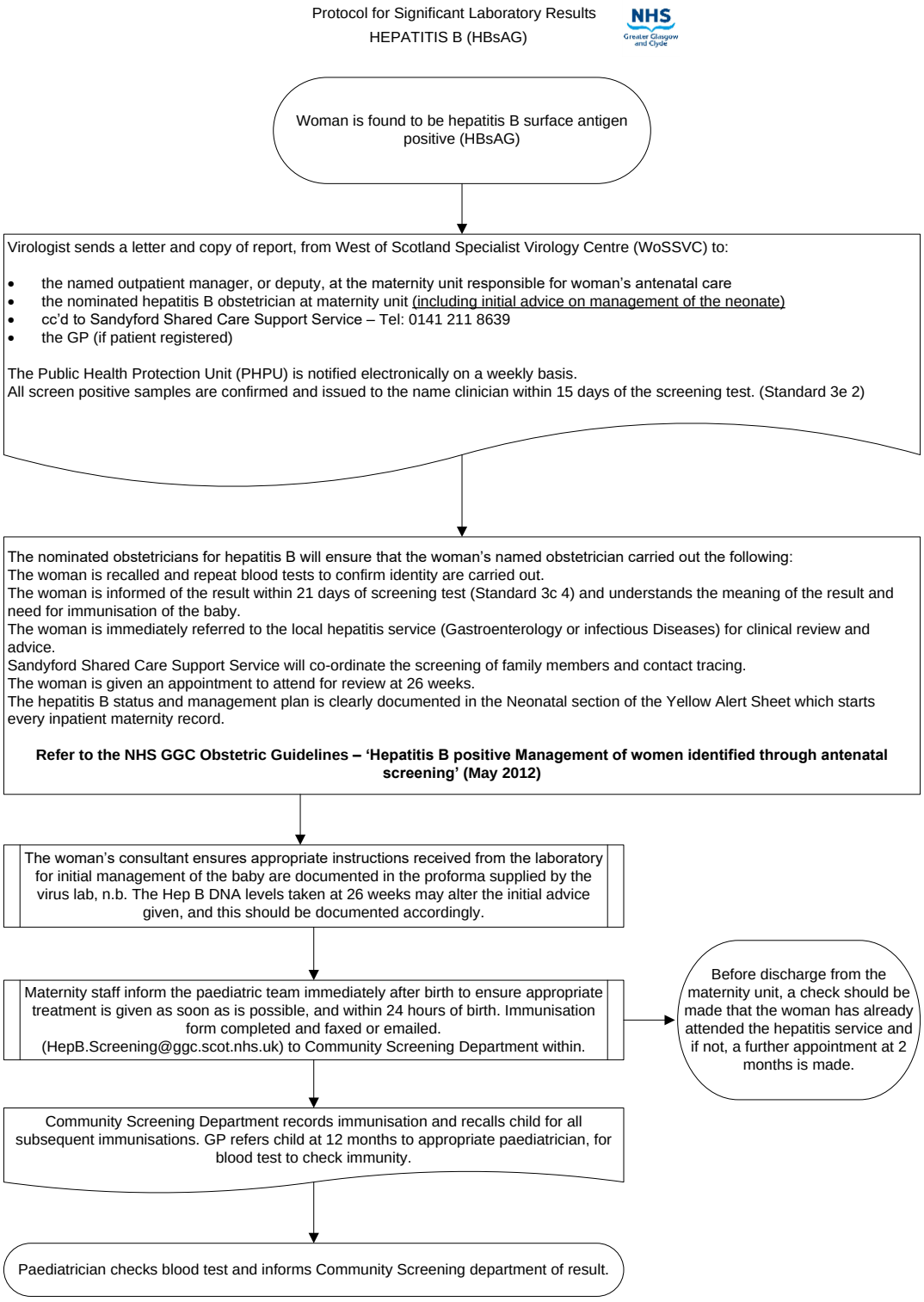
Appendix 1.7

Syphilis, Protocol for Significant Laboratory Results



Source: [CG] Syphilis, Protocol for Significant Laboratory Results (nhsggc.org.uk)
Last reviewed: 11/10/2021
Next review date: 31/12/2024

Appendix 1.8



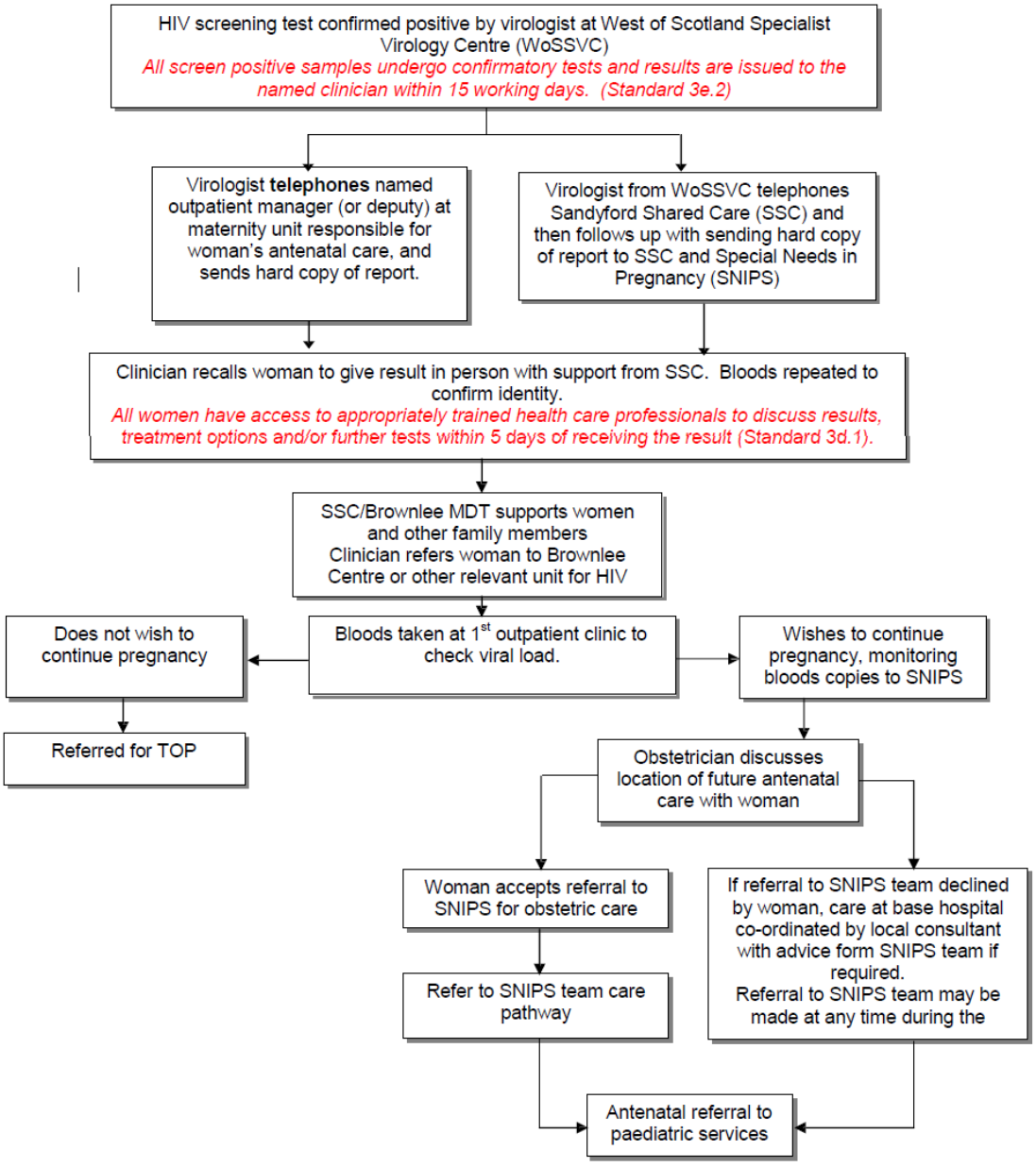
Version No:	2
Approved by:	Communicable Diseases in Pregnancy Steering Group Lead Author Dr Gillian Penrice added 5.1.16
Date Approved:	12.5.2014 on site – live from 16.6.2014
Next Revision Date:	June 2017

Appendix 1.9

NHS Greater Glasgow and Clyde

Protocol for Significant Laboratory Results

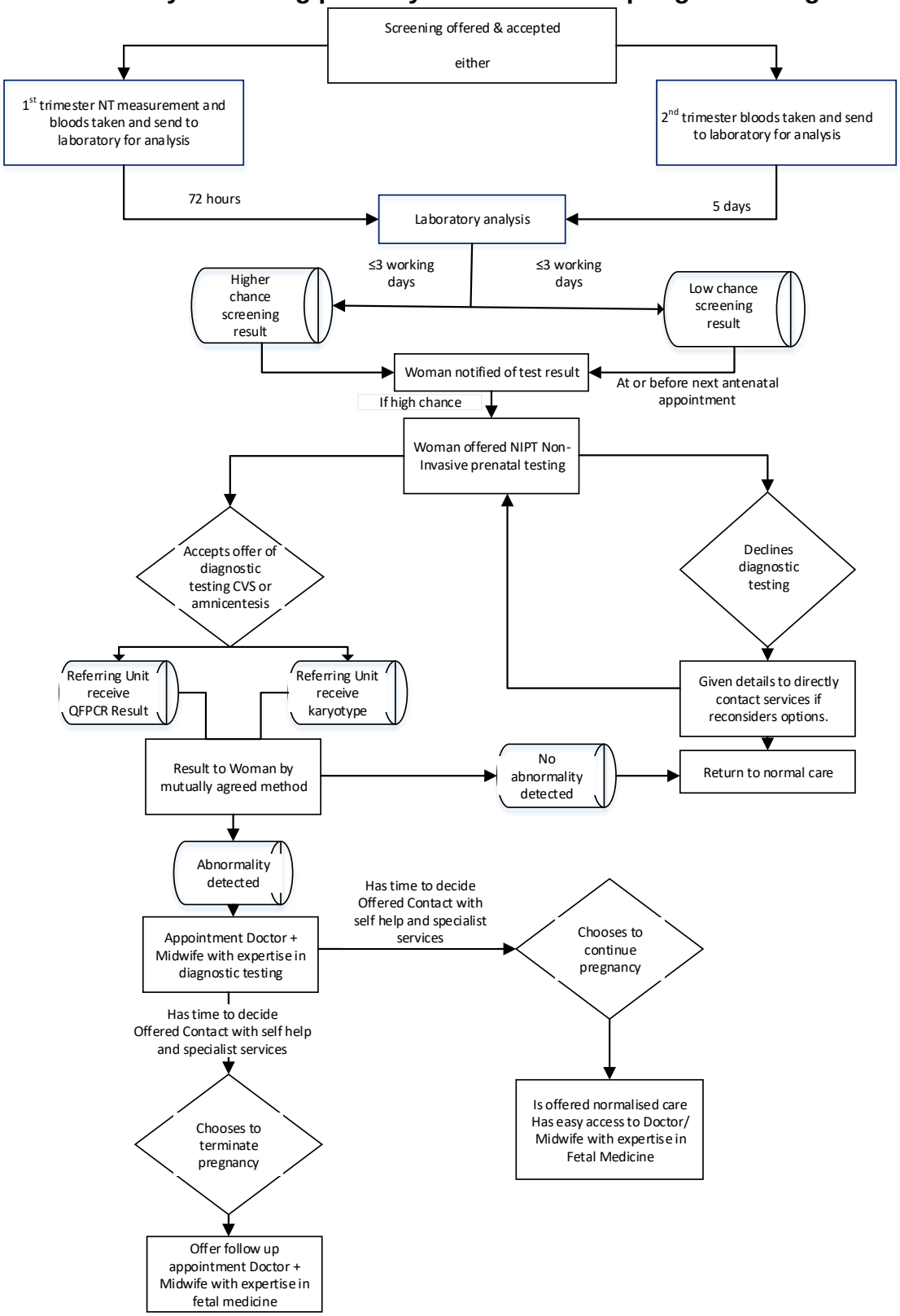
HIV



Version No:	V5.1
Approved by:	Communicable Diseases in Pregnancy Steering Group Lead Author - Dr Gillian Penrice added 5.1.2016
Date Approved:	On site 12.6.14 Live from 16.6.14
Next revision date:	June 2021

Appendix 1.10

Trisomy screening pathway for women accepting screening



Appendix 1.11

Members of Pregnancy & Newborn Screening Steering Group (At March 2022)

Dr Emilia Crighton	Interim Director of Public Health (Chair)
Ms Sally Amor	Head of Health Improvement, NHS Highland
Dr Catriona Bain	Clinical Director, Obstetrics and Gynaecology
Ms Donna-Maria Bean	Lead Sonographer (Obstetrics & Gynaecology)
Dr Vicki Brace	Consultant Obstetrician
Mr Paul Burton	Information Manager
Mrs Lin Calderwood	National Portfolio Manager
Ms Kim Campbell	Senior Healthcare Scientist
Ms Margaret Cartwright	Sector Laboratory Manager
Dr Elizabeth Chalmers	Consultant Paediatrician
Ms Barbara Cochrane	Metabolic Dietician
Dr Alison Cozens	Consultant in Inherited Metabolic Disorders
Dr Rosemarie Davidson	Consultant Clinical Geneticist
Dr Anne Devanney	Consultant in Paediatric Respiratory Medicine
Dr Catriona Dreghorn	Consultant
Mr Ian Fergus	Site Technical Manager, Diagnostics
Mrs Jaki Lambert	Lead Midwife (Argyll and Bute)
Dr Louise Leven	Consultant Neonatologist
Dr Louisa McIlwaine	Consultant Haematologist
Ms Gill Jess	Clinical Services Manager
Ms Elaine Drennan	Lead Midwife
Ms Angela Watt	Lead Midwife
Dr Gillian Penrice	Consultant in Public Health Medicine
Dr Nicola Schinaia	Consultant, NHS Highland
Mrs Uzma Rehman	Public Health Programme Manager
Mrs Elizabeth Rennie	Screening Programmes Manager

Appendix 1.12

Members of Infectious Diseases Steering Sub Group (At March 2022)

Dr Gillian Penrice	Public Health Protection Unit (Chair)
Ms Donna Athanasopoulos	Information & Publications Manager
Ms Elizabeth Boyd	Clinical Effectiveness Co-ordinator
Mr Paul Burton	Information Manager
Mrs Lin Calderwood	National Portfolio Programme Manager
Ms Rose Dougan	Special Needs (SNIPS) Midwife
Ms Catherine Frew	Data Analyst, Specialist Virology Centre
Ms Louise Jack	Midwife
Mrs Jaki Lambert	Lead Midwife
Mr Sam King	Sexual Health Advisor
Ms Karen McAlpine	Lead Midwife
Ms Valerie McAlpine	Senior Charge Midwife
Ms Michelle McLauchlan	General Manager, Obstetrics
Ms Elizabeth Rennie	Programme Manager
Ms Samantha Shepherd	Clinical Scientist
Ms Claire Stewart	Clinical Service Manager
Ms Hilary Alba	Charge Midwife
Ms Donna Athanasopoulos	Information and Publications Manager
Ms Lesley Binnesbesel	Senior Charge Nurse
Lynda Davidson	Public Affairs Officer
Angela Duffy	Lead Midwife
Ann Duncan	Consultant Obstetrician
Elizabeth Ellis	Staff Grade
Rebecca Metcalf	Consultant
Karen Mochan	Medical Secretary
Matthias Rohe	Specialty Registrar in Public Health
Clair Wilson	BBV CNS

Chapter 2 – Newborn Bloodspot Screening

Summary

Newborn bloodspot screening identifies babies who may have rare but serious conditions. Most babies screened will not have any of the conditions, but for the small numbers that do, the benefits of screening are enormous. Early treatment can improve health and prevent severe disability or even death. Every baby born in Scotland is eligible for and routinely offered screening.

Newborn babies are screened for phenylketonuria; congenital hypothyroidism; cystic fibrosis; sickle cell haemoglobinopathy, medium chain acyl-CoA dehydrogenase deficiency (MCADD), maple syrup urine disease (MSUD), isovaleric acidaemia (IVA), glutaric aciduria type 1 (GA1), homocystinuria (HCU).

The total number of babies eligible for screening was 10,929 and of these, 10,837 (99.2%) babies were screened.

The uptake of Newborn Bloodspot screening was greater than 96.1% across all HSCP areas and deprivation categories.

The breakdown of the ethnicity groups for babies tested within NHSGGC shows that 7,609 (68.8%) of babies screened were UK White; 839 (7.6%) South Asian; 437 (4.0%) African or African Caribbean; 250 (2.3%) Other non- European; 449 (4.1%) Southern and Other European and 102 (0.9%) North Europe (white). The number from Any Mixed Background was 778 (7.0%) and ethnicity was not stated for 486 (4.4%)

Following screening 10 babies were diagnosed with congenital hypothyroidism (CHT), <5 babies were diagnosed with PKU (phenylketonuria) and 7 tested positive for cystic fibrosis.

The results for Haemoglobinopathy showed that although <5 babies were diagnosed with haemoglobinopathy variants, 79 babies were identified as haemoglobinopathy carriers.

The phrase less than five has been used in line with NHS Scotland information governance which is intended to protect privacy and avoid identifying individuals.

5 Year Trends in uptake of Newborn Bloodspot Screening

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Number of babies eligible and uptake of Newborn Screening	11,803 98.1%	12,155 98.8%	11,238 98.8%	10,594 98.8%	10,929 99.2%

Ethnicity of Babies born in NHSGGC – 5 years

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
African or African-Carib bean	4.2%	4.0%	3.4%	3.3%	4%
South Asian (Asian)	11.9%	9.5%	7.6%	7.7%	7.6%
South East Asian (Asian)	2.8%	1.8%	1.5%	1.3%	1%
Other non-European (other)	2.5%	3.0%	2.7%	2.6%	2.3%
Southern & other European (White)	5.83%	5.2%	4.6%	3.9%	4.1%
United Kingdom (White)	75.0%	63.1%%	67.9%	68.7%	68.8%
North Europe (White	1.24%	1.3%	1.04%	0.9%	0.9%
Any Mixed Back ground	5.3%	6.3%	6.15%	6.8%	7%

Chapter Contents

2.1. Newborn Bloodspot Screening

Newborn bloodspot screening identifies babies who may have rare but serious conditions. Most babies screened will not have any of the conditions, but for the small numbers that do, the benefits of screening are enormous. Early treatment can improve health and prevent severe disability or even death. Every baby born in Scotland is eligible for and routinely offered screening.

Newborn bloodspot screening aims to identify, as early as possible, abnormalities in newborn babies which can lead to problems with growth and development, so that they may be offered appropriate management for the condition detected.

The diseases screened for are phenylketonuria; congenital hypothyroidism; cystic fibrosis; sickle cell haemoglobinopathy, medium chain acyl-CoA dehydrogenase deficiency (MCADD), maple syrup urine disease (MSUD), isovaleric acidaemia (IVA), glutaric aciduria type 1 (GA1), homocystinuria (HCU).

2.2. Eligible Population

Newborn Bloodspot screening is offered to all newborns. Eligible babies are the total number of babies born within the reporting period (2020-2021), excluding any baby who died before the age of 8 days.

2.3. The Screening Test

The bloodspot sample should be taken on day 5 of life whenever possible. There are separate protocols in place for screening babies who are ill, have a blood transfusion or are born prematurely and when repeat testing is required.

Newborn siblings of patients who have MCADD are offered diagnostic testing at 24 – 28 hours of age as well as routine testing.

Blood is taken by the community midwife from the baby's heel using a bloodletting device and collected on a bloodspot card consisting of special filter paper. It is then sent to the National Newborn Screening Laboratory in Queen Elizabeth University Hospital for analysis.

Detailed pathway is shown in Appendix 2.1.

2.4. Live births registrations by Health Board and HSCP areas

1. By Health Board

2021/22	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
NHSGGC	825	776	869	895	946	946	1,022	984	791	903	903	1,011	10,871

2. By Council Areas

HSCP	Number of live births 2021/22
East Renfrewshire	776
East Dunbartonshire	888
Glasgow City	6,026
Renfrewshire	1,670
Inverclyde	664
West Dunbartonshire	847
NHSGGC Total	**10,871**

Footnotes
1) Data for 2021 and 2022 are provisional.
2) The health board areas are based on the boundaries introduced on 1 April 2014.

https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/weekly-and-monthly-data-on-births-and-deaths/monthly-data-on-births-and-deaths-registered-in-scotland

2.5. Delivery of NHSGGC Newborn Bloodspot Screening Programmes

Figure 2.1 illustrates newborn bloodspot uptake rates and the results of the screening programme from 1 April 2021 to 31 March 2022.

The total number of babies eligible for screening was 10,929 and of these, 10,837 (99.2%) babies were screened.

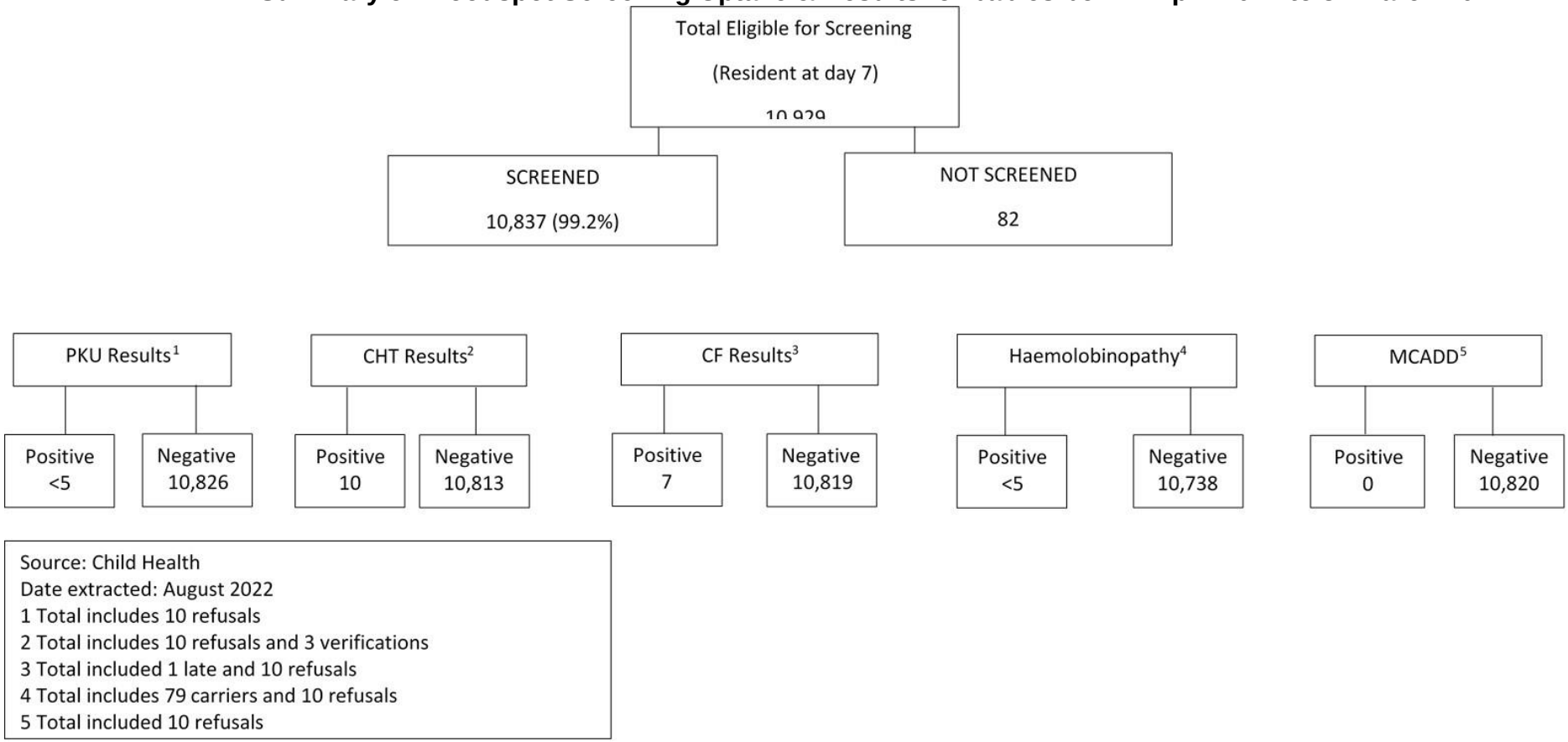
Following screening, 10 babies were diagnosed with congenital hypothyroidism (CHT), <5 babies were diagnosed with PKU (phenylketonuria) and 7 tested positive for cystic fibrosis.

The results for Haemoglobinopathy showed that although <5 babies were diagnosed with haemoglobinopathy variants, 79 babies were identified as haemoglobinopathy carriers.

In this report the phrase less than five has been used in line with NHS Scotland information governance standards to protect the privacy of individuals.

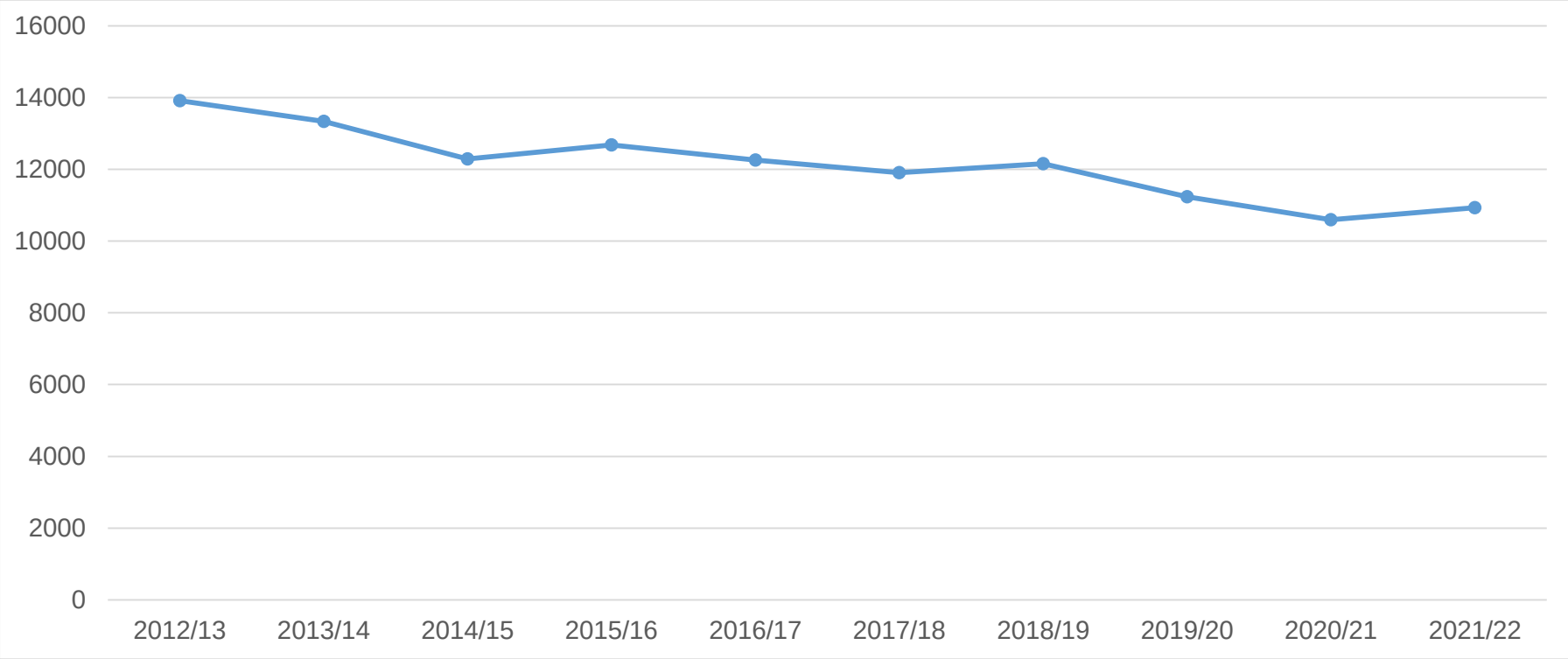
Figure 2.1

NHS Greater Glasgow & Clyde Residents
Summary of Bloodspot Screening Uptake & Results for babies born 1 April 2021 to 31 March 2022



Source: Child Health
Date extracted: August 2022
1 Total includes 10 refusals
2 Total includes 10 refusals and 3 verifications
3 Total included 1 late and 10 refusals
4 Total includes 79 carriers and 10 refusals
5 Total included 10 refusals

Figure 2.2: Number of eligible babies for Newborn Bloodspot Screening within NHS GGC over a 10 year period, 1 April 2012 to 31 March 2022



Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Total number of babies	13,915	13,332	12,286	12,681	12,257	11,907	12,155	11,238	10,594	10,929

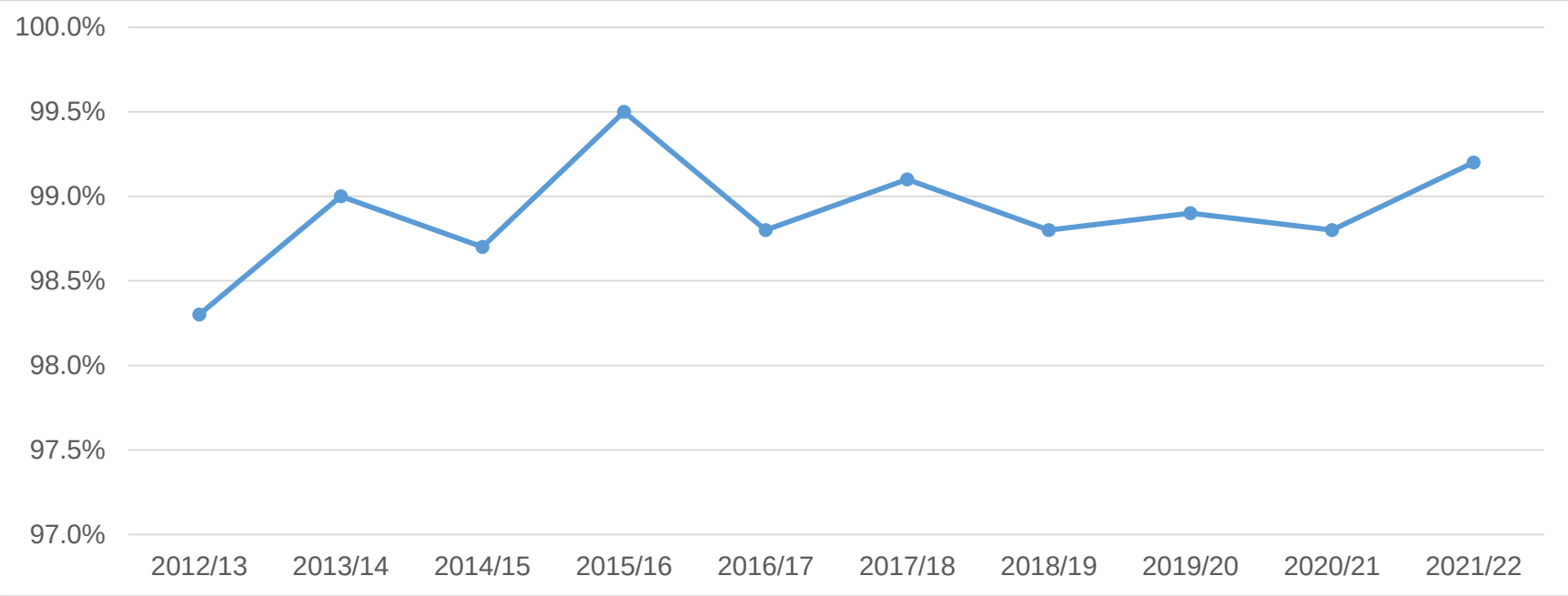
The percentage uptake rate of Newborn Bloodspot screening was greater than 96.1% overall across all HSCP areas and deprivation categories. (**Table 2.1)**

Table 2.1: Uptake rate of Newborn Bloodspot screening by HSCP and deprivation
Percentage uptake of Bloodspot Screening by HSCP and SIMD, 1 April 2021 to 31 March 2022

	Most Deprived		SIMD 2020 Quintile						Least Deprived			
	1		2		3		4		5		Total	
CHP	No. Screened	% uptake	No. Screened	% uptake	No. Screened	% uptake	No. Screened	% uptake	No. Screened	% uptake	No. Screened	% uptake
East Dunbartonshire CHP	49	*100.0*	165	*98.2*	37	*97.4*	182	*100.0*	429	*99.3*	862	*99.2*
East Renfrewshire CHCP	56	*100.0*	96	*99.0*	51	*96.2*	221	*100.0*	360	*99.2*	784	*99.2*
Glasgow North East	1086	*99.0*	259	*99.6*	179	*98.4*	228	*99.6*	37	*100.0*	1789	*99.1*
Glasgow North West	901	*98.8*	225	*99.6*	188	*97.9*	151	*98.1*	357	*99.2*	1822	*98.8*
Glasgow South	1086	*99.1*	536	*99.4*	316	*97.5*	350	*99.4*	202	*99.0*	2490	*99.0*
Inverclyde CHP	316	*99.7*	103	*100.0*	71	*100.0*	84	*100.0*	73	*100.0*	647	*99.8*
Renfrewshire CHP	423	*98.8*	355	*99.4*	265	*100.0*	205	*100.0*	387	*99.5*	1635	*99.5*
West Dunbartonshire CHP	347	*98.9*	230	*99.1*	130	*100.0*	59	*100.0*	42	*100.0*	808	*99.3*
Grand Total	4264	*99.0*	1969	*99.3*	1237	*98.6*	1480	*99.6*	1887	*99.3*	10837	*99.2*

Source: Child Health (CH2008); Date extracted: August 2022

Figure 2.3: Uptake trend for Newborn Bloodspot Screening within NHS GGC over a 10 year period, 1 April 2012 to 31 March 2022



Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Uptake %	98.3%	99.0%	98.7%	99.5%	98.8%	99.1%	98.8%	98.9%	98.8%	99.2%

2.6. Ethnicity of babies born in 2020/2021

The breakdown of the recorded ethnicity groups for babies tested within NHSGGC shows that 7,609 (68.8%) of babies screened were UK White; 839 (7.6%) South Asian; 437 (4%) African or African Caribbean; 250 (2.3%) Other non- European; 449 (4.1%) Southern and Other European and 102 (0.9%) North Europe (white). The number from Any Mixed Background was 778 (7.0%) and ethnicity was not stated for 486 (4.4%) **(Table 2.2).**

Table 2.2: NHSGGC Newborn Bloodspot screening – ethnicity of babies tested 1 April 2021 to 31 March 2022

African or African-Caribbean	South Asian (Asian)	South East Asian (Asian)	Other non-European (other)	Southern & other European (White)	United Kingdom (White)	North Europe (White)	Any Mixed Background	Not Stated
437	839	112	250	449	7,609	102	778	486
4%	7.6%	1%	2.3%	4.1%	68.8%	0.9%	7.0%	4.4%

Source: Scottish Newborn Screening Laboratory - Newborn Bloodspot Screening 2021/22

Note: Scottish Newborn Screening Laboratory figures cannot be mapped to NHS GGC new boundary and may include Lanarkshire, Highland patients,

2.7. Specimen Tests and Outcomes for 2020/2021

During 2021/2022, the Scottish Newborn Screening Laboratory received 11,754 newborn bloodspot cards from NHSGGC. The number and reason for repeat tests due to avoidable problems is detailed in (**Table 2.3).**

Table 2.3: Number and reason for repeat samples

Reason	Number	Percentage
Insufficient sample	194	1.65
Sample taken <96 hours	42	0.36
Incorrect blood application	49	0.42
Compressed /damaged sample	20	0.17
Blood quality of sample	10	0.09
Missing CHI	78	0.66
Expired card used	15	0.13
>14 days in transit	9	0.08
Total	**417**	3.54%

Source: SNSL Report 2021-22

2.8. Key Performance Indicators for Newborn Bloodspot Screening

Table 2.4 below shows the Newborn Bloodspot Screening against Key Performance. Indicators for NHSGGC during 2021-22. The total number of samples was 11,754 (**Table 2.4)**

Table 2.4: NBBS KPIs and performance during 2020-21 for NHSGGC

NBBS KPI	Performance threshold	2021-22
8.1 Coverage	95-99%	*Information not available for health Boards as lab only reports on number of samples received*
8.2 Movers in	95-99%	121 children offered (100%)
8.3 Avoidable repeats	<1.0 to <2.0 %	3.54 %
8.4 Null or incomplete result on CHIS	Essential – regular checks to identify babies	Checks carried out on daily basis for overdue NBBS result.
8.5 CHI number recorded on bloodspot card	98-100%	99.3% had valid CHI
8.6 Timely sample collection	95-99%	41 samples were taken at less than 4 days. (0.37%)
8.7 Timely receipt of sample in the lab	95-99%	83 samples were too old in transit and too old for analysis (0.75%)
8.8 Timely second sample for CF screening	95% taken on day 21-24	3 out of 5 samples taken within timescale (60%)
8.9 Timely second sample for borderline CHT screening	95 – 99%	25 out of 26 samples (96.1%)
8.10 Timely second sample for CHT for preterm infant	95 – 99%	67 out of 145 samples (46.2%)
8.11 Timely processing CHT	Clinical referral within 3 days – 100%	All referred by 2 days
8.12 Timely entry into clinical care (data for Scotland)	IMDs appt by 14 days – 100%	92%
	CHT referral on 1st sample	94%
	CHT referral on 2nd sample	72% (two referrals were not included in this data as the day the baby was seen is not known)
	CF appt by 28 days – 80- 100%	95%
	CF appt by 35 days – 80-100%	67%
	SCD appt by 90 days	100%

2.9. Information systems

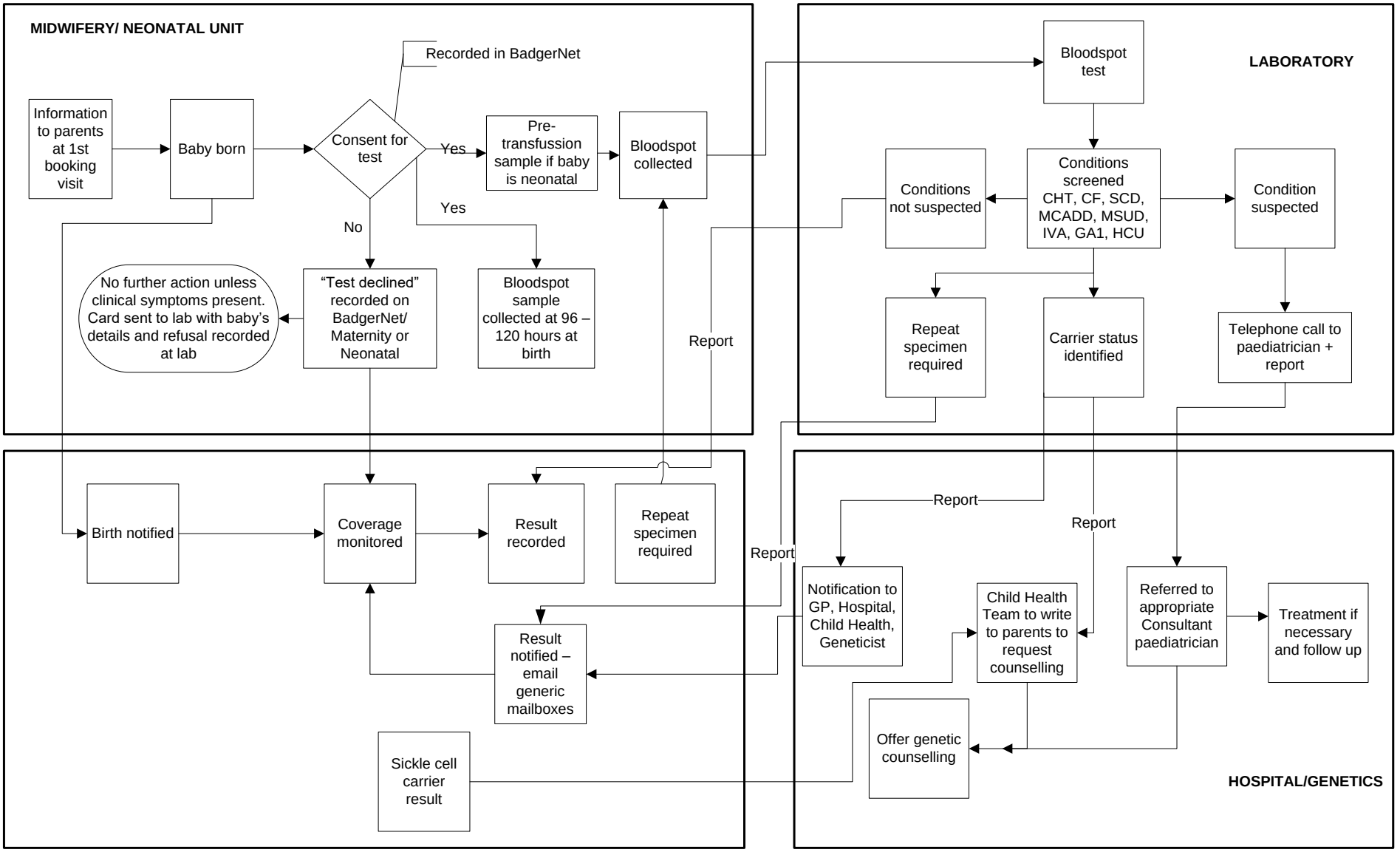
Pregnancy and Newborn Bloodspot screening tests results are provided by the National Laboratory's Information Management System and data are reported on the old former NHS Greater Glasgow and NHS Argyll and Clyde basis.

The results of the Bloodspot test are recorded against the individual child's record held within the Scottish Immunisation and Recall System (SIRS) application that supports the failsafe processes for Newborn Bloodspot Screening.

2.10. Challenges and Service Improvements

- Support parents whose children are identified as carriers of Sickle Cell Disease to access genetic counselling.
- Ensure that the website with information about haemoglobinopathies for staff and parents in available on StaffNet and the BadgerNet App.
- Ensure that services meet KPIs for Newborn Bloodspot Screening.

Appendix 2.1: NHSGGC Newborn Bloodspot Screening Pathway



Appendix 2.2

Members of Pregnancy & Newborn Screening Steering Group (At March 2022)

Dr Emilia Crighton	Interim Director of Public Health (Chair)
Ms Sally Amor	Head of Health Improvement, NHS Highland
Dr Catriona Bain	Clinical Director, Obstetrics and Gynaecology
Ms Donna-Maria Bean	Lead Sonographer (Obstetrics & Gynaecology)
Dr Vicki Brace	Consultant Obstetrician
Mr Paul Burton	Information Manager
Mrs Lin Calderwood	National Portfolio Manager
Ms Kim Campbell	Senior Healthcare Scientist
Ms Margaret Cartwright	Sector Laboratory Manager
Dr Elizabeth Chalmers	Consultant Paediatrician
Ms Barbara Cochrane	Metabolic Dietician
Dr Alison Cozens	Consultant in Inherited Metabolic Disorders
Dr Rosemarie Davidson	Consultant Clinical Geneticist
Dr Anne Devanney	Consultant in Paediatric Respiratory Medicine
Dr Catriona Dreghorn	Consultant
Mr Ian Fergus	Site Technical Manager, Diagnostics
Mrs Jaki Lambert	Lead Midwife (Argyll and Bute)
Dr Louise Leven	Consultant Neonatologist
Dr Louisa McIlwaine	Consultant Haematologist
Ms Gill Jess	Clinical Services Manager
Ms Elaine Drennan	Lead Midwife
Ms Angela Watt	Lead Midwife
Dr Gillian Penrice	Consultant in Public Health Medicine
Dr Nicola Schinaia	Consultant, NHS Highland
Mrs Uzma Rehman	Public Health Programme Manager
Mrs Elizabeth Rennie	Screening Programmes Manager

Chapter 3 - Universal Newborn Hearing Screening

Summary

Universal Newborn Hearing screening can detect early permanent congenital hearing impairment in babies as mild and unilateral losses. Of the 10,798 eligible babies, 10,868 were screened, an uptake of 99.3% across all HSCP areas.

1,325 (12%) babies required a second stage follow up and of these, 148 (1.0%) babies were referred to audiology. 49 babies were confirmed with a hearing loss (0.45% of the screened population). 27 had confirmed bilateral hearing loss and 22 babies had confirmed unilateral hearing loss.

Seventy (0.6%) babies did not complete the screening programme, of these 6 parents declined or withdrew consent. The rest included babies who did not attend for screening, 30, are deceased and <5 was contra indicated.

The phrase less than five has been used in line with NHS Scotland information governance which is intended to protect privacy and avoid identifying individuals.

Uptake of Universal Newborn Hearing Screening over 5 years

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Uptake of Universal Newborn Hearing Screening	98.3%	98.8%	98.8%	99%	99.3%

Chapter Contents

4.1. Universal Newborn Hearing Screening

Universal Newborn Hearing screening aims to detect permanent congenital hearing impairment. In addition, babies with mild and unilateral losses are also identified and receive ongoing review.

4.2. Eligible Population

Universal Newborn Hearing screening programme is offered to all newborns by 4 weeks of corrected age. The corrected age is the actual age in weeks plus the number of weeks the baby was preterm. The eligible babies are those whose mothers were registered with a GP practice within the Health Board or resident within the area. The babies excluded are those who died before screening was complete or have not reached the corrected age for screening.

4.3. Screening Tests

Hearing tests are carried out on all babies born in NHS Greater Glasgow and Clyde using the Automated Auditory Brainstem Response (AABR). The screening is completed prior to discharge from hospital or if this is not possible, then an appointment is made at an outpatient clinic.

4.4. Repeat Screens

A second screening test may be required if the baby does not pass the initial test. This can be because the baby was unsettled during the test, there was fluid or a temporary blockage in the ear or the baby has a hearing loss. Detailed screening pathway is shown in Appendix 3.1**.**

4.5. Delivery of NHSGGC Universal Newborn Hearing Screening Programme

The uptake of Newborn Hearing Screening was 99.3% across all areas **(Table 3.1).** Seventy babies did not complete the screening programme.

Table 3.1: NHSGGC Residents Universal Newborn Hearing – Annual Uptake by HSCP, 1 April 2021 to 31 March 2022

HSCP	Eligible	Not Screened	Screened	% screened
East Dunbartonshire	851	5	846	99.4
East Renfrewshire	780	<5	779	99.8
Glasgow North East	1785	16	1769	99.1
Glasgow North West	1834	14	1820	99.2
Glasgow South	2491	17	2474	99.3
Inverclyde	650	7	643	98.9
Renfrewshire	1658	6	1652	99.6
West Dunbartonshire	819	<5	815	99.5
Total	10868	70	10798	99.3

Data provided by the Hearing and Screening service is presented in **Figure 3.2.** Universal Newborn Hearing screening can detect permanent congenital hearing impairment in babies' as well mild and unilateral losses.

1,325 (12%) babies required a second stage follow up and of these, 148 (1.0%) babies were referred to audiology. 49 babies were confirmed with a hearing loss (0.45% of the screened population). 27 had confirmed bilateral hearing loss and 22 babies had confirmed unilateral hearing loss.

70 (0.6%) babies did not complete the screening programme, of these 6 parents declined or withdrew consent. The rest included babies who did not attend for screening, 30, are deceased and 1 was contra indicated. **(Figure 3.2).**

Table 3.2: NHSGGC Residents Universal Newborn Hearing – 10 year uptake trend from 2012/13 – 2021/22

Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
% uptake	97.0%	96.8%	97.6%	98.0%	98.7%	98.3%	98.8%	98.8%	99.0%	99.3%

Figure 3.1 NHSGGC Residents Universal Newborn Hearing – 10 year uptake trend from 2012/13 – 2021/22

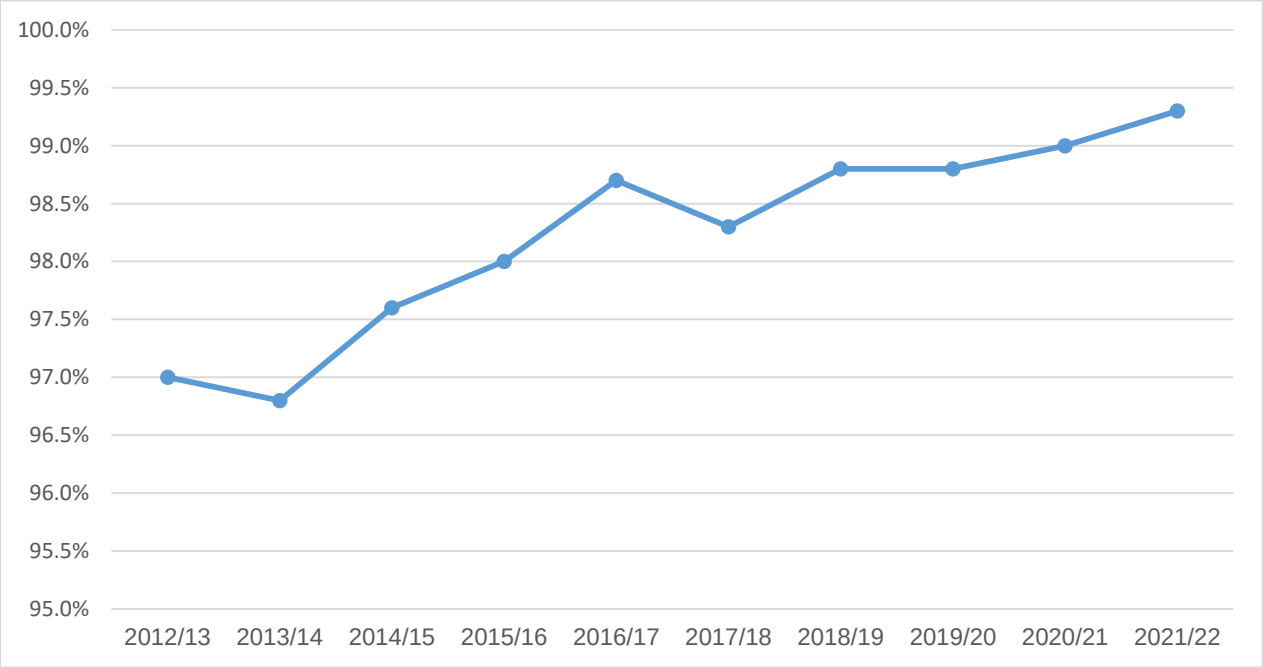
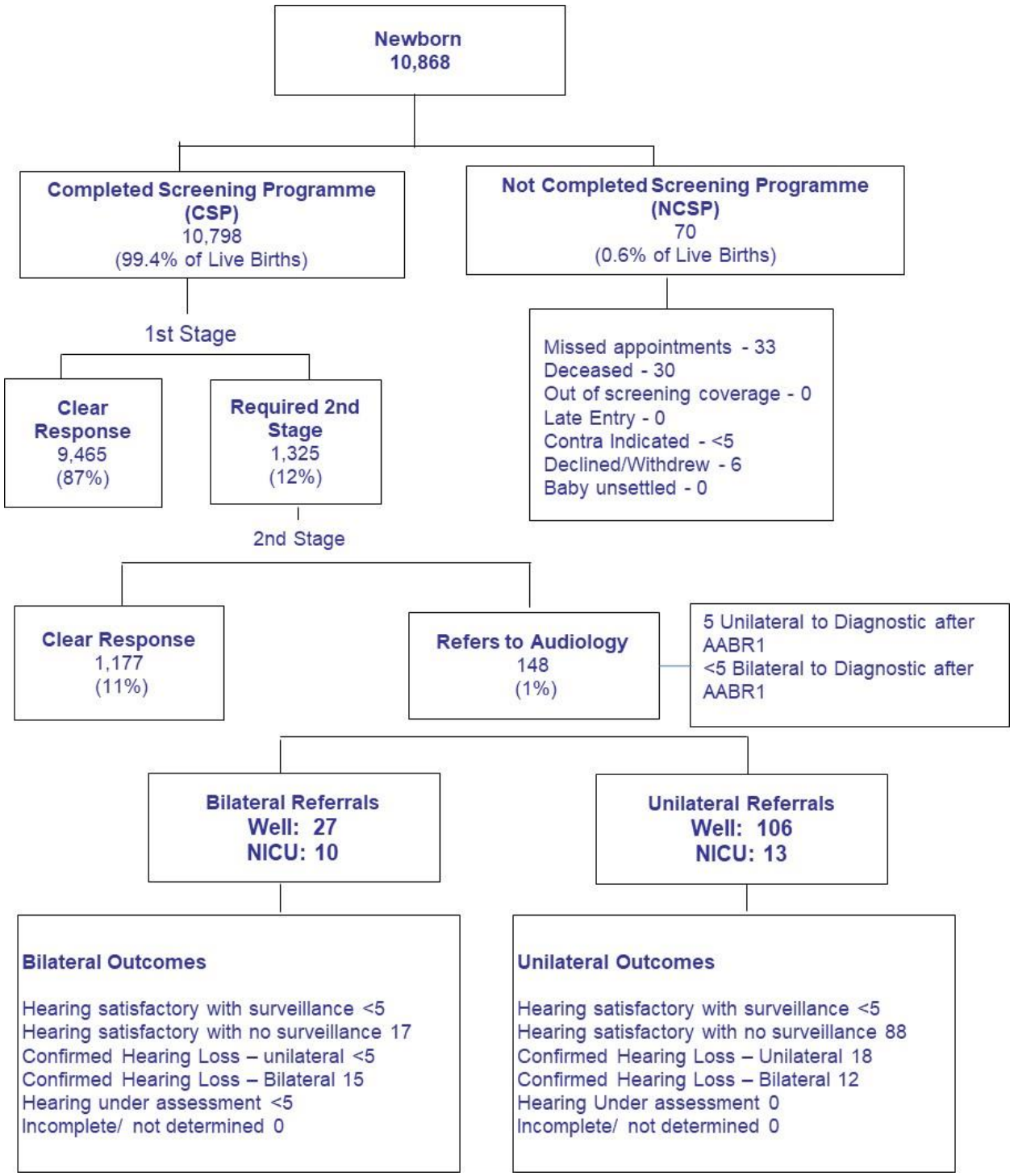


Figure 3.2 Summary of NHSGGC Residents Universal Newborn Hearing Screening activity for period 1 April 2021 to 31 March 2022



*** Contraindicated: Confirmed Hearing Loss (Bilateral ANSD , Bilateral Conductive & Sensorineural , Unilateral Conductive , Unilateral Sensorineural , Bilateral Sensorineural)**

Definitions
1st Stage – is first AABR for Greater Glasgow and the first OAE for Clyde
2nd Stage – is the second AABR for Greater Glasgow and the second OAE and first AABR for Clyde
Results pending – includes all those babies who we are still trying to complete the screen
Incomplete/not completed – are all those babies we cannot complete a screen or diagnostic assessment for i.e. DNAs, deceased, transferred out or moved away etc.
Clear Response – is a pass (though some are followed up due to risk factors)
Hearing Under assessment – all babies who have referred from the screen and their diagnostic assessment is ongoing.

4.6. Universal Newborn Hearing Screening KPIs 2021-22

7.1 The proportion of babies eligible for UNHS for whom the screening process is complete by 4 weeks corrected age	10,798 completed screening i.e. 99.3%	**UNHS: Coverage** Essential ≥ 98% Desirable ≥99.5%
7.4 The proportion of well babies tested using the AABR protocol who do not show a clear response in both ears at AABR1	1,325 required 2nd stage 12%	**UNHS: Test Performance - (3) Referral rate for AABR1 for well babies** Essential ≤15% Desirable ≤12%
7.5 The proportion of babies with a screening outcome who require an immediate onward referral to audiology for a diagnostic assessment	148 referred to Audiology 1.0%	**UNHS: Test Performance - (4) Referral rate to diagnostic audiology assessment** Essential ≤3% Desirable ≤2%
7.6 The proportion of babies with a no clear response result in one or both ears or other result that require an immediate onward referral for audiological assessment who receive an appointment within the required timescale. The required timescale is either 4 weeks of scan completion or by 44 weeks gestational age.	98.7%	**UNHS: Time from screening outcome to initial appointment offered for = audiology assessment** Essential ≥97% Desirable ≥99%
7.7 The proportion of babies with a no clear response result in one or both ears or other result that requires an immediate onward referral for audiological assessment who receive an appointment within the required timescale. The required timescale is either 4 weeks of scan completion or by 44 weeks gestational age.	96.2%	**UNHS: Time from screening outcome to attendance at an audiology assessment appointment** Essential ≥90% Desirable ≥95%

4.7. Information Systems

The Universal Newborn Hearing Screening programme is supported by the Scottish Birth Record (SBR) to deliver hearing screening.

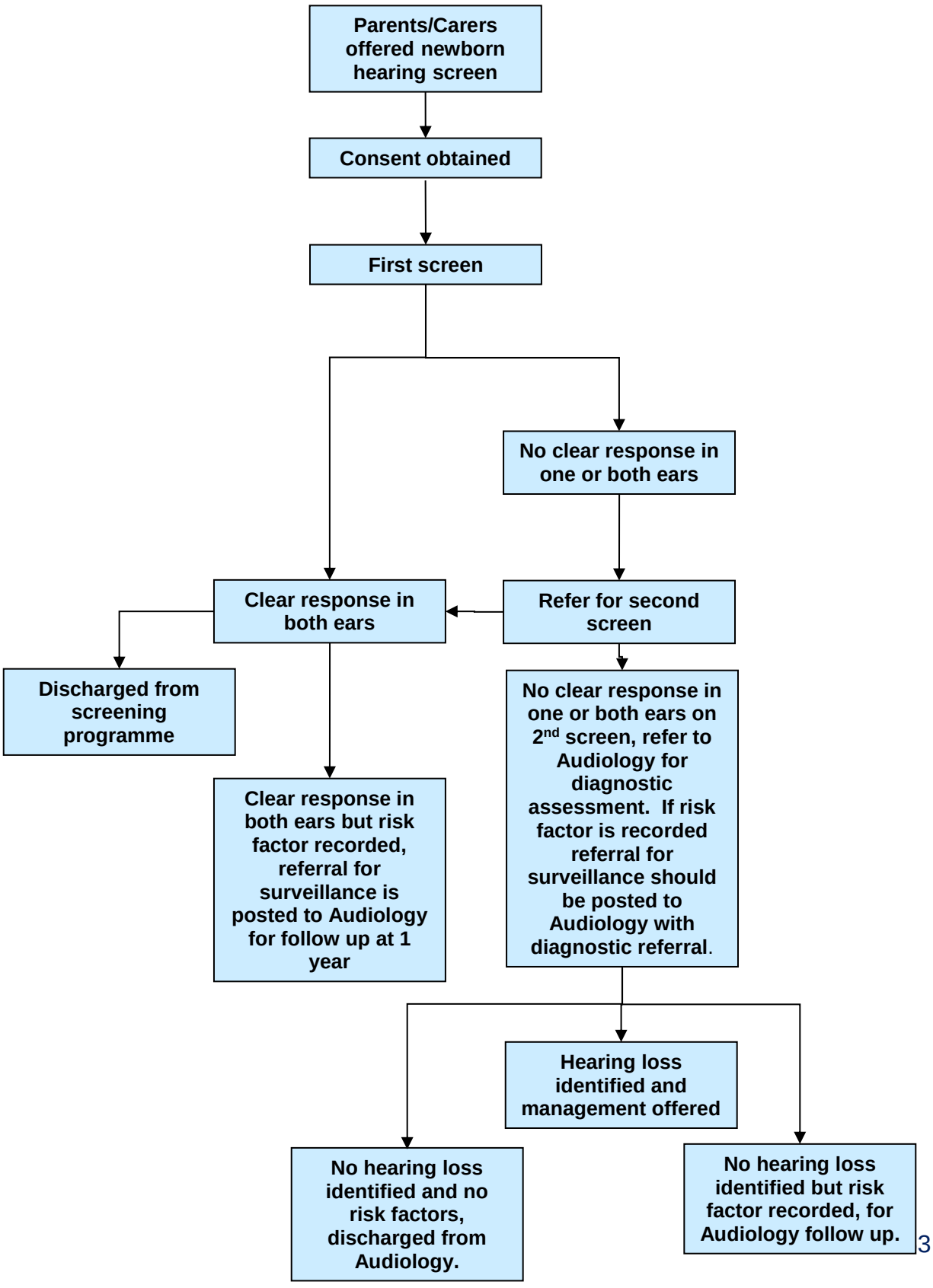
The Child Health Surveillance Programme Pre-School system (CHSP-PS) holds screening outcomes and is used as a failsafe to ensure all babies are offered hearing screening.

4.8. Challenges and Future Priorities

- Meet service KPIs.
- Maintain service performance and ensure that all babies are offered Universal Newborn Hearing Screening to meet national standards and targets.
- Replace old testing equipment across all sites.

Appendix 3.1

NHSGGC Universal Newborn Hearing Screening Pathway



Appendix 3.2

Universal Newborn Hearing Screening Programme Steering Group (At March 2022)

Ms Sally Amor	Public Health NHS Highland
Dr Emilia Crighton	Interim Director of Public Health (Chair)
Mr James Harrigan	Head of Audiology
Ms Janice Heggie	Lead Nurse Neonatal Services
Ms Ainsley Keenan	Screening Manager
Ms Jaki Lambert	Midwife, NHS Highland
Ms Catherine McAleer	Neonatal Screening Manager
Dr Juan Mora	Consultant Audiological Physician
Mrs Julie Mullin	Assistant Programme Manager, Screening Dept
Dr Andrew Powls	Consultant Neonatologist
Mrs Uzma Rehman	Public Health Programme Manager
Mrs Sandra Simpson	Assistant Programme Manager, Screening
Dr Nicola Schinaia	Public Health Consultant, NHS Highland
Ms Jan Smith	Midwife, NHS Highland
Ms Vivien Thorpe	Clinical Scientist
Ms Angela Watt	Lead Midwife
Ms Lorna Young	Midwife, NHS Highland

Chapter 4 - Child Vision Screening

Summary

Pre-school Vision Screening Programme

Vision Screening is routinely offered to all pre-school age children resident in NHS Greater Glasgow and Clyde areas. Vision problems affect 3-6% of children and although obvious squints are easily detected, refractive error and subtle squints often go undetected and long-term vision loss can develop in adulthood. Most problems can be treated using spectacle lenses to correct any refractive error and occlusion therapy to treat strabismus (squint) – mainly using eye patches.

In 2021-22, 12,149 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening. 4,750 (39.1%) of all pre-school children within NHSGGC live in the most deprived quintile. The majority of these children are resident within the Glasgow City sectors 3,444 (72.5%). The uptake of pre-school vision screening was 73.2% (9708) across all HSCP areas. This ranged from 55.4 %(798) in East Renfrewshire to 88.4 % (1698) in Renfrewshire.

The number and percentage of children screened by ethnicity was analysed. The uptake among the White group was 74.2% (3134); and for Asian, Scottish Asian or British Asian 70.7% (325); and for African, Scottish African or British African 80.7% (67).

Overall, 68.8% (6115) children screened had a normal result, this ranged from 60.9% (454) in Glasgow North East to 75.8% (518) in Renfrewshire. Of those screened, 25.1% (2,230) children were referred for further investigations. The referral rates varied from 31.8% (542) in Glasgow South to 17.5% (109) in Renfrewshire. The percentage of children screened that were already attending an eye clinic was 3.8% (337), ranging from 5.1 % (87) in Glasgow South to 1.5% (17) in Glasgow North West.

Of the 8,889 screened during 2021-22, 3,417 (38.4%) were from the most deprived and 1,736 (19.5%) from the least deprived quintile. Deprivation also has an impact on vision and abnormal results following screening. The proportion of children with a normal result (NAD) ranged from 61.3% (2093) among children living in the most deprived areas to 79.3% (1377) in the least deprived area. A significantly larger proportion of children living in the most deprived areas were referred for further assessment, recalled or were already attending a clinic. Of the 2,230 (25.1%) children referred for further assessment, 30.8% (1053) were from the most deprived area compared to 17.2% (298) from the least deprived area.

207 (2.3%) children were recalled back to be screened due to difficulties screening their vision during the first screen. Of the 337 (3.8%) children already attending an eye clinic, 160 (4.7 %) were from the most deprived area.

Primary 7 School Vision Screening Programme

In 2021-22, 12,589 Primary 7 school children were eligible for a vision test of which 10,271 (81.6%) were tested. The highest delivery rate was in Inverclyde 93% (740) and the lowest was in Glasgow South sector at 67.7% (1600). P7 vision screening varied according to SIMD (child) with the uptake in the most deprived quintile recorded as 77.8% (3,656) compared to 85.4% (10,271) in the most affluent areas.

The number and percentage of children screened by ethnicity was analysed. The uptake among the White group was 83.7%(6715); and for Asian, Scottish Asian or British Asian 77.8% (741); and for African, Scottish African or British African 81.6% (168).

Of the 10,271 children screened for vision testing, 19.7% (2025) were already wearing prescription spectacles. The highest percentage wearing glasses was in Renfrewshire 21.6% (381) and the lowest in East Renfrewshire 17.3% (197).

Visual defects identified as part of the primary 7 screening process indicate that Glasgow North East sector had the highest percentage of pupils 31.1% (488) with defects compared to 5.8% (66) in East Renfrewshire.

Of the 10,271 children screened, 8,246 (80.3%) were screened using the Snellen test and 75.4% (6216) of these children were recorded with an acuity of 6/6 which is normal. A follow up with an Optometrist is recommended for children with an acuity worse than 6/9 (if not wearing spectacles) and acuity of 6/12 or worse for those with spectacles.

The highest percentage of children not wearing glasses and identified with poor acuity of 6/9 lived in Glasgow North East sector 30.5 % (382) and the lowest percentage in East Dunbartonshire 4.7% (45).

Glasgow South sector also had the highest percentage 9.3% (119) of children already wearing glasses and identified with poor acuity of 6/12 or worse and East Renfrewshire had the lowest percentage at 2.6% (25).

Pre School and P7 Vision Screening – Trends over 5 years

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Pre-school vision screening uptake	86.8%	85.4%	60.4%	***	73.2%
P7 vision screening uptake	74.4%	66.6%	66%	59.3%	81.6%

*** Due to COVID restrictions, some screening is still in progress in P1. Once that data is available a report will be made available.

Chapter Contents

Pre-school Vision Screening Programme

4.9. Background

Vision Screening is routinely offered to all pre-school age children resident in NHS Greater Glasgow and Clyde areas.

Amblyopia can be caused by either a squint (strabismus) or differences in the focusing power of each eye (refractive error) which results in the brain receiving different images from each eye. If these problems are not treated early in childhood, this can lead to reduced vision in one or, in some cases, both eyes. The screening programme can also detect reduced vision due to other more uncommon causes.

Vision problems affect 3-6% of children and although obvious squints are easily detected, refractive error and subtle squints often go undetected and long-term vision loss can develop in adulthood. Most problems can be treated using spectacle lenses to correct any refractive error and occlusion therapy to treat strabismus (squint) – mainly using eye patches. These treatments can be used alone or in combination. Treatment is most effective when the brain is still developing (in young children) and when the child co-operates in wearing the patch and/or glasses.

The most common cause of poor vision is refractive error.

4.10. Aim of Vision Screening Programmes

The aim of the screening programme is to detect reduced visual acuity, the commonest causes of which are amblyopia and refractive error. There is emerging evidence that good screening and treatment result in lower incidence of significant permanent vision loss.

4.11. Pre-school vision test

The basic screen is a visual acuity test where children are asked to match a line of letters or pictures to a key card or to describe a line of pictures.

4.12. Eligible Population

All children resident in NHS Greater Glasgow and Clyde aged between four and five years are invited to attend screening for reduced vision.

4.13. Pre-school Vision Screening Pathway

The list of eligible children (the school intake cohort for the following year), with dates of birth between 1 March 2014 and 28 February 2015 were downloaded from CHI and matched against the lists received from nurseries.

Pre-school vision screening clinics take place in the nursery setting. Children that do not attend nursery or school or whose nursery is unknown or miss their appointment within the nursery are invited to a hospital Orthoptic clinic to have their vision screened.

A proportion of children require further testing in secondary care following the initial screen. These children are referred for further assessment to a paediatric clinic in an

ophthalmology department, though a small number may be referred to a community optometrist initially. The assessment appointment involves a full eye examination and allows clinicians to identify whether the screen test was a false positive and no further action is required or if the screen test was a true positive to enable the specific disorder to be identified and treated

4.14. Delivery of Pre-school Vision Screening Programme 2021-2022

In 2021-22, 12,149 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening. 4,750 (39.1%) of all pre-school children within NHSGGC live in the most deprived quintile.

The majority of these children are resident within the Glasgow City sectors 3,444 (72.5%) **(Table 4.1).**

Table 4.1. Total number of eligible NHSGGC child residents by HSCP and deprivation for Pre-school Screening

	SIMD Quintile 2016					
	Most deprived				Least deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	42	165	54	242	728	1231
East Renfrewshire	60	128	53	330	584	1155
Glasgow North East	1272	268	177	228	35	1980
Glasgow North West	975	216	172	141	333	1837
Glasgow South	1197	539	292	308	164	2500
Inverclyde	324	103	75	85	106	693
Renfrewshire	472	380	292	279	449	1872
West Dunbartonshire	408	225	121	88	39	881
Total	4750	2024	1236	1701	2438	12149
% of Total	**39.1**	**16.7**	**10.2**	**14.0**	**20.1**	

Source: Child Health - Pre-School Date Extracted: November 2022

The uptake of pre-school vision screening was 73.2% (9708) across all HSCP areas. This ranged from 55.4 %(798) in East Renfrewshire to 88.4 %(1698) in Renfrewshire. **(Table 4.2)**

Not all children eligible for vision screening are registered with a nursery. Those that miss screening in nursery are sent an appointment during the summer holidays to have their vision tested within a community or hospital clinic.

Parents received a letter advising them to take their child to an Optometrist if they had concerns about their vision.

Inverclyde has the highest proportion of children registered with a nursery 91.6% (635) and North West Glasgow the lowest, 67.2% (1235) **(Table 4.2).**

Table 4.2 Number of NHSGGC children eligible for screening, number and percentage registered with a nursery by HSCP

HSCP	Total Population	Total number screened	Total number not screened	% Uptake
East Dunbartonshire	1231	986	*80.1*	*75.1*
East Renfrewshire	1155	798	*69.1*	*55.4*
Glasgow North East	1980	1640	*82.8*	*76.5*
Glasgow North West	1837	1235	*67.2*	*59.9*
Glasgow South	2500	2069	*82.8*	*68.3*
Inverclyde	693	635	*91.6*	*92.1*
Renfrewshire	1872	1698	*90.7*	*88.4*
West Dunbartonshire	881	647	*73.4*	*80.4*
Total	12149	9708	*79.9*	*73.2*

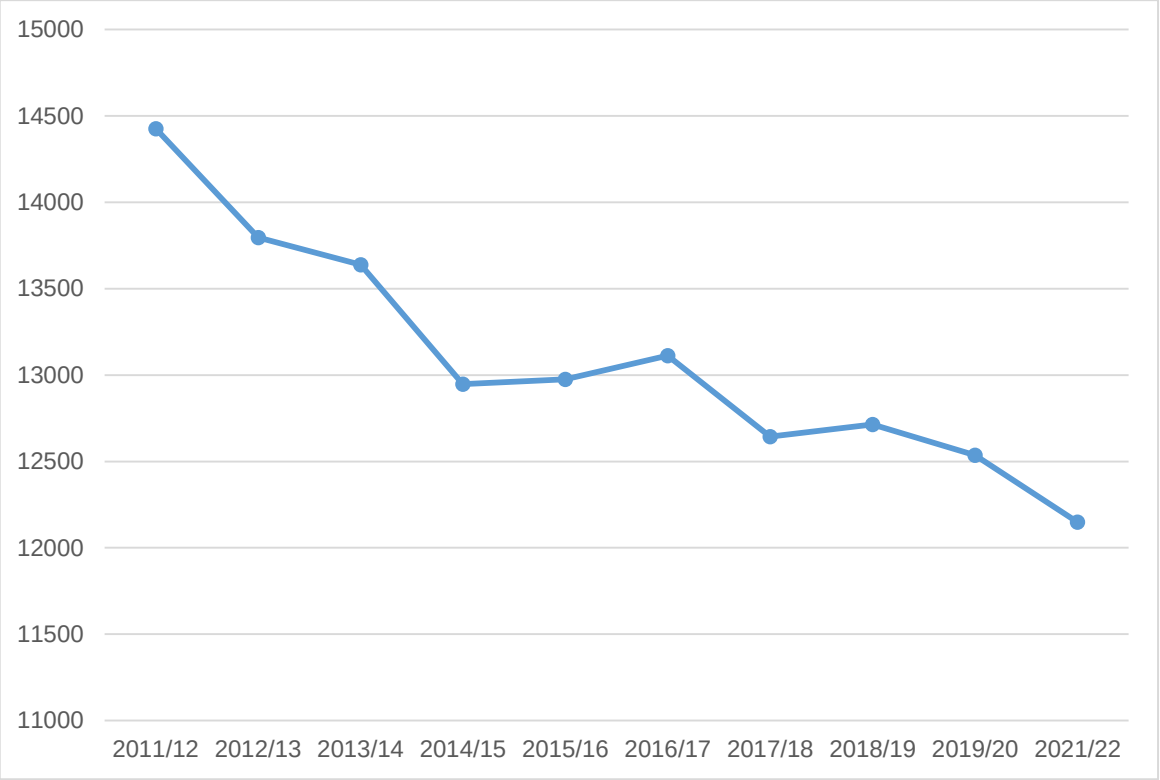
Source: Child Health - PS Date Extracted: Nov 2022

Table 4.3 Number of NHSGGC children eligible for Pre-school vision screening – 10 year trend from 2011/12-2021-22

Year	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2021/ 22
No of eligible children	14425	13795	13638	12947	12975	13112	12644	12714	12536	12149

Note 2020/21 data has not been recorded due to Covid-19 restrictions

Figure 4.1. Number of NHSGGC children eligible for Pre-school screening – 10 year trend from 2011/12-2021-22

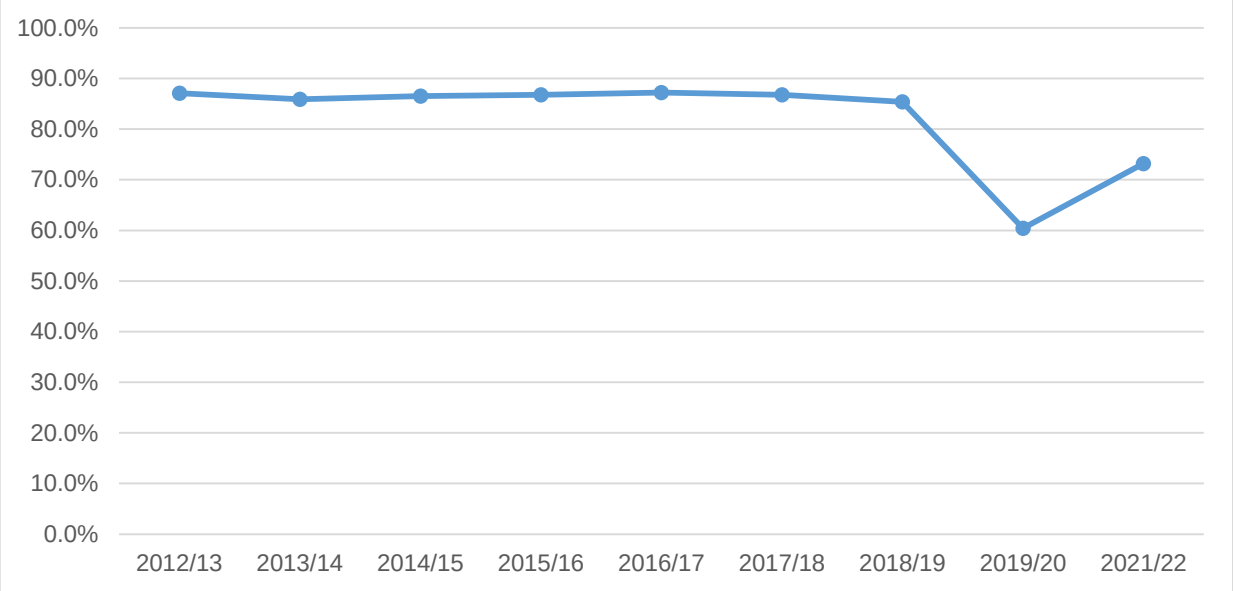


Note: 2020/21 data has not been recorded due to Covid-19 restrictions, the children are being screened in Primary 1 during 2022/2023 and a report will be made available once complete.

Table 4.4 NHS GGC children Pre-school vision screening uptake by percentage – 10 year trend from 2011/12-2021-22

Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2021/22
% uptake	87.1%	85.9%	86.5%	86.8%	87.2%	86.8%	85.4%	60.4%	73.2%

Figure 4.2. Uptake by percentage of NHSGGC Pre School vision children screening – 10 year trend from 2011/12-2021-22



Note: 2020/21 data has not been recorded due to Covid-19 restrictions, the children are being screened in Primary 1 during 2022/2023 and a report will be made available once complete.

The number and percentage of children screened by ethnicity was analysed. The uptake among the White group was 74.2% (3134); and for Asian, Scottish Asian or British Asian 70.7% (325); and for African, Scottish African or British African 80.7% (67). (**Table 4.5**)

Table 4.5 – NHSGGC Pre-school vision screening by ethnic origin 2021-2022

2021 Census Ethnicity Group	Not Screened	Screened	Total	*% Screened*
African, Scottish African or British African	16	67	83	*80.7*
Asian, Scottish Asian or British Asian	135	325	460	*70.7*
Caribbean or Black	8	42	50	*84.0*
Mixed or multiple ethnic groups	51	123	174	*70.7*
NULL	1920	5095	7015	*72.6*
Other ethnic group	43	103	146	*70.5*
White	1087	3134	4221	*74.2*
Grand Total	3260	8889	12149	*73.2*

Source: Child Health - Pre-School, Date Extracted: November 2022

Overall, 68.8% (6115) children screened had a normal result, this ranged from 60.9% (454) in Glasgow North East to 75.8% (518) in Renfrewshire

Of those screened, 25.1% (2,230) children were referred for further investigations. The referral rates varied from 31.8% (542) in Glasgow South to 17.5% (109) in Renfrewshire.

The percentage of children screened that were already attending an eye clinic was 3.8% (337), ranging from 5.1 % (87) in Glasgow South to 1.5% (17) in Glasgow North West **(Table 4.6).**

Table 4.6 Pre-school Vision Screening Uptake and Outcomes by HSCP Area 2021-2022

HSCP	Total number of children screened	No Abnormality Detected (NAD) of those screened	% No Abnormality Detected (NAD) of those screened	Referred of those screened	% Referred of those screened	Recalled of those screened	% Recalled of those screened	Already Attending Eye Clinic	% Already attending Eye Clinic
East Dunbartonshire	925	685	*74.1*	205	*22.2*	15	*1.6*	20	*2.2*
East Renfrewshire	640	476	*74.4*	144	*22.5*	5	*0.8*	15	*2.3*
Glasgow North East	1515	923	*60.9*	470	*31.0*	49	*3.2*	73	*4.8*
Glasgow North West	1101	765	*69.5*	298	*27.1*	21	*1.9*	17	*1.5*
Glasgow South	1707	1045	*61.2*	542	*31.8*	33	*1.9*	87	*5.1*
Inverclyde	638	450	*70.5*	134	*21.0*	31	*4.9*	23	*3.6*
Renfrewshire	1655	1255	*75.8*	289	*17.5*	37	*2.2*	74	*4.5*
West Dunbartonshire	708	516	*72.9*	148	*20.9*	16	*2.3*	28	*4.0*
Total	8889	6115	*68.8*	2230	*25.1*	207	*2.3*	337	*3.8*

Source: Child Health - Pre-School Date Extracted: Nov 2022

Of the 8,889 screened during 2021-22, 3,417 (38.4%) were from the most deprived and 1,736 (19.5%) from the least deprived quintile.

Deprivation also has an impact on vision and abnormal results following screening. The proportion of children with a normal result (NAD) ranged from 61.3% (2093) among children living in the most deprived areas to 79.3% (1377) in the least deprived area.

A significantly larger proportion of children living in the most deprived areas were referred for further assessment, recalled or were already attending a clinic. Of the 2,230 (25.1%) children referred for further assessment, 30.8% (1053) were from the most deprived area compared to 17.2% (298) from the least deprived area.

207 (2.3%) children were recalled back to be screened due to difficulties screening their vision during the first screen.

