Public Health Screening Programmes

1 April 2014 to 31 March 2015

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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 2014/15:

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. Pre-School Vision Screening

8. Aortic Abdominal Aneurysm Screening

Screening is a public health service offered to specific population groups to detect potential health conditions before symptoms appear. Screening has the potential to save lives and improve quality of life through early diagnosis of serious conditions.

In NHSGGC, the co-ordination of all screening programmes is the responsibility of the Public Health - Health Services led by a Consultant in Public Health Medicine. Multidisciplinary Steering Groups for the programmes are in place and their remit is to monitor performance, uptake and quality assurance.

Reporting structures for Scottish public health screening programmes is currently under review. The proposed governance structure is illustrated in **Figure A.** Current governance arrangements for NHSGGC public health screening programmes is illustrated in **Figure B.**

Figure A: Proposed Scottish national reporting structures – National Public Health Screening Programmes

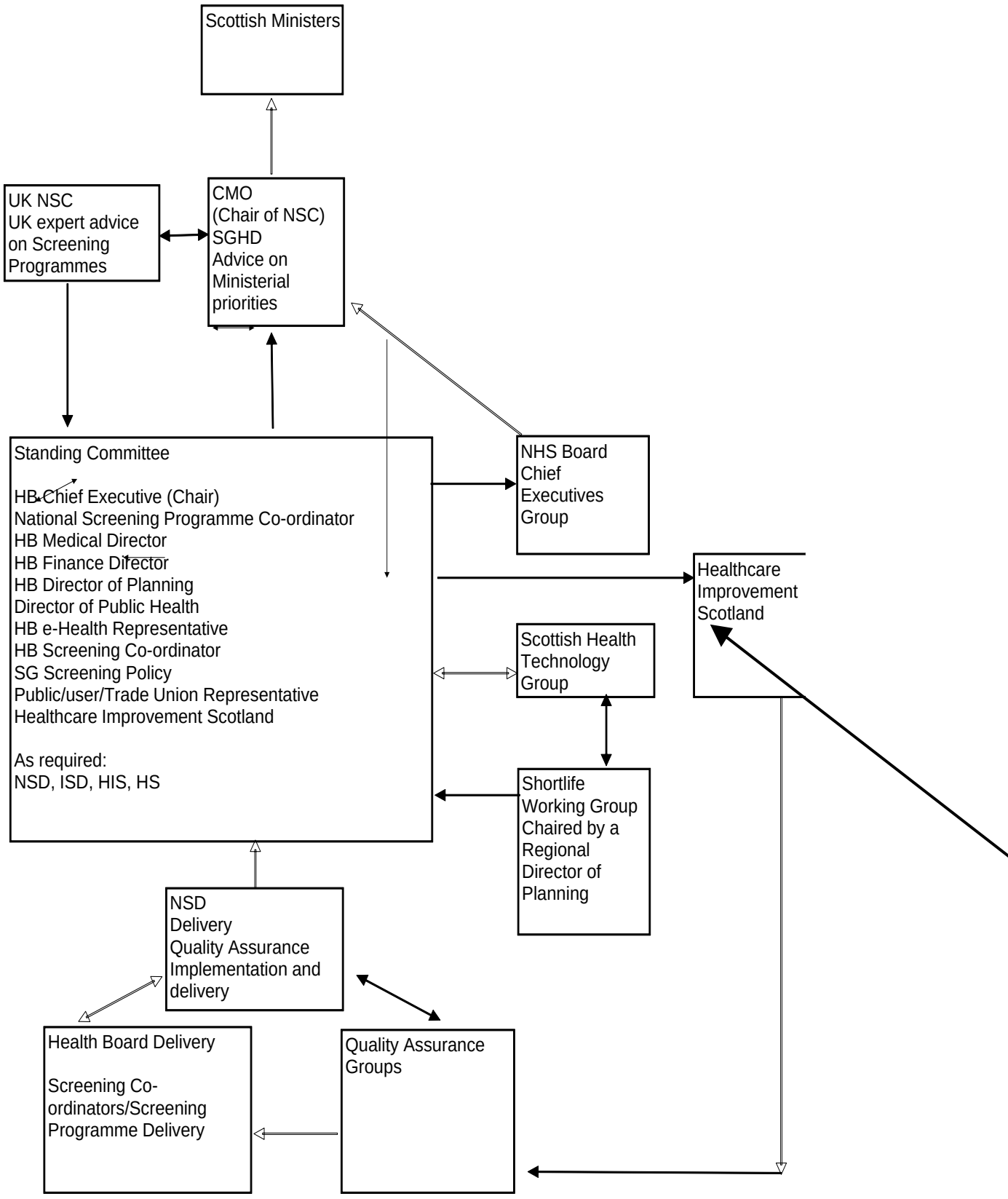
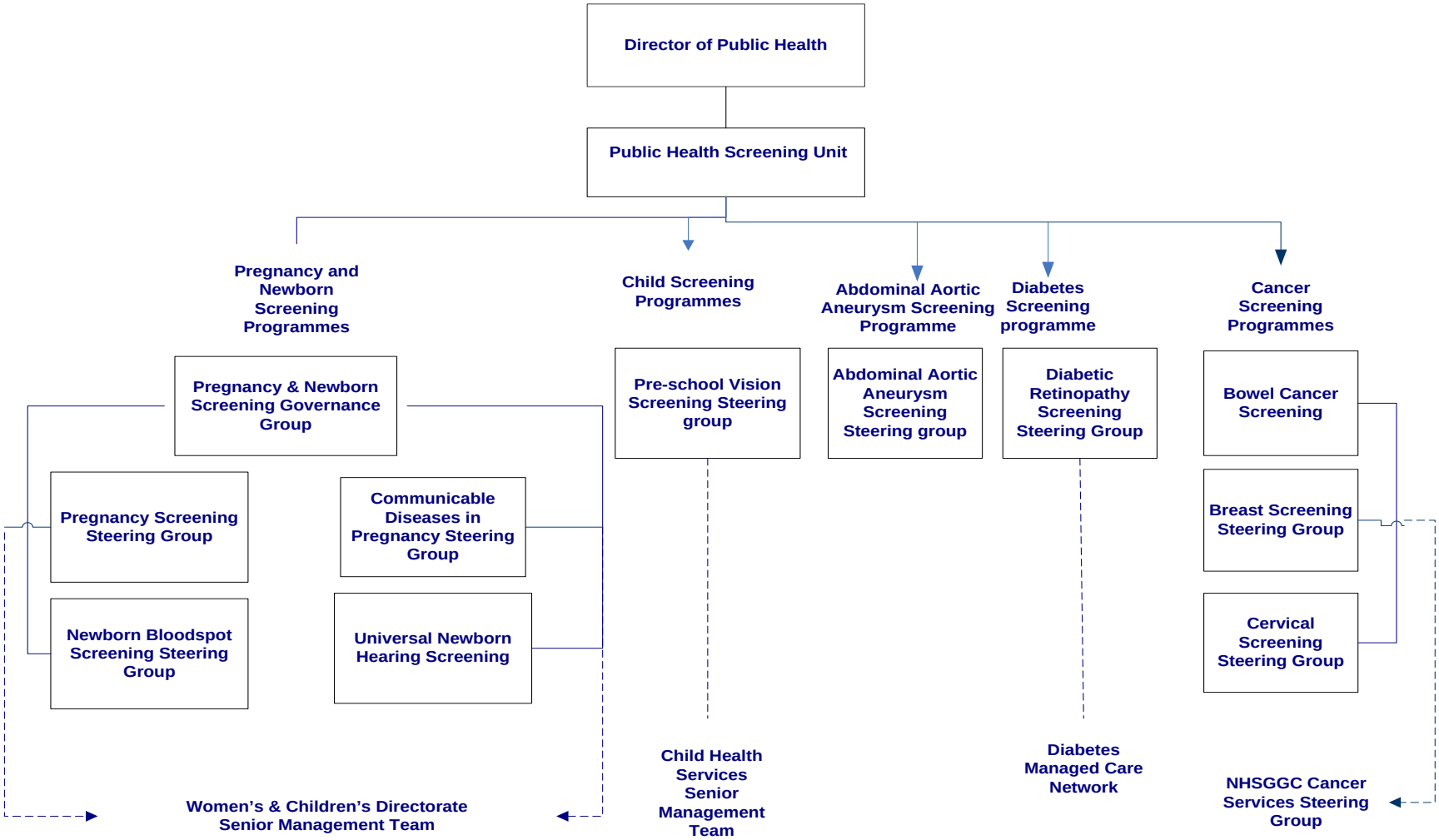


Figure B: Governance arrangements for the NHSGGC public health screening programmes



As the screening programmes stretch across the whole organisation, successful delivery relies on a large number of individuals working in a co-ordinated manner towards common goals in a quality assured environment. It is essential that good information management systems are in place to monitor and evaluate each component and the overall performance of every screening programme offered to our residents. All the screening programmes, with the exception of Pre-school Vision Screening, have clinical standards set by Health Improvement Scotland which we strive to meet.

NHS Greater Glasgow and Clyde Public Health - Health Services is committed to working in partnership with voluntary and statutory services to identify innovative ways to tackle inequalities in health and encourage uptake of screening programmes.

This report includes work of the newly established Primary Care Engagement Team which is a joint partnership scheme between NHSGGC and Cancer Research UK (Chapters 2, 3 and 4). Since 2014, the team has been supporting general practices to raise the profile of cancer and enhance their activity around cancer screening, prevention and early detection. This is a three year joint partnership between Cancer Research UK and NHSGGC.

Analysis on uptake among people with learning disabilities and screening activity by ethnicity is also included for some chapters.

Table A shows the number of people eligible in NHS Greater Glasgow and Clyde in 2014/15 that were offered screening tests, the number of people who had taken up the offer of screening and the uptake rates for each of the screening programmes.

Table A: NHSGGC screening programmes uptake rates for the period 1 April 2014 to 31 March 2015

Screening programme	Total eligible population	Total number Screened	HIS Target	% Uptake[5]
Cervical screening[1]	331,326	234,755	80%	70.9%
Breast screening[2]	132,178	84,864	70%	64.2%
Bowel screening[3]	380,902	203,166	60%	53.0%
Pregnancy screening: • Communicable diseases in pregnancy [4]	16,224	16,161	n/a	99.0%
• Down's syndrome	13,518	9,741	n/a	72.1%
• Haemoglobinopathies	13,518	13,159	n/a	97.3%
Newborn screening: • Newborn bloodspot	12,453	12,286	n/a	98.7%
• Newborn hearing	12,591	12,283	n/a	97.6%
Pre-school vision screening	12,947	11,205	n/a	86.5%
Diabetic retinopathy Screening	63,173	53,325	80%	84.4%
Abdominal Aortic Aneurysm Screening	5,616	4,493	70%	80.0%

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 2015

Chapter 1: Cervical Screening

Summary

- 344,525 women were eligible to be invited to participate in the cervical screening programme over three years.

- In 2014/15, the 5.5 year uptake rate calculated for NHSGGC was 70.9%. This was below the minimum standard of 80%.

- This represented an overall 3.1% decrease in uptake since 2013/2014 when uptake was 74%.

- The lowest uptake of 60.3% was in Glasgow North West sector. East Renfrewshire had the highest uptake at 79.4%.

- 61,255 (18.5%) did not take up the invite to have a smear, despite an invitation letter and two reminders being sent and were classified as defaulters.

- The lowest 5.5 year uptake in 2014/15 was among the 21 to 24 year olds at 52.6% when only no cervix exclusion was applied. This represented a 2% decrease on previous year's uptake of 54.6%.

- The lowest 5.5 year uptake was among women resident in the most SIMD3 quintile neighbourhoods at 69% when the no cervix exclusion was applied. This represented a 3.7% decrease from previous year's uptake of 72.7%.

- Uptake was higher at 75.5% among women in the least deprived areas and represented a decrease in uptake of 2.9% compared to previous year's uptake of 78.4%.

- The total number of smear tests processed in 2014/15 was 101,000 and represented an increase of 2% from the 98,959 smears processed in 2013/14.

- The overall percentage of unsatisfactory smears reduced to 2.3% and was the lowest rate in Scotland.

- 9.7% of smears were reported as abnormal in 2014/15 representing a decrease of 0.5% since 2013/14.

- 90.3% of smears processed were reported to be negative; 3.8% were borderline squamous; 4.3% mild dyskaryosis and 1.3% to have moderate to severe dyskaryosis.

- The performance of colposcopy units against benchmarking standards is reviewed annually at the NHSGGC Colposcopy User Group. Where standards are not within the interquartile range, measures are identified and action plans introduced to improve performance.

- 4,951 women were referred to colposcopy for treatment, 73% (3,252) of patients were seen within 4 weeks; 19.5% (870) were seen within 8 weeks and 7.4% (331) were seen more than 8 weeks.

- In 2014, we reviewed the notes of 83 women who developed invasive cervical cancer and had a pathology diagnosis made in NHS Greater Glasgow and Clyde laboratories

- 40 of the 83 (48%) cancer cases were screen detected.

- Over the five years audited, 57 (13.6%) women out of the 417 that developed cancer had never had a smear; 157 (37.6%) had complete smear histories and 194 (46.5%) of women had incomplete smear histories.

- In 2013, the most recent year for which completed data is available, the number of new cervical cancers registered among NHSGGC residents was 65. This gives a standardised incidence rate of 11.2 per 100,000 per population which is lower than that for Scotland at 11.3.

- In 2013, 20 women with a diagnosis of cervical cancer died in NHSGGC. This gives a standardised rate of 3.3 per 100,000 population equal to the Scotland rate of 3.3 per 100,000.

Chapter 1: Cervical Screening

Background

Systematic cervical screening began in 1989 as part of the National Scottish Cervical Screening Programme (SCSP).

Cervical cancer is caused by oncogenic types of human papilloma virus (HPV), mainly types 16 and 18. HPV can evolve during a period of 10 to 20 years through precancerous lesions to invasive cancer and death.

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 aged 20 to 60 who live in Greater Glasgow and Clyde areas are invited to have a smear test taken every three years.

Screening Test

A “smear test” involves collecting cells from the surface of the cervix or ‘neck of 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.

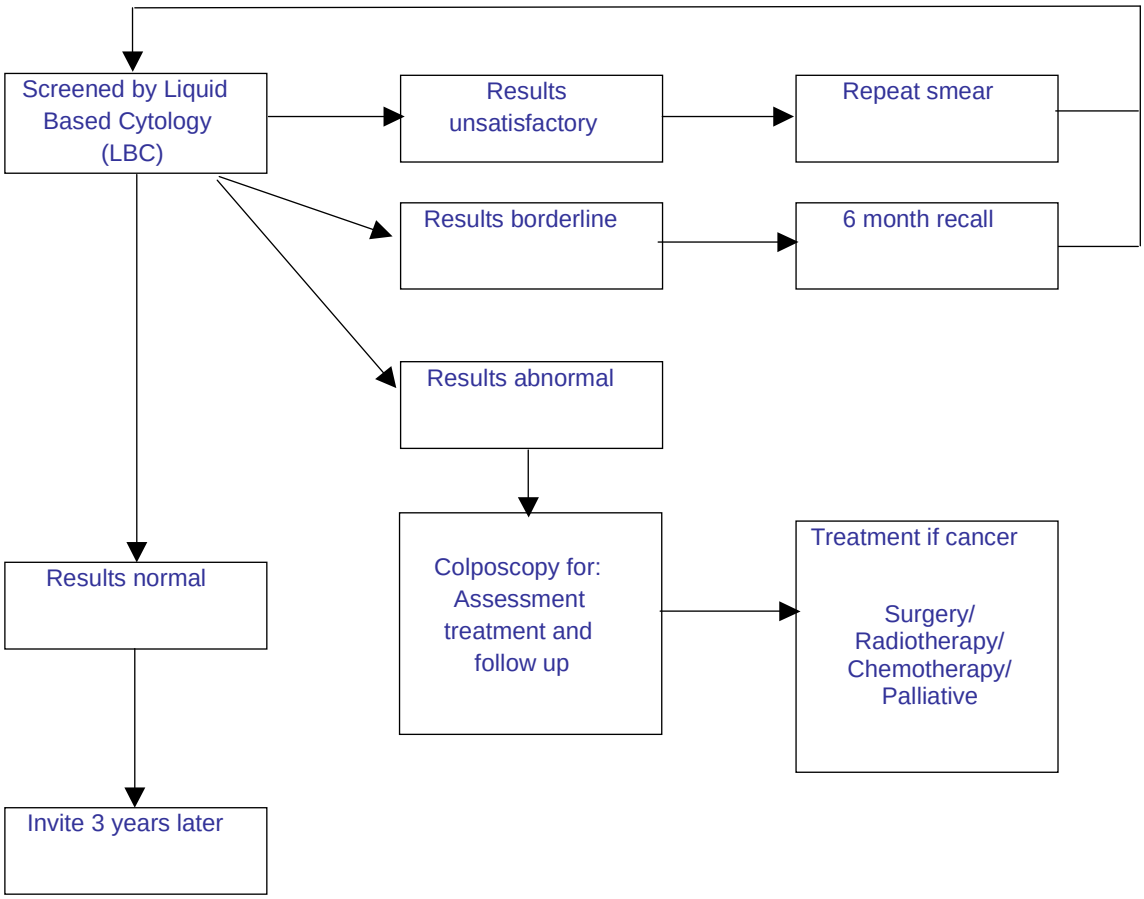
Liquid based cytology (LBC) is a way of preparing cervical samples for examination in the laboratory. The sample is collected using a special device which brushes cells from the neck of the womb. The head of the brush, where the cells are lodged, is broken off into a small glass vial containing preservative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

Screening Pathway

Figure 1.1 illustrates the pathway for 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 3 years (normal result), 6 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. The NHS Greater Glasgow & Clyde Colposcopy User 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 are available having been developed from The British Society for Colposcopy and Cervical Pathology (BSCCP) standards.

Delivery of Cervical Screening programme

Table 1.1 shows the numbers of women in the target and eligible populations for the cervical screening programme. There were 344,525 women aged 21 to 60 resident in NHS Greater Glasgow and Clyde in the target population. Following the exclusion of those with no cervix, 331,326 women were eligible to be invited to participate in the programme over three years. Approximately 110,442 women were sent an invitation to attend during 2014-15.

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 excluded because of no cervix no cervix	All eligible women based on GMS Payments[4]	% eligible women excluded from denominator for GMS Payments[4] (%)
2000/01	360,361	338,068	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[5]	362,828	344,252	*5.1*	268,484	*26.0*
2008/09[5]	362,845	344,882	*5.0*	251,844	*30.6*
2009/10[5]	361,918	344,589	*4.8*	245,742	*32.1*
2010/11[5]	366,275	349,492	*4.6*	278,943	*23.8*
2011/12[5]	355,579	340,559	*4.2*	268,512	*24.5*
2012/13[5]	363,101	347,841	*4.2*	274,472	*24.4*
2013/14[5]	368,362	353,527	*4.0*	281,103	*23.7*
2014/15[6]	344,525	331,326	*3.8*	264,061	*23.4*

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

2007/08 - 2014/15 - 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

5 Based on NHSGGC resident population and not practice population

6 As of April 2015 North & South Lanarkshire are no longer included in figures

The table also shows the numbers of women that were considered as eligible for cervical screening after applying the exclusions allowed by the General Medical Services contract.

The General Medical Services (GMS) Contract introduced in 2004 includes cervical screening in the additional services domain and awards practices for providing the service under the Quality and Outcomes Framework.

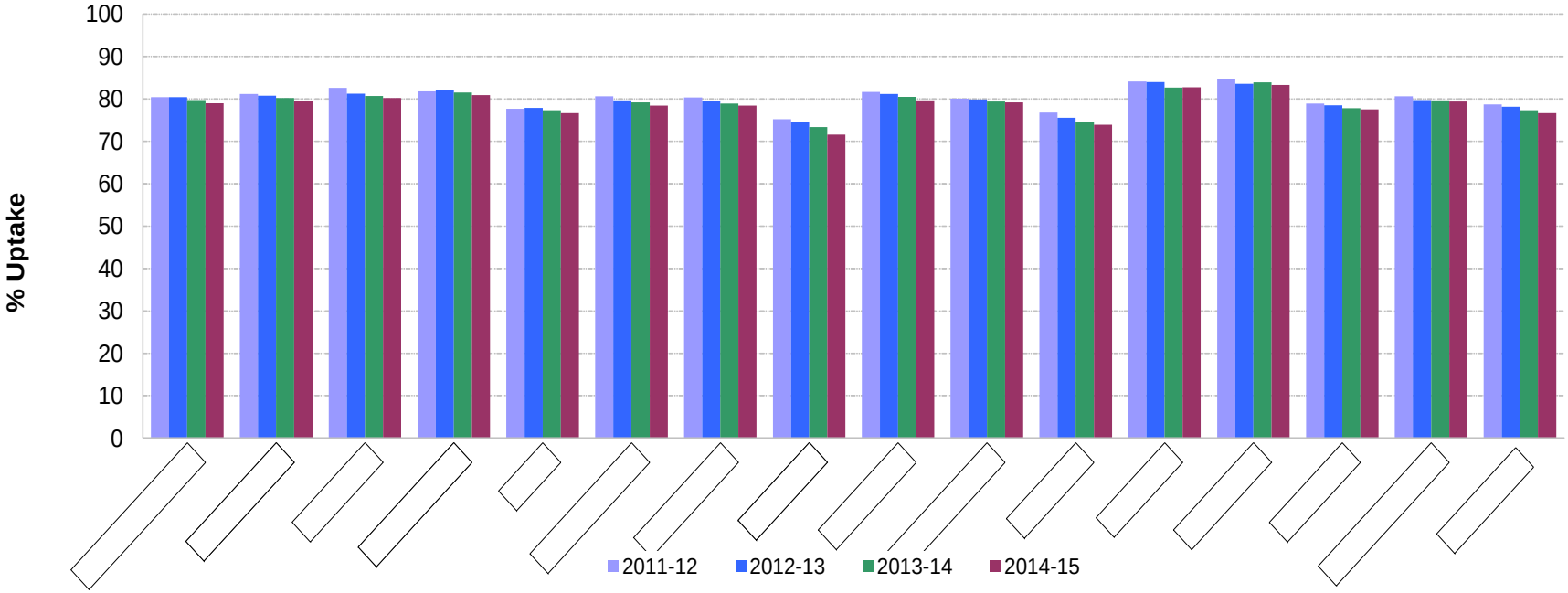
The cervical screening indicator 1 (80% of patients aged 21 to 60 whose notes record that a cervical smear has been performed in the last 5 years) reflects the previous General Medical Services Contract target payment system for cervical screening and is designed to encourage and provide an incentive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

The indicator excludes women who have had hysterectomy involving the complete removal of the cervix. In addition, practices are allowed to exclude "patients who have been recorded as refusing to attend review who have been invited on at least three occasions during the preceding 12 months" under the exception reporting.

Figure 1.2 illustrates nationally published trends in cervical screening uptake for all Scottish Health Boards, based on the pre-2006 health boards' configuration. There has been a slow decline in uptake for most health board areas, with the Scottish average for 2014/15 being 76.6%. This was below the minimum standard of 80%.

The 5.5 year uptake rate calculated for NHS Greater Glasgow and Clyde residents for 2014/15 was 70.9% (**Table 1.2**). This represented a 3.1% decrease in uptake since 2013/2014 when uptake was 74%. The lowest uptake of 60.3% was in Glasgow North West sector. East Renfrewshire had the highest uptake at 79.4% (**Table 1.2**).

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: 1 April 2011 to 31 March 2015



* 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.

1. 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 ineligible 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.

Data Source: ISD(D)4 Legacy applications for 1995 to 2006-07 data

Data Source: ISD(D)4 SCCRS for 2007-08 data onwards

Table 1.2 Comparative uptake rates of cervical screening by CH(C)P

CH(C)P[1]	% Uptake - All Eligible Women (excluding women with No Cervix[2])					% Uptake - All Eligible Women (based on Target GMS Payments[3])				
	2010/11	2011/12	2012/13	2013/14	2014/15[5]	2010/11[3]	2011/12	2012/13	2013/14	2014/15[5]
East Dunbartonshire	81.9%	82.6%	82.2%	81.7	79.0	86.5%	89.4%	88.7%	86.7	84.5
East Renfrewshire	81.4%	82.2%	82.2%	81.6	79.4	86.4%	89.5%	89.2%	86.9	85.2
Glasgow North East	70.4%	72.3%	71.7%	70.9	69.1	78.2%	81.7%	81.4%	78.8	76.7
Glasgow North West	66.0%	67.5%	65.7%	63.4	60.3	74.0%	78.4%	76.2%	72.6	70.5
Glasgow South	73.6%	75.1%	74.6%	73.7	71.0	80.0%	83.8%	83.3%	80.5	78.0
Inverclyde	77.2%	78.0%	78.0%	77.6	74.7	82.3%	85.7%	84.8%	82.8	80.4
Renfrewshire	78.5%	79.8%	79.5%	78.7	76.1	84.2%	87.1%	86.4%	84.1	82.1
West Dunbartonshire	77.7%	78.6%	78.3%	77.7	74.9	83.5%	86.4%	85.1%	83.4	81.0
NHS GGC[4]	**74.5%**	**76.0%**	**75.1%**	**74.0**	**70.9**	**81.1%**	**84.0%**	**83.6%**	**81.0**	**78.4**

Source: Scottish Cervical Call Recall System (Extracted May 2015)

Notes:

1 CH(C)P has been derived by NHSGGC Resident population

2 NHS GGC residents only

3 Uptake based on GMS target payments. Excludes women with exclusion categories as defined in the GP contract, implemented in 2004

4 Includes invalid and missing postcodes. Missing=not entered.Invalid=NHSGGC postcode but incorrect or new postcode and unable to derive CH(C)P

5 As of April 2015, North & South Lanarshire are no long reported

Of the 331,326 eligible women (excluding women with no cervix), 61,255 (18.5%) did not take up the invite to have a smear, despite an invitation letter and two reminders being sent and were classified as defaulters (**Table 1.3**).

Table 1.3 shows the numbers and proportions of women excluded under the different exclusion categories.

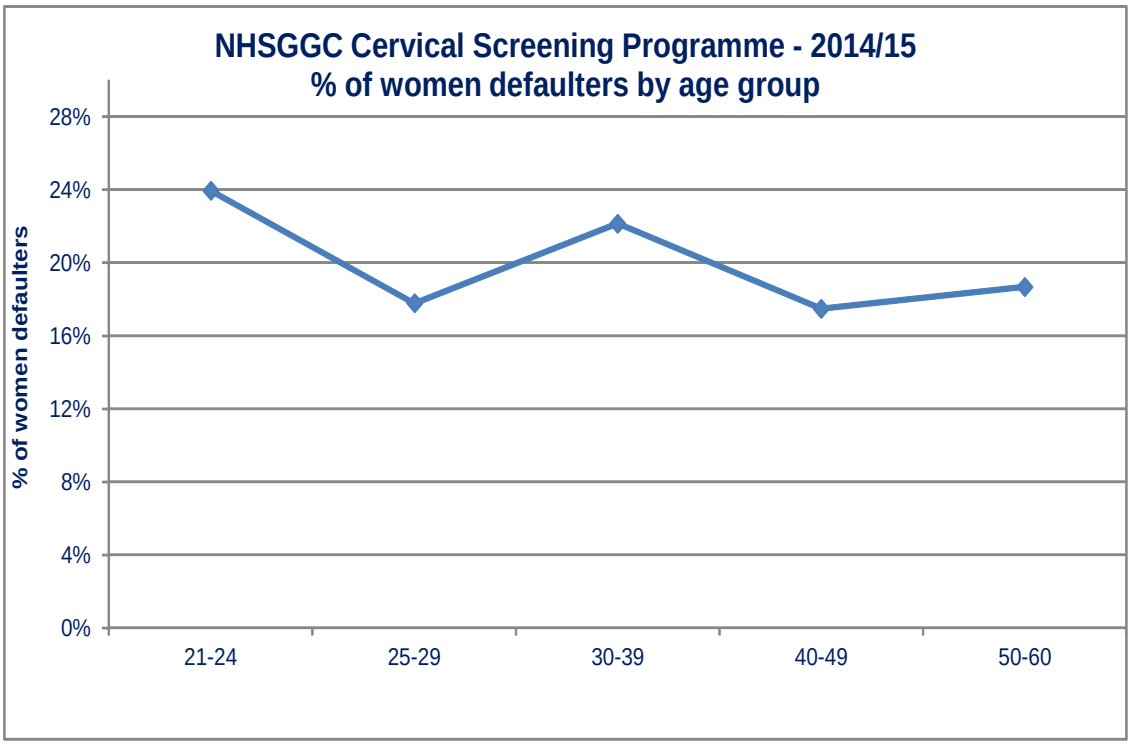
Table 1.3 Number and proportion of women excluded from cervical screening programme by exclusion category

Reason for exclusion	Number of women excluded	% of total target population	% of eligible population
Pregnancy	740	0.2%	0.2%
Co-Morbidity	60	0.0%	0.0%
Opted Out	4,182	1.2%	1.3%
Not Clinically appropriate	1,343	0.4%	0.4%
Terminally Ill	>10	0.0%	0.0%
Anatomically Impossible	49	0.0%	0.0%
No Cervix	13,199	3.8%	n/a
No Further Recall	827	0.2%	0.2%
Suspended	>10	0.0%	0.0%
Defaulter	**61,255**	17.8%	**18.5%**
Transferred out by SCCRs	13	0.0%	0.0%
Total exclusions	**81,668**	**23.7%**	**24.6%**
Total target population	**344,525**		
Total eligible population (minus no cervix)	**331,326**		

Source: Scottish Cervical Call Recall System - Extracted May 2015

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

Figure 1.3 Percentage of women excluded as defaulters by age group



Source: Scottish Cervical Call Recall System

Note: Women aged 21 to 60 years

As of April 2015, North & South Lanarkshire figures are no longer included

Table 1.4 shows the percentage of women excluded as defaulters by age group. There has been a year on year increase in the defaulters aged between 21 - 39 and 50 – 60. However, defaulters in the 40 – 49 age range has been declining year on year since 2009/10.

Table 1.4 Percentage of women excluded as defaulters by age group

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

Source: Scottish Cervical Call Recall System - Extracted May 2015

Table 1.5 shows that the cervical screening uptake varied across different age groups. The lowest 5.5 year uptake in 2014/15 was among the 21 to 24 year olds at 52.6% when only no cervix exclusion was applied. This represented a 2% decrease on previous year's uptake of 54.6%. When exclusions (allowed for the purpose of GMS target payments) were made, overall uptake was 78.4%. This represented a decrease of 2.6% on previous year's uptake of 81%.

Table 1.5 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	38,898	19,691	50.6	20,452	52.6	23,408	16,616	71.0	16,888	72.1
25-29	48,661	28,679	58.9	31,896	65.5	36,897	25,817	70.0	27,164	73.6
30-39	81,928	54,159	66.1	60,138	73.4	66,824	49,864	74.6	52,504	78.6
40-49	79,808	55,991	70.2	61,524	77.1	68,021	53,057	78.0	55,474	81.6
50-60	82,031	54,702	66.7	60,745	74.1	68,911	52,608	76.3	54,888	79.7
Total[3]	**331,326**	**213,222**	**64.4**	**234,755**	**70.9**	**264,061**	**197,962**	**75.0**	**206,918**	**78.4**

Source:- Scottish Cervical Call Recall System(2014/15)

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

3 As of April 2015, North & South Lanarkshire are no longer included in figures

Table 1.6 shows that the cervical screening uptake rate varied across deprivation categories.

The lowest 5.5 year uptake rate in 2014/15 was among women resident in the most deprived neighbourhoods at 70.1% when the no cervix exclusion was applied. This represented a 3% decrease from previous year's uptake of 73.1%.

Uptake was higher at 75.5% among those in the least deprived areas and represented a decrease in uptake of 2.9% compared to previous year's uptake of 78.4%.

Table 1.6 NHSGGC Cervical screening uptake by age and deprivation categories

		All Eligible Women (excluding women with No Cervix[1])					All Eligible Women (based on Target GMS Payments[2])				
SIMD[3]		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	115,159	72,049	62.6	80,703	70.1	90,968	66,179	72.7	69,961	76.9
	2	56,916	36,133	63.5	39,972	70.2	45,165	33,505	74.2	35,100	77.7
	3	48,549	30,435	62.7	33,514	69.0	38,129	28,254	74.1	29,490	77.3
	4	43,222	27,714	64.1	30,111	69.7	34,204	25,938	75.8	26,884	78.6
Least Deprived	5	58,800	41,313	70.3	44,381	75.5	48,762	38,948	79.9	40,144	82.3
New/Incomplete		8,680	5,578	64.3	6,074	70.0	6,833	5,138	75.2	5,339	78.1
	Total[5]	**331,326**	**213,222**	**64.4**	**234,755**	**70.9**	**264,061**	**197,962**	**75.0**	**206,918**	**78.4**

Source:- Scottish Cervical Call Recall System(2014/15)

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

3 - SIMD Quintles 2012

4 - Although incomplete these postcodes clearly fall within Greater Glasgow & Clyde boundaries

5 - As of April 2015, North & South Lanarkshire are no longer included in figures

When calculations were made for the purpose of General Medical Services target payments, the uptake among women living in the most deprived neighbourhoods was 76.9% representing a decrease of 2.5% from 2013/14 when uptake was 79.4%.

Highest uptake of 82.3% was among residents living in least deprived areas and represented a decrease of 2.7% on 2013/14 uptake of 85%.

The comparative cervical screening uptake for women with learning disabilities by age group is shown in **Table 1.7**. The 5.5 years uptake for women with no cervix remained static at 24% and is lower than the general population. The 5.5 years uptake based on the GMS contract declined by 6.8% from 49.9% in 2013/14 to 43.1% in 2014/2015.

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	108	10	9.3	10	9.3	46	10	21.7	10	21.7
25-29	185	42	22.7	46	24.9	95	38	40.0	40	42.1
30-39	364	86	23.6	95	26.1	189	80	42.3	87	46.0
40-49	442	100	22.6	117	26.5	212	95	44.8	99	46.7
50-60	504	92	18.3	116	23.0	226	87	38.5	95	42.0
Total[1]	**1,603**	**330**	**20.6**	**384**	**24.0**	**768**	**310**	**40.4**	**331**	**43.1**

Source: Scottish Call Recall System; NHS Greater Glasgow and Clyde Learning Disabilty LES extract August 2015

Note

[1] As from April 2015, North & South Lanarkshire are no longer reported.

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 2014/15 was 101,000 and represents an increase of 2% from the 98,959 smears processed in 2013/14.

Table 1.8 Number of smear tests performed in NHSGGC laboratories

	Number of Smear Tests					
Year	**IRH***	**VOL***	**SGH**	**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

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 2.8% in 2013/14 to 2.3% in 2014/15 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.

Table 1.9 Percentage of unsatisfactory smears reported in NHS GGC laboratories

Percentage of unsatisfactory smears of total number of smears						
Year	**IRH***	**VOL***	**SGH**	**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%

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 2014/15.

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 2014/15 representing a decrease of 0.5% since 2013/14.

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%

*IRH/VOL - includes unsatisfactory smears reported for Argyll and Bute area
Glasgow Royal Infirmary and Inverclyde Royal Hospital stopped reporting smears taken as at quarter ending 31st March 2012

Vale of Leven stopped reporting smears taken as at quarter ending 30th September 2004

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

Victoria stopped reporting smears taken as at quarter ending 30th September 2001
Sources: 2000-2007 Cervical Cytology System (CCS); 2007/14 - Labs (SCCRs); Scotland figures from ISD Website

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

Of the 101,000 smears tests received by the laboratories, 98,703 (97.7%) were processed. 90.3% of smears processed were reported to be negative; 3.8% were borderline squamous; 4.3% mild dyskaryosis and 1.3% to have moderate to severe dyskaryosis. **Appendix 1.1** shows the management and follow up advice for cytology results.

Table 1.11 Result profiles by age band: 1 April 2014 to 31 March 2015 (compiled from quarterly reports)
All NHS Greater Glasgow and Clyde Laboratories

Age Band	Under 20	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 and Over	Total All Ages	%Satisfactory	Cumulative%	Total Ages 20 - 60	%Satisfactory	Cumulative%
Unsatisfactory	5	221	275	275	235	266	292	317	314	89	8	2,297			2,251		
%Total	**1.0**	**1.5**	**1.9**	**2.0**	**2.1**	**2.3**	**2.3**	**2.8**	**3.6**	**4.4**	**5.3**	**2.3**			**2.3**		
Negative	422	11,509	12,194	11,718	10,163	10,790	11,492	10,634	8,257	1,865	128	89,172	90.3	90.3	88,071	90.4	90.4
Borderline change in squamous cells	32	1,039	819	580	359	299	290	209	109	35	3	3,774	3.8	94.2	3,718	3.8	94.2
Borderline change in endocervical cells	-	5	18	25	8	11	21	7	2	-	-	97	0.1	94.3	97	0.1	94.3
Low grade dyskaryosis	43	1,395	1,039	563	363	282	259	185	85	29	8	4,251	4.3	98.6	4,184	4.3	98.6
High grade dyskaryosis (moderate)	1	173	242	161	75	73	36	13	21	3	2	800	0.8	99.4	795	0.8	99.4
High grade dyskaryosis (severe)	-	72	149	111	64	55	41	25	17	4	2	540	0.5	99.9	537	0.6	99.9
High grade dyskaryosis ? invasive	-	-	6	5	5	2	1	1	-	-	-	20	0.0	100.0	20	0.0	99.9
Glandular Abnormality	-	1	9	13	6	4	4	2	2	-	-	41	0.0	100.0	41	0.0	100.0
Endocervical Adenocarcinoma	-	-	1	-	-	1	-	-	-	-	-	2	0.0	100.0	2	0.0	100.0
Endometrial or other malignancy	-	-	-	-	-	-	1	3	2	-	-	6	0.0	100.0	6	0.0	100.0
Total including unsatisfactory results	**503**	**14,415**	**14,752**	**13,451**	**11,278**	**11,783**	**12,437**	**11,396**	**8,809**	**2,025**	**151**	**101,000**			**99,722**		
Total excluding unsatisfactory results	**498**	**14,194**	**14,477**	**13,176**	**11,043**	**11,517**	**12,145**	**11,079**	**8,495**	**1,936**	**143**	**98,703**			**97,471**		

	All Ages	20-60
Abnormal	9,531	9,400
% abnormal	9.7	9.6

Source: Scottish Cervical Call Receall System (SCCRs)

Report Definitions:

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

2 Smear counts for the orginating lab

3 Date received into the lab is the qualification date - report wont run until all smears completed for reporting period. Date authorised may be at the end of reporting period.

