NHS
Greater Glasgow and Clyde

Public Health Screening Programmes

Annual Report

1 April 2015 to 31 March 2016

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Public Health – Health Services

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Introduction

This annual report presents information about the following screening programmes offered to residents across NHS Greater Glasgow and Clyde (NHSGGC) for the period 2015/16:

1. Cervical Screening

2. Breast Screening

3. Bowel Screening

4. Pregnancy Screening:
    - Communicable Diseases in Pregnancy
    - Haemoglobinopathies screening
    - Down's syndrome and other congenital anomalies

5. Newborn Screening:
    - Newborn Bloodspot
    - Universal Newborn Hearing

6. Diabetic Retinopathy Screening

7. Child Vision Screening

8. Aortic Abdominal Aneurysm Screening

The report includes analysis of uptake among people with learning disabilities and uptake by ethnicity.

The purpose of screening is to detect early disease or risk factors among people who have not yet developed symptoms. Early management should result in better outcomes. Screening programmes do not detect all cases of disease and will be positive among some people who are healthy. They therefore contribute to early detection but do not obviate the need for detecting and treating symptomatic patients.

Healthcare Improvement Scotland will begin national quality assessment reviews of all screening programmes in 2017. These will include extensive self-assessments and visits to Boards. The first screening programme to be reviewed will be abdominal aortic aneurysm screening. A special review of breast screening services in Scotland by HIS took place in 2016, following two incidents in which women were incorrectly not invited, and incorrectly invited, for screening. The final report is expected to describe the need for new governance arrangements between National Services Scotland (NSS) and Boards.

Table A shows the number of people eligible in NHS Greater Glasgow and Clyde in 2015/16 that were offered screening tests and the uptake rates for each of the screening programmes.

Table A: NHSGGC screening programmes uptake rates for the period 1 April 2015 to 31 March 2016

Screening programme	Total eligible population	Total number Screened	HIS Target	% Uptake[5]
Cervical screening[1]	331,326	235,955	80%	71.1%
Breast screening[2]	123,131	83,721	70%	67.9%
Bowel screening[3]	349,567	182,358	60%	52.2%
Pregnancy screening:				
• Communicable diseases in pregnancy [4]	15,853	15,816	n/a	99.0%
• Down's syndrome[5]	13,427	9,843	n/a	61.0%
• Haemoglobinopathies	13,427	13,102	n/a	97.6%
Newborn screening:				
• Newborn bloodspot	12,439	12,382	n/a	99.5%
• Newborn hearing	12,337	12,138	n/a	98.4%
Pre-school vision screening	12,975	11,258	n/a	86.6%
Primary 7 school vision screening	11,780	10,294	n/a	87.4%
Diabetic retinopathy Screening	56,535	44,511	80%	78.7%
Abdominal Aortic Aneurysm Screening	5,760	4,637	70%	80.5%

Sources: NHSGGC bowel Screening IT system; West of Scotland Breast Screening; Scottish Cervical Call Recall System; PNBS; National Newborn Screening Laboratory; West of Scotland Prenatal Screening Laboratory; AAA IT system

Notes:

1. Target population – number of women screened within 5.5 years
2. Target population – number of people screened within 3 years
3. Target population – number of people screened within 2 years
4. Percentage uptake of each of the tests has been calculated by dividing the number requesting tests by the total number of samples. Also include test from Argyll (NHS Highland residents)
5. Screening activity covers the period to 31 March 2016

Chapter 1: Cervical Screening

Summary

- Cervical cancer incidence increased 18% over the past 10 years.
- 332,033 women were invited for cervical screening in 2015-16.
- The 5.5-year uptake of cervical screening was 71% in 2015-16, against a target of 80%.
- Uptake was lowest (59%) in Glasgow North West sector and highest in East Dunbartonshire and East Renfrewshire (81%).
- Uptake has been declining over time in NHSGGC, as with other Scottish Boards.
- Women from the least deprived areas are most likely to take up cervical screening but there is not a clear trend across socio-economic groups.
- Women aged 21-24 years were least likely to take up screening (50%) but no age-group achieves the 80% standard.
- Loss in 2016 of the financial incentive to GPs to carry out cervical screening may result in decreases in uptake.
- National information campaigns will be launched in 2017 to improve uptake.
- The business case for an alternative approach to cervical screening – high risk HPV – will be finalised at the end of 2016 and the new approach introduced later in 2017. High risk HPV screening involves the same clinical examination (a cervical smear) but only women whose virology results are positive for specific types of Human Papilloma Virus will have cervical cytology results tested.
- Women with learning difficulties had much lower uptake rates for cervical screening, at 25% over 5.5 years. Women aged 21-24 with learning difficulties had even lower uptake rates of 9.8%.
- Ethnic minorities have poorer uptake of cervical screening than white women. Chinese, Black and Asian women have much lower rates of uptake.
- The Queen Elizabeth University Hospital processes all smear test specimens and in 2015-16 processed 99,037 specimens.
  .
- The proportion of unsatisfactory smears is low at 2.8%.

- 10% of smears are abnormal, the most common reasons being low grade dyskaryosis and borderline change in squamous cells.

- 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.

- 42% of all invasive cervical cancers in NHSGGC are detected through screening.

Chapter 1: Cervical Screening

Background

Over the last 10 years, cervical cancer has increased by 18% in Scotland. It was the tenth most common cancer in females in 2014 and most common cancer in women under the age of 35 (ISD Scotland, 2016).

Risk factors

Most cervical cancers are caused by oncogenic types of human papilloma virus (HPV), mainly types 16 and 18. While the majority of women clear the HPV virus, a minority has persistent HPV infection which can transform normal cervical cells into abnormal ones. These changes can occur over a period of 10 to 20 years through precancerous lesions to invasive cancer and death.

Smoking, immune deficiency (including HIV), the oral contraceptive pill and having children are also risk factors for cervical cancer. Smoking can damage the DNA of cervix cells contributing to the development of cervical cancer. The immune system can also be affected making it hard to fight HPV infection (American Association for Cancer).

Aim of Screening Programme

The aim of the Scottish Cervical Screening Programme (SCSP) is to reduce the number of women who develop invasive cancer and the number of women who die from it by detecting precancerous changes. By taking a cytological smear from the cervix, followed where necessary by a diagnostic test, it is possible to identify changes in individual cells which may mean that the woman is at risk of developing invasive cancer at a later date. Prompt treatment can result in permanent removal of affected areas of the cervix and prevent the development of cancer.

Target Population

Women who live in the Greater Glasgow and Clyde area and who have a cervix are invited for screening. Until June 2016, women aged 20 to 60 were invited every three years. From June 6th 2016, a Change in Age Range and Frequency (CARAF) was made to reflect new evidence about the effectiveness of screening. The CARAF means that women aged 25-49 are offered screening every three years and women aged 50-64 are offered screening every five years. Women who were already enrolled in the screening programme aged less than 25 will continue to be screened every three years until they are 50.

Screening Test

A “smear test” involves collecting cells from the surface of the cervix or ‘neck of the womb’. The sample is then sent to a specialist laboratory. The cells are then examined under a microscope to see if any of them appear abnormal.

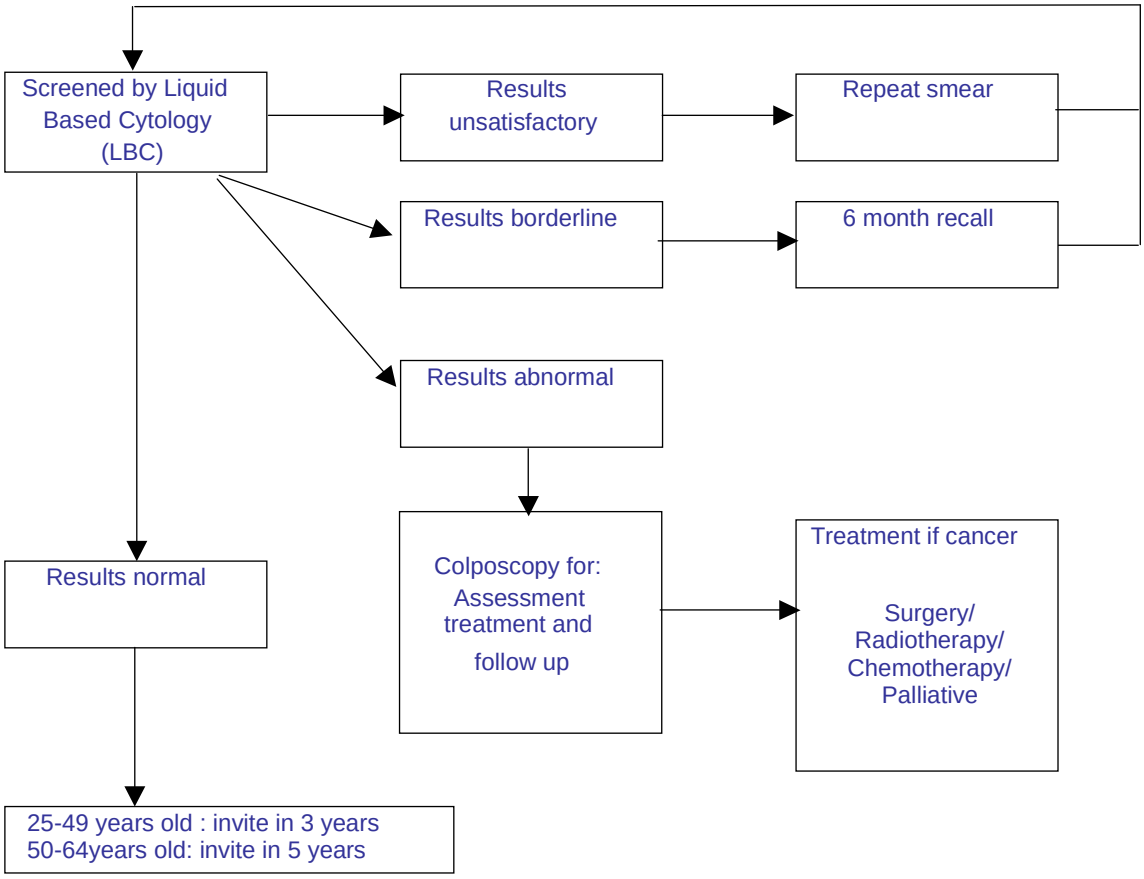
Liquid based cytology (LBC) is a way of preparing cervical samples for examination in the laboratory. The sample is collected using a special device which brushes cells from the neck of the womb. The head of the brush, where the cells are lodged, is broken off into a small glass vial containing preservative fluid, or rinsed directly into the preservative fluid.

The sample is sent to the laboratory where it is spun and treated to remove obscuring material, for example mucus or pus and a random sample of the remaining cells is taken. A thin layer of the cells is deposited onto a slide. The slide is then screened automatically and if there is evidence of any abnormality, examined under a microscope by a cytologist.

Screening Pathway

Figure 1.1 illustrates the pathway for the cervical screening programme. Following the invitation being issued, a woman will attend for a test. Women can also have opportunistic smears at the time of attending medical care for another reason. Depending on the result of the test she will be recalled to attend, if eligible, in three years (normal result, aged 25-49) or five years (normal results, aged 50-64), six months (for a borderline result); will have a repeat smear (if result not satisfactory) or will be referred to colposcopy for diagnostic tests and treatment (**Appendix 1.1**). Treatment of invasive cervical cancers follows agreed cancer treatment pathways.

Figure 1.1 Cervical Screening Pathway



Colposcopy Referral Pathway

Referral to colposcopy services is principally via the direct referral route whereby women with abnormal smears are appointed to the closest colposcopy department according to postcode of residence. Patients with a suspicious cervix, suspicious symptoms or other clinical reasons are referred to colposcopy through standard referral routes from primary or secondary care.

Colposcopy

Colposcopy services in NHS Greater Glasgow and Clyde are provided over six sites: Stobhill ACH, Victoria ACH, Sandyford Initiative, Royal Alexandra Hospital, Inverclyde Royal Hospital and the Vale of Leven Hospital.

Colposcopy services on each site have a lead colposcopist and all sites participate in the NHS Greater Glasgow & Clyde Colposcopy User Group to address quality assurance issues within the Colposcopy service. This group is represented on the National Colposcopy Quality Assurance Group and the National Colposcopy Clinical Information and Audit System (NCCIAS) User Group. Scottish wide benchmarking standards were developed from The British Society for Colposcopy and Cervical Pathology (BSCCP) standards.

Delivery of Cervical Screening programme

The uptake of cervical screening is measured using two methods to define the eligible population. Each produces very different results. The first method identifies all women in the Health Board area in the eligible age groups minus those who have no cervix (for example, following a total or radical hysterectomy). The second method, used to calculate payments to GPs, includes several other exclusions such as repeated non-attendance ("patients who have been recorded as refusing to attend review who have been invited on at least three occasions during the preceding 12 months").

Table 1.1 shows the numbers of women in the target and eligible populations for the cervical screening programme. There were 344,619 women aged 21 to 60 resident in NHS Greater Glasgow and Clyde area between 1 April 2015 and 31 March 2016. Following the exclusion of those with no cervix, 332,033 women were eligible to be invited to participate in the programme over three years. Approximately 110,600 women were sent an invitation to attend during 2015-16. The table also shows the numbers of women that were considered as eligible for payment for cervical screening after applying the exclusions allowed by the General Medical Services contract. At 264,716 patients, this represents just over three quarters (77%) of all women who are eligible for screening. The effect of excluding women from the eligible population for GMS payments means that a high uptake does not reflect the true proportion of all women who should be screened.

The General Medical Services (GMS) Contract introduced in 2004 included cervical screening in the additional services domain and awarded practices for providing the service under the Quality and Outcomes Framework (QOF). Payment based on the QOF ceased at the end of March 2016.

The GMS cervical screening indicator 1 (80% of patients aged 21 to 60 whose notes record that a cervical smear has been performed in the last 5 years) reflected the previous General Medical Services Contract target payment system for cervical screening and was designed to encourage and provide an incentive to continue to achieve high levels of uptake in cervical screening.

Table 1.1 NHSGGC cervical screening population

Year[5]	Target Population[1]	Eligible Population[2]			
		All eligible women minus no cervix[3] (N)	Target population minus no cervix (%)	All eligible women based on GMS Payments[4]	All eligible women based on GMS Payments[4] (%)
2000/01	360,361	338068.0	6.2		
2001/02	360,170	337,919	6.2		
2002/03	360,069	338,184	6.1		
2003/04	360,644	339,460	5.9	292,652	18.9
2004/05	358,617	338,291	5.7	273,106	23.8
2005/06	364,919	345,408	5.3	272,447	25.3
2006/07	359,436	340,446	5.3	272,104	24.3
2007/08	362,828	344,252	5.1	268,484	26.0
2008/09	362,845	344,882	5.0	251,844	30.6
2009/10	361,918	344,589	4.8	245,742	32.1
2010/11	366,275	349,492	4.6	278,943	23.8
2011/12	355,579	340,559	4.2	268,512	24.5
2012/13	363,101	347,841	4.2	274,472	24.4
2013/14	368,362	353,527	4.0	281,103	23.7
2014/15	344,525	331,326	3.8	264,061	23.4
2015/16	344,619	332,033	3.7	264,716	23.2

Sources: 2000/01-2006/07 - CHI via Cervical Cytology system

2007/08 - 2015/16 - Scottish Cervical Call Recall System

Notes:

1 Women aged 21 to 60 years

2 Women aged 21 to 60 years except medically exempt women, as defined in 3 and 4

3 No Cervix excludes those women with the exclusion category "no Cervix"

4 Target Payments excludes those women with the exclusion categories as defined in the GP Contract, implemented in 2004

The 5.5 year uptake rate calculated for NHS Greater Glasgow and Clyde residents for 2015/16 was 71.1% (**Table 1.2**) against a target of 80%. This is almost unchanged from the previous year. The lowest uptake of 59% was in Glasgow North West sector and the highest uptakes were in East Dunbartonshire and East Renfrewshire at 81%.

The uptake calculated for GMS payments was higher (79%) because of greater exclusions from the eligible population.

There has been a decline over time in uptake of cervical screening in all Health Board areas in Scotland - **Figure 1.2** – and since 2012 the overall uptake target of 80% has not been reached nationally. NHSGGC has had the lowest uptake rates of the Board areas.

Table 1.2 Comparative 5.5 year uptake rates of cervical screening by HSCP

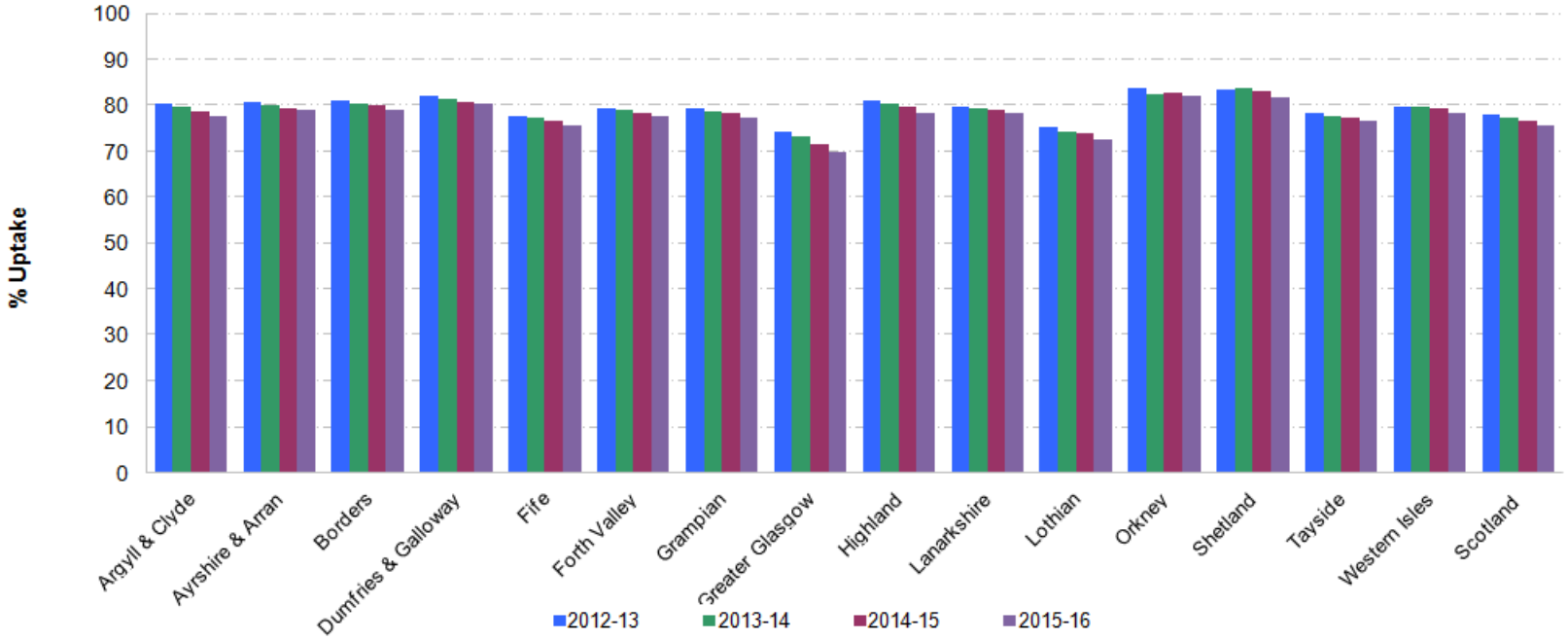
HSCP	% Uptake - All Eligible Women (excluding women with No Cervix[1])						% Uptake - All Eligible Women (based on Target GMS Payments[2])					
	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
East Dunbartonshire	81.9%	82.6%	82.2%	81.7	79.0	80.9	86.5%	89.4%	88.7%	86.7	84.5	86.5
East Renfrewshire	81.4%	82.2%	82.2%	81.6	79.4	80.5	86.4%	89.5%	89.2%	86.9	85.2	86.4
Glasgow North East Sector	70.4%	72.3%	71.7%	70.9	69.1	68.9	78.2%	81.7%	81.4%	78.8	76.7	77.3
Glasgow North West Sector	66.0%	67.5%	65.7%	63.4	60.3	59.2	74.0%	78.4%	76.2%	72.6	70.5	69.3
Glasgow South Sector	73.6%	75.1%	74.6%	73.7	71.0	70.8	80.0%	83.8%	83.3%	80.5	78.0	78.3
Inverclyde	77.2%	78.0%	78.0%	77.6	74.7	75.0	82.3%	85.7%	84.8%	82.8	80.4	81.5
Renfrewshire	78.5%	79.8%	79.5%	78.7	76.1	77.3	84.2%	87.1%	86.4%	84.1	82.1	83.2
West Dunbartonshire	77.7%	78.6%	78.3%	77.7	74.9	76.1	83.5%	86.4%	85.1%	83.4	81.0	82.1
NHS GGC	**74.5%**	**76.0%**	**75.1%**	**74.0**	**70.9**	**71.1**	**81.1%**	**84.0%**	**83.6%**	**81.0**	**78.4**	**78.9**

Source: Scottish Cervical Call Recall System, November 2016

1 No Cervix excludes those women with

2 Target payments excludes those women with the exclusion categories as defined in the GP contract, implemented in 2004

Figure 1.2: Trends in the % uptake of females aged 20-60 with a record of a previous screening test taken within last 5.5 years by NHS Board of Residence: 1st April 2012 to 31st March 2016



Data Sources: ISD(D)4 Legacy applications for 1995 to 2006-07 data; ISD(D)4 SCCRS for 2007-08 data onwards

Notes:

1. IMPORTANT: These data are based on the pre-2006 Health Board configuration (former Argyll & Clyde). Figures for NHS Highland do not include the Argyll & Bute area and figures for NHS Greater Glasgow do not include the Clyde area.

2. Based on adjusted Community Health Index (CHI) population denominator: 20-59 years (excluding medically ineligible women) for years 1995 to 1996 and 20-60 years (excluding medically inegligible women) for years 1997-1998 to 2006-07. Based on SCCRS population denominator (excluding medically ineligible women) for 2007-08.

2. Excludes Lothian NHS Board for 2000-01 to 2006-07 (data calculated on a different basis - calendar year).

3. For 2000-01 to 2006-07 data for Lothian NHS Board are calculated on a different basis - calendar year.

The poorer uptake of cervical screening in Glasgow compared with other Health Board areas may be partly explained by differences in the population's socio-economic, age and ethnic characteristics. The relationship between deprivation and cervical screening uptake is not a simple one (**Table 1.3)**. Uptake in the least deprived areas (SIMD quintile 5), at 69% over 3.5 years and 75% over 5.5 years, is higher than other areas. But there is not a consistent increase in uptake from most deprived to least deprived areas.

Younger women have poorer uptake of cervical screening than older women (**Table 1.4)**. Women aged 21-24 have 3.5 year uptake rates of 52% compared to women aged over 40, whose uptake rates are nearly 20% higher at 69%. The CARAF is likely to lead to an improvement in overall uptake rates but no age-group achieves the 80% target uptake.

Table 1.3 NHSGGC cervical screening uptake by deprivation categories

		All Eligible Women (exluding women with No Cervix[1)]					All Eligible Women (based on Target GMS Payments[2)]				
SIMD Quintile 2012		Eligible Women	3.5 yr uptake		5.5 yrs uptake		Eligible Women	3.5 yr uptake		5.5 yrs uptake	
			Total	%	Total	%		Total	%	Total	%
Most Deprived	1	120,347	74,074	61.6	83,856	69.7	94,874	68,370	72.1	73,064	77.0
	2	54,873	35,751	65.2	39,837	72.6	44,159	33,330	75.5	35,174	79.7
	3	47,989	29,682	61.9	32,773	68.3	37,512	27,650	73.7	29,017	77.4
	4	47,122	30,346	64.4	33,081	70.2	37,436	28,342	75.7	29,575	79.0
Least Deprived	5	61,702	42,820	69.4	46,408	75.2	50,735	40,450	79.7	42,000	82.8
	Total	332,033	212,673	**64.1**	235,955	**71.1**	264,716	198,142	**74.9**	208,830	**78.9**

Source:- Scottish Cervical Call Recall System, November 2016

Notes

1 No Cervix excludes those women with the exclusion category "no Cervix"

2 Target Payments excludes those women with the exclusion categories as defined in the GP Contract, implemented in 2004

Table 1.4 NHSGGC cervical screening uptake by age group

Age Group	All Eligible Women (excluding women with No Cervix[1)]					All Eligible Women (based on Target GMS Payments[2)]				
	Eligible women	3.5 yrs uptake		5.5yrs uptake		Eligible women	3.5 yrs uptake		5.5yrs uptake	
		Total	%	Total	%		Total	%	Total	%
21-24	39,178	19,474	49.7	20,350	51.9	23,744	16,651	70.1	16,940	71.3
25-29	49,886	28,519	57.2	31,973	64.1	37,839	25,798	68.2	27,346	72.3
30-39	82,420	54,259	65.8	60,794	73.8	67,634	50,272	74.3	53,519	79.1
40-49	77,481	54,689	70.6	60,605	78.2	65,753	51,818	78.8	54,670	83.1
50-60	83,068	55,732	67.1	62,233	74.9	69,746	53,603	76.9	56,355	80.8
Total	332,033	212,673	64.1	235,955	71.1	264,716	198,142	74.9	208,830	78.9

Source: Scottish Cervical Call Recall System, November 2016

1 No Cervix excludes those women with the exclusion category "no Cervix"

Of the 332,033 eligible women (excluding women with no cervix), 60,852 (18%) did not take up the invitation to have a smear, after an invitation letter and two reminders being sent and were classified as defaulters (**Table 1.5**). **Table 1.5** shows the numbers and proportions of women excluded under the different exclusion categories.

Table 1.5 Number and proportion of women excluded from cervical screening programme by exclusion category

Reason for exclusion	No. of Women excluded	% of total Target population
Anatomically impossible	26	0.0
Co-morbidity	138	0.0
Defaulter	**60,852**	**17.7**
No cervix	12,586	3.7
No further recall	347	0.1
Not clinically appropriate	1,253	0.4
Opted out	4,018	1.2
Pregnant	656	0.2
Terminally ill	27	0.0
Total exclusions	79,903	23.2
Total target population	344,636	

Source: Scottish Cervical Call Recall System, November 2016

The highest proportion of women excluded under the GMS exception reporting as defaulted after three invitations was among the 21 to 24 year olds (see **Figure 1.3**).

Figure 1.3 Percentage of women excluded as defaulters by age group 2007/08 to 2015/2016

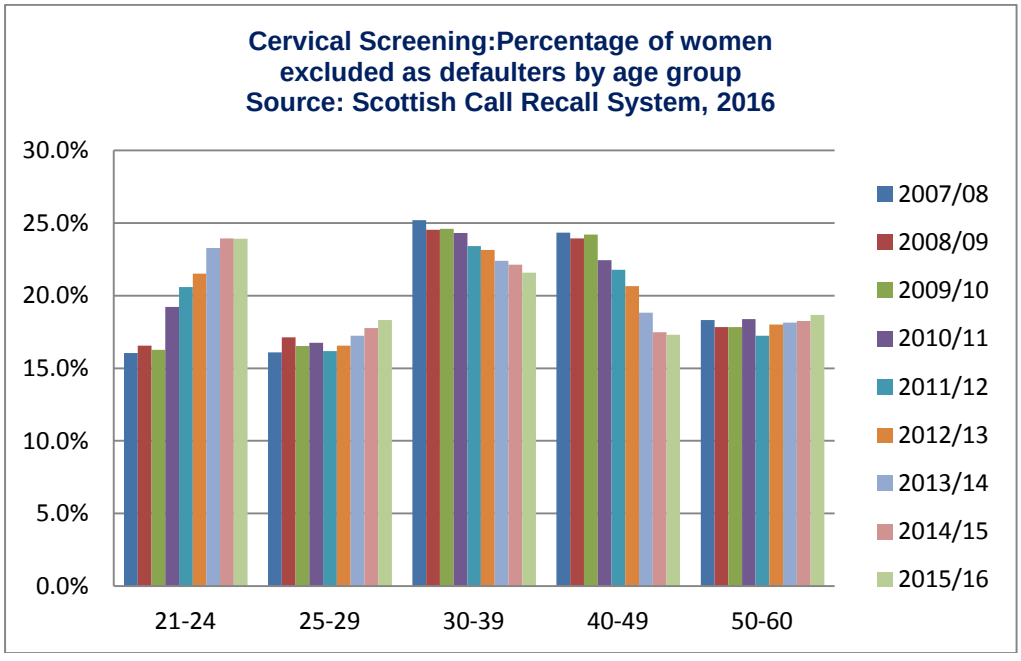


Table 1.6 shows the percentage of women excluded as defaulters by age group. The highest proportion of defaulters are aged 21-24, where nearly a quarter (24%) defaults. Default rates in this age group have also increased over time. After the CARAF, this group will no longer be invited for screening, unless already enrolled. Default rates in 30-49 year olds have decreased over time.

Table 1.6 Percentage of women excluded as defaulters by age group

	21-24	25-29	30-39	40-49	50-60
2007/08	16.1%	16.1%	25.2%	24.3%	18.3%
2008/09	16.6%	17.1%	24.5%	23.9%	17.8%
2009/10	16.3%	16.5%	24.6%	24.2%	17.8%
2010/11	19.2%	16.8%	24.3%	22.4%	18.4%
2011/12	20.6%	16.2%	23.4%	21.8%	17.2%
2012/13	21.5%	16.6%	23.1%	20.7%	18.0%
2013/14	23.3%	17.3%	22.4%	18.8%	18.1%
2014/15	23.9%	17.8%	22.1%	17.5%	18.2%
2015/16	23.9%	18.3%	21.6%	17.3%	18.7%

Source: Scottish Cervical Call Recall System, November 2016

The cervical screening uptake for women with learning disabilities by age group is shown in **Table 1.7**. The 3.5 year uptake, at 21%, is less than a third of the rest of the population (71%). Women aged 21-24 have particularly poor screening uptake rates. The 5.5 years uptake for women with no cervix, at 25%, was similar to the previous year (24%).

Table 1.7 NHSGGC Cervical Screening uptake of women with learning disability by age group

Age Group	All Eligible Women (excluding women with No Cervix[1)]					All Eligible Women (based on Target GMS Payments[2)]				
	Eligible women	3.5 yrs uptake		5.5yrs uptake		Eligible women	3.5 yrs uptake		5.5yrs uptake	
		Total	%	Total	%		Total	%	Total	%
21-24	102	10	9.8	10	9.8	40	9	22.5	9	22.5
25-29	188	46	24.5	51	27.1	105	44	41.9	48	45.7
30-39	376	89	23.7	100	26.6	184	80	43.5	82	44.6
40-49	417	91	21.8	108	25.9	201	84	41.8	88	43.8
50-60	523	101	19.3	128	24.5	245	96	39.2	103	42.0
Total[1]	**1,606**	**337**	**21.0**	**397**	**24.7**	**775**	**313**	**40.4**	**330**	**42.6**

Source: Scottish Call Recall System June 2016; NHS Greater Glasgow and Clyde Learning Disabilty LES extract September 2016

1 No Cervix excludes those women with the exclusion category "no Cervix"

2 Target payments excludes those women with the exclusion categories as defined in the GP contract, implemented in 2004

There was a large variation in uptake across the different ethnic groups (**Table 1.8).** Highest uptake was among white women at 76% compared to the lowest uptake of 28% among Chinese women. Asian and Black women have uptake rates of 55% and 49% respectively.

Table 1.8 Cervical screening uptake rate by ethnicity

2001 Ethnic Group	Total Target population	Eligible (CHI & No Cervix Exclusions Applied)	Not Screened	Screened	% Screened	Eligible (CHI & No Cervix & GMS Exclusions	Not Screened	Screened	% Screened
White British	265,145	254,146	59,805	194,341	76.5	208,367	35,610	172,757	82.9
White Irish	22,445	21,411	5,606	15,805	73.8	17,228	3,282	13,946	80.9
White other background	19,649	19,486	10,110	9,376	48.1	13,788	5,761	8,027	58.2
Subtotal	**307,239**	**295,043**	**75,521**	**219,522**	**74.4**	**239,383**	**44,653**	**194,730**	**81.3**
Asian or Asian British - Indian	4,989	4,925	2,412	2,513	51.0	3,594	1,418	2,176	60.5
Asian or Asian British - Pakistani	8,524	8,375	3,491	4,884	58.3	6,017	1,914	4,103	68.2
Asian or Asian British - Bangladeshi	587	582	313	269	46.2	381	154	227	59.6
Asian or Asian British - Other Asian	355	347	205	142	40.9	247	122	125	50.6
Subtotal	**14,455**	**14,229**	**6,421**	**7,808**	**54.9**	**10,239**	**3,608**	**6,631**	**64.8**
Black or Black British - Caribbean	36	35	25	10	28.6	24	15	9	37.5
Black or Black British - African	2,386	2,371	1,197	1,174	49.5	1,732	731	1,001	57.8
Subtotal	**2,422**	**2,406**	**1,222**	**1,184**	**49.2**	**1,756**	**746**	**1,010**	**57.5**
Other Ethnic Group - Chinese	**9,629**	**9,589**	**6,952**	**2,637**	**27.5**	**5,875**	**3,549**	**2,326**	**39.6**
Other Ethnic Group - Other background	**6,767**	**6,686**	**3,461**	**3,225**	**48.2**	**4,724**	**1,952**	**2,772**	**58.7**
Unclassified	4,107	4,080	2,501	1,579	38.7	2,739	1,378	1,361	49.7
Total	**344,619**	**332,033**	**96,078**	**235,955**	**71.1**	**264,716**	**55,886**	**208,830**	**78.9**

Source: Scottish Cervical Call Recall System, November 2016, OnoMap software

NHSGGC Cytopathology Laboratories Workload

Table 1.8 shows the number of tests performed in Cytopathology laboratories in the NHS Greater Glasgow and Clyde area. An essential criterion of the NHS HIS standards requires the laboratories to process a minimum of 15,000 smears annually and this has been achieved.

These included repeat smears and smears taken at colposcopy as one woman can have more than one smear test. The total number of smear tests processed in 2015/16 was 99,037.

Table 1.8 Number of smear tests performed in NHSGGC laboratories

	Number of Smear Tests					
Year	**IRH***	**VOL***	**QEUH**	**GRI**	**NHSGGC**	**Scotland**
2002/03	24,627	12,384	25,953	44,713	**107,677**	439,678
2003/04	23,607	12,052	25,824	44,422	**105,905**	429,522
2004/05	28,326	5,843	25,975	43,194	**103,338**	406,305
2005/06	36,166	n/a	23,160	44,035	**103,361**	410,241
2006/07	36,137	n/a	23,141	40,732	**100,010**	401,749
2007/08	30,955	n/a	23,742	39,684	**94,381**	373,340
2008/09	38,363	n/a	28,190	49,502	**116,055**	450,522
2009/10	34,166	n/a	25,138	46,025	**105,329**	415,497
2010/11	32,254	n/a	25,325	42,295	**99,874**	390,194
2011/12	31,120	n/a	23,460	41,199	**95,779**	408,838
2012/13	n/a	n/a	104,507	n/a	**104,507**	405,020
2013/14	n/a	n/a	98,959	n/a	**98,959**	384,296
2014/15	n/a	n/a	101,000	n/a	**101,000**	397,673
2015/16	n/a	n/a	99,037	n/a	**99,037**	339,150

Sources: 2002-2007 Cervical Cytology System (CCS); 2007/15 - Labs : Telepath & SCCRs

Scotland figures from ISD Website

Notes:

GRI and IRH stopped reporting smears taken as at quarter ending 31st March 2012

VOL stopped reporting smears taken as at quarter ending 30th September 2004

Table 1.9 shows the proportion of the total cervical samples sent to each of the cytology laboratories that were reported as unsatisfactory smears.