Of the 337 (3.8%) children already attending an eye clinic, 160 (4.7 %) were from the most deprived area **(Table 4.7).**

Table 4.7 Pre-school Vision Screening Uptake and Outcomes by SIMD 2021-22

SIMD	Number of Children Screened	No Abnormality Detected (NAD)	*% NAD*	Referred	*% Referred*	Recall	*% Recall*	Already attending clinic	*% Already Attending Clinic*
1 (Most Deprived)	3417	2093	*61.3*	1053	*30.8*	111	*3.2*	160	*4.7*
2	1529	1030	*67.4*	404	*26.4*	32	*2.1*	63	*4.1*
3	954	697	*73.1*	207	*21.7*	19	*2.0*	31	*3.2*
4	1253	918	*73.3*	268	*21.4*	21	*1.7*	46	*3.7*
5 (Least Deprived)	1736	1377	*79.3*	298	*17.2*	24	*1.4*	37	*2.1*
Total	8889	6115	*68.8*	2230	*25.1*	207	*2.3*	337	*3.8*

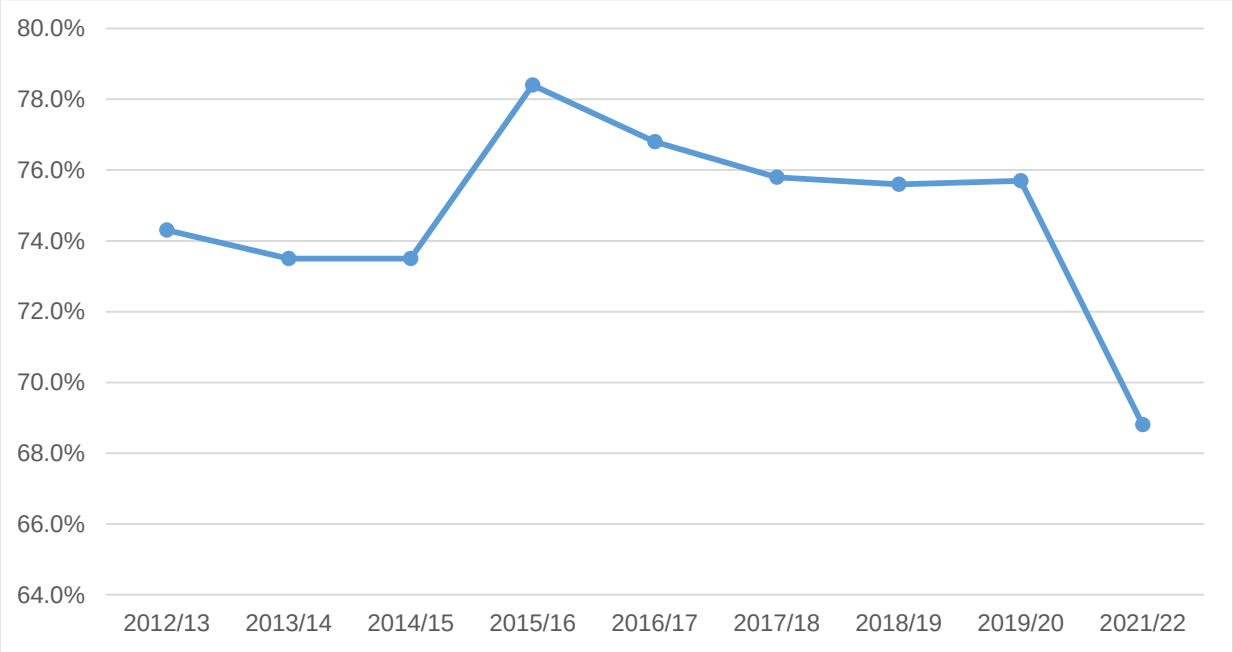
Source: Child Health Pre-School November 2022

Table 4.8 Percentage of children screened who had No Abnormality Detected – 10 year trend from 2011/12-2021-22

Year	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2021/22
% No visual defect	74.3%	73.5%	73.5%	78.4%	76.8%	75.8%	75.6%	75.7%	68.8%

Note 2020/21 data has not been recorded due to Covid-19 restrictions

Figure 4.3. % of screened children who had No Abnormality Detected – 10 year trend from 2011/12-2021-22



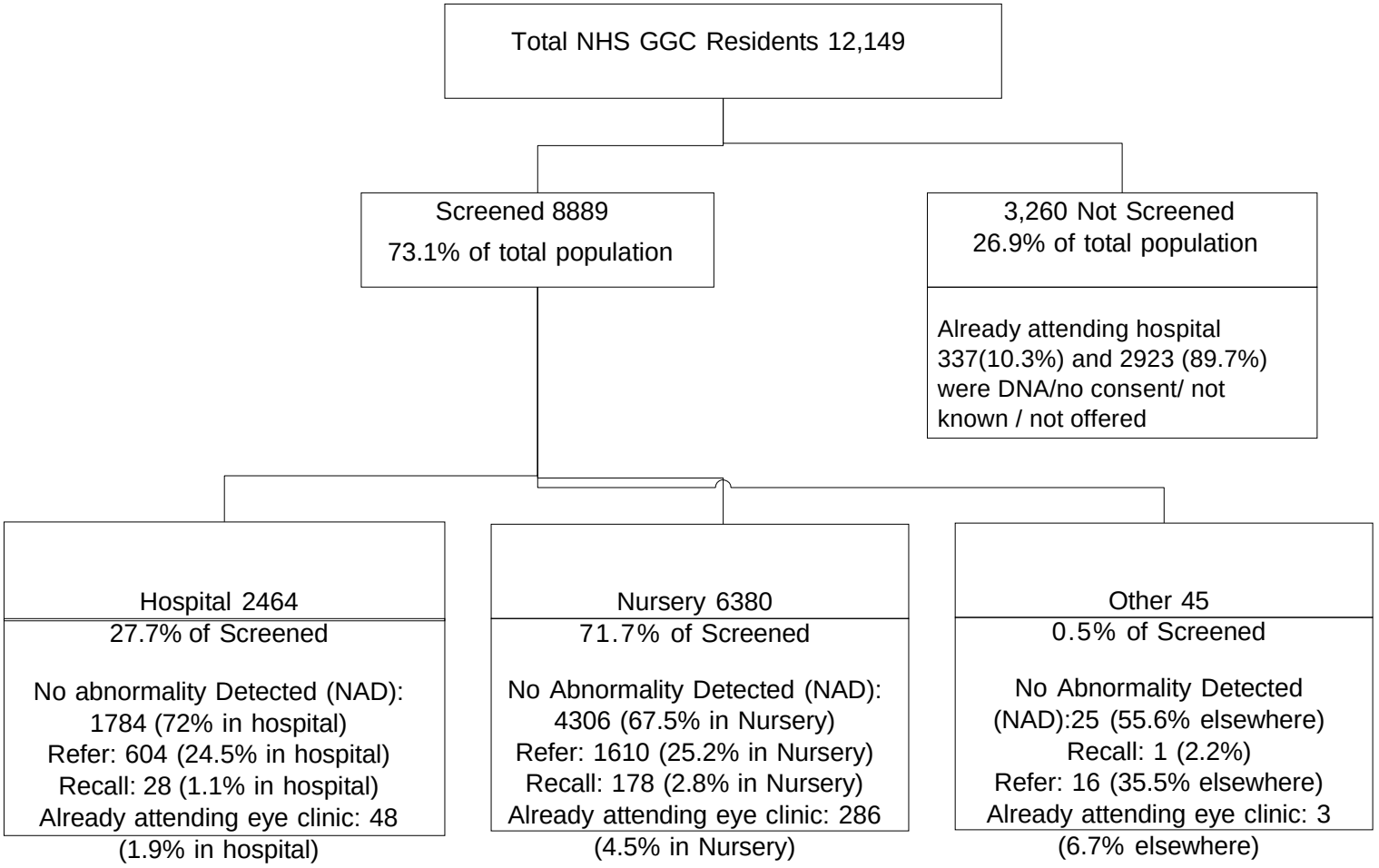
Note: 2020/21 data has not been recorded due to Covid-19 restrictions, the children are being screened in Primary 1 during 2022/2023 and a report will be made available once complete

The Pre-school vision screening summary of activity for the service in NHS Greater Glasgow and Clyde for the school year 2021/22 is in Figure 4.1.

6,380 children were screened in Nurseries and 4,306 (67.5%) had a normal result, 1,610 (25.2%) were referred and 286 (4.5%) were already attending an eye clinic.

Those not screened in nursery were invited to attend the hospital based service. 2,464 (27.7%) children were screened within a hospital setting, 1,784 (72.4%) had a normal result, 604 (24.5%) were referred and 48 (1.9%) were already attending an eye clinic.

Figure 4.4 Summary of NHSGGC Pre-School Vision Screening Activity 2021-2022



Source: Child-Health-Pre-School
Data extracted: November 2022

Primary 7 School Vision Screening Programme

4.15. P7 Eligible Population

School children in Primary 7 resident in NHSGGC are offered a vision test prior to transfer to secondary education.

4.16. P7 Vision Test

A visual acuity test is carried out where children are asked to identify a line of letters using a Snellen chart or Log mar if a child is unable to manage a Snellen chart. Testing is also carried out on children who already have glasses.

4.17. P7 Vision Screening Pathway

P7 vision screening takes place in school and is carried out by a Healthcare Support Worker. Children that do not attend school or miss their appointment within the school are advised to attend their local community optometrist.

Parents/carers are issued with result letter.

The referral pathway for those with abnormal results is to the local community optometrist:

- Parent/carer is given a referral letter to take to their local community optometrist for further examination if a child's visual acuity without glasses is 6/9 or poorer in one or both eyes or with glasses is 6/12 or poorer in the better eye.

- Children who have specific visual abnormalities leading to visual impairment, if not already known are also referred to a community paediatrician.

- If a child has a sudden onset squint, the School Nurse, GP and parent will be informed on the same day as this can be associated with more serious illness which needs urgent assessment and management.

4.18. Delivery of Primary 7 School Vision Screening Programme 2021 to 2022

In 2021-22, 12,589 Primary 7 school children were eligible for a vision test of which 10,271 (81.6%) were tested. The highest delivery was in Inverclyde 93% (740) and the lowest was in Glasgow South sector at 67.7% (1600). **(Table 4.10).**

Table 4.9 NHSGGC Primary 7 vision screening tests by HSCP, 2021-2022

HSCP (School)	Not Screened	Screened	Total	% Uptake
East Dunbartonshire HSCP	169	1197	1366	*87.6*
East Renfrewshire HSCP	309	1141	1450	*78.7*
Glasgow North East Sector	285	1568	1853	*84.6*
Glasgow North West Sector	407	1472	1879	*78.3*
Glasgow South Sector	765	1600	2365	*67.7*
Inverclyde HSCP	56	740	796	*93.0*
Renfrewshire HSCP	173	1761	1934	*91.1*
West Dunbartonshire HSCP	154	792	946	*83.7*
Total	2318	10271	12589	*81.6*

Source: CHSP_PS, May 2022

Table 4.10 NHSGGC number of children - Primary 7 vision tests – 2015-2022

Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Total number screened	11780	12166	11807	12503	12427	11566	12589

Figure 4.5 NHSGGC Primary 7 vision screening tests – 2015-2022

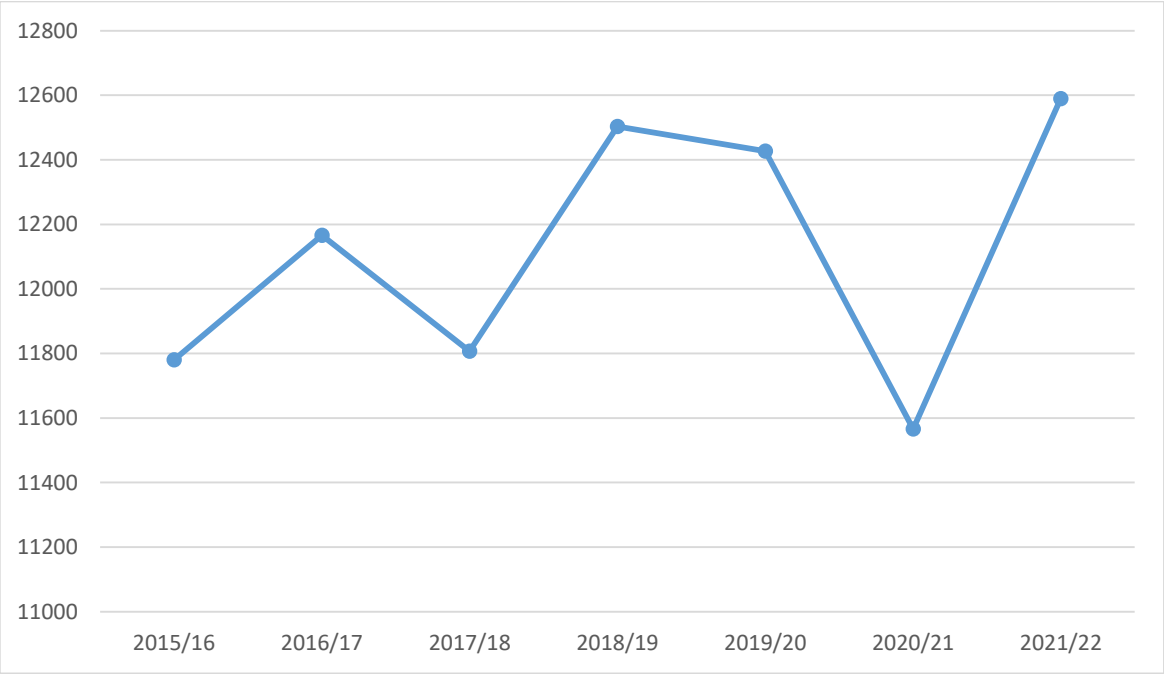
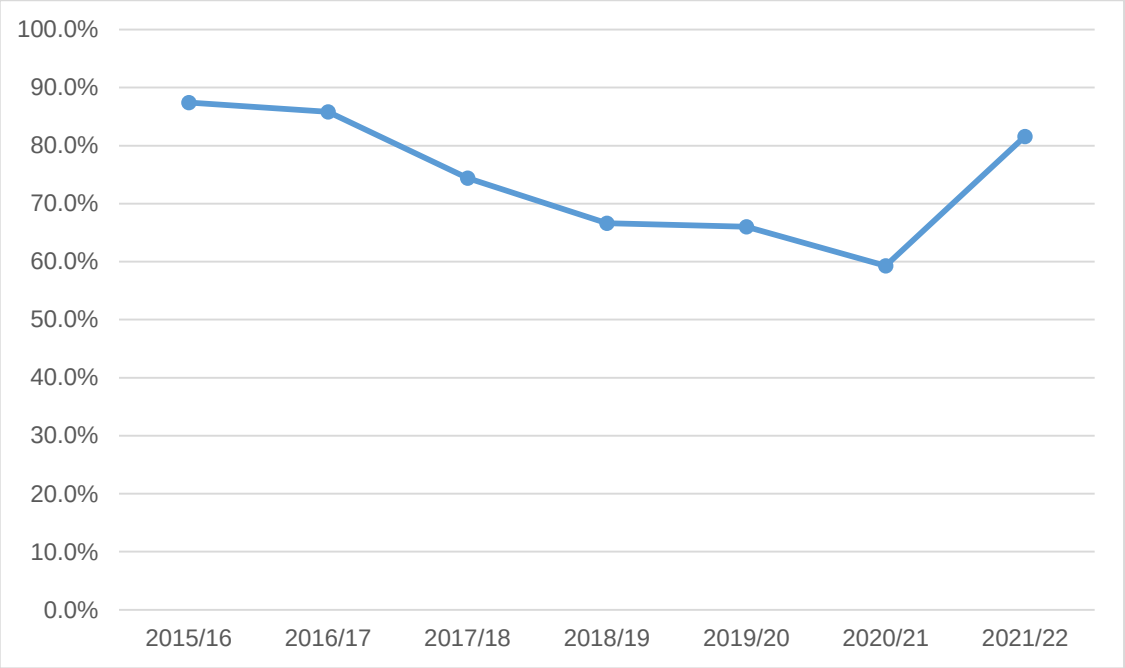


Table 4.11 NHSGGC Primary 7 vision screening tests percentage – 2015-2022

Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Uptake %	87.4%	85.8%	74.4%	66.6%	66.0%	59.3%	81.6%

Figure 4.6 NHSGGC Primary 7 vision screening uptake percentage – 2015-2022



The number and percentage of children screened by ethnicity was analysed. The uptake among the White group was 83.7%(6715); and for Asian, Scottish Asian or British Asian 77.8% (741); and for African, Scottish African or British African 81.6% (168). (**Table 4.12**)

Table 4.12 NHSGGC P7 screening uptake by ethnicity – 2021-2022

2021 Census Ethnicity Group	Not Screened	Screened	Total	% Uptake
African, Scottish African or British African	38	168	206	*81.6*
Asian, Scottish Asian or British Asian	212	741	953	*77.8*
Caribbean or Black	17	65	82	*79.3*
Mixed or multiple ethnic groups	61	194	255	*76.1*
NULL	630	2245	2875	*78.1*
Opt out, Not known	9	21	30	*70.0*
Other ethnic group	39	122	161	*75.8*
White	1312	6715	8027	*83.7*
Grand Total	2318	10271	12589	*81.6*

Source: CHSP_PS, October 2022

P7 vision screening varied according to SIMD (child) with the uptake in the most deprived quintile recorded as 77.8% (3,656) compared to 85.4% (10,271) in the most affluent areas. **(Table 4.13)**

Table 4.13 NHSGCC Primary 7 Vision Screening tests by SIMD (child) 2021-2022

SIMD Quintile 2016 (Child)	**Not Screened**	**Screened**	**Total**	**% Uptake**
1 (Most Deprived)	1044	3656	4700	*77.8*
2	429	1818	2247	*80.9*
3	220	1067	1287	*82.9*
4	237	1465	1702	*86.1*
5 (Least Deprived)	388	2265	2653	*85.4*
Total	2318	10271	12589	*81.6*

Source: CHSP_PS, October 2022

Of the 10,271 children screened for vision testing, 19.7% (2025) were already wearing prescription spectacles. The highest percentage wearing glasses was in Renfrewshire 21.6% (381) and the lowest in East Renfrewshire 17.3% (197). **(Table 4.14).**

Table 4.14 NHSGGC schools primary 7 vision screening tests pupils already wearing spectacles 2021-2022

HSCP (School)	No Spectacles	Spectacles	Total	% Spectacles
East Dunbartonshire HSCP	949	248	1197	*20.7*
East Renfrewshire HSCP	944	197	1141	*17.3*
Glasgow North East Sector	1251	317	1568	*20.2*
Glasgow North West Sector	1207	265	1472	*18.0*
Glasgow South Sector	1279	321	1600	*20.1*
Inverclyde HSCP	586	154	740	*20.8*
Renfrewshire HSCP	1380	381	1761	*21.6*
West Dunbartonshire HSCP	650	142	792	*17.9*
Total	8246	2025	10271	*19.7*

Source: CHSP_PS, October 2022

Visual defects identified as part of the primary 7 screening process indicate that Glasgow North East sector had the highest percentage of pupils 31.1% (488) with defects compared to 5.8% (66) in East Renfrewshire (**Table 4.15)**

Table 4.15 NHSGGC primary 7 vision screened pupils & visual defect identified 2021-2022

HSCP (School)	No Visual Defect	Visual Defect	Total	*% Visual Defect*
East Dunbartonshire	1114	83	1197	*6.9*
East Renfrewshire	1075	66	1141	*5.8*
Glasgow North East Sector	1080	488	1568	*31.1*
Glasgow North West Sector	1150	322	1472	*21.9*
Glasgow South Sector	1167	433	1600	*27.1*
Inverclyde	617	123	740	*16.6*
Renfrewshire	1465	296	1761	*16.8*
West Dunbartonshire	589	203	792	*25.6*
Total	8257	2014	10271	*19.6*

Source: CHSP_PS, Oct 2022

Visual defects were recorded as 27.8% (1015) in children from the most deprived quintile compared to the most affluent quintile 9.1% (206) (**Table 4.16)**

Table 4.16 NHSGGC primary 7 vision tests pupils by SIMD 2021-2022: visual defect identified

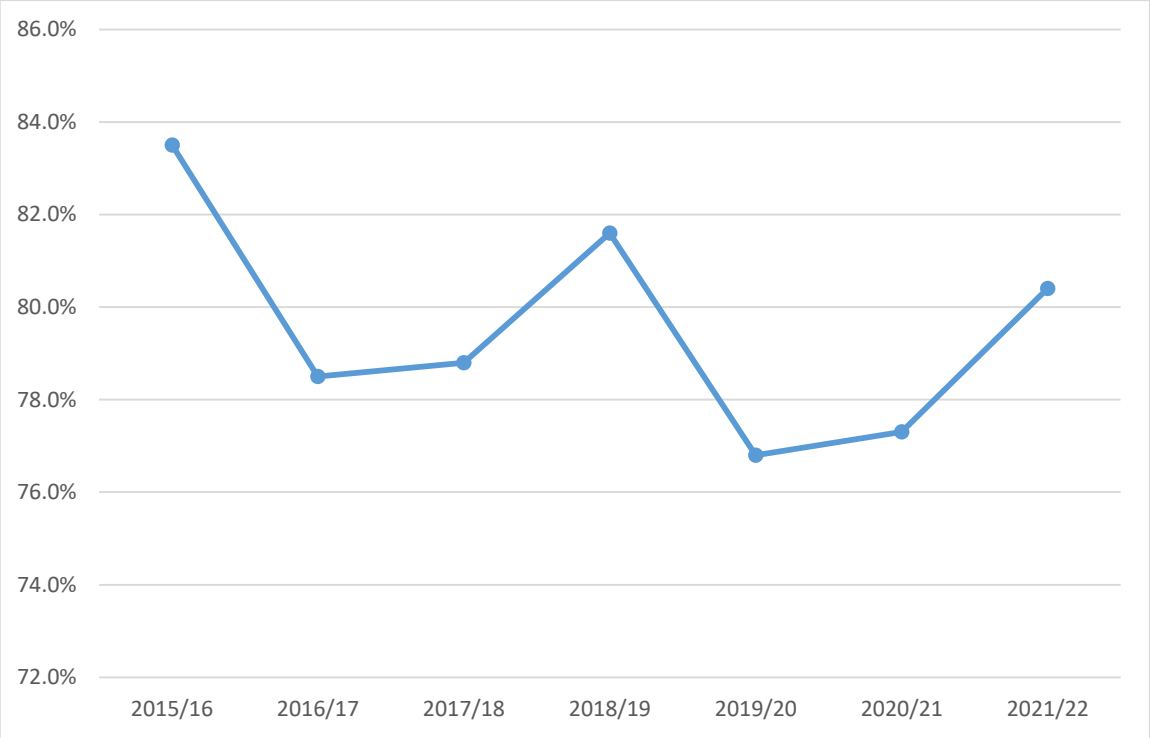
SIMD Quintile (Child)	No visual Defect	Visual Defect	Total	% Visual defect identified
1 (Most Deprived)	2641	1015	3656	*27.8*
2	1442	376	1818	*20.7*
3	857	210	1067	*19.7*
4	1258	207	1465	*14.1*
5 (Least Deprived)	2059	206	2265	*9.1*
Total	8257	2014	10271	*19.6*

Source: CHSP_PS, Oct 2022

Table 4.17 NHSGGC primary 7 vision tests: percentage of pupils with No Visual Defect 2015-2022:

Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
% No visual defect	83.5%	78.5%	78.8%	81.6%	76.8%	77.3%	80.4%

Figure 4.7 NHSGGC primary 7 vision tests: percentage of pupils with No Visual Defects 2015-2022:



Of the 10,271 children screened, 8,246 (80.3%) were screened using the Snellen test and 75.4% (6216) of these children were recorded with an acuity of 6/6 which is normal. A follow up with an Optometrist is recommended for children with an acuity worse than 6/9 (if not wearing spectacles) and acuity of 6/12 or worse for those with spectacles.

The highest percentage of children not wearing glasses and identified with poor acuity of 6/9 lived in Glasgow North East sector 30.5 % (382) and the lowest percentage in East Dunbartonshire 4.7% (45).

Glasgow South sector also had the highest percentage of 9.3% (119) of children already wearing glasses and identified with poor acuity of 6/12 or worse and East Renfrewshire had the lowest percentage at 2.6% (25) (**Table 4.18).**

Table 4.18 NHSGGC residents primary 7 vision tests pupils 2021:2022 poor acuity identified

HSCP (School)	Total Number of children Screened	Snellen Test	% Snellen Test	Acuity 6/6	% Acuity 6/6	Acuity 6/9	% Acuity 6/9	Acuity 6/12 or worse	% Acuity 6/12 or worse
East Dunbartonshire	1197	949	*79.3*	865	*91.1*	45	*4.7*	39	*4.1*
East Renfrewshire	1141	944	*82.7*	872	*92.4*	47	*5.0*	25	*2.6*
Glasgow North East	1568	1251	*79.8*	763	*61.0*	382	*30.5*	106	*8.5*
Glasgow North West	1472	1207	*82.0*	885	*73.3*	222	*18.4*	100	*8.3*
Glasgow South	1600	1279	*79.9*	843	*65.9*	317	*24.8*	119	*9.3*
Inverclyde	740	586	*79.2*	464	*79.2*	84	*14.3*	38	*6.5*
Renfrewshire	1761	1380	*78.4*	1079	*78.2*	222	*16.1*	79	*5.7*
West Dunbartonshire	792	650	*82.1*	445	*68.5*	171	*26.3*	34	*5.2*
Total	10271	8246	*80.3*	6216	*75.4*	1490	*18.1*	540	*6.5*

Source: CHSP_PS, November 2020

4.19. P7 Child Health Screening Information Systems

Child Health Surveillance System–Preschool (CHS-PS) currently supports the delivery of the pre-school vision screening programme across NHS Greater Glasgow and Clyde. School vision testing is supported by the Child Health Surveillance System-School (CHS-S). Both CHS-PS and CHS-S are being re-procured by NHS Scotland.

4.20. Pre-school and P7 Vision Screening Challenges and Future Priorities

- Ensure the co-operation of all nurseries to allow screening to take place taking into account GDPR requirements. Uptake is far higher in children who attend nursery compared to those not in nursery who are asked to attend hospital.

- Work with NHS Scotland and other boards to ensure the safe and effective continuity of vision screening activities during a change of IT systems.

Appendix 4.1

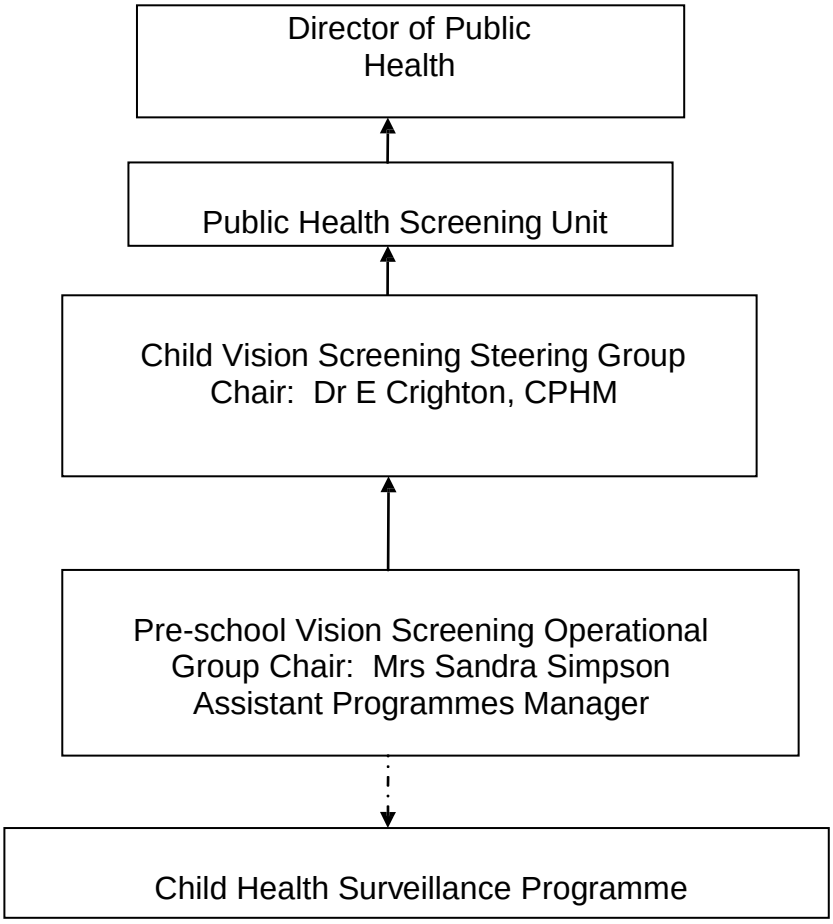
Members of Child Vision Screening Steering Group (March 2022)

Dr Emilia Crighton	Interim Director of Public Health (chair)
Mr Gordon Simpson	Optometrist
Mr Paul Burton	Information Manager
Mrs Sandra Simpson	Assistant Screening Programme Manager
Mrs Patricia Mackay	Team Lead Children & Families, South Glasgow
Mrs Carolyn MacLellan	Lead Orthoptist
Ms Arlene Polet	Children's & Families Team Lead, Inverclyde
Mrs Uzma Rehman	Programme Manager, Public Health
Mrs Diane Russell	Lead Orthoptist
Ms Elaine Salina	Principal Optometrist

Appendix 4.2

Reporting Structure

Child Vision Screening Steering Group



Key:

_____ Direct Reports

- - - - - - - Network Link

Section 2

Adult Screening

Chapter 5 - Abdominal Aortic Aneurysm (AAA) Screening

Summary

An abdominal aortic aneurysm (AAA) is a dilatation of the aorta within the abdomen where the aortic diameter is 3.0 cm or more. Aneurysms are strongly linked to increasing age, hypertension, smoking, other vascular disease and a positive family history of AAA.

The aim of AAA screening is the early detection and elective repair of asymptomatic AAA in order to prevent spontaneous rupture. Screening is associated with a 40% reduction in aneurysm related mortality. All men aged 65 years in the NHSGGC area are invited to attend AAA screening by a single ultrasound examination. Men aged over 65 years of age are able to self-refer to the programme.

During the period 2021-2022, the total number men eligible was 6,979 and 5,365 were screened (76.9%). The essential threshold for screening uptake (75%) was met overall in NHSGGC, however uptake among men residing in the most deprived areas was below this threshold at 70.2%, compared to uptake among men residing in the least deprived areas (84.8%). In NHSGGC the uptake of screening has been slowly falling across the last four years.

Uptake of AAA screening among eligible population in NHSGGC and Scotland: 2017-18 – 2021-2022*

	2017/18	2018/19	2019/20	2020/21	2021/22*
GGC	80.1	81.2	80.4	78.5	76.9
Scotland	84.5	84.4	82.8	78.0	
Essential Threshold	75	75	75	75	75

Source: Scottish Abdominal Aortic Aneurysm (AAA) screening programme statistics
*AAA application, September 2022, GGC statistics only

The majority of eligible men (79.9%) were of Scottish ethnic origin**.** Uptake of AAA screening differs between ethnic groups, with uptake variable across groups. However, due to low numbers in some ethnic groups it is not possible to directly compare programme uptake across ethnic subgroups.

Uptake of screening amongst those registered with learning disability (as identified in the 2018 Learning Disability Register) was lower than the rest of the population, 67.4% compared to 76.9%. Uptake of screening amongst those with enduring mental health issues (indicated by those registered on PsyCIS who have had at least one episode of psychosis) was also lower than in the rest of the population, 59.1% compared to 77.0%. However, for both of these measures the number of men of screening age and registered in either of these cohorts was small at less than 100, so these uptake figures should be interpreted with caution.

Screening identified 52 men (1.0%) with an enlarged aorta (≥3cm). Of these, 46 men (88.4%) had a small aneurysm (aorta measuring between 3cm to 4.49cm), requiring annual surveillance scans. Less than 5 men had a medium aneurysm requiring 3 monthly surveillance scans, and less than 5 men were found to have a large aneurysm (measuring 5.5 cm or more), requiring surgical assessment and intervention.

The Mortality and Incident Audit was established in autumn 2018 and all relevant cases since the programme began in 2013 were reviewed following national guidance.

The standards for the Scottish AAA Screening Programme state that:

- The screening & surveillance history of men, who died of a ruptured aortic aneurysm, is reviewed and discussed by the collaborative screening centre multidisciplinary team, and
- The mortality rate due to ruptured abdominal aortic aneurysm among men who were screened negative and discharged from the programme is recorded and an action plan implemented

To comply with these criteria, an analysis of deaths due to ruptured AAA's from September 2021-September 2022 was undertaken. A total of 11 men were identified with cause of death attributed to ruptured AAA, and a further 13 cases were identified from emergency aneurysm repair for ruptured aortic aneurysm. Following review of all these cases, no deficiencies in the screening programme were identified and no further investigation of cases was required.

2021-22 was a recovery period for the AAA screening programme, following a pause in screening in 2020 due to the pandemic. During this recovery period the screening service prioritised surveillance scans for those identified with aneurysm and worked to clear the backlog of screening scans from the pause in the programme. During this period the programme gradually returned to the venues across the region which were closed to screening during the pandemic.

Chapter Contents

5.1. Background

An abdominal aortic aneurysm (AAA) is a dilatation of the aorta within the abdomen where the aortic diameter is 3.0 cm or more. Aneurysms are strongly linked to increasing age, hypertension, smoking, other vascular disease and a positive family history of AAA.

It is estimated that almost 5% of the male population of Scotland aged 65 to 74 years of age will have an AAA[1]. It is less common in men and women under aged 65 years. When an AAA ruptures less than half of patients will reach hospital alive. When an operation is possible, mortality from ruptured AAA is around 40% despite surgical intervention[2].

5.2. Aim of the Screening Programme and Eligible Population

The aim of AAA screening is the early detection and elective repair of symptomatic AAA in order to prevent spontaneous rupture. Screening is associated with a 40% reduction in aneurysm related mortality.

AAA screening was implemented across NHS Greater Glasgow and Clyde in February 2013. The performance and quality of the programme is monitored via defined National AAA Screening Standards[3] and Key Performance Indicators (KPIs)[4].

All men aged 65 years who are resident in the NHSGGC area are invited to participate in the AAA screening programme. Men aged over 65 years of age are able to self-refer to the programme.

5.3. Screening Test and Screening Pathway

The screening test involves a single abdominal scan using a portable ultrasound machine. The AAA IT application is used to appoint and manage the patient through the screening pathway. The application obtains the demographic details of the participants by linking with the Community Health Index (CHI). Screening currently takes place in the New Victoria Hospital, New Stobhill Hospital, West Glasgow Ambulatory Care Hospital, Golden Jubilee Hospital, Renfrew Health Centre, Greenock Health Centre and Vale of Leven Hospital.

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[1] 20207-AAAinScotlandBriefingSheet.pdf (healthscotland.com) (Accessed Oct 2022)

[2] Bown MJ, Sutton AJ, Bell PRF, Sayers RD. A meta-analysis of 50 years of ruptured abdominal aortic aneurysm repair. BJS. 2002;89(6):714-30

[3] Healthcare Improvement Scotland, Abdominal aortic aneurysm (AAA) screening standards June 2021 (Accessed Oct 2022)

[4] Guidance and information on the Key Performance Indicators (KPIs) for the Abdominal Aortic Aneurysm screening programme Publication date: 1 March 2022 V1.5 (Accessed Oct 2022)

Individuals whose aortic diameter is less than 3.0 cm are discharged. Individuals with a positive result from screening (AAA dimensions between 3.0 and 5.4 cm) will be offered appropriate interval surveillance scanning and treatment. Men with clinically significant AAA (over 5.5 cm) will be referred to secondary care for assessment. **Appendix 5.1** summarises the patient pathways**.**

Individuals with an AAA over 5.5 cm are assessed in vascular surgical outpatient clinics to assess willingness and fitness for either surgery or for referral to interventional radiological services for assessment for endovascular aneurysm repair (EVAR). There is multidisciplinary team decision making for aneurysm patients (both screened and unscreened). Some patients will not go on to have an intervention, mainly due to fitness for surgery or a preference for no intervention after consultation and assessment.

Sometimes an image cannot be achieved if, for example, an individual has a high BMI, large abdominal girth, bowel gas or has had previous surgery. These can cause issues with visualisation of the aorta thus preventing accurate measurements and image capture using ultrasound. If an image cannot be achieved after two appointments the individual will be discharged from the programme and referred to Vascular Services for management locally.

5.4. Programme Performance and Delivery

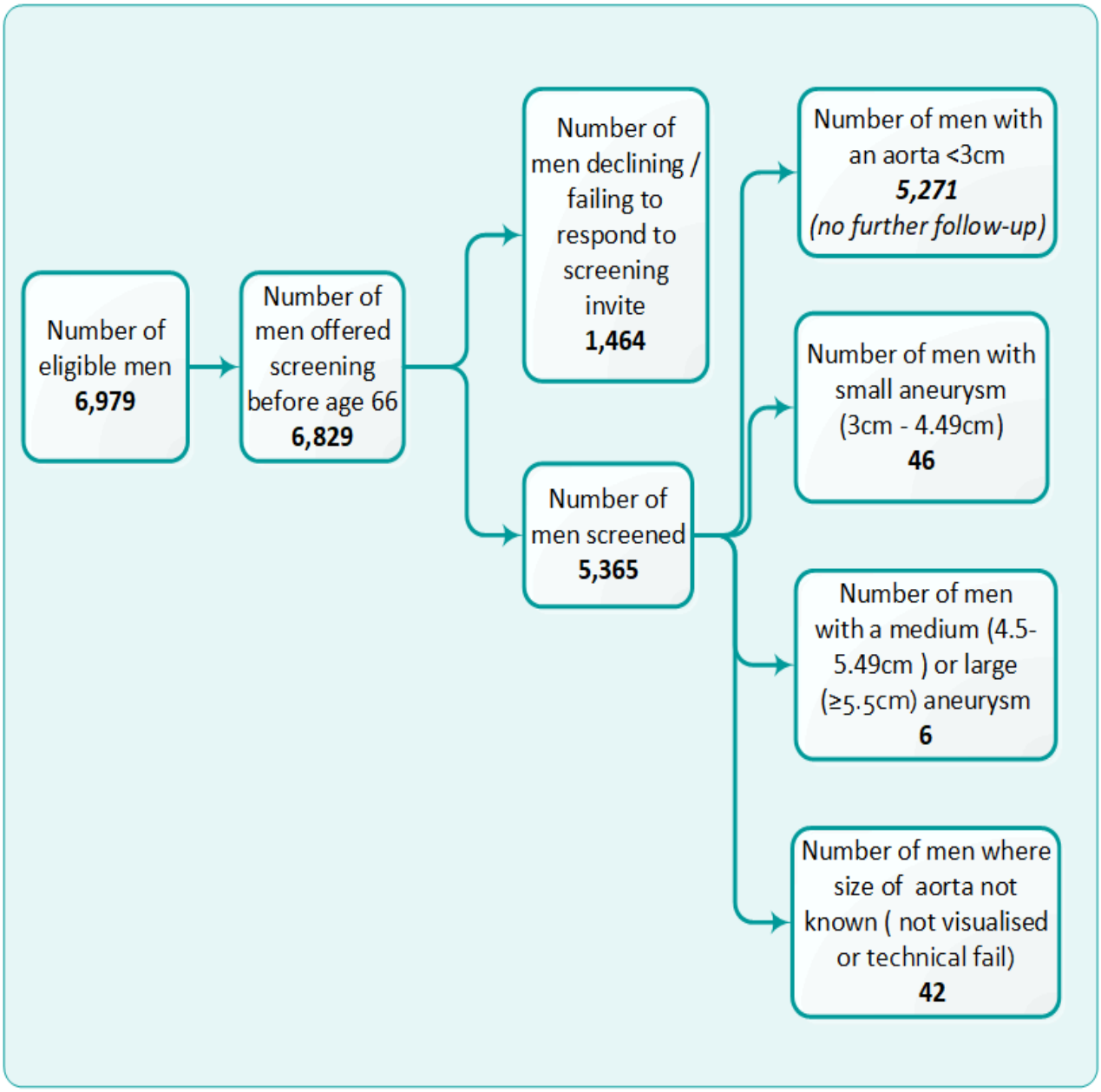
National AAA programme statistics are published by Public Health Scotland in March each year reflecting the previous year activity. **Appendix 5.2** summarises AAA Key Performance Indicators (KPIs) for NHSGGC for the periods 2019 to 2021. The latest data for the year to the end of March 2021 covers the COVID-19 pandemic period and reflects the delays in appointments and treatment that many services experienced at that time. This is discussed more fully in **Section 5.7**.

Local monitoring data sourced from the AAA database is presented in this report to provide uptake and outcome data for period 1st April 2021 to 31st March 2022. As a result of differences in data extract dates, numbers in local data analysis may differ from those presented in forthcoming published national programme reports.

An overview of NHGGC AAA screening programme activity during 2021/22 is provided in **Figure 5.1**.

During the period 2021-2022, the total number of eligible men resident in NHSGGC was 6,979 and 6,829 (97.9%) were invited. Of the men eligible, 5,365 (76.9%) were screened before age 66 and 3 months.

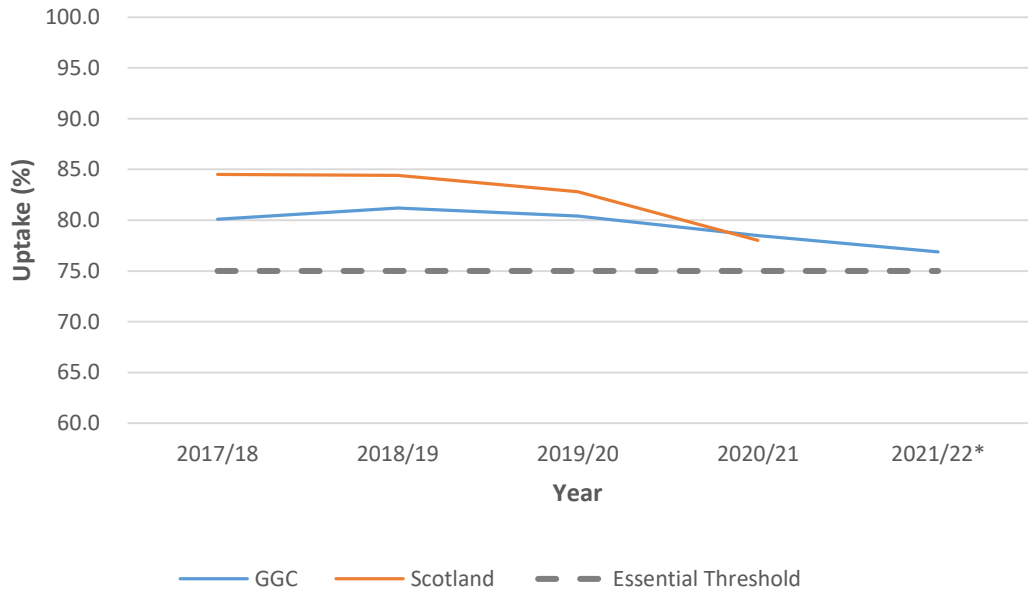
Figure 5.1 Overview NHSGGC AAA screening programme activity, 2021/22



Source: AAA application, September 2022

Overall uptake of AAA screening in NHSGGC has consistently achieved the essential threshold target of 75% over the previous 5 years, (**Figure 5.2**).

Figure 5.2 Uptake of AAA screening among eligible population in NHSGGC and Scotland: 2017/18 – 2021/2022*

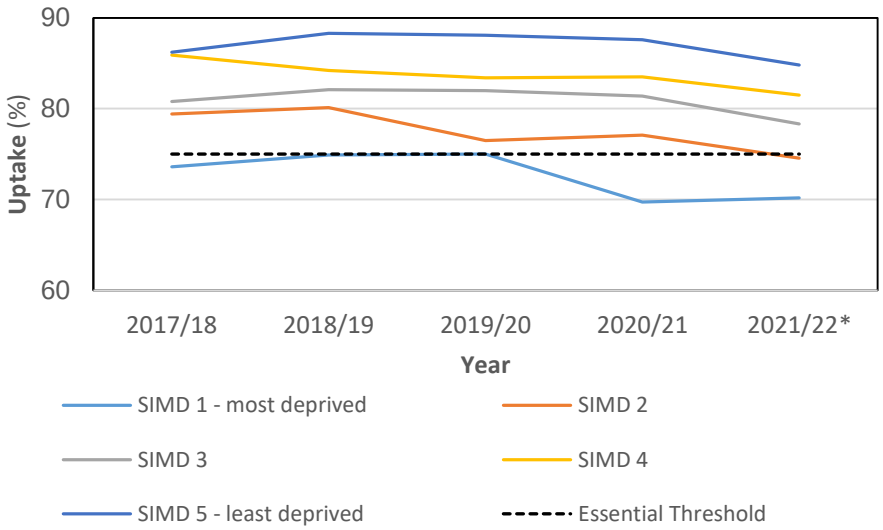


Source: Scottish Abdominal Aortic Aneurysm (AAA) screening programme statistics
*AAA application, September 2022, GGC statistics only

During the period April 2021 to March 2022, the essential threshold of 75% for AAA screening uptake was met in NHSGGC (78.6%), showing that although there were delays in screening for some men due to the associated pause in screening during the COVID-19 pandemic in 2020, the overall uptake of screening in 2021/2022 was similar to previous years.

However, uptake among men residing in the most deprived areas compared with least deprived areas over the last 5 years has remained consistently lower (**Figure 5.3**).

Figure 5.3 Uptake of AAA screening among eligible population in NHSGGC by Deprivation: 2017/18 – 2021/2022*



Source: Scottish Abdominal Aortic Aneurysm (AAA) screening programme statistics
* AAA application, September 2022, GGC statistics only

During 2021/2022 uptake among men residing in the most deprived areas were 14.2 percentage points lower than men residing in the least deprived areas (70.2% vs.84.8% respectively).

Table 5.1: Uptake of AAA screening among eligible population by SIMD quintile for NHSGGC, 2021-2022

SIMD Quintile 2020	Total	Invited	Not Screened	Screened	*% Screened*
1 (Most Deprived)	2,298	2,263	650	1,613	*70.2*
2	1,253	1,225	291	934	*74.5*
3	858	834	162	672	*78.3*
4	1,011	981	157	824	*81.5*
5 (Least Deprived)	1,559	1,526	204	1,322	*84.8*
Total	6,979	6,829	1,464	5,365	*76.9*

Further local analysis was undertaken to explore variations in uptake of 2021/22 screening round for additional populations with protected characteristics including ethnicity, learning disability and mental health, and by Health and Social Care Partnership (HSCP) area.