Table 1.12 shows the activity data across NHSGGC colposcopy service. In 2014/15, there were 9,849 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 1.12 NHSGGC colposcopy service workload 1 April 2014 to 31 March 2015

Attendance Status	New Outpatients	Return/ Follow Up Outpatients	Inpatients	Total Episodes
Patient was Seen (Attended)	4,058	3,252	57	7,367
Cancelled by Patient	288	445	0	733
Cancelled by Clinic or Hospital	15	131	0	146
Patient attended but was not seen	3	3	0	6
Patient Did Not Attend	587	1,009	1	1,597
Total	4,951	4,840	58	9,849

Source: National Colposcopy Clinical Audit System (Extracted: October 2015)

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.

Table 1.13 illustrates that 73% of patients were seen within 4 weeks; 19.5% were seen within 8 weeks and 7.4% were seen after 8 weeks. Delays in referral to first appointment may also include patient induced delays.

Table 1.13 NHSGGC waiting times from referral to colposcopy appointment

New Referrals: Time from Referral to first appointment	Time waited from referral to first appointment			Total new referrals
	Less than or equal to 4 weeks	Greater than 4 weeks and <= 8 weeks	Greater than 8 weeks	
New Referrals	3,252	870	331	4,453
New Referrals as % of Total New Referrals	73.0	19.5	7.4	100.0

Source: National Colposcopy Clinical Audit System (extracted: October 2015)

Table 1.14 NHSGGC Colposcopy benchmarking standards for 2014/2015

	Total New Outpatient Attendances	New Outpatient Attendances Abnormal Screening Smear	Cyto-reversion rates at 4 - 12 months after treatment if a smear is taken (%)	Confirmed histological treatment failures at 12 months (%)	Adequacy of cervix biopsy for histology (%)	Proportion of women, referred with abnormal cytology, where SCJ is visualised, treated at 1st visit with CIN on histology (%)	New referral for high grade dyskaryosis having biopsy (%)	Recommended for treatment as Inpatient (%)
TARGET	None	>= 50 (per annum)	> 90%	<= 5%	> 97%	>= 90%	> 90%	< 20%
SCOTLAND	13,805	10,122	90.4	2.5	98.4	84.8	92.1	8.1
Greater Glasgow & Clyde	**4,058**	**2,653**	**89.6**	**2.3**	**98.0**	**86.7**	**93.0**	**7.2**
Royal Alexandra Hospital	587	438	91.2	3.0	98.4	85.7	92.6	10.0
Inverclyde Royal Hospital	287	189	84.1	0.0	99.1	76.7	88.7	4.1
Vale of Leven Hospital	131	93	79.3	2.7	92.0	50.0	93.3	28.0
Western Infirmary	-	-	0.0	0.0	0.0	0.0	0.0	0.0
New Victoria Hospital	1,081	591	89.7	2.1	97.4	80.7	93.0	7.0
Glasgow Royal Infirmary	2	2	100.0	0.0	100.0	0.0	100.0	0.0
Stobhill Hospital	1,734	1,259	91.0	2.2	98.4	89.8	93.9	5.5
Sandyford Initiative	236	81	87.0	6.8	98.5	92.9	90.3	8.9

Source: National Colposcopy Clinical Audit System (Extracted: October 2015)

Benchmarking standards have been derived and are reviewed by the National Colposcopy Quality Assurance group to allow comparison between colposcopists, colposcopy units, and health boards.

The benchmarking standards for NHSGGC colposcopy units are shown in **Table 1.14.** The performance of colposcopy units against benchmarking standards is reviewed annually at the NHSGGC Colposcopy User Group. Where standards are not within the interquartile range, measures are identified and action plans introduced to improve performance.

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 service.

In 2014, we reviewed the notes of 83 women who developed invasive cervical cancer and had a pathology diagnosis made in NHS Greater Glasgow and Clyde laboratories.

Table 1.15 shows numbers and the distribution of women's age at diagnosis for years 2010 to 2014. The largest number of cervical cancers occurred in women aged between 30 and 39 years.

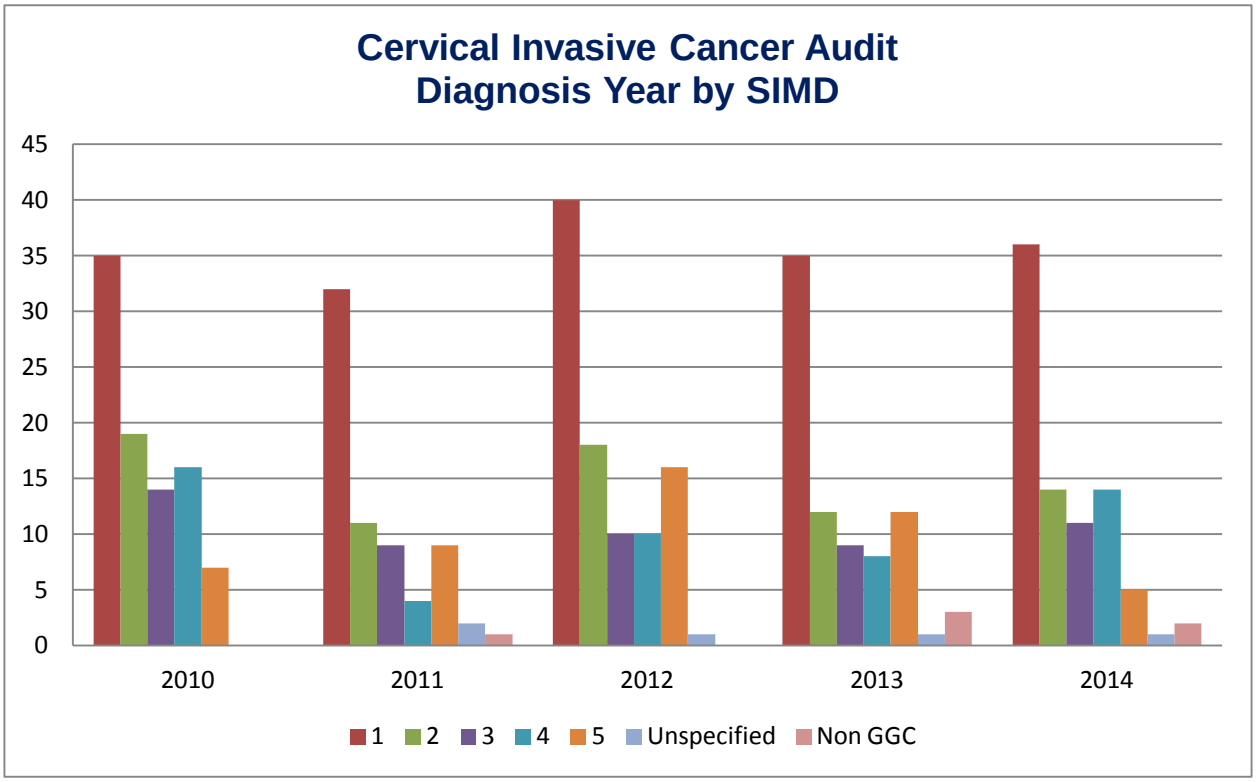
Table 1.15 Number of NHSGGC residents with invasive cervical cancers by age at diagnosis and year of diagnosis

Age at Diagnosis	Year of Diagnosis					Total
	2010	2011	2012	2013	2014	2010-14
20-29	10	7	13	7	12	49
30-39	26	17	30	25	26	124
40-49	27	13	21	20	17	98
50-59	8	11	10	11	11	51
60-69	5	8	11	3	8	35
70-79	11	8	7	7	6	39
80+	4	4	3	7	3	21
Total	**91**	**68**	**95**	**80**	**83**	**417**

Source: NHSGGC Invasive Cancer Audit (Extracted: October 2015)

Figure 1.4 shows the distribution of cervical cancers by deprivation for the period 2010 to 2014. 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 2014



Source: NHSGGC Invasive Cancer Audit database, extracted October 2015

Table 1.16 shows the distribution of clinical stage at diagnosis over a five year period from 2010 to 2014.

Table 1.16 Number of women with invasive cervical cancers by clinical stage and by year of diagnosis

Clinical stage of diagnosis	2010	2011	2012	2013	2014	Total 2010-14
1a1, 1a2 or 1b	40	29	50	45	50	**214**
2 or greater (spread outwith cervix)	44	36	42	33	31	**186**
No Details	7	3	3	2	2	**17**
Total	**91**	**68**	**95**	**80**	**83**	**417**

Source: NHSGGC Invasive Cancer Audit (Extracted: October 2015)

Table 1.17 shows that, in 2014, 40 of the 83 (48%) cases were screen detected. The rest of the cases presented to the service with symptoms. Some of the screen detected cancers might have had an opportunistic smear while presenting with genital tract complaints.

Table 1.17 Number of women with invasive cancers split by modality of presentation and year of diagnosis

Modality of Presentation	Year of diagnosis					Total 2010-14
	2010	2011	2012	2013	2014	
Screen Detected	32	21	44	34	40	171
Symptomatic	34	23	50	42	34	183
Incidental Finding	0	0	1	2	2	5
No Details	25	24	0	2	7	58
Total	**91**	**68**	**95**	**80**	**83**	**417**

Source: NHSGGC Invasive Cancer Audit (Extracted: October 2015)

In 2014, 33 women of 83 (39.8%) women had a complete smear history compared to 42 (50.6%) women who had incomplete smear histories (**Table 1.18**).

Table 1.18 Smear histories of women with invasive cervical cancer

Smear History	Year of diagnosis					Total 2010-14
	2010	2011	2012	2013	2014	
Complete	31	26	39	28	33	157
Incomplete	45	25	44	38	42	194
Not Applicable	14	15	11	12	5	57
Unknown	1	2	1	2	3	9
Total	**91**	**68**	**95**	**80**	**83**	**417**

Source: NHSGGC Invasive Cancer Audit (Extracted: October 2015)

* Apart from index smear ie the abnormal smear causing referral

Over the five years audited, 57 (13.7%) women out of the 417 that developed cancer had never had a smear; 157 (37.6%) had complete smear histories and 194 (46.5%) of women had incomplete smear histories.

Table 1.19 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 1.19 Follow up status of the women with invasive cervical cancer

	Year diagnosis					Total
Status	**2010**	**2011**	**2012**	**2013**	**2014**	**2010-14**
Death	7	9	11	5	2	34
Early recall	0	0	3	0	0	3
Lost to colposcopy service	1	0	1	1	1	4
On follow up at colposcopy	25	10	28	19	18	100
No further recall - total hysterectomy	0	1	0	0	1	2
On follow up at oncology/Beatson	52	41	51	53	58	255
Unknown	6	7	1	2	3	19
Total	**91**	**68**	**95**	**80**	**83**	**417**

Source: NHSGGC Invasive Cancer Audit (Extracted: October 2015)

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

In 2013, the most recent year for which completed data is available, the number of new cervical cancers registered among NHS Greater Glasgow and Clyde residents was 65 (**Table 1.20**). This gives a standardised incidence rate of 11.2 per 100,000 per population which is lower than that for Scotland at 11.3.

Standardised incidence and mortality rates for cervical cancer for NHSGGC and Scotland is illustrated in **Figure 1.5.**

In 2013, 20 women with a diagnosis of cervical cancer died in NHSGGC. This gives a standardised rate of 3.3 per 100,000 population equal to the Scotland rate of 3.3 per 100,000.

Table 1.20 Cervical Cancer Registrations and Deaths 1997 - 2013

Scotland

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Registration																	
Number	359	369	313	302	309	292	267	284	298	292	293	314	328	332	317	304	309
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	11.3
- 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*	*10.4*	*9.9*	*10.1*
- 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*	*13.6*	*13.0*	*12.5*	*12.6*
Deaths																	
Number	144	145	122	117	113	100	120	102	127	92	105	102	107	99	108	112	91
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
- 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*
- 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*

Greater Glasgow & Clyde

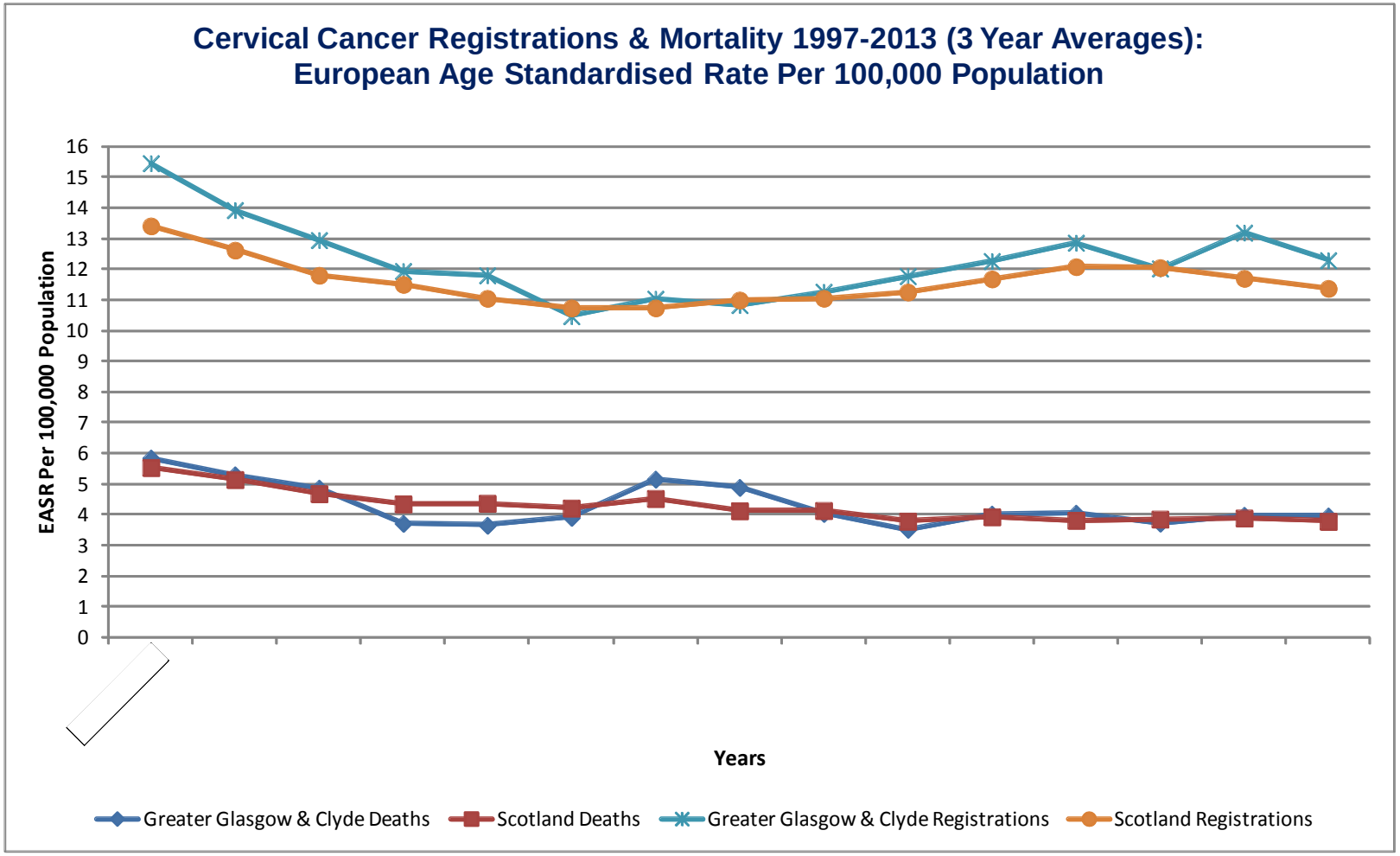
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Registration																	
Number	90	104	73	68	86	57	63	62	65	60	70	74	70	81	60	90	65
EASR	16.0	17.8	12.6	11.4	14.8	9.6	11.0	10.8	11.3	10.4	12.1	12.8	11.9	13.9	10.3	15.4	11.2
- Lower 95% CI	*12.8*	*14.5*	*9.8*	*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*	*8.7*
- 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*	*14.2*
Deaths																	
Number	32	37	33	23	30	14	22	33	36	17	19	27	26	20	22	32	20
EASR	5.5	6.3	5.7	3.9	5.0	2.3	3.7	5.8	6.0	2.9	3.3	4.5	4.4	3.3	3.5	5.1	3.3
- Lower 95% CI	*3.8*	*4.4*	*3.9*	*2.4*	*3.4*	*x*	*2.3*	*4.0*	*4.2*	*x*	*x*	*2.9*	*2.8*	*2.0*	*2.2*	*3.5*	2.0
- Upper 95% CI	*7.6*	*8.5*	*7.8*	*5.6*	*7.0*	*x*	*5.4*	*7.9*	*8.1*	*x*	*x*	*6.3*	*6.2*	*5.0*	*5.1*	*7.1*	4.9

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: November 2014

Registra EASR: age-standardised incidence rate per 100,000 person-years at risk (European standard population) Source: Scottish Cancer Registry, ISD Data extracted: March 2015

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



Source: Scottish Cancer Registry, March 2015; National Records Scotland, November 2014

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 95.9%, 94.4% for the second dose. This was above the Scottish averages of 94.4% and 92.5% respectively (**Table 1.21**).

Table 1.21 shows the uptake rates for S1 and S2 routine cohort by end of the school year by CH(C)P

CHP	Number of S1 Girls in Cohort*	Number Uptake of Dose 1	% Uptake of Dose 1	Number of S2 Girls in Cohort**	Number Uptake of Dose 1	% Uptake of Dose 1
East Dunbartonshire	579	544	94.0	605	566	93.6
East Renfrewshire	659	625	94.8	663	623	94.0
Glasgow North East	741	674	91.0	690	636	92.2
Glasgow North West	868	794	91.5	896	822	91.7
Glasgow South	913	832	91.1	965	878	91.0
Inverclyde	247	230	93.1	224	208	92.9
Renfrewshire	779	739	94.9	809	762	94.2
West Dunbartonshire	469	447	95.3	457	433	94.7
NHSGGC Total	**5,255**	**4,885**	**93.0**	**5,309**	**4,928**	**92.8**
Scotland	**23,234**	**20,671**	**89.0**	**25,837**	**23,610**	**91.4**
Unknown School Codes	204	179	87.7	234	220	94.0

Source: CHSP School (November 2015)/SIRS (November 2015)

Notes

* S1 girls 2014/15 will receive 2nd dose in S2 - School year 2015/2016

** S2 girls 2014/15 will receive 2nd dose in January 2016

A catch-up campaign for older girls ran over a three-year period from September 2008 and applied to girls who were aged 13 to 17 on 1 September 2008.

Uptake for the third dose was 91.4% which was above the Scottish average of 88.8% (Table 1.22).

Table 1.22 shows the uptake rates for S3 routine cohort by the end of the school year by CH(C)P for school year 2014/15.

CHP	Number S3 Girls in Cohort*	Number Uptake of Dose 1	% Uptake of Dose 1	Number Uptake of Dose 2	% Uptake of Dose 2	Number Uptake of Dose 3	% Uptake of Dose 3
East Dunbartonshire	608	578	95.1	576	94.7	566	93.1
East Renfrewshire	608	586	96.4	581	95.6	570	93.8
Glasgow North East	791	772	97.6	750	94.8	705	89.1
Glasgow North West	878	842	95.9	826	94.1	804	91.6
Glasgow South	1,022	958	93.7	938	91.8	897	87.8
Inverclyde	257	250	97.3	247	96.1	246	95.7
Renfrewshire	861	826	95.9	818	95.0	796	92.5
West Dunbartonshire	460	447	97.2	440	95.7	428	93.0
NHSGGC Total	**5,485**	**5,259**	**95.9**	**5,176**	**94.4**	**5,012**	**91.4**
Scotland	**26,554**	**25,067**	**94.4**	**24,573**	**92.5**	**23,588**	**88.8**
Unknown School Codes	236	220	93.2	212	89.8	203	86.0

Source: CHSP School (November 2015)/SIRS (November 2015)

Note:

*These girls were first offered the vaccine when they were in S2 in school year 2013/14. These figures represent uptake 'one year later'.

Change to age range and frequency

From April 2016, the age range and frequency of the cervical screening programme will change for routine screening to three yearly from age 25 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 current arrangement of 68 years.

Health Improvement

NHSGGC Cervical screening "smear" campaign 2014 was repeated from 19 January to 23 February 2015. The campaign consisted of using the locally developed resources to again target young women to make an appointment to go for their ''smear' test.

This resulted in an increase of 5.9% (800) of smear samples received by the laboratory. However, the numbers of samples were too small to have an affect on the overall uptake of the cervical screening programme because the campaign was short lived. A sustained campaign such as National Detect Cancer Early campaign is needed to make any significant impact on cervical screening uptake.

NHS Health Scotland will be developing a national campaign for launch in 2016.

Reducing barriers to cervical screening

South Glasgow identified that their BME community had a poorer uptake of cervical screening when compared to the general local population. The area has a number of Roma and Slovakian families, and to raise awareness of the importance of cervical screening, group work on cervical screening awareness was delivered to 34 women. These workshops tackled some of the cultural difficulties that can cause barriers to attending for cervical screening. As a result, many women stated that they would now attend for screening.

Primary Care Engagement Team has been working closely with general practices to identify ways to reduce barriers to participation in the cervical screening programme. This included developing a cervical cytology toolkit to encourage practices to benchmark their current practice in relation to three broad headings and identify areas for improvement:

- Practice systems
- Patient engagement
- Undertaking smears

Further training and support is offered to practices following the completion of the toolkit.

Challenges and future priorities

The change to the age range and frequency of the cervical screening programme may have an impact on uptake, particularly in the older age group.

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

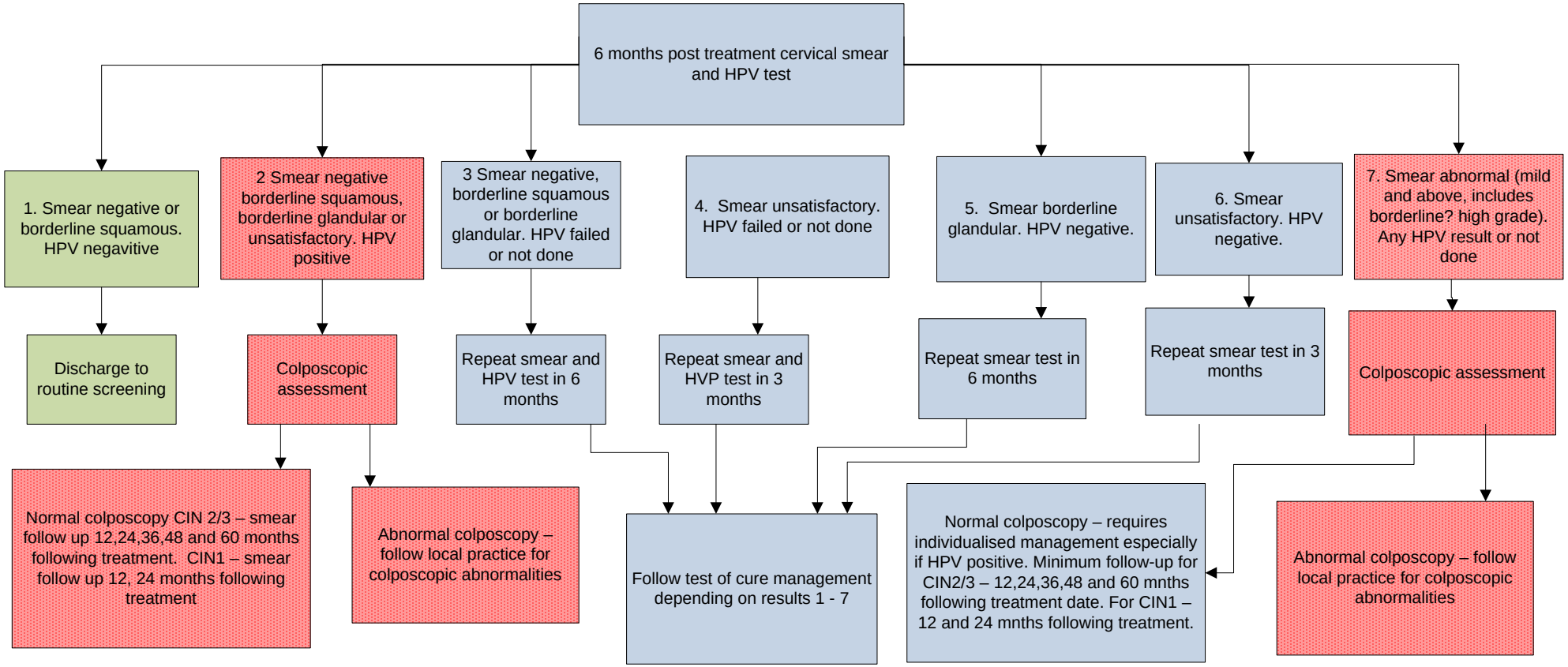
On routine recall No CIN/CGIN in hysterectomy	No further recall
On non-routine recall No CIN/CGIN in hysterectomy	No further recall
CIN/CGIN in hysterectomy completely excised	Vault smears at 6 and 18 months. If negative, no further recall
Low grade CIN/CGIN in hysterectomy incompletely excised	Vault 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 2014)

Dr Emilia Crighton	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
Ms Claire Donaghy	Health Improvement Senior (Cancer)
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
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Michelle McLachlan	General Manager, Women's & Children's
Ms Jane McNiven	Practice Manager
Dr Alan Mitchell	Clinical Director Renfrewshire CHP
Mrs Eilidh O'Neill	Health Visitor, West Dunbartonshire CHP
Mrs Christine Paterson	Primary Care Support Nurse
Mr Graham Reid	Specialty Manager, Cytology
Mrs Elizabeth Rennie	Programme Manager, Screening Dept
Dr Saima Shah	Medical Officer in Addictions

Chapter 2: Breast Screening

Summary

- 132,178 women registered with a practice in NHSGGC were invited to attend breast screening over three years.

- 84,864 (64.2%) women attended breast screening during the previous three years. This represents a decrease of 3.1% since 20011/14. Only East Renfrewshire met and exceeded the minimum standard of 70%.

- 779 (0.6%) women were diagnosed with breast cancer following screening.

- Uptake for the three year rounds 2004/07 to 2008/11 were slightly above the minimum standard of 70% at 71%. Since then uptake has declined to 64.2% in 2012/2015.

- 74,178 (96.2%) of women received their screening invitation within three years. This exceeded the minimum standard of 90%.

- Of the 25,823 women invited for their first appointment, 62.9% took up the invitation to attend for breast screening. Lowest uptake was among women living in Renfrewshire and Glasgow North West areas at 59.6% and 59.4% respectively. Highest uptake was in the East Renfrewshire area at 75.4%.

- Of the 673 women with learning disabilities, only 307 (45.6%) participated in breast screening.

- In 2013, the number of new breast cancers registered in NHSGGC was 962. This gives a standardised incidence rate of 168.6 per 100,000 per population which is slightly lower than that for Scotland (168.8).

- In 2013, there were 200 deaths from breast cancer, giving a standardised rate of 32.3 per 100,000 population. This is lower than that for Scotland (36.4).

- During 2012 to 2014, 2,951 breast cancers were detected. 787 (50.7%) of the cancers diagnosed among women in the age group eligible for screening were detected through the breast screening programme, while 766 (49.3%) breast cancers were diagnosed following symptomatic presentations. Of these, 359 (12.2%) cases were potential interval cancers.

- During 2014, 130 potential interval cancers records were reviewed and 68 were classed as true interval cancers.

- NHSGGC piloted a three month local social marketing campaign in Glasgow North East to reinforce the national Detect Cancer Early breast cancer messages and encourage women to take up breast screening. This involved telephone/text appointment reminder; local awareness; radio and cinema advertising; competition; pharmacy prescription bags with key messages.

- The results of the campaign showed an overall 2.2% increase in uptake of 10 pilot practices, with one practice achieving a 6.2% increase.

- Simple lifestyle changes by exercising, maintaining a healthy weight and reducing alcohol intake can reduce the risk of breast cancer.

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 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 interim screening round data from 1 April 2012 to 31 March 2015.

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.

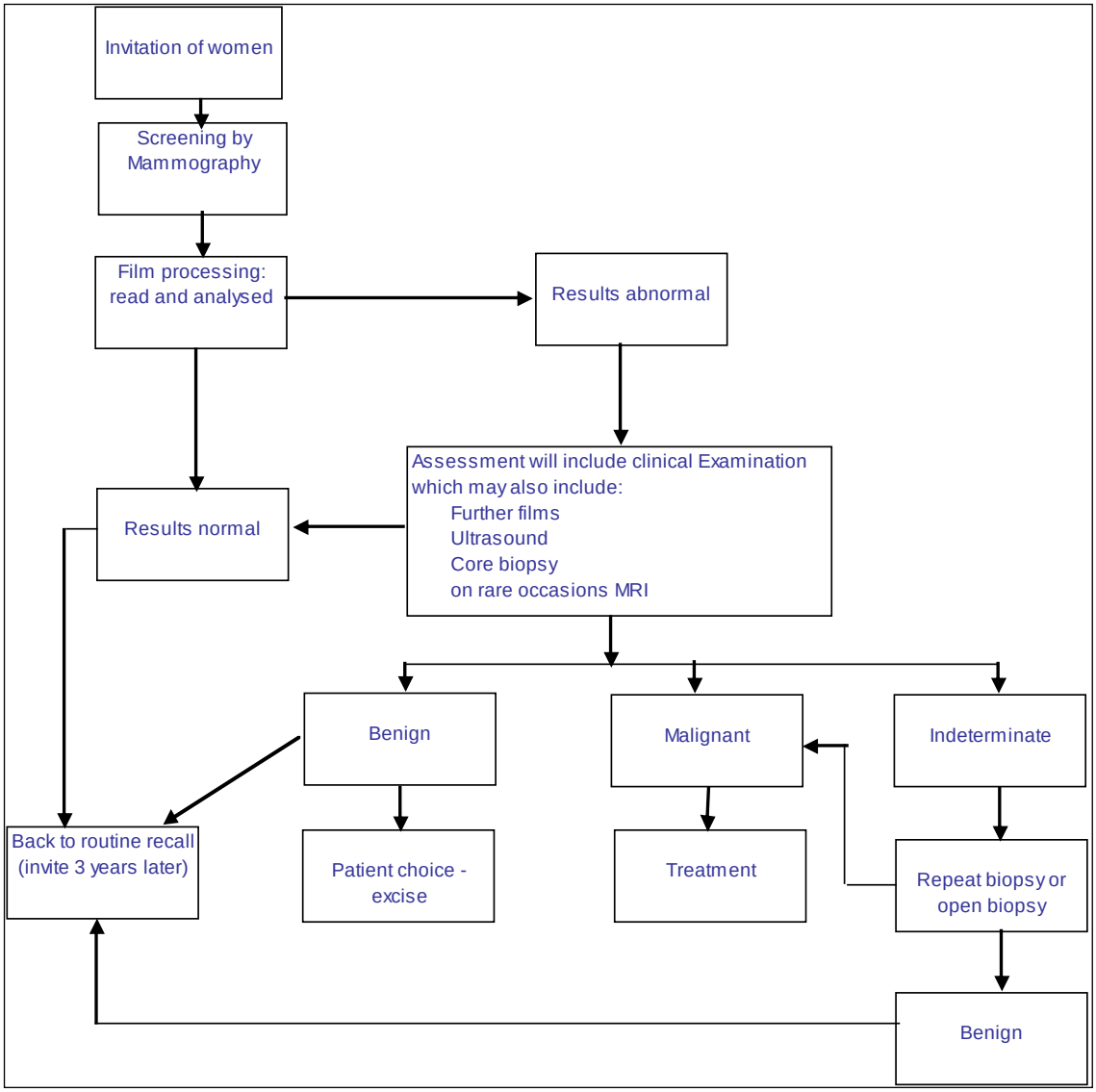
If a woman is found to have cancer, she is referred to a consultant surgeon to discuss the options available to her. This usually involves surgery: a lumpectomy where just the lump and a small amount of surrounding tissue is removed or a mastectomy where the whole breast is removed. Surgery is likely 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 1.2 illustrates the breast screening pathway.

Figure 2.1 Screening pathway



Delivery of NHSGGC Breast Screening Programme

During 2012-2015, there were 132,178 eligible women in for breast screening (**Table 2.1**).

Table 2.1 Number of NHSGGC women residents split by age band and CH(C)P 1 April 2012 to 31 March 2015

	Age Band				
CH(C)P	**50-54**	**55-59**	**60-64**	**65-70**	**Total**
East Dunbartonshire	4,601	4,102	3,596	3,888	16,187
East Renfrewshire	2,126	1,829	1,499	1,563	7,017
Glasgow North East	6,801	5,440	4,373	4,459	21,073
Glasgow North West	6,066	5,096	4,032	3,950	19,144
Glasgow South Sector	6,983	5,995	4,597	4,517	22,092
Inverclyde	3,351	2,824	2,590	2,758	11,523
Renfrewshire	6,735	5,588	5,043	5,285	22,651
West Dunbartonshire	3,601	3,223	2,873	2,794	12,491
Total	**40,264**	**34,097**	**28,603**	**29,214**	**132,178**

Source: West of Scotland Breast Screening data

Table 2.2 shows the number and percentage uptake by age and by CH(C)P. Of the 132,718 eligible women, 84,864 (64.2%) women attended breast screening during the previous three years. This represents a decrease of 3.1% since 20011/14. Only East Renfrewshire met and exceeded the minimum standard of 70% uptake.

Lowest uptake of 62.8% was among women aged 50 to 54 and highest uptake of 66% was among women aged 60 to 64.

Table 2.2 Total number and percentage of NHSGGC breast screening uptake by age and by CH(C)P 2012 - 2015

CH(C)P	Total eligible	Number & Percentage Uptake									
		50-54		55-59		60-64		65-70		Total 50-70	
	N	N	%	N	%	N	%	N	%	N	%
East Dunbartonshire	16,187	2,960	64.3%	2,700	65.8%	2,524	70.2%	2,669	68.6%	10,853	67.0%
East Renfrewshire	7,017	1,598	75.2%	1,401	76.6%	1,128	75.3%	1,121	71.7%	5,248	74.8%
Glasgow North East	21,073	4,169	61.3%	3,280	60.3%	2,679	61.3%	2,745	61.6%	12,873	61.1%
Glasgow North West	19,144	3,633	59.9%	3,149	61.8%	2,586	64.1%	2,457	62.2%	11,825	61.8%
Glasgow South	22,092	4,276	61.2%	3,789	63.2%	2,935	63.8%	2,827	62.6%	13,827	62.6%
Inverclyde	11,523	2,202	65.7%	1,907	67.5%	1,795	69.3%	1,808	65.6%	7,712	66.9%
Renfrewshire	22,651	4,004	59.5%	3,435	61.5%	3,195	63.4%	3,338	63.2%	13,972	61.7%
West Dunbartonshire	12,491	2,463	68.4%	2,222	68.9%	2,023	70.4%	1,846	66.1%	8,554	68.5%
Total	**132,178**	**25,305**	**62.8%**	**21,883**	**64.2%**	**18,865**	**66.0%**	**18,811**	**64.4%**	**84,864**	**64.2%**

Source: West of Scotland Breast Screening data

Of the total number that attended breast screening, 779 (0.6%) women were diagnosed with breast cancer following screening (**Table 2.3**).