The reduction in unsatisfactory smears rates from 2002-03 can be attributed to NHSGGC cervical skills training programme to improve smear taker skills, and also the ongoing monitoring and feedback on individual smear taker performance. Quarterly comparative performance is fed-back to individual smear takers based on the proportion of unsatisfactory smears reported. The unsatisfactory smear rate in 2015/16 (2.8%) was similar to other years in the past decade.

Table 1.9 Percentage of unsatisfactory smears reported in NHS GGC laboratories

Percentage of unsatisfactory smears of total number of smears						
Year	**IRH***	**VOL***	**QEUH**	**GRI**	**NHSGGC**	**Scotland**
2002/03	5.9%	6.8%	5.9%	3.9%	**5.2%**	7.4%
2003/04	3.4%	4.6%	6.3%	3.9%	**4.4%**	3.9%
2004/05	2.7%	2.6%	2.2%	1.9%	**2.3%**	2.2%
2005/06	2.3%	n/a	2.9%	1.6%	**2.1%**	2.2%
2006/07	2.5%	n/a	3.0%	2.1%	**2.5%**	2.4%
2007/08	1.8%	n/a	2.7%	2.8%	**2.4%**	2.8%
2008/09	2.0%	n/a	2.7%	3.1%	**2.7%**	3.0%
2009/10	2.6%	n/a	2.9%	2.9%	**2.8%**	3.0%
2010/11	2.7%	n/a	2.6%	2.2%	**2.5%**	2.8%
2011/12	2.6%	n/a	2.9%	2.9%	**2.8%**	2.4%
2012/13	n/a	n/a	2.9%	n/a	**2.9%**	2.5%
2013/14	n/a	n/a	2.8%	n/a	**2.8%**	2.7%
2014/15	n/a	n/a	2.3%	n/a	**2.3%**	2.7%
2015/16	n/a	n/a	2.8%	n/a	**2.8%**	2.5%

Sources: 2002-2007 Cervical Cytology System (CCS); 2007/14 - Labs (SCCRs)

Scotland figures from ISD Website

Notes:

GRI and IRH stopped reporting smears taken as at quarter ending 31st March 2012

VOL stopped reporting smears taken as at quarter ending 30th September 2004

Table 1.10 shows the proportion of results reported as abnormal smears in each of the pathology laboratories in NHSGGC, after excluding the unsatisfactory tests between 2002/03 and 2015/16.

Abnormal smears results include: borderline, mild, moderate and severe dyskaryosis, severe dyskaryosis/invasive, glandular abnormality and adenocarcinoma. 9.7% of smears were reported as abnormal in 2015/16, the same proportion as in the previous year.

Table 1.10 Percentage of abnormal smears reported in NHS Greater Glasgow and Clyde laboratories

	Percentage of Abnormal smear results of total satisfactory smears							
Year	**IRH***	**VOL***	**SGH**	**GRI**	**STOB**	**VIC**	**NHSGGC**	**Scotland**
2000/01	7.8%	8.6%	10.2%	11.2%	10.1%	8.5%	**9.4%**	8.0%
2001/02	7.2%	7.4%	7.8%	12.4%	16.5%	8.5%	**9.5%**	8.3%
2002/03	7.0%	8.3%	5.7%	10.0%	n/a	n/a	**8.1%**	7.3%
2003/04	7.6%	10.2%	5.2%	10.3%	n/a	n/a	**8.5%**	7.2%
2004/05	7.8%	7.4%	6.0%	9.8%	n/a	n/a	**8.2%**	7.2%
2005/06	7.6%	n/a	6.7%	10.7%	n/a	n/a	**8.7%**	7.4%
2006/07	8.2%	n/a	7.6%	10.2%	n/a	n/a	**8.9%**	7.6%
2007/08	8.5%	n/a	7.1%	11.1%	n/a	n/a	**9.3%**	7.7%
2008/09	9.6%	n/a	8.5%	10.9%	n/a	n/a	**9.9%**	8.4%
2009/10	8.9%	n/a	9.3%	11.8%	n/a	n/a	**10.3%**	8.7%
2010/11	9.8%	n/a	8.1%	13.2%	n/a	n/a	**10.8%**	9.4%
2011/12	8.8%	n/a	8.2%	13.8%	n/a	n/a	**10.8%**	9.1%
2012/13	n/a	n/a	13.3%	n/a	n/a	n/a	**13.3%**	9.7%
2013/14	n/a	n/a	10.2%	n/a	n/a	n/a	**10.2%**	9.4%
2014/15	n/a	n/a	9.7%	n/a	n/a	n/a	**9.7%**	9.0%
2015/16	n/a	n/a	9.7%	n/a	n/a	n/a	**9.7%**	9.0%

Source 2000-2007 Cervical Cytology System (CCS); 2007/14 - Labs (SCCRs)

Scotland figures from ISD Website

Notes:

*IRH/VOL - includes unsatisfactory smears reported for Argyll and Bute area

GRI and IRH stopped reporting smears taken as at quarter ending 31st March 2012

VOL stopped reporting smears taken as at quarter ending 30th September 2004

STOB stopped reporting smears taken as at quarter ending 30th June 2001

VIC stopped reporting smears taken as at quarter ending 30th September 2001

Table 1.11 shows the detailed breakdown of smear results profile reported by NHSGGC laboratories.

Of the 99,037 smears tests received by the laboratories, 98,703 (97.7%) were processed. 90% of smears processed were reported to be negative; 3% were borderline squamous; 4% mild dyskaryosis and 1% to have moderate to severe dyskaryosis. **Appendix 1.1** shows the management and follow up advice for cytology results.

Table 1.12 NHSGGC laboratory result profiles by age band: 1 April 2015 to 31 March 2016 (compiled from quarterly reports)

Age Band	Unsatisfactory	% Total	Negative	Borderline change in squamous cells	Borderline change in endocervical cells	Low grade dyskaryosis	High grade dyskaryosis (moderate)	High grade dyskaryosis (severe)	High grade dyskaryosis ? Invasive	Glandular Abnormality	Endocervical Adeno-carcinoma	Endometrial or other malignancy	Total (Including Unsatisfactory)	Total (Excluding Unsatisfactory)
Under 20	13	2.70	403	37	0	29	0	0	0	0	0	0	482	469
20 - 24	277	2.09	10,678	924	12	1,191	126	52	0	[redacted]	0	0	13,264	12,987
25 - 29	304	2.12	11,757	844	13	1,031	208	153	[redacted]	6	0	0	14,317	14,013
30 - 34	360	2.64	11,868	503	38	589	153	133	[redacted]	16	0	0	13,661	13,301
35 - 39	296	2.59	10,204	374	17	365	89	64	[redacted]	7	0	[redacted]	11,421	11,125
40 - 44	303	2.69	10,181	337	24	303	55	63	[redacted]	6	0	0	11,274	10,971
45 - 49	356	2.94	11,112	308	21	245	33	26	[redacted]	[redacted]	0	[redacted]	12,107	11,751
50 - 54	374	3.30	10,476	219	7	207	25	17	[redacted]	[redacted]	0	[redacted]	11,329	10,955
55 - 59	374	4.19	8,282	126	0	113	12	15	[redacted]	[redacted]	0	[redacted]	8,930	8,556
60 - 64	94	4.47	1,933	32	0	36	[redacted]	<5	[redacted]	0	0	0	2,104	2,010
65 and Over	[redacted]	2.70	130	[redacted]	0	8	0	<5	[redacted]	0	0	0	148	144
Total	**2,755**	**2.8**	**87,024**	**3,707**	**132**	**4,117**	**704**	**529**	**14**	**46**	0	**9**	**99,037**	**96,282**
%			**90.4**	**3.4**	**0.1**	**3.9**	**0.7**	**0.5**	**0.0**	**0.0**	0	**0.0**		
20 - 60	**2,702**	**2.8**	**85,857**	**3,653**	**132**	**4,057**	**702**	**525**	**11**	**46**	0	**9**	**97,694**	**94,992**
%			**90.4**	**3.4**	**0.1**	**3.9**	**0.7**	**0.5**	**0.0**	**0.0**	0.0	**0.0**		

Source: Scottish Cervical Call Recall System, November 2016

Smears are those processed at a lab , independent of a woman's area of residence or where smeared

Smear counts for the originating lab

Date received into the lab is the qualification date - report won't run until all smears completed for reporting period. Date authorised may be after end of reporting period.

Only lab processed smears count , not white cards or other historic adjustments/additions

Smears must be authorised to qualify

If a woman has more than one smear , each one will count .

Result proportions are calculated excluding unsatisfactory results

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 1.13 shows the activity data across NHSGGC colposcopy service. In 2015/16, there were 6,954 patient episodes. New outpatient episodes include all patients attending colposcopy services; return episodes will include treatment visits following the diagnosis of cervical intra-epithelial neoplasia (CIN) in addition to standard follow up visits for colposcopy based indications.

Table 1.13 NHSGGC colposcopy service workload 1 April 2015 to 31 March 2016

Attendance Status	Type of Episode			Total Episodes (Types 1-3)
	New Outpatients	Return/ Follow Up Outpatients	Inpatients	
Patient was Seen (Attended)	4,039	2,859	56	6,954
Cancelled by Patient	328	481	-	809
Cancelled by Clinic or Hospital	21	114	-	135
Patient attended but was not seen (CNW)			-	
Patient Did Not Attend	550	835	-	1,385

Source: National Colposcopy Clinical Audit System (Extracted November 2016
Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

British Society for Colposcopy and Cervical Pathology (BSCCP) standards suggest that all patients should be seen within 8 weeks of referrals and that high grade cases should be seen within 4 weeks of referral. In NHSGGC, colposcopy service aim to see all high grade cases within 2 weeks of referral and low grade cases within 8 weeks of referral.

Test of cure

In May 2012, NHSGGC implemented “test of cure” for women treated at Colposcopy for cervical disease (CIN 1, CIN2 and CIN 3). This involves testing follow up smear samples for HPV in addition to cytological examination. The combined algorithm allows the return to normal 3 yearly recall for approximately 1,300 women per annum whose HPV and cytological result is normal.

Previously women with one mild dyskaryosis smear result were referred to colposcopy. Women are referred to colposcopy after two mild dyskaryosis smear results.

Invasive cervical cancer audit

The aim of the cervical screening programme is to reduce the incidence of and mortality from invasive cervical cancer. It is recognised that in order to assess the effectiveness of the cervical screening programme, the audit of the screening histories of women with invasive cervical cancer is fundamental. This audit is an important process that helps to identify variations in practice, encourages examinations of the reasons for these variations, and helps to identify the changes required to improve the quality of the service.

In 2015, we reviewed the notes of 63 women who developed invasive cervical cancer and had a pathology diagnosis made in NHS Greater Glasgow and Clyde laboratories.

Table 1.14 shows numbers and the distribution of women's age at diagnosis for years 2010 to 2015. The largest number of cervical cancers occurred in women aged between 30 and 39 years.

Table 1.14 Number of NHSGGC residents with invasive cervical cancers by age at diagnosis and year of diagnosis

	Year (Diagnosis)						
Age Group	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
20-29	10	7	12	6	9	8	**52**
30-39	23	15	27	23	20	18	**126**
40-49	22	10	17	17	14	15	**95**
50-59	7	10	9	10	6	8	**50**
60-69	[redacted]	7	11	[redacted]	8	9	**43**
70-79	10	8	7	7	6	[redacted]	**42**
80+	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**18**
Total	**80**	**60**	**86**	**70**	**67**	**63**	**426**

Source: NHSGGC Invasive Cancer Audit (November 2016)
Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Figure 1.4 shows the distribution of cervical cancers by deprivation for the period 2010 to 2015. The highest proportion of cervical cancers occurred in women living in the most deprived (SIMD1) areas.

Figure 1.4 Distribution of cervical cancers diagnosed by deprivation area from 2010 to 2015

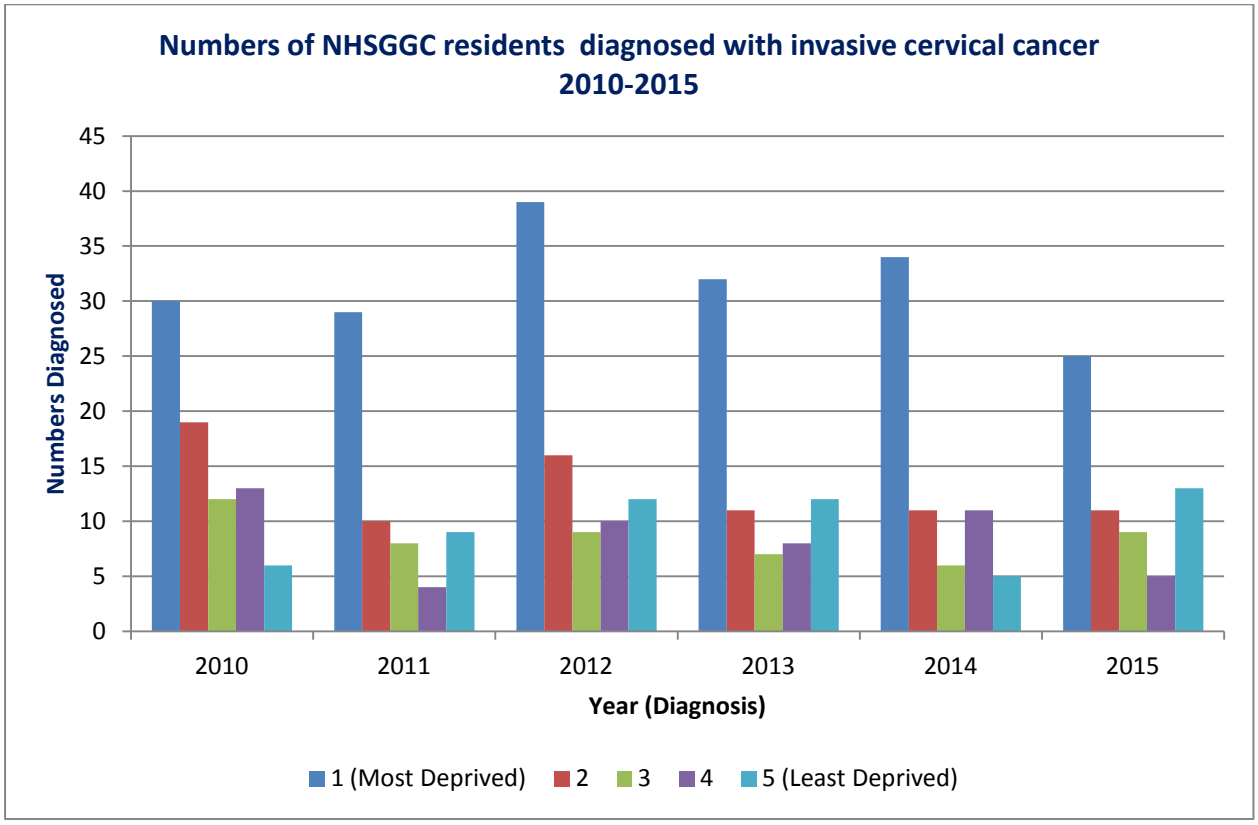


Table 1.15 shows the distribution of clinical stage at diagnosis over a six year period from 2010 to 2015

Table 1.15 Number of women with invasive cervical cancers by clinical stage and by year of diagnosis

	Year (Diagnosis)						
Clinical Staging	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
Not Known	[redacted]	[redacted]	0	0	0	[redacted]	[redacted]
1a1 (less than 3mm deep and >=7mm	21	12	20	19	13	10	**95**
1a2 (3-5mm deep and <7mm wide)	0	[redacted]	[redacted]	[redacted]	0	[redacted]	[redacted]
1b (confined to cervix)	14	14	24	19	26	21	**118**
2 or Greater (spread outwith cervix)	39	32	38	30	28	29	**196**
Not known	[redacted]	0	[redacted]	0	0	0	**7**
Total	**80**	**60**	**86**	**70**	**67**	**63**	**426**

Source: NHSGGC Invasive Cancer Audit (November 2016)

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 1.16 shows that, in 2015, 27 of the 63 (43%) cases were screen detected. The rest of the cases presented to the service with symptoms or were incidental findings.

Table 1.16 Number of women with invasive cancers split by modality of presentation and year of diagnosis

	Year (Diagnosis)						
Presentation	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
Not Known	24	20	0	0	[redacted]	[redacted]	**47**
Incidental Finding	0	0	[redacted]				[redacted]
Smear detected	29	20	39	31	32	27	**178**
Symptomatic	27	20	46	38	33	32	**196**
Total	**80**	**60**	**86**	**70**	**67**	**63**	**426**

Source: NHSGGC Invasive Cancer Audit (November 2016)
Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

In 2015, 20 women of 63 (32%) women had a complete smear history compared to 42 (56%) women who had incomplete smear histories (**Table 1.17**). Over the six years audited, 57 (13%) women out of the 426 that developed cancer had never had a smear; 153 (36%) had complete smear histories and 211 (50%) of women had incomplete smear histories.

Table 1.17 Smear histories of women with invasive cervical cancer

	Year (Diagnosis)						
Smear History	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
Not Known	[redacted]	0	[redacted]	0	0	[redacted]	[redacted]
Adequate	25	24	34	24	26	20	**153**
Incomplete	42	22	40	36	36	35	**211**
Not Applicable	12	14	11	10	[redacted]		**57**
Total	**80**	**60**	**86**	**70**	**67**	**63**	**426**

Source: NHSGGC Invasive Cancer Audit (November 2016)
Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 1.18 shows the follow up status of the women included in the audit of invasive cancer at the time when the audit was carried out.

Table 1.18 Follow up status of the women with invasive cervical cancer

	Year (Diagnosis)						
Smear History	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**Total**
Not Known							**14**
Death	7	9	11		0		**34**
Early recall	0	0	3	0	0	0	**3**
Lost to colposcopy service		0					
No further recall - total	0		0	0	0		
On follow up at colposcopy	21	8	24	18	12	9	**92**
On follow up at oncology/Beatson	47	38	46	46	52	46	**275**
Total	**80**	**60**	**86**	**70**	**67**	**63**	**426**

Source: NHSGGC Invasive Cancer Audit (November 2016)

Morbidity and mortality from cervical cancer in NHS Greater Glasgow and Clyde and Scotland

In 2014, the most recent year for which completed data are available, the number of new cervical cancers registered among NHS Greater Glasgow and Clyde residents was 77 (**Table 1.19**). This gives a standardised incidence rate of 13 per 100,000 per population which is lower than that for Scotland at 14.1.

Standardised incidence and mortality rates for cervical cancer for NHSGGC and Scotland are illustrated in **Figure 1.5.** Between 2004 and 2014, incidence increased by 18%. It is not clear that rates have continued to rise in more recent years.

In 2014, 18 women with a diagnosis of cervical cancer died in NHSGGC. This gives a standardised rate of 3.2 per 100,000 population equal to the Scotland rate of 3.2 per 100,000.

Table 1.19 Cervical Cancer Registrations and Deaths 1997 – 2014

Scotland	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	359	369	313	302	309	292	267	284	298	292	293	314	328	333	318	304	318	385
Registration: EASR	*13.9*	*14.3*	*12.0*	*11.5*	*11.8*	*11.1*	*10.2*	*10.9*	*11.2*	*10.9*	*11.1*	*11.8*	*12.2*	*12.3*	*11.7*	*11.2*	*11.6*	*14.1*
- Lower 95% CI	*12.5*	*12.9*	*10.7*	*10.3*	*10.6*	*9.9*	*9.0*	*9.7*	*9.9*	*9.7*	*9.8*	*10.5*	*10.9*	*11.0*	*10.5*	*9.9*	*10.4*	*12.7*
- Upper 95% CI	*15.4*	*15.8*	*13.4*	*12.9*	*13.2*	*12.5*	*11.4*	*12.2*	*12.5*	*12.2*	*12.4*	*13.1*	*13.6*	*13.7*	*13.0*	*12.5*	*12.9*	*15.5*
Mortality: Numbers	144	145	122	117	113	100	120	102	127	92	105	102	107	99	108	112	91	88
Mortality: EASR	*5.9*	*5.8*	*4.9*	*4.7*	*4.5*	*3.9*	*4.7*	*4.0*	*4.9*	*3.5*	*4.0*	*3.8*	*4.0*	*3.7*	*3.9*	*4.1*	*3.3*	*3.2*
- Lower 95% CI	*4.9*	*4.9*	*4.1*	*3.9*	*3.7*	*3.2*	*3.9*	*3.2*	*4.1*	*2.9*	*3.3*	*3.1*	*3.3*	*3.0*	*3.2*	*3.4*	*2.7*	*2.6*
- Upper 95% CI	*6.9*	*6.8*	*5.8*	*5.6*	*5.3*	*4.7*	*5.6*	*4.8*	*5.7*	*4.3*	*4.8*	*4.6*	*4.8*	*4.4*	*4.7*	*4.9*	*4.1*	*3.9*

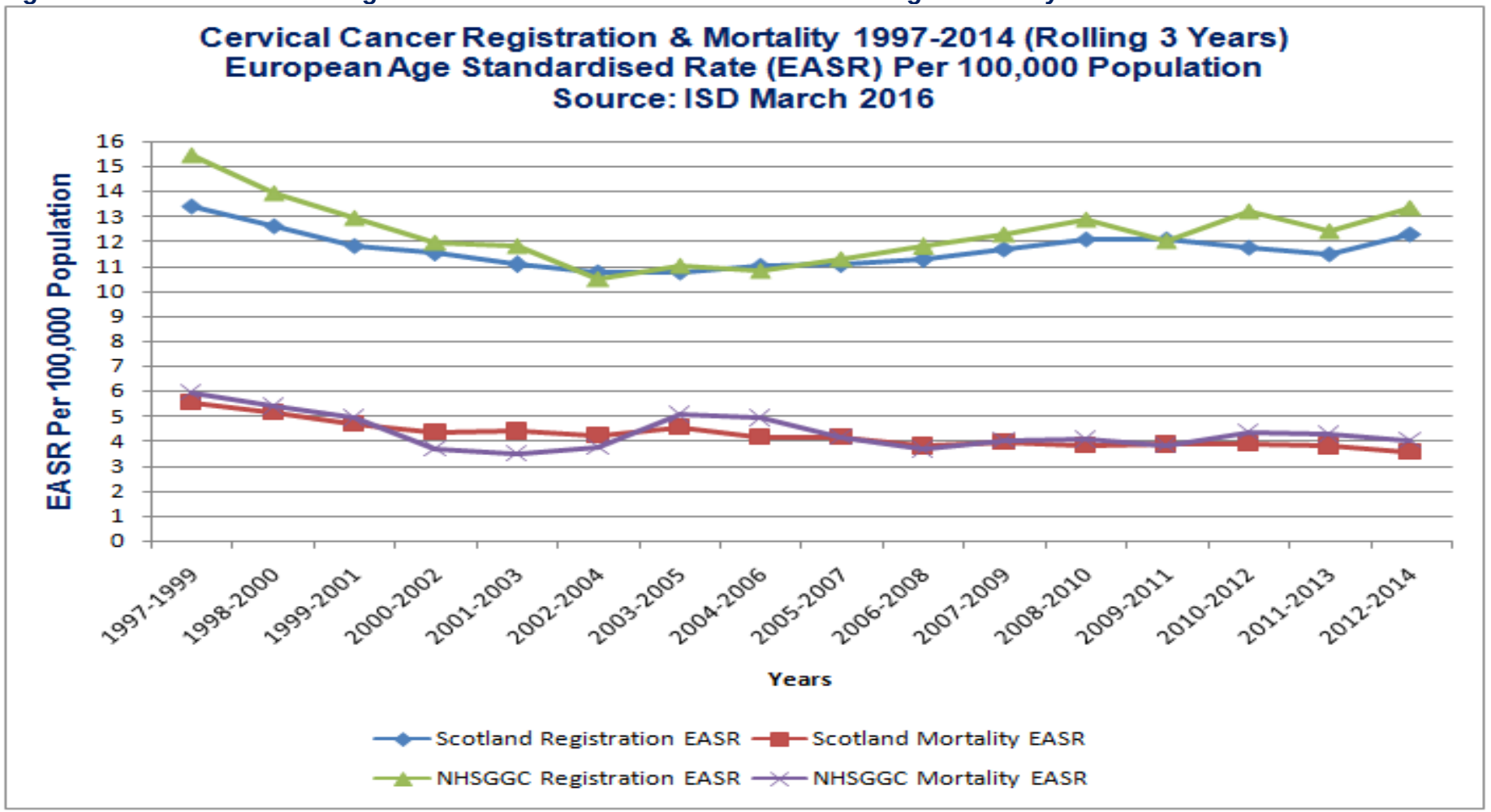
NHS Greater Glasgow and Clyde	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	90	104	73	68	86	57	63	62	65	60	70	74	70	81	60	90	67	77
Registration: EASR	*16.0*	*17.8*	*12.6*	*11.4*	*14.8*	*9.6*	*11.0*	*10.8*	*11.3*	*10.4*	*12.1*	*12.8*	*11.9*	*13.9*	*10.3*	*15.4*	*11.6*	*13.0*
- Lower 95% CI	*12.8*	*14.5*	*9.8*	*8.9*	*11.8*	*7.2*	*8.4*	*8.3*	*8.7*	*7.9*	*9.5*	*10.0*	*9.2*	*11.1*	*7.8*	*12.3*	*9.0*	*10.2*
- Upper 95% CI	*19.5*	*21.4*	*15.7*	*14.3*	*18.2*	*12.2*	*13.9*	*13.7*	*14.2*	*13.2*	*15.2*	*15.9*	*14.8*	*17.2*	*13.1*	*18.7*	*14.5*	*16.1*
Mortality: Numbers	30	35	32	21	28	13	18	31	34	16	19	26	22	20	23	32	19	18
Mortality: EASR	*5.5*	*6.4*	*5.9*	*3.8*	*5.0*	*2.3*	*3.2*	*5.8*	*6.0*	*2.9*	*3.5*	*4.6*	*4.0*	*3.6*	*3.9*	*5.5*	*3.4*	*3.2*
- Lower 95% CI	*3.7*	*4.4*	*4.0*	*2.3*	*3.3*	*x*	*x*	*4.0*	*4.2*	*x*	*x*	*3.0*	*2.5*	*2.2*	*2.5*	*3.7*	*x*	*x*
- Upper 95% CI	*7.7*	*8.7*	*8.1*	*5.6*	*7.0*	*x*	*x*	*8.1*	*8.3*	*x*	*x*	*6.5*	*5.8*	*5.3*	*5.7*	*7.5*	*x*	*x*

Cervical Cancer (ICD10 C53)

Deaths EASR: age-standardised incidence rate per 100,000 person-years at risk (European standard population) Source: National Records of Scotland (NRS) Data extracted: September 2015

Registration EASR: age-standardised incidence rate per 100,000 person-years at risk (European standard population) Source: Scottish Cancer Registry (ISD) Data extracted: March 2016

Figure: 1.5 Cervical cancer registrations and deaths for NHS Greater Glasgow and Clyde and Scotland



Information systems

Scottish Cervical Call Recall System (SCCRS)

The Scottish Cervical Call Recall System (SCCRS) provides women with a complete e-health record detailing their whole smear history which professionals involved with the screening programme access. Results are automatically available for the smear takers to view in SCCRS and patients are sent notification directly from Scottish Cervical Call Recall System. The system also produces individual, and practice performance automated reports.

National Colposcopy Clinical Information Audit System (NCCIAS)

The National Colposcopy Clinical Information Audit System (NCCIAS) is used by Colposcopy staff for the clinical management and audit of all colposcopy referrals.

HPV Vaccination

Since 2008, all girls aged 11 to 13 years in their second year of secondary school are routinely offered vaccinations to protect them against the Human Papilloma Virus (HPV). There are two types of HPV that cause 70% of cases of cervical cancers. The HPV vaccine does not protect against all cervical cancers so regular cervical screening is still important (ISD, 2011).

Overall uptake across NHSGGC for the first dose of the HPV vaccination was 94% and 89% for the second dose (**Table .20**).

Change to age range and frequency

From June 2016, the age range and frequency of the cervical screening programme changed for routine screening to three yearly from age 25 – 49 and 5 yearly from age 50 – 64. Women on non routine screening will be invited up to the age of 70 years, a change from the previous arrangement of 68 years.

Challenges and future priorities

- To support national public health information campaigns to increase cervical screening uptake among women in younger age groups.

- To plan for the introduction of high risk HPV testing.

Table 1.20 shows the uptake rates for S1, S2 and S3 routine cohort by end of the school year by HSCP

HSCP	Number S1 Girls in Cohort	Number Uptake Dose 1	% Uptake Dose 1	Number S2 Girls in Cohort	Number Uptake Dose 1	% Uptake Dose 1	Number Uptake Dose 2	% Uptake Dose 2	Number S3 Girls in Cohort	Number Uptake Dose 1	% Uptake Dose 1	Number Uptake Dose 2	% Uptake Dose 2
East Dunbartonshire	642	595	92.7	577	551	95.5	525	91.0	615	588	*96*	564	91.7
East Renfrewshire	635	592	93.2	670	638	95.2	617	92.1	679	654	*96*	627	92.3
Glasgow North East	752	699	93.0	738	706	95.7	629	85.2	721	676	*94*	621	86.1
Glasgow North West	670	579	86.4	824	774	93.9	705	85.6	839	777	*93*	733	87.4
Glasgow South	884	803	90.8	895	844	94.3	764	85.4	917	870	*95*	803	87.6
Inverclyde	379	343	90.5	361	337	93.4	310	85.9	378	363	*96*	337	89.2
Renfrewshire	833	775	93.0	835	812	97.2	758	90.8	873	845	*97*	807	92.4
West Dunbartonshire	452	408	90.3	471	457	97.0	419	89.0	457	445	*97*	418	91.5
Total	5,247	4,794	91.4	5371	5119	95.3	4,727	88.0	5,479	5,218	*95*	4,910	89.6

Source: CHSP School, June 2016

Appendix 1.1

Management and follow-up advice for cytology results

SMEAR REPORT	MANAGEMENT
Negative	36 month recall
Negative, after borderline	Further repeat at 6 months Return to routine recall after 2nd negative.
Negative, after mild	Further repeat at 6 & 18 months. Return to routine recall after 3rd negative
Unsatisfactory	3 month recall. Refer after third in succession.
Borderline Squamous Changes +/- HPV	6 month recall. Refer after third. ? High grade – Flag as such and Refer to Colposcopy on 1st.
Borderline Glandular Changes	6 month recall. Refer after second.
Mild dyskaryosis	Repeat in 6 months Refer after second.
Glandular abnormality	Refer to Colposcopy
Moderate Dyskaryosis	Refer to Colposcopy
Severe Dyskaryosis	Refer to Colposcopy
Severe Dyskaryosis / invasive	Refer to Colposcopy
Adenocarcinoma – Endocervical	Refer to Colposcopy
Endometrial Adenocarcinoma	Refer to Gynaecology (Early recall will not be triggered for such cases as the detected abnormality is not relevant to cervical screening)

Management and follow up for cytology results: Post Total Hysterectomy prior local test of cure implementation

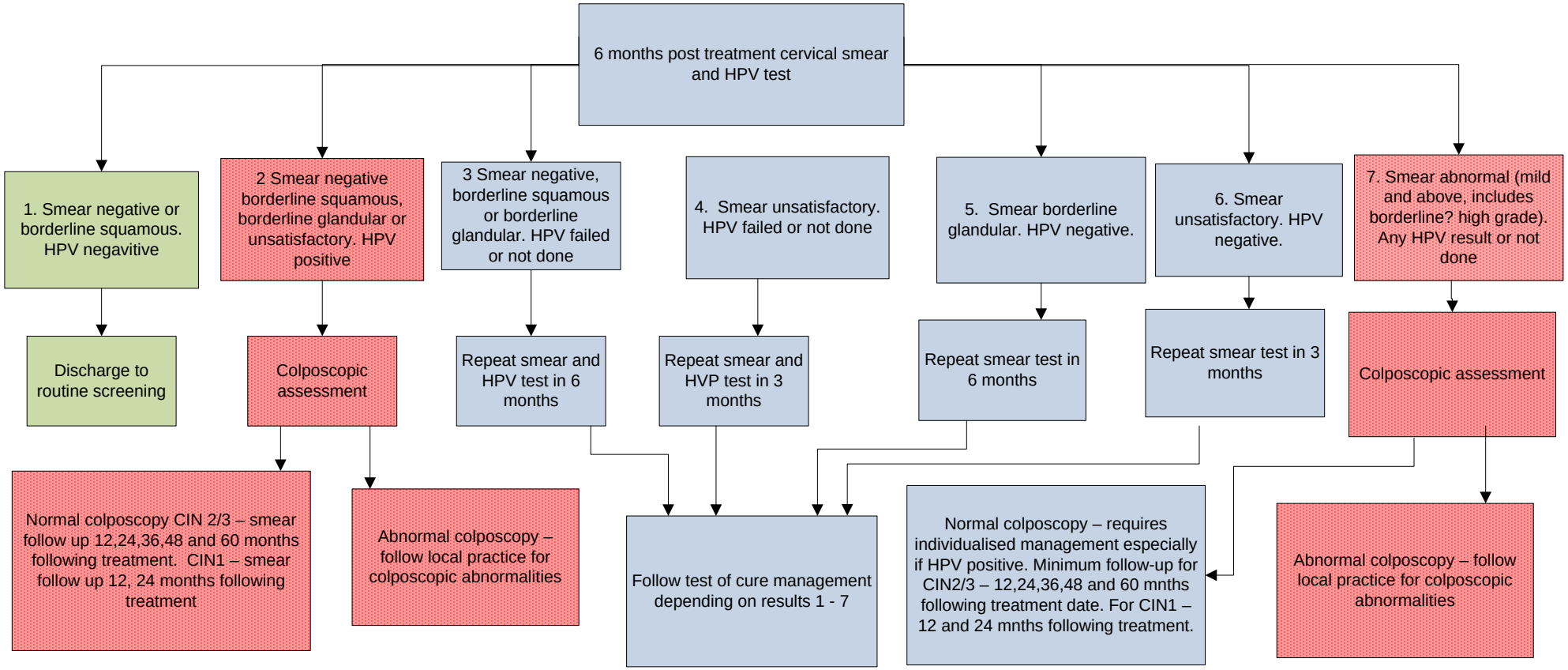
On routine recall No CIN/CGIN in hysterectomy	No further recall
On non-routine recall No CIN/CGIN in hysterectomy	No further recall
CIN/CGIN in hysterectomy completely excised	Vault smears at 6 and 18 months. If negative, no further recall
Low grade CIN/CGIN in hysterectomy incompletely excised	Vault smears at 6, 12 and 24 months. If negative, no further recall
High grade CIN/CGIN in hysterectomy incompletely excised	Vault smears at 6 and 12 months, and then annual vault smears to 5 years. If negative, no further recall.

Management and follow up for cytology results: Post Total Hysterectomy after local test of cure implementation

On routine recall No CIN/CGIN in hysterectomy	No further recall
On non-routine recall No CIN/CGIN in hysterectomy	No further recall
CIN in hysterectomy	Vault smear and HPV Test at 6 months. If both negative, no further recall
CGIN in hysterectomy. Completely excised	Vault smears at 6 and 18 months. If negative, no further recall
Low grade CGIN in hysterectomy incompletely excised	Vault smears at 6, 12 and 24 months. If negative, no further recall
High grade CGIN in hysterectomy incompletely excised	Vault smears at 6 and 12 months, and then annual vault smears to 5 years. If negative, no further recall

CIN = cervical intraepithelial neoplasia
CGIN = cervical glandular intraepithelial neoplasia

Management and follow up for cytology post treatment cervical smear and HPV test (Test of Cure)



Appendix 1.4

Members of Cervical Screening Steering Group (As at March 2016)

Dr David Morrison	Consultant in Public Health Medicine (Chair)
Dr Margaret Burgoyne	Head of Service, Pathology
Dr Kevin Burton	Consultant Gynaecologist
Mrs Lin Calderwood	HI&T Service Delivery Manager
Mr Chris Garbutt	Health Records Senior Supervisor
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Dr Anja Guttinger	Consultant in Sexual and Reproductive Health Medicine
Mrs Kathy Kenmuir	Primary Care Support Nurse Advisor (acting)
Dr Margaret Laing	Staff Grade in Cytology/Colposcopy
Mr Paul Burton	Information Manager
Miss Denise Lyden	Project Officer
Mrs Michelle McLachlan	General Manager, Women's & Children's
Dr Ken O'Neill	Clinical Director, Glasgow City HSCP
Mrs Christine Paterson	Primary Care Support Nurse
Mr Graham Reid	Specialty Manager, Cytology
Mrs Elizabeth Rennie	Programme Manager, Screening Dept

Chapter 2: Breast Screening

Summary

- During 2013-2016, 123,131 women were eligible for breast screening in NHSGGC.
- There has been an increase of 3.8% in uptake since 2012/15. 68% (83,721) of eligible women attended breast screening during the previous three years, against a minimum target of 70%. East Dunbartonshire, East Renfrewshire and Renfrewshire HSCP areas met the target uptake.
- 752 (0.9% of all screened) women were diagnosed with breast cancer following screening.
- Of the 615 women with learning disabilities, only 275 (44.7%) participated in breast screening.
- Uptake rates were lower at younger ages.
- Uptake of breast screening is strongly associated with socio-economic circumstances. It ranged from 56.4% in the most deprived quintile to 78.1% in the least deprived. The variation in uptake between HSCPs is probably largely explained by socio-economic differences.
- Uptake of breast screening differs between ethnic groups. It was lowest in Black or Black British, Caribbean and African women (48.7%) and highest among white women (68.5%). Asian or Asian British Indian women were the only ethnic minority with uptake rates above 60%.
- In 2014, when the most recent data were available, the number of new breast cancers registered in NHSGGC was 950. The risk of developing breast cancer in NHSGGC is not significantly different to that in the rest of Scotland.

Chapter 2: Breast Screening

Background

Breast cancer is the most common cancer in women in Scotland. Incidence rates continue to rise with a 10% increase over the last decade. This is partly due to increased detection by the Scottish Breast Screening Programme and to changes in the prevalence of known risk factors, such as mother's age at birth of first child, increases in obesity and alcohol consumption.

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

This report represents screening round data from 1 April 2012 to 31 March 2016.

Aim of Screening Programme

The purpose of breast screening by mammography is to detect breast cancers at the earliest possible time so that treatment may be offered promptly. It is believed that very early detection of breast cancers in this way can result in more effective treatment, which may be more likely to reduce deaths from breast cancer.

Eligible Population

Women aged 50-70 years are invited for a routine screen once every three years. Women aged over 70 years are screened on request.

The Screening Test

The screening method used consists of two mammographic views.
The test is a straightforward procedure involving two images being taken of each breast using an X-ray machine (also known as a mammogram).

Screening Setting

The West of Scotland Breast Screening Centre screens NHSGGC residents either in the static centre in Glasgow or in mobile units that visit pre-established sites across the NHSGGC area.

Screening Pathway

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 thereafter until her 70th birthday. A woman can request a screening appointment when she turns 50 providing her practice is not being screened in the next six months. The West of Scotland Breast Screening Centre also contacts all long-stay institutions (care homes, prisons, and mental health hospitals) to offer screening to eligible residents.

The mammograms taken during the screening visit are examined and the results sent to the woman and her GP. A proportion of women attending for screening 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.

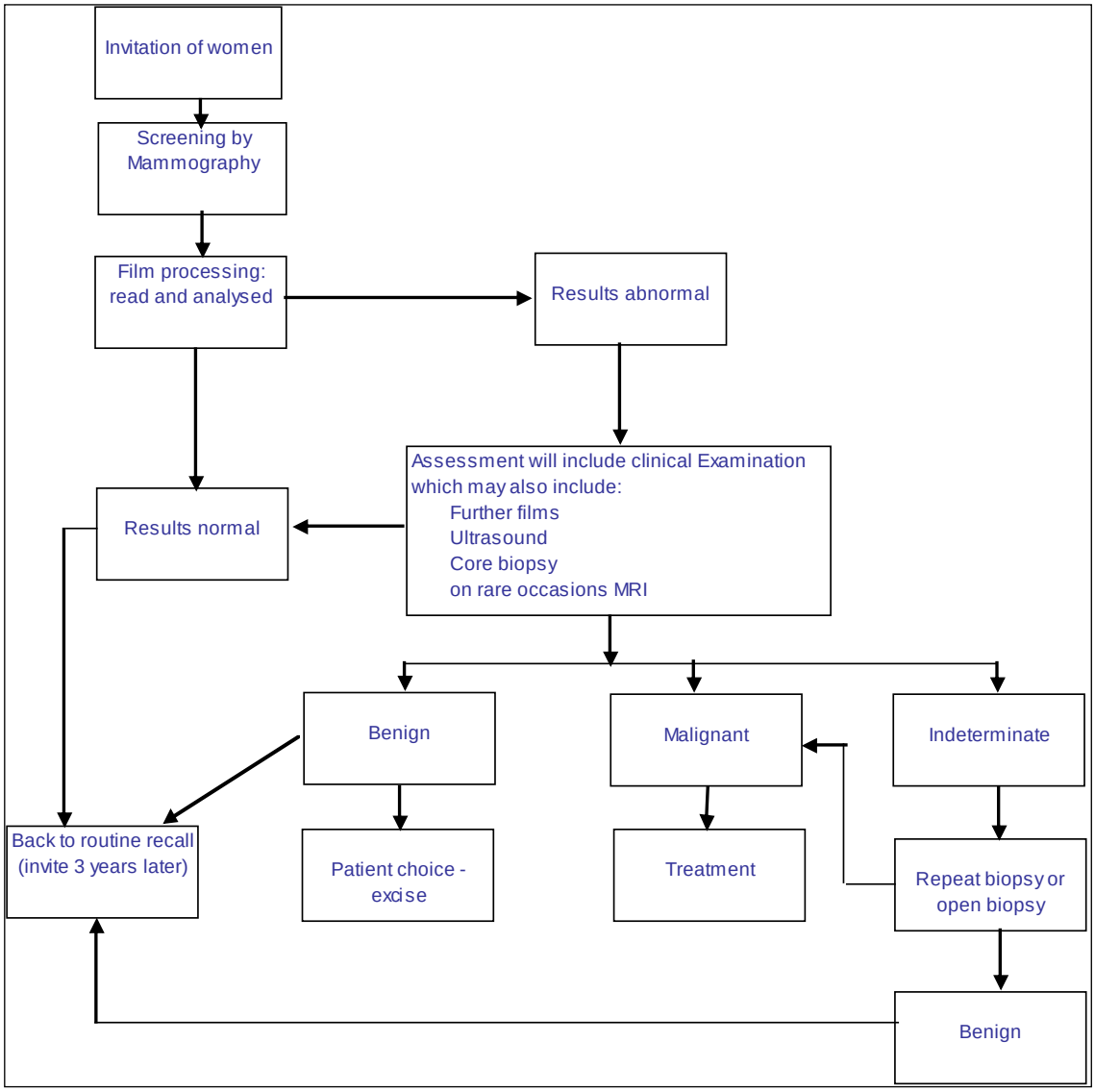
If a woman is found to have cancer, she is referred to a consultant surgeon to discuss the options available to her. This usually involves surgery: a lumpectomy where just the lump and a small amount of surrounding tissue is removed or a mastectomy where the whole breast is removed. Surgery is likely to be followed by radiotherapy, chemotherapy, hormone therapy or a mixture of these.

The exact course of treatment will depend on the type of cancer found and the woman's personal preferences.

Assessment clinics are carried out in the West of Scotland Breast Screening Centre situated in Glasgow. The surgical treatment is carried out by designated teams in Western Infirmary, Victoria ACH, Stobhill ACH and Royal Alexandra Hospital and a small proportion of women with palpable tumours are referred for treatment to local breast teams.

Figure 2.1 illustrates the breast screening pathway.

Figure 2.1 Screening pathway



Delivery of NHSGGC Breast Screening Programme

During 2013-2016, 123,131 were eligible women for breast screening (**Table 2.1**).

Table 2.1 Number of NHSGGC women residents split by age band and HSCP 1 April 2013 to 31 March 2016

	Age Band				
HSCP	**50-54**	**55-59**	**60-64**	**65-70**	**Total**
East Dunbartonshire	4,502	4,029	3,572	3,895	15,998
East Renfrewshire	3,815	3,345	2,820	3,101	13,081
Glasgow North East Sector	4,387	3,477	2,697	2,836	13,397
Glasgow North West Sector	5,466	4,707	3,708	3,639	17,520
Glasgow South Sector	7,596	6,515	4,990	4,841	23,942
Inverclyde	1,280	1,112	1,013	1,054	4,459
Renfrewshire	7,251	6,181	5,426	5,840	24,698
West Dunbartonshire	2,871	2,625	2,208	2,332	10,036
Total	**37,168**	**31,991**	**26,434**	**27,538**	**123,131**

Source: West of Scotland Breast Screening Data, August 2016

Table 2.2 shows the number and percentage uptake by age and by HSCP. Of the 123,131 eligible women, 83,721 (68%) women attended breast screening during the previous three years. This represents an increase of 3.8% since 2012/15. East Dunbartonshire, East Renfrewshire and Renfrewshire met and exceeded the minimum standard of 70% uptake although overall NHSGGC did not.

Uptake rates increased with age from 66.6% at ages 50-54 to 69.8% at ages 60-64 before falling slightly to 68.6% at ages 65-70.

Table 2.2 Total number and percentage of NHSGGC breast screening uptake by age and by HSCP 2013 - 2016
NHS Greater Glasgow & Clyde Breast Screening Programme uptake by age band. Invitations 1 April 2013 – 31 March 2016

	50-54		55-59		60-64		65-70		Total	
HSCP	**N**	**% Screened**	**N**	**% Screened**	**N**	**% Screened**	**N**	**% Screened**	**N**	**% Screened**
East Dunbartonshire	3,404	75.6	3,057	75.9	2,780	77.8	2,959	76.0	12,200	76.3
East Renfrewshire	2,869	75.2	2,584	77.2	2,175	77.1	2,296	74.0	9,924	75.9
Glasgow North East Sector	2,725	62.1	2,119	60.9	1,695	62.8	1,760	62.1	8,299	61.9
Glasgow North West Sector	3,333	61.0	2,921	62.1	2,418	65.2	2,286	62.8	10,958	62.5
Glasgow South Sector	4,682	61.6	4,072	62.5	3,226	64.6	3,080	63.6	15,060	62.9
Inverclyde	823	64.3	736	66.2	706	69.7	728	69.1	2,993	67.1
Renfrewshire	5,033	69.4	4,378	70.8	3,955	72.9	4,213	72.1	17,579	71.2
West Dunbartonshire	1,898	66.1	1,740	66.3	1,498	67.8	1,572	67.4	6,708	66.8
Total	**24,767**	**66.6**	**21,607**	**67.5**	**18,453**	**69.8**	**18,894**	**68.6**	**83,721**	**67.9**

Of the total number that attended breast screening, 752 (0.9%) women were diagnosed with breast cancer following screening (**Table 2.3**).

Table 2.3 NHSGGC Breast Screening Programme activity data for 2013-2016 by HSCP area

HSCP	Attended	Routine Invitations	% Uptake	Number Cancers Detected*	Cancers of those invited %	Cancers of those attended %
East Dunbartonshire	12,200	15,998	76.3	104	0.7	0.9
East Renfrewshire	9,924	13,081	75.9	99	0.8	1.0
Glasgow North East Sector	8,299	13,397	61.9	84	0.6	1.0
Glasgow North West Sector	10,958	17,520	62.5	86	0.5	0.8
Glasgow South Sector	15,060	23,942	62.9	130	0.5	0.9
Inverclyde	2,993	4,459	67.1	56	1.3	1.9
Renfrewshire	17,579	24,698	71.2	155	0.6	0.9
West Dunbartonshire	6,708	10,036	66.8	38	0.4	0.6
Total	**83,721**	**123,131**	**67.9**	**752**	**0.6**	**0.9**

Table 2.4 shows the number of women aged 50 – 53 who were invited to attend their first breast screening appointment and percentage uptake. Of the 22,743 women invited, 66.6% took up the invitation to attend for breast screening.

Lowest uptake was among women living in Glasgow North West and Glasgow South areas at 60.4% and 61.6%, respectively. Highest uptake was in the East Renfrewshire area at 75.5%.

Table 2.4 NHSGGC breast screening uptake by first invitation (age 50-53) by HSCP 1 April 2013- 31 March 2016

		Uptake		
HSCP	**Total Eligible**	**Not Attended**	**Attended**	**% Uptake**
East Dunbartonshire	2,717	685	2,032	74.8
East Renfrewshire	2,339	572	1,767	75.5
Glasgow North East Sector	2,719	1,017	1,702	62.6
Glasgow North West Sector	3,383	1,340	2,043	60.4
Glasgow South Sector	4,609	1,769	2,840	61.6
Inverclyde	790	285	505	63.9
Renfrewshire	4,402	1,336	3,066	69.7
West Dunbartonshire	1,784	597	1,187	66.5
Total	**22,743**	**7,601**	**15,142**	**66.6**

Source: West of Scotland Breast Screening Data, August 2016

Of the 615 women with learning disabilities, only 275 (44.7%) participated in breast screening (**Table 2.5**). There were larger variations in uptake of breast screening between HSCPs in women with learning disabilities compared with the general population. Uptake ranged from 37.1% in Glasgow North to 60.5% in East Renfrewshire.

Table 2.5 NHSGGC breast screening uptake among people with learning difficulties by HSCP 1 April 2012- 31 March 2016

Status	**HSCP**	**Total Eligible**	**Not Screened**	**Screened**	**% Uptake**
Not registered with a learning difficulty	East Dunbartonshire	15,964	3,782	12,182	76.3%
	East Renfrewshire	13,043	3,142	9,901	75.9%
	Glasgow North East Sector	13,308	5,042	8,266	62.1%
	Glasgow North West Sector	17,412	6,504	10,908	62.6%
	Glasgow South Sector	23,790	8,798	14,992	63.0%
	Inverclyde	4,418	1,444	2,974	67.3%
	Renfrewshire	24,598	7,060	17,538	71.3%
	West Dunbartonshire	9,983	3,298	6,685	67.0%
	Total	**122,516**	**39,070**	**83,446**	**68.1%**
Learning Difficulties Registered	East Dunbartonshire	34	16	18	52.9%
	East Renfrewshire	38	15	23	60.5%
	Glasgow North East Sector	89	56	33	37.1%
	Glasgow North West Sector	108	58	50	46.3%
	Glasgow South Sector	152	84	68	44.7%
	Inverclyde	41	22	19	46.3%
	Renfrewshire	100	59	41	41.0%
	West Dunbartonshire	53	30	23	43.4%
	Total	**615**	**340**	**275**	**44.7%**

Source: West of Scotland Breast Screening Data, August 2016

Uptake of breast screening is strongly associated with socio-economic circumstances (**Table 2.6**). It ranged from 56.4% in the most deprived quintile to 78.1% in the least deprived. The variation in uptake between HSCPs is probably largely explained by socio-economic differences: within each SIMD quintile, uptake was similar between HSCPs.

Table 2.5 NHSGGC breast screening uptake by deprivation categories by HSCP for period 1 April 2012- 31 March 2016

	SIMD 2012 Quintile 1 (Most Deprived)		2		3		4		SIMD 2012 Quintile 5 (Least Deprived)		Total	
HSCP	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
East Dunbartonshire	281	59.7	1,628	68.7	898	72.4	2,362	76.7	7,031	79.6	12,200	76.3
East Renfrewshire	489	61.2	774	70.0	722	73.2	1,692	74.5	6,247	78.9	9,924	75.9
Glasgow North East Sector	4,486	56.4	1,134	62.9	888	70.4	1,404	74.4	387	78.7	8,299	61.9
Glasgow North West Sector	3,698	55.6	1,734	63.6	1,383	62.4	1,328	66.6	2,815	71.6	10,958	62.5
Glasgow South Sector	5,623	55.0	3,391	63.7	2,057	68.6	2,358	72.1	1,631	76.6	15,060	62.9
Inverclyde	599	53.9	297	61.1	456	72.3	915	72.8	726	74.5	2,993	67.1
Renfrewshire	3,296	58.0	2,457	67.5	3,796	72.2	2,985	78.7	5,045	79.8	17,579	71.2
West Dunbartonshire	1,854	58.6	2,109	67.1	1,509	70.6	786	75.6	450	81.5	6,708	66.8
Total	**20,326**	**56.4**	**13,524**	**65.7**	**11,709**	**70.0**	**13,830**	**74.4**	**24,332**	**78.1**	**83,721**	**67.9**

Uptake of breast screening differs between ethnic groups (**Table 2.6**). It was lowest in Black or Black British, Caribbean and African women (48.7%) and highest among white women (68.5%). Asian or Asian British Indian women were the only ethnic minority with uptake rates above 60%.

Table 2.6 NHSGGC Breast Screening uptake by ethnicity for period 1 April 2012 to 2016

2001 Ethnicity	Total Eligible	Not Screened	Screened	% Screened
White British	106,877	33,108	73,769	69.0
White Irish	10,075	3,504	6,571	65.2
White Other	2,024	903	1,121	55.4
Subtotal	**118,976**	**37,515**	**81,461**	**68.5**
Asian or Asian British - Indian	831	312	519	62.5
Asian or Asian British - Pakistani	1,276	625	651	51.0
Asian or Asian British - Bangladeshi	61	30	31	50.8
Asian or Asian British - Other	30	14	16	53.3
Subtotal	**2,198**	**981**	**1,217**	**55.4**
Black or Black British, Caribbean, African	**158**	**81**	**77**	**48.7**
Chinese	**621**	**261**	**360**	**58.0**
Other Ethnic groups	**865**	**404**	**461**	**53.3**
Unclassified	**313**	**168**	**145**	**46.3**
Total	**123,131**	**39,410**	**83,721**	**67.9**

Source: West of Scotland Breast Screening Data, OnoMap, August 2016

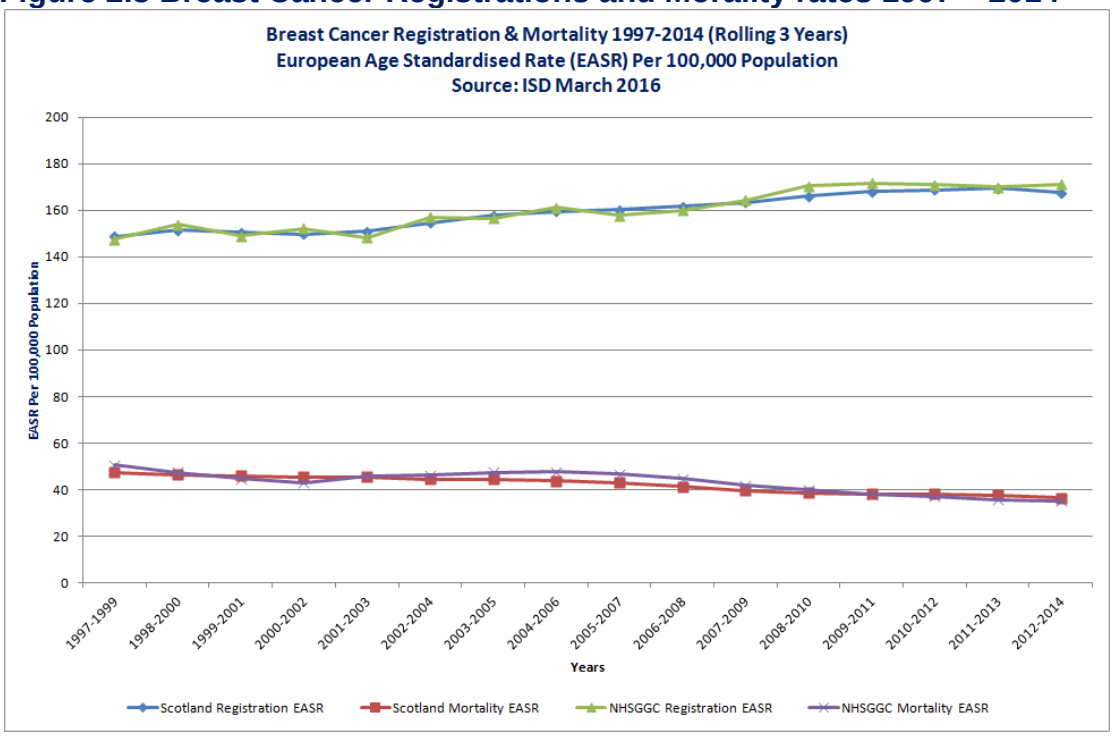
Breast Cancer Morbidity and Mortality

In 2014, the number of new breast cancers registered in NHSGGC was 950 (**Table 2.7**). This gives a standardised incidence rate of 166.6 per 100,000 per population which is not significantly different to the rest of Scotland (163.9).

Figure 2.3 illustrates that breast cancer rates have been increased over time in a similar way in both NHS Greater Glasgow and Clyde and Scotland.

Table 2.7 shows that the number of deaths from breast cancer in NHSGGC and Scotland. In 2014, there were 196 deaths from breast cancer, giving a standardised rate of 34.0 per 100,000 population. This is not significantly different to that for Scotland (34.3 per 100,000).

Figure 2.3 Breast Cancer Registrations and Morality rates 1997 – 2014



Source: Scottish Cancer Registry, ISD, 2016

Table 2.7: Breast cancer registrations and deaths across NHS Greater Glasgow and Clyde 1997 - 2014

Scotland	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	3466	3625	3689	3734	3624	3722	3907	3977	4061	4148	4132	4315	4418	4499	4597	4625	4686	4578
Registration: EASR	*145.0*	*150.0*	*151.7*	*152.7*	*146.9*	*149.8*	*156.3*	*157.6*	*159.3*	*161.7*	*159.5*	*164.2*	*166.6*	*167.6*	*169.7*	*168.9*	*169.5*	*163.9*
- Lower 95% CI	*140.2*	*145.1*	*146.8*	*147.8*	*142.2*	*145.1*	*151.4*	*152.7*	*154.4*	*156.8*	*154.6*	*159.3*	*161.7*	*162.8*	*164.8*	*164.0*	*164.7*	*159.2*
- Upper 95% CI	*149.9*	*154.9*	*156.6*	*157.6*	*151.8*	*154.7*	*161.2*	*162.5*	*164.3*	*166.7*	*164.4*	*169.1*	*171.6*	*172.6*	*174.7*	*173.8*	*174.4*	*168.7*
Mortality: Numbers	1161	1147	1136	1122	1150	1110	1149	1093	1151	1112	1067	1050	1010	1032	1041	1071	1020	976
Mortality: EASR	*48.0*	*47.3*	*46.5*	*45.4*	*46.2*	*44.5*	*45.7*	*43.0*	*44.9*	*43.4*	*40.9*	*39.8*	*38.2*	*37.9*	*38.0*	*38.6*	*36.4*	*34.3*
- Lower 95% CI	*45.3*	*44.6*	*43.9*	*42.8*	*43.5*	*41.9*	*43.1*	*40.4*	*42.4*	*40.8*	*38.5*	*37.4*	*35.8*	*35.6*	*35.7*	*36.3*	*34.2*	*32.2*
- Upper 95% CI	*50.9*	*50.1*	*49.3*	*48.1*	*48.9*	*47.1*	*48.4*	*45.6*	*47.6*	*46.0*	*43.5*	*42.2*	*40.6*	*40.3*	*40.4*	*40.9*	*38.6*	*36.5*

NHS Greater Glasgow and Clyde	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	783	814	780	885	736	830	829	881	823	907	836	875	985	952	908	1,005	966	950
Registration: EASR	*146.3*	*151.2*	*145.0*	*165.3*	*136.7*	*154.5*	*153.7*	*163.2*	*153.0*	*167.1*	*153.6*	*159.5*	*179.6*	*172.2*	*163.2*	*177.5*	*169.3*	*166.6*
- Lower 95% CI	*136.2*	*140.9*	*135.0*	*154.5*	*127.0*	*144.2*	*143.4*	*152.6*	*142.7*	*156.3*	*143.3*	*149.1*	*168.5*	*161.4*	*152.7*	*166.7*	*158.7*	*156.1*
- Upper 95% CI	*156.8*	*161.8*	*155.4*	*176.4*	*146.8*	*165.3*	*164.4*	*174.3*	*163.7*	*178.2*	*164.3*	*170.3*	*191.1*	*183.4*	*174.1*	*188.7*	*180.2*	*177.4*
Mortality: Numbers	272	279	265	220	239	239	262	250	259	270	235	228	227	207	201	222	188	196
Mortality: EASR	*50.9*	*52.0*	*49.1*	*40.9*	*44.4*	*43.9*	*48.6*	*45.7*	*47.6*	*49.7*	*42.9*	*41.3*	*41.5*	*37.2*	*35.3*	*39.0*	*32.6*	*34.0*
- Lower 95% CI	*45.0*	*46.1*	*43.3*	*35.7*	*38.9*	*38.5*	*42.9*	*40.2*	*41.9*	*43.9*	*37.6*	*36.1*	*36.2*	*32.2*	*30.5*	*34.0*	*28.1*	*29.4*
- Upper 95% CI	*57.1*	*58.3*	*55.2*	*46.5*	*50.2*	*49.7*	*54.7*	*51.6*	*53.6*	*55.8*	*48.6*	*46.9*	*47.1*	*42.4*	*40.4*	*44.3*	*37.5*	*39.0*

Source: ISD Scotland, November 2016

During 2012-2016, 752 cancers were screen detected (**Table 2.8**)

Table 2.8 Breast screening uptake by HSCP and number % breast cancers detected for period 2012 – 2016

HSCP	Routine Invitations	Attended	% *Uptake*	Number Cancers Detected*	Cancers of those invited %	Cancers of those attended %
East Dunbartonshire	15,998	12,200	76.3	104	0.7	0.9
East Renfrewshire	13,081	9,924	75.9	99	0.8	1.0
Glasgow North East Sector	13,397	8,299	61.9	84	0.6	1.0
Glasgow North West Sector	17,520	10,958	62.5	86	0.5	0.8
Glasgow South Sector	23,942	15,060	62.9	130	0.5	0.9
Inverclyde	4,459	2,993	67.1	56	1.3	1.9
Renfrewshire	24,698	17,579	71.2	155	0.6	0.9
West Dunbartonshire	10,036	6,708	66.8	38	0.4	0.6
Total	**123,131**	**83,721**	**68.0**	**752**	**0.6**	**0.9**

Source: West of Scotland Breast Screening Data, August 2016, Cancer Audit, November 2016

* Source of referral 'screening' calendar years 2013-2015

Challenges and Future Priorities

- Staff to continue to provide information and support women on making healthier lifestyle changes.
- Workforce succession planning to replace staff due to retire in 2017.
- To implement recommendations made from future Health Improvement Scotland review of breast screening.
- More effective ways of organising screening will be explored in 2017. In particular, we will explore screening clusters of congruent GP practices at a time rather than each practice on its own.

Appendix 2.2

Members of Breast Screening Steering Group (As at March 2016)

Dr David Morrison	Consultant in Public Health Medicine (Chair)
Mrs Lin Calderwood	H&IT Service Delivery Manager - Screening
Dr Hilary Dobson	Clinical Director, WoS Breast Screening
Ms Claire Donaghy	Health Improvement Senior
Mrs Fiona Gilchrist	Assistant Programmes Manager, Screening Dept
Mrs Donna Leith	WoS Breast Screening Administration Manager
Mr Paul Burton	Information Manager
Miss Denise Lyden	Project Officer, Public Health - Health Services
Dr Ken O'Neill	Clinical Director
Ms Ann Mumby	Superintendent Radiographer
Ms Elaine Murray	Health Improvement Assistant
Mrs Elizabeth Rennie	Programmes Manager, Screening Dept

Chapter 3: Bowel Screening Programme

Summary

- In 2014-16, 349,657 NHSGGC residents were invited to participate in the bowel screening programme.
- The overall uptake of screening was 52.2%, against a minimum target of 60%.
- Patients whose bowel cancers are detected through screening are three times more likely to be diagnosed with earliest stage cancers and half as likely to have widespread, metastatic cancer when diagnosed compared to those who have symptoms.
- Uptake is poorest in Glasgow City HSCPs, in men, younger people, the most socio-economically deprived, residents with learning disabilities and in ethnic minorities.
- Results are most likely to be positive among men, older people and the most socio-economically deprived. There are also lower uptake rates in some HSCPs that are not wholly explained by socio-economic deprivation.
- In 2017, several initiatives will take place to try to improve uptake of bowel screening. These include the introduction of a more accurate and acceptable screening test (QFIT, quantitive faecal immunoassay test) and public information campaigns.

Chapter 3: Bowel Screening Programme

Background

Colorectal (Bowel) Cancer is the third most common cancer in Scotland for both men and women. Every year in Scotland approximately 4,000 people are diagnosed with the disease. The incidence declined in men and women in the decade to 2014. The main preventable risk factors for bowel cancer are lack of physical activity; consumption of red and processed meats; alcohol; dietary fibre and obesity. Smoking also raises bowel cancer risks. (ISD Scotland, 2015) (WCRF)

In residents of NHS Greater Glasgow and Clyde area, 784 people were diagnosed with bowel cancer in 2014 (**Table 3.9**). 95% of bowel cancers detected are among people aged over 50 (www.isdscotland.org accessed November 2016).

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

Aim of the screening programme

The purpose of bowel screening by guaiac Faecal Occult Blood test (gFOBt) is to detect colorectal cancers at the earliest possible time so that treatment may be offered promptly. It is believed 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 precancerous lesions could lead to a reduction in the incidence of colorectal cancer.

Eligible population

The programme invites all men and women between the ages of 50 – 74 years 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 agreements. Thereafter, all eligible individuals will be routinely recalled every two years.

The screening test

Guaiac Faecal Occult Blood test (gFOBt) testing kit is completed at home and returned to the National Bowel Screening Centre in Dundee for analysis.

Screening pathway

Eligible NHS Greater Glasgow and Clyde residents are sent an invitation letter and screening kit. The letter explains the programme and encourages participants to take the test.

The National Bowel Screening Centre in Dundee issues screening kits to all eligible residents of NHS Greater Glasgow and Clyde to carry out the screening test at home. The kits are then posted by return to the National Laboratory for processing.

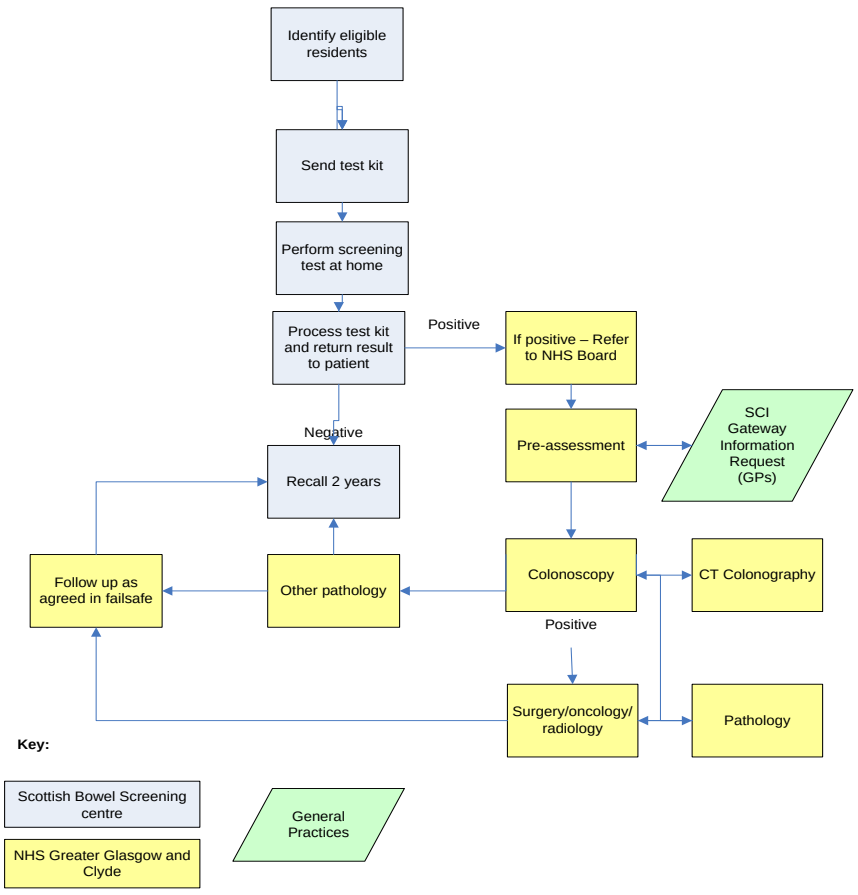
After analysis, the National Centre reports, via an IT system, results of all positive tests to the Board. The National Centre also informs the patient and the patient's general practitioner by letter.

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. If required, patients are then referred for further diagnostic investigations and treatment.

Figure 3.1 gives an overview of the bowel screening pathway.

A letter is sent to patients and their GPs who refuse or do not turn up for colonoscopy asking them to get in touch within 6 months if they change their minds. Otherwise they will be removed from the waiting list. We also inform the Bowel Screening Centre so that the patient is invited to take part in bowel screening in two years' time.

Figure 3.1 Overview of bowel screening pathway



Delivery of NHSGGC bowel screening programme

From 1 April 2014 to 31 March 2016, 349,567 NHSGGC residents were invited to participate in the Bowel Screening programme (**Table 3.1**). Of the total population invited, 118,652 (33.9%) lived in the most deprived areas and Glasgow North was the HSCP with the highest proportion of residents in the most deprived circumstances, at 64.0%.

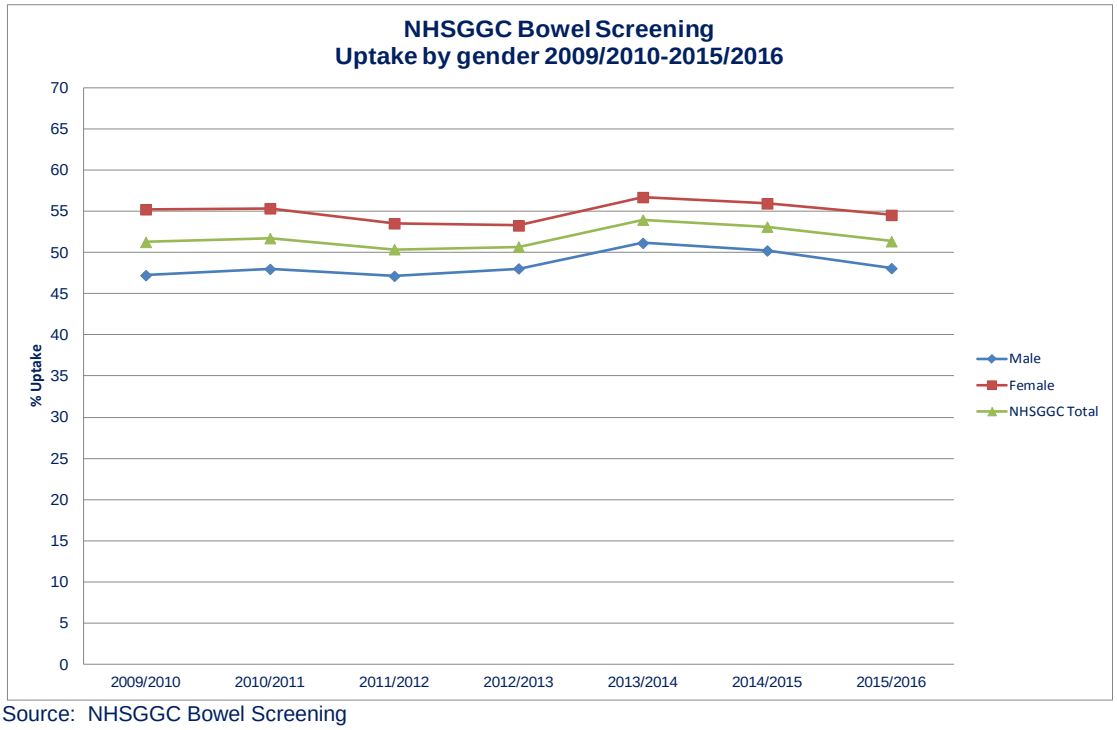
Table 3.1 Eligible population invited to participate in the bowel screening programme by HSCP and deprivation categories

	Most Deprived				SIMD				Least Deprived		
HSCP	**1**	**%**	**2**	**%**	**3**	**%**	4	**%**	**5**	**%**	**Total**
East Dunbartonshire	1,081	2.9	5,556	14.8	2,781	7.4	7,038	18.8	20,962	56.0	37,418
East Renfrewshire	1,837	6.1	2,555	8.5	2,144	7.2	5,163	17.2	18,271	61.0	29,970
Glasgow North East	33,064	64.0	6,985	13.5	4,191	8.1	5,982	11.6	1,432	2.8	51,654
Glasgow North West	22,686	43.6	7,589	14.6	6,546	12.6	5,406	10.4	9,762	18.8	51,989
Glasgow South	26,840	42.1	15,174	23.8	8,337	13.1	8,263	13.0	5,190	8.1	63,804
Inverclyde HSCP	10,809	39.4	3,757	13.7	3,952	14.4	5,155	18.8	3,776	13.8	27,449
Renfrewshire HSCP	13,360	23.4	8,411	14.7	12,292	21.5	8,675	15.2	14,401	25.2	57,139
West Dunbartonshire	8,975	29.8	9,342	31.0	6,892	22.9	3,113	10.3	1,822	6.0	30,144
Total NHS GGC	118,652	33.9	59,369	17.0	47,135	13.5	48,795	14.0	75,616	21.6	349,567

Source: Bowel Screening IT system (Data extracted: May 2016)

Since the bowel screening programme was implemented in 2009, there have been small rises and falls in uptake (**Figure 3.2)**. It has been consistently higher in women compared to men.

Figure 3.2: NHSGGC Bowel Screening uptake by gender 2009/2010 to 2015/2016

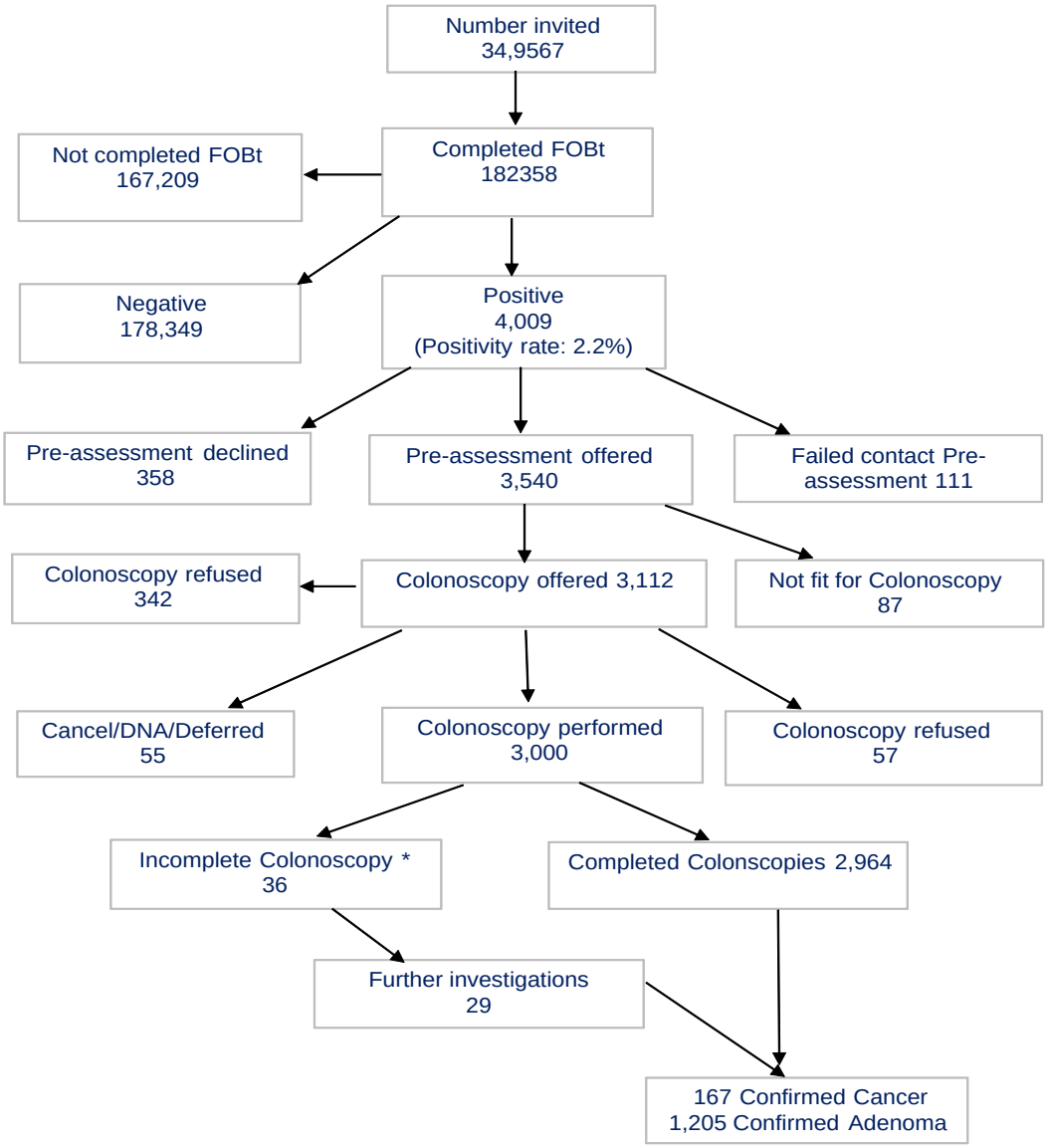


Source: NHSGGC Bowel Screening

Figure 3.3 illustrates the bowel screening activity.

182,358 screening kits were completed and returned to the Bowel Screening laboratory for analysis. This gives an estimated uptake of 52.2%, representing a decrease of 1.1% compared to data reported in 2014/2015 when uptake was 53.3%. This is below the Scottish average of 57.5% (ISD Scotland, 2016) and the NHS HIS target of 60%.

Figure 3.3 NHSGGC Bowel Screening activity, 1 April 2014 to 31 March 2016.



Source: NHS Greater Glasgow and Clyde Bowel Screening IT System (Extracted: May 2016)

* Reasons for incomplete colonoscopy: Bowel Prep Failure = 10, Excessive Looping = 8, Pain = 9, Pathology Obstructing = 9, Other = 5

Table 3.2 shows the bowel screening uptake by HSCP area and by deprivation. There is a large variation between HSCPs, with East Dunbartonshire having the highest at 62.5% (and thus meeting the national target) and Glasgow North East having the lowest uptake at 45.8%. Socio-economic circumstances have an important influence on uptake, with uptake ranging from 42.7% in the most deprived to 63.8% in the least deprived. However, there also appear to be area effects, in that uptake among the most deprived is still higher in East Dunbartonshire compared with the most deprived in other areas. These may suggest that there are local differences in the way that non-responders are followed-up.

Table 3.2 NHSGGC Bowel screening uptake by HSCP and deprivation category

	Most Deprived		SIMD		Least Deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	48.6	51.4	57.4	63.6	66.5	62.5
East Renfrewshire	43.5	50.7	57.4	58.7	64.4	60.4
Glasgow North East	41.8	47.5	52.1	58.7	59.1	45.8
Glasgow North West	41.9	49.2	45.8	52.9	58.4	47.7
Glasgow South	41.9	46.1	50.7	57.2	61.0	47.6
Inverclyde	46.2	52.4	55.5	59.7	63.9	53.3
Renfrewshire	43.5	50.8	55.8	62.3	64.1	55.3
West Dunbartonshire	44.1	51.7	56.5	61.3	65.8	52.4
Total NHS GGC	**42.7**	**49.3**	**53.4**	**59.4**	**63.8**	**52.2**

Source: Bowel Screening IT system (Data extracted: May 2016)

Younger age and being male are associated with poorer uptake of bowel screening. Uptake among females at 55.2% was higher than uptake of the male population at 49.1% (**Table 3.3).** The lowest uptake of 40% was among males aged 50-54 years.

Test results are more likely to be positive among people who are more likely to have cancer – that is, older people, men and those from more deprived areas. The overall positivity rate was higher among men, at 2.6% compared to women at 1.8%. Scottish national average was 1.96% (ISD, 2016). Compared to all other groups, males aged 70 to 74 had the highest positivity rate of 3.7% (**Table 3.3**).

Table 3.3 NHSGGC Bowel screening uptake and positivity rate by age and gender

Age Group	Uptake			Positvity		
	Male	Female	Total	Male	Female	Total
	%	%	%	%	%	%
50-54	40.0	47.7	**43.8**	1.9	1.4	**1.6**
55-59	47.3	53.6	**50.5**	2.3	1.7	**2.0**
60-64	52.4	58.5	**55.5**	2.8	1.8	**2.2**
65-69	59.2	63.0	**61.2**	3.2	1.9	**2.5**
70-74	58.8	60.7	**59.8**	3.7	2.5	**3.1**
Total NHS GGC	**49.1**	**55.2**	**52.2**	**2.6**	**1.8**	**2.2**

Source: Bowel Screening IT system (Data extracted May 2016)

There is a gradient in the positivity rate across deprivation categories. The positivity rate for residents living in the most deprived areas was 3.1% compared to 1.4% for residents living in least deprived areas (**Figure 3.4 and Table 3.4).**

Geographically, the highest positivity rates were among residents in most deprived areas of East Dunbartonshire (4 %) and Glasgow North East (3.5%). The lowest positivity rates were in the least deprived areas of Glasgow North (1.1%).

The overall positivity rate for Glasgow North East was also highest at 3% compared to the lowest positive rates of 1.6% in East Renfrewshire.

Figure 3.4 Positivity rates by deprivation and HSCP (1, most deprived)

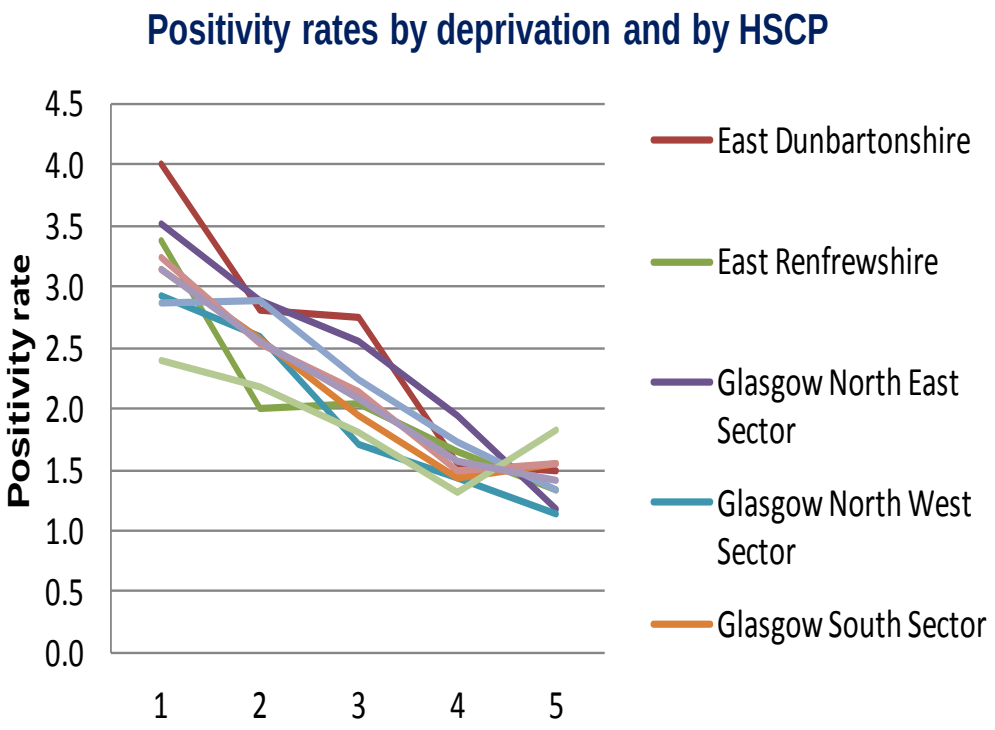


Table 3.4 Positivity rates by HSCP and deprivation category

	Most Deprived		SIMD		Least Deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	4.0	2.8	2.8	1.5	1.5	1.8
East Renfrewshire	3.4	2.0	2.0	1.7	1.3	1.6
Glasgow North East Sector	3.5	2.9	2.6	1.9	1.2	3.0
Glasgow North West Sector	2.9	2.6	1.7	1.4	1.1	2.1
Glasgow South Sector	3.1	2.6	1.9	1.4	1.5	2.4
Inverclyde	2.9	2.9	2.2	1.7	1.3	2.3
Renfrewshire	3.3	2.5	2.1	1.5	1.6	2.1
West Dunbartonshire	2.4	2.2	1.8	1.3	1.8	2.0
Total NHS GGC	3.1	2.6	2.1	1.6	1.4	2.2

Source: Bowel Screening IT system (Data extracted May 2016)

The male population in the most deprived areas had the lowest uptake at 40.6% and highest positivity rate of 3.7%. In contrast, uptake for men residing in the least deprived area was higher at 60% and positivity rate was lower 1.7% **(Table 3.5 and Figure 3.4).**

Overall, the highest uptake of 67.4% and lowest positivity rate of 1.2% was among women residing in least deprived areas (**Table 3.5 and Figure 3.4**).

Table 3.5 NHSGGC bowel screening uptake and positivity rate by deprivation area and gender

	Male		Female		Total	
SIMD	**% Uptake**	**% Positivity**	**% Uptake**	**% Positivity**	**% Uptake**	**% Positivity**
1 (most deprived)	40.6	3.7	44.8	2.6	42.7	3.1
2	46.3	3.1	52.3	2.1	49.3	2.6
3	50.1	2.5	56.7	1.7	53.4	2.1
4	55.8	1.9	62.9	1.3	59.4	1.6
5 (least deprived)	60.0	1.7	67.4	1.2	63.8	1.4
NHS GGC	**49.1**	**2.6**	**55.2**	**1.8**	**52.2**	**2.2**

Source: Bowel Screening IT system (Data extracted May 2016)

Of the 4,009 patients who screened positive, 3,540 patients were pre-assessed prior to colonoscopy. 358 patients declined pre-assessment, 111 patients did not respond to the offer of colonoscopy pre-assessment and 342 patients declined colonoscopy (**Figure 3.3**).

2,964 (66.3%) patients completed colonoscopy investigations by 31 March 2016. 55 patients cancelled, deferred or did not turn up for their colonoscopy appointment. If they remain eligible for bowel screening, they will be invited to participate in screening in two years. Of the total eligible population invited to take part in bowel screening, 167 cancers were detected (**Figure 3.3**).

Of the 2,121 people with learning difficulties that were invited to take part in the bowel screening programme, only 31.5% (642) completed the bowel screening test (**Table 3.6**). This was similar to the previous year's uptake of 3.6%. Seventeen patients received positive results representing a positivity rate of 2.6%. No cancer was diagnosed following investigations. As with the wider population, uptake was lower in males, and positivity rates were higher in this group.

Table 3.6 NHSGGC Bowel Screening activity among people with learning difficulties

	Female	Male	Total
Invited to participate	918	1,123	2,041
Completed Kits	297	345	642
Positive Result	9	8	17
Uptake (%)	32.4	30.7	31.5
Postiivity Rate (%)	3.0	2.3	2.6

Source: Bow el Screening IT system (Data extracted May 2016/Learning Disability (August 2016)

Uptake of screening is lower than the target 60% in all ethnic groups in NHSGGC, but it is poorest in the non-white population (**Table 3.7**). The lowest uptake of bowel screening is among Asian and Black British people.

Table 3.7 Number and percentage uptake of bowel screening by ethnicity 1 April 2015 to 31 March 2016

Ethnicity	Not Screened	Screened	Total	% Uptake
White British	137,278	157,139	294,417	53.4
White Irish	17,034	17,182	34,216	50.2
White other	3,899	2,928	6,827	42.9
Subtotal	**158,211**	**177,249**	**335,460**	**42.9**
Asian or Asian British - Indian	1,543	942	2,485	37.9
Asian or Asian British - Pakistani	3,263	1,508	4,771	31.6
Asian or Asian British - Bangladeshi	175	80	255	31.4
Asian Other	84	42	126	33.3
Subtotal	**5,065**	**2,572**	**7,637**	**33.7**
Black or Black British, African, Caribbean	**434**	**224**	**658**	**34.0**
Chines	**1,045**	**947**	**1,992**	**47.5**
Other ethnic groups	**1,862**	**1,046**	**2,908**	**36.0**
Unclassified	**592**	**320**	**912**	**35.1**
Total	**167,209**	**182,358**	**349,567**	**52.2**

Source: Bowel Screening IT system (Data extracted: May 2016), OnoMap

Table 3.8 shows the proportion of polyps identified at colonoscopy and the adenoma pathology diagnosis. 58.8% of men and 40.8% of women who underwent colonoscopies had polyps. Adenomas were diagnosed in 47.4% of men and 30.9% of women.

Table 3.8 Adenoma and polyp detection rate by gender and HSCP

	Patients having investigations* performed			% Polyps Detected			% Adenomas Detected		
Age Group	Male	Female	Total	Male	Female	Total	Male	Female	Total
50-54	321	308	629	*54.8*	*32.8*	*44.0*	*41.4*	*24.0*	*32.9*
55-59	357	289	646	*55.5*	*34.3*	*46.0*	*40.3*	*25.6*	*33.7*
60-64	262	202	464	*55.7*	*39.6*	*48.7*	*47.7*	*33.2*	*41.4*
65-69	472	319	791	*62.5*	*46.7*	*56.1*	*53.8*	*35.1*	*46.3*
70-74	273	201	474	*64.5*	*54.2*	*60.1*	*52.0*	*39.8*	*46.8*
Total	1,685	1,319	3,004	*58.8*	*40.8*	*50.9*	*47.4*	*30.9*	*40.1*

Source: Bowel Screening IT system (Data extracted: May 2016)

* Colonoscopy or other inevestigation

Morbidity and mortality from colorectal cancer

In 2014, the most recent year for which completed data are available, the number of new colorectal cancers registered in NHS Greater Glasgow and Clyde was 431 for men and 353 for females (**Table 3.9**). This gives a standardised incidence rate of 101.6 and 61.6 per 100,000 populations for males and females respectively. That is, the risk of being diagnosed with bowel cancer is about 60% higher in men compared with women. This is higher than that for Scotland for both males and females (**Tables 3.9 and 3.10**).

In 2014, the number of deaths from colorectal cancer in NHS Greater Glasgow and Clyde was 165 for male population and 167 in the female population (**Table 3.9**). This gives a standardised rate of 41.4 and 28.5 respectively per 100,000 populations which is higher than the Scotland rates of 38.1 and 25.9, respectively (**Tables 3.9 and 3.10**). The rate of deaths has remained similar since 2004/06.

Table 3.9 Colorectal cancer incidence rate for and mortality rates for 1997-2014 for NHS Greater Glasgow and Clyde

NHSGGC Males	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	400	380	367	386	392	404	407	378	384	395	395	399	453	424	489	408	417	431
Registration: EASR	109.1	105.5	102.5	107.1	106.5	109.1	112.2	107.8	107.1	103.0	103.9	104.7	114.9	105.6	120.7	98.9	98.3	101.6
- Lower 95% CI	98.0	94.5	91.7	96.2	95.6	98.3	100.8	96.5	95.9	92.7	93.5	94.1	104.1	95.4	109.8	89.3	88.9	91.9
- Upper 95% CI	120.9	117.2	114.0	118.6	118.1	120.5	124.1	119.8	118.9	113.9	114.9	115.9	126.2	116.3	132.1	109.0	108.2	111.7
Mortality: Numbers	209	184	161	185	171	193	174	198	162	173	176	186	175	142	169	158	192	165
Mortality: EASR	*61.6*	*51.4*	*48.2*	*55.7*	*47.7*	*55.2*	*50.9*	*56.3*	*47.3*	*49.9*	*48.3*	*51.0*	*47.3*	*37.6*	*44.6*	*42.5*	*48.7*	*41.4*
- Lower 95% CI	*52.8*	*43.8*	*40.5*	*47.4*	*40.4*	*47.1*	*43.0*	*48.3*	*39.8*	*42.2*	*41.0*	*43.2*	*40.1*	*31.3*	*37.8*	*35.8*	*41.8*	*35.1*
- Upper 95% CI	*71.1*	*59.5*	*56.6*	*64.7*	*55.6*	*64.1*	*59.4*	*64.9*	*55.5*	*58.2*	*56.2*	*59.3*	*55.0*	*44.4*	*51.8*	*49.8*	*56.0*	*48.2*

NHSGGC Females	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	340	332	357	350	397	343	327	336	336	371	336	395	386	381	379	398	348	353
Registration: EASR	*61.1*	*60.3*	*65.1*	*64.5*	*72.6*	*63.0*	*60.0*	*61.7*	*61.6*	*68.2*	*61.6*	*72.0*	*70.2*	*69.5*	*68.0*	*71.6*	*62.2*	*61.6*
- Lower 95% CI	*54.7*	*54.0*	*58.5*	*57.9*	*65.6*	*56.5*	*53.6*	*55.2*	*55.2*	*61.4*	*55.2*	*65.0*	*63.3*	*62.6*	*61.3*	*64.7*	*55.8*	*55.3*
- Upper 95% CI	*67.8*	*67.0*	*72.0*	*71.4*	*80.0*	*69.9*	*66.7*	*68.5*	*68.4*	*75.4*	*68.4*	*79.3*	*77.4*	*76.7*	*75.1*	*78.8*	*68.9*	*68.2*
Mortality: Numbers	172	175	165	186	188	149	154	156	148	158	149	172	159	168	119	181	166	167
Mortality: EASR	*31.2*	*32.0*	*30.2*	*34.1*	*33.9*	*26.7*	*28.3*	*28.6*	*26.9*	*29.1*	*27.2*	*31.6*	*28.9*	*29.9*	*21.0*	*32.3*	*29.0*	*28.5*
- Lower 95% CI	*26.7*	*27.4*	*25.8*	*29.3*	*29.2*	*22.6*	*24.0*	*24.3*	*22.8*	*24.8*	*23.0*	*27.0*	*24.6*	*25.5*	*17.4*	*27.7*	*24.7*	*24.3*
- Upper 95% CI	*36.1*	*37.0*	*35.0*	*39.2*	*39.0*	*31.2*	*33.0*	*33.3*	*31.5*	*33.9*	*31.8*	*36.5*	*33.6*	*34.6*	*25.0*	*37.2*	*33.6*	*33.0*

Sources: Scottish Cancer Registry, ISD extracted November 2016; National Records for Scotland, Extracted November 2016
Notes: Colorectal Cancer (ICD10: C18-C20)

Table 3.10 Colorectal cancer incidence rates and mortality rates for 1997 to 2014 for Scotland

Scotland Males	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	1803	1786	1819	1884	1847	1817	1902	1910	1894	1890	2017	2140	2166	2219	2256	2130	2117	2061
Registration: EASR	*108.2*	*105.8*	*108.3*	*108.0*	*106.1*	*102.2*	*107.9*	*105.8*	*102.1*	*100.4*	*105.2*	*108.2*	*107.6*	*107.0*	*107.4*	*99.5*	*96.2*	*92.4*
- Lower 95% CI	*103.0*	*100.7*	*103.1*	*102.9*	*101.0*	*97.3*	*102.8*	*100.9*	*97.4*	*95.8*	*100.5*	*103.5*	*103.0*	*102.4*	*102.9*	*95.2*	*92.1*	*88.3*
- Upper 95% CI	*113.6*	*111.1*	*113.6*	*113.1*	*111.3*	*107.3*	*113.2*	*110.9*	*107.0*	*105.2*	*110.0*	*113.0*	*112.4*	*111.6*	*112.0*	*103.9*	*100.5*	*96.5*
Mortality: Numbers	889	848	870	839	835	842	830	844	855	835	812	829	825	782	824	837	871	786
Mortality: EASR	*56.3*	*52.9*	*55.4*	*52.2*	*51.0*	*51.2*	*49.4*	*50.4*	*49.1*	*47.2*	*45.2*	*45.2*	*44.0*	*41.1*	*42.1*	*42.5*	*42.3*	*38.1*
- Lower 95% CI	*52.4*	*49.2*	*51.5*	*48.5*	*47.4*	*47.5*	*45.9*	*46.8*	*45.6*	*43.8*	*42.0*	*42.0*	*40.9*	*38.1*	*39.1*	*39.5*	*39.5*	*35.4*
- Upper 95% CI	*60.3*	*56.8*	*59.4*	*56.0*	*54.8*	*55.1*	*53.1*	*54.2*	*52.7*	*50.6*	*48.6*	*48.6*	*47.3*	*44.2*	*45.1*	*45.5*	*45.3*	*41.0*

Scotland Females	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Registration: Numbers	*1610*	*1532*	*1626*	*1687*	*1689*	*1601*	*1553*	*1614*	*1595*	*1632*	*1709*	*1776*	*1809*	*1823*	*1780*	*1784*	*1738*	*1660*
Registration: EASR	*66.2*	*62.9*	*66.5*	*68.7*	*68.3*	*64.5*	*62.0*	*63.9*	*62.8*	*63.7*	*66.0*	*67.9*	*68.4*	*68.4*	*65.9*	*65.3*	*63.0*	*58.9*
- Lower 95% CI	*63.0*	*59.8*	*63.3*	*65.5*	*65.0*	*61.4*	*58.9*	*60.8*	*59.8*	*60.6*	*62.9*	*64.8*	*65.3*	*65.3*	*62.8*	*62.3*	*60.1*	*56.1*
- Upper 95% CI	*69.4*	*66.1*	*69.8*	*72.1*	*71.6*	*67.7*	*65.1*	*67.1*	*66.0*	*66.8*	*69.2*	*71.1*	*71.7*	*71.6*	*69.0*	*68.4*	*66.0*	*61.8*
Mortality: Numbers	781	791	792	757	780	713	752	706	695	715	727	736	730	719	702	784	707	739
Mortality: EASR	*32.1*	*32.3*	*32.3*	*30.5*	*31.2*	*28.5*	*30.1*	*28.0*	*27.1*	*27.7*	*28.0*	*28.2*	*27.5*	*26.6*	*25.6*	*28.3*	*25.2*	*25.9*
- Lower 95% CI	*29.9*	*30.1*	*30.1*	*28.4*	*29.0*	*26.4*	*27.9*	*25.9*	*25.1*	*25.7*	*26.0*	*26.2*	*25.5*	*24.7*	*23.8*	*26.3*	*23.3*	*24.0*
- Upper 95% CI	*34.4*	*34.6*	*34.6*	*32.7*	*33.4*	*30.6*	*32.3*	*30.1*	*29.2*	*29.8*	*30.1*	*30.3*	*29.5*	*28.6*	*27.6*	*30.3*	*27.1*	*27.8*

Sources: Scottish Cancer Registry, ISD extracted November 2016; National Records for Scotland, Extracted November 2016
Notes: Colorectal Cancer (ICD10: C18-C20)

Table 3.11 shows the numbers of detected colorectal cancers diagnosed by Dukes staging from 2014 to 2015. Patients whose bowel cancers are detected through screening are three times more likely to be diagnosed with earliest stage cancers and half as likely to have widespread, metastatic cancer when diagnosed compared to those who have symptoms.

Table 3.11 Dukes' stage and mode of detection of colorectal cancer in NHSGGC residents, 2014 and 2015.

	DUKES							
Detection Mode 2014	99	A	B	C1	C2	D	Total	%
Interval	[redacted]	17	31	20	[redacted]	24	100	*22.9*
Screen	[redacted]	37	28	21	[redacted]	7	102	*23.4*
Symptomatic	22	34	62	42	7	67	234	*53.7*
Total	31	88	121	83	15	98	436	

	DUKES							
Detection Mode 2015	Unknown	A	B	C1	C2	D	Total	%
Interval	9	17	24	19	6	21	96	*26.0*
Screen	[redacted]	29	20	18	[redacted]	8	82	*22.2*
Symptomatic	37	20	51	38	[redacted]	40	191	*51.8*
Total	48	66	95	75	16	69	369	

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Information systems

The bowel screening programme is supported by a NHSGGC in-house IT application. The data collected allows staff to monitor service performance and track patients through the process from point of referral to diagnosis and treatment for colorectal cancer. The application also enables staff to monitor progress against quality assurance standards and NHS Quality Improvement Scotland Standards.

Challenges and future priorities

- Continue to monitor and audit the performance of the programme

- In 2017, several initiatives will take place to try to improve uptake of bowel screening. These include the introduction of a more accurate and acceptable screening test (QFIT, quantitive faecal immunoassay test) and public information campaigns.

Appendix 3.2

Members of Bowel Screening Steering Group (As at April 2016)

Dr David Morrison	Consultant in Public Health Medicine, Chair
Mr John Anderson	Consultant Surgeon
Mrs Margaret Anderson	Lead Nurse - Endoscopy
Dr Stuart Ballantyne	Lead Clinician for Radiology
Dr Fraser Duthie	Lead Clinician for Pathology
Mrs Fiona Gilchrist	Assist Programme Manager, Screening Dept
Dr Jack Winter	Lead Clinician for Endoscopy
Dr Rachel Green	Associate Medical Director
Mrs Annette Little	Information Analyst
Mr Iain Gorman	Interim Clinical Service Manager
Miss Denise Lyden	Project Officer
Mrs Lin Calderwood	H&IT Service Delivery Manager
Ms Joyce McFadyen	Health Records Manager
Mrs Susan McFadyen	Interim General Manager
Mrs Tricia McKenna	Colorectal Nurse Endoscopist
Dr John Morris	Consultant Gastroenterologist
Dr Kenneth O'Neill	Clinical Director, South Sector CHP
Mrs Elizabeth Rennie	Programme Manager, Screening Dept

Chapter 4: Pregnancy Screening

Summary

During 2015/16, there were 16,147 women booked to attend antenatal clinics across NHSGGC. 13,427 (81.8%) women booked into antenatal clinics were NHSGGC residents.

74.2% (9,959) were of British origin, 5.5% (737) were of Pakistan origin and 5.2% (693) were of East European origin.

86% (10,358) of first antenatal booking appointments were offered within 12 weeks gestational age and 14% (1,684) between 13 to 16 weeks gestational age.

Only 45.3% (6,084) of pregnant women had a normal weight at the time of their first antenatal booking appointment. 49.8% (6,685) of pregnant women were overweight. Of the 6,685 who were overweight, 43.8% (2,929) were obese or severely obese.

Obesity is a risk factor for gestational diabetes. Women with gestational diabetes are at increased risk of having a large baby, a stillborn baby or a baby who dies shortly after birth. They are more likely than non-diabetic women to require their labour to be induced and to have their baby delivered by caesarean section.

97.6% (13,217) of pregnant women had taken up haemoglobinopathies screening.

Uptake was greater than 99% for all of the communicable diseases in pregnancy screening tests.

Screening identified 16 women infected with HIV (15 were previously known); 72 women were infected with hepatitis B (46 were previously known) and six women infected with syphilis. 2,611 women (16.5%) were identified as susceptible to rubella and were offered immunisation with MMR vaccine after delivery.

From June 2016, screening for susceptibility to rubella for all pregnant women ceased following a review by the UK National Screening Committee. Rubella infection levels in the UK are at a level defined as ‘eliminated’ by the World Health Organisation. Screening for rubella susceptibility in pregnancy does not give any protection to the unborn baby in the current pregnancy and stopping antenatal screening in unlikely to result in increased rates of congenital rubella. There were 12 cases of congenital rubella reported in the UK between 2005 and 2015. None of these could have been prevented by the screening programme.

Of the 9,843 (61%) samples that were tested for Down's syndrome, 7,285 (45.1%) were taken from women in their first trimester and 2,558 (15.8%) samples were taken from women in the second trimester

2.46% (179) of women tested in their first trimester were assigned to the 'higher chance' of Down's syndrome group.

4.93% (126) of women tested in their second trimester were assigned to the 'higher chance' of Down's syndrome group.

76% (10,210) of pregnant women had taken up congenital anomalies screening. 74 anomalies were detected and of that number 17 were confirmed postnatally. The outcomes for 156 anomalies were not known.

255 amniocentesis samples were analysed by the Cytogenetics Laboratory. Some women whose indication for amniocentesis has been recorded as "maternal age" had also been screened. Thirty-two abnormalities were detected (12.6% of samples) and less than 20 of those (7.5% of total tests) had a diagnosis of trisomy (Down's syndrome).

117 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2015/16. Forty abnormalities were detected (34.2% of tests) and 32 of those (27.4% of tests) had a diagnosis of trisomy (Down's syndrome).

An audit was undertaken of all live-births, stillbirths, fetal losses and terminations of pregnancy between 1 April 2015 and 31 March 2016 that were associated with one or more congenital abnormalities. A total of 345 cases were identified from 344 pregnancies.

Chapter 4: Pregnancy Screening

Aims of pregnancy screening programmes

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

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

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

Eligible population

The pregnancy screening programmes are offered universally to all pregnant women at the first booking visit. Women are offered the tests, not because they have been at risk, but because they are pregnant.

The screening tests

Appendix 4.1 illustrates the gestational age when pregnancy tests are carried out.

Antenatal haemoglobinapthies screening*:* The pregnant woman and her partner are asked to complete a family origin questionnaire (FOQ). The information from the questionnaire is used to assess the risk of either parent being a carrier for sickle cell and other haemoglobin variants. In addition, a blood test is taken at 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 4.2.**

Screening for sickle cell disorders and thalassaemia should be offered to all women as early as possible in pregnancy, and ideally by 10 weeks.

Communicable diseases in pregnancy screening: Testing for HIV, hepatitis B, syphilis infection and immunity to rubella is carried out at first antenatal booking when a blood sample is taken. The full screening pathway is shown in **Appendices 4.3 – 4.8**.

Screening for **Down's syndrome** 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 Down's syndrome. The full screening pathway is shown in **Appendix 4.9**. Ultrasound scanning is used to look for other **congenital anomalies**.

The decision to accept screening for Down's syndrome and other congenital anomalies raises particular moral and ethical issues for women. Uptake of Down's syndrome or other congenital anomalies screening depends on whether women would wish further investigation or management.

Delivery of NHSGGC pregnancy screening programmes

Each NHS Board has a statutory requirement to submit data on antenatal activity. In NHSGGC, there were 16,147 women booked to attend antenatal clinics across NHSGGC (**Table 4.1)**. 13,427 (81.8%) women booked into antenatal clinics were NHSGGC residents.

Table 4.1 Number of women booked for their first antenatal appointments in NHSGGC 1 April 2015 to 31 March 2016

Maternity Unit	Appointed Referrals Not NHSGGC Residents	Appointed Referrals NHSGGC Residents	Appointed Referrals Total	Bookers Not NHSGGC Residents	Bookers NHSGGC Residents	Bookers Total
Not assigned to a unit	506	299	805	506	299	805
Princess Royal Maternity Hospital	1,491	4,235	5,726	1,353	3,871	5,224
Queen Elizabeth University Hospital	576	6,488	7,064	531	6,016	6,547
Royal Alexandra Hospital	365	3,517	3,882	330	3,241	3,571
Total	**2,938**	**14,539**	**17,477**	**2,720**	**13,427**	**16,147**

source: Pregnancy and Newborn Screening System, July 2016

Of the 13,427(81.8%) women booked into antenatal clinics were NHSGGC residents, 74.2% (9,959) were of British origin, 5.5% (737) were of Pakistan origin and 5.2% (693) were of East European origin (**Table 4.2).**

Table 4.2: Number of NHSGGC residents booked for their first antenatal appointment by family origin during 1 April 2015 to 31 March 2016

Mother's Family Origin	Number	%
Caribbean Islands	71	0.5
African	274	2.0
African Other	58	0.4
Indian or African Indian	274	2.0
Pakistan	737	5.5
Bangladesh	17	0.1
China Taiwan Singapore	250	1.9
Thailand Indonesia Burma	18	0.1
Malaysia Vietnam Philippines	51	0.4
Any other Asian	39	0.3
North Africa South America	56	0.4
Middle East	195	1.5
Any other Non European	48	0.4
Greece Turkey Cyprus	28	0.2
Italy Portugal Spain	103	0.8
Other Mediterranean country	8	0.1
Albania Czech Republic Poland	693	5.2
England Scotland N Ireland Wales	9,959	74.2
Austria Belgium Ireland	98	0.7
Scandinavia Switzerland	23	0.2
Any other European	81	0.6
Not recorded	123	0.9
Not recorded (declined)	13	0.1
Not recorded (not asked)	191	1.4
Sickle Cell/Thalassaemia Known	19	0.1
Total	**13,427**	

Sources: PNBS, Onomap, October 2016

Table 4.3 shows that 86% (10,358) of first antenatal booking appointments were offered within 12 weeks gestational age and 14% (1684) between 13 to 16 weeks gestational age.

Table 4.3 Gestational age at first antenatal booking appointment by deprivation categories for period 1 April 2015 to 31 March 2016

SIMD 2012 Quintile	<= 12 weeks 6 days	<= 12 weeks 6 days %	> 12 weeks 6 days	> 12 weeks 6 days %	Total	<=12 weeks 6 days %
1 (Most Deprived)	2,504	83.2	504	16.8	3,008	**83.2**
2	2,222	85.0	392	15.0	2,614	**85.0**
3	2,066	85.5	350	14.5	2,416	**85.5**
4	1,847	88.3	245	11.7	2,092	**88.3**
5 (Least Deprived)	1,719	89.9	193	10.1	1,912	**89.9**
Total	**10,358**	**86.0**	**1,684**	**14.0**	**12,042**	**86.0**

Source: SMR02

Only 45.3% (6,084) of pregnant women had a normal weight at the time of their first antenatal booking appointment. 49.8% (6,685) of pregnant women were overweight. Of the 6,685 who were overweight, 43.8% (2,929) were obese or severely obese (**Table 4.4).**

Table 4.4 Number and percentage of women booked for their first antenatal appointments by body mass index and by maternity unit 1 April 2015 to 31 March 2016

Body Mass Index (BMI)	Maternity Unit									
	Not assigned to a unit		Princess Royal Maternity Hospital		Queen Elizabeth University		Royal Alexandra Hospital		Total	
	N	%	N	%	N	%	N	%	N	%
BMI Not Recorded	**35**	**11.7**	**111**	**2.9**	**115**	**1.9**	**19**	**0.6**	**280**	**2.1**
Underweight BMI<18.5	**8**	**2.7**	**99**	**2.6**	**189**	**3.1**	**82**	**2.5**	**378**	**2.8**
Normal 18.5<=BMI<25	**115**	**38.5**	**1,651**	**42.7**	**2,997**	**49.8**	**1,321**	**40.8**	**6,084**	**45.3**
Overweight 25<=BMI<30	62	20.7	1,096	28.3	1,630	27.1	968	29.9	3,756	28.0
Obese 30<=BMI<35	42	14.0	541	14.0	652	10.8	492	15.2	1,727	12.9
Severely Obese 35<=BMI<40	27	9.0	234	6.0	298	5.0	233	7.2	792	5.9
Severely Obese 40<=BMI<45	[redacted]	1.7	99	2.6	102	1.7	84	2.6	290	2.2
Severely Obese BMI>=45	[redacted]	1.7	40	1.0	33	0.5	42	1.3	120	0.9
Overweight - Severely Obese 25<=BMI<=45	**141**	**47.2**	**2,010**	**51.9**	**2715**	**45.1**	**1,819**	**56.1**	**6,685**	**49.8%**
Total	**299**	**2.2**	**3871**	**28.8**	**6016**	**44.8**	**3,241**	**24.1**	**13,427**	

Source: Pregnancy & Newborn Screening System, July 2016

Note: NHSGGC residents only

Table contains some data in bold for emphasis.
Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Obesity is a risk factor for gestational diabetes. Women with gestational diabetes are at increased risk of having a large baby, a stillborn baby or a baby who dies shortly after birth. They are more likely than non-diabetic women to require their labour to be induced and to have their baby delivered by caesarean section. There are also long term risks to the health of the baby. In particular, it is more likely to become overweight or obese as a child. Finally the mother herself is more likely to become diabetic in later life.

NHSGGC Antenatal Haemoglobinopathies Screening Programme

Of the 13,427 women booked for their first antenatal screening, 97.6% (13,102) had taken up haemoglobinopathies screening (**Table 4.5)**.

Data on the number of carriers and foetuses at risk of sickle cell disease and thalassaemia through screening is not available for 2015/16. We are working to improve the quality of recording of this data in order to report on this in subsequent annual screening reports.

Table 4.5 NHSGGC haemoglobinopathies screening activity for the period 1 April 2015 to 31 March 2016

Maternity Unit	Bookers	Consent	FOQ Completed	% Uptake
Not assigned to a unit	299	268	260	87.0
Princess Royal Maternity Hospital	3,871	3,790	3,752	96.9
Queen Elizabeth University Hospital	6,016	5,933	5,871	97.6
Royal Alexandra Hospital	3,241	3,226	3,219	99.3
Total	**13,427**	**13,217**	**13,102**	**97.6**

Source: Pregnancy & Newborn Screening System, July 2016

NHSGGC Communicable Diseases in Pregnancy Screening

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

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

Uptake across NHSGGC was greater than 99% for all four of the screening tests (**Table 4.6**).

Table 4.6 NHSGGC communicable diseases tests and results

1 April 2015 - 31 March 2016					Results			
	Total number of samples	No. requesting individual test	No. not requesting individual test	uptake	Antibody detected[1,2,3]		antibody not detected [4]	
	(N)	(N)	(N)	%	(N)	%	(N)	%
HIV	15,853	15,816	37	99.8	16	0.1	15,800	99.9
HBV	15,853	15,834	19	99.9	72	0.4	15,762	99.6
Rubella	15,853	15,842	11	99.9	13,231	83.5	2,611	16.5
Syphilis	15,853	15,828	25	99.8	6	0.04	15822	99.9

Sources: West of Scotland Specialist Virology Centre;

Notes:

1. 15 of the 16 HIV infections were previously known about
2. 46 of the 72 HBV infections were previously known about
3. Rubella antibody detected means that the woman is immune to rubella
4. No antibody detected means that the woman is susceptible to rubella and should be offered immunisation with MMR vaccine after delivery

Screening for susceptibility to rubella for all pregnant women ceased on 1st June 2016 following a review by the UK National Screening Committee (UK NSC). Due to the high uptake of measles, mumps and rubella (MMR) vaccination in the population the epidemiology of rubella has changed. The rationale to end screening for rubella susceptibility includes:

- Rubella infection levels in the UK are at a level defined as eliminated by the World Health Organisation;
- Screening for rubella susceptibility in pregnancy does not give any protection to the unborn baby in the current pregnancy and stopping antenatal screening is considered unlikely to result in increased rates of congenital rubella. There were 12 cases of congenital rubella reported in the UK between 2005 and 2015. None of these could have been prevented by the screening programme.

In the period 2015/16 covered in this report, the policy was to offer rubella screening to all pregnant women.

NHSGGC Down's syndrome and other congenital anomalies screening programme

Table 4.7 shows that 9,843 samples were tested for Down's syndrome, representing an overall uptake of 61%. 7,285 (45.1%) samples were taken from women in their first trimester and 2,558 (15.8%) samples were taken from women in the second trimester.

Table 4.7 Uptake rate of Down's syndrome tests, and type of screening test for the period 1 April 2015 to 31 March 2016

Number of Bookers	1st trimester		2nd trimester		Total number samples analysed	Overall uptake
16,147	7,285	45.1%	2,558	15.8%	9,843	**61.0%**

Source: West of Scotland Prenatal Screening Laboratory, November 2016

The number and proportion of women initially assigned to each of the 'higher chance' groups following the first trimester and second trimester screening Down's syndrome screening requiring diagnostic tests is shown in **Table 4.8**.

Among pregnant women who had first trimester Down's syndrome screening, 2.46% of women were assigned to the 'higher chance' of Down's syndrome group.

Following the second trimester Down's syndrome screening, 4.93% of women tested were assigned to the 'higher chance' of Down's syndrome group.

Table 4.8 Number and proportion of women initially assigned to the 'higher chance' anomaly groups by type of screening tests

Down Syndrome test	High Chance result	
	N	%
1st trimester	179	2.46
2nd trimester	126	4.93

Source: West of Scotland Prenatal Screening Laboratory, October 2016

NHS Quality Improvement Scotland Standards: Pregnancy and Newborn Screening 2005, recommends that less than 5-7% screening tests for Down's syndrome should be assessed as higher chance. Therefore, laboratory based screening in NHS Greater Glasgow and Clyde met this standard.

76% (10,210) of pregnant women had taken up congenital anomalies screening **(Table 4.9).**

Table 4.9 Uptake rate for other congenital anomalies (fetal anomaly scan) for the period 31 March 2015 to 1 April 2016

Maternity Unit	Number of bookers	Number of Consents	% Consented	Number of fetal anomaly scans performed	% fetal anomaly scans performed	% Uptake
Not assigned to a unit	299	272	91.0	183	67.3	61.2
Princess Royal Maternity Hospital	3,871	3,812	98.5	2,858	75.0	73.8
Queen Elizabeth University Hospital	6,016	5,874	97.6	4,595	78.2	76.4
Royal Alexandra Hospital	3,241	3,164	97.6	2,574	81.4	79.4
Total	**13,427**	**13,122**	**97.7**	**10,210**	**77.8**	**76.0**

Source: Pregnancy & Newborn Screening System, July 2016

Of the 10,210 fetal anomaly scans performed, 247 anomalies were detected and of that number 74 were confirmed postnatally. The outcomes for 156 anomalies are not known (**Table 4.10**).

Table 4.10 Outcome of fetal anomaly scans performed for the period 1 April 2015 to 31 March 2016

Maternity Unit	Fetal anomaly scan performed	Fetal anomaly detected	% Fetal anomaly detected	Anomaly detected postnatally	No anomaly detected postnatally	Outcome not known
Not assigned to a unit	183	[redacted]	0.5	[redacted]	0	0
Princess Royal Maternity Hospital	2,858	108	3.8	25	11	72
Queen Elizabeth University Hospital	4,595	65	1.4	24	[redacted]	39
Royal Alexandra Hospital	2,574	73	2.8	24	[redacted]	45
Total	**10,210**	**247**	**2.4**	**74**	**17**	**156**

Source: Congenital Anomalies Surveillance Tool, Pregnancy & Newborn Screening System, July 2016

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 4.11 shows that 255 amniocentesis samples were analysed by the Cytogenetics Laboratory. Some women whose indication for amniocentesis has been recorded as “maternal age” have also been screened. Thirty-two abnormalities were detected (12.6% of samples) and less than 20 of those (7.5% of total tests) had a diagnosis of trisomy (Down’s syndrome).

Table 4.11 Cytogenetics analysis of amniocentesis samples by indication type for the period 1 April 2015 - 31 March 2016

	Biochemical Screening	Maternal Age	Abnormalities on Scan	Other	Total
Number of women (= number of tests)	135	[redacted]	76	36	255
% total referral reasons	52.9%	3.1%	29.8%	14.1%	100%
Number with normal results	132	[redacted]	50	33	223
Number with diagnostic trisomy	[redacted]	0	15	[redacted]	<20
% number with diagnostic trisomy	2.2%	0.0%	19.7%	2.8%	7.5%
Number of other non trisomy abnormalities	0	0	11	<10	<15
Total number of abnormalities	[redacted]	**0**	**26**	[redacted]	**32**
% total number of abnormalities	**2.2%**	**0.0%**	**34.2%**	**8.3%**	**12.6%**

Source: Cytogenetics Laboratory

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 4.12 shows that 117 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2015/16. Forty abnormalities were detected (34.2% of tests) and 32 of those (27.4% of tests) had a diagnosis of trisomy (Down's syndrome).

Table 4.12 Cytogenetics analysis outcomes of chorionic Villus Biopsy samples by indication for the period

	Referral Type				
	Biochemical Screening	Maternal Age	Abnormalities on Scan	Other	Total
Number of women (= number of tests)	20	[redacted]	64	30	117
% total referral reasons	**17.1%**	**2.6%**	**54.7%**	**25.6%**	**100.0%**
Number with normal results	17	[redacted]	33	24	77
Number with diagnostic trisomy	[redacted]	0	27	[redacted]	32
% total with diagnostic trisomy	15.0%	0.0%	42.2%	6.7%	27.4%
Number of other non trisomy abnormalities	0	0	[redacted]	[redacted]	[redacted]
Total number of abnormalities	[redacted]	**0**	**31**	[redacted]	40
% total number of abnormalities	**15.0%**	**0.0%**	**48.4%**	**20.0%**	**34.2%**

source: Cytogenetics Laboratory

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Audit of Congenital Anomalies

An audit was undertaken of all live-births, stillbirths, fetal losses and terminations of pregnancy between 1 April 2015 and 31 March 2016 that were associated with one or more congenital abnormalities.

A total of 345 cases were identified from 344 pregnancies. The case rate is calculated at 276.6/10,000 live and stillbirths. The numbers are dependent on the date of data extraction and the degree of case ascertainment, (proportion of notifications reported out of all cases of congenital abnormality in the population), rather than any real change in congenital anomaly.

Most cases were live births, (n= 256, 74%). There were <5 stillbirths and <5 fetal losses. Termination of pregnancy following prenatal diagnosis of abnormality accounted for 86 cases (25%).

Overall a total of 579 abnormalities were classified in these 345 cases using the ICD 10 system, the primary abnormality and a variable number of associated abnormalities.

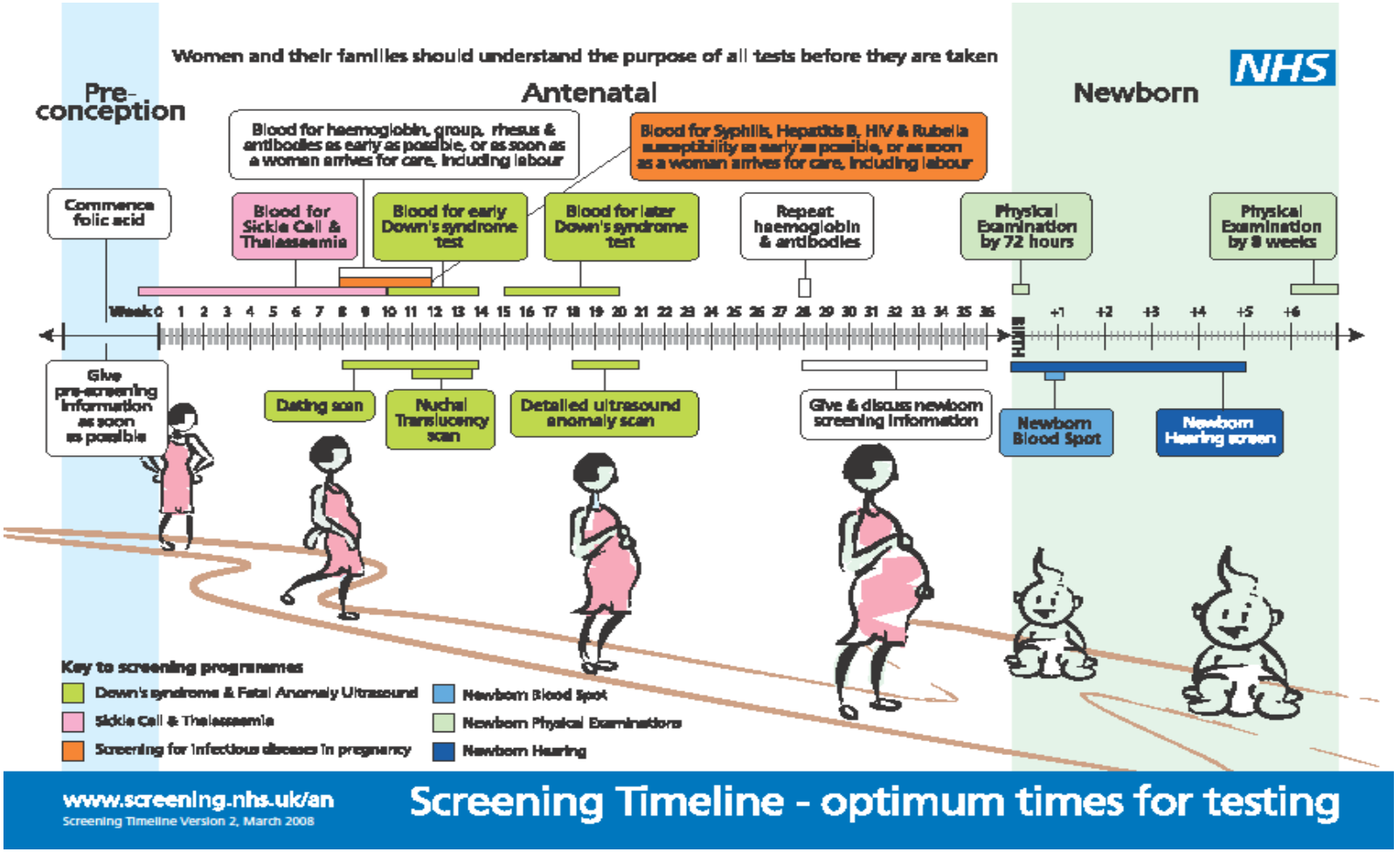
Full details of the audit is available on www.nhsggc.org.uk/your-health/public-health/public-health-screening-unit/reports/

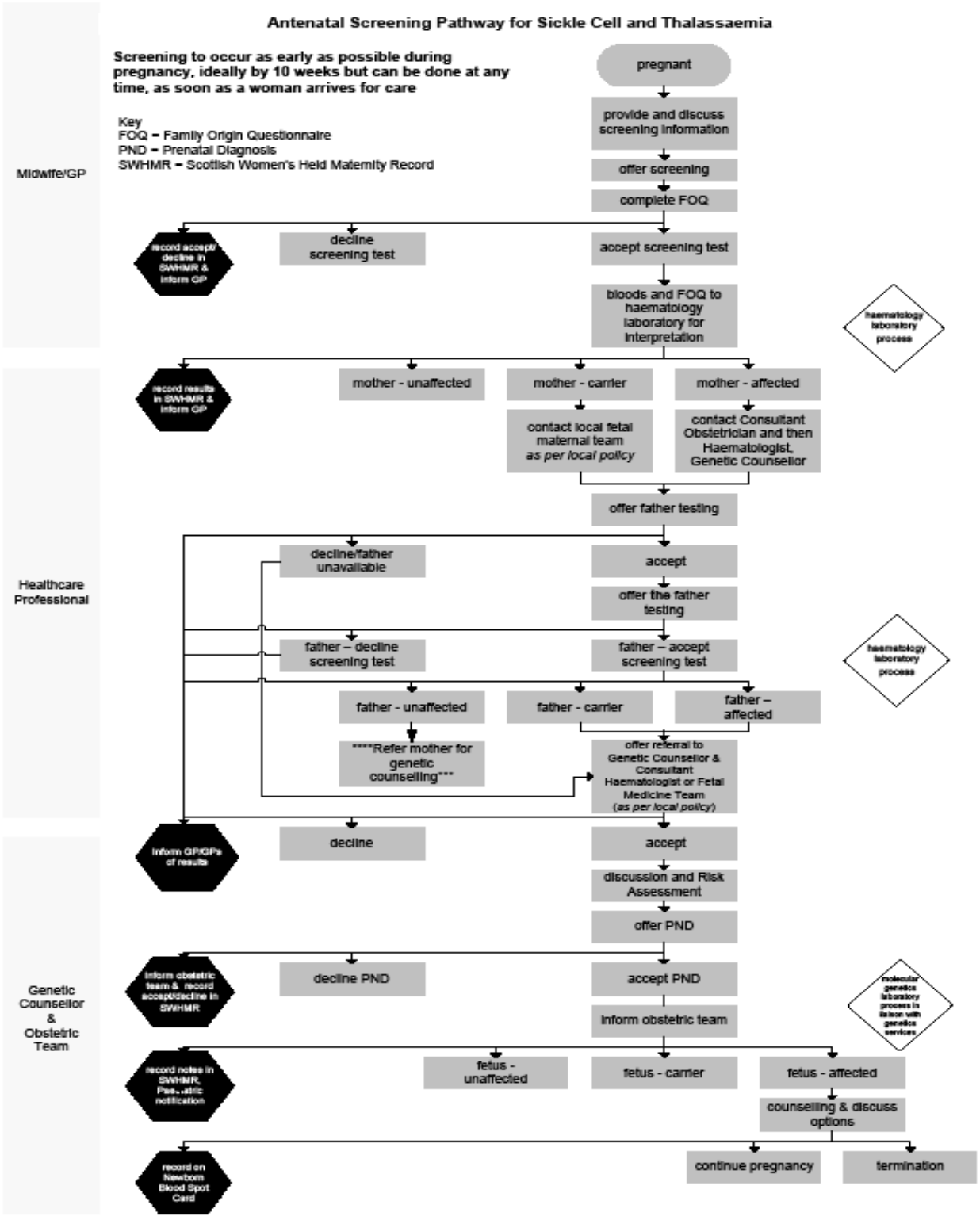
Information systems

PNBS IT application is used to support all pregnancy and newborn screening programmes. The application brought improvements in both the reporting and management of cases identified through the screening programme and introduced additional failsafe mechanisms into the screening programmes.

Challenges and Priorities

- Improving data completeness
- Capture data for full haemoglobinopathy screening pathway
- Encouraging pregnant women to adopt healthier lifestyles to improve newborn outcomes


Women and their families should understand the purpose of all tests before they are taken
NHS
Pre-conception
Antenatal
Newborn
Blood for haemoglobin, group, rhesus & antibodies as early as possible, or as soon as a woman arrives for care, including labour
Blood for Syphilis, Hepatitis B, HIV & Rubella susceptibility as early as possible, or as soon as a woman arrives for care, including labour
Commence folic acid
Blood for Sickle Cell & Thalassaemia
Blood for early Down's syndrome test
Blood for later Down's syndrome test
Repeat haemoglobin & antibodies
Physical Examination by 72 hours
Physical Examination by 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
+1 +2 +3 +4 +5 +6
BIRTH
Give pre-screening information as soon as possible
Dating scan
Nuchal Translucency scan
Detailed ultrasound anomaly scan
Give & discuss newborn screening information
Newborn Blood Spot
Newborn Hearing screen
Key to screening programmes
Down's syndrome & Fetal Anomaly Ultrasound
Sickle Cell & Thalassaemia
Screening for infectious diseases in pregnancy
Newborn Blood Spot
Newborn Physical Examinations
Newborn Hearing
www.screening.nhs.uk/an
Screening Timeline Version 2, March 2008
Screening Timeline - optimum times for testing

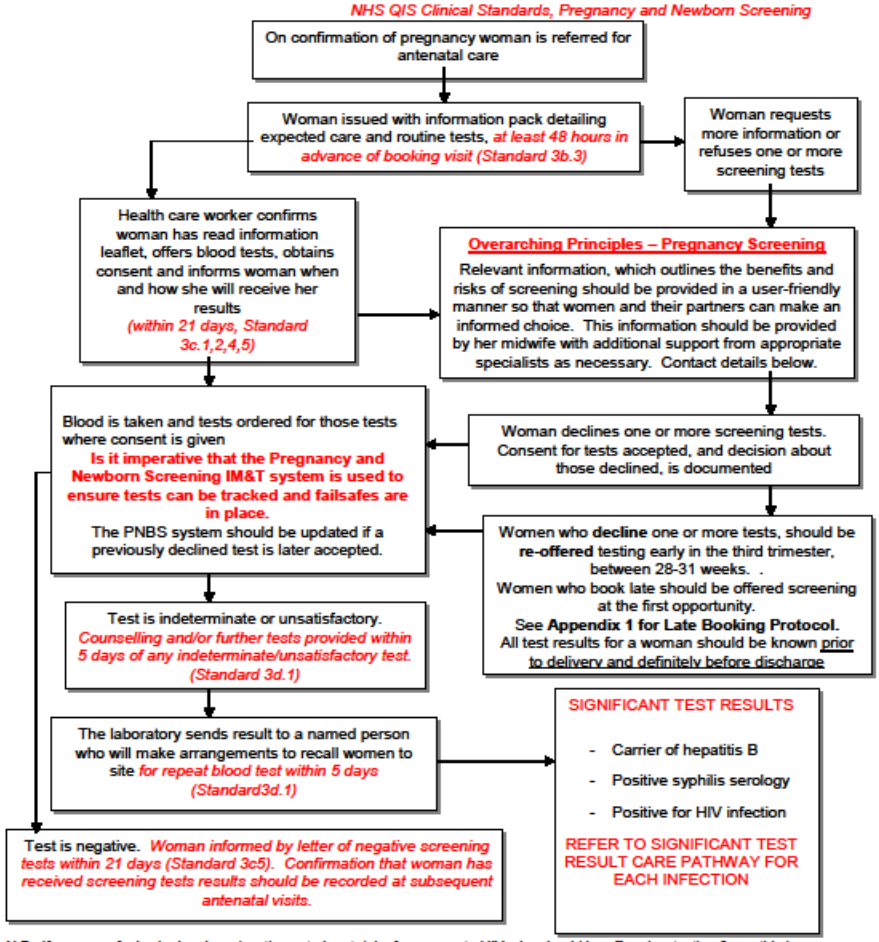

Antenatal Screening Pathway for Sickle Cell and Thalassaemia
Screening to occur as early as possible during pregnancy, ideally by 10 weeks but can be done at any time, as soon as a woman arrives for care
Key
FOQ = Family Origin Questionnaire
PND = Prenatal Diagnosis
SWHMR = Scottish Women's Held Maternity Record
Midwife/GP
Healthcare Professional
Genetic Counsellor & Obstetric Team
pregnant
provide and discuss screening information
offer screening
complete FOQ
record accept/ decline in SWHMR & inform GP
decline screening test
accept screening test
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, Pae...atric notification
fetus - unaffected
fetus - carrier
fetus - affected
counselling & discuss options
record on Newborn Blood Spot Card
continue pregnancy
termination

Appendix 4.3

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 woman develops symptoms of hepatitis or an STI she should be referred to the relevant professional (hepatologist/SHA) for appropriate assessment.

Special Needs in Pregnancy (SNIPs) –RAH – 0141 314 6199 or 0141 887 9111 then page 56311 **VOL** – 01389 817 270
IRH – 01475 504 833 **Glasgow** - 0141 221 5267 or 0141 211 5366 or 0141 211 5337 (secretary)
Sexual Health Advisors, Sandyford – 0141 211 8634
Counselling and Support Team (CAST), Brownlee Centre 0141 211 1089

Version No	V5.3
Revised:	24 May 2016
Approved by:	Communicable Diseases in Pregnancy Steering Group
Date Approved:	April 2011
Next revision date:	May 2019

Appendix 4.4

Managing Communicable Diseases Screening Tests in Late Bookers

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

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

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

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

- Seek informed consent for screening (HIV, Syphilis, hepatitis B)
- Fill one 9ml purple topped EDTA bottle and complete a virology request form, clearly indicating which tests (HIV, Syphilis hepatitis B) are to be carried out. Even if a woman does not consent to all four tests, please fill one 9ml purple topped EDTA bottle. Do not send two 5ml bottles, or other combinations to make up to 9 ml, the machines in the lab won't accept them and the sample will not be processed.
- Ensure tests are recorded on PNBS
- Mark the sample as URGENT and telephone the West of Scotland Specialist Virology Centre to let them know it is in the system. (Tel 0141 201 8722)
- Send the sample to the virus lab, via normal routine processes
- Ensure that the name and contact details of the person and a deputy who will be responsible for any positive results are clearly appended
- Note that to view a result on portal a CHI number is essential

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

- Seek informed consent for screening (HIV, Syphilis, hepatitis B, rubella)
- Fill one 9ml purple topped EDTA bottle and complete a virology request form, clearly indicating which tests (HIV, Syphilis hepatitis B) are to be carried out.
- Please fill one 9ml bottle regardless of how many tests are requested. Sending multiple 5 ml tubes is not acceptable and the sample will not be processed.
- Ensure tests are recorded on PNBS at next opportunity
- Mark the sample as 'URGENT'.

- In hours (i.e. 9.00 – 17.00 Monday – Friday and 9.00 – 12.30 Saturday), telephone the Laboratory (Tel 0141 201 8722) and
- explain that an urgent sample is being sent
- discuss the travel arrangements
- arrange when and to whom the results will be communicated. You must provide the laboratory with adequate contact details to include the name and preferably two contact numbers of the main results recipient and a deputy.
- Out of hours you must telephone the on-call virologist via the Switchboard 0141 211 3000 and discuss the above.
- If the timing of the local transport systems does not facilitate urgent transfer order a taxi to ensure the sample reaches the laboratory. (see NHSGGC Amended Protocol Ordering and Use of Taxis and Couriers October 2011)

http://www.staffnet.ggc.scot.nhs.uk/Corporate%20Services/Communications/Briefs/Documents/amended%20taxi%20protocol%20-%20phase%201_acute%20services.pdf

In normal hours the lab is able to process and produce results within 1-2 hours of receipt. Note that reactive samples will need to be confirmed on the next day.

Note that to view a result on portal a CHI number is essential

3) The woman presents in labour:

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

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

- Seek informed consent for screening (HIV, Syphilis, hepatitis B,).

- Fill one 9ml purple topped EDTA bottle and complete a virology request form, clearly indicating which tests (HIV, Syphilis hepatitis B) are to be carried out.

- Please fill one 9ml bottle regardless of how many tests are requested. Sending multiple 5 ml tubes is not acceptable and the sample will not be processed.

- Mark the sample as ‘URGENT’.

- In hours (i.e. 9.00 – 17.00 Monday – Friday and 9.00 – 12.30 Saturday), telephone the Laboratory (Tel 0141 201 8722) and explain that an urgent

sample is being sent discuss the travel arrangements

- arrange when and to whom the results will be communicated. You must provide the laboratory with adequate contact details to include the name and preferably two contact numbers of the main results recipient and a deputy.

- Out of hours you must telephone the on-call virologist via the Switchboard 0141 211 3000 and discuss the above.

- Order a taxi to ensure the sample reaches the laboratory. (see NHSGGC Amended Protocol Ordering and Use of Taxis and Couriers October 2011)

http://www.staffnet.ggc.scot.nhs.uk/Corporate%20Services/Communications/Briefs/Documents/amended%20taxi%20protocol%20-%20phase%201_acute%20services.pdf

- As with ALL emergency blood tests ensure results are followed up immediately they are available. In normal hours the lab is able to process and produce results within 1-2 hours of receipt.

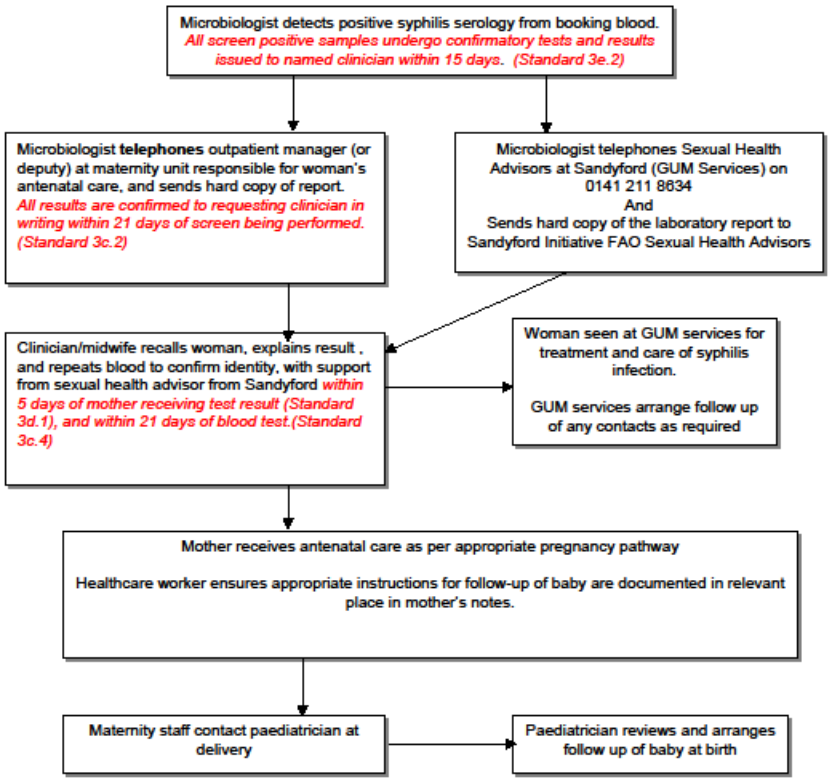
- Communication with paediatricians is essential as their management may be significantly altered by these results however the responsibility for taking and sending these investigations and obtaining these results remains with the midwifery / obstetric team.

- Ensure tests are recorded on PNBS at next opportunity

NHS Greater Glasgow and Clyde

Protocol for Significant Laboratory Results

SYPHILIS



Version No:	V4.2
Approved by:	Communicable Diseases in Pregnancy Steering Group Lead Author Dr Gillian Penrice added 6.1.2016
Date Approved:	December 2011 Checked 1.2016
Next revision date:	December 2014 Next review 31/01/2017

NHS Greater Glasgow and Clyde

Protocol for Significant Laboratory Results

HEPATITIS B (HBsAG)

Woman is found to be hepatitis B surface antigen positive (HBsAG)

Virologist sends a letter and copy of report, from West of Scotland Specialist Virology Centre (WoSSVC) to:

- the named outpatient manager, or deputy, at the maternity unit responsible for woman's antenatal care
- the nominated hepatitis B obstetrician at the maternity unit (including initial advice on management of the neonate)
- cc'd to Sandyford Shared Care Support Service – Tel: 0141 211 8639
- the GP (if patient registered)

The Public Health Protection Unit (PHPU) is notified electronically on a weekly basis.

All screen positive samples are confirmed and issued to the named clinician within 15 days of the screening test. (Standard 3e.2)

The nominated obstetricians for hepatitis B will ensure that the woman's named obstetrician carries out the following:

The woman is recalled and repeat blood tests to confirm identity are carried out

The woman is *informed of the result within 21 days of screening test (Standard 3c.4)* and understands the meaning of the result and need for immunisation of the baby.

The woman is immediately referred to the local hepatitis service (Gastroenterology or Infectious Diseases) for clinical review and advice

Sandyford Shared Care Support Service will co-ordinate the screening of family members and contact tracing.

The woman is given an appointment to attend for review at 26 weeks.

The hepatitis B status and management plan is clearly documented in the Neonatal section of the Yellow Alert Sheet which starts every inpatient maternity record

Refer to the NHS GGC Obstetric Guidelines – 'Hepatitis B positive Management of women identified through antenatal screening' (May 2012)

The woman's consultant ensures appropriate instructions received from the laboratory for initial management of the baby are documented in the proforma supplied by the virus lab. n.b. the Hep B DNA levels taken at 26 weeks may alter the initial advice given, and this should be documented accordingly .

Before discharge from the maternity unit, a check should be made that the woman has already attended the hepatitis service and if not, a further appointment at 2 months is made.

Maternity staff inform the paediatric team immediately after birth to ensure appropriate treatment is given as soon as is possible, and within 24 hours of birth. Immunisation form completed and faxed or emailed (HepB.Screening@ggc.scot.nhs.uk) to Community Screening Department within

Community Screening Department records immunisation and recalls child for all subsequent immunisations. GP refers child at 12 months to appropriate paediatrician, for blood test to check immunity

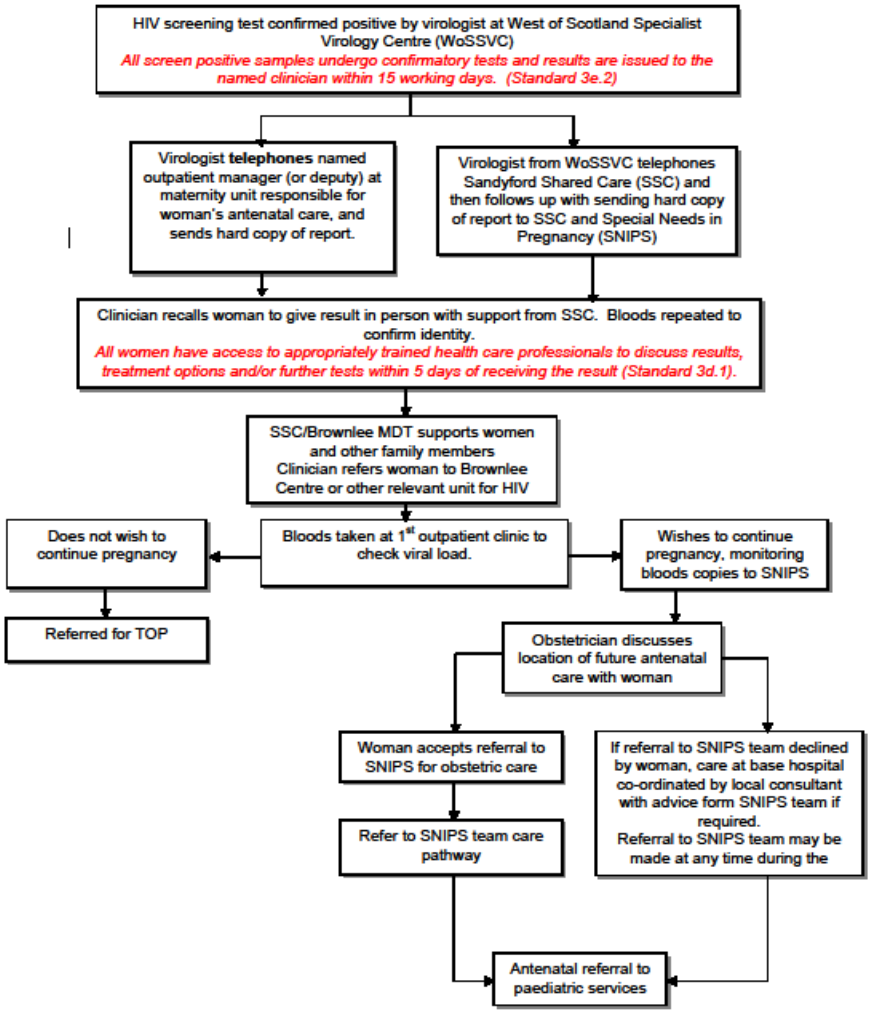
Paediatrician checks blood test and informs Community Screening department of result.

Version No:	V6.2
Approved by:	Communicable Diseases in Pregnancy Steering Group Lead Author Dr Gillian Penrice added 5.1.16
Date Approved:	12.6.2014 on site – live from 16.6.2014
Next revision date:	June 2017

NHS Greater Glasgow and Clyde

Protocol for Significant Laboratory Results

HIV



Version No: V5.1
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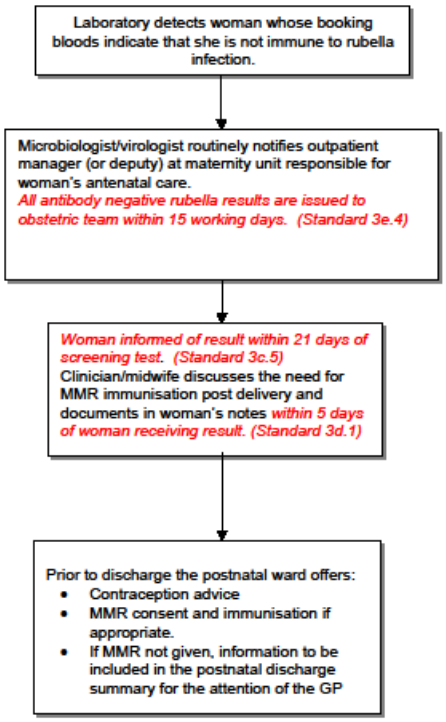
Date Approved: On site 12.6.14 Live from 16.6.14
Next revision date: June 2017

NHS Greater Glasgow and Clyde

Protocol for Significant Laboratory Results

NOT IMMUNE TO RUBELLA INFECTION

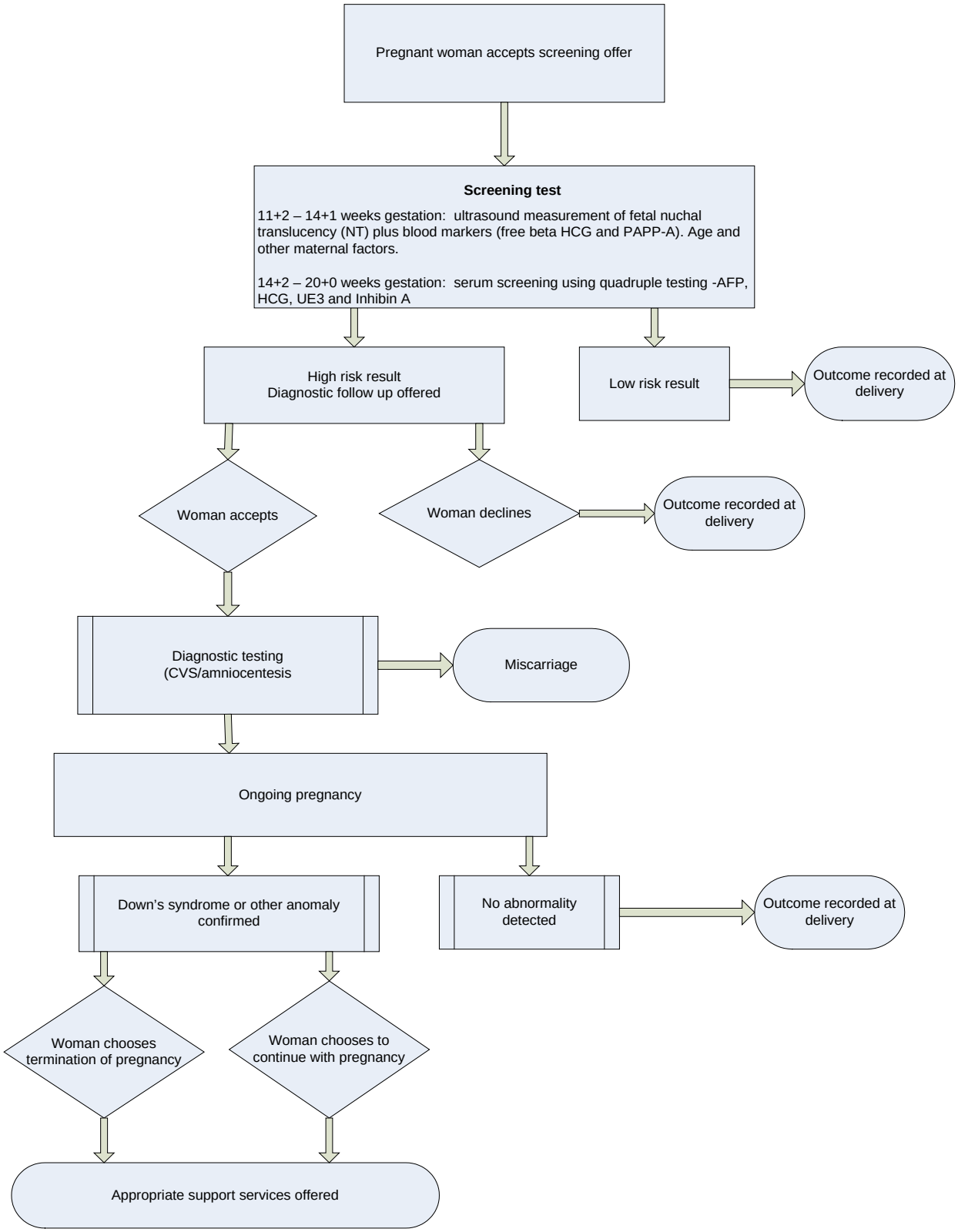


Version No:	V4.2
Approved by:	Communicable Diseases in Pregnancy Steering Group Lead Author Dr Gillian Penrice added 5.1.16
Date Approved:	December 2011 Checked 1.2016
Next revision date:	December 2012 Next Review 1.2017

Note: Antenatal immunisation against rubella infection will cease from June 2016.

Appendix 4.9

Down's syndrome screening pathway



Appendix 4.10

Members of Pregnancy Screening Steering Group

(as at March 2016)

Dr John O'Dowd	Consultant in Public Health Medicine (Chair)
Dr Catriona Bain	Clinical Director, Obstetrics and Gynaecology
Ms Louise Brown	West of Scotland Pregnancy Laboratory
Mrs Lin Calderwood	HI&T Screening Service Delivery Manager
Dr Elizabeth Chalmers	Consultant Haematologist
Dr Rosemarie Davidson	Consultant Clinical Geneticist
Mr Ian Fergus	Site Technical Manager, Diagnostics
Ms Evelyn Frame	Chief Midwife
Mrs Cathy Harkins	Lead Midwife
Mrs Marilyn Horne	Deputy Health Records Manager
Miss Denise Lyden	Project Officer
Dr Alan Mathers	Chief of Medicine, Women's and Children's
Mrs Michelle McLauchlan	General Service Manager
Dr Louisa McIlwaine	Consultant Haematologist
Mrs Diana Clark	Lead Midwife
Mrs Elizabeth Rennie	Screening Programmes Manager
Dr Jim Robins	Consultant Obstetrician, Clyde
Ms Jaki Lambert	Lead Midwife (Argyll and Bute)
Ms Margaretha Van Mourik	Consultant Genetic Counsellor
Dr Nicola Williams	Head of Molecular Genetics

Appendix 4.11

Members of Communicable Diseases Steering Sub Group (As at March 2016)

Dr Gillian Penrice	Public Health Protection Unit (Chair)
Ms Maxine Anderson	Counsellor
Mrs Louise Carroll	Programme Manager HIV/STIs
Ms Flora Dick	Special Needs (SNIPS) Midwife
Ms Rose Dougan	Special Needs (SNIPS) Midwife
Ms Catherine Frew	Data Analyst, Specialist Virology Centre
Ms Claire Glover	Clinical Nurse Specialist
Mr Sam King	Sexual Health Advisor
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Dr Catriona Bain	Clinical Director Obstetrics and Gynaecology
Ms Victoria Mazzoni	Senior Community Midwife
Ms Christine McGee	Community Midwife
Mrs Katie McEwan	Clinical Service Manager
Mrs Diane Clark	Lead Community Midwife
Ms Jane McOwan	Technical Manager, Specialist Virology Centre
Ms Linda Rhodick	Medical Secretary/Data Co-ordinator
Dr James Robins	Consultant Obstetrician & Gynaecologist
Ms Samantha Shepherd	Clinical Scientist
Dr Andrew Thomson	Consultant Obstetrician & Gynaecologist

Chapter 5: Newborn Screening

Summary

Newborn Bloodspot Screening:

- 12,382 babies resident in NHSGGC were screened, that is a total of 99% of the total eligible population of 12,681. The uptake of screening was high across all socioeconomic deprivation quintiles and geographical areas.

- 72% of babies screened had white UK ancestry, 7% had South Asian ancestry and 5% had mixed background ancestry.

- Eight babies were diagnosed with congenital hypothyroidism, less than five babies with PKU (phenylketonuria); seven babies with cystic fibrosis; less than five babies with sickle cell disease, and 57 babies were identified as carriers for haemoglobinopathies. The phrase *less than five* has been used in line with NHS Scotland information governance which is intended to protect privacy and avoid identifying individuals.

Universal Newborn Hearing Screening

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

- Of the 12,337 eligible babies, 12,138 were screened for hearing loss giving an uptake of 98%. 1,321 (11%) babies required a second stage follow up and, of these, 186 (1.5%) babies were referred to audiology. Fifty babies were confirmed with a hearing loss (0.4% of the screened population). 27 babies had confirmed bilateral hearing loss and 19 babies had confirmed unilateral hearing loss. Of these children, 13 (0.001%) had significant bilateral hearing loss.

- 308 (2.6%) babies did not complete the screening programme. These included babies who did not attend for screening, are deceased or have moved away from their current home address or transferred to another Board area.

Chapter 5: Newborn Screening

Newborn bloodspot screening aims to identify, as early as possible, abnormalities in newborn babies which can lead to problems with growth and development, so that they may be offered appropriate management for the condition detected. The diseases screened for are phenylketonuria; congenital hypothyroidism; cystic fibrosis; sickle cell haemoglobinopathy and medium chain acyl-CoA dehydrogenase deficiency (MCADD).

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

Eligible population

Newborn Bloodspot and Universal Newborn Hearing screening programmes are offered to all newborns.

The screening tests

Newborn bloodspot screening: The bloodspot sample should be taken on day 5 of life whenever possible. There are separate protocols in place for screening babies who are ill, have a blood transfusion or are born prematurely and when repeat testing is required. Newborn siblings of patients who have MCADD are offered diagnostic testing at 24 – 28 hours of age as well as routine testing.

Blood is taken by the community midwife from the baby's heel using a bloodletting device and collected on a bloodspot card consisting of special filter paper. It is then sent to the National Newborn Screening Laboratory in Queen Elizabeth University Hospital for analysis. The blood is analysed for markers of the five conditions: phenylketonuria, congenital hypothyroidism, cystic fibrosis, sickle cell disorders and MCADD.

Detailed pathway is shown in **Appendix 5.1**.

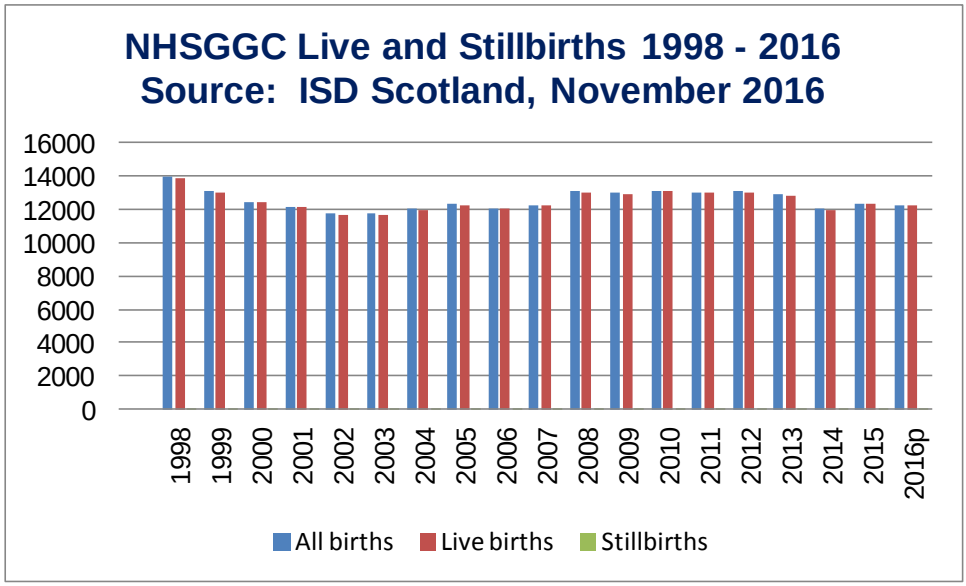
Universal Newborn Hearing screening: Hearing tests are carried out on all babies born in NHS Greater Glasgow and Clyde using the Automated Auditory Brainstem Response (AABR).

Detailed screening pathway is shown in **Appendix 5.2**

Delivery of NHSGGC Newborn Bloodspot Screening programmes

Figure 5.1 shows that number of live births from 1998 to 2016. The number of live births to NHSGGC residents for 2016 was 12,233.

Figure 5.1 Number of live and still births across NHSGGC over a 16 year period from 1998 to 2016



Source SMR02, ISD Scotland, November 2016
Notes

1 - Excludes home births and births at non-NHS hospitals.
2 - Where four or more babies are involved in a pregnancy, birth details are recorded only for the first three babies delivered.

3 - Includes births where NHS Board of residence is unknown or outside Scotland.
4 - Stillbirths which are reported via SMR02 submissions are included in the above table.
It is known that not all stillbirths are captured this way and therefore the recommended source of stillbirth data for Scotland is that published by National Records of Scotland (NRS).

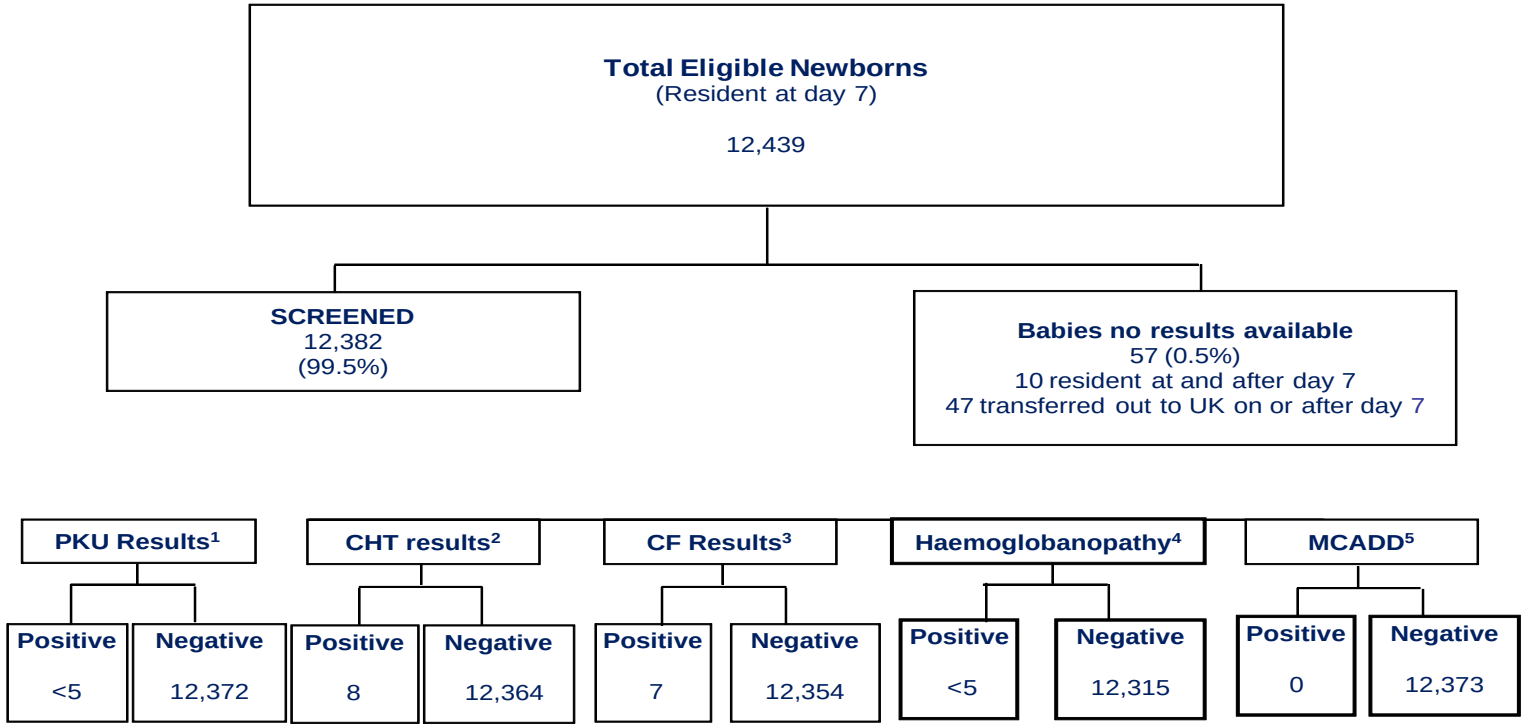
p - Provisional.

Figure 5.2 illustrates newborn bloodspot uptake rates and the results of the screening programme from 1 April 2015 to 31 March 2016.

12,382 babies resident in NHSGGC were screened, that is 99.5% of the total eligible population of 12,439. Results were not available for the 57 (0.5%) babies that moved into the NHSGGC Board area.

This represents an improvement in the uptake rate from 98.7% in 2014/15.

Figure 5.2 Newborn bloodspot uptake rates and the results for babies born 1 April 2015 to 31 March 2016



Source: Child Health (CH2008); Date extracted: July 2016

Notes:

1 Total includes <5 repeats; 5 verifications

<5 repeats; 6 verifications

3 Total includes 11 carriers; <5 late; <5 repeats; 5 verifications

4 Total includes 55 carriers; <5 repeats; 5 verifications

5 Total includes 68 carriers; <5 repeats; 5 verifications

Following screening, less than five babies were diagnosed with PKU (phenylketonuria); eight babies were diagnosed with congenital hypothyroidism, seven babies with cystic fibrosis; less than five babies with sickle cell disease, and 55 babies were identified as carriers for haemoglobinopathies. All babies received appropriate management within the timescale of the set NHSQIS standards. In this report the phrase less than 5 has been used in line with NHS Scotland information governance standards to protect the privacy of individuals.

Table 5.1 shows that the percentage uptake rate of bloodspot screening is high across all HSCP areas and deprivation categories.

Table 5.1 Percentage uptake rate of bloodspot screening by HSCP and deprivation categories
Period: 1 April 2015 to 31 March 2016

	Most Deprived				SIMD2012 Quintile				Least Deprived			
	1		2		3		4		5		Total	
HSCP	Screened	% uptake	Screened	% uptake	Screened	% uptake	Screened	% uptake	Screened	% uptake	Screened	% uptake
East Dunbartonshire	41	100.0	197	99.0	80	97.6	171	99.4	520	99.6	1,009	99.3
East Renfrewshire	86	100.0	80	100.0	59	98.3	182	99.5	444	99.8	851	99.6
Glasgow North East Sector	1,445	99.4	287	98.6	161	99.4	157	98.1	45	100.0	2,095	99.2
Glasgow North West Sector	1,073	99.8	252	99.6	305	99.7	218	100.0	295	99.7	2,143	99.8
Glasgow South Sector	1,246	99.0	784	99.4	381	99.7	295	98.7	168	99.4	2,874	99.2
Inverclyde	354	100.0	116	100.0	83	100.0	89	100.0	72	100.0	714	100.0
Renfrewshire	627	99.8	248	100.0	417	100.0	232	100.0	249	99.6	1,773	99.9
West Dunbartonshire	381	100.0	265	99.6	180	100.0	55	100.0	42	100.0	923	99.9
Total	**5,253**	**99.6**	**2,229**	**99.42**	**1,666**	**99.6**	**1,399**	**99.4**	**1,835**	**99.7**	**12,382**	**99.5**

Source: Child Health (CH2008); Date extracted: July 2016

Table 5.2 shows the breakdown of the ancestry group for babies tested. Data includes babies born in Argyll and Bute. 72% of babies screened had white UK ancestry, 7% had South Asian ancestry and 5% had mixed background ancestry.

All babies received appropriate management within the timescale of the set national standards.

Table 5.2 NHSGGC Newborn Bloodspot screening – ancestry of the babies tested 1 April 2015 – 31 March 2016

	Argyll & Clyde		Glasgow		Total	
Ancestry Group	**N**	**%**	**N**	**%**	**N**	**%**
African or African Caribbean	23	0.7	302	3.2	325	2.6
South Asian (Asian)	61	1.9	843	8.9	904	7.1
South East Asian (Asian)	17	0.5	216	2.3	233	1.8
Other non-European (Other)	2	0.1	153	1.6	155	1.2
Southern & Other European (White)	106	3.3	454	4.8	560	4.4
United Kingdom (White)	2,720	84.0	6,439	68.2	9,159	72.2
North Europe (White)	25	0.8	77	0.8	102	0.8
Unknown	[redacted]	0.1	25	0.3	30	0.2
Any Mixed Background	117	3.6	505	5.3	622	4.9
Not Stated	162	5.0	430	4.6	592	4.7
Total	**3,237**		**9,444**		**12,681**	

Source: Scottish Newborn Screening Laboratory - Newborn Bloodspot Screening Report 2015/16

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

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 5.3 illustrates the laboratory outcomes of blood spot tests. In 2015/16, of the 13,274 bloodspot samples received, 13,188 were normal. 192 (1.4%) bloodspot specimens could not be analysed due to insufficient amounts of blood on the bloodspot card and required repeat bloodspot screening tests to be carried out on babies. 4 samples received had taken more than seven days to arrive at the laboratory.

National standards require that 95% of positive cases of congenital hypothyroidism and phenylketonuria start treatment by 14 days of age and of cystic fibrosis by 35 days of age. Therefore, the time from when a test is taken to the time of arrival at the laboratory is important.

Table 5.3: Specimen test outcomes for NHSGGC for period 1 April 2015 and 31 March 2016

Specimen Test - Outcomes	Clyde	Glasgow	Total
Refused all tests			
Partial refused	0	0	0
Insufficient blood to perform all tests	46	146	192
Unsatisfactory >14 days in transit	0		
Unsatisfactory No CHI	10	69	79
Unsatisfactory Other	16	60	76
<3 days post T/F			9
Updated info	57	172	229
IRT tested late (total)	0		
IRT tested late (Born in Scotland)	0		
Ref PKU	0		
Ref CHT			8
Ref CF	0	6	6
Ref CF Carrier			12
Ref MCADD	0	0	0
Ref SCD	0		
Ref SCD Carrier		<40	40
Ref HbV	0		
Ref HbV Carrier	1	15	16
Number of normal results	3,364	9,824	13,188
Pre-TF	17	71	88
Sent for SCD DNA		<15	<20
Total Specimens received	3,373	9,901	13,274

Insufficent as % of Total	1.4	1.5	1.4
Unsatisfactory as % of Total	0.77	1.30	1.17
IRT tested late as % of Total	0.00	0.01	0.01
IRT tested last (born in Scotland) as % of Total	0.00	0.01	0.01

Source: Scottish Newborn Screening Laboratory - Newborn Bloodspot Screening Report 2015/16

Notes

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol.

Scottish Newborn Screening Laboratory figures cannot be mapped to NHS GGC new boundary

Parental decline - Parents have the option to decline tests for some or all of the conditions screened

Unsatisfactory = specimen damaged or of poor quality

Updated Information = cards that were received with incorrect or missing details

Results are not issued until the relevant information is received

IRT Tested Late = babay was more than 6 weeks of age when specimen was taken. The test for Cystic Fibrosis is not reliable after 6 weeks.

Ref PKU = babies with high or persistently raised levels of phenylalanine that were referred to paediatricians for further investigations. Some of these may not be confirmed cases of PKU.

Ref CHT = babies with high or persistently raised levels of TSH that were referred to paediatricians for further investigations. Some of these may not be confirmed cases of Congential Hypothyroidism.

Ref CF = babies suspected of having Cystic Fibrosis of babies referred for Sweat testing. Some of these cases may not be confirmed as cases of CF.

Ref Carrier CF = Babies referred as possible carriers of Cystic Fibrosis

Ref MCADD = babies with suspected MCADD referred to paediatricians for further investigations

Ref SCD = babies referred to haematologists with suspected Sickle Cell Disorder

Ref SCD Carrier = babies referred as suspected carriers of Sickle Cell Disorder.

Ref HbV = babies referred to haematologists suspected of having a haemoglobanopathy disorder. These require follow-up for confirmation and some may not be confirmed as cases.

Ref HbV Carrier = babiesr referred as suspected carriers of a haemoglobanopathy disorder. Some of these

Delivery of the NHSGGC Universal Newborn Hearing Screening programme

Table 5.4 shows that the percentage uptake rate for the newborn hearing screening is high for all HSCP areas.

Table 5.4 Percentage Uptake for newborn hearing screening by HSCP

HSCP	Eligible	Screened	% Uptake
East Dunbartonshire	998	986	98.8
East Renfrewshire	844	836	99.1
Glasgow North East Sector	2,083	2,033	97.6
Glasgow North West Sector	2,157	2,113	98.0
Glasgow South Sector	2,875	2,820	98.1
Inverclyde	712	709	99.6
Renfrewshire	1,751	1,735	99.1
West Dunbartonshire	917	906	98.8
Total	12,337	12,138	98.4

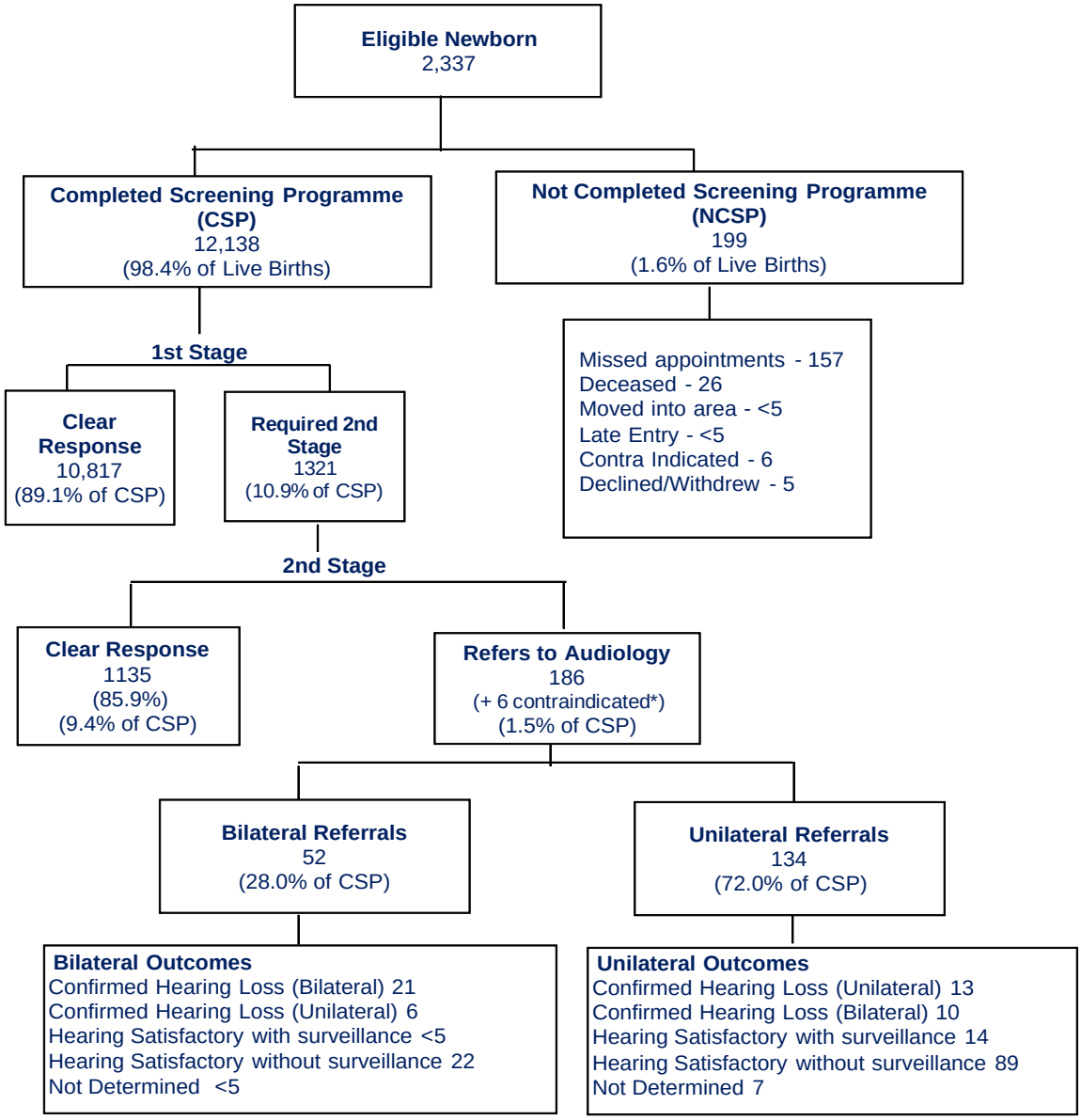
Source: Scottish Birth Record (SBR) Extracted: August 2016

Figure 5.3 illustrates the hearing screening activity. Of the 12,337 eligible babies, 12,138 were screened for hearing loss giving an uptake of 98.4% (**Figure 5.3 and Table 5.4**), an improvement on the uptake rate of 97.6% in 2014/15.

Of the 12,337 eligible babies, 12,13*8 were screene*d for hearing loss giving an uptake of 98%. 1,321 (11%) babies required a second stage follow up and, of these, 186 (1.5%) babies were referred to audiology. Fifty babies were confirmed with a hearing loss (0.4% of the screened population). 27 babies had confirmed bilateral hearing loss and 19 babies had confirmed unilateral hearing loss. Of these children, 13 (0.001%) had significant bilateral hearing loss.

308 (2.6%) babies did not complete the screening programme (**Figure 5.3**). These included babies who did not attend for screening, are deceased or have moved away from their current home address or transferred to another Board area.

Figure 5.3 Summary of NHSGGC Universal Newborn Hearing Screening Programme



Source: Scottish Birth Record, extracted August 2016

Definitions - Screening

1st Stage - 1st Screen (AABR1) for Greater Glasgow & Clyde

2nd Stage - 2nd screen (AABR2) for Greater Glasgow & Clyde

Not Completed screening programme- all babies did not completed screen process but have a final outcome set on SBR includes, DNA, Deceased, Moved Away, etc. Babies who are still in screen process either awaiting 1st or 2nd stage screen are also in this data

Definitions - Outcomes

Hearing Under assessement: all babies who have referred from the screen but have not attended for diagnostic testing at time report was compiled.
Incompleted: Patient did not attend appointment for diagnostic testing
Not yet determined: the severity and type of loss is not finalised at the time of reporting. Will be followed up in Audiology.
PCHI: all babies who were diagnosed with permanent Childhood Hearing Loss in both ears - better ear responses at 40dB and more.

Information systems

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

The results of the Bloodspot test are recorded against the individual child's record held within the Scottish Immunisation and Recall System (SIRS) and also in PNBS IT application that supports the failsafe processes for newborn bloodspot screening.

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

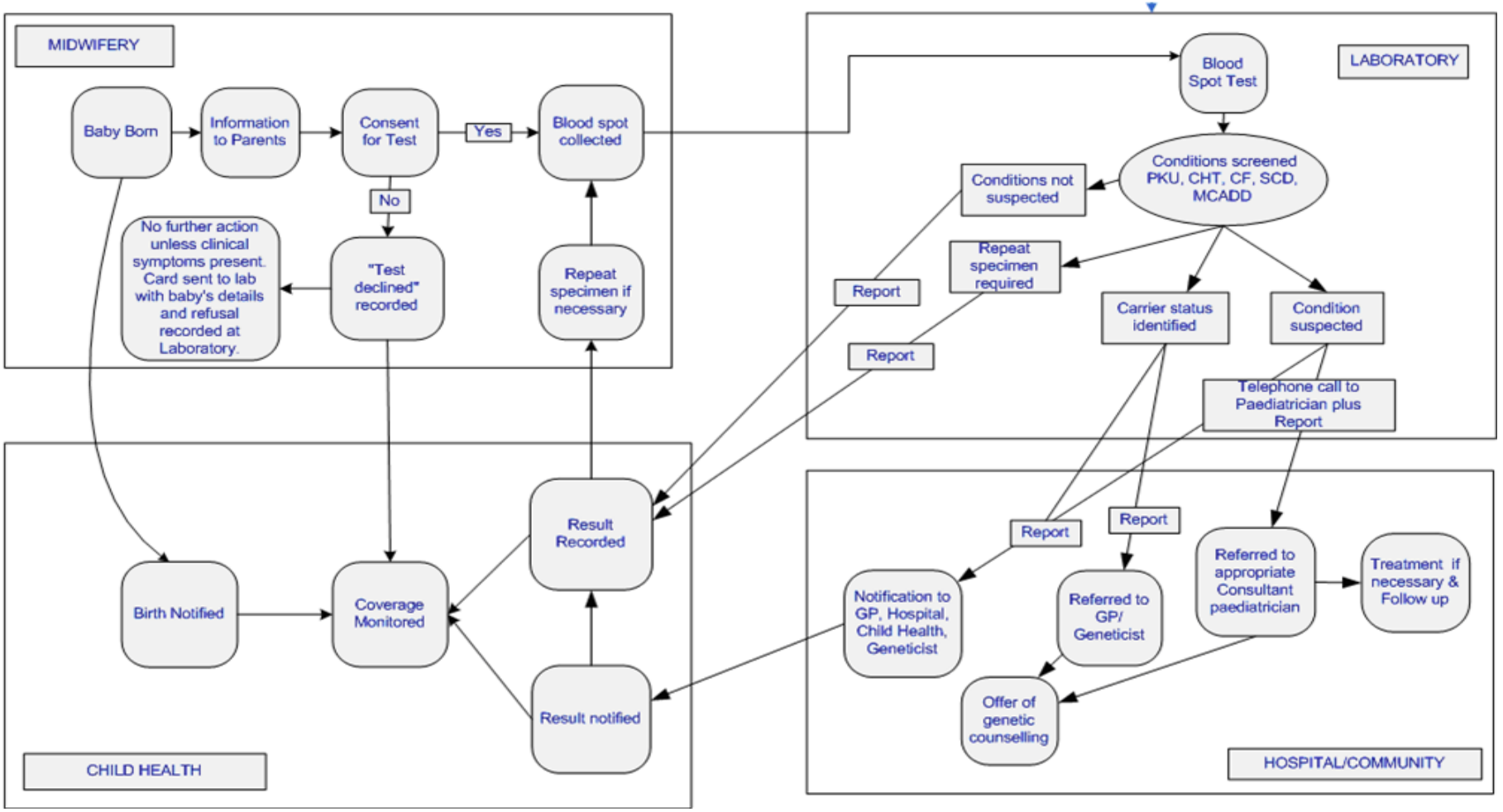
The Child Health Surveillance Programme Pre-School system (CHSP-PS) holds screening outcomes and is used as a failsafe to ensure all babies are offered hearing screening.

Challenges and future priorities

Maintain service performance and ensure that all babies are offered a newborn bloodspot test and hearing test within the targets set by national standards.

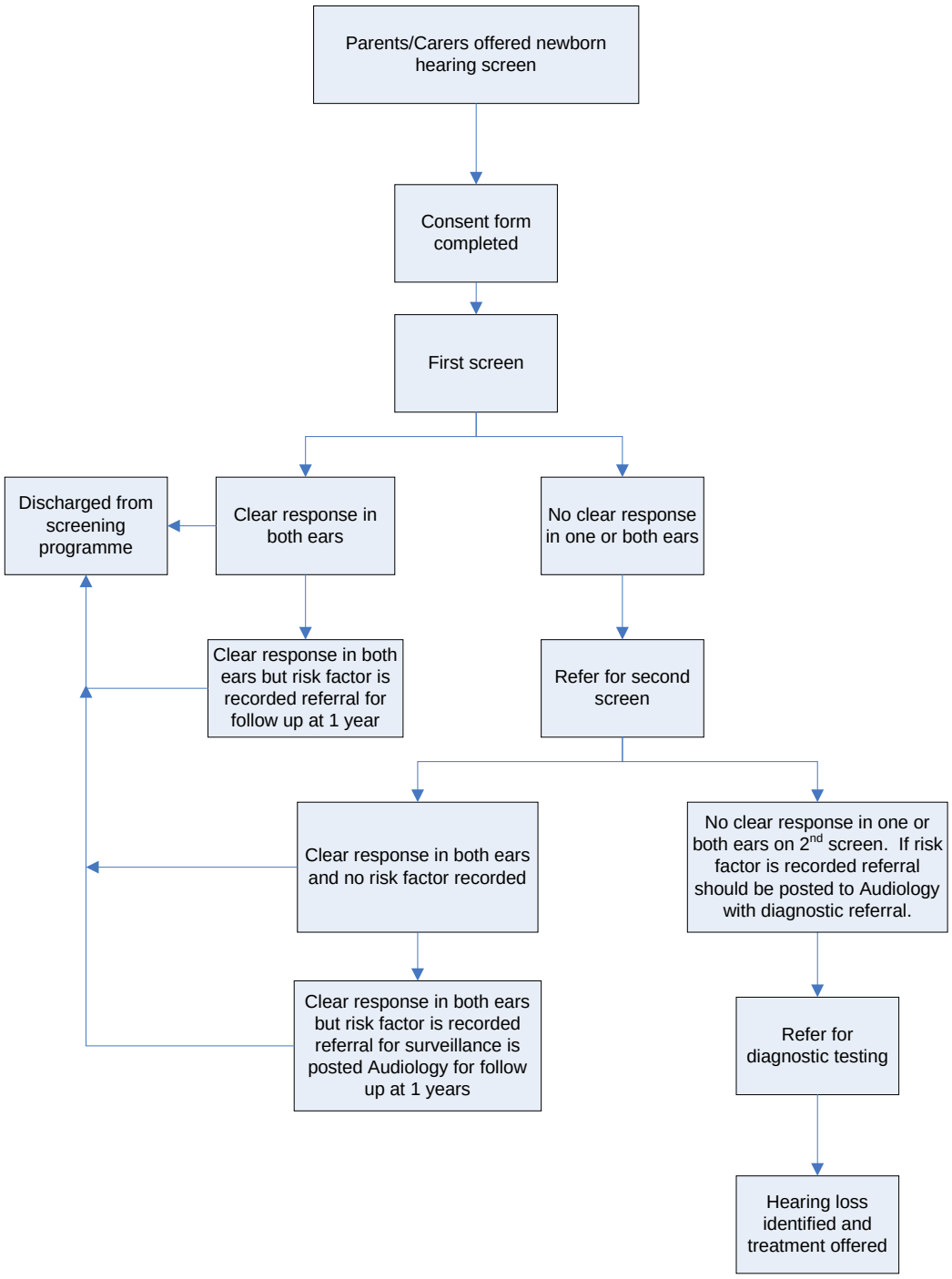
NHSGGC Newborn Bloodspot Screening Pathway

Appendix 5.1



Appendix 5.2

NHSGGC Universal Newborn Hearing Screening Pathway



Appendx 5.3

Members of Newborn Bloodspot Screening Steering Group
As at March 2016

Dr John O'Dowd	Consultant in Public Health Medicine (Chair)
Mr Paul Burton	Senior Information Analyst
Mrs Lin Calderwood	HI&T Service Delivery Manager
Mrs Cathy Harkins	Clinical Lead Midwife
Dr Elizabeth Chalmers	Consultant Paediatric Haematologist
Dr Rosemarie Davidson	Consultant Clinical Geneticist
Dr Anne Devenny	Consultant Paediatrician
Mr Ian Fergus	Technical Site Manager
Dr Peter Galloway	Consultant Clinical Biochemist
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Mr Paul Burton	Information Manager
Miss Denise Lyden	Project Officer
Dr Helen Mactier	Consultant Neonatologist
Mrs Jaki Lambert	Lead Midwife
Mrs Michelle McLauchlan	General Manager, Obstetrics
Mrs Diana Clark	Lead Midwife
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Dr Peter Robinson	Consultant in Paediatric Metabolic Medicine
Ms Sarah Smith	Principle Scientist, Newborn Screening Laboratory
Ms Margaretha van Mourik	Consultant Genetics Counsellor
Mrs Nicola Williamson	Consultant Clinical Scientist

Appendix 5.4

Universal Newborn Hearing Screening Programme Steering Group (As at March 2016)

Dr John O'Dowd	Consultant in Public Health Medicine (Chair)
Mrs Karen Boyle	Newborn Hearing Screening Manager
Mr Jim Bretherton	Clinical Service Manager
Mr Paul Burton	Senior Information Analyst
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Mr James Harrigan	Head of Audiology
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Lin Calderwood	H&IT Service Delivery Manager
Dr Juan Mora	Consultant Audiological Physician
Mrs Julie Mullin	Assistant Programme Manager, Screening Dept
Mrs Jacqueline Truss	Audiologist Team Leader
Dr Madeline White	Consultant Neonatologist

CHAPTER 6: CHILD VISION SCREENING

SUMMARY

Pre-school Vision Screening Programme

- In 2015/16, 12,975 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening.

- 40.7% (5,276) of children live in the most deprived areas, with the largest proportion living in the Glasgow area.

- Highest uptake was among children of white ethnicity at 87.8%, followed by Asian children where uptake was 81.3%. Lowest uptake was among other ethnic groups at 77.3%.

- Overall uptake was 86.8%. Lowest uptake was in Glasgow City HSCP sectors and West Dunbartonshire where uptake was below 90% compared to highest uptake in Inverclyde at 92.5%.

- Of the 11,258 children screened, 8,080 (71.2%) had a normal result. Of the 2,430 (21.6%) children referred for further assessment, 47% were from the most deprived areas

- The highest proportion of children screened that were referred for further investigation was in Glasgow North East (29.2%) and Glasgow North West (29.1%). The lowest was 12.8% in East Renfrewshire.

- Of the 89 (0.8 %) children that were recalled back to be screened due to difficulties screening their vision during the first screen, 62 lived in the most deprived areas.

- 631 (5.6%) children are currently under follow up by ophthalmology service.

P7 School Vision Screening Programme

- In 2015/16, 11,780 Primary 7 school children were eligible for a vision test and of which 10,294 (87.4%) were tested. Highest uptake was in the Glasgow North East sector at 90.6%. Lowest uptake was in Renfrewshire at 84.9%.
- Highest uptake was among children of white ethnicity at 88.3%, followed by Asian children where uptake was 81.3%. Lowest uptake was 75.8% among Black children.

- Of the 11,780 children eligible for vision testing, 15.4% (1,811) were already wearing prescription spectacles.

- Of the 10,294 children tested, 1,701 (16.5%) were identified with a visual defect. Glasgow North West sector had the highest proportion of defects detected at 30.9% (459). The lowest proportion of defects detected was in the Renfrewshire HSCP area at 6.1%.

- 6.6% (676) were identified with poor visual acuity. The highest proportion of children identified with poor acuity were living in Glasgow North West sector at 12.4%. East Renfrewshire HSCP area had the lowest proportion of children with poor acuity at 3.7%.

CHAPTER 6: CHILD VISION SCREENING

Background

Vision Screening is routinely offered to all pre-school age children and Primary 7 school children resident in NHS Greater Glasgow and Clyde area.

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

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

Aim of Vision Screening Programme

The aim of the screening programme is to detect reduced visual acuity. There is emerging evidence that good screening and treatment result in lower incidence of significant permanent vision loss.

Eligible Population

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

All school children in Primary 7 are offered a vision test prior to transfer to secondary education.

The Screening Test

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.

P7 vision test: a visual acuity test is carried out where children are asked to identify a line of letters. Testing is also carried out on children who already have glasses.

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 2011 and 28 February 2012 were downloaded from CHI and matched against the lists received from nurseries.

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

A proportion of children require further testing in secondary care following the initial screen. These children are referred for further assessment to a paediatric clinic in an ophthalmology department, though a small number may be referred to a community optometrist. The assessment appointment involves a full eye examination and allows operators to identify whether the screen test was a false positive and no further action is required or if the screen test was a true positive to enable the specific disorder to be identified and treated.

P7 Vision Screening Pathway

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

Parents/carers are issued with result letter.

Abnormal results have three referral pathways:

- 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;

- If a child has some specific visual abnormalities e.g. nystagmus (difficulty fixing their gaze on an object) or a visual field problem (problems with central or peripheral vision) , they will be 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 need urgent assessment and management.

Delivery of Pre-school Vision Screening Programme 2015/16

In 2015/16, 12,975 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening.

Table 6.1 shows that 40.7% (5,276) of children live in the most deprived areas, with the largest proportion living in the Glasgow area.

Table 6.1 Number of Eligible NHSGGC Child Residents by HSCP Area and by Deprivation Categories

	SIMD Quintile 2012					
	Most deprived				Least deprived	
HSCP	**1**	**2**	**3**	**4**	**5**	**Total**
East Dunbartonshire	52	194	108	173	656	1,183
East Renfrewshire	84	90	85	249	699	1,207
Glasgow North East Sector	1,479	259	156	131	47	2,072
Glasgow North West Sector	1,045	265	236	169	303	2,018
Glasgow South Sector	1,229	672	340	307	156	2,704
Inverclyde	377	101	110	113	107	808
Renfrewshire	597	286	475	205	342	1,905
West Dunbartonshire	413	343	193	78	51	1,078
Total	5,276	2,210	1,703	1,425	2,361	12,975
% of Total	**40.7**	**17.0**	**13.1**	**11.0**	**18.2**	

Source: Child Health - Pre-School Date Extracted: October 2016

Table 6.2 shows the number and percentage of children screened by ethnicity. Highest uptake was among children of white ethnicity at 87.8%, followed by Asian children where uptake was 81.3%. Lowest uptake was among other ethnic groups at 77.7%.

Table 6.2 Pre-school Vision Screening Uptake by Ethnicity

2001 Census Ethnic Group	Not Screened	Screened	Total	% Screened
White British	983	7,528	8,511	88.5
White Irish	191	1,454	1,645	88.4
White - Other	156	596	752	79.3
sub total	**1,330**	**9,578**	**10,908**	**87.8**
Asian or Asian British - Indian	40	236	276	85.5
Asian or Asian British - Pakistani	117	444	561	79.1
Asian or Asian British - Bangladeshi	9	43	52	82.7
Asian or Asian British - Other	[redacted]	<10	<10	75.0
subtotal	**166**	**723**	**889**	**81.3**
Black or Black British - African,	32	192	224	85.7
subtotal	**32**	**192**	**224**	**85.7**
Chinese	**21**	**229**	**250**	**91.6**
Other ethnic groups	**107**	**365**	**472**	**77.3**
Unclassified	**59**	**165**	**224**	**73.7**
Total	**1,717**	**11,258**	**12,975**	**86.8**

Source: Child Health - Pre-School, Onomap software, October 2016

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 6.3 shows that the overall uptake was 86.8% representing an increase of 0.2% from previous year. Lowest uptake was in Glasgow City HSCP sectors and West Dunbartonshire where uptake was below 90% compared to highest uptake in Inverclyde at 92.5%.

The highest proportion of children screened that were referred for further investigation was in Glasgow North East (29.2%) and Glasgow North West (29.1%). The lowest was 12.8% in East Renfrewshire (**Table 6.3**).

Of the 11,258 children screened, 8,108 (72%) had a normal result. Of the 2,430 (21.6%) children referred for further assessment, the majority (1,145) were from the most deprived areas (**Table 6.4**).

Of the 89 (0.8 %) children that were recalled back to be screened due to difficulties screening their vision during the first screen, 62 lived in the most deprived areas (**Table 6.4**). 631 (5.6%) children are currently under follow up by ophthalmology service.

Figure 6.1 illustrates the activity for the service in NHS Greater Glasgow and Clyde for the school year 2015-2016.

Table 6.3 Pre-school Vision Screening Uptake and Outcomes by HSCP Area 1 April 2015 to 31 March 2016

HSCP	Children eligible for screening	Total number of children screened	Total number of children not screened	% Uptake	% No Abnormality Detected (NAD) of those screened	% Referred of those screened	% Recalled of those screened	% Ongoing Follow-up of those screened
East Dunbartonshire	1,183	1,081	102	91.4	71.7	23.2	0.6	4.4
East Renfrewshire	1,207	1,104	103	91.5	82.2	12.8	0.5	4.5
Glasgow North East Sector	2,072	1,708	364	82.4	63.0	29.2	1.8	6.0
Glasgow North West Sector	2,018	1,691	327	83.8	64.2	29.1	0.8	5.9
Glasgow South Sector	2,704	2,231	473	82.5	72.6	21.9	0.7	4.8
Inverclyde	808	747	61	92.5	76.6	16.6	0.8	6.0
Renfrewshire	1,905	1,750	155	91.9	80.0	12.7	0.4	6.9
West Dunbartonshire	1,078	946	132	87.8	71.0	22.5	0.3	6.1
Total	**12,975**	**11,258**	**1,717**	**86.8**	**72.0**	**21.6**	**0.8**	**5.6**

Source: Child Health - Pre-School Date Extracted: October 2016

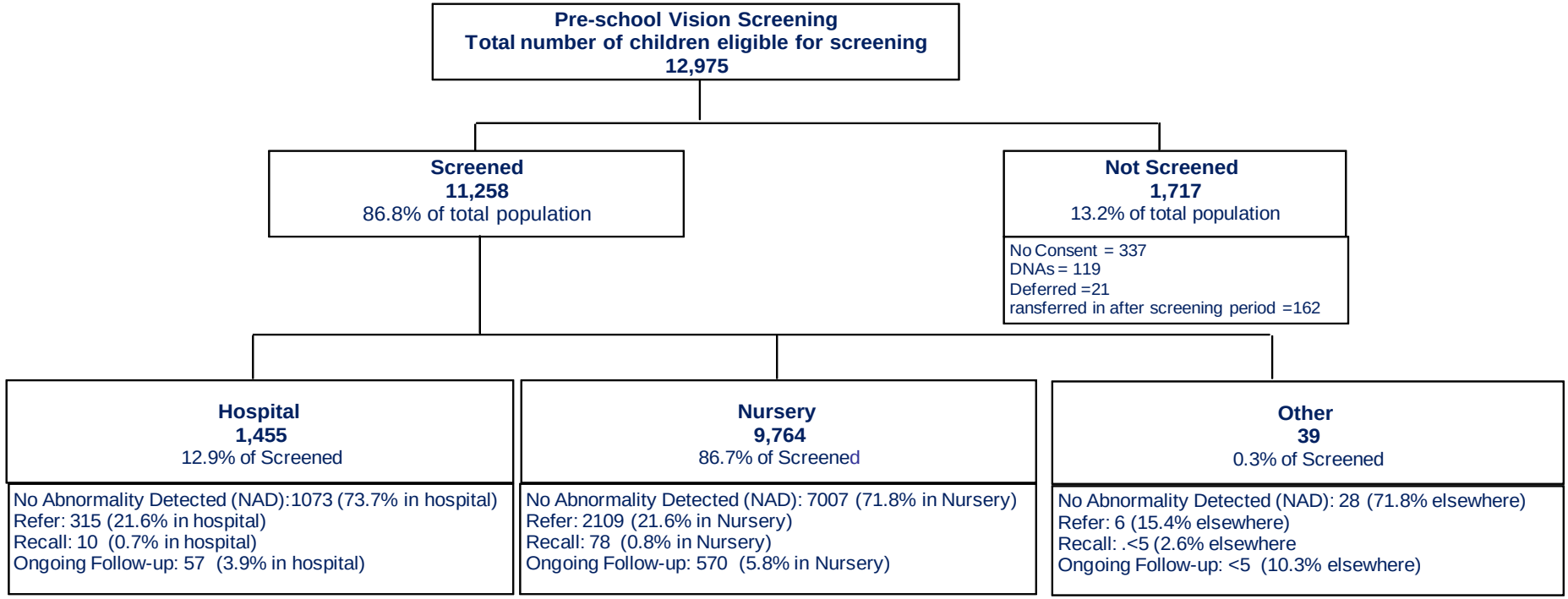
Table 6.4 Pre-school Vision Screening Uptake and Outcomes by Deprivation

SIMD	Total Eligible Population	Number of Children Screened	Number of children screened %	No Abnormality Detected (NAD)	% NAD	Referred	% Referred	Recall	% Recall	Ongoing Follow up	% Ongoing Follow up
1 (Most Deprived)	5,276	4,467	84.7	2,978	66.7	1145	25.6	62	1.4	282	6.3
2	2,210	1,868	84.5	1,336	71.5	423	22.6	9	0.5	100	5.4
3	1,703	1,482	87.0	1,111	75.0	280	18.9	9	0.6	82	5.5
4	1,425	1,270	89.1	972	76.5	225	17.7	[redacted]	0.2	71	5.6
5 (Least Deprived)	2,361	2,171	92.0	1,711	78.8	357	16.4	7	0.3	96	4.4
Total	**12,975**	**11,258**	**86.8**	**8,108**	**72.0**	**2430**	**21.6**	**89**	**0.8**	**631**	**5.6**

Source: Child Health - Pre-School Date Extracted: October 2016

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Figure 6.1: Summary of NHSGGC Pre-school Vision Screening Activity



Source: Child Health - Pre-School Date Extracted: October 2016

Delivery of Primary 7 School Vision Screening Programme 2015/16

In 2015/16, 11,780 Primary 7 school children were eligible for a vision test and of which 10,294 (87.4%) were tested (**Table 6.5)**. Highest uptake was in the Inverclyde (96.7%) and Glasgow North East areas at 90.6%. Lowest uptake was in West Dunbartonshire at 84.8%.

Table 6.5: NHSGGC Primary 7 Screening Uptake by HSCP area

HSCP (School)	Total Eligible	Not Screened	Screened	% Uptake
East Dunbartonshire	1,280	192	1,088	85.0
East Renfrewshire	1,312	134	1,178	89.8
Glasgow North East Sector	1,635	154	1,481	90.6
Glasgow North West Sector	1,716	231	1,485	86.5
Glasgow South Sector	2,332	343	1,989	85.3
Inverclyde	823	27	796	96.7
Renfrewshire	1,734	261	1,473	84.9
West Dunbartonshire	948	144	804	84.8
Total	11,780	1,486	10,294	87.4

Source: CHSP_PS, October 2016

Table 6.6 shows the number and percentage of children screened by ethnicity. Highest uptake was among children of white ethnicity at 88.3%, followed by Asian children where uptake was 81.3%. Lowest uptake was 75.8% among Black children.

Table 6.6: NHSGGC Primary 7 Screening Uptake by ethnicity

2001 Census Ethnic Group	Not Screened	Screened	Total	% Screened
White British	929	7,260	8,189	88.7
White Irish	178	1,500	1,678	89.4
White other background	104	381	485	78.6
Subtotal	**1,211**	**9,141**	**10,352**	**88.3**
Asian or Asian British - Indian	22	147	169	87.0
Asian or Asian British - Pakistani	92	399	491	81.3
Asian or Asian British - Bangladeshi	7	34	41	82.9
Asian or Asian British - other background	[redacted]	[redacted]	[redacted]	75.0
Subtotal	**99**	**433**	**532**	**81.4**
Black or Black British - African,	**30**	**94**	**124**	**75.8**
Chinese	**18**	**74**	**92**	**80.4**
Other ethnic groups	**76**	**299**	**375**	**79.7**
Unclassified	**29**	**103**	**132**	**78.0**
Total	**1,486**	**10,294**	**11,780**	**87.4**

Source: CHS-S, Onomap, November 2016

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 6.7 shows that of the 11,780 children eligible for vision testing, 15.4% (1,811) were already wearing prescription spectacles.

Table 6.7: Number of Primary 7 children wearing glasses by HSCP area

HSCP (School)	Children without spectacles	Children with Spectacles	Total	%Children with Spectacles
East Dunbartonshire	1,106	174	1,280	13.6
East Renfrewshire	1,081	231	1,312	17.6
Glasgow North East Sector	1,378	257	1,635	15.7
Glasgow North West Sector	1,444	272	1,716	15.9
Glasgow South Sector	1,970	362	2,332	15.5
Inverclyde	666	157	823	19.1
Renfrewshire	1,520	214	1,734	12.3
West Dunbartonshire	804	144	948	15.2
Total	**9,969**	**1,811**	**11,780**	**15.4**

Source: CHSP_PS, October 2016

Table 6.8 shows that, of the 10,294 children tested, 1,701 (16.5%) were identified with a visual defect. Glasgow North West sector had the highest proportion of defects detected at 30.9% (459). The lowest proportion of defects detected was in the Renfrewshire HSCP area at 6.1%.

Table 6.8: NHSGGC Primary 7 Children Identified with Visual Defect by HSCP area

HSCP (School)	No Visual Defect	Visual Defect	Total	% Visual Defect
East Dunbartonshire	912	176	1,088	16.2
East Renfrewshire	1,050	128	1,178	10.9
Glasgow North East Sector	1,258	223	1,481	15.1
Glasgow North West Sector	1,026	459	1,485	30.9
Glasgow South Sector	1,579	410	1,989	20.6
Inverclyde	671	125	796	15.7
Renfrewshire	1,383	90	1,473	6.1
West Dunbartonshire	714	90	804	11.2
Total	8,593	1,701	10,294	16.5

Source: CHSP_PS, October 2016

10,294 school children were screened for visual impairment. 6.6% (676) were identified with poor acuity (**Table 6.9**). The highest proportion of children identified with poor acuity were living in Glasgow North West sector at 12.4%. East Renfrewshire HSCP area had the lowest proportion of children with poor acuity at 3.7%.

Table 6.9: NHSGGC Primary 7 school children with accurate or poor acuity by HSCP area

HSCP (School)	Accurate Vision	Poor Acuity[1]	Total	% Poor Acuity
East Dunbartonshire	1,038	50	1,088	4.6
East Renfrewshire	1,134	44	1,178	3.7
Glasgow North East Sector	1,392	89	1,481	6.0
Glasgow North West Sector	1,301	184	1,485	12.4
Glasgow South Sector	1,835	154	1,989	7.7
Inverclyde	738	58	796	7.3
Renfrewshire	1,414	59	1,473	4.0
West Dunbartonshire	766	38	804	4.7
Total	**9,618**	**676**	**10,294**	**6.6**

Source: CHS-S, October 2016

Notes 1 Poor acuity where vision 6/9 or worse

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 reprocured by NHS Scotland.

Challenges and Future Priorities

- Ensure the co-operation of all nurseries to allow screening to take place.
- Increase the proportion of children attending nursery.
- Work with Local Authorities Education Departments to understand taking up nursery places and how to improve this.
- Consider how best to inform and support parents and children who are home-schooled to arrange P7 vision screening.
- 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 6.1

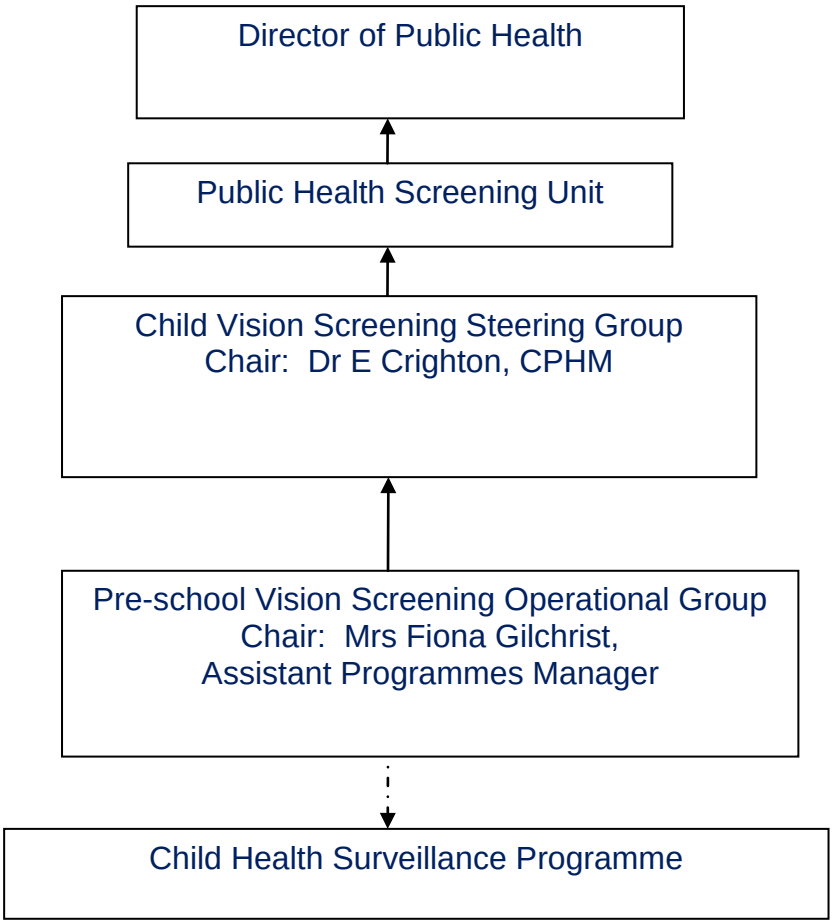
Members of Child Vision Screening Steering Group (As at March 2016)

Dr Emilia Crighton, Consultant in Public Health Medicine (Chair)
Denise Bratten, Optometrist
Paul Burton, Information Manager, H&IT Information Services
Lin Calderwood, Screening Service Delivery Manager
Fiona Gilchrist, Assistant Screening Programme Manager
Samara Hodi, Head of Optometry, NHSGGC
Gale Leslie, Area Ophthalmic Committee Representative
Denise Lyden, Project Officer, Public Health
Patricia Mackay, Team Lead Children & Families, South Glasgow
Carolyn MacLellan, Lead Orthoptist, Glasgow
Eddie McVey, Optometric Adviser, NHSGGC
Arlene Polet, Children's & Families Team Lead, Inverclyde
Uzma Rehman, Programme Manager, Public Health
Diane Russell, Lead Orthoptist, Clyde
Elaine Salina, Principal Optometrist, Clyde HES, NHSGCC
Anita Simmers Head of Vision, Science Dept, GCU
Dr Kathy Spowart, Paediatrician, Community Child Health

Appendix 6.2

Reporting Structure

Child Vision Screening Steering Group



Key:

_____ Direct Reports

- - - - - - - Network Links

Chapter 7: Diabetic Retinopathy Screening

Summary

- 63,173 NHS Greater Glasgow and Clyde residents had diabetes in 2015/16, an increase of 33% from 2007/08, when 48,360 residents had diabetes.
- Prevalence of diabetes among NHS Greater Glasgow and Clyde adult residents has gradually increased from 4.3% in 2007/08 to 5.8% in 2015/16.
- The largest proportion of people with diabetes was among the 50 – 79 year olds. This represents 69.0% (43,565) of the total population with diabetes.
- 24 centenarian residents developed diabetes late on life with the average age of diagnosis at 77.
- Prevalence of diabetes has continued to increase across all CHCP areas with the exception of Glasgow North East sector and East Renfrewshire which has remained static at 5.9% and 5.3% respectively.
- Among people with diabetes, 55.4% were male and 44.6% were female.
- That largest majority of people with diabetes were of white origin 80.6% followed by South East Asian origin at 7.4%.
- 25,534 (40.4%) are known to be resident in the most deprived areas compared to 9,079 (14.4%) who live in the least deprived areas.
- 53,325 (84.4%) were eligible for screening and of those, 90.1% were screened.
- 1,761 were referred to Ophthalmology for further investigation.
- 9,848 (15.6%) people were not eligible for screening because they were either permanently or temporarily suspended from the programme

Chapter 7: Diabetic Retinopathy Screening

Background

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 a diabetic 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.

Aim of screening programme

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.

Eligible population

All people with diabetes aged 12 and over who are resident in the NHS Greater Glasgow and Clyde area are eligible for Diabetic Retinopathy Screening.

The screening test

In the first instance a digital photograph is taken of the individual's retina. If the photograph cannot be graded then a further slit lamp examination will be performed.

Clinic Setting

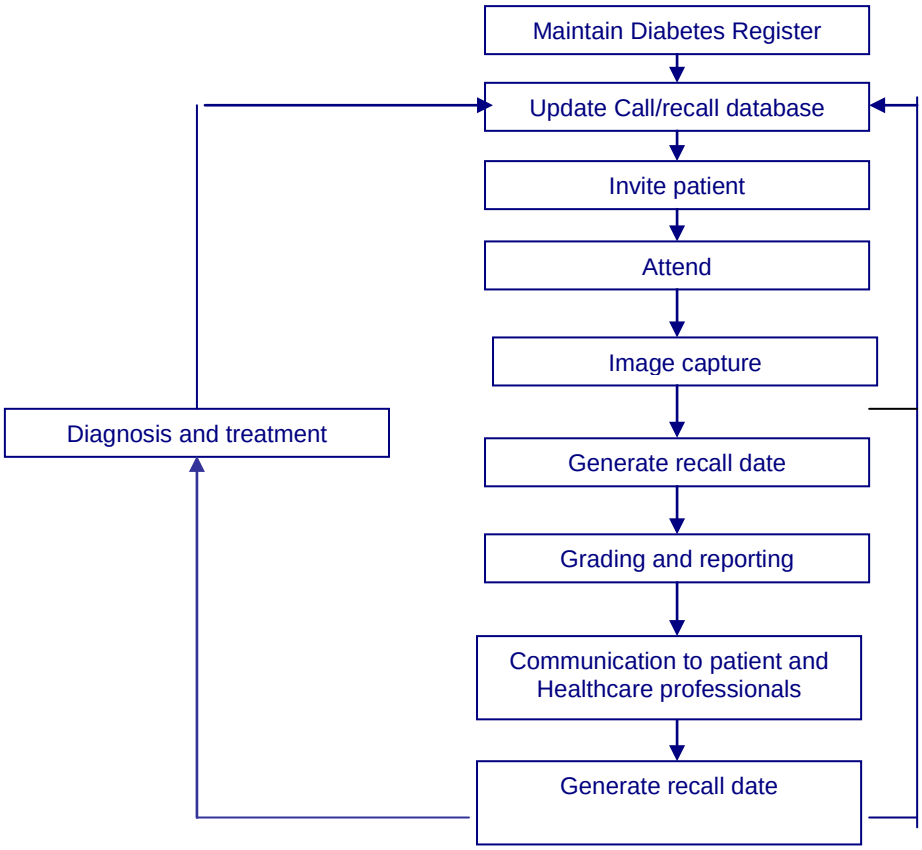
The screening programme takes place in a variety of settings. This can either be at a hospital, health centre or clinic. Across Greater Glasgow and Clyde screening takes place at five hospital locations and 14 health centres or clinics.

The service also provides a slit lamp service from the five hospitals and two of the health centres/clinics for patients who are not suitable for retinal photography.

Screening Pathway

Figure 7.1 illustrates the pathway to reduce diabetes related blindness in general population by identifying and treating sight threatening diabetic retinopathy.

Figure 7.1 illustrates the Diabetic Retinopathy screening pathway



Delivery of NHSGGC Diabetic Retinopathy Screening Programme

Table 7.1 shows the year on year increase in the number of people diagnosed with diabetes over an eight year period from 2007/08 to 2015/16. There were 64,558 NHS Greater Glasgow and Clyde residents with a diagnosis of diabetes in 2015/16, representing an increase of 33% since 2007/08. The table also shows that the prevalence of diabetes among NHS Greater Glasgow and Clyde adult residents has gradually increased from 4.3% in 2007/08 to 5.84% in 2015/16.

Table 7.1 NHSGGC residents with diabetes, type of diabetes and prevalence from 2007/2008 to 2015/2016

Year	Total Population[1]	Type 1 Diabetes Mellitus	Type 2 Diabetes Mellitus	Other Diabetes Mellitus	Unspecified[2]	Total Diabetic Population	Prevalance %
2007/2008	1,123,080	5,630	41,622	616	492	48,360	**4.31**
2008/2009	1,140,434	5,924	45,222	993	422	52,561	**4.61**
2009/2010	1,146,795	6,417	47,916	679	820	55,832	**4.87**
2010/2011	1,147,994	6,205	49,725	697	1,088	57,715	**5.03**
2011/2012	1,161,195	6,333	52,349	820	1,016	60,578	**5.22**
2012/2013	1,140,039	6,456	53,750	1,011	2,583	63,094	**5.53**
2013/2014	1,147,662	6,629	56,170	1,002	1,464	65,265	**5.69**
2014/2015	1,089,967	6,374	54,766	1,270	763	63,173	**5.80**
2015/2016	1,105,968	6,456	56,913	986	146	64,558	**5.84**

Source: DRS, Soarian Date Extracted June 2016

[1] Total Population aged over 12 years old (Source CHI - Jan08, Jan09, Jan10, Jan11, Jun12, Aug12, Mar14, Aug15)

[2] Unspecified: No type of Diabetes recorded

Table 7.2 shows the prevalence and type of diabetes by HSCP.

Table 7.2 Prevalence and number of patients with diabetes in NHSGGC by type of diabetes and HSCP

HSCP	Total Population	Unspecified [2]	Maturity onset diabetes of youth (MODY)	Other diabetes mellitus	Type 1 Diabetes Mellitus	Type 2 Diabetes Mellitus	Total	Prevalance %
East Dunbartonshire	99,478	12	8	71	571	4,674	5,336	5.36
East Renfrewshire	83,803	7	4	47	523	4,010	4,591	5.48
Glasgow North East Sector	178,899	25	13	196	1,009	9,283	10,526	5.88
Glasgow North West Sector	212,521	27	4	187	1,115	8,477	9,810	4.62
Glasgow South Sector	214,584	38	16	215	1,282	12,417	13,968	6.51
Inverclyde	73,197	6	2	70	448	4,292	4,818	6.58
Renfrewshire	160,174	24	7	137	974	8,964	10,106	6.31
West Dunbartonshire	83,312	7	3	63	534	4,796	5,403	6.49
Total	**1,105,968**	**146**	**57**	**986**	**6,456**	**56,913**	**64,558**	**5.84**

Source: DRS, Soarian Date Extracted: June 2016

Notes:

1 Total population over 12 years old (CHI, May 2016)

2 Unspecified: No type of Diabetes recorded

Table 7.3 gives a breakdown of the number of people with diabetes by ethnicity and sex. Of the total population with diabetes, 55.4% were male and 44.6% were female. The largest majority of people with diabetes were White (81.2%) followed by Asians (7.8%).

Table 7.3 NHSGGC eligible population for Diabetic Retinopathy Screening split by ethnicity

Ethnicity	Female	%	Male	%	Total	%
Other White British	5,665	19.7	6,871	19.2	12,536	19.4
White Scottish	16,920	58.7	20,607	57.6	37,527	58.1
White Irish	137	0.5	221	0.6	358	0.6
Other White	879	3.1	1,152	3.2	2,031	3.1
Subtotal	**23,601**	**45.0**	**28,851**	**0.6**	**52,452**	**81.2**
Asian - Indian	553	1.9	883	2.5	1,436	2.2
Asian - Bangladeshi	208	0.7	324	0.9	532	0.8
Asian Pakistani	950	3.3	1,164	3.3	2,114	3.3
Other Asian	399	1.4	555	1.6	954	1.5
Subtotal	**2,110**	**7.3**	**2,926**	**8.2**	**5,036**	**7.8**
Black African	253	0.9	316	0.9	569	0.9
Black Caribbean	21	0.1	16	0.0	37	0.1
Other Black	34	0.1	70	0.2	104	0.2
Subtotal	**308**	**1.1**	**402**	**1.1**	**710**	**1.1**
Chinese	229	0.8	278	0.8	507	0.8
Other Mixed Origin	329	1.1	406	1.1	735	1.1
Other ethnic group	221	0.8	332	0.9	553	0.9
Unknown	2,011	7.0	2,552	7.1	4,565	7.1
Total	**28,809**	**44.6**	**35,747**	**55.4**	**64,558**	

Source: DRS, Sorian Date Extracted: June 2016

Table 7.4 shows the distribution of the population with diabetes across deprivation categories and by age group. Of the total population with diabetes in NHSGGC, 26,511 (41.7%) are resident in the most deprived areas compared to 9470 (14.6%) who live in the least deprived areas.

Table 7.4 NHSGGC eligible population for Diabetic Retinopathy Screening split by age and by deprivation categories

Age Group	SIMD 2012 Quintile 1 (Most Deprived)	2	3	4	SIMD 2012 Quintile 5 (Least Deprived)	Total	% SIMD 2012 Quintile 1 (Most Deprived)
12-19	213	105	81	63	109	571	37.30
20-29	585	290	249	217	196	1,537	38.06
30-39	1,286	581	417	307	329	2,920	44.04
40-49	3,080	1,272	884	651	666	6,553	47.00
50-59	6,028	2,740	1,814	1,422	1,709	13,713	43.96
60-69	6,834	3,145	2,228	2,071	2,628	16,906	40.42
70-79	5,460	2,720	1,912	1,718	2,319	14,129	38.64
80-89	2,702	1,380	989	868	1,315	7,254	37.25
90-99	316	189	128	127	195	955	33.09
100+	8					23	34.78
Total	**26,511**	**12,426**	**8,705**	**7,446**	**9,470**	**64,558**	**41.07**

Source: DRS, Sorian Date Extracted: June 2016

Notes:

Age calculated as at financial year end (i.e. 31/03/2016)

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

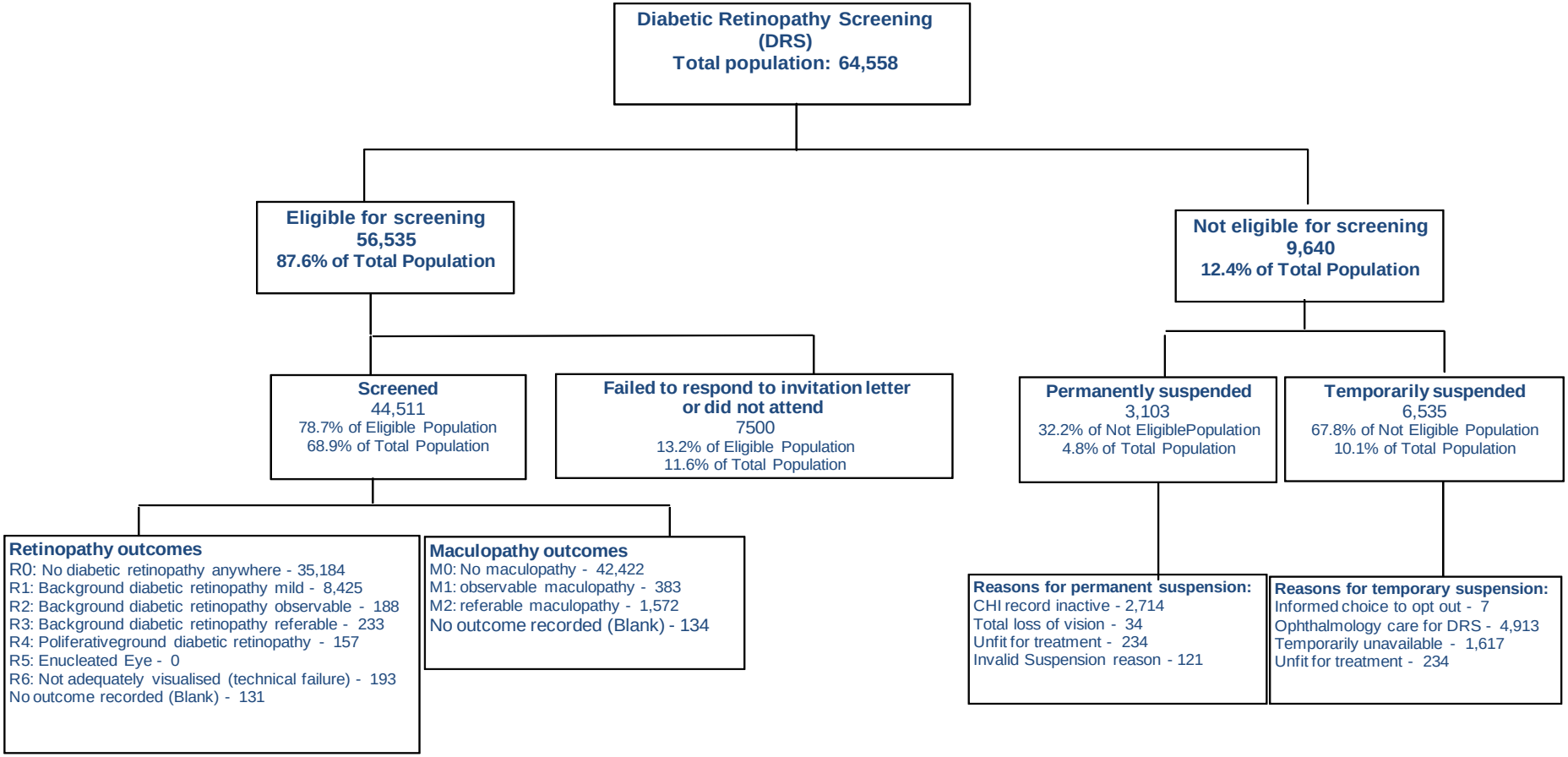
Figure 7.3 illustrates the summary of the NHSGGC Diabetic Retinopathy Screening programme for the period 1 April 2015 to 31 March 2016.

Of the 64,558 patients with diabetes, 56,535 (87.6%) were eligible for screening. Of those, 78.7% (44,511) were screened. This means that 68.9% of the total population with diabetes in NHSGGC was screened in 2015/16.

9,640 (12.4%) people were not eligible for screening because they were either permanently or temporarily suspended from the programme. The main reason for suspension from screening was ongoing ophthalmology care following attendance in diabetic retinopathy screening.

Of the total number of residents screened (44,511), 1,729 were referred to Ophthalmology for further investigation.

Figure 7.3 Summary **uptake and results of NHSGGC Diabetic Retinopathy Screening Programme for period 1 April 2015 to 31 March 2016**



Source: DRS, Soarian Date Extracted June 2016

The overall uptake rate of diabetic retinopathy screening was 78.7% which was below the minimum standard of 80% (**Table 7.5**). Highest uptake was in East Dunbartonshire and Renfrewshire at 81.7%. Lowest uptake was in the three Glasgow City sectors ranging from 76.6% to 77.7% which was below the minimum standard of 80% (**Table 7.5**).

Table 7.5 Diabetic Retinopathy Screening programme uptake for NHSGGC residents by CHP area

HSCP	Not Screened	Screened	Eligible Population[1]	% Screened
East Dunbartonshire	872	3,883	4,755	81.7
East Renfrewshire	752	3,250	4,002	81.2
Glasgow North East Sector	2,085	7,280	9,365	77.7
Glasgow North West Sector	1,983	6,500	8,483	76.6
Glasgow South Sector	2,773	9,193	11,966	76.8
Inverclyde	846	3,424	4,270	80.2
Renfrewshire	1,622	7,239	8,861	81.7
West Dunbartonshire	1,091	3,742	4,833	77.4
Total	**12,024**	**44,511**	**56,535**	**78.7**

Source: DRS, Sorian Data Extracted: June 2016

Notes 1 Eligible population calculated as eligible population minus suspensions ('temporarily unavailable' suspensions reinstated)

Information systems

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

SOARIAN provides the call/recall, image capture, grading, quality assurance and result delivery.

SCI-Diabetes is an essential component for effective Diabetic Retinopathy Screening. It provides the diabetes population register for diabetic retinopathy screening call/recall and the screening results where they can be viewed by clinical staff involved in the care of patients with diabetes.

Challenges and future priorities

It is anticipated that the number of people with diabetes will continue to increase, requiring additional screening capacity and resources in the future. At present the current prevalence of diabetes for NHSGGC adult residents is 5.8%.

Appendix 7.1

Members of Diabetic Retinopathy Screening Steering Group (As at April 2016)

Dr David Morrison	Consultant in Public Health Medicine (chair)
Mr Jim Bretherton	Clinical Service Manager
Mrs Lin Calderwood	HI&T Screening Service Delivery Manager
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Mrs Fiona Heggie	Clinical Nurse Co-ordinator, Retinal Screening
Mr Paul Burton	Information Manager
Miss Denise Lyden	Project Officer
Ms Gillian Kinstrie	Co-ordinator for MCN for Diabetes
Mrs Chris McNeill	Head of Community Health & Care, Partnerships
Mr Eddie McVey	Optometric Advisor
Mrs Elizabeth Rennie	Programme Manager, Screening Dept
Mr David Sawers	DRS Service Manager
Dr William Wykes	Consultant Ophthalmologist
Dr Sonia Zachariah	Specialty Doctor, Diabetic Retinal Screening

Chapter 8: Abdominal Aortic Aneurysm Screening

Summary

- All men aged 65 years in the Board area are invited to attend AAA screening by a single ultrasound examination.
- 5,760 men aged 65 were invited to participate in the AAA Screening programme in 2015-2016.
- 4,637 (80.5%) took up screening, exceeding the minimum standard of 70%.
- Lowest uptake overall was 74% among residents in the most deprived neighbourhoods while uptake among residents in the least deprived areas was 88%.
- Lowest uptakes were found in Glasgow City HSCPs, ranging from 76% to 78%. These may largely reflect the effects of socio-economic deprivation.
- Among 40 individuals with learning disabilities, 23 (57.5%) took up AAA screening.
- 59 men (1.3%) were found to have an aneurysm measuring between 3.00 and 5.49 cm and are currently on surveillance.
- Ten men (0.1%) had an aneurysm measuring 5.5 cm or more that required surgical assessment and intervention.
- All essential KPIs for AAA screening were met.

Chapter 8: Abdominal Aortic Aneurysm Screening

Abdominal aortic aneurysm (AAA) screening was implemented across NHS Greater Glasgow and Clyde in February 2013.

Background

An abdominal aortic aneurysm 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 AAA (Vadulkari, 2000).

Studies have found that approximately 7% of men aged 65 were found to have an aneurysm and was less common in men and women under aged 65 years (Vadulkari et al., 2000; Ashton et al., 2000).

When an aneurysm ruptures less than half of patients will reach hospital alive and when an operation is possible mortality is as high as 85%.

Aim of the screening programme

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

Eligible population

All men aged 65 years who are resident in the NHSGGC area are invited to attend for a single abdominal ultrasound scan. Men aged over 65 years of age will be able to self-refer to the programme. Screening takes place in Victoria ACAD, Stobhill ACAD, Golden Jubilee Hospital, Renfrew Health Centre, Inverclyde Royal Hospital and Vale of Leven Hospital.

Screening test

The screening test involves a single abdominal scan using a portable ultrasound machine.

Screening pathway

Individuals whose aortic diameter is less than 3.0 cm are discharged. Patients with a positive result from screening (AAA dimensions between 3.0 and 5.4 cm) will be offered interval surveillance scanning and treatment. Men with clinically significant AAA (over 5.5 cm) will be referred to secondary care for assessment (**Figure 8.1**).

Participants with an abdominal aortic aneurysm over 5.4 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 participants have a high BMI, large abdominal girth, as bowel gas or previous surgery that can cause issues with visualisation of the aorta preventing accurate measurements and image capture using ultrasound.

If an image cannot be achieved after two appointments men will be discharged from the programme and referred to Vascular Services to manage the participants locally (**Figure 8.2**).

Figure 8.1 Positive Abdominal Aortic Aneurysm Screening Pathway

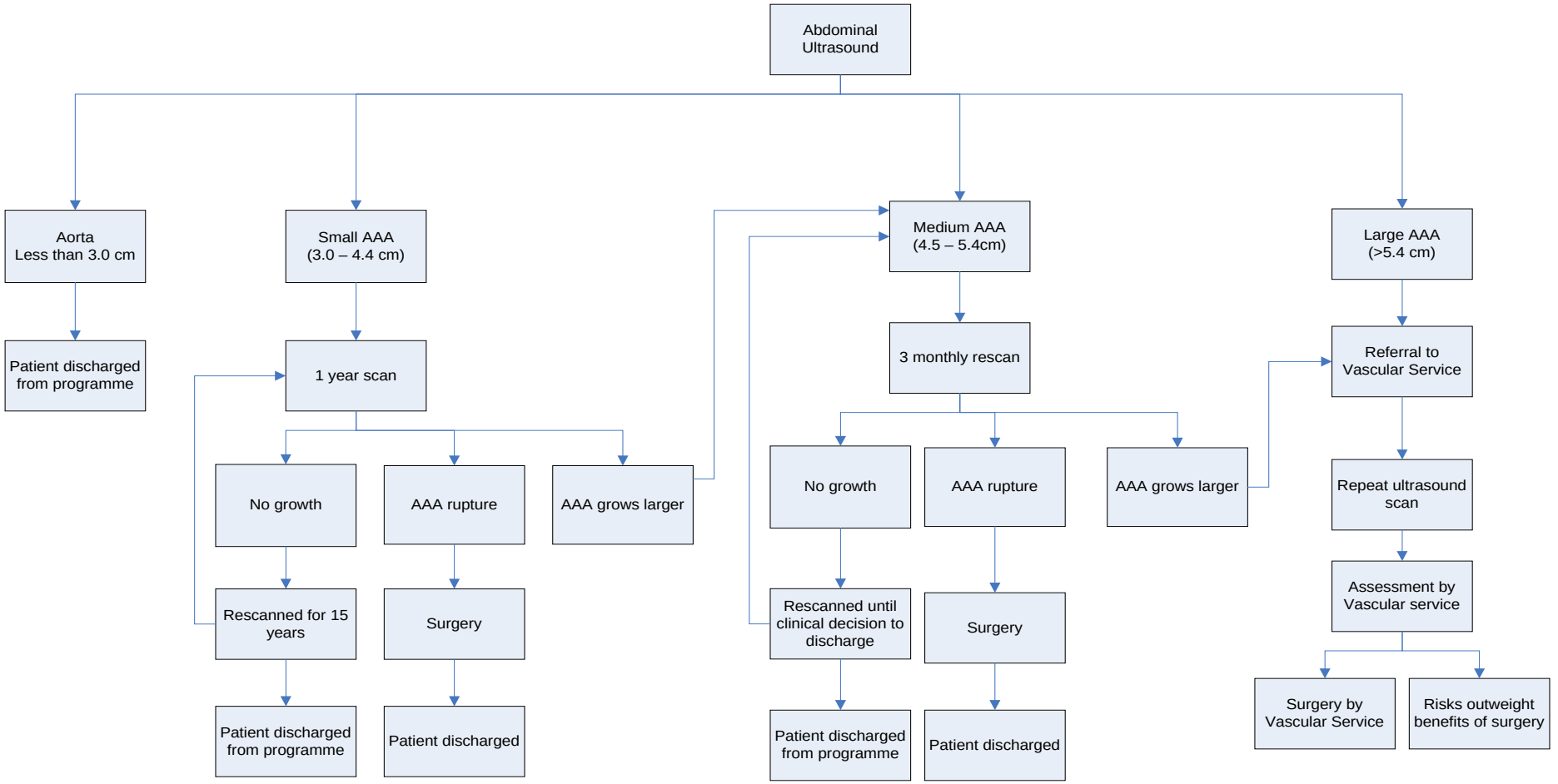
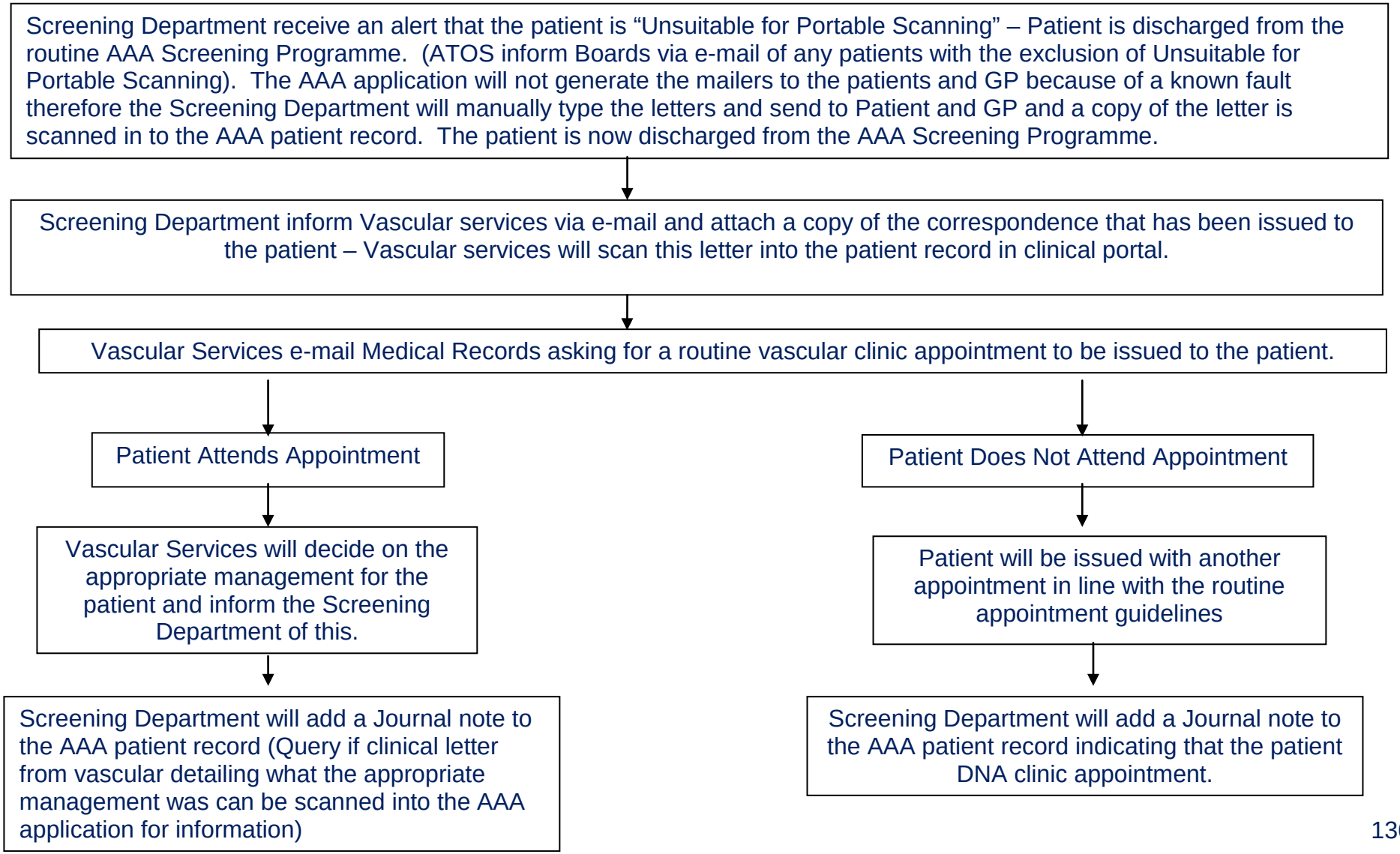


Figure 8.2 Pathway for participants that are unsuitable for portable scanning



Delivery of NHSGGC Abdominal Aortic Aneurysm Screening

From 1 April 2015 to 31 March 2016, 5,760 men were invited to participate in the AAA Screening programme. Of the total invited, 80.5% took up screening, exceeding the national essential standard of 70% (**Table 8.1**).

Uptake of screening was poorer in more socio-economically deprived areas but the differences between HSCPs are not wholly explained by them (**Table 8.1**). Overall, residents of the most deprived areas had uptake rates about 14% lower than the least deprived (74% vs 88%, respectively). But in the HSCP with the highest overall uptake, East Dunbartonshire, uptake in the most deprived areas was 85% compared with 70% in Glasgow North West sector. These suggest that differences in other local activities are also important in obtaining high AAA screening uptake rates.

Table 8.1 Uptake of AAA Screening programme by HSCP area and deprivation category for the period 1 April 2015 to 31 March 2016

			% Uptake by SIMD 2012 Quintile					
HSCP	Total Eligible	Attended	1 (Most Deprived)	2	3	4	5 (Least Deprived)	Total
East Dunbartonshire	686	603	85.0	74.6	91.1	89.0	89.4	87.9
East Renfrewshire	459	397	63.0	88.6	94.3	87.3	87.3	86.5
Glasgow North East Sector	742	564	74.1	72.5	77.4	86.3	85.7	76.0
Glasgow North West Sector	878	663	70.2	78.3	75.0	80.0	82.8	75.5
Glasgow South Sector	1,028	801	76.8	71.8	80.1	82.3	87.6	77.9
Inverclyde	496	391	71.4	80.3	83.7	86.4	84.6	78.8
Renfrewshire	956	790	71.5	82.9	82.4	85.7	89.5	82.6
West Dunbartonshire	515	428	79.2	84.8	84.2	87.9	81.3	83.1
NHSGGC Total	**5,760**	**4,637**	**73.7**	**77.9**	**82.0**	**85.5**	**87.5**	**80.5**

Source: AAA System, July 2016

Men who are registered with a learning difficulty were less likely to take up screening. Of the 40 men identified with learning disability in 2015-16, only 23 (57.5%) took up screening.

A further 196 men (122 in NHSGGC and 73 in Forth Valley Health Board) attended for screening after self-referral. In NHSGGC, all were <5.5cm in diameter and the majority (91%) were <3 cm.

Table 8.2 shows that 59 men (1.3%) were found to have an aneurysm measuring between 3.00 and 5.49 cm and were therefore offered surveillance. Ten men (0.1%) had an aneurysm measuring 5.5 cm or more that required surgical assessment and intervention.

Table 8.2 NHSGGC Abdominal Aneurysm Screening results for the period 1 April 2015 to 31 March 2016

	Largest Measure (cm)				
Result Type	**<3**	**3 - 5.49**	**>=5.5**	**Not Known**	**Total**
External		0	0	0	
Negative	4,536	0	0	0	4,536
Non Visualisation	0	0	0	27	27
Positive	0	59	10	0	69
Technical Fail	0	0	0		
Total	4,540	59	10	28	4,637

Source: AAA System, July 2016
Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

Table 8.3 Number and percentage of deaths by abdominal aneurysm measure for the period 1 April 2015 to 31 March 2016

	Largest Measure (cm)						
Mortality	**<3**	**3 - 5.49**	**(No Surgery) ***	**>=5.5 (Surgery)**	**Not Known**	**Total Screened**	**Total Not Screened**
Total Deceased	53		0	0		58	6
Total Not Deceased	4,487	58		7	23	4,578	1,118
Total	4,540	59		7	27	4,636	1,124
% Mortality	*1.2*	*1.7*	*0.0*	*0.0*	*14.8*	*1.3*	*0.5*

Source: AAA System, July 2016

* 2 not for surgery, 1 already vascular patient

Numbers ≤5 redacted as per ISD Statistical Disclosure Control Protocol

There are 11 national key performance indicators for the AAA screening programme (**Table 8.4**). All but one of the essential KPIs were met. Only two desirable indicators were not met – 98.3% of men were invited for screening before their 66th birthday, against a target of 100%; and 80.5% of eligible men were screened against a desirable target of 85%.

Table 8.4 Performance against national key performance indicators for the period 1 April 2015 to 31 March 2016

Standard	Importance	Criterion	Numerator	Denominator	%	Status
4a1	Essential	A minimum of 90% of men in their 65th year are sent their first invitation for screening before their 66th birthday.	5662	5760	*98.3*	Met
4a3	Desirable	All men in their 65th year are sent their first invitation for screening before their 66th birthday.	5662	5760	*98.3*	Not Met
5a1	Essential	A minimum of 70% of men invited for AAA screening are tested.	5760	4637	*80.5*	Met
5a3	Desirable	A minimum of 85% of men invited for AAA screening are tested.	5760	4637	*80.5*	Not Met
7a2	Essential	The mortality rate due to ruptured abdominal aneurysm among men who were screened negative and discharged from the programme is recorded and an action plan implemented.	0	4540	*0.0*	n/a
8a1	Essential	All men with a screen-detected aneurysm of ≥ 55 mm are referred to a designated unit for assessment within 3 working days of the scan.	10	10	*100.0*	Met
8a2	Essential	A minimum of 75% of men with a screen-detected aneurysm of ≥ 55 mm are seen by a vascular specialist within 10 working days of referral.	9	9	*100.0*	Met
8a3	Desirable	A minimum of 95% of men with a screen-detected aneurysm of ≥ 55 mm are seen by a vascular specialist within 10 working days of referral.	9	9	*100.0*	Met
9b2	Essential	A minimum of 60% of patients with a screen-detected aneurysm ≥ 55 mm deemed appropriate for intervention are operated on by a vascular specialist within 40 working days of referral.	8	9	*88.9*	Met

Standard	Importance	Criterion	Numerator	Denominator	%	Status
9b3	Desirable	A minimum of 80% of patients with a screen-detected aneurysm ≥ 55 mm deemed appropriate for intervention are operated on by a vascular specialist within 40 working days of referral.	8	9	*88.9*	Met
10a1	Essential	The 30-day mortality rate following elective open repair or endovascular aneurysm repair is recorded and actions identified and implemented by the NHS board/collaborative multidisciplinary team.	0	9	*0*	n/a

Information Systems

The Abdominal Aortic Aneurysm (AAA) IT application is used to appoint and manage the patient through their screening pathway. The application obtains the demographic details of the participants by linking with the Community Health Index (CHI).

Challenges/Future Priorities

- To maintain the screening staffing level and screening locations to ensure stability in the delivery of AAA Screening Programme.

- To undertake a patient experience survey to improve service and address inequalities.

APPENDIX 8.2

Members of Abdominal Aortic Aneurysm Screening Steering Group (as at April 2016)

Dr David Morrison	Consultant in Public Health Medicine (Chair)
Mr Paul Burton	Senior Information Analyst
Mrs Lin Calderwood	HI&T Service Delivery Manager
Mrs Mairi Devine	Radiographer
Mrs Antonella Grimon	AAA Data Administrator
Mrs Irene Fyffe	Health Records Services Manager
Dr Ram Kasthuri	Consultant Interventional Radiologist
Miss Denise Lyden	Project Officer
Mrs Elizabeth Rennie	Programme Manager, Screening Department
Mrs Lynn Ross	General Manager, Diagnostics
Mr Wesley Stuart	Lead Clinician
Ms Karen Loudon	Clinical Service Manager (Vascular)
Mr George Welch	Associate Medical Director

ACKNOWLEDGEMENTS

This annual report was prepared by Dr David Morrison, Dr John O'Dowd, Consultants in Public Health Medicine and Denise Lyden, Project Officer Public Health Screening Unit in collaboration with colleagues across NHS Greater Glasgow and Clyde.

Special thanks are conveyed to Paul Burton, Information Manager, Dr Jim Robins, Consultant Obstetrician, Louise Brown, Principal Scientist, West of Scotland Prenatal Screening Laboratory and Alison Estell Laboratory Newborn Screening Co-ordinator, and Stuart Imrie, Principal Scientist, Cytogenetics.

Many thanks also go to all the healthcare professionals, support staff and Screening Department for helping to deliver the screening services across NHS Greater Glasgow and Clyde.

The programmes have also benefited from the close links held with the Child Health Surveillance Programme (CHSP), Maternity Services, Regional Cancer Advisory Group and the Diabetes Managed Care Network.