The majority of eligible men (79.9%) were of Scottish ethnic origin, see **Table 5.2.** Uptake of AAA screening differs between ethnic groups, with uptake variable across groups. However, due to low numbers in some ethnic groups it is not possible to directly compare programme uptake across ethnic subgroups.

Table 5.2: Uptake of AAA Screening by ethnicity for NHSGGC, 2021-2022

2001 Census Ethnic Group	Total	Invited	% Invited	Not Screened	Screened	*% Screened*
African, Scottish African or British African	*	*	*100.0*	*	*	*83.3*
Any Mixed or multiple ethnic group	16	16	*100.0*	5	11	*68.8*
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	*	*	*100.0*	*	*	*33.3*
Caribbean or Black	*	*	*100.0*	*	*	*85.7*
Chinese, Scottish Chinese or British Chinese	*	*	*96.3*	*	*	*92.6*
Gypsy/Traveller	*	*	*100.0*	*	*	*50.0*
Indian, Scottish Indian or British Indian	53	50	*94.3*	16	37	*69.8*
Irish	36	36	*100.0*	7	29	*80.6*
NULL	436	412	*94.5*	266	170	*39.0*
Opt out, Not known	*	*	*100.0*	*	*	*36.4*
Other	24	24	*100.0*	6	18	*75.0*
Other British	521	507	*97.3*	105	416	*79.8*
Other ethnic group	*	*	*100.0*	*	*	*88.5*
Other ethnic group Arab, Scottish Arab or British Arab	*	*	*100.0*	*	*	*100.0*
Other white ethnic group	67	65	*97.0*	25	42	*62.7*
Pakistani, Scottish Pakistani or British Pakistani	126	125	*99.2*	23	103	*81.7*
Polish	22	22	*100.0*	9	13	*59.1*
Roma	*	*	*100.0*	*	*	*100.0*
Scottish	5,579	5,474	*98.1*	1,131	4,448	*79.7*
Showman/Showwoman	*	*	*100.0*	*	*	*100.0*
Total	6,979	6,829	*97.9*	1,613	5,366	*76.9*

Source: AAA Application, health systems ethnicity data, December 2022

* numbers redacted as <=5, or identifiable as <=5

Table 5.3 shows that 43 of the 6,979 individuals eligible for AAA screening in 2021/22 were registered with a learning disability (0.6%)[5]. People who were registered with a learning disability had poorer uptake of AAA screening**,** 67.4% compared to 76.9% uptake in the rest of the population.

Table 5.3 Uptake of AAA Screening by Learning Disability for NHSGGC, 2021-2022

Learning Disability	Total	Invited	Not Screened	Screened	*% Screened*
Rest of population	6,936	6,787	1,451	5,336	*76.9*
Registered	43	42	13	29	*67.4*
Total	6,979	6,829	1,464	5,365	*76.9*

Source: AAA Application, Learning Disability, September 2018
Chi-Square Tests Pearson Chi-Square p = 0.140505

[5] Sourced from Learning Disability Register, September 2018, therefore will not capture LD registrations after this date.

People registered on PsyCIS have had at least one episode of psychosis which is typically seen in patients with a severe or enduring mental illness. **Table 5.4** shows that 66 of the 6,979 men eligible for screening were registered on PsyCIS (0.9%). These individuals had poorer uptake of AAA Screening, 59.1% compared to 77.0% in the rest of the population. However, cohort numbers are small therefore caution should be applied when interpreting annual uptake data.

Table 5.4 Uptake of AAA screening by Severe and Enduring Mental Health for NHSGGC, 2021-2022

PYSCIS	Total	Not Screened	Screened	% *Screened*
Rest of population	6,913	1,441	5,326	*77.0*
Registered	66	23	39	*59.1*
Total	6,979	1,464	5,365	*76.9*

Source: Source: AAA Application, PSYCIS, September 2022

The essential threshold for screening uptake (75%) was met in East Dunbartonshire (*85.1*%), East Renfrewshire (*86.7*%), Inverclyde (77.4%) and Glasgow City HSCPs (*77.3*%). The essential threshold was not met in Inverclyde (*71.2*%) and Renfrewshire (*72.7*%), West Dunbartonshire (*72.7%)* HSCPs or in Glasgow City North East Sector (*73.6*%), (**Table 5.5**).

Table 5.5: Uptake of AAA screening among eligible population by Health & Social Care Partnership in NHSGGC, 2021-2022

HSCP	Total	Invited	% Invited	Not Screened	Screened	% *Screened*
East Dunbartonshire HSCP	710	699	*98.5*	95	604	*85.1*
East Renfrewshire HSCP	609	600	*98.5*	72	528	*86.7*
Glasgow North East Sector	1,038	1,027	*98.9*	263	764	*73.6*
Glasgow North West Sector	1,043	1,021	*97.9*	225	796	*76.3*
Glasgow South Sector	1,332	1,318	*98.9*	241	1,077	*80.9*
Glasgow City	3,413	3,366	*98.6*	729	2,637	*77.3*
Inverclyde HSCP	527	515	*97.7*	140	375	*71.2*
Renfrewshire HSCP	1,120	1,086	*97.0*	301	785	*70.1*
West Dunbartonshire HSCP	600	563	*93.8*	127	436	*72.7*
Total	6,979	6,829	*97.9*	1,464	5,365	*76.9*

Source: AAA Application, September 2022

Mapping of AAA uptake rates by intermediate zones[6] was undertaken to provide further insight into variation in uptake at local geographical level. This illustrates that uptake rates in some pockets of NHSGGC can be significantly lower than HSCPs levels, with 9 of the 257 intermediate zones had uptake rates below 60%. Uptake maps are available on the PHSU website[7].

5.5. Abdominal Aneurysm Screening Results

Table 5.6 shows that of the 5,365 men screened, 52 men (1.0%) had a confirmed positive screening result with an enlarged aorta ≥3cm. Of these, 46 men (88.5%) had an aorta measuring between 3cm to 4.49cm (small aneurysm) requiring annual surveillance scans, and less than 5 men had a medium aneurysm requiring 3 monthly surveillance scans. Less than 5 men were found to have a large aneurysm (measuring 5.5 cm or more) requiring surgical assessment and intervention where appropriate.

Table 5.6: Abdominal Aneurysm screening results for NHSGGC, 2021-2021

	Largest Measure (cm)					
Result Type	**<3**	**3 - 4.49**	**4.5-5.49**	**≥5.5**	**Not Known**	**Total**
Negative	5,271	0	0	0	0	5,271
Non Visualisation / technical fail	0	0	0	0	42	42
Positive	0	46	≤5	≤5	0	52
Total	5,271	46	≤5	≤5	42	5,365

Source: AAA Application, September 2022.
Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

5.6. AAA Mortality and Incident Audit

The Public Health Screening Unit leads a programme of audit of AAA screening. A multi-disciplinary group reviews all AAA related mortality and incidents in relation to the screening programme. This is an addition to the already established system of reviewing the cases of patients who have died from a ruptured aorta at regular Morbidity and Mortality meetings.

The Mortality and Incident Audit was established in autumn 2018 and all relevant cases since the programme began in 2013 were reviewed following national guidance.

[6] Intermediate Zones (as opposed to smaller data zones) were used for mapping AAA uptake rates due to small denominator.
[7] Screening Uptake Data Zone maps

The standards for the Scottish AAA Screening Programme state that:

- The screening & surveillance history of men, who died of a ruptured aortic aneurysm, is reviewed and discussed by the collaborative screening centre multidisciplinary team, and
- The mortality rate due to ruptured abdominal aortic aneurysm among men who were screened negative and discharged from the programme is recorded and an action plan implemented

To comply with these criteria, an analysis of deaths due to ruptured AAA's from September 2021-September 2022 was undertaken. Due to small numbers, a summary of audit findings are provided to minimise risk of disclosure.

A total of 11 men were identified with cause of death attributed to ruptured AAA, and a further 13 cases were identified from emergency aneurysm repair for ruptured aortic aneurysm. Following review of all these cases, no deficiencies in the screening programme were identified and no further investigation of cases was required.

5.7. Effect of the COVID-19 pandemic on delivery of AAA screening

The Scottish Government announced a temporary pause to all adult screening programmes on the 30 March 2020, and those patients requiring vascular assessment were scheduled during pause. Clinical guidance was issued by the Vascular Society for Great Britain and Ireland, setting out guidance for surgical interventions, and this resulted in most of the planned AAA repair operations being postponed and only very large or symptomatic AAAs being considered for surgery.

AAA screening recommenced in July 2020, initially prioritising men on 3 month and 12 month surveillance, with all initial screening invitations reinstated by September 2020. During the period April 2021 to March 2022, NHSGGC AAA screening programme recovery continued to focus reducing the back log of patients requiring initial screening resulting from the pause and as a consequence of social distancing measures. AAA screening gradually resumed within all pre-coved venues during this period.

5.8. Challenges and Future Priorities

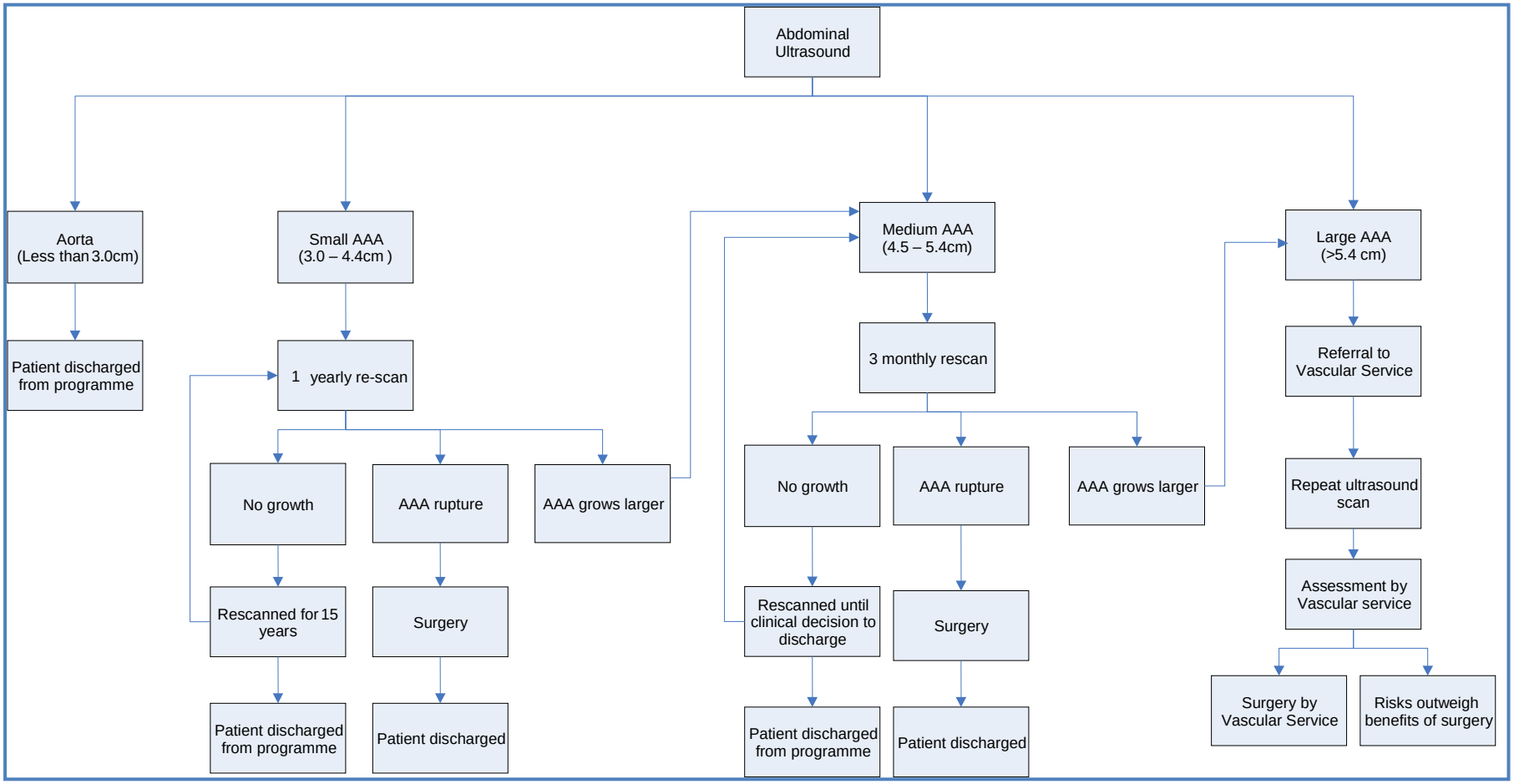
Access to imaging stemming from the service backlog during the pandemic meant that waiting times for assessment for surgery for those with large aneurysms was longer than national targets. This is a challenge for NHS boards across Scotland and continues to be a challenge in NHSGGC. We will work with colleagues in radiology to resolve this issue.

We aim to maintain the screening staffing level and screening site locations to ensure stability in the delivery of AAA Screening Programme.

We plan to progress a patient experience survey with men under surveillance for small and medium AAA, with the aim to improve patient experience, communication and links to related services.

We will review and implement the NHSGGC Adult Screening Inequalities Action Plan to enable a more coordinated approach to reducing inequalities in uptake of screening through targeted interventions. Further details on targeted inequalities actions are detailed in chapter 10.

Appendix 5.1: Positive Abdominal Aortic Aneurysm Screening Pathway



Appendix 5.2: Abdominal Aortic Aneurysm Key Performance Indicators, NHS Greater Glasgow & Clyde (2019–2021)

Please note that KPI data cannot be fully assessed for year ending March 2022 and will be available in March 2023.

KPI	Description	Essential Threshold	Desirable Threshold	Year ending 31st March 2019	Year ending 31st March 2020	Year ending 31st March 2021
1.1	Percentage of eligible population who are sent an initial offer to screening before age 66 years	≥ 90%	100%	100%	99.9%	99.8%
1.2	Percentage of men offered screening who are tested before age 66 years and 3 months	≥ 75%	≥ 85%	81.2%	80.5%	78.5%
1.3	Percentage of men residing in SIMD 1 areas (most deprived) offered screening who are tested before age 66 and 3 months;	≥ 75%	≥ 85%	75.4%	75.1%	69.7%
1.4a	Percentage of annual surveillance appointments due where men are tested within 6 weeks of due date	≥ 90%	100%	95.3%	92.5%	51.4%
1.4b	Percentage of quarterly surveillance appointments due where men are tested within 4 weeks of due date	≥ 90%	100%	91.7%	92.9%	63.0%
2.1a	Percentage of screening encounters where aorta could not be visualised	< 3%	< 1%	2.5%	2.4%	1.9%
2.1b	Percentage of men screened where aorta could not be visualised	< 3%	< 1%	2.1%	2.1%	1.8%
2.2	Percentage of screened images that failed the quality assurance audit and required immediate recall	< 4%	< 1%	0.9%	0.7%	0.6%
3.1	Percentage of men with AAA ≥5.5cm seen by vascular specialist within two weeks of screening	≥ 75%	≥ 95%	100%	92.9%	100.0%
3.2	Percentage of men with AAA ≥5.5cm deemed appropriate for intervention/ operated on by vascular specialist within eight weeks of screening	≥ 60%	≥ 80%	60.0%	75.0%	27.3%

Source: Scottish Screening AAA Programme Statistics 2019 -2021
Green = desirable threshold met; amber = essential threshold met; red = essential threshold not met

Appendix 5.3

Members of Abdominal Aortic Aneurysm Screening Steering Group (at March 2022)

Dr Emilia Crighton	Screening Coordinator, Interim Director of Public Health (Chair)
Mr Paul Burton	Information Manager
Mrs Lin Calderwood	HI&T Service Delivery Manager
Mr Kevin Daly	Consultant Vascular Surgeon/Lead Clinician
Mrs Mairi Devine	Lead Screener
Mr Andrew Ferguson	SDPM, Diagnostics, Strategy & Programmes/Diagnostics
Mr Neil Ferguson	Head of Planning
Mr Marco Florence	Glasgow LMC
Ms Irene Fyfe	Health Records Manager, NHS GGC
Mrs Antonella Grimon	AAA Data Administrator
Dr Oliver Harding	Consultant in Public Health Medicine, NHS Forth Valley
Ms Heather Jarvie	Public Health Programme Manager
Dr Ram Kasthuri	Consultant Interventional Radiologist
Ms Joyce McFadyen	Health Records Manager, NHS GGC
Mr Calum McGillivray	Programme Support Officer, Screening Department
Mrs Elizabeth Rennie	Programme Manager, Screening Department
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Chapter 6 – Bowel Screening Programme

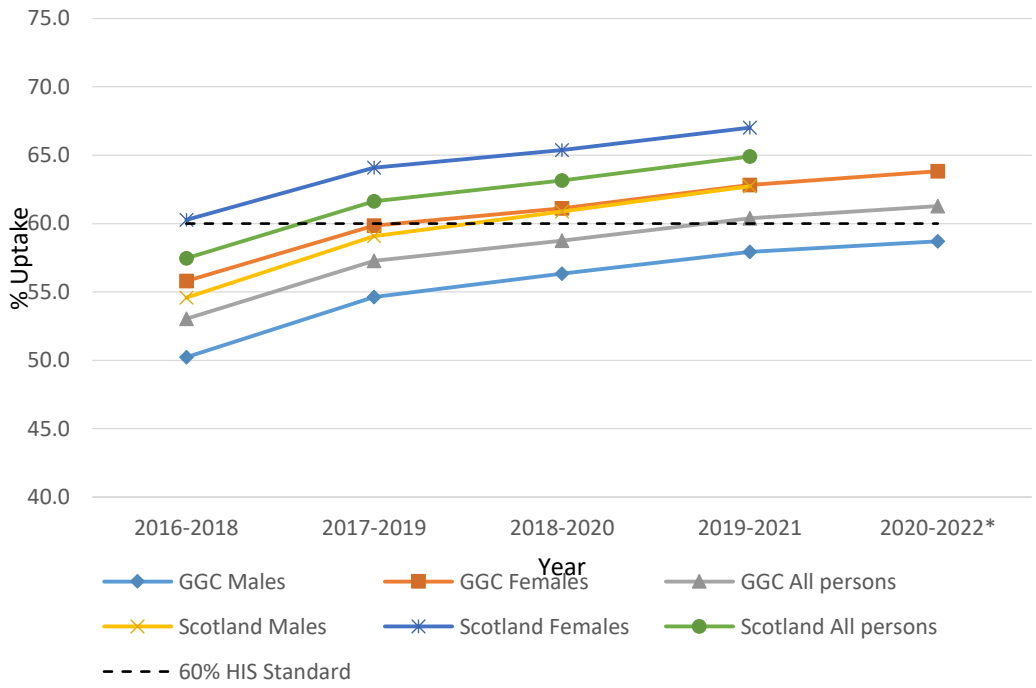
Summary

Colorectal (Bowel) Cancer was the third most common cancer in Scotland for both men and women in 2019. Ninety three percent of bowel cancers detected are among people aged over 50 years of age.

The aim of bowel screening is to detect bowel cancer at an early stage where treatment is more effective. In some cases, pre-cancerous polyps can be removed and cancer prevented. The programme invites all men and women between the ages of 50–74 to participate in screening once every two years, by returning a sample taken at home using a nationally supplied kit.

Between 2020 and 2022, 299,813 NHSGGC residents were invited for bowel screening. 61.3% of those invited returned the screening test, of which 5,643 tested positive (3.1%). Of those individuals who had a positive result, 5,137 (91.1%) attended a nurse pre-assessment and over three quarters 4,024 (78.3%) had a colonoscopy performed. Subsequently, 169 cancers and 1,999 adenomas were detected.

Uptake of Bowel Screening in NHSGGC and Scotland 2016-18 to 2020-22* by Sex



Source: PHS Bowel Screening Programme Statistics, 1st April 2016 to 31st March 2021.
* NHSGGC Bowel Screening IT System, GGC statistics only (November 2022)

Women were more likely to return a bowel screening test than men (63.8% vs. 58.7% respectively). Uptake was lowest among those aged 50-54 years, at 54.9% and increased to 68.2% for those aged 70-74 years, a difference of 13.3 percentage points.

Uptake of bowel screening programme increased with decreasing levels of deprivation. Uptake was lowest amongst those living in the most deprived Board areas (52.0%) and highest in the least deprived areas (71.8%).

Analysis by ethnicity identified that uptake was highest in the Scottish, other British, Irish and Chinese groups (higher than 60% uptake) but was consistently poorer in other ethnic groups. Some ethnic groups were small and these data are harder to interpret.

Amongst those registered with a learning disability uptake of screening was lower than the rest of the population, 44.8% compared to 61.4%. Amongst those with enduring mental illness (as determined by registration on PsyCIS and with at least one episode of psychosis), uptake was lower compared with the rest of the population, 42.6% compared to 61.5%. For both of these categories, the proportion of the screened population registered in these categories was small.

Overall, 3.1% (5,643 of 183,751) of completed screening test were reported positive, meriting further investigation. Women had a lower positivity than men (2.5% vs. 3.7 %, respectively); older people had a higher positivity than younger people (4.2% aged 70-74 vs. 2.5% aged 50-54); and those living in our most deprived communities had higher positivity than the least deprived (4.2% vs. 2.1%, respectively).

Of the 5,643 people who had a positive screening test, 4,024 people underwent a colonoscopy. Of these:

- 2,370 people (58.9%) had a polyp detected;
- 1,999 people (49.7%) had a confirmed adenoma detected; and
- 169 (4.2%) people had a confirmed colorectal cancer diagnosis;
- all detection rates increased among older age cohorts.

Polyps were detected in 65.9% of men and 49.4% of women who underwent colonoscopies. Adenomas were detected in 56.1% of men and 40.9% of women, and 4.0% of men and 4.5% of women had a confirmed colorectal cancer diagnosis.

Whilst more people residing in areas of higher deprivation have had investigations performed, the detection rate of polyps, adenomas and cancers is roughly similar across the SIMD quintiles with higher polyp and adenoma detection rates among males.

There is an ongoing programme of audit within the screening programme focussing on the colonoscopy service. A multi-disciplinary group reviews the performance of all individuals who carry out colonoscopy as part of screening. Three main measures are recorded: adenoma detection rate; completion rate; and complication rate.

During the pandemic the bowel screening programme was paused for six months in 2020. Following this pause, individuals requiring follow-up investigations such as colonoscopy were prioritised and due to the demand on colonoscopy services, triaging of screening test results was introduced to prioritise those at highest risk. During the period April 2021 to March 2022, bowel screening programme recovery continued to focus reducing the back log of patients requiring colonoscopy resulting from this pause in services.

Chapter Contents

6.1. Background

Colorectal (bowel) cancer is the fourth most common cancer in Scotland for both men and women accounting for 10.9% of all cancers in 2020 (the most recent year for which incidence data is available). Ninety four percent of bowel cancers detected were among people aged over 50 years of age[8].

In the same year, 667 people residing in the NHSGGC area were diagnosed with bowel cancer, of these 371 were male and 296 were female. This gives an age-standardised incidence rate of 79.9 per 100,000 of the population for men in 2020, higher than the Scotland rate of 73.1 per 100,000. For women the age-standardised incidence rate in 2020 was 48.7 per 100,000 of the population, lower than the Scotland rate of 50.0 per 100,000.

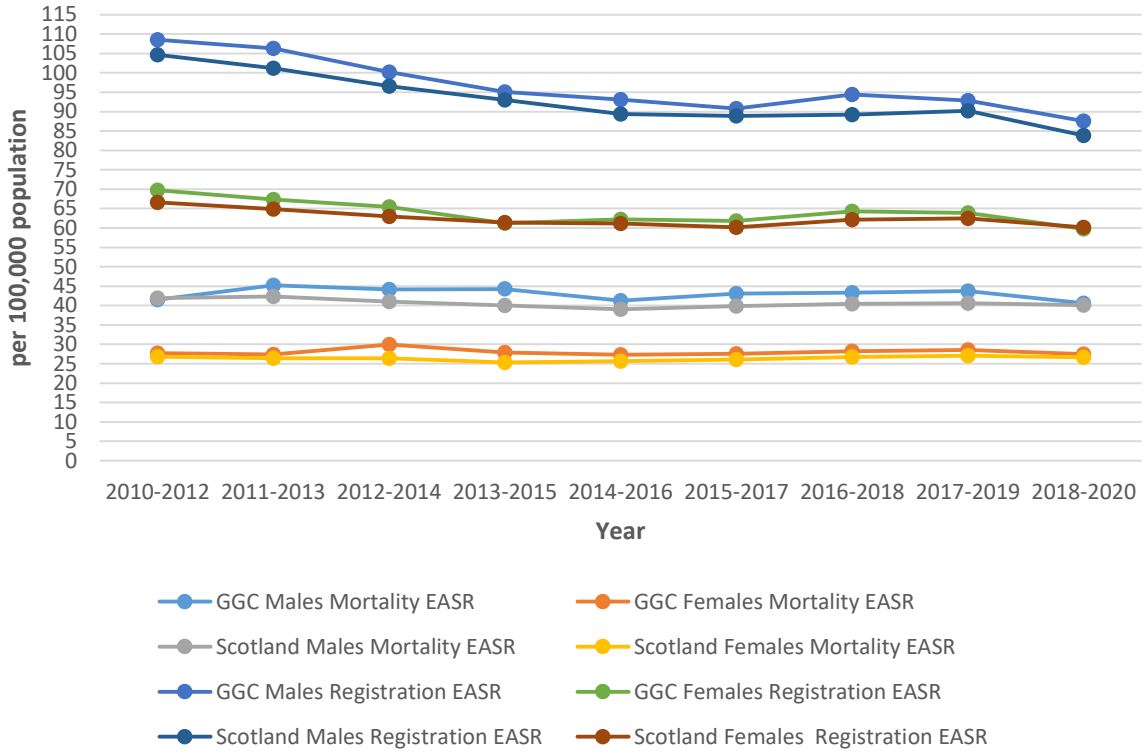
In 2021**,** the most recent year for mortality data, there were 321 deaths from bowel cancer in NHSGGC, of which 185 were male and 136 were female. The gives an age standardised mortality rate of 41.9 per 100,000 population for men, comparable with the national rate (41.3 per 100,000) and 21.9 per 100,000 population for women was recorded, lower that national rate of 26.4 per 100,000 population[9].

Standardised incidence and mortality rates over rolling 3 year periods for bowel cancer for NHSGGC and Scotland are illustrated in **Figure 6.1**. In the 10 year period between 2010 and 2020, the age-standardised rolling 3 years incidence rate of bowel cancer in Greater Glasgow & Clyde decreased in both men (108.5 to 87.5 per 100,000) and women (69.7 to 59.7 per 100,000). Mortality rates of bowel cancer in Greater Glasgow & Clyde decreased in men (from 41.5 to 40.6 per 100,000) and in women (27.7 to 27.5 per 100,000). There was a larger than expected fall in colorectal cancer incidence during 2019/20, which has been attributed to under-diagnoses due to COVID-19 pandemic.

The main preventable risk factors for bowel cancer are consumption of red and processed meats, obesity, alcohol consumption and smoking.

[8] Cancer Incidence in Scotland (publichealthscotland.scot) (Accessed November 2022)
[9] Cancer Mortality in Scotland (publichealthscotland.scot) (Accessed November 2022)

Figure 6.1: Colorectal Cancer Registrations & Mortality Trends 2010-2020 (Rolling 3 Years) European Age Standardised Rate (EASR) Per 100,000 Population



Source: Registration Source: PHS April 2022, Mortality Source: PHS October 2022

6.2. Aim of the Screening Programme

The Scottish Bowel Screening Programme was fully implemented across Scotland in 2009.

The purpose of bowel screening is to detect colorectal cancers at the earliest possible time so that treatment may be offered promptly. There is evidence that very early detection of colorectal cancers in this way can result in more effective treatment which may be more likely to reduce deaths from colorectal cancer. In addition, the removal of pre-cancerous lesions could lead to a reduction in the incidence of colorectal cancer.

The National Bowel Screening Programme performance and quality is monitored via defined Key Performance Indicators (KPI's)[10] and National Bowel Screening Standards[11], see **Appendix 6.1**.

[10] Scottish bowel screening programme statistics - For the period of invitations from May 2019 to April 2021 - Scottish bowel screening programme statistics - Publications - Public Health Scotland (Accessed November 2022)

[11] http://www.healthcareimprovementscotland.org/our_work/cancer_care_improvement/programme_resources/bowel_screening_standards.aspx (Accessed November 2022)

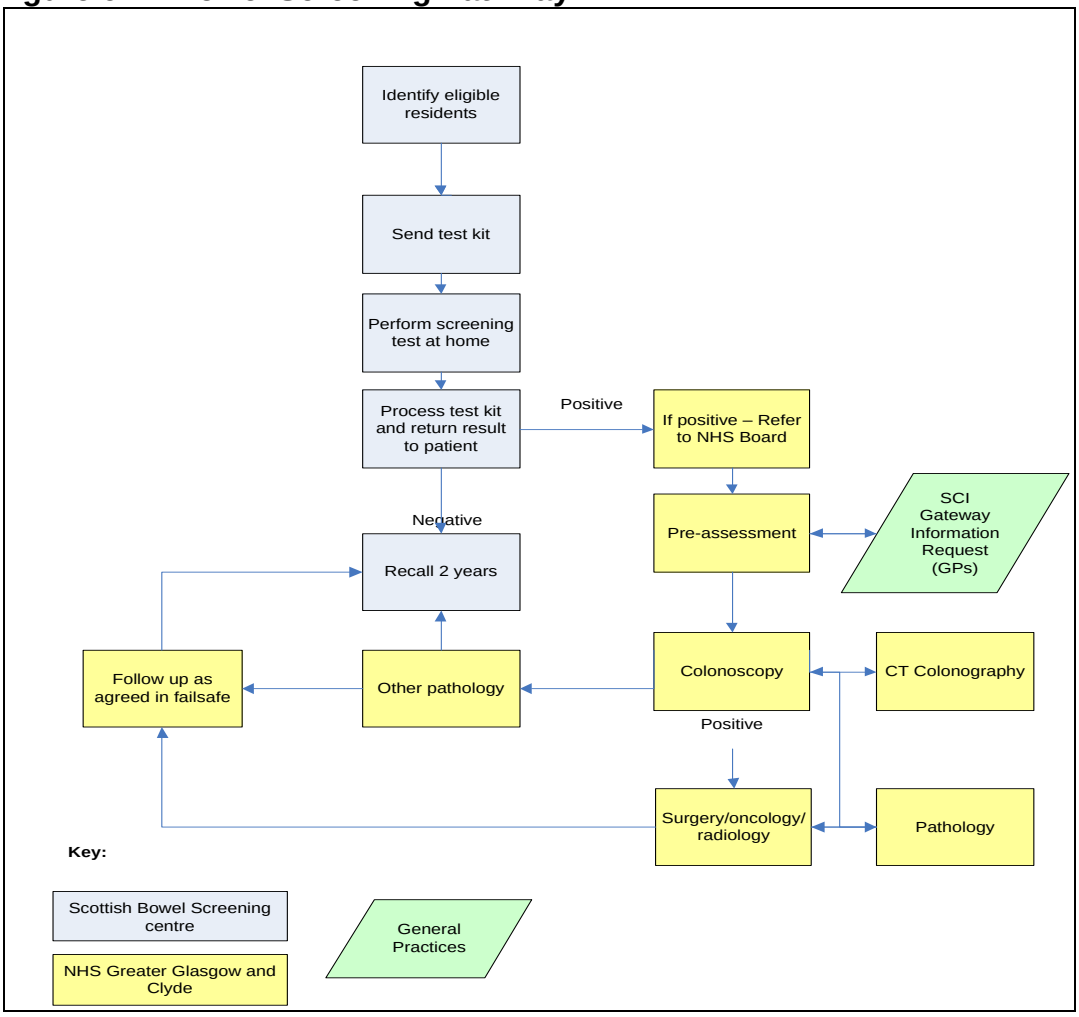
6.3. Eligible Population

The programme invites all men and women between the ages of 50–74 years of age registered with a General Practice. Other eligible individuals who are not registered with a General Practice such as prisoners, armed forces, homeless and individuals in long-stay institutions are also able to participate following NHS Greater Glasgow and Clyde local arrangements. All eligible individuals will be routinely recalled every two years. Individuals may request screening above the age of 74.

6.4. The Screening Test and Pathway

In November 2017 the quantitative Faecal Immunochemical Test (FIT) was introduced throughout Scotland. This test is recommended as the first choice for population-wide colorectal cancer screening by the European Guidelines for Quality Assurance in Colorectal Cancer Screening[12]. **Figure 6.2** provides an overview of the bowel screening pathway.

Figure 6.2: Bowel Screening Pathway



[12] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4482205/ Accessed November 2022)

The National Bowel Screening Centre in Dundee issues invitation letters and screening kits to all eligible residents of NHSGGC to carry out the screening test at home. The kits are then posted by return to the National Laboratory for processing. After analysis, the National Centre reports the results to patient, GP Practice and Health Board. The patient is informed by letter, an electronic notification is sent to the patient's general practitioner and results of all positive tests are sent to the Health Board via an IT system.

Patients with positive screening results are invited to contact NHS Greater Glasgow and Clyde administrative staff to arrange a telephone assessment and be offered a colonoscopy. Patients who are unable to undergo colonoscopy will be offered a CT colonography as an alternative where appropriate. If required, patients are then referred for further diagnostic investigations and treatment. Some patients may not be offered a colonoscopy, common reasons being an inability to tolerate any form of bowel preparation, a recent change in health status, a previous failed colonoscopy, or unsuitability due to physical incapability.

Anyone who has a positive result will automatically be invited again in 2 years' time, unless a permanent exclusion is placed on their record.

If a patient refuses or does not turn up for colonoscopy, a letter is sent to the patient and their GP, asking them to get in touch within 6 months if they change their minds. Otherwise they will be removed from the waiting list. The patient will be invited to take part in bowel screening in two years' time.

6.5. Programme Performance and delivery

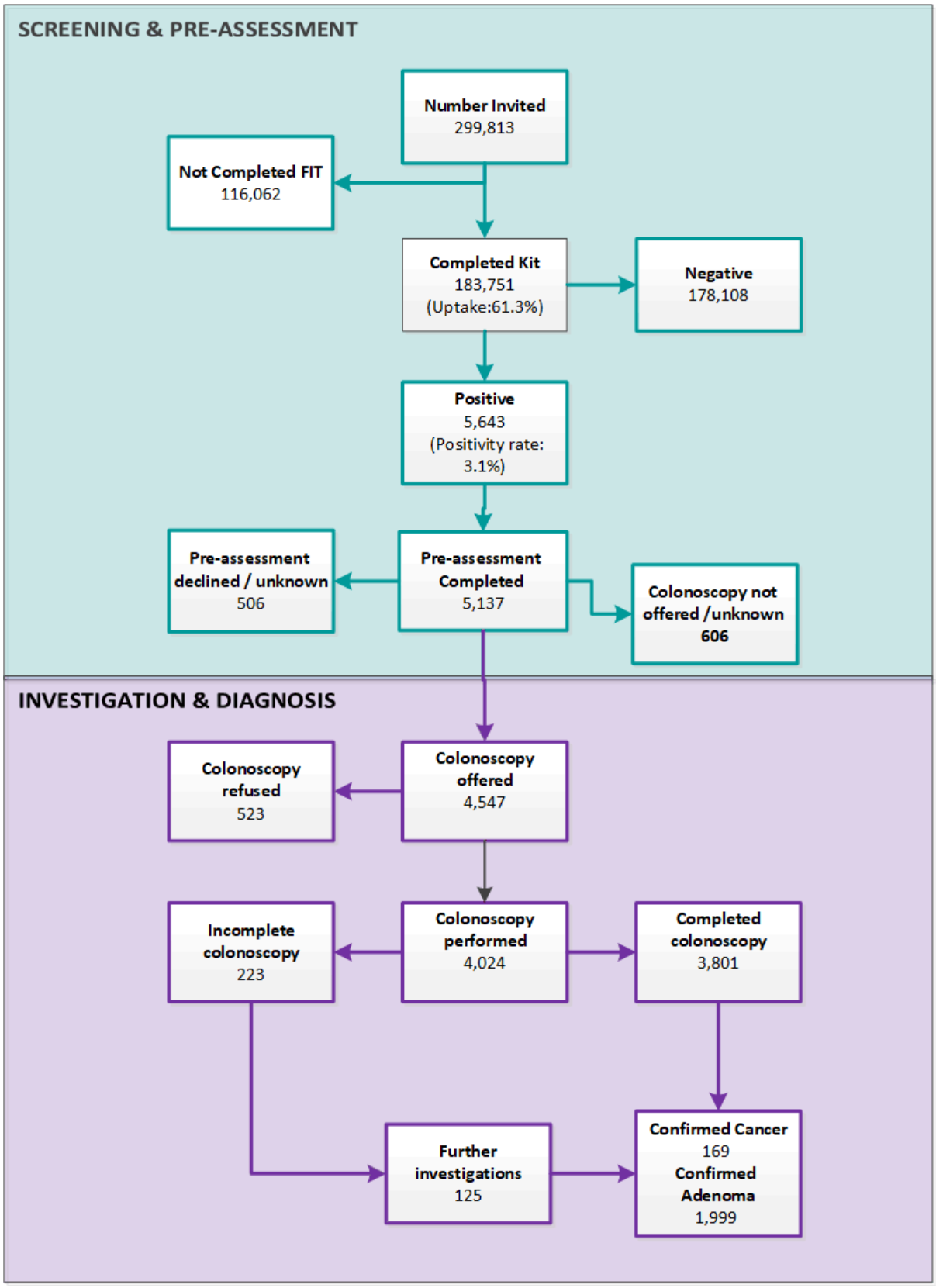
The bowel screening programme KPIs cover information on uptake of screening (completed kits), results of screening, quality of colonoscopy, and cancer diagnosis and staging.

National Bowel Screening Programme Statistics are published annually by Public Health Scotland in February each year, reflecting the previous 2 year screening round. **Appendix 6.1** summarises the most recent published KPIs for NHSGGC and Scotland for time period **1st March 2019 to 30 April 2021**.

Local monitoring data is presented in this report to provide uptake and outcome data for period 1st April 2020 to 31st March 2022. As a result of differences in data extract dates and data definitions, numbers in local data analysis may differ from those presented in forthcoming published national programme reports.

Figure 6.3 summarises bowel screening uptake for the screening round **1st April 2020 to 31st March 2022** from local analysis, which is based on NHSGGC resident population only. During this time period, 299,813 NHSGGC residents were invited for bowel screening, of which 61.3% returned the screening test. Of the 183,751 completed tests, 5,643 tested positive (3.1%). Of those individuals who had a positive result, 5,137 (91.1%) attended a nurse pre-assessment and over three quarters 4,024 (78.3%) had a colonoscopy performed. Subsequently, 169 cancers and 1,999 adenomas were detected.

Figure 6.3: NHSGGC Eligible Residents Bowel Screening Activity 1 April 2020 to 31 March 2022

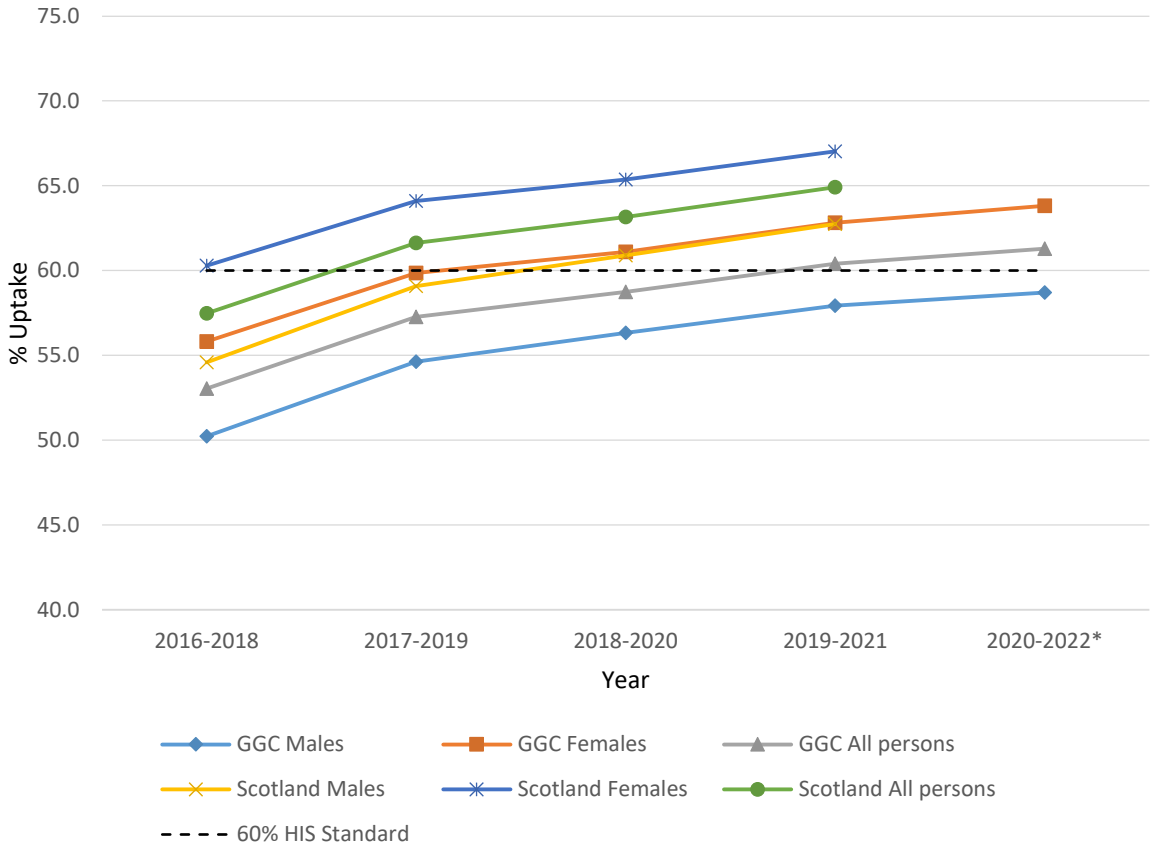


Source: NHS Greater Glasgow and Clyde Bowel Screening IT System, Pathology, Cancer Audit (Extracted: November 2022)

6.6. Uptake of Screening

The overall uptake of bowel screening has increased both nationally and within NHSGGC following the implementation of FIT testing in 2017. This increase was observed in both men and women, although uptake remains lower in men **(Figure 6.4)**.

Figure 6.4: Uptake of Bowel Screening in NHSGGC and Scotland 2016/18 to 2020/22* by Sex



Source: PHS Bowel Screening Programme Statistics, 1st April 2016 to 31st March 2021. * NHSGGC Bowel Screening IT System, GGC statistics only (November 2022)

For the screening round 2020 to 2022, overall uptake of bowel screening in NHSGGC was 61.3%, above the Health Improvement Scotland (HIS) standard of 60%. Women were more likely to return a bowel screening test than men (63.8% vs. 58.7% respectively) **(Table 6.1)**.

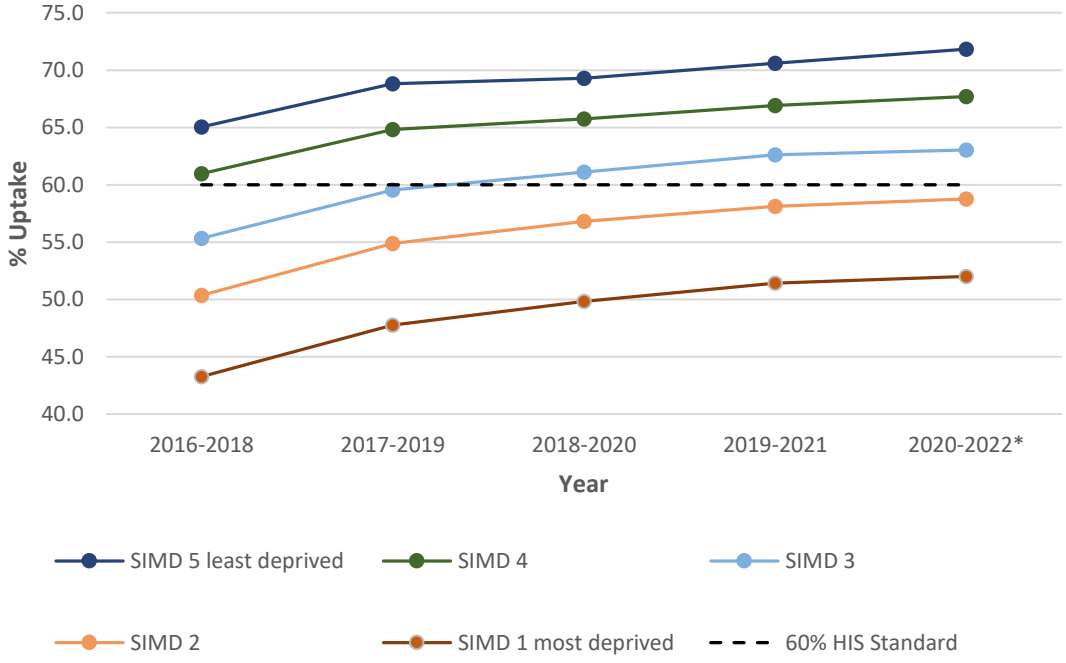
Table 6.1: Uptake of bowel screening by sex in NHGGC, 2020-2022, males and females

Sex	Not Screened	Screened	Total	*% Screened*
Female	54,731	96,570	151,301	*63.8*
Male	61,331	87,181	148,512	*58.7*
Total	116,062	183,751	299,813	*61.3*

Source: NHSGGC Bowel Screening IT System (November 2022)
Chi-Square Tests p < 0.0001

Uptake of bowel screening within the most and least deprived quintiles has also increased following the implementation of FIT in 2017, although lowest uptake continues to be observed among those residing in the most deprived areas **(Figure 6.5).**

Figure 6.5: Uptake of bowel screening in NHSGGC 2016/18 to 2020/22* by least and most deprived quintiles.



Source: PHS Bowel Screening Programme Statistics, 1st April 2016 to 31st March 2021. * NHSGGC Bowel Screening IT System (November 2022)

For the screening round 1st April 2020 to 31st March 2022, there was a 19.8 percentage point difference in uptake among individuals residing in the most deprived areas compared to individuals residing in the least deprived areas (52.0% vs *71.8*% respectively). **(Table 6.2)**.

Table 6.2: Uptake of bowel screening by SIMD in NHSGGC, 1st April 2020 to 31st March 2022

SIMD Quintile	Not Screened	Screened	Total	*% Screened*
1 (Most Deprived)	47,233	51,165	98,398	*52.0*
2	21,894	31,213	53,107	*58.8*
3	13,939	23,774	37,713	*63.0*
4	14,462	30,307	44,769	*67.7*
5 (Least Deprived)	18,534	47,292	65,826	*71.8*
Total	116,062	183,751	299,813	*61.3*

Source: NHSGGC Bowel Screening IT System (Extracted: November 2022).
Chi-Square Tests Linear-by-Linear Association p < 0.0001

Further local analysis was undertaken to explore variations in uptake of 2020/22 screening round for populations with protected characteristics (including age, ethnicity, learning disability and mental health), and geographically by Health and Social Care Partnership (HSCP) area.

There was progressively greater uptake of bowel screening with increasing age **(Table 6.3).** Uptake was lowest among those aged 50-54 years, at 54.9% and increased to 68.2% between those aged 70 to 74 years, a difference of 13.3 percentage points.

Table 6.3 Uptake of bowel screening by age cohort in NHSGGC, 1st April 2020 to 31st March 2022

Age Group	Not Screened	Screened	Total	*% Screened*
50-54	40,008	48,799	88,807	*54.9*
55-59	23,486	33,122	56,608	*58.5*
60-64	21,125	35,312	56,437	*62.6*
65-69	17,164	35,895	53,059	*67.7*
70-74	14,279	30,623	44,902	*68.2*
Total	116,062	183,751	299,813	*61.3*

Source: NHSGGC Bowel Screening IT system (November 2022)
Chi-Square Tests Linear-by-Linear Association p < 0.0001

Analysis by ethnicity was undertaken via data linkage to self-reported ethnicity reference dataset held within West of Scotland Safe Haven. The uptake screening standard of 60% was achieved in the Scottish, other British, Irish and Chinese groups but was consistently poorer in other ethnic groups **(**see **Table 6.4).** Some ethnic groups were small and these data are harder to interpret.

Table 6.4: Uptake of Bowel screening by ethnicity in NHS Greater Glasgow and Clyde, 1st April 2020 to 31st March 2022

2021 Census Ethnicity Category	Not Screened	Screened	Total	*% Screened*
African, Scottish African or British African	570	779	1,349	*57.7*
Any Mixed or multiple ethnic group	483	498	981	*50.8*
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	84	74	158	*46.8*
Caribbean or Black	168	219	387	*56.6*
Chinese, Scottish Chinese or British Chinese	493	1,093	1,586	*68.9*
Gypsy/Traveller	96	144	240	*60.0*
Indian, Scottish Indian or British Indian	1,089	1,198	2,287	*52.4*
Irish	517	1,152	1,669	*69.0*
NULL	17,437	7,127	24,564	*29.0*
Opt out, Not known	401	344	745	*46.2*
Other	495	695	1,190	*58.4*
Other British	8,235	14,227	22,462	*63.3*
Other ethnic group	570	591	1,161	*50.9*
Other ethnic group Arab, Scottish Arab or British Arab	127	196	323	*60.7*
Other white ethnic group	1,550	2,007	3,557	*56.4*
Pakistani, Scottish Pakistani or British Pakistani	2,482	1,972	4,454	*44.3*
Polish	359	341	700	*48.7*
Roma	6	25	31	*80.6*
Scottish	80,888	151,054	231,942	*65.1*
Showman/Showwoman	12	15	27	*55.6*
Grand Total	116,062	183,751	299,813	*61.3*

Source: Bowel Screening IT system (November 2022) ; Safe Haven Assigned Ethnicity

Table 6.5 shows that 1,838 of the 299,813 individuals eligible for screening were registered with a learning disability (0.9%)[13]. People who were registered with a learning disability had poorer uptake of bowel screening**,** 44.8% compared to 61.4% in the rest of the population.

Table 6.5 Uptake of bowel screening by learning disability in NHSGGC, 1st April 2020 to 31st March 2022

Learning Disability Register	**Not Screened**	**Screened**	**Total**	***% Screened***
Not Registered	115,047	182,928	297,975	*61.4*
Registered	1,015	823	1,838	*44.8*
Total	116,062	183,751	299,813	*61.3*

[13] Sourced from Learning Disability Register, September 2018, therefore will not capture LD registrations after this date.

Source: NHSGGC Bowel Screening IT system (November 2022); Learning Disability (September 2018). Chi-Square Tests $p < 0.0001$

People registered on PsyCIS have had at least one episode of psychosis which is typically seen in patients with a severe or enduring mental illness. **Table 6.6** shows that 3,264 of the 299,813 people eligible for screening were registered on PsyCIS (1.1% of the total eligible population). These individuals had poorer uptake of bowel screening, 42.6% compared to 61.5% in the rest of the population.

Table 6.6 Uptake of Bowel screening among people with severe and enduring mental illness in NHSGGC, 1st April 2020-31st March 2022

PsyCIS	Not Screened	Screened	Total	*% Screened*
Not Registered	114,189	182,360	296,549	*61.5*
Registered	1,873	1,391	3,264	*42.6*
Total	116,062	183,751	299,813	*61.3*

Source: NHSGGC Bowel Screening IT system (November 2022), PsyCIS (November 2022). Chi-Square Tests $p < 0.0001$

Variations in bowel screening uptake across HSCPs persist **(Table 6.7).** Uptake ranges from 55.9% in Glasgow City North East Sector to 70.9% in East Dunbartonshire HSCP. The HIS target of 60% was met in all HSCPs with the exception of Glasgow City HSCP.

Table 6.7: Uptake of Bowel screening by HSCP in NHSGGC, 1st April 2020 to 31st March 2022

HSCP	Not Screened	Screened	Total	*% Screened*
East Dunbartonshire HSCP	9,088	22,142	31,230	*70.9*
East Renfrewshire HSCP	7,854	17,803	25,657	*69.4*
Glasgow North East Sector	19,373	24,583	43,956	*55.9*
Glasgow North West Sector	19,964	26,522	46,486	*57.1*
Glasgow South Sector	24,475	31,246	55,721	*56.1*
Glasgow City	63,812	82,351	146,163	*56.3*
Inverclyde HSCP	8,154	14,142	22,296	*63.4*
Renfrewshire HSCP	17,484	31,420	48,904	*64.2*
West Dunbartonshire HSCP	9,670	15,893	25,563	*62.2*
Total	116,062	183,751	299,813	*61.3*

Source: NHSGGC Bowel Screening IT system (November 2022)

Mapping of bowel screening uptake rates by data zones was undertaken to provide further insight into variation in uptake at local geographical level. This illustrates that uptake rates in some pockets of NHSGGC can be significantly lower than HSCPs levels, as 656 of the 1,456 data zones had uptake rates between 40-59% and a further 51 data zones had uptake rates of below 40%. Uptake maps are available on the PHSU website[14].

6.7. Screening Test Positivity

Overall 3.1% (5,643 of 183,751) of completed screening tests were reported positive, meriting further investigation with colonoscopy or equivalent in the period 2020-2022.

- Women had a lower positivity rate than men (2.5% vs. 3.7 %, respectively);
- older people have higher positivity rate than younger people (4.2% aged 70-74 vs. 2.5% aged 50-54); and
- those residing in the most deprived communities have higher positivity than the least deprived (4.2% vs. 2.1% respectively).

See **Tables 6.8 and 6.9**.

Table 6.8: Uptake for Bowel screening and positivity rate by age and sex for NHSGGC, 1 April 2020 to 31 March 2022

	% Screened			% Positive		
Age Group	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
50-54	58.8	51.3	54.9	2.1	2.8	2.5
55-59	61.7	55.3	58.5	2.0	3.2	2.6
60-64	64.9	60.1	62.6	2.2	3.6	2.9
65-69	68.8	66.4	67.7	2.9	4.3	3.6
70-74	68.4	67.9	68.2	3.5	5.1	4.2
Total	63.8	58.7	61.3	2.5	3.7	3.1

Source: NHSGGC Bowel Screening IT system (November 2022)

Table 6.9: Bowel screening positivity rate by SIMD for NHSGGC, 1 April 2020 to 31 March 2022

SIMD Quintile 2016	Negative	Positive	Total	*% Positive*
1 (Most Deprived)	49,007	2,158	51,165	*4.2*
2	30,206	1,007	31,213	*3.2*
3	23,065	709	23,774	*3.0*
4	29,540	767	30,307	*2.5*
5 (Least Deprived)	46,290	1,002	47,292	*2.1*
Total	178,108	5,643	183,751	*3.1*

Source: NHSGGC Bowel Screening IT system (November 2022)

[14] Screening Uptake Data Zone maps

6.8. Adenoma and Polyp Detection

Tables 6.10 and 6.11 provide a summary of adenoma, polyp and cancer detection rates by age, gender and deprivation. Of the 5,643 people who had a positive screening test, 4,024 people underwent a colonoscopy. Of these:

- 2,370 people (58.9%) had a polyp detected;
- 1,999 people (49.7%) had a confirmed adenoma detected; and
- 169 (4.2%) people had a confirmed colorectal cancer diagnosis;
- all detection rates increased among older age cohorts.

Polyps were detected in 65.9% of men and 49.4% of women who underwent colonoscopies. Adenomas were detected in 56.1% of men and 40.9% of women, and 4.0% of men and 4.5% of women had a confirmed colorectal cancer diagnosis.

Whilst more people residing in areas of higher deprivation have had investigations performed, the detection rate of polyps, adenomas and cancers is roughly similar across the SIMD quintiles with higher polyp and adenoma detection rates among males.

Table 6.10: Adenoma and polyp detection rate by age and gender in NHSGGC, 2020-2022

	Patients having investigations* performed			Polyps Detected n (%)			Adenomas Detected n (%)			Cancer Detected n (%)		
Age Group	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
50-54	404	511	915	160 *(39.6)*	289 (56.6)	449 *(49.1)*	129 *(31.9)*	249 *(48.7)*	378 *(41.3)*	10 *(2.5)*	11 *(2.2)*	21 *(2.3)*
55-59	259	362	621	126 *(48.6)*	216 *(59.7)*	342 *(55.1)*	97 *(37.5)*	188 *(51.9*	285 *(45.9)*	9 *(3.5)*	12 *(3.3)*	21 *(3.4)*
60-64	306	450	756	149 *(48.7)*	325 *(72.2)*	474 *(62.7)*	123 *(40.2)*	269 *(59.8)*	392 *(51.9)*	16 *(5.2)*	24 *(5.3)*	40 *(5.3)*
65-69	373	529	902	208 *(55.8)*	370 *(69.9)*	578 *(64.1)*	179 *(48.0)*	320 *(60.5)*	499 *(55.3)*	21 *(5.6)*	21 *(4.0)*	42 *(4.7)*
70-74	362	468	830	199 *(55.0)*	328 *(70.1)*	527 *(63.5)*	169 *(46.7)*	276 *(59.0)*	445 *(53.6)*	21 *(5.8)*	24 *(5.1)*	45 *(5.4)*
Total	1,704	2,320	4,024	842 *(49.4)*	1,528 *(65.9)*	2,370 *(58.9)*	697 *(40.9)*	1,302 *(56.1)*	1,999 *(49.7)*	77 *(4.5)*	92 *(4.0)*	169 *(4.2)*

Source: NHSGGC Bowel Screening IT system (November 2022)
* Colonoscopy or other investigation

Table 6.11: Adenoma, polyp & cancer detection rate by SIMD and gender in NHSGGC, 2020-2022

	Patients having investigations* performed			Polyps Detected n (%)			Adenomas Detected n (%)			Cancer Detected n (%)		
SIMD Quintile	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
1 (Most Deprived)	628	861	1489	303 *(48.2)*	585 *(67.9)*	888 *(59.6)*	253 *(40.3)*	499 *(58.0)*	752 *(50.5)*	24 *(3.8)*	22 *(2.6)*	46 *(3.1)*
2	309	418	727	157 *(50.8)*	277 *(66.3)*	434 *(59.7)*	124 *(40.1)*	237 *(56.7)*	361 *(49.7)*	11 *(3.6)*	14 *(3.3)*	25 *(3.4)*
3	233	287	520	119 *(51.1)*	186 *(64.8)*	305 *(58.7)*	96 *(41.2)*	159 *(55.4)*	255 *(49.0)*	13 *(5.6)*	12 *(4.2)*	25 *(4.8)*
4	227	326	553	112 *(49.3)*	220 *(67.5)*	332 *(60.0)*	90 *(39.6)*	189 *(58.0)*	279 *(50.5)*	13 *(5.7)*	14 *(4.3)*	27 *(4.9)*
5 (Most Deprived)	307	428	735	151 *(49.2)*	260 *(60.7)*	411 *(55.9)*	134 *(43.6)*	218 *(50.9)*	352 *(47.9)*	16 *(5.2)*	30 *(7.0)*	46 *((6.3)*
Total	1704	2320	4024	842 *(49.4)*	1528 *(65.9)*	2370 *(58.9)*	697 *(40.9)*	1302 *(56.1)*	1999 *(49.7)*	77 *(4.5)*	92 *(4.0)*	169 *(4.2)*

Source: NHSGGC Bowel Screening IT system (November 2022)
* Colonoscopy or other investigation

Data presented in **Table 6.12** shows the cancer staging of the 169 people who had a confirmed colorectal cancer diagnosis.

Table 6.12: Cancer stage of colorectal cancel for NHSGGC, 2020-22

Staging	Number	*%*
1	61	*36.1*
2	44	*26.0*
3	46	*27.2*
4	16	*9.5*
unknown	2	*1.2*
Total	169	

Source: Local Cancer Audit

6.9. Quality Improvement in Colonoscopy

The Public Health Screening Unit leads a programme of bowel screening audit, focusing on the quality of colonoscopy services. A multi-disciplinary group reviews the performance of all individuals who carry out colonoscopy as part of screening. Three main measures are recorded: adenoma detection rate; completion rate; and complication rate. It is expected that all bowel screening colonoscopists will undertake a minimum of 200 unselected colonoscopies per year and that they will have a minimum completion rate of 90% and a minimum adenoma detection rate of 35% in bowel screening colonoscopies. Any complications identified are flagged to sectoral clinical management teams for discussion at local Morbidity and Mortality meetings and it is expected that outcomes will be shared across the health board. Post colonoscopy cancer rates are now also being audited.

6.10. Recovery following Covid -19 pandemic

The Scottish Government announced a temporary pause to all adult screening programmes on the 30 March 2020, meaning that no new invitations we issued from this date. Results for those who had recently returned screening kits continued to be processed, however individuals requiring follow-up investigations, such as colonoscopy, were advised that appointments would be rescheduled.

Bowel screening resumed on 12th October 2020, including colonoscopies for those whose test results need further investigation. Following remobilisation of screening, information on patients with QFIT>400 via the FIT test was be made available to Health Boards from the national laboratory to enable patients to be triaged in order of priority for appointments.

During the period April 2021 to March 2022, NHSGGC bowel screening programme recovery continued to focus reducing the back log of patients requiring colonoscopy resulting from the pause and as a consequence of social distancing measures.

6.11. Challenges and Future Priorities

Over 2021-22, a significant amount of work was undertaken to increase screening colonoscopy capacity, significantly reducing the pre-pandemic waiting time. However, due to pressures on colonoscopy capacity and access challenges created by the COVID-19 pandemic, there remains significant challenge in reducing the waiting time for bowel screening colonoscopy.

During the next year plans are in place to decommission the current NHSGGC bowel screening application and integrate programme administration into existing hospital clinical data management systems. This will streamline administration across screening pathway.

We will review the NHSGGC *Preparing for your Colonoscopy* patient information resource, to provide insight into how patients are able to navigate and understand laxative and diet instructions, and to update content and the structure of consent information.

We will undertake further analysis of demographic and wider patient factors contributing to refusal/non-engagement with colonoscopy for individuals with a positive screening result, to inform future priority actions.

We will continue to progress actions identified within NHSGGC Inequalities Plan for Adult Screening programmes to enable a more coordinated approach to reducing inequalities in uptake through targeted activities (see **Section 10**).

Appendix 6.1 Bowel Screening Key Performance Indicators, NHS Greater Glasgow & Clyde 2019 – 2021. Source: Public Health Scotland

KPI	Key Performance: Indicator Description	Target		1st May 2017 to 30th April 2019	1st May 2018 to 30th April 2020	1st May 2019 to 30th April 2021
Screening Uptake						
1.	Overall uptake of screening - percentage of people with a final outright screening test result, out of those invited.	60%		57.3%	58.7%	60.4%
2.	Overall uptake of screening by deprivation category *- percentage of people with a final outright screening test result for which a valid postcode is available, *by Scottish Index of Multiple Deprivation (SIMD) quintile 1 (Q1 most deprived) to quintile 5 (Q5 least deprived)	60 %	Q1	47.8%	49.8%	51.4%
			Q2	54.9%	56.8%	58.1%
			Q3	59.6%	61.1%	62.6%
			Q4	64.8%	65.8%	66.9%
			Q5	68.8%	69.3%	70.6%
3.	Percentage of people with a positive test result, out of those with a final outright screening test result.	N/A		3.08%	3.10%	2.99%
Referral, clinical intervention and outcomes						
4.	Percentage of people where the time between the screening test referral date 0 to 4 weeks >4 to 8 weeks > 8 weeks	N/A		13.5% 23.1% 63.4%	14.2% 16.9% 69.0%	26.4% 33.3% 40.3%
5.	Percentage of people with a positive screening test result going on to have a colonoscopy performed.	N/A		73.4%	69.0%	64.6%
6.	Percentage of people having a completed colonoscopy, out of those who had a colonoscopy performed.	90%		97.8%	96.1%	95.3%
7.	Percentage of people requiring admission for complications arising directly from the colonoscopy, out of those who had a colonoscopy performed.	N/A		0.36%	0.13%	0.29%
8.	Percentage of people with colorectal cancer, out of those with a final outright screening test result.	N/A		0.11%	0.12%	0.09%
9-14.	Percentage of people with colorectal cancer staged: 9. Dukes' A. 10. Dukes' B. 11*. Dukes' C (includes 12 – previously C2) 13. Dukes' D. 14. Dukes' Not known.	N/A		42.9% 21.7% 25.0% 6.7% 3.8%	35.4% 24.3% 26.2% 9.5% 4.6%	35.8% 24,7% 24.1% 9.3% 6.2%

15 – 16.	Percentage of people with colorectal cancer 15. Where the stage has not yet been supplied. 16. That has a recorded stage.	N/A	- 100%	- 100%	- 100%
17.	Percentage of people with polyp cancer out of those with a final outright screening test result.	N/A	0.006%	0.004%	0.001%
18.	Percentage of people with polyp cancer, out of those with colorectal cancer.	N/A	5.8%	3.0%	1.2%
19.	Percentage of people with adenoma as the most serious diagnosis, out of those with a final outright screening test result.	N/A	0.95%	0.97%	0.91%
20.	Percentage of people with high risk adenoma as the most serious diagnosis, out of those with a final outright screening test result.	N/A	0.13%	0.14%	0.14%
21.	Positive Predictive Value of current screening test for colorectal cancer.	N/A	4.8%	5.2%	4.5%
22.	Positive Predictive Value of current screening test for adenoma as the most serious diagnosis.	N/A	42.0%	45.3%	47.0%
23.	Positive Predictive Value of current screening test for high risk adenoma as the most serious diagnosis.	N/A	5.9%	6.6%	7.0%
24.	Positive Predictive Value of current screening test for high risk adenoma as the most serious diagnosis or colorectal cancer.	N/A	10.7%	11.8%	11.5%
25.	Positive Predictive Value of current screening test for adenoma as the most serious diagnosis or colorectal cancer.	N/A	46.7%	50.5%	51.4%
26 - 28	Percentage of people with a colorectal cancer that is a malignant neoplasm of the: 26. colon (ICD-10 C18) 27. rectosigmoid junction (ICD-10 C19) 28. rectum (ICD-10 C20)	N/A	67.5% - 32.5%	70.3% - 29.7%	70.4% - 29.6%

Green = target met; Red = target not met

Appendix 6.3

Members of Bowel Screening Steering Group (At March 2022)

Dr Emilia Crighton	Screening Co-ordinator, Interim Director of Public Health (Chair)
Dr Stuart Ballantyne	Lead Clinician for Radiology
Mr Paul Burton	Information Manager
Mrs Lin Calderwood	H&IT Service Delivery Manager
Dr Fraser Duthie	Lead Clinician for Pathology
Mr Patrick Finn	Consultant Surgeon, RAH
Ms Ailsa Forsyth	Lead Nurse, GGH
Dr Rachel Green	Chief of Medicine, Diagnostics
Miss Heather Jarvie	Public Health Programme Manager
Dr Graeme Marshall	Clinical Director, Glasgow HSCP, NE Sector
Dr David Mansouri	Clinical Lecturer, Glasgow University
Ms Joyce McFadyen	Health Records Site Manager
Mr Calum McGillivray	Programme Support Officer, Screening Dept
Mrs Tricia McKenna	Colorectal Nurse Endoscopist
Mr Gerard McMahon	Bowel Cancer UK
Ms Natalie McMillan	Clinical Service Manager
Ms Gill Mitan	Administration Manager, North Sector
Mr John Mooney	CPHM, NHS Highland
Dr John Morris	Consultant Physician and Gastroenterologist
Ms Lynne Peat	NHS Highland
Mrs Elizabeth Rennie	Programme Manager, Screening Dept
Dr Andrew Renwick	Consultant, RAH
Dr Nicola Schinaia	Consultant, Highland
Mr Gerard McMahon	Bowel Cancer UK
Dr Jack Winter	Lead Clinician for Endoscopy (North)
Mr Paul Witherspoon	Consultant Surgeon

Chapter 7 - Breast Screening Programme

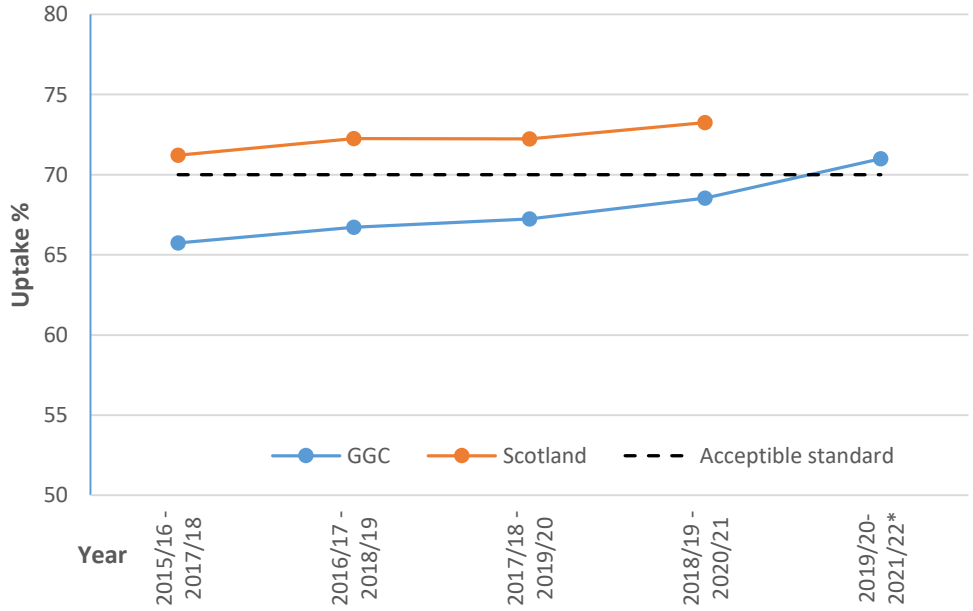
Summary

Breast cancer is the most common cancer in women in Scotland, accounting for 27.9% of all new cancers diagnosed in women in 2020. In the same year, 842 new breast cancers were registered among women residing in NHSGGC. This gives an age-standardised incidence rate of 142.4 per 100,000 per population, compared with the Scotland rate of 147.7 per 100,000. In 2021**,** the most recent year for mortality data, 195 women with a diagnosis of breast cancer died in NHSGGC, giving a standardised mortality rate of 31.9 per 100,000 population, comparable with the Scotland rate of 33.4 per 100,000.

The purpose of breast screening by mammography is to detect breast cancers early. Early detection of breast cancers may result in more effective treatment, which may reduce deaths from breast cancer. Women aged 50-70 years are invited for a routine screening once every three years. Women aged over 70 years could self-refer into breast screening until the breast screening pause during COVID. This continued to be the position during this reporting period, but this was reinstated in autumn 2022.

Uptake of breast screening in NHSGGC has steadily increased over the previous five screening rounds. During the screening period 2019/20 to 2021/22, the percentage of women eligible for breast screening in NHSGGC was 71.0%, exceeding the national acceptable standard of 70%.

Uptake of Breast Screening in NHSGGC and Scotland 2015/18 to 2019/22* (Females aged 50-70 years)



Source: PHS Breast Screening Programme Statistics, 2016/19, 2017/20 & 2019/21
* 2019/22 SSBS local report – GGC data only (November 2022)

Uptake of screening was investigated by age, SIMD, geography and for those with learning disability and enduring mental illness. The single biggest factor for variation in uptake of offer of screening was SIMD.

Uptake of screening was lowest in individuals residing in the most deprived Board areas (*61.0*%) and highest in the least deprived areas (*79.8*%). This is a large difference of 18.8 percentage points. Uptake of breast screening was similar across all age cohorts.

Analysis by ethnicity was undertaken via data linkage to self-reported ethnicity reference dataset held within West of Scotland Safe Haven. Uptake was above 70% for the Scottish and Irish groups and below 70% for all other ethnic groups except the Roma and Showman/Showwoman groups which had very small numbers. Lowest uptake was seen in women who did not have ethnicity recorded (NULL, opt-out / unknown).

For those registered with a learning disability, screening uptake was lower than in the rest of the population, 49.9% compared to 71.2%. For those with enduring mental illness (as registered in PsyCIS with at least one episode of psychosis), screening uptake was lower than in the rest of the population, 50.7% compared to 71.2%. For both these groups, those registered were less than 1% of the screening population.

By geography, the acceptable standard for screening uptake (70%) was met in East Dunbartonshire (78.3%), East Renfrewshire (77.3%), Inverclyde (72.0%), Renfrewshire (76.9%), and West Dunbartonshire (71.8%) HSCPs. The acceptable standard was not met in Glasgow City HSCP as a whole (65.3%) or in any of the three sectors.

2021-22 has seen continued recovery from the COVID-19 pandemic for the Breast Screening Service. The pandemic saw screening paused for four months and then resume with significant restrictions in capacity due to infection prevention and control measures and longer appointment times. To improve uptake during this period the screening service revised administration and appointment processes, encouraging patients to contact the centre to discuss pandemic related changes. More women were invited to attend breast screening at Nelson Mandela Place instead of mobile units within local areas of Glasgow City.

During 2021 the Breast Screening Service implemented a new telephony system which enabled SMS and telephone reminders. This has contributed to the improvement in attendance.

Chapter Contents

7.1. Background

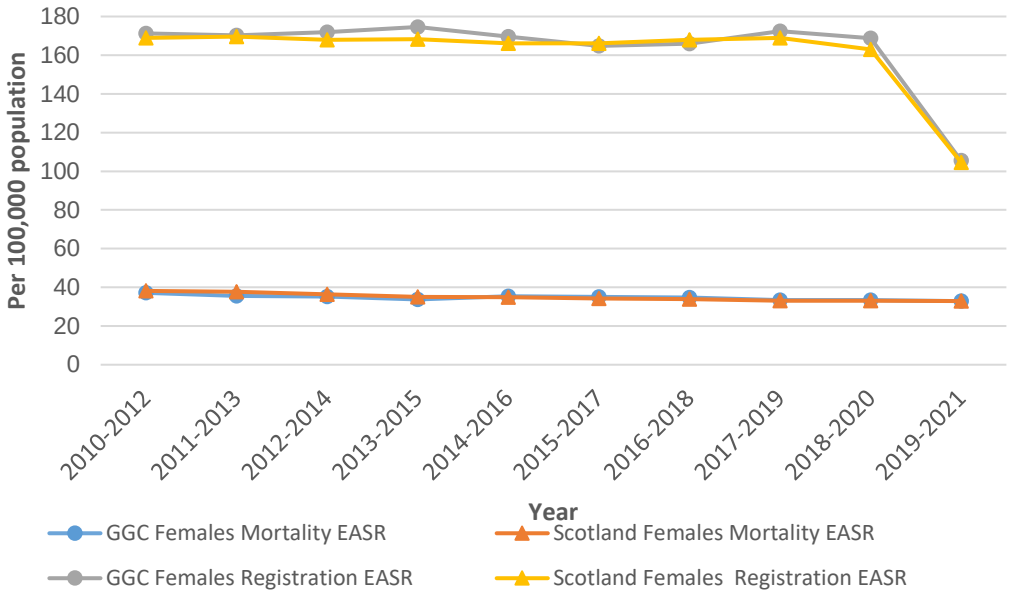
Breast cancer is the most common cancer in women in Scotland, accounting for 27.9% of all new cancers diagnosed in women in 2020 (the most recent year for which incidence data is available). In the same year, 842 new breast cancers were registered among women residing in NHSGGC. This gives an age-standardised incidence rate of 142.4 per 100,000 per population, compared with the Scotland rate of 147.7 per 100,000[15].

In 2021**,** the most recent year for mortality data, 195 women with a diagnosis of breast cancer died in NHSGGC, giving a standardised mortality rate of 31.9 per 100,000 population, comparable with the Scotland rate of 33.4 per 100,000[16] .

Standardised incidence and mortality rates over rolling 3 year periods for breast cancer for NHSGGC and Scotland are illustrated in **Figure 7.1**. In the 10 year period between 2010 and 2020, the age-standardised rolling 3 years incidence rate of breast cancer in GGC decreased in women from (171.2 to 168.7 per 100,000). During the same period, age standardised mortality rates of breast cancer in women in GGC also decreased, (from 37.2 to 33.5 per 100,000). There was a larger than expected fall in breast cancer incidence during 2019/20, which has been attributed to under-diagnoses due to the COVID-19 pandemic.

[15] Cancer Incidence in Scotland (publichealthscotland.scot) (Accessed November 2022)
[16] Cancer Mortality in Scotland (publichealthscotland.scot) (Accessed November 2022)

Figure 7.1: Breast Cancer Registration & Mortality 2010-2020 (Rolling 3 Years) European Age Standardised Rate (EASR) Per 100,000 Population



Source: Registrations PHS April 2022, Mortality PHS October 2022

7.2. Aim of Screening Programme

The Scottish Breast Screening Programme was introduced in February 1987 following the publication of the Forrest Report (1986)[17]. Breast screening was implemented in 1988 in North Glasgow, 1991 in South Glasgow and in October 1990 in Argyll & Clyde.

The purpose of breast screening by mammography is to detect breast cancers early. Early detection of breast cancers in this way can result in more effective treatment, which may reduce deaths from breast cancer.

Programme performance and quality is monitored via defined Key Performance Indicators (KPI's)[18] and National Breast Screening Standards[19].

The Scottish Government published the report of Major Review of the Scottish Breast Screening in May 2022[20], recommending ways to make the breast screening programme more accessible, resilient and sustainable, to drive improvements and build upon successful delivery of services. A new Breast

[17] **Forrest, P, Breast cancer screening: report to health ministers of England, Wales, Scotland and Northern Ireland, H.M.S.O., 1986.**

[18] Scottish breast screening programme statistics - Annual update to 31 March 2021 - Scottish breast screening programme statistics - Publications - Public Health Scotland (Accessed November 2022)

[19] Breast screening standards (healthcareimprovementscotland.org) (Accessed November 2022)

[20] Scottish Breast Screening Programme: major review - gov.scot (www.gov.scot) (Accessed November 2022)

Screening Modernisation Programme Board, will take forward the recommendations from the report as well as considering additional ways to modernise the service.

7.3. Eligible Population

Women aged 50 until age 70 years +364 days who are registered with a GP, and those women not registered with a GP e.g. women in long-stay institutions, are eligible for a routine screen once every three years.

Some women are excluded from routine invitation, for example those who have had bilateral mastectomy or who have signed a disclaimer form to remove themselves from the Scottish Breast Screening Programme call-recall system.

Prior to the pandemic, women aged 71 years and over could self-refer once every three years for breast screening. Since the restart of breast screening after the pause caused by the pandemic, this has not been the case. Since August 2020, the service temporarily paused the over-age self-referral opportunity to allow it to concentrate on reducing waits for clients within programme age, this continued to be the position during this reporting period.

7.4. The Screening Test and Pathway

The screening method used consists of two mammographic views of each breast. The test is a straightforward procedure involving two digital images being taken of each breast using an X-ray machine (also known as a mammogram). Adaptations and/or extra views are captured for augmented breasts including breast implants and implantable devices.

The West of Scotland Breast Screening Service (WoSBSS) screens NHSGGC residents in either the static facility in Nelson Mandela Place or, for the majority of residents, in one of the seven mobile units that visit sites across the NHSGGC area to ensure ease of access for women locally. Eligible women registered with a GP practice within range of Glasgow city centre will be invited to attend appointments for screening in the static facility. For the 2021/22 screening round, the service has been active in NHSGGC areas detailed in **Table 7.1**.

Table 7.1: 2021/2022 screening locations for NHSGGC residents

HSCP	Mobile Unit	Static (Nelson Mandela Place)
East Dunbartonshire	Bishopbriggs, Kirkintilloch	N/A
East Renfrewshire	Barrhead	Newton Mearns, Clarkston, Crookfur
Glasgow City	Govan, Toryglen	Clarkston, Shawlands, Toryglen, Towhead, Thornwood, Charing Cross, Pollokshields, Hyndland, Finnieston, Dowanhill, Charing Cross, Kelvingrove, Pollokshaws, Scotstoun, Partick, Yoker, Anniesland, Knightswood, Kinning Park, Maryhill
Inverclyde	Johnstone, Linwood, Bishopton	N/A
Renfrewshire	Renfrew, Paisley	N/A
West Dunbartonshire	Alexandria	N/A

Every woman registered with a GP receives her first invitation to attend for a mammogram at her local breast screening location sometime between her 50th and 53rd birthdays and then three yearly until age 70 +364 days when women in her Practice are screened.

A woman can request a screening appointment from the age of 50. However if her GP practice is being screened in the next six months, she will be advised to attend there. The WoSBSS also contacts all long-stay institutions (care homes, prisons, and mental health inpatient units) to offer screening to eligible residents.

The mammograms taken during the screening visit are examined and the results sent to the woman and her GP. Women will be recalled if the mammogram was technically inadequate or will be asked to go to an assessment clinic for further tests if a potential abnormality has been detected. Tests may include further imaging, clinical examination and possibly ultrasound and biopsy if required. This is the end of the screening part of this pathway.

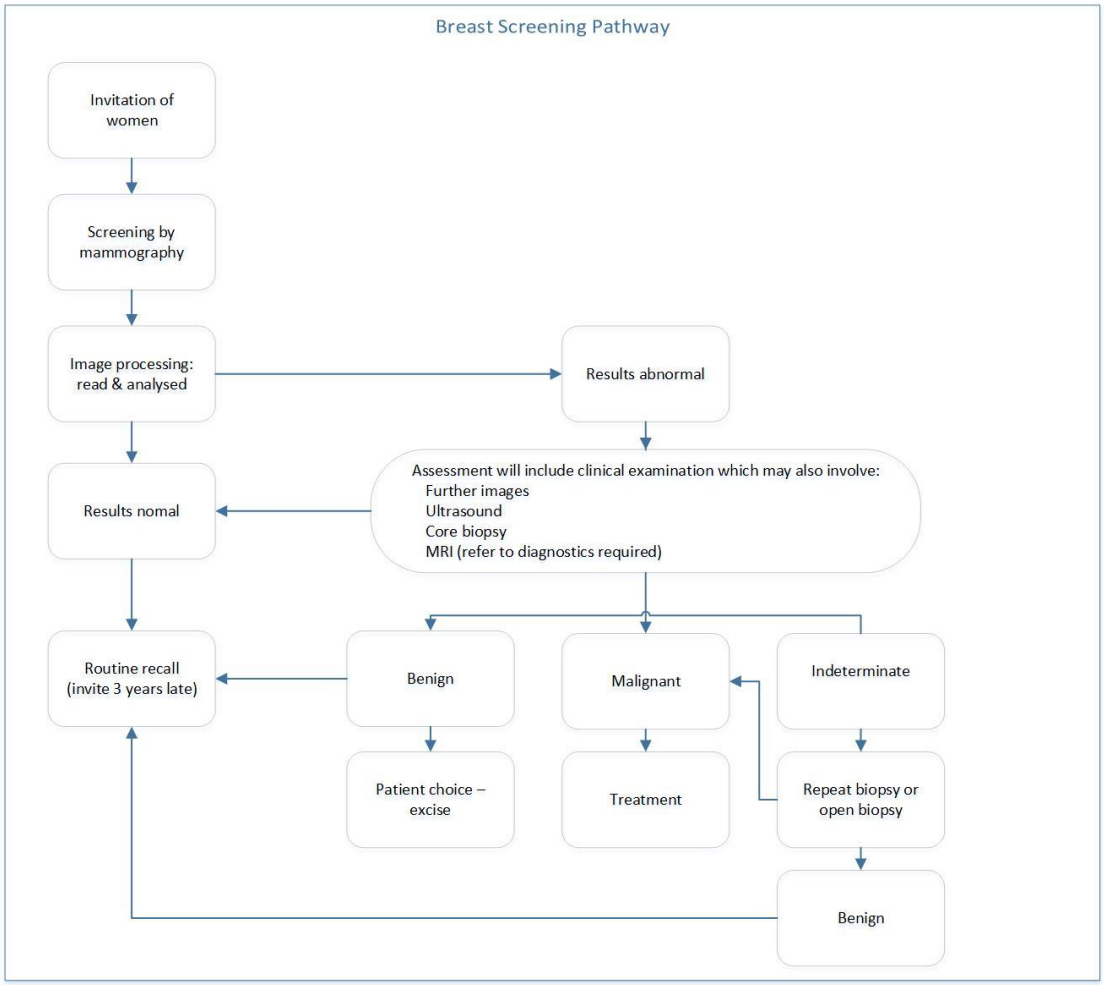
If a woman is found to have cancer, she is referred to secondary care consultant surgeon to discuss the options available to her, which usually involve surgery. The exact course of treatment will depend on the type of cancer found and the woman's personal preferences.

Assessment clinics are carried out in the WoSBSS situated in Glasgow. The surgical treatment is carried out by designated teams in Gartnavel, New Victoria Hospital, New Stobhill Hospital and Royal Alexandra Hospital. A small proportion of women with palpable tumours are referred for treatment to local breast teams.

The Breast Screening Community Liaison Officer works in partnership with Public Health, Primary Care, HSCP Health Improvement and third sector organisations to support participation in screening, including staff training, health road shows and community talks.

Figure 7.2 illustrates the breast screening pathway.

Figure 7.2: Breast Screening Pathway



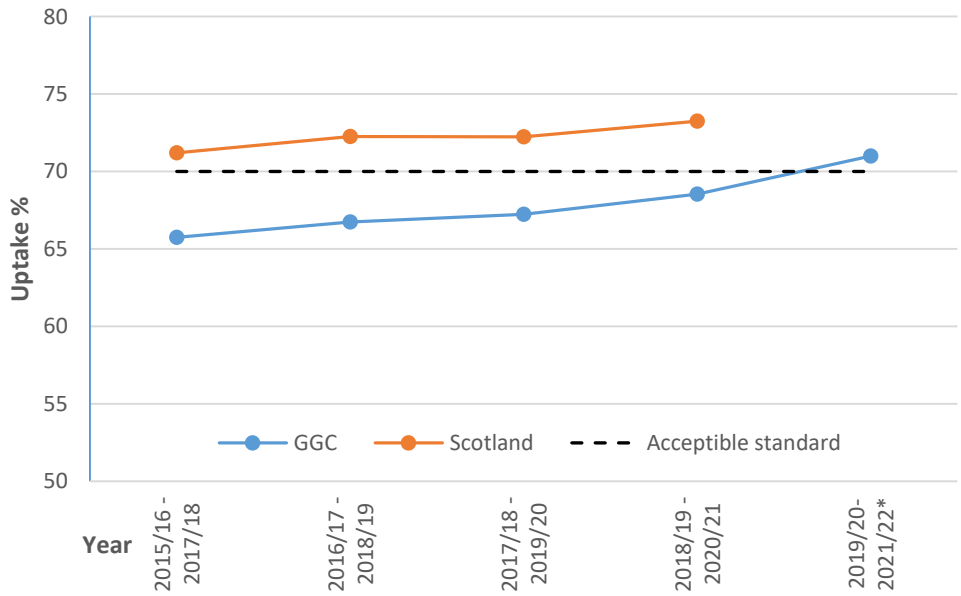
7.5. Programme Performance and Delivery

National Breast Screening Programme Statistics are published annually by Public Health Scotland in April each year, reflecting the previous 3 year screening round. **Appendix 7.1** summarises the most recent published KPIs for Scotland for three year rolling period **2018/19 to 2020/21.** Local monitoring data is presented in this report to provide uptake data for period 2019/20 to 2021/22. As a result of differences in data extract dates and data definitions, numbers in local data analysis may differ from those presented in forthcoming published national programme reports.

7.6. Uptake of Screening

Overall, uptake of breast screening has steadily increased during the period 2016 to 2022. This increase is observed both nationally and within NHSGGC. For the screening round 2019/20 to 2021/22, overall uptake of breast screening in NHSGGC was 71.0%, compared with an uptake of 65.8% in 2015/18 screening round, exceeding the national acceptable standard of 70%, **(Figure 7.3)**.

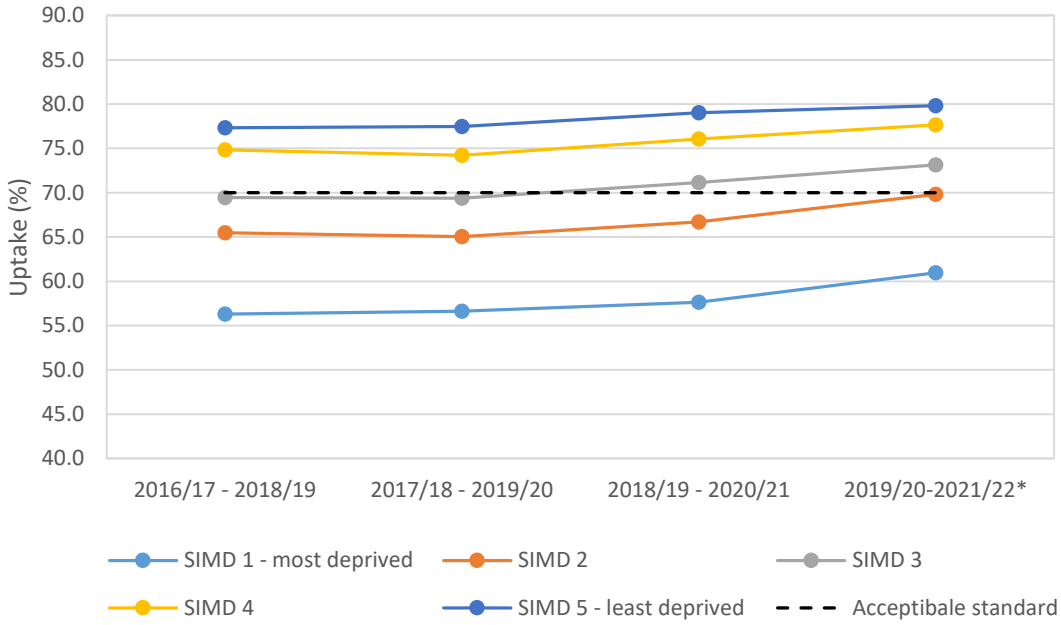
Figure 7.3: Uptake of Breast Screening in NHSGGC and Scotland 2015/18 to 2019/22* (Females aged 50-70 years)



Source: PHS Breast Screening Programme Statistics, 2016/19, 2017/20 & 2019/21
* 2019/22 SSBS local report – GGC data only (November 2022)

Uptake of breast screening has increased across all deprivation quintiles since the 2016/19 screening round, although lowest uptake continues to be observed among women residing in the most deprived areas **(Figure 7.4).**

Figure 7.4: Breast Screening Uptake by Deprivation: NHS Greater Glasgow and Clyde, 2016/19 to 2019/22



Source: PHS Breast Screening Programme Statistics, 1st April 2016 to 31st March 2021.
* SBSS local report (November 2022)

For the screening round 1st April 2019 to 31st March 2022, uptake of breast screening was lowest in individuals residing in the most deprived Board areas (*61.0*%) and highest in the least deprived areas (*79.8*%), see **Table 7.1**. This is a large difference of 18.8 percentage points.

Table 7.1: Uptake of Breast Screening by SIMD in NHS Greater Glasgow and Clyde, 1st April 2019 to 31st March 2022

SIMD Quintile 2016	Not Screened	Screened	Total	*% Screened*
1 (Most Deprived)	18,138	28,318	46,456	*61.0*
2	7,983	18,463	26,446	*69.8*
3	5,072	13,803	18,875	*73.1*
4	5,192	18,036	23,228	*77.6*
5 (Least Deprived)	6,975	27,562	34,537	*79.8*
Total	43,360	106,182	149,542	*71.0*

Source: SBSS local report (November 2022)

Further local analysis was undertaken to explore variations in uptake of 2019/22 screening round for additional populations with protected characteristics including age, ethnicity, learning disability and mental health, and by Health and Social Care Partnership (HSCP) area.

Uptake of breast screening is similar across all age cohorts, **(Table 7.2)**.

Table 7.2 Uptake of breast screening by age in NHS Greater Glasgow and Clyde, 1st April 2019 to 31st March 2022

Age Band	Not Screened	Screened	Total	*% Screened*
50-54	11,838	28,031	39,869	*70.3*
55-59	11,777	28,880	40,657	*71.0*
60-64	10,001	25,436	35,437	*71.8*
65-70	9,744	23,835	33,579	*71.0*
Total	43,360	106,182	149,542	*71.0*

Source: SBSS local report (November 2022)

However, comparison of uptake by age and deprivation shows wide differences across all age cohorts residing in the most deprived areas compared to those residing in the most affluent (see **Table 7.3**).

Table 7.3 Proportion of screened NHSGGC women residents split by age and SIMD, 1st April 2019 to 31 March 2022

	Age Band				
SIMD	**50-54**	**55-59**	**60-64**	**65-70**	**Total**
1 (Most Deprived)	*60.6*	*61.1*	*61.7*	*60.5*	*61.0*
2	*69.3*	*69.9*	*70.4*	*69.7*	*69.8*
3	*73.3*	*73.6*	*73.3*	*72.2*	*73.1*
4	*77.7*	*78.1*	*78.5*	*76.3*	*77.6*
5 (Least Deprived)	*78.9*	*79.9*	*80.8*	*79.6*	*79.8*
Total	*70.3*	*71.0*	*71.8*	*71.0*	*71.0*

Source: SBSS local report (November 2022)

Analysis by ethnicity was undertaken via data linkage to self-reported ethnicity reference dataset held within West of Scotland Safe Haven, see **Table 7.3**. Uptake was above 70% for the Scottish and Irish groups and below 70% for all other ethnic groups except the Roma and Showman/Showwoman groups which had very small numbers. Lowest uptake was seen in women who did not have ethnicity recorded (NULL, opt-out / unknown).

Table 7.3: Uptake of breast screening by ethnicity in NHS Greater Glasgow and Clyde, 1st April 2019 to 31st March 2022

2001 Census Ethnic Group	Not Screened	Screened	Total	% Screened
African, Scottish African or British African	190	342	532	*64.3*
Any Mixed or multiple ethnic group	178	268	446	*60.1*
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	25	36	61	*59.0*
Caribbean or Black	62	123	185	*66.5*
Chinese, Scottish Chinese or British Chinese	264	596	860	*69.3*
Gypsy/Traveller	47	76	123	*61.8*
Indian, Scottish Indian or British Indian	326	741	1,067	*69.4*
Irish	161	549	710	*77.3*
NULL	4,968	3,486	8,454	*41.2*
Opt out, Not known	196	215	411	*52.3*
Other	176	364	540	*67.4*
Other British	3,411	7,215	10,626	*67.9*
Other ethnic group	190	333	523	*63.7*
Other ethnic group Arab, Scottish Arab or British Arab	38	76	114	*66.7*
Other white ethnic group	632	993	1,625	*61.1*
Pakistani, Scottish Pakistani or British Pakistani	746	1,255	2,001	*62.7*
Polish	159	194	353	*55.0*
Roma	*	*	*	*92.3*
Scottish	31,584	89,294	120,878	*73.9*
Showman/Showwoman	*	*	*	*70.0*
Total	43,360	106,182	149,542	*71.0*

Source: West of Scotland Breast Screening Data, Safe Haven Ethnicity dataset, November 2022. * numbers redacted as <= 5 or identifiable as <=5

Table 7.4 shows that 561 of the 149,542 individuals eligible for screening were registered with a learning disability (0.4%)[21]. Individuals who were registered with a learning disability had poorer uptake of breast screening**,** 49.9% compared to 71.2% in the rest of the population.

Table 7.4 Uptake of breast screening by learning disability in NHS Greater Glasgow and Clyde, 1st April 2019 to 31st March 2022

Learning Disability Register	Not Screened	Screened	Total	*% Uptake*
Not Registered	43,079	105,902	148,981	*71.1*
Registered	281	280	561	*49.9*
Total	43,360	106,182	149,542	*71.0*

Source: West of Scotland Breast Screening Data, November 2022;
Learning Disability (September 2018).

[21] Sourced from Learning Disability Register, September 2018, therefore will not capture LD registrations after this date.

People registered on PsyCIS have had at least one episode of psychosis which is typically seen in patients with a severe or enduring mental illness. **Table 7.5** shows that 1,155 of the 149,542 people eligible for screening were registered on PsyCIS (0.8% of the total eligible population). Individuals registered on PsyCIS had poorer uptake of breast screening, .50.7% compared to 71.2% in the rest of the population.

Table 7.5 Uptake of breast screening among people with severe and enduring mental illness in NHS Greater Glasgow and Clyde, 1st April 2019 to 31st March 2022

PSYCIS Status	Not Screened	Screened	Total	*% Uptake*
Rest of Population	42,791	105,596	148,387	*71.2*
PSYCIS (Registered)	569	586	1,155	*50.7*
Total	43,360	106,182	149,542	*71.0*

Source: West of Scotland Breast Screening Data, November 2022m (November 2022); PsyCIS (November 2022)

The acceptable standard for screening uptake (70%) was met in East Dunbartonshire (*78.3*%), East Renfrewshire (*77.3*%), Inverclyde (72.0%) and Renfrewshire (*76.9*%), West Dunbartonshire (*71.8%)* HSCPs. The essential threshold was not in Glasgow City HSCP as a whole (*65.3*%) or in any of the three sectors, (**Table 7.6**).

Table 7.6: Uptake of breast screening by HSCP in NHS Greater Glasgow and Clyde, 1st April 2019 to 31st March 2022

HSCP	Routine Invitations	Not Screened	Screened	% Uptake
East Dunbartonshire HSCP	17,099	3,702	13,397	*78.3*
East Renfrewshire HSCP	14,001	3,173	10,828	*77.3*
Glasgow North East	19,110	7,159	11,951	*62.5*
Glasgow North West	22,484	8,168	14,316	*63.7*
Glasgow South	27,118	8,534	18,584	*68.5*
Glasgow HSCP	68,712	23,861	44,851	65.3
Inverclyde HSCP	10,257	2,867	7,390	*72.0*
Renfrewshire HSCP	27,017	6,245	20,772	*76.9*
West Dunbartonshire HSCP	12,456	3,512	8,944	*71.8*
Total	149,542	43,360	106,182	*71.0*

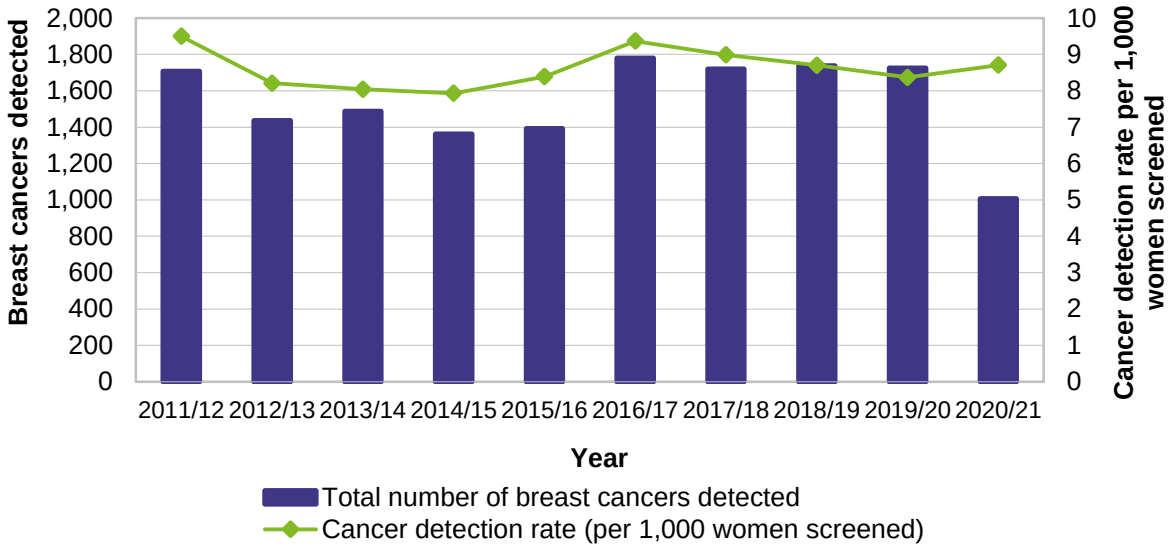
Source: West of Scotland Breast Screening Data, November 2022

Mapping of breast screening uptake rates by data zones was undertaken to provide further insight into variation in uptake at local geographical level. This illustrates that uptake rates in some pockets of NHSGGC can be significantly lower than HSCPs levels, as 293 of the 1,456 data zones had uptake rates between 40-59% and a further 13 data zones had uptake rates of below 40%. Uptake maps are available on the PHSU website.[22]

7.7. Breast Screening Outcomes

The most recent national SBSP statistics published in April 2022 noted the number of screen-detected breast cancers in women of all ages in Scotland in 2020/2021 was 1,006, (rate of 8.7 per 1,000 women screened) a drop of 718 individuals from 2019/20. **(Figure 7.5).** This decrease is likely to be due to the pausing of the screening programme from March to August 2020[23].

Figure 7.5: Trends in the number of breast cancers detected, and cancer detection rates per 1,000 women screened: Scotland, 2011/2012 to 2020/2021(All appointment types)



Source: PHS Breast Screening Programme Statistics, April 2022

[22] Screening Uptake Data Zone maps

[23] Scottish breast screening programme statistics - Annual update to 31 March 2021 - Scottish breast screening programme statistics - Publications - Public Health Scotland (Accessed November 2022)

7.8. Effect of the COVID-19 pandemic on delivery of breast screening

Breast screening was paused from April to July 2020 due to COVID restrictions, and resumed from August 2020

The West of Scotland Breast Screening Service (WoSBSS) revised administration and appointment processes with the aim of improving uptake. Patients were encouraged to contact the centre and this allowed staff to discuss pandemic related changes. A courtesy call from the service fourteen days prior to the appointment allowed staff to encourage and engage with those who may have been reluctant to attend.

More women were also invited to attend breast screening at Nelson Mandela Place instead of mobile units within local areas of Glasgow City. The service also had to deal with additional factors such as COVID-19 infection prevention and control processes including PPE and social distancing during the screening process, and longer appointment times.

Prior to the COVID-19 pandemic, women aged 71 years and over could self-refer once every three years for breast screening. Plans to re-instate self-referrals for women over 71 years of age on a phased basis from autumn 2022, communicated in a recent Scottish Government press release[24].

During 2021, WoSBSS implemented a new telephony system within the service which enabled SMS and telephone reminders. This has contributed to the improvement in attendance.

7.9. Challenges and Future Priorities

We will continue to work with NHSGGC Estates and local communities to secure future sites for breast screening vans to be sited. We will prioritise locations by local intelligence in relation to uptake and accessibility.

As far as possible with current staffing profile, we will continue to actively monitor slippage in the system, and remaining sensitive to local uptake rates. The available screening appointments continue to be optimised so we can maintain increased uptake rates above the minimum standard (71.0% compared to 65.8% for 2015/16 to 2018/19 screening round).

Calling women for screening based on GP practice can lead to a women missing screening invitations and managing this remains a challenge. However this will be considered as part of the national review by the Breast Screening Modernisation Programme Board.

[24] https://www.gov.scot/news/modernising-breast-screening-services/

We will continue to progress actions identified within NHSGGC Inequalities Plan for Adult Screening programmes to enable a more coordinated approach to reducing inequalities in uptake through targeted activities, (see **Section 10**)

Appendix 7.1

Performance Data in relation to NHSBSP Standards[1]: Scotland, 1st April 2018 to 31st March 2021[2], Females aged 50-70 years[3]. This data was not available by NHS Board.

Standard	Appointment type[3]	Age group	Acceptable Standard	Achievable Standard	Results 2018/21
Attendance rate (percentage of women invited)	All routine appointments	50-70 years	>= 70%	80%	73.2%
Invasive cancer detection rate (per 1000 women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	>= 2.7	>= 3.6	6.4
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	>= 3.1	>= 4.2	6.9
Small (<15mm) invasive cancer detection rate (per 1000 women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	>= 1.5	>= 2.0	2.7
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	>= 1.7	>= 2.3	3.6
Non-invasive cancer detection rate (per 1000 women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	>= 0.5	-	1.6
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	>= 0.6	-	1.0
Standardised Detection Ratio (SDR) (observed invasive cancers detected divided by the number expected given the age distribution of the population)	Routine-All initial screens (Prevalent) and Subsequent screen (Incident) (previous screen within 5 years)	50-70 years	>= 1.0	>= 1.4	1.55
Recalled for assessment rate (percentage of women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	<10%	<7%	7.2
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	<7%	<5%	3.0
Benign biopsy rate (per 1000 women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	< 1.5	< 1.0	1.4
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	< 1.0	< 0.75	0.4

[1] Health Improvement Scotland Breast Screening Standards 2019.
[2] Breast Screening year runs from 1st April to 31st March.
[3] Routine appointments exclude self/GP referral appointments.
Green = achievable standard met; amber = acceptable standard met; red = standard not met
Source: Scottish Breast Screening Programme (SBSP) Information System -- KC62 returns

Appendix 7.2

Members of Breast Screening Steering Group (At March 2022)

Dr Emilia Crighton	Screening Co-ordinator, Interim Director of Public Health (Chair)
Celia Briffa-Watt	Consultant in Public Health, NHS Lanarkshire
Paul Burton	Information Manager
Lin Calderwood	National Portfolio Programme Manager, National Portfolio
Margo Carmichael	Health Improvement Lead, NHS Lanarkshire
Nuala Dawson	Consultant Radiologist
Dr Rob Henderson	Consultant in Public Health Medicine, NHS Highland
Dr Aileen Holliday	Clinical Effectiveness Coordinator, NHS Forth Valley
Marion Inglis	Business Manager, WoSBSS
Heather Jarvie	Public Health Programme Manager
Dr Jacqueline Kelly	Clinical Director, West of Scotland Breast Screening Service
Khatijah McLellan	Community Liaison Officer
Dr Graeme Marshall	Clinical Director, NE Glasgow HSCP
Uzma Rehman	Public Health Programme Manager
Mary McKee	General Manager, Diagnostic Imaging
Dr Nicola Schinaia	Consultant in Public Health Medicine, NHS Highland
Archana Seth	Consultant Radiologist (QA Lead Radiologist) Scotland
Cat Graham	Superintendent Radiographer

Chapter 8: Cervical Screening

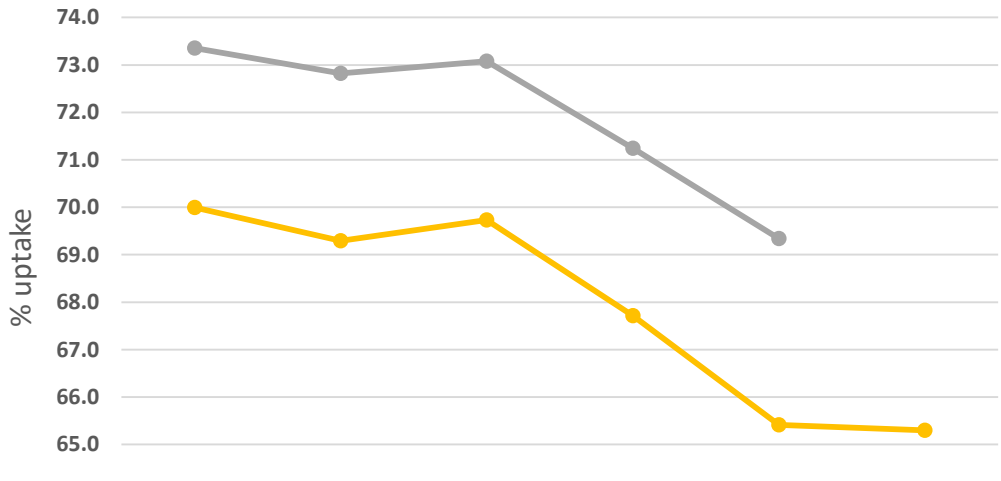
Summary

Cervical cancer was the eleventh most common cancer in females in 2020 in Scotland and the most common cancer in women under the age of 35 years.

Cervical screening (smear test) is offered to women and anyone with a cervix aged between 25 and 64 years, every 5.5 years. HPV testing replaced cervical cytology as the primary test in April 2020. If a smear sample tests positive for HPV, cytology will be undertaken to identify if there are cell changes. Subsequent follow-up will differ according to the test results and can include invitation to attend colposcopy where the cervix is visualised. If no high-risk HPV is found in the smear sample, the person has a very low risk of developing cervical cancer within 5 years and will be called for screening at the routine interval of 5.5 years, regardless of their age.

Uptake of screening in NHSGGC for 2021-22 was 65.3% against a target of 80%. A total of 232,652 women were adequately screened in 2021-22. Uptake in NHSGGC has declined in the last six years by five percentage points. Although NHSGGC uptake of cervical screening is low in Scotland, Scotland overall does not meet the 80% target for uptake.

Uptake of offer of cervical screening in Scotland and NHS GGC 2016-17 to 2021-22.



	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22*
Scotland	73.4	72.8	73.1	71.2	69.3	
GGC	70.0	69.3	69.7	67.7	65.4	65.3

Source: PHS Cervical Screening Programme Statistics, *NHSGGC SCCRS extract

Uptake was lowest at the youngest end of the age range offered screening in those aged between 25 and 29 (50.2%), compared to the highest uptake in women aged 50-54 years (76.1%).

Uptake was higher in those living in least deprived areas. Uptake for women living in the least deprived areas was 68.7% compared with 62.1% in the most deprived areas. This gap is not as wide as seen in other screening programmes. Over time screening uptake by deprivation quintile has fallen in each quintile and the gap between the most and least deprived SIMD quintiles is widening over time.

Uptake of screening was highest amongst women identifying as Scottish, other British and Irish, and lowest in those who had no ethnic group recorded (NULL).

Uptake of screening amongst those with registered learning disability was significantly lower than the rest of the population, 25.5% versus 65.3%. Uptake of screening amongst those with enduring mental illness (as registered on PsyCIS and with at least one episode of psychosis) was similar to the rest of the population, 62.1% versus 65.3%. Both of these groups were less than 1% of the screening population.

Variations in cervical screening uptake across HSCPs persist, ranging from 52.8% in Glasgow City North West Sector, to 77.4% in East Dunbartonshire HSCP. No HSCP met the minimum target of 80% uptake of screening.

Recovery from the COVID-19 pandemic continues. During the pandemic cervical screening was paused for six months and as a result all records on SCCRS were updated by adding another 6 months on to the existing projected recall date. This in effect pushed the recall date out by another 6 months to 5.5 years. All women who missed their invitation date due to the pause in screening were caught up when the programme resumed.

Reviews of laboratory and colposcopy service are undertaken annually against specified criteria. This highlighted two significant issues. Cervical screening sample submission has returned to pre-pandemic levels, but there is considerable backlog within the laboratories and the colposcopy service, leading to long wait times for screening sample test results and for clinical investigation of positive screening results. Work is ongoing to reduce these waiting times.

NHSGGC has carried out a multi-disciplinary review of all invasive cervical cancer cases since 2006 to audit the screening and management of every case. On average this clinical audit reviews 75 cases of cervical cancer per year, in 2021-22 this was 69 cases. Averaged over the last ten years, 10.4% of cases were under the age of 30 years and 29.0% under the age of 40 years. Almost half of cases are in women from the most deprived areas in NHSGGC. Only 27% of cases had a full screening history, 67% had missed some or all screening tests following invitations. Over the last ten years, 55% of cases have been in women displaying symptoms and 41% in women who attended routine screening and were not symptomatic.

Preparation is underway for a national look-back exercise which will ensure that women excluded from cervical screening with the ‘no cervix’ exclusion

have been correctly identified. This follows cases of cervical cancer in women who had been excluded in this way. This audit will involve checking the records of almost 30,000 women resident in NHSGGC and will involve primary care, secondary care and a dedicated audit team. Funding is being provided by Scottish Government for this purpose. The audit is likely to begin in Spring 2023 and run for more than a year.

Chapter Contents

8.1. Background

Cervical cancer was the eleventh most common cancer in females in Scotland and the most common in women under the age of 35 years in 2020 (the most recent year for which incidence data is available)[25].

In the same year, 53 women residing in the NHSGGC area were diagnosed with cervical cancer, which gives an age-standardised incidence rate of 8.7 per 100,000 of the population. In 2021, the most recent year for mortality data, there were 30 deaths from cervical cancer in women residing in NHSGGC, this gives an age standardised mortality rate of 5.1 per 100,000 population, higher than the national rate of 3.6 per 100,000.

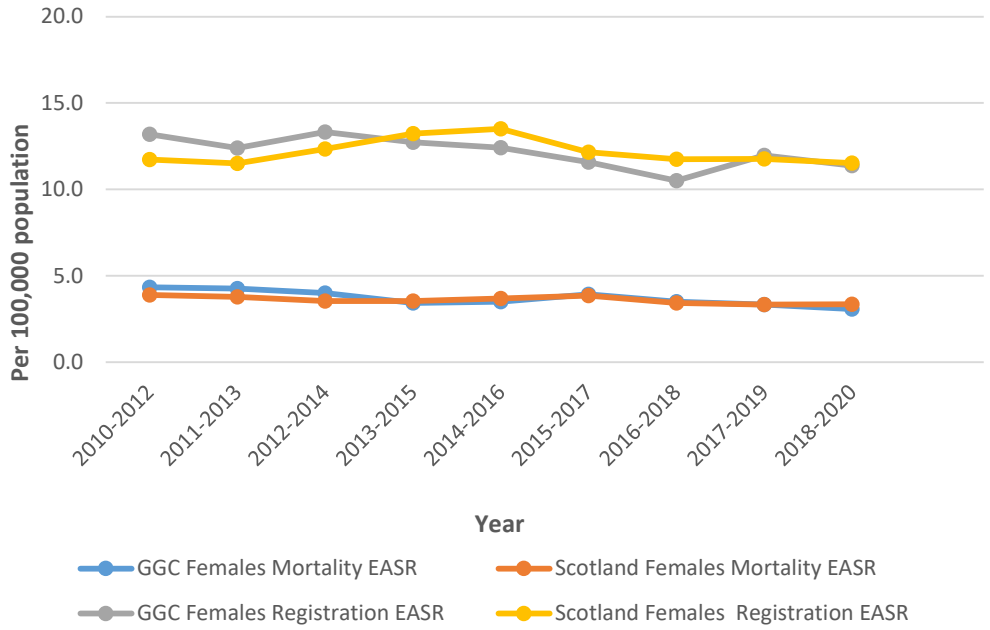
Standardised incidence and mortality rates over rolling 3 year periods for cervical cancer for NHSGGC and Scotland are illustrated in **Figure 8.1**. In the 10 year period between 2010 and 2020, the age-standardised rolling 3 years incidence rate of cervical cancer in women Greater Glasgow & Clyde decreased from 13.2 to 11.4 per 100,000 population. Mortality rates of cervical cancer in Greater Glasgow & Clyde decreased from 4.3 to 3.1 per 100,000. There was a larger than expected fall in cervical cancer incidence during 2019/20, which has been attributed to under-diagnoses due to COVID-19 pandemic.

Risk factors for cervical cancer include:

- Exposure to oncogenic types of HPV through all kinds of sexual contact, including touching. The body clears most HPV infections, however a minority become persistent HPV infection which can transform normal cervical cells into abnormal ones, which can develop to precancerous lesions and then invasive cancer. These changes usually occur over a period of 10 to 20 years.
- Increased exposure to HPV, such as a multiple number of sexual partners.
- Immunosuppressive diseases or infections, that make the body more vulnerable to infection.
- Smoking.

[25] Cancer Incidence in Scotland (publichealthscotland.scot) (Accessed November 2022)

Figure 8.1: Cervix and Uteri Cancer Registrations & Mortality Trends 2010-2020 (Rolling 3 Years) European Age Standardised Rate (EASR) Per 100,000 Population



Source: Registration Source: PHS April 2022, Mortality Source: PHS October 2022

8.2. Aim of cervical screening programme

Cervical screening is a national screening programme which aims to prevent cervical cancer, or detect cervical cancer early so it can be treated promptly. Cervical screening is offered to women and anyone with a cervix aged between 25 and 64 years. It involves taking a sample of cells from the cervix (a smear test) and testing those cells for High Risk Human Papilloma Virus (Hr-HPV) which, if left untreated, can lead to cervical cancer.

The National Cervical Screening Programme performance and quality is monitored via defined Key Performance Indicators (KPI's)[26] and National Cervical Screening Standards[27].

[26] Scottish cervical screening programme statistics - Annual update to 31 March 2021 - Scottish cervical screening programme statistics - Publications - Public Health Scotland (Accessed November 2022)

[27] Cervical screening standards (healthcareimprovementscotland.org) (Accessed November 2022)

8.3. Eligible population

Cervical screening is routinely offered to women and anyone with a cervix registered with a GP practice between the ages of 25-64 years every 5 years. Participants on non-routine screening (where screening results have shown changes that need further investigation or follow up) will be recalled more frequently and invited up to 70 years of age.

8.4. The cervical screening pathway

Women are called for cervical screening test once every five years. Call/recall for screening is managed through a national database, the Scottish Cervical Call Recall System (SCCRS). Invitations to attend for screening are sent by post to all eligible women, with up to three reminders being sent if they do not attend for screening. Women who miss a smear test are automatically called again five years later. Call/recall for the next smear test is automatic depending on the outcome of the current smear test. Smear tests are usually undertaken at GP practices.

The cervical screening sample is tested for High Risk Human Papilloma Virus (Hr-HPV) which causes cervical cancer. If the Hr-HPV test is positive, cells in the sample are visualised with cytology. If cytology identifies cell changes (the test is positive), a woman is invited to attend for colposcopy. If a screening test is negative then women are recalled for routine smear test five years later.

Colposcopy clinics, located in hospital out-patient settings, involves visualising the cervix to identify if there are any changes. If changes are identified, cells and biopsied tissue may be removed for pathological investigation or further tests may be undertaken.

A summary of the Hr-HPV primary pathway is provided in **Appendix 8.1**

8.5. Preventing HPV infection

HPV vaccination has been offered to all girls aged 11-13 years since 2008; and all boys since 2019.

HPV infection causes cervical cancer and HPV immunisation is offered to teenagers in Scotland as part of the national immunisation programme, to prevent cervical cancer. However, there are many cancer-causing types of HPV and the vaccine may not protect against all these types. As a result, women and people with a cervix are still invited to participate in the cervical screening programme.

The HPV vaccine was first offered in Scotland in 2008 to girls aged 11-16 years. These people are now screening age (aged 25-29 years) and nationally there is a programme to monitor cervical screening uptake in this age group to understand barriers to screening.

Table 8.1 shows the key performance indicator for vaccine uptake in those people who were offered HPV vaccine at school. Uptake of cervical screening in NHSGGC is lower than for the whole of Scotland in women aged 25-29 years. HPV immunisation data shows that women aged 24-29[28] years who are fully vaccinated are more likely to have attended cervical screening than women who are incompletely vaccinated or unvaccinated. Women aged 24-29 years who are unvaccinated have a low uptake of cervical screening at 26.7% in NHSGGC (compared to 32.2% in Scotland overall).

Vaccine uptake data is available for all ages from Public Health Scotland, the latest available data if for the period April 2020-March 2021[29].

Table 8.1: Percentage uptake of cervical screening by women aged 25-29 years who were offered HPV vaccine as teenagers and are fully, partially or not immunised with HPV vaccine. NHSGGC and Scotland, April 2020 to March 2021

HPV vaccination status	Age						
	24	25	26	27	28	29	24-29
HPV Immunisation status (Full[1])							
Scotland	**40.9**	**61.7**	**68.9**	**72.0**	**73.3**	**76.1**	**68.2**
Greater Glasgow & Clyde	**40.2**	**60.7**	**67.2**	**71.2**	**72.2**	**75.0**	**67.1**
HPV Immunisation status (Incomplete[1])							
Scotland	**34.4**	**45.7**	**57.8**	**66.7**	**67.4**	**71**	**65.3**
Greater Glasgow & Clyde	**27.5**	**39.7**	**60.7**	**66.8**	**68.1**	**68.3**	**64.8**
No HPV Immunisation status							
Scotland	**6.4**	**17.4**	**26.6**	**35.4**	**39.4**	**45.2**	**32.2**
Greater Glasgow & Clyde	**4.6**	**14.0**	**21.7**	**29.8**	**34.2**	**39.8**	**26.7**

1. The Immunisation Status of FULL is where the individual has been fully immunised, i.e. had all HPV doses. Incomplete is where the individual has had at least one of the Immunisations but not all of them.
2. Based on SCCRS population denominator (excluding medically ineligible women) ages 24-29.

[28] Include women age 24 due to change in age range and frequency in 2016
[29] HPV immunisation statistics Scotland - HPV immunisation statistics Scotland school year 2020/21 - HPV immunisation statistics Scotland - Publications - Public Health Scotland.

8.6. Eligibility for cervical screening

Over a five year period (a single call/recall cycle) in NHSGGC, more than 356,000 women are eligible to attend cervical screening.

In the call/recall database (SCCRS), 116,398 women have an exclusion applied to their record, so that they are not invited for cervical screening. Exclusions are applied for a variety of reasons, (**Table 8.2).** The main reason is women who default on their invitation to attend for screening. When women do not attend for screening, they are sent two reminders after their initial invite. If they do not attend following these reminders, they are excluded from call/recall until their next five year call/recall round. Women with a 'defaulter' exclusion can make an appointment for screening in primary care at any time, however they will not be sent a further invite until the next five-year call/recall cycle.

Table 8.2 Exclusions from cervical screening among eligible population, NHSGGC, 2021-22

Exclusion	Frequency	*%*
Medical exclusion	25	*0.01*
CHI Exclusion	9,839	*8.45*
Defaulter	89,520	*76.91*
No Cervix	13,261	*11.39*
No Further Recall	321	*0.28*
Not Clinically Appropriate	372	*0.32*
Opted Out	2,634	*2.26*
Pregnant	426	*0.37*
Total	116,398	

Source: SCCRRS (November 2022)

Medical exclusion combines categories anatomically impossible, co-morbidity and terminally ill. CHI exclusion categories include: transferred out of Scotland, redundant (because of linked records), transferred out as present address unknown, or deceased. No cervix exclusion is usually added when a woman has undergone hysterectomy and had their cervix removed. Opted-out is when a woman notifies their GP that they do not want to attend for screening and do not want to receive reminders to attend. This is usually done after discussion with their GP and can be reversed at any time.

8.7. Programme Performance and delivery

Screening is offered to women once every five years unless they are on a treatment or on a higher risk pathway. Prompts and reminders are sent every to remind women to contact their GP practice to make an appointment for screening. Uptake is reported over a five and a half years period, the time when every eligible women will have been called for screening.

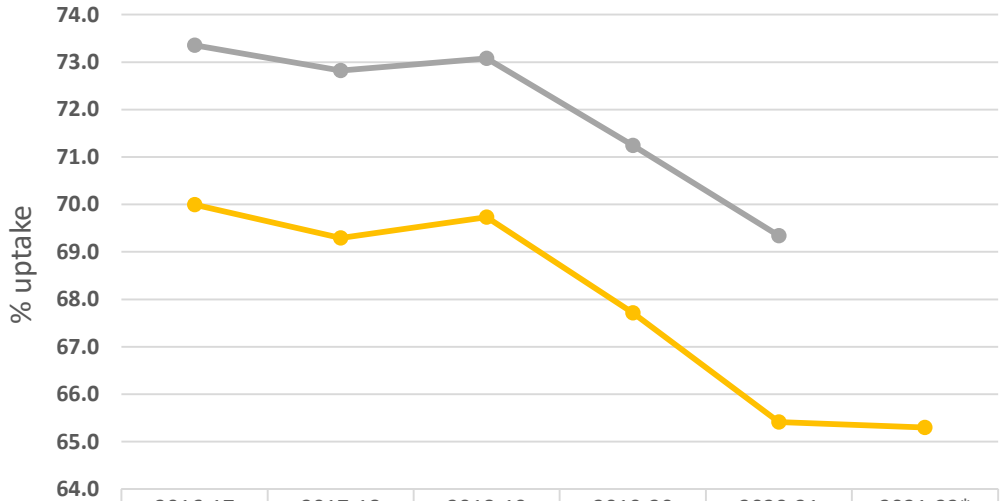
National Cervical Screening Programme Statistics are published annually by Public Health Scotland. **Appendix 8.2** summarises the most recent published KPIs for NHSGGC and Scotland for time period **1st April 2020 to 31st March 2021**.

Local monitoring data is presented in this report to provide uptake and outcome data for period 1st April 2021 to 31st March 2022. As a result of differences in data extract dates and data definitions, numbers in local data analysis may differ from those presented in forthcoming published national programme reports.

8.8. Uptake of Cervical Screening

Over time the percentage of women participating in the cervical screening programme has been declining, see **Figure 8.2**.

Figure 8.2 Uptake of offer of cervical screening in Scotland and NHS GGC 2016-17 to 2021-22.



	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22*
Scotland	73.4	72.8	73.1	71.2	69.3	
GGC	70.0	69.3	69.7	67.7	65.4	65.3

Source: PHS Cervical Screening Programme Statistics, *NHSGGC SCCRS extract (November 2022), GGC statistics only

In 2020-21, NHS GGC did not meet the national standard for uptake of offer of screening for the whole population of eligible women, nor by age group or SIMD quintile. However, Scotland as a whole also did not meet this standard. The uptake in NHS GGC for these categories, was lower than for All Scotland but was generally similar. These findings will be discussed in more detail in the sections below.

Uptake by age

Uptake by five year age groups is detailed in **Table 8.3**. Younger women have a poorer uptake of cervical screening than older women. Among women aged 25 to 29, the uptake rate was 50.2% compared to women aged over 40, whose overall uptake rate ranged from 66.8% to 76.1%. No age group achieved the 80% target uptake.

Women in the 25-29 year old age group will have received only one invitation to attend screening. This group also has high uptake of HPV vaccine which protects against cervical cancer, meaning that these women may not feel that cervical screening is needed. All sexually active women are advised to attend for cervical screening independent of HPV vaccine status, as there are many types of HPV which can cause cervical cancer and the vaccines used in the national programme do not protect against all types.

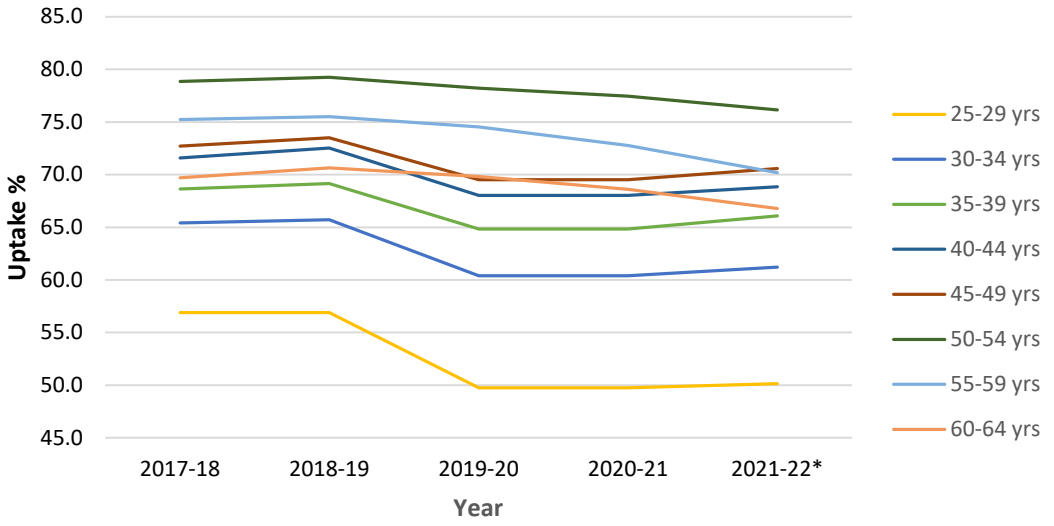
Table 8.3: Uptake of cervical screening among eligible population by age for NHS Greater Glasgow and Clyde, 2021-22 in previous 5.5 years

Age Group	Not Screened	Screened	Total	*% Uptake*
25-29	27,990	28,173	56,163	***50.2***
30-34	21,227	33,495	54,722	***61.2***
35-39	16,458	32,071	48,529	***66.1***
40-44	13,233	29,236	42,469	***68.8***
45-49	10,659	25,567	36,226	***70.6***
50-54	9,687	30,912	40,599	***76.1***
55-59	12,265	28,865	41,130	***70.2***
60-64	12,110	24,333	36,443	***66.8***
Total	**123,629**	**232,652**	**356,281**	***65.3***

Source: SCCRS (November 2022)

Between 2017-18 and 2021-22 screening uptake has generally fallen in each five year age group, though by local data in 2021-22 there has been a small rise in uptake in many age groups, (**Figure 8.3)**. There remains a gap in uptake between the younger women aged 25-29 years and those in older age groups.

Figure 8.3 Uptake of cervical screening amongst eligible women in the previous 5.5 years, by five year age group for NHSGGC residents, 2017-18 to 2021-22



Source: PHS Cervical Screening Programme Statistics,
*NHSGGC SCCRS extract (November 2022), GGC statistics only

Uptake by deprivation

Uptake was higher in those living in least deprived areas. Uptake for women living in the least deprived areas was 68.7% compared with 62.1% in the most deprived areas. The target of 80% was not met in any deprivation quintile, (**Table 8.4).**

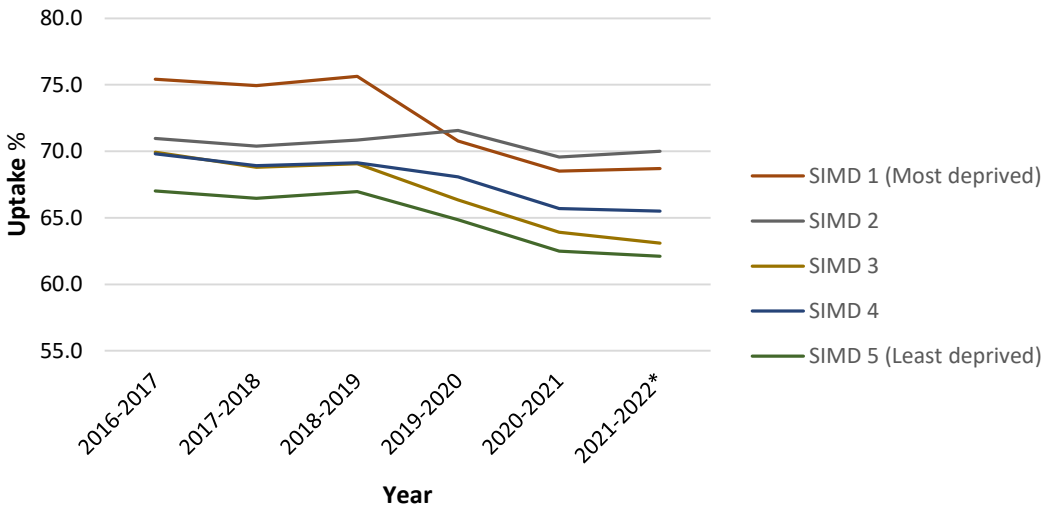
Table 8.4: Uptake of cervical screening among eligible population by SIMD for NHS Greater Glasgow and Clyde, 2021-22 in previous 5.5 years

SIMD Quintile 2016	Not Screened	Screened	Total	*% Uptake*
1 (Most Deprived)	46,031	75,423	121,454	***62.1***
2	22,217	42,155	64,372	***65.5***
3	17,575	30,018	47,593	***63.1***
4	15,186	35,365	50,551	***70.0***
5 (Least Deprived)	22,620	49,691	72,311	***68.7***
Total	**123,629**	**232,652**	**356,281**	***65.3***

Source: SCCRS (November 2022)

Over time screening uptake by deprivation quintile has fallen in each quintile, (**Figure 8.4)**. Those in the most deprived SIMD quintile consistently have the poorest screening uptake and this gap is widening over time.

Figure 8.4 Uptake of cervical screening amongst eligible women in the previous 5.5 years, by SIMD quintile for NHSGGC residents, 2016-17 to 2021-22



Source: PHS Cervical Screening Programme Statistics, *NHSGGC SCCRS extract (November 2022), GGC statistics only

Further local analysis was undertaken to explore variations in uptake of 2021/22 screening round for populations with protected characteristics (including age, ethnicity, learning disability and mental health), and geographically by Health and Social Care Partnership (HSCP) area and at community level via mapping screening uptake by data zone.

Uptake by ethnic group

In the past ethnic group has been poorly recorded in health data in Scotland and NHSGGC have used software to predict ethnicity based on name. This method had significant limitations and was likely to underestimate the ethnic diversity in our population here in NHSGGC. Previous screening reports have described uptake by ethnic group based on data generated in this way. More recently, there has been drive to improve ethnicity recording in health records and as a result, ethnicity data presented in this report utilises data linkage with self-reported ethnicity data held within West of Scotland Safe Haven, obtained from a variety of NHSGGC data sources. See **Table 8.5**.

Uptake of screening was highest amongst women identifying as Scottish, other British and Irish, and lowest in those who had no ethnic group recorded (NULL).

Table 8.5 Uptake of cervical screening amongst eligible women in the previous 5.5 years, by ethnicity for NHSGGC residents, 2016-17 to 2021-22

2021 Census Ethnicity Category	Not Screened	Screened	Total	*% Uptake*
African, Scottish African or British African	1,203	2,804	4,007	*70.0*
Any Mixed or multiple ethnic group	1,054	1,963	3,017	*65.1*
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	106	209	315	*66.3*
Caribbean or Black	342	671	1,013	*66.2*
Chinese, Scottish Chinese or British Chinese	1,630	2,455	4,085	*60.1*
Gypsy/Traveller	366	817	1,183	*69.1*
Indian, Scottish Indian or British Indian	1,899	2,940	4,839	*60.8*
Irish	453	1,735	2,188	*79.3*
NULL	45,524	16,741	62,265	*26.9*
Opt out, Not known	318	616	934	*66.0*
Other	1,115	1,838	2,953	*62.2*
Other British	5,499	15,240	20,739	*73.5*
Other ethnic group	1,060	1,688	2,748	*61.4*
Other ethnic group Arab, Scottish Arab or British Arab	455	592	1,047	*56.5*
Other white ethnic group	3,418	5,971	9,389	*63.6*
Pakistani, Scottish Pakistani or British Pakistani	3,168	4,930	8,098	*60.9*
Polish	859	1,373	2,232	*61.5*
Roma	20	37	57	*64.9*
Scottish	55,131	170,006	225,137	*75.5*
Showman/Showwoman	9	26	35	*74.3*
Total	**123,629**	**232,652**	**356,281**	***65.3***

Source: SCCRS, Safe Haven Ethnicity dataset (August 2022)

Uptake amongst those with learning disability

Uptake of health services amongst those with learning disability is a priority for NHSGGC and this includes uptake of offer of screening. **Table 8.6** shows that 1,751of the 356,281individuals eligible for cervical screening were registered with a learning disability (0.5%)[30]. Uptake of cervical screening was 25.5% amongst those with learning disability. This is considerably lower that uptake of cervical screening amongst the rest of the eligible population in NHSGGC.

[30] Sourced from Learning Disability Register September 2018, therefore will not capture LD registrations after this date.

Table 8.6 Uptake of cervical screening amongst eligible population by learning disability, NHSGGC residents, 2021-22, in previous 5.5 years

Learning Disability Register	Not Screened	Screened	Total	*% Uptake*
Rest of population	122,324	232,206	354,530	***65.5***
Registered learning disability	1,305	446	1,751	***25.5***
Total	123,629	232,652	356,281	***65.3***

Source: SCCRS (November 2022) ; Learning Disability Register (November 2018)

Uptake amongst those with enduring mental illness

Uptake of medical services for those with enduring mental illness is a priority for NHSGGC and this includes uptake of offer of screening. Data linkage was undertaken with PSYCIS database. Individuals registered on PsyCIS have had at least one episode of psychosis which is typically seen in patients with a severe or enduring mental illness.

A total of 2,324 of the 356,281 people eligible for cervical screening were registered on PsyCIS (0.7% of the total eligible population). Uptake of cervical screening amongst those eligible and with an episode of psychosis was 62.1%, (**Table 8.7**). This was similar to the uptake of screening amongst the rest of the eligible population in NHSGGC (65.3%).

Table 8.7 Uptake of cervical screening amongst eligible population by severe psychosis for NHSGGC residents 2021-22, in the previous 5.5 years

PSYCIC	Not Screened	Screened	Total	*% Uptake*
Rest of population	122,748	231,209	353,957	***65.3***
Registered episode of psychosis	881	1,443	2,324	***62.1***
Total	123,629	232,652	356,281	***65.3***

Source: SCCRS ; PSYCIS (November 2022)

Uptake by HSCP

Variations in cervical screening uptake across HSCPs persist **(Table 8.8).** They range from 52.8% in Glasgow City North West Sector, to 77.4% in East Dunbartonshire HSCP. No HSCP met the minimum target of 80% uptake of screening.

Table 8.8: Uptake of Cervical Screening by HSCP in NHS Greater Glasgow and Clyde, 2020-21

HSCP	Not Screened	Screened	Total	*% Screened*
East Dunbartonshire HSCP	6,603	22,563	29,166	*77.4*
East Renfrewshire HSCP	6,234	19,302	25,536	*75.6*
Glasgow North East Sector	22,859	36,174	59,033	*61.3*
Glasgow North West Sector	35,647	39,856	75,503	*52.8*
Glasgow South Sector	24,835	46,652	71,487	*65.3*
Glasgow City HSCP	83,341	122,682	206,023	*59.5*
Inverclyde HSCP	6,052	14,637	20,689	*70.7*
Renfrewshire HSCP	14,264	35,845	50,109	*71.5*
West Dunbartonshire HSCP	7,135	17,623	24,758	*71.2*
Total	123,629	232,652	356,281	*65.3*

Source: SCCRS (August 2022)

Mapping of cervical screening uptake rates by data zones was undertaken to provide further insight into variation in uptake at local geographical level. This illustrates that uptake rates in some pockets of NHSGGC can be significantly lower than HSCPs levels, as 195 of the 1,456 data zones had uptake rates between 40-59% and a further 50 data zones had uptake rates of below 40%. Uptake maps are available on the PHSU website.[31]

8.9. Effect of the COVID-19 pandemic on uptake of screening

The Scottish Government announced a temporary pause to all adult screening programmes on the 30 March 2020, meaning that no new invitations we issued from this date.

During the COVID-19 pandemic, all screening programmes including cervical screening were paused for six months (30th March 2020 to September 202). This was a national decision and as a result all records on SCCRS were updated by adding another 6 months on to the existing projected recall date. This in effect pushed the recall date out by another 6 months for those patients who were in SCCRS.

In addition, during the COVID-19 pandemic period April to July 2020, no smears were taken in primary care as part of the screening programme. Smear tests were taken for women who were symptomatic, but this was done outside the screening programme but still recorded on SCCRS.

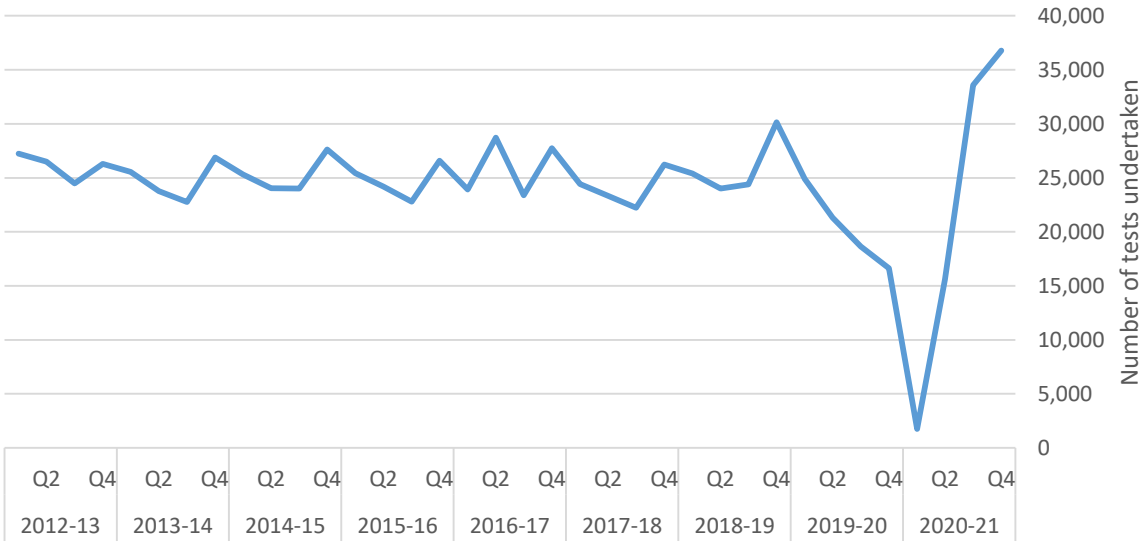
[31] Screening Uptake Data Zone maps

Nothing else has changed within the programme, all women who missed their invitation date and their screening appointment with their GP practice, due to the pause in screening programmes were caught up when the programme resumed.

The number of smears taken over time is shown in **Figure 8.5**. During the pandemic, screening smear tests were paused between April and July 2020. Since return to screening after the pandemic, the number of screening tests run has exceeded pre-pandemic levels. Data is only available for the year 2020-2132.

Smears are predominantly taken in primary care, but can also be taken in opportunistically within Sandyford specialist sexual health services, or at colposcopy clinic.

Figure 8.5 Numbers of tests undertaken for NHSGGC by quarter from 2012-13 to 2020-21 (latest available data)



Source: PHS Cervical Screening Programme Statistics

8.10. NHSGGC Cytopathology Laboratory

In 2020-21, the NHSGGC Cytopathology Laboratory processed 87,738 cervical smear samples. An essential criterion of the NHS HIS standards requires the laboratories to process a minimum of 15,000 cervical screening samples annually and this was achieved.

Turnaround times and reporting times for processing of cervical screening tests are also a key performance indicator, shown **Table 8.9a and 8.9b** respectively.

[32] Scottish cervical screening programme statistics - Annual update to 31 March 2021 - Scottish cervical screening programme statistics - Publications - Public Health Scotland

Table 8.9a: Laboratory turnaround times[33] in days, for 95% of cervical screening test samples processing at NHS laboratories: Scotland & NHSGGC samples, April 2020 to March 2021

Year/ quarter	Scotland	Greater Glasgow & Clyde
Q4	39	34
Q3	43	32
Q2	30	36
Q1	14	14

Source: PHS Cervical Screening Programme Statistics

Table 8.9b Average reporting times[34] in days, for cervical screening tests: Scotland & NHSGGC laboratories, April 2020 to March 2021

Year/ quarter	Scotland	Greater Glasgow & Clyde
Q4	17	17
Q3	18	19
Q2	19	21
Q1	14	14

Source: PHS Cervical Screening Programme Statistics

8.11. Colposcopy

When a screening smear sample tests positive for HPV and positive for cell changes at cytology, a colposcopy appointment is offered to enable further investigation by taking a closer look at the cervix. Laboratory results will indicated whether colposcopy should be routine, or high risk – where individuals are seen more quickly. Colposcopy is undertaken in out-patient clinics in hospitals across NHSGGC. Outcomes of colposcopy include return to routine screening call/recall for those with no cause for concern; higher frequency screening call/recall for those who need closer monitoring; and biopsy and pathology to identify if any detected changes are cancer.

[33] turnaround time is defined as the number of days from the date the sample was received by the laboratory to the date the report was issued by the laboratory.

[34] Reporting time is defined as the number of days from the date the screening test was performed to the date the report was issued by the laboratory.

Table 8.10 shows the activity data across NHSGGC colposcopy services. In 2021-22, there were 4,533 new and 1,498 return appointments for colposcopy, of which 3,293 (73%) and 971 (65%) respectively were attended (an average of 71%). New outpatient episodes include all patients attending colposcopy services; return episodes include treatment visits following the diagnosis of cervical cancer in addition to standard follow up visits for colposcopy based indications.

Reasons for non-attendance at clinic appointments included the patient did not attend (10%), the appointment was cancelled by the patient (11%) or the appointment was cancelled by NHSGGC (8%).

Data presented here is for the colposcopy service as a whole, and includes appointments for women who tested positive at screening test and women who are symptomatic.

Table 8.10: NHSGGC Colposcopy Services out-patient appointments in April 2021 to March 2022

Appointment Status	New patient	Return patient	Total
Attended	3,293	971	**4264**
Did not attend (DNA)	347	248	**595**
Cancelled by Clinic	334	151	**485**
Cancelled by Patient	483	79	**562**
Patient cancelled on day of clinic	76	8	**84**
Other	0	41	**41**
Total	**4,533**	**1,498**	**6,031**

Source: National Colposcopy Clinical Audit System (Extracted December 2022)

Colposcopy service performance benchmarking

There are national performance targets for colposcopy services in Scotland, these are shown in **Table 8.11** with details of performance of colposcopy services across NHSGGC.

In Scotland, the Colposcopy Quality Assurance is monitored through NCCIAS[35] and its Benchmarking standards. The Benchmarking report is discussed in the colposcopy user meetings twice per year to ensure practices within all units in NHSGGC meet the Scottish targets and in line with the average practices in Scotland within the same duration.

[35] National Colposcopy Clinical Information Audit System

One unit in NHSGGC is behind the Scottish target and other units for 12/12 cytoconversion and see and treat rate. This was discussed in colposcopy user meetings with further recommendations to review the local figures and practices. In general, the figures for other units have either met or close to the Scottish targets and comparable to the average practices in Scotland.

Table 8.11: Performance of colposcopy services across NHSGGC against benchmarking standards, April 2021-March 2022

Source: National Colposcopy Clinical Information & Audit System (Extracted December 2022)

	Total new outpatient attendances	Total new with abnormal smear	% Cyto reversion 12/12 post treatment	Confirmed histological treatment failures at 12 months	Adequacy of biopsy for histo	See and treat with CIN on histo	High grade new referral having biopsy	% recommended for IP treatment
Target		≥50 per annum	>90%	≤5%	>97%	≥90%	>90%	<20%
Scotland	14,520	10,796	87.7	3.7	97.8	82.6	92	8
GGC	3,564	2,690	83.2	2.0	97.1	87.9	91.8	7
Royal Alexandra Hospital	368	301	85.4	1.1	98.2	89.5	79.3	13.9
Vale of Leven Hospital	254	219	73.1	5.5	95.9	75	91.4	4.1
Inverclyde Royal Hospital	299	223	82.6	0	95.2	85.7	90.2	8.8
New Victoria Hospital	0	0	0	0	0	0	0	0
Stobhill Hospital	2,548	1,908	84	2.1	97.2	88.6	95.7	6
Sandyford	89	34	100	0	97.9	100	83.3	0

8.12. Invasive Cervical Cancer Audit

This audit looks at cases of invasive cervical cancer and examines screening history. Here in NHSGGC invasive cervical cancer audit is undertaken every quarter. This audit helps to identify variations in practice, the reasons for these variations and ultimately how to improve the quality of the screening and clinical services.

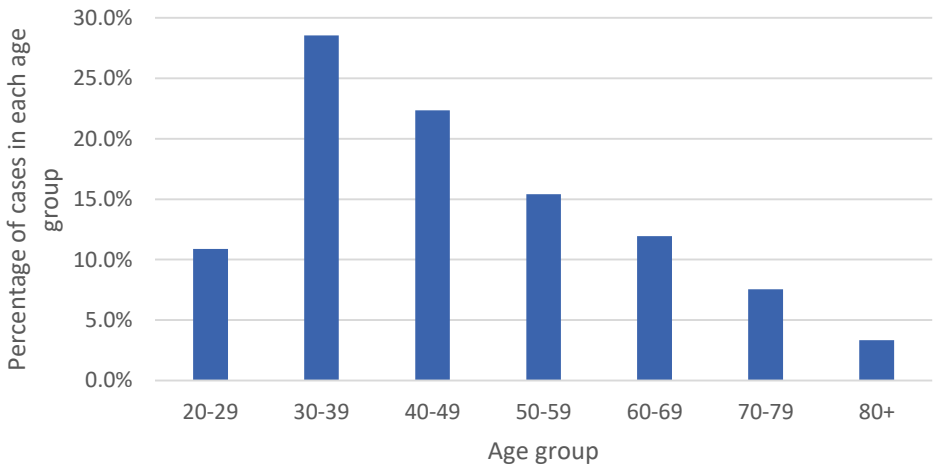
Findings from invasive cervical cancer audit are collated nationally and published annually in Public Health Scotland Cervical Cancer Quality Performance Indicators Report[36].

In 2022, the NHSGGC audit group reviewed the notes of 69 women who developed invasive cervical cancer and had a pathology diagnosis made in NHSGGC laboratories. These included women who had cancer detected through screening and detected by being symptomatic. In the last 10 years there have been on average 75 cases per year (range 51 to 108).

Age distribution of invasive cervical cancer cases

In 2022, cases were in the age range 28 to 79 years. Over the last ten years, the average age distribution of cases is shown in **Figure 8.6**. More than half of cases are in women under the age of 50 years, with 10.4% in women under 30 years, 29.0% in women aged 30-39 years and 22.2% in women aged 40-49 years.

Figure 8.6 Age distribution of cases of invasive cervical cancer in women resident in NHSGGC 2012-13 to 2021-22, 10 year age bands.



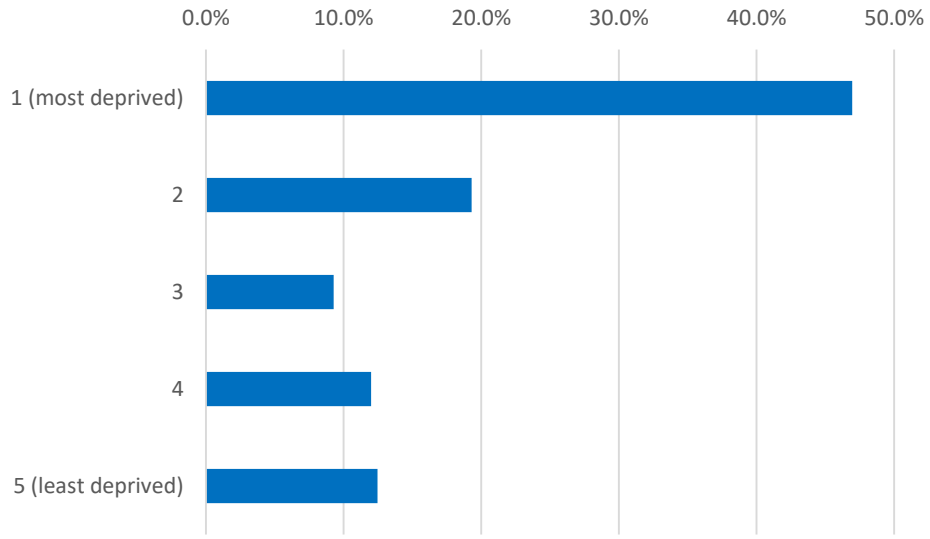
Source: NHSGGC Invasive Cancer Audit (November 2022)

[36] Cervical cancer Quality Performance Indicators - Patients diagnosed between October 2017 and September 2020 - Cervical cancer - Publications - Public Health Scotland (Accessed November 2022)

SIMD distribution of invasive cervical cancer cases

The average SIMD distribution of cases of NHSGGC residents from the last ten years is shown in **Figure 8.7**. Women from the most deprived SIMD quintile are more likely to be diagnosed with invasive cervical cancer, with almost half of invasive cancer cases diagnosed in women in NHSGGC in this quintile over the last ten years.

Figure 8.7 Average SIMD distribution of cases of invasive cervical cancer in women resident in NHSGGC 2012-13 to 2021-22, SIMD quintiles.



Source: NHSGGC Invasive Cancer Audit (November 2022)

How invasive cervical cancers were detected

In 2021-22 invasive cervical cancer cases in women resident in NHSGGC were detected through cervical screening (39%), by women presenting to medical services with symptoms (32%) and through incidental findings when women were being investigated for other illness (2%) (28% of cases were still under investigation at the time of compiling this report).

Over the last ten years of invasive cancer audit, on average 41% of cases were detected through screening, 55% were detected in symptomatic women and 2% through incidental findings.

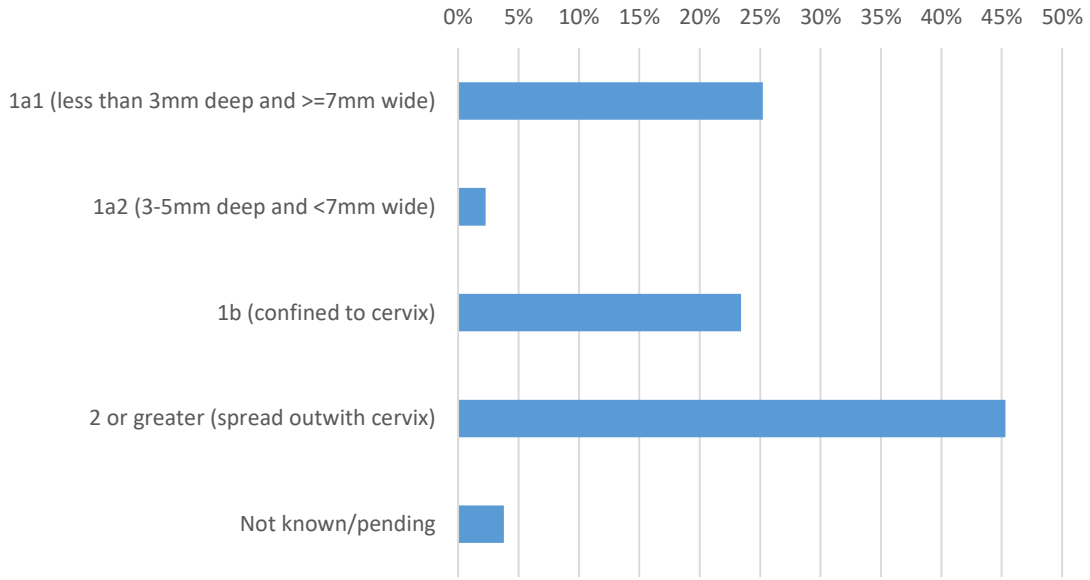
Screening history of women with invasive cervical cancer

Averaged over the last ten years for women resident in NHSGGC, 27% of cases had a full screening history, meaning that they had attended screening every time they were called; 67% of cases had an incomplete screening history where the women had not attended for smear test in response to some or all screening invitations.

Clinical stage of invasive cervical cancers at diagnosis

Invasive cervical cancers are graded or 'staged' based on their size and whether they are confined to the cervix or have grown into surrounding tissues. The proportion of invasive cervical cancer cases at each stage is shown in **Figure 8.8**, averaged for the last ten years.

Figure 8.8 Stage of invasive cervical cancers audited in NHSGGC, averaged for 2012-13 to 2021-22



Source: NHSGGC Invasive Cancer Audit (November 2022)

8.13. Training

NHSGGC offers training to smear-takers working in primary care and other dedicated smear-taking clinics (see Cervical Skills Training - NHSGGC). To become a smear-taker an initial training day followed by a period of supervised working must be undertaken. Those who become qualified at the end of this are held on a register with NHSGGC and must attend update training at least every three years.

The initial day of training and the update day are given by clinical staff and staff within the screening programme. Aspects of the screening programme that are incorporated into the training day and update day include:

- how to use SCCRS and any changes or updates;
- changes and updates for call/recall;
- lab results, what they mean and any changes to testing or process;
- any delays in the screening programme;
- programmes of work to improve inequalities in uptake and attendance.

In 2021-22 six initial training days were given, with 45 people attending including GPs, practice nurses, sexual health nurses, specialist registrars and other healthcare professionals. Six half-day update training sessions were delivered, attended by 57 people.

8.14. Challenges and Future Priorities

National 'no cervix' exclusion audit

In 2021 the Scottish Government announced that an audit would be undertaken of all women in the SCCRS database currently excluded from call/recall with the 'no cervix' exclusion. Discrepancies were identified in how this exclusion had been applied, following invasive cervical cancer audit. The 'no cervix' exclusion is usually applied to women following hysterectomy. The audit will examine the clinical evidence to support the 'no cervix' exclusion for all women in the SCCRS database, to make sure that the exclusion has been applied appropriately.

Planning for this audit is currently underway. All health boards are involved in this audit, with each health board responsible for checking the records of current residents who have this exclusion. This audit is likely to begin in early 2023 and run for more than a year.

Colposcopy waiting times

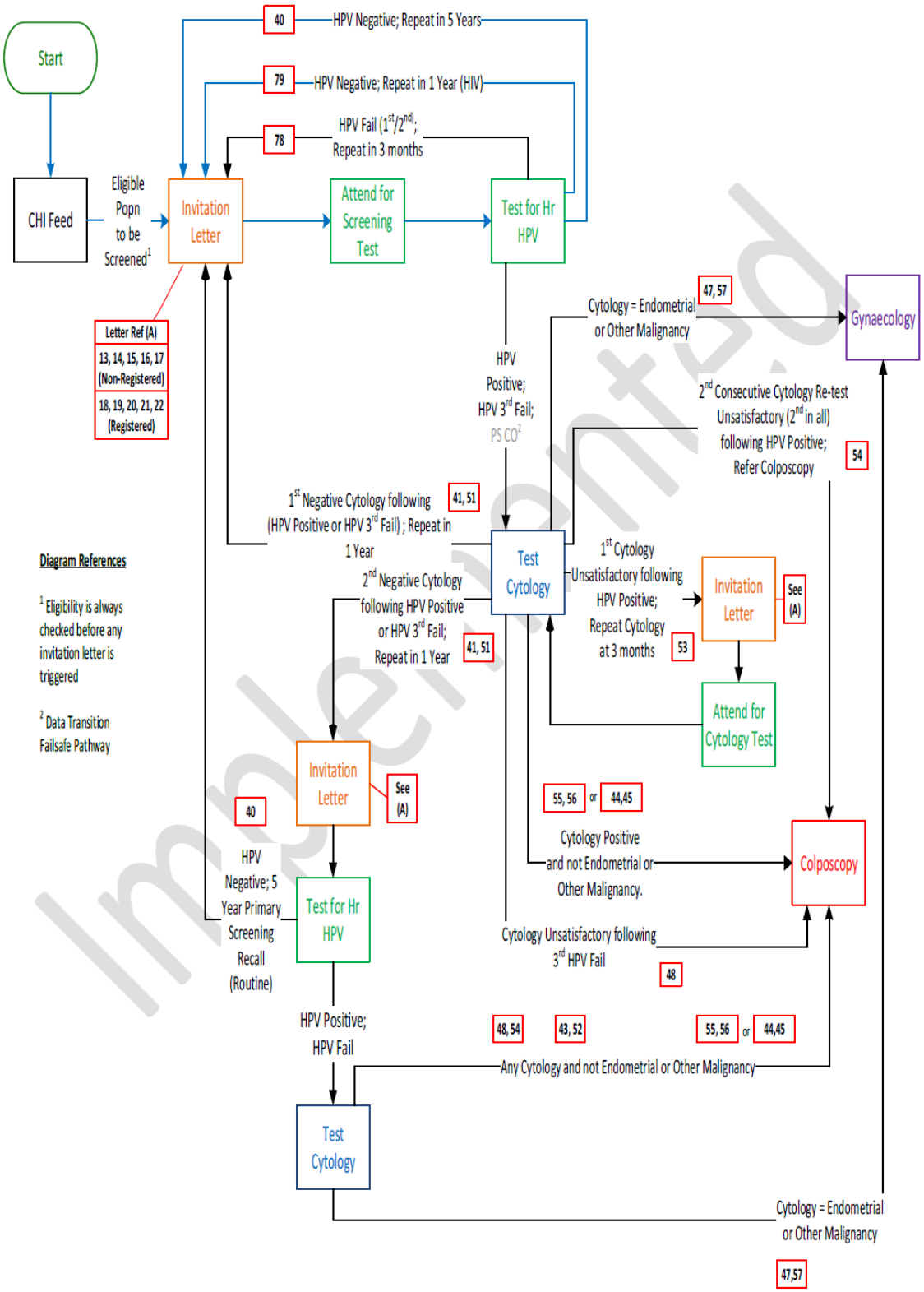
There is a considerable backlog within colposcopy service which has resulted in long wait times for clinical investigation of positive screening results. This has been as a result of the accumulated effects of the COVID-19 pandemic and ongoing vacancies. Work is ongoing to reduce these waiting times.

Inequalities in screening uptake and attendance

Further details on targeted inequalities actions are detailed in chapter 10. This plan includes specific actions to address inequalities in cervical screening uptake by:

- implementing a planned programme of targeted cervical screening within geographical areas and for individuals with protected characteristics with persistently lower uptake of cervical screening.
- continue to support quality improvement initiatives to improve of cervical screening within Primary Care;
- continue to work in partnership with 3rd sector and HSCP staff to raise awareness of cervical screening.

Appendix 8.1 Hr-HPV Primary Screening Recommended Management Pathway and Key



Pathway Diagram Key:
Colour use on the pathway diagrams is intended to help differentiate different stages.

Symbol	Meaning	Comment
Start	Start of screening process.	
CHI Feed	Daily CHI Feed of eligible participants.	
Invitation Letter	Participant Invitation letter sent from SCCRS.	A process or event (a rectangle signifies a process, sub-process, task or event).
Attend for Screening Test	Activity at sample taking location, e.g. GP Practice, Community setting.	Participant attends for screening.
Test for Hr HPV	Laboratory Process – testing sample for hrHPV (using automatic system).	
Attend for Cytology Test	Physical attendance by participant for sample taking for subsequent consideration of cytology only result component.	
Test Cytology	Laboratory undertakes cytology testing of sample when pertinent (following virology testing).	
Gynaecology	Participant is referred to Gynecology.	
Colposcopy	Participant is referred to Colposcopy.	
XX	Letter number associated with event.	
Letter Ref (A) 13, 14, 15, 16, 17 (Non-Registered) 18, 19, 20, 21, 22 (Registered)	Different letter types associated with invitation letters.	

Appendix 8.2

Key performance indicators for screening uptake for NHS GGC, comparison with All Scotland and the national standard. Taken from the 2020-21 report (2021-22 not yet available) [red = standard not met]

Screening uptake	Standard %	Scotland %	NHS Greater Glasgow & Clyde %
The percentage of eligible women (aged 25 to 64) who were recorded as screened adequately	80	69.3	**65.4**
Percentage uptake by deprivation quintile			
SIMD 1 (most deprived)	80	73.7	**68.5**
SIMD 2		73.6	**69.6**
SIMD 3		69.6	**63.9**
SIMD 4		67.1	**65.7**
SIMD 5 (least deprived)		63.2	**62.5**
Uptake by Age Group			
25-49 years	80	66.3	**61.4**
50-64 years		74.4	**73.1**
25-64 years		69.3	**65.4**

Appendix 8.3 Members of Cervical Screening Steering Group (at March 2022)

Dr Emilia Crighton	Screening Co-ordinator, Interim Director of Public Health (Chair)
Dr Eleanor Anderson	Consultant in Public Health Medicine (Interim Chair)
Dr Christine Black	Sexual and Reproductive Health Care
Mr Paul Burton	Information Manager
Dr Maureen Byrne	GP, GP Sub Committee
Mrs Lin Calderwood	HI&T Service Delivery Manager
Ms Kenna Campbell	Health Improvement Senior
Mrs Pam Campbell	Referral Management & Clinic Build Lead
Ms Gillian Collins	Team Leader, Cytology
Ms Anne Coventry	Practice Manager
Mrs Lorna Dhami	Practice Nurse
Mr Neil Ferguson	Head of Planning
Dr Victoria Flanagan	Consultant Obstetrician & Gynaecologist
Mr Marco Florence	Business Coordinator, LMC
Dr Morton Hair	Clinical Lead, Consultant Obstetrician & Gynaecologist, RAH
Mrs Susan Hunt	Interim GPN Professional Nurse Lead
Ms Heather Jarvie	Public Health Programme Manager
Mrs Suzanne Kelly	Jo's Cervical Cancer Trust
Dr Abigail Latimer	Consultant Pathologist
Dr Graeme Marshall	Clinical Director, North East Glasgow
Mr Calum McGillivray	Programme Support Officer, Screening Department
Ms Lynn McLaughlin	General Practice Support and Development Nurse
Mrs Elizabeth Rennie	Programme Manager, Screening Department
Dr Nicola Schinaia	Associate Director of Public Health, NHS Highland
Mr Craig Spinks	Clinical Service Manager - Gynaecology & ACS,
Mrs Claire Stewart	Women & Children's Management General Manager, Obstetrics and Gynaecology
Ms Julia Thomson	RMC & Clinic Build Lead GGC
Mr Brian Vaugh	Business Manager, Obstetrics and Gynaecology

Chapter 9 - Diabetic Eye Screening (DES)

Summary

Diabetes mellitus is a long-term condition in which the level of glucose in the blood is raised leading to abnormal fat metabolism and other complications. The Scottish Diabetes Survey 2020 reports that in Greater Glasgow & Clyde, 5.6% of the population were registered as diabetic in 2020; this is an increase from 4.1% of the population in 2007.

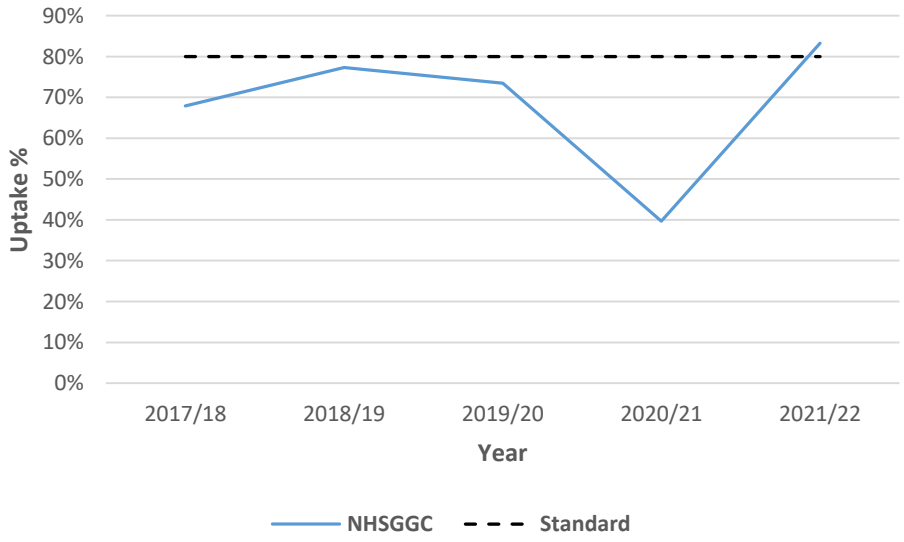
Diabetic retinopathy is a complication of diabetes affecting blood vessels of the retina and is the biggest single cause of blindness and visual impairment amongst working age people in Scotland. Retinopathy is symptom-free until its late stages. If it is detected early enough, treatment can prevent the progression of the disease and save sight for many years in most patients.

The national Diabetic Eye Screening (DES) programme was implemented across NHSGGC in 2004-2005 and is an integral part of diabetes care. The DES programme differs from other screening programmes in that it is an important part of the patient's care pathway rather than screening for a particular condition.

The OPTIMIZE system is used to manage the call/recall and imaging for the DES programme and replaced the previous data system in 2020. National data, including KPIs, are not yet available for reporting from the new system, though should be in 2023. Data presented here is from SCI Diabetes, which should hold the details of diabetic eye screening for each patient.

Based on local analysis, of the 69,133 individuals with diabetes, 57,600 (83.3%) were screened during 2021/22, exceeding the 80% uptake target.

Uptake of Diabetic Eye Screening in NHSGGC, 2017 to 2021



Source: NHSGGC Annual Screening Reports 2017/18 to 2020/21.
2021/2022 SCI Diabetes (November 2022)

For 2021-22, uptake of screening was similar for men (84.2%) and women (82.3%). Screening uptake increased with increasing age, from 68.6% of those aged 15-24 years, compared with 89.5% of those aged 75-84 years.

Uptake increased with decreasing levels of deprivation. Uptake was 79.8% amongst individuals residing in the most deprived areas, compared to 83.3% residing in the least deprived areas. The uptake target of 80% was met in all but the most deprived deprivation quintile.

Analysis by ethnicity was undertaken via self-reported ethnicity recorded on SCI-Diabetes. The uptake screening standard of 80% was achieved within majority of White, Indian, Pakistani, Chinese and mixed/multiple ethnic groups. Uptake was generally lower among Bangladeshi, African, Caribbean, Black and other White ethnic groups.

For those with a registered learning disability, there was no significant difference in uptake between those with a learning disability compared to the rest of the population (82.2% vs 83.3% respectively). For those with enduring mental illness (people registered on PsyCIS with at least one episode of psychosis), uptake was lower than the rest of the population, 72.7% compared to 83.5%.

There were variations in uptake between HSCPs areas. Uptake ranged from 81.4% in Glasgow City HSCP - North East Sector and in West Dunbartonshire, to 86.7% in East Dunbartonshire. The 80% target for screening uptake was met in all HSCPs.

During the COVID-19 pandemic in 2020, DES was paused along with other screening programmes. When screening resumed, the programme had reduced capacity as there was access to fewer locations (the programme could not return to the majority of community sites), and longer appointment times due to increased infection prevention and control measures. When screening restarted, offer of screening was based on risk of retinopathy, to those at highest risk first.

In 2021-22, work continued to catch up missed appointments, with all patients offered a catch-up appointment by September 2022. Challenges with capacity continued throughout this period due to limited clinic settings. For patients there were additional challenges of having to travel to unfamiliar locations sometimes far from home.

Many community clinic locations are now up and running again, with eight more community locations taking longer to reinstate than others. The feasibility of using the mobile unit is being investigated where it is not possible to return to the usual community setting. Much of this will be resolved by the end of 2022.

Chapter Contents

9.1. Background

Diabetes mellitus is a long-term condition in which the level of glucose in the blood is raised, leading to abnormal fat metabolism and other complications. There are two main types of diabetes: type 1 and type 2.

- Type 1 often develops before the age of 40 and usually during the teenage years.
- Type 2 is far more common than type 1 and typically affects people over the age of 40, although increasingly younger people are affected as well. It is often associated with being overweight or obese and people of South Asian, African-Caribbean or Middle Eastern origins are more frequently affected.

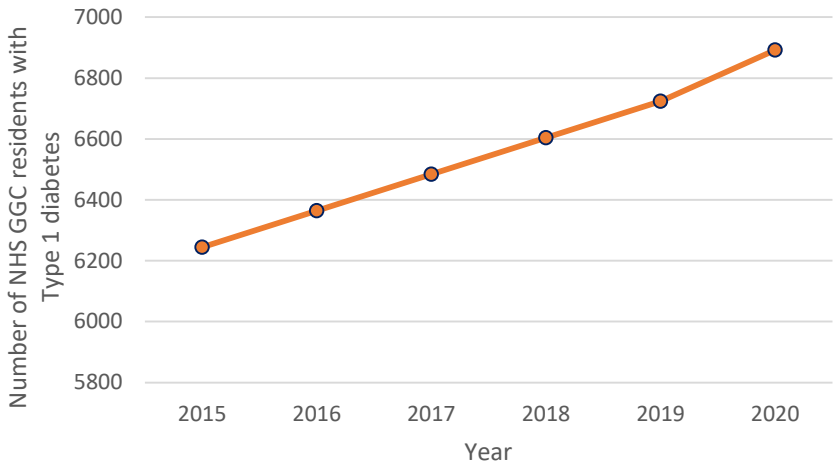
The latest Scottish Diabetes Survey 2020[37] reports that in Scotland, there were 317,128 people with known diabetes recorded on local diabetes registers at the end of 2020, representing 5.8% of the population of all ages. Over the last ten years, the proportion of people in Scotland with diabetes has been steadily growing, from 4.7% in 2011 to 5.8% in 2022. In 2020, the proportion of people in Scotland with diabetes who have Type 2 diabetes was 87.8% (278,239); and the proportion with Type 1 diabetes was 10.7% (34,087).

In the same year, 2020, in Greater Glasgow and Clyde, there were 66,824 people with known diabetes[1] (5.6% of the population), compared to 48,602 people in 2007 (4.1% of the population).

Figures 9.1 and 9.2 illustrate the increase in the number of NHSGGC residents with type 1 and type 2 diabetes in the previous four year period. In 2015 there were 6,244 people with type 1 diabetes compared to 6,892 in 2020, an increase of 10.4%. Similarly for type 2 diabetes, there 54,515 people in 2015 when compared to 58,919 in 2020, an increase of 8.1%.

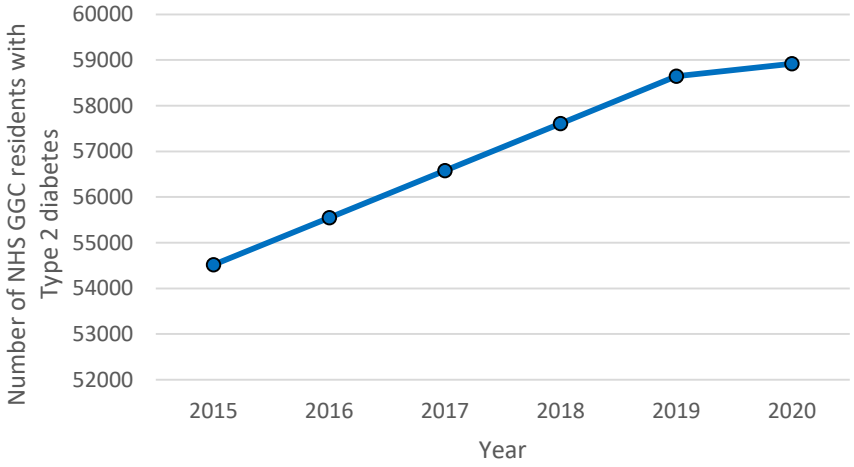
[37] https://www.diabetesinscotland.org.uk/wp-content/uploads/2022/01/Diabetes-Scottish-Diabetes-Survey-2020.pdf , accessed November 2022

Figure 9.1: Number of people with Type 1 diabetes in NHSGGC 2015-2020



Source: Scottish Diabetes Survey reports 2015-2020

Figure 9.2: Number of people with Type 2 diabetes in NHSGGC 2015-2020



Source: Scottish Diabetes Survey reports 2015-2020

Diabetic retinopathy is a complication of diabetes affecting blood vessels of the retina and is the biggest single cause of blindness and visual impairment amongst working age people in Scotland. Retinopathy is symptom-free until its late stages, and programmes of retinal screening can reduce the risk of blindness in the population by detecting retinopathy at a stage at which it may be effectively treated. If it is detected early enough, treatment can prevent the progression of the disease and save sight for many years in most patients.

9.2. Aim of the screening programme and eligible population

The national Diabetic Eye Screening (DES) programme was implemented across NHSGGC in 2004-2005 and is an integral part of diabetes care. The primary aim of the programme is the detection of referable (sight-threatening) retinopathy.

A secondary aim is the detection of lesser degrees of diabetic retinopathy. This can have implications for the medical management of people with diabetes.

The Diabetic Eye Screening programme differs from other screening programmes in that it is an important part of the patient's care pathway rather than screening for a particular condition.

All people with diabetes aged 12 and over are eligible for Diabetic Eye Screening.

The programme performance and quality of national DES screening is monitored via defined National DES Screening Standards[38] and Key Performance Indicators[39].

9.3. The screening test

The screening test is a photograph of the individual's retinas. This is taken in clinics held in hospital out-patient departments and community settings across NHSGGC. If the photograph cannot be graded, then a further slit lamp examination will be performed.

There are two main information systems used in the provision of Diabetic Eye Screening.

1. OPTIMIZE provides the call/recall, image capture, grading, quality assurance and result delivery.
2. SCI-Diabetes is the national data system for all people with diabetes and provides the diabetes population register for screening call/recall and the screening results can be viewed here by clinical staff involved in the care of patients with diabetes.

At this time, there are inaccuracies within the OPTIMIZE system which are being corrected. As a result, no national data is available from the OPTIMIZE system and KPIs are unavailable until these issues have been resolved. It is expected that data will be available from the system in 2023.

9.4. Screening setting

Prior to COVID-19, DES was delivered at five hospital locations and fourteen community health centres or clinics. The screening service also carries out slit lamp examinations from the five hospitals and two of the health centres/clinics for patients who are not suitable for retinal photography. Due to ongoing restrictions due to social distancing and infection control measures during 2021/2022, DES screening resumed in a reduced number of locations as summarised in **Table 9.1.**

[38] http://www.healthcareimprovementscotland.org/our_work/long_term_conditions/programme_resources/diabetic_retinopathy_screening.aspx (Accessed November 2022)
[39] https://www.ndrs.scot.nhs.uk/ (Accessed November 2022)

Table 9.1 NHSGGC Diabetic Eye Screening locations status 2020/21

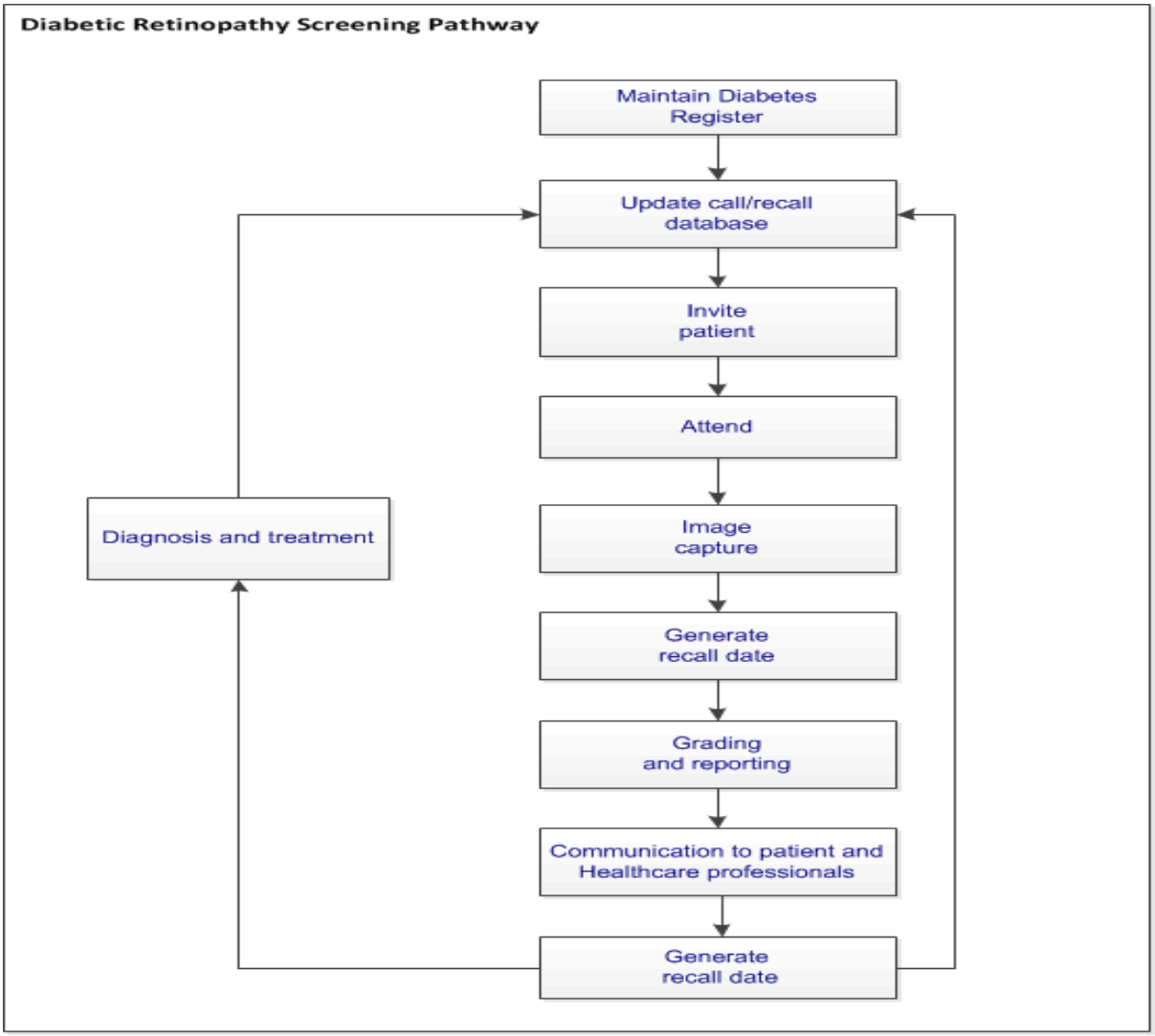
Screening Location	Status 2020/21		
	Fundus Photography	Slit Lamp Clinic	OCT Clinic
Hospital Locations			
Gartnavel General Hospital	✓	✓	N/A
Glasgow Royal Infirmary	✓	✓	✓
New Victoria ACH	✓	✓	✓
Queen Elizabeth University Hospital	✓	✓	✓
Vale of Leven Hospital	N/A	✓	N/A
Health Centre/HSCP Locations			
East Dunbartonshire HSCP			
Milingavie HC	×	N/A	N/A
Kirkintilloch HC	×	N/A	N/A
Lennoxtown HC	×	N/A	N/A
East Renfrewshire HSCP			
Barrhead Health Centre	×	N/A	N/A
Eastwood Health Centre	×	N/A	N/A
Glasgow City HSCP			
Baillieston Health Centre	×	N/A	N/A
Castlemilk Health Centre	×	N/A	N/A
Drumchapel Health Centre	×	N/A	N/A
Easterhouse Health Centre	×	N/A	N/A
Pollok Health Centre	×	N/A	N/A
Inverclyde HSCP			
Greenock Health Centre	✓	✓	N/A
Renfrewshire HSCP			
Johnston Health Centre	×	N/A	N/A
New Sneddon Street Clinic	✓	✓	N/A
Renfrew Health Centre	✓	N/A	N/A
West Dunbartonshire HSCP			
Dumbarton Health Centre	×	N/A	N/A
Vale of Leven Care and treatment centre	✓	N/A	N/A
Additional Locations			
HMP Barlinnie	Patients called to GRI	N/A	N/A
HMP Lowmoss	Patients called to GRI	N/A	N/A
Rowanbank Clinic	Patients called to GRI	N/A	N/A

✓ Screening resumed × Screening not resumed **N/A** Not Applicable

9.5. Screening Pathway

Figure 9.3 illustrates the pathway to reduce diabetes related blindness in the general population by identifying and treating sight threatening diabetic retinopathy.

Figure 9.3: Diabetic retinopathy screening pathway



9.6. Uptake of diabetic eye screening

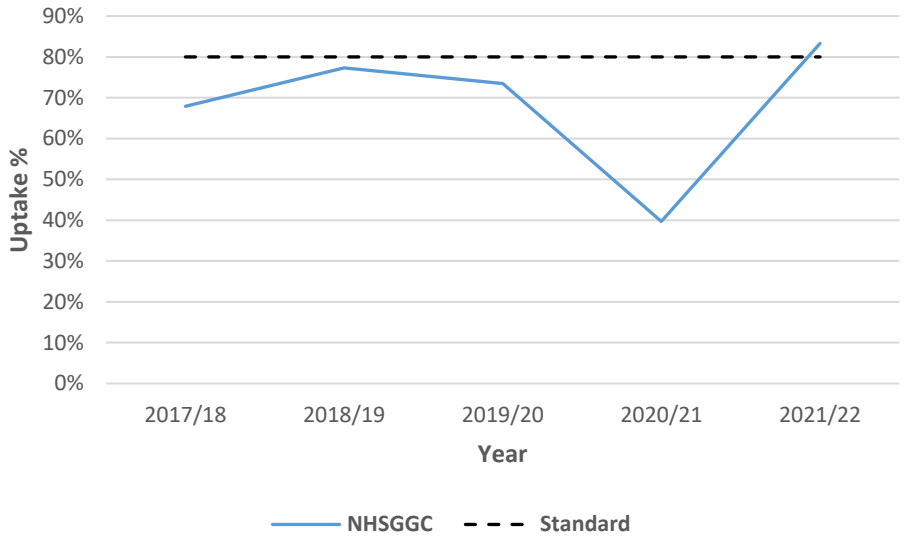
The OPTIMIZE system replaced the previous data system in 2020 and national data, including KPIs, are **not yet available** for reporting.

Five year trends have been sourced from previous annual screening reports, with local monitoring data obtained from screening status for all ages recorded on SCI-Diabetes system data is presented in this report to provide uptake, for period 1st April 2021 to 31st March 2022. As a result of differences in data extract dates and data definitions,

numbers in local data analysis will differ from those presented in forthcoming published national programme reports.

Overall, uptake of diabetic eye screening fluctuated from 67.9% in 2016/17 to 73.5% in 2019/20 peaking at 77.3% in 2018/19. The drop in screening during 2020/21 was due to a 'pause' in screening from March 2020. The service then had to deal with the backlog of patients who were 'not invited' during that period. Based on local analysis from SCI-Diabetes, uptake in 2021/22 was 83.3%, exceeding the 80% standard[40]. **(Figure 9.4)**.

Figure 9.4 Uptake of Diabetic Eye Screening in NHSGGC, 2017-18 to 2021-22



Source: NHSGGC Annual Screening Reports 2017/18 to 2020/21.
2021/2022 SCI Diabetes (November 2022)

Of the 69,133 individuals with a confirmed diagnosis of diabetes, 57,600 (83.3%) were screened during 2021/22[41].

Table 9.2 shows that more than half (55.5%) of the eligible resident population screened were male. Within NHSGGC the overall uptake was *83.3*%. Males accounted for *84.2*% of people screened. The 80% uptake target met by both sexes.

Table 9.2 Uptake of Diabetic Eye Screening by sex in NHSGGC, 2021-2022

Sex	Not Screened	Screened	Total	% Screened
Female	5,413	25,100	30,513	*82.3*
Male	6,120	32,500	38,620	*84.2*

[40] Uptake in relation to national standard will be reviewed following future publication of national KPI's
[41] Cohort obtained from SCI-Diabetes included all persons, 262 aged 0-14 years, noting only those over 12years of age are eligible for screening. Information of those 12 years and over was not available at time of writing.

Total	11,533	57,600	69,133	*83.3*

Source: SCI Diabetes November 2022

Table 9.3 shows that uptake of DES screening increases with age, (with exception of 0-14 year old cohort), 68.6% of those 15-24 years of age were screened in comparison with 89.5% of those aged 75-84 years of age.

Table 9.3 Uptake of Diabetic Eye Screening by age in NHSGGC, by Board of Residence 2021-2022

Age	Not Screened	Screened	Total	% Screened
0-14	68	194	262	*74.0*
15-24	332	725	1,057	*68.6*
25-34	721	1,541	2,262	*68.1*
35-44	1,402	3,607	5,009	*72.0*
45-54	2,273	7,803	10,076	*77.4*
55-64	3,059	15,391	18,450	*83.4*
65-74	2,084	15,868	17,952	*88.4*
75-84	1,139	9,662	10,801	*89.5*
85+	455	2,809	3,264	*86.1*
Total	11,533	57,600	69,133	*83.3*

Source: SCI Diabetes November 2022

Uptake also increases with decreasing levels of deprivation, with 79.8% uptake among individuals residing in the most deprived areas compared to 83.3% residing in the most affluent areas. The uptake target of 80% was met in all but the most deprived deprivation quintile.

Table 9.4: Uptake of Diabetic Eye Screening by deprivation in NHSGGC, by Board of Residence 2021-2022

SIMD	Not Screened	Screened	Total	% Screened
1 (Most Deprived)	5,683	22,409	28,092	*79.8*
2	2,308	11,393	13,701	*83.2*
3	1,242	7,032	8,274	*85.0*
4	1,173	7,643	8,816	*86.7*
5 (Least Deprived)	1,127	9,123	10,250	*89.0*
Total	11,533	57,600	69,133	*83.3*

Source: SCI Diabetes November 2022

Further local analysis was undertaken to explore variations in uptake of screening round for populations with protected characteristics (including, ethnicity, learning disability and mental health), and geographically by Health and Social Care Partnership (HSCP) area.

Analysis by ethnicity was undertaken via self-reported ethnicity recorded on SCI-Diabetes. The uptake screening standard of 80% was achieved within majority of White, Indian, Pakistani, Chinese and mixed/multiple ethnic groups. Uptake was generally lower among Bangladeshi, African, Caribbean, Black and other White ethnic sub groups **(Table 9.5).**

Table 9.5 NHS Greater Glasgow & Clyde Diabetic Eye Screening Uptake 2021/2022 by Ethnicity

2021 Census Ethnic Group	Not Screened	Screened	Total	*% Screened*
White - Northern Irish	*	*	*	*100.0*
White - Scottish	5,965	33,758	39,723	*85.0*
Indian, Indian Scottish or Indian British	253	1,373	1,626	*84.4*
Pakistani, Pakistani Scottish or Pakistani British	523	2,772	3,295	*84.1*
White - British	1,988	10,206	12,194	*83.7*
White - Irish	59	302	361	*83.7*
Any mixed or multiple ethnic groups	153	772	925	*83.5*
White - English	11	50	61	*82.0*
Chinese, Chinese Scottish or Chinese British	91	392	483	*81.2*
Other - Asian, Asian Scottish or Asian British	186	776	962	*80.7*
African, African Scottish or African British	174	634	808	*78.5*
Bangladeshi, Bangladeshi Scottish or Bangladeshi British	80	280	360	*77.8*
NULL	879	2,945	3,824	*77.0*
White - Polish	17	55	72	*76.4*
Arab	9	29	38	*76.3*
Any other white ethnic group	477	1,413	1,890	*74.8*
Other - Other ethnic group	185	540	725	*74.5*
Not Known	409	1,121	1,530	*73.3*
Caribbean, Caribbean Scottish or Caribbean British	10	27	37	*73.0*
Black, Black Scottish or Black British	*	*	*	*72.7*
Other - African, Caribbean or Black	42	107	149	*71.8*
Refused/Not provided by patient	15	29	44	*65.9*
White - Gypsy/Traveller	*	*	*	*50.0*
White - Welsh	*	*	*	*50.0*
Grand Total	11,533	57,600	69,133	*83.3*

Source: SCI Diabetes November 2022

* Numbers ≤5 or derivable as ≤5 redacted as per ISD statistical disclosure control protocol

Table 9.6 shows that 612 of the 69,133 individuals eligible for screening were registered with a learning disability (0.89%)[42]. There was no significant difference in uptake among people who were registered with a learning disability compared to the rest of the population (82.2% vs 83.3% respectively).

Table 9.6 NHS Greater Glasgow & Clyde Diabetic Retinopathy Screening Uptake 2021/2022 by Learning Disabilities Register

Learning Disabilities Register	Not Screened	Screened	Total	*% Screened*
Not Registered	11,424	57,097	68,521	*83.3*
Registered	109	503	612	*82.2*
Total	11,533	57,600	69,133	*83.3*

Source: SCI Diabetes November 2022; LD Register, September 2018,
Chi-Square Tests p = 0.452106 (no sig diff)

People registered on PsyCIS have had at least one episode of psychosis which is typically seen in patients with a severe or enduring mental illness. **Table 9.7** shows that 1,163 of the 69,133 people eligible for screening were registered on PsyCIS (1.7% of the total eligible population). These individuals had poorer uptake of DES screening, 72.7% compared to 83.5% in the rest of the population.

Table 9.7 NHS Greater Glasgow & Clyde Diabetic Retinopathy Screening Uptake 2021/2022 by PSYCIS Register

PSYCIS	Not Screened	Screened	Total	*% Screened*
Not Registered	11,216	56,754	67,970	*83.5*
Registered	317	846	1,163	*72.7*
Total	11,533	57,600	69,133	*83.3*

Source: SCI Diabetes November 2022; PSYCIS, September 2022
Chi-Square Tests p < .00001

There are variations in those screened across HSCPs **(Table 9.8).** They range from 81.4% in Glasgow City HSCP - North East Sector and West Dunbartonshire to 86.7% in East Dunbartonshire. The 80% target for screening was met in all HSCPs

[42] Sourced from Learning Disability Register, September 2018, therefore will not capture LD registrations after this date.

Table 9.8: Uptake of diabetic retinopathy screening by HSCP in NHGGC, 2021-2022

HSCP	Not Screened	Screened	Total	*% Screened*
East Dunbartonshire HSCP	750	4870	5620	*86.7*
East Renfrewshire HSCP	676	4300	4976	*86.4*
Glasgow North East Sector	2088	9139	11227	*81.4*
Glasgow North West Sector	1965	8666	10631	*81.5*
Glasgow South Sector	2615	12289	14904	*82.5*
Glasgow City	6668	30094	36762	*81.9*
Inverclyde HSCP	759	4249	5008	*84.8*
Renfrewshire HSCP	1592	9338	10930	*85.4*
West Dunbartonshire HSCP	1088	4749	5837	*81.4*
Total	11533	57600	69133	*83.3*

9.7. Mapping

To enable further local analysis of uptake rates, geographical mapping at data-zone level will be carried out. Data-zone maps for NHSGGC and by HSCP will be available on the PHSU website[43].

9.8. Challenges and Future Developments

Implementation of the OPTIMIZE system remains a challenge and we await national system updates so that we can effectively monitor the local programme and produce and monitor local and national KPIs.

NHSGGC Screening Department is in the process of scoping a new telephone system to improve the efficiency and capacity of call handling. The Screening Department has managed a huge call volume from patients over the last year which has required additional staff to manage. Calls have been about appointments in unexpected settings (for example at hospital instead of in community), delays in appointments as well as changing appointment times and dates.

Work continues to ensure that all patients are offered a screening appointment at an accessible location. Many community clinic locations are now up and running again, with eight more community locations taking longer to reinstate than others.
The feasibility of using the mobile unit is being investigated where it is not possible to return to the usual community setting. Much of this will be resolved by the end of 2022.

[43] Breast Screening Uptake Data Zone maps

All patients have been offered a catch-up screening appointment by September 2022. From this time onwards appointments will return to their usual call/recall cycle, though as previously mentioned, for some patients this may mean appointments in venues other than the one they attended pre-pandemic.

Capacity within NHSGGC for Level 3 imaging sign-off remains an issue, leading to delays in sign-off. These images require senior trained staff, often medical grade or consultant ophthalmologist, to undertake this image review. Capacity for review of these images remains limited across Scotland. Work is ongoing in NHSGGC to resolve these capacity issues.

It is anticipated that the number of people with diabetes will continue to increase over the coming years. This will mean that the diabetic eye screening service will need additional screening capacity and resources to accommodate this extra demand.

Appendix 9.1

Members of Diabetic Eye Screening Steering Group (at March 2022)

Dr Emilia Crighton	Screening Co-ordinator, Interim Director of Public Health (Chair)
Mr Jim Bretherton	Clinical Service Manager
Mr Paul Burton	Information Manager
Mrs Lin Calderwood	Service Delivery Manager, HI&T Screening
Ms Beth Culshaw	Chief Officer, West Dunbartonshire HSCP
Mr Neil Ferguson	Head of Planning
Mr Marco Florence	Glasgow LMC
Dr Mike Gavin	DES Clinical Lead, Consultant Ophthalmologist
Ms Jo Gibson	Head of Health & Community Care
Mrs Elaine Hagen	Programme Support Officer, Screening Department
Mrs Fiona Heggie	Acting DES Service Manager
Ms Heather Jarvie	Public Health Programme Manager
Mr Stuart Laird	Area Optometric Committee Representative
Mrs Ann Lees	Health Economist, Corporate Planning
Mr Jordan Livingstone	Planning Officer
Mrs Elizabeth Rennie	Programme Manager, Screening Department
Mrs Sandra Simpson	Assistant Programme Manager, Screening Department
Dr Sonia Zachariah	Specialty Doctor, Diabetic Retinal Screening

Chapter 10 – NHSGGC Screening Programmes Inequalities Action Plan for 2022-25

10.1 Introduction

NHS Greater Glasgow and Clyde Public Health Directorate is responsible for co-ordinating and monitoring screening programmes across Greater Glasgow and Clyde.

The NHS GGC Public Health Strategy (2018) outlines a commitment to "improving Health Services; ensuring evidence-based and best value through public health analysis, investigation and comparisons. This includes action to support earliest diagnosis to achieve the best treatment outcomes e.g. screening systems".

The Inequalities Action Plan builds on the action plan for 2019-21. It outlines priorities and actions to widen access and address inequalities in relation to the following adult screening programmes:

- Abdominal aortic aneurysm (AAA) screening
- Bowel screening
- Breast screening
- Cervical screening
- Diabetic eye screening

The plan will be subject to annual review in accordance with funding requirements. Progress on this report will be reported through NHS GGC screening steering groups and the Public Health and Wellbeing Committee.

10.2 Aims

The aims of this action plan are aligned to those of the Public Health Strategy. The work fits within programme 5 of the strategy:

- Implement national developments and guidance to existing screening programmes and ensure compliance with standards; enhance uptake for those programmes and population groups where uptake falls short of national standards.

It also supports A Fairer NHS Greater Glasgow & Clyde 2020-2024 / Equality Outcome 8 The physical health of those with mental health problems is addressed / Increase the number of in-patients who access screening.

Activities in this action plan are informed by evidence and are intended to improve uptake in those groups with lower uptake in screening programmes. The plan aims to take a coordinated approach to reducing inequalities in uptake through targeted activities across NHS GGC.

10.3 Context

The Public Health Strategy is situated in the context of policy and legislative drivers linked to adult screening programmes:

- The current National Cancer Plan Recovery and redesign: an action plan for cancer services comes to completion in March 2023. This superseded the previous cancer strategy 'Beating Cancer Ambition and Action', and was developed in response to immediate challenges presented by the COVID-19 pandemic. The Scottish Government have started the process of developing a new cancer strategy for Scotland. The consultation document outlines a commitment to addressing screening inequalities.
- The Detect Cancer Early programme has the objective "To improve informed consent and participation in national cancer screening programmes to help detect cancer earlier and improve survival rates."
- The quality ambitions of The Healthcare Quality Strategy for NHS Scotland: mutually beneficial partnerships between patients, their families and those delivering healthcare services which respect individual needs and values and which demonstrate compassion, continuity, clear communication and shared decision making.
- The Equality Act (2010), health services are legally required to make reasonable adjustments to enable equality of health service access.
- A Fairer NHS Greater Glasgow & Clyde which outlines how the organisation will uphold the law by addressing inequalities.

In addition, screening is now identified as a priority in the Scottish Government Women's Health Plan: A plan for 2021-2024 including the tackling of inequalities across the screening programmes.

10.4 Current Uptake Rates

The most recent uptake rates are outlined below. For fuller information on the programmes including the impact of COVID-19, see the Public Health Screening Programme Annual Report.

- **Abdominal aortic aneurysm (AAA) screening**: During the period 2021-2022, the total number men eligible was 6,979, and 5,365 were screened (76.9%). The essential threshold for screening uptake (75%) was met overall in NHSGGC, however uptake among men residing in the most deprived areas was below this threshold at 70.2%, compared to uptake among men residing in the least deprived areas (84.8%). The majority of eligible men (79.9%) were of Scottish ethnic origin**.** Uptake of AAA screening differs between ethnic groups, with uptake variable across groups. However, due to low numbers in some ethnic groups it is not possible to directly compare programme uptake across ethnic subgroups.

- **Bowel screening**: Between 2020 and 2022, 299,813 NHSGGC residents were invited for bowel screening. Over half (61.3%) of those invited returned the screening test against a target of 60%. Women were more likely to return a bowel screening test than men, 63.8% vs. 58.7% respectively. Uptake was lowest among those aged 50-54 years, at 54.9% and increased to 68.2% between 70 and 74 years. Uptake of bowel screening programme increased with decreasing levels of deprivation. It was lowest in people living in the most deprived Board areas (52.0%) and highest in the least deprived areas (71.8%). Analysis by ethnicity identified that uptake was highest in the Scottish, other British, Irish and Chinese groups (higher than 60% uptake) but was consistently poorer in other ethnic groups. Some ethnic groups were small and these data are harder to interpret.

- **Breast screening:** From April 2019 to March 2022, 149,542 women were invited and 106,182 attended breast screening (71.0%), against standard of 70%. The national SBSP statistics published in June 2021 show that women from more deprived areas are less likely to attend for breast screening, with 61.0% of women from the most deprived areas going for screening compared with 79.8% women living in the least deprived areas in NHSGGC. Uptake of breast screening was similar across all age cohorts. Uptake was above 70% for the Scottish and Irish groups and below 70% for all other ethnic groups except the Roma and Showman/Showwoman groups which had very small numbers. Lowest uptake was seen in women who did not have ethnicity recorded.

- **Cervical screening**: Uptake in NHSGGC for 2021-22 was 65.3% against a target of 80%, a total of 232,652 women being adequately screened within the specified period. Uptake is poorest among women aged between 25 and 29 years (50.2%), compared with the highest uptake in women aged 50-54 years (76.1%). Uptake for women living in the least deprived areas was 68.7% compared with 62.1% in the most deprived areas, there is not a clear trend across socio-economic groups. Uptake of screening was highest amongst women identifying as Scottish, other British and Irish, and lowest in those who had no ethnic group recorded.

- **Diabetic eye screening:** The Scottish Diabetes Survey 2020 reports that in Scotland, there were 317,128 people with known diabetes recorded on local diabetes registers in 2020, representing 5.8% of the population. In the same year in Greater Glasgow and Clyde, there were 66,824 people with known diabetes (5.6% of the population), compared to 48,602 people in 2007 (4.1% of the population). Of the 69,133 individuals with diabetes, 57,600 (83.3%) were screened during 2021/22, exceeding the 80%. Black and minority ethnic groups also have lower uptake than white British.

10.5 Scottish Government Screening Inequalities Fund

This action plan is partly funded from the Scottish Government Screening Inequalities Fund. This funding primarily contributes to service improvement and development activities in priority communities. These priority communities are identified in the plan and by the Scottish Government using analysis of screening uptake and potential for access barriers across the screening pathway. We are able to determine access barriers from both published literature and local evidence.

Actions in this plan are intended to achieve the following outcome measures:

- **Outcome measure 1**: Increased screening uptake among target populations.
- **Outcome measure 2**: Increased knowledge among target populations of the cancer screening programmes and their benefits.
- **Outcome measure 3**: Increased knowledge on barriers experienced by targeted populations to access screening.

10.6 National Screening Oversight

A National Screening Oversight (NSO) National Equity in Screening Strategy is in process. This has been developed through an Equity in Screening Strategy Reference Group recognising that tackling inequalities requires multiple agency working. NHS Greater Glasgow and Clyde have representation on this group along with National Services Scotland, Public Health Scotland, Scottish Government, other NHS Boards and HSCPs, and the Third Sector.

10.7 Logic Model

The following logic model summarises the approach and intended outcomes of the action plan.

Contributors	Evidence-informed activities	Outcomes		
		Short term	Medium term	Longer term
NHS GGC • Screening delivery staff • Public Health • HSCP Health Improvement teams • Practice Development Third sector • Jo's Trust	• Provide learning on inequalities issues for staff who deliver screening. • Deliver service improvements aimed at those who face specific barriers to access. • Promote screening programmes in communities. • Increase awareness of screening among NHS and third sector staff who are not directly involved in screening programmes.	• Staff are aware of the issues impacting on screening uptake and can contribute to addressing these. • Pathways are in place to support access to screening. • People have increased knowledge and awareness of screening programmes in the context of their own lives.	• Access barriers to screening are reduced. • People are able to make an informed choice as to whether to participate in screening.	Improved uptake in screening at population level and within groups who currently have lower uptake rates.

10.8 Progress to date

The 2022-25 Screening Inequalities Action Plan outlines priorities and actions to widen access and address inequalities in relation to the adult screening programmes. The action plan is partly funded from the Scottish Government Screening Inequalities Fund. It builds on the previous action plan for 2019-21.

The following summarises progress in the early stages of this plan.

National strategy

We have contributed to the NSS National Screening Oversight (NSO) Equity in Screening Strategy Short Life Working Group. This aims to develop a strategy to implement those improvements which are best driven national as well as issues which benefit from a once-for-all approach. These include equalities monitoring and data, research, access to services, and communications themes. We will continue to work with national colleagues and those from other board areas on the implementation of the strategy once it is published.

We are also, in line with national developments, in the process of exploring how to address inequalities in the pregnancy screening programme.

Health services

The plan outlines a number of actions to contribute to the development and delivery of inequalities sensitive practice in through our services.

Representatives from AAA, Bowel and Diabetic Eye Screening programmes participated in training to undertake equality impact assessments (EQIAs), and updated EQIAs are underway. Activities supporting this work such as reviewing colonoscopy patient information as part of a whole pathway approach are in process.

NHSGGC Mental Health Physical Healthcare Policy physical health check includes adult screening as a core component for individuals within community and inpatient settings. We continue to work with mental health services to support staff training, and work is in progress to develop approaches for delivery of cervical screening for eligible women in inpatient settings.

The Annual Health Check for people with Learning Disabilities, a programme announced in 2022 by the Scottish Government in 2022, includes adults screening as a core component. We are in process of planning activities to support staff training, community engagement and awareness to support conversations about and participation in adult screening programmes. This will be informed by EQIAs and delivered in partnership with HSCPs, third sector organisations and wider partners.

A proposed business case is being progressed for a time-limited intervention of community-based peripatetic cervical smear clinics that will target geographical areas of highest need, determined by the numbers of individuals who have failed to engage with the cervical screening programme. A partnership between NHSGGC Public Health, Primary Care Support, HSCP Health Improvement, Jo's Trust and other key stakeholders, this work will progress during 2023 and will focus on reengaging

defaulters with the screening programme. Using improvement methodology and PDSA cycles, it will also develop understanding about the optimal service delivery model for cervical screening clinics within NHSGGC.

Communities

An equalities practitioner has been recruited to support the implementation of the plan, with a focus on increasing informed participation in screening among black and minority ethnic communities. To date this has involved undertaking engagement with community organisations and partner organisations. Learning from communities is an important part of this engagement and will influence future activities.

Health Improvement teams continue to raise awareness of screening in the community and to collaborate with the equalities practitioner. This includes exploring new ways to communicate with communities based on community-specific and preferred social media as identified in community engagement work. We are also in the process of expanding the number of languages available for the animated introductions to the screening programmes, produced by Glasgow HSCP with funding from the Scottish Government.

We continue to work in partnership with Jo's Trust in community activities and with quality improvement activities.

Evaluation

An evaluation framework sets out approaches to evaluating the plan. All activities will be monitored by one or more outcome measure indicators. Some activities will be prioritised for more formal or semi-formal evaluation in order to ensure that learning from these can be implemented or shared as appropriate. The criteria for this more detailed focus will be activities which explore potential new models of working and community based development activities funded through Scottish Government Inequalities Fund.

10.9 Action Plan for 2022-25

ACTION	PROGRAMME	LEAD	SETTING	OUTCOME MEASURE
(a) Minority Ethnic people: South Asian, Caribbean, African and Chinese communities				
1. Work with community and faith groups to promote screening, build skills of community leaders and peers to raise the issue of screening, and increase knowledge of barriers to informed participation.	ALL SCREENING	GGC Equalities Practitioner / Glasgow City HSCP / Third Sector	Community	2
2. Share learning from communities to inform approaches to addressing health inequalities and discrimination in a systematic way.	ALL SCREENING	GGC Equalities Practitioner / Glasgow City HSCP / Third Sector	Community	3
3. Raise awareness of screening utilising screening animations (in languages other than English) aimed at residents, patients, and community organisations.	ALL CANCER SCREENING	Glasgow City HSCP / Public Health	Community / Primary Care	3
(b) People living in the most deprived areas				
4. Deliver a programme of additional community clinics for those who are not currently participating in the programme.	CERVICAL	Public Health – Health Services / Sandyford / GP Practices	Primary Care	1
5. Raise awareness of screening through NHS, local authority, housing associations, community, and GGC communication including social networking and media sharing platforms.	ALL SCREENING	Public Health / Third Sector / HSCPs	Community	2

ACTION	PROGRAMME	LEAD	SETTING	OUTCOME MEASURE
(c) People with physical disabilities				
6. Conduct service EQIA in order that screening services are sensitive to and meet the needs of people with physical disabilities.	ALL	Screening Services / Public Health – Health Services	Pathways & Patient Info	3
(d) People with sensory disabilities				
7. Conduct service EQIA in order that screening services are sensitive to and meet the needs of people with sensory disabilities.	ALL	Screening Services / Public Health – Health Services	Pathways & Patient Info	3
8. Engage with Deaf-Blind community in raising the issues of screening and overcoming barriers.	ALL	Public Health – Health Services, Deaf-Blind Scotland	Community	2
(e) People with learning disabilities				
9. Conduct service EQIA in order that screening services are sensitive to and meet the needs of people with learning disabilities.	ALL	Screening Services / Public Health – Health Services	Pathways & Patient Info	3
10. Develop good practice outlining reasonable adjustments to support access to screening including through Annual Health Check.	ALL	Public Health – Health Services / LD Services	Primary Care	3
11. Provide learning opportunities to health staff about the barriers faced by women with learning disabilities and the potential to address screening through the Annual Health Check.	CERVICAL	Public Health – Health Services / Jo's Trust	Primary Care	3

ACTION	PROGRAMME	LEAD	SETTING	OUTCOME MEASURE
12. Explore potential for text reminders and teaser letters in addition to training for carers and service users.	ALL SCREENING	East Dunbartonshire HSCP	Primary Care	1
(f) LGBT+ individuals				
13. Deliver training in equalities sensitive practice in screening (challenging heteronormative assumptions).	CERVICAL	Practice Nurse Development / Public Health – Health Services	Primary Care	3
14. Undertake/support existing engagement work with LGBT+ people to increase uptake.	ALL SCREENING	Public Health – Health Services / LGBT forums	Community	1
(g) People with severe and enduring mental ill health				
15. Promote introductory Learn Pro module on adult screening in order to support Mental Health Services Equality Outcome 8: Increase the number of in-patients who access screening.	ALL SCREENING	Mental Health	Mental Health	1
16. Appraise options for providing access to screening for in-patients via the Physical Health Check Policy.	CERVICAL	Public Health – Health Services / Mental Health	Mental Health	1
(h) Additionally identified local priorities				
17. Support GPs to use existing PHS cervical toolkit and framework to target vulnerable groups and eligible people who have not attended.	CERVICAL	Public Health – Health Services / Jo's Trust	Primary Care	3

ACTION	PROGRAMME	LEAD	SETTING	OUTCOME MEASURE
(i) Potential mechanisms to integrate findings into work to tackle inequalities in the longer term.				
18. Develop guidance on the use of SMS and other electronic reminders for and in relation to screening services.	ALL SCREENING	Public Health – Health Services / NSS NSO Equity in Screening Strategy	Corporate	1
19. Promote introductory Learn Pro module to HSCP staff identified as able to raise the issue of screening, such as Community Link workers.	ALL SCREENING	HSPCs	Community	2
20. Refresh patient information which is due for review in partnership with stakeholders.	BOWEL	Public Health – Health Services / Screening Services	Corporate	1