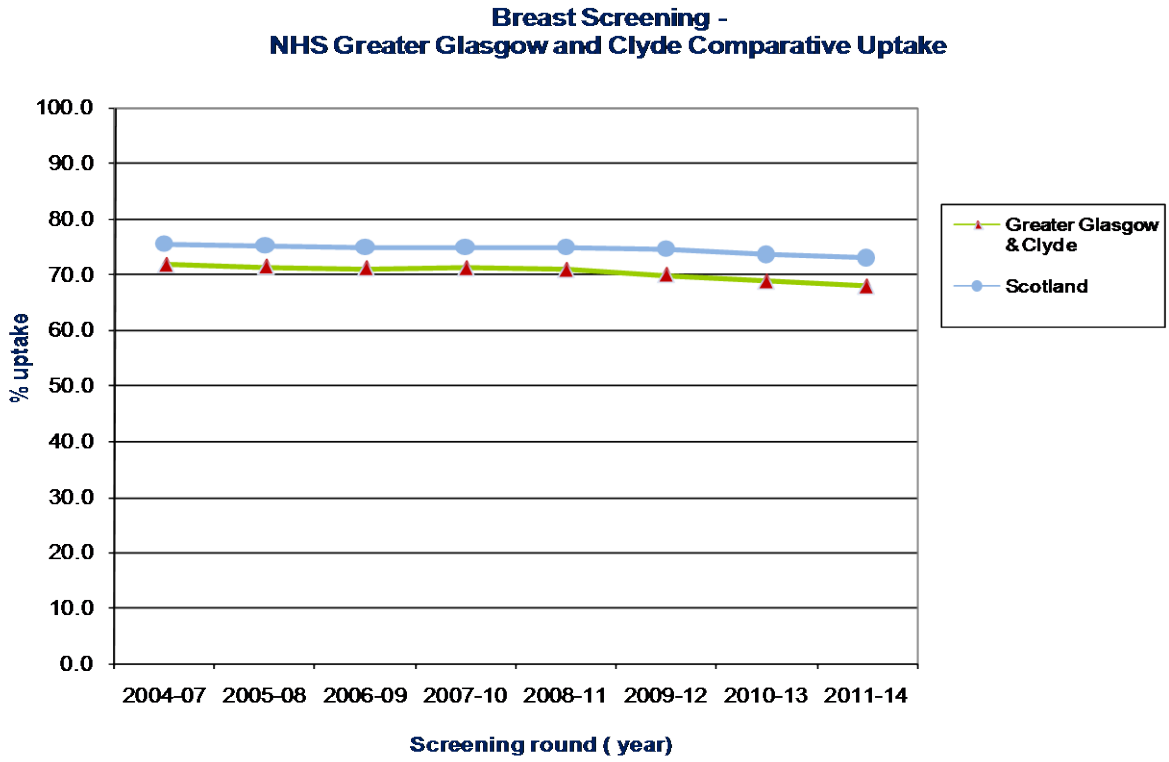
Table 2.3 NHSGGC Breast Screening Programme interim activity data for 2012-2015 by CH(C)P area

HSCP	Attended	Routine Invitations	% Uptake	Number Cancers Detected	Cancers of those invited	Cancers of those attended
East Dunbartonshire	10,848	16,178	67.1	113	0.7	1.0
East Renfrewshire	5,262	7,035	74.8	78	1.1	1.5
Glasgow North East	12,878	21,082	61.1	96	0.5	0.7
Glasgow North West	11,828	19,148	61.8	91	0.5	0.8
Glasgow South Sector	13,813	22,074	62.6	126	0.6	0.9
Inverclyde	7,712	11,523	66.9	57	0.5	0.7
Renfrewshire	13,972	22,651	61.7	82	0.4	0.6
West Dunbartonshire	8,551	12,487	68.5	136	1.1	1.6
Total	**84,864**	**132,178**	**64.2**	**779**	**0.6**	**0.9**

Source: West of Scotland Breast Screening data

Figure 2.2 shows NHS Greater Glasgow and Clyde trends in uptake in breast screening compared to Scottish average. The uptake for the three year rounds 2004/07 to 2009/12 was above the minimum standard of 70%, at 71%. Since then uptake has gradually declined to 67.8% in 2011/2014.

Figure 2.2 Comparative trends in uptake in breast screening between NHS Greater Glasgow and Clyde and Scotland



NHS Board	2004-07	2005-08	2006-09	2007-10	2008-11	2009-12	2010-13	2011-14
Greater Glasgow & Clyde	71.7	71.3	71.0	71.1	70.8	69.8	68.8	67.8
Scotland	**75.4**	**75.2**	74.9	**74.9**	74.9	**74.5**	73.5	72.9

Source: Scottish Breast Screening Programme (SBSP) Information System - KC62 Returns

Notes:

[1] Only routine appointments are included in the above figures. Self /GP referral and early recall appointments are excluded.

[2] Breast Screening year runs from 1st April to 31st March.

[3] Women are invited to attend screening once every three years and NHS Boards are not necessarily screened evenly throughout the three year period.

began. To reflect the expansion of the age range, three year rolling figures are reported from 2004.

[5] New NHS Board areas including parts of former Argyll & Clyde.

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 25,823 women invited, 62.9% took up the invitation to attend for breast screening.

Lowest uptake was among women living in Renfrewshire and Glasgow North West areas at 59.6% and 59.4% respectively. Highest uptake was in the East Renfrewshire area at 75.4%.

Table 2.4 NHSGGC breast screening uptake by first invitation (age 50-53) by CH(C)P 1 April 2012- 31 March 2015

CH(C)P	Routine Invitations	Not Attended	Attended	% Uptake
East Dunbartonshire	2,790	1,005	1,785	64.0
East Renfrewshire	1,299	319	980	75.4
Glasgow North East	4,181	1,600	2,581	61.7
Glasgow North West	3,796	1,541	2,255	59.4
Glasgow South Sector	4,349	1,681	2,668	61.3
Inverclyde	2,061	714	1,347	65.4
Renfrewshire	4,133	1,670	2,463	59.6
West Dunbartonshire	2,214	679	1,535	69.3
Total	**24,823**	**9,209**	**15,614**	**62.9**

Source: West of Scotland Breast Screening data

Of the 673 women with learning disabilities, only 307 (45.6%) participated in breast screening (**Table 2.5**).

Table 2.5 NHSGGC breast screening uptake among people with learning disabilities by CH(C)P 1 April 2012- 31 March 2015

CH(C)P	Routine Invitations	Not Attended	Attended	% Uptake
East Dunbartonshire	31	19	12	38.7
East Renfrewshire	30	11	19	63.3
Glasgow North East Sector	144	81	63	43.8
Glasgow North West Sector	115	61	54	47.0
Glasgow South Sector	143	73	70	49.0
Inverclyde	55	28	27	49.1
Renfrewshire	92	58	34	37.0
West Dunbartonshire	63	35	28	44.4
Total	**673**	**366**	**307**	**45.6**

Source: West of Scotland Breast Screening data

74,178 (96.2%) of women received their screening invitation within three years (**Table 2.6**). This exceeded the minimum standard of 90%.

Table 2.6 Number and percentage of invites to attend for breast screening within 36 months since previous screen by CH(C)P 1 April 2012- 31 March 2015

		Number and percentage of invitations issued within 3 years since previous last screen					
CH(C)P	Total Invites issued	<3 years		3 years - 4 years		> 4 years	
East Dunbartonshire	10,676	10,404	97.5%	242	2.3%	30	0.3%
East Renfrewshire	4,444	4,378	98.5%	54	1.2%	12	0.3%
Glasgow North East	11,278	11,142	98.8%	118	1.0%	18	0.2%
Glasgow North West	10,376	10,097	97.3%	229	2.2%	50	0.5%
Glasgow South Sector	12,224	11,521	94.2%	669	5.5%	34	0.3%
Inverclyde	6,830	6,806	99.6%	20	0.3%	4	0.1%
Renfrewshire	13,657	12,707	93.0%	922	6.8%	28	0.2%
West Dunbartonshire	7,627	7,123	93.4%	504	6.6%	-	0.0%
Total	**77,112**	**74,178**	96.2%	**2,758**	3.6%	**176**	0.2%

Source: West of Scotland Breast Screening data

Breast Cancer Morbidity and Mortality

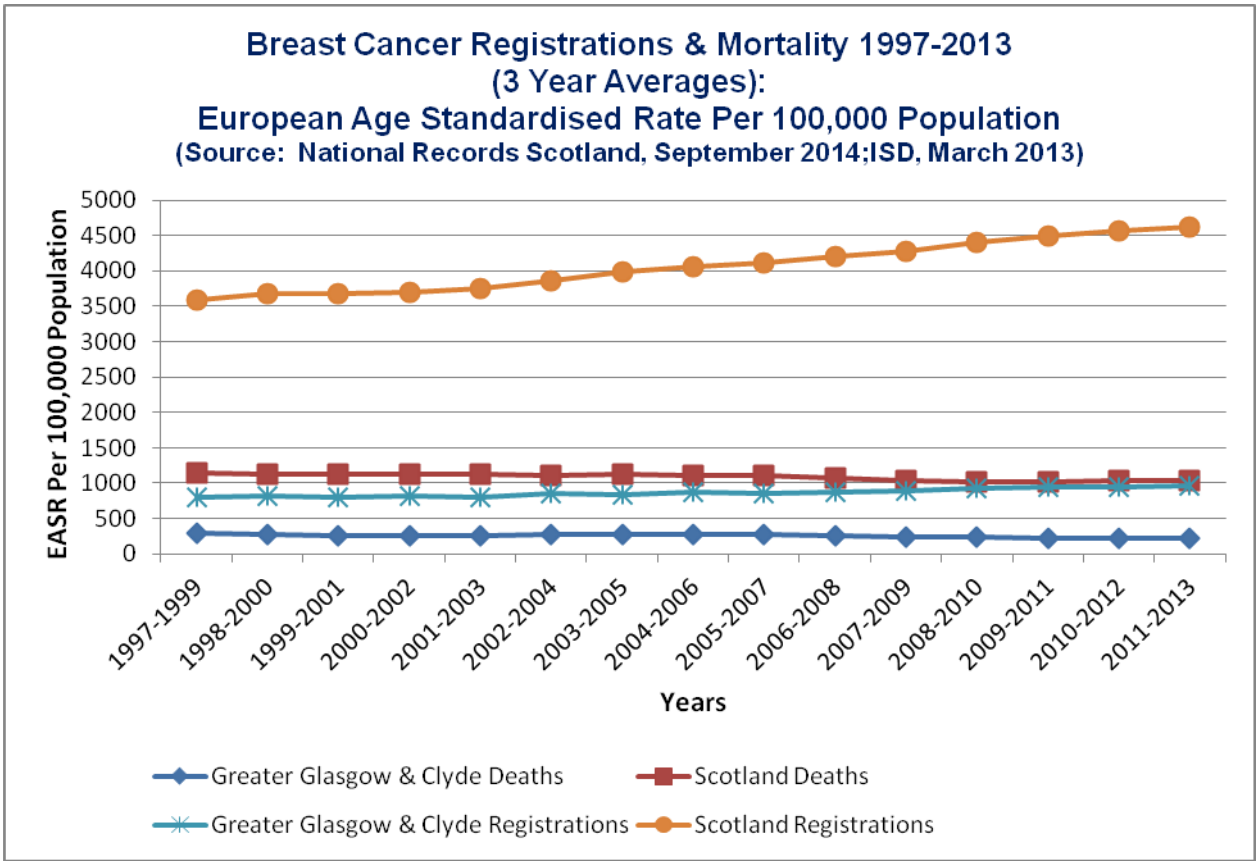
In 2013, the number of new breast cancers registered in NHSGGC was 962 (**Table 2.3**). This gives a standardised incidence rate of 168.6 per 100,000 per population which is slightly lower than that for Scotland (168.8).

Figure 2.3 illustrates a steady increase in the incidence rate of breast cancers across Scotland and that NHSGGC is following the same trend. **Figure 2.3** also illustrates that the age standardised death rates for NHS Greater Glasgow and Clyde and Scotland are gradually declining.

Table 2.7 shows that the number of deaths from breast cancer in NHSGGC and Scotland. In 2013, there were 200 deaths from breast cancer, giving a standardised rate of 32.3 per 100,000 population. This is lower than that for Scotland (36.4).

42% of breast cancers are preventable. Women who drink more drink 1 – 2 units of alcohol a day and women who are more than three stone overweight after the menopause have a higher risk of developing breast cancer. Thirty minutes of exercise five times a week helps maintain a healthy weight and reducing alcohol intake will help minimise the risk of developing breast cancer.

Figure 2.3 Breast Cancer Registrations and Morality rates 1997 – 2013



Source: Scottish Cancer Registry, ISD, 2015

Table 2.7: Breast cancer registrations and deaths across NHS Greater Glasgow and Clyde 1997 - 2013

Scotland

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Registration																	
Number	3,466	3,625	3,688	3,733	3,624	3,722	3,907	3,978	4,061	4,148	4,131	4,310	4,418	4,496	4,594	4,620	4,665
EASR	145.0	150.0	151.6	152.6	146.9	149.8	156.3	157.6	159.3	161.7	159.4	164.0	166.6	167.5	169.6	168.7	168.8
- 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*	*159.1*	*161.7*	*162.6*	*164.7*	163.8	164
- Upper 95% CI	*149.9*	*154.9*	*156.6*	*157.6*	*151.8*	*154.7*	*161.2*	*162.6*	*164.3*	*166.7*	*164.3*	*168.9*	*171.6*	*172.5*	*174.6*	173.6	173.7
Deaths																	
Number	1,154	1,142	1,129	1,116	1,143	1,105	1,138	1,082	1,144	1,108	1,062	1,043	1,002	1,022	1,036	1,063	1,013
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
- 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*
- 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*

Greater Glasgow & Clyde

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Registration																	
Number	783	814	780	884	736	830	829	881	823	907	835	873	984	951	907	1,004	962
EASR	146.3	151.2	145.0	165.1	136.7	154.5	153.7	163.2	153.0	167.1	153.4	159.2	179.4	172.0	163.1	177.4	168.6
- Lower 95% CI	*136.2*	*140.9*	*135.0*	*154.4*	*127.0*	*144.2*	*143.4*	*152.6*	*142.7*	*156.3*	*143.2*	*148.7*	*168.3*	*161.2*	*152.6*	166.5	158.0
- Upper 95% CI	*156.8*	*161.8*	*155.4*	*176.2*	*146.8*	*165.3*	*164.4*	*174.3*	*163.7*	*178.2*	*164.1*	*170.0*	*190.9*	*183.2*	*173.9*	188.6	179.5
Deaths																	
Year	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Number	288	297	279	240	252	258	284	266	284	285	259	247	237	220	219	237	200
EASR	50.6	51.9	48.7	41.8	43.9	44.5	49.4	45.8	48.9	49.2	44.5	41.9	40.5	37.0	35.9	39.0	32.3
- Lower 95% CI	*44.9*	*46.2*	*43.1*	*36.7*	*38.6*	*39.2*	*43.8*	*40.4*	*43.4*	*43.6*	*39.2*	*36.8*	*35.5*	*32.2*	*31.3*	*34.2*	28.0
- Upper 95% CI	*56.7*	*58.0*	*54.6*	*47.3*	*49.5*	*50.1*	*55.3*	*51.5*	*54.8*	*55.1*	*50.1*	*47.4*	*45.9*	*42.1*	*40.9*	*44.2*	37.0

Breast Cancer (ICD10 C50, D05)

Deaths EASR: age-standardised incidence rate per 100,000 person-years at risk (European standard population) Source: National Records of Scotland (NRS) Data extracted: November 2014

Registr EASR: age-standardised incidence rate per 100,000 person-years at risk (European standard population) Source: Scottish Cancer Registry, ISD Data extracted: March 2015

Interval Cancers

The screening histories of women attending breast screening became available following work carried out by central IT teams. This allowed data linkage to identify potential interval breast cancers.

During 2012 to 2014, 2,951 breast cancers were detected. 1,553 breast cancers were diagnosed in women eligible for screening; of the eligible, 787 (50.7%) were detected through the breast screening programme and 766 (49.3%) breast cancers were symptomatic presentations (**Table 2.8**)

Table 2.8 Numbers and percentages of breast cancers diagnosed from 2012 to 2014 by mode of detection and eligibility

Detection Mode	Under Eligible Age		Eligible Age		Over Eligible Age		Total	
	N	%	N	%	N	%	N	%
Screen Detected	0	0.0	787	50.7	16	1.9	820	27.8
Symptomatic	542	100.0	766	49.3	840	98.1	2,131	72.2
Total	**542**		**1553**		**856**		**2,951**	

Source: West of Scotland Breast Screening IT system, Cancer Audit

Table 2.9 shows the numbers and percentages of breast cancers diagnosed by mode of detection from 2012 to 2014. Of the 2,951 breast cancers, 359 (12.2%) were potential interval cancers; 779 (26.4%) were screen detected and 1,789 (60.6%) were symptomatic. 23.1% of cancers in the eligible group were potential interval cancers.

Table 2.9 Numbers and percentages of breast cancers diagnosed from 2012 to 2014 by mode of detection and year

Mode of Detection	2012		2013		2014		Total	
	N	%	N	%	N	%	N	%
Interval (Symptomatic)	116	11.3	129	13.3	114	11.9	**359**	**12.2**
Routine, Centre invitation	340	33.2	239	24.7	200	20.9	**779**	**26.4**
Self Referrals - Over Eligible Age	9	0.9	1	0.1	0	0.0	**10**	**0.3**
Self Referrals -Within Eligible Age	4	0.4	3	0.3	7	0.7	**14**	**0.5**
Symptomatic	554	54.2	597	61.6	638	66.5	**1,789**	**60.6**

Source: West of Scotland Breast Screening IT system, Cancer Audit

Table 2.10 shows the stage at diagnosis for screen detected, interval and other symptomatic cancers. There is a higher proportion of stage 0 among screen detected cancer.

Table 2.10 Breast cancer diagnoses by stage and by mode of detection for period 2012 – 2014

	Screen Detected						Symptomatic				Screen Detected & Sypmtomatic	
Stage	Routine, Centre invitation		Self Referrals - Over Eligible Age		Self Referrals - Within Eligible Age		Interval		Other Symptomatic		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Stage 0	137	17.6	1	10.0	1	7.1	25	7.0	127	7.1	**291**	9.9
Stage A	461	59.2	7	70.0	6	42.9	124	34.5	581	32.5	**1,179**	40.0
Stage IB/IIA	107	13.7	1	10.0	4	28.6	115	32.0	541	30.2	**768**	26.0
Stage IIIA	41	5.3	1	10.0	3	21.4	34	9.5	178	9.9	**257**	8.7
Stage IIB	4	0.5	0	0.0	0	0.0	8	2.2	35	2.0	**47**	1.6
Stage IIIB	5	0.6	0	0.0	0	0.0	13	3.6	102	5.7	**120**	4.1
Stage IIIC	1	0.1	0	0.0	0	0.0	3	0.8	4	0.2	**8**	0.3
Stage IV	1	0.1	0	0.0	0	0.0	23	6.4	141	7.9	**165**	5.6
Unassigned-Missing	14	1.8	0	0.0	0	0.0	8	2.2	45	2.5	**67**	2.3
Unassigned-T0N0M0	8	1.0	0	0.0	0	0.0	6	1.7	35	2.0	**49**	1.7
Total	**779**		**10**		**14**		**359**		**1,789**		**2,951**	

Source: West of Scotland Breast Screening data, extract 2015

There were 132 records of women with breast cancer diagnosed cancers in 2012 and 130 were reviewed. Two cases are still awaiting classification. The review classification was carried out by three readers. The majority decision prevailed and, where there was lack of consensus amongst the three readers, an independent reader would lead a consensus discussion as to the classification.

Table 2.11 shows the final classifications to date. Of the 130 potential intervals reviewed, 25 images were identified to be false negative results; 14 were false negative subtle while 68 of the 130 were true interval cancers.

Table 2.11 Interval cancers for 2012

Classification	Number
Not interval	7
True interval	68
False negative	25
False negative subtle	14
Mammography Occult	13
Unclassified	3
Total	**130**
Outstanding to be classified	**2**

Review of the literature confirms that thresholds for identifying possible abnormalities are much lower than 'real life' because of the nature of a retrospective review. All cases classified as false negative are reviewed by all staff to identify any learning pointers. Having established a manual method to identify and classify the cases, the remaining calendar years will be audited.

The interim audit protocol can be found in **Appendix 2.1**

Digital Mammography

In September 2011, the West of Scotland Breast Screening Unit became one of six contributors to the Health Technology Assessment (HTA) funded UK trial assessing the potential benefit of the addition of tomosynthesis to the process of assessment. 1,000 women took part in the two year tomography trial. This trial has now completed and publication of results is awaited.

Health Improvement

A range of health improvement activities took place across NHS Greater Glasgow and Clyde, for example:

- **North East Glasgow:** North East Glasgow has high levels of deprivation with the lowest uptake in breast screening at 61.6% (Public Health Screening Annual report 2013/14).

  NHSGGC piloted a three month local social marketing campaign in Glasgow North East to reinforce the national Detect Cancer Early breast cancer messages and encourage women to take up breast screening. This involved telephone/text appointment reminder; local awareness; radio and cinema advertising; competition; pharmacy prescription bags with key messages.

  The results of the campaign showed an overall 2.2% increase in uptake, with one practice achieving a 6.2% increase.

- **South Glasgow:** With poor uptake of breast screening among the BME community, the health improvement team delivered breast screening awareness workshops in Urdu and English. These workshops were well received from the 51 women that attended.

The success of the Glasgow North East pilot was due to the planning and co-ordination of activities with the breast screening service. As a result, a short life working group will be established to set out a planning template for other teams.

Challenges and Future Priorities

- Finalise implementation of digital mammography.
- Implementation of health interventions and health improvement initiatives to raise awareness of, and encourage women to participate in the breast screening programme.
- Staff to continue to provide information to and support women on making healthier lifestyle changes.

Appendix 2.1

NHS Confidential Audit of Interval Breast Cancers

Protocol

Introduction

The aim of the breast screening programme is to reduce incidence and mortality from breast cancer. It is recognised that in order to assess the effectiveness of the breast screening programme the audit of the screening histories of women with breast 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 service.

Aim

The aim of the audit is to identify interval breast cancers and review their screening mammograms in order to determine whether any of the activities of the programme could be improved.

Objectives

- To identify interval cancers
- To obtain information for the cases - demographic details, screening history and outcome.
- To undertake a review of screening histories.
- To identify any factors that may have contributed to any anomaly in the screening history.

Methods

Identification of interval breast cancers

Data collection

- Demographic details: current name, previous name, date of birth, postcode, case number, CHI number, GP name and address at time of cancer registration, date of death, date of cancer registration.

- WoSB to provide Screening history: screening date, referring hospital/board, result of the mammograms and recommendations. Obtain pathology reports both initial diagnosis and final surgery including axilla. Date of symptomatic mammography.

- Breast Screen Review: WoSBS will review available mammograms and report on outcome and whether the review would impact on case management.

- Clinical staging: MDT summary

Sources of data

- Information Services to run a report from ACADME listing women aged 50 – 77 diagnosed with breast cancer that were **not** screen detected screening history.

  Dataset: CHI, Name, DOB, Date Diagnosed, Diagnosis

- West of Scotland Breast Screening to provide list of women screened within three years from diagnosis.

  Dataset: CHI, Name, DOB, date screened,

- WOSCAN provide most recent 6 months cancer staging data:

  Dataset: CHI, Name, DOB, Postcode

T0	No evidence	
Tis	Carcinoma in situ (CIS)	
T1	Tumour up to 2 cm	
T2	Tumour >2cm; = 5cm	
T3	Tumour >5cm	
T4	Tumour of any size with direct extension to chest wall and/or to skin (ulceration of skin nodules)	
TX	Primary tumour cannot be assessed	
Not known/recorded		

Code	Value	Explanatory Notes
N0	No regional lymph nodes metastasis	
N1	Metastases to movable ipsilateral Level I, II axillary lymph node(s)	
N2	Metastases in ipsilateral Level I, II axillary lymph node(s) that are clinically fixed or matted; or in clinically detected* ipsilateral internal mammary lymph node(s) in the *absence* of clinically evident axillary lymph node metastasis.	Fixed nodal metastasis. * Detected by clinical examination or by imaging studies (excluding lymphoscintigraphy) and having characteristics highly suspicious for malignancy or a presumed pathological macrometastasis based on fine-needle aspiration biopsy with cytological examination.
N3	Metastasis in ipsilateral infraclavicular (Level III axillary) lymph node(s), with or without Level I, II axillary lymph node involvement, or in clinically detected* ipsilateral internal mammary lymph node(s) with clinically evident Level I, II axillary lymph node metastasis; or metastasis in ipsilateral supraclavicular lymph node(s), with or without axillary or internal mammary lymph node involvement.	Nodal metastasis above the clavicle. * Detected by clinical examination or by imaging studies (excluding lymphoscintigraphy) and having characteristics highly suspicious for malignancy or a presumed pathological macrometastasis based on fine-needle aspiration biopsy with cytological examination.
NX	Regional lymph nodes cannot be assessed (e.g. previously removed)	
9999		

Code	Value
M0	No evidence of distant metastases
M1	Distant metastases present
9999	Not known

Audit procedure

1. Information Services provide 6 monthly list of breast cancers (sourced from ACADME) diagnosed within the previous 6 months.

2. Board Screening Co-ordinator sends a request to Dr Hilary Dobson, Clinical Director, West of Scotland Breast Screening Centre for list of screening histories of NHSGGC residents for previous round.

3. Information Services will match ACADME data with breast screening data to remove any screen detected cancers and women who did not take up screening within 4 years of diagnosis.

4. Information Services sends yearly request to WOSCAN for cancer staging data of women identified for audit.

5. West of Scotland Breast Screening Centre will review the mammograms of women identified for audit.

Audit Meeting

6. Audit data will be recorded on a pass-worded protected database for future reference and further analysis if required.

7. The audit statistics will be presented to the Breast Screening Steering group and in the Breast Screening Programme annual report.

APPENDICES

IBA1 Interval Cancer Audit Form
Membership of the Group

CONFIDENTIAL

NHS Greater Glasgow and Clyde
Audit of Interval Breast Cancers

Patient Name:

CHI Number: Date of Birth:

Post Code: Practice Code:

Date of Diagnosis:

Data provided by West of Scotland Breast Screening Centre:

Time of last mammogram screen

1.	Last screened 3 years ago	
2.	Last screened 2 years	
3.	Last screened 1 year	
4.	Last screened less than 1 year	

Review of Mammograms

Film review 1	**Screening Films**	**Symptomatic Films**
Date of mammogram		
Number of views		
Density of tissue		
HRT		
Lesion seen	Yes/no	Yes/no
Lesion descriptor		

Film review 2	**Screening Films**	**Symptomatic Films**
Date of mammogram		
Number of views		
Density of tissue		
HRT		
Lesion seen	Yes/no	Yes/no
Lesion descriptor		

Film review 3	**Screening Films**	**Symptomatic Films**
Date of mammogram		
Number of views		
Density of tissue		
HRT		
Lesion seen	Yes/no	Yes/no

Lesion descriptor		

Review of Index Mammogram (interval breast cancers only)

Date of mammogram: **-------/--------/--------**	Definition	Please tick
True interval	Cancer is not visible on the screening mammograms	
False negative	Cancer is visible on the screening mammograms	
False negative subtle	Cancer is visible on the screening mammograms but appeared benign and did not warrant recall	
Mammography occult	Cancer is not visible on either the screening or the symptomatic mammograms	
Technical	Screening mammograms technically inadequate and as a result the cancer may not have been detected	
Unclassifiable	Symptomatic mammograms not available	

Impact on management Yes ☐ No ☐ Not known ☐

If yes, please specify:	

DATA PROVIDED BY WOSCAN

TMN (Cancer) Stage

T0	No evidence	
Tis	Carcinoma in situ (CIS)	
T1	Tumour up to 2 cm	
T2	Tumour >2cm; = 5cm	
T3	Tumour >5cm	
T4	Tumour of any size with direct extension to chest wall and/or to skin (ulceration of skin nodules)	

TX	Primary tumour cannot be assessed	
Not known/recorded		

Code	Value	
N0	No regional lymph nodes metastasis	
N1	Metastases to movable ipsilateral Level I, II axillary lymph node(s)	
N2	Metastases in ipsilateral Level I, II axillary lymph node(s) that are clinically fixed or matted; or in clinically detected* ipsilateral internal mammary lymph node(s) in the *absence* of clinically evident axillary lymph node metastasis.	
N3	Metastasis in ipsilateral infraclavicular (Level III axillary) lymph node(s), with or without Level I, II axillary lymph node involvement, or in clinically detected* ipsilateral internal mammary lymph node(s) with clinically evident Level I, II axillary lymph node metastasis; or metastasis in ipsilateral supraclavicular lymph node(s), with or without axillary or internal mammary lymph node involvement.	
NX	Regional lymph nodes cannot be assessed (e.g. previously removed)	
9999		
M0	No evidence of distant metastases	
M1	Distant metastases present	
9999	Not known	

Date of Death	
Cause of Death	

Comments	

Signed:	
Print Name:	

APPENDIX 2

Membership of the Breast Cancer Audit Group:

- Dr Emilia Crighton, NHSGGC Board's Breast & Cervical Screening Co-ordinator
- Dr Hilary Dobson, Clinical Lead, West of Scotland Breast Cancer Centre
- Dr Catriona Pagliari, Consultant Radiologist, WOSBS
- Marion Martin, Office Manager, WOSBS
- Donna Wilson, Service Support Manager, WOSBS
- Paul Burton, Senior Information Analyst, Information Services
- Denise Lyden, Project Officer, Public Health

Appendix 2.2

Members of Breast Screening Steering Group (As at March 2015)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Mrs Lin Calderwood	H&IT Service Delivery Manager - Screening
Dr Hilary Dobson	Clinical Director, West of Scotland Breast Screening
Ms Claire Donaghy	Health Improvement Senior
Mrs Fiona Gilchrist	Assistant Programmes Manager, Screening Dept
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer, Public Health - Health Services
Ms Janet Mair	Regional Registration Manager
Dr Stephen McLaughlin	Clinical Director, Renfrewshire CHP
Ms Ann Mumby	Superintendent Radiographer
Ms Elaine Murray	Health Improvement Assistant
Mrs Eilidh O'Neill	Health Visitor, West Dunbartonshire CHP
Mrs Elizabeth Rennie	Programmes Manager, Screening Dept

Chapter 3: Bowel Screening Programme

Summary

- 380,902 NHSGGC residents were invited to participate in the Bowel Screening programme.
- 127,890 (33.5%) lived in the most deprived areas.
- 203,166 screening kits were completed and returned to the Bowel Screening laboratory for analysis. This gives an estimated uptake of 53.3%, representing an increase of 6,844 (1.8%) since 2013/2014 when uptake was 51.5%. This is below the Scottish wide average of 57.6% and the NHS HIS target of 60%.
- Uptake varied across all deprivation categories with lowest uptake in the most deprived areas at 44.4% compared to highest uptake of 64.7% in the least deprived areas.
- The lowest uptake was in the most deprived areas of Glasgow North East at 43.2%. Highest uptake was among residents living in the more affluent areas of West Dunbartonshire at 67% and East Dunbartonshire (67.1%).
- Only East Dunbartonshire and East Renfrewshire CH(C)P exceeded the minimum standard of 60% where uptake was 63.4% and 61.3% respectively.
- The percentage uptake among females at 55.9% was higher than the male population at 50.6%. The lowest uptake of 41.9% was among males aged 50-54 year olds.
- 4,741 patients screened positive, 4,241 patients were pre-assessed prior to colonoscopy. 458 patients declined or did not respond to the offer of a colonoscopy pre-assessment.
- The overall positivity rate was 2.3% and it was higher among men at 2.9% compared to women at 1.9%. The overall Scottish national average was 2.5 (2.49% in men and 1.6% in women) (ISD, 2015). Compared to all other groups, males aged 70 to 74 had the highest positivity rate of 4.1%.
- 4,241(89.5%) patients completed colonoscopy investigations by 31 March 2015.
- Of the 2,121 people with learning disability invited to take part in the bowel screening programme, 33.3% (670) completed the bowel screening test. This represented an increase of 3% from previous year's uptake of 30.3%. No cancer was diagnosed following investigations.

- 60.1% of men and 42.8% of women who underwent colonoscopies had polyps. Adenomas were diagnosed in 46.3% of men and 32.3% of women.

- 191 cancers were detected.

- 34.5% (65) of all cancers were diagnosed in the early stages. The highest proportion of cancers diagnosed was in both most and least deprived groups. These represented 56% (107) of the overall total.

- In 2013, the most recent year for which completed data is available, the number of new colorectal cancers registered in NHSGGC was 412 for men and 344 for females. This gives a standardised incidence rate of 97.1and 61.5 respectively per 100,000 populations. This is higher than that for Scotland for males at 95.3 and lower than the Scottish rates for females at 62.5 per 100, 000.

- In 2013, the number of deaths from colorectal cancer in NHSGGC was 203 for male population and 176 in the female population. This gives a standardised rate of 48.5 and 28.7 respectively per 100,000 populations which is higher than the Scotland rates of 42.3 and 25.2 respectively.

Chapter 3: Bowel Screening Programme

Background

Colorectal (Bowel) Cancer is the third most common cancer in Scotland after prostate (for men), lung (for both men and women) and breast (women) cancers (ISD Scotland, 2015*).* Every year in Scotland over 3,400 people are diagnosed with the disease. In NHS Greater Glasgow and Clyde, 880 people were diagnosed with bowel cancer in 2012 (Table 3.6). 95% of bowel cancers detected are among people aged over 50.

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

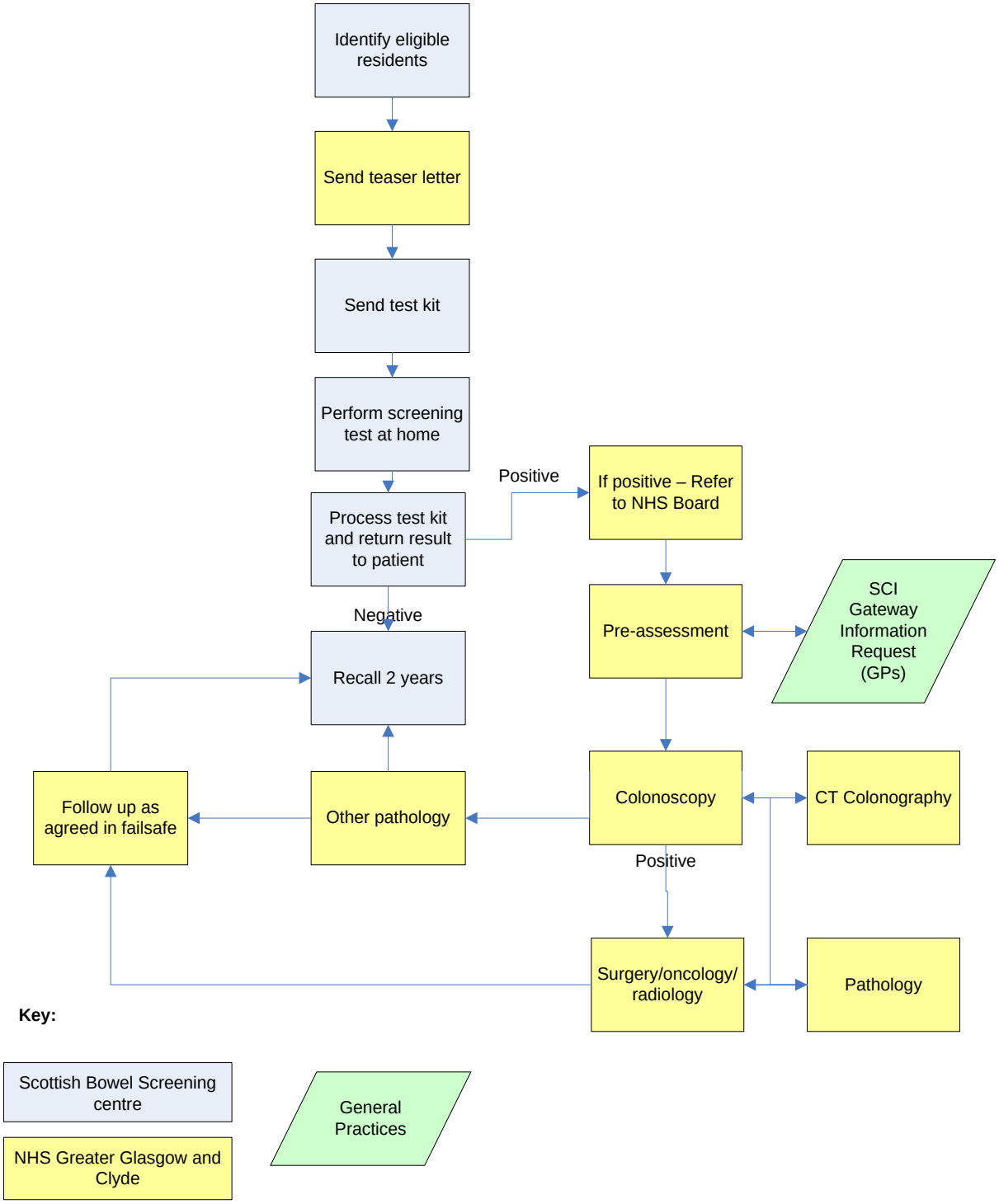
Eligible NHS Greater Glasgow and Clyde residents that are due to be invited to take part in the bowel screening programme are sent a “teaser” letter before they are sent an invitation letter and screening kit. The letter explains the programme and encourages participants to take the test.
The National Bowel Screening Centre in Dundee issue 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 for a telephone assessment and be offered a colonoscopy. Following colonoscopy, if required, they 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 GP that refuse or do not turn up for colonoscopy asking them to get in touch within 6 months if they change their mind, 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.

Figure 3.1 Overview of bowel screening pathway



Delivery of NHSGGC bowel screening programme

From 1 April 2013 to 31 March 2015, 380,902 NHSGGC residents were invited to participate in the Bowel Screening programme (**Table 3.1**). Of the total population invited, 127,890 (33.5%) lived in the most deprived areas.

Table 3.1 Number of eligible population invited to participate in the bowel screening programme by CH(C)P and deprivation categories

	Most Deprived		SIMD		Least Deprived		
CH(C)P	**1**	**2**	**3**	**4**	**5**	**Unassigned[2]**	**Total**
East Dunbartonshire	1,129	5,635	2,908	7,227	21,788	84	38,771
East Renfrewshire	1,881	2,636	2,109	5,158	18,765	29	30,578
Glasgow North East	33,931	6,974	4,231	6,003	1,413	157	52,709
Glasgow North West	23,070	7,717	6,533	5,400	9,760	143	52,623
Glasgow South	27,127	15,377	8,417	8,373	5,272	119	64,685
Inverclyde	11,172	3,880	4,047	5,362	3,757	56	28,274
North Lanarkshire[1]	778	901	1,888	1,940	341	15	5,863
Renfrewshire	13,743	8,711	12,400	8,902	14,578	106	58,440
South Lanarkshire[1]	5,999	2,602	2,719	3,188	2,653	12	17,173
Stirling(GGC pt) [1]				5			5
West Dunbartonshire	9,060	9,576	7,032	3,812	1,801	64	31,345
Unassigned[2]						436	436
Total NHS GGC	**127,890**	**64,009**	**52,284**	**55,370**	**80,128**	**1,221**	**380,902**

Source: Bowel Screening IT system (Data extracted: August 2015)

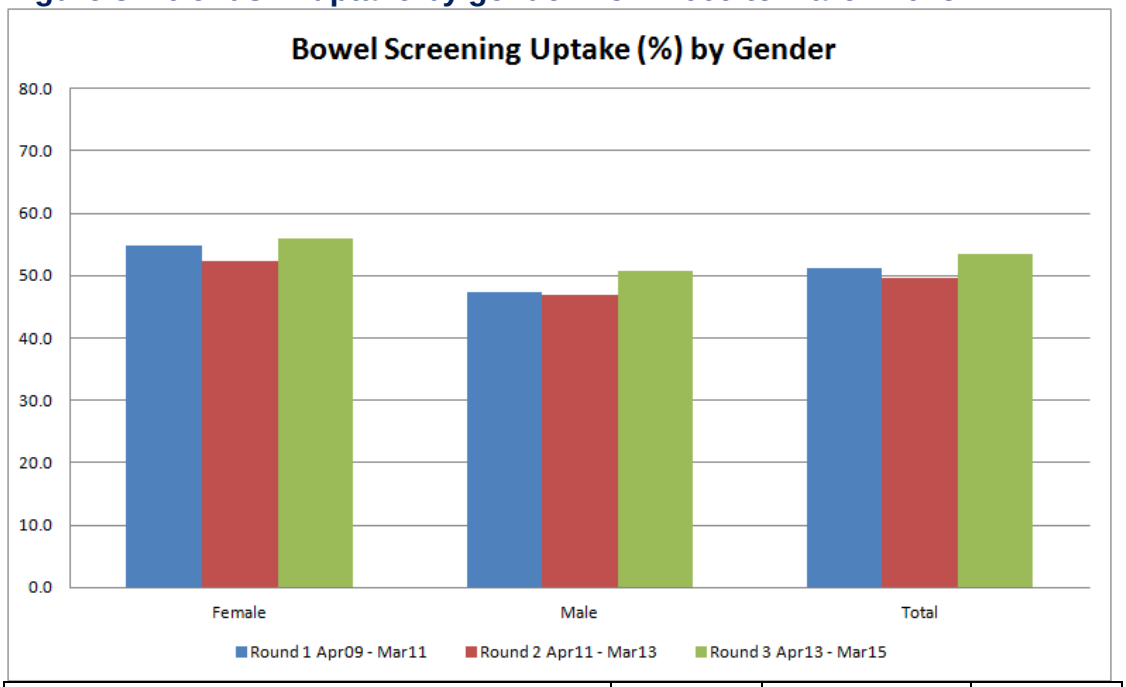
Notes:

1 NHSGGC residents only

2 Unable to assign CHP or SIMD due to incomplete/incorrect postcode.

Figure 3.2 illustrates the trends in uptake by gender since the programme was implemented in 2009. The most recent Round 3 (2013 – 2015) shows that there has been an increase in uptake for both male (50.6%) and females (55.9%) compared to the previous years. The increase can be attributed to the national detect cancer early social marketing campaign.

Figure 3.2 trends in uptake by gender from 2009 to March 2015

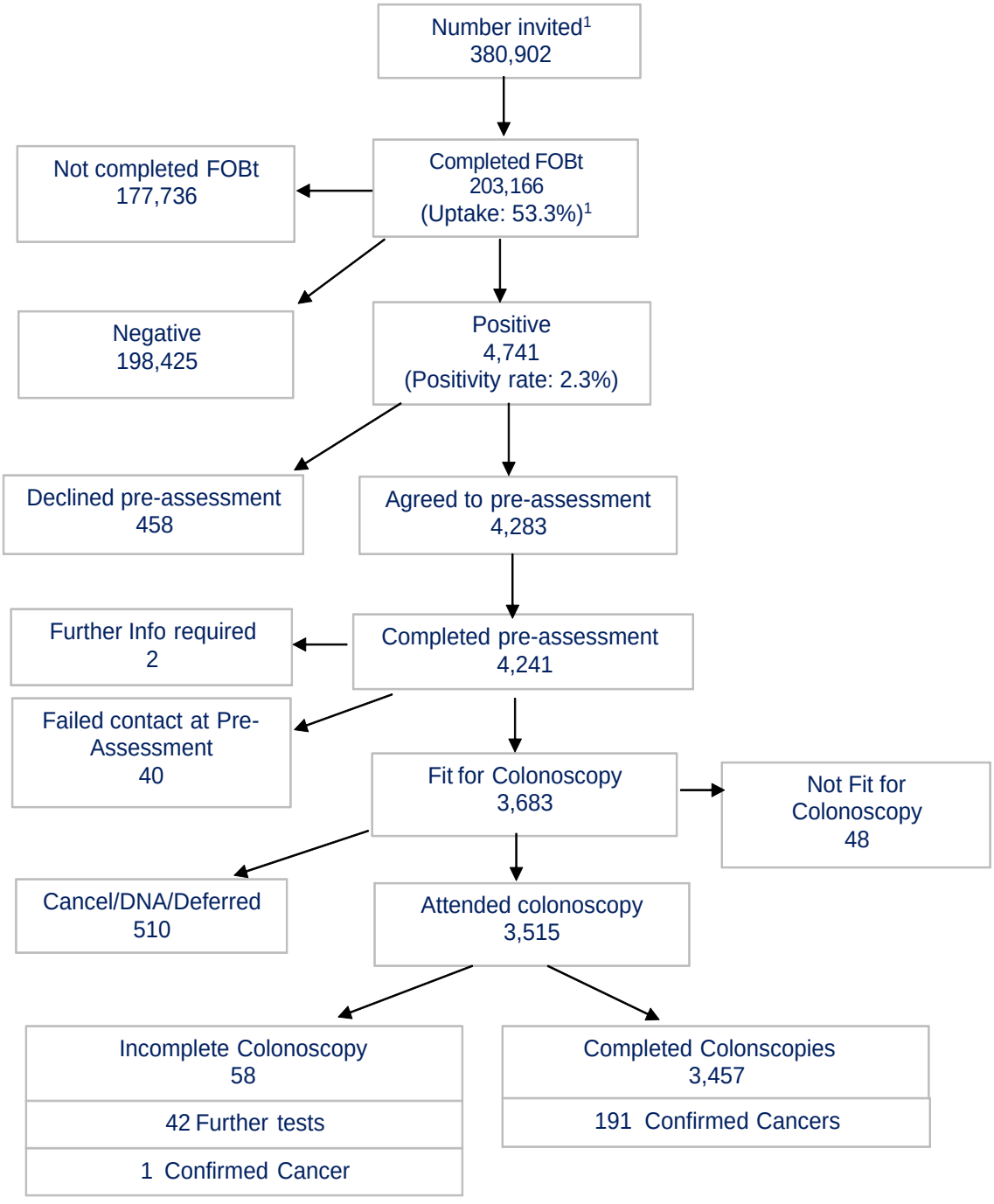


	Female	Male	Overall
Round 1 April 2009 – March 2011	54.7	47.4	51.1
Round 2 April 2011 – March 2013	52.3	46.8	49.6
Round 3 April 2013 – March 2015	55.9	50.6	53.3

Figure 3.3 illustrates the bowel screening activity.

203,166 screening kits were completed and returned to the Bowel Screening laboratory for analysis. This gives an estimated uptake of 53.3%, representing an increase of 6,844 (1.8%) compared to data reported in 2013/2014 when uptake was 51.5%. This is below the Scottish wide average of 57.6% and the NHS HIS target of 60%.

Figure 3.3 NHSGGC Bowel Screening activity 1 April 2013 to 31 March 2015



Source: NHS Greater Glasgow and Clyde Bowel Screening IT System (Extracted: August 2015)

Table 3.2 shows the bowel screening uptake by CH(C)P area and by deprivation. Overall, uptake varied across all deprivation categories with lowest uptake in the most deprived areas at 44.4% compared to highest uptake of 64.7% in the least deprived areas.

The lowest uptake was in the most deprived areas of Glasgow North East at 43.2%. Highest uptake was among residents living in the least deprived areas. Only East Dunbartonshire and East Renfrewshire CH(C)P exceeded the minimum standard of 60% where uptake was 63.4% and 61.3% respectively.

Table 3.2 NHSGGC Bowel screening uptake by CH(C)P and deprivation category

	Most Deprived		SIMD		Least Deprived		
CH(C)P	**1**	**2**	**3**	**4**	**5**	**Unassigned[2]**	**Total**
East Dunbartonshire	46.1	53.1	58.8	64.7	67.1	66.7	63.4
East Renfrewshire	43.8	52.2	57.8	59.4	65.2	62.1	61.3
Glasgow North East	43.2	48.3	54.1	60.0	61.4	40.8	47.1
Glasgow North West	43.9	50.4	47.5	54.8	59.9	41.3	49.4
Glasgow South	43.5	47.2	51.3	57.1	61.7	41.2	48.7
Inverclyde	47.6	53.6	57.3	60.0	65.1	60.7	54.5
North Lanarkshire[1]	51.2	55.6	54.8	58.0	55.4	26.7	55.5
Renfrewshire	44.8	52.3	57.0	62.8	65.0	50.0	56.3
South Lanarkshire[1]	46.6	48.4	53.8	58.1	60.0	58.3	52.2
Stirling[1]	0.0	0.0	0.0	20.0	0.0	0.0	20.0
West Dunbartonshire	46.1	52.4	57.8	61.7	67.0	57.8	53.8
Unassigned[2]						35.6	35.6
Total NHS GGC	44.4	50.5	54.7	60.0	64.6	43.9	53.3

Source: Bowel Screening IT system (Data extracted August 2015)

Notes:

1 NHSGGC residents only

2 Unable to assign CHP or SIMD due to incomplete/incorrect postcode.

Uptake among females at 55.9% was higher than uptake of the male population at 50.6%. The lowest uptake of 41.9% was among males aged 50-54 years. The overall positivity rate was higher among men, at 2.9% compared to women at 1.9%. Scottish national average was 2% (ISD, 2014). Compared to all other groups, males aged 70 to 74 had the highest positivity rate of 4.1% (**Table 3.3**).

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

Age Group	Uptake			Positvity		
	Female	Male	Total	Female	Male	Total
	%	%	%	%	%	%
50-54	48.5	41.9	45.1	1.5	2.0	1.7
55-59	55.0	49.0	52.0	1.7	2.5	2.0
60-64	60.2	54.4	57.3	1.8	2.9	2.3
65-69	63.2	59.7	61.5	2.0	3.4	2.7
70-74	60.3	58.3	59.4	2.4	4.1	3.2
75+	55.3	55.6	55.4	2.6	4.4	3.4
Total	55.9	50.6	53.3	1.9	2.9	2.3

Source: Bowel Screening IT system (Data extracted August 2015)

There is a gradient in the positivity rate across deprivation categories. The positivity rate for residents living in the most deprived areas was 3.3% compared to 1.5% for residents living in least deprived areas (**Figure 3.4 and Table 3.4).**

The highest positivity rates were among residents in most deprived areas of East Renfrewshire (4.9%), Glasgow North East (3.9%) and East Dunbartonshire (3.8%).

The lowest positivity rates were in the least deprived areas of East Dunbartonshire and Inverclyde at 1.4%.

The overall positivity rate for Glasgow North East was also highest at 3.2% compared to the lowest positive rates of 1.8% in East Dunbartonshire and East Renfrewshire.

Figure 3.4 Positivity rates by deprivation and by CH(C)P

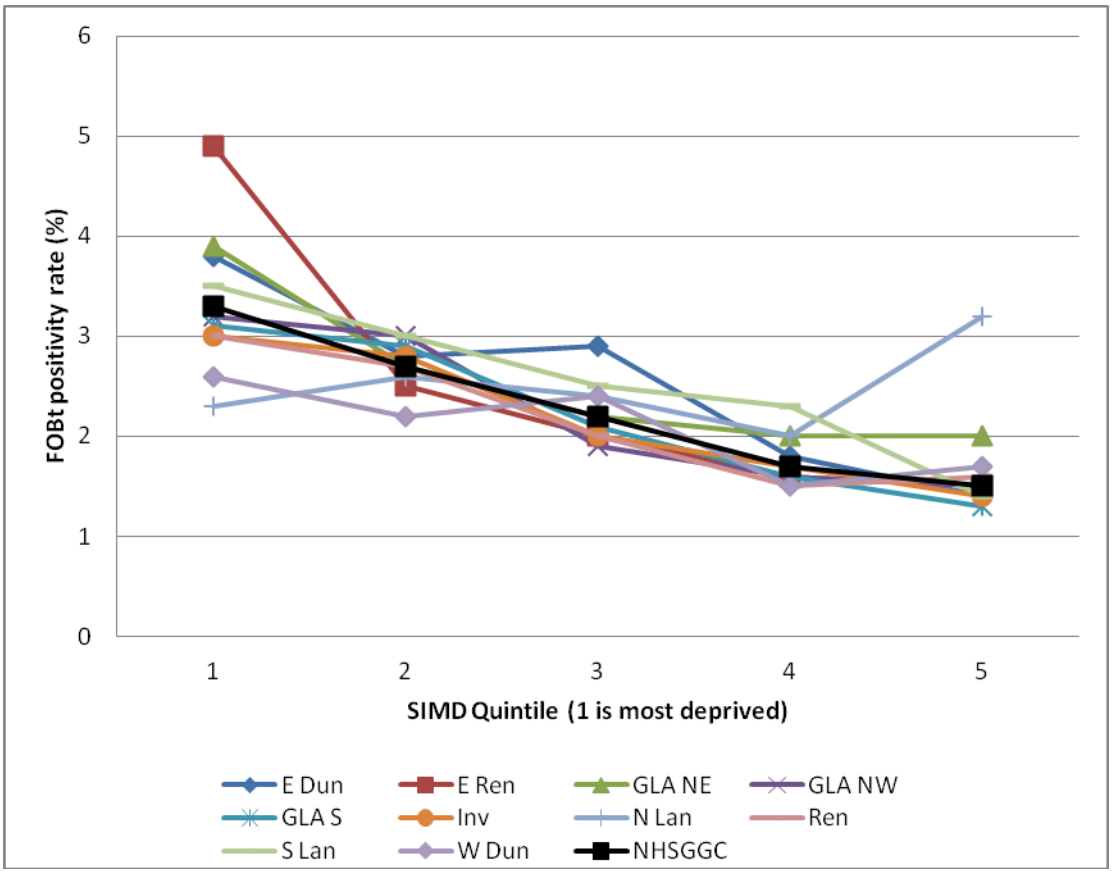


Table 3.4 Positivity rates by CH(C)P and deprivation category

CH(C)P	Most Deprived SIMD 1	2	3	4	Least Deprived 5	Unassigned[2]	Total
	%	%	%	%	%	%	%
East Dunbartonshire	3.8	2.8	2.9	1.8	1.4	3.6	1.8
East Renfrewshire	4.9	2.5	2.0	1.6	1.5	0.0	1.8
Glasgow North East	3.9	2.7	2.2	2.0	2.0	1.6	3.2
Glasgow North West	3.2	3.0	1.9	1.6	1.5	3.4	2.4
Glasgow South	3.1	2.9	2.1	1.6	1.3	4.1	2.5
Inverclyde	3.0	2.8	2.0	1.7	1.4	0.0	2.3
North Lanarkshire[1]	2.3	2.6	2.4	2.0	3.2	0.0	2.3
Renfrewshire	3.0	2.7	2.0	1.5	1.6	1.9	2.1
South Lanarkshire[1]	3.5	3.0	2.5	2.3	1.4	0.0	2.7
West Dunbartonshire	2.6	2.2	2.4	1.5	1.7	2.7	2.2
Unassigned[2]						1.9	1.9
Total NHS GGC	3.3	2.7	2.2	1.7	1.5	2.2	2.3

Source: Bowel Screening IT system (Data extracted August 2015)

Notes:

1 NHSGGC residents only

2 Unable to assign CHP or SIMD due to incomplete/incorrect postcode.

The male population in the most deprived areas had the lowest uptake at 42.7% and highest positivity rate of 4%. In contrast, uptake for men residing in the least deprived area was higher at 61.1% and positivity rate was lower 1.9% **(Table 3.5 and Figure 3.5).**

Overall, the highest uptake of 67.8% and lowest positivity rate of 1.2% was among women residing in least deprived areas (**Table 3.5 and Figure 3.6**).

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

SIMD	MALE		FEMALE		Total	
	% Uptake	Positivity	% Uptake	Positivity	% Uptake	Positivity
1 (most deprived)	42.7	4.0	46.1	2.7	44.4	3.3
2	47.8	3.5	53.0	2.1	50.5	2.7
3	52.0	2.6	57.2	1.8	54.7	2.2
4	56.5	2.1	63.3	1.4	60.0	1.7
5 (least deprived)	61.1	1.9	67.8	1.2	64.6	1.5
Unassigned	41.2	1.1	47.2	3.4	43.9	2.2
Total	**50.6**	**2.9**	**55.9**	**1.9**	**53.3**	**2.3**

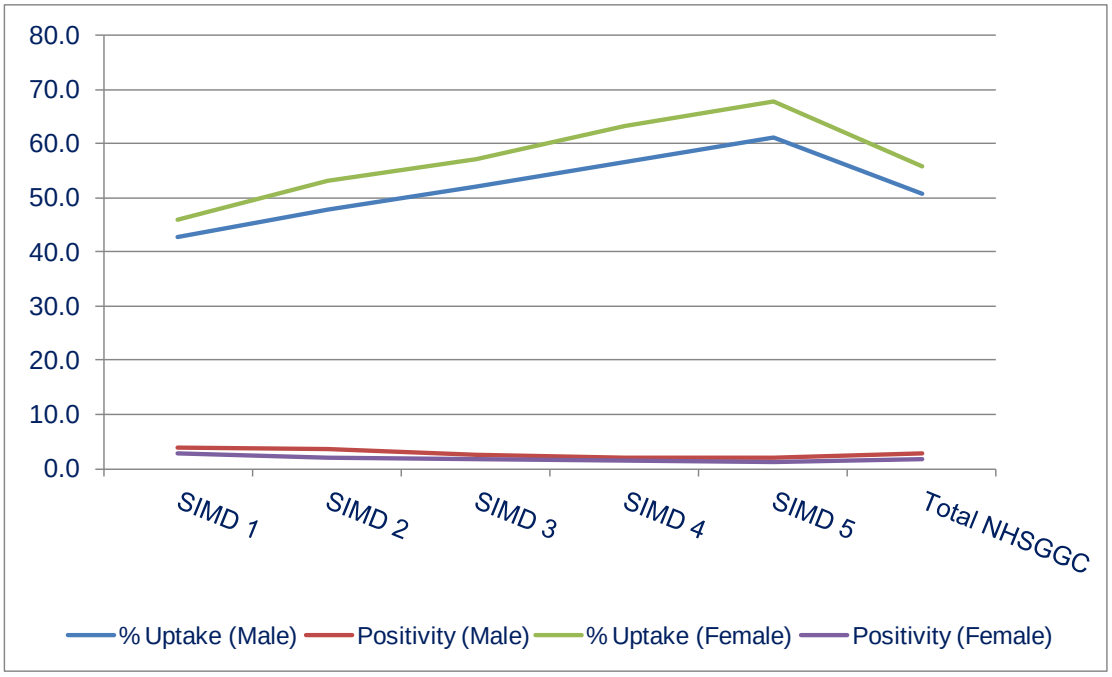
Source: Bowel Screening IT system (Data extracted August 2015)

Notes:

1 NHSGGC residents only

2 Unable to assign CHP or SIMD due to incomplete/incorrect postcode.

Figure 3.5: NHSGGC bowel screening uptake and positivity rate among male and female residents by deprivation area



Of the 4,741 patients who screened positive, 4,241 patients were pre-assessed prior to colonoscopy. 458 patients declined or did not respond to the offer of a colonoscopy pre-assessment (**Figure 3.3**).

4,241(89.5%) patients completed colonoscopy investigations by 31 March 2015. 510 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, 191 cancers were detected (**Figure 3.3**).

Of the 2,121 people with learning disability that were invited to take part in the bowel screening programme, only 33.3% (670) completed the bowel screening test (**Table 3.7**). This represented an increase of 3% from previous year's uptake of 30.3%. The increase may be attributed to the national detect cancer campaign and the local bowel screening resources and training targeted at carers of people with learning disabilities. 26 patients received positive results representing a positivity rate of 3.9%. No cancer was diagnosed following investigations (**Table 3.7**). 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 disability

	Female	Male	Total
Invited to participate	958	1163	2121
Completed Kits	319	351	670
Positive Result	12	14	26
Uptake (%)	33.3	30.2	31.6
Postiivity Rate (%)	3.8	4.0	3.9

Source: Bowel Screening IT system (Data extracted August 2015/Learning Disability LES (August 2015)

Table 3.7 shows the proportion of polyps identified at colonoscopy and the adenoma pathology diagnosis. 60.1% of men and 42.8% of women who underwent colonoscopies had polyps. Adenomas were diagnosed in 46.3% of men and 32.3% of women.

Table 3.7 Adenoma and polyp detection rate of completed colonoscopies by gender and CH(C)P

	Number of Completed Colonoscopies			% Polyps of completed colonoscopies			% Adenomas of completed colonoscopies		
CH(C)P	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
East Dunbartonshire	185	164	349	62.7	42.1	53.0	49.2	29.9	40.1
East Renfrewshire	143	109	252	55.9	40.4	49.2	44.8	29.4	38.1
Glasgow North East	337	253	590	55.8	37.5	48.0	42.1	30.0	36.9
Glasgow North West	250	200	450	60.4	44.5	53.3	46.8	38.0	42.9
Glasgow South	328	230	558	61.6	45.7	55.0	48.8	30.4	41.2
Inverclyde	160	101	261	61.3	46.5	55.6	48.8	34.7	43.3
North Lanarkshire[1]	33	22	55	57.6	22.7	43.6	39.4	18.2	30.9
Renfrewshire	292	207	499	63.0	49.3	57.3	46.2	37.2	42.5
South Lanarkshire [1]	94	83	177	54.3	44.6	49.7	40.4	36.1	38.4
West Dunbartonshire	151	112	263	64.2	36.6	52.5	50.3	25.0	39.5
Unassigned	2	1	3	0.0	100.0	33.3	0.0	100.0	33.3
Total	**1,975**	**1,482**	**3,457**	**60.1**	**42.8**	**52.7**	**46.3**	**32.3**	**40.3**

Source: Bowel Screening IT system (Data extracted August 2015)

Notes:

1 NHSGGC residents only

Morbidity and mortality from colorectal cancer

In 2013, the most recent year for which completed data is available, the number of new colorectal cancers registered in NHS Greater Glasgow and Clyde was 412 for men and 344 for females (**Table 3.8**). This gives a standardised incidence rate of 97.1and 61.5 per 100,000 populations for males and females respectively. This is higher than that for Scotland for males at 95.3 and lower for females 62.5 per 100, 000(**Tables 3.9 and 3.10**).

Figure 3.6 shows trends in the incidence of colorectal cancer registrations in males and females, for Scotland and NHSGGC. This has seen an initial rise in the incidence rate of colorectal cancers in the male population across Scotland and NHS Greater Glasgow and Clyde. The period from 2009 to date has seen a slight fall. There has been a slight decrease in 2012 in incidence within the female population across Scotland and NHS Greater Glasgow and Clyde is following the same trend.

In 2013, the number of deaths from colorectal cancer in NHS Greater Glasgow and Clyde was 203 for male population and 176 in the female population (**Table 3.9**). This gives a standardised rate of 48.5 and 28.7 respectively per 100,000 populations which is higher than the Scotland rates of 42.3 and 25.2 respectively (**Tables 3.9 and 3.10**). **Figure 3.6** shows that the rate of deaths has remained consistent since 2004/06.

Table 3.9 Colorectal cancer incidence rate for 1997 - 2012 and mortality rates for 1997 to 2013 for NHS Greater Glasgow and Clyde

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Greater Glasgow & Clyde																		
MALES																		
	Deaths																	
	Number	219	194	175	197	184	203	183	213	172	182	186	203	183	159	179	165	203
	EASR per 100,000 pop	60.8	51.3	50.1	55.8	48.2	54.4	49.9	56.5	46.7	49.3	47.57	52.24	46.27	39.2	44.36	41.8	48.5
	Lower 95% Confidence Interval	*52.3*	*43.9*	*42.3*	*47.8*	*41.1*	*46.6*	*42.4*	*48.7*	*39.5*	*41.9*	*40.5*	*44.63*	*39.39*	*33.1*	*37.83*	*35.3*	41.8
	Upper 95% Confidence Interval	*69.9*	*59.3*	*58.6*	*64.5*	*55.9*	*62.9*	*58.1*	*64.8*	*54.5*	*57.4*	*55.2*	*60.44*	*53.7*	*45.9*	*51.41*	*48.8*	55.6
	Registrations																	
	Number	400	380	367	386	392	404	407	378	384	395	394	399	453	424	488	406	412
	EASR per 100,000 pop	109.1	105.5	102.5	107.1	106.5	109.1	112.2	107.8	107.1	103.0	103.7	104.7	114.9	105.6	120.4	98.2	97.1
	Lower 95% Confidence Interval	*98.0*	*94.5*	*91.7*	*96.2*	*95.6*	*98.3*	*100.8*	*96.5*	*95.9*	*92.7*	*93.3*	*94.1*	*104.1*	*95.4*	*109.5*	88.6	87.8
	Upper 95% Confidence Interval	*120.9*	*117.2*	*114.0*	*118.6*	*118.1*	*120.5*	*124.1*	*119.8*	*118.9*	*113.9*	*114.7*	*115.9*	*126.2*	*116.3*	*131.7*	108.3	107
FEMALES																		
	Deaths																	
	Number	185	181	177	192	204	156	166	165	156	168	165	178	175	177	127	191	176
	EASR per 100,000 pop	31.6	31.1	30.4	33.0	34.6	26.2	28.7	28.4	26.7	29.2	28.2	30.6	29.8	29.5	20.9	31.9	28.7
	Lower 95% Confidence Interval	*27.2*	*26.7*	*26.1*	*28.5*	*30.0*	*22.3*	*24.5*	*24.2*	*22.6*	*24.9*	*24.1*	*26.2*	*25.5*	*25.3*	*17.4*	*27.5*	24.6
	Upper 95% Confidence Interval	*36.4*	*35.8*	*35.1*	*37.9*	*39.5*	*30.5*	*33.3*	*32.9*	*31.0*	*33.8*	*32.7*	*35.3*	*34.4*	*34.1*	*24.7*	*36.6*	33.2
	Registrations																	
	Number	340	332	357	350	397	343	327	336	336	371	336	395	386	381	378	397	344
	EASR per 100,000 pop	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	67.8	71.4	61.5
	Lower 95% Confidence Interval	*54.7*	*54.0*	*58.5*	*57.9*	*65.6*	*56.5*	*53.6*	*55.2*	*55.2*	*61.4*	*55.2*	*65.0*	*63.4*	*62.6*	*61.1*	64.5	55.1
	Upper 95% Confidence Interval	*67.8*	*67.0*	*72.0*	*71.4*	*80.0*	*69.9*	*66.7*	*68.5*	*68.4*	*75.4*	*68.4*	*79.3*	*77.5*	*76.7*	*74.9*	78.6	68.2

Notes:
Colorectal Cancer (ICD10: C18-C20)
Mortality Source: National Records of Scotland (NRS). Date extracted September 2015 Registrations Source: Scottish Cancer Registry, ISD. Date extracted: March 2015

Table 3.10 Colorectal cancer incidence rates for 1997 to 2012 and mortality rates for 1997 to 2013 for Scotland

Scotland

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
MALES																		
	Deaths																	
	Number	889	848	870	839	835	842	830	844	855	835	812	829	825	782	824	837	871
	EASR per 100,000 pop	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
	Lower 95% Confidence Interval	*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
	Upper 95% Confidence Interval	*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
	Registrations																	
	Number	1803	1785	1818	1884	1847	1817	1902	1910	1894	1890	2016	2140	2165	2219	2255	2122	2100
	EASR per 100,000 pop	108.2	105.8	108.2	108.0	106.1	102.2	107.9	105.8	102.1	100.4	105.2	108.2	107.6	107.0	107.3	99.1	95.3
	Lower 95% Confidence Interval	*103.0*	*100.6*	*103.1*	*102.9*	*101.0*	*97.3*	*102.8*	*100.9*	*97.4*	*95.8*	*100.4*	*103.5*	*102.9*	*102.4*	*102.8*	94.8	91.2
	Upper 95% Confidence Interval	*113.6*	*111.1*	*113.5*	*113.1*	*111.3*	*107.3*	*113.2*	*110.9*	*107.0*	*105.2*	*110.0*	*113.0*	*112.4*	*111.6*	*111.9*	103.4	99.6
FEMALES																		
	Deaths																	
	Number	781	791	792	757	780	713	752	706	695	715	727	736	730	719	702	784	707
	EASR per 100,000 pop	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
	Lower 95% Confidence Interval	*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
	Upper 95% Confidence Interval	*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
	Registrations																	
	Number	1,610	1,532	1,626	1,687	1,689	1,601	1,553	1,614	1,595	1632	1709	1775	1808	1823	1778	1778	1712
	EASR per 100,000 pop	61.0	58.1	61.7	64.1	64.2	60.9	59.0	61.2	60.2	61.4	63.9	66.0	67.0	67.2	65.1	65.0	62.5
	Lower 95% Confidence Interval	*58.0*	*55.2*	*58.7*	*61.1*	*61.2*	*57.9*	*56.1*	*58.2*	*57.3*	*58.5*	*60.9*	*63.0*	*63.9*	*64.1*	*62.1*	62.0	59.5
	Upper 95% Confidence Interval	*64.0*	*61.1*	*64.8*	*67.3*	*67.3*	*63.9*	*62.1*	*64.2*	*63.2*	*64.5*	*67.0*	*69.2*	*70.1*	*70.3*	*68.2*	68.1	65.5

Notes:
Colorectal Cancer (ICD10: C18-C20)
Mortality Source: National Records of Scotland (NRS). Date extracted September 2015 Registrations Source: Scottish Cancer Registry, ISD. Date extracted: March 2015

Figure 3.6 Colorectal cancer incidence and mortality rates for 1997 to 2013 for NHS Greater Glasgow and Clyde and Scotland

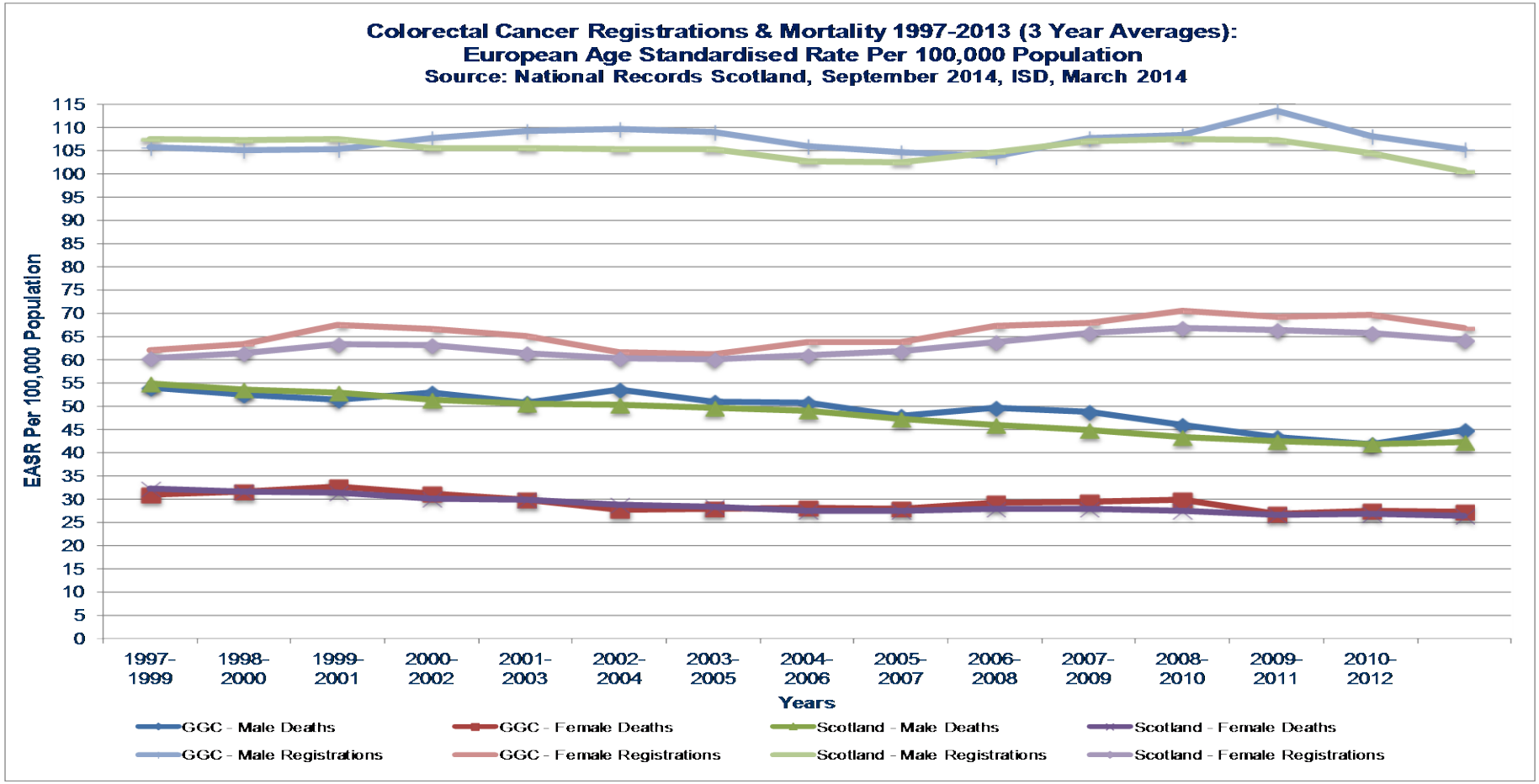


Table 3.11 shows the numbers of screened detected colorectal cancers diagnosed by Dukes staging from 1 April 2014 to 31 March 2015.

34.5% (65) of all cancers were diagnosed in the early stages. The highest proportion of cancers diagnosed was among people resident in the most and least deprived groups. These represented 56% (107) of the total number of cancers.

Table 3.11 Numbers of screened detected colorectal cancers by Dukes staging by deprivation 1 April 2014 – 31 March 2015

	(most deprived)		SIMD		(Least Deprived)		
Dukes	**1**	**2**	**3**	**4**	**5**	**Unassigned**	**Total**
A	22	8	8	13	14	0	65
B	12	6	6	5	22	0	51
C1	12	10	5	4	11	0	42
C2	1	2	0	2	1	0	6
Dukes	2	1	3	2	4	0	12
Not Appplicable	2	0	1	4	0	1	8
Not Known	3	1	1	1	1	0	6
Total	**54**	**28**	**24**	**31**	**53**	**1**	**191**

Source: Bowel Screening IT system (Data extracted August 2015)

Notes:

1 NHSGGC residents only

Table 3.12 illustrates the staging of screen detected colorectal cancers by gender and staging categories. The largest proportion of cancers were diagnosed in men at 59.3% (113). 40.8% (78) of cancers were diagnosed in women.

Table 3.12 Staging category of screen detected colorectal cancers by gender
1 April 2015 – 31 March 2015

	Dukes Staging								
Gender	**A**	**B**	**C1**	**C2**	**D**	**Not Known**	**Total**	**Polyp Cancers**	**% Polyp Cancers**
Male	42	30	21	5	6	9	113	9	8.0
Female	23	21	21	1	6	6	78	6	7.7
Total	65	51	42	6	12	15	191	15	7.9

Source: Bowel Screening IT system (Data extracted August 2015); ISD return May2015

Notes:

1 NHSGGC residents only

Research and development

There are two research and development studies associated with the colorectal cancer screening programme, studying the relationship between obesity and colorectal cancer.

The first study (Di Rollo et al) explores the relationship between BMI (Body Mass Index) and the incidence of colorectal cancer, identifying how BMI and different epidemiological features such as ethnicity, disease progression and chronic inflammation are related. The second study (Ross et al) explores evidence for an association between visceral fat distribution and colorectal cancer. It is hoped that the findings from these studies, which build on data and structures which exist within the screening programme, will enhance our understanding of risk factors, and ultimately, will improve our ability to detect and prevent colorectal cancer.

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.

Health Improvement

In 2012, Scottish Government launched a three year National Detect Cancer Early social marketing campaign to raise awareness of signs and symptoms of bowel, breast and lung cancer. The campaign also encouraged people to get checked and more recently attend for bowel screening. As reported earlier, the campaign resulted in a 3% increase bowel screening uptake among residents living in NHSGGC area.

This work was also complemented with local initiatives:

a) ***Raising awareness within communities***
   Awareness stalls within a range of community and health settings offered the opportunity to discuss benefits of bowel screening.

b) ***Learning Disabilities Resource***
   Working in partnership with Bowel Cancer UK to develop bowel health and screening resources and training for carers of learning disabilities. After the second year of the availability of the resource and training, uptake by people with learning disabilities increased a further 3% and overall by 8% since their launch.

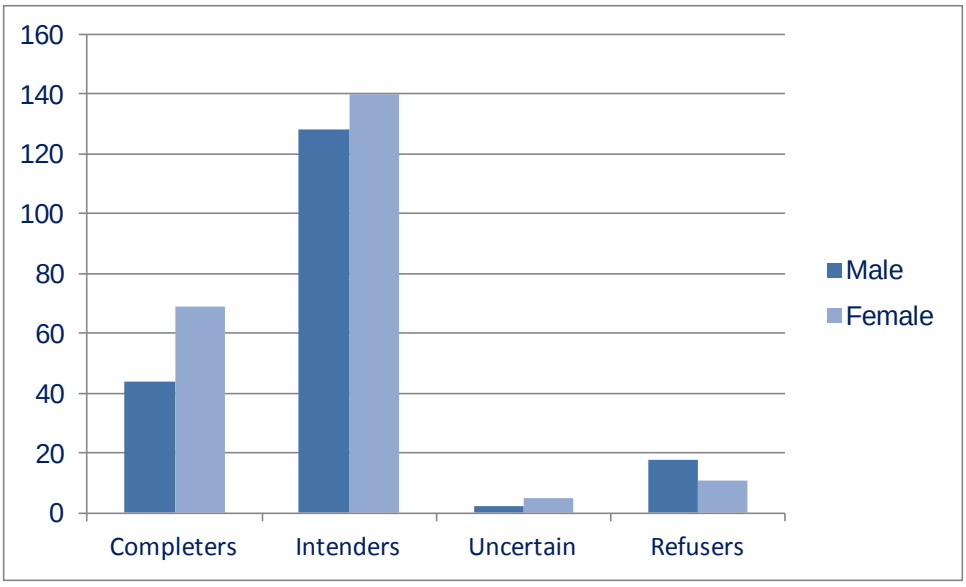
c) *Telephone engagement pilot*

NHSGGC carried out a pilot that engaged with people living in deprived areas who were due their first invitation to participate in the bowel screening programme. This involved telephoning participants around the time the screening kit arrives through the post to encourage them to complete the test. It also provided the opportunity to understand the barriers to taking part in the bowel screening programme.

Of the 417 people contacted, 192 (46%) were male and 225 (54%) were female. These groups were subsequently broken down into four segments (**Figure 3.7)**:

- Completers: people who had already completed the test (or were in the process of doing so) when the contact team spoke with them
- Intenders: people who were planning to or thinking about doing the test, including those who may have been helped in this decision as a result of the telephone contact
- Uncertain: people who, despite having a conversation with the contact team were still unsure about completing the test
- Refusers: People who refuse to do the test and who it seems have not been shifted in any way in their view by the telephone contact.

Figure 3.7: Number of NHSGGC residents contacted by gender and intention to take part in bowel screening



The largest number of people contacted fell into the Intenders category i.e. those who agreed to complete the screening as a result of being contacted, with 268 patients out of the overall 417 falling into this category.

This was an encouraging sign for the intervention, indicating a substantial group not already committed to the test who may have been responsive to the encouragement given by the contact team.

d) Reducing barriers to participation in the bowel screening programme

Primary Care Engagement Team which is a joint partnership between Cancer Research UK and NHSGGC have been working closely with general practices to identify ways to reduce barriers to participation in the bowel screening programme. This included:

- Delivering bowel screening staff awareness training
- Providing staff with bowel screening demo kits and replacement order forms
- Providing patient leaflets/screening resources
- Supporting practices to run patient awareness events (in conjunction with health improvement teams and voluntary sector partners)
- Supporting practices to audit effectiveness of engagement methods
- Supporting practices to implement new engagement methods

e) ***Targeting non responders***

Over 200 general practices took part in the national sGMS initiative to reduce the number of people who previously did not respond to the bowel screening invitation. The Primary Care Engagement Team developed an "Engaging Bowel Screening Non Responders" workbook outlining a three stage flow chart (Code/Contact/Check) for practices to implement the identified good practice.

The workbook provides practices with real time feedback on what is working for their peers, and captures the learning for sustainable service improvement. Forty practices (including some outwith NHSGGC) requested copies and/or a practice visit to discuss the workbook. The success of this workbook has been recognised beyond Glasgow with screening teams in Scotland and England requesting copies to distribute or replicate within their local area.

The sGMS contract bowel screening initiative ended in March 2015. A review of the initiative will be contained in next year's report.

Challenges and future priorities

- Continue to monitor and audit the performance of the programme
- To encourage uptake of the programme through social marketing and health improvement projects.

Appendix 3.2

Members of Bowel Screening Steering Group (As at April 2015)

Dr Emilia Crighton	Consultant in Public Health Medicine, Chair
Mr John Anderson	Consultant Surgeon
Mrs Margaret Anderson	Lead Nurse - Endoscopy
Dr Stuart Ballantyne	Lead Clinician for Radiology
Ms Claire Donaghy	Health Improvement Senior
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

- Of the 16,397 women booked to attend antenatal clinics, 13,518 (89.2%) women booked into antenatal clinics were NHSGGC residents - 74.9% (10,122) were British origin, 5.5% (747) were Pakistani and 4.3% (579) were East European.

- 78.6% (10,630) of first antenatal booking appointments were offered within 12 weeks gestational age and 8.37% (1,132) between 13 to 16 weeks gestational age.

- Only 45% (6,083) of pregnant women had a normal weight at the time of their first antenatal booking appointment. 50.6% (6,843) of pregnant women were overweight. Of the 6,438 who were overweight, 22.3%% (3,019) were obese or severely obese.

- Of the 13,518 women booked for their first antenatal screening, 97.3% (13,159) had taken up haemoglobinopathies screening.

- Uptake was greater than 99% for all four of the communicable diseases screening tests.

- Screening identified 22 women infected with HIV (18 of these were previously known), 66 women infected with hepatitis B (43 were previously known) and 7 women who had syphilis. 2,126 women (13.1% were identified as susceptible to rubella and were offered immunisation with MMR vaccine after delivery.

- 9,741 samples were tested for Down syndrome, representing an overall uptake of 72.1%. 7,391 (54.7%) samples were taken from women in their first trimester and 2,350 (17.4%) samples were taken from women in the second trimester.

- 2.1% of women were assigned to the ‘higher chance’ of Down syndrome group in first trimester screening and 3.7% of women were assigned to the 'higher chance' of Down syndrome group following second trimester screening.

- 214 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-eight abnormalities were detected (17.76% of samples) and 23 of those (10.75% of total tests) had a diagnosis of trisomy (Down Syndrome).

- 140 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2014/15. Forty-nine abnormalities were detected (35% of

tests) and 32 of those (22.9% of tests) had a diagnosis of trisomy (Down Syndrome).

- 75.4% of pregnant women had taken up congenital anomalies screening.

- Of the 10,199 fetal anomaly scans performed, 151 anomalies were detected and of that number 54 were confirmed. The outcomes for 43 screen detected anomalies are not known.

- An audit was undertaken of all live-births, stillbirths, fetal losses and terminations of pregnancy between 1 April 2014 and 31 March 2015 that were associated with one or more congenital abnormalities.

- A total of 346 cases with congenital anomalies were identified from 345 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 syndrome and other congenital anomalies screening aims to detect Down 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 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 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 syndrome and other congenital anomalies raises particular moral and ethical issues for women. Uptake of Down 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 16,397 women booked to attend antenatal clinics across NHSGGC (**Table 4.1)**. 13,518 (89.2%) women booked into antenatal clinics were NHSGGC residents.

Table 4.1 Number of women booked for their first antenatal appointments in NHSGGC 1 April 2014 to 31 March 2015

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	136	320	456	143	333	476
Princess Royal Maternity Hospital	2,061	4,619	6,680	1,862	4,156	6,018
Royal Alexandra Hospital	442	3,383	3,825	398	3,121	3,519
Southern General Hospital	535	6,515	7,050	476	5,908	6,384
Total	**3,174**	**14,837**	**18,011**	**2,879**	**13,518**	**16,397**

Source: Pregnancy & Newborn Screening System, August 2015

Of the 13,518 (89.2%) women booked into antenatal clinics were NHSGGC residents, 74.9% (10,122) were of British origin, 5.5% (747) were of Pakistan origin and 4.3% (579) were of East European orgin (**Table 4.2).**

Table 4.2: Number of NHSGGC residents booked for their first antenatal appointment by family origin during 1 April 2014 to 31 March 2015

Family Origin	Number	%
CaribbeanIslands	61	0.5
African	313	2.3
African Other	43	0.3
Indian or African Indian	263	1.9
Pakistan	747	5.5
Bangladesh	17	0.1
China Taiwan Singapore	246	1.8
Thailand Indonesia Burma	17	0.1
Malaysia Vietnam Philippines	48	0.4
Other Asian	48	0.4
North Africa South America	74	0.5
Middle East	172	1.3
Non European	47	0.3
Sardinia	2	0.0
Greece Turkey Cyprus	48	0.4
ItalyPortugalSpain	85	0.6
Other Mediterranean country	8	0.1
Albania Czech Republic Poland	579	4.3
England Scotland Nireland Wales	10,122	74.9
Austria Belgium Ireland	115	0.9
Scandinavia Switzerland	16	0.1
Any other European	67	0.5
Not Recorded	121	0.9
Not Recorded (Declined)	19	0.1
Not Recorded (NotAsked)	219	1.6
Not Sickle Cell Known Carrier	21	0.2
Total	13,518	

Source: Pregnancy & Newborn Screening

NHSGGC residents only

Table 4.3 shows that 78.6% (10,630) of first antenatal booking appointments were offered within 12 weeks gestational age and 8.37% (1,132) between 13 to 16 weeks gestational age.

Table 4.3 Gestational age at first antenatal booking appointment by maternity unit for period 1 April 2014 to 31 March 2015

Maternity Unit	Not Recorded	<=12Wks 6Days	13Wks 0Days - 16Wks 6Days	17Wks 0Days - 20Wks 6Days	21Wks 0Days - 24Wks 6Days	25Wks 0Days - 30Wks 6Days	>=31Wks 0Days	Total	% <=12Wks 6Dys
Not assigned to a unit	85	179	30	14	7	7	11	333	*53.8*
Princess Royal Maternity Hospital	364	3,141	497	74	34	20	26	4,156	*75.6*
Royal Alexandra Hospital	311	2,577	136	36	22	22	17	3,121	*82.6*
Southern General Hospital	492	4,733	469	113	53	21	27	5,908	*80.1*
Total	1,252	10,630	1,132	237	116	70	81	13,518	*78.6*

Source: Pregnancy & Newborn Screening System, August 2015

Only 45% (6,083) of pregnant women had a normal weight at the time of their first antenatal booking appointment. 50.6% (6,843) of pregnant women were overweight. Of the 6,438 who were overweight, 22.3%% (3,019) 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 2013 to 31 March 2014

Maternity Unit	Princess Royal Maternity Hospital		Royal Alexandra Hospital		Southern General Hospital		Not assigned to a unit		Total	
	N	%	N	%	N	%	N	%	N	%
BMI not recorded	**114**	**2.7%**	**20**	**0.6%**	**78**	**1.3%**	**20**	**6.0%**	**232**	**1.7%**
Underweight BMI<18.5	**98**	**2.4%**	**67**	**2.1%**	**189**	**3.2%**	**6**	**1.8%**	**360**	**2.7%**
Normal 18.5<=BMI<25	**1,790**	**43.1%**	**1,321**	**42.3%**	**2,835**	**48.0%**	**137**	**41.1%**	**6,083**	**45.0%**
Overweight 25<=BMI<30	1,161	27.9%	898	28.8%	1,663	28.1%	102	30.6%	3,824	28.3%
Obese 30<=BMI<35	573	13.8%	475	15.2%	736	12.5%	46	13.8%	1,830	13.5%
Severely Obese 35<=BMI<40	274	6.6%	239	7.7%	269	4.6%	15	4.5%	797	5.9%
Severely Obese 40<=BMI<45	102	2.5%	69	2.2%	105	1.8%	6	1.8%	282	2.1%
Severely Obese BMI>=45	44	1.1%	32	1.0%	33	0.6%	1	0.3%	110	0.8%
Overweight - Severely obese (25<=BMI>=40)	**2,154**	51.8%	**1,713**	54.9%	**2,806**	47.5%	**170**	51.1%	**6,843**	50.6%
Total[1]	**4,156**		**3,121**		**5,908**		**333**		**13,518**	

Source: Pregnancy & Newborn Screening System, August 2015

Note:

1. NHSGGC residents only

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 13,518 women booked for their first antenatal screening, 97.3% (13,159) 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 2014/15.

Table 4.5 NHSGGC haemoglobinopathies screening activity for the period 1 April 2014 to 31 March 2015

Maternity Unit	Bookers	Consent	FOQ Completed	% Uptake
Not assigned to a unit	333	298	295	88.6
Princess Royal Maternity Hospital	4,156	4,055	3,991	96.0
Royal Alexandra Hospital	3,121	3,096	3,086	98.9
Southern General Hospital	5,908	5,825	5,787	98.0
Total	**13,518**	**13,274**	**13,159**	**97.3**

Source: Pregnancy & Newborn Screening System, August 2015

NHSGGC Communicable Diseases in Pregnancy Screening Programme

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

1st April 2014 - 31st March 2015					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	16,224	16,161	63	99.6	22	0.1	16,139	99.9
HBV	16,224	16,191	33	99.8	66	0.4	16,125	99.6
Rubella	16,224	16,213	11	99.9	14,087	86.9	2,126	13.1
Syphilis	16,224	16,193	31	99.8	7	0.04	16,186	99.96

Sources: West of Scotland Specialist Virology Centre; NHSGGC Microbiology Laboratories (Clyde)

Notes:

1. 18 of the 22 HIV infections were previously known about
2. 43 of the 66 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

NHSGGC Down syndrome and other congenital anomalies screening programme

Table 4.7 shows that 9,741 samples were tested for Down syndrome, representing an overall uptake of 72.1%. 7,391 (54.7%) samples were taken from women in their first trimester and 2,350 (17.4%) samples were taken from women in the second trimester.

Table 4.7 Uptake rate of Down Syndrome tests, and type of screening test for the period 2014/2015

Number of Bookers	1st trimester		2nd trimester		Total number samples	Overall uptake
13,518	7,391	54.7%	2,350	17.4%	9,741	**72.1%**

Source: West of Scotland Prenatal Screening Laboratory, November 2015

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

Among pregnant women who had first trimester Down syndrome screening, 2.1% of women were assigned to the 'higher chance' of Down syndrome group.

Following the second trimester Down syndrome screening, 3.7% of women were assigned to the 'higher chance' of Down 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	155	2.1%
2nd Trimester	88	3.7%

Source: West of Scotland Prenatal Screening Service

NHS Quality Improvement Scotland Standards: Pregnancy and Newborn Screening 2005, recommends that less than 5-7% screening tests for Down Syndrome should be assessed as higher chance. Therefore, laboratory based screening in NHS Greater Glasgow and Clyde does achieve these standards.

75.4% 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 2014 to 1 April 2015

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	333	279	83.8	180	64.52	54.1
Princess Royal Maternity Hospita;	4,156	4,067	97.9	3,002	73.81	72.2
Royal Alexandra Hospital	3,121	3,020	96.8	2,505	82.95	80.3
Southern General Hospital	5,908	5,767	97.6	4,512	78.24	76.4
Total	**13,518**	**13,133**	**97.2**	**10,199**	**77.66**	**75.4**

Source: Pregnancy & Newborn Screening System, August 2015

Of the 10,199 fetal anomaly scans performed, 151 anomalies were detected and of that number 54 were confirmed postnatally. The outcomes for 43 anomalies are not known (**Table 4.10**).

Table 4.10 Outcome of fetal anomaly scans performed for the period 1 April 2014 to 31 March 2015

Maternity Unit	Fetal anomaly scan performed	Fetal anomaly detected	% Fetal anomaly detected	Anomaly confirmed	No anomaly detected postnatally	Outcome not known
Not assigned to a unit	180	5	2.8	3	2	0
Princess Royal Maternity Hospital	3,002	30	1.0	10	7	13
Royal Alexandra Hospital	2,505	56	2.2	16	29	11
Southern General Hospital	4,512	60	1.3	25	14	19
Total	**10,199**	**151**	**1.5**	**54**	**52**	**43**

Source: Congenital Anomalies Surveillance Tool, Pregnancy & Newborn Screening System, August 2015

Table 4.11 shows that 214 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-eight abnormalities were detected (17.76% of samples) and 23 of those (10.75% of total tests) had a diagnosis of trisomy (Down Syndrome).

Table 4.12 Cytogenetics analysis of amniocentesis samples by indication type for the period 1 April 2014 - 31 March 2015

	Biochemical Screening	Maternal Age	Abnormalities on Scan	Other	Total
Number of women (= number of tests)	97	16	60	41	214
% total referral reasons	45.3%	7.5%	28.0%	19.2%	100%
Number with normal results	91	16	34	35	176
Number with diagnostic trisomy	5	0	16	2	23
% number with diagnostic trisomy	5.15%	0.00%	26.67%	4.88%	10.75%
Number of other non trisomy abnormalities	1	0	10	4	15
Total number of abnormalities	**6**	**0**	**26**	**6**	38
% total number of abnormalities	**6.19%**	**0.00%**	**43.33%**	**14.63%**	**17.76%**

Source: Cytogenetics Laboratory

Table 4.13 shows that 140 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2014/15. Forty-nine abnormalities were detected (35% of tests) and 32 of those (22.9% of tests) had a diagnosis of trisomy (Down Syndrome).

Table 4.13 Cytogenetics analysis outcomes of chorionic Villus Biopsy samples by indication for the period 1 April 2013 to 31 March 2014

	Referral Type				
	Biochemical Screening	Maternal Age	Abnormalities on Scan	Other	Total
Number of women (= number of tests)	28	4	76	32	140
% total referral reasons	**20.0%**	**2.9%**	**54.3%**	**22.9%**	**100.0%**
Number with normal results	19	4	46	22	91
Number with diagnostic trisomy	8	0	23	1	32
% total with diagnostic trisomy	28.6%	0.0%	30.3%	3.1%	22.9%
Number of other non trisomy abnormalities	1	0	7	9	17
Total number of abnormalities	**9**	**0**	**30**	**10**	49
% total number of abnormalities	**32.14%**	**0.00%**	**39.47%**	**31.25%**	**35.00%**

source: Cytogenetics Laboratory

Audit of Congenital Anomalies

An audit was undertaken of all live-births, stillbirths, fetal losses and terminations of pregnancy between 1 April 2014 and 31 March 2015 that were associated with one or more congenital abnormalities (Robins, 2015).

The congenital anomaly data used to compile the report were collected from a number of different sources. The report is merely a 'snapshot' taken from the database held within Public Health Screening on 28 August 2015. The data set is evolving and constantly updated as further abnormalities are recognised within this birth cohort.

An essential aspect of the congenital anomalies surveillance programme is the precise and accurate coding of the recorded malformation. The ICD 10 system is considered to be the international standard diagnostic classification system for all general epidemiological purposes. However, ICD 10 lacks specificity for coding some congenital abnormalities and most genetic syndromes. The Royal College of Paediatrics & Child Health (RCPCH - formerly the British Paediatric Association), developed an adaptation of the ICD 10 system by adding an extra digit to the code in order to allow more detailed coding. These extensions are used where they exist in order to improve data quality.

Case based review

A total of 346 cases were identified from 345 pregnancies.[1] This is slightly more than the data reported for 2013-2014 but similar to the numbers described in 2012-2013. The case rate is calculated at 260/10,000 live and stillbirths.[2] 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.

The majority of cases were live births, (n= 249, 72%). There were 7 stillbirth and 2 fetal losses. Termination of pregnancy following prenatal diagnosis of abnormality accounted for 88 cases (25%), (**Figure 4.1**).

Overall a total of 551 abnormalities were classified in these 346 cases using the ICD 10 system, the primary abnormality and a variable number of associated abnormalities (**Figure 4.2**).

[1] One set of twins, each co-twin exhibiting an abnormality.
[2] This is calculated from the number of live and stillbirths for residents of NHS GG&C from 1 April 2014 to 31 March 2015, total 13,295.

In 236 (68.2%) cases only one abnormality is listed. However in the remaining 110 cases, (31.8%), two or more abnormalities are classified. Generally accepted figures from WHO and other organizations suggest that approximately 75% of fetuses will have just one anomaly.
It is uncertain as to why the collected figures in this report suggest a higher incidence of associated abnormality.

It could represent a 'thorough' diagnostic assessment but may simply be due to the process of active data collection from multiple sources as well as the inclusion of what may be considered by some as more 'minor' abnormalities.

Figure 4.1: Pregnancy outcome, (n=346)

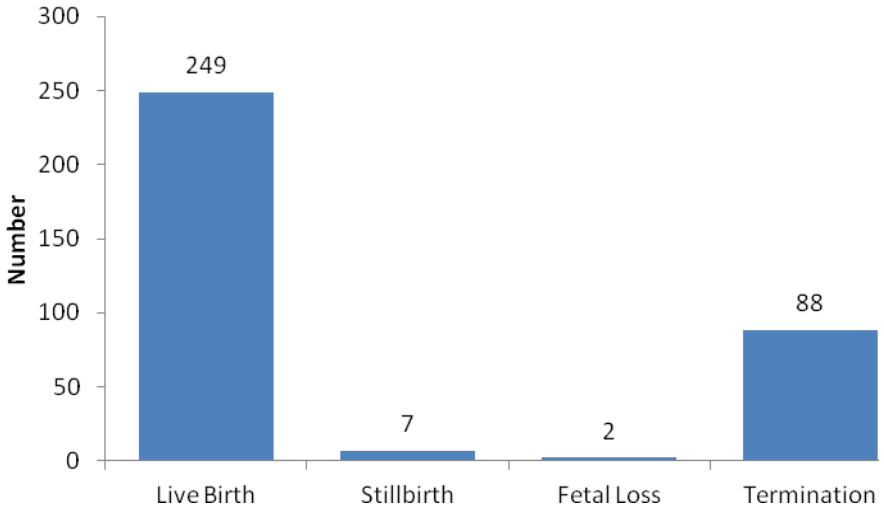
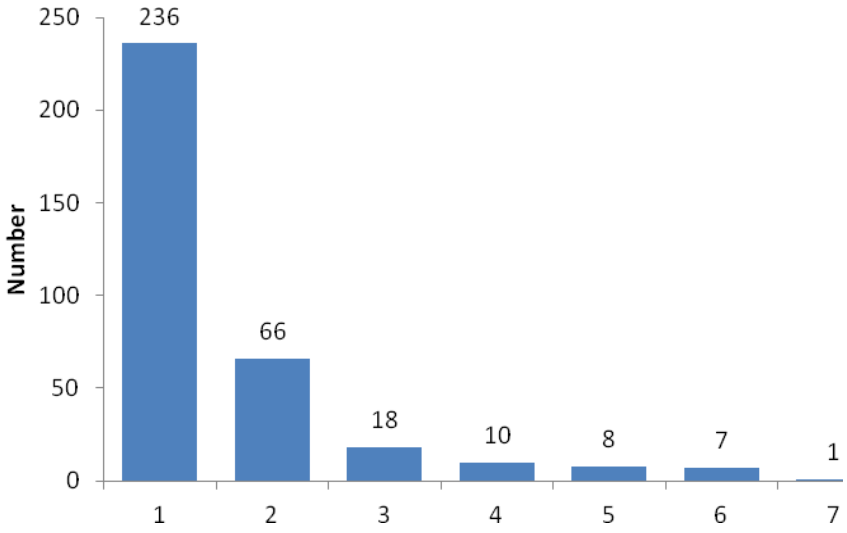


Figure 4.2: Abnormalities per case, (n=346)



The basic data set is summarised as a table listed by Congenital Malformation Category as coded under ICD 10 (Table 4.12).

Table 4.14: Classification according to primary abnormality, (ICD1 10), (n=346)

Congenital Malformation Category	Icd 10 Code	Total	Rate[3]
Spina Bifida	Q05	12	9.0
Other Neural Tube Defects	Q00-Q01	8	6.0
Other Central Nervous System	Q02-Q04; Q06-Q07	13	9.8
Eye, Ear, Face & Neck	Q10-Q18	3	2.3
Heart/Circulatory System	Q20-Q28	26	19.6
Respiratory System	Q30-Q34	9	6.8
Cleft Lip & Cleft Palate	Q35-Q37	16	12.0
Other Digestive	Q38-Q45	16	12.0
Genital Organs	Q50-Q56	12	9.0
Urinary System	Q60-Q64	30	22.6
Congenital Deformities Of Hip	Q65	14	10.5
Congenital Deformities Of Feet	Q66	20	15.0
Limb Reduction Defects	Q71-Q73	4	3.0
Exomphalos	Q792	1	0.8
Gastroschisis	Q793	7	5.3
Other Limb & Musculoskeletal System	Q67-Q70; Q74-Q791; Q794-Q799	28	21.1
Other Anomalies	Q80-Q89	24	18.1
Downs syndrome	Q90	36	27.1
Other Chromosomal	Q91-Q99	23	17.3
Congenital Neoplasms	C00-D48	8	6.0
Blood, Blood-Forming Organs & Immune	D50-D89	3	2.3
Congenital Hypothyroidism	E03	6	4.5
PKU	E700-E701	3	2.3
Cystic Fibrosis	E84	5	3.8
Other Endocrine, Nutritional & Metabolic	E16-E90 (Excld. E700-E701 & E84)	6	4.5
Nervous System	G11-G71	4	3.0
Blindness, Deafness	H50-H919	1	0.8
Other Circulatory	I40-I82	0	0.0
Dentofacial Anomalies	K070-K071	0	0.0
Congenital Infection	P230-P378	8	6.0
Total Anomalies		**346**	**260.2**

[3] Rate per 10,000 live and stillbirths. The surveillance tool used to compile the data within this report is restricted to mothers' resident within the geographically defined area of NHSGGC at time of delivery. The denominator for the prevalence data is therefore the total live births and stillbirths for that area from 1 April 2014 to 31st March 2015: total 13,295. Source: Child Health Universe Extract run 28 August 2015.

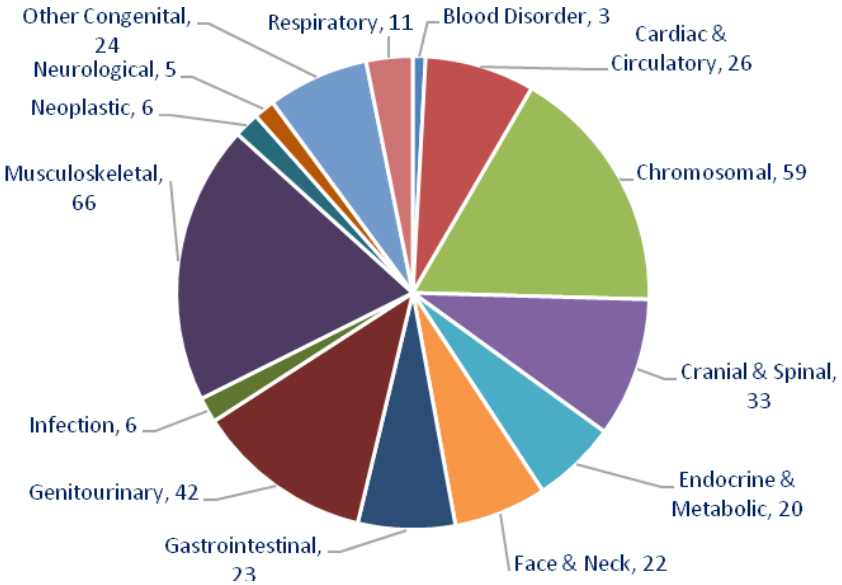
However, it is easier to consider this data if some of these categories are grouped together. Therefore, abnormalities of the musculoskeletal system, comprising 'Congenital Deformities of Hip', 'Congenital Deformities of Feet', 'Limb Reduction Defects' and 'Other Limb & Musculoskeletal System', are the commonest primary classification (n=66, 19%).

Chromosomal abnormality, ('Down Syndrome' and 'Other Chromosomal Disorders), is the next largest grouping (n=59, 17%), with primary abnormalities of the genitourinary system, ('Genital Organs' and 'Urinary System'), accounting for 42 of the cases.

Cranial & spinal abnormalities, ('Spina Bifida', 'Other Neural Tube Defects' and 'Other Central Nervous System), is the preferred primary classification in 33 (9.5%). Cardiac and circulatory disorders, 'Heart/Circulatory System' and 'Other Circulatory', account for 26 of the primary abnormalities (7.5%).

An aggregated and simplified chart based on primary abnormality is presented in **Figure 4.3**.

Figure 4.3: Simplified classification by primary abnormality, (n=346)



Abnormality Based Review

The data are a little more complex when all 551 abnormalities, as defined under ICD 10, are considered (**Table 4.15**).

Abnormalities of the musculoskeletal system, comprising 'Congenital Deformities of Hip', 'Congenital Deformities of Feet', 'Limb Reduction Defects' and 'Other Limb & Musculoskeletal System', remain the largest grouping (n=107, 19.4%). Thereafter cardiac & circulatory abnormalities form the second most common grouping (n=75, 13.6%).

Table 4.15: Anomalies in any diagnostic position by ICD 10 grouping, (non-exclusive), (n=551)

Congenital Malformation Category	ICD 10 Code	Total	Rate
Spina Bifida	Q05	12	9.0
Other Neural Tube Defects	Q00-Q01	8	6.0
Other Central Nervous System	Q02-Q04; Q06-Q07	40	30.1
Eye, Ear, Face & Neck	Q10-Q18	10	7.5
Heart/Circulatory System	Q20-Q28	74	55.7
Respiratory System	Q30-Q34	13	9.8
Cleft Lip & Cleft Palate	Q35-Q37	23	17.3
Other Digestive	Q38-Q45	27	20.3
Genital Organs	Q50-Q56	23	17.3
Urinary System	Q60-Q64	46	34.6
Congenital Deformities Of Hip	Q65	14	10.5
Congenital Deformities Of Feet	Q66	24	18.1
Limb Reduction Defects	Q71-Q73	15	11.3
Exomphalos	Q792	5	3.8
Gastroschisis	Q793	7	5.3
Other Limb & Musculoskeletal System	Q67-Q70; Q74-Q791; Q794-Q799	54	40.6
Other Anomalies	Q80-Q89	28	21.1
Downs syndrome	Q90	36	27.1
Other Chromosomal	Q91-Q99	28	21.1
Congenital Neoplasms	C00-D48	16	12.0
Blood, Blood-Forming Organs & Immune	D50-D89	3	2.3
Congenital Hypothyroidism	E03	6	4.5
PKU	E700-E701	3	2.3
Cystic Fibrosis	E84	5	3.8
Other Endocrine, Nutritional & Metabolic	E16-E90 (Excld. E700-E701 & E84)	7	5.3
Nervous System	G11-G71	5	3.8
Blindness, Deafness	H50-H919	2	1.5
Other Circulatory	I40-I82	1	0.8
Dentofacial Anomalies	K070-K071	8	6.0
Congenital Infection	P230-P378	8	6.0
Total Anomalies		**551**	**414.4**

The single most commonly defined, (coded), abnormality was trisomy 21, (Down syndrome), which was listed on 36 occasions. The next most common abnormality was talipes equinovarus, (n=24), followed by VSD, hypospadias and developmental dysplasia of the hip (n= 16, 15 and 14 respectively).

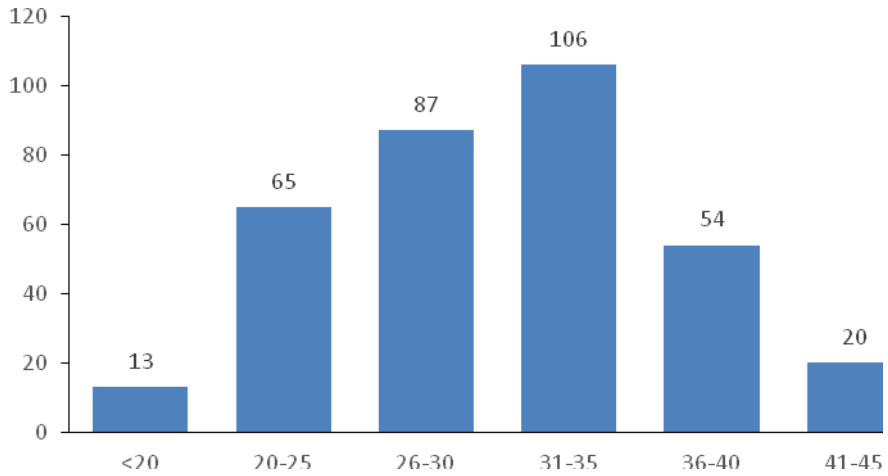
Maternal Age

Overall 345 pregnancies accounted for the 346 classified cases of abnormality.[4] Maternal age at time of delivery, miscarriage or termination ranged from 16 to 44 years, (**Figure 4.4**). The mean age was 30.5 years.

[4] One mother delivered twins where each co-twin had a significant abnormality.

Although maternal age is recorded in the register, no information is held on the father.

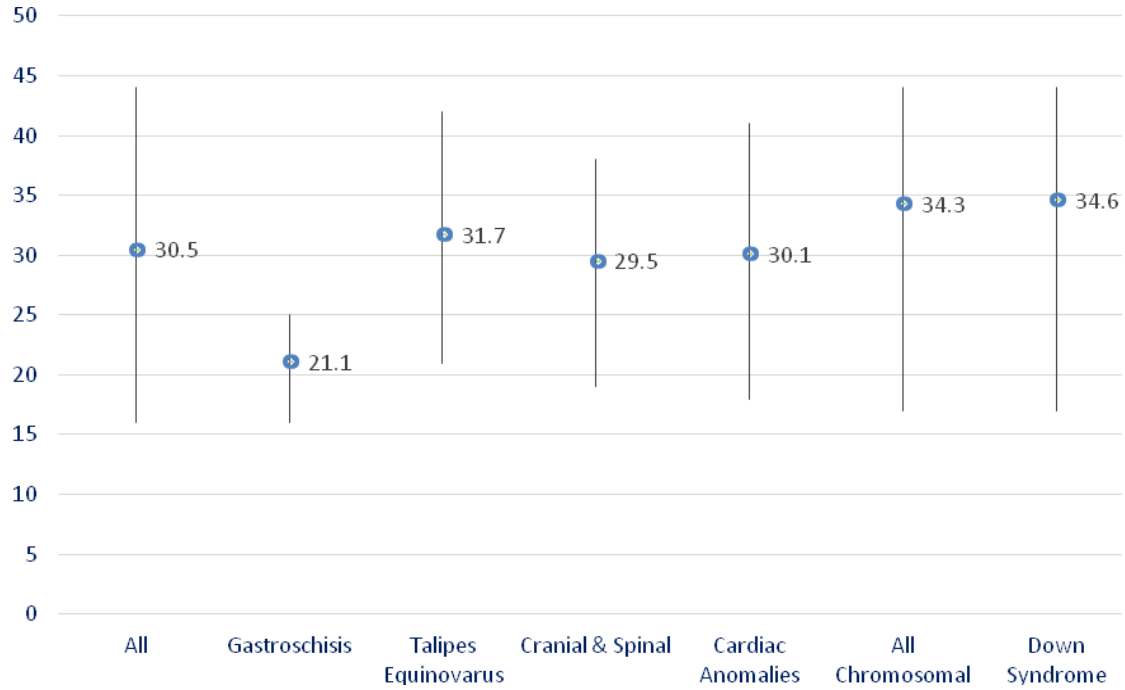
Figure 4.4: Maternal age at delivery or loss, (n=345)



Data from WHO, EUROCAT, BINOCAR and other surveillance programmes suggest that mothers under the age of 20 years have the highest prevalence of non-chromosomal anomalies when compared with older mothers, whereas the birth prevalence of chromosomal anomalies increases with age.

A very cursory analysis of the data, (**Figure 4.5**), suggests some age related trends. It is difficult to draw too many conclusions from such a small data set but clearly gastroschisis is particularly associated with younger mothers.

Figure 4.5: Mean and range of maternal age (years) at time of delivery or loss by primary abnormality or abnormality group



Gender

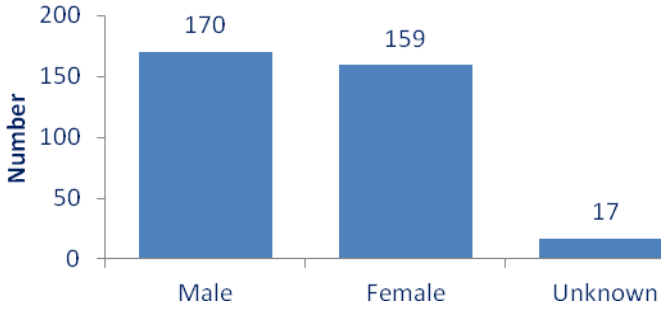
It has been long recognized that overall males are at greater risk than females but gender differences in the prevalence of specific birth defects are common e.g. developmental dysplasia of the hip is much more common in female infants.

Gender is recorded for 329 cases. Congenital abnormality was slightly more prevalent in males than females. In 17 cases gender is recorded as 'unknown' (**Figure 4.6**).

All but two of the major categories of birth defect, abnormalities of the Cranial & Spinal and Endocrine systems, had a higher prevalence amongst males. Even so congenital hypothyroidism was more common in female infants.

The mean gestation at delivery for the unknown group was 15.47 weeks, (range 10-21 weeks). The majority were terminations of pregnancy (n=16), with one spontaneous fetal loss. In all but one case a prenatal diagnosis of abnormality had been made. One pregnancy accounts for two cases of unknown fetal gender.

Figure 4.6: Fetal and infant gender, (n=346)



Multiple pregnancy

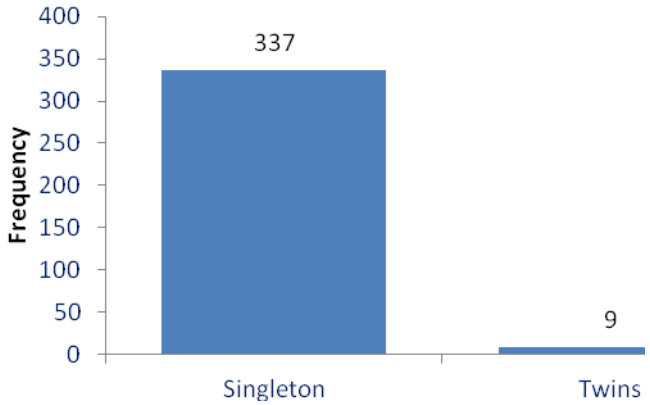
There were 180 twin pregnancies resulting in either live-birth or stillbirth in NHSGGC during 2014-2015. This is lower than 2013–2014 and reflects boundary changes occurring in 2014. Three hundred and fifty-eight babies were live born with two stillbirths: two pregnancies resulted in the birth of both live born and stillborn co-twins.

The incidence of congenital anomalies in twin pregnancies is generally higher than in singletons. All anomalies that occur in singletons can also occur in dizygotic twins. There are specific anomalies that occur with monozygotic twins. These fall into two main groups: asymmetrical free twins and conjoined twins, (Schwalbe).

Nine cases are recorded from twin pregnancies (**Figure 4.7**).

