

Greater Glasgow and Clyde NHS Board

Board Meeting

15 February 2011

Board Paper No: 11/03

Director of Public Health

Public Health Screening Programmes Annual Report 1 April 2009 to 31 March 2010

## RECOMMENDATION

Members are asked to **note** the attached *Public Health Screening Programmes Annual Report from 1 April 2009 to 31 March 2010*.

## INTRODUCTION

This annual report presents information about the following screening programmes offered to residents across NHS Greater Glasgow and Clyde for the period 2009/10:

- Cervical Screening
- Bowel Screening
- Breast Screening
- Communicable Diseases in Pregnancy
- Down's syndrome and other congenital anomalies
- Pregnancy and Newborn Bloodspot
- Universal Newborn Hearing
- Diabetic Retinopathy Screening
- Pre-School Vision Screening

This year the report includes progress on :

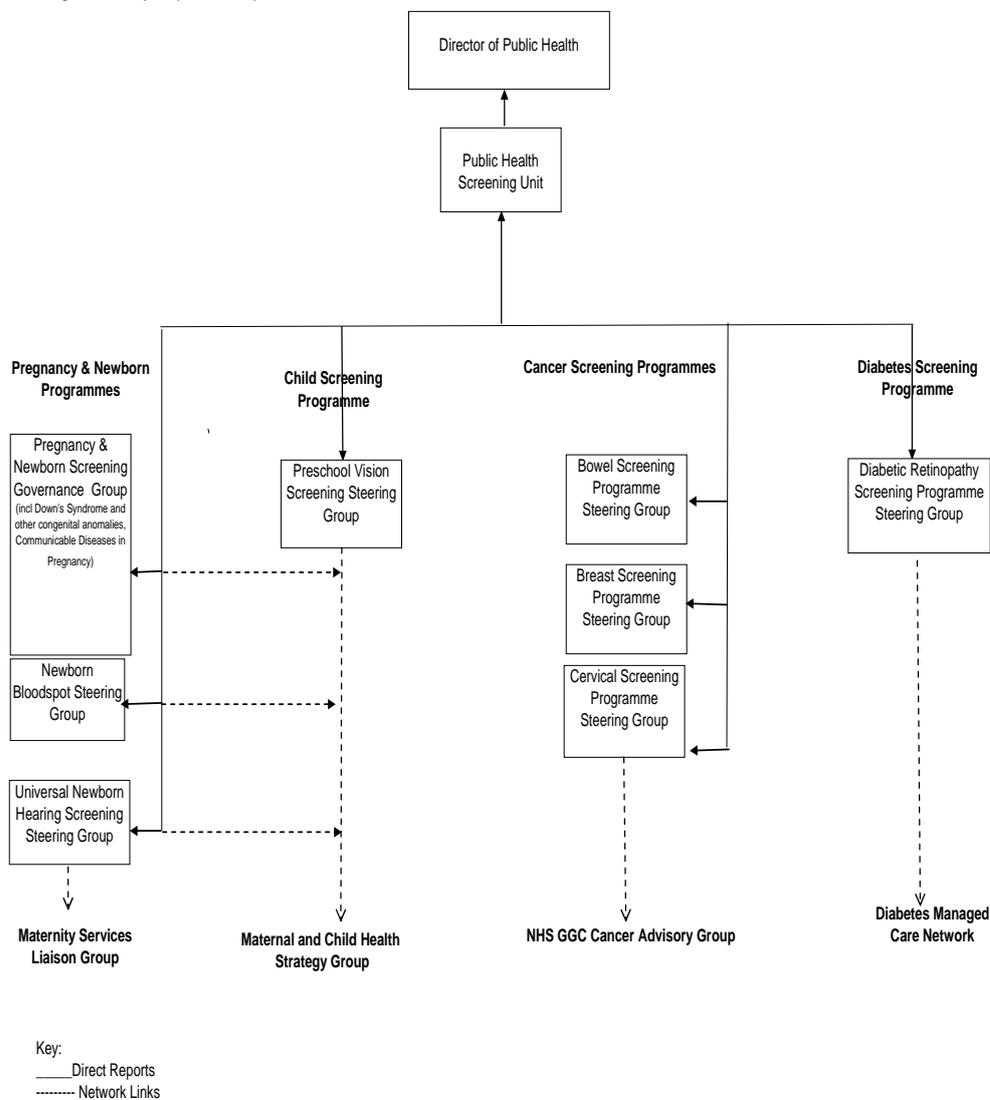
- the replacement of the existing Pregnancy Screening Programme offered for Down's syndrome and other congenital anomalies
- the implementation of haemoglobinopathy screening both during pregnancy and for newborn babies
- the extension of the newborn bloodspot screening programme to include screening for Medium Chain Acyl CoA Dehydrogenase Deficiency (MCADD)

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 NHS Greater Glasgow and Clyde, the co-ordination of all screening programmes is the responsibility of the Public Health Screening Unit 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.

Figure A illustrates the reporting and accountability lines.

Figure A: Accountability arrangements for population screening programmes across NHS Greater Glasgow and Clyde (as at 2010)



In 2009/2010, approximately 238,212 NHS Greater Glasgow and Clyde residents were eligible for screening (see **Table A**). **Table A** also shows that 35.7 % of NHS Greater Glasgow and Clyde population live in the most deprived areas of Scotland as determined by the Scottish Index of Multiple deprivation.

**Table A: Total NHS Greater Glasgow and population and total number and percentage of eligible screening population.**

	SIMD 2009					Total	% Living in most deprived area
	Most Deprived			Least Deprived			
Screening Population	1	2	3	4	5		
Total GGC Population	426,151	209,263	173,639	167,051	222,680	1,194,472	35.7%
<b>Target Screening Population <sup>1</sup></b>	<b>83,143</b>	<b>41,231</b>	<b>34,349</b>	<b>33,624</b>	<b>45,866</b>	<b>238,212</b>	<b>34.9%</b>
% of total GGC population	19.5	19.7	19.8	20.1	20.6	19.9	
<b>% of target screening population</b>	<b>34.9</b>	<b>17.3</b>	<b>14.4</b>	<b>14.1</b>	<b>19.3</b>	<b>100.0</b>	

**Table B: The eligible population by screening programme for NHS Greater Glasgow and Clyde and split by deprivation category**

Screening Programme	SIMD 2009					Total	% Living in most deprived area
	Most Deprived			Least Deprived			
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Bowel Screening	34,879	17,943	14,600	14,890	22,572	104,885	33.3%
Breast Screening	16,130	8,182	6,769	6,877	10,409	48,367	33.3%
Cervical and Pregnancy Screening <sup>2</sup>	41,712	20,633	17,590	16,917	20,976	117,828	35.4%
Newborn Screening Programmes <sup>3</sup>	6,016	2,410	1,781	1,729	2,120	14,056	42.8%
Diabetic Retinopathy Screening <sup>4</sup>	14,647	7,400	6,107	5,870	7,762	41,785	35.1%
Pre-School Vision Screening	5,201	1,965	1,697	1,735	2,419	13,017	40.0%

Source: Small Area Population Estimates (SAPE) 2009

<sup>1</sup> Target screening population- Number of people eligible for screening within 1 year

<sup>2</sup> Figures for cervical will also include women of child bearing years. Programmes: Downs & Neural Tubes; Communicable Diseases

<sup>3</sup> Programmes: Newborn Bloodspot; Universal Newborn Hearing

<sup>4</sup> A prevalence rate of 4% has been taken of the total population to give an approximation of Target population

SIMD - Scottish Index of Multiple Deprivation

**Table B** gives a breakdown of the total number of eligible population by screening programme and by deprivation category.

## **Health Inequalities**

As part of NHS Greater Glasgow and Clyde's commitment to tackle inequalities in health, the Public Health Screening Unit engaged with voluntary and statutory services to identify innovative ways to encourage and promote uptake of screening programmes.

We engaged with local CH(C)P Health Improvement Teams and voluntary groups, such as Bowel Cancer UK and Cancer Research UK to develop local protocols to encourage and include groups that, because of various social and economic circumstances, could potentially be excluded or prevented from taking up any of our public health screening programmes. For example, organising a women's event such as Bums, Tums and Breasts to raise awareness of bowel, cervical and breast cancer and encourage uptake; providing patient testimonials to local press; and engaging with local Mosques to promote bowel screening among Muslim communities.

Screening programmes stretch across the whole organisation and the 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 NHS Quality Improvement Scotland which we strive to meet.

A rolling programme to complete Equality Impact Assessments for each of the screening programmes is in place and is due to be completed in 2011. The outcome of the assessments will identify any areas of the service that prevent service users from receiving equal access to services or receiving treatment when taking part in any screening programme.

## **CERVICAL SCREENING**

- Cervical cancer is caused by oncogenic types of human papilloma virus (HPV), mainly types 16 and 18.
- Women aged 20 to 60 who live in Greater Glasgow and Clyde areas are invited to have a smear test taken every three years.
- In 2009/10, there were approximately 362,000 women aged 21 to 60 resident in NHS Greater Glasgow and Clyde in the target population. Following the exclusion of those with no cervix, approximately 344,500 women were eligible to be invited to participate in the programme over three years. Each year approximately 116,000 women are sent an invitation to attend.

- We calculated the uptake rates of NHS Greater Glasgow and Clyde residents: the 5.5 year cervical screening uptake rate, when only the no cervix exclusion has been applied, decreased from 72.7% in 2008/09 to 71.5% in 2009/10. This is significantly less than the 81.5% reported in 2001.
- When exception categories allowed under the General Medical Services (GMS) contract were included, the calculated 5.5 year uptake rate in 2009/10 was 83.6% which is consistent with the uptake in 2008/09 (83.6%)
- There is an 11.5% difference in the uptake rate calculated for the purpose of QIS Standard and GMS contract.
- On average, 32% of women aged 21 to 60 had been excluded under one of the GMS exclusion categories. 25.4% of women have been excluded as they defaulted following an invitation followed by two reminder letters to take part in screening, while 4.8% of women have been excluded as they have no cervix.
- The percentage of defaulters increased from 18.5% in 2007/08 to 25.4% in 2009/10. The increase could be due to the reversal of incentives brought about by the GMS contract for primary care to actively encourage women to take up cervical screening.
- West Glasgow CHCP and South East Glasgow CHCP did not reach the overall GMS target of 80% across a number of practices.
- The uptake of cervical screening varied across different age groups. The lowest 5.5 year uptake in 2009/10 was among the 21 to 24 year at 54% when only no cervix exclusion was applied. When calculations were made for the purpose of General Medical Services target payments the uptake was 72.3%.
- The cervical screening uptake rate varied across deprivation categories. The lowest 5.5 year uptake rate in 2009/10 was seen among women resident in the most deprived neighbourhoods where the uptake rate was 68.2% while among the women living in the least deprived neighbourhoods, the uptake rate was 78.1% when only the no cervix exclusion was applied. When calculations were made for the purpose of General Medical Services target payments the uptake among women living in the most deprived neighbourhoods was 80.6%, whereas for those living in the least deprived areas it was 87.3%.
- Approximately 105,300 smear tests were processed and reported in laboratories in NHS Glasgow and Clyde in 2009/10. These included repeat smears and smears taken at colposcopy (one woman can have more than one smear test). This represents a decrease of 10,726 (10%) from the number of smears processed in 2009/10 compared to 116,055 smears processed in 2008/09.

- There has been a gradual increase of unsatisfactory smears from 2.1 % in 2005/06 to 2.8% in 2009/10. The rate increase is lower than the 7.7% reported in 2001, prior to the introduction of Liquid Based Cytology testing in 2003.
- In 2009/10, the proportion of results reported as abnormal smears in each of the cytopathology laboratories in NHSGGC, after excluding the unsatisfactory tests, was 10.3%. Abnormal smears results include: borderline, mild, moderate and severe dyskaryosis, severe dyskaryosis/invasive, glandular abnormality and adenocarcinoma.
- In 2009, the cervical screening histories of women who developed invasive cervical cancer were reviewed. Seventy-three patients were diagnosed with invasive cervical cancer in 2009. (The number of patients diagnosed with invasive cervical cancer in 2008 was 65; 67 in 2007; 49 in 2006; and 50 in 2005.) The largest number of cervical cancers occurred in women aged between 40 and 49 years. This was a change from the last 2 years where the most common age group for invasive cervical cancers were in women 30-39 years old.
- Over the five years audited, 50 women out of the 231 that developed cancer had never had a smear and 113 women had incomplete smear histories.
- There were 23 deaths over the five years audited, 90 women were under follow up at colposcopy service, 175 were under follow up in the oncology service.
- The Scottish Cervical Call Recall System (SCCRS) provides women with a complete e-health record detailing their whole smear history. Professionals involved with the screening programme have access to this system. Since the system was implemented, the turnaround time for smears reported has improved. The system also produces automated reports and more recently allows for individual smear taker and screener performance data to be produced.
- In an effort to improve uptake comparative practice-based uptake figures are sent to all practices and to the Community Health (and Care) Partnerships.
- Direct referral to colposcopy was introduced in April 2010 to improve the referral time to colposcopy to one week to comply with the new waiting times targets.
- To reduce the number of unsatisfactory smears, an in-house staff cervical skills update training programme was introduced in May 2010.
- Following the outcome of an Equality Impact Assessment, improvements were made to communications and information materials given to women. Information resources are now being offered in different formats. The

Cytology Skills training programme now includes communication training for smear takers to explain in user friendly terms about the screening programme and outcome of abnormal smears.

## **BREAST SCREENING**

- This report represents interim data for the breast screening round May 2006 – May 2009 in NHS Greater Glasgow and Clyde.
- In April 2010, two view mammography for incident screens was introduced across NHS Greater Glasgow and Clyde for women attending for screening.
- The number of women eligible for breast screening across the area of Greater Glasgow and Clyde per screening year was 48,367.
- From May 2006 to May 2009, 145,452 eligible women registered with a practice in NHS Greater Glasgow and Clyde area were invited to attend breast screening. These included some women living in other NHS board areas registered with a practice in NHS Greater Glasgow and Clyde.
- The screening programme met the minimum performance attendance standard of 70%. 103,112 women (70.6% of those invited) attended breast screening during the reported period. This was lower than the Scottish average of 74.9%. Uptake increased since the introduction of the programme until 2003/06 round and has plateaued since then.
- There were 686 women who were diagnosed with breast cancer following screening.
- West of Scotland Breast Screening Centre Staff were trained on the benefits of lifestyle choices that people can make to reduce the risk of developing cancer, such as physical activity and alcohol consumption. This training, along with other resources, will give patients the opportunity to ask about services that are available to support any behaviour change.

## **BOWEL SCREENING PROGRAMME**

- Colorectal (Bowel) Cancer is the third most common cancer in Scotland after prostate (for men), lung (for both men and women) and breast (for women) cancers. (*Cancer in Scotland (2010): Information Services Division, NHS National Services Scotland*)).
- The Scottish Bowel Screening Programme was launched in 2007 and was fully implemented across Scotland by the end of 2009.

- 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 will be able to participate. Thereafter, all eligible individuals will be routinely recalled every two years.
- All eligible individuals are sent a “teaser” (early notification) letter two weeks before the screening kit is sent to advise them that they will be sent the bowel screening kit.
- 196,961 residents in NHS Greater Glasgow and Clyde residents were invited to participate in the Bowel Screening programme.
- 99,784 test results were reported by the Bowel Screening laboratory and this gives an estimated uptake of 50.7%.
- Uptake was highest in East Dunbartonshire CHP and East Renfrewshire CHCP (60.2% and 58.9% respectively).
- Uptake was lowest in East Glasgow CHCP and North Glasgow CHCP (43.9% and 45% respectively).
- 1,643 patients received a positive result. This represents a positivity screening rate of 1.6%. This was lower than the national average range of 1.9% to 2.3% reported in the *Scottish Bowel Screening Programme KPI reports* ([www.ISDscotland.org](http://www.ISDscotland.org) 25 August 2009).
- Of the 1,643 patients screened positive, 1,558 patients were pre-assessed prior to colonoscopy. 85 patients did not respond to the offer of a colonoscopy pre-assessment.
- 1,381 (84.1%) patients completed colonoscopy investigations by 31 March 2010. 12.8% (177) patients refused to take up the offer of a colonoscopy. Of the total eligible population invited to take part in bowel screening, 122 cancers were detected (6 in 10,000).
- Uptake was highest among females at 54.4% compared to the male population at 46.8%. The lowest uptake of 39.6% was among the 50-54 year old male population group.
- The positivity rate was highest among men at 2.2% compared to women at 1.2%. The male population age group of 70 to 74 had the highest positivity rate of 3.7% compared to all other groups.
- To minimise the complication rates for colonoscopy, skills update training and audit for screening colonoscopists were implemented.

- A bespoke information management and technology system to support the bowel screening programme was developed in-house. 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.
- NHS Greater Glasgow and Clyde has implemented several initiatives to promote uptake based on the experience from the breast screening programme.
- NHS Greater Glasgow and Clyde commissioned a TV and radio advertising and poster campaign to help raise public awareness and maximise the uptake of the bowel screening programme. The campaign ran from April to August 2009. The evaluation of the campaign reported that by using TV advertising, TV awareness was 46% and that the total campaign awareness was 53%. (*Bowel Screening Campaign, MRUK Omnibus, June 2009, The Bridge*). The campaign won the 2010 Gold Star Social Marketing Award.
- A Health Improvement Cancer Screening Group was set up to increase public awareness and encourage uptake of the bowel screening programme. The group meets regularly and has developed local action plans that are regularly updated.
- Training has been developed on Bowel Awareness and Bowel Screening. This course is available to key health and care employees to increase their knowledge and skills on these topics.

## **COMMUNICABLE DISEASES IN PREGNANCY**

- All pregnant women are offered screening for the four communicable diseases, and receive information about the screening tests prior to attendance at their first booking visit.
- To comply with the NHS Quality Improvement Scotland standards (*Clinical Standards 2005, Pregnancy and Newborn Screening*), protocols covering each of the four communicable diseases routinely tested for in pregnancy – HIV, rubella, hepatitis B virus and syphilis - have been developed and implemented throughout Greater Glasgow and Clyde. These protocols are major steps towards a consistent approach to co-ordinating this screening programme throughout the Board area.
- 16954 pregnant women were referred for a first booking visit in Greater Glasgow and Clyde during 2009/10.
- Laboratory data indicates that the uptake of screening for communicable diseases in pregnancy has risen from last year and is now greater than 96% for all four communicable diseases.

- Fourteen women were identified as having HIV by the screening programme, only 9 of whom were previously known to be HIV positive. Seventy nine women were detected as having hepatitis B virus, 33 of whom were previously known to be chronic carriers of the virus. Seven women were identified by the screening programme to be positive for syphilis and required treatment and follow-up. As the majority of the women with HIV or HBV were not previously known to be infected, the detection of these women and the implications for their health and the health of their babies are immense and illustrates the success of the screening programme. All infected women and their babies were offered appropriate treatment and care.

## **DOWN'S SYNDROME AND NEURAL TUBE DEFECTS**

- In NHS Greater Glasgow and Clyde screening for Down's syndrome and neural tube defects (NTDs) is offered to all pregnant women.
- In the year 2009/10, 16,954 women attended antenatal clinics across NHS Greater Glasgow and Clyde. 15,202 women were NHS Greater Glasgow and Clyde residents and 1,752 women lived outwith the Board area.
- There are two screening pathways in NHS Greater Glasgow and Clyde: first trimester combined ultrasound and biochemical testing for Down's syndrome and 18-20 week fetal anomaly ultrasonography offered to women booking in the Clyde area of NHS Greater Glasgow and Clyde; and second trimester blood testing and fetal anomaly ultrasonography offered to women booking in Greater Glasgow. This will change during 2011.
- In 2009/10, the overall uptake for Down's syndrome and neural tube defects was 61.7%. 0.5% of pregnant women chose to have only neural tube defect screening.
- Following the second trimester screening, 4.2% of women were assigned to the 'higher chance' of Down's syndrome group, 0.1% of women assigned to the 'higher chance' of trisomy 18 group and 2.4% of women with an elevated AFP giving a 'higher chance' of a neural tube defect.
- 493 amniocentesis tests were analysed by the Cytogenetics Laboratory. 38 abnormalities were detected (7.7% of samples) and 32 of those (6.5% of total tests) had a diagnosis of trisomy (Down's syndrome/Trisomy 18).
- 114 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2008/09. 29 abnormalities were detected (25.4% of tests) and 19 of those (16.7% of tests) had a diagnosis of trisomy (Down's syndrome/Trisomy 18).

- To date, it is known that 15 cases of Down's syndrome, 4 cases of trisomy 18 and 4 cases with neural tube defects were detected antenatally by screening. Some babies born with these conditions will not be diagnosed during pregnancy as a number of women that had a "higher chance" screening result would not take up the offer of diagnostic test (amniocentesis or CVS).
- From 2011, all women in NHS Greater Glasgow and Clyde will be offered combined ultrasound and biochemical screening (CUBS) in the first trimester of pregnancy and a second trimester fetal anomaly ultrasound (FAS) scan between 18 weeks, 0 days and 20 weeks, 6 days. Women who do not present early enough in their pregnancy to take advantage of first trimester screening will be offered second trimester blood serum screening.

## **NEWBORN BLOODSPOT SCREENING**

- The newborn bloodspot screening programme offers tests to detect certain abnormalities which can cause problems in growth and development and for which there is effective management or treatment. The conditions screened for are phenylketonuria, congenital hypothyroidism and cystic fibrosis.
- Newborn Screening for phenylketonuria and congenital hypothyroidism has been in progress since 1965 and 1979 respectively. Newborn screening for cystic fibrosis was added in Scotland in February 2003.
- In 2009/10, 14,251 babies resident in NHS Greater Glasgow and Clyde were screened; that is 98% of the total eligible population of 14,548.
- In 2009/10 of the 15,477 bloodspot samples received, 172 (1.1%) bloodspot specimens could not be analysed due to insufficient amounts of blood on the bloodspot card. This required repeat bloodspot screening tests to be carried out on babies. 169 (1%) samples received had taken more than seven days to arrive at the laboratory.
- There were five positive cases of phenylketonuria detected, six babies with congenital hypothyroidism and 11 babies with cystic fibrosis. All received appropriate management within the timescale of the standard.
- The proportion of bloodspot cards with a CHI number sent for analysis increased from 87.9% in April 2009 to 93.3% in March 2010 compared to the national average of 63.9% in April 2009 and 83.9% in March 2010.

## **UNIVERSAL NEWBORN HEARING SCREENING**

- The Universal Newborn Hearing Screening (UNHS) Programme was introduced across NHS Greater Glasgow and Clyde in 2005.
- 14,111 babies born in 2009/10 in NHS Greater Glasgow and Clyde. 6,071 (43%) of babies were born to residents living in the most deprived areas.
- Of the 14,111 babies born in 2009/10, 13,679 were screened for a hearing loss giving an overall uptake of 97%. 1,544 babies required a second stage follow up and, of these, 203 (13%) babies were referred to audiology and, of those, 27 babies were confirmed with a hearing loss (0.2% of the screened population). 432 (3%) babies did complete the screening programme. These include babies who did not turn up for screening, are deceased or have moved away from their current home address or transferred to another Board area.
- 6,071 (43% of total babies born) babies were born to residents living in the most deprived areas.
- An information leaflet for parents on prominent and folded ears is given out at the same time as the neonatal hearing assessment with details of the direct access clinics.
- NHS Greater Glasgow and Clyde is currently undertaking a value for money exercise of current IT provision and exploring alternative solutions. The outcome of the exercise will be completed by January 2011.

## **DIABETIC RETINOPATHY SCREENING**

- 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.
- 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.
- There were 55,832 NHS Greater Glasgow and Clyde residents with a diagnosis of diabetes at 2 April 2010. This represents an increase of 3,137 (6%) from the previous year 2008/09. The current prevalence of diabetes among NHS Greater Glasgow and Clyde residents is 4%.
- Of the total eligible population, 48,459 (86.8%) residents were offered screening. Of those, 88.6% (42,916) were screened. This means that in total 76.9% of total eligible diabetic population in were screened in 2009/10.

- 7,373 people were not eligible for screening because they were either permanently or temporarily suspended from the programme. This represents an increase of 14% (909) from the previous year 2008/09.
- 23,351 (41.8%) of the total population with diabetes in NHS Greater Glasgow and Clyde are known to be resident in the most deprived areas compared to 7,915 (14.2%) who live in the least deprived areas. The largest proportion of people with diabetes was among the 50 – 79 year olds.
- 4,546 invited to be screened did not attend their appointment. This represents a decrease of 360 from 2008/09 returns.
- A survey carried out found that there was no clear pattern as to why patients failed to turn up. Some of the reasons included not receiving a letter, forgetting, not well, do not want to attend and bereavement.
- Work will continue to try to reduce the number of people not taking up appointments.

## **PRE-SCHOOL VISION SCREENING**

- All children born between 1 March 2005 and 28 February 2006 were offered pre-school vision screening in 2009/10.
- 13,511 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening. 41% of children live in deprived areas.
- 10,175 children were screened out of 13,235 eligible children in 2009/10. This gives an overall uptake rate of 76.9%. The uptake rate varied across the geographical location from 67.2% in East Glasgow to 81.8% in West Glasgow.
- 4,082 (30.8%) of the eligible children were invited to be seen by a hospital Orthoptics Department.
- 604 (4.6%) of eligible children were already attending an eye clinic.
- 125 (0.9%) parents refused consent for their children to be screened.
- 8,534 children were screened in a nursery setting; that represents 83.9% of all screened children and 64.5% of all eligible children.
- Following screening, 2,761 (27.1%) children were referred for further assessments. Of these, 520 (17.7%) were referred to an Optometrist for further assessment. This represents 3.8% of the total eligible population.

- 7,362 (70.9%) of children screened had a normal result following screening.
- Despite all efforts to recruit to the vacant Orthoptist post in East Glasgow, the post remains unfilled due to a national shortage of Orthoptists.



# **Public Health Screening Programmes**

## **Annual Report**

**1 APRIL 2009  
TO  
31 MARCH 2010**

Public Health Screening Unit

Version 1

Published: 15 February 2011

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## INTRODUCTION

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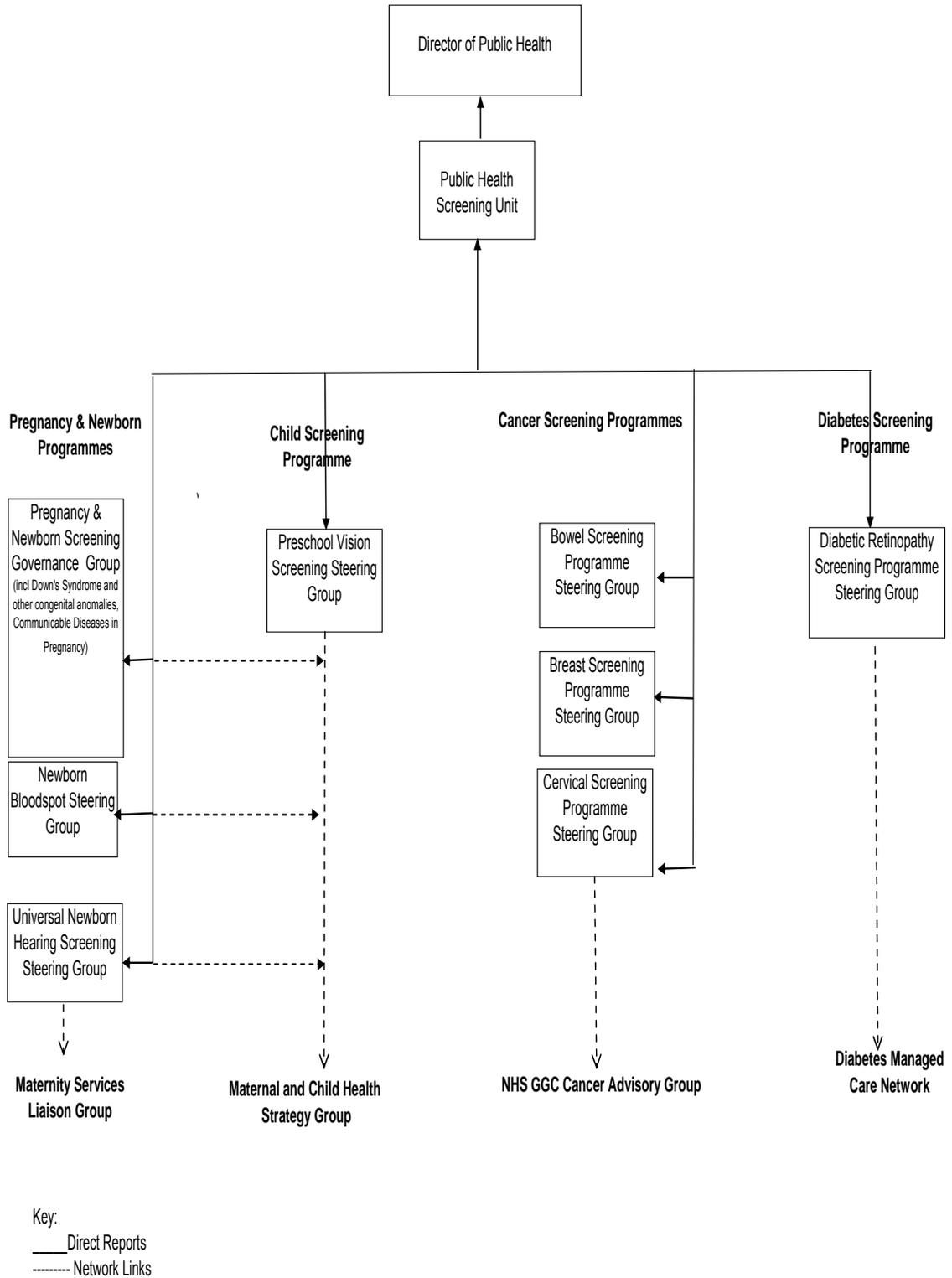
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Figure A illustrates the reporting and accountability lines.

Figure A: Accountability arrangements for population screening programmes across NHS Greater Glasgow and Clyde (as at 2010)



In 2009/2010, approximately 238,212 NHS Greater Glasgow and Clyde residents were eligible for screening (see **Table A**). **Table A** also shows that 35.7 % of NHS Greater Glasgow and Clyde population live in the most deprived areas of Scotland as determined by the Scottish Index of Multiple deprivation.

**Table A: Total NHS Greater Glasgow and population and total number and percentage of eligible screening population.**

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<b>Target Screening Population <sup>1</sup></b>	<b>83,143</b>	<b>41,231</b>	<b>34,349</b>	<b>33,624</b>	<b>45,866</b>	<b>238,212</b>	<b>34.9%</b>
% of total GGC population	19.5	19.7	19.8	20.1	20.6	19.9	
<b>% of target screening population</b>	<b>34.9</b>	<b>17.3</b>	<b>14.4</b>	<b>14.1</b>	<b>19.3</b>	<b>100.0</b>	

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## Health Inequalities

As part of NHS Greater Glasgow and Clyde's commitment to tackle inequalities in health, the Public Health Screening Unit engaged with voluntary and statutory services to identify innovative ways to encourage and promote uptake of screening programmes.

We engaged with local CH(C)P Health Improvement Teams and voluntary groups, such as Bowel Cancer UK and Cancer Research UK to develop local protocols to encourage and include groups that, because of various social and economic circumstances, could potentially be excluded or prevented from taking up any of our public health screening programmes. For example, organising a women's event such as Bums, Tums and Breasts to raise awareness of bowel, cervical and breast cancer and encourage uptake; providing patient testimonials to local press; and engaging with local Mosques to promote bowel screening among Muslim communities.

Screening programmes stretch across the whole organisation and the 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 NHS Quality Improvement Scotland which we strive to meet.

A rolling programme to complete Equality Impact Assessments for each of the screening programmes is in place and is due to be completed in 2011. The outcome of the assessments will identify any areas of the service that prevent service users from receiving equal access to services or receiving treatment when taking part in any screening programme.

## SUMMARY

### CHAPTER 1: CERVICAL SCREENING

- Cervical cancer is caused by oncogenic types of human papilloma virus (HPV), mainly types 16 and 18.
- Women aged 20 to 60 who live in Greater Glasgow and Clyde areas are invited to have a smear test taken every three years.
- In 2009/10, there were approximately 362,000 women aged 21 to 60 resident in NHS Greater Glasgow and Clyde in the target population. Following the exclusion of those with no cervix, approximately 344,500 women were eligible to be invited to participate in the programme over three years. Each year approximately 116,000 women are sent an invitation to attend.
- We calculated the uptake rates of NHS Greater Glasgow and Clyde residents: the 5.5 year cervical screening uptake rate, when only the no cervix exclusion has been applied, decreased from 72.7% in 2008/09 to 71.5% in 2009/10. This is significantly less than the 81.5% reported in 2001.
- When exception categories allowed under the General Medical Services (GMS) contract were included, the calculated 5.5 year uptake rate in 2009/10 was 83.6% which is consistent with the uptake in 2008/09 (83.6%)
- There is an 11.5% difference in the uptake rate calculated for the purpose of QIS Standard and GMS contract.
- On average, 32% of women aged 21 to 60 had been excluded under one of the GMS exclusion categories. 25.4% of women have been excluded as they defaulted following an invitation followed by two reminder letters to take part in screening, while 4.8% of women have been excluded as they have no cervix.
- The percentage of defaulters increased from 18.5% in 2007/08 to 25.4% in 2009/10. The increase could be due to the reversal of incentives brought about by the GMS contract for primary care to actively encourage women to take up cervical screening.
- West Glasgow CHCP and South East Glasgow CHCP did not reach the overall GMS target of 80% across a number of practices.
- The uptake of cervical screening varied across different age groups. The lowest 5.5 year uptake in 2009/10 was among the 21 to 24 year at 54% when only no cervix exclusion was applied. When calculations were made for the purpose of General Medical Services target payments the uptake was 72.3%.

- The cervical screening uptake rate varied across deprivation categories. The lowest 5.5 year uptake rate in 2009/10 was seen among women resident in the most deprived neighbourhoods where the uptake rate was 68.2% while among the women living in the least deprived neighbourhoods, the uptake rate was 78.1% when only the no cervix exclusion was applied. When calculations were made for the purpose of General Medical Services target payments the uptake among women living in the most deprived neighbourhoods was 80.6%, whereas for those living in the least deprived areas it was 87.3%.
- Approximately 105,300 smear tests were processed and reported in laboratories in NHS Glasgow and Clyde in 2009/10. These included repeat smears and smears taken at colposcopy (one woman can have more than one smear test). This represents a decrease of 10,726 (10%) from the number of smears processed in 2009/10 compared to 116,055 smears processed in 2008/09.
- There has been a gradual increase of unsatisfactory smears from 2.1 % in 2005/06 to 2.8% in 2009/10. The rate increase is lower than the 7.7% reported in 2001, prior to the introduction of Liquid Based Cytology testing in 2003.
- In 2009/10, the proportion of results reported as abnormal smears in each of the cytopathology laboratories in NHSGGC, after excluding the unsatisfactory tests, was 10.3%. Abnormal smears results include: borderline, mild, moderate and severe dyskaryosis, severe dyskaryosis/invasive, glandular abnormality and adenocarcinoma.
- In 2009, the cervical screening histories of women who developed invasive cervical cancer were reviewed. Seventy-three patients were diagnosed with invasive cervical cancer in 2009. (The number of patients diagnosed with invasive cervical cancer in 2008 was 65; 67 in 2007; 49 in 2006; and 50 in 2005.) The largest number of cervical cancers occurred in women aged between 40 and 49 years. This was a change from the last 2 years where the most common age group for invasive cervical cancers were in women 30-39 years old.
- Over the five years audited, 50 women out of the 231 that developed cancer had never had a smear and 113 women had incomplete smear histories.
- There were 23 deaths over the five years audited, 90 women were under follow up at colposcopy service, 175 were under follow up in the oncology service.

- The Scottish Cervical Call Recall System (SCCRS) provides women with a complete e-health record detailing their whole smear history. Professionals involved with the screening programme have access to this system. Since the system was implemented, the turnaround time for smears reported has improved. The system also produces automated reports and more recently allows for individual smear taker and screener performance data to be produced.
- In an effort to improve uptake comparative practice-based uptake figures are sent to all practices and to the Community Health (and Care) Partnerships.
- Direct referral to colposcopy was introduced in April 2010 to improve the referral time to colposcopy to one week to comply with the new waiting times targets.
- To reduce the number of unsatisfactory smears, an in-house staff cervical skills update training programme was introduced in May 2010.
- Following the outcome of an Equality Impact Assessment, improvements were made to communications and information materials given to women. Information resources are now being offered in different formats. The Cytology Skills training programme now includes communication training for smear takers to explain in user friendly terms about the screening programme and outcome of abnormal smears.

## CHAPTER 1: CERVICAL SCREENING

### Background

Systematic cervical screening began in 1989 as part of the National Scottish Cervical Screening Programme (SCSP). Over the last 20 years women aged 20 to 60, who are resident in NHS Greater Glasgow and Clyde have been invited to have a cervical smear at least every 5 years.

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 in a similar way to the conventional smear, using a special device which brushes cells from the neck of the womb. Rather than smearing the sample onto a microscope slide as happens with the conventional smear, 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.

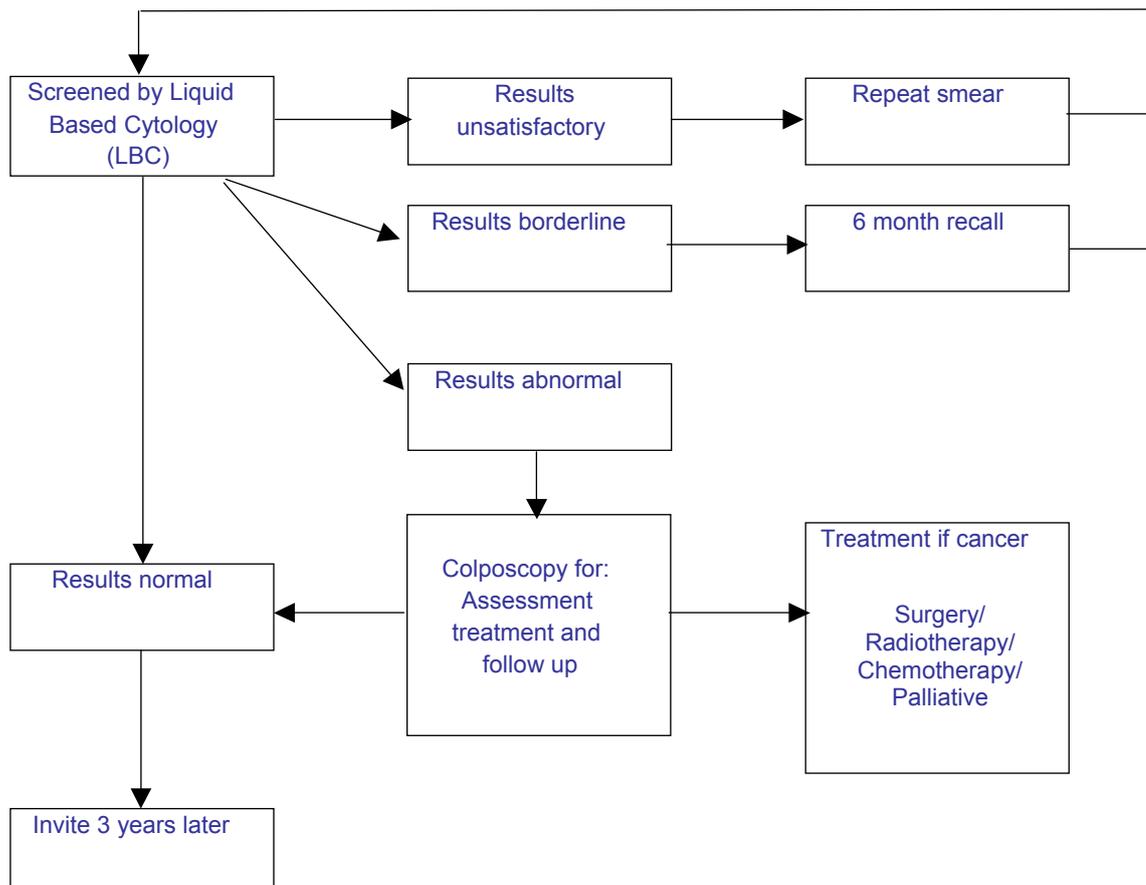
The sample is sent to the laboratory where it is spun and treated to remove obscuring material, for example mucus or pus, and a random sample of the remaining cells is taken. A thin layer of the cells is deposited onto a slide. The slide is examined in the usual way under a microscope by a cytologist.

## 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.

The responsibility for making the referral to the Colposcopy/Gynaecology service lies with the originator of the referral smear. NHS Greater Glasgow and Clyde implemented direct referral to colposcopy. From 1 April 2010, women who require a colposcopy appointment following a positive smear are sent an appointment straight away to the nearest clinic.

**Figure 1.1 Cervical Screening Pathway**



## Delivery of screening programme 2009/10

**Table 1.1** shows the numbers of women in the target and eligible populations for the cervical screening programme. There were approximately 362,000 women aged 21 to 60 resident in NHS Greater Glasgow and Clyde in the target population. Following the exclusion of those with no cervix, approximately 344,500 women were eligible to be invited to participate in the programme over three years. Each year approximately 115,000 women are sent an invitation to attend.

**Table 1.1 NHS Greater Glasgow and Clyde Cervical Screening populations**

Year	Target Population <sup>1</sup>	Eligible Population <sup>2</sup>			
		No Cervix <sup>3</sup>	Exclusions by No Cervix %	Target GMS Payments <sup>4</sup>	Exclusions by Target GMS Payments %
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 <sup>5</sup>	362,828	344,252	5.1	268,484	26.0
2008/09 <sup>5</sup>	362,845	344,882	5.0	251,844	30.6
2009/10 <sup>5</sup>	361,918	344,589	4.8	245,742	32.1

Sources: 2000/01-2006/07 - CHI via Cervical Cytology system  
2007/08 - 2009/10 - Scottish Cervical Call Recall System

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

**Table 1.1** also shows the number of women that were considered to be eligible for cervical screening after the application of the exclusions allowed by the General Medical Services contract. Approximately 116,000 (32.1%) women were excluded from the target population under the GMS defaulters exception reporting.

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 3 occasions during the proceeding 12 months" under the exception reporting.

**Table 1.2** shows the comparative numbers of and percentage uptake rates for NHS Greater Glasgow and Clyde residents screened by the programme in the last 5.5 years for the purpose of Quality Improvement Standards and GMS contract.

**Table 1.2 Cervical Screening uptake for NHSGGC Residents**

Year	Number of Women Screened <sup>1</sup>		5.5 year <sup>2</sup> Percentage Uptake	
	No Cervix <sup>3</sup>	GMS Target payments <sup>4</sup>	No Cervix <sup>3</sup>	GMS Target payments <sup>4</sup>
2000/01	275,361		81.5%	
2001/02	276,239		81.7%	
2002/03	276,666		81.8%	
2003/04	271,419	260,863	80.0%	89.1%
2004/05	268,860	251,457	79.5%	92.1%
2005/06	267,931	246,570	77.6%	90.5%
2006/07	262,604	243,388	77.1%	89.4%
2007/08 <sup>5</sup>	247,652	221,975	71.9%	82.7%
2008/09 <sup>5</sup>	250,799	210,605	72.7%	83.6%
2009/10 <sup>5</sup>	246,332	203,982	71.5%	83.0%

Sources: 2000/01-2006/07 - CHI via Cervical Cytology system  
2007/08 - 2009/10 - Scottish Cervical Call Recall System

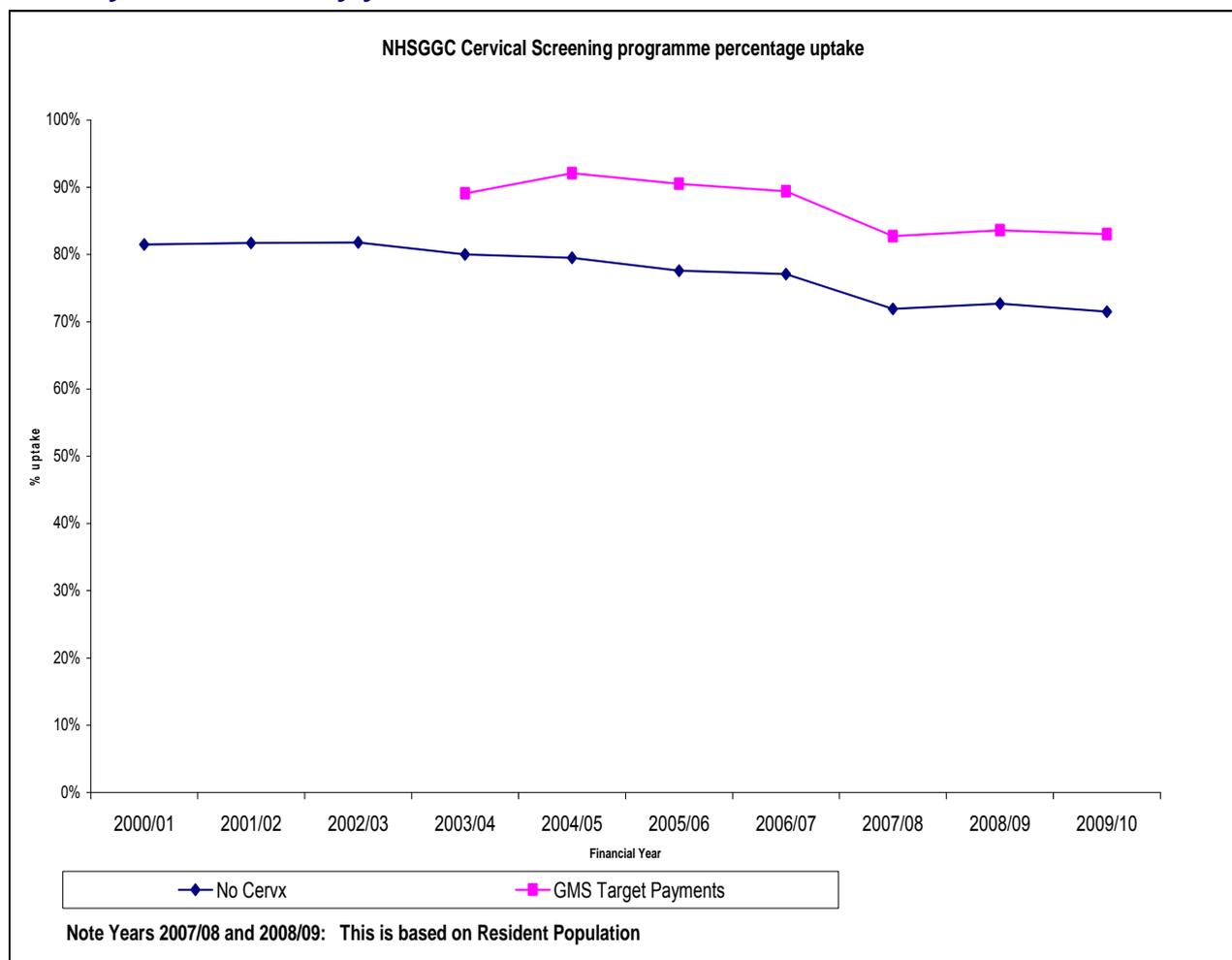
1. Women aged 21 to 60 years with an adequate smear within the last 5.5 years, except medically exempt women, as defined in 3 and 4.
2. NHSGGC aims to identify, invite and encourage women to have a cervical smear at least once every 5.5 years.
3. No cervix excludes those women with the exclusion category "no Cervix".
4. Target payments exclude those women with the exclusion categories defined in the GMS contract, implemented in 2004.
5. Based on NHSGGC resident population and not practice population.

The 5.5 year cervical screening uptake rate, when only the no cervix exclusion has been applied, decreased from 72.7% in 2008/09 to 71.5% in 2009/10. This is still significantly lower than the 81.5% reported in 2001. When exception categories allowed under the General Medical Services contract were included, the calculated 5.5 year uptake rate in 2009/10 of 83.0% was consistent with that of 2008/09 (uptake rate 83.6%).

There is an 11.5% difference in the uptake rate calculated for the purpose of QIS Standard and GMS contract. On average, 32.1% of women aged 21 to 60 had been excluded under one of the categories.

The data in **Table 1.2** demonstrates and **Figure 1.2** illustrates the difference in uptake rates calculated for the purpose of NHS Quality Improvement Scotland Standards and Performance assessment framework and General Medical Services target payment. The cervical screening uptake rates for the purpose of the General Medical Services target payments are between 9 and 12% higher than the NHS Quality Improvement Scotland standard uptake rate; the downward trend in the cervical screening uptake has seen a sharper drop following the implementation of the new General Medical Services contract while the uptake for the purpose of General Medical Services contract has initially seen a marked increase followed by a slow decline.

**Figure 1.2: Cervical Screening uptake for NHS Greater Glasgow and Clyde residents by year**



Source: CHI via Cervical Cytology System

**Table 1.3** shows that in 2009/10 25.4% of women in the target population were classified as defaulters. Defaulters are women who did not take up the invite to have a smear despite a prompt letter and two reminders being sent. The percentage of defaulters increased from 18.5 in 2007/08 to 25.4% in 2009/10. 4.8% of the target population were excluded from the cervical screening programme smear as they have no cervix (**Table 1.1**).

The increase among women who became defaulters could be due to the reversal of the incentives brought about by the GMS contract for primary care to actively encourage women to take up cervical screening.

**Table 1.3 NHS Greater Glasgow and Clyde resident population - Cervical Screening total number of defaulters**

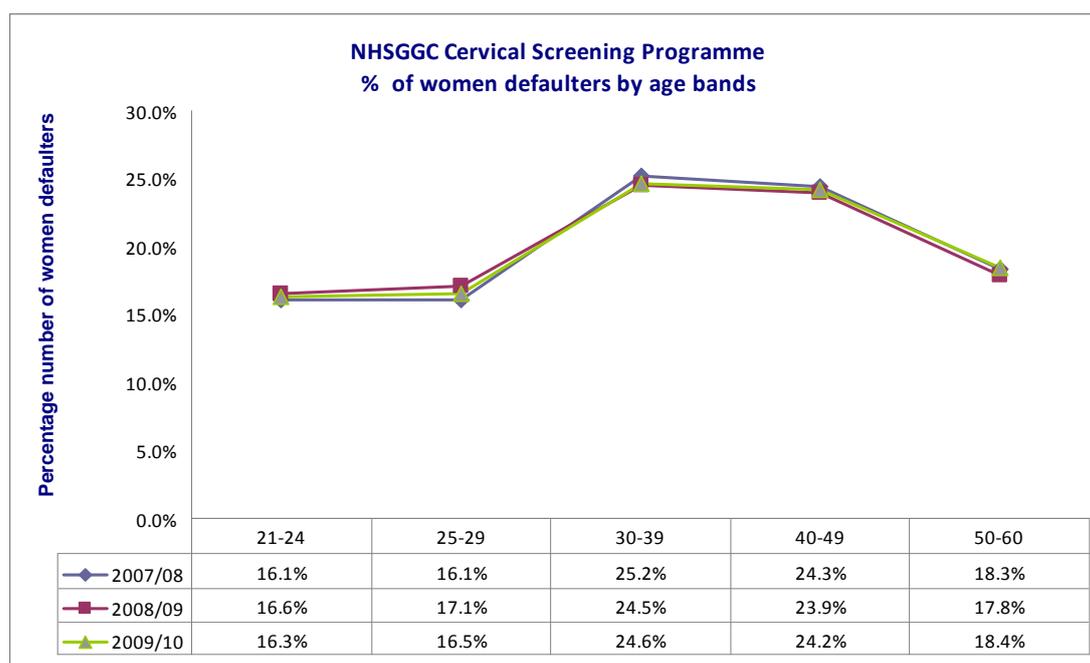
	2007/08	2008/09	2009/10
Target	362,828	362,845	361,918
Total Defaulters	67,240	86,185	91,830
% Defaulters	18.5%	23.8%	25.4%

Source: 2007/08 - 2009/10 - Scottish Cervical Call Recall System

1 Women aged 21 to 60 years

**Figure 1.3** gives a breakdown of women by age bands who did not take up cervical screening. The highest proportion of defaulters is among the 30 to 39 year olds at 24.6% and 40 to 49 year olds at 24.2%.

**Figure 1.3 shows the percentage and number of women defaulters split by age bands from 1 April 2007 to 31 March 2010.**



**Table 1.4** shows the 5.5 year uptake rates of cervical screening by Community Health (and Care) Partnership (CH(C)P) for the no cervix category as calculated for NHS Quality Improvement Scotland standards and the Performance Assessment Framework. The table also illustrates the uptake rate reached for the GMS target payment.

West of Glasgow CH(C)P and South East Glasgow CH(C)P on average did not reach the GMS target of 80% across a number of practices.

**Table 1.4 NHS Greater Glasgow and Clyde Cervical Screening uptake rates by CH(C)P**

Financial Year CH(C)P <sup>1</sup>	Uptake Rate - NHS QIS Standard									GMS Contract		
	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/08	2008/09	2009/10	2007/08 <sup>3</sup>	2008/09 <sup>3</sup>	2009/10 <sup>3</sup>
East Glasgow	80.1%	80.4%	80.3%	78.1%	78.7%	75.0%	71.1%	71.3%	70.5%	82.5%	81.5%	82.2%
North Glasgow	78.6%	78.6%	79.0%	76.7%	77.0%	73.2%	68.3%	69.1%	67.6%	80.7%	79.7%	80.4%
South East Glasgow	80.5%	81.1%	81.0%	80.3%	79.6%	77.1%	70.2%	70.1%	68.5%	80.6%	81.0%	79.9%
South West Glasgow	82.3%	82.7%	82.5%	80.4%	79.2%	76.4%	70.3%	71.1%	69.9%	81.1%	83.4%	82.7%
West Glasgow	76.8%	76.7%	77.8%	75.8%	74.8%	73.1%	64.3%	64.8%	61.9%	76.0%	77.1%	75.1%
North Lanarkshire (part)	82.6%	83.0%	84.3%	83.7%	83.5%	82.7%	78.9%	79.4%	78.5%	86.1%	89.1%	88.2%
South Lanarkshire (part)	83.6%	84.4%	84.3%	82.3%	82.2%	80.1%	76.0%	77.0%	76.8%	86.6%	86.2%	87.4%
East Dunbartonshire	85.0%	85.6%	85.4%	85.2%	84.8%	83.3%	78.6%	79.8%	78.0%	87.6%	89.1%	87.3%
East Renfrewshire	85.0%	85.8%	85.7%	84.6%	83.8%	81.6%	77.5%	78.8%	77.5%	85.9%	88.4%	87.5%
Inverclyde	82.1%	82.2%	81.7%	79.7%	78.9%	77.2%	74.6%	75.2%	74.3%	86.2%	86.6%	85.2%
Renfrewshire	83.8%	83.8%	83.5%	80.6%	80.0%	77.8%	73.9%	75.0%	74.9%	83.9%	85.7%	85.2%
West Dunbartonshire	82.7%	83.3%	73.1%	80.6%	80.4%	78.9%	73.5%	74.8%	75.2%	84.6%	85.6%	85.5%
<b>NHS GG&amp;C<sup>2</sup></b>	<b>81.5%</b>	<b>81.7%</b>	<b>81.8%</b>	<b>80.0%</b>	<b>79.5%</b>	<b>77.1%</b>	<b>71.9%</b>	<b>72.7%</b>	<b>71.5%</b>	<b>82.7%</b>	<b>83.6%</b>	<b>83.0%</b>

Sources: 2000/01-2006/07 - CHI via Cervical Cytology system; 2007/08 - 2009/10 - Scottish Cervical Call Recall System

1 2007/08 & 2008/09 - CHP/CH(C)P has been derived by NHSGGC Resident Population; 2000/01-2006/07 CH(C)P/CHP divided by GP Practice

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

3 Uptake based on Target Payments. Excludes those women with the exclusion categories as defined in the GP Contract, implemented in 2004

**Table 1.5** shows that the uptake of cervical screening varied across different age groups. The lowest 5.5 year uptake in 2009/10 was among the 21 to 24 year at 54% when only no cervix exclusion was applied. When calculations were made for the purpose of General Medical Services target payments the uptake was 72.3%.

**Table 1.5 Cervical screening uptake by age group across NHSGGC for 2009/10**

Age Group	No Cervix <sup>1</sup>					Target GMS Payments <sup>2</sup>				
	Eligible women	3.5 yrs uptake		5.5yrs uptake		Eligible women	3.5 yrs uptake		5.5yrs uptake	
		Total	%	Total	%		Total	%	Total	%
21-24	38995	20042	51.4	21064	54.0	22681	15985	70.5	16409	72.3
25-29	49945	28652	57.4	32810	65.7	33051	23603	71.4	25183	76.2
30-39	86258	55620	64.5	63368	73.5	61968	48356	78.0	51412	83.0
40-49	94377	65044	68.9	73144	77.5	71328	59174	83.0	62222	87.2
50-60	75014	49386	65.8	55946	74.6	56714	46380	81.8	48756	86.0
<b>Total</b>	<b>344589</b>	<b>218744</b>	<b>63.5</b>	<b>246332</b>	<b>71.5</b>	<b>245742</b>	<b>193498</b>	<b>78.7</b>	<b>203982</b>	<b>83.0</b>

Source:- Scottish Cervical Call Recall System

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

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

**Table 1.6** shows that the cervical screening uptake rate varied across deprivation categories. The lowest 5.5 year uptake rate in 2009/10 was seen among women resident in the most deprived neighbourhoods where the uptake rate was 68.2% while among the least deprived neighbourhoods, the uptake rate was 78.1% when only the no cervix exclusion was applied. When calculations were made for the purpose of General Medical Services target payments the uptake among women living in the most deprived neighbourhoods was 80.6%, whereas those living among the least deprived was 87.3%.

**Table 1.6 Cervical screening uptake rate by deprivation category for NHS Greater Glasgow and Clyde for 2009/10**

SIMD <sup>3</sup>	No Cervix <sup>1</sup>					Target GMS Payments <sup>2</sup>					
	Eligible	3.5 yr uptake		5.5 yrs uptake		Eligible	3.5 yr uptake		5.5 yrs uptake		
Most Deprived	1	128212	76538	59.7	87383	68.2	86223	65922	76.5	69538	80.6
	2	59383	37233	62.7	42010	70.7	41893	32770	78.2	34548	82.5
	3	46683	29700	63.6	33369	71.5	33503	26425	78.9	27853	83.1
	4	47827	31295	65.4	35030	73.2	35492	28164	79.4	29774	83.9
Least Deprived	5	59870	42445	70.9	46773	78.1	46825	38910	83.1	40868	87.3
New/Incomplete postcodes <sup>4</sup>		2614	1533	58.6	1767	67.6	1806	1307	72.4	1401	77.6
<b>Total</b>		<b>344589</b>	<b>218744</b>	<b>63.5</b>	<b>246332</b>	<b>71.5</b>	<b>245742</b>	<b>193498</b>	<b>78.7</b>	<b>203982</b>	<b>83.0</b>

Source: Scottish Cervical Call Recall System 2009/10

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 Quintiles 2006

4 - Although incomplete these postcodes clearly fall within NHSGGC boundaries

## Cytopathology Laboratories Workload

**Table 1.7** shows the number of tests performed in Cytopathology laboratories in the NHS Greater Glasgow and Clyde area. An essential criterion of the NHS QIS standards requires the laboratories to process a minimum of 15,000 smears annually and this has been achieved throughout the area. Approximately 105,300 smear tests were processed and reported in laboratories in NHS Glasgow and Clyde. These included repeat smears and smears taken at colposcopy as one woman can have more than one smear test. This represents a decrease of 10,726 (10%) from the number of smears processed in 2009/10 compared to 116,055 smears processed in 2008/09.

**Table 1.7 Number of smear tests performed in NHS Greater Glasgow and Clyde laboratories**

Year	Number of Smear Tests							
	Inverclyde*	Vale of Leven*	Southern General	Glasgow Royal Infirmary	Stobhill	Victoria	NHSGGC	Scotland
2000/01	25,453	17,486	10,266	29,667	15,907	18,959	<b>117,738</b>	457,774
2001/02	27,378	14,973	23,326	49,162	190	7,101	<b>122,130</b>	471,722
2002/03	24,627	12,384	25,953	44,713	n/a	n/a	<b>107,677</b>	439,678
2003/04	23,607	12,052	25,824	44,422	n/a	n/a	<b>105,905</b>	429,522
2004/05	28,326	5,843	25,975	43,194	n/a	n/a	<b>103,338</b>	406,305
2005/06	36,166	n/a	23,160	44,035	n/a	n/a	<b>103,361</b>	410,241
2006/07	36,137	n/a	23,141	40,732	n/a	n/a	<b>100,010</b>	401,749
2007/08	30,955	n/a	23,742	39,684	n/a	n/a	<b>94,381</b>	373,340
2008/09	38,363	n/a	28,190	49,502	n/a	n/a	<b>116,055</b>	450,522
2009/10	34,166	n/a	25,138	46,025	n/a	n/a	<b>105,329</b>	415,497

Sources: 2000-2007 Cervical Cytology System (CCS); 2007/10 - Labs : Telepath & SCCRs

Scotland figures from ISD Website

\*Inverclyde and Vale of Leven - includes smears tests for Argyll and Bute area

Vale of Leven (VOL) 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

**Table 1.8** shows the proportion of the total cervical samples sent to each of the cytology laboratories that were reported as unsatisfactory smears in 2009/10. The overall percentage of satisfactory smears was 2.8%. The increase is still markedly less than the 7.7% reported in 2001 prior to the introduction of Liquid Based Cytology testing in 2003.

**Table 1.8 Percentage of unsatisfactory smears reported in NHS Greater Glasgow and Clyde laboratories**

Year	Percentage of unsatisfactory smears of total number of smears							
	Inverclyde*	Vale of Leven*	Southern General	Glasgow Royal	Stobhill	Victoria	NHSGGC	Scotland
2000/01	6.0%	7.6%	9.1%	7.2%	7.6%	10.2%	<b>7.7%</b>	8.5%
2001/02	5.5%	6.3%	7.3%	10.5%	4.2%	8.5%	<b>8.1%</b>	8.8%
2002/03	5.9%	6.8%	5.9%	3.9%	n/a	n/a	<b>5.2%</b>	7.4%
2003/04	3.4%	4.6%	6.3%	3.9%	n/a	n/a	<b>4.4%</b>	3.9%
2004/05	2.7%	2.6%	2.2%	1.9%	n/a	n/a	<b>2.3%</b>	2.2%
2005/06	2.3%	n/a	2.9%	1.6%	n/a	n/a	<b>2.1%</b>	2.2%
2006/07	2.5%	n/a	3.0%	2.1%	n/a	n/a	<b>2.5%</b>	2.4%
2007/08	1.8%	n/a	2.7%	2.8%	n/a	n/a	<b>2.4%</b>	2.8%
2008/09	2.0%	n/a	2.7%	3.1%	n/a	n/a	<b>2.7%</b>	3.0%
2009/10	2.6%	n/a	2.9%	2.9%	n/a	n/a	<b>2.8%</b>	3.0%

Sources: 2000-2007 Cervical Cytology System (CCS); 2007/10. - Labs (SCCRs); Scotland figures from ISD website

\*Inverclyde and Vale of Leven includes unsatisfactory smears reported for Argyll and Bute area

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

To improve the skills of smear takers and reduce the number of unsatisfactory smears, NHS Greater Glasgow and Clyde introduced an in-house staff cytology skills training programme in May 2010.

**Table 1.9** shows the proportion of results reported as abnormal smears in each of the cytopathology laboratories in NHSGGC, after excluding the unsatisfactory tests between 2000/01 and 2009/10. Abnormal smears results include: borderline, mild, moderate and severe dyskaryosis, severe dyskaryosis/invasive, glandular abnormality and adenocarcinoma. 10.3% of smears were reported as abnormal in 2009/10.

**Table 1.9 Percentage of abnormal smears reported in NHS Greater Glasgow and Clyde Laboratories**

Year	Percentage of abnormal smear results of total satisfactory smears							
	Inverclyde*	Vale of Leven*	Southern General	Glasgow Royal	Stobhill	Victoria	NHSGGC	Scotland
2000/01	7.8%	8.6%	10.2%	11.2%	10.1%	8.5%	<b>9.4%</b>	8.0%
2001/02	7.2%	7.4%	7.8%	12.4%	16.5%	8.5%	<b>9.5%</b>	8.3%
2002/03	7.0%	8.3%	5.7%	10.0%	n/a	n/a	<b>8.1%</b>	7.3%
2003/04	7.6%	10.2%	5.2%	10.3%	n/a	n/a	<b>8.5%</b>	7.2%
2004/05	7.8%	7.4%	6.0%	9.8%	n/a	n/a	<b>8.2%</b>	7.2%
2005/06	7.6%	n/a	6.7%	10.7%	n/a	n/a	<b>8.7%</b>	7.4%
2006/07	8.2%	n/a	7.6%	10.2%	n/a	n/a	<b>8.9%</b>	7.6%
2007/08	8.5%	n/a	7.1%	11.1%	n/a	n/a	<b>9.3%</b>	7.7%
2008/09	9.6%	n/a	8.5%	10.9%	n/a	n/a	<b>9.9%</b>	8.4%
2009/10	8.9%	n/a	9.3%	11.8%	n/a	n/a	<b>10.3%</b>	8.7%

Sources: 2000-2007 Cervical Cytology System (CCS); 2007/09 - Labs (SCCRs)

Scotland figures from ISD Website

\*Inverclyde and Vale of Leven includes unsatisfactory smears reported for Argyll and Bute area

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

**Table 1.10** shows the detailed breakdown of smear results profile reported by NHSGGC laboratories.

Of the 105,329 smears tests received by the laboratories, 102,386 (97.2%) were processed. 89.7% of smears processed were reported to be negative; 6.3% to be borderline squamous; 2.6% 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 1.10 Result profiles by age band: 1 April 2009 to 31 March 2010 (compiled from quarterly reports)  
All NHS Greater Glasgow and Clyde Laboratories

	Under 20	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 and Over	Total age 20 - 65+	%Satisfactory	Cumulative%	Total age 20 - 60	%Satisfactory	Cumulative%
<b>Unsatisfactory</b>	24	330	283	317	349	390	371	370	399	94	16	2943			2871		
<b>%Unsatisfactory total</b>	2.0	2.0	1.8	2.4	2.7	2.8	2.9	3.7	5.3	5.0	7.5	2.8			2.8		
<b>Negative</b>	876	12566	12868	11425	11712	12514	11651	9375	6965	1721	187	91860	89.72	89.7	90245	89.8	89.8
<b>Borderline Squamous</b>	217	2304	1187	746	613	555	425	228	119	36	3	6433	6.28	96.0	6189	6.2	96.0
<b>Borderline Glandular</b>	0	3	5	9	9	3	7	1	1	1	0	39	0.04	96.0	39	0.0	96.0
<b>Mild Dyskaryosis</b>	54	1009	594	315	227	202	142	68	31	9	5	2656	2.59	98.6	2593	2.6	98.6
<b>Moderate Dyskaryosis</b>	9	206	189	132	77	45	21	11	10	3	0	703	0.69	99.3	692	0.7	99.3
<b>Severe Dyskaryosis</b>	3	113	187	97	100	74	39	22	11	0	1	647	0.63	100.0	643	0.6	100.0
<b>Severe Dyskaryosis/Invasion</b>	0	0	1	1	0	3	1	0	1	1	0	8	0.01	100.0	7	0.0	100.0
<b>Glandular Abnormality</b>	0	2	5	4	11	6	2	1	0	3	1	35	0.03	100.0	32	0.0	100.0
<b>Endocervical Adenocarcinoma</b>	0	0	0	0	0	0	0	0	0	0	0	0	0.00	100.0	0	0.0	100.0
<b>Other Malignancy</b>	0	0	1	0	0	2	0	1	0	0	1	5	0.00	100.0	4	0.0	100.0
<b>Total including unsatisfactory results</b>	1183	16533	15320	13046	13098	13794	12659	10077	7537	1868	214	105329			103315		
<b>Total excluding unsatisfactory results</b>	1159	16203	15037	12729	12749	13404	12288	9707	7138	1774	198	102386			100444		

	All ages	20-60 years
N Abnormal	10526	10199
% abnormal	10.3	10.2

Source: Scottish Cervical Call Recall System (SCCRs)

#### Report Definitions

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

2 Smear counts for the originating 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.

## 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 2009, we reviewed the notes of women who developed invasive cervical cancer. Seventy-three patients were diagnosed with invasive cervical cancer in 2009. The number of patients diagnosed with invasive cervical cancer in 2008 was 65; 67 in 2007; 49 in 2006; and 50 in 2005.

**Table 1.11** shows the distribution of the women's age at diagnosis for years 2005 to 2009. The largest number of cervical cancers occurred in women aged between 30 and 49 years.

**Table 1.11 Number of NHSGGC residents with invasive cervical cancers by age at diagnosis and year of diagnosis**

Age	Year of diagnosis				
	2005	2006	2007	2008	2009
20 - 29	5	4	7	9	8
30 - 39	13	14	29	21	15
40 - 49	14	11	20	14	23
50 - 59	10	6	3	11	8
60 - 69	2	5	5	5	8
70 - 79	3	6	2	2	6
80+	3	3	1	3	4
Unknown	0	0	0	0	1
<b>Total</b>	<b>50</b>	<b>49</b>	<b>67</b>	<b>65</b>	<b>73</b>

Source: NHSGGC Invasive Cancer Audit database

**Table 1.12** shows the distribution of clinical stage at diagnosis over a five year period from 2005 to 2009.

**Table 1.12 Total number of women with invasive cervical cancers split by diagnosis and year**

Clinical stage of diagnosis	2005	2006	2007	2008	2009	Total
1a1 (less than 3mm deep and >=7mm wide)	13	15	18	17	23	86
1a2 (3-5mm deep and <7mm wide)	0	0	4	1	1	6
1b (confined to cervix)	12	10	18	16	18	74
2 or greater (spread outwith cervix)	23	22	27	31	28	131
No Details	2	2	1	0	3	8
<b>Total</b>	<b>50</b>	<b>49</b>	<b>68</b>	<b>65</b>	<b>73</b>	<b>305</b>

**Table 1.13** shows that 25 of 73 invasive cervical cancers were detected at screening in 2009; 31 of 65 in 2008; 25 of 67 in 2007; 16 of 49 in 2006 and 33 of 50 in 2005. The rest of the cases presented to the service with symptoms.

**Table 1.13 Total number of women with invasive cancers split by modality of presentation and year**

Modality of Presentation	Year of diagnosis				
	2005	2006	2007	2008	2009
Screen Detected	33	16	25	31	25
Symptomatic, last smear date <5 yrs	4	9	14	14	10
Symptomatic, last smear date >5 yrs	7	9	19	13	18
Symptomatic, No previous smear	6	14	9	7	20
No Details	0	1	0	0	0
<b>Total</b>	<b>50</b>	<b>49</b>	<b>67</b>	<b>65</b>	<b>73</b>

Source: NHSGGC Invasive Cancer Audit database

Some of the screen detected cancers might have had an opportunistic smear while presenting with genital tract complaints.

**Table 1.14** shows that 25 women out of the 50 with invasive cervical cancer in 2005, 22 women of 49 in 2006, 34 women of 67 in 2007; 31 women of 65 in 2008 and 27 women out of 73 in 2009 had a complete smear history.

Over the five years audited, 50 (21.6%) women out of the 231 (48.9%) that developed cancer had never had a smear and 113 women had incomplete smear histories.

**Table 1.14 Smear history of women with invasive cervical cancer**

Smear History	Year of diagnosis				
	2005	2006	2007	2008	2009
Complete	25	22	34	31	27
Incomplete	20	13	24	27	29
No previous smear history	4	13	9	7	17
Not known	1	1	0	0	0
<b>Total</b>	<b>50</b>	<b>49</b>	<b>67</b>	<b>65</b>	<b>73</b>

Source: NHSGGC Invasive Cancer Audit Database

\* Apart from index smear ie the abnormal smear causing referral

**Table 1.15** shows the status of the women included in the audit of invasive cancer at the time when the audit was carried out. There were 23 deaths over the five years audited; 90 women were under follow up at colposcopy service and 175 were under follow up in the oncology service.

**Table 1.15 Follow up status of the women with invasive cervical cancer**

Status	Year diagnosis				
	2005	2006	2007	2008	2009
Lost to Colposcopy service	1	0	1	1	0
On follow-up at Colposcopy	15	18	19	17	21
On follow-up at Oncology/Beatson	23	21	41	42	48
Early recall	1	0	0	0	0
Death	8	8	3	4	0
Unknown	2	1	1	1	2
No details		1	2	0	2
<b>Total</b>	<b>50</b>	<b>49</b>	<b>67</b>	<b>65</b>	<b>73</b>

## Information systems

### Scottish Cervical Call Recall System (SCCRS)

The Scottish Cervical Call Recall System (SCCRS) implemented in 2007 provides women with a complete e-health record detailing their whole smear history which professionals involved with the screening programme access. Since the system was implemented, the turnaround time for smears reported has reduced. This is because 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 automated reports and more recently allows for individual performance data to be produced.

### 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.

## Initiatives to improve uptake

In an effort to improve uptake comparative practice-based uptake figures are sent to all practices and to Directors and Clinical Directors of Community Health (and Care) Partnerships. NHS Greater Glasgow and Clyde contributed to the national research into women's attitudes for cervical screening and for development of new patient information materials that address the issues identified by research. The new materials were produced in August 2010.

## Improving Colposcopy waiting times

Direct referral to colposcopy was introduced in April 2010 to improve the referral time to colposcopy. All appointments are issued centrally by Royal Alexandra Hospital Health Records staff. Where possible, all women are appointed to a local colposcopy clinic.

## Health Inequalities

An Equality Impact Assessment was carried out in October 2009 to ensure that eligible population receive equal access to screening and services.

As a result, improvements were made to communications and information materials given to women. Information resources are now being offered in different formats. Cytology Skills training programme now includes communication training for smear takers to explain in user friendly terms about the screening programme and outcome of abnormal smears.

Health improvement initiatives are in place to engage with transient groups such as travellers and homeless to promote and raise awareness about the importance of participating in the cervical screening programme.

### **Challenges and future priorities**

- To target most deprived population group to improve uptake of cervical screening and attendance at colposcopy clinics through health improvement teams engaging with community groups.
- To reduce the number of unsatisfactory smears, a cervical skills update training programme was introduced in May 2010 and will run on a yearly basis.

**Appendix 1.1****Management And Follow-Up Advice For Cytology Results**

<b>SMEAR REPORT</b>	<b>MANAGEMENT</b>
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. OR Refer to Colposcopy on 1st
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 colposcopy following abnormal cytology)

Colposcopy outcome	Management
Normal colposcopy or benign biopsy	Smears at 6 and 18 months. If both smears are negative, return to routine recall.
CIN 1 (including untreated)	Smears at 6, 12 and 24 months. If negative, return to routine recall, if not, return to routine recall after 2 <sup>nd</sup> negative.
CIN 2, CIN 3, Microinvasive or CGIN	Smears at 6 and 12 months. Then annual smears to 5 years. If negative, return to routine recall.

- Borderline changes in post-colposcopy follow up, repeat. Refer after 3<sup>rd</sup>.
- Any dyskaryosis in post-colposcopy follow up, refer back to colposcopy

### Post Total Hysterectomy

No History of CIN/CGIN	No Recall
CIN or CGIN in history	No recall
CIN or CGIN within last 5 years in history - CIN/CGIN in specimen, completely excised	Smear at 12 months. If negative, no further recall.
CIN or CGIN in history - CIN/CGIN in specimen, incompletely excised	Smears at 6, 12 and 24 months. If negative, no further recall

CIN = cervical intraepithelial neoplasia

CGIN = cervical glandular intraepithelial neoplasia

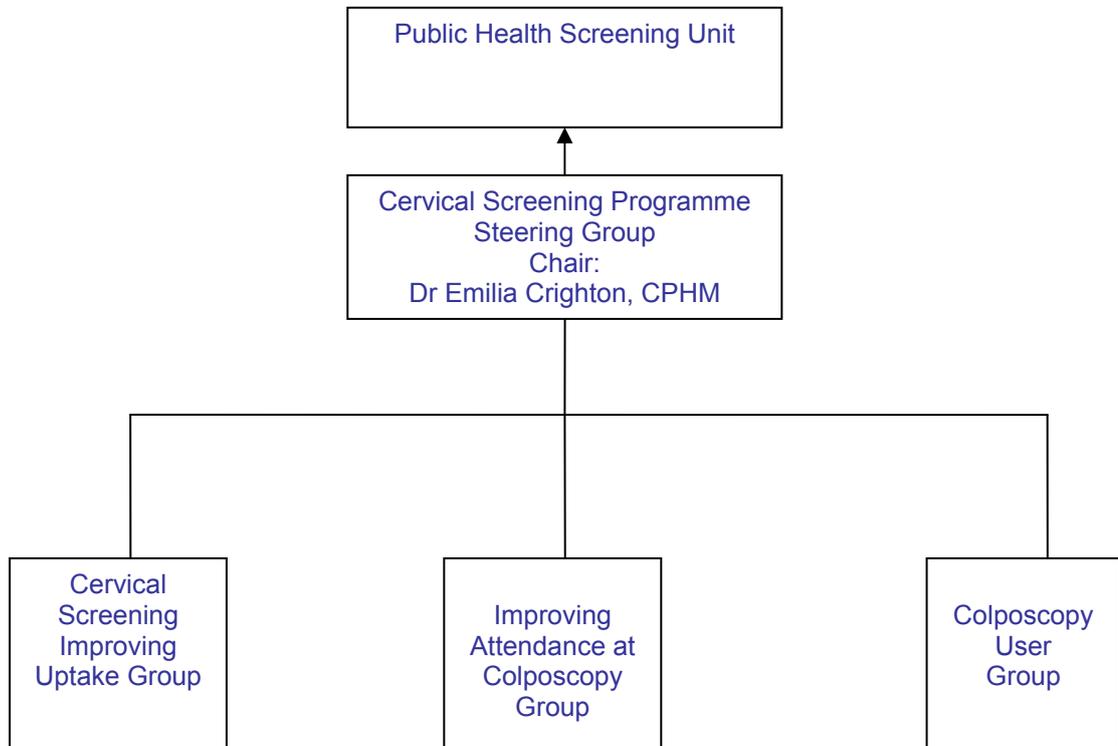
## Appendix 1.2

### Members of Cervical Screening Steering Group (As at March 2010)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Mrs Donna Athanasopolous	PERL Resources Co-ordinator
Dr Urszula Bankowska	Clinical Director, Sandyford
Dr Margaret Burgoyne	Head of Service, Pathology
Dr Kevin Burton	Consultant Gynaecologist
Mr Mark Darroch	IM&T Project Manager
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Dr Mary Hepburn	Consultant Obstetrician/Gynaecologist
Mrs Kathy Kenmuir	Primary Care Support Nurse
Dr Margaret Laing	Staff Grade in Cytology/Colposcopy
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Ms Cynthia Mendelsohn	Lay Member
Mrs Eleanor McColl	Screening Service Delivery Manager
Ms Jane McNiven	Practice Manager
Dr Alan Mitchell	Clinical Director Renfrewshire CHP
Mrs Elizabeth Rennie	Programme Manager, Screening Dept
Ms Claire Scott	Health Improvement Senior (Cancer)
Dr Millicent Thomas	Consultant Pathologist
Dr Cynthia Van der Horst	Consultant Cytopathologist
Ms Patricia Weir	Lay Member
Dr Barbara West	General Practitioner (to March 2010)
Ms Jackie Wright	Practice Nurse

## Appendix 1.3

### Reporting Structure: Cervical Screening Programme



## SUMMARY

### CHAPTER 2: BREAST SCREENING

- This report represents interim data for the breast screening round May 2006 – May 2009 in NHS Greater Glasgow and Clyde.
- In April 2010, two view mammography for incident screens was introduced across NHS Greater Glasgow and Clyde for women attending for screening.
- The number of women eligible for breast screening across the area of Greater Glasgow and Clyde per screening year was 48,367.
- From May 2006 to May 2009, 145,452 eligible women registered with a practice in NHS Greater Glasgow and Clyde area were invited to attend breast screening. These included some women living in other NHS board areas registered with a practice in NHS Greater Glasgow and Clyde.
- The screening programme met the minimum performance attendance standard of 70%. 103,112 women (70.6% of those invited) attended breast screening during the reported period. This was lower than the Scottish average of 74.9%. Uptake increased since the introduction of the programme until 2003/06 round and has plateaued since then.
- There were 686 women who were diagnosed with breast cancer following screening.
- West of Scotland Breast Screening Centre Staff were trained on the benefits of lifestyle choices that people can make to reduce the risk of developing cancer, such as physical activity and alcohol consumption. This training, along with other resources, will give patients the opportunity to ask about services that are available to support any behaviour change.

## **CHAPTER 2: BREAST SCREENING**

### **Background**

Breast cancer is the most common cancer in women in Scotland. Incidence rates continue to rise with a 7.9% increase between 1998 and 2008. 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, and alcohol consumption. (Information Statistics Division)

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 when women aged 50 to 64 were invited for a mammogram every three years.

This report represents completed screening round data from May 2006 to May 2009 for the breast screening in NHS Greater Glasgow and Clyde.

### **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 three yearly on request. The age range for invitation has been extended from 64 to include women up to the age of 70 years. In Scotland and NHS Greater Glasgow and Clyde this expansion was phased in over one three-year round of screening, beginning in 2003/04. The age extension was implemented across NHS Greater Glasgow and Clyde in April 2003 for the women resident in Argyll and Clyde area, and in March 2005 for women resident in Greater Glasgow.

### **The screening test**

The screening method used consists of two mammographic views at first screen (called prevalent screen) and one view at subsequent screens (called incident screens). In April 2010, two view mammography for incident screens was introduced across NHS Greater Glasgow and Clyde for women attending for screening.

The test is a straightforward procedure involving an image 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 NHS Greater Glasgow and Clyde residents either in the static centre in Glasgow or in mobile van units that visit pre-established sites across the NHS Greater Glasgow and Clyde area.

### **Screening pathway**

Every woman registered with a GP will receive 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. The West of Scotland Breast Screening Centre also contacts all long-stay institutions to offer screening to eligible residents.

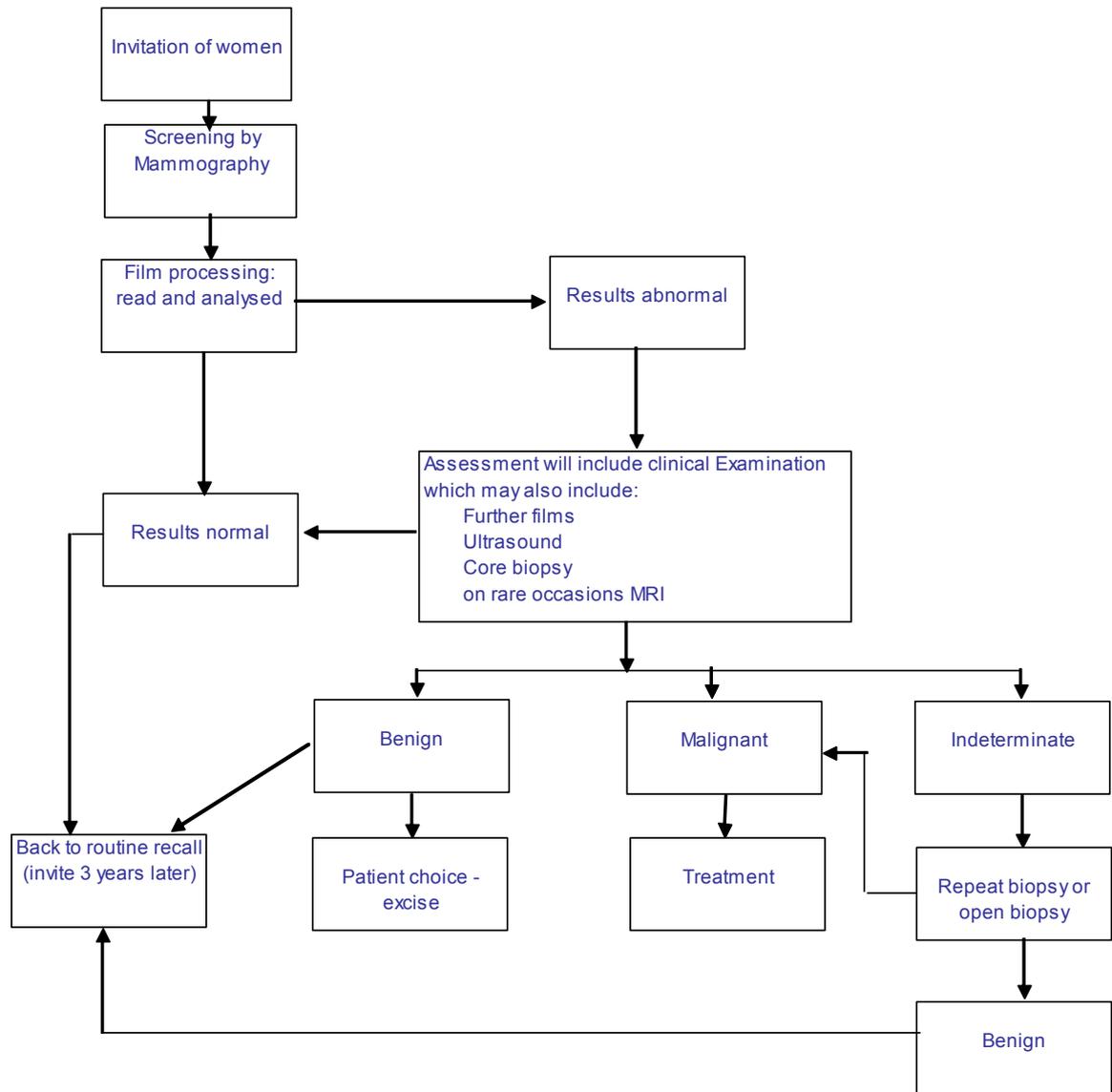
The mammograms taken during the screening visit are examined and the results sent to the woman and her GP. A proportion of women attending for screening will be recalled if the picture was not clear enough or asked to go to an assessment clinic for further tests if a potential abnormality has been detected. The tests include ultrasound and core biopsies.

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 or 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.

In NHS Greater Glasgow and Clyde the 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 and Victoria Infirmary and a small proportion of women with palpable tumours are referred for treatment to local breast teams.

Figure 2.1 Screening pathway



Breast Cancer Incidence

## Uptake of breast screening in NHS Greater Glasgow and Clyde

### Eligible population

The number of women eligible for breast screening across the area of Greater Glasgow and Clyde per screening year was 48,367 (**Table 2.1**). Eligible women were identified using the Community Health Index (CHI) system.

**Table 2.1 Total number of women eligible for breast screening split by age bands and by CH(C)P**

CH(C)P	50-54	55-59	60-64	65-70	50-70	Screening Population per year <sup>2</sup>
East Dunbartonshire	4340	3699	3664	3593	15296	5099
East Glasgow	4348	3517	3281	3456	14602	4867
East Renfrewshire	3425	2835	2835	2773	11868	3956
Inverclyde	3006	2685	2628	2624	10943	3648
North Glasgow	3203	2545	2377	2606	10731	3577
North Lanarkshire <sup>1</sup>	698	616	618	572	2504	835
Renfrewshire	6189	5585	5446	5299	22519	7506
South East Glasgow	3317	2659	2249	2217	10442	3481
South Lanarkshire <sup>1</sup>	2266	1921	1756	1730	7673	2558
South West Glasgow	4252	3125	2869	3016	13262	4421
West Dunbartonshire	3486	2954	2864	2826	12130	4043
West Glasgow	4130	3224	2894	2884	13132	4377
<b>NHSGGC Total</b>	<b>42660</b>	<b>35365</b>	<b>33481</b>	<b>33644</b>	<b>145102</b>	<b>48367</b>

Source: NHS GGC CH(C)P SAPE 2009

SAPE: Small Area Population Statistics

**Note:**

1. NHS Greater Glasgow and Clyde residents only
2. Screening Population - Total population divided by 3 years

**Table 2.2** shows the numbers and the proportion of the eligible population invited; numbers screened; and the uptake rate split by Community Health (and Care) Partnership (CH(C)P) area for the period May 2006 to March 2009. 145,452 women registered with a practice in NHS Greater Glasgow and Clyde area were invited to attend breast screening. These include women living in other NHS board areas.

103,112 women (70.9% of those invited) attended breast screening during the reported period. There were 686 women who were diagnosed with breast cancer following screening.

**Table 2.2 Breast screening programme split by CH(C)P area for the period May 2006 to March 2009.**

CH(C)P	Number invited <sup>1</sup>	Number attended <sup>1</sup>	Number Cancers Detected <sup>1</sup>	% Attend of those invited	%Cancers of those Attended
East Dunbartonshire	13872	10968	75	79.1%	0.7%
East Renfrewshire	10954	8461	49	77.2%	0.6%
Glasgow East	16244	10845	62	66.8%	0.6%
Glasgow North	8009	5016	39	62.6%	0.8%
Glasgow South East	13613	9645	82	70.9%	0.9%
Glasgow South West	12578	8570	43	68.1%	0.5%
Glasgow West	16328	11105	75	68.0%	0.7%
Inverclyde	10649	7277	43	68.3%	0.6%
North Lanarkshire	2355	1803	11	76.6%	0.6%
Renfrewshire	21895	15776	117	72.1%	0.7%
South Lanarkshire	6950	5071	34	73.0%	0.7%
West Dunbartonshire	12005	8575	56	71.4%	0.7%
<b>GGC Total</b>	<b>145452</b>	<b>103112</b>	<b>686</b>	<b>70.9</b>	<b>0.7</b>
Argyll and Bute	12881	9809	84	76.2%	0.9%
<b>Total Screening</b>	<b>158333</b>	<b>112921</b>	<b>770</b>	<b>71.3</b>	<b>0.7</b>

Sources:

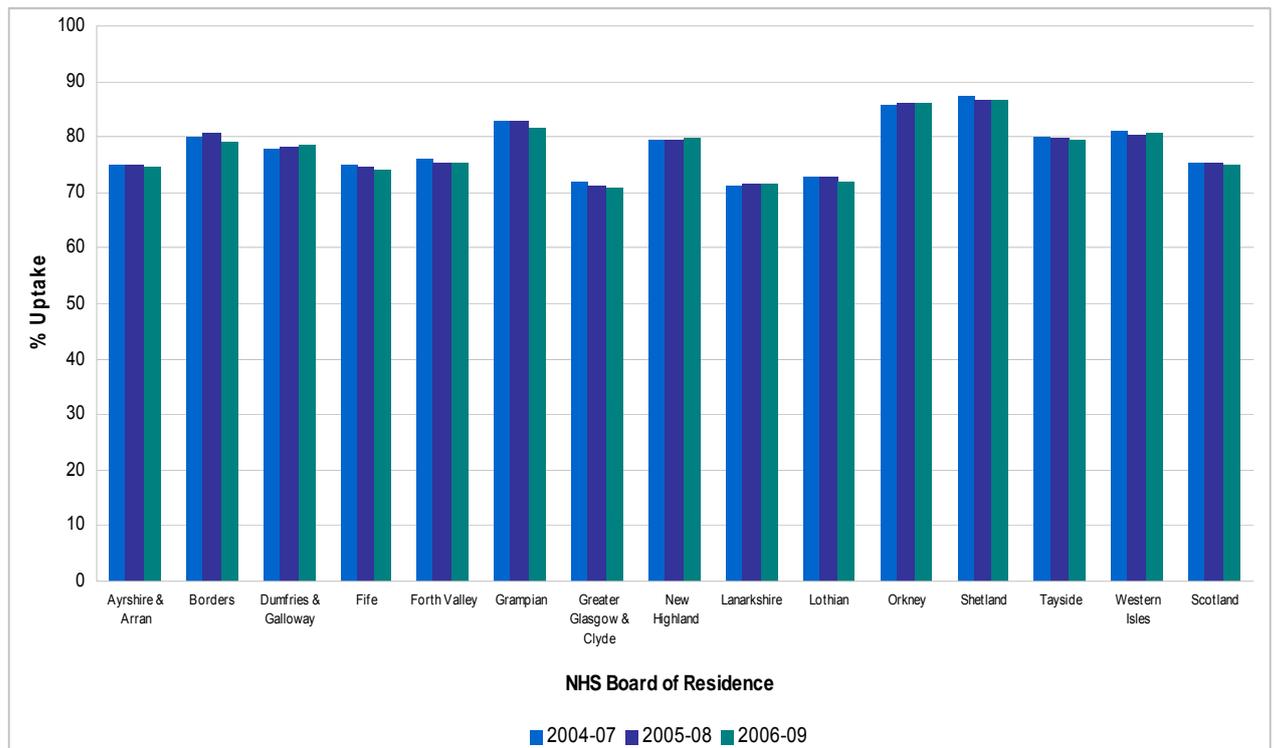
<sup>1</sup> West of Scotland Breast Screening Data**Note: Completion Details**

Greater Glasgow: Completed round May 2006 to March 2009.

Inverclyde, Renfrewshire, West Dunbartonshire, Argyll &amp; Bute (Formerly Argyll &amp; Clyde): Round completed - May 2006 to May 2009

**Figure 2.1** illustrates the comparative breast screening uptake rate among Scottish NHS Boards. However, the percentage uptake of 70.9% for NHS Greater Glasgow and Clyde remains lower compared to the Scottish average (74.9%).

**Figure 2.1 Uptake<sup>1</sup> (%) by NHS Board of Residence: 1<sup>st</sup> April 2004 to 31<sup>st</sup> March 2009<sup>2</sup> Percentage uptake (three-year rolling periods<sup>3</sup>), females aged 50-70 years<sup>4</sup>**



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

<sup>1</sup> Only routine appointments are included in the above figures. Self /GP referral and early recall appointments are not included.

<sup>2</sup> Breast Screening year runs from 1st April to 31st March.

<sup>3</sup> Women are invited to attend screening once every three years.

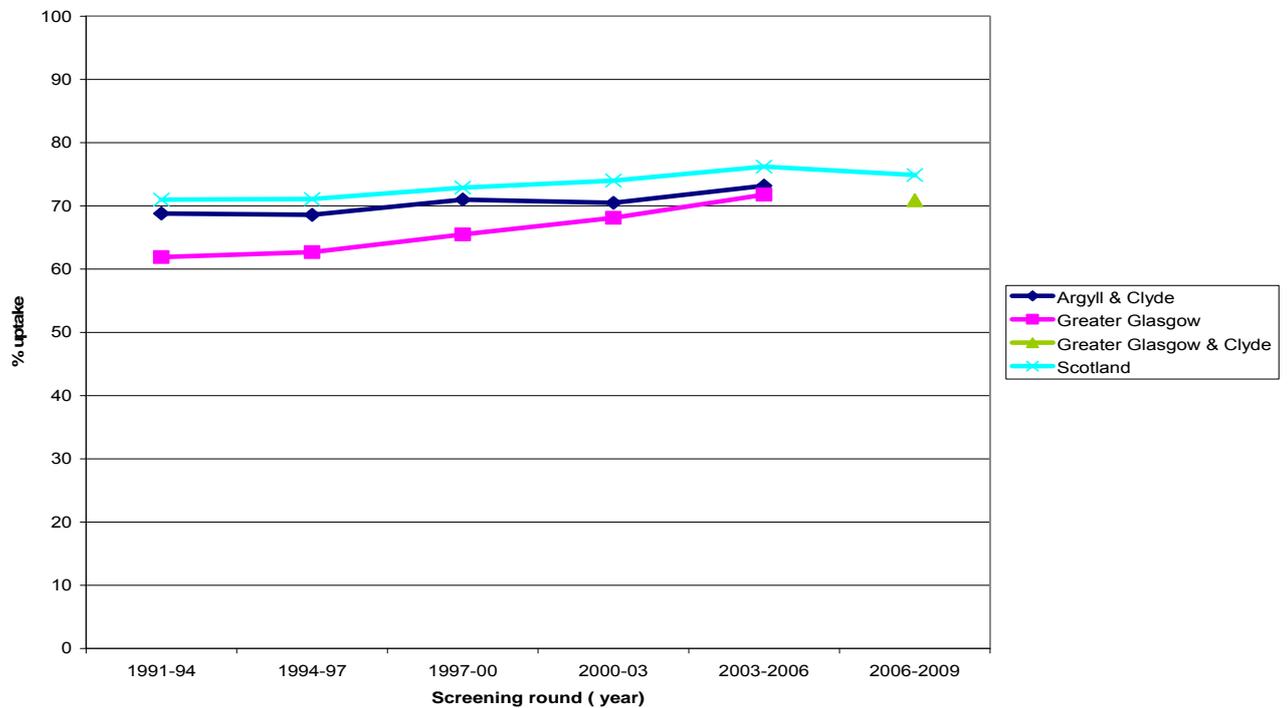
<sup>4</sup> During 2003/04, a phased extension of the age range for routine invitation (from 50-64 to 50-70 years) began. To reflect the expansion of the age range, 3 year rolling figures are reported from 2004.

<sup>5</sup> New NHS Board areas including parts of former Argyll & Clyde.

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

**Figure 2.1** shows that the uptake rate of the breast screening programme has remained stable over three-year rolling periods 2004-2009 at approximately 71%. The minimum performance attendance standard of 70% of women invited during the previous three years was met in all years. **Figure 2.2** shows that there has been an overall increase in the trends in breast screening uptake since 1991-1994 across NHS Greater Glasgow and Clyde.

**Figure 2.2 Percentage uptake of the breast screening programme over successive screening rounds**



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

## Two view mammography

Since May 2010, all women are now offered to view mammography at every screen. Additional staff were recruited and trained to allow for the increase in activity to be implemented in NHS Greater Glasgow and Clyde from 2010. The additional activity has, however, increased the number of breakdowns in the equipment and due to the age of the technology, parts are becoming difficult to source.

## Digital Mammography

National Services Division will pilot digital mammography in early 2011 with a view to rolling out across Scotland. The policy intention is that Digital mammography will replace analogue equipment currently being used for two view mammography.

## **Brief Interventions**

Attending regular Breast Screening allows any changes in breasts to be identified earlier. There are other lifestyle choices that people can make that will reduce the risk of developing cancer. It is important that women who attend for breast screening are made aware of this. West of Scotland Breast Screening Centre Staff were trained on the benefits of lifestyle choices that people can make to reduce the risk of developing cancer. This training, along with other resources, will give patients the opportunity to ask about services that are available to support any behaviour change

## **Challenges and future priorities**

Continue health interventions and health improvement initiatives to raise awareness of, and encourage women to participate in the breast screening programme.

To use the screen as a “teachable moment” for health behaviours.

The additional activity following introduction of two view mammography has increased the number of breakdowns in the equipment and due to the age of the technology, parts are becoming difficult to source.

The implementation of digital mammography will have to be managed carefully to ensure that the high level of performance achieved by the programme is maintained. Digital mammography will replace the need for analogue equipment.

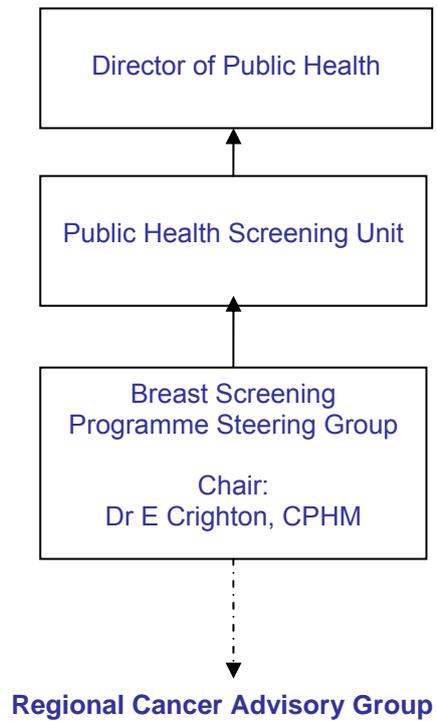
## Appendix 2.1

### Members of Breast Screening Steering Group (As at March 2010)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Mrs Donna Athanasopolous	PERL Resources Co-ordinator
Ms Brenda Bellando	Business Manager
Mr Tom Clackson	GMS Contract Manager
Dr Hilary Dobson	Clinical Director
Mrs Fiona Gilchrist	Assistant Programmes Manager, Screening Dept
Dr Susan Langridge	General Practitioner
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Ms Janet Mair	Regional Registration Manager
Mrs Eleanor McColl	H&IT Service Delivery Manager
Ms Cynthia Mendelsohn	Lay Member
Dr Alan Mitchell	Clinical Director
Ms Ann Mumby	Superintendent Radiographer
Ms Elaine Murray	Community Liaison Officer
Mrs Elizabeth Rennie	Programmes Manager, Screening Dept
Mrs Claire Scott	Senior Health Improvement Officer
Ms Patricia Weir	Lay Member

## Appendix 2.2

### Reporting Structure: Breast Screening Steering Group



**Key:**  
\_\_\_\_\_ Direct Reports  
----- Network Links

## SUMMARY

### CHAPTER 3: BOWEL SCREENING PROGRAMME

- Colorectal (Bowel) Cancer is the third most common cancer in Scotland after prostate (for men), lung (for both men and women) and breast (for women) cancers. (*Cancer in Scotland (2010): Information Services Division, NHS National Services Scotland*).
- The Scottish Bowel Screening Programme was launched in 2007 and was fully implemented across Scotland by the end of 2009.
- 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 will be able to participate. Thereafter, all eligible individuals will be routinely recalled every two years.
- All eligible individuals are sent a “teaser” (early notification) letter two weeks before the screening kit is sent to advise them that they will be sent the bowel screening kit.
- 196,961 residents in NHS Greater Glasgow and Clyde residents were invited to participate in the Bowel Screening programme.
- 99,784 test results were reported by the Bowel Screening laboratory and this gives an estimated uptake of 50.7%.
- Uptake was highest in East Dunbartonshire CHP and East Renfrewshire CHCP (60.2% and 58.9% respectively).
- Uptake was lowest in East Glasgow CHCP and North Glasgow CHCP (43.9% and 45% respectively).
- 1,643 patients received a positive result. This represents a positivity screening rate of 1.6%. This was lower than the national average range of 1.9% to 2.3% reported in the *Scottish Bowel Screening Programme KPI reports (www.ISDscotland.org 25 August 2009)*.
- Of the 1,643 patients screened positive, 1,558 patients were pre-assessed prior to colonoscopy. 85 patients did not respond to the offer of a colonoscopy pre-assessment.
- 1,381 (84.1%) patients completed colonoscopy investigations by 31 March 2010. 12.8% (177) patients refused to take up the offer of a colonoscopy. Of the total eligible population invited to take part in bowel screening, 122 cancers were detected (6 in 10,000).

- Uptake was highest among females at 54.4% compared to the male population at 46.8%. The lowest uptake of 39.6% was among the 50-54 year old male population group.
- The positivity rate was highest among men at 2.2% compared to women at 1.2%. The male population age group of 70 to 74 had the highest positivity rate of 3.7% compared to all other groups.
- To minimise the complication rates for colonoscopy, skills update training and audit for screening colonoscopists were implemented.
- A bespoke information management and technology system to support the bowel screening programme was developed in-house. 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.
- NHS Greater Glasgow and Clyde has implemented several initiatives to promote uptake based on the experience from the breast screening programme.
- NHS Greater Glasgow and Clyde commissioned a TV and radio advertising and poster campaign to help raise public awareness and maximise the uptake of the bowel screening programme. The campaign ran from April to August 2009. The evaluation of the campaign reported that by using TV advertising, TV awareness was 46% and that the total campaign awareness was 53%. (*Bowel Screening Campaign, MRUK Omnibus, June 2009, The Bridge*). The campaign won the 2010 Gold Star Social Marketing Award.
- A Health Improvement Cancer Screening Group was set up to increase public awareness and encourage uptake of the bowel screening programme. The group meets regularly and has developed local action plans that are regularly updated.
- Training has been developed on Bowel Awareness and Bowel Screening. This course is available to key health and care employees to increase their knowledge and skills on these topics.

## 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. (*Cancer in Scotland (2010): Information Services Division, NHS National Services Scotland*). Every year over 3,400 people are diagnosed with the disease. In NHS Greater Glasgow and Clyde, 434 people aged between 50 and 74 were diagnosed with bowel cancer in 2006. (*Colorectal Cancer Incidence (ICD10 C18 to C20) 2006*).

The Scottish Bowel Screening Programme was launched in 2007 and was fully implemented across Scotland by the end of 2009. NHS Greater Glasgow and Clyde implemented the programme in April 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 would also be 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

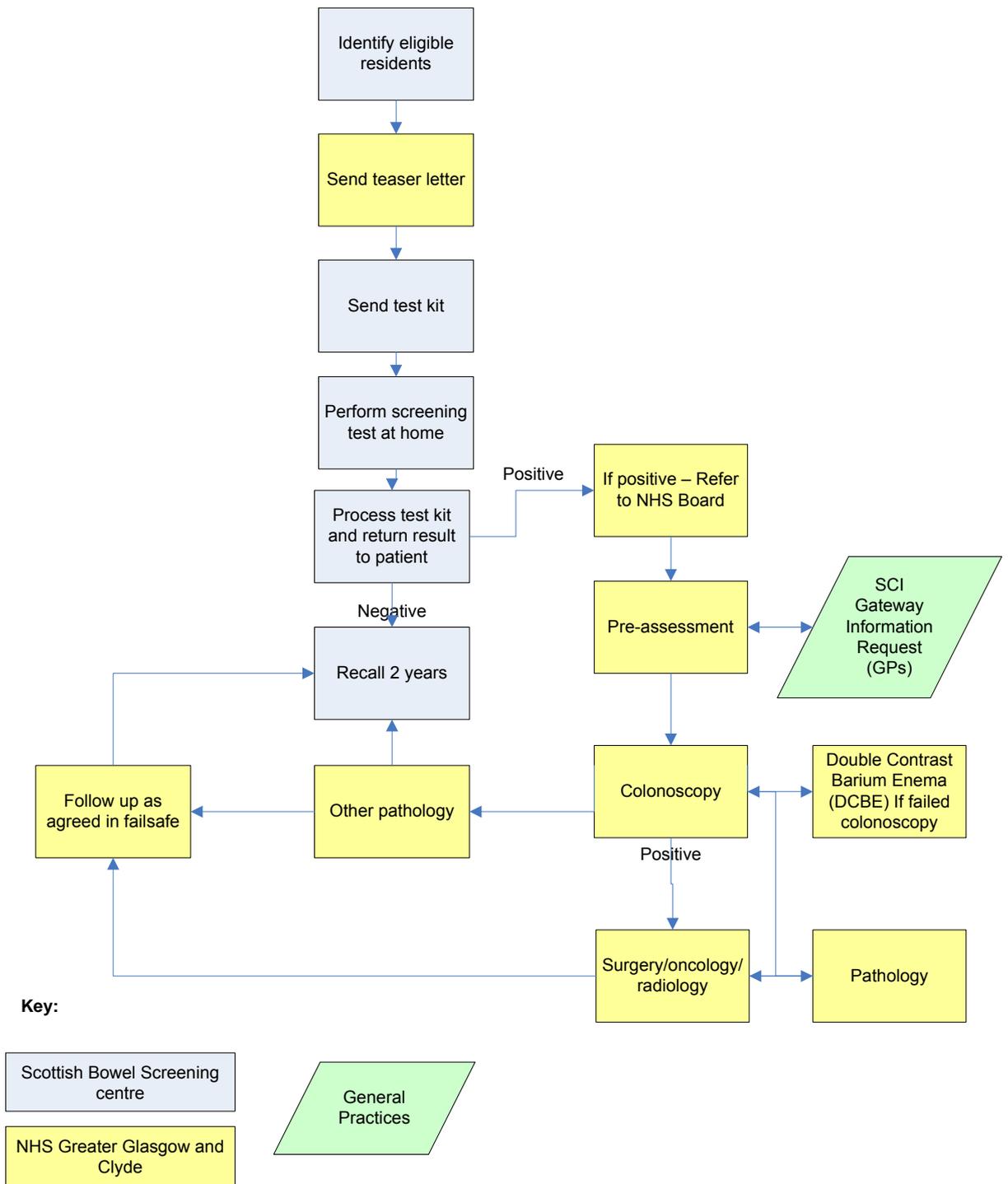
Eligible NHS Greater Glasgow and Clyde residents that are due to be invited to take part in the bowel screening programme are sent a “teaser” letter before they are sent an invitation letter and screening kit. The letter explains the programme and encourages participants to take the test.

The National Bowel Screening Centre in Dundee issue screening kits to all eligible residents of NHS Greater Glasgow and Clyde to screen 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. If required, they are then referred for further diagnostic investigations and treatment. **Figure 3.1** gives an overview of the bowel screening pathway.

Figure 3.1 Overview of bowel screening pathway



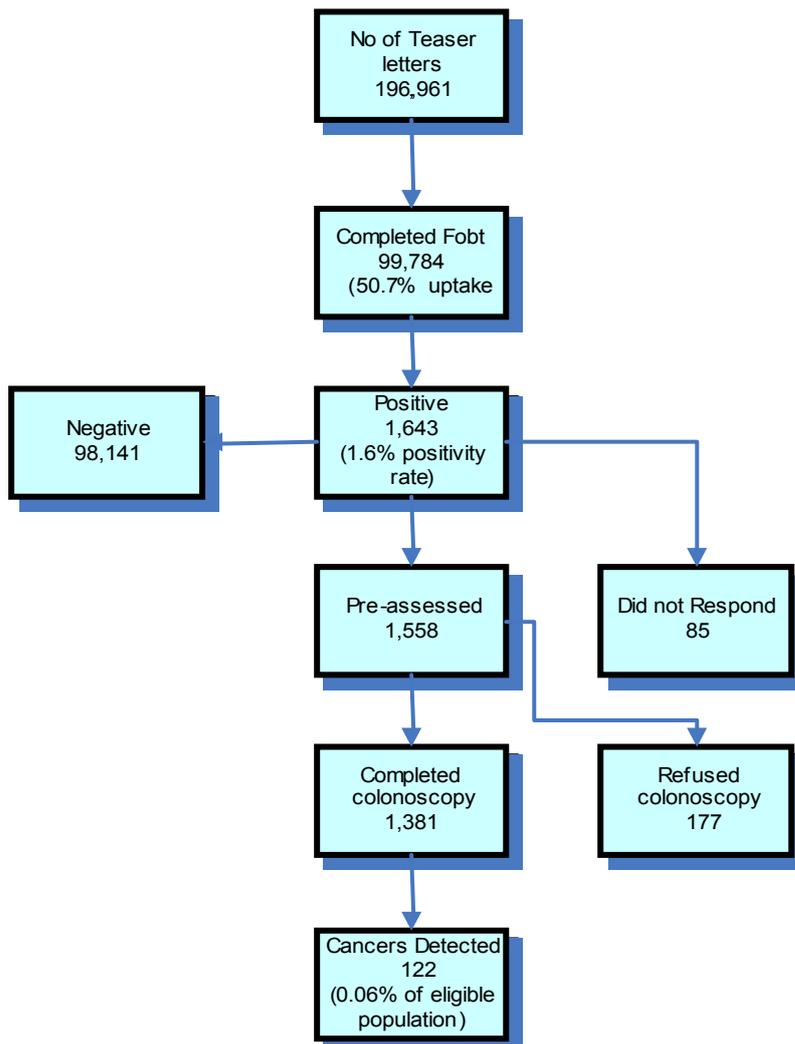
## Performance on uptake and delivery of service

From 18 March 2009 to 31 March 2010 196,961 residents in NHS Greater Glasgow and Clyde residents were sent “teaser” (early notification) letters and subsequently invited to participate in the Bowel Screening programme (see Figure 3.1).

99,784 screening kits were completed and were reported by the Bowel Screening laboratory. This gives an estimated uptake of 50.7%. The uptake is encouraging as the evaluation of the bowel screening pilot in the UK demonstrated a level of uptake of 30% in deprived communities. The uptake varied between CH(C)Ps. Uptake was highest in East Dunbartonshire CHP and East Renfrewshire CH(C)P (60.2% and 58.9% respectively). Uptake was lowest in East Glasgow CH(C)P and North Glasgow CH(C)P (43.9% and 45% respectively).

Achieving NHS Quality Improvement Scotland’s standard level of uptake of 60% is particularly challenging for NHS Greater Glasgow and Clyde.

**Figure 3.1: Breakdown of NHS Greater Glasgow and Clyde Bowel Screening Activity 1 April 2009 to 31 March 2010**



Source: NHS Greater Glasgow and Clyde Bowel Screening IT System.

Note:

1. It was estimated that residents would complete the test within 6 weeks of teaser letter being issued. Therefore the approximate percentage uptake is based on total number of results from 1 April 2009 – 31 March 2010 against the number of teaser letters issued from 1 April 2009 – 31 March 2010..

There were 1,643 patients that received a positive result, representing a positivity screening rate of 1.6%. This was lower than the national average range of 1.9% to 2.3% reported in the *Scottish Bowel Screening Programme KPI reports (www.ISDscotland.org 25 August 2009)*. There is a gradient in the positivity rate across deprivation categories. The positivity rate for residents living in the most deprived areas was 2.3% compared 1% for residents living in least deprived areas.

Of the 1,643 patients screened positive, 1,558 patients were pre-assessed prior to colonoscopy. 85 patients did not respond to the offer of a colonoscopy pre-assessment.

1,381 (84.1%) patients completed colonoscopy investigations by 31 March 2010. 177 patients refused to take up the offer of a colonoscopy. If they remain eligible for bowel screening, they will be invited to participated in screening in two years. Of the total eligible population invited to take part in bowel screening, 122 cancers were detected (6 in 10,000).

**Table 3.1** shows the percentage uptake among females at 54.4% was higher than the male population at 46.8%. The lowest uptake of 39.6% was among the 50-54 year old male population group. The overall positivity rate was highest among men at 2.2% compared to women at 1.2%. The male population age group of 70 to 74 had the highest positivity rate of 3.7% compared to all other groups.

**Table 3.1 Percentage uptake and positivity rate by age bands and gender**

Age group	Uptake			Positivity Rate		
	Female	Male	Overall Average	Female	Male	Overall Average
50-54	49.5%	39.6%	44.5%	0.8%	1.4%	1.0%
55-59	56.0%	46.3%	51.0%	0.8%	1.5%	1.1%
60-64	59.2%	51.5%	55.4%	1.0%	2.4%	1.6%
65-69	58.6%	53.6%	56.3%	1.7%	3.0%	2.3%
70-74	53.8%	52.4%	53.2%	2.0%	3.7%	2.7%
75+	45.8%	47.0%	46.3%	2.2%	3.5%	2.7%
Unassigned <sup>3</sup>	46.8%	37.1%	41.7%	0.5%	0.6%	0.6%
<b>Total</b>	<b>54.4%</b>	<b>46.8%</b>	<b>50.7%</b>	<b>1.2%</b>	<b>2.2%</b>	<b>1.6%</b>

Source: Bowel Screening IT System; Data extracted 27th October 2010

1 7 patients had no gender assigned but remain in total

2 two patients had no gender assigned but remain in total

3 Incorrect CHI number/date of births recorded

**Table 3.2** shows the percentage bowel screening uptake by CH(C)P area and by deprivation. Overall, the lowest uptake was among the most deprived areas at 41.8%. The lowest uptake for bowel screening was among the most deprived residents living in South East Glasgow CH(C)P at 39% compared to the least deprived residents living in East Dunbartonshire where uptake was highest at 63.9%. Uptake was below 50% for East Glasgow, North Glasgow, South East Glasgow, South West Glasgow and West Glasgow.

**Table 3.2 Percentage uptake by CHCP and by deprivation category**

Uptake	SIMD06					Unassigned	Overall Average
	Most deprived			Least Deprived			
	1	2	3	4	5		
East Dunbartonshire	46.3%	50.0%	54.5%	60.5%	63.9%	41.2%	60.2%
East Glasgow	40.6%	44.9%	51.0%	57.8%	54.4%	17.2%	43.9%
East Renfrewshire	43.6%	50.8%	54.6%	54.9%	62.6%	59.5%	58.9%
Inverclyde	44.2%	49.8%	54.2%	59.8%	60.3%	25.0%	51.4%
North Glasgow	41.4%	44.4%	54.8%	55.3%	57.8%	6.3%	45.0%
North Lanarkshire <sup>1</sup>	41.9%	51.8%	56.1%	56.7%	59.7%	0.0%	54.5%
Renfrewshire	43.4%	50.3%	55.3%	58.9%	63.6%	28.8%	54.4%
South East Glasgow	39.0%	39.9%	47.8%	55.4%	57.0%	32.4%	45.2%
South Lanarkshire <sup>1</sup>	45.8%	49.2%	56.7%	58.2%	58.4%	46.2%	51.9%
South West Glasgow	40.3%	48.2%	54.4%	55.6%	55.7%	5.7%	46.0%
West Dunbartonshire	44.1%	52.0%	54.9%	59.1%	63.8%	29.4%	51.7%
West Glasgow	41.1%	45.4%	44.9%	48.5%	60.0%	9.1%	46.2%
Unassigned <sup>2</sup>						31.4%	31.4%

Source: Bowel Screening IT system (data extracted 27 October 2010)

Notes:

1. NHSGGC residents only

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

## Quality assurance and training

To minimise the complication rates for colonoscopy, skills update training and continuing audit for screening colonoscopists are implemented.

## Information systems

A bespoke information management and technology system to support the bowel screening programme was developed in-house. 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 final phase of the development will include links to pathology, cancer MDT and cancer waiting times systems.

The application enables staff to monitor service performance, progress against quality assurance standards and NHS Quality Improvement Scotland Standards.

## Promoting uptake

NHS Greater Glasgow and Clyde has implemented several initiatives to promote uptake based on the experience from the breast screening programme.

“Teaser” letters are sent to patients before they receive their bowel screening kit. The wording of the letter was agreed with the Local Medical Council (LMC).

Primary care was also involved in promoting the programme by displaying promotional materials. In addition, general practices are involved in the delivery of the diagnostic part of the programme by sending relevant clinical information using SCI Gateway protocol.

The Keep Well programme incorporates advice and encourages eligible participants to take part in the bowel screening programme during the Keep Well health check.

NHS Greater Glasgow and Clyde commissioned a TV and radio advertising and poster campaign to help raise public awareness and maximise the uptake of the bowel screening programme. The campaign ran from April to August 2009. The evaluation of the campaign reported that by using TV advertising, TV awareness was 46% and that the total campaign awareness was 53%. (*Bowel Screening Campaign, MRUK Omnibus, June 2009, The Bridge*). The campaign won the Scottish Marketing Gold Star Social Marketing Award 2010.

It is commonly accepted, however, that any marketing campaign that relies on leaflets, posters and advertisements alone may have limited success. What works are approaches that provide information but also explore attitudes, values, and develop skills and ways of addressing barriers to uptake. Also engagement with, and empowerment of, the target group are key to a successful screening programme.

Health Improvement Cancer Screening Group was set up to increase public awareness and encourage uptake of the bowel screening programme. This group has representation from all local NHS Greater Glasgow and Clyde Health Improvement teams as well as NHS specialist health improvement teams for disadvantaged population groups, and the voluntary sector. The group meets regularly and has developed many local action plans that are regularly updated. For example, local protocols for homeless and traveller communities have been developed and once ratified these protocols should help raise uptake in these vulnerable groups; screening workshops for staff groups and local road show events across NHS Greater Glasgow and Clyde were also organised.

Working with other partners, training has been developed on Bowel Awareness and Bowel Screening. This course is available to key health and care employees to increase their knowledge and skills on these topics. This enables them to talk to patients, clients and community groups with greater confidence.

### **Challenges and future priorities**

- To complete an equality impact assessment for the bowel screening programme
- To monitor and audit the performance of the programme
- To encourage uptake of the programme through health promotion activities

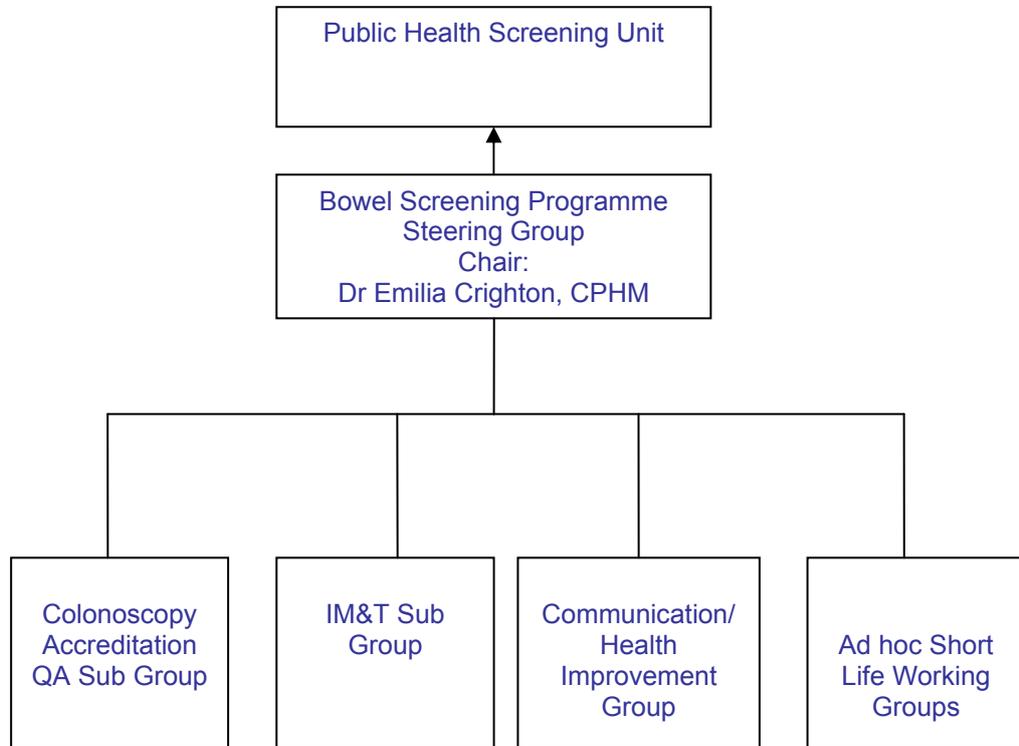
## Appendix 3.1

### Members of Bowel Screening Steering Group (As at March 2010)

Dr Emilia Crighton	Consultant in Public Health Medicine, Chair
Mr John Anderson	Consultant Surgeon
Mrs Donna Athanasopolous	PERL Resources Co-ordinator
Mr Ewan Bell	Colorectal Nurse Endoscopist
Dr Fraser Duthie	Lead Clinician for Pathology
Mr Ian Finlay	Consultant Surgeon - Bowel Screening Lead
Mr Patrick Finn	Consultant Colorectal and General Surgeon
Mrs Fiona Gilchrist	Assistant Programmes Manager, Screening Dept
Dr Derek Gillen	Lead Clinician for Endoscopy
Mr Alan Hunter	General Manager
Ms Heather Jarvie	Senior Health Promotion Officer
Mrs Maureen Kirkland	Lay Member
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Miss Flora MacInnes	Business Analyst/ Project Lead
Mrs Eleanor McColl	H&IT Service Delivery Manager
Ms Joyce McFadyen	Health Records Manager
Ms Susan McFadyen	Clinical Service Manager
Mrs Tricia McKenna	Colorectal Nurse Endoscopist
Dr John Morris	Consultant Gastroenterologist
Dr Kenneth O'Neill	Clinical Director, South West CHP
Mr Ian Pickford	Consultant Surgeon
Dr Fat Wui Poon	Lead Clinician for Radiology
Mrs Rebecca Reid	Clinical Service Manager
Dr Robin Reid	Associate Medical Director, Laboratories & Diagnostics (until March 2010)
Mrs Elizabeth Rennie	Programmes Manager, Screening Dept
Mrs Claire Scott	Senior Health Improvement Officer
Dr Maureen Smith	General Practitioner/LMC Representative
Mrs Ann Wilson	General Manager – General Surgery, Urology and Endoscopy

## Appendix 3.2

### Reporting Structure: Bowel Screening Programme



## SUMMARY

### CHAPTER 4: COMMUNICABLE DISEASES IN PREGNANCY

- All pregnant women are offered screening for the four communicable diseases, and receive information about the screening tests prior to attendance at their first booking visit.
- To comply with the NHS Quality Improvement Scotland standards (*Clinical Standards 2005, Pregnancy and Newborn Screening*), protocols covering each of the four communicable diseases routinely tested for in pregnancy – HIV, rubella, hepatitis B virus and syphilis - have been developed and implemented throughout Greater Glasgow and Clyde. These protocols are major steps towards a consistent approach to co-ordinating this screening programme throughout the Board area.
- 16954 pregnant women were referred for a first booking visit in Greater Glasgow and Clyde during 2009/10.
- Laboratory data indicates that the uptake of screening for communicable diseases in pregnancy has risen from last year and is now greater than 96% for all four communicable diseases.
- Fourteen women were identified as having HIV by the screening programme, only 9 of whom were previously known to be HIV positive. Seventy nine women were detected as having hepatitis B virus, 33 of whom were previously known to be chronic carriers of the virus. Seven women were identified by the screening programme to be positive for syphilis and required treatment and follow-up. As the majority of the women with HIV or HBV were not previously known to be infected, the detection of these women and the implications for their health and the health of their babies are immense and illustrates the success of the screening programme. All infected women and their babies were offered appropriate treatment and care.

## **CHAPTER 4: COMMUNICABLE DISEASES IN PREGNANCY**

### **Background**

HIV screening in pregnancy was introduced in Scotland in 2003. This is an addition to the existing integrated programme of antenatal screening to limit risk for a number of communicable diseases - hepatitis B, syphilis, rubella as well as HIV.

### **Aim of screening programme**

The primary aim of screening women for these conditions is to ensure a plan for treatment and management for affected individuals and their babies. It allows 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.

### **Eligible population**

The programme is offered universally to all pregnant women at the first booking visit. Women are offered the test, not because they have been at risk, but because they are pregnant.

### **The screening test**

Testing for infection with HIV, hepatitis B, syphilis and immunity to rubella are carried out on serum obtained from a single blood sample normally taken at the first antenatal booking visit. Occasionally a second blood sample may be requested for technical reasons.

### **Screening pathway**

The following protocols for communicable diseases screening in pregnancy were approved by the Pregnancy Screening Group in June 2007 by the Pregnancy Screening for Communicable Diseases in Pregnancy Protocols and Data Monitoring sub group chaired by Dr Gillian Penrice, Consultant in Public Health Medicine in the Public Health Protection Unit. These are in place and were updated in 2010 (See Appendices 4.3 .

- Offering routine antenatal communicable diseases test
- Protocol for significant laboratory results for hepatitis B
- Protocol for significant laboratory results for HIV
- Protocol for significant laboratory results for non immune rubella infection
- Protocol for significant laboratory results for syphilis

The protocols set out the pathways for antenatal screening for communicable diseases in order to meet NHS QIS Standard 3a1.

### Delivery of screening programme 2009/10 - results

16954 pregnant women were referred for a first booking visit at a Greater Glasgow and Clyde hospitals during 2009/10; 12,900 in Greater Glasgow and 4,054 in Clyde.

All women are offered screening for the four communicable diseases, and receive an information leaflet about the screening tests prior to attendance at their first booking visit.

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. When screening is offered to the woman, the tests are accepted or refused individually. Consent is obtained and documented in the woman's notes.

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

The table below of results shows that for all four of the screening tests, the estimated uptake is greater than 97%.

**Table 4.1 Greater Glasgow laboratories**

Samples 2009/10					Results					
Test	Total number of samples	No. requesting individual test	No. not requesting individual test	% uptake	Antibody detected		Antibody not detected		Insuff <sup>1</sup> or not tested	
					No.	%	No.	%	No.	%
HIV	12365	12052	313	97.47	14 <sup>2</sup>	0.12	12011	99.66	27	0.22
HBV	12365	12174	191	98.46	73 <sup>3</sup>	0.60	12074	99.18	27	0.22
Rubella	12365	12351	14	99.89	11765 <sup>4</sup>	95.26	558 <sup>5</sup>	4.52	28	0.23
Syphilis	12365	12172	193	98.44	6	0.05	12139	99.73	27	0.22

#### Notes

<sup>1</sup> Insufficient or not tested – although the test was requested, for various reasons, e.g. sample volume too small, the test could not be carried out. A repeat sample will be needed.

<sup>2</sup> 9 of the 14 infections were previously known about

<sup>3</sup> 30 of the 73 infections were previously known about

<sup>4</sup> Detection of antibody means that the woman is immune to rubella.

<sup>5</sup> No antibody detected means that the woman is susceptible to rubella and should be offered immunisation with MMR vaccine after delivery.

The table below of results shows that for all four of the screening tests, uptake is greater than 96%.

Table 4.2 Clyde laboratories

Samples 2009/10					Results					
Test	Total number of samples	No. requesting individual test	No. not requesting individual test	% uptake	Antibody detected		Antibody not detected		Insuff <sup>1</sup> or not tested	
					No.	%	No.	%	No.	%
HIV	3898	3744	154	96.05	0	0	3737	99.81	7	0.19
HBV	3898	3799	99	97.46	6 <sup>2</sup>	0.16	3786	99.66	7	0.18
Rubella	3860	3828	32	99.17	3655 <sup>3</sup>	95.48	165 <sup>4</sup>	4.31	8	0.21
Syphilis	3898	3800	98	97.49	1	0.03	3791	99.76	8	0.21

**Notes**

<sup>1</sup> Insufficient or not tested – although the test was requested, for various reasons, e.g. sample volume too small, the test could not be carried out. A repeat sample will be needed.

<sup>2</sup> 3 of the 6 infections were previously known about

<sup>3</sup> Detection of antibody means that the woman is immune to rubella.

<sup>4</sup> No antibody detected means that the woman is susceptible to rubella and should be offered immunisation with MMR vaccine after delivery.

**Information systems**

The IT application to support all pregnancy and newborn screening programmes, which was rolled out in 2009/10, will see improvements in both the reporting and management of cases identified through the programme. It will also introduce additional failsafe mechanisms into the screening programme.

**Future developments**

The Pregnancy Screening for Communicable Diseases subgroup will continue to audit activity and outcomes against the protocols to ensure that the QIS standards are met and women identified as a result of the programme are offered appropriate treatment and care.

## **Challenges and future priorities**

The Pregnancy Screening for Communicable Diseases subgroup will work with the laboratories to identify and resolve the minor data anomalies and improve routine reporting so that ongoing audit and identification of any problems with protocol compliance are noticed and rectified in a timely manner.

There are well-established follow-up protocols for babies born to mothers infected with hepatitis B and regular audits are carried out to ensure effectiveness. For those mothers and their children affected by HIV, there is an annual HIV clinical audit, which reviews those HIV cases detected via the screening programme and examines where the protocol has been particularly successful or requires amendment.

Ensuring that all staff are fully trained and are able to use the IT system for pregnancy and newborn screening will be a priority over the coming year.

## **Conclusion**

The results indicate that this screening programme is successful as the uptake of the four screening tests is high and all women identified (and their babies) are offered appropriate treatment.

## Appendix 4.1

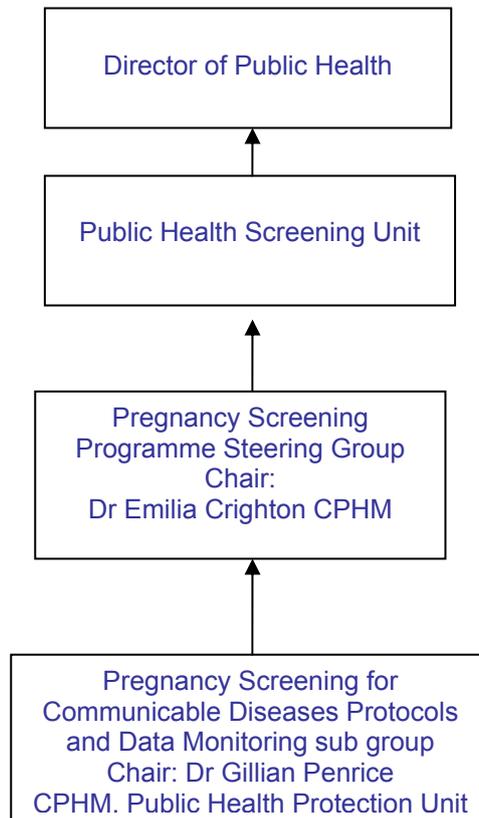
## Members of Pregnancy Screening for Communicable Diseases Data and Monitoring Group

(As at March 2010)

Dr Gillian Penrice	Public Health Protection Unit (Chair)
Mrs Donna Athanasopolous	PERL Resources Co-ordinator
Ms Elizabeth Boyd	Clinical Effectiveness Facilitator
Dr Sheila Cameron	Consultant Clinical Scientist
Mrs Jacquie Campbell	General Manager
Mrs Louise Carroll	Programme Manager HIV/STIs
Ms Flora Dick	Special Needs (SNIPS) Midwife
Ms Catherine Frew	Data Analyst
Mrs Annie Hair	Head of Children's Services
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Gwyneth MacDonald	Sexual Health Advisor
Dr Alan Mathers	Clinical Director Obstetrics and
Mrs Marie-Elaine McClair	Clinical Nurse Manager
Mrs Harriet O'Donnell	Health Protection Nurse Specialist
Mrs Diane Paterson	Lead Midwife
Ms Linda Rhodick	Medical Secretary/Data Co-ordinator
Dr James Robins	Consultant Obstetrician & Gynaecologist
Dr Andrew Thomson	Consultant Obstetrician & Gynaecologist
Mrs Janice Winter	Clinical Effectiveness Facilitator
Mr Roger Wong	Clinical Co-ordinator

## Appendix 4.2

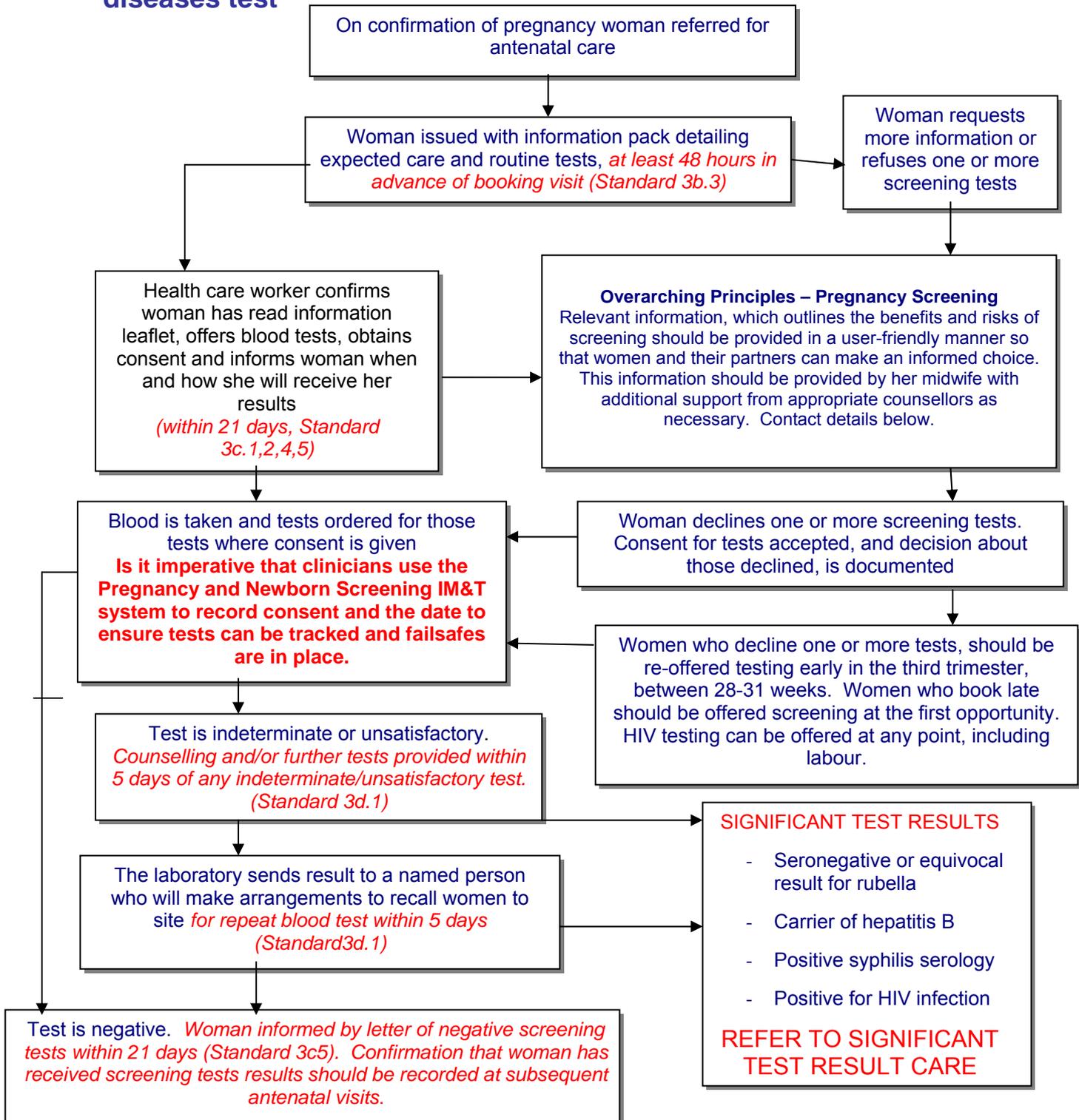
### Reporting Structure: Pregnancy Screening for Communicable Diseases Protocols and Data Monitoring Sub Group



**Key:**  
\_\_\_\_\_ Direct Reports

Appendix 4.3a

Protocol for offering routine antenatal communicable diseases test

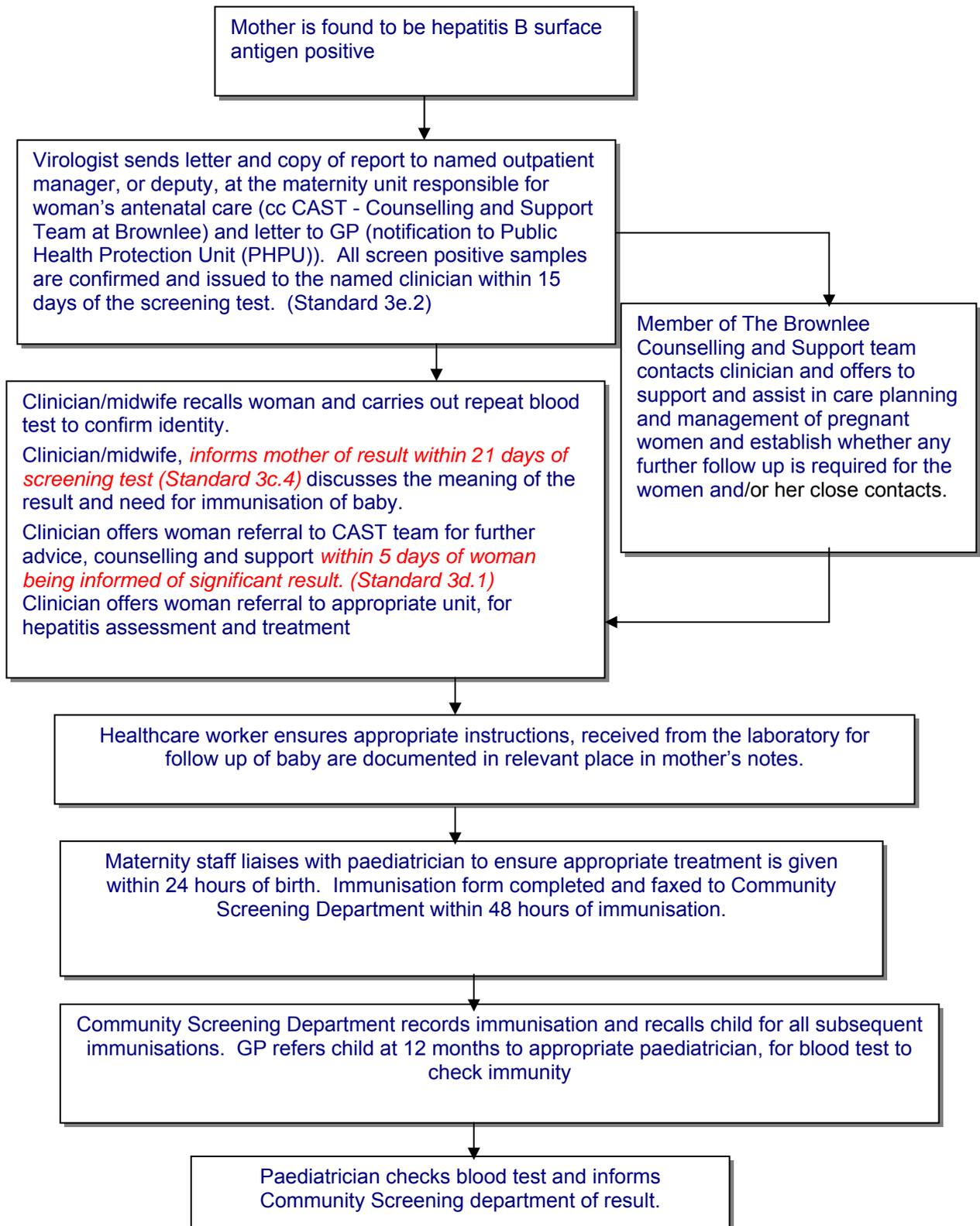


N.B. If a woman feels she has been/continues to be at risk of exposure to HIV, she should be offered re-testing 3 monthly in pregnancy. If a mother develops symptoms of hepatitis or a sexually transmitted infection she should be referred to SNIPs/or sexual health advisor.

Special Needs in Pregnancy (SNIPs) –RAH – 0141 314 6199 or 0141 887 911 then page 56311 VOL – 01389 817 232  
 IRH – 01475 504 833 Glasgow - 0141 221 5267 or 0141 211 5337 Sexual Health Advisors, Sandyford – 0141 211 8634  
 Counselling and Support Team (CAST), Brownlee Centre 0141 211 1089

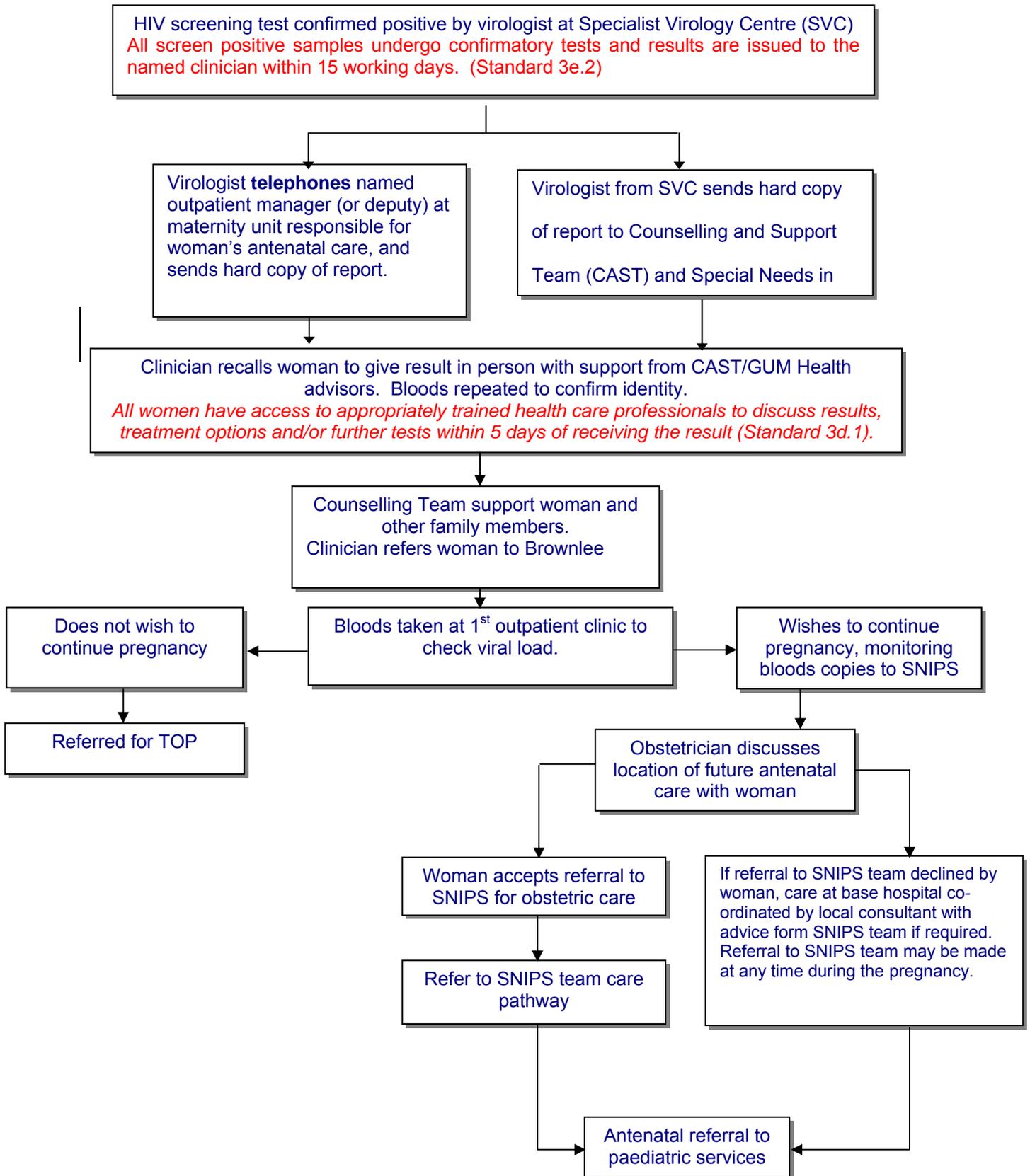
## Appendix 4.3b

## Protocol for significant laboratory results for hepatitis B

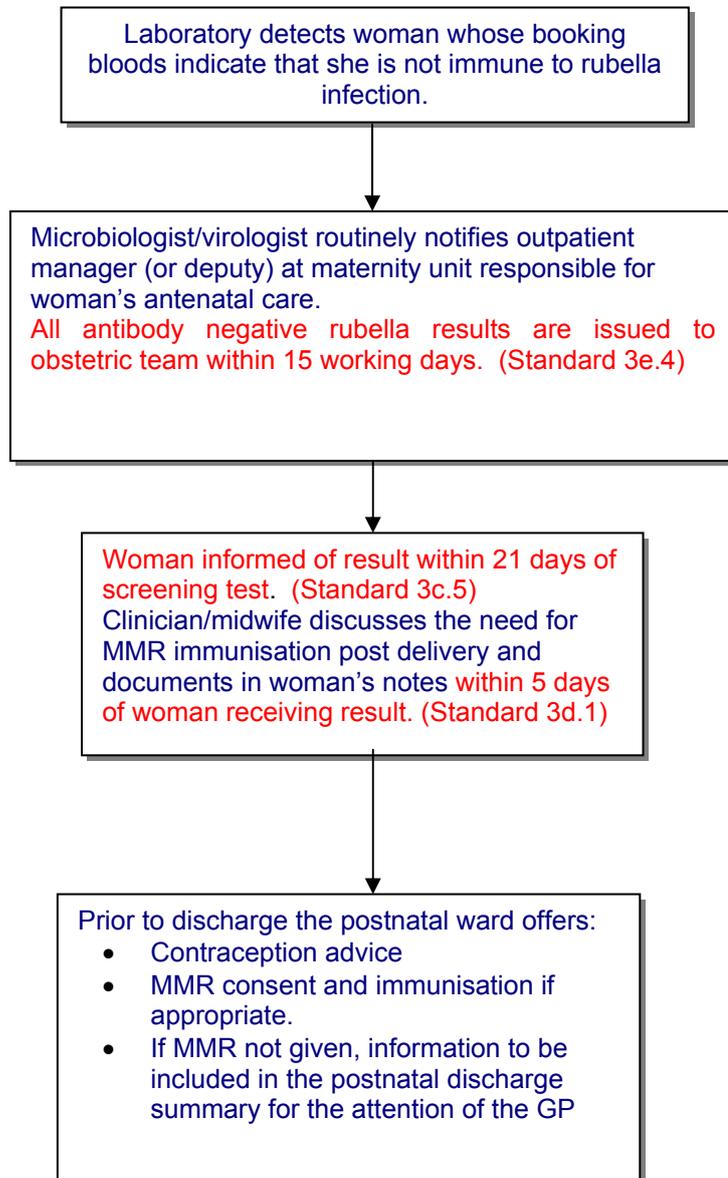


Appendix 4.3c

Protocol for significant laboratory results for HIV

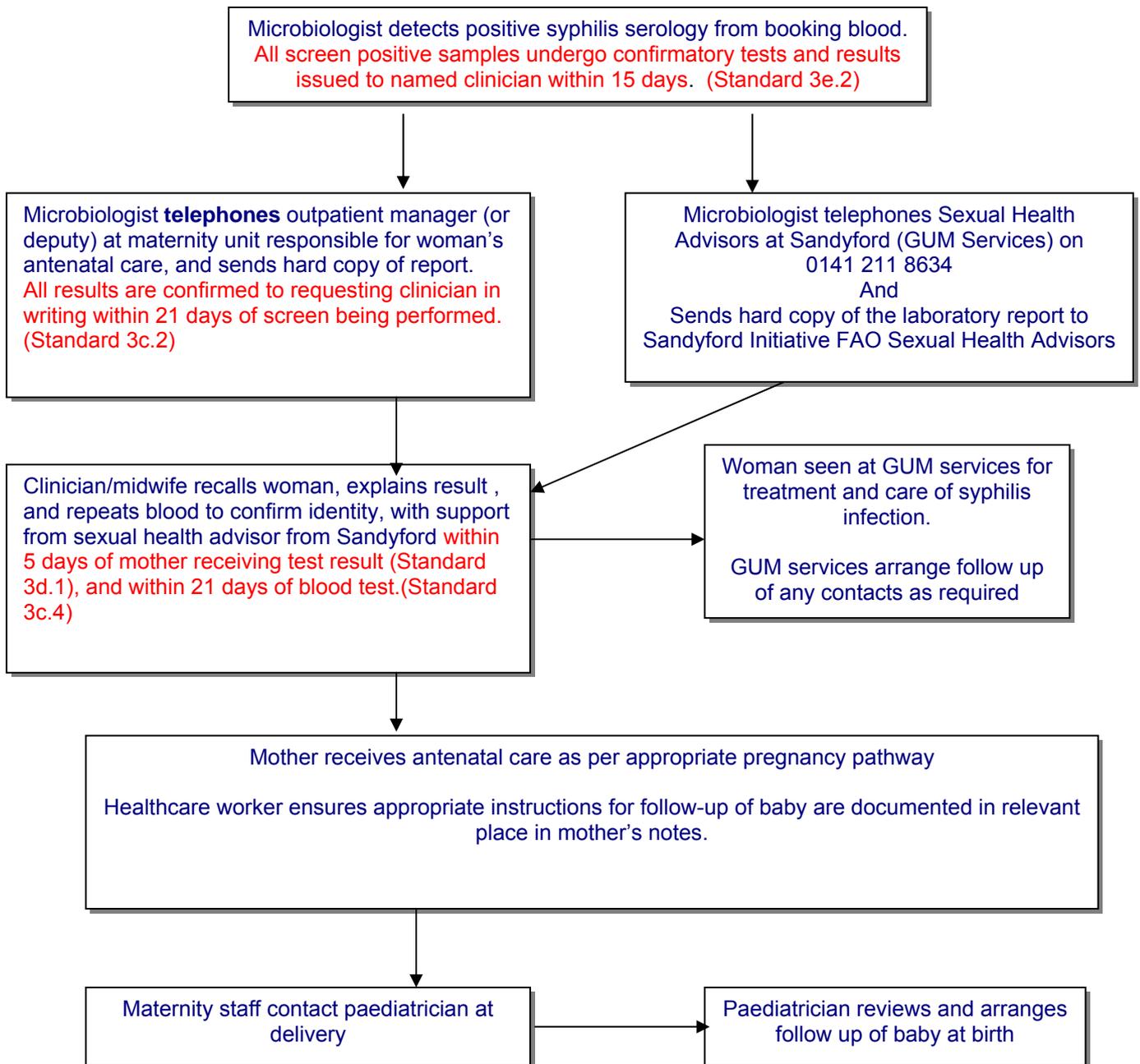


## Appendix 4.3d

**Protocol for significant laboratory results for non immune rubella infection**

Appendix 4.3e

Protocol for significant laboratory results for syphilis



## SUMMARY

### CHAPTER 5: DOWN'S SYNDROME AND NEURAL TUBE DEFECTS

- In NHS Greater Glasgow and Clyde screening for Down's syndrome and neural tube defects (NTDs) is offered to all pregnant women.
- In the year 2009/10, 16,954 women attended antenatal clinics across NHS Greater Glasgow and Clyde. 15,202 women were NHS Greater Glasgow and Clyde residents and 1,752 women lived outwith the Board area.
- There are two screening pathways in NHS Greater Glasgow and Clyde: first trimester combined ultrasound and biochemical testing for Down's syndrome and 18-20 week fetal anomaly ultrasonography offered to women booking in the Clyde area of NHS Greater Glasgow and Clyde; and second trimester blood testing and fetal anomaly ultrasonography offered to women booking in Greater Glasgow. This will change during 2011.
- In 2009/10, the overall uptake for Down's syndrome and neural tube defects was 61.7%. 0.5% of pregnant women chose to have only neural tube defect screening.
- Following the second trimester screening, 4.2% of women were assigned to the 'higher chance' of Down's syndrome group, 0.1% of women assigned to the 'higher chance' of trisomy 18 group and 2.4% of women with an elevated AFP giving a 'higher chance' of a neural tube defect.
- 493 amniocentesis tests were analysed by the Cytogenetics Laboratory. 38 abnormalities were detected (7.7% of samples) and 32 of those (6.5% of total tests) had a diagnosis of trisomy (Down's syndrome/Trisomy 18).
- 114 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2008/09. 29 abnormalities were detected (25.4% of tests) and 19 of those (16.7% of tests) had a diagnosis of trisomy (Down's syndrome/Trisomy 18).
- To date, it is known that 15 cases of Down's syndrome, 4 cases of trisomy 18 and 4 cases with neural tube defects were detected antenatally by screening. Some babies born with these conditions will not be diagnosed during pregnancy as a number of women that had a "higher chance" screening result would not take up the offer of diagnostic test (amniocentesis or CVS).

- From 2011, all women in NHS Greater Glasgow and Clyde will be offered combined ultrasound and biochemical screening (CUBS) in the first trimester of pregnancy and a second trimester fetal anomaly ultrasound (FAS) scan between 18 weeks, 0 days and 20 weeks, 6 days. Women who do not present early enough in their pregnancy to take advantage of first trimester screening will be offered second trimester blood serum screening.

## **CHAPTER 5: DOWN'S SYNDROME AND NEURAL TUBE DEFECTS**

### **Background**

Scottish Government's guidance CEL 31 (2008) on Changes to Pregnancy and Newborn Pregnancy programmes set out guidance for Boards to ensure all pregnant women are offered Down's syndrome and other congenital anomaly screening. Since September 2009, all pregnant women booking in NHS Greater Glasgow and Clyde are offered second trimester fetal anomaly scanning.

Down's syndrome is a congenital condition which causes moderate to severe learning difficulties, impaired physical growth, characteristic facial appearance and is associated with a number of other physical problems such as cardiac abnormalities.

Neural tube defects (NTDs) are congenital malformations which arise during the development of the brain and spinal cord. It can result in spina bifida (incomplete closure of the lower spine). There are different forms of spina bifida, typically this can be open or closed depending on whether or not there is tissue covering the lower spine. It causes walking difficulties as well as problems with bowel and bladder control; or anencephaly when the skull and brain are not properly formed.

### **Aim of screening programme**

The purpose of antenatal screening for Down's syndrome and neural tube defects is to detect Down's syndrome and neural tube defects 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**

All pregnant women who book for antenatal care in NHS Greater Glasgow and Clyde are offered antenatal screening for Down's syndrome and neural tube defects in the first, second or both trimesters of their pregnancy.

## Screening setting

All women are provided with information regarding Down's syndrome and neural tube defects prior to attending the antenatal clinic, allowing them to make an informed decision regarding screening tests.

All pregnant women are offered antenatal screening for Down's syndrome and neural tube defects at the antenatal clinic. Screening is integrated into the clinical care pathway.

## The screening tests

Screening for Down's syndrome and neural tube defects can be carried out using a number of different screening methods. The screening tests, together with maternal risk factors, are used to derive an overall risk of having a baby with Down's syndrome or a neural tube defect.

There are two different screening tests for Down's syndrome used in NHS Greater Glasgow and Clyde:

- Blood testing in the second trimester (AFP and total beta HCG) and maternal age. It is carried out at 15-20 weeks.
- Combined test: This uses a combination of ultrasound measurements of fetal nuchal translucency (NT); measurements of maternal blood markers: free beta HCG and PAPP-A; age and other maternal factors. It is carried out at 11-14 weeks. This method has the best detection rate and the lowest false positive rate.

There are two different screening methods for neural tube defects used in NHS Greater Glasgow and Clyde:

- Blood testing in the second trimester (AFP and total HCG measured at around 16 weeks) and maternal age.
- 18-20 week fetal anomaly ultrasonography (which also assesses other fetal anomalies).

These differences are due to historical reasons but a process is now in place to use the most sensitive and specific tests across NHS Greater Glasgow and Clyde.

Throughout NHS Greater Glasgow and Clyde, all women who are found to have a risk of Down's syndrome greater than or equal to 1:250 or a risk of neural tube defect defined by an AFP greater or equal to 2.0 MOM are offered further investigation and management. All women with an abnormal fetal anomaly ultrasound are offered further investigations.

## The diagnostic procedures

Further diagnostic investigation for Down's syndrome and neural tube defects in pregnancy include:

- Chorionic villus sampling: This is an invasive procedure, where a needle is used to sample the placenta. It is usually performed between 11 to 13 weeks and has a miscarriage rate of 2%.
- Amniocentesis: This is an invasive procedure, where a needle is used to sample the fluid around the foetus. It is usually performed after 15 weeks gestation and has an overall risk of miscarriage of 1%.

The sample is sent to Glasgow Cytogenetics Laboratory to perform the Quantified Fluorescent Polymerase Chain Reaction (QF-PCR) analysis (Rapid Report) and standard culture/karyotyping.

Quantified Fluorescent Polymerase Chain Reaction is a technique used in testing for Down's syndrome. This is a rapid and robust method that is highly automated. Testing includes the enumeration of chromosome 21 (to exclude Down's syndrome), 18 (Edwards syndrome) and 13 (Patau's syndrome).

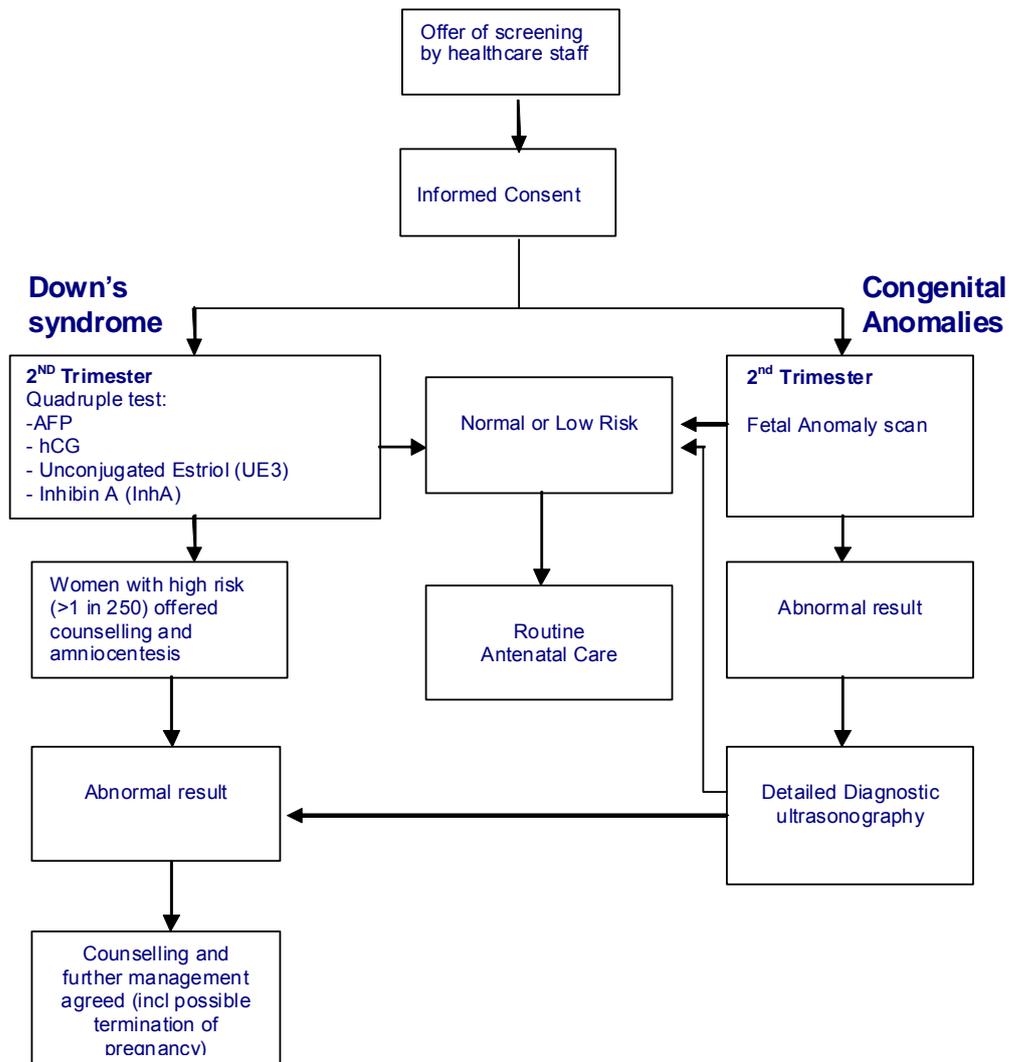
Standard Culture/Karyotyping is commonly used to diagnose Down's syndrome, other trisomies, balanced and unbalanced translocations and the sex of the fetus. It involves growing cells and then counting all chromosomes and examining their structure and shape. The main disadvantage is the long wait for results.

## Screening Pathway

Throughout NHS Greater Glasgow and Clyde, there are two main screening pathways.

Women who book in Greater Glasgow, and women in Clyde who book too late in their pregnancy to have first trimester screening are offered second trimester blood testing for Down's syndrome and neural tube defects (quadruple test) and fetal anomaly scanning (See Figure 5.2)

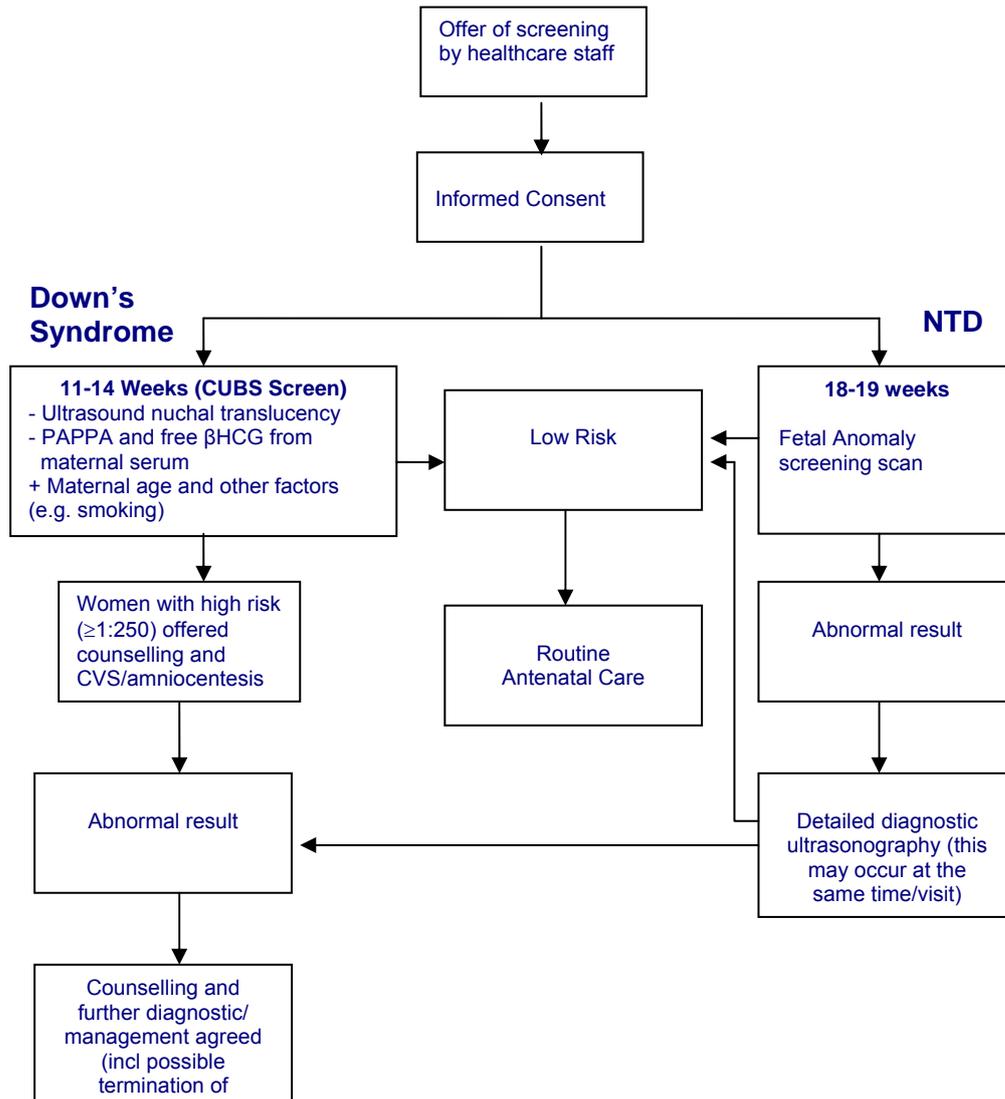
**Figure 5.2**  
**Screening for Down's syndrome and other congenital anomalies for late bookers**



The Clyde area offers all women combined screening for Down's syndrome at 11 – 14 weeks and universal routine 18-20 week fetal anomaly ultrasonography (see Figure 5.3).

**Figure 5.3**

**Screening For Down's Syndrome and other congenital anomalies**



## Uptake of Down's syndrome and neural tube defect screening in NHS Greater Glasgow and Clyde

The decision to accept screening for Down's syndrome and neural tube defects raises particular moral and ethical issues for women. Uptake therefore depends on whether women would wish further investigation or management of Down's syndrome or neural tube defects. This is reflected in the uptake rate of testing, although uptake of fetal ultrasonography at any stage is virtually 100%.

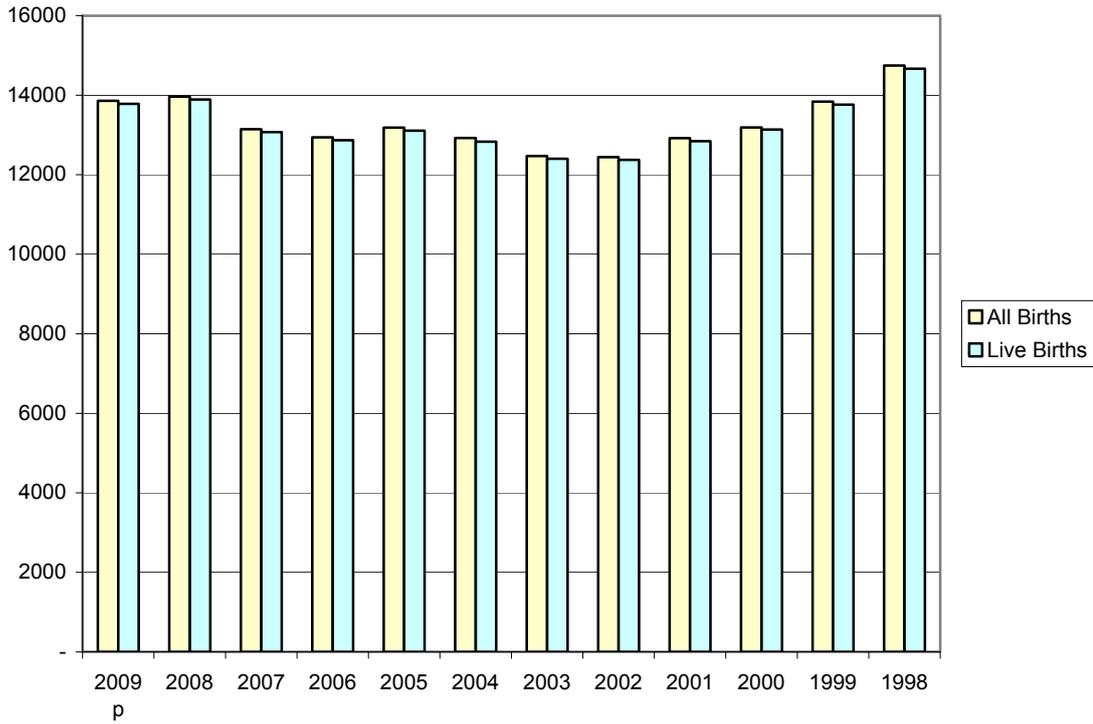
At present, assessment of uptake of screening is based on laboratory data only. In the year 2009/10 16,954 women attended antenatal clinics across NHS Greater Glasgow and Clyde. **Table 5.1** shows that 15,202 women were NHS Greater Glasgow and Clyde residents and 1,752 women lived outwith the Board area.

**Table 5.1 Number of women booking antenatal clinics in NHS Greater Glasgow and Clyde from 1 April 2009 to 31 March 2010.**

Hospital/Clinic name	NHS GGC Residents	Non NHS GGC Residents	Total
<b>Greater Glasgow:</b>			
Clarkston Clinic	50	31	81
Easterhouse HC	233	8	241
Glasgow Royal Maternity	3676	953	4629
Possilpark HC	117	0	117
Queen Mothers	2187	109	2296
Kilsyth HC	2	2	4
Rutherglen HC	741	114	855
Southern General	3150	134	3284
Springburn HC	214	1	215
Victoria Infirmary	1175	3	1178
<b>Sub Total</b>	<b>11545</b>	<b>1355</b>	<b>12900</b>
<b>Clyde:</b>			
Inverclyde Royal	1084	99	1183
Barrhead HC	179	0	179
Royal Alexandra	1858	97	1955
Vale of Leven	536	201	737
<b>Sub Total</b>	<b>3657</b>	<b>397</b>	<b>4054</b>
<b>Total</b>	<b>15202</b>	<b>1752</b>	<b>16954</b>

Source: SMR00

**Figure 5.2: Number of live and still births across NHS Greater Glasgow and Clyde over a 10 year period from 1998 to 2009**



Source: SMR02 ISD Scotland

Notes:

1. Excludes home births and births at non-NHS hospitals.
  2. Where four or more babies are involved in a pregnancy, birth details are recorded only for the first 3 babies delivered.
  3. Scotland data includes births where NHS board of residence is unknown or outside Scotland.
- p. Provisional.

**Figure 5.2** shows that the number of births in 2002 was approximately 12300 and has gradually increased each year to approximately 13,800 in 2009. This represents a 12% increase.

### Delivery of Screening Programme 2009/10

**Table 5.2** shows that 2,354 samples were received for first trimester combined ultrasound biochemical screening and 8,034 for second trimester Down’s syndrome and neural tube defects. 77 women chose to be tested for neural tube defects only.

**Table 5.2: Number of samples received and number of women screened in 2009/10 by Division and for type of screening test.**

Division	1st trimester CUBS		2nd trimester DS/NTD		2nd trimester NTD only (with no previous CUBS)		Overall %	Total number screened <sup>1</sup>	Number Booked
Clyde	2066	51.0%	454	11.2%	3	0.1%	62.2%	2523	4054
Greater Glasgow	288	2.2%	7580	58.8%	74	0.6%	61.6%	7942	12900
<b>Total</b>	<b>2354</b>	<b>13.9%</b>	<b>8034</b>	<b>47.4%</b>	<b>77</b>	<b>0.5%</b>	<b>61.7%</b>	<b>10465</b>	<b>16954</b>

Source: West of Scotland Regional Prenatal Screening Service

**Note:**

CUBS = combined ultrasound biochemical screening

DS = Down's Syndrome

NTD = neural tube defect

<sup>1</sup> The total number of women screened may be slight underestimate. There are some Greater Glasgow women who had CUB screening privately and then had an NTD only test through the maternity unit (n=87). They are not included as they had a CUB screen which is not included in the NHSGGC figures.

There are currently different policies for neural tube defects screening across NHS Greater Glasgow and in Clyde. In Clyde, all women are offered an anomaly scan at 18 – 20 weeks whereas in Greater Glasgow, neural tube defects screening is carried out by measuring maternal serum AFP in the second trimester. From September 2009, all women are offered the fetal anomaly scan at 18 – 20 weeks.

In 2009/10, the overall uptake for Down's syndrome and neural tube defects was 61.7%. 0.5% of women chose to have only second trimester neural tube defect screening .

Data on fetal anomaly scanning is recorded manually and, therefore, it was not possible to report on uptake.

## Proportion of women assigned to the 'higher chance' groups for Down's syndrome, trisomy 18 and neural tube defects

Table 5.4 shows the number and proportion of women initially assigned to each of the three 'higher chance' groups following the first trimester CUB screening and second trimester screening.

Among those who had first trimester CUB screening, 4.2% of women were assigned to the 'higher chance' of Down's syndrome group and 0.1% to the 'higher chance' of trisomy 18/13 groupings.

Following the second trimester screening, 5.8% of women were assigned to the 'higher chance' of Down's syndrome group, 0.4% of women assigned to the 'higher chance' of trisomy 18 group and 2.4% of women with an elevated AFP giving a 'higher chance' of a neural tube defect.

NHS Quality Improvement Scotland Standards: Pregnancy and Newborn Screening 2005, recommends that 5-7% screening tests for Down's syndrome should be assessed as high risk and 2-4% tests for neural tube defects. Therefore, laboratory based screening in NHS Greater Glasgow and Clyde does achieve these standards.

**Table 5.4: Number and proportion of women initially assigned to the 'higher chance' groups from screening by type of screen.**

<u>CUB Screening</u>		
	N	%
- Higher Chance' of Down's syndrome	98	4.2
- Higher Chance' of Trisomy 18/13	3	0.1
<u>2nd Trimester Screening</u>		
	N	%
- Higher Chance' of Down's syndrome	466	5.8
- Higher Chance' of Trisomy 18	33	0.4
- NTD risk (AFP $\geq$ 2.0 MOM)	194	2.4

Source: West of Scotland Regional Prenatal Screening Service

In 2009/10, **Table 5.5** shows that 493 amniocentesis tests were analysed by the Cytogenetics Laboratory. Some women whose indication for amniocentesis has been recorded as “age over 35” have also been screened; however, it was not possible to separate the data.

38 abnormalities were detected (7.7% of samples) and 32 of those (6% of total tests) had a diagnosis of trisomy (Down’s syndrome/Trisomy 18).

**Table 5.5 Amniocentesis referrals and outcomes 1 April 2009 to 31 March 2010**

	Biochemical Screening	Maternal Age >35	Abnormalities on Scan	Other	Total
Number of women (= number of tests)	318	98	51	26	493
% total referral reasons	64.5%	19.9%	10.3%	5.3%	100%
Number with normal results	303	94	35	23	455
Number with diagnostic trisomy	15	2	14	1	32
% number with diagnostic trisomy	4.7%	2.0%	27.5%	3.8%	6.5%
Number of other non trisomy abnormalities	0	2	2	2	6
<b>Total number of abnormalities</b>	<b>15</b>	<b>4</b>	<b>16</b>	<b>3</b>	<b>38</b>
<b>% total number of abnormalities</b>	<b>4.7%</b>	<b>4.1%</b>	<b>31.4%</b>	<b>11.5%</b>	<b>7.7%</b>

source: Cytogenetics Laboratory

**Table 5.6** shows that 114 chorionic villus biopsies were analysed by the Cytogenetics Laboratory in 2009/10. 29 abnormalities were detected (25.4% of tests) and 19 of those (16.7% of tests) had a diagnosis of trisomy (Down’s syndrome/Trisomy 18).

**Table 5.6 Chorionic Villus Biopsy referrals and outcomes for the period 1 April 2009 to 31 March 2010**

	Referral Type				Total
	Biochemical Screening	Maternal Age >35	Abnormalities on Scan	Other	
Number of women (= number of tests)	6	26	32	50	114
% total referral reasons	5.3%	22.8%	28.1%	43.9%	100%
Number with normal results	4	24	12	47	87
Number with diagnostic trisomy	2	2	14	1	19
% total with diagnostic trisomy	33.3%	7.7%	43.8%	2.0%	16.7%
Number of other non trisomy abnormalities	0	0	6	4	10
<b>Total number of abnormalities</b>	<b>2</b>	<b>2</b>	<b>20</b>	<b>5</b>	<b>29</b>
<b>% total number of abnormalities</b>	<b>33.3%</b>	<b>7.7%</b>	<b>62.5%</b>	<b>10.0%</b>	<b>25.4%</b>

source: Cytogenetics Laboratory

**Table 5.7** shows the number of cases of Down's syndrome and neural tube defects detected by screening in 2009/10.

**Table 5.7: Number of abnormalities detected by screening<sup>1</sup>**

Screening Test	Condition	Number
Second trimester double marker	Down's Syndrome	10
	Trisomy 18	4
	Triploidy	2
Second Trimester APF	NTD	4
	Gastrochisis	1
First Trimester CUB Screening	Down's Syndrome	5
	Trisomy 18	3
	Trisomy 13	2

Source: West of Scotland Regional Prenatal Screening Service

**Note**

1. The data incomplete due to timescale (babies to women screened during this time are only just finished being born).

## **Turnaround time for laboratory results**

The turnaround time from a sample to be received in the laboratory to when a report is available is regularly monitored. The time from sample collection until a report is available is also monitored. For 2009/10, the average time taken from sample receipt until a report to be available was 1.4 working days. In 97% of cases a report was available by 3 working days. Results which require follow-up testing are communicated to the requesting centre by fax or phone as soon as possible after the report has been checked and signed by a clinical scientist. Hard copies of all reports are sent out either by mail or by inter-hospital delivery service.

## **Challenges and future priorities**

Women booking in NHS Greater Glasgow and Clyde are offered different screening tests for Down's syndrome and neural tube defects. This will change from Spring 2011. It has not been possible to introduce CUBS screening in Greater Glasgow due to a national shortage of sonographers.

An information management system is now in place to allow the delivery of the failsafe processes for all women working in NHS Greater Glasgow and Clyde. Usage and data quality will continually be monitored.

## SUMMARY

### CHAPTER 6: NEWBORN BLOODSPOT SCREENING

- The newborn bloodspot screening programme offers tests to detect certain abnormalities which can cause problems in growth and development and for which there is effective management or treatment. The conditions screened for are phenylketonuria, congenital hypothyroidism and cystic fibrosis.
- Newborn Screening for phenylketonuria and congenital hypothyroidism has been in progress since 1965 and 1979 respectively. Newborn screening for cystic fibrosis was added in Scotland in February 2003.
- In 2009/10, 14,251 babies resident in NHS Greater Glasgow and Clyde were screened; that is 98% of the total eligible population of 14,548.
- In 2009/10 of the 15,477 bloodspot samples received, 172 (1.1%) bloodspot specimens could not be analysed due to insufficient amounts of blood on the bloodspot card. This required repeat bloodspot screening tests to be carried out on babies. 169 (1%) samples received had taken more than seven days to arrive at the laboratory.
- There were five positive cases of phenylketonuria detected, six babies with congenital hypothyroidism and 11 babies with cystic fibrosis. All received appropriate management within the timescale of the standard.
- The proportion of bloodspot cards with a CHI number sent for analysis increased from 87.9% in April 2009 to 93.3% in March 2010 compared to the national average of 63.9% in April 2009 and 83.9% in March 2010.

## **CHAPTER 6: NEWBORN BLOODSPