Public Health Screening Programme

Annual Report

1 April 2022 to 31 March 2023

Health Services
Public Health Directorate
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Section 1

Pregnancy & Newborn and Child Vision Screening

Chapter 1 - Pregnancy Screening

Summary

There are three screening programmes in pregnancy:

- haemoglobinopathies screening for sickle cell anaemia and thalassaemia**;**
- infectious diseases screening for HIV, hepatitis B and syphilis;
- trisomy and other congenital anomalies screening to detect Down's syndrome (T21), Edwards' syndrome (T18), or Patau's syndrome (T13) and other congenital anomalies.

In addition, pregnant women have BMI and gestational diabetes risk assessed.

These programmes allow parents to make reproductive choices, manage illness and infection during and after the pregnancy and manage risk to the baby during pregnancy and after birth.

Pregnancy screening programmes are offered universally to all pregnant women during antenatal visits. During 2022/23, 11,328 NHSGGC residents booked to attend antenatal clinics and 10,037 (88.6%) of first antenatal booking appointments were offered by 12 weeks and 6 days gestation. Early attendance at first booking ensures access to testing and follow on care is as timely as possible. Those that attend a booking appointment before 12 weeks and 6 days gestation are more likely to be in the least deprived category (94.0% versus 83.8% in the most deprived category).

The ethnic origin of pregnant women was identified as shown in **Table 1.4**. Scottish (64.2%), Other British (4.6%), other white (7.7%), Pakistani (6.5%), Indian (3.0%), other Asian (2.3%), African (6.2%), Arab (2.6%), other ethnic groups (1.1%), mixed ethnic group (1.2%) and not known/null (0.6%).

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. 39.5% of women were recorded as having 'any risk' of GDM and were eligible to be offered an oral glucose tolerance test at 24-28 weeks gestation**.**

At the time of their booking appointment, 1339 (37.8%) pregnant women had a normal weight, 1,107 (31.3%) were overweight and 580 (16.4%) obese. The total number of women who were within the severely obese categories with BMI>35 was 412 (3.63%).

Haemoglobinopathies Screening

Haemoglobinopathies screening tests for a group of inherited blood disorders which affect the haemoglobin (oxygen carrying) component of blood. These can be haemoglobin variants (such as sickle cell disorders) which are associated with the

production of abnormal forms of haemoglobin; or thalassaemias where there is an abnormality in the amount of haemoglobin produced.

Haemoglobinopathies screening involves completion of the Family Origin Questionnaire (FOQ) and blood testing. For low prevalence areas like NHSGGC, the FOQ provides the basis for testing for haemoglobin variants, in the interpretation of results and the need for partner testing.

Of the 11,328 women booked for their first antenatal booking, 11,305 (99.8%) were offered haemoglobinopathies screening.

Across NHSGGC, 9,894 (87.3%) samples had a completed FOQ, with completion of the questionnaire varying across sites. Laboratory staff test samples for haemoglobinopathies even if the FOQ is missing.

Infectious diseases

NHSGGC submitted 13,810 antenatal samples for infectious disease screening. This includes from individuals who may reside in another board area but use services in NHSGGC and multiple samples for some individuals which may have be taken for a number of reasons.

The screening identified 12 women infected with HIV (six previously known to GGC); 41 infected with Hepatitis B virus (28 were previously known) and 34 women with a reactive syphilis test (not all of whom would have required treatment as this includes both current and previously treated infections).

Trisomies and other congenital anomalies screening

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

In NHSGGC in 2022/23, 10,511 samples taken during first or second trimester were screened for congenital abnormalities. Timing of testing was when the woman presented to maternity services and/or gave consent for testing. Different tests are used in the first and second trimester.

The first trimester samples are taken during 11 weeks +2 days to 14 weeks +1 day of pregnancy. The samples were sent to Lothian Laboratory and during 2022/2023, 7,915 samples were tested. 232 samples had increased chance of Trisomy 21 and 47 samples had increased chance for Trisomy 18 or 13.

The second trimester samples are taken up to 20 weeks+0 days gestation and sent to Bolton Laboratory for testing. During 2022/2023, 2,596 samples were taken in the second Trimester. 118 high chance results were reported (4.54%).

Congenital anomalies screening

All women were 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 foetal anomaly scan was 6,990 (61.7%) of all bookers, and 6,987 (100%) of scans were performed. Of the 6,987 foetal scans performed, anomalies were suspected in 585 (8.4%) of scans.

Chapter Contents

1.1. Introduction

Pregnancy screening is offered to all women who attend ante-natal appointments. The aim of pregnancy screening is to alert women, their partners, their midwives and clinical team, to increased risk of illness in the pregnant woman or her baby. This knowledge allows decision-making about reproductive choices, treatment or planning for the birth.

This programme covers a number of individual screening tests which are offered across pregnancy. See Appendix 1.1 for the timelines for testing during pregnancy.

- **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 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. 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.

Though not nationally agreed screening programmes, pregnant women are also screened for body mass index and gestational diabetes. These are also described in this report.

- **Gestational diabetes mellitus screening** aims to identify women at increased risk of developing gestational diabetes and to put plans for managing this in place.

- **Body mass index screening** aims to identify women with high body mass index who are at increased risk of complications in pregnancy including gestational diabetes.

1.2. Eligible Population

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

1.3. The Screening Tests

Antenatal haemoglobinopathies screening

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

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 haemoglobinopathies and details are included in Appendix 1.4.

Screening for sickle cell disorders and thalassaemia is offered to all women as early as possible in pregnancy, and ideally by 10 weeks gestation, to give parents time 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 appointment when a blood sample is taken. The full screening pathway is shown in Appendix 1.5. Clinical management protocols are in place for diagnosis late in pregnancy or during birth, and to manage pregnant women who test positive for HIV, hepatitis B or syphilis.

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 a 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 1.6. Ultrasound scanning is used to look for other congenital anomalies between 18 and 21 weeks.

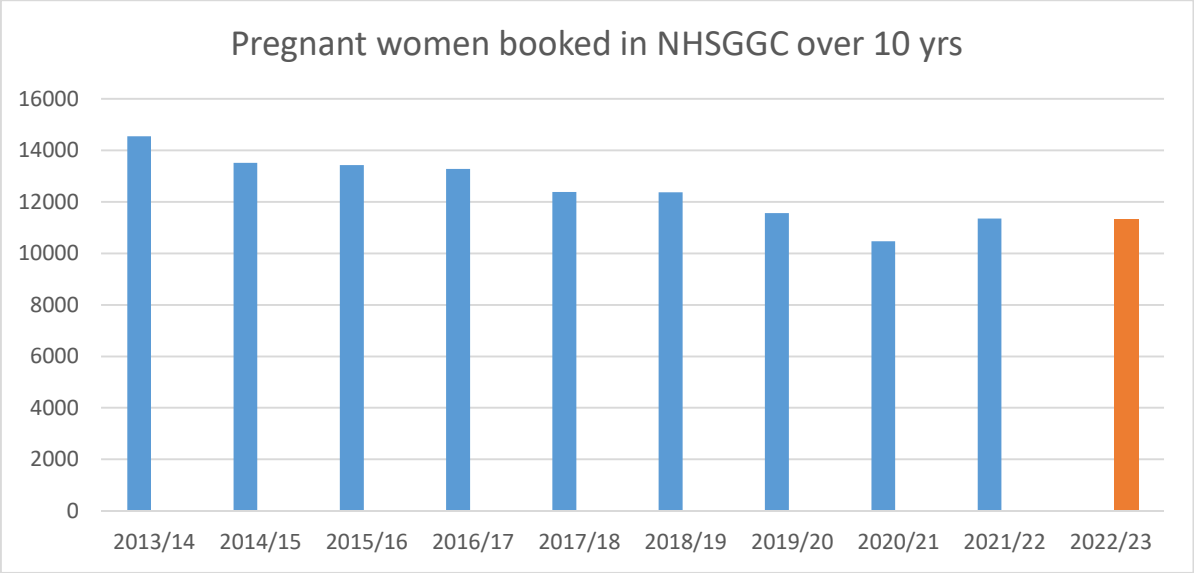
The decision to accept screening for chromosomal and other congenital anomalies raises particular ethical issues for women. Uptake of trisomy or other congenital anomalies screening depends on whether women would wish further investigation or management.

1.4. Attendance and timing of first antenatal visit

Each NHS Board has a statutory requirement to submit data on antenatal activity. In NHSGGC between April 2022 and March 2023, 11,328 women booked to attend an antenatal appointment. Figure 1.1 shows the number of women who have attended antenatal clinic in NHSGGC since 2013/14. From 2013/14 to 2022/23, there has been an overall decline in the number of women attending antenatal clinic

from 14,547 in 2013/14 to 11,328 in 2022/23. However, the number in 2022/23 is similar to the number in 2021/22 and an increase from 2020/21.

Figure 1.1. Total number of pregnant women booked in NHSGGC, April 2013 – March 2023



Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Total number of women	14547	13518	13427	13278	12386	12370	11561	10472	11353	11328

Timing of the first antenatal appointment is important for the best care and choices about the pregnancy to be available. In 2022/23, overall 88.6% (10,037) attended before 13 weeks or 3 months gestation, see **Table 1**. This proportion is slightly lower than the last three years, but similar to the last seven years, see **Table 1.1 and Figure 1.2**.

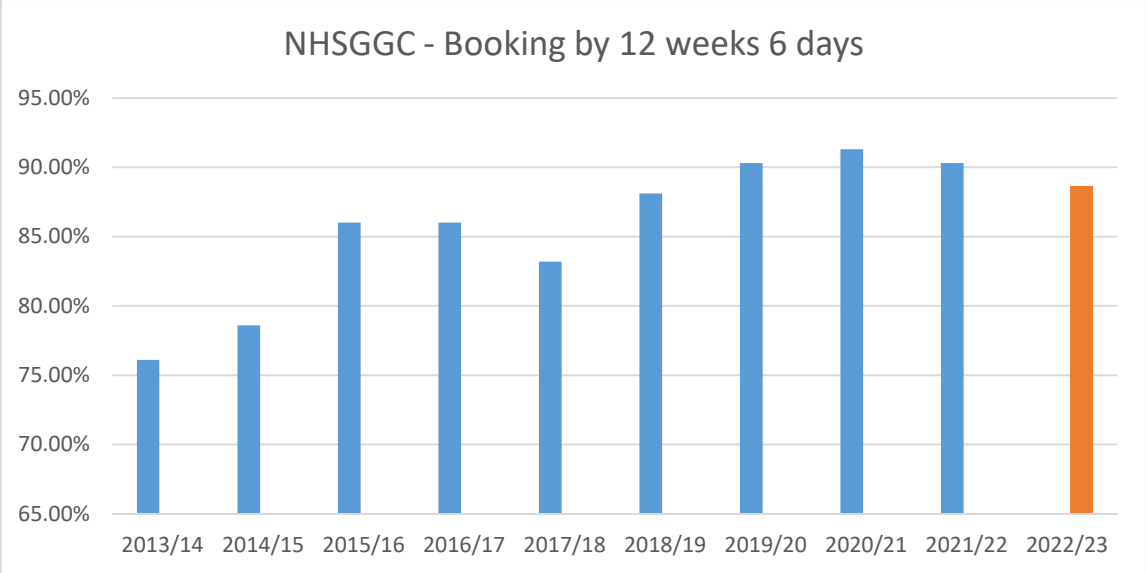
The proportion of pregnant women attending their first appointment at less than 13 weeks gestation was highest at the Royal Alexandria Hospital maternity unit (93.1%) and lowest at the Princess Royal Maternity Hospital (85.1%).

Table 1.1. Number of women booked for their first antenatal appointment in NHSGGC 1 April 2022 to 31 March 2023, by maternity unit and 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	3014	282	96	46	47	44	**3541**	*85.1*
Queen Elizabeth University Hospital	4225	232	96	56	65	94	**4782**	*88.4*
Royal Alexandra Hospital	2798	86	33	16	32	31	**3005**	*93.1*
Total	**10037**	**600**	**225**	**118**	**144**	**169**	**11328**	*88.6*

Badgernet, September 2023

Figure 1.2. Percentage of women booked by 12 weeks and 6 days in NHS GGC, 2013 to 2023



Year	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
Total %	76.1%	78.6%	86.0%	86.0%	83.2%	88.1%	90.3%	91.3%	90.3%	88.6%

Within NHSGGC, booking for the first antenatal appointment varied according to area of residence. 3,809 (83.8%) pregnant women living in the most deprived areas

booked by 12 weeks and 6 days compared to 1,880 (94%) pregnant women living in the least deprived areas.

Maternity Services are developing digital booking options backed up with a communication plan to encourage pregnant women to book early. Women from BAME communities and those from deprived areas are less likely to contact services. (**Table 1.2**)

Table 1.2. Gestational age at first antenatal booking appointment by deprivation categories for period 1 April 2022 to 31 March 2023

SIMD Quintile	<=12 Wks 6Days	13Wks 0Days - 16Wks 6Days	17Wks 0Days - 20Wks 6Days	21Wks 0Days - 24Wks 6Days	25Wks 0Days - 30Wks 6Days	>=31 Wks 0Days	Unk	Total	% <=12 Wks 6Dys
1 -Most Deprived	3809	336	143	65	89	83	22	**4547**	*83.8*
2	1751	106	26	13	21	34	7	**1958**	*89.4*
3	1158	50	27	16	12	20	4	**1287**	*90.0*
4	1439	49	13	11	8	15	2	**1537**	*93.6*
5 -Least Deprived	1880	59	16	13	14	17	0	**1999**	*94.0*
Total	**10037**	**600**	**225**	**118**	**144**	**169**	**35**	**11328**	*88.6*

Source: BADGERNET, September 2023

The majority of pregnant women 61.5% (6975) were between the ages 25-34 of age; 323 (2.85%) were under 20 years of age; and 2745 (24.2%) 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 2022 to 31 March 2023

Age at Booking	East Dunbartonshire	East Renfrewshire	Glasgow North East	Glasgow North West	Glasgow South	Inverclyde	Renfrewshire	West Dunbartonshire	Total
<20	6	10	61	42	93	25	46	40	**323**
20-24	54	48	265	204	288	86	200	140	**1285**
25-29	147	172	603	475	664	193	479	270	**3003**
30-34	347	350	591	651	883	215	662	273	**3972**
35+	308	253	396	480	628	129	394	157	**2745**
Total	**862**	**833**	**1916**	**1852**	**2556**	**648**	**1781**	**880**	**11328**

Source: BADGERNET, September 2023

The ethnic origin of pregnant women was identified as shown in **Table 1.4**. Scottish (64.2%), Other British (4.6%), other white (7.7%), Pakistani (6.5%), Indian (3.0%), other Asian (2.3%), African (6.2%), Arab (2.6%), other ethnic groups (1.1%), mixed ethnic group (1.2%) and not known/null (0.6%).

Table 1.4. Number of NHSGGC residents booked for their first antenatal appointment by ethnic origin during 1 April 2022 to 31 March 2023

Ethnic Category	Total	%
1A. Scottish	7274	*64.2*
1B. Other British	519	*4.6*
1C. Irish	87	*0.8*
1K. Gypsy/ Traveller	13	*0.1*
1L. Polish	196	*1.7*
1Z. Any other white ethnic group	580	*5.1*
2A. Any mixed or multiple ethnic background	138	*1.2*
3F. Pakistani, Pakistani Scottish or Pakistani British	735	*6.5*
3G. Indian, Indian Scottish or Indian British	340	*3.0*
3H. Bangladeshi, Bangladeshi Scottish or Bangladeshi British	22	*0.2*
3J. Chinese, Chinese Scottish or Chinese British	87	*0.8*
3Z. Other Asian, Asian Scottish or Asian British	142	*1.3*
4D. African, African Scottish or African British	587	*5.2*
4Y. Other African	113	*1.0*
5C. Caribbean, Caribbean Scottish or Caribbean British	12	*0.1*
5D. Black, Black Scottish or Black British	21	*0.2*
5Y. Other Caribbean or Black	13	*0.1*
6A. Arab, Arab Scottish or Arab British	290	*2.6*
6Z. Other Ethnic Group	83	*0.7*
98. Refused / Not provided by patient	5	*0.0*
99. Not Known	10	*0.1*
NULL	61	*0.5*
Grand Total	11328	

Source: BADGERNET, September 2023

1.5. Gestational Diabetes Mellitus

Pregnant women are assessed for their diabetes status at the time of booking and BMI (Body Mass Index) is recorded. Women with gestational diabetes are at increased risk of having a large baby, a stillborn baby or a baby who dies shortly after birth. There were 44 women with Type 1 diabetes and 59 with Type 2 diabetes (0.9%) in 2022/23 compared to 1.2% in the previous 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 2022 to 31 March 2023

	Current Diabetes				
Body Mass Index Categories	No	Yes Type 1	Yes Type 2	Total	% Diabetic
BMI<18.5	284	0	0	284	0
18.5<=BMI<25	4496	18	5	4519	0.5
25<=BMI<30	3309	17	13	3339	0.9
30<=BMI<35	1789	7	18	1814	1.4
35<=BMI<40	829	2	15	846	2.0
40<=BMI<45	335	0	6	341	1.8
BMI>=45	153	0	2	155	1.3
Unknown	30	0	0	30	0
Total	**11225**	**44**	**59**	**11328**	**0.9**

Source: Badgernet, September 2023

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

39.5% (4429) of women were recorded as having 'any risk' of gestational diabetes mellitus and were eligible to be offered oral glucose tolerance testing at 24-28 weeks gestation**. (Table 1.6)**

Table 1.6. Number of women booked for first antenatal appointments in NHSGGC 1 April 2022 to 31 March 2023 and GDM risk factors, excluding women with known diabetes

Maternity Unit	BMI >=35	Family History Diabetes	Origin Mother Risk	Previous Gestational Diabetes	Previous Macrosomic Baby	Any Risk	Bookers Total	% Any Risk
Princess Royal Maternity Hospital	403	664	753	78	33	1493	3504	***42.6***
Queen Elizabeth University Hospital	482	917	1088	167	51	1970	4741	***41.6***
Royal Alexandra Hospital	432	469	216	85	31	966	2980	***32.4***
Total	**1317**	**2050**	**2057**	**330**	**115**	**4429**	**11225**	***39.5***

Source: Badgernet, September 2023

1.6. Body Mass Index (BMI) and Pregnant Women

At the time of their first antenatal appointment, 1339 (37.8%) of pregnant women had a normal weight, 1,107 (31.3%) were overweight and 580 (16.4%) obese. The total number of women who were within the severely obese categories with BMI>35 was 412 (3.63%). The BMI was not recorded for 9 women (0.3%) **(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 2022/2023

	Maternity Unit							
BMI Category	Princess Royal Maternity	*%*	Queen Elizabeth University Hospital	*%*	Royal Alexandra Hospital	*%*	**Total**	***%***
Underweight BMI<18.5	94	*2.7*	126	*2.6*	64	*2.1*	**284**	***2.5***
Normal 18.5<=BMI<25	1339	*37.8*	2093	*43.8*	1087	*36.2*	**4519**	***39.9***
Overweight 25<=BMI<30	1107	*31.3*	1360	*28.4*	872	*29.0*	**3339**	***29.5***
Obese 30<=BMI<35	580	*16.4*	698	*14.6*	536	*17.8*	**1814**	***16.0***
Severely Obese 35<=BMI<40	278	*7.9*	300	*6.3*	268	*8.9*	**846**	***7.5***
Severely Obese 40<=BMI<45	92	*2.6*	132	*2.8*	117	*3.9*	**341**	***3.0***
Severely Obese BMI>=45	42	*1.2*	60	*1.3*	53	*1.8*	**155**	***1.4***
Unknown	9	*0.3*	13	*0.3*	8	*0.3*	**30**	***0.3***
Total	**3541**		**4782**		**3005**		**11328**	

Source: Badgernet, September 2023

1.7. Haemoglobinopathies Screening

Haemoglobinopathies

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 thalassaemias 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 children. 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 children.

Samples taken for haemoglobinopathies screening

Of the 11,328 women booked for their first antenatal appointment, 11,305 (99.8%) were offered haemoglobinopathies screening. **(Table 1.8)** Uptake of haemoglobinopathies screening has been high at >99% in NHSGGC for the last five years, see **Figure 1.3**.

The Family Origin Questionnaire (FOQ) was 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. Blood samples taken at first antenatal appointment were checked for risk of thalassaemia for all women who consented.

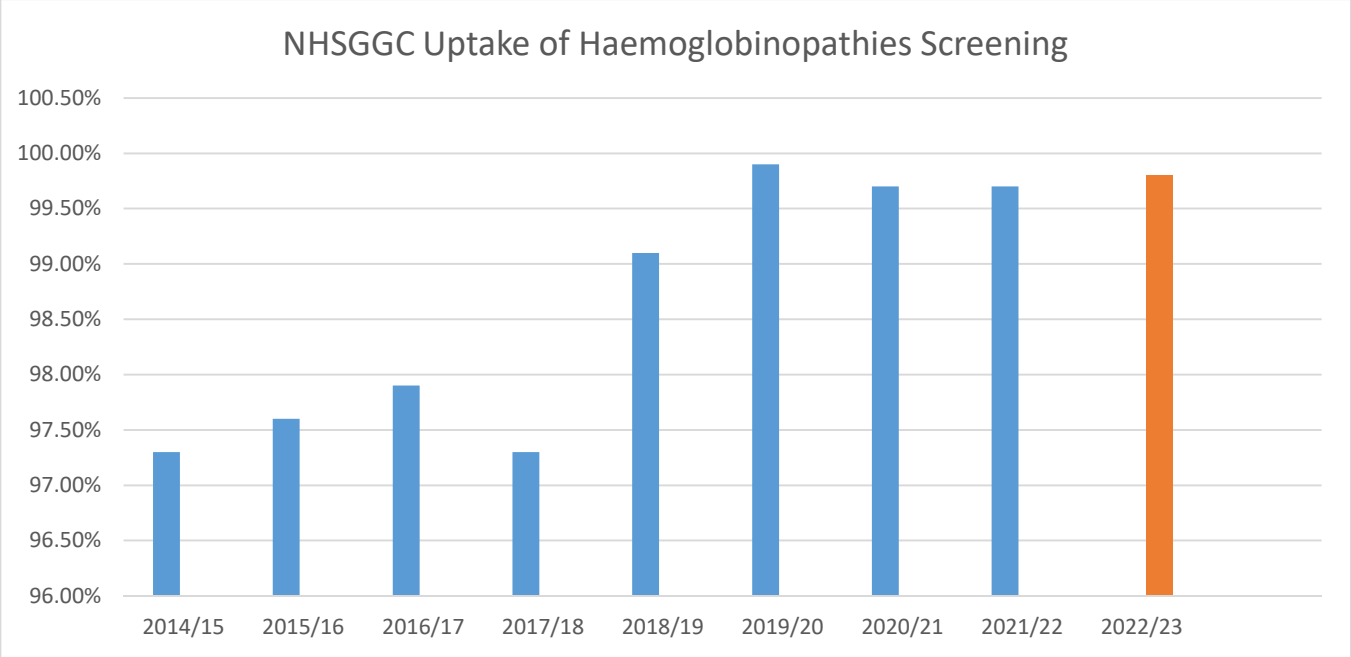
In NHSGGC in 2022/23, 9,894 (87.3%) blood samples for haemoglobinopathies (HBO) testing had a completed Family Origin Questionnaire (FOQ). This varied across sites with the Princess Royal Maternity completing the FOQ for 82.2% of pregnant women and the Royal Alexandra Hospital maternity unit completing FOQ for 90.7% of pregnant women. Laboratory staff test samples for haemoglobinopathies even if the FOQ is missing **(Table 1.8).**

Table 1.8. NHSGGC haemoglobinopathies screening from 1 April 2022 to 31 March 2023

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	3541	3532	1	9	3531	2910	621	***82.2***
Queen Elizabeth University Hospital	4782	4772	2	10	4772	4258	514	***89.0***
Royal Alexandra Hospital	3005	3001	6	4	2998	2726	272	***90.7***
Total	**11328**	**11305**	**9**	**23**	**11301**	**9894**	**1407**	***87.3***

Source: BadgerNet, September 2023
HBO – Haemoglobinopthies and FOQ – Family Origin Questionnaire

Figure 1.3. NHSGGC 10 year uptake trend for Haemoglobinopathy screening, April 2013 – March 2023



Year	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**2021/22**	**2022/23**
% uptake	96.2%	97.3%	97.6%	97.9%	97.3%	99.1%	99.9%	99.7%	99.7%	99.8%

The maternal samples tested for haemoglobinopathies identified 21 foetus at risk and eight cases where partner testing should be offered. **(Table 1.9)**

Table 1.9. NHSGGC haemoglobinopathies screening outcome (HBO performed only) 1 April 2022 to 31 March 2023

	Maternity Unit			
Screening Outcome	Glasgow Princess Royal Maternity	Queen Elizabeth University Hospital	Royal Alexandra Maternity Hospital	Total
01: Fetal at risk	*	*	*	**21**
02: Fetal not at risk	54	67	23	**144**
04: Carrier	35	9	16	**60**
05: Possible Carrier	257	384	143	**784**
07: Partner testing should be offered	*	*	*	**8**
08: Partner testing not required	3081	4185	2724	**9990**
09: Negative	43	*	*	**54**
Unknown	48	109	85	**242**
Grand Total	**3532**	**4773**	**2998**	**11303**

Source: BADGERNET, September 2023
* = small numbers, redacted to preserve anonymity

Table 1.10. KPIs for Pregnancy and Newborn Screening - Haemoglobinopathy 2022-2023

KPI	Performance threshold	NHSGGC 2022-2023
1.1 Coverage	Essential : ≥95% Desirable : ≥ 99%	99.8%
1.3 Completion of FOQ	Essential : ≥ 95% Desirable : ≥99%	87.3 %

1.8. Infectious Diseases in Pregnancy Screening

The infections that are screened for are hepatitis B (HBV), syphilis and Human Immunodeficiency Virus (HIV).

Hepatitis B 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, although this is preventable. Many women with HIV will not know that they are infected unless they are tested.

Screening tests and results for Infectious diseases

NHSGGC submitted 13,810 antenatal samples for infectious disease screening. This includes from individuals who may reside in another board area but use services in NHSGGC and multiple samples for some individuals which may have be taken for a number of reasons.

The screening identified 12 women infected with HIV (six previously known to GGC); 41 infected with HBV (28 were previously known); and 34 women with a reactive syphilis test (not all of whom would have required treatment as this includes both current and previously treated infections). **Table 1.11**.

Table 1.11. NHSGGC Infectious diseases tests and results 2022/2023

1 April 2022 - 31 March 2023					Results			
	Total number of samples	Samples tested	Samples not tested		Positive[1,2]		Negative	
	(N)	(N)	(N)		(N)	%	(N)	%
HIV	13,810	13,803	7		12[1]	0.09	13,791	99.9
HBV	13,810	13,810	0		44[2]	0.3	13,766	99.7
Syphilis	13,810	13,807	3		34[3]	0.2	13,773	99.8

Source: West of Scotland Specialist Virology Centre Nov 2023

Notes:

1. Six of the twelve HIV infections were previously known, and six were new diagnoses
2. 28 of the 44 HBV infections were previously known, and sixteen were new diagnoses.
3. Not all of these women will have required treatment, since this figure includes women with previously treated syphilis as well as those with current infection.

Key Performance Indicators

The KPIs for screening for infectious diseases in pregnancy are to:

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

Hepatitis B

2.1 Coverage[1]	13,803/13,810 = 99.9%
2.2 Turnaround	100% of results reported within 8 days
2.3 Treat/ intervene	44 women tested positive for hepatitis B, of whom: • 28 were known about previously • 16 were new diagnoses. A local protocol is in place for the management of women with hepatitis B infection identified in pregnancy. This covers referral for specialist care, checking viral load at 26 weeks, actions required depending on viral load and paediatric services involvement at delivery.
2.4 Timely assessment	As above
2.5 Timely neonatal vaccination and immunoglobulin	100% of babies born to mothers with hepatitis B received their first dose of hep B vaccine +/- immunoglobulin within 24hrs of birth.

1. Shown as % undergoing hepatitis B testing among those undergoing infectious diseases in pregnancy screening.

Syphilis

3.1 Coverage[2]	13,807/13,810 = 99.9%
3.2 Turnaround	97.7% of results reported within 8 days
3.3 Treat/intervene	34 women had a reactive syphilis test. However not all of these women will have required treatment, since this figure includes women with previously treated syphilis as well as those with current infection. Failsafe in conjunction with sexual health services ensures that all positive women are followed up promptly.

2. Shown as % undergoing syphilis testing among those undergoing infectious diseases in pregnancy screening.

HIV

4.1 Coverage[3]	13,803/13,810 = 99.9%
4.2 Turnaround	100% of results reported within 8 days
4.3 Treat/intervene	Twelve women tested positive for HIV, of whom: • Six were already known to be HIV positive and engaged in care. • Six were new diagnoses (of whom three were new to Glasgow but had already been diagnosed elsewhere and were engaged in care). Failsafe in conjunction with sexual health or other services ensures that all HIV positive women are followed up promptly.

3. Shown as % undergoing HIV testing among those undergoing infectious diseases in pregnancy screening.

1.9. NHSGGC Foetal anomaly screening

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

Women who are registered with maternity services between 11+2 and 14+1 weeks gestation, are offered the combined test, this includes a nuchal translucency (NT) scan and a blood test. Healthcare professionals use the information gathered from this test to identify the chance of trisomy pregnancies.

Women who present to maternity services after 14+1 weeks, or where an NT measurement cannot be obtained, will be offered the quadruple test, which is performed between 14+2 and 20+0 weeks gestation. Healthcare professionals use the information gathered from this test to identify the chance of trisomy pregnancies.

1st and 2nd Trimester Trisomy screening

In NHSGGC in 2022/23, 10,511 samples taken during first or second trimester were screened for congenital abnormalities. This includes NHSGGC residents and residents of other NHS boards who attend NHSGGC services. Timing of testing was dependant on when the woman presented to maternity services and/or gave consent for testing. Different tests are used in the first and second trimester. See **Table 1.12**.

Table 1.12. First and Second Trimester Trisomy Screening for pregnant women in NHSGGC, 2017/18 to 2022/23

NHS Greater Glasgow and Clyde	2022/23	2021/22	2020/21	2019/20	2018/19	2017/18
First Trimester	**7,915**	8,158	7,849	7,801	7,961	8,227
Second Trimester	**2,596**	2,389	2,236	2,152	2,393	2,209
Total Screens	**10,511**	10,547	10,085	9,916	10,354	10,436
% Second trimester	**24.7%**	22.7%	22.2%	21.7%	23.1%	21.2%

Source: First Trimester Trisomy Screening, Lothian Laboratory Annual Report 2022/23

The First 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 2022/2023, 7,915 samples were tested. There were 0 late samples and 471 samples (6%) had incomplete request details.

Of the samples tested in the first trimester, 232 samples had increased chance of T21 (Down's syndrome); and 47 samples had increased chance for T18/13 (Edwards' and Patau's syndromes). The Singleton Pregnancy Screen (SPR) for increased chance results in the first trimester was 3.25% (253). **(Table 1.13)**

Table 1.13. First Trimester Trisomy singleton pregnancy screening samples 2022/2023 in NHSGGC

2022/23	SPR T21	# increased Chance T21	SPR T18/13	# increased Chance T18/13	SPR for increased chance result	# Screened with increased chance result
NHSGGC	**2.98%**	**232**	**0.6%**	**47**	**3.25%**	**253**

Source: First Trimester Trisomy Screening, Lothian Laboratory Annual Report 2022/23

The 2nd Trimester samples are taken up to 20 weeks+0 days gestation and sent to Bolton Laboratory for testing. During 2022/2023, 2,596 samples were taken in the Second Trimester, 118 high chance results were reported (4.5%). **(Table 1.14)**

Table 1.14. Second Trimester Down's syndrome screening samples 2022/2023

2022/2023	Number of samples	% Samples	Number of high chance results	% High chance results
2nd Trimester	2,596	24.7%	118	4.5%

Source: Bolton Labs September 2023

Key Performance Indicators for First Trimester Trisomy screening

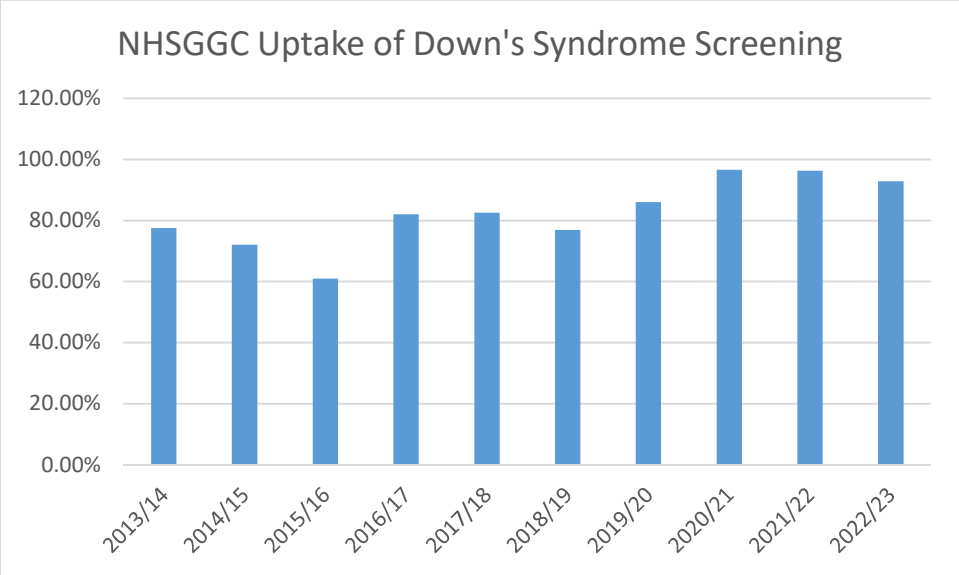
The following data has been reviewed to provide evidence for the NSS Pregnancy and Newborn Screening Key Performance Indicators (KPIs), for 2022/2023 from the Lothian Laboratory for Scotland. **(Table 1.15)**

Table 1.15. KPIs for First Trimester Down's syndrome screening

KPI 5.2 Turnaround time	Overall 99.2% 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 98 %, which fulfils the essential performance criteria.
KPI 5.5 Screen Positive Rate (T21/T18/T13)	The overall screen positive rate is % for NHSGGC 3.25%
KPI 5.6 Detection Rate	The detection rate for year 2021/22 for all Scottish Health Boards was 78.3 % for T21 and 80.8 % for T18/13

Source: First Trimester Trisomy Screening, Lothian Laboratory Annual Report 2022/23

Figure 1.3. NHSGGC 10 year coverage* trend for Down's Syndrome Screening April 2013 – March 2023



Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
% Coverage*	77.5%	72.1%	61.0%	82.0%	82.6%	76.9%	86.0%	96.6%	96.3%	92.8%

* coverage is the number of samples submitted for screening by NHSGGC divided by the number of pregnant women eligible for testing who were NHSGGC residents.

Amniocentesis

Amniocentesis is only offered if there's a high chance that a baby could have a health condition or chromosomal condition because:

- an earlier antenatal screening test has suggested there may be a health condition or chromosomal condition;
- of a previous pregnancy with health condition or chromosomal condition;
- a family history of a health condition, such as cystic fibrosis or muscular dystrophy.

203 amniocentesis samples were analysed by the Cytogenetics Laboratory and 41 abnormalities were detected (23.4%) and of these 34 had a diagnosis of Trisomy 21 (Down's syndrome) **(Table 1.16).**

Table 1.16. Amniocentesis Referrals 1 April 2022 to 31 March 2023 in NHSGGC

	Screening risk	Maternal anxiety	Scan abnormality	NIPT	Other	Total
No of patients (tests)	52	0	104	16	31	**203**
% total referral reasons	25.6%	0.0%	51.2%	7.9%	15.3%	
Number with normal results	42	0	87	*	*	161
Number with diagnostic trisomy	9	0	10	15	0	34
Number non-trisomy abnormal	*	0	*	0	0	7
Failed analysis	*	0	*	*	0	1
Total Abnormalities	**10**	**0**	**16**	**15**	**0**	**41**

Source Cytogenetics Lab – Dec 2023
NIPT – Non-Invasive Prenatal Test
* = small numbers, redacted to preserve anonymity

Chorionic Villus Biopsy

Chorionic Villus Biopsy (CVS) is another test that can be offered to pregnant women if there is a high risk the baby could have a health condition or chromosomal condition.

This could be because:

- an earlier antenatal screening test has suggested there may be a health condition or chromosomal condition, such as Down's syndrome, Edwards' syndrome or Patau's syndrome or sickle cell anaemia;
- a previous pregnancy with these health conditions or chromosomal condition;
- there is a family history of a health condition, such as cystic fibrosis or muscular dystrophy, and a health condition is detected in baby during a routine ultrasound scan.

66 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2022/23. 19 abnormalities were detected (28.7%) 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 2022 to 31 March 2023

	Screening risk	Maternal anxiety	Scan abnormality	NIPT	Other	Total
No of patients (tests)	*	0	37	*	21	**66**
% total referral reasons	4.5%	0.0%	56.1%	7.6%	31.8%	
Number with normal results	*	0	22	*	21	46
Number with diagnostic trisomy	*	0	12	*	*	17
Number non-trisomy abnormal	*	0	*	*	*	2
Failed analysis	*	0	*	*	*	1
Total Abnormalities	*****	**0**	**14**	*****	**0**	**19**

Source Cytogenetics Lab – Dec 2023
NIPT – Non-Invasive Prenatal Test
* = small numbers, redacted to preserve anonymity

1.10. Other Foetal Anomaly Screening

Foetal 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 foetal anomaly scan was 6,990 (61.7%) of all bookers and 6,987 (100%) of scans were performed **(Table 1.18).**

Table 1.18. Uptake rate for other congenital anomalies (FAS, foetal anomaly scan) for the period 31 March 2022 to 1 April 2023 in NHSGGC

Maternity Unit	Total	FAS Consented	*% FAS Consented*	FAS Performed	*% FAS Performed*
Princess Royal Maternity Hospital	3541	2198	*62.1*	2197	*100.0*
Queen Elizabeth University Hospital	4782	2941	*61.5*	2939	*99.9*
Royal Alexandra Hospital	3005	1851	*61.6*	1851	*100.0*
Total	**11328**	**6990**	***61.7***	**6987**	***100.0***

Source: Badger Net, September 2023

Of the 6,987 foetal scans performed, 585 (8.4%) anomalies were suspected. **(Table 1.19)**

Table 1.19. Outcome of foetal anomaly scans performed for the period 1 April 2022 to 31 March 2023

Maternity Unit	Number of Foetal Scans performed	Anomaly Not Suspected	Anomaly Suspected	*% Anomaly Suspected*
Princess Royal Maternity Hospital	2197	2091	106	*4.8*
Queen Elizabeth University Hospital	2939	2763	176	*6.0*
Royal Alexandra Hospital	1851	1548	303	*16.4*
Total	**6987**	**6402**	**585**	***8.4***

Source: Badger Net, September 2023

1.11. Pregnancy screening trends April 2017 to March 2023

The table below shows various pregnancy screening trends between April 2017-March 2018 (2017-18) and April 2022-March 2023 (2022-23).