Figure 4.7: Cases with a defined primary abnormality by fetal number

*346 cases but 345 pregnancies



One case of diastematomyelia with tethered cord was diagnosed at birth in a female first twin delivered at term. Her co-twin showed no evidence of abnormality.

Cardiac abnormalities were seen in two male second twins without abnormality of their co-twins. In one of these cases tetralogy of Fallot had been diagnosed prenatally at the routine 20 week anomaly scan. The pregnancy continued to 36 weeks. An AVSD, without associated abnormality, was diagnosed between one and 12 months in the other case.

Q062 Diastematomyelia & Tethered Cord No abnormality of co-twin

Q212	Avsd	No abnormality of co-twin
Q213	Tetralogy Of Fallot	No abnormality of co-twin
Q914	Trisomy 13	Stillbirth; No abnormality of co-twin

Selective reductions were performed in three cases. One of these, relates to the acardiac twin described below. In the other cases selective reduction was performed at 21 weeks gestation for multiple limb abnormalities, (bilateral absence of forearms associated with abnormalities of the lower limbs), and at 16 weeks for a second twin diagnosed with trisomy 18 at 13 weeks gestation. In both of these cases there was no abnormality of the co-twin and the pregnancies progressed to live birth of the remaining twin.

Q712	Absent Forearm - Bilat	Selective Reduction; No Abnormality Of Co-Twin
Q898	Acardiac Twin Sequence	}Twin 1 Acardiac Twin
Q899	Congenital Anoms Nos	}Twin 2 Pump-Twin
Q910	Trisomy 18	Selective Reduction; No Abnormality Of Co-Twin

Conjoined twins, (Q894)

Symmetrical conjoined twins are complete same sex twins joined at certain body sites. Conjoined twins occur in 1:50,000 births. The most common type is thoracophagus. Ultrasound diagnosis is based on a lack of separation, synchronicity of movement, and shared body organs. Prognosis depends on the extent of fusion.

Q894	Conjoined Twins	Only one diagnosis/form for conjoined twin

In the above case termination of pregnancy was performed following early ultrasound diagnosis at nine weeks gestation.

Acardiac Twin Sequence/TRAP Sequence, (Q898)[5]

Often considered to be the most severe form of early twin-to-twin transfusion syndrome. Acardius is anatomically misleading term in that the majority of supposedly acardiac foetuses have at least a rudimentary, although non-functioning, heart. Ultrasound diagnosis is based on the detection of a second twin with absent or rudimentary heart, the detection of reversed arterial perfusion and signs of cardiac failure in the pump twin.

Q898	Acardiac Twin Sequence	}Twin 1 Acardiac twin
Q899	Congenital Anoms Nos	}Twin 2 Pump-twin

Selective reduction of the acardiac twin was performed at 15 weeks gestation. The co-twin, (pump-twin), was subsequently terminated some 2 weeks later when a ‘number of potentially significant abnormalities’, (unfortunately not

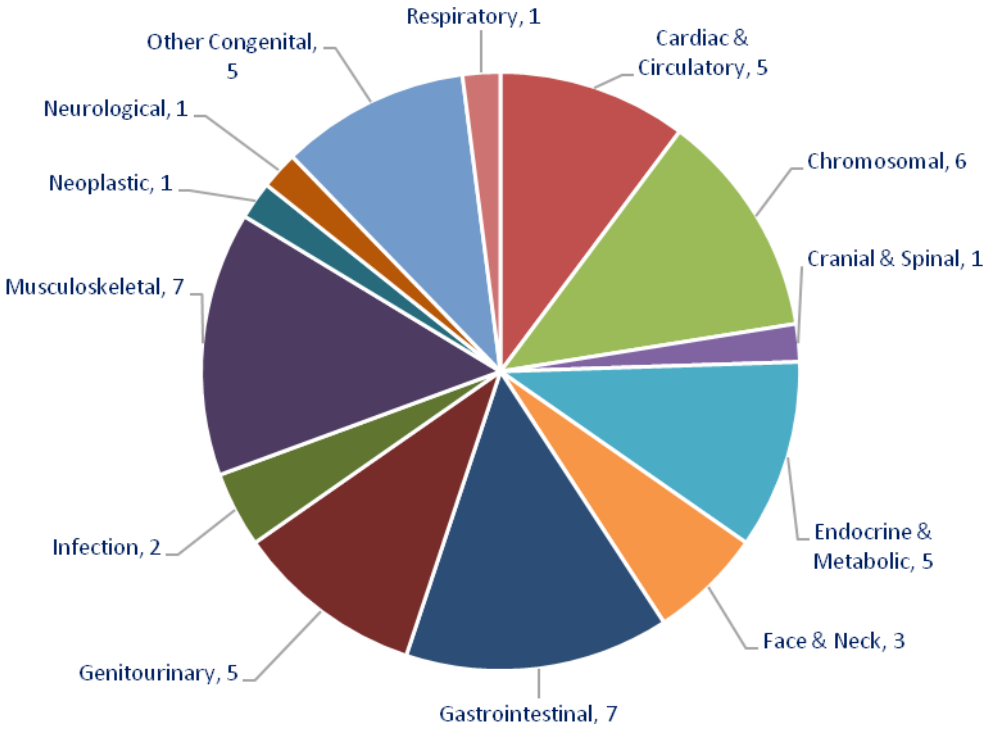
[5] The coding of TRAP sequence should really include P023 ‘TRAP sequence’ as the primary malformation with Q249 ‘Acardia’ and Q000 ‘Anencephaly’ as an essential minimum. Other common malformations such as absent upper limbs, rudimentary alimentary tract etc. should also be coded. The database has now been updated accordingly.

specified), were identified.

Gestational Age

The frequency of some congenital anomalies varies according to gestational age at delivery. For example, preterm infants have a higher frequency of PDA and undescended testes than term infants, but these conditions are considered physiologically normal amongst preterm infants if they resolve within a short period of time, (and are therefore not routinely classified as abnormalities).

Figure 4.8: Preterm Live births by Primary Abnormality Category, (Simplified), (n=49)



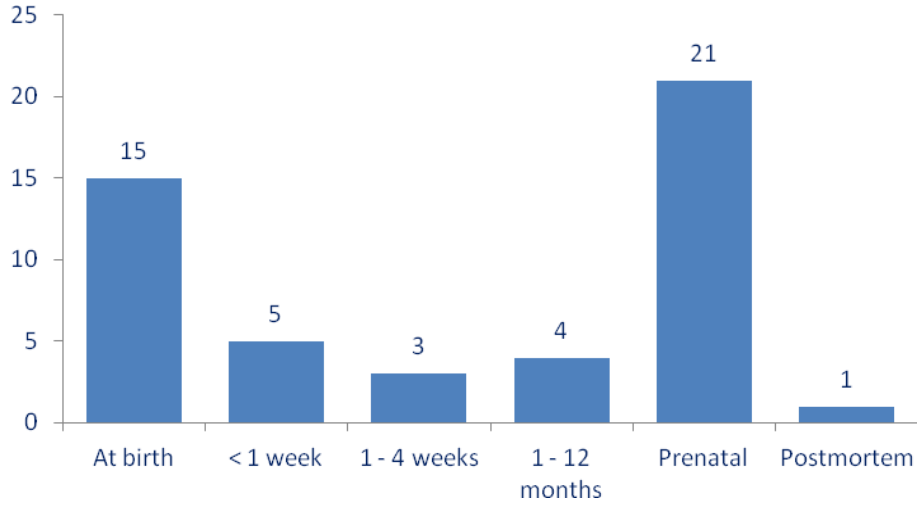
The mean gestation at delivery for live born infants with abnormality, (n=249), was 38 weeks (range 23 to 43 weeks). Forty-nine of these infants were delivered prematurely (< 37 weeks gestation), (**Figure 4.8**). There were two sets of twins. The mean maternal age at time of preterm live birth of an infant with abnormality was 29.1 years (range 16 – 41 years).

Forty percent of live born babies with a chromosomal abnormality are delivered prematurely and it is perhaps not surprising that an identical figure is seen for infants with a congenital infection. However, it is interesting that 25% of infants with a primary abnormality of the endocrine & metabolic system deliver before 37 weeks gestation.

Of those babies delivered prematurely a prenatal diagnosis of abnormality had been made in 21 cases (43%), (**Figure 4.9**).

A diagnosis of primary abnormality was made either at birth or within the first week of life in a further 41%, (n=20). A female infant live born at 35 weeks gestation was found to have polycystic kidneys on post-mortem.

Figure 4.9: Point of diagnosis of primary abnormality for infants delivered prior to 37 weeks gestation, (n=49)



Four babies with significant abnormality were delivered prior to 29 weeks gestation. All were singleton pregnancies.

Q373	Cleft Lip (L) Incomplete & Cleft Palate (Soft)	
Q900	Trisomy 21	AVSD; Exomphalos
D180	Multiple Haemangioma Scalp/Neck/Trunk/Limbs	
Q793	Gastroschisis	

Full details of the audit results are 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.

Health Improvement

Universal pathways for obese pregnant women to Live Active / Specialist Dietician / Physiotherapist is underway in the Clyde area in line with the Diabetes in pregnancy prevention and early intervention plan. 42 Clyde maternity staff trained and the remaining 50 are expected to be trained in the next few months. Identification of obese antenatal women expected to start in June and those for the post natal intervention to be identified in May-June 2014.

To support health improvement interventions, a series of bookmarks have been produced. The key messages on the bookmarks link Health Improvement messages with Ready Steady Baby. This will allow midwives to direct women to the relevant pages for specific topics. The topics include Physical Activity, Alcohol, Healthy Eating, Smoking, Healthy Weight, Emotional Wellbeing, and Money Worries.

A directory of local health and wellbeing services has also been developed to support midwives to signpost and refer pregnant women to local services. The prompts and key messages within the directory are tailored for pregnant women.

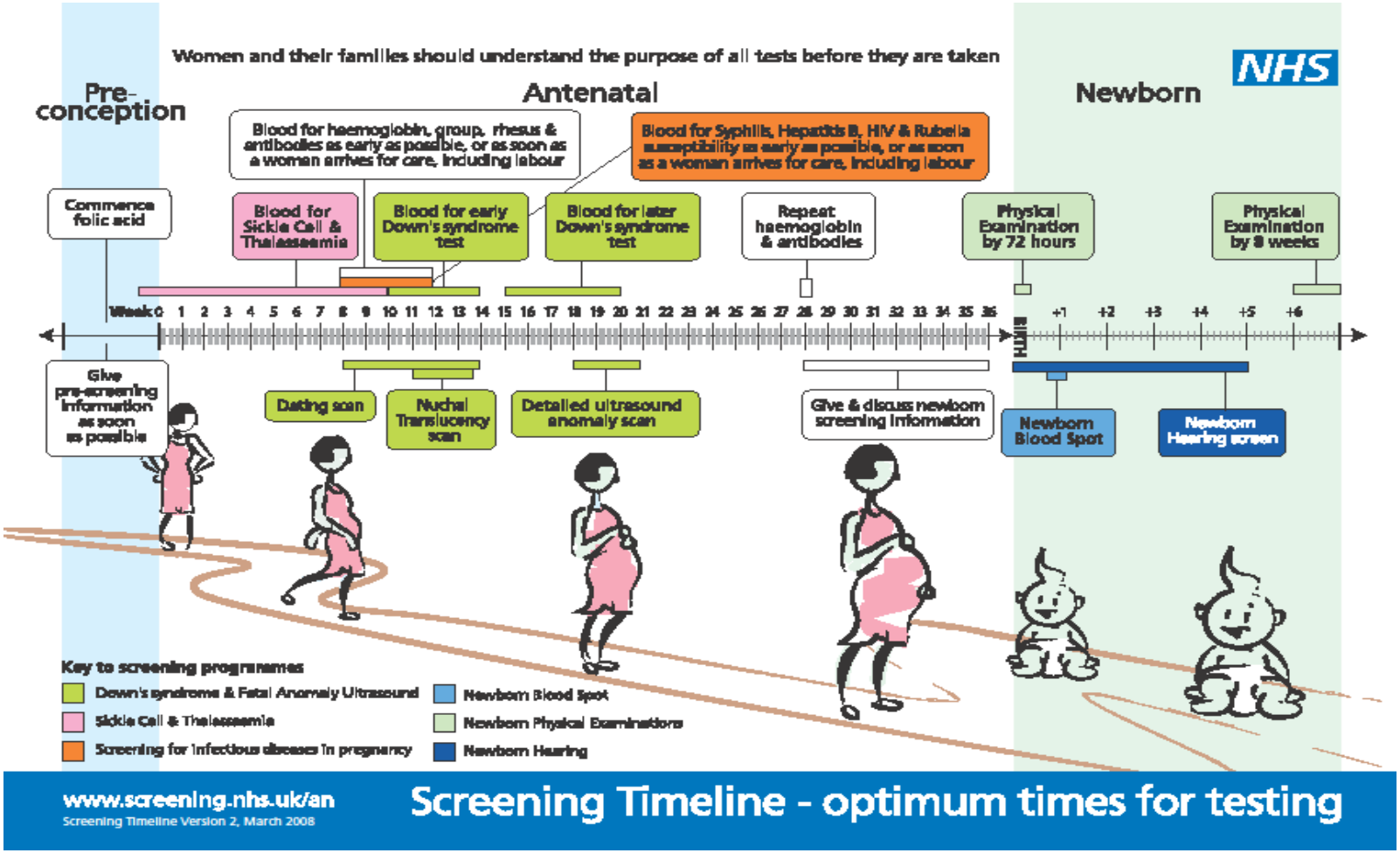
PNBS developments

Breastfeeding questions to gather data on previous infant feeding history, feeding at birth, at discharge from hospital and handover to Health Visitors are on PNBS but completion rates have been low, therefore meaningful and accurate reports cannot be produced. Maternity services have been updated and staff will be supported to complete the screens.

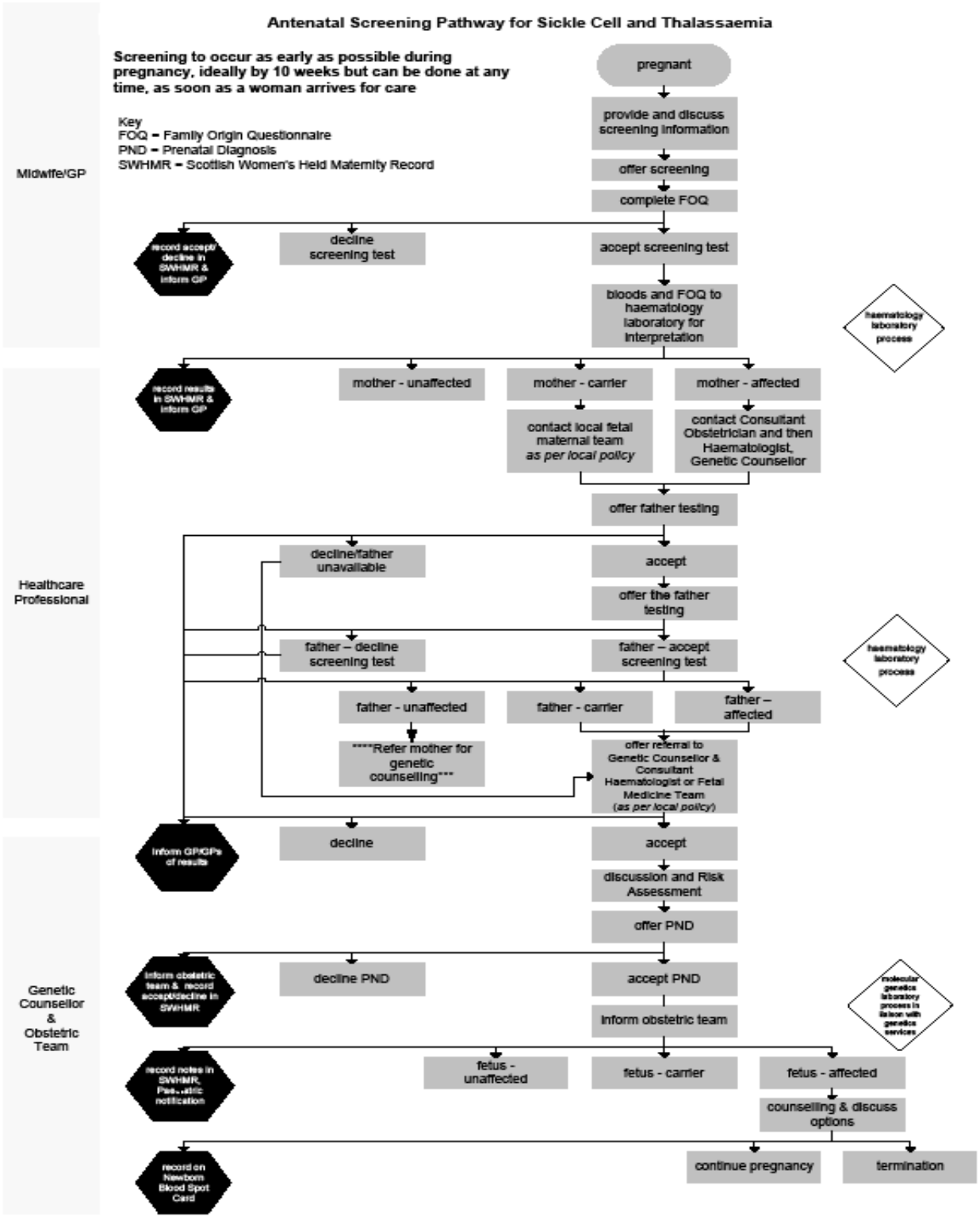
The low uptake of Alcohol Brief Interventions in maternity was due to limited reponse to the question –'are you currently drinking' – with 0.3% of admitting to drinking in pregnancy. The alcohol related questions from the Scottish Women Hand Held Record have now on PNBS and the response to drinking is now above 20% of all women at the booking visit. Further training around delivery of Alcohol Brief Interventions is now in progress.

Challenges and Priorities

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

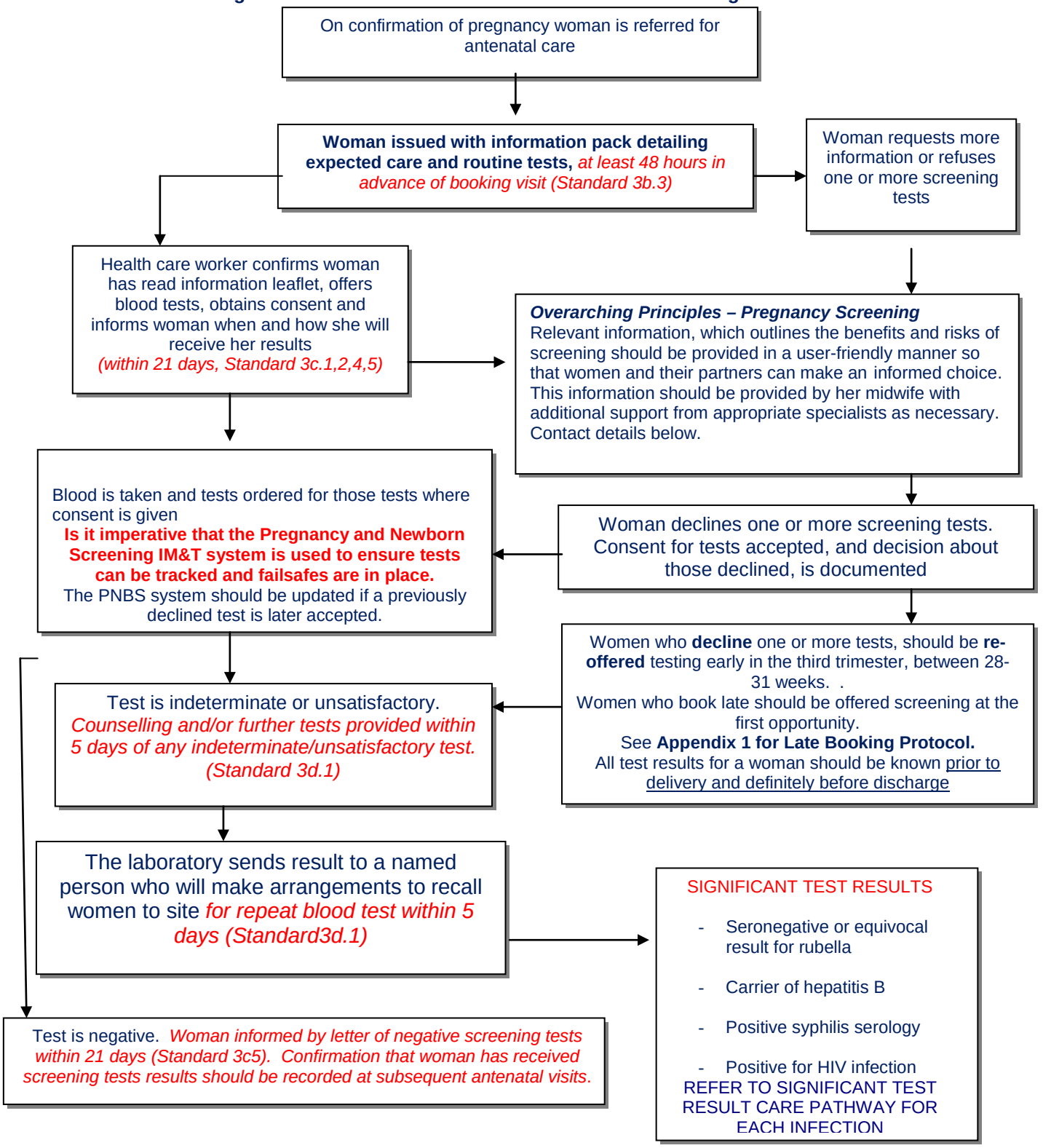

Women and their families should understand the purpose of all tests before they are taken
NHS
Pre-conception
Antenatal
Newborn
Blood for haemoglobin, group, rhesus & antibodies as early as possible, or as soon as a woman arrives for care, including labour
Blood for Syphilis, Hepatitis B, HIV & Rubella 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

Appendix 4.2


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

Appendix 4.3

Offering Routine Antenatal Communicable Disease Screening Tests



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 & Support Team (CAST),** Brownlee Centre 0141 211 1089

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, rubella)
- Fill **one 9ml purple topped EDTA bottle** and complete a virology request form, clearly indicating which tests (HIV, Rubella, 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, Rubella, 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 Ammended Protocol Ordering and Use of Taxis and Courriers 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 <u>in labour:</u>

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, rubella)
- Fill **one 9ml purple topped EDTA bottle** and complete a virology request form, clearly indicating which tests (HIV, Rubella, 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

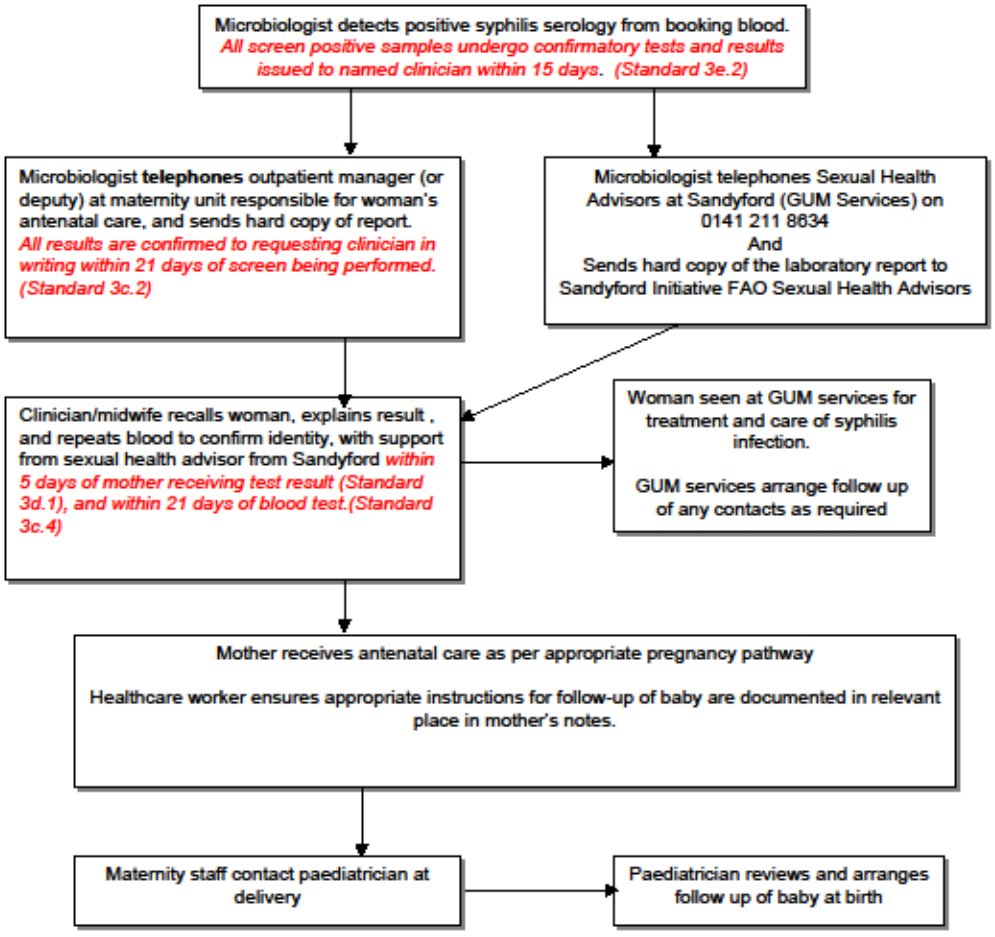
- As with **ALL** emergency blood tests ensure results are followed up immediately they are available. In normal hours the lab is able to process and produce results within 1-2 hours of receipt.

- 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
Date Approved:	December 2011
Next revision date:	December 2016

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

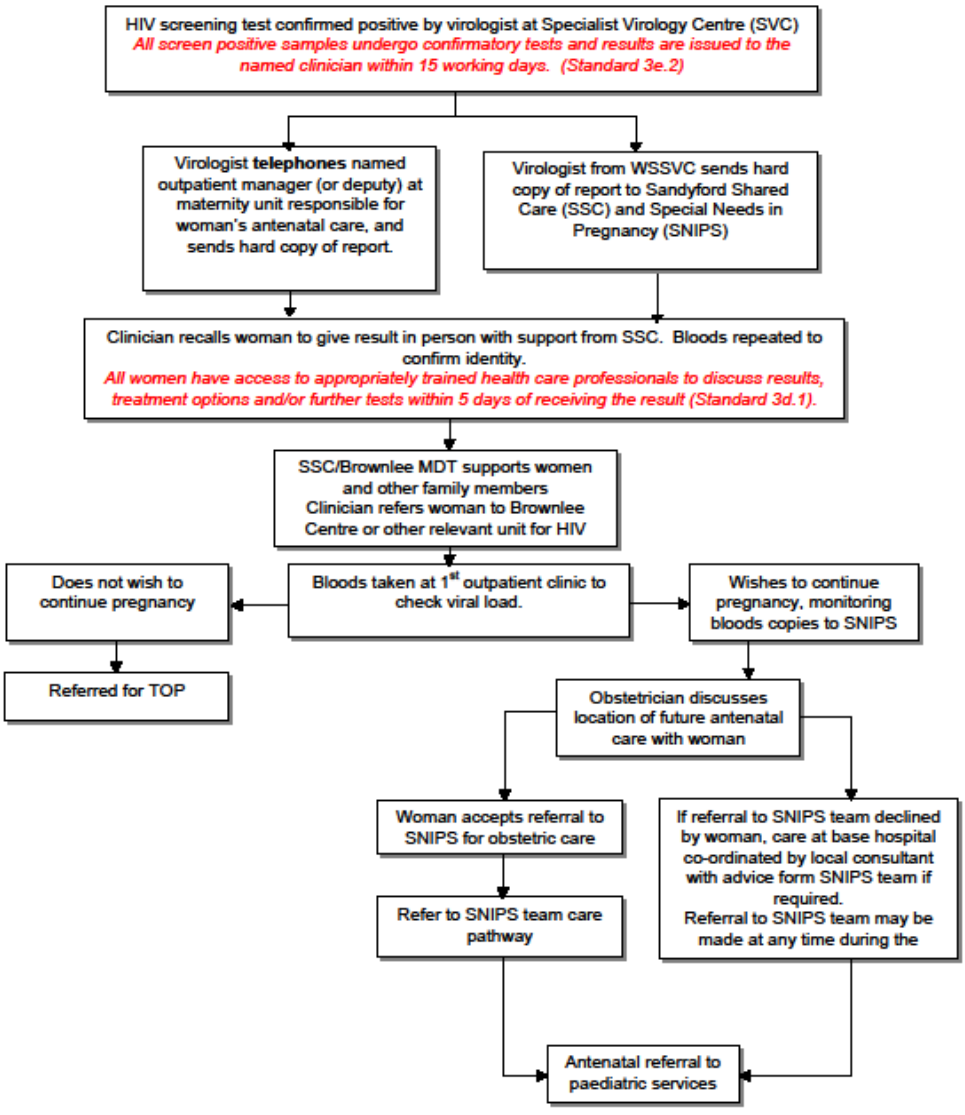
Paediatrician checks blood test and informs Community Screening department of result.

Version No: V6.2
Approved by: Communicable Diseases in Pregnancy Steering Group
Date Approved:
Next revision date:

NHS Greater Glasgow and Clyde

Protocol for Significant Laboratory Results

HIV

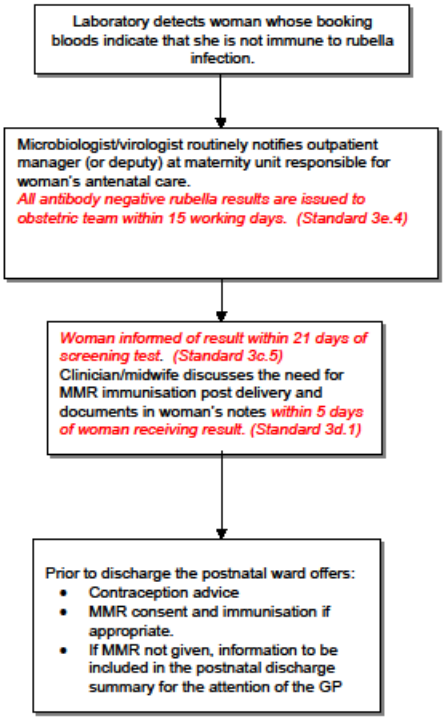


Version No:	V4.2
Approved by:	Communicable Diseases In Pregnancy Steering Group
Date Approved:	December 2012
Next revision date:	December 2013

NHS Greater Glasgow and Clyde

Protocol for Significant Laboratory Results

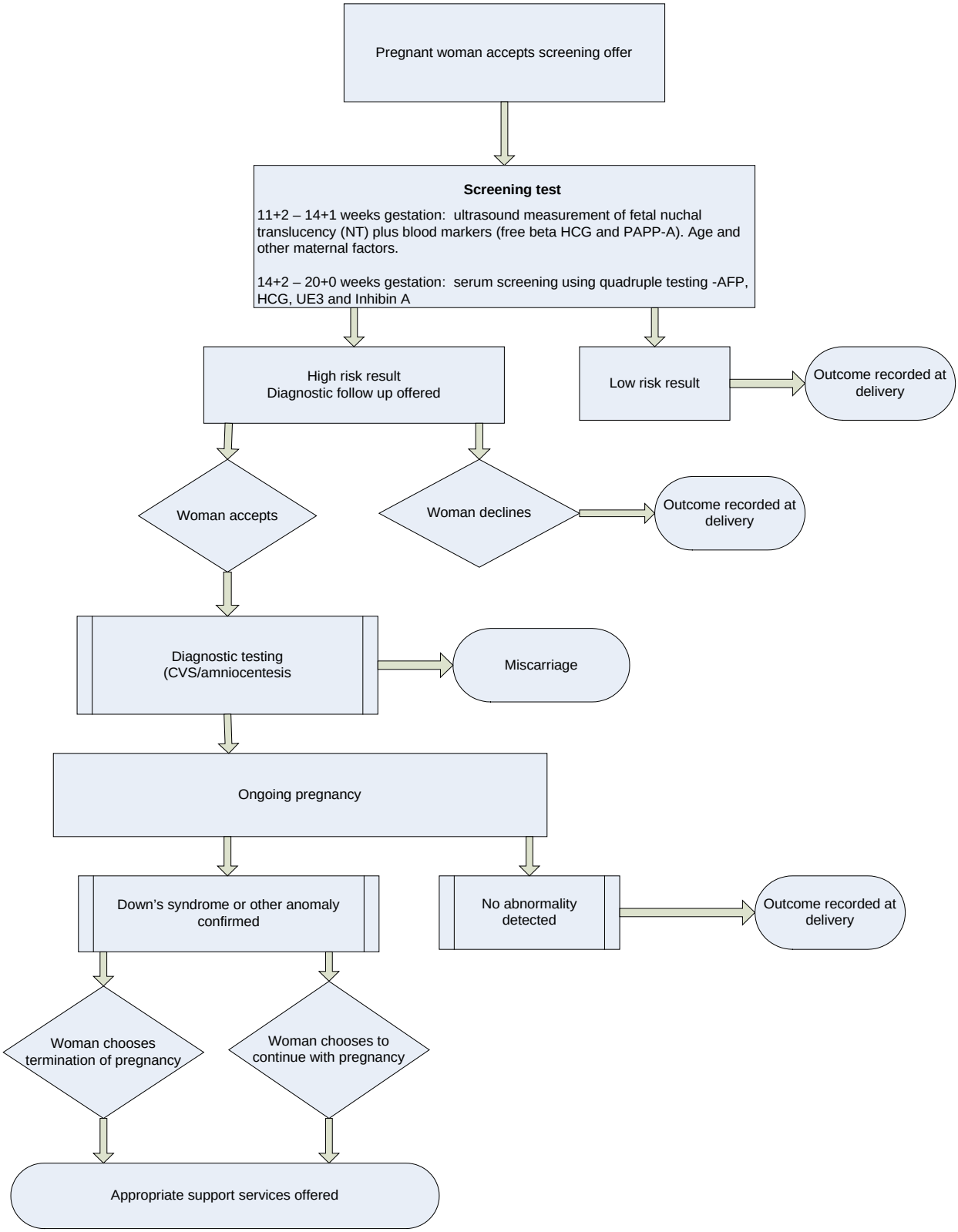
NOT IMMUNE TO RUBELLA INFECTION



Version No:	V4.2
Approved by:	Communicable Diseases in Pregnancy Steering Group
Date Approved:	December 2011
Next revision date:	December 2016

Appendix 4.9

Down's syndrome screening pathway



Appendix 4.10

Members of Pregnancy Screening Steering Group

(as at March 2015)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Ms Louise Brown	West of Scotland Pregnancy Laboratory
Mrs Lin Calderwood	HI&T Screening Service Delivery Manager
Dr Margaret J Cartwright	Chief Biomedical Scientist
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	Clinical Director, Women's and Children's
Mrs Michelle McLauchlan	General Service Manager
Dr Louisa McIlwaine	Consultant Haematologist
Mrs Marion McNab	Lead Midwife
Mrs Elizabeth Rennie	Screening Programmes Manager
Dr Jim Robins	Consultant Obstetrician, Clyde
Ms Fiona Manwell	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 2015)

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	SexualHealth Advisor
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Dr Alan Mathers	Clinical Director Obstetrics and Gynaecology
Ms Victoria Mazzoni	Senior Community Midwife
Ms Christine McGee	Community Midwife
Mrs Katie McEwan	Clinical Service Manager
Mrs Marion McNabb	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

- Bloodspot screening: 12,286 babies resident in NHSGGC were screened, that is 98.7% of the total eligible population of 12,453.

- Eight babies were diagnosed with congenital hypothyroidism, three babies with PKU (phenylketonuria); (seven babies with cystic fibrosis; four babies with sickle cell disease, 1 baby with MCADD and 68 babies were identified as carriers for haemoglobinopathies.

- 72.7% of babies screened had white UK ancestry, 7% had South Asian ancestry and 5.4% had mixed background ancestry.

- Of the 14,300 bloodspot samples received, 14,214 were normal. 227 (1.6%) samples 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.

- 77 (0.5%) samples received had taken more than seven days to arrive at the laboratory.

- 12,591 babies were eligible for hearing screening. 12,283 were screened for hearing loss giving an uptake of 97.6%.

- 1,290 (9.2%) babies required a second stage follow up and, of these, 166 (1.3%) babies were referred to audiology. 17 babies were confirmed with a hearing loss (0.4% of the screened population): 12 babies had confirmed bilateral hearing loss and 5 babies had confirmed unilateral 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 MCCAD 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**.

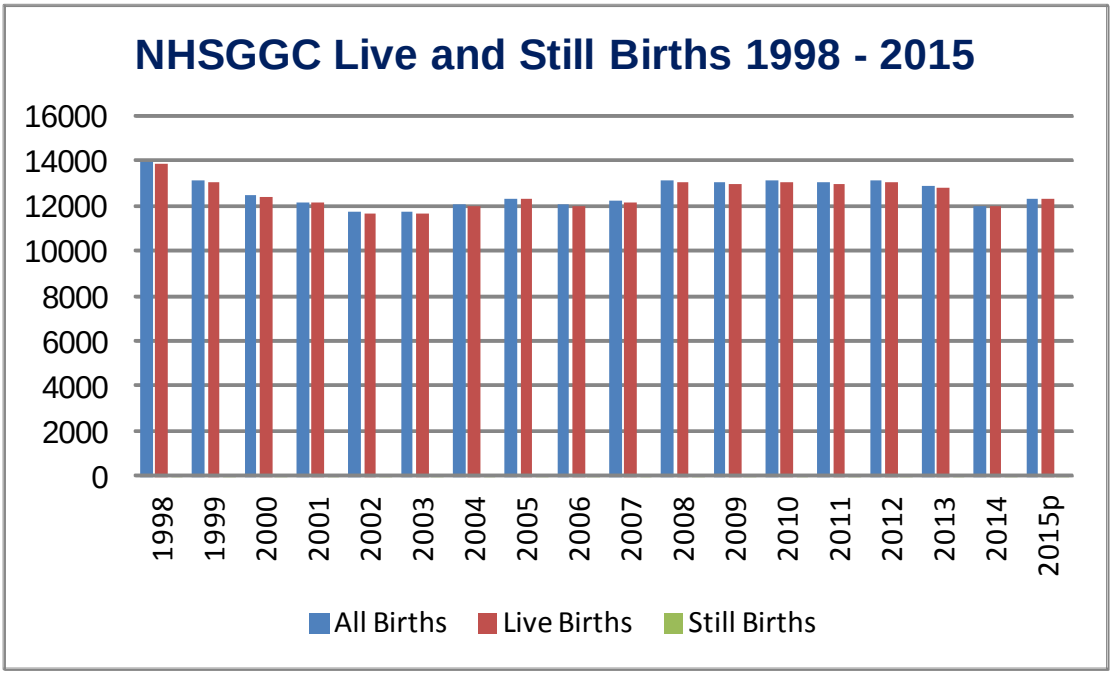
Universal Newborn Hearing screening: Hearing tests are carried out on all babies born in NHS Greater Glasgow and Clyde using the Automated Auditory Brainstem Response (AABR).

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 have gradually increased year on year from 12,409 in 2002/03 to 13,792 in 2012/2013 and then decreased to 11,997 in 2014 and 12,339 in 2015.

Figure 5.1 Number of live and still births across NHSGGC over a 16 year period from 1998 to 2015



Source: SMR02, ISD Scotland November 2015

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.

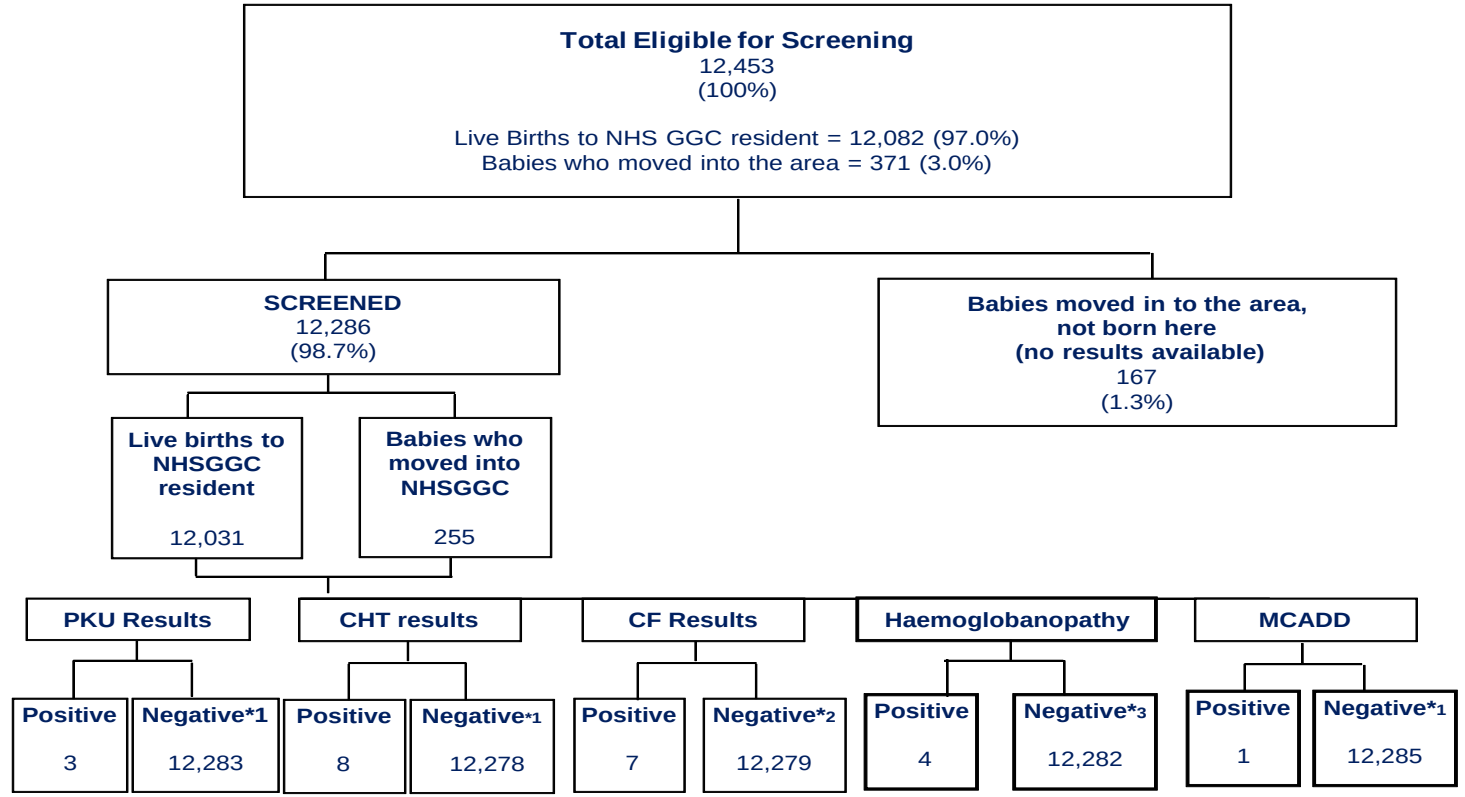
3 - Scotland data includes births where NHS board of residence is unknown or outside Scotland.

p - Provisional.

Figure 5.2 illustrates newborn bloodspot uptake rates and the results of the screening programme from 1 April 2014 to 31 March 2015.

12,286 babies resident in NHSGGC were screened, that is 98.7% of the total eligible population of 12,453. Results were not available for the 167 (1.3%) babies that moved into the NHSGGC Board area.

Figure 5.2 Newborn bloodspot uptake rates and the results for babies born 1 April 2014 to 31 March 2015



Source: Child Health (CH2008); Date extracted: May, 2015

Notes:

*1 Total includes 3 repeats; 1 verification

*2 Total includes 7 carriers; 5 late tests; 1 verifications, 4 repeats

*3 Total includes 68 carriers; 3 repeats; 3 verifications

Following screening, three babies were diagnosed with PKU (phenylketonuria); eight babies were diagnosed with congenital hypothyroidism, seven babies with cystic fibrosis; four babies with sickle cell disease, 1 baby with MCADD and 68 babies were identified as carriers for haemoglobinopathies. All babies received appropriate management within the timescale of the set NHSQIS standards.

Table 5.1 shows that the percentage uptake rate of bloodspot screening is high across all CH(C)P areas and deprivation categories.

Table 5.1 Percentage uptake rate of bloodspot screening by CH(C)P and deprivation categories
Period: 1 April 2014 to 31 March 2015

	Most Deprived				SIMD				Least Deprived			
	1		2		3		4		5		Total	
CH(C)P	Screening (N)	Uptake (%)	Screening (N)	Uptake (%)	Screening (N)	Uptake (%)	Screening (N)	Uptake (%)	Screening (N)	Uptake (%)	Screening (N)	Uptake (%)
East Dunbartonshire	47	100.0	181	98.9	78	100.0	138	98.6	491	98.6	944	98.7
East Renfrewshire	86	98.9	87	100.0	52	100.0	169	100.0	451	99.3	859	99.5
Glasgow North East	1,448	99.1	266	97.8	186	96.9	144	98.0	45	100.0	2094	98.7
Glasgow North West	1,049	98.8	267	98.2	290	92.7	193	96.0	329	97.1	2133	97.3
Glasgow South	1,244	98.3	711	97.7	397	99.3	317	99.4	181	100.0	2856	98.5
Inverclyde	364	100.0	116	98.3	90	98.9	85	100.0	76	100.0	732	99.6
Renfrewshire	522	99.4	257	99.2	375	99.5	201	99.5	285	99.3	1687	99.4
West Dunbartonshire	365	98.9	287	99.7	186	99.5	68	98.6	46	100.0	962	99.3
Total	5,125	98.9	2,172	98.4	1,654	97.9	1,315	98.7	1,904	98.9	12,286	98.7

Source: Child Health (CH2008); Date extracted: May, 2015

SIMD=Scottish Index of Multiple Deprivation 2012

Note: 116 patients could not be assigned CH(C)P/SIMD due to incomplete/incorrect postcodes but have been included in the overall total.

Table 5.2 shows the breakdown of the ancestry group for babies tested. Data includes babies born in Argyll and Bute. 72.7% of babies screened had white UK ancestry, 7% had South Asian ancestry and 5.4% had mixed background ancestry.

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

Table 5.2 NHSGGC Newborn Bloodspot screening – ancestry of the babies tested 1 April 2014 – 31 March 2015

	Argyll & Clyde		Glasgow		Total	
Ancestry Group	**N**	**%**	**N**	**%**	**N**	**%**
A African or African Caribbean	39	1.2	287	2.7	326	2.4
B South Asian (Asian)	53	1.6	900	8.6	953	7.0
C South East Asian (Asian)	15	0.5	274	2.6	289	2.1
D Other non-European (Other)	7	0.2	159	1.5	166	1.2
E Southern & Other European (White)	87	2.7	434	4.2	521	3.8
F United Kingdom (White)	2,751	85.0	7,196	68.9	9,947	72.7
G North Europe (White)	16	0.5	98	0.9	114	0.8
H Don't Know	0	0.0	21	0.2	21	0.2
I Declined to Answer	0	0.0	1	0.0	1	0.0
J Any Mixed Background	106	3.3	628	6.0	734	5.4
Z Not Stated	161	5.0	445	4.3	606	4.4
Total	**3,235**		**10,443**		**13,678**	

Source: Scottish Newborn Screening Laboratory - Newborn Bloodspot Screening Report 2014/15

Table 5.3 illustrates the laboratory outcomes of blood spot tests. In 2014/15, of the 14,300 bloodspot samples received, 14,214 were normal. 227 (1.6%) 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. 77 (0.5%) 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 2014 and 31 March 2015

Specimen Test - Outcomes	Argyll & Clyde	Glasgow	Total
Refused all tests	0	5	5
Partial refused	1	0	1
Insufficient blood to perform all tests	47	180	227
Unsatisfactory >14 days in transit	1	2	3
No CHI	21	84	105
Unsatisfactory Other	8	29	37
Updated info	50	152	202
IRT tested late (total)	0	5	5
IRT tested late (Born in Scotland)	0	4	4
7 days in transit	12	65	77
Ref PKU	0	3	3
Ref CHT	2	6	8
Ref CF	1	5	6
Ref CF Carrier	1	5	6
Ref MCADD	1	0	1
Ref SCD	0	2	2
Ref SCD Carrier	6	43	49
Ref HbV	0	2	2
Ref HbV Carrier	2	20	22
Number of normal results	3,366	10,921	14,214
Pre-TF	18	66	84
Sent for SCD DNA	11	21	32
Total Specimens received	**3,379**	**10,921**	**14,300**

Insufficent as % of Total	1.4	1.6	1.6
Unsatisfactory as % of Total	0.89	1.05	1.01
IRT tested late as % of Total	0.00	0.05	0.03
IRT tested last (born in Scotland) as % of Total	0.00	0.04	0.03
>7 days in transit as % of Total	0.4	0.6	0.5

Source: Scottish Newborn Screening Laboratory - Newborn Bloodspot Screening Report 2014/15

Notes

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 have unidentified variants and may required follow-up for confirmation.

Delivery of the NHSGGC Universal Newborn Hearing Screening programme

Integration of the Universal Newborn Hearing Screening programme across NHSGGC was completed in April 2013.

Table 5.4 shows that the percentage uptake rate for the newborn hearing screening is high for all CH(C)P areas.

Table 5.4 Percentage Uptake for newborn hearing screening by CH(C)P

CH(C)P	Eligible	Screened	% Uptake
East Dunbartonshire	900	890	98.9
East Renfrewshire	787	780	99.1
Glasgow North East	2,150	2,090	97.2
Glasgow North West	2,276	2,186	96.0
Glasgow South	2,981	2,891	97.0
Inverclyde	731	725	99.2
Renfrewshire	1,717	1,698	98.9
West Dunbartonshire	980	958	97.8
Unassigned[2]	69	65	94.2
Total[3]	**12,591**	**12,283**	**97.6**

Source: Scottish Birth Record (SBR) Extracted: August 2015

Notes

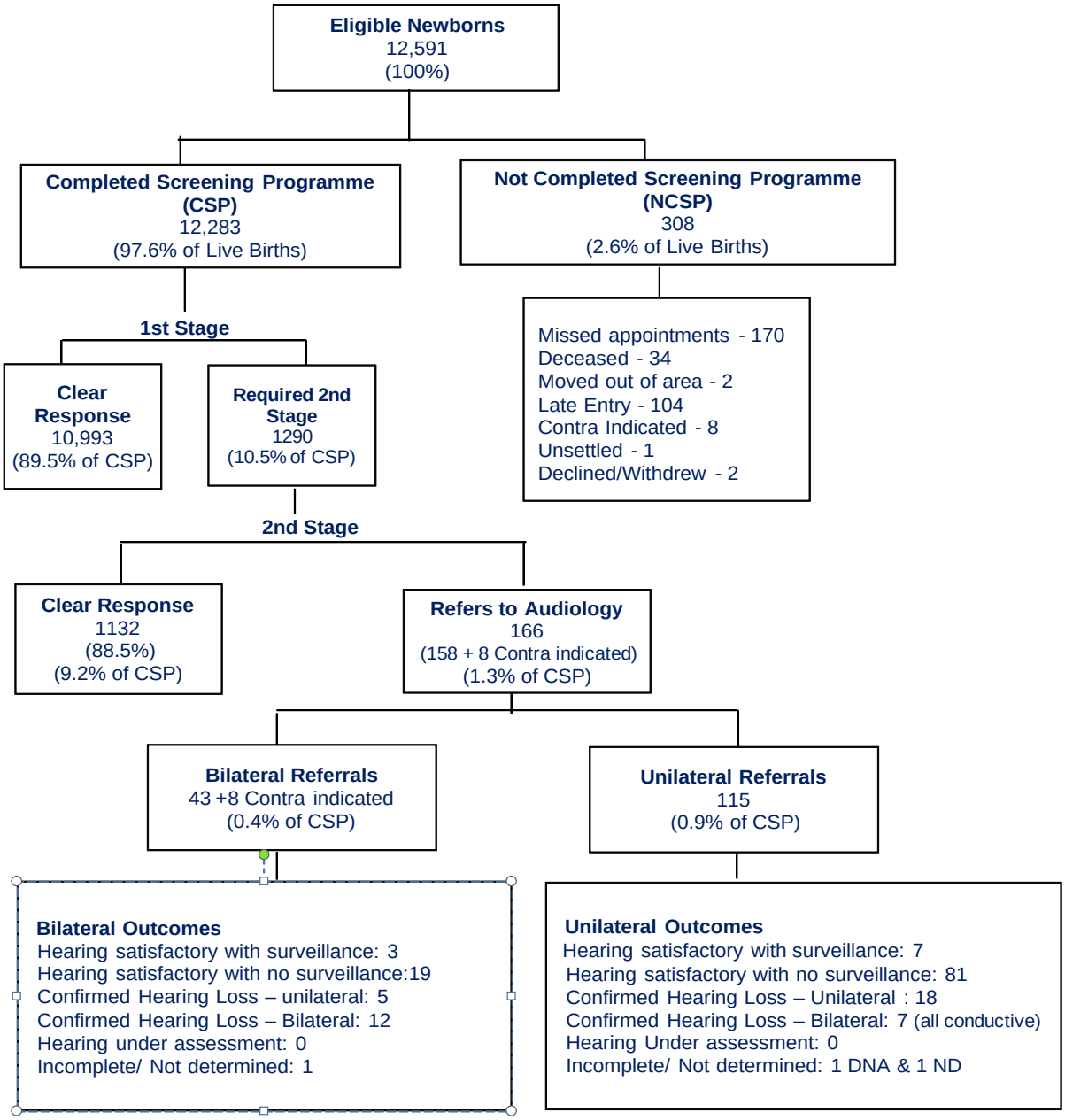
[1] NHS Greater Glasgow and Clyde residents only

[2] Unable to assign CH(C)P or SIMD due to incompete/incorrect postcodes

[3] As of April 2015 North & South Lanarkshire are no longer included

Figure 5.3 illustrates the hearing screening activity. Of the 12,591 eligible babies, 12,283 were screened for hearing loss giving an uptake of 97.6% (**Figure 5.3 and Table 5.4**).

Figure 5.3 Summary of NHSGGC Universal Newborn Hearing Screening Programme



Source: Scottish Birth Record Extracted August 2015

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.

1,290 (9.2%) babies required a second stage follow up and, of these, 166 (1.3%) babies were referred to audiology. 17 babies were confirmed with a hearing loss (0.4% of the screened population): 12 babies had confirmed bilateral hearing loss and 5 babies had confirmed unilateral 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.

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.

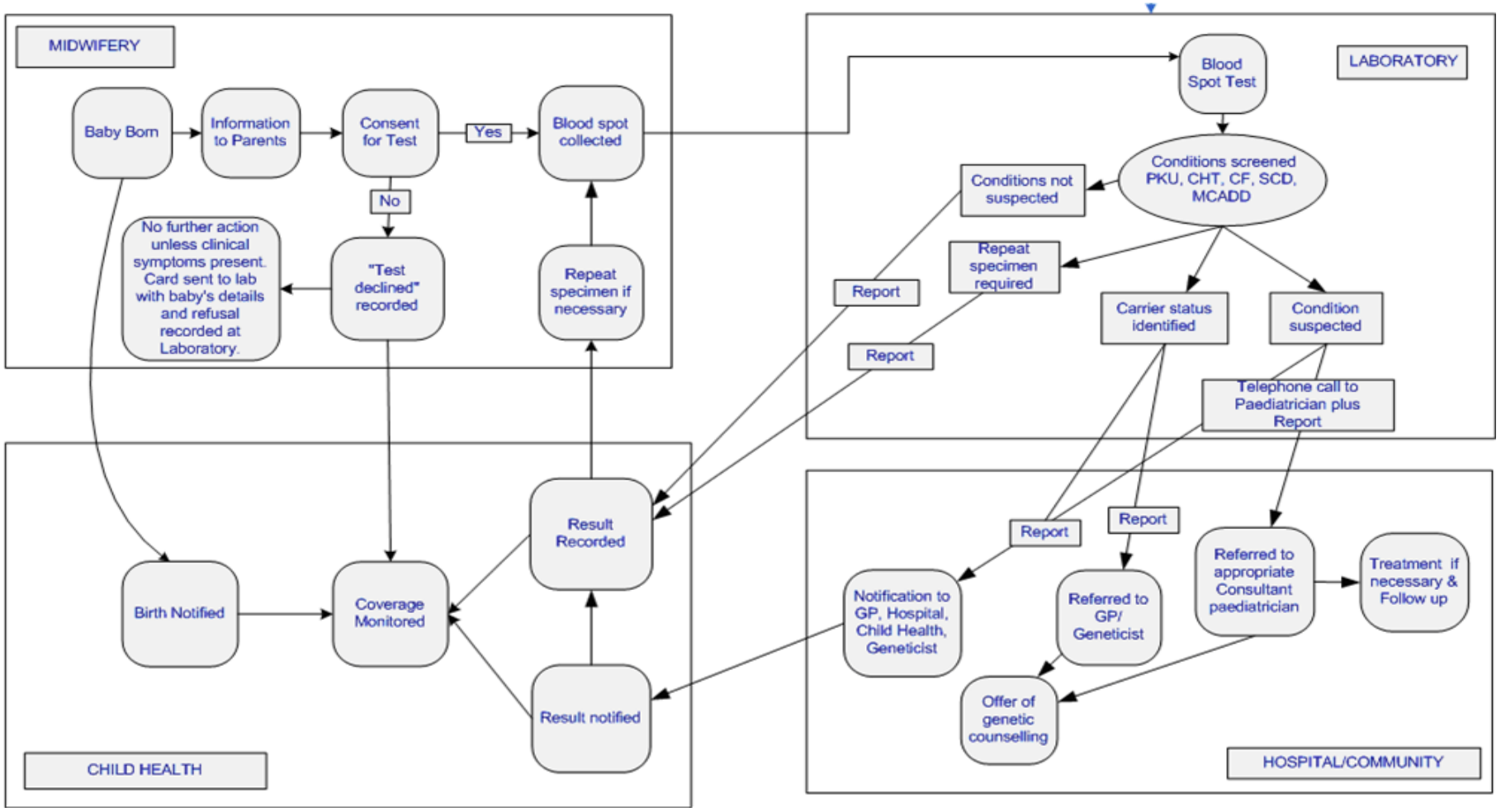
The Child Health Surveillance Programme Pre-School system (CHSP-PS) is holding screening outcomes and is used as a failsafe to ensure all babies are offered hearing screening.

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.

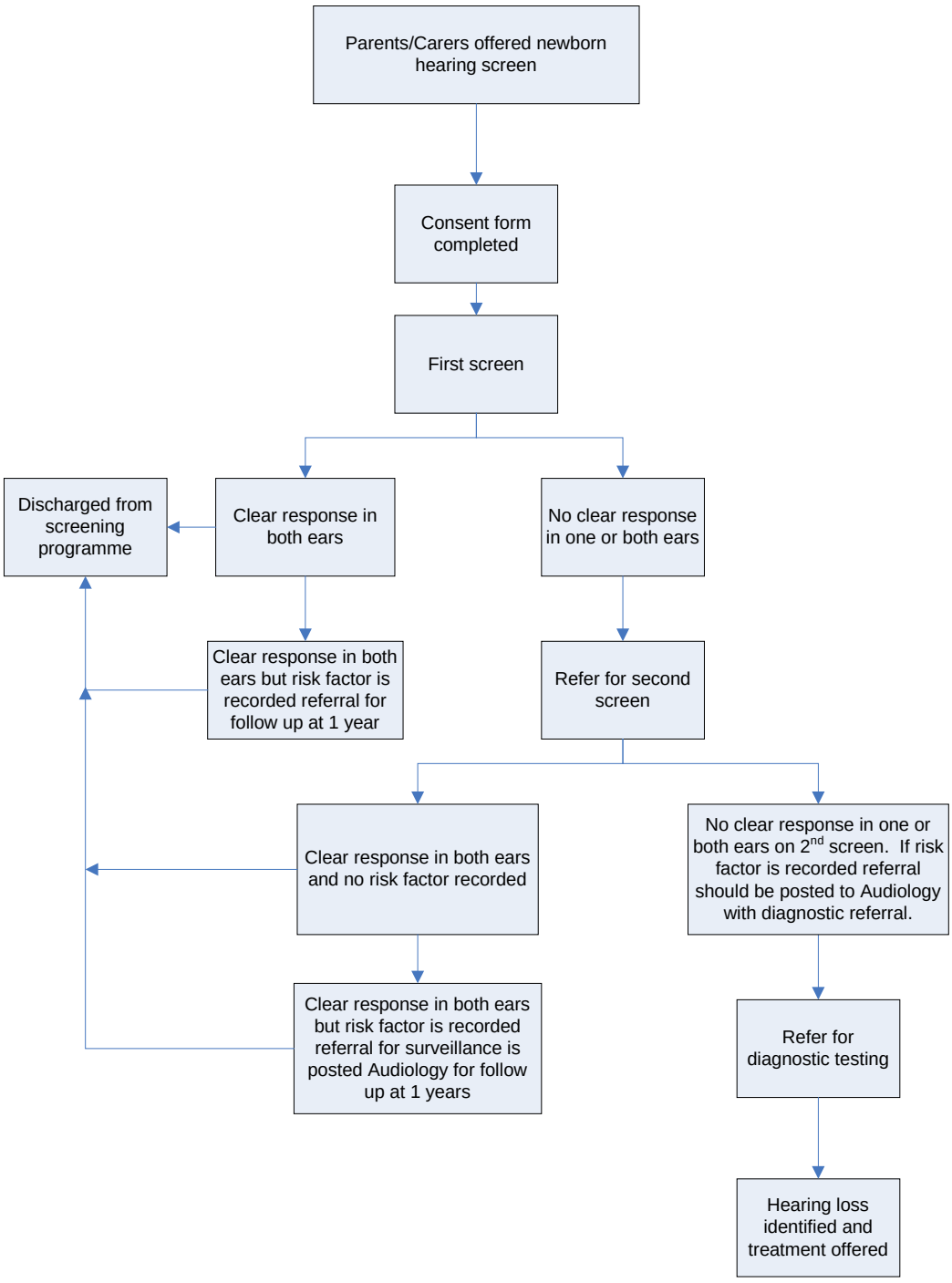
NHSGGC Newborn Bloodspot Screening Pathway

Appendix 5.1



Appendix 5.2

NHSGGC Universal Newborn Hearing Screening Pathway



Appenidx 5.3

Members of Newborn Bloodspot Screening Steering Group
As at March 2015

Dr Emilia Crighton	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
Dr Catherine Dorrian	Consultant Clinical Scientist
Ms Carolyn Dunlop	Senior Paediatric Dietitian
Mrs Catherine Dorrian	Consultant Clinical Scientist
Mr Ian Fergus	Technical Site Manager
Dr Peter Galloway	Consultant Clinical Biochemist
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Dr Helen Mactier	Consultant Neonatologist
Mrs Fiona Manwell	Lead Midwife
Mrs Michelle McLauchlan	General Manager, Obstetrics
Mrs Marion McNabb	Lead Midwife
Mrs Julie Mullin	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 2015)

Dr Emilia Crighton	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 Liz Daniels	Clinical Service Manager, Partnerships
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 Jan Savage	National Deaf Children's Society
Mrs Jacqueline Truss	Audiologist Team Leader
Dr Madeline White	Consultant Neonatologist
Ms Heather Young	National Deaf Children's Society, Family Support

Chapter 6: Pre-School Vision Screening

Summary

- 12,947 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening. This represents a 0.5% decrease from previous year 2013/14.

- 40.9% (5,292) of children live in the most deprived areas, with the largest proportion living in the Glasgow area

- 77.2% (9,994) of children were registered with a nursery. Of the 2,953 (22.8%) children not registered with a nursery, 1,835 (62.1%) were from Glasgow City CHP sectors.

- 98.6% of children registered with a nursery had a screening test. Only 45.7% of children not registered with a nursery have been screened.

- 11,205 children were screened for a visual abnormality, giving an overall uptake of 86.5%.

- Uptake rate varied from 82.5% in Glasgow North East to 91.7% in East Renfrewshire.

- 8,236 (73.5%) had a normal result. 2,219 (19.8%) children were referred for further assessment, Of the number referred, 1,028 (23.2%) were from the most deprived areas.

- The highest proportion of children screened that were referred for further investigation was in Glasgow North East (24.3%) and Glasgow North West (23.5%). The lowest was 14.3% in East Renfrewshire.

CHAPTER 6: PRE-SCHOOL VISION SCREENING

Background

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

Amblyopia, otherwise known as lazy eye, can be caused by either a squint (strabismus) or differences in the focussing power of each eye (refractive error) which results in the brain receiving different images from each eye. In an adult, receiving two images causes double vision, but a child compensates for the difficulty by suppressing one of the images. If this defect goes untreated this leads to reduced vision in one or, in some cases, both eyes. The screening programme can also detect reduced vision due to structural abnormality or disease of the media, fundi or visual pathways.

Amblyopia and strabismus affects 3-6% of children, and although obvious squints are easily detected, refractive error and subtle squints often go undetected and thus amblyopia develops. Amblyopia can be treated using spectacle lenses to correct any refractive error and occlusion therapy - mainly 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, the commonest causes of which are amblyopia and refractive error. There is emerging evidence that good screening and treatment result in lower incidence of significant permanent vision loss.

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.

The screening 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.

Screening pathway

The list of eligible children (the school intake cohort for the following year), with dates of birth between 1 March 2010 and 28 February 2011 were downloaded from CHI and matched against the lists received from nurseries.

The vision screening clinics take place in the nursery setting. The pre-school children that do not attend nursery, or whose nursery is unknown to the screening programme and the children that 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.

Delivery of Pre-School Vision Screening Programme 2014/15

In 2014/15, 12,947 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening. This represents a 0.5% decrease from previous year 2013/14.

Table 6.1 shows that 40.9% (5,292) 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 CH(C)P area and by deprivation category

	Scottish Index of Multiple Deprivation[1]						
	Most deprived				Least deprived		
Row Labels	**1**	**2**	**3**	**4**	**5**	**Unassigned[2]**	**Total**
East Dunbartonshire CHP	82	150	103	227	597	15	1,174
East Renfrewshire CHCP	83	92	103	132	759	21	1,190
Glasgow North East	1,439	202	164	148	54	29	2,036
Glasgow North West	1,000	302	231	189	251	11	1,984
Glasgow South	1,335	577	467	234	135	20	2,768
Inverclyde CHP	385	114	101	109	90	3	802
Renfrewshire CHP	555	390	320	292	345	39	1,941
West Dunbartonshire CHP	413	303	172	91	37	12	1,028
Unassigned[2]						24	24
Total	**5,292**	**2,130**	**1,661**	**1,422**	**2,268**	**174**	**12,947**
% of Total	**40.9**	**16.5**	**12.8**	**11.0**	**17.5**	**1.3**	

Source: Child Health - Pre-School Date Extracted: September 2015

Notes

1 Scottish index of multiple deprivation 2012

2 Unable to assign SIMD due to incomplete or incorrect postcode

As of April 2015, North & South Lanarkshire are no longer reported on

Table 6.2 shows that 77.2% (9,994) of children were registered with a nursery. Of the 2,953 (22.8%) children not registered with a nursery, 1,835 (62.1%) were from Glasgow City CHP sectors.

Table 6.2 NHSGGC child residents eligible for screening, registered with a nursery by CH(C)P

CH(C)P	Children eligible for screening	Registered with a Nursery	% Registered	Not registered with a nursery	% Not Registered
East Dunbartonshire CHP	1,174	965	82.2	209	17.8
East Renfrewshire CHCP	1,190	981	82.4	209	17.6
Glasgow North East	2,036	1,495	73.4	541	26.6
Glasgow North West	1,984	1,436	72.4	548	27.6
Glasgow South	2,768	2,022	73.0	746	27.0
Inverclyde CHP	802	681	84.9	121	15.1
Renfrewshire CHP	1,941	1,604	82.6	337	17.4
West Dunbartonshire CHP	1,028	790	76.8	238	23.2
Unassigned[1]	24	20	83.3	4	16.7
Total	**12,947**	**9,994**	**77.2**	**2,953**	**22.8**

Source: Child Health - Pre-School Date Extracted: September 2015

Notes

1 Unable to assign SIMD due to incomplete or incorrect postcode

As of April 2015, North & South Lanarkshire are no longer reported

Table 6.3 shows that the overall uptake was 86.5% representing an increase of 0.6% from previous year. Of the overall uptake, 98.6% of children registered with a nursery had a screening test. Only 45.7% of children not registered with a nursery have been screened. Lowest uptake was in Glasgow North East at 82.5% compared to highest uptake in East Renfrewshire 91.7%

Table 6.3 NHSGCC preschool vision uptake for child residents eligible for screening by nursery registration and by CH(C)P, registered with a nursery

CHP/CH(C)P	No of Eligible children registered with nursery	% Uptake registered with nursery	No of Eligible children not registered with nursery	% Uptake not registered with nursery[2]	Total No of Eligible children	% total uptake
East Dunbartonshire	965	98.9	209	52.6	1,174	90.6
East Renfrewshire	981	99.0	209	57.4	1,190	91.7
Glasgow North East	1,495	98.5	541	38.1	2,036	82.5
Glasgow North West	1,436	98.5	548	42.7	1,984	83.1
Glasgow South	2,022	98.7	746	45.0	2,768	84.2
Inverclyde	681	98.8	121	47.9	802	91.1
Renfrewshire	1,604	98.3	337	54.9	1,941	90.7
West Dunbartonshire	790	98.4	238	41.6	1,028	85.2
Unassigned[1]	20	100.0	4	50.0	24	91.7
Total	**9,994**	98.6	**2,953**	45.7	**12,947**	**86.5**

Source: Child Health - Pre-School

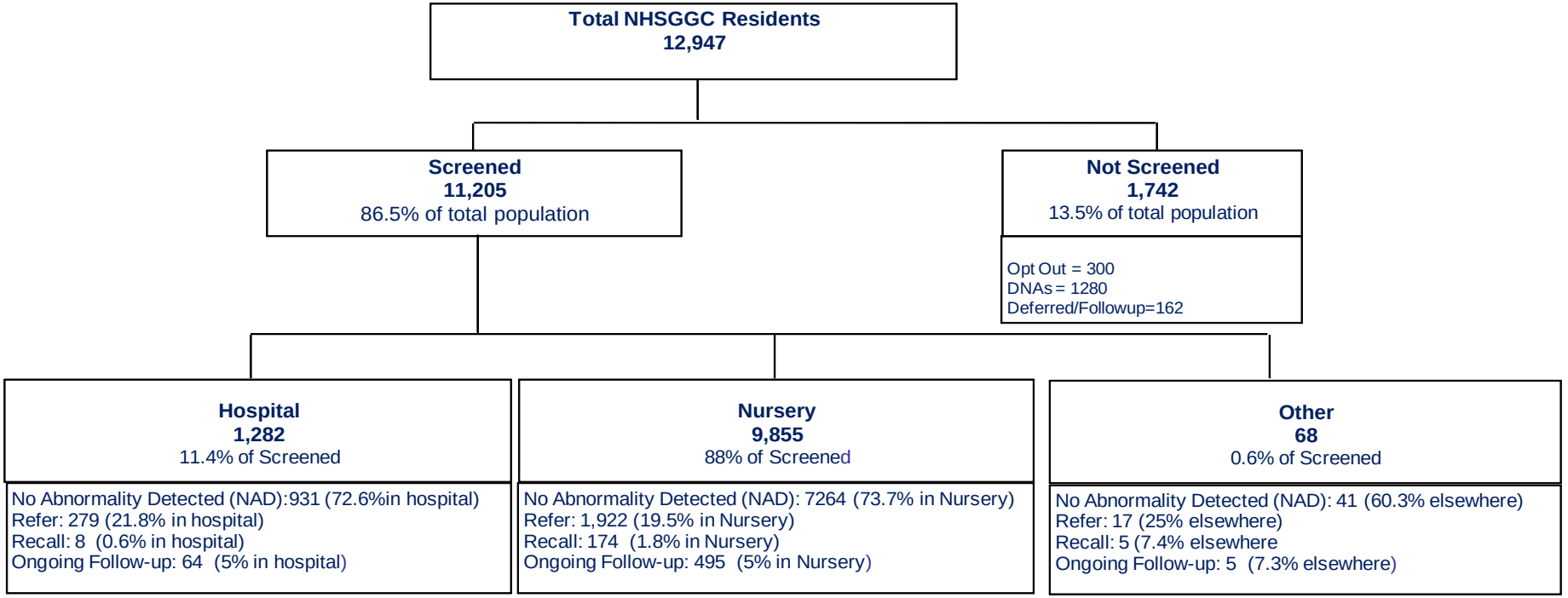
Notes

1 Unable to assign SIMD due to incomplete or incorrect postcode

2. Not all nurseries returned the nursery lists and some children may be registered

Figure 6.1 illustrates the activity for the service in NHS Greater Glasgow and Clyde for the school year 2014-15. Of the 12,947 eligible children, 11,205 were screened for a visual abnormality, giving an overall uptake of 86.5%. 2,218(19.8%) children were referred for further assessment (**Figure 6.1**).

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



Source: Child Health – Pre-School Date Extracted: September 2015

Table 6.4 shows that, of the 11,205 children screened, 8,236 (73.5%) had a normal result. Of the 2,219 (19.8%) children referred for further assessment, 1,028 (23.2%) were from the most deprived areas. 187 (1.7 %) children were recalled back to be screened due to difficulties screening children's vision during their first screen. 564 (5.0%) children are currently under follow up by ophthalmology service

Table 6.4 NHSGGC Pre-school vision screening outcomes by deprivation category

SIMD	Number of Children Screened	No Abnormality Detected (NAD)	% NAD	Referred	% Referred	Recall	% Recall	Ongoing follow up	%Ongoing follow up
1	4,431	3,068	69.2	1,028	23.2	86	1.9	249	5.6
2	1,810	1,325	73.2	360	19.9	34	1.9	91	5.0
3	1,466	1,102	75.2	267	18.2	23	1.6	74	5.0
4	1,270	955	75.2	228	18.0	16	1.3	71	5.6
5	2,077	1,677	80.7	305	14.7	22	1.1	73	3.5
Unassigned[1]	151	109	72.2	30	19.9	6	4.0	6	4.0
Total	**11,205**	**8,236**	**73.5**	**2,218**	**19.8**	**187**	**1.7**	**564**	**5.0**

Source: Child Health - Pre-School Date Extracted: September 2015

Notes

1 Unable to assign SIMD due to incomplete or incorrect postcode

Table 6.3 shows the uptake rate and outcomes for the programme across the CH(C)P areas varied from 82.5% in Glasgow North East to 91.7% in East Renfrewshire.

The highest proportion of children screened that were referred for further investigation was in Glasgow North East (24.3%) and Glasgow North West (23.5%). The lowest was 14.3% in East Renfrewshire.

Table 6.5 Uptake and outcome of pre-school vision screening programme across NHS Greater Glasgow and Clyde by CH(C)P area

CH(C)P	Total Population	Number of children screened	Number of children not screened	% Uptake	% NAD	% Referred	% Recalled	% Ongoing Follow up
East Dunbartonshire	1,174	1,064	110	90.6	73.6	21.1	1.0	4.2
East Renfrewshire	1,190	1,091	99	91.7	80.8	14.4	1.2	3.6
Glasgow North East	2,036	1,679	357	82.5	65.2	28.4	2.2	4.3
Glasgow North West	1,984	1,649	335	83.1	67.7	24.7	1.4	6.2
Glasgow South	2,768	2,332	436	84.2	75.1	17.9	2.7	4.2
Inverclyde	802	731	71	91.1	79.9	13.0	0.8	6.3
Renfrewshire	1,941	1,761	180	90.7	77.6	14.8	1.5	6.1
West Dunbartonshire	1,028	876	152	85.2	72.9	20.2	0.8	6.1
Unassigned 1	24	22	2	91.7	90.9	4.5	0.0	4.5
Total	**12,947**	**11,205**	**1,742**	**86.5**	**73.5**	**19.8**	**1.7**	**5.0**

Source: Child Health - Pre-Schoc Date Extracted: September 2015

Notes

1 Unable to assign SIMD due to incomplete or incorrect postcode

As of April 2015, North & South Lanarkshire are no longer reported

Information systems

Child Health Surveillance System (CHS-P) currently supports the delivery of the programme across NHS Greater Glasgow and Clyde.

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.

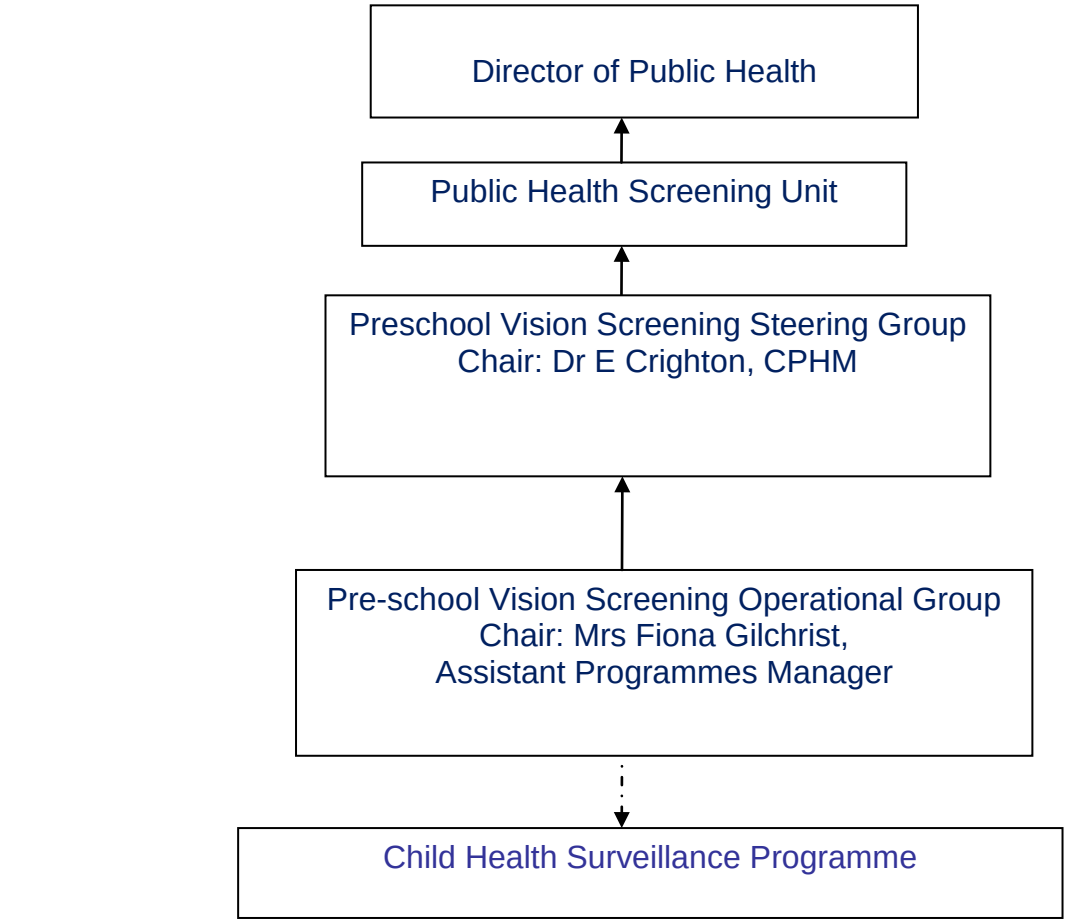
Appendix 6.1

Members of Pre-school Vision Screening Steering Group (As at March 2015)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Mrs Angela Carson	Head of Optometry
Mr Jim Bretherton	Clinical Service Manager
Mrs Maggie Darroch	Optometrist
Mrs Liz Daniels	Clinical Services Manager, Renfrewshire CHP
Mrs Emma Finlay	Child & Families Team Lead, Renfrewshire CHP
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Ms Bernie Hegarty	Deputy Head of Optometry
Ms Nicola McElvanney	Chair Area Optometry Committee
Ms Carolyn MacLellan	Head Orthoptist
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Lin Calderwood	Screening Service Delivery Manager
Mrs Diane Russell	Head Orthoptist
Mrs Elaine Salina	Principal Optometrist
Dr Kathy Spowart	Associate Specialist, Community Paediatrics
Mrs Sandra Simpson	Programme Support Officer

Appendix 6.2

Reporting Structure:
Pre-School 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 2014/15, an increase of 30% 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 2014/15.
- 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, 55.2% were male and 44.8% 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

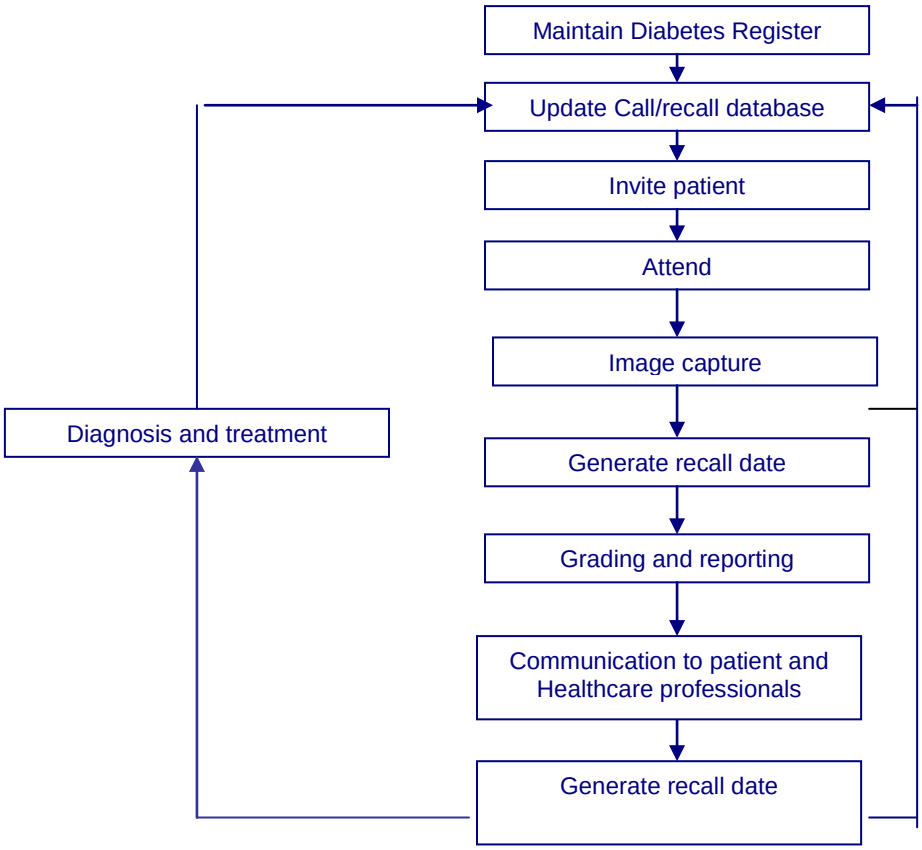
The screening programme takes place in a variety of settings. This can either be at a hospital, health centre or clinic. Across Greater Glasgow and Clyde screening takes place at five hospital locations and 14 health centres or clinics.

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 2014/15. There were 63,173 NHS Greater Glasgow and Clyde residents with a diagnosis of diabetes in 2014/15, representing an increase of 30% 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 5.8% in 2014/15.

Table 7.1 NHSGGC residents with diabetes, type of diabetes and prevalence from 2007/2008 to 2014/2015

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[3]	1,089,967	6,374	54,766	1,270	763	63,173	**5.80**

Source: DRS, Soarian Date Extracted: May 15

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

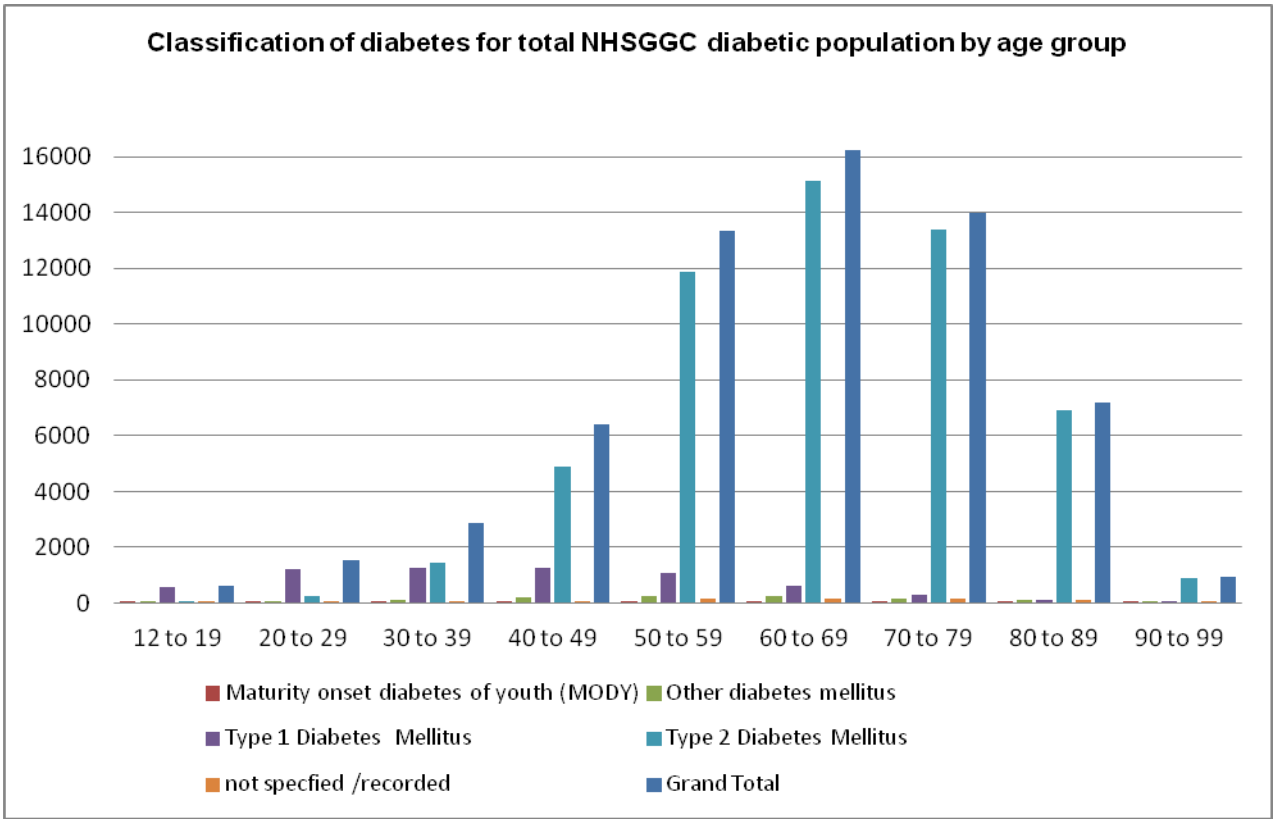
[2] Unspecified: No type of Diabetes recorded

[3] As of April 2015 North and South Lanarkshire are no longer included

The number of patients with diabetes increases with age and peaks between 60-69 years.

Figure 7.2 shows that the majority of people with diabetes who are under 30 years old have Type 1 diabetes. With increasing age the burden of disease is due to Type 2 diabetes. The public health importance of this is that type 2 diabetes is largely preventable being associated with obesity.

Figure 7.2 NHSGGC population with type of diabetes and by age group



Source: DRS, Soarian; Date extracted: May 2015

69.0% (43,565) of the total population with diabetes were in the 50-79 age range. 24 centenarian residents developed diabetes late on life with average age of diagnosis at 77.

Table 7.2 shows the prevalence and type of diabetes by CH(C)P. The 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.

Table 7.2 Prevalence and number of patients with diabetes in NHSGGC by type of diabetes and CH(C)P

CHP	Total Population[1]	Type 1 Diabetes Mellitus	Type 2 Diabetes Mellitus	Other Diabetes Mellitus	Unspecified[2]	Total Diabetic Population	Prevalance %
East Dunbartonshire	98,424	548	4,492	92	75	5,207	5.3%
East Renfrewshire	82,926	493	3,757	81	35	4,366	5.3%
Glasgow North East	174,943	995	9,002	239	135	10,371	5.9%
Glasgow North West	207,636	1,098	8,210	215	144	9,667	4.7%
Glasgow South	211,887	1,256	11,817	287	143	13,503	6.4%
Inverclyde	72,865	442	4,125	104	62	4,733	6.5%
Renfrewshire	158,578	967	8,639	152	101	9,859	6.2%
West Dunbartonshire	82,708	541	4,594	87	55	5,277	6.4%
Unassigned[4]		34	130	13	13	190	
NHSGGC Total[5]	**1,089,967**	**6,374**	**54,766**	**1,270**	**763**	**63,173**	**5.8%**

Source: DRS, Soarian Date Extracted: May 2015

Notes:

1 Total population over 12 years old (CHI, August 2015)

2 Unspecified: No type of Diabetes recorded

3 NHSGGC residents only

4 Unassigned: Incomplete or incorrect postcodes - unable to assign CHP

5 As of April 2015, North & South Lanarkshire are no longer included

Table 7.3 gives a breakdown of the number of people with diabetes by ethnicity and gender. Of the total population with diabetes, 55.2% were male and 44.8% were female. That largest majority of people with diabetes were of white origin 80.6% followed by South East Asian origin at 7.4%.

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

Ethnicity	Female		Male		Total	
	N	%	N	%	N	%
Black (African, Caribbean, Other)	273	1.0%	348	1.0%	621	1.0%
South East Asian (Asian, Bangladeshi, Pakistani)	1,969	7.0%	2,733	7.8%	4,702	7.4%
Chinese	240	0.8%	298	0.9%	538	0.9%
Other (including mixed origin)	525	1.9%	721	2.1%	1,246	2.0%
White (White other, British, Irish, Scottish)	23,012	81.2%	27,893	80.0%	50,905	80.6%
Unknown*	2,304	8.1%	2,857	8.2%	5,161	8.2%
Total	**28,323**	**44.8%**	**34,850**	**55.2%**	**63,173**	

Source: DRS, Sorian Date Extracted: May 2015

* includes Not Recorded, Not Specified and Unknown

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, 25,534 (40.4%) are resident in the most deprived areas compared to 9,079 (14.4%) who live in the least deprived areas.

Figure 7.3 illustrates the summary of the NHSGGC Diabetic Retinopathy Screening programme for the period 1 April 2014 to 31 March 2015.

Of the 63,173 patients with diabetes, 53,325 (84.4%) were eligible for screening. Of those, 90.1% (48,020) were screened. This means that 76.7% of the total population with diabetes in NHSGGC was screened in 2014/15.

9,848 (15.6%) 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 (48,020), 1,761 were referred to Ophthalmology for further investigation.

Table 7.4 NHSGGC eligible population for Diabetic Retinopathy Screening split by age group

	Most Deprived								Least Deprived					
Age Group	1		2		3		4		5		Unassigned		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
12 to 19	221	0.9%	105	0.9%	80	1.0%	68	0.9%	104	1.1%	18	1.7%	**596**	**0.9%**
20 to 29	562	2.2%	278	2.3%	258	3.1%	207	2.9%	195	2.1%	38	3.6%	**1,538**	**2.4%**
30 to 39	1,257	4.9%	535	4.5%	383	4.6%	293	4.1%	307	3.4%	93	8.8%	**2,868**	**4.5%**
40 to 49	2,967	11.6%	1,247	10.4%	818	9.8%	631	8.7%	627	6.9%	131	12.5%	**6,422**	**10.2%**
50 to 59	5,654	22.1%	2,602	21.8%	1,766	21.2%	1,400	19.4%	1,674	18.4%	252	24.0%	**13,348**	**21.1%**
60 to 69	6,399	25.1%	2,950	24.7%	2,098	25.1%	2,000	27.7%	2,530	27.9%	239	22.7%	**16,216**	**25.7%**
70 to 79	5,444	21.3%	2,665	22.3%	1,849	22.2%	1,663	23.1%	2,202	24.3%	178	16.9%	**14,001**	**22.2%**
80 to 89	2,696	10.6%	1,381	11.6%	967	11.6%	822	11.4%	1,256	13.8%	82	7.8%	**7,204**	**11.4%**
90 to 99	326	1.3%	181	1.5%	125	1.5%	128	1.8%	180	2.0%	16	1.5%	**956**	**1.5%**
100+	8	0.0%	5	0.0%	3	0.0%	1	0.0%	4	0.0%	3	0.3%	**24**	**0.0%**
Total	**25,534**	**40.4%**	**11,949**	**18.9%**	**8,347**	**13.2%**	**7,213**	**11.4%**	**9,079**	**14%**	**1,051**	**1.7%**	**63,173**	

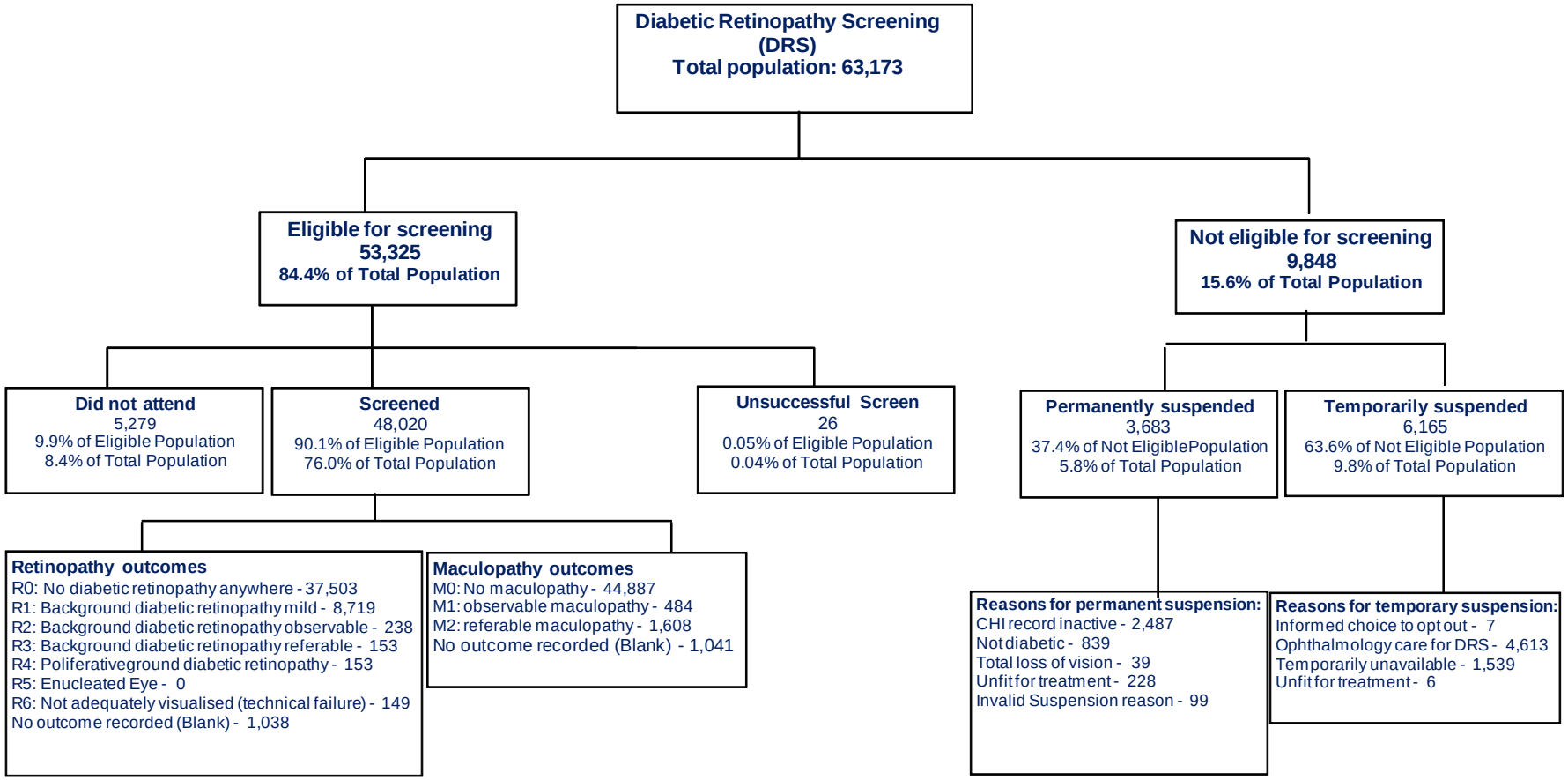
Source: DRS, Soarian Date Extracted: May 2015

Notes:

Unassigned SIMD: Postcode incompleted or only partially recorded - unable to assign SIMD

Age calculated as at financial year end (ie 31/03/2015)

Figure 7.3 Summary **uptake and results of NHSGGC Diabetic Retinopathy Screening Programme for period 1 April 2014 to 31 March 2015**



Source: DRS, Soarian Date Extracted: May 2015
Note: As of April 2015 North & South Lanarkshire are no longer included

The overall uptake rate of diabetic retinopathy screening was 90.1% and exceeded the minimum standard of 80% (**Table 7.4**). Uptake across all CH(CP) areas also exceeded the minimum standard. Lowest uptake of 87.8% was among residents living in West Dunbartonshire CHP and highest uptake of 94.3% was in East Dunbartonshire area. (**Table 7.4**).

Table 7.4 Diabetic Retinopathy Screening programme uptake for NHSGGC residents by CHP area

CH(C)P	Total Population	Eligible Population	Screened	Uptake
East Dunbartonshire	5,207	4,441	4,189	94.3%
East Renfrewshire	4,366	3,686	3,454	93.7%
Glasgow North East	10,371	8,880	7,797	87.8%
Glasgow North West	9,667	8,070	7,162	88.7%
Glasgow South	13,503	11,236	9,965	88.7%
Inverclyde	4,733	3,986	3,615	90.7%
Renfrewshire	9,859	8,333	7,655	91.9%
West Dunbartonshire	5,277	4,566	4,071	89.2%
Unassigned[2]	190	127	112	88.2%
NHSGGC Total[3]	**63,173**	**53,325**	**48,020**	**90.1%**

Source: DRS, Soarian Data Extracted: May 2015

Notes

1 NHSGGC residents only

2 Unassigned: Incomplete or incorrect postcodes - unable to assign CHP

3 As of April 2015, North & South Lanarkshire are no longer included

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.

Developments

DRS/OCT clinics

The National Diabetic Retinal Screening (DRS) protocol, Scotland, relies on surrogate markers like hard exudates and a single blot haemorrhage within one disc diameter of the fovea, detected on digital photography, to identify possible macular oedema. These are deemed as M2 maculopathy referable to secondary care.

A previous audit by DRS GGC confirmed the presence of high false positives and unnecessary referrals to secondary care (only 2 out of 191 referrals requiring intervention).

Optical Coherence Tomography (OCT) has demonstrated its ability to clearly identify macular oedema.

A pilot DRS/OCT clinic was started in January 2012 at the new Victoria, and expanded in January 2013 to include the Southern General as well.

Analysis has shown that between January 2013 and December 2014, 725 patients with M2 maculopathy were seen at the South Glasgow DRS/OCT clinics who would previously have been referred directly to secondary care. Of these 725, only 99 were found to have features on OCT requiring further referral to the ophthalmology clinic. This means that there has been a reduction of M2 maculopathy referrals to ophthalmology of 86.4%.

In February 2015, Access Team Funding was obtained from Ophthalmology to allow the DRS/OCT clinics to expand to cover North Glasgow in addition to the established South Glasgow DRS/OCT clinics. Almost 50 patients per month with M2 maculopathy from North Glasgow have now been seen at the DRS/OCT clinic at Glasgow Royal Infirmary.

This means that almost all M2 maculopathy referrals from within Glasgow are now seen at DRS/OCT clinics and only referred to ophthalmology if the OCT deems that necessary.

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 March 2015)

Dr Emilia Crighton	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
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mr Carsten Mandt	Co-ordinator for MCN for Diabetes
Miss Nicola McElvanney	AOC Chair
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

- 5,616 men aged 65 were invited to participate in the AAA Screening programme.
- 4,493 (80%) took up screening, exceeding the minimum standard of 70%.
- Lowest uptake overall was 72.3% among residents in the most deprived neighbourhoods while uptake among residents in the least deprived areas was 89%.
- Lowest uptakes were found in Glasgow North East 73.2%; Glasgow North West at 73.5% and Glasgow South at 78.6%.
- 60 men were found to have an aneurysm measuring between 3.00 and 5.4 cm and are currently on surveillance.
- Four men had an aneurysm measuring over 5.5 cm that required surgical assessment and intervention.
- 1.3% required surveillance and 0.1% were referred to secondary care for assessment.

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 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, 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

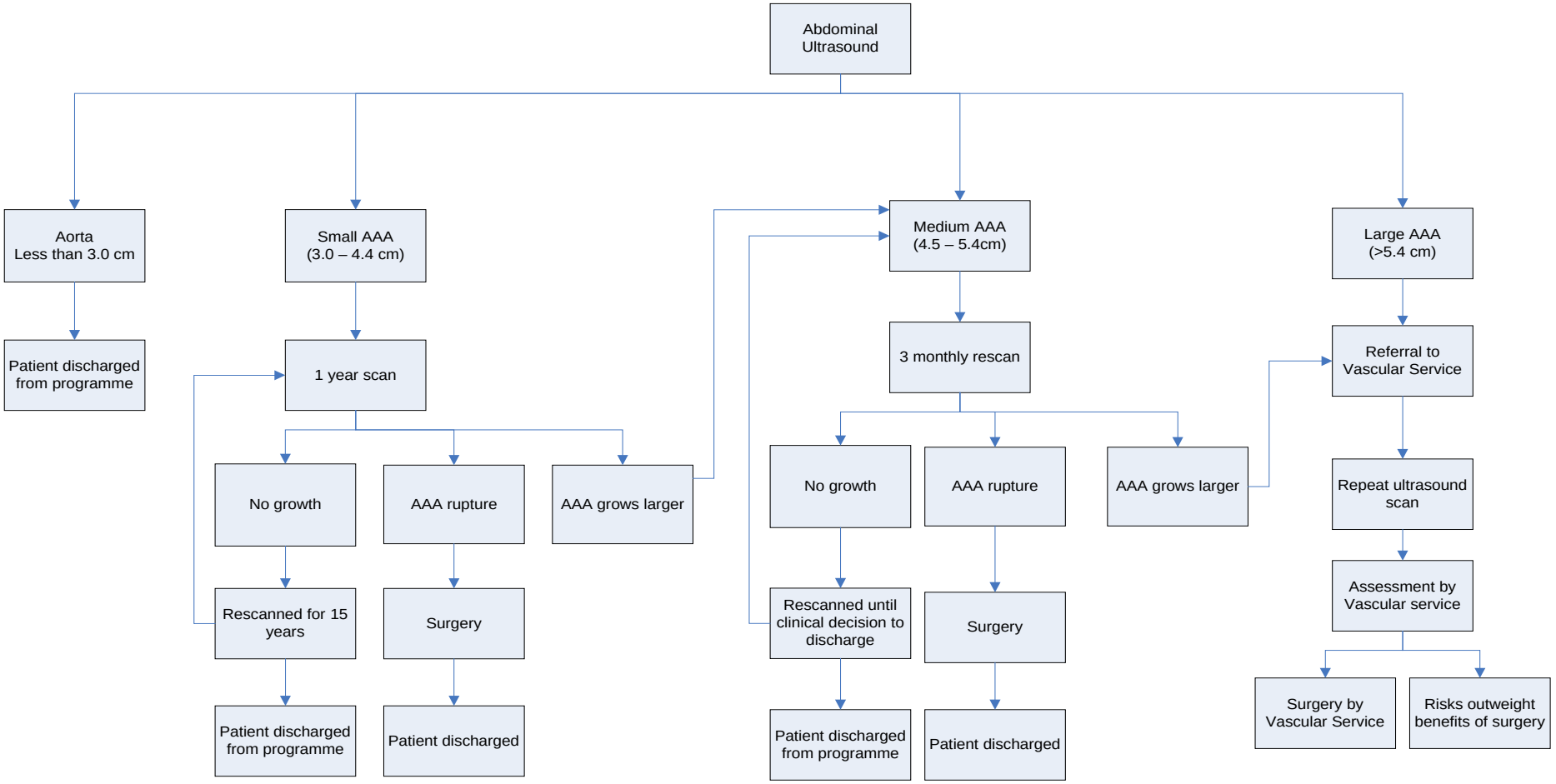
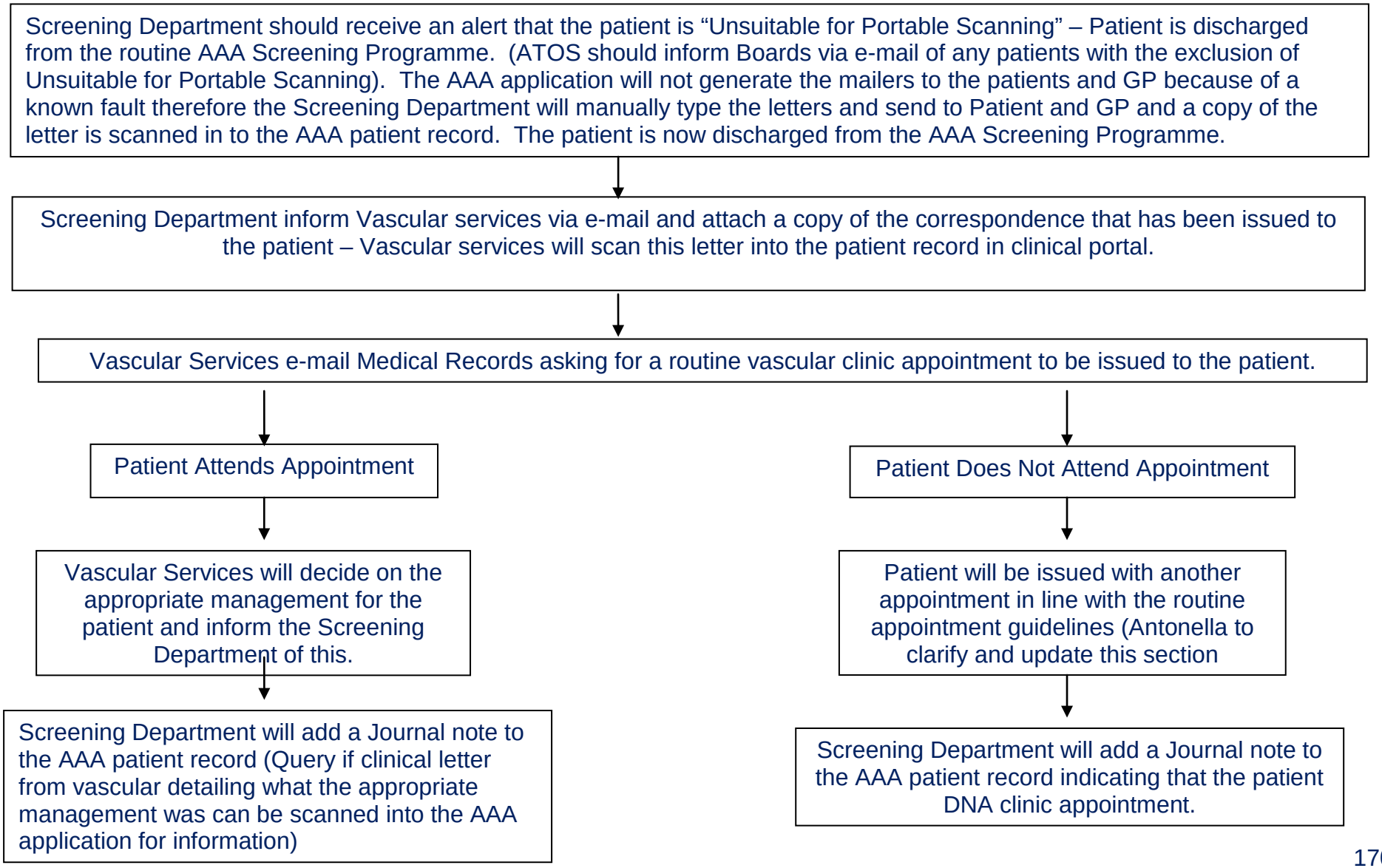


Figure 8.2 Pathway for participants that are unsuitable for portable scanning



Delivery of NHSGGC Abdominal Aortic Aneurysm Screening

Table 8.1 shows the estimated eligible screening population from 2014 to 2021.

Table 8.1 Eligible 65 year old male population

2014	2015	2016	2017	2018	2019	2020	2021
5,815	5,691	5,671	5,570	5,907	5,858	6,191	6,398

Source: National Services Division business case (2008)

From 1 April 2014 to 31 March 2015, 5,616 men aged 65 were invited to participate in the AAA Screening programme. Of the total invited, 4,493 (80%) took up screening, exceeding the minimum standard of 70%. (**Table 8.2**).

Table: 8.2 NHSGGC AAA Screening activity 1 April 2014 – 31 March 2015

Activity	**NHSGGC**
Number Invited	5,616
Attended	4,493
Did Not Attend	1,093
% Uptake	**80.0**
% DNA	**19.5**

Source: Abdominal Aortic Aneuysm (AAA) BO; extracted August 2015

Note: 30 patients had an appointment in the future. These patients have been included in the total

Table 8.3 shows the abdominal aortic aneurysm screening uptake varied across the different deprivation categories. Lowest uptake was 72.3% among residents in the most deprived neighbourhoods while uptake among residents in the least deprived areas was 89%. Lowest uptakes were found in Glasgow North East 73.2%; Glasgow North West at 73.5% and Glasgow South at 78.6%.

Table 8.3 NHSGGC Abdominal Aortic Aneurysm Screening uptake by CHP and deprivation category

					% Uptake by SIMD 12						
CH(C)P	Invited	Attended	DNA	DNA	1	2	3	4	5	Unassigned[1]	Total
	(N)	(N)	(N)	%	%	%	%	%	%	%	%
East Dunbartonshire	636	564	71	11.2	70.0	87.7	88.6	88.0	90.1	100.0	88.7
East Renfrewshire	518	448	69	13.3	66.7	75.8	76.3	90.4	89.2	100.0	86.5
Glasgow North East	738	540	191	25.9	70.1	67.3	80.0	89.7	87.5	0.0	73.2
Glasgow North West	808	594	209	25.9	68.6	72.0	72.3	75.5	84.8	66.7	73.5
Glasgow South	982	772	208	21.2	75.3	73.2	82.7	82.6	93.5	100.0	78.6
Inverclyde	487	397	85	17.5	75.3	88.3	87.5	82.8	89.1	100.0	81.5
Renfrewshire	931	749	177	19.0	67.2	71.8	84.1	84.6	89.6	100.0	80.5
West Dunbartonshire	493	414	77	15.6	84.2	82.4	87.1	84.4	76.9	100.0	84.0
Unassigned[1]	10	8	1	10.0						80.0	80.0
Total[2]	**5,616**	**4,493**	**1,093**	**19.5**	**72.3**	**76.2**	**82.2**	**84.6**	**89.0**	**84.8**	**80.0**

Source: Abdominal Aortic Aneuysm (AAA) BO; extracted August 2015

Note:

1. Due to incomplete/incorrect postcodes uable to assign SIMD

2. As of april 2015, former GGC residents transferred to North and South Lanarkshire and are not included

Table 8.4 shows that 60 men were found to have an aneurysm measuring between 3.00 and 5.4 cm and are currently on surveillance. Four men had an aneurysm measuring over 5.5 cm that required surgical assessment and intervention. 1.3% required surveillance and 0.1% were referred to secondary care for assessment.

Table 8.4 NHSGGC Abdominal Aneurysm Screening results for the period 1 April 2014 to 31 March 2015

Largest Measure	Total
<3	4,427
3.00 - 5.40	60
5.5+	4
Total	**4,493**
% requiring surveillance	1.3
% requiring secondary care	0.1

Source: Abdominal Aortic Aneuysm (AAA) BO; extracted August 2015

Note: 2 patients did not have a measurement recorded

Information Systems

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

Staffing

Six screeners have been trained in 2014/15 to provide the service on a weekly basis, and four sonographers have been trained as a back up support for the screeners.

Challenges/Future Priorities

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

APPENDIX 8.2

Members of Abdominal Aortic Aneurysm Screening Steering Group (as at March 2015)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Dr Sandy Binning	Clinical Director, Critical Care
Mrs Kate Blacklock	Health Records Site Manager
Mr Paul Burton	Senior Information Analyst
Mrs Lin Calderwood	HI&T Service Delivery Manager
Mrs Marie Devine	Radiographer
Mrs Antonella Grimon	AAA Data Administrator
Mrs Marilyn Horne	Health Records Services Manager
Dr Ram Kasthuri	Consultant Interventional Radiologist
Miss Denise Lyden	Project Officer
Ms Aileen MacLennan	Director, Diagnostics
Mrs Susan McFadyen	General Manager
Mr Nick Pace	Clinical Director, Theatres and Anaesthesia
Mrs Elizabeth Rennie	Programme Manager, Screening Department
Mrs Lynn Ross	General Manager, Diagnostics
Mr Wesley Stuart	Lead Clinician
Ms Jackie Wilson	Clinical Service Manager (Vascular)
Mr George Welch	Associate Medical Director

ACKNOWLEDGEMENTS

This annual report was prepared by Dr Emilia Crighton, Consultant in Public Health Medicine and Denise Lyden, Project Officer Public Health Screening Unit in collaboration with colleagues across NHS Greater Glasgow and Clyde.

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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 Liaison Group, Regional Cancer Advisory Group and the Diabetes Managed Care Network.