Table 1.20. Pregnancy Screening – Trends over 6 years

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Number of pregnant women booked in NHSGCC	12,386	12,370	11,561	10,472	11,353	11,328
Pregnancy – booked by 12 weeks and 6 days	83.2%	88.1%	90.3%	91.3%	90.3%	88.6%
Gestational Diabetes with any risk during pregnancy	29.3%	33.1%	33.3%	36.2%	37.8%	39.5%
Haemoglobinopathies Family Origin Questionnaire completed	67.5%	74.0%	77.5%	80.3%	84.7%	87.3%
Infectious Diseases screening coverage	99.9%	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%	92.8%

Source: Annual Screening Reports

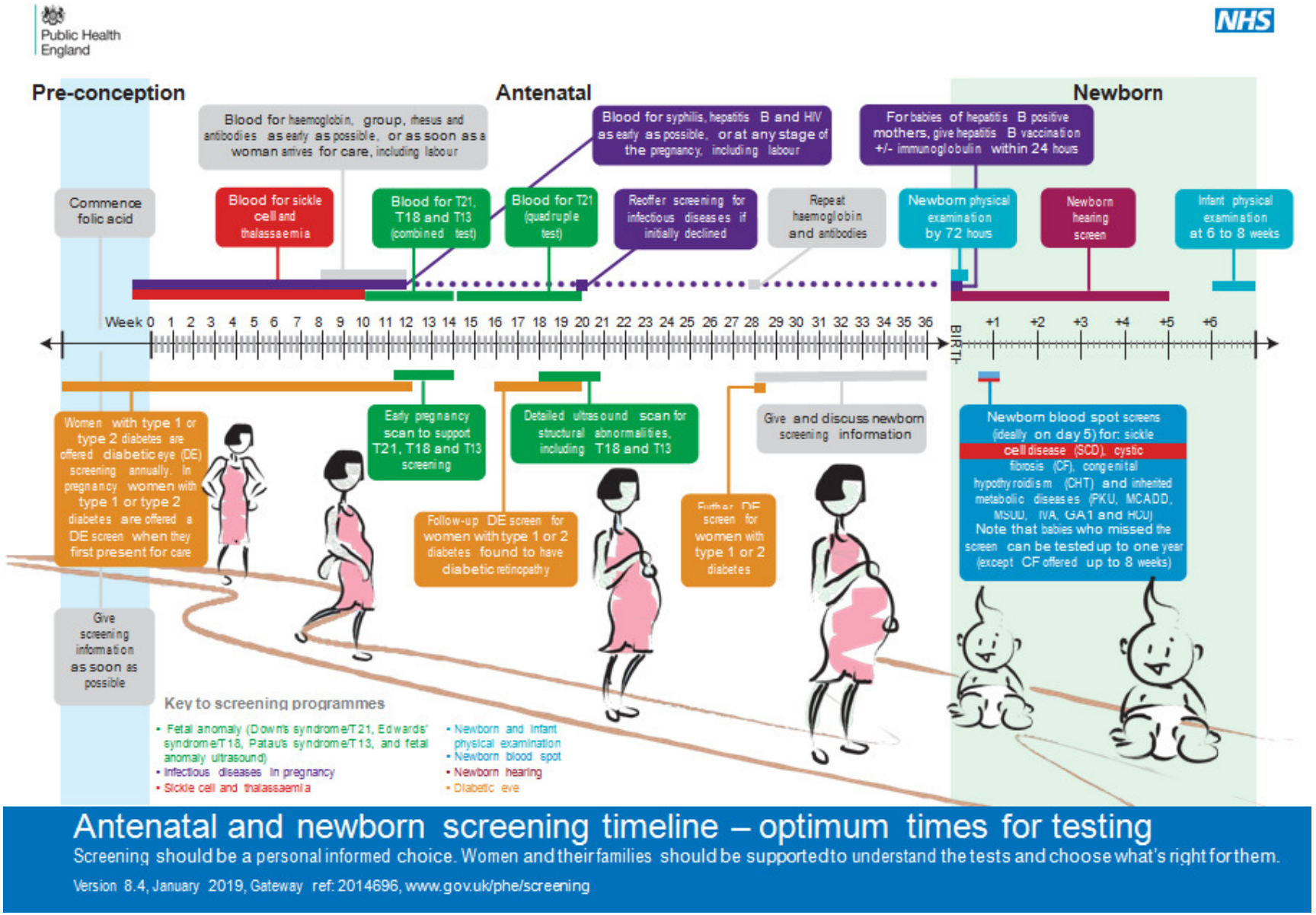
1.12. Information Systems

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

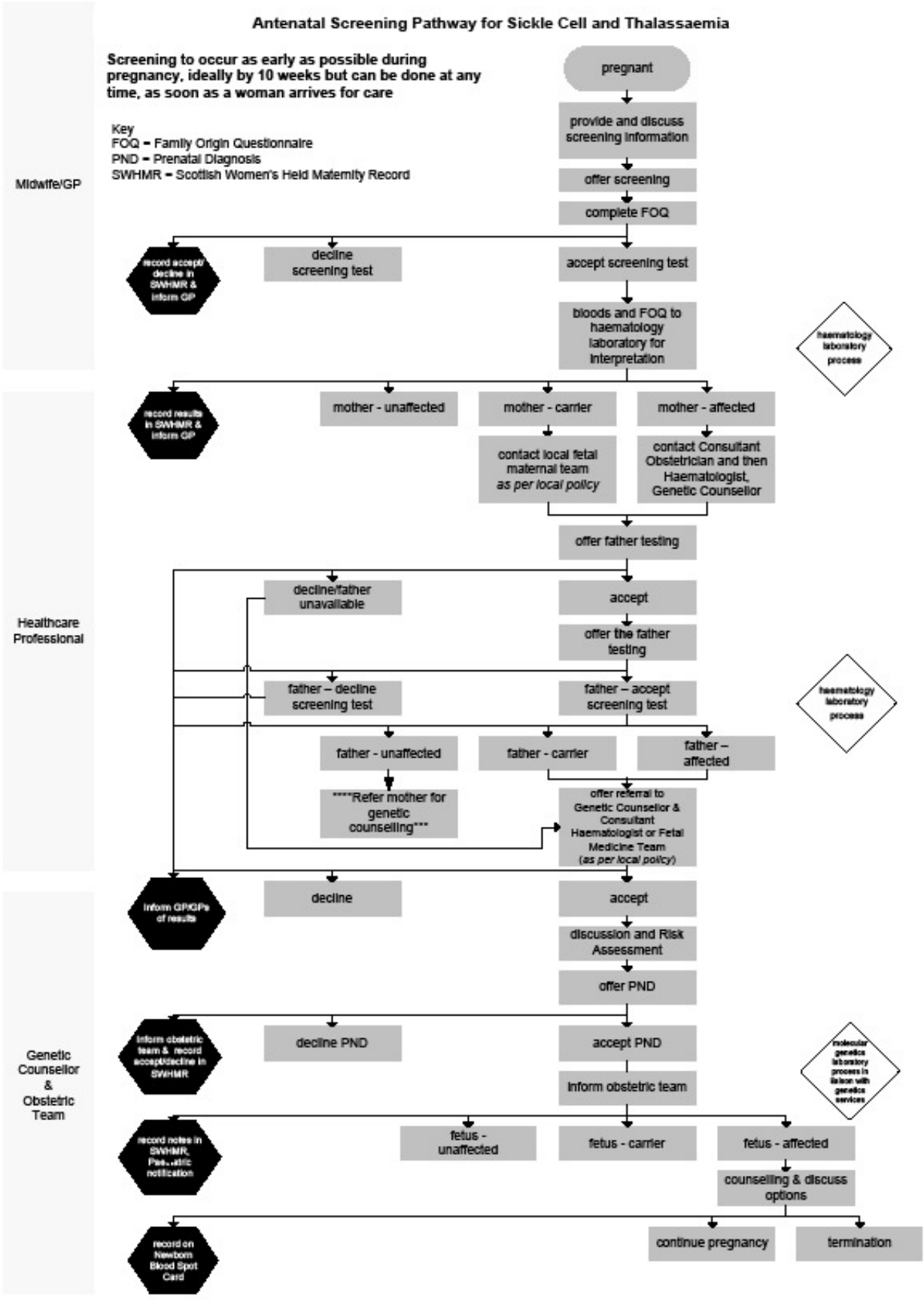
1.13. Challenges and Priorities

- 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, Pre...atric 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

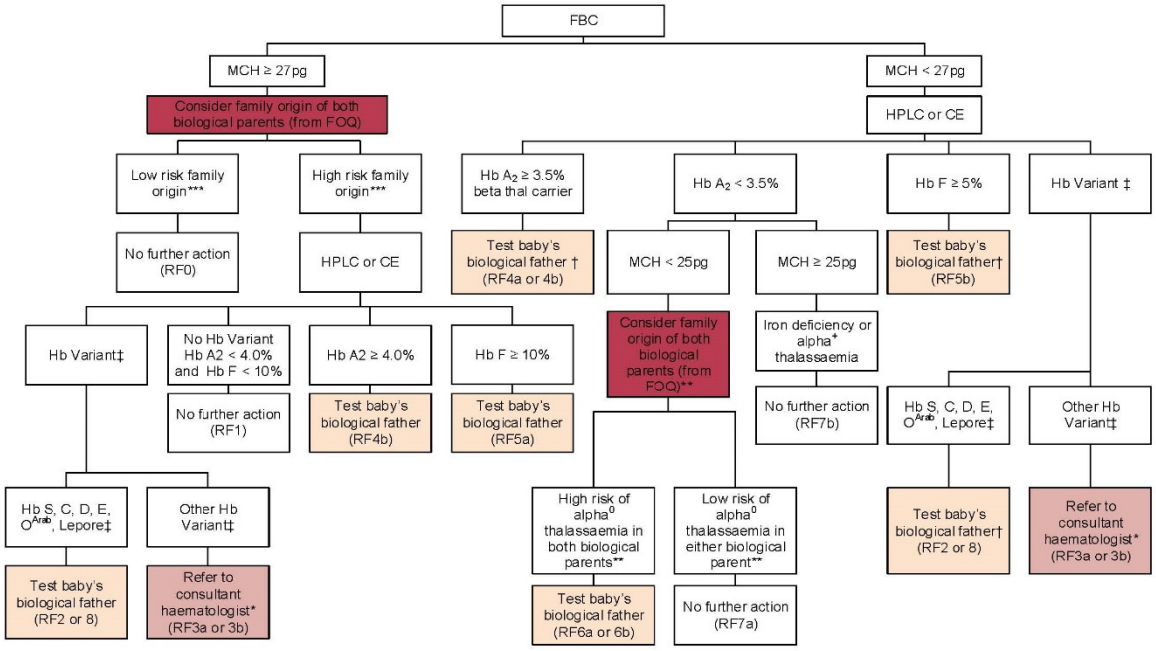
Signed _____ Print Name _____

Job Title _____ Contact Tel No _____ Date _____

(By Health Care Professional completing the form)

Appendix 1.4

Haemoglobinopathy Screening in Low Prevalence Areas



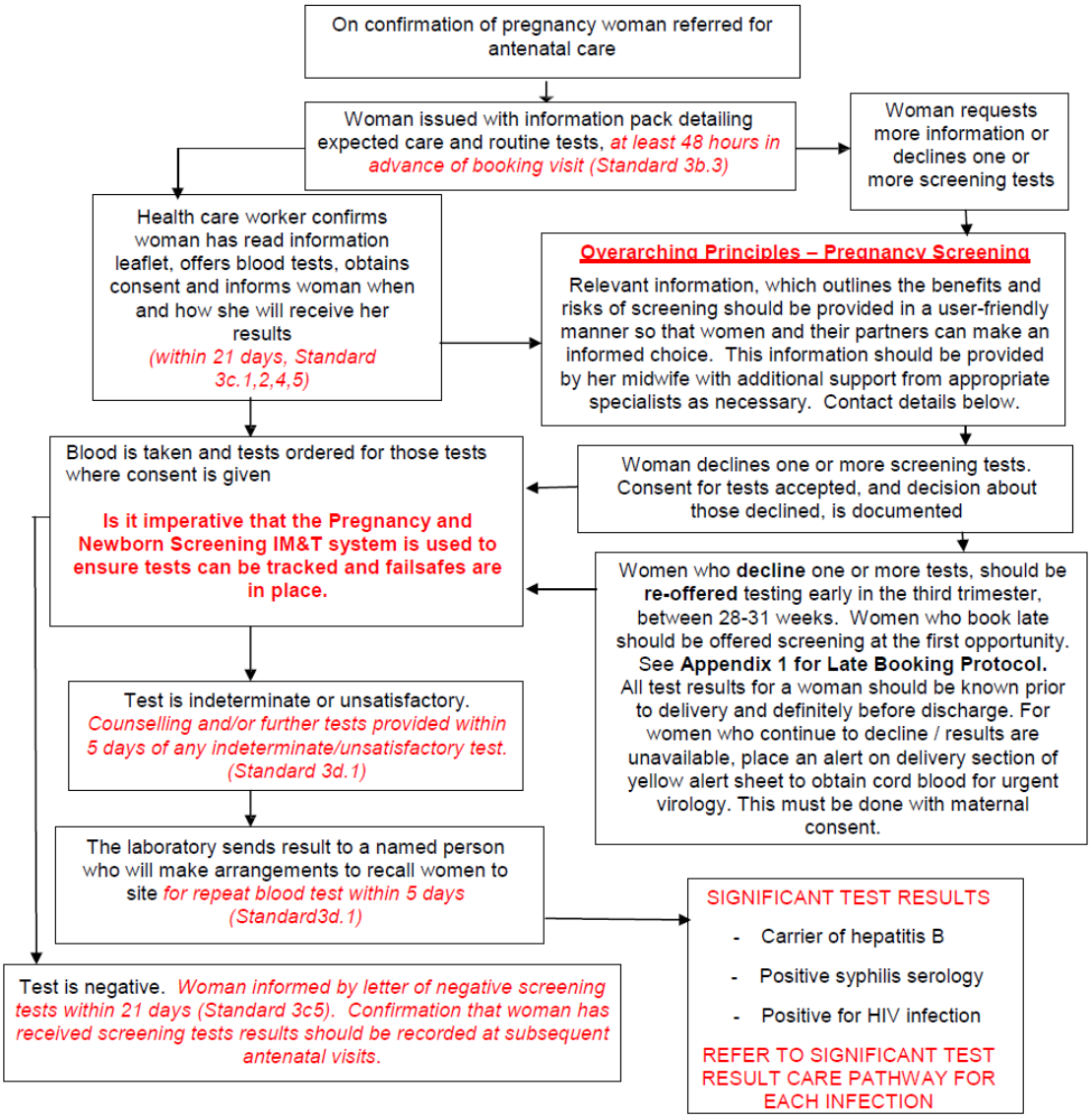
* Refer analytical results to consultant for an opinion on the need for a clinical referral or consult the laboratory support s service helpline.
** Consider at high risk if any ethnic origins in China (including Hong Kong), Taiwan, Thailand, Cambodia, Laos, Vietnam, Indonesia, Burma, Malaysia, Singapore, 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^0thalassaemia if both parents are from a high risk area and MCH <25pg.
‡ Consider co-existing beta thalassaemia

FBC = Full Blood Count
FOQ = Family Origin Questionnaire
Hb,S,C,D,E,O = Types of haemoglobinopathy variants
HPLC = High Performance Liquid Chromatography
MCH = Mean Corpuscular Haemoglobin

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

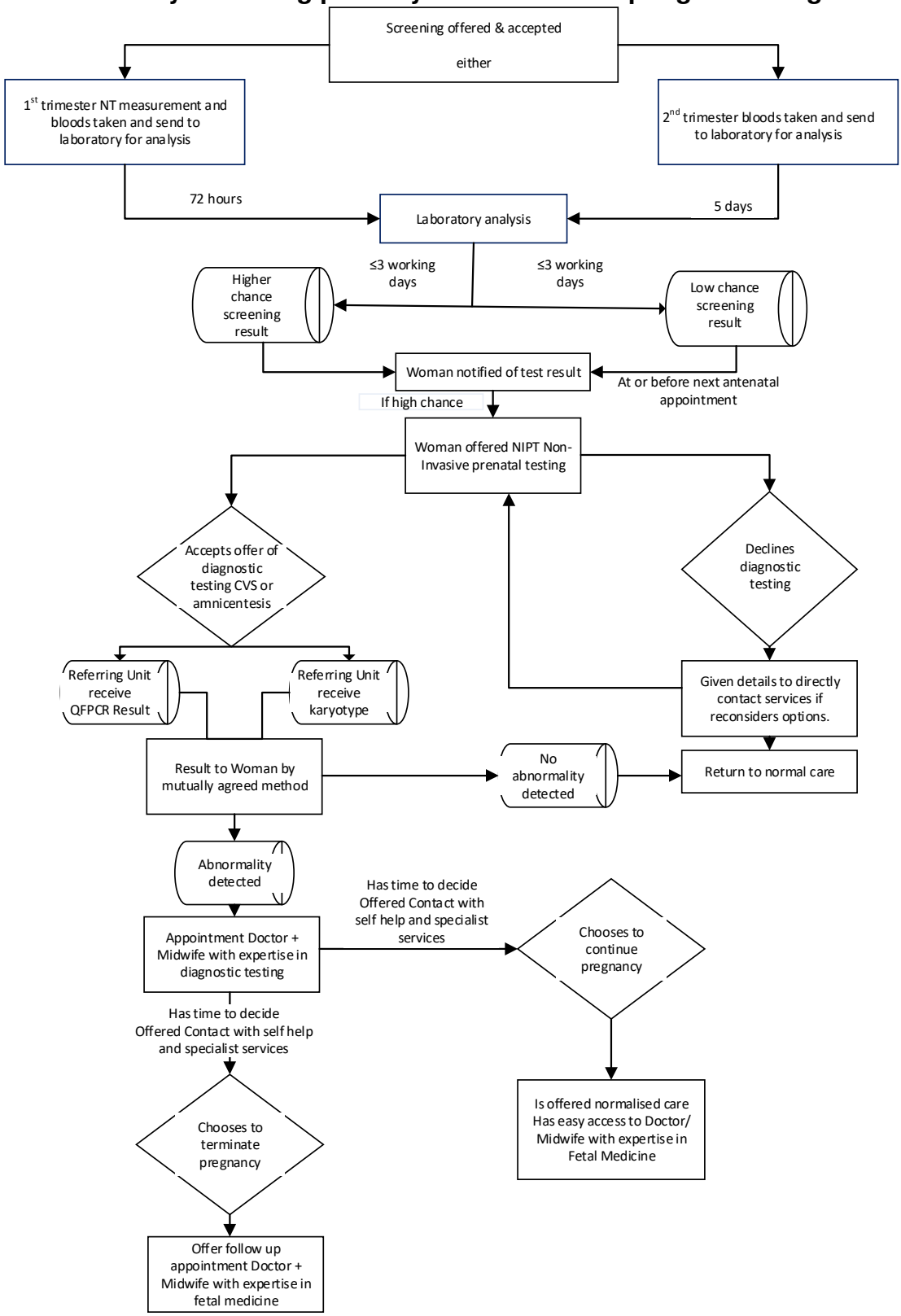


N.B. If a woman feels she has been/continues to be at risk of exposure to HIV, she should be offered re-testing 3 monthly in pregnancy.
If a mother develops symptoms of hepatitis or a sexually transmitted infection she should be referred to SNIPs/or sexual health advisor.

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

Appendix 1.6

Trisomy screening pathway for women accepting screening



Appendix 1.7

Members of Pregnancy & Newborn Screening Steering Group (At March 2023)

Dr Emilia Crighton	Interim Director of Public Health (Chair)
Dr Nicola Schinaia	Consultant, 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
Mrs Uzma Rehman	Public Health Programme Manager
Mrs Elizabeth Rennie	Screening Programmes Manager

Appendix 1.8

Members of Infectious Diseases Steering Sub Group (At March 2023)

Dr Gillian Penrice	Public Health Protection Unit (Chair)
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 health 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), and homocystinuria (HCU).

The total number of babies eligible for screening was 10,656 and of these, 10,571 (99.2%) babies were screened.

The uptake of newborn bloodspot screening was 99.0% or greater across all HSCP areas. The lowest uptake was 98.2% in Glasgow North East sector.

Following screening:

- <5 babies were diagnosed with PKU (phenylketonuria);
- six babies were diagnosed with congenital hypothyroidism (CHT);
- nine tested positive for cystic fibrosis;
- <5 babies were diagnosed with haemoglobinopathy variants, with an additional 111 babies were identified as haemoglobinopathy carriers;
- <5 tested positive for Isovaleric Acidaemia (IVA);
- no babies tested positive for medium chain acyl-CoA dehydrogenase deficiency (MCADD), maple syrup urine disease (MSUD), Glutaric Aciduria type 1 (GA1) or Homocystinuria (HCU).

Trends in Uptake of Newborn Bloodspot Screening 2017/18 to 2022/23

	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Number of babies eligible	11,803	12,155	11,238	10,594	10,929	10,571
Uptake of newborn screening	98.1%	98.8%	98.8%	98.8%	99.2%	99.2%

The breakdown of ethnicity for babies screened in 2022-23 was: 7,167 (66.1%) were UK White; 937 (8.6%) were South Asian; 115 (1.1%) were South East Asian; 557 (5.1%) were African or African Caribbean; 452 (4.2%) were Southern and Other European; 266 (2.5%) were Other non-European and 99 (0.9%) were North European (white); Mixed Background was 740 (6.8%); and ethnicity was not stated for 506 (4.7%).

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 conditions which can lead to problems with growth and development as early as possible after birth. This means that appropriate management for the condition detected can be offered as quickly as possible.

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 (April 2022 to March 2023), excluding any baby who died before the age of 8 days.

2.3. The Screening Test

The bloodspot sample is taken on day 4-5 of life whenever possible. There are separate protocols in place for screening babies who are ill, have had 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, Glasgow, for analysis.

Detailed pathway is shown in Appendix 2.1.

2.4. Annual Live Births Registrations by HSCP Areas in NHSGGC 2018-2022 (whole calendar years)

HSCP	2018	2019	2020	2021	2022
East Dunbartonshire	950	910	884	898	849
East Renfrewshire	854	808	797	790	745
Glasgow	6,548	6,553	5,867	5,929	6,112
Inverclyde	689	615	615	605	654
Renfrewshire	1,697	1,693	1,539	1,647	1,754
West Dunbartonshire	885	845	771	769	852
NHSGGC	**11,623**	**11,424**	**10,473**	**10,638**	**10,966**

Source Births Time Series Data | National Records of Scotland (nrscotland.gov.uk)

The annual number of live births is reported nationally from 1st January to 31st of December as in the table above.

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 1st April 2022 to 31st March 2023.

The total number of babies eligible for screening was 10,656 and of these, 10,571 (99.2%) babies were screened.

The total number of babies eligible for newborn screening in NHSGGC has fallen over the last ten years, reflecting the fall in birth rate in Scotland over this period. See **Figure 2.2**.

The uptake of newborn screening has remained stable at around 99% over the last ten years. See **Figure 2.3**.

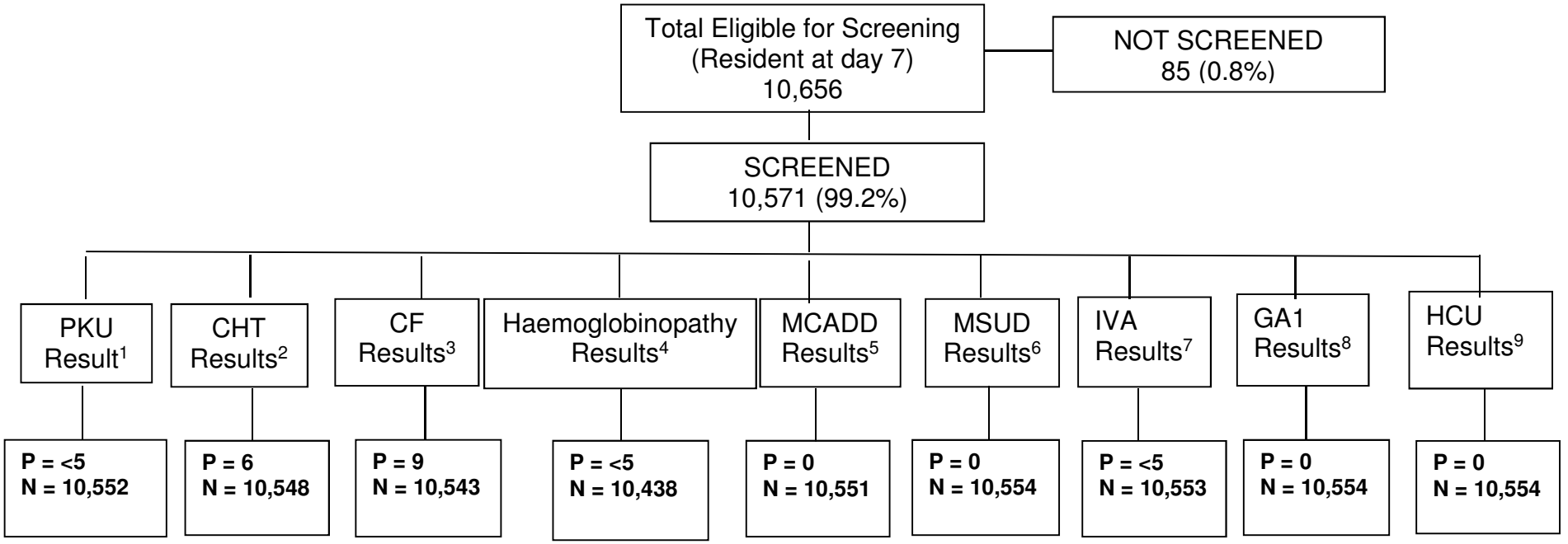
Following screening:

- <5 babies were diagnosed with PKU (phenylketonuria);
- six babies were diagnosed with congenital hypothyroidism (CHT);
- nine tested positive for cystic fibrosis;
- <5 babies were diagnosed with haemoglobinopathy variants and 111 babies were identified as haemoglobinopathy carriers;
- no babies were diagnosed with medium chain acyl-CoA dehydrogenase deficiency MCADD;
- no babies were diagnosed with maple syrup urine disease (MSUD);
- <5 babies were diagnosed with isovaleric acidaemia (IVA);
- no babies were diagnosed with glutaric aciduria type 1 (GA1);
- no babies were diagnosed with homocystinuria (HCU).

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 1st April 2022 to 31st March 2023

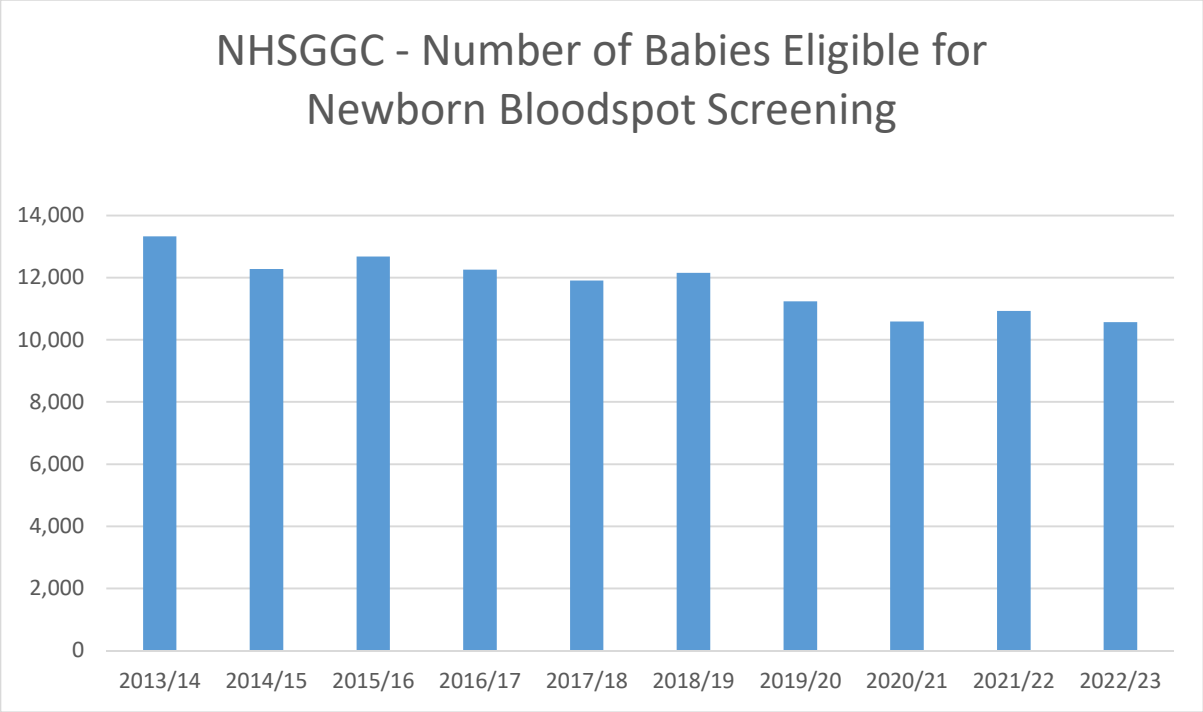


1 Total includes 14 refusals and 3 verifications
2 Total includes 14 refusals and 3 verifications
3 Total included 2 carrier, 14 refusals and 3 verifications
4 Total includes 111 carrier, 14 refusals and 3 verifications
5 Total included 14 refusals and 3 verifications
6 Total includes 14 refusals and 3 verifications
7 Total includes 14 refusals and 3 verifications
8 Total includes 14 refusals and 3 verifications
9 Total includes 14 refusals and 3 verifications

Source: Child Heath
Date extracted: October 2023

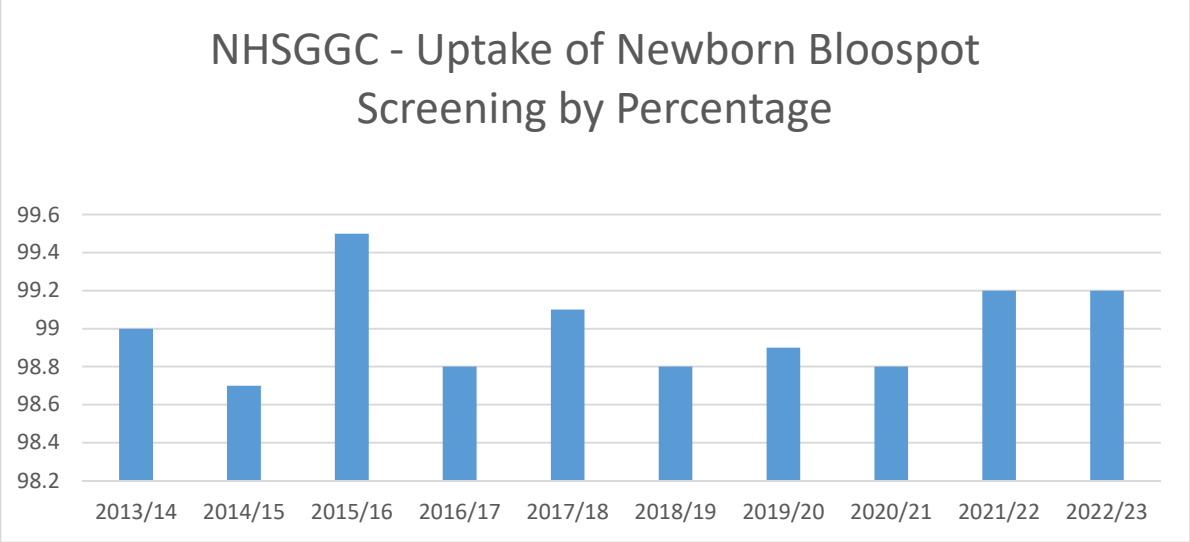
P = Positive N = Negative

Figure 2.2. Number of Eligible Babies for Newborn Bloodspot Screening within NHS GGC over a 10 Year Period, 1st April 2013 to 31st March 2023



Source: Child Health; Date extracted: October 2023

Figure 2.3. Uptake Trend for Newborn Bloodspot Screening within NHSGGC over a 10 Year Period, 1st April 2013 to 31st March 2023



Year	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2020/ 21	2021/ 22	2022/ 23
Uptake % newborn bloodspot screening	99.0%	98.7%	99.5%	98.8%	99.1%	98.8%	98.9%	98.8%	99.2%	99.2%

The overall uptake rate of newborn bloodspot screening was 99% or greater across all HSCP areas. The lowest uptake was 98.2% for Glasgow North East sector (**Table 2.1).** Uptake was similar across all SIMD categories (variation 99.0% - 99.4%).

Table 2.1. Uptake Rate of Newborn Bloodspot Screening by HSCP & Deprivation
Percentage Uptake of Bloodspot Screening by HSCP and SIMD, 1st April 2022 to 31st March 2023

	Most Deprived				SIMD 2020 Quintile				Least Deprived			
HSCP	1		2		3		4		5		Total	
	No. Screened	**% Uptake**	**No. Screened**	**% Uptake**	**No. Screened**	**% Uptake**	**No. Screened**	**% Uptake**	**No. Screened**	**% Uptake**	**No. Screened**	**% Uptake**
East Dunbartonshire	46	*100.0*	152	*100.0*	59	*100.0*	153	*99.4*	423	*99.3*	**833**	***99.5***
East Renfrewshire	53	*100.0*	75	*100.0*	51	*100.0*	218	*99.5*	342	*99.4*	**739**	***99.6***
Glasgow North East	1,139	*98.8*	213	*95.9*	217	*97.3*	212	*97.7*	34	*100.0*	**1,815**	***98.2***
Glasgow North West	800	*99.1*	208	*99.0*	171	*99.4*	136	*100.0*	350	*99.2*	**1,665**	***99.2***
Glasgow South	1,127	*99.2*	560	*98.9*	291	*99.3*	344	*99.7*	147	*98.7*	**2,469**	***99.2***
Inverclyde	298	*100.0*	108	*100.0*	63	*100.0*	79	*100.0*	75	*100.0*	**623**	***100.0***
Renfrewshire	449	*99.6*	321	*99.4*	244	*99.6*	258	*99.6*	357	*99.7*	**1,629**	***99.6***
West Dunbartonshire	375	*98.9*	187	*100.0*	129	*100.0*	72	*100.0*	35	*100.0*	**798**	***99.5***
Total	**4,287**	***99.2***	**1,824**	***99.0***	**1,225**	***99.2***	**1,472**	***99.4***	**1,763**	***99.4***	**10,571**	***99.2***

Source: Child Health; Date extracted: October 2023

2.6. Ethnicity

The breakdown of ethnicity for babies screened in 2022/23 was **(Table 2.2)**:

- 7,167 (66.1%) were UK White;
- 937 (8.6%) were South Asian;
- 115 (1.1%) were South East Asian;
- 557 (5.1%) were African or African Caribbean;
- 452 (4.2%) were Southern and Other European;
- 266 (2.5%) were Other non-European;
- 99 (0.9%) were North European (white);
- Mixed Background was 740 (6.8%); and
- ethnicity was not stated for 506 (4.7%)**.**

Table 2.2. NHSGGC Newborn Bloodspot Screening – Ethnicity of Babies Tested 1st April 2022 to 31st March 2023

A. African or African-Caribbean	B. South Asian (Asian)	C. South East Asian (Asian)	D. Other non-European (other)	E. Southern & other European (White)	F. United Kingdom (White)	G. North Europe (White)	J. Any Mixed Background	Z. Not Stated
557	937	115	266	452	7,167	99	740	506
5.1%	8.6%	1.1%	2.5%	4.2%	66.1%	0.9%	6.8%	4.7%

Source: Scottish Newborn Screening Laboratory - Newborn Bloodspot Screening 2022/23

Table 2.3. Ethnicity of Babies Born in NHSGGC 2017-18 to 2022-2023

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
African or African-Caribbean	3.7%	4.0%	3.4%	3.3%	4.0%	5.1%
South Asian (Asian)	9.5%	9.5%	7.6%	7.7%	7.6%	8.6%
South East Asian (Asian)	1.8%	1.8%	1.5%	1.3%	1.0%	1.1%
Other Non-European (Other)	2.6%	3.0%	2.7%	2.6%	2.3%	2.5%
Southern & Other European (White)	5.5%	5.2%	4.6%	3.9%	4.1%	4.2%
United Kingdom (White)	64.3%	63.1%	67.9%	68.7%	68.8%	66.1%
North Europe (White)	1.1%	1.3%	1.0%	0.9%	0.9%	0.9%
Any Mixed Background	5.8%	6.3%	6.1%	6.8%	7.0%	6.8%

Source: Scottish Newborn Screening Laboratory - Newborn Bloodspot Screening 2017-23

2.7. Specimen Tests & Outcomes for 2022/23

During 2022/2023, the Scottish Newborn Screening Laboratory received 11,640 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 & Reason for Repeat Samples

Reason	Number	Percentage
Insufficient sample	348	3.05
Sample taken <96 hours	24	0.21
Incorrect blood application	70	0.61
Compressed /damaged sample	34	0.30
Blood quality of sample	13	0.11
Missing CHI	68	0.60
Expired card used	2	0.02
>14 days in transit	4	0.04
Total	**563**	4.89%

Source: SNSL Report 2022-23

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 2022-23. The total number of newborn bloodspots screened was 1,045.

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 for NHS Greater Glasgow areas.

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 & Service Improvements

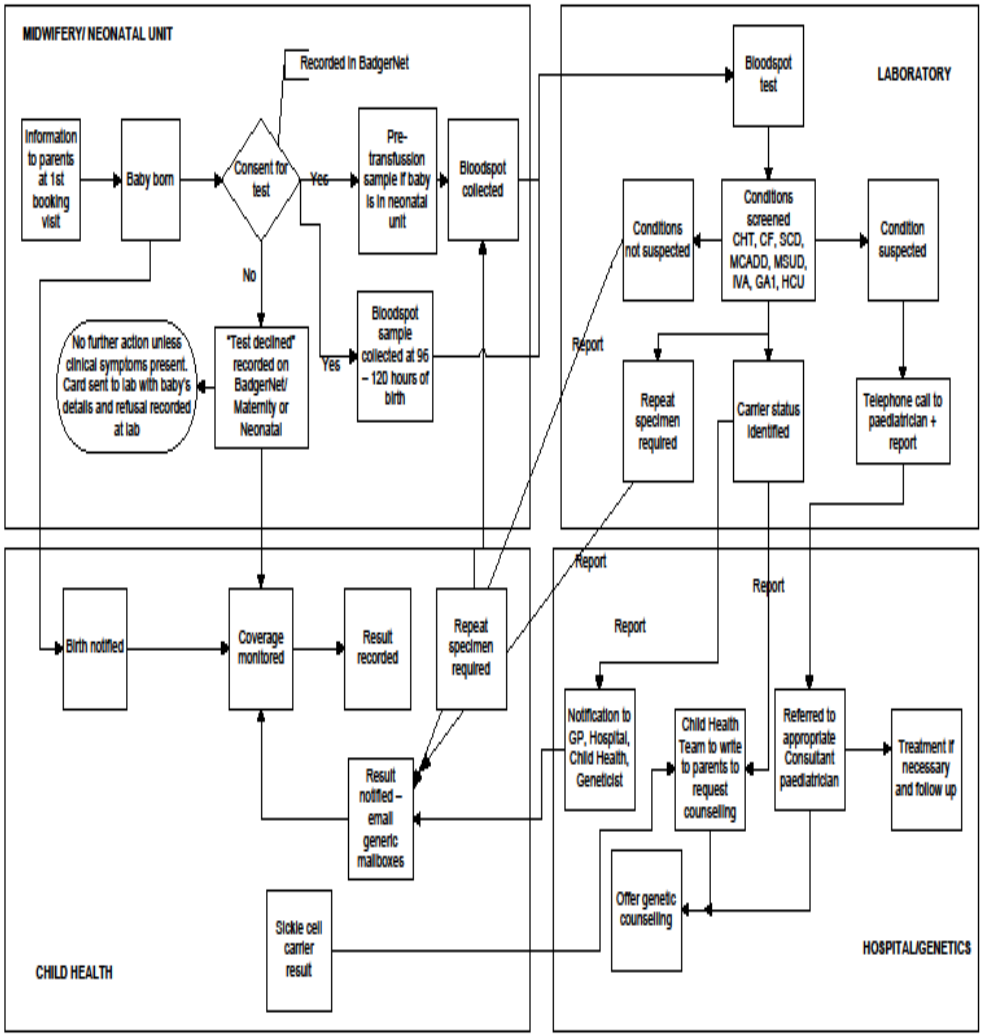
- Support parents whose children are identified as carriers of sickle cell disease to access genetic counselling.
- Ensure that the website with information about haemoglobinopathies for staff and parents in available on NHSGGC website.
- Ensure that services meet KPIs for newborn bloodspot screening.

Table 2.4. NBBS KPIs & Performance during 2022-23 for NHSGGC

NBBS KPI	Performance Threshold	2022-23
8.1 Coverage (number of babies screened)	95-99%	*99.85%*
8.2 Movers in	95-99%	98.3%
8.3 Avoidable repeats	<1.0 to <2.0 %	4.89 %
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%	99.42% had valid CHI
8.6 Timely sample collection	95-99%	86%
8.7 Timely receipt of sample in the lab	95-99%	90.4%
8.8 Timely second sample for CF screening	Essential >95% days 21-24	4 out of 7 samples taken within timescale
8.9 Timely second sample for borderline CHT screening	95 – 99%	21 out of 25 samples (84%)
8.10 Timely second sample for CHT for preterm infant	95 – 99%	68 out of 116 samples (58.6%)
8.11 Timely processing CHT (data for Scotland)	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%	100%
	CHT referral on 1st sample	86%
	CHT referral on 2nd sample	70%
	CF (2+ CFTR mutations) appt by 28 days – 95-100%	86%
	CF (<2 CFTR mutations) appt by 35 days – 80-100%	63%
	SCD appt by 90 days	100%

Source: SNSL Report 2022-23

Newborn Bloodspot Screening 2018



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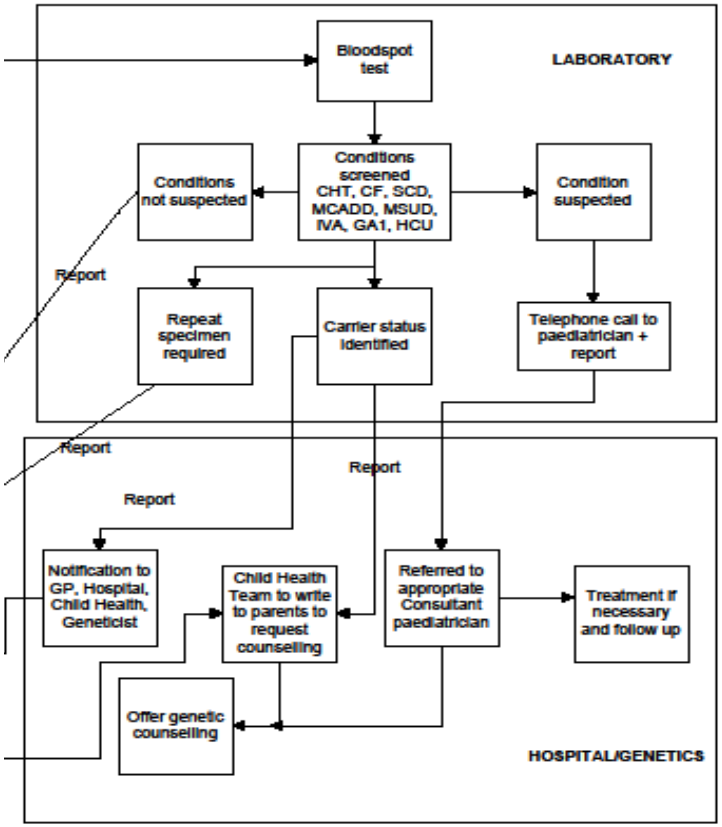


March 2019

Appendix 2.2

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

Dr Emilia Crighton	Interim Director of Public Health (Chair)
Dr Catriona Bain	Clinical Director, Obstetrics & 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 & 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 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. In addition, babies with mild and/or unilateral (one-sided) hearing losses are also identified and receive ongoing review.

Screening is offered to all newborns by four weeks of corrected age (taking into account premature birth). All of the 10,530 eligible babies were screened, an uptake of 100% across all HSCP areas.

The total number of babies referred on to audiology were 184 well babies and 35 from Neonatal Intensive Care Unit (NICU). There were 154 unilateral referrals and 28 bilateral referrals for well babies and 17 unilateral referrals and 10 bilateral referrals from the NICU. A total of ten babies were referred due to incomplete screening contraindicated.

Chapter Contents

3.1. Universal Newborn Hearing Screening

Universal newborn hearing screening aims to detect permanent congenital hearing impairment. In addition, babies with mild and unilateral (one-sided) hearing losses are also identified and receive ongoing review.

3.2. 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 minus the number of weeks the baby was pre-term. Eligible babies are those whose mothers were registered with a GP practice within NHSGGC 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.

3.3. Screening Tests

Hearing tests are carried out on all eligible babies born 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.

3.4. 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**.**

3.5. Delivery of the Universal Newborn Hearing Screening Programme

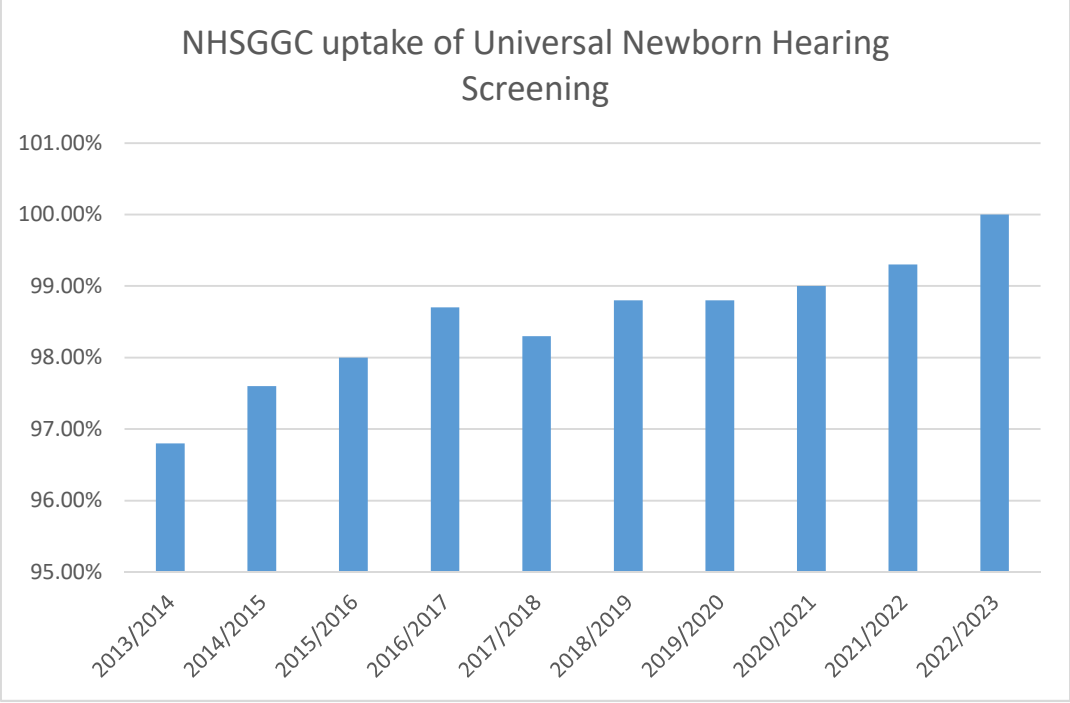
The uptake of newborn hearing screening was 100% across all areas for babies eligible for screening. **(Table 3.1).** Uptake has been high in NHSGGC over the last ten years, increasing over this period from 97% uptake in 2013/14 to 100% in 2022/23 (**Figure 3.1**).

Table 3.1. NHSGGC Uptake Universal Newborn Hearing 1 April 2022 to 31 March 2023

HSCP	Total	Excluded	Eligible	Screened	% Screened
East Dunbartonshire	825	7	818	818	*100*
East Renfrewshire	734	2	732	732	*100*
Glasgow North East	1,837	15	1,822	1,822	*100*
Glasgow North West	1,662	7	1,655	1,655	*100*
Glasgow South	2,477	21	2,456	2,456	*100*
Inverclyde	624	2	622	622	*100*
Renfrewshire	1,637	6	1,631	1,631	*100*
West Dunbartonshire	802	8	794	794	*100*
Total	**10,598**	**68**	**10,530**	**10,530**	*100%*

Source: Scottish Birth Record Extracted August 2023

Figure 3.1. NHSGGC Residents Universal Newborn Hearing – 10 Year Uptake Trend from 2013/14 – 2022/23



The reasons for the babies excluded from screening are detailed in Table 3.2.

Table 3.2. NHSGGC Babies Excluded from UNHS 1st April 2022 to 31st March 2023

Reason for Exclusion	Number
Incomplete – appointments missed	31
Incomplete – contraindicated	10
Incomplete – deceased	23
Incomplete – declined consent	1
Incomplete – out of screening coverage	2
Incomplete – withdrew consent	1
Grand Total	**68**

Source: Scottish Birth Record (SBR) Extracted: August 2023

3.6. Audiology Referrals following Universal Newborn Hearing Screening

The total number of babies referred on to audiology were 184 well babies and 35 from Neonatal Intensive Care Unit (NICU). The outcomes of audiology referrals for babies following the universal hearing screening is detailed in **Table 3.3**.

There were 154 unilateral referrals and 28 bilateral referrals for well babies and 17 unilateral referrals and 10 bilateral referrals from neonatal intensive care unit. A total of 10 babies were referred due to incomplete screening contraindicated.

Table 3.3. NHSGGC Referrals to Audiology from UNHS 1st April 2022 to 31st March 2023

	Well Baby	NICU
Unilateral referrals	154	17
Bilateral referrals	28	10
Incomplete-baby/equipment reason, equipment malfunction, equipment not available, baby unsettled	0	0
Incomplete-screening contraindicated	2	8
Total number of babies referred	184	35

3.7. Timeliness of Assessment within Audiology

The total number of babies who completed the diagnostic assessment process was 213. The details of timeliness of assessment are in **Table 3.4**

Table 3.4. NHSGGC Completion of Newborn Audiology Assessment following Referral from UNHS, 1st April 2022 to 31st March 2023

	Well Baby	**NICU**
Number of babies referred who were **offered** an initial appointment either within 4 weeks of screen completion or by 44 weeks gestational age. (Corrected age to be used for babies born at <40 weeks gestation).	182	32
Number of babies referred who **attended** an initial appointment either within 4 weeks of screen completion or by 44 weeks gestational age. (Corrected age to be used for babies born at <40 weeks gestation).	173	32
Total number of babies completing diagnostic assessment process	**180**	**33**

Outcomes for Babies on Completion of Diagnostic Assessments

Following diagnostic assessment: 142 babies had satisfactory hearing in both ears; 40 babies had temporary conductive loss; 17 babies had mild or moderate hearing loss; 5 babies had severe or profound hearing loss; fewer than five babies had auditory neuropathy spectrum disorder. All the babies with an identified hearing loss were and will be followed up with the appropriate care pathway for ongoing support and management. See **Table 3.5**.

Table 3.5. Outcomes for Babies Completing the Hearing Diagnostic Assessment Process, NHSGGC, 1st April 2022 to 31st March 2023

	Number of babies
Satisfactory hearing in both ears	142
Hearing status not yet determined	<5
Temporary conductive loss of any degree	40
Mild unilateral permanent conductive loss	<5
Mild bilateral permanent conductive loss	0
Moderate unilateral permanent conductive loss	<5
Moderate bilateral permanent conductive loss	<5
Mild unilateral sensorineural loss	<5
Mild bilateral sensorineural loss	<5
Moderate unilateral sensorineural loss	<5
Moderate bilateral sensorineural loss	5
Severe/profound unilateral sensorineural loss	<5
Severe/profound bilateral sensorineural loss	<5
Unilateral auditory neuropathy spectrum disorder	<5
Bilateral auditory neuropathy spectrum disorder	<5
Other – please attach details	<5
Outcome not known	0

<5 has been used to redact small numbers and preserve anonymity

3.8. Universal Newborn Hearing Screening KPIs 2022-23

7.1 The proportion of babies eligible for UNHS for whom the screening process is complete by 4 weeks corrected age.	10,530 completed screening i.e. 100%	**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.	1,396 required 2nd stage 13%	**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.	211referred to audiology 1.99%	**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.	97.7%	**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 **attend** an appointment within the required timescale. The required timescale is either 4 weeks of **screen** completion or by 44 weeks gestational age.	93.6%	**UNHS: Time from screening outcome to attendance at an audiology assessment appointment** Essential ≥90% Desirable ≥95%

3.9. Information Systems

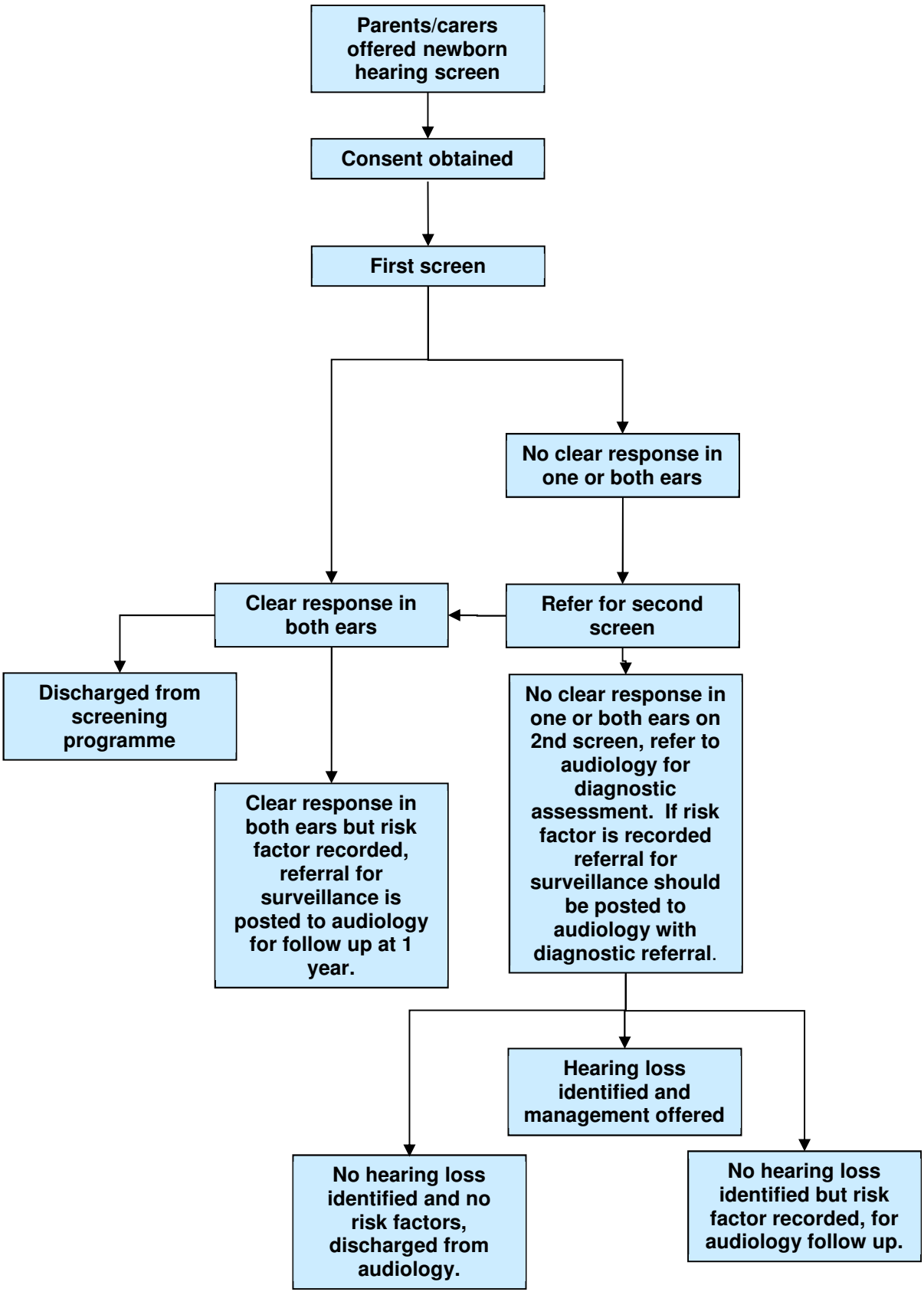
The universal newborn hearing screening programme is supported by the Scottish Birth Record system to deliver hearing screening.

The child health surveillance programme pre-school system holds screening outcomes and is used as a failsafe to ensure all babies are offered hearing screening.

3.10. Challenges & 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.
- Implement recommendations from the national review of audiology services.

Appendix 3.1 - NHSGGC Universal Newborn Hearing Screening Pathway



Appendix 3.2

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

Dr Emilia Crighton	Interim Director of Public Health (Chair)
Ms Sally Amor	Public Health, NHS Highland
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 Department
Dr Andrew Powls	Consultant Neonatologist
Mrs Uzma Rehman	Public Health Programme Manager
Dr Nicola Schinaia	Public Health Consultant, NHS Highland
Mrs Sandra Simpson	Assistant Programme Manager, Screening
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 children aged 4-5 years resident in NHSGGC. Vision problems affect 15-20% of children and although obvious squints are easily detected, refractive error and subtle squints often go undetected and long-term vision loss in adulthood can be the result. Most problems can be treated using spectacle lenses to correct any refractive error and occlusion therapy to treat amblyopia (reduced vision) – mainly using eye patches.

In 2022-2023, 11,981 children aged between 4 to 5 years old were eligible for pre-school vision screening. Of these, 4,642 (38.7%) pre-school children lived in the most deprived quintile, the majority resident within the Glasgow City sectors 3,265 (70.3%).

The uptake of pre-school vision screening was 83.8% (10,041) across the whole of NHSGGC. This is higher than the last three screening years and is a return to levels similar to those seen before the COVID-19 pandemic. This ranged from 77.7 % (1,526) in Glasgow North East to 92.4 % (1,710) in Renfrewshire. Uptake varied between 80.0% in the most deprived quintile, to 88.4% in the least deprived quintile.

Ethnicity was summarised for those children screened. The uptake varied across ethnic groups: White Scottish 87.0% (6,798); White Other British 84.2% (443); Pakistani groups 82.1% (568); Indian groups 80% (252); Arabs 74% (154); and 82.2% (360) for Africans.

Overall, 67.5% (6,775) children screened had a normal result. By HSCP, this ranged from 56.9% (1,082) in Glasgow South to 75.2% (761) in East Dunbartonshire. Of those screened, 26.1% (2,619) children were referred for further investigations. The referral rates varied from 19.7% (199) in East Dunbartonshire to 38.3% (727) in Glasgow South. The percentage of children screened that were already attending an eye clinic was 3.8% (385), ranging from 3.2 % (60) in Glasgow South to 4.6% (35) in West Dunbartonshire.

Deprivation also has an impact on vision and abnormal results following screening. The proportion of children with a normal result ranged from 61.7% (2,292) among children living in the most deprived areas to 75.8% (1,588) 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 2,619 (26.1%) children referred for further assessment, 43.3% (1135) were from the most deprived quintile compared to 15.7% (411) from the least deprived quintile.

262 (2.6%) children were recalled back to be screened due to difficulties screening their vision during the first screen; and 385 (3.8%) children already attending an eye clinic. Of those already attending a clinic, 158 (41.0%) were from the most deprived quintile.

Primary 7 School Vision Screening Programme

In 2022-23, 11,817 Primary 7 school children were eligible for a vision screening test of which 10,450 (88.4%) were tested. The highest uptake was in Inverclyde 96.3% (817) and the lowest was in Glasgow South sector at 82.2% (1,579). P7 vision screening varied according to SIMD (child) with the uptake in the most deprived quintile recorded as 84.1% (3,756) compared to 93.7% (2,357) in the least deprived quintile.

Ethnicity of this cohort was investigated. Uptake among White Scottish was (90.1%); White Other British (94.9%); Irish (100%); and Polish (85.4%). The uptake for those of Pakistani origin (83.6%); Indian (86.8%) and Bangladeshi (100%); 93.2% for Other Asian; and 94.5% for Chinese. For African (94.6%) and Other African (87.1%). The lowest uptake was among the Gypsy/Traveller (73.3%).

Of the 10,450 children screened for vision testing, 19.8% (2,071) were already wearing prescription spectacles. The highest percentage wearing glasses was in Glasgow North East sector 21.2% (381) and the lowest in Glasgow South sector 15.3% (242).

Visual defects were recorded as 27.9% (1,047) in children from the most deprived quintile compared to the most affluent quintile 9.1% (214).

Of the 10,450 children screened, 8,379 (80.2%) were screened using the Snellen test and 75.5% (6327) 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 34.2 % (390) and the lowest percentage in East Renfrewshire 5.3% (54). Glasgow South sector also had the highest percentage of 9.7% (130) of children already wearing glasses and identified with poor acuity of 6/12 or worse and East Renfrewshire had the lowest percentage at 2.1% (21).

Pre School and P7 Vision Screening – Trends over 6 years

Vision Screening uptake	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
Pre-school	86.8%	85.4%	60.4%	73.7%	73.2%	83.8%
P7 vision	74.4%	66.6%	66%	59.3%	81.6%	88.4%

Vision Screening for Children with Additional Support Needs

NHSGGC Specialist Children's Services provide an annual eye examination for children in schools with Additional Support Needs from Primary 1 to Senior 6. The results are recorded in the medical record for the child and prescriptions for glasses provided by the Optometrist.

Chapter Contents

Pre-school Vision Screening Programme

4.1. Background

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

Lazy eye or 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 15-20% of children and although obvious squints are easily detected, refractive error and subtle squints often go undetected and long-term vision loss can be the result in adulthood. Most problems can be treated using spectacle lenses to correct any refractive error and occlusion therapy to treat amblyopia (reduced vision) – 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.

4.2. Aim of Vision Screening Programme

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.

4.3. 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.

4.4. Eligible Population

All pre-school children resident in NHS Greater Glasgow and Clyde aged between 4 and 5 years are invited to attend screening for reduced vision.

4.5. 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 and the following 28 February are downloaded from CHI and matched against the lists received from nurseries.

Pre-school vision screening clinics take place in nurseries. 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 screening 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.

4.6. Delivery of Pre-school Vision Screening Programme 2022-2023

Eligible population

In 2022-23 in NHSGGC, 11,981 children aged between 4 to 5 years old were identified using the Community Health Index System as being eligible for pre-school vision screening. The majority of these children (4,642, 38.7%) were in the most deprived quintile. The majority of these children were resident within the Glasgow City sectors 3,265 (70.3%) **(Table 4.1).**

Table 4.1. Total number of eligible NHSGGC child residents by HSCP and deprivation for pre-school screening 2022-2023

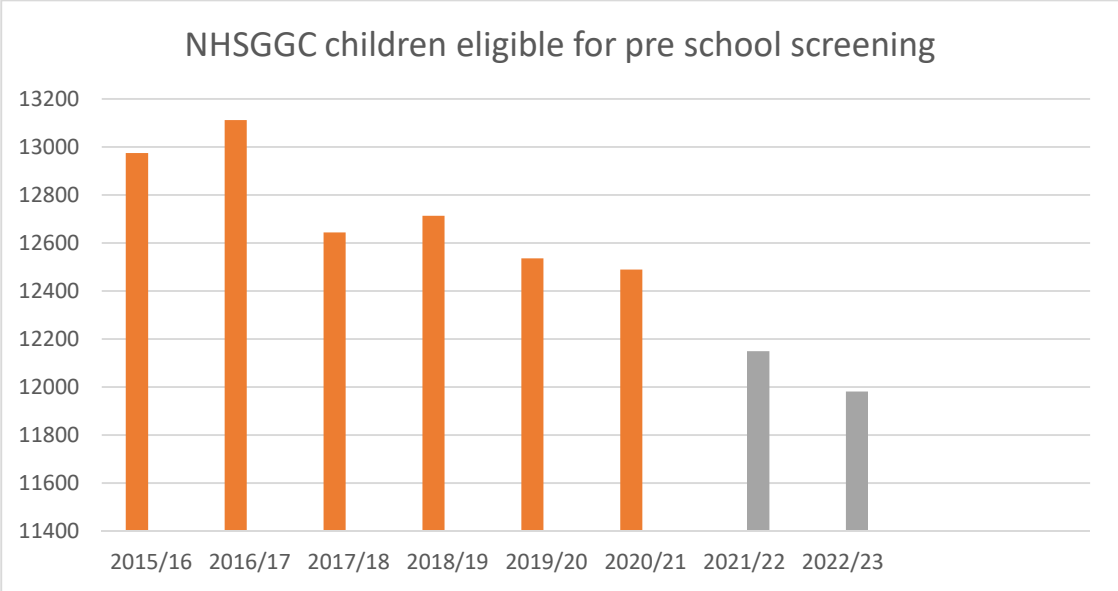
	SIMD Quintile 2016					
	Most deprived				Least deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	41	181	56	227	643	1,148
East Renfrewshire	64	112	65	362	557	1,160
Glasgow North East	1,221	265	227	209	42	1,964
Glasgow North West	928	238	167	164	350	1,847
Glasgow South	1,116	516	297	300	161	2,390
Inverclyde	383	111	68	72	94	728
Renfrewshire	481	376	291	240	463	1,851
West Dunbartonshire	408	224	134	68	59	893
Total	4,642	2,023	1,305	1,642	2,369	11,981
% of Total	**38.7**	**16.9**	**10.9**	**13.7**	**19.8**	

HSCP – Health and Social Care Partnership

SIMD – Scottish Index of Multiple Deprivation
Source: Child Health Pre-School date extracted: Nov 2023

Over the last ten years, the number of children eligible for vision screening has fallen, from 13,638 in 2013-14 to 11,981 in the current year 2022-23. This aligns with the fall in birth rate over this period. See **Figure 4.1**.

Fig 4.1. Number of NHSGGC children eligible for pre-school vision screening – 10 year trend from 2013-2014 to 2022-2023



Uptake of screening

The uptake of pre-school vision screening in 2022-23 was 83.8% (10,041) across the whole of NHSGGC. This is higher than the last three screening years and is a return to levels similar to those seen before the COVID-19 pandemic (**Figure 4.2**).

By Health and Social Care Partnership area, in 2022/23 uptake of screening ranged from 77.7% (1,526) in Glasgow North East to 92.4% (1,710) in Renfrewshire **(Table 4.2).** This is a difference of 14.7 percentage points. Uptake varied between 80.0% in the most deprived quintile, to 88.4% in the least deprived quintile.

Table 4.2. Percentage of NHSGGC residents aged 4 to 5 years, screened by SIMD quintiles 2022-2023

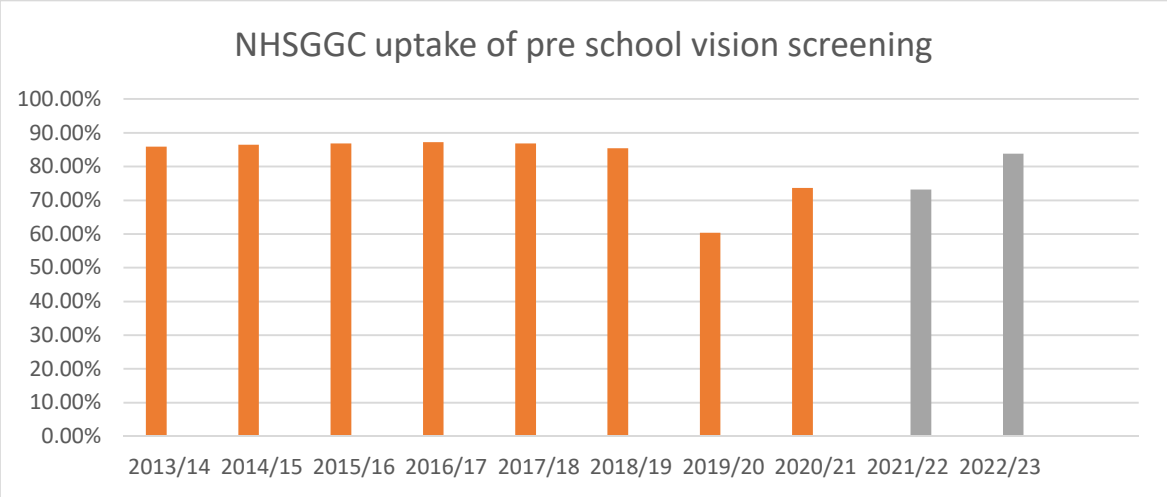
	SIMD Quintile					
	Most deprived				Least deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	90.2	90.1	80.4	88.1	88.2	**88.2**
East Renfrewshire	90.6	92.9	93.8	88.1	85.8	**87.9**
Glasgow North East	76.6	76.6	77.1	84.2	88.1	**77.7**
Glasgow North West	76.2	81.9	80.2	73.2	81.1	**78.0**
Glasgow South	78.0	76.0	80.8	85.3	88.2	**79.5**
Inverclyde	88.8	95.5	94.1	93.1	94.7	**91.5**
Renfrewshire	88.6	92.8	92.8	92.9	95.5	**92.4**
West Dunbartonshire	83.6	89.7	82.8	85.3	94.9	**85.9**
Total	**80.0**	**84.7**	**84.3**	**86.4**	**88.4**	**83.8**

HSCP – Health and Social Care Partnership

SIMD – Scottish Index of Multiple Deprivation

Source: Child Health Pre-School date extracted: Nov 2023

Figure 4.2. Uptake by percentage of NHSGGC Pre-school vision children screening – 10 year trend from 2013-14 to 2022-23



Attendance at nursery

Vision screening is principally undertaken in nurseries. However, not all children eligible for vision screening are registered with a nursery. Those that miss screening in nursery (due to not being registered or absent on the day) are sent an appointment during the summer holidays to have their vision tested within a community or hospital clinic.

Registration at nursery for 4-5 year olds varies across the region. Inverclyde has the highest proportion of children registered with a nursery 91.3% (678) and North East Glasgow the lowest, 83.2% (1634) **(Table 4.3).**

Table 4.3. Number of NHSGGC children eligible for screening, number and percentage registered and not registered with a nursery by HSCP 2022-2023

HSCP	Children eligible for screening	Registered with a nursery	% Registered	Not registered with a nursery	% Not Registered
East Dunbartonshire	1,148	1,024	*89.2*	124	*10.8*
East Renfrewshire	1,160	1,049	*90.4*	111	*9.6*
Glasgow North East	1,964	1,634	*83.2*	330	*16.8*
Glasgow North West	1,847	1,562	*84.6*	285	*15.4*
Glasgow South	2,390	1,990	*83.3*	400	*16.7*
Inverclyde	728	678	*93.1*	50	*6.9*
Renfrewshire	1,851	1,706	*92.2*	145	*7.8*
West Dunbartonshire	893	764	*85.6*	129	*14.4*
Total	11,981	10,407	*86.9*	1574	*13.1*

HSCP – Health and Social Care Partnership
Date Extracted: November 2023
Source: Child Health – PS

Ethnicity

The number and percentage of children screened by ethnic group is shown in **Table 4.4**. The uptake among the most populous groups was 87% (6798) for White – Scottish and 84.2% (443) for White – Other British. For other ethnic groups, uptake among Pakistani groups was 82.1% (568); for Indian groups 80% (252); Arabs 74% (154) and 82.2% (360) for Africans. Lower uptake was seen in the White – Gypsy/Traveller group at 22.0%, amongst those of Bangladeshi origin 62.5% and amongst those whose ethnicity category was unknown, 66.5%.

Table 4.4. NHSGGC Pre-school vision screening by ethnic origin 2022-2023

2021 Census Ethnicity Category	Not Screened	Screened	Total	*% Screened*
African, African Scottish or African British	78	360	438	*82.2*
Any mixed or multiple ethnic groups	96	366	462	*79.2*
Arab, Arab Scottish or Arab British	58	165	223	*74.0*
Bangladeshi, Bangladeshi Scottish or Bangladeshi British	6	10	16	*62.5*
Black, Black Scottish or Black British	5	15	20	*75.0*
Caribbean, Caribbean Scottish or Caribbean British	2	6	8	*75.0*
Chinese, Chinese Scottish or Chinese British	16	119	135	*88.1*
Indian, Indian Scottish or Indian British	63	252	315	*80.0*
Other African	19	83	102	*81.4*
Other Asian, Asian Scottish or Asian British	25	96	121	*79.3*
Other Caribbean or Black	1	0	1	*0.0*
Other ethnic group	54	133	187	*71.1*
Pakistani, Pakistani Scottish or Pakistani British	124	568	692	*82.1*
Unknown	104	206	310	*66.5*
White - Gypsy/Traveller	39	11	50	*22.0*
White – Irish	6	14	20	*70.0*
White - Other British	83	443	526	*84.2*
White - Other white ethnic group	92	239	331	*72.2*
White – Polish	50	157	207	*75.8*
White – Scottish	1019	6798	7817	*87.0*
Total	**1940**	**10041**	**11981**	***83.8***

Source: Child Health - Pre-School Date Extracted: November 2023

Outcome of screening

Overall, 67.5% (6775) children screened had no abnormality detected, this ranged from 56.9% (1,082) in Glasgow South to 75.2% (761) in East Dunbartonshire. (**Table 4.5**).

Of those screened, 26.1% (2,619) children were referred for further investigations. The referral rates varied from 19.7% (199) in East Dunbartonshire to 38.3% (727) in Glasgow South.

The percentage of children screened that were already attending an eye clinic was 3.8% (385), ranging from 3.2 % (60) in Glasgow South to 4.6% (35) in West Dunbartonshire **(Table 4.5).**

Table 4.5. Pre-school Vision Screening Uptake and Outcomes by HSCP Area 2022-2023

HSCP	Total number of children screened	Normal	% Normal	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	1,012	761	*75.2*	199	*19.7*	19	*1.9*	33	*3.3*
East Renfrewshire	1,020	722	*70.8*	253	*24.8*	6	*0.6*	39	*3.8*
Glasgow North East	1,526	985	*64.5*	424	*27.8*	56	*3.7*	61	*4.0*
Glasgow North West	1,440	967	*67.2*	387	*26.9*	27	*1.9*	59	*4.1*
Glasgow South	1,900	1,082	*56.9*	727	*38.3*	31	*1.6*	60	*3.2*
Inverclyde	666	474	*71.2*	137	*20.6*	30	*4.5*	25	*3.8*
Renfrewshire	1,710	1,253	*73.3*	312	*18.2*	72	*4.2*	73	*4.3*
West Dunbartonshire	767	531	*69.2*	180	*23.5*	21	*2.7*	35	*4.6*
Total	**10,041**	**6,775**	***67.5***	**2,619**	***26.1***	**262**	***2.6***	385	*3.8*

Source: Child Health - Pre-School Date Extracted: Nov 2023

The proportion of children with normal screening result varied by deprivation category, see **Table 4.6**. For children in the most deprived category 61.7% (2,292) had a normal screening result, compared with 75.8% (1,588) in the least deprived category.

This meant that a larger proportion of children living in the most deprived areas were referred for further assessment, recalled or were already attending a clinic. Of the 2,619 (26.1%) children referred for further assessment, 30.6% (1,135) were from the most deprived quintile compared to 19.6% (411) from the least deprived quintile.

A small proportion (2.6%, 262) of children were called back to be re-screened due to difficulties screening their vision during the first screen.

Of the 385 (3.8%) children already attending an eye clinic, 158 (41.0%) were from the most deprived quintile, compared to 65 (16.9% from the least deprived quintile **(Table 4.6).**

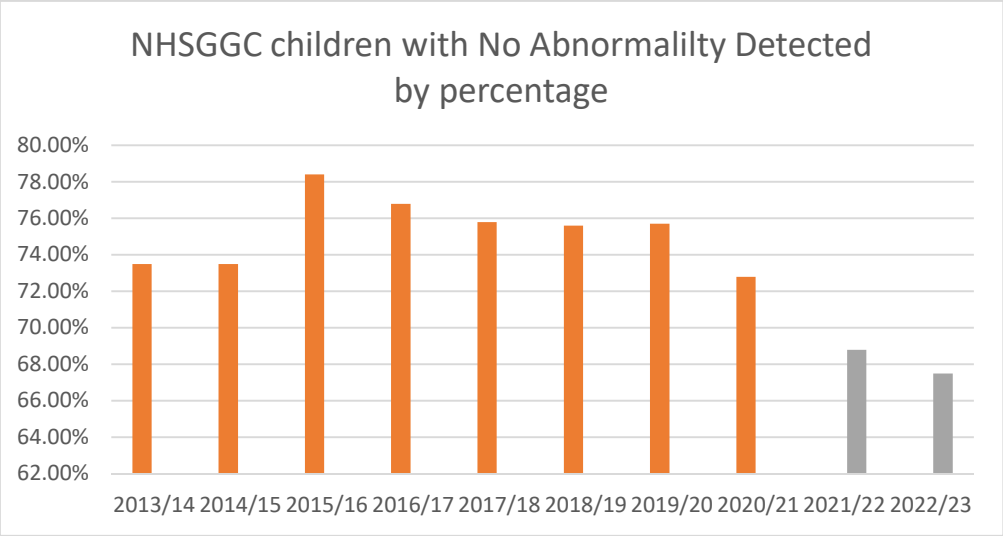
Table 4.6. Pre-school Vision Screening Uptake and Outcomes by SIMD 2022-2023

SIMD	Number of Children Screened	Normal)	*% Normal*	Referred	*% Referred*	Recall	*% Recall*	Already attending clinic	*% Already Attending Clinic*
1 (Most Deprived)	3,714	2,292	*61.7*	1,135	*30.6*	129	*3.5*	158	*4.3*
2	1,713	1,152	*67.3*	436	*25.5*	50	*2.9*	75	*4.4*
3	1,100	752	*68.4*	293	*26.6*	25	*2.3*	30	*2.7*
4	1,419	991	*69.8*	344	*24.2*	27	*1.9*	57	*4.0*
5 (Least Deprived)	2,095	1,588	*75.8*	411	*19.6*	31	*1.5*	65	*3.1*
Total	**10041**	**6,775**	***67.5***	**2,619**	***26.1***	**262**	***2.6***	**385**	***3.8***

Source: Child Health Pre-School November 2023

Since the pandemic, the number of children with a normal screening result has been lower that the proportions seen before the pandemic. The proportion of children with a normal screening result is lower in 2022/23 than it was in 2021/22. **Figure 4.3.**

Figure 4.3. Percentage of screened children who had a normal screening result – 10 year trend from 2012-13 to 2022-23



The Pre-school vision screening summary of activity for the service in NHS Greater Glasgow and Clyde for the school year 2022-23 is in **Figure 4.4**.

Vision Screening for Children with Additional Support Needs

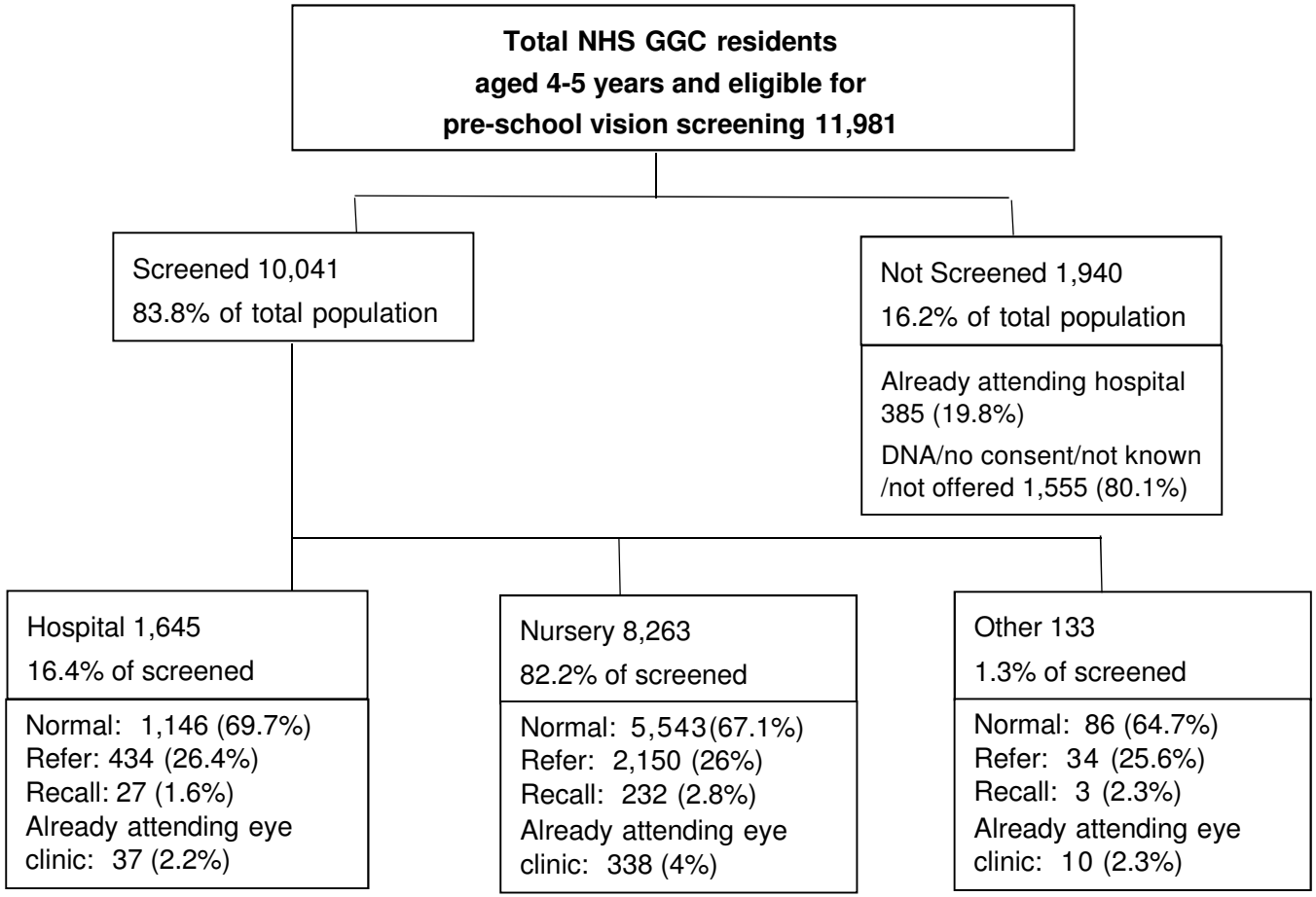
NHSGGC Specialist Children's Services provide an annual eye examination for children in schools with Additional Support Needs from Primary 1 to Senior 6. The results are recorded in the medical record for the child and prescriptions for glasses provided by the Optometrist.

Pre-school vision screening in 2020-2021, during the COVID-19 pandemic

During the period March 2020 to April 2021, the COVID-19 pandemic and associated lock-downs meant that routine pre-school screening could not be undertaken either in nurseries or in other venues. From August 2021 catch-up clinics were run for this cohort of pre-school children, who were in P1 from August 2021.

Data is now available for the screening that took place and is presented in **Appendix 4.2.** The data is presented as a summary of screening for the whole 2020/21 cohort, even though screening appointments were held up to two years later.

Figure 4.4. Summary of NHSGGC Pre-School Vision Screening Activity 2022-2023



Source: Child-Health-Pre-School Data extracted:
November 2023

Primary 7 School Vision Screening Programme

4.7. P7 Eligible Population

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

4.8. 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.

4.9. 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 a result letter.

For those with abnormal result, parents are referred to their 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.

4.10. Delivery of Primary 7 School Vision Screening Programme 2022 to 2023

Eligible population

In 2022/23, 11,817 Primary 7 school children were eligible for a vision test (**Figure 4.5)**.

Uptake of screening

In 2022/23, 10,450 (88.4%) of P7 children were tested across NHSGGC. The highest uptake of screening was in Inverclyde 96.3% (817) and the lowest was in Glasgow South sector at 82.2% (1579). **(Table 4.9).**

Uptake has now returned to the highest levels seen in the last 8 years, showing a full recovery from the drop in uptake seen before, during and following the COVID-19 pandemic, **Figure 4.6.**

Figure 4.5. NHSGGC numbers eligible for P7 vision screening tests

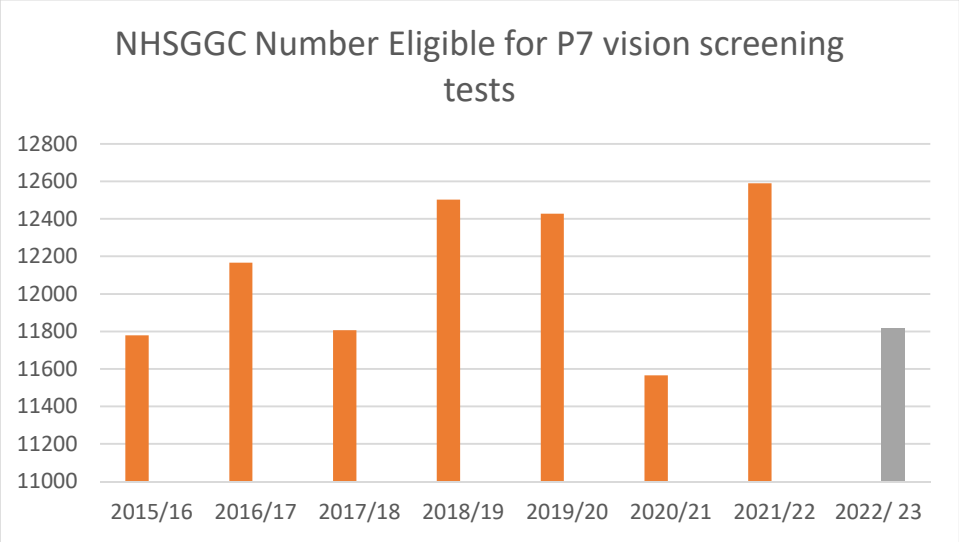
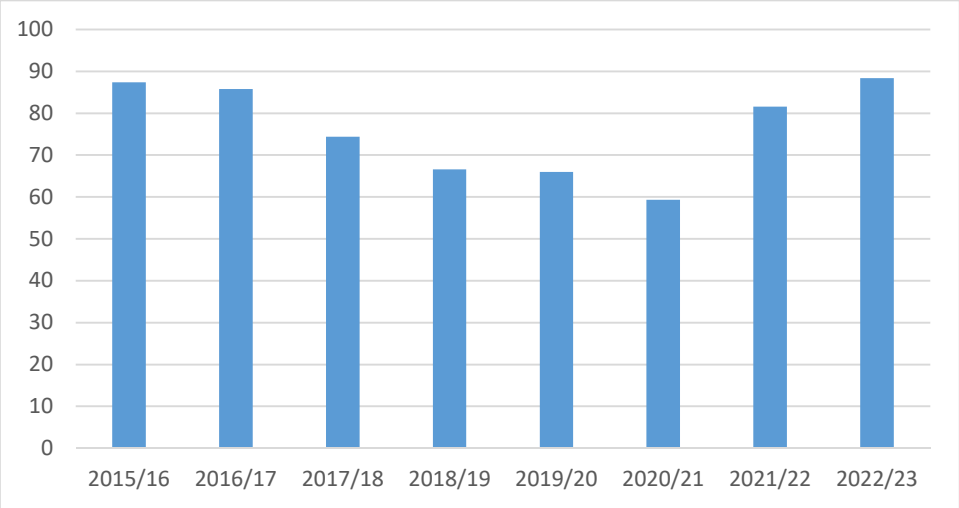


Table 4.9. NHSGGC Primary 7 vision screening tests by HSCP, 2021-2022

HSCP (School)	Not Screened	Screened	Total	% Uptake
East Dunbartonshire HSCP	80	1,302	1,382	*94.2*
East Renfrewshire HSCP	110	1,274	1,384	*92.1*
Glasgow North East Sector	304	1,446	1,750	*82.6*
Glasgow North West Sector	201	1,449	1,650	*87.8*
Glasgow South Sector	343	1,579	1,922	*82.2*
Inverclyde HSCP	31	817	848	*96.3*
Renfrewshire HSCP	202	1,675	1,877	*89.2*
West Dunbartonshire HSCP	96	908	1,004	*90.4*
Total	**1,367**	**10,450**	**11,817**	***88.4***

Source: CHSP_PS, October 2023

Figure 4.6. NHSGGC Primary 7 vision screening tests percentage uptake 2015/16 to 2022/23



Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Uptake %	87.4%	85.8%	74.4%	66.6%	66.0%	59.3%	81.6%	88.4%

P7 vision testing varied according to SIMD with lower uptake in the most deprived quintile 84.1% (3,756) compared to 93.7% (2,357) in the least deprived quintile **(Table 4.12).**

Table 4.12. NHSGCC Uptake of Primary 7 vision screening tests by SIMD 2022-2023

SIMD Quintile 2016 (Child)	Not Screened	Screened	Total	% Uptake
1 (Most Deprived)	711	3,756	4,467	***84.1***
2	258	1,845	2,103	***87.7***
3	127	1,095	1,222	***89.6***
4	113	1,397	1,510	***92.5***
5 (Least Deprived)	158	2,357	2,515	***93.7***
Total	**1,367**	**10,450**	**11,817**	***88.4***

Source: CHSP_PS, October 2023

Ethnicity

Uptake of screening by ethnic group was investigated. The uptake among Scottish was (90.1%); Other British (94.9%); Irish (100%) and Polish (85.4%). The uptake for Asian groups was Pakistani (83.6%); Indian (86.8%) and Bangladeshi (100%); 93.2% for Other Asian and 94.5% for Chinese. For African (94.6%) and Other African (87.1%). The lowest uptake was among the Gypsy/Traveller (73.3%) (**Table 4.13**).

Table 4.13. NHSGGC P7 screening uptake by ethnicity – 2022-2023

2021 Census Ethnicity Category	Not Screened	Screened	Total	% Uptake
NULL	418	1,894	2,312	*81.9*
1A:Scottish	763	6,958	7,721	*90.1*
1B:Other British	8	150	158	*94.9*
1C:Irish	0	8	8	*100.0*
1K:Gypsy/Traveller	4	11	15	*73.3*
1L:Polish	22	129	151	*85.4*
1Z:Other white ethnic group	8	115	123	*93.5*
2A:Any mixed or multiple ethnic groups	24	163	187	*87.2*
3F:Pakistani, Pakistani Scottish, Pakistani British	70	358	428	*83.6*
3G:Indian, Indian Scottish, Indian British	18	118	136	*86.8*
3H:Bangladeshi, Bangladeshi Scottish, Bangladeshi British	0	5	5	*100.0*
3J:Chinese, Chinese Scottish, Chinese British	10	172	182	*94.5*
3Z:Other Asian, Asian Scottish, Asian British	3	41	44	*93.2*
4D:African, African Scottish, African British	9	159	168	*94.6*
4Y:Other African	4	27	31	*87.1*
5C:Caribbean, Caribbean Scottish, Caribbean British	0	10	10	*100.0*
5D:Black, Black Scottish, Black British	0	9	9	*100.0*
5Y:Other Caribbean or Black	0	1	1	*100.0*
6A:Arab, Arab Scottish, Arab British	4	48	52	*92.3*
6Z:Other ethnic group	2	24	26	*92.3*
98:Refused / Not provided by patient	0	1	1	*100.0*
99:Not Known	0	49	49	*100.0*
Total	1,367	10,450	11,817	*88.4*

Already wearing spectacles

Of the 10,450 children screened in 2022/23, 19.8% (2071) were already wearing prescription spectacles. By HSCP, the highest percentage wearing glasses was in Glasgow North East sector 21.2% (381) and the lowest in Glasgow South sector 15.3% (242) **(Table 4.14).**

Table 4.14. NHSGGC schools primary 7 vision screening tests pupils already wearing spectacles 2022-2023

HSCP (School)	No Spectacles	Spectacles	Total	% Spectacles
East Dunbartonshire	1,031	271	1,302	***20.8***
East Renfrewshire	1,010	264	1,274	***20.7***
Glasgow North East Sector	1,140	306	1,446	***21.2***
Glasgow North West Sector	1,144	305	1,449	***21.0***
Glasgow South Sector	1,337	242	1,579	***15.3***
Inverclyde	648	169	817	***20.7***
Renfrewshire	1,342	333	1,675	***19.9***
West Dunbartonshire	727	181	908	***19.9***
Total	**8,379**	**2,071**	**10,450**	***19.8***

Source: CHSP_PS, October 2023

Outcome of screening

Across NHSGGC in 2022/23, the screening test result was normal for 8,429 (80.7%) of those tested (**Table 4.15**). This proportion was similar to that seen last year and in line with the fluctuation seen over the last eight years (**Figure 4.7**).

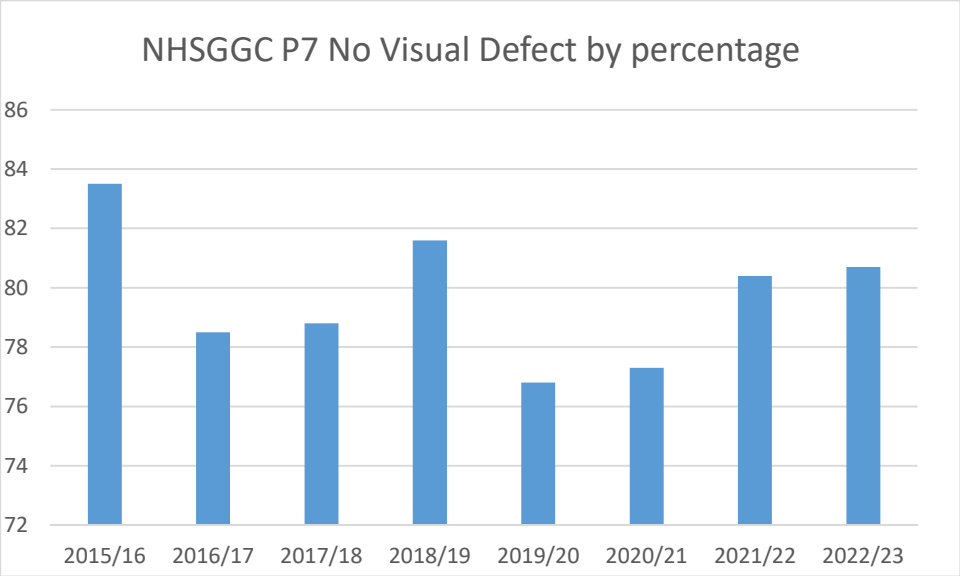
Overall, visual defects were identified in 2,021 (19.3%) of P7 children screened. This varied from 5.8% (72) P7 pupils in East Renfrewshire to 34.5% (585) P7 pupils in Glasgow South (**Table 4.15**).

Table 4.15. NHSGGC primary 7 vision screened pupils & visual defect identified 2022-2023

HSCP (School)	No Visual Defect	Visual Defect	Total	*% Visual Defect*
East Dunbartonshire	1,153	91	1,244	***7.3***
East Renfrewshire	1,175	72	1,247	***5.8***
Glasgow North East Sector	962	448	1,410	***31.8***
Glasgow North West Sector	1,180	295	1,475	***20.0***
Glasgow South Sector	1,110	585	1,695	***34.5***
Inverclyde	674	131	805	***16.3***
Renfrewshire	1,424	264	1,688	***15.6***
West Dunbartonshire	751	135	886	***15.2***
Total	**8,429**	**2,021**	**10,450**	***19.3***

Source: CHSP_PS, Oct 2023

Figure 4.7. NHSGGC Primary 7 vision tests: percentage of pupils with no visual defects 2015-2023:



Year	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
% No visual defect	83.5%	78.5%	78.8%	81.6%	76.8%	77.3%	80.4%	80.7%

Visual defects were recorded in 27.9% (1,047) children from the most deprived quintile compared to 9.1% (214) children in the least deprived quintile 9.1% (214) (**Table 4.16).**

Table 4.16. NHSGGC Primary 7 vision tests pupils by SIMD 2022-2023: visual defect identified

SIMD Quintile (Child)	No Visual Defect	Visual Defect	Total	% Visual Defect Identified
1 (Most Deprived)	2,709	1,047	3,756	***27.9***
2	1,476	369	1,845	***20.0***
3	870	225	1,095	***20.5***
4	1,231	166	1,397	***11.9***
5 (Least Deprived)	2,143	214	2,357	***9.1***
Total	**8,429**	**2,021**	**10,450**	***19.3***

Source: CHSP_PS, Oct 2023

Of the 10,450 children screened, 8,379 (80.2%) were screened using the Snellen Test, which is the first choice of test with this age group (**Table 4.18**).

Of those screened with the Snellen Test, 75.5% (6,327) had a normal outcome, of acuity 6/6. The proportion with a normal outcome varied between 57.5% in Glasgow North East sector and 92.6% in East Renfrewshire.

A follow up with an optometrist is recommended for children with an acuity of 6/9 not wearing spectacles and acuity of 6/12 for those with spectacles.

Those children screened who did not wear spectacles and with a visual acuity of 6/9 were 18.5% (1,553) of all children screened. The highest proportion was in Glasgow North East sector 34.2 % (390) and the lowest proportion in East Renfrewshire 5.3% (54).

Those children wearing spectacles who had additional detected vision defects (acuity score of 6/12) accounted for 499 or 6.0% of pupils screened. Glasgow South sector had the highest proportion of 9.7% (130) of children affected and East Renfrewshire had the lowest percentage at 2.1% (21) affected.

Table 4.18. NHSGGC Residents Primary 7 Vision Tests Pupils 2022:2023 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	1,302	1,031	*79.2*	930	*90.2*	69	*6.7*	32	*3.1*
East Renfrewshire	1,274	1,010	*79.3*	935	*92.6*	54	*5.3*	21	*2.1*
Glasgow North East	1,446	1,140	*78.8*	655	*57.5*	390	*34.2*	95	*8.3*
Glasgow North West	1,449	1,144	*79.0*	882	*77.1*	186	*16.3*	76	*6.6*
Glasgow South	1,579	1,337	*84.7*	752	*56.2*	455	*34.0*	130	*9.7*
Inverclyde	817	648	*79.3*	519	*80.1*	72	*11.1*	57	*8.8*
Renfrewshire	1,675	1,342	*80.1*	1,073	*80.0*	211	*15.7*	58	*4.3*
West Dunbartonshire	908	727	*80.1*	581	*79.9*	116	*16.0*	30	*4.1*
Total	**10,450**	**8,379**	***80.2***	**6,327**	***75.5***	**1,553**	***18.5***	**499**	***6.0***

Source: CHSP_PS, October 2023

4.11. 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.

4.12. 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 2023)

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

Pre-school vision screening in 2020-2021, during the COVID-19 pandemic

During the period March 2020 to April 2021, the COVID-19 pandemic and associated lock-downs meant that routine pre-school screening could not be undertaken either in nurseries or in other venues. From August 2021 catch-up clinics were run for this cohort of children, who were in P1 from August 2021.

For the catch-up clinics, funding was secured for additional staff time for screening within primary schools and acute settings. All children in the 2020/21 cohort were invited to screening at some point in the year 2021/22. This catch-up programme was run alongside routine screening of the current 2021/22 pre-school year in nurseries.

Prior to this catch-up offer of screening, parents were sent a letter advising them to take their child to an optometrists if they had any concerns about vision.

Data is now available for the screening that took place and is presented in this section. The data is presented as a summary of screening for the whole 2020/21 cohort, even though screening appointments were held up to two years later.

Summary

For the 2020/21 cohort in NHSGGC, 12,490 children were eligible for pre-school vision screening. The majority of these children 4,898, (39.2%) were in the most deprived quintile. The majority of these children were resident within the Glasgow City sectors 3,518 (71.8%).

The uptake of pre-school vision screening in 2020/2021 was 73.7% (9,206) across the whole of NHSGGC. This ranged from 69.6% (514) uptake in Inverclyde to 81.3% (976) uptake in East Renfrewshire. A difference of 11.7 percentage points. Uptake varied between 71.7% in the most deprived quintile, to 76.6% in the least deprived quintile.

The uptake among the most populous groups was 76.8% (8370) for White – Scottish and 72.2% (436) for White – Other British. For other ethnic groups, uptake among Pakistani groups was 77.1% (704); for Indian groups 75.8% (252); Arabs 68.5% (197) and 78.9% (336) for Africans. Lower uptake was seen in the White – Gypsy/Traveller group at 44.3% (61), amongst White Irish 62.5% (16) and amongst those whose ethnicity category was unknown, 20.1% (598).

Overall, 72.8% (6705) children screened had no abnormality detected, this ranged from 69.7% (1,060) in Glasgow North East to 79.1% (761) in East Dunbartonshire. Of those screened, 24.1% (2,219) children were referred for further investigations. The referral rates varied from 19.1% (181) in East Dunbartonshire to 28.3% (530) in Glasgow South. The proportion of children with normal screening result varied by deprivation category. For children in the most deprived category 67.7% (2,379) had a normal screening result, compared with 79.7% (1,526) in the least deprived category.

Of the 2,219 (24.1%) children referred for further assessment, 44.8% (995) were from the most deprived quintile compared to 15.8% (352) from the least deprived quintile.

A1. Delivery of Pre-school Vision Screening Programme 2020-2021

Eligible population

For the 2020/21 cohort in NHSGGC, 12,490 children aged between 4 to 5 years old were identified using the Community Health Index System as being eligible for pre-school vision screening. The majority of these children (4,898, 39.2%) were in the most deprived quintile. The majority of these children were resident within the Glasgow City sectors 3,518 (71.8%) **(Table A1.1).**

Table A1.1. 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	60	211	49	253	710	1283
East Renfrewshire	60	131	66	337	607	1201
Glasgow North East	1292	279	189	180	43	1983
Glasgow North West	1040	246	187	135	354	1962
Glasgow South	1186	565	300	327	174	2552
Inverclyde	363	95	76	72	132	738
Renfrewshire	482	380	299	246	435	1842
West Dunbartonshire	415	260	136	74	44	929
Total	4898	2167	1302	1624	2499	12490
% of Total	**39.2**	**17.3**	**10.4**	**13.0**	**20.0**	

HSCP – Health and Social Care Partnership

SIMD – Scottish Index of Multiple Deprivation
Source: Child Health Pre-School date extracted: Nov 2023

Uptake of screening

The uptake of pre-school vision screening in 2020/2021 was 73.7% (9,206) across the whole of NHSGGC.

By Health and Social Care Partnership area, in 2020/21 uptake of screening ranged from 69.6% (514) uptake in Inverclyde to 81.3% (976) uptake in East Renfrewshire **(Tables A1.2 and A1.3).** A difference of 11.7 percentage points. Uptake varied between 71.7% in the most deprived quintile, to 76.6% in the least deprived quintile.

Table A1.2. Percentage of NHSGGC residents screened by SIMD quintiles

	SIMD Quintile 2016					
	Most deprived				Least deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	81.7	70.1	75.5	75.1	73.7	**73.8**
East Renfrewshire	80.0	76.3	74.2	83.4	82.0	**81.3**
Glasgow North East	76.4	79.6	74.1	79.4	65.1	**76.7**
Glasgow North West	71.8	79.7	68.4	68.1	68.6	**71.7**
Glasgow South	72.8	68.0	75.0	78.3	81.6	**73.3**
Inverclyde	62.5	74.7	67.1	80.6	81.1	**69.6**
Renfrewshire	66.0	65.8	72.6	73.6	77.9	**70.8**
West Dunbartonshire	66.0	73.8	78.7	82.4	77.3	**71.9**
Total	**71.7**	**72.1**	**73.3**	**77.7**	**76.6**	**73.7**

Table A1.3. Total number NHSGGC residents screened by SIMD quintiles

	SIMD Quintile 2016					
	Most deprived				Least deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	49	148	37	190	523	**947**
East Renfrewshire	48	100	49	281	498	**976**
Glasgow North East	987	222	140	143	28	**1520**
Glasgow North West	747	196	128	92	243	**1406**
Glasgow South	863	384	225	256	142	**1870**
Inverclyde	227	71	51	58	107	**514**
Renfrewshire	318	250	217	181	339	**1305**
West Dunbartonshire	274	192	107	61	34	**668**
Total	**3513**	**1563**	**954**	**1262**	**1914**	**9206**

HSCP – Health and Social Care Partnership

SIMD – Scottish Index of Multiple Deprivation

Source: Child Health Pre-School date extracted: Nov 2023

Ethnicity

The number and percentage of children screened by ethnic group is shown in **Table A1.4**. The uptake among the most populous groups was 76.8% (8370) for White – Scottish and 72.2% (436) for White – Other British. For other ethnic groups, uptake among Pakistani groups was 77.1% (704); for Indian groups 75.8% (252); Arabs 68.5% (197) and 78.9% (336) for Africans. Lower uptake was seen in the White – Gypsy/Traveller group at 44.3% (61), amongst White Irish 62.5% (16) and amongst those whose ethnicity category was unknown, 20.1% (598).

Table A1.4 – NHSGGC Pre-school vision screening by ethnic origin 2022-2023

2021 Census Ethnicity Category	Not Screened	Screened	Total	*% Screened*
African, African Scottish or African British	71	265	336	*78.9*
Any mixed or multiple ethnic groups	84	314	398	*78.9*
Arab, Arab Scottish or Arab British	62	135	197	*68.5*
Bangladeshi, Bangladeshi Scottish or Bangladeshi British	6	14	20	*70.0*
Black, Black Scottish or Black British	1	13	14	*92.9*
Caribbean, Caribbean Scottish or Caribbean British	1	4	5	*80.0*
Chinese, Chinese Scottish or Chinese British	30	153	183	*83.6*
Indian, Indian Scottish or Indian British	61	191	252	*75.8*
Other African	10	61	71	*85.9*
Other Asian, Asian Scottish or Asian British	17	81	98	*82.7*
Other Caribbean or Black	1	5	6	*83.3*
Other ethnic group	43	114	157	*72.6*
Pakistani, Pakistani Scottish or Pakistani British	161	543	704	*77.1*
Unknown	478	120	598	*20.1*
White - Gypsy/Traveller	34	27	61	*44.3*
White - Irish	6	10	16	*62.5*
White - Other British	121	315	436	*72.2*
White - Other white ethnic group	90	238	328	*72.6*
White - Polish	61	179	240	*74.6*
White - Scottish	1946	6424	8370	*76.8*
Total	3284	9206	12490	*73.7*

Source: Child Health - Pre-School Date Extracted: November 2023

Outcome of screening

Overall, 72.8% (6705) children screened had no abnormality detected, this ranged from 69.7% (1,060) in Glasgow North East to 79.1% (761) in East Dunbartonshire (**Table 1.5**).

Of those screened, 24.1% (2,219) children were referred for further investigations. The referral rates varied from 19.1% (181) in East Dunbartonshire to 28.3% (530) in Glasgow South.

The percentage of children screened that were already attending an eye clinic was 2.3% (210), ranging from 0.5 % (5) in East Renfrewshire to 6.2% (32) in Inverclyde **(Table A1.5).**

Table A1.5 Pre-school Vision Screening Uptake and Outcomes by HSCP Area 2020-2021

HSCP	Total number of children screened	Normal	% Normal	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	1283	749	*79.1*	181	*19.1*	4	*0.4*	13	*1.4*
East Renfrewshire	1201	768	*78.7*	203	*20.8*	0	*0.0*	5	*0.5*
Glasgow North East	1983	1060	*69.7*	415	*27.3*	11	*0.7*	34	*2.2*
Glasgow North West	1962	1015	*72.2*	361	*25.7*	15	*1.1*	15	*1.1*
Glasgow South	2552	1315	*70.3*	530	*28.3*	5	*0.3*	20	*1.1*
Inverclyde	738	362	*70.4*	112	*21.8*	8	*1.6*	32	*6.2*
Renfrewshire	1842	945	*72.4*	272	*20.8*	20	*1.5*	68	*5.2*
West Dunbartonshire	929	491	*73.5*	145	*21.7*	9	*1.3*	23	*3.4*
Total	12490	6705	*72.8*	2219	*24.1*	72	*0.8*	210	*2.3*

Source: Child Health - Pre-School

Date Extracted: Nov 2023

The proportion of children with normal screening result varied by deprivation category, **Table A1.6**. For children in the most deprived category 67.7% (2,379) had a normal screening result, compared with 79.7% (1,526) in the least deprived category.

This meant that a larger proportion of children living in the most deprived areas were referred for further assessment, recalled or were already attending a clinic. Of the 2,219 (24.1%) children referred for further assessment, 44.8% (995) were from the most deprived area compared to 15.9% (352) from the least deprived area.

A small proportion 0.8%,(72) of children were recalled back to be screened due to difficulties screening their vision during the first attempt.

Of the 210 (2.3%) children already attending an eye clinic, 100 (47.6%) were from the most deprived quintile, compared to 25 (11.9%) from the least deprived quintile **(Table A1.6).**

Table A1.6 Pre-school Vision Screening Uptake and Outcomes by SIMD 2020-2021

SIMD	Number of Children Screened	Normal)	*% Normal*	Referred	*% Referred*	Recall	*% Recall*	Already attending clinic	*% Already Attending Clinic*
1 (Most Deprived)	3513	2379	*67.7*	995	*28.3*	39	*1.1*	100	*2.8*
2	1563	1128	*72.2*	387	*24.8*	12	*0.8*	36	*2.3*
3	954	699	*73.3*	229	*24.0*	6	*0.6*	20	*2.1*
4	1262	973	*77.1*	256	*20.3*	4	*0.3*	29	*2.3*
5 (Least Deprived)	1914	1526	*79.7*	352	*18.4*	11	*0.6*	25	*1.3*
Total	**9206**	**6705**	***72.8***	**2219**	***24.1***	**72**	***0.8***	**210**	***2.3***

Source: Child Health Pre-School November 2023

Section 2

Adult Screening

Chapter 5 - Abdominal Aortic Aneurysm (AAA) Screening

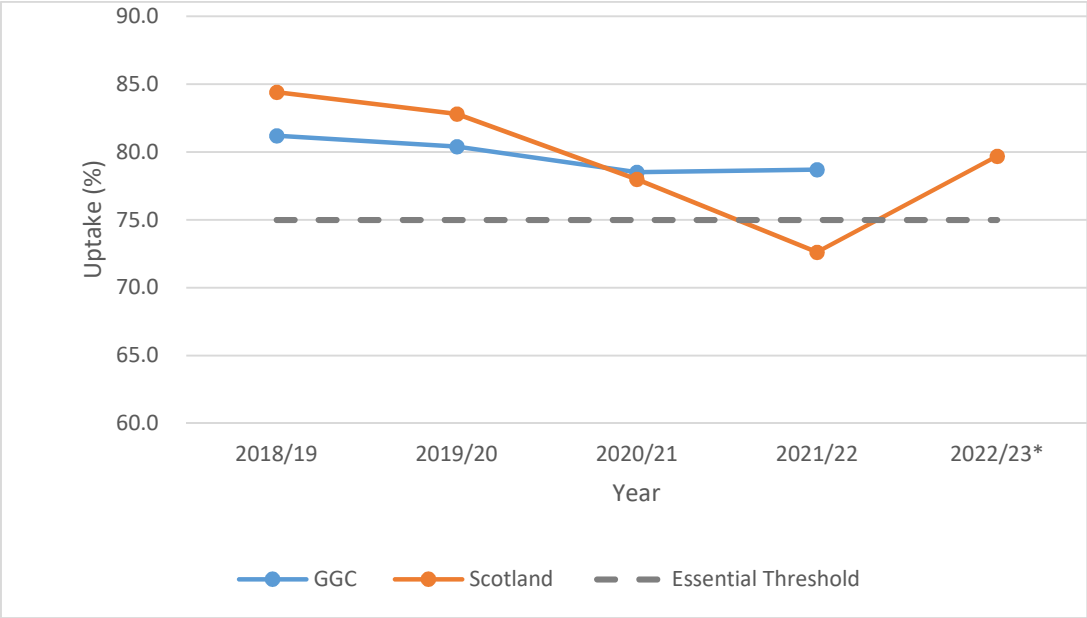
Summary

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 2022-2023, the total number men eligible for AAA screening was 7,269 and 5,796 were screened (79.7%). 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 72.0%, compared to uptake among men residing in the least deprived areas (87.5%) In NHSGGC the uptake of AAA screening has been slowly falling across the last four years.

Uptake of AAA screening among eligible population in NHSGGC and Scotland: 2018/19 – 2022/23*



Source: Scottish Abdominal Aortic Aneurysm (AAA) screening programme statistics
*AAA application, December 2023, GGC statistics only

The majority of eligible men (79.3%) 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 higher than the rest of the population, 81.1% compared to 79.3%. 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 lower than in the rest of the population, 66.7% compared to 79.5%. 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 49 men (0.86%) with an enlarged aorta (≥3cm). Of these, 40 men (81.6%) 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.

The 2023 mortality audit was underway at time of this report, outcomes of this audit will be included in due course.

During 2022-23 the programme resumed screening in all pre-COVID-19 locations, with the exception of Inverclyde Royal Hospital, where Greenock Health Centre continues to be used as an alternative location.

Access to imaging stemming from the service backlog during the pandemic continues to impact on waiting times for assessment for surgery for those with large aneurysms. This continued to be a challenge during the reporting period 1st April 2022 to 31st March 2023, however vascular clinics were reinstated during 2023 facilitating timely vascular imaging and surgical assessment.

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].

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].

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.

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.

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

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[1] 20207-AAAinScotlandBriefingSheet.pdf (healthscotland.com) (Accessed November 2023)

[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 November 2023)

[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 November 2023)

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

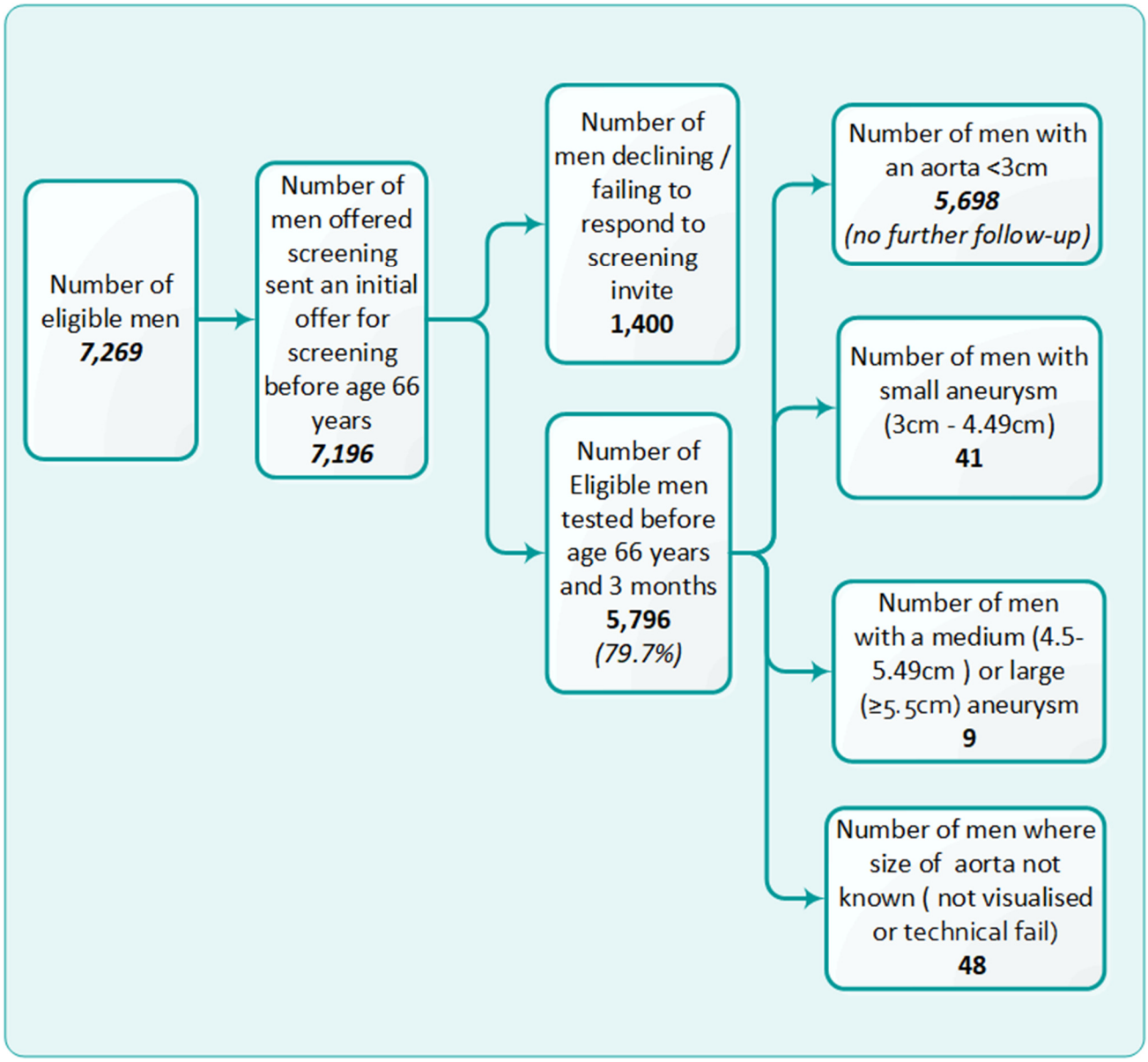
National AAA programme statistics are published by Public Health Scotland in March each year reflecting the previous year activity. **Appendix 5.2** summarises the most recent published national AAA Key Performance Indicators (KPIs) for NHSGGC for the periods 2020, 2021 and 2022.

Local monitoring data sourced from the AAA database is presented in this report to provide uptake and outcome data for period 1st April 2022 to 31st March 2023. 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 2022/23 is provided in **Figure 5.1**.

During the period 2022-2023, the total number of eligible men resident in NHSGGC was 7,269 and 7,196 were sent an initial offer of screening before their 66th birthday. Of the 7,269 men eligible, 5,796 (79.7%) were screened before age 66 and 3 months.

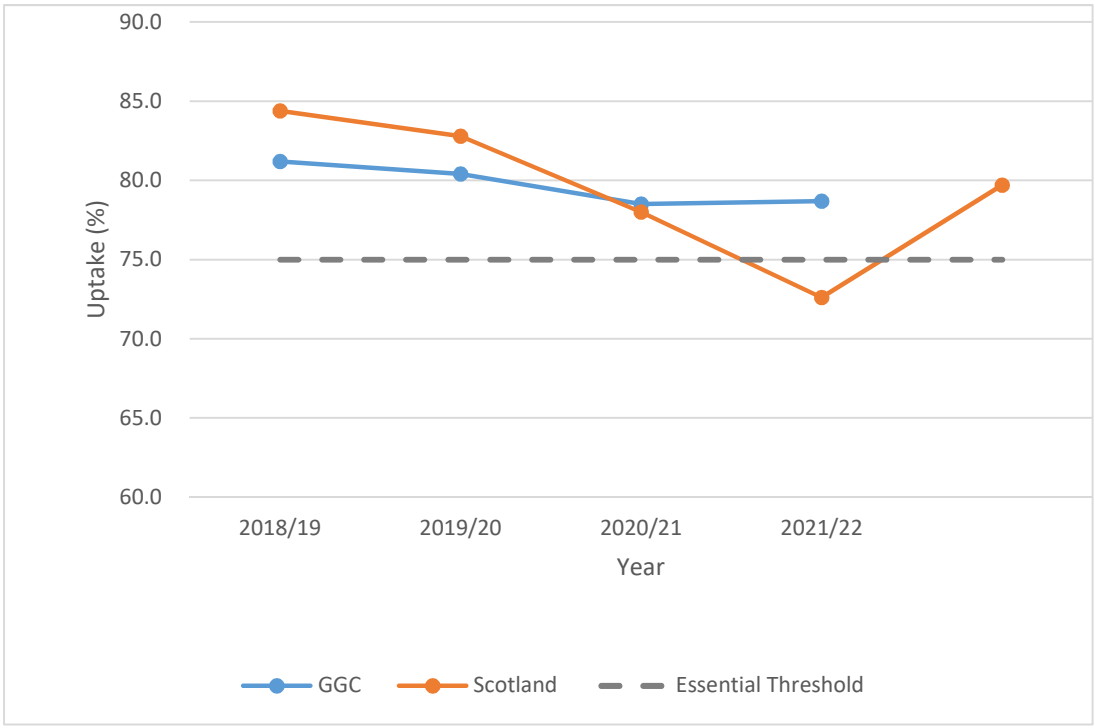
Figure 5.1. Overview NHSGGC AAA screening programme activity, 2022/23



Source: AAA application, December 2023

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

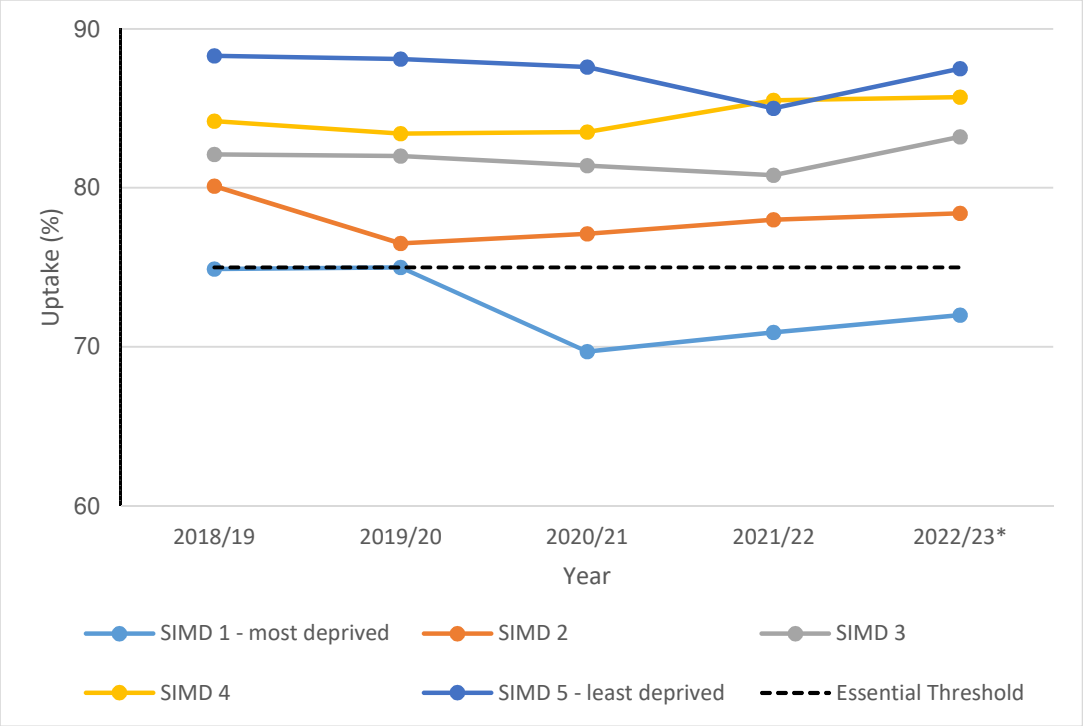
Figure 5.2. Uptake of AAA screening among eligible population in NHSGGC and Scotland: 2018/19 – 2022/2023*



Source: Scottish Abdominal Aortic Aneurysm (AAA) screening programme statistics
*AAA application, December 20223, GGC statistics only

During the period April 2022 to March 2023, the essential threshold of 75% for AAA screening uptake was met in NHSGGC (79.7%). 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: 2018/19 – 2022/23*



Source: Scottish Abdominal Aortic Aneurysm (AAA) screening programme statistics
* AAA application, December 2023, GGC statistics only

During 2022/23 uptake among men residing in the most deprived areas was 16.1 percentage points lower than men residing in the least deprived areas (72.0% vs.87.5% respectively).

Table 5.1. Uptake of AAA screening among eligible population by SIMD quintile for NHSGGC, 2022-2023

SIMD Quintile 2020	Total	Not Screened	Screened	*% Screened*
1 (Most Deprived)	2,458	664	1,769	***72.0***
2	1,350	278	1,058	***78.4***
3	920	144	765	***83.2***
4	1,033	135	885	***85.7***
5 (Least Deprived)	1,508	179	1,319	***87.5***
Total	**7,269**	**1,400**	**5,796**	***79.7***

Source: AAA Application, December 2023

Further local analysis was undertaken to explore variations in uptake of 2022/23 screening round for additional populations with protected characteristics including ethnicity, learning disability and mental health, and by Health and Social Care Partnership (HSCP) area. However, in some instances, cohort numbers are small therefore caution should be applied when interpreting annual uptake data.

The majority of eligible men (79.3%) 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, 2022-2023

2011 Census Category	Screened	Not Screened	TOTAL	% Screened
Roma	*	*	*	*100.0*
Scottish	4,856	910	5,766	*84.2*
Other ethnic group Arab, Scottish Arab or British Arab	*	*	*	*83.3*
Irish	36	8	44	*81.8*
Chinese, Scottish Chinese or British Chinese	34	8	42	*81.0*
Other British	422	105	527	*80.1*
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	*	*	*	*77.8*
Indian, Scottish Indian or British Indian	44	14	58	*75.9*
Pakistani, Scottish Pakistani or British Pakistani	88	34	122	*72.1*
African, Scottish African or British African	13	6	19	*68.4*
Other white ethnic group	65	31	96	*67.7*
Other	16	8	24	*66.7*
Gypsy/Traveller	*	*	*	*66.7*
Other ethnic group	12	9	21	*57.1*
Caribbean or Black	*	*	*	*57.1*
Polish	9	8	17	*52.9*
Any Mixed or multiple ethnic group	8	10	18	*44.4*
Unknown, Opt out, not known	174	315	489	*35.6*
TOTAL	**5,796**	**1,473**	**7,269**	***79.7***

Source: AAA Application, health systems ethnicity data linkage, December 2023
* numbers ≤5, or identifiable as ≤5 as per PHS Statistical Disclosure Control Protocol

Table 5.3 shows that 37 of the 7,158 individuals eligible for AAA screening in 2022/23 were registered with a learning disability (0.6%)[5]. People who were registered with a learning disability had better uptake of AAA screening**,** 85.7% compared to 79.7% uptake in the rest of the population.

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

Table 5.3. Uptake of AAA Screening by Learning Disability for NHSGGC, 2022-2023

Learning Disability	Total	Not Screened	Screened	% Screened
Rest of population	7,227	1,394	5,760	***79.7***
Registered	42	6	36	***85.7***
Total	**7,269**	**1,400**	**5,796**	***79.7***

Source: AAA Application, Learning Disability, December 2018
Chi-Square Tests Pearson Chi-Square p =0.88799

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 79 of the 7,269 men eligible for screening were registered on PsyCIS (1.1%). These individuals had poorer uptake of AAA Screening, 68.4% compared to 79.9% in the rest of the population.

Table 5.4. Uptake of AAA screening by Severe and Enduring Mental Health for NHSGGC, 2022-2023

PSYCIS	Total	Not Screened	Screened	% Screened
Rest of population	7,190	1,375	5,742	***79.9***
Registered	79	25	54	***68.4***
Total	**7,269**	**1,400**	**5,796**	***79.7***

Source: AAA Application, PSYCIS, December 2023
Chi-Square Tests Pearson Chi-Square p = 0.002658

The essential threshold for screening uptake (75%) was met in all six HSCPs: East Dunbartonshire (*85.5*%), East Renfrewshire (*85.5%*) Glasgow City (*76.2*%), Inverclyde (85.7%) Renfrewshire (*80.3*%), and West Dunbartonshire (*81.8%)* (**Table 5.5**).

Table 5.5. Uptake of AAA screening among eligible population by Health & Social Care Partnership in NHSGGC, 2022-2023

Health & Social Care Partnership	Total	Not Screened	Screened	% Screened
East Dunbartonshire HSCP	730	99	624	***85.5***
East Renfrewshire HSCP	612	86	523	***85.5***
Glasgow North East Sector	1,103	256	831	***75.3***
Glasgow North West Sector	1,129	257	863	***76.4***
Glasgow South Sector	1,351	300	1,035	***76.6***
Glasgow City HSCP	3,583	70	2,729	***76.2***
Inverclyde HSCP	505	70	433	***85.7***
Renfrewshire HSCP	1,190	219	956	***80.3***
West Dunbartonshire HSCP	649	113	531	***81.8***
Total	**7,269**	**1,400**	**5,796**	***79.7***

Source: AAA Application, December 2023

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 15 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 5,796 men screened, 50 men (0.9%) had a confirmed positive screening result with an enlarged aorta ≥3cm. Of these, 40 men (82.0%) 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, 2021-2023

	Largest Measure (cm)					
Result Type	**<3**	**3 - 4.49**	**4.5-5.49**	**>=5.5**	**Not Known**	**Total**
External	*	*	*	*	*	*
Negative	5,697					**5,697**
Non Visualisation					48	**48**
Positive		41	*	*		**50**
Total	**5,698**	**41**	**4**	**5**	**48**	**5,796**

Source: AAA Application, December 2023.
* numbers ≤5, or identifiable as ≤5 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 in line with national guidance. 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 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

[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 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.

The 2023 local mortality audit was underway at time of this report, outcomes of this audit will be included in this report in due course.

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 in March 2020 due to the COVID-19 pandemic. 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 2022 to March 2023, NHSGGC AAA screening resumed in all pre-COVID venues, with the exception of Inverclyde Royal Hospital, with screening taking place in Greenock Health Centre as an alternative.

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 continued to be a challenge during the reporting period 1st April 2022 to 31st March 2023, however vascular clinics were reinstated during 2023 facilitating timely vascular imaging and surgical assessment.

5.8. Challenges and Future Priorities

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

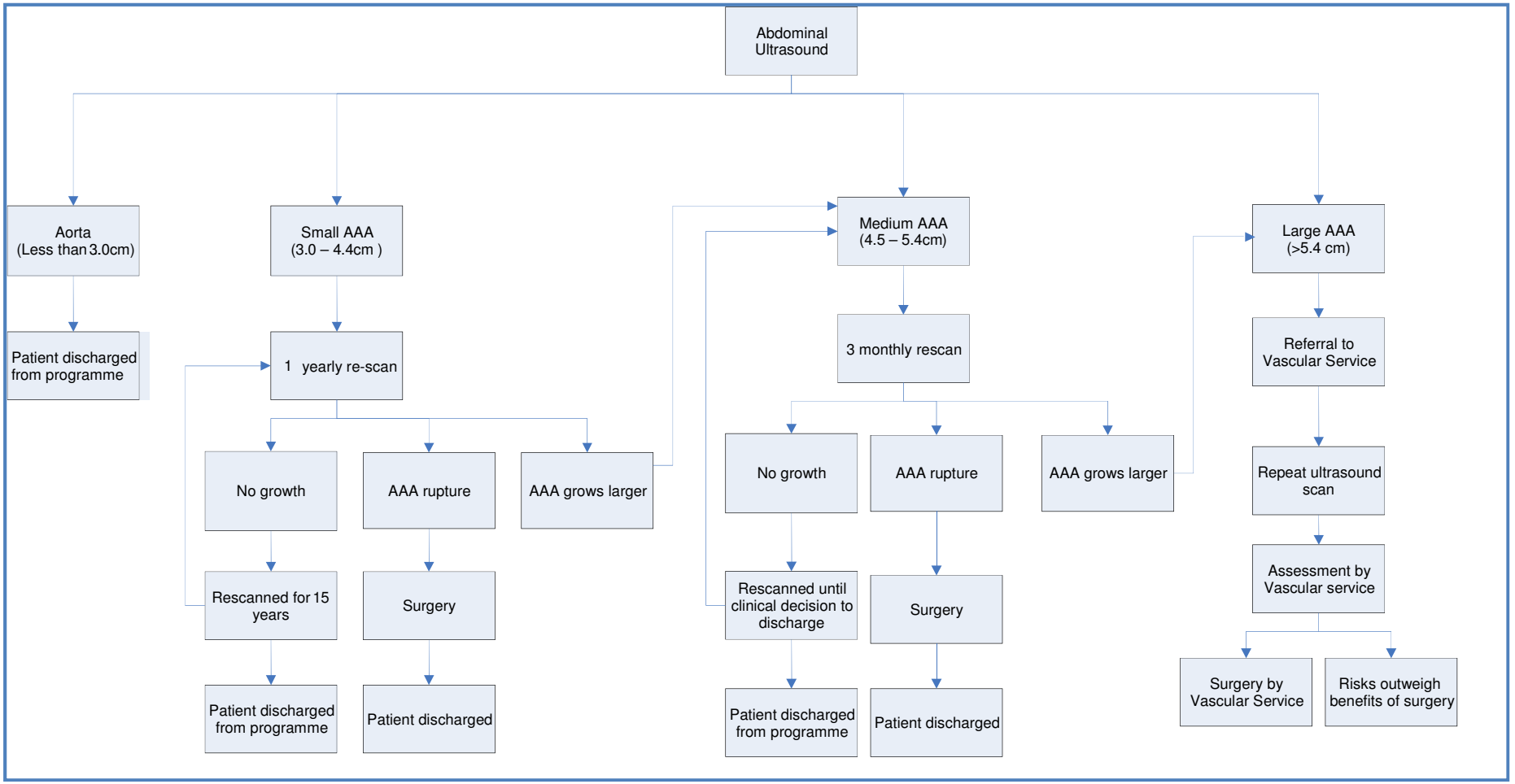
We will coordinate the roll-out of nine replacement AAA ultrasound scanners in line with national requirements. These scanners provide updated technology which provides an improved experience for both screeners and participants due to the depth functionality available on them.

We plan to undertake 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 work in collaboration with Health and Social Care Partnerships to identify opportunities to support uptake of AAA in our most deprived communities.

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 (2020–2023)

Please note that KPI data not available for year ending March 2023 at time of writing.

KPI	Description	Essential Threshold	Desirable Threshold	Year ending 31st March 2020	Year ending 31st March 2021	Year ending 31st March 2022
1.1	Percentage of eligible population who are sent an initial offer to screening before age 66 years	≥ 90%	100%	99.9%	99.8%	92.7%
1.2	Percentage of men offered screening who are tested before age 66 years and 3 months	≥ 75%	≥ 85%	80.5%	78.5%	78.7%
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%	75.1%	69.7%	70.9%
1.4a	Percentage of annual surveillance appointments due where men are tested within 6 weeks of due date	≥ 90%	100%	92.5%	51.4%	94.3%
1.4b	Percentage of quarterly surveillance appointments due where men are tested within 4 weeks of due date	≥ 90%	100%	92.9%	63.0%	92.5%
2.1a	Percentage of screening encounters where aorta could not be visualised	< 3%	< 1%	2.4%	1.9%	2%
2.1b	Percentage of men screened where aorta could not be visualised	< 3%	< 1%	2.1%	1.8%	1.7%
2.2	Percentage of screened images that failed the quality assurance audit and required immediate recall	< 4%	< 1%	0.7%	0.6%	1.4%
3.1	Percentage of men with AAA ≥5.5cm seen by vascular specialist within two weeks of screening	≥ 75%	≥ 95%	92.9%	100.0%	93.3%
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%	75.0%	27.3%	16.7%

Source: Scottish Screening AAA Programme Statistics 2020 -2023
RED = essential threshold not met; AMBER = essential threshold met, desirable threshold not met; GREEN = essential and desirable thresholds met

Appendix 5.3

Members of Abdominal Aortic Aneurysm Screening Steering Group (at March 2023)

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
Ms Sandra Robertson	Radiology Department Manager
Dr Nicola Schinaia	Consultant in Public Health Medicine, NHS Highland
Ms Iona Scott	Clinical Service Manager, General Surgery

Chapter 6 - Bowel Screening Programme

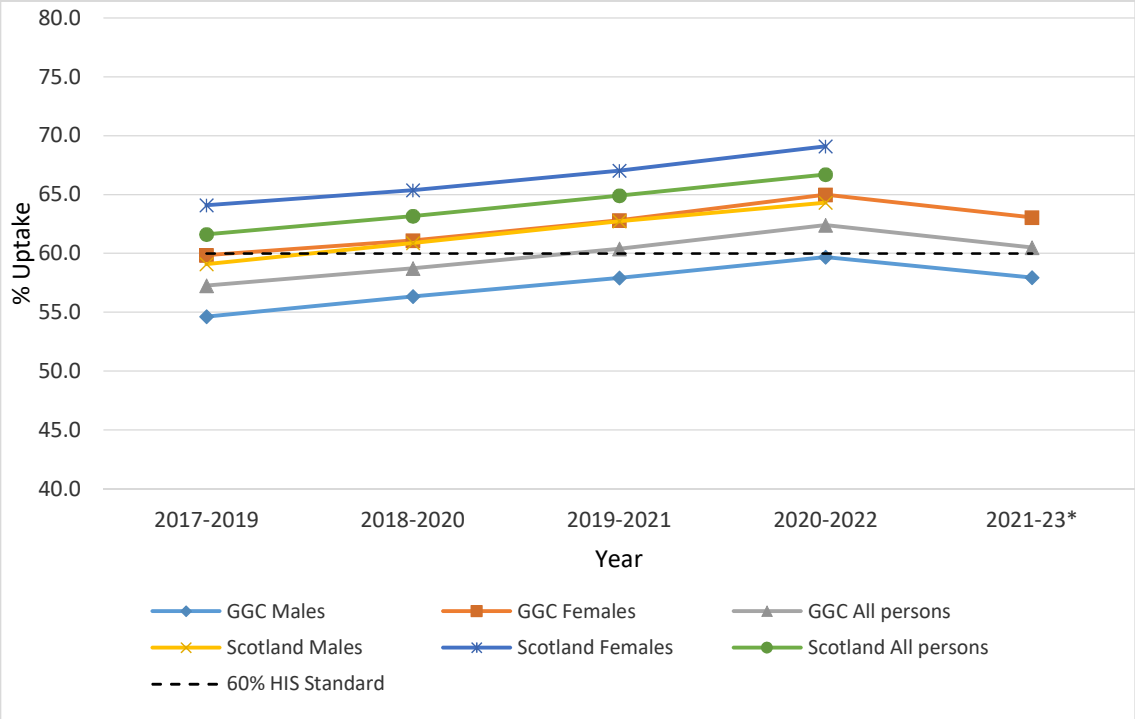
Summary

Colorectal (Bowel) Cancer was the third most common cancer in Scotland for both men and women in 2021. Ninety five 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 April 2021 and March 2023, 367,550 NHSGGC residents were invited for bowel screening. 60.5% of those invited returned the screening test, of which 6,615 tested positive (3.0%). Of those individuals who had a positive result, 6,093 (92.1%) attended a nurse pre-assessment and over three quarters 4,856 (73.4%) had a colonoscopy performed. Subsequently, 263 cancers and 2,482 adenomas were detected.

Uptake of Bowel Screening in NHSGGC and Scotland 2017-19 to 2021-23* by Sex



Source: PHS Bowel Screening Programme Statistics, 1st April 2017 to 31st March 2022.
* NHSGGC Bowel Screening IT System, GGC statistics only (November 2023)

Women were more likely to return a bowel screening test than men (63.1% vs. 57.9% respectively). Uptake was lowest among those aged 50-54 years, at 54.2%

and increased to 67.4% for those aged 70-74 years, a difference of 13.2 percentage points.

Uptake of the bowel screening programme increased with decreasing levels of deprivation. Uptake was lowest amongst those living in the most deprived areas (51.1%) and highest in the least deprived areas (71.1%).

Analysis by ethnicity showed uptake screening standard of 60% was achieved in the Roma, Irish, Chinese, Showman/Show woman Scottish and other British groups 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, 44.5% compared to 60.6%. 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, 42.8% compared to 60.7%. For both of these categories, the proportion of the screened population registered was small.

Overall, 3.0% (6,615 of 222,444) of completed screening tests were reported positive, meriting further investigation. Women had a lower positivity than men (2.5% vs. 3.5 %, respectively); older people had a higher positivity than younger people (4.0% aged 70-74 vs. 2.3% aged 50-54); and those living in our most deprived communities had higher positivity than the least deprived (4.0% vs. 2.2%, respectively).

Of the 6,615 people who had a positive screening test, 4,856 people underwent a colonoscopy. Of these:

- 2,984 people (61.4%) had a polyp detected;
- 2,482 people (51.1%) had a confirmed adenoma detected; and
- 263 (5.4%) people had a confirmed colorectal cancer diagnosis;
- all detection rates increased among older age cohorts.

Polyps were detected in 67.6% of men and 53.2% of women who underwent colonoscopies. Adenomas were detected in 57.3% of men and 42.9% of women. Colorectal cancer was diagnosed in 5.4% of men and 5.5% of women.

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 due to the demand on colonoscopy services. Triaging of screening test results was introduced when screening resumed to prioritise those at highest risk.

During the period April 2022 to March 2023, bowel screening programme recovery continued to focus on 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 12.1% of all cancers in 2021 (the most recent year for which incidence data is available). Ninety five percent of bowel cancers detected were among people aged over 50 years of age[8].

In the same year, 805 people residing in the NHSGGC area were diagnosed with bowel cancer, of these 461 were male and 344 were female. This gives an age-standardised incidence rate of 97.0 per 100,000 population for men in 2021, higher than the Scotland rate of 92.5 per 100,000. For women the age-standardised incidence rate in 2021 was 57.4 per 100,000 population, lower than the Scotland rate of 63.8 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].

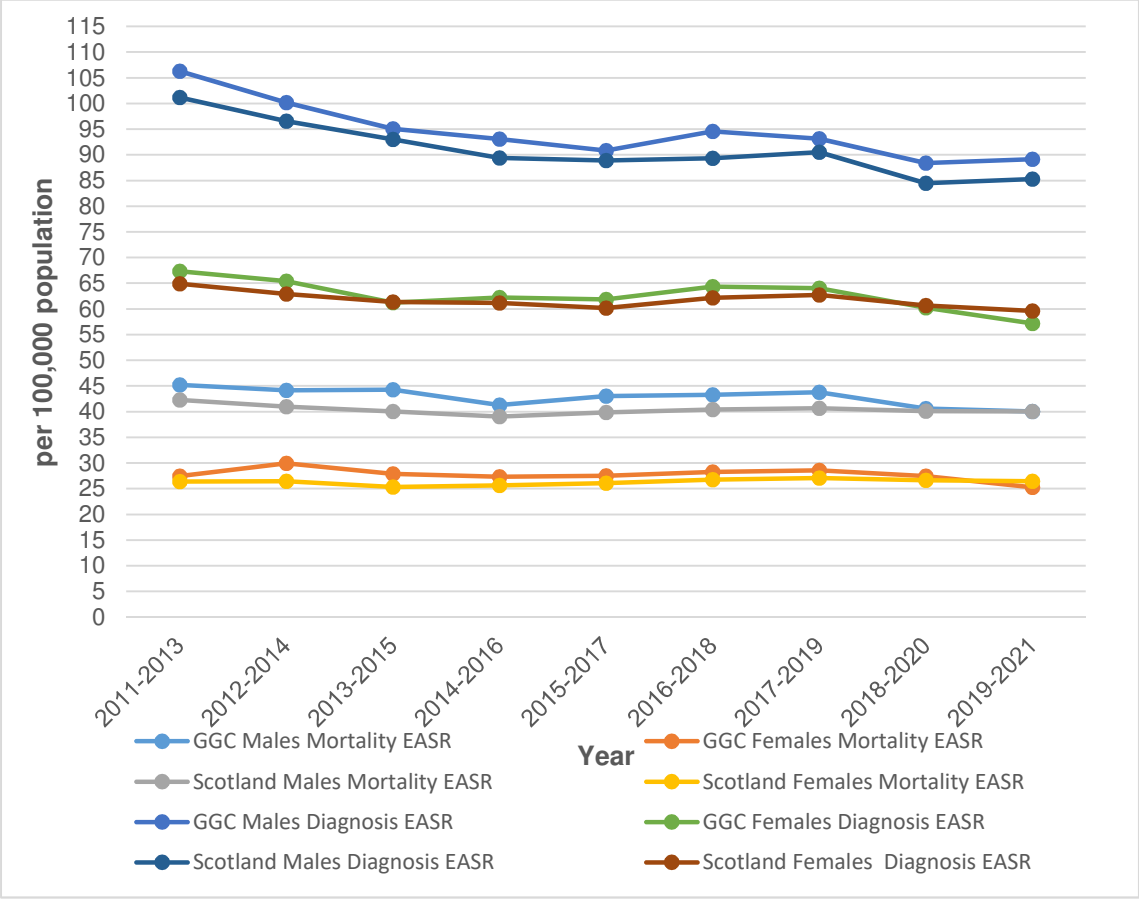
Standardised incidence and mortality rates averaged across rolling three year periods for bowel cancer for NHSGGC and Scotland are illustrated in **Figure 6.1**. In the ten year period between 2011 and 2021, the age-standardised rolling three years incidence rate of bowel cancer in Greater Glasgow & Clyde decreased in both men (106.3 to 89.1 per 100,000) and in women (67.3 to 57.3 per 100,000). Mortality rates of bowel cancer in Greater Glasgow & Clyde decreased in men (from 45.2 to 40.1 per 100,000) and in women (27.4 to 25.3 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.

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

[8] Cancer incidence in Scotland - to December 2021 - Cancer incidence in Scotland - Publications - Public Health Scotland (Accessed November 2023)
[9] Cancer mortality in Scotland - Annual update to 2021 - Cancer mortality - Publications - Public Health Scotland (Accessed November 2023)

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



Source: Registration Source: PHS March 2023, Mortality Source: PHS October 2022

6.2. Aim of the Screening Programme

The purpose of bowel screening is to detect colorectal cancers at the earliest possible opportunity 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 (KPIs)[10] and National Bowel Screening Standards[11], see **Appendix 6.1**.

[10] Scottish bowel screening programme statistics - For the period of invitations from May 2020 to April 2022 - Scottish bowel screening programme statistics - Publications - Public Health Scotland (Accessed November 2023)
[11] http://www.healthcareimprovementscotland.org/our_work/cancer_care_improvement/programme_resources/bowel_screening_standards.aspx (Accessed November 2023)

6.3. Eligible Population

The programme invites all men and women between the ages of 50–74 years of age and 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.

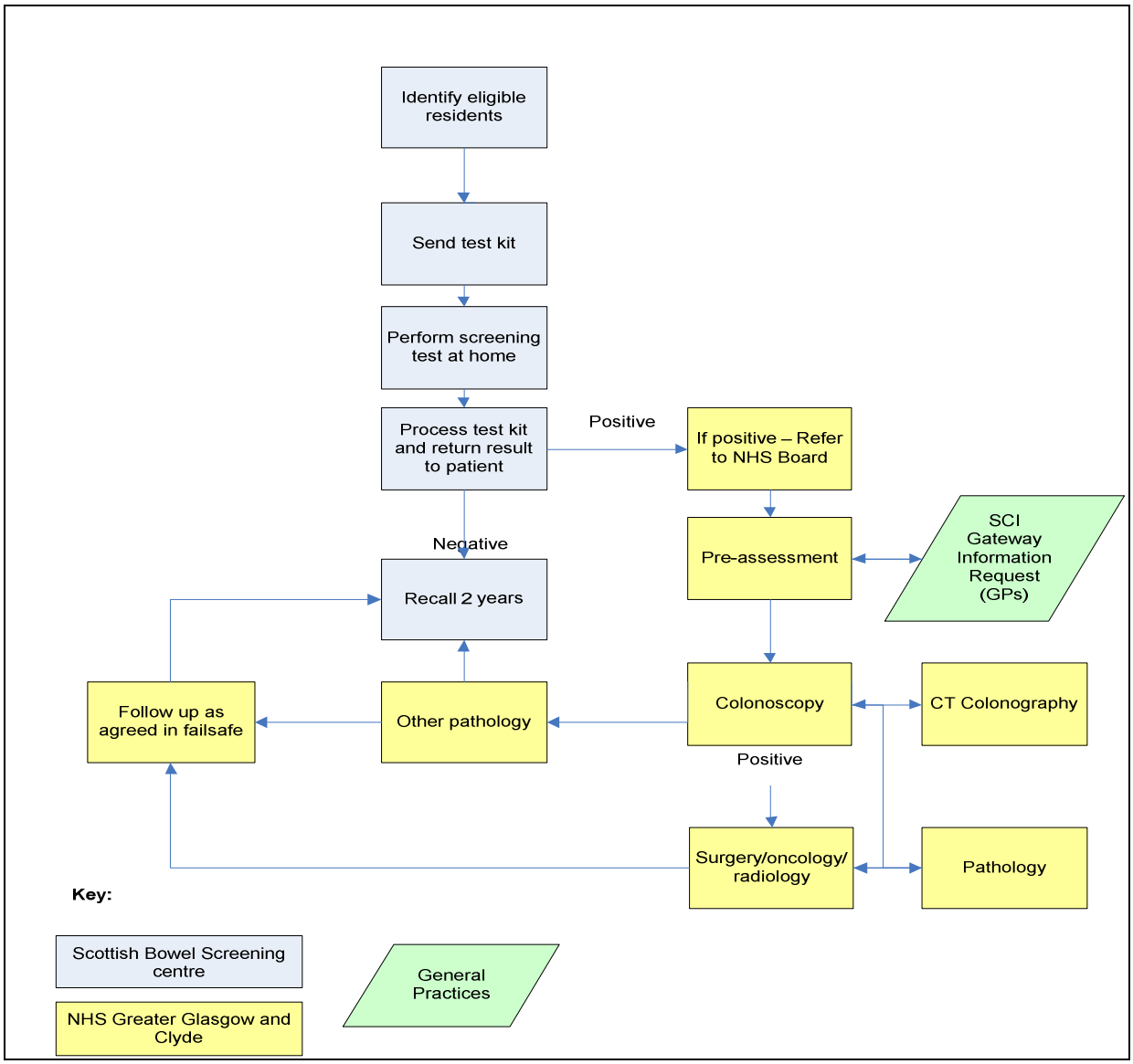
The National Bowel Screening Centre in Dundee issues invitation letters and screening kits to all eligible residents of NHSGGC to carry out the screening test at home. The kits are then posted by return to the National Laboratory for processing. After analysis, the National Centre reports the results to the 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 SCI Gateway referral.

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 to attend screening again in two years' time, unless a permanent exclusion is placed on their record. If a patient declines to attend colonoscopy, a letter is sent to the patient and their GP, asking them to get in touch within six 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 the next round, in two years' time.

[12] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4482205/ Accessed November 2023)

Figure 6.2. Bowel Screening Pathway



6.5. Programme Performance and delivery

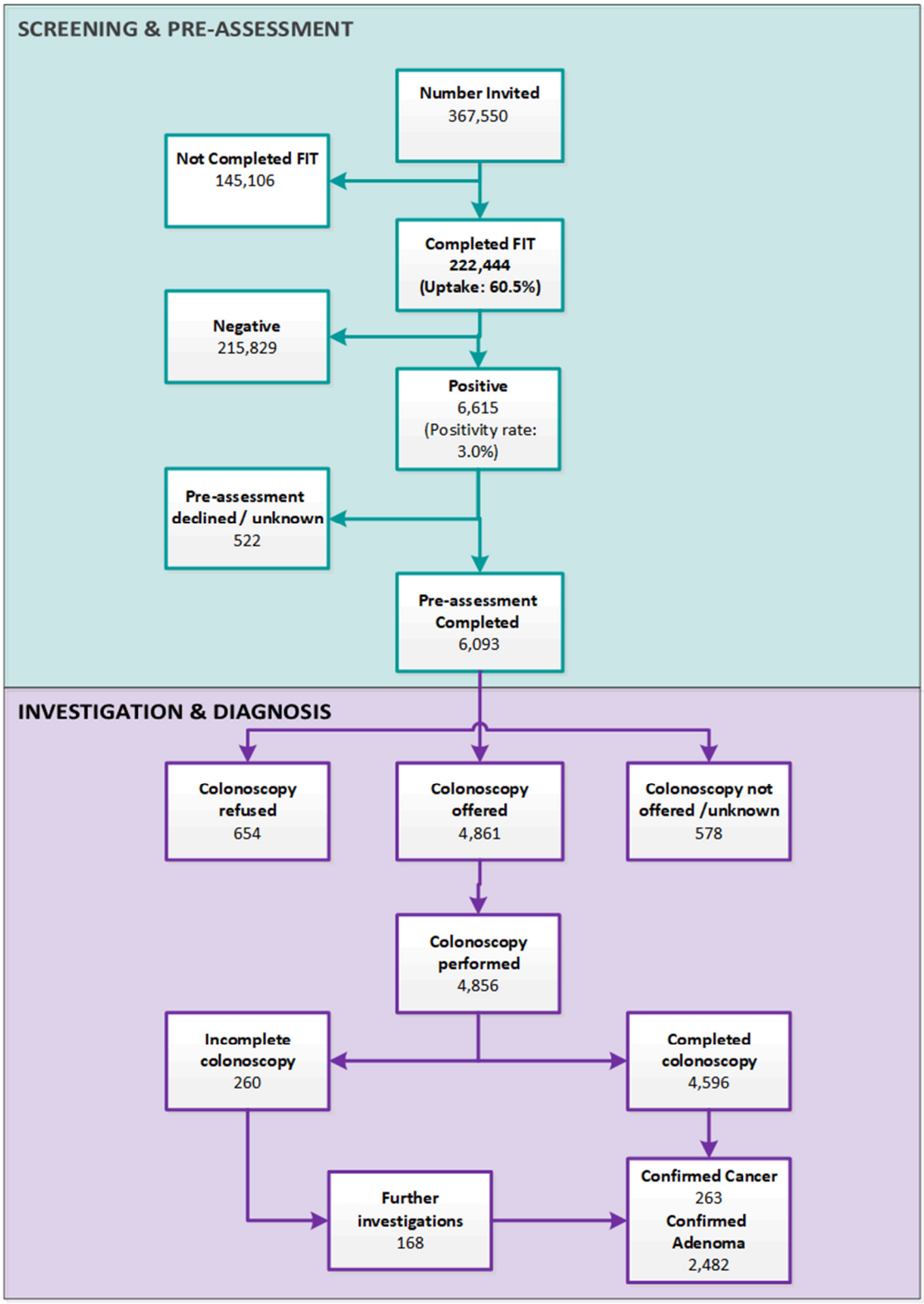
The bowel screening programme KPIs cover information on uptake of screening (completed kits), results of screening, quality of colonoscopy, and cancer diagnosis and staging.

National Bowel Screening Programme Statistics are published annually by Public Health Scotland in February each year, reflecting the previous two year screening round. **Appendix 6.1** summarises the most recent published KPIs for NHSGGC and Scotland for time period 1st March 2020 to 30 April 2022.

Local monitoring data is presented in this report to provide uptake and outcome data for period 1st April 2021 to 31st March 2023. 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 2021 to 31st March 2023 from local analysis, which is based on NHSGGC resident population only. During this time period, 367,550 NHSGGC residents were invited for bowel screening, of which 60.5% returned the screening test. Of the 222,444 completed tests, 6,615 tested positive (3.0%). Of those individuals who had a positive result, 6,093 (92.1%) attended a nurse pre-assessment and over three quarters 4,856 (79.7%) had a colonoscopy performed. Subsequently, 263 cancers and 2,482 adenomas were detected.

Figure 6.3. NHSGGC Eligible Residents Bowel Screening Activity 1 April 2021 to 31 March 2023

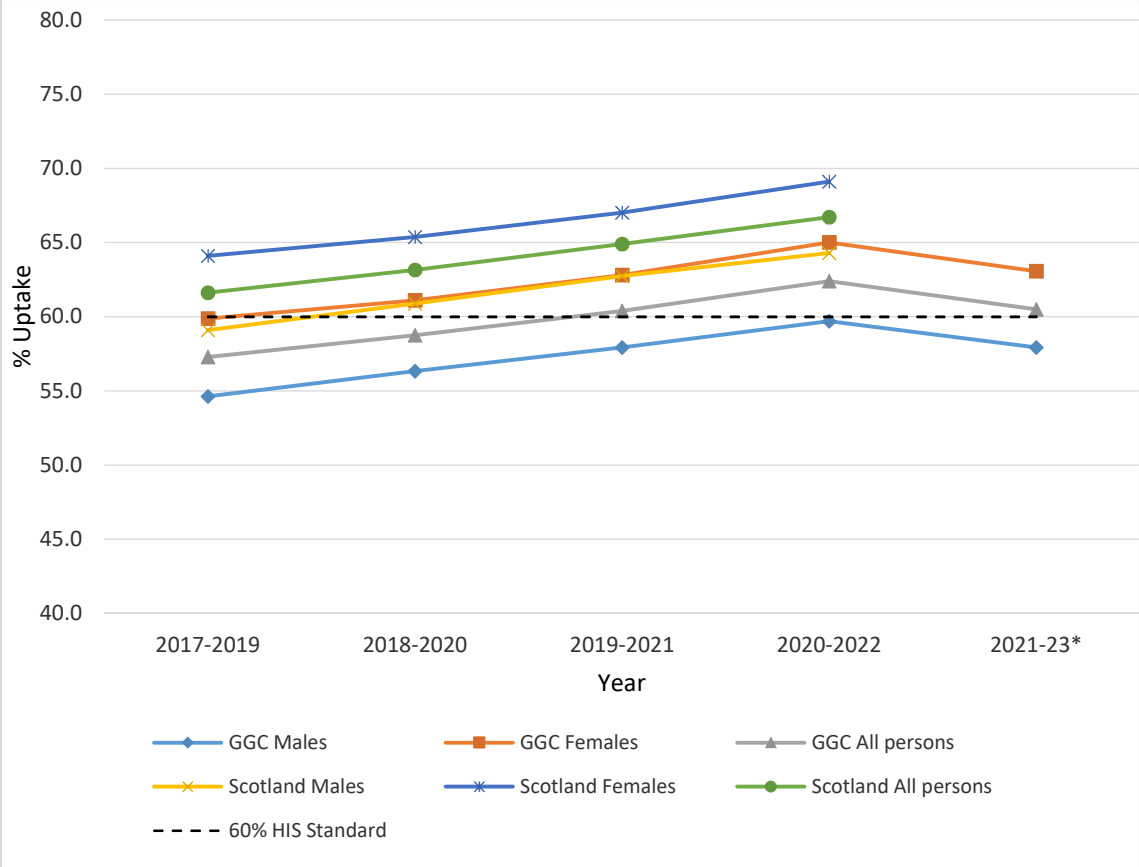


Source: NHS Greater Glasgow and Clyde Bowel Screening IT System, Pathology, Cancer Audit (Extracted: November 2023)

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, however there was a reduction observed in both men and women in the 2021/23 screening round, with uptake remaining lower in men **(Figure 6.4)**.

Figure 6.4. Uptake of Bowel Screening in NHSGGC and Scotland 2017/19 to 2021/23* by Sex



Source: PHS Bowel Screening Programme Statistics, 1st April 2017 to 31st March 2022.
* NHSGGC Bowel Screening IT System (November 2023)

For the screening round 2021 to 2023, overall uptake of bowel screening in NHSGGC was 60.5%, above the Health Improvement Scotland (HIS) standard of 60%. Women were more likely to return a bowel screening test than men (63.1% vs. 57.9% respectively) **(Table 6.1)**.

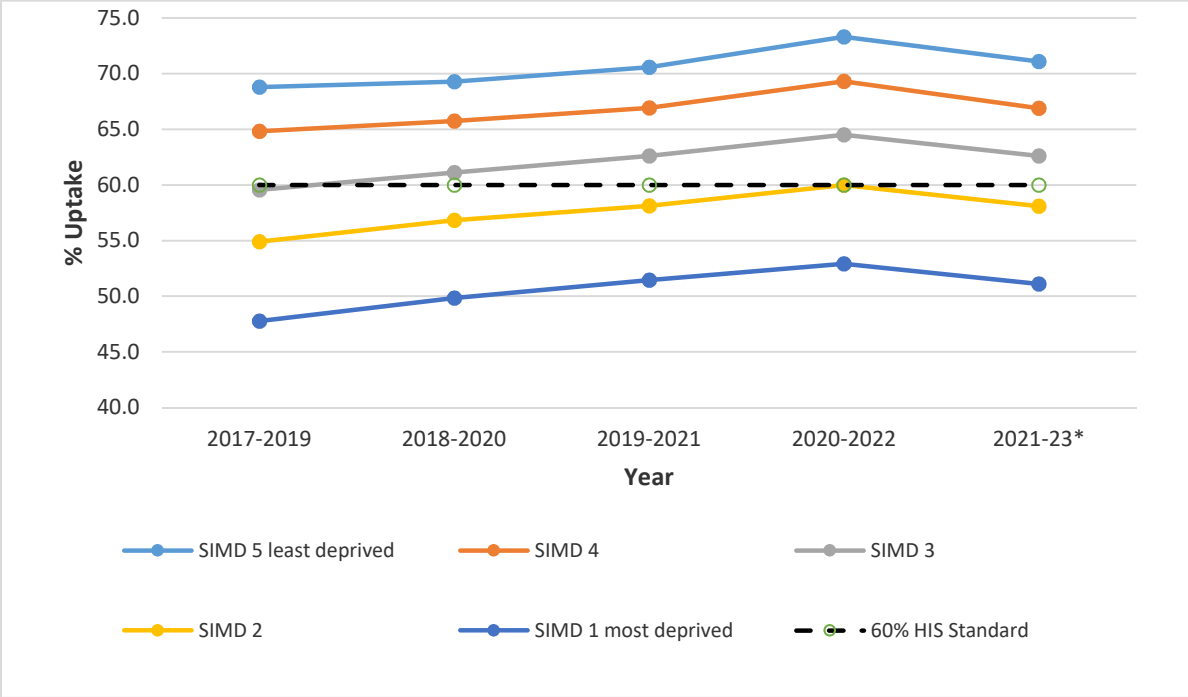
Table 6.1. Uptake of bowel screening by sex in NHGGC, 2021-2023, males and females

Sex	Not Screened	Screened	Total	*% Screened*
Female	68,352	116,712	185,064	*63.1*
Male	76,754	105,732	182,486	*57.9*
Total	145,106	222,444	367,550	*60.5*

Source: NHSGGC Bowel Screening IT System (November 2023)

Uptake of bowel screening within the most and least deprived quintiles has also increased following the implementation of FIT in 2017. A reduction in uptake was observed across all deprivation quintiles during the 2021-23 screening round, and 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 2021/23* by deprivation quintiles



Source: PHS Bowel Screening Programme Statistics, 1st April 2017 to 31st March 2022. * NHSGGC Bowel Screening IT System (November 2023)

For the screening round 1st April 2021 to 31st March 2023, there was a 20.0% percentage point difference in uptake among individuals residing in the most deprived areas compared to individuals residing in the least deprived areas (51.1% vs *71.1*% respectively). **(Table 6.2)**.

Table 6.2. Uptake of bowel screening by SIMD in NHSGGC, 1st April 2021 to 31st March 2023

SIMD Quintile	Not Screened	Screened	Total	*% Screened*
1 (Most Deprived)	59,087	61,756	120,843	*51.1*
2	27,326	37,823	65,149	*58.1*
3	17,260	28,893	46,153	*62.6*
4	18,173	36,741	54,914	*66.9*
5 (Least Deprived)	23,260	57,231	80,491	*71.1*
Total	**145,106**	**222,444**	**367,550**	***60.5***

Source: NHSGGC Bowel Screening IT System (Extracted: November 2023).

Further local analysis was undertaken to explore variations in uptake of 2021/23 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 (54.2%) and increased to 67.4% between those aged 70 to 74 years, a difference of 13.2 percentage points.

Table 6.3. Uptake of bowel screening by age cohort in NHSGGC, 1st April 2021 to 31st March 2023

Age Group (years)	Not Screened	Screened	Total	% *Screened*
50-54	47,720	56,392	104,112	*54.2*
55-59	29,054	40,337	69,391	*58.1*
60-64	29,256	47,138	76,394	*61.7*
65-69	23,161	45,646	68,807	*66.3*
70-74	15,915	32,931	48,846	*67.4*
Total	**145,106**	**222,444**	**367,550**	***60.5***

Source: NHSGGC Bowel Screening IT system (November 2023)

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 Roma, Irish, Chinese, Showman/Showwoman Scottish and other British 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 2021 to 31st March 2023

2011 Census Ethnicity Category	Not Screened	Screened	Total	% *Screened*
Roma	30	8	38	*79.0*
Irish	1,416	666	2,082	*68.0*
Chinese, Scottish Chinese or British Chinese	1,405	663	2,068	*67.9*
Showman/Showwoman	30	16	46	*65.2*
Scottish	182,658	101,255	283,913	*64.3*
Other British	16,967	10,089	27,056	*62.7*
Gypsy/Traveller	182	123	305	*59.7*
Other ethnic group Arab, Scottish Arab or British Arab	230	166	396	*58.1*
Other white ethnic group	2,557	1,999	4,556	*56.1*
Caribbean or Black	277	219	496	*55.9*
African, Scottish African or British African	996	792	1,788	*55.7*
Other	819	684	1,503	*54.5*
Indian, Scottish Indian or British Indian	1,542	1,379	2,921	*52.8*
Any Mixed or multiple ethnic group	657	633	1,290	*50.9*
Other ethnic group	771	805	1,576	*48.9*
Polish	461	495	956	*48.2*
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	88	112	200	*44.0*
Pakistani, Scottish Pakistani or British Pakistani	2,566	3,302	5,868	*43.7*
Opt out, Not known, Unknown	8,792	21,700	30,492	*28.8*
TOTAL	**222,444**	**145,106**	**367,550**	*60.5*

Source: Bowel Screening IT system (November 2023) ; Safe Haven Assigned Ethnicity

Table 6.5 shows that 2,193 of the 367,550 individuals eligible for screening were registered with a learning disability (0.6)[13]. People who were registered with a learning disability had poorer uptake of bowel screening**,** 44.5% compared to 60.6% in the rest of the population.

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

Table 6.5. Uptake of bowel screening by learning disability in NHSGGC, 1st April 2021 to 31st March 2023

Learning Disability Register	Not Screened	Screened	Total	% *Screened*
Not Registered	143,889	221,468	365,357	*60.6*
Registered	1,217	976	2,193	*44.5*
Total	**145,106**	**222,444**	**367,550**	***60.5***

Source: NHSGGC Bowel Screening IT system (November 2023); Learning Disability (September 2018).

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 4,185 of the 367,550 people eligible for screening were registered on PsyCIS (1.1% of the total eligible population). These individuals had poorer uptake of bowel screening, 42.8% compared to 60.7% 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 2021-31st March 2023

PsyCIS	Not Screened	Screened	Total	% *Screened*
Not Registered	142,713	220,652	363,365	*60.7*
Registered	2,393	1,792	4,185	*42.8*
Total	**145,106**	**222,444**	**367,550**	***60.5***

Source: NHSGGC Bowel Screening IT system (November 2023), PsyCIS (November 2023). Chi-Square Tests $p < 0.0001$

Variations in bowel screening uptake across HSCPs persist **(Table 6.7).** Uptake ranges from 55.2% in Glasgow City North East Sector to 70.4% 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 2021 to 31st March 2023

HSCP	Not Screened	Screened	Total	% *Screened*
East Dunbartonshire HSCP	11,268	26,835	38,103	*70.4*
East Renfrewshire HSCP	9,677	21,553	31,230	*69.0*
Glasgow North East Sector	24,209	29,864	54,073	*55.2*
Glasgow North West Sector	25,113	32,245	57,358	*56.2*
Glasgow South Sector	30,605	37,812	68,417	*55.3*
Glasgow City	79,927	99,921	179,848	*55.6*
Inverclyde HSCP	10,348	17,180	27,528	*62.4*
Renfrewshire HSCP	21,944	37,946	59,890	*63.4*
West Dunbartonshire HSCP	11,942	19,009	30,951	*61.4*
Total	**145,106**	**222,444**	**367,550**	***60.5***

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 715 of the 1,456 data zones had uptake rates between 40-59% and a further 56 data zones had uptake rates of below 40%. Uptake maps are available on the PHSU website[14].

6.7. Screening Test Positivity

Overall in the period 2021-2023, 3.0% (6,615 of 222,444) of completed screening tests were reported positive, meriting further investigation with colonoscopy or equivalent.

- Women had a lower positivity rate than men (2.5% vs. 3.5 %, respectively).
- Older people have higher positivity rate than younger people (4.0% aged 70-74 vs. 2.3% aged 50-54).
- Those residing in the most deprived communities have higher positivity than the least deprived (4.0% vs. 2.2% 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 2021 to 31 March 2023

	% Screened			% Positive		
Age Group	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
50-54	*58.1*	*50.5*	*54.2*	*2.1*	*2.6*	*2.3*
55-59	*61.1*	*55.1*	*58.1*	*2.1*	*3.2*	*2.6*
60-64	*64.2*	*59.2*	*61.7*	*2.3*	*3.3*	*2.8*
65-69	*67.4*	*65.2*	*66.3*	*2.9*	*4.2*	*3.5*
70-74	*67.9*	*66.9*	*67.4*	*3.2*	*5.0*	*4.0*
Total	***63.1***	***57.9***	***60.5***	***2.5***	***3.5***	***3.0***

Source: NHSGGC Bowel Screening IT system (November 2023)

Table 6.9. Bowel screening positivity rate by SIMD for NHSGGC, 1 April 2021 to 31 March 2023

SIMD Quintile 2016	Negative	Positive	Total	*% Positive*
1 (Most Deprived)	59,298	2,458	61,756	*4.0*
2	36,638	1,185	37,823	*3.1*
3	28,069	824	28,893	*2.9*
4	35,825	916	36,741	*2.5*
5 (Least Deprived)	55,999	12,32	57,231	*2.2*
Total	**215,829**	**6,615**	**222,444**	***3.0***

Source: NHSGGC Bowel Screening IT system (November 2023)

[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 6,615 people who had a positive screening test, 4,856 people underwent a colonoscopy. Of these:

- 2,984 people (61.4%) had a polyp detected;
- 2,482 people (51.1%) had a confirmed adenoma detected; and
- 263 (5.4%) people had a confirmed colorectal cancer diagnosis;
- all detection rates increased with increasing age.

Polyps were detected in 67.6% of men and 53.2% of women who underwent colonoscopies. Adenomas were detected in 57.3% of men and 42.9% of women. Colorectal cancer was diagnosed in 5.4% of men and 5.5% of women.

Whilst more people residing in areas of higher deprivation have had investigations performed, the detection rate of polyps, adenomas and cancers is similar across the SIMD quintiles.

Table 6.10. Adenoma and polyp detection rate by age and gender in NHSGGC, 2021-2023

	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	474	545	1019	194 *(40.9)*	331 *(60.7)*	525 *(51.5)*	145 *(30.6)*	275 *(50.5)*	420 *(41.2)*	17 *(3.6)*	19 *(3.5)*	36 *(3.5)*
55-59	338	458	796	173 *(51.2)*	274 *(59.8)*	447 *(56.2)*	136 *(40.2)*	234 *(51.1)*	370 *(46.5)*	13 *(3.8)*	18 *(3.9)*	31 *(3.9)*
60-64	427	585	1012	233 *(54.6)*	411 *(70.3)*	644 *(63.6)*	182 *(42.6)*	335 *(57.3)*	517 *(51.1)*	23 *(5.4)*	32 *(5.5)*	55 *(5.4)*
65-69	479	680	1159	287 *(59.9)*	487 *(71.6)*	774 *(66.8)*	239 *(49.9)*	425 *(62.5)*	664 *(57.3)*	31 *(6.5)*	42 *(6.2)*	73 *(6.3)*
70-74	356	514	870	216 *(60.7)*	378 *(73.5)*	594 *(68.3)*	187 *(52.5)*	324 *(63.0)*	511 *(58.7)*	30 *(8.4)*	38 *(7.4)*	68 *(7.8)*
Total	**2,074**	**2,782**	**4,856**	**1,103** ***(53.2)***	**1,881** ***(67.6)***	**2,984** ***(61.4)***	**889** ***(42.9)***	**1,593** ***(57.3)***	**2,482** ***(51.1)***	**114** ***(5.5)***	**149** ***(5.4)***	**263** ***(5.4)***

Source: NHSGGC Bowel Screening IT system (November 2023)
* Colonoscopy or other investigation

Table 6.11. Adenoma, polyp & cancer detection rate by SIMD and gender in NHSGGC, 2021-2023

	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)	722	988	1710	380 *(52.6)*	673 *(68.1)*	1053 *(61.6)*	314 *(43.5)*	568 *(57.5)*	882 *(51.6)*	37 *(5.1)*	44 *(4.5)*	81 *(4.7)*
2	387	490	877	201 *(51.9)*	340 *(69.4)*	541 *(61.7)*	155 *(40.1)*	293 *(59.8)*	448 *(51.1)*	13 *(3.4)*	23 *(4.7)*	36 *(4.1)*
3	276	361	637	153 *(55.4)*	242 *(67.0)*	395 *(62.0)*	115 *(41.7)*	201 *(55.7)*	316 *(49.6)*	21 *(7.6)*	18 *(5.0)*	39 *(6.1)*
4	281	403	684	155 *(55.2)*	279 *(69.2)*	434 *(63.5)*	128 *(45.6)*	246 *(61.0)*	374 *(54.7)*	15 *(5.3)*	22 *(5.5)*	37 *(5.4)*
5 (Least Deprived)	408	540	948	214 *(52.5)*	347 *(64.3)*	561 *(59.2)*	177 *(43.4)*	285 *(52.8)*	462 *(48.7)*	28 *(6.9)*	42 *(7.8)*	70 *(7.4)*
Total	**2,074**	**2,782**	**4,856**	**1103 *(53.2)***	**1881 *(67.6)***	**2984 *(61.4)***	**889 *(42.9)***	**1593 *(57.3)***	**2482 *(51.1)***	**114 *(5.5)***	**149 *(5.4)***	**263 *(5.4)***

Source: NHSGGC Bowel Screening IT system (November 2023)
* Colonoscopy or other investigation

Data presented in **Table 6.12** shows the cancer staging of the 263 people who had a confirmed colorectal cancer diagnosis.

Table 6.12. Cancer stage of colorectal cancel for NHSGGC, 2021-23

Staging	Number	%
1	104	*39.5*
2	68	*25.9*
3	60	*22.8*
4	15	*5.7*
unknown	16	*6.1*
Total	263	

Source: Local Cancer Audit November 2023

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. Post colonoscopy cancer rates are now also being audited.

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 consideration through clinical governance process. Any learning from this will be shared accordingly across the health board.

6.10. Recovery following Covid-19 pandemic

During the 2021-23 screening round, the number of invitations to participate in bowel screening returned to pre-pandemic levels. In 2022/23, post-pandemic bowel screening programme recovery continued to focus on reducing the back log of patients requiring colonoscopy.

6.11. Challenges and Future Priorities

We will continue to monitor screening colonoscopy waiting times, increasing capacity where possible to ensure waiting times are in line with standards.

We will undertake a review of bowel screening pathway and procedures in line with Health Improvement Scotland's new standards for bowel screening and identify and progress any areas requiring action.

We will implement updated NHSGGC *Preparing for your Colonoscopy* patient information resource following feedback from patients and staff, to provide clearer information on laxative, diet instructions, and consent information.

We will progress 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 2020 – 2022. Source: Public Health Scotland

KPI	Key Performance: Indicator Description	Target	1st May 2018 to 30th April 2020		1st May 2019 to 30th April 2021	1st May 2020 to 30th April 2022
Screening Uptake						
1	Overall uptake of screening - percentage of people with a final outright screening test result, out of those invited.	60%	58.70%		60.40%	62.40%
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	49.80 %	51.40%	52.90%
			Q2	56.80 %	58.10%	60.00%
			Q3	61.10 %	62.60%	64.50%
			Q4	65.80 %	66.90%	69.30%
			Q5	69.30 %	70.60%	73.30%
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	14.2% 16.9% 69.0%		26.4% 33.3% 40.3%	7.6% 15.4% 77.0%
5	Percentage of people with a positive screening test result going on to have a colonoscopy performed.	N/A	69.00%		64.60%	71.30%
6	Percentage of people having a completed colonoscopy, out of those who had a colonoscopy performed.	90%	96.10%		95.30%	94.50%
7	Percentage of people requiring admission for complications arising directly from the colonoscopy, out of those who had a colonoscopy performed.	N/A	0.13%		0.29%	0.23%

8	Percentage of people with colorectal cancer, out of those with a final outright screening test result.	N/A	0.12%	0.09%	0.09%
9-14	Percentage of people with colorectal cancer staged: 9. Dukes' A. 10. Dukes' B. 11*. Dukes' C 13. Dukes' D. 14. Dukes' Not known.	N/A	 35.4% 24.3% 26.2% 9.5% 4.6%	 35.8% 24.7% 24.1% 9.3% 6.2%	 35.2% 26.8% 26.3% 9.5% 2.2%
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	-	-	-
18	Percentage of people with polyp cancer, out of those with colorectal cancer.	N/A	3.00%	1.20%	-
19	Percentage of people with adenoma as the most serious diagnosis, out of those with a final outright screening test result.	N/A	0.97%	0.91%	1.05%
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	0.14%	0.14%	0.17%
21	Positive Predictive Value of current screening test for colorectal cancer.	N/A	5.20%	4.50%	4.10%
22	Positive Predictive Value of current screening test for adenoma as the most serious diagnosis.	N/A	45.30%	47.00%	47.80%
23	Positive Predictive Value of current screening test for high risk adenoma as the most serious diagnosis.	N/A	6.60%	7.00%	7.80%
24	Positive Predictive Value of current screening test for high risk adenoma as the most serious diagnosis or colorectal cancer.	N/A	11.80%	11.50%	11.90%

25	Positive Predictive Value of current screening test for adenoma as the most serious diagnosis or colorectal cancer.	N/A	50.50%	51.40%	51.90%
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	70.3% - 29.70%	70.4% - 29.60%	69.3% - 30.7%

Green = target met; Red = target not met

Appendix 6.2

Members of Bowel Screening Steering Group (At March 2023)

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 Lynne Peat	NHS Highland
Mrs Elizabeth Rennie	Programme Manager, Screening Dept
Dr Andrew Renwick	Consultant, RAH
Dr Nicola Schinaia	Public Health Consultant, Highland
Dr Jack Winter	Lead Clinician for Endoscopy (North)
Mr Paul Witherspoon	Consultant Surgeon

Chapter 7 - Breast Screening Programme

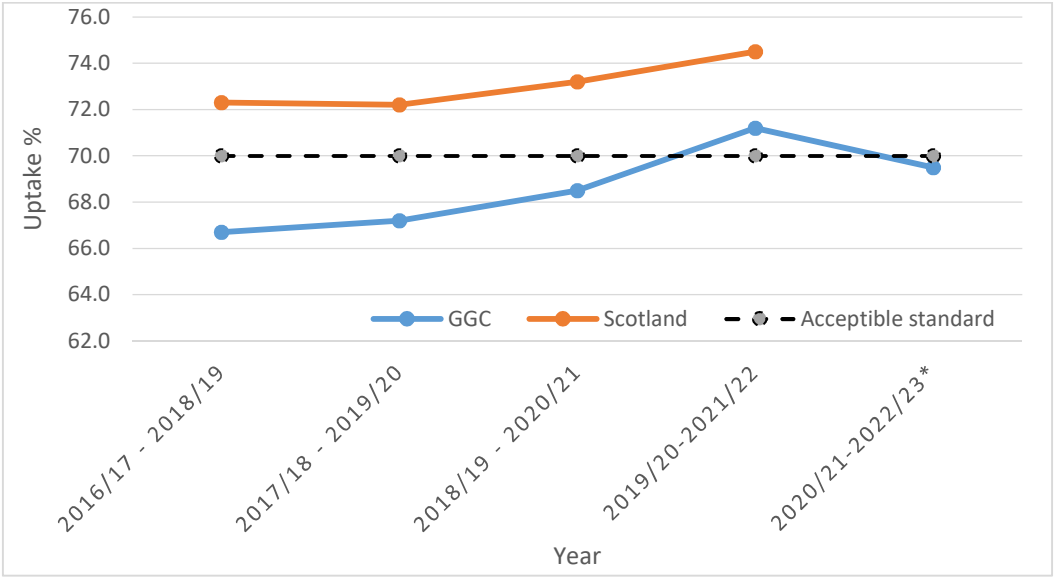
Summary

Breast cancer is the most common cancer in women in Scotland, accounting for 28.9% of all new cancers diagnosed in women in 2021. In the same year, 1,098 new breast cancers were registered among women residing in NHSGGC. This gives an age-standardised incidence rate of 183.7 per 100,000 per population, higher than the Scotland rate of 174.2.7 per 100,000. In the same year, 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-19 pandemic. During this reporting period, self-referrals were reinstated for women 71-74 years old, or who have previously had breast cancer and have been discharged from yearly follow up mammograms.

Uptake of breast screening in NHSGGC had steadily increased over the four previous screening rounds, but fell slightly in the current screening round. During the current screening round 2020/21 to 2022/23, the percentage of eligible women who attended for breast screening in NHSGGC was 69.5%, slightly below the national acceptable standard of 70%.

Uptake of Breast Screening in NHSGGC and Scotland 2016/19 to 2020/23* (Females aged 50-70 years)



Source: PHS Breast Screening Programme Statistics, 1st April 2016 to 31st March 2022
* 2020/23 SSBS local report – GGC data only (October 2023)

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

Uptake of screening was lowest in individuals residing in the most deprived Board areas (60.4%) and highest in the least deprived areas (77.6%). This is a large difference of 17.2 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, Irish and Arab 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, 51.1% compared to 69.6%. 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, 51.3% compared to 69.7%.

By geography, the acceptable standard for screening uptake (70%) was met in East Dunbartonshire (75.1%), East Renfrewshire (74.7%), Inverclyde (72.3%) and Renfrewshire (76.0%), West Dunbartonshire (72.2%) HSCPs. The essential threshold was not met in Glasgow City HSCP as a whole (64.1%) or in any of the three Glasgow City sectors.

The Breast Screening Service implemented a new telephony system in 2021 which enabled SMS and telephone reminders. This continues to contribute to the improvement in attendance.

Capacity for assessment clinics remains a challenge. Whilst waiting time standards are currently under review the service continues to monitor waits closely and add additional appointments wherever possible.

Chapter Contents

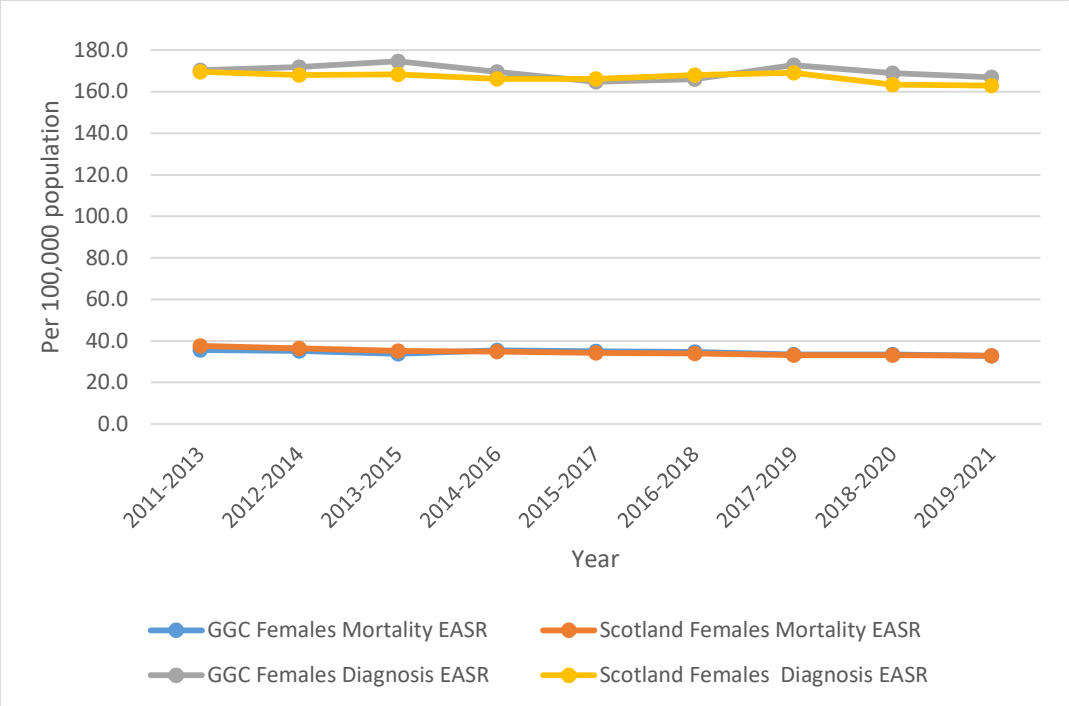
7.1. Background

Breast cancer is the most common cancer in women in Scotland, accounting for 28.9% of all new cancers diagnosed in women in 2021 (the most recent year for which incidence data is available) [15], with 1,098 new breast cancers registered among women residing in NHSGGC Board area. This gives an age-standardised incidence rate for NHSGGC of 183.7 per 100,000 population, higher than the Scotland rate of 174.2 per 100,000.

In the same year 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] population.

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 2011/13 and 2019/21, the age-standardised rolling three years incidence rate of breast cancer in GGC decreased in women from 170.3 to 166.9 per 100,000. During the same period, age standardised mortality rates of breast cancer in women in GGC also decreased, from 35.6 to 32.9 per 100,000. There was a fall in breast cancer incidence during 2019/20, which has been attributed to under-diagnoses due to the COVID-19 pandemic.

Figure 7.1. Breast Cancer Diagnosis & Mortality 2011/13 to 2019/21 (rolling three years) European Age Standardised Rate (EASR) per 100,000 population



Source: Registrations - PHS April 2023; Mortality - PHS October 2022

[15] Cancer incidence in Scotland - to December 2021 - Cancer incidence in Scotland - Publications - Public Health Scotland (Accessed November 2023)
[16] Cancer mortality in Scotland - Annual update to 2021 - Cancer mortality - Publications - Public Health Scotland (Accessed November 2023)

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. The Breast 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.

In addition, women older than 70 years can self-refer into the screening programme. From August 2020, this part of the service was temporarily paused to concentrate on reducing waiting times for women within normal programme age. During this reporting period, self-referrals were reinstated for women 71-74 years old, or those have previously had breast cancer and have been discharged from yearly follow up mammograms.

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 (also known as a mammogram), being taken of each breast using an X-ray machine.

[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 2023)
[19] Breast screening standards (healthcareimprovementscotland.org) (Accessed November 2023)
[20] Scottish Breast Screening Programme: major review - gov.scot (www.gov.scot) (Accessed November 2023

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 in central Glasgow, or, for the majority of residents, in one of the two 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 are invited to attend appointments for screening in the static facility. For the 2022/23 screening round, the service has been active in NHSGGC areas detailed in **Table 7.1**.

Table 7.1. 2022/2023 screening locations for NHSGGC residents

HSCP	Mobile Unit	Static (Nelson Mandela Place)
East Dunbartonshire	Bishopbriggs, Kirkintilloch	Bearsden, Milngavie
East Renfrewshire		Clarkston, Giffnock
Glasgow City	Possilpark, Bridgeton, Springburn, Maryhill, Gorbals, Toryglen	Carntyne, Dowanhill, Finnieston, Govanhill, Pollokshields, Woodside, Gorbals, Thornliebank
Inverclyde	Port Glasgow, Greenock, Kilmacolm, Wemyss Bay	N/A
Renfrewshire		N/A
West Dunbartonshire	Dumbarton, Johnstone	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 all the eligible women in her GP practice are screened.

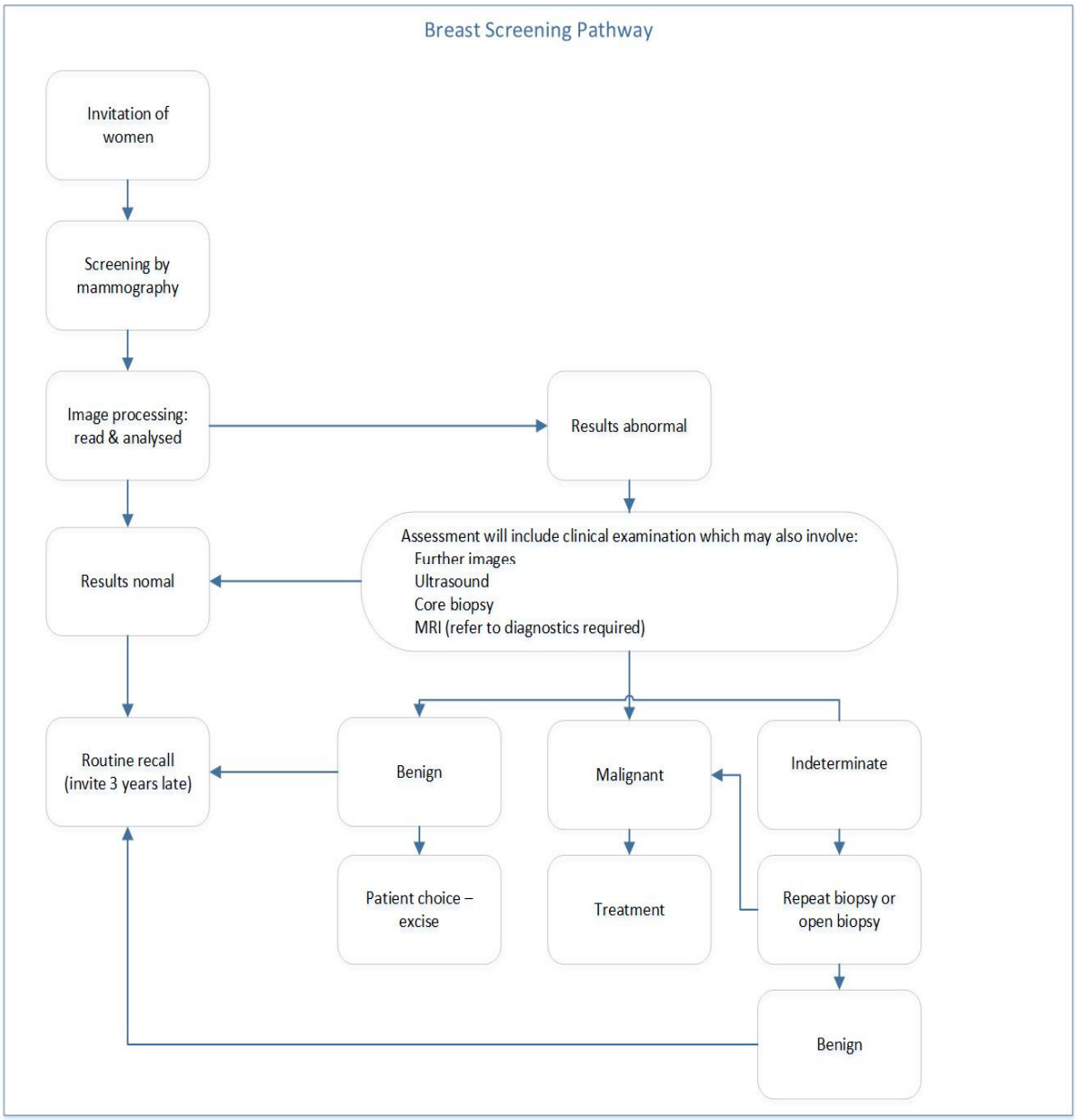
A woman can request a screening appointment from the age of 50. However, if her GP practice is being screened in the next six months, she will be advised to attend at that time. The WoSBSS also contacts all long-stay institutions (care homes, prisons, and mental health inpatient units) to offer screening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

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.

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.

Following investigation of an abnormality detected by screening, 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. **Figure 7.2** provides an overview of the breast screening pathway.

Figure 7.2. Breast Screening Pathway



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.

7.5. Programme Performance and Delivery

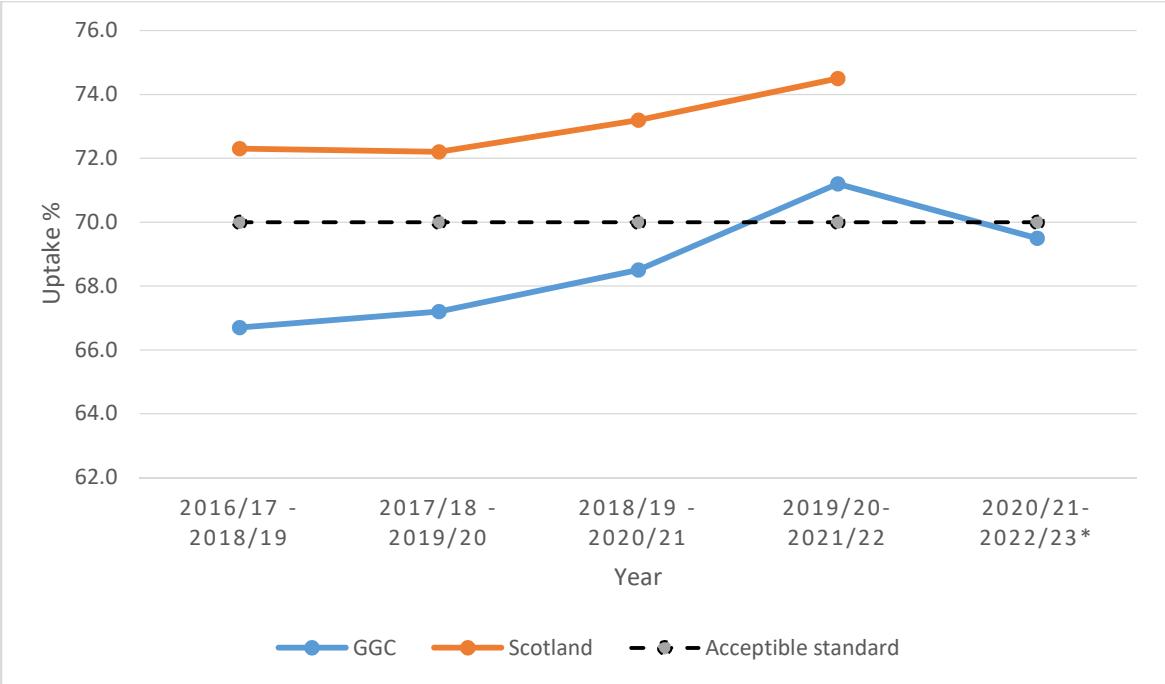
National Breast Screening Programme Statistics are published annually by Public Health Scotland in April each year, reflecting the previous 3 year screening round. **Appendix 7.1** summarises the most recent published KPIs for Scotland for three year rolling period 2019/20 to 2021/22.

Local monitoring data is presented in this report to provide uptake data for screening period 2020/21 to 2022/23. 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 five year screening period from 2016/19 to 2020/23. This increase is observed both nationally and within NHSGGC. However for the screening round 2020/21 to 2022/23, overall uptake of breast screening in NHSGGC fell to 69.5%, which is slightly below the national acceptable standard of 70%. This was a 1.7 percentage point drop from the previous year. **(Figure 7.3)**.

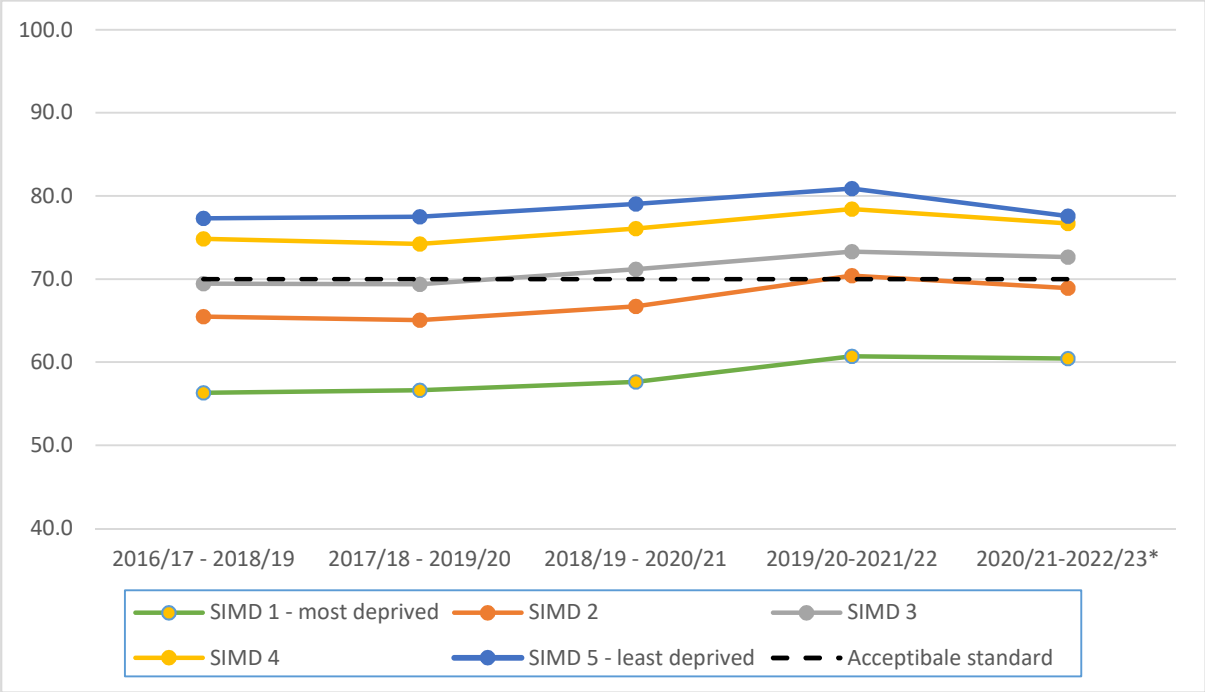
Figure 7.3. Three year rolling average uptake of Breast Screening in NHSGGC and Scotland 2016/19 to 2020/23* (Females aged 50-70 years)



Source: PHS Breast Screening Programme Statistics, 1st April 2016 to 31st March 2022
* 2020/23 SSBS local report – GGC data only (October 2023)

Since 2016/19, uptake of breast screening has increased across all deprivation quintiles despite the decrease seen in the current period. There continues to be a large difference in uptake of screening between those from the most and least deprived areas, with lowest uptake 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 2020/23



Source: PHS Breast Screening Programme Statistics, 1st April 2016 to 31st March 2022.
* 2020/23 SSBS local report – GGC data only (October 2023)

For the screening round 1st April 2020 to 31st March 2023, uptake of breast screening was lowest in individuals residing in the most deprived Board areas (*60.4*%) and highest in the least deprived areas (*77.6*%), see **Table 7.1**, a difference of 17.2 percentage points.

Table 7.1. Uptake of Breast Screening by SIMD in NHS Greater Glasgow and Clyde, 1st April 2020 to 31st March 2023

SIMD Quintile 2016	Not Screened	Screened	Total	*% Screened*
1 (Most Deprived)	20,128	30,728	50,856	***60.4***
2	8.528	18,900	27,428	***68.9***
3	5,205	13,820	19,025	***72.6***
4	5,250	17,260	22,510	***76.7***
5 (Least Deprived)	7,177	24,824	32,001	***77.6***
Total	46,288	105,532	151,820	***69.5***

Source: SBSS local report (October 2023)

Further local analysis was undertaken to explore variations in uptake of 2020/23 screening round for 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 2020 to 31st March 2023

Age Band	Not Screened	Screened	Total	*% Screened*
50-54	11,896	26,849	38,745	***69.3***
55-59	12,369	28,734	41,103	***69.9***
60-64	11,093	25,827	36,920	***70.0***
65-70	10,930	24,122	35,052	***68.8***
Total	46,288	105,532	151,820	***69.5***

Source: SBSS local report (October 2023)

However, comparison of uptake by age and deprivation shows similar low uptake amongst all age cohorts in the most deprived category, which increases for all age cohorts with decreasing deprivation (see **Table 7.3**).

Table 7.3. Proportion of screened NHSGGC women residents split by age and SIMD, 1st April 2020 to 31 March 2023

	% Uptake Age Band				
SIMD	**50-54**	**55-59**	**60-64**	**65-70**	**Total**
1 (Most Deprived)	*60.4*	*60.6*	*61.3*	*59.1*	***60.4***
2	*68.7*	*70.0*	*68.7*	*68.1*	***68.9***
3	*73.0*	*74.2*	*72.4*	*70.7*	***72.6***
4	*77.0*	*77.6*	*76.9*	*75.1*	***76.7***
5 (Least Deprived)	*77.7*	*77.1*	*78.4*	*77.2*	***77.6***
Total	*69.3*	*69.9*	*70.0*	*68.8*	***69.5***

Source: West of Scotland Breast Screening Data, September 2023

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, Irish and Arab groups and below 70% for all other ethnic groups except the Roma and Showman/Show woman 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 2020 to 31st March 2023

2011 Census Ethnic Group	Attended	Not Attended	TOTAL	Percentage
Roma	*	*	12	**83.3**
Irish	560	138	698	**80.2**
Showman/Show woman	*	*	19	**78.9**
Other ethnic group Arab, Scottish Arab or British Arab	94	33	127	**74.0**
Scottish	88,335	33,816	122,151	**72.3**
Indian, Scottish Indian or British Indian	767	334	1,101	**69.7**
Chinese, Scottish Chinese or British Chinese	629	285	914	**68.8**
Caribbean or Black	143	67	210	**68.1**
Gypsy/Traveller	99	48	147	**67.3**
Other British	7,049	3,502	10,551	**66.8**
Other	405	203	608	**66.6**
African, Scottish African or British African	404	230	634	**63.7**
Pakistani, Scottish Pakistani or British Pakistani	1,480	849	2,329	**63.5**
Other ethnic group	376	222	598	**62.9**
Any Mixed or multiple ethnic group	308	199	507	**60.7**
Other white ethnic group	1,080	703	1,783	**60.6**
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	39	26	65	**60.0**
Polish	232	172	404	**57.4**
Unknown, Opt out, not known	3,507	5,455	8,962	**39.1**
TOTAL	**105,532**	**46,288**	**151,820**	**69.5**

* numbers ≤5, or identifiable as ≤5 redacted as per PHS Statistical Disclosure Control Protocol

Table 7.4 shows that 848 of the 151,820 individuals eligible for screening were registered with a learning disability (0.6%)[21]. Individuals who were registered with a learning disability had poorer uptake of breast screening**,** 51.2 % compared to 69.6% in the rest of the population.

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

7.4. Uptake of breast screening by learning disability in NHS Greater Glasgow and Clyde, 1st April 2020 to 31st March 2023

Learning Disability Register	Not Screened	Screened	Total	% Uptake
Not Registered	45,874	105,098	150,972	***69.6***
Registered	414	434	848	***51.2***
Total	46,288	105,532	151,820	***69.5***

Source: West of Scotland Breast Screening Data, September 2023 ; Learning Disability (September 2018).

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 1,705 of the 151,820 people eligible for screening were registered on PsyCIS (1.1% of the total eligible population). Individuals registered on PsyCIS had poorer uptake of breast screening, 51.3% compared to 69.7% 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 2020 to 31st March 2023

PSYCIS Status	Not Screened	Screened	Total	% Uptake
Rest of Population	45,457	104,658	150,115	***69.7***
PSYCIS (Registered)	831	874	1,705	***51.3***
Total	46,288	105,532	151,820	***69.5***

Source: West of Scotland Breast Screening Data, September 2023

The acceptable standard for screening uptake (70%) was met in East Dunbartonshire (*75.1*%), East Renfrewshire (*74.7*%), Inverclyde (72.3%), Renfrewshire (*76.0*%), and West Dunbartonshire (*72.2%)* HSCPs. The essential threshold was not met in Glasgow City HSCP as a whole (*64.1*%) 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 2020 to 31st March 2023

HSCP	Not Screened	Screened	Total	% Uptake
East Dunbartonshire HSCP	3,938	11,892	15,830	**75.1**
East Renfrewshire HSCP	3,155	9,303	12,458	**74.7**
Glasgow North East	8,825	13,944	22,769	**61.2**
Glasgow North West	8,534	14,370	22,904	**62.7**
Glasgow South	8,396	17,732	26,128	**67.9**
Glasgow City HSCP	*25,755*	*46,046*	*71,801*	***64.1***
Inverclyde HSCP	3,504	9,160	12,664	**72.3**
Renfrewshire HSCP	5,949	18,799	24,748	**76.0**
West Dunbartonshire HSCP	3,987	10,332	14,319	**72.2**
Total	46,288	105,532	151,820	**69.5**

Source: West of Scotland Breast Screening Data, September 2023

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 316 of the 1,456 data zones had uptake rates between 40-59% and a further 16 data zones had uptake rates of below 40%. Uptake maps are available on the PHSU website.[22]

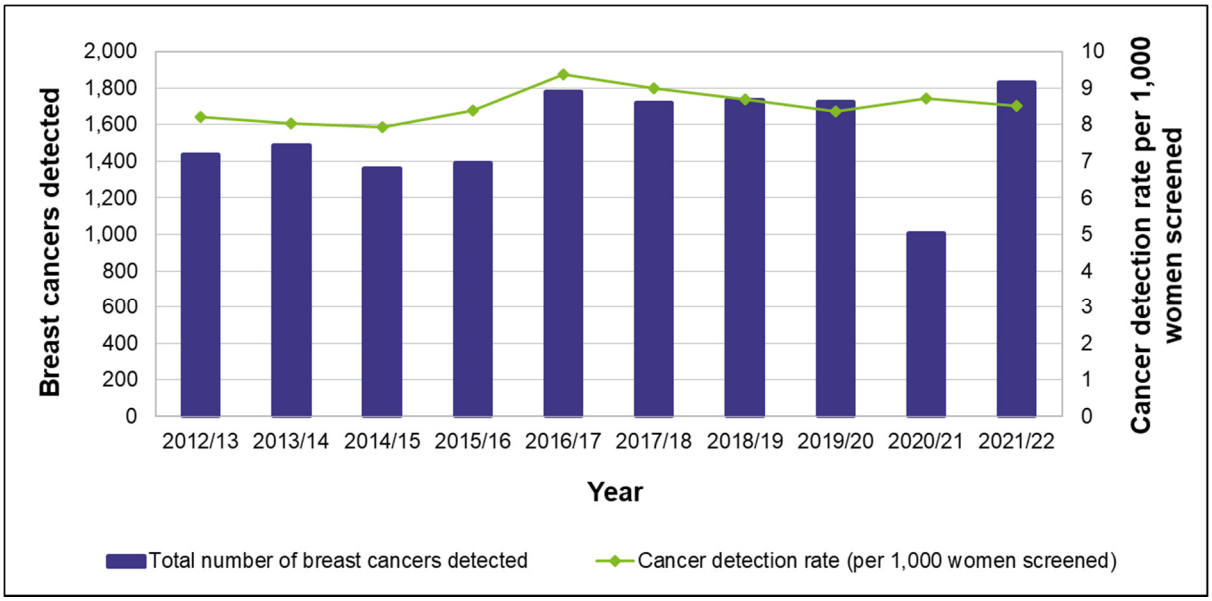
7.7. Breast Screening Outcomes

The most recent national statistics published in April 2023 noted the number of screen-detected breast cancers in women of all ages in Scotland in 2021/22 was 1,830, (rate of 8.5 per 1,000 women screened) an increase of 811 individuals from 2020/21[23] **(Figure 7.5).** This increase is likely to be due to the pausing of the screening programme from March to August 2020 resulting in lower than expected detection in 2020/21.

[22] Screening Uptake Data Zone maps

[23] Scottish breast screening programme statistics - Annual update to 31 March 2022 - Scottish breast screening programme statistics - Publications - Public Health Scotland (accessed November 2023)

Figure 7.5. Trends in the number of breast cancers detected, and cancer detection rates per 1,000 women screened: Scotland, 2011/2012 to 2021/2022 (all appointment types)



Source: PHS Breast Screening Programme Statistics, April 2023

7.8. Challenges and Future Priorities

During this reporting period, two mobile units were affected by mechanical issues. Neither unit were deployed in Greater Glasgow & Clyde area at the time however indirectly impacted on programme delivery across the Board area, due to unplanned costs and disruption to the services. We will continue to work with National Service Scotland and suppliers to address these issues in order to maintain fleet of mobile units.

The service is facing cost pressures over the next two years due to essential building maintenance at static location. We will work with NHSGGC Estates and Planning Departments to review premises options for static location.

We will continue to work with NHSGGC Estates, Planning and local communities in order to secure sites for breast screening mobile units and static site location. 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.

Capacity for assessment clinics remains a challenge. Whilst waiting time standards are currently under review the service continues to monitor waits closely and add additional appointments wherever possible.

We will continue to call women for screening based on GP practice. This can lead to a woman 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.

We will continue to prioritise telephone reminders to women who have previously not engaged with screening and women invited for first screening round (50-52 years of age) in our areas of low uptake.

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 2019 to 31st March 2022[2], Females aged 50-70 years[3]

This data was not available by NHS Board.

Standard	Appointment type[2]	Age group	Acceptable Standard	Achievable Standard	Results 2019/22
Attendance rate (percentage of women invited)	All routine appointments	50-70 years	≥ 70%	≥ 80%	**74.5%**
Invasive cancer detection rate (per 1000 women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	≥ 2.7	≥ 3.6	**6.3**
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	≥ 3.1	≥ 4.2	**6.8**
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	**2.5**
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	≥ 1.7	≥ 2.3	**3.4**
Non-invasive cancer detection rate (per 1000 women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	≥ 0.5	-	**1.4**
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	≥ 0.6	-	**1.1**
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	**1.50**
Recalled for assessment rate (percentage of women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	<10%	<7%	**6.6%**
	Routine- Subsequent screen (Incident) (previous screen within 5 years)	53-70 years	<7%	<5%	**2.8%**
Benign biopsy rate (per 1000 women screened)	Routine- Initial screen (Prevalent) in response to first invitation	50-52 years	< 1.5	< 1.0	**1.7**
	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 Routine appointments exclude self/GP referral appointments.

GREEN = acceptable and achievable standards met; AMBER = acceptable standard met, achievable standard not met; RED = acceptable and achievable standards not met

Source: Scottish Breast Screening Programme (SBSS) Information System -- KC62 returns

Appendix 7.2

Members of Breast Screening Steering Group (At March 2023)

Dr Emilia Crighton	Screening Co-ordinator, Interim Director of Public Health
Celia Briffa-Watt	Consultant in Public Health, NHS Lanarkshire (Chair)
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, WoSBSS
Dr Graeme Marshall	Clinical Director, NE Glasgow HSCP
Mary McKee	General Manager, Diagnostic Imaging
Archana Seth	Consultant Radiologist (QA Lead Radiologist) Scotland
Cat Graham	Superintendent Radiographer
Lynne Peat	Public Health Programme Manager, NHS Highland

Chapter 8 - Cervical Screening

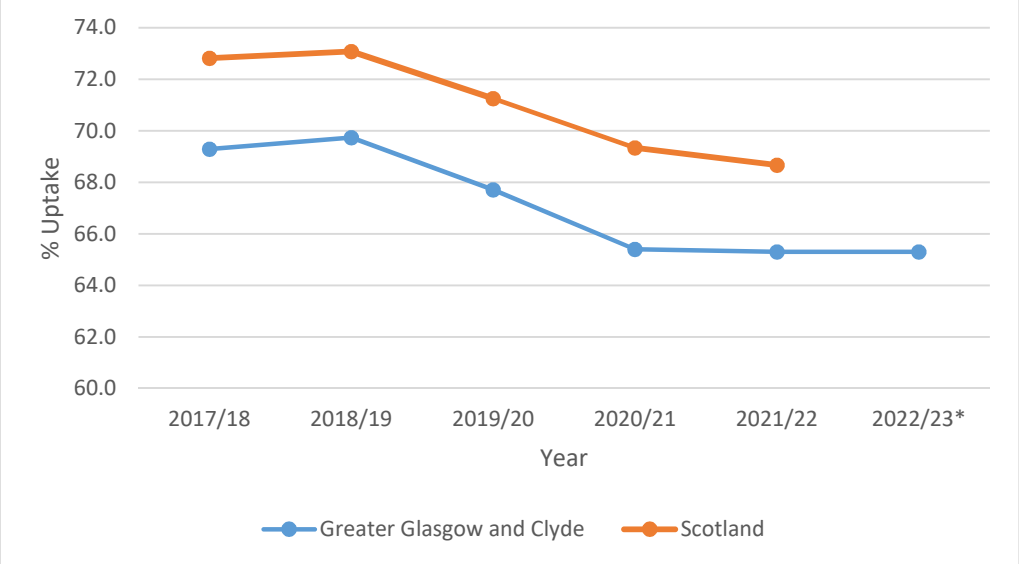
Summary

Cervical cancer was the twelfth most common cancer in females in 2021 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 within 5.5 years, regardless of their age.

Uptake of screening in NHSGGC for 2022-23 was 65.3% against a target of 80%. A total of 234,417 women were adequately screened in 2022-23. Uptake in NHSGGC has declined in the last six years by five percentage points. Although NHSGGC uptake of cervical screening is low, Scotland overall does not meet the 80% target for uptake.

Uptake of cervical screening in Scotland and NHS GGC 2017-18 to 2022-23.



Source: PHS Cervical Screening Programme Statistics,
*NHSGGC SCCRS extract (November 2023), GGC statistics only

Uptake was lowest at the youngest end of the age range offered screening in those aged between 25 and 29 (46.8%), compared to the highest uptake in women aged 45-49 years (74.8%).

Uptake was higher in those living in least deprived areas. Uptake for women living in the least deprived areas was 65.3% compared with 62.7% 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, however the gap between the most and least deprived SIMD quintiles has remained similar.

Uptake of screening was highest amongst women identifying as Irish, Roma, Showman/Show woman, Scottish and Gypsy/Traveller, and lowest in those who had no ethnic group recorded.

Uptake of screening amongst those with registered learning disability (0.5% of the eligible screening population) was significantly lower than the rest of the population, 26.5% versus 65.4%. Uptake of screening amongst those with enduring mental illness (as registered on PsyCIS and with at least one episode of psychosis, 0.7% of the eligible screening population) was similar to the rest of the population, 61.4% versus 65.3%.

Variations in cervical screening uptake across HSCPs persist, ranging from 51.5% in Glasgow City North West Sector, to 77.6% in East Dunbartonshire HSCP. No HSCP met the minimum target of 80% uptake of screening.

Reviews of laboratory and colposcopy service are undertaken annually against specified performance 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 2022-23 this was 83 cases. Averaged over the last ten years, 10% of cases were under the age of 30 years and 27% of cases were aged 30-39 years. Almost half of cases are in women from the most deprived areas in NHSGGC. Only 32% of cases had an adequate screening history, 57% had missed some or all screening tests following invitations. Over the last ten years, 57% of cases have been in women displaying symptoms and 40% in women who attended routine screening and were not symptomatic.

The national exclusion audit is now underway. This audit will review the histories of all women in the cervical screening database (SCCRS) with a ‘no cervix’ exclusion to ensure it has been correctly applied. This exclusion is usually applied to women who have had hysterectomy. The audit was developed following cases of cervical cancer in women who had been excluded in this way. This audit involves checking the records of almost 30,000 women resident in NHSGGC and involves primary care, secondary care and a dedicated audit team. The audit will continue into 2024 and is being funded by Scottish Government.

Chapter Contents

8.1. Background

Cervical cancer was the twelfth most common cancer in females in Scotland and the most common in women under the age of 35 years in 2021 (the most recent year for which incidence data is available)[24].

In the same year, 63 women residing in the NHSGGC area were diagnosed with cervical cancer, which gives an age-standardised incidence rate of 10.7 per 100,000 of the female population, lower than the national rate of 11.4 per 100,000 [25]. In 2021, 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 female population, higher than the national rate of 3.6 per 100,000[26].

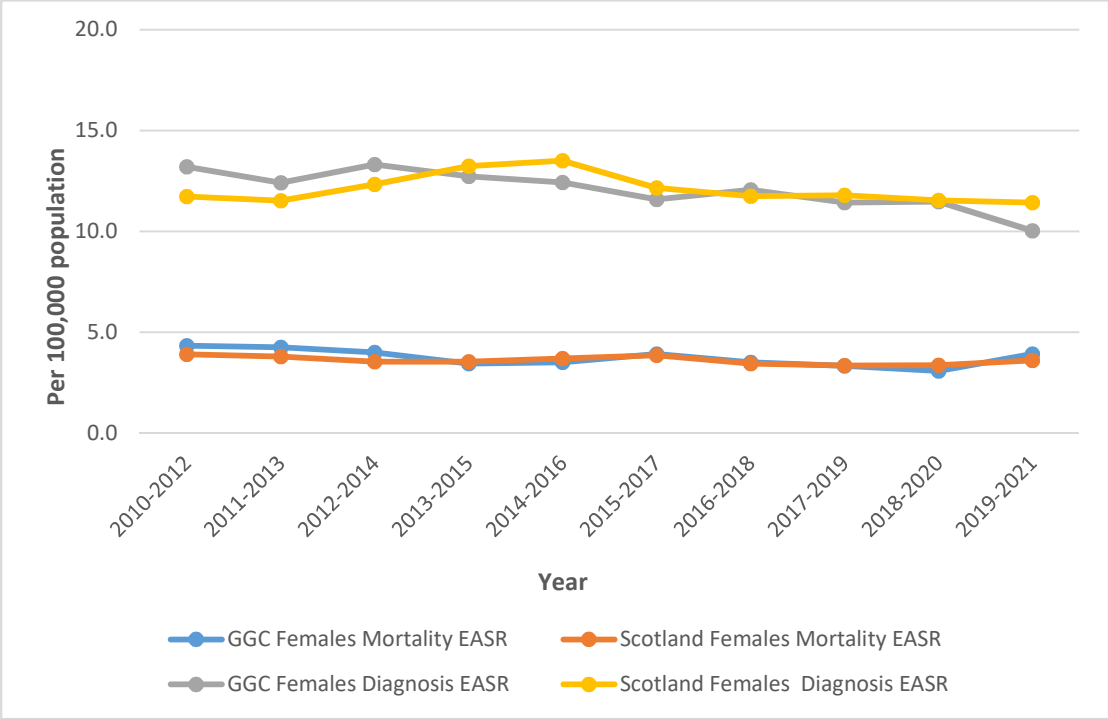
Standardised incidence and mortality rates over rolling 3 year periods for cervical cancer for NHSGGC and Scotland are illustrated in **Figure 8.1**. In the 10 year period between 2011 and 2021, the age-standardised rolling 3 years incidence rate of cervical cancer in women in Greater Glasgow & Clyde decreased from 12.4 to 10.0 per 100,000 population. Rolling 3 years mortality rates of cervical cancer in women in Greater Glasgow & Clyde decreased from 4.3 to 3.9per 100,000 during the same period. 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.

[24] Cancer incidence data story - Cancer incidence in Scotland - to December 2021 - Cancer incidence in Scotland - Publications - Public Health Scotland
[25] Cancer incidence in Scotland - to December 2021 - Cancer incidence in Scotland - Publications - Public Health Scotland, 28th March 2023 (Accessed November 2023)
[26] Cancer mortality in Scotland - Annual update to 2021 - Cancer mortality - Publications - Public Health Scotland, October 2022 (Accessed November 2023)

Figure 8.1. Cervix and Uteri Cancer Diagnosis & Mortality Trends 2011-2021 (Rolling 3 Years) European Age Standardised Rate (EASR) Per 100,000 Population



Source: Diagnosis Source: PHS April 2023, 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)[27] and National Cervical Screening Standards[28].

[27] Scottish cervical screening programme statistics - Annual update to 31 March 2022 - Scottish cervical screening programme statistics - Publications - Public Health Scotland (Accessed November 2023)

[28] 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. Vaccine uptake data is available for all ages from Public Health Scotland, the latest available data if for the school year 2021/2022[29].

[29] HPV immunisation statistics Scotland - HPV immunisation statistics Scotland school year 2021/22 - HPV immunisation statistics Scotland - Publications - Public Health Scotland

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

Table 8.1 shows cervical screening uptake among eligible women 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 25-31 years who are fully vaccinated are more likely to have attended cervical screening than women who are incompletely vaccinated or unvaccinated. Women aged 25-31 years who are unvaccinated have a low uptake of cervical screening at 31.2% in NHSGGC (compared to 37.8% in Scotland overall).

Table 8.1.- Percentage uptake of cervical screening by women aged 25-31 years who were offered HPV vaccine as teenagers and are fully, partially or not immunised with HPV vaccine. NHSGGC and Scotland, April 2021 to March 2022

HPV vaccination status	Age							
	25	26	27	28	29	30	31	25-31
HPV Immunisation status (Full[1])								
Scotland	*53.5*	*66.8*	*71.3*	*73.8*	*75.4*	*77.0*	*79.0*	***69.6***
Greater Glasgow & Clyde	*52.5*	*65.9*	*70.4*	*73.3*	*74.5*	*75.8*	*78.3*	***68.7***
HPV Immunisation status (Incomplete[1])								
Scotland	*43.1*	*50.0*	*58.6*	*68.8*	*69.8*	*70.8*	*74.3*	***67.5***
Greater Glasgow & Clyde	*40.9*	*48.4*	*58.7*	*68.7*	*70.0*	*69.5*	*73.7*	***67.0***
No HPV Immunisation status								
Scotland	*17.6*	*24.8*	*29.9*	*38.2*	*40.9*	*45.7*	*55.2*	***37.9***
Greater Glasgow & Clyde	*13.2*	*19.8*	*25.5*	*31.9*	*34.2*	*39.7*	*49.5*	***31.2***

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.

8.6. Eligibility for cervical screening

Over a five year period (a single call/recall cycle) in NHSGGC, 359,201 women are eligible to attend cervical screening.

In the call/recall database (SCCRS), 137,883 women had an active exclusion applied to their record, so that they are not invited for cervical screening during the current screening round.

Exclusions are applied for a variety of reasons, (**Table 8.2).** The main reason for exclusion, 'defaulter' (80.8%) relates to women who did not attend for screening following an initial invite and two reminder invites. If they do not attend following these reminders, SCCRS applies a 'defaulter' exclusion and they are excluded from call/recall until their next scheduled recall date (five years for routine recall). 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, 2022-23

Exclusion	**Frequency**	***% of total exclusions***
Medical exclusion	21	*0.02*
CHI Exclusion	11,495	*8.34*
Defaulter	111,453	*80.8*
No Cervix	11,658	*8.45*
No Further Recall	339	*0.25*
Not Clinically Appropriate	343	*0.25*
Opted Out	2,292	*1.66*
Pregnant	282	*0.20*
Total	137,883	

Source: SCCRRS (August 2023)

Medical exclusion includes 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 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 2021 to 31st March 2022**.

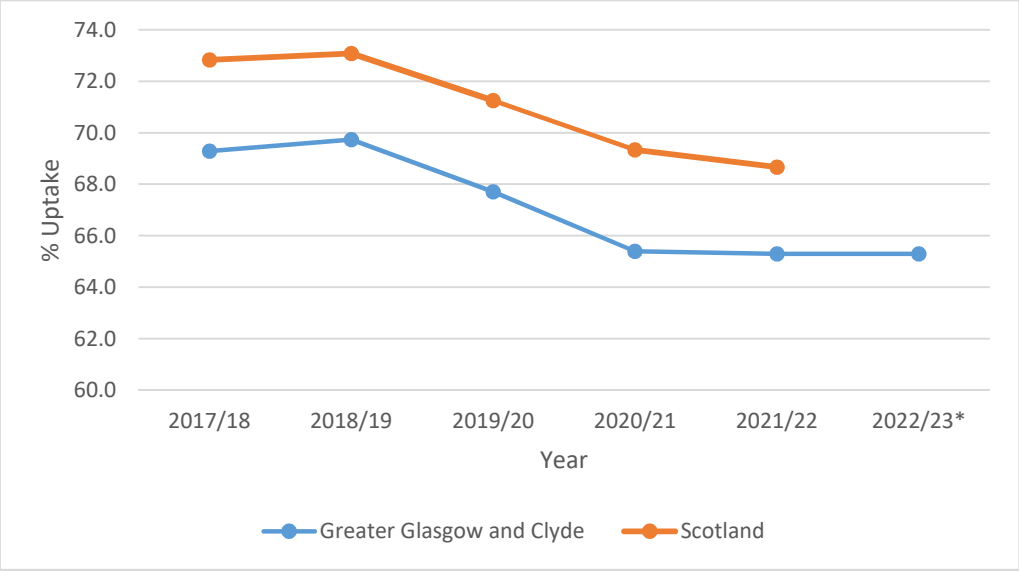
Local monitoring data is presented in this report to provide uptake and outcome data for period 1st April 2022 to 31st March 2023. As a result of differences in

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 (**Figure 8.2)**.

Figure 8.2. Uptake of cervical screening in Scotland and NHS GGC 2017-18 to 2022-23.



Source: PHS Cervical Screening Programme Statistics,
*NHSGGC SCCRS extract (November 2023), GGC statistics only

During the period April 2022 to March 2023, the overall uptake of cervical screening in NHS GGC was 64.3%, lower than that national standard of 80%. However, Scotland as a whole also did not meet this standard.

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 46.8% compared 74.8% among women aged 45-49 years of age. Uptake then steadily decreases with age from 74.4% among women aged 50-54 to 61.7% among women 60-64. No age group achieved the 80% target uptake.

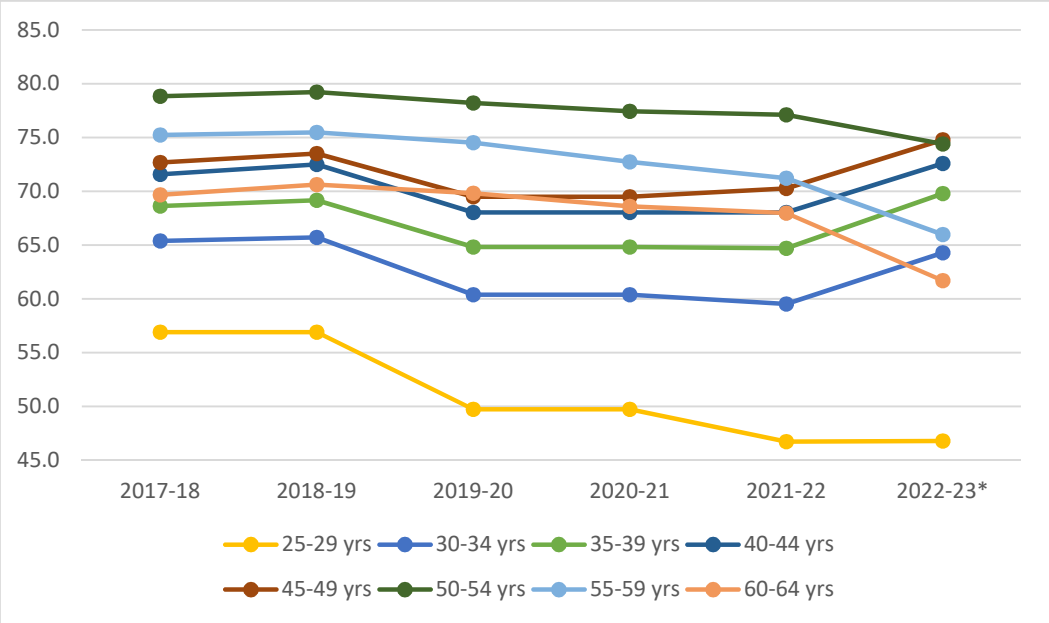
Table 8.3. Uptake of cervical screening among eligible population by age for NHS Greater Glasgow and Clyde, 2022 – 23 in previous 5.5 years

Age Group	Not Screened	Screened	Total	*% Uptake*
25-29	31,530	27,736	59,266	*46.8*
30-34	19,639	35,419	55,058	*64.3*
35-39	14,757	34,174	48,931	*69.8*
40-44	11,867	31,464	43,331	*72.6*
45-49	8,978	26,708	35,686	*74.8*
50-54	10,106	29,387	39,493	*74.4*
55-59	13,834	26,893	40,727	*66.0*
60-64	14,073	22,636	36,709	*61.7*
Total	**124,784**	**234,417**	**359,201**	***65.3***

Source: SCCRS (August 2023)

In the five year period between 2017-18 and 2021-22 uptake has generally fallen in each age group. In 2022-23, uptake increased among women within 30-34, 35-39, 40-44 and 45-49 age groups, however uptake among women aged 50-64 continued to decline. Uptake among women aged 25-29 stayed the same from the previous year (**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 2022-23



Source: PHS Cervical Screening Programme Statistics,
*NHSGGC SCCRS extract (August 2023), GGC statistics only

Uptake was higher in those residing in least deprived areas. Uptake for women residing in the least deprived areas was 67.9% compared with 62.7% in the most deprived areas. The target of 80% was not met in any deprivation quintile, (**Table 8.4).**

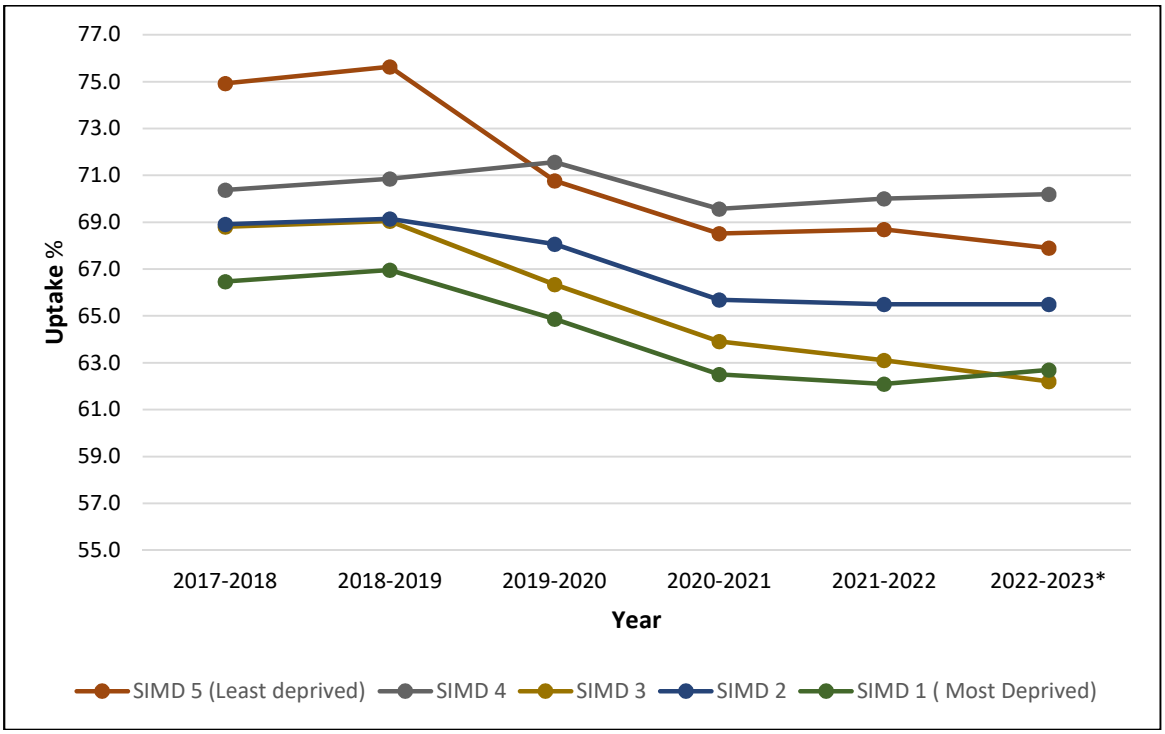
Table 8.4. Uptake of cervical screening among eligible population by SIMD for NHS Greater Glasgow and Clyde, 2022-23 in previous 5.5 years

SIMD Quintile 2016	Not Screened	Screened	Total	*% Uptake*
1 (Most Deprived)	45,340	76,371	121,711	*62.7*
2	22,432	42,630	65,062	*65.5*
3	18,362	30,173	48,535	*62.2*
4	15,176	35,698	50,874	*70.2*
5 (Least Deprived)	23,474	49,545	73,019	*67.9*
Total	**124,784**	**234,417**	**359,201**	***65.3***

Source: SCCRS (August 2023)

Over time screening uptake by deprivation quintile has fallen in each quintile, (**Figure 8.4)**. Those women residing in the most deprived SIMD quintile consistently have the poorest screening uptake, however uptake in 2022-23 reporting period was similar to 2021-22.

Figure 8.4. Uptake of cervical screening amongst eligible women in the previous 5.5 years, by SIMD quintile for NHSGGC residents, 2017-18 to 2022-23



Source: PHS Cervical Screening Programme Statistics,
*NHSGGC SCCRS extract (August 2023), GGC statistics only

Further local analysis was undertaken to explore variations in uptake of 2022/23 screening round for populations with protected characteristics (including 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.

Analysis by ethnicity was undertaken via data linkage to self-reported ethnicity reference dataset held within West of Scotland Safe Haven, see **Table 8.5**. Uptake was above 70% for the Irish, Roma, Showman/Showwoman, Scottish and Gypsy/Traveller, and below 70% for all other ethnic groups. Lowest uptake was seen in women who did not have ethnicity recorded (unknown, opt-out / not-known). Due to low numbers in some ethnic groups and significant number of women with no ethnicity recorded, comparison across ethnic sub groups should be made with caution.

Table 8.5. Uptake of cervical screening amongst eligible women in the previous 5.5 years, by ethnicity for NHSGGC residents, 2022/23

2011 Census Ethnic Group	Screened	Not Screened	Total	% Uptake
Irish	1,784	511	2,295	*77.7*
Roma	40	15	55	*72.7*
Showman/Showwoman	26	10	36	*72.2*
Scottish	172,168	67,593	239,761	*71.8*
Gypsy/Traveller	836	335	1,171	*71.4*
African, Scottish African or British African	3,026	1,355	4,381	*69.1*
Other British	15,654	7,264	22,918	*68.3*
Caribbean or Black	719	371	1,090	*66.0*
Polish	1,511	795	2,306	*65.5*
Bangladeshi, Scottish Bangladeshi or British Bangladeshi	206	112	318	*64.8*
Any Mixed or multiple ethnic group	2,223	1,239	3,462	*64.2*
Other white ethnic group	6,314	3,680	9,994	*63.2*
Other	1,920	1,181	3,101	*61.9*
Other ethnic group	1,879	1,179	3,058	*61.4*
Pakistani, Scottish Pakistani or British Pakistani	5,259	3,340	8,599	*61.2*
Indian, Scottish Indian or British Indian	3,069	1,963	5,032	*61.0*
Other ethnic group Arab, Scottish Arab or British Arab	665	470	1,135	*58.6*
Chinese, Scottish Chinese or British Chinese	2,475	2,079	4,554	*54.3*
Unknown, Opt out, Not known	17,527	51,561	69,088	*25.4*
Total	**237,301**	**145,053**	**382,354**	***62.1***

Source: SCCRS extract (August 2023), Safe Haven Ethnicity dataset linkage (November 2023)

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 1,708 of the 359,201 individuals eligible for cervical screening w ere registered with a learning disability (0.5%)[30]. Uptake of cervical screening was 26.5% amongst those with learning disability. This is considerably lower than uptake of cervical screening amongst the rest of the eligible population in NHSGGC.

Table 8.6. Uptake of cervical screening amongst eligible population by learning disability, NHSGGC residents, 2022-23, in previous 5.5 years

Learning Disability	Not Screened	Screened	Total	% *Uptake*
Rest of population	123,529	233,964	357,493	*65.4*
Registered	1,255	453	1,708	*26.5*
Total	**124,784**	**234,417**	**359, 201**	***65.3***

Source: SCCRS; Learning Disability Register (August 2023)

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 2,393 of the 359,201 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 61.4%, (**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 2022-23, in the previous 5.5 years

PSYCIC	Not Screened	Screened	Total	% *Uptake*
Rest of population	123,860	232,948	356,808	*65.3*
Registered episode of psychosis	924	1,469	2,393	*61.4*
Total	**124,784**	**234,417**	**359,201**	***65.3***

Source: SCCRS ; PSYCIS (August 2023)

Uptake by HSCP

Variations in cervical screening uptake across HSCPs persist **(Table 8.8).** They range from 51.5% in Glasgow City North West Sector, to 77.6% in East Dunbartonshire HSCP. No HSCP met the minimum target of 80% uptake of screening.

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

Table 8.8. Uptake of Cervical Screening by HSCP in NHS Greater Glasgow and Clyde, 2022-23

HSCP	Not Screened	Screened	Total	% Screened
East Dunbartonshire HSCP	6,523	22,627	29,150	*77.6*
East Renfrewshire HSCP	6,228	19,435	25,663	*75.7*
Glasgow North East Sector	23,248	36,304	59,552	*61.0*
Glasgow North West Sector	37,128	39,495	76,623	*51.5*
Glasgow South Sector	24,452	47,314	71,766	*65.9*
Glasgow City HSCP	(84,828)	(123,113)	(207,941)	*59.2*
Inverclyde HSCP	6,047	14,775	20,822	*71.0*
Renfrewshire HSCP	14,170	36,703	50,873	*72.1*
West Dunbartonshire HSCP	6,988	17,764	24,752	*71.8*
Total	**124,784**	**234,417**	**359,201**	***65.3***

Source: SCCRS (August 2023)

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 187 of the 1,456 data zones had uptake rates between 40-59% and a further 53 data zones had uptake rates of below 40%. Uptake maps are available on the PHSU website.[31]

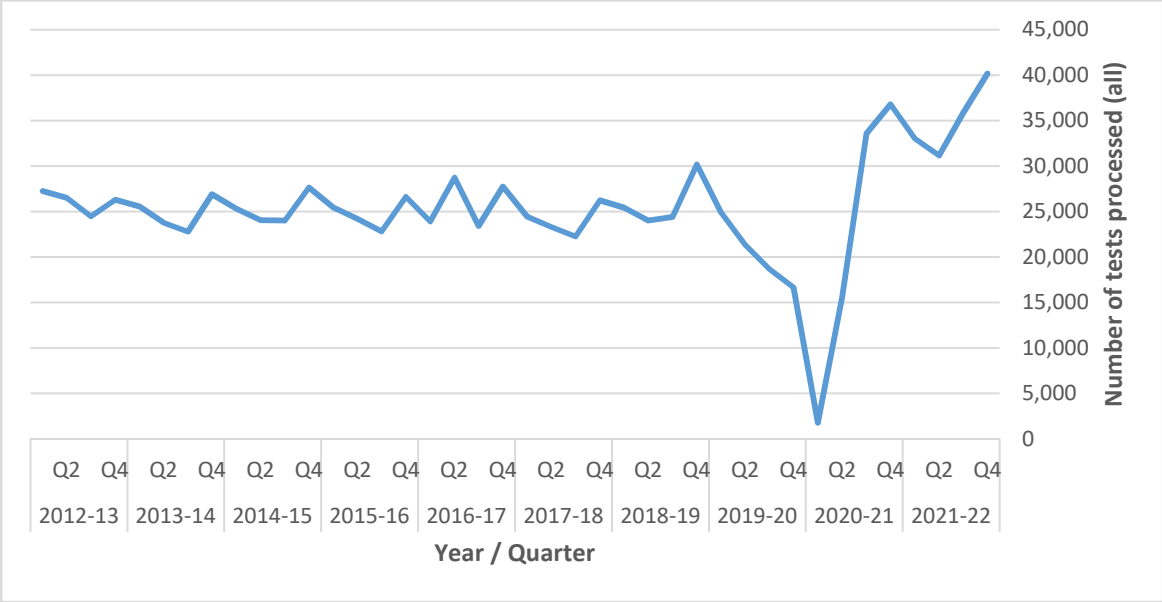
8.9. NHSGGC Cytopathology Laboratory

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. The most recent data available is for the year 2020-22[32].

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

[31] Screening Uptake Data Zone maps
[32] Scottish cervical screening programme statistics - Annual update to 31 March 2022 - Scottish cervical screening programme statistics - Publications - Public Health Scotland

Figure 8.5. Cervical screening tests processed at NHS Greater Glasgow & Clyde laboratory 1st April 2006 to 31st March 2022 (2012-13 to 2020-22 latest available data)



Source: PHS Cervical Screening Programme Statistics

In 2021-22, the NHSGGC Cytopathology Laboratory processed 140,169 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.

Table 8.9a. Laboratory turnaround times[33] in days, for 95% of cervical screening test samples processing at NHS laboratories: Scotland & NHSGGC samples, April 2021 to March 2022

Year/ quarter	Scotland	Greater Glasgow & Clyde
Q4	38	40
Q3	27	31
Q2	18	20
Q1	31	27

Source: PHS Cervical Screening Programme Statistics

[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.

Table 8.9b. Average reporting times[34] in days, for cervical screening tests: Scotland & NHSGGC laboratories, April 2021 to March 2022

Year/ quarter	Scotland	Greater Glasgow & Clyde
Q4	**16**	16
Q3	**15**	15
Q2	**14**	13
Q1	**15**	14

Source: PHS Cervical Screening Programme Statistics

8.10. 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 indicate whether colposcopy should be routine, or high risk – where individuals are seen more quickly.

Colposcopy is undertaken in out-patient clinics across NHSGGC, principally Stobhill, Royal Alexandria, Vale of Leven and Inverclyde Royal Hospitals. During 2022/23 Colposcopy services ceased at Sandyford Initiative as part of service re-design. 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.

Table 8.10 shows the activity data across NHSGGC colposcopy services. In 2022-23, there were 4,534 new and 1,389 return appointments for colposcopy, of which 3,109 (68.5%) and 980 (70.6%) respectively were attended. 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 (7.3%), the appointment was cancelled by the patient (11.4%) or the appointment was cancelled by NHSGGC (11.2%).

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 were symptomatic.

[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. NHSGGC Colposcopy Services out-patient appointments in April 2022 to March 2023

Appointment Status	New Patient	Return Patient	Total
Arrived	3,109	980	4,089
Not Attended	290	144	434
Cancelled by Clinic	486	180	666
Cancelled by Patient	601	77	678
Patient Cancelled Day of Clinic	46	2	48
other	2	6	8
Total	**4,534**	**1,389**	**5,923**

Source: National Colposcopy Clinical Audit System (Extracted November 2023)

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.

All main colposcopy units in NHSGGC were behind the Scottish target for cytoreversion, adequacy of biopsy 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.

[35] National Colposcopy Clinical Information Audit System

Table 8.11. Performance of colposcopy services across NHSGGC against benchmarking standards, April 2022-March 2023

	Total New Outpatient Attendances	New Outpatient Attendances Abnormal Screening Smear	Cyto-reversion rates at 4 - 12 months after treatment if a smear is taken	Confirmed histological treatment failures at 12 months	Adequacy of cervix biopsy for histology	Proportion of women, referred with abnormal cytology, where SCJ is visualised, treated at 1st visit with CIN on histology	New referral for high grade dyskaryosis having biopsy	% Recommended for treatment as Inpatient
TARGET	**None**	**>= 50 (per annum)**	**> 90%**	**≤ 5%**	**> 97%**	**≥ 90%**	**> 90%**	**< 20%**
SCOTLAND	13,243	10,064	84.8	4.4	97.3	79.4	90.1	9.4
Greater Glasgow & Clyde	3,062	2,389	81.6	2.9	94.9	80.1	90.2	9.9
Royal Alexandra Hospital	665	543	82.9	3.0	96.5	89.5	89.9	15.5
Inverclyde Royal Hospital	295	199	72.4	0.0	94.6	65.4	84.1	7.1
Vale of Leven Hospital	110	88	81.3	3.4	95.1	60.0	95.0	9.7
Glasgow Royal Infirmary	4	4	100.0	0.0	100.0	100.0	100.0	0.0
Stobhill Hospital	1,971	1,553	82.3	3.2	94.3	80.6	91.0	7.9
Sandyford initiative	17	2	0.0	0.0	100.0	0.0	0.0	0.0

Source: National Colposcopy Clinical Information & Audit System (Extracted November 2023)

8.11. National Invasive Cervical Cancer Audit

This audit reviews all cases of invasive cervical cancer diagnosis in order 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].

NHSGGG Invasive cancer Audit Group, comprised of screening call recall, public health, pathology and gynaecology clinicians, meet on a quarterly basis. In this reporting period (1st April 2022 to 31st March 2023), NHSGGC audit group reviewed the notes of 83 women who developed invasive cervical cancer and had a pathology diagnosis made in NHSGGC laboratories. These included women who had cancer detected via cervical screening, symptomatic presentation or by incidental finding.

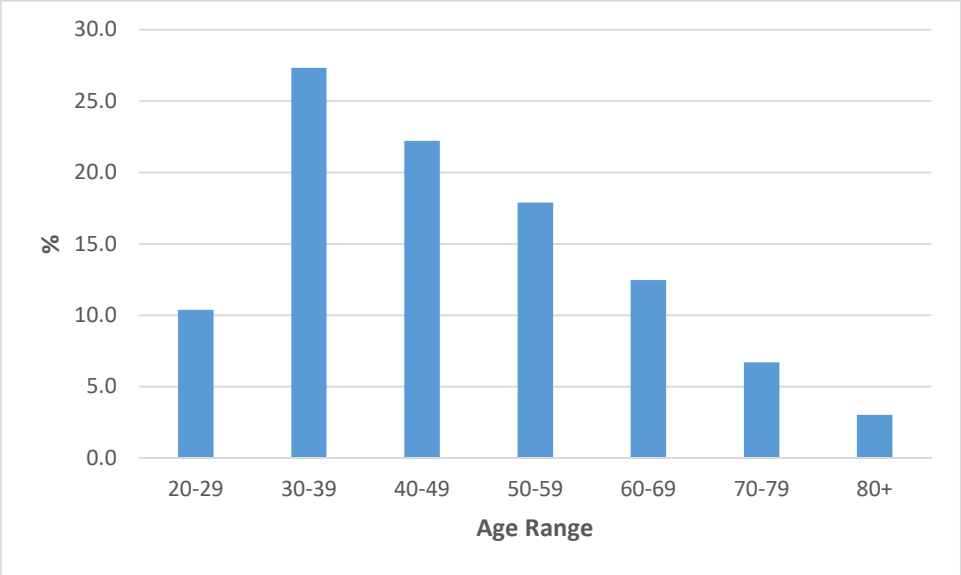
In the ten year period from 1st April 2013 to 31st March 2023, a total of 626 NHSGGC residents who developed invasive cervical cancer had a pathology diagnosis made in NHSGGC laboratories.

Age distribution of invasive cervical cancer cases

The age distribution of NHSGGC residents diagnosed cervical cancer 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, 27.3% in women aged 30-39 years and 22.2% in women aged 40-49 years.

[36] Cervical cancer Quality Performance Indicators - Patients diagnosed between October 2017 and September 2020 - Cervical cancer - Publications - Public Health Scotland (Accessed November 2023)

Figure 8.6. Age distribution of invasive cervical cancer cases audited in women resident in NHSGGC, diagnosis date 1st April 2013 to 31st March 2023, 10 year age bands

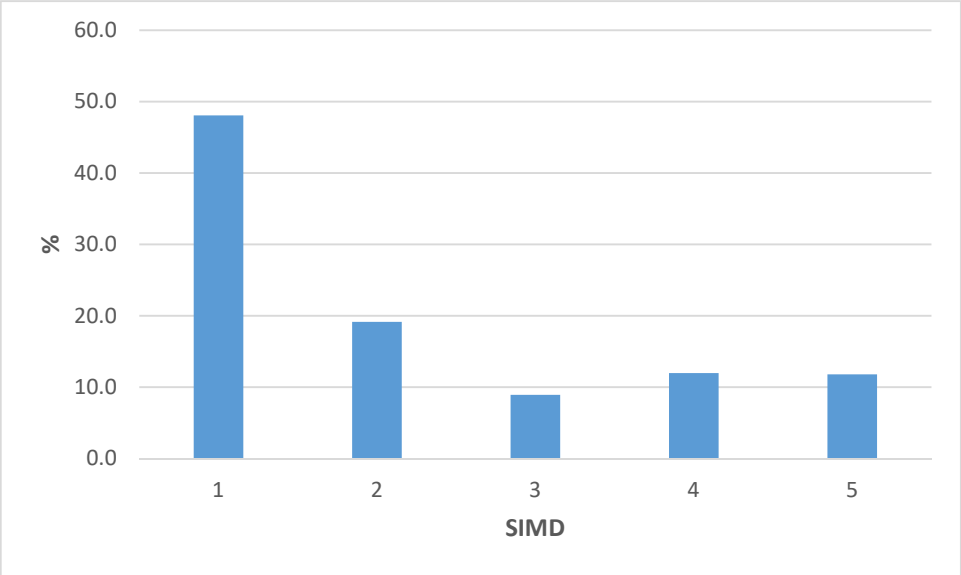


Source: NHSGGC Invasive Cancer Audit (December 2023)

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**. Almost half (48.1%) of women diagnosed with invasive cervical cancer over the last 10 years resided in the most deprived SIMD quintile.

Figure 8.7. SIMD distribution of invasive cervical cancer cases audited in women resident in NHSGGC, diagnosis date 1st April 2013 to 31st March 2023, SIMD quintiles.



Source: NHSGGC Invasive Cancer Audit (December 2023)

How invasive cervical cancers were detected

Over the last ten years of invasive cancer audit, invasive cervical cancer cases in women resident in NHSGGC were detected through cervical screening (39.6%), by women presenting to medical services with symptoms (57.7%) and through incidental findings when women were being investigated for other illnesses (1.6%).

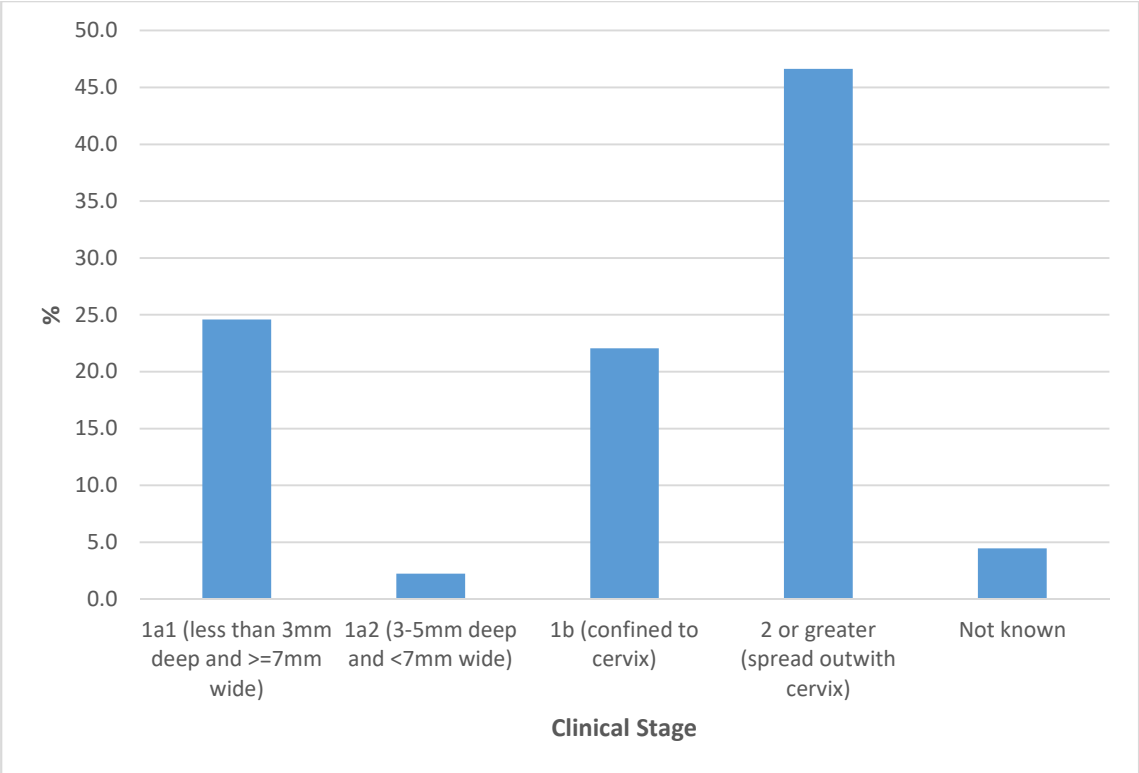
Screening history of women with invasive cervical cancer

Of the 626 women with confirmed invasive cancer, 31.9% of women had an adequate screening history, meaning that they had regularly attended screening; 56.7% 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. Clinical stage of invasive cervical cancer cases audited in women resident in NHSGGC, 1st April 2013 to 31st March 2022



Source: NHSGGC Invasive Cancer Audit (December 2023)

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 once 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 2022-23, 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.

8.12. Challenges and Future Priorities

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.

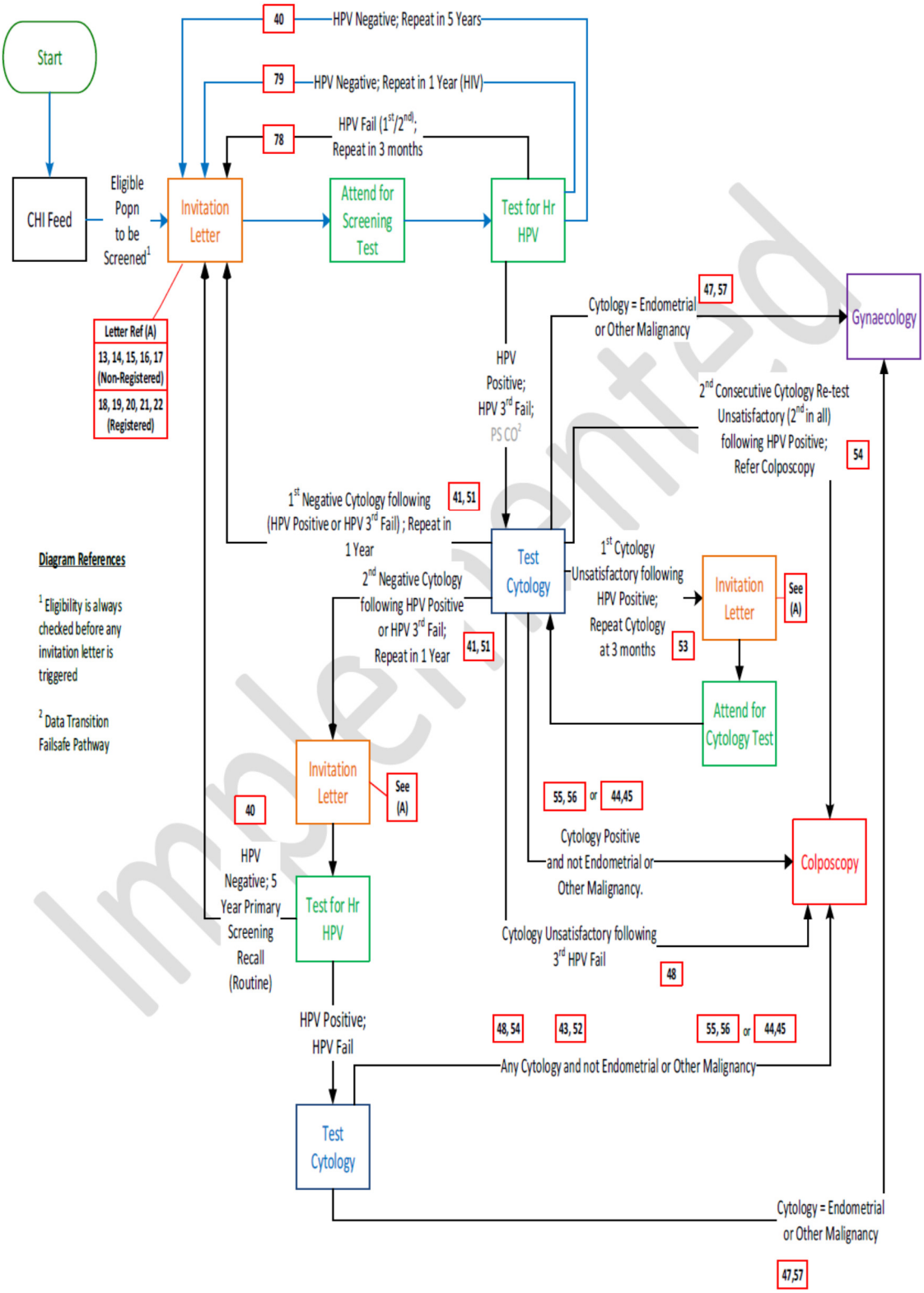
The audit will examine the clinical evidence to support the 'no cervix' exclusion for all women in the SCCRS database, to make sure that the exclusion has been applied appropriately. The audit commenced in NHSGGC from June 2023, and is expected to continue until end of 2024 due to delays in securing appropriate clinical staff to review patient records

We will continue to work to reduce waiting times for clinical investigation of positive screening results.

We will continue to progress targeted actions to address inequalities in uptake of cervical screening in line with NHSGGC Inequalities Action Plan (chapter 10). This plan includes specific actions to address inequalities in cervical screening uptake by:

- delivering a planned programme of targeted cervical screening in geographical areas of higher deprivation, and populations with protected characteristics with persistently lower uptake of cervical screening;
- continue to support quality improvement initiatives to improve uptake of cervical screening within Primary Care;
- continue to work in partnership with third sector and HSCP staff to raise awareness of cervical cancer 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 2021-22 report (2022-23 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	68.7	**64.4**
Percentage uptake by deprivation quintile			
SIMD 1 (most deprived)	80	62.4	**61.7**
SIMD 2		66.3	**64.8**
SIMD 3		68.9	**62.3**
SIMD 4		73.2	**68.8**
SIMD 5 (least deprived)		73.1	**67.2**
Uptake by Age Group			
25-49 years	80	65.7	**60.4**
50-64 years		73.7	**72.3**
25-64 years		68.7	**64.4**

Appendix 8.3 - Members of Cervical Screening Steering Group (at March 2023)

Dr Emilia Crighton	Screening Co-ordinator, Interim Director of Public Health (Chair)
Dr Christine Black	Consultant in Sexual and Reproductive Health
Mr Paul Burton	Information Manager
Dr Maureen Byrne	GP, GP Sub Committee
Mrs Lin Calderwood	HI&T Service Delivery Manager
Mrs Pam Campbell	Referral Management & Clinic Build Lead
Ms Gillian Collins	Team Leader, Cytology
Ms Anne Coventry	Practice Manager
Ms Jade Curtis	Senior Support Officer
Mrs Lorna Dhami	Practice Nurse
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 2022 reports that in Greater Glasgow & Clyde, 6.0% of the population were registered as diabetic in 2022; this is an increase from 5.6% of the population in 2018.

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 asymptomatic individuals for a particular condition.

The OptoMize system is used to manage the call/recall and imaging for the DES programme and replaced the previous data system in 2020. Delays in reporting from the OptoMize system have now been resolved, however publication of nationally validated KPIs are not yet available, but are expected in 2024.

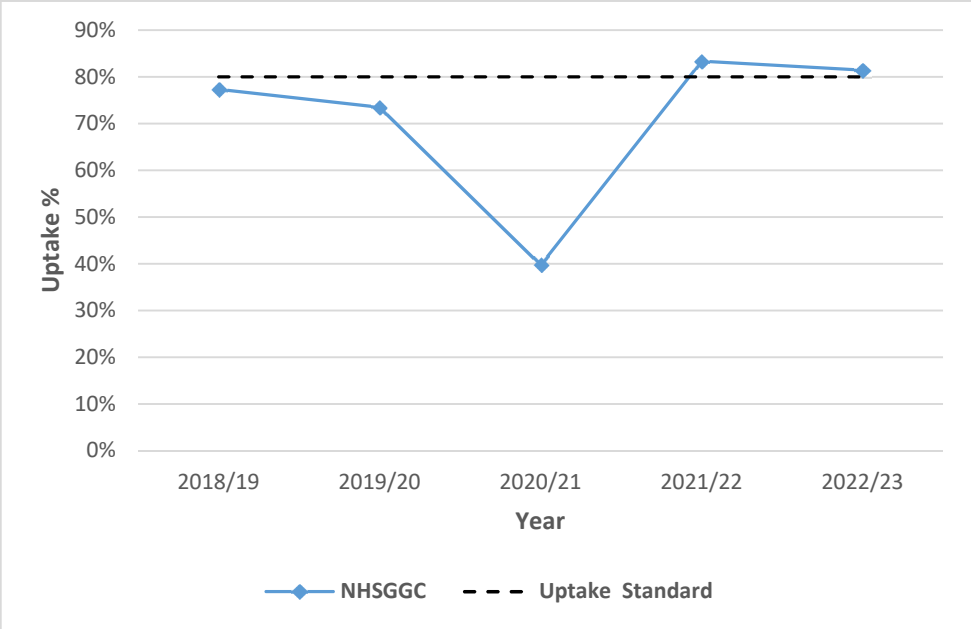
Data presented for period 1st April 2022 to 31st March 2023 has been sourced from local data extract from the OptoMize system.

Based on local analysis, of the 66,920 individuals with diabetes, 54,494 (81.4%) were screened during 2022/23, exceeding the 80% uptake target.

For 2022-23, uptake of screening was similar for men (82.3%) and women (80.3%). Overall, uptake of screening increased with increasing age, from 71.5 of those aged 15-24 years, compared with 86.1% of those aged 65-74 years, however uptake decreased to 77.6% in those 85 years and older.

Uptake increased with decreasing levels of deprivation. Uptake was 78.2% amongst individuals residing in the most deprived areas, compared to 86.7% residing in the least deprived areas. The uptake target of 80% was met in all but the most deprived deprivation quintile.

Uptake of Diabetic Eye Screening in NHSGGC, 2018/19 to 2022/23



Source: NHSGGC Annual Screening Reports 2018/19 to 2021/22.
2021/22 SCI Diabetes (November 2022) [37] ; 2022/2023 OptoMize (November 2023)

Analysis by ethnicity was undertaken via self-reported ethnicity recorded on SCI-Diabetes. The uptake screening standard of 80% was achieved within Pakistani, Black Caribbean, Indian, White Scottish/Irish/British, Chinese, and other Asian ethnic groups. Uptake was generally below the screening standard among Black African, Bangladeshi, other Black, and other White ethnic sub groups.

There was no significant difference in uptake between those with a registered learning disability compared to the rest of the population (78.5% vs 81.5% 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, 71.0% compared to 81.6%.

There were variations in uptake between HSCPs areas. Uptake ranged from 79.6% in Inverclyde HSCP to 85.0% in East Renfrewshire. The 80% target for screening was met in all HSCPs with the exception of Inverclyde.

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 majority of screening locations have now been reinstated with the exception of four community locations, principally due to ongoing facility refurbishment.

[37] 2021/21 cohort obtained from SCI-Diabetes included all persons, only those over 12 years of age are eligible for screening.

Chapter Contents

9.1. Background

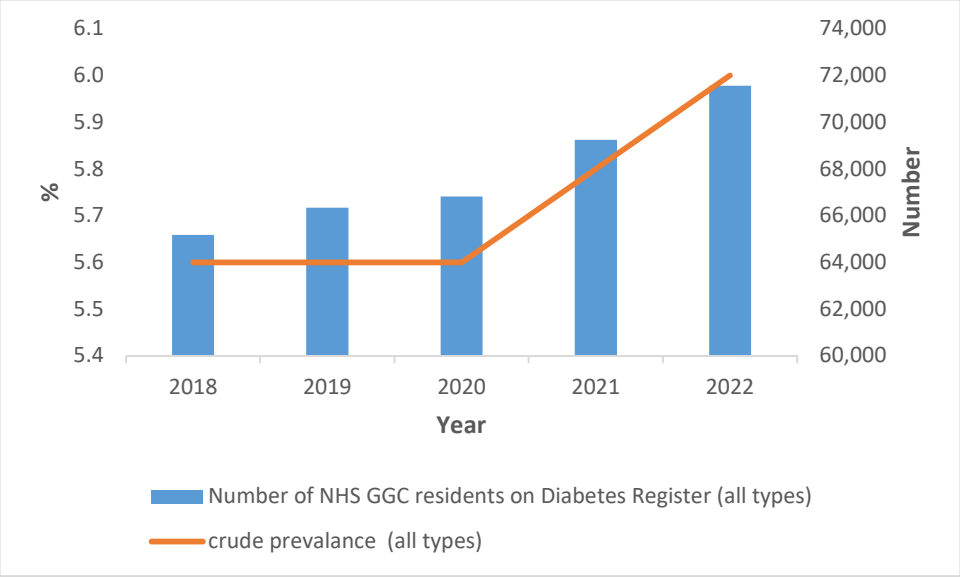
Diabetes mellitus is a long-term condition in which the level of glucose in the blood is raised, leading to abnormal fat metabolism and other complications. There are two main types of diabetes: type 1 and type 2.

- 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 2022[38] reports that in Scotland, there were 339,018 people with known diabetes recorded on local diabetes registers at the end of 2022, representing 6.2% of the population of all ages. Over the last ten years, the proportion of people in Scotland with diabetes has steadily increased, from 5.1% in 2013 to 6.2% in 2022. In 2022, the proportion of people in Scotland with diabetes who have Type 2 diabetes was 87.8% (297,504); and the proportion with Type 1 diabetes was 10.5% (35,619).

Over the five year period 2018 to 2022, the number of people with diabetes in NHS GGC increased from 65,174 (5.6% of the NHSGGC population) to 71,556 (6.0% of the NHSGGC population) respectively, (**figure 9.1).** The relatively high number of new cases diagnosed between 2021 and 2022 may be related to effects of the pandemic and the relatively low number of new cases diagnosed in 2020.

Figure 9.1. Number and % of people with Diabetes (all types) in NHSGGC 2018-2022



Source: Diabetes Scottish Diabetes Survey, 2018 - 2022

[38] Scottish-Diabetes-Survey-2022.pdf (diabetesinscotland.org.uk) Accessed November 2023

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.

The national Diabetic Eye Screening (DES) programme was implemented across NHSGGC in 2004-2005 and is an integral part of diabetes care.

The programme performance and quality of national DES screening is monitored via defined National DES Screening Standards[39] and Key Performance Indicators[40].

9.2. Aim of the screening programme and eligible population

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.

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.

[39] http://www.healthcareimprovementscotland.org/our_work/long_term_conditions/programme_resources/diabetic_retinopathy_screening.aspx (Accessed November 2023)
[40] https://www.ndrs.scot.nhs.uk/ (Accessed November 2023)

There are two main information systems used in the provision of Diabetic Eye Screening.

1. OptoMize 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.

Delays in reporting from OptoMize system have now been resolved, however publication of nationally validated KPIs are not yet available.

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 carried out slit lamp examinations for patients who were not suitable for retinal photography, from the five hospitals and two of the health centres/clinics. Following removal of COVID-19 restrictions due to social distancing and infection control measures, DES screening resumed in the majority of these locations in 2022/23 as summarised in **Table 9.1.**

Table 9.1. NHSGGC Diabetic Eye Screening locations status 2022/23

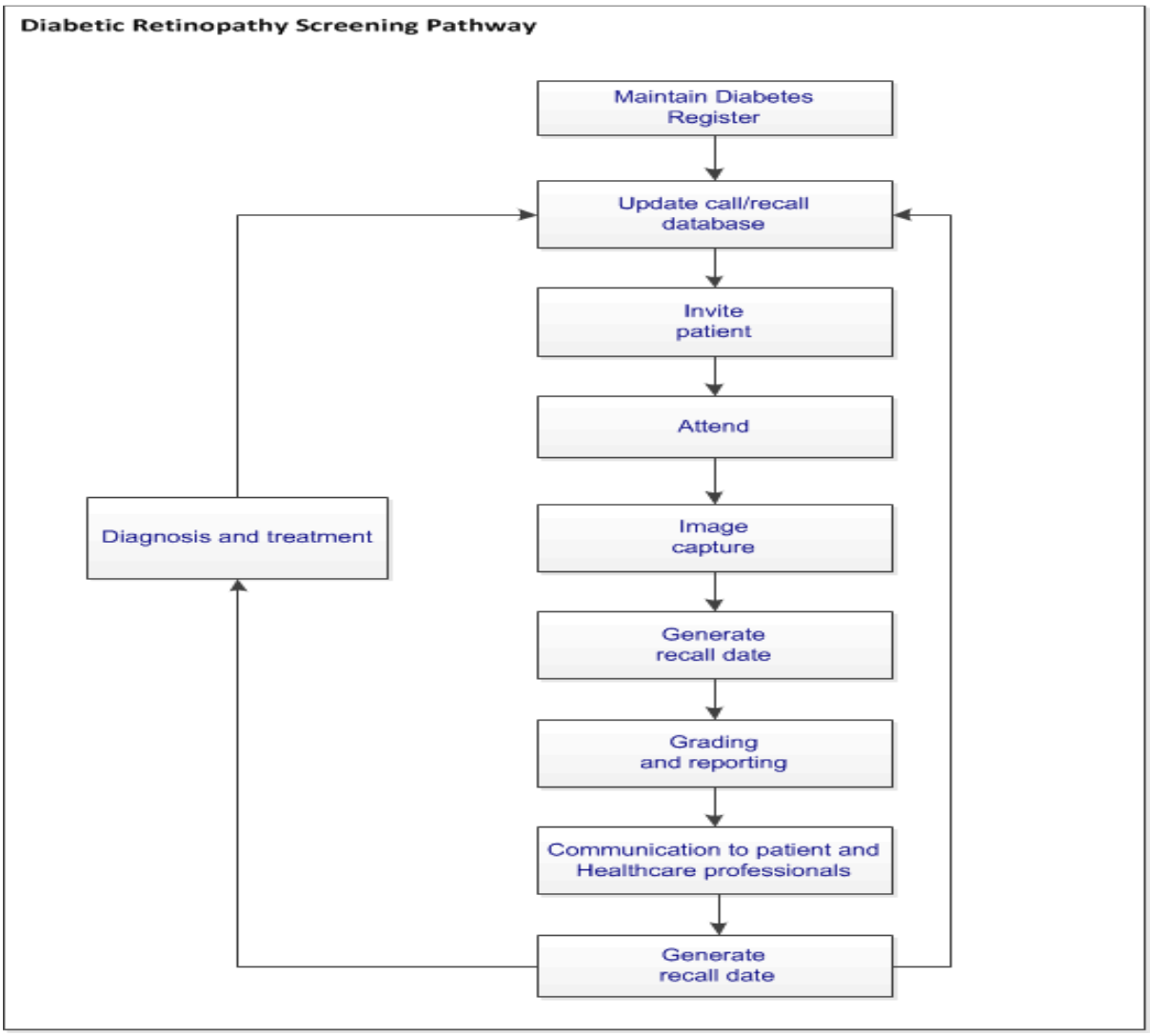
Screening Location	Status 2022/23		
	Fundus Photography	Slit Lamp Clinic	OCT Clinic
Hospital Locations			
Gartnavel General Hospital	✓	✓	✓
Glasgow Royal Infirmary	✓	✓	✓
New Victoria Ambulatory Care Hospital	✓	✓	✓
Queen Elizabeth University Hospital	✓	✓	✓
Vale of Leven Hospital	N/A	✓	N/A
Health Centre/HSCP Locations			
East Dunbartonshire HSCP			
Milngavie Health Centre	×	N/A	N/A
Kirkintilloch Health Centre	×	N/A	N/A
Lennoxtown Health Centre	×	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 9.2 illustrates the pathway to reduce diabetes related blindness in the general population by identifying and treating sight threatening diabetic retinopathy.

Figure 9.2. Diabetic retinopathy screening pathway



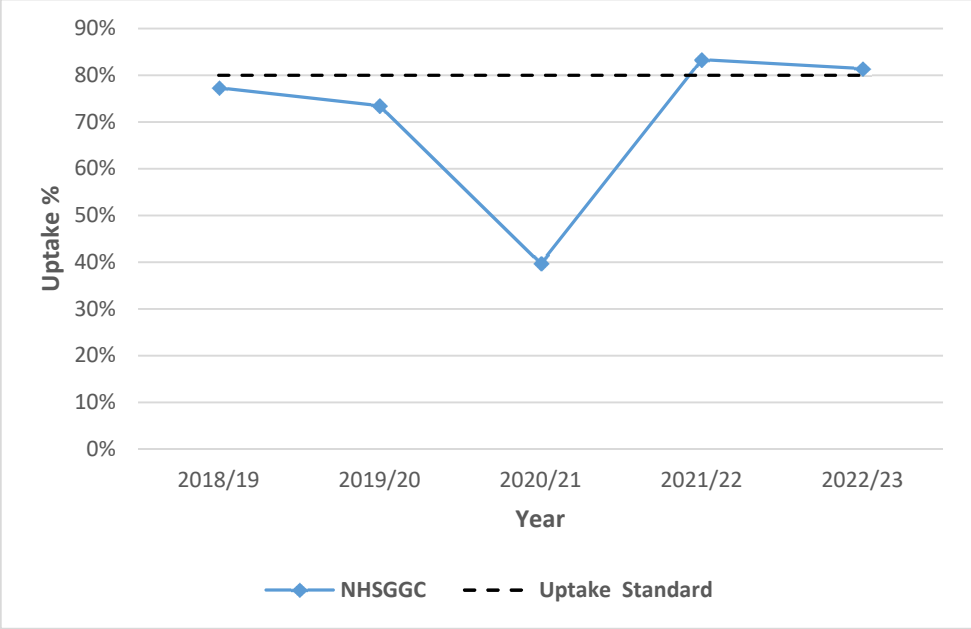
9.6. Uptake of diabetic eye screening

Five year trends have been sourced from previous annual screening reports, with data from period for period 1st April 2022 to 31st March 2023 now obtained from OptiMize system. 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 over the 5 year period from 2018/19 to 2022/23 screening rounds. The drop in screening uptake during 2020/21 was due to a pause in screening from March to September 2020, due to the COVID-19 pandemic. The service then had to catch up the backlog of patients who could not be invited during this period. It took the service 18 months to complete this catch up and return to a

normal (pre-pandemic) service. Based on local analysis from SCI-Diabetes, uptake in 2022/23 was 81.4%, exceeding the 80% standard[41]. **(Figure 9.4)**.

Figure 9.4. Uptake of Diabetic Eye Screening in NHSGGC, 2018/19 to 2022/23



Source: NHSGGC Annual Screening Reports 2018/19 to 2021/22.
2021/22 SCI Diabetes (November 2022) [42]
2022/2023 OptoMize (November 2023)

Of the 66,920 individuals with a confirmed diagnosis of diabetes and eligible for diabetic eye screening 54,494 (81.4%) were screened during 2022/23.

Table 9.2 shows that more than half (55.5%) of the eligible resident population of people with diabetes were male. Uptake was slightly higher amongst male patients (82.3%) than female patients (80.3%), however, the 80% uptake target met by both sexes.

Table 9.2. Uptake of Diabetic Eye Screening by sex in NHSGGC, by Board of Residence 2022-2023

Sex	Not Screened	Screened	Total	% Screened
Female	5,866	23,921	29,787	***80.3***
Male	6,560	30,573	37,133	***82.3***
Total	**12,426**	**54,494**	**66,920**	***81.4***

Source: OptoMize (November 2023)

[41] Uptake in relation to national standard will be reviewed following future publication of national KPI's
[42] 2021/21 cohort obtained from SCI-Diabetes included all persons, only those over 12 years of age are eligible for screening.

Table 9.3 shows that uptake of DES screening is high in young people aged 12-14 years (80.1%), then falls in those aged 15-34 years (lowest in 25-34 years group at 67.7%) and increases with age up to 74 years of age (highest uptake in the 65-74 years age group, 86.1%). Uptake decreases after 75 years of age, 84.6% of individuals aged 75-84 were screened, further decreasing to 77.6% among individuals age 85 years and older.

Table 9.3. Uptake of Diabetic Eye Screening by age in NHSGGC, by Board of Residence 2022-2023

Age Group	Not Screened	Screened	Total	% Screened
12-14	41	165	206	***80.1***
15-24	282	709	991	***71.5***
25-34	660	1,382	2,042	***67.7***
35-44	1,300	3,380	4,680	***72.2***
45-54	2,133	7,007	9,140	***76.7***
55-64	3,011	14,393	17,404	***82.7***
65-74	2,420	15,024	17,444	***86.1***
75-84	1,740	9,535	11,275	***84.6***
85+	839	2,899	3,738	***77.6***
Total	**12,426**	**54,494**	**66,920**	***81.4***

Source: OptoMize (November 2023)

Uptake also increases with decreasing levels of deprivation, with *78.2*% uptake among individuals residing in the most deprived areas compared to *86.7*% 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 2022-2023

SIMD Quintile	Not Screened	Screened	Total	% Screened
1 (most deprived)	5,942	21,360	27,302	***78.2***
2	2,521	10,774	13,295	***81.0***
3	1,371	6,638	8,009	***82.9***
4	1,286	7,226	8,512	***84.9***
5 (least deprived)	1,306	8,496	9,802	***86.7***
Total	**12,426**	**54,494**	**66,920**	***81.4***

Source: OptoMize (November 2023)

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 Pakistani, Black Caribbean, Indian, White Scottish/Irish/British, Chinese, and other Asian ethnic groups. Uptake was generally below the screening standard among Black African, Bangladeshi, Other Black and Other White ethnic sub groups **(Table 9.5).**

Table 9.5. Uptake of Diabetic Eye Screening by ethnicity in NHSGGC, by Board of Residence 2022-2023

2001 Census Ethnic Group	Not Screened	Screened	Total	*% Screened*
Pakistani	480	2,660	3,140	*84.7*
Black Caribbean	5	27	32	*84.4*
Indian	248	1,291	1,539	*83.9*
White Scottish	6,550	31,623	38,173	*82.8*
Chinese	82	379	461	*82.2*
Other Asian	161	728	889	*81.9*
Other White British	2,326	9,541	11,867	*80.4*
White Irish	67	274	341	*80.4*
Black African	166	630	796	*79.1*
Other Mixed Origin	184	687	871	*78.9*
Bangladeshi	71	252	323	*78.0*
Other Black	36	114	150	*76.0*
Not Recorded/Null	1,344	4,252	5,596	76.0
Other White	504	1,475	1,979	*74.5*
Other	202	561	763	*73.5*
Total	**12,426**	**54,494**	**66,920**	***81.4***

Source: OptoMize, November 2023

Table 9.6 shows that 601 of the 66,920 individuals eligible for screening were registered with a learning disability (0.89%)[43]. The uptake among individuals registered with a learning disability was lower compared to the rest of the population (*78.5*% vs 81.5% respectively), however this difference was not statistically significant.

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

Table 9.6. Uptake of Diabetic Eye Screening by Learning Disability in NHSGGC, by Board of Residence 2022-2023

Learning Difficulties Register	Not Screened	Screened	Total	*% Screened*
Not Registered	12,297	54,022	66,319	*81.5*
Registered	129	472	601	*78.5*
Total	**12,426**	**54,494**	**66,920**	***81.4***

Source: OptoMize, November 2023; LD Register, September 2018
Chi-Square Tests p = 0.066667 (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 1,205 of the 66,920 people eligible for screening were registered on PsyCIS (1.8% of the total eligible population). These individuals had a poorer uptake of DES screening, 71.0% compared to 81.6% in the rest of the population,

Table 9.7. Uptake of Diabetic Eye Screening by Severe and Enduring Mental Health in NHSGGC, by Board of Residence 2022-2023

PSYCIS	Not Screened	Screened	Total	*% Screened*
Not Registered	12,077	53,638	65,715	*81.6*
Registered	349	856	1,205	*71.0*
Total	**12,426**	**54,494**	**66,920**	***81.4***

Source: OptoMize, November 2023; PSYCIS, September 2023

There are variations in screening uptake in those screened across HSCPs **(Table 9.8).** They range from 79.6% in Inverclyde HSCP to 85.0% in East Renfrewshire. The 80% target for screening was met in all HSCPs with the exception of Inverclyde.

Table 9.8. Uptake of Diabetic Eye Screening by HSCP, in NHSGGC, by Board of Residence 2022-2023

Health & Social Care Partnership	Not Screened	Screened	Total	% Screened
East Dunbartonshire HSCP	900	4,560	5,460	***83.5***
East Renfrewshire HSCP	719	4,080	4,799	***85.0***
Glasgow City HSCP - North East Sector	2,176	8,699	10,875	***80.0***
Glasgow City HSCP - North West Sector	2,027	8,185	10,212	***80.2***
Glasgow City HSCP - South Sector	2,693	11,666	14,359	***81.2***
Glasgow City HSCP (all Sectors)	*6,896*	*28,550*	*35,446*	***80.5***
Inverclyde HSCP	981	3,826	4,807	***79.6***
Renfrewshire HSCP	1,795	8,882	10,677	***83.2***
West Dunbartonshire HSCP	1,135	4,596	5,731	***80.2***
Total	**12,426**	**54,494**	**66,920**	***81.4***

Source: OptoMize, November 2023

9.7. Mapping

Mapping of diabetic eye 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 89 of the 1,456 data zones had uptake rates between 60-69% and a further 10 data zones had uptake rates of below 60%. Uptake maps are available on the PHSU website[44]

9.8. Challenges and Future Developments

The OptoMize Software update released in December 2022 included optional self-booking facility to enable patients to book, change or cancel DES appointments. However, implementation of the patient booking portal is delayed due to ongoing national discussion to agree the content of patient letters. NHSGGC will adopt phased implementation of online booking in 2024 in order to monitor success and any impact on screening uptake and those who miss their appointment.

NHSGGC Screening Department implemented a new telephone system to improve the efficiency and capacity of call handling due to significant call volume from patients over the last year. Call volume and type will continue to be monitored.

[44] Screening Uptake Data Zone maps

Work continues to engage with primary care to encourage use of SCI diabetes to ensure accurate patient eligibility and regular review of temporary exclusions.

Work continues to ensure that all patients are offered a screening appointment at an accessible location. Some community clinic locations have still not reopened following the COVID-19 pandemic. We are working with local HSCP groups to facilitate clinics returning to these locations as soon as possible.

Capacity within NHSGGC for Level 3 imaging sign-off remains a challenge, leading to delays in sign-off. These images require senior trained staff, often medical grade or consultant ophthalmologist, to undertake image review. During 2022/23, additional grading sessions delivered by NHSGGC Consultant Ophthalmologist has significantly reduced backlog, however ongoing capacity for review of these images remains limited across NHSGGC and 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 to find additional screening capacity and resources to accommodate this extra demand.

Appendix 9.1 - Members of Diabetic Eye Screening Steering Group (at March 2023)

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 - Inequalities

Progress on the NHSGGC Widening Access and Addressing Inequalities in Adult Screening Programmes: Action Plan for 2022-25

The NHSGGC Widening Access and Addressing Inequalities in Adult Screening Programmes: Action Plan for 2022-25[45], is currently being reviewed in the context of a new policy environment and emerging local priorities.

There have been two Scottish Government policy developments since the plan was published:

- the Cancer Strategy for Scotland 2023-2033 was launched in June 2023; and
- the Scottish Equity in Screening Strategy 2023-2026 was launched in July 2023.

NHSGGC contributed to the development of the Scottish Equity in Screening Strategy through membership of the Reference Group, Access and Communications Sub Groups, and the Editorial Group. The strategy requires all boards to have an action plan to address inequalities in screening. We were in a position to share our plan with other boards and present advice on our process for developing and evaluating it.

Our plan has been impacted by challenges, shared by other Health Boards, in using the Scottish Government Scottish Inequalities Fund (SG SIF). The most impactful of these has been changes in how boards are able to carry funding forward between financial years, which reduces flexibility in spending and continuing projects across financial year end/start.

The logic model below provides a summary of the approach and intended outcomes of NHSGGC Widening Access and Addressing Inequalities in Adult Screening Programmes: Action Plan for 2022-25

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.

[45] https://www.nhsggc.scot/downloads/nhsggc-2022-25-inequalities-in-adult-screening-plan-2/

The following table provides a progress report on the actions in line with evidenced-informed activities. Some actions have been refined or merged with others to better reflect how activities are being undertaken. New actions, which have emerged due to priorities arising from service developments or data, are marked with a *.

ACTION	PROGRESS	STATUS
(a) Minority Ethnic people: South Asian, Caribbean, African and Chinese communities		
1. Work with community and faith groups to raise awareness of screening, build skills of community leaders and peers to discuss screening, and increase NHS GGC knowledge of community barriers to informed participation.	An Engagement Practitioner, funded by the SG SIF, undertook engagement with Black and Minority Ethnic communities. During the first year of this post (August 2022 to August 2023), 1302 participants were involved in 47 engagement activities with 29 community groups in North West and North East Glasgow City. The Engagement Practitioner coordinated work and, for some sessions, collaborated with the West of Scotland Breast Screening Service, Jo's Cervical Cancer Trust, and HSCP Health Improvement teams.	●
2. Respond to learning from and experience of communities.	We conducted an exercise to identify the issues emerging from the community engagement and to clarify the policy, corporate and service responses available to address these issues. There are barriers to accessing health services. These include: cost of attending appointments; not registered with a GP; language barriers and negative experience of staff linked to language; caring responsibilities; and cultural differences in accessing health services. There are also both system and personal barriers to participating in screening. These include limited awareness of programmes and, for cervical, how it links with the HPV vaccination programme; previous negative experiences; embarrassment; community not represented on patient information; and, for cervical, a perception that screening is not required due to individual lifestyles. The next stages are to address these issues specifically within services.	●
3. * Pilot the process of sending written communications to women eligible and due for breast screening in their recorded language.	We have agreed a protocol and provided funding (from the SG SIF) for this work. This will inform the development of more systematic approaches to accessible information. The work is currently in progress. Initial Learning from it will be available later in 2024.	●

ACTION	PROGRESS	STATUS
(b) People living in the most deprived areas		
4. Deliver a programme of additional community cervical clinics for those who are not currently participating in the programme.	We have agreed a service delivery model and a clinical results management pathway with the local GP committee. Work is progressing to determine appropriate staff management arrangements.	●
5. Raise awareness of screening in areas of deprivation and through GGC communication channels including social networking and media sharing platforms.	Screening programmes are promoted through our corporate communications channels as well as via HSCPs. We link to national campaigns as well as providing local information such as when the breast screening mobile unit is in an area. Our community engagement work has given us important information from which we can develop messages for communications campaigns. We have also partnered with Glasgow Times to launch a Don't Fear the Smear public campaign.	●
(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	Service staff have participated in training to undertake equality impact assessments (EQIAs). Updated EQIAs are in progress. Learning from implementing this action plan will be used to inform future EQIAs.	●
(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	Service staff have participated in training to undertake equality impact assessments (EQIAs). Updated EQIAs are in progress. Learning from implementing this action plan will be used to inform future EQIAs.	●

ACTION	PROGRESS	STATUS
8. Engage with Deaf-Blind community in raising the issues of screening and overcoming barriers.	Meetings were held with Deaf-Blind Scotland to raise awareness of screening in partnership with the West of Scotland Breast Cancer Service and Jo's Cervical Cancer Trust. The WSBCS have identified a need to make information and communication available in Braille. This will be undertaken as part of action 3.	●
(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.	Service staff have participated in training to undertake equality impact assessments (EQIAs). Updated EQIAs are in progress. Learning from implementing this action plan will be used to inform future EQIAs.	●
10. Deliver service improvements in access to screening for people with learning disabilities, particularly in relation to the Learning Disabilities Health Check.	In preparation for the introduction of health check in early 2024, we are in the process of recruiting a fixed term Inequalities Sensitive Practice Development Lead post to drive service improvement within screening programmes and liaise with LD service staff delivering health checks. We have also commissioned engagement with people with learning disabilities in order to gain insight and understanding of their experiences of accessing screening programmes locally.	●
11. Provide learning opportunities to health staff about the barriers faced by women with learning disabilities and the potential to address screening through the Learning Disabilities Health Check.	Not yet started. It is anticipated this will be conducted by the Inequalities Sensitive Practice Development Lead post once health checks are in progress. The insights we gain from community work with people with learning disabilities will be central to a staff learning programme.	●

ACTION	PROGRESS	STATUS
(f) LGBT+ people		
12. Deliver training in equalities sensitive practice in cervical screening.	Not yet started. In 2024, we plan to work with colleagues in sexual health to commission a provider from the LGBT+ community to deliver learning for cervical screening staff including challenging heteronormative assumptions.	
13. Undertake/support existing engagement work with LGBT+ people to increase uptake.	Not yet started. The comprehensive health needs assessments of lesbian, gay, bisexual, transgender and non-binary people have provided us with direct information about peoples' experiences of accessing services generally and cervical screening in particular. Next stages are to incorporate this learning into practice.	
(g) People with severe and enduring mental ill health		
14. Promote introductory Learn Pro module on adult screening in order to support staff awareness and to increase the number of in-patients who access screening.	87 staff have completed the Learn Pro module. Most staff completing this module are nursing staff from mental health and learning disabilities services. Others who have completed are from medical, AHPs, administrative, and psychologist staff groups. Staff who do not have access to Learn Pro have had opportunities to access the content through sharing with HSCPs. The Learn Pro module has also been shared with other health boards and the Equity in Screening Strategy team. This module will maintained to reflect national changes to screening programmes.	
15. Appraise options for providing access to screening for in-patients via the Physical Health Check Policy.	The Physical Health Check Steering Group have supported a 12 month pilot to deliver in reach cervical screening programme within inpatient mental health settings. Implementation planning is progressing, aiming to commence delivery early 2024.	

ACTION	PROGRESS	STATUS
(h) Additionally identified local priorities		
16. * Resource additional cervical clinic appointments for women who have experienced trauma	We used SG SIF to provide non-recurring funding of £5k to Sandyford My Body Back programme in order to increase capacity to address waiting lists. My Body Back offers cervical screening for people who have experienced rape or sexual violence and are due, or overdue, for their test. Supporting those who have experienced trauma is now a national priority.	●
17. * Undertake analysis of colonoscopy pre-assessment data	Not yet started. Analysis of local pre-assessment data will be undertaken from 2024. The aim of this is to improve understanding of the drop off in participation at this point in the pathway in order to inform what if any areas of action should be taken.	●
18. *Improve understanding of AAA screening experience at the point of delivery	A patient survey of men under surveillance is currently in the final stages of development.	●
19. Support GPs to use existing PHS cervical toolkit and framework to target vulnerable groups and eligible people who have not attended.	We are working with PHS to review and update the toolkit. It is anticipated this work will be supported by Jo's Cervical Cancer Trust working in partnership with HSCPs. We are in the process of agreeing SG SIF funding and a programme to deliver this work.	●
(i) Potential mechanisms to integrate findings into work to tackle inequalities in the longer term.		
20. * Pilot follow-up telephone calls to women who fail to contact WSBSS following open invitation letter	We have agreed funding through the SG SIF and a partnership with West of Scotland Breast Screening Service, NHS Lanarkshire, NHS Forth Valley, and NHS Highland - Argyll & Bute in order to improve uptake of breast screening through improved communication with eligible women who are due to attend. This is due to complete in spring of 2024. We will monitor the outcomes of telephone follow-up calls in order to inform future service delivery.	●

ACTION	PROGRESS	STATUS
21. Evaluate and undergo programme of revision of patient information which is due for review in partnership with stakeholders.	With agreement from the Bowel Screening Steering Group, we commissioned (funded from the SG SIF) a qualitative evaluation of the Preparing for your Colonoscopy patient information. Both patients and service delivery staff were interviewed for the evaluation. The Bowel Screening Steering Group has been open and receptive to the report findings. As a result, they revisited Pre-Assessment and Bowel Preparation policies. We are now in the process of finalising content for revised patient information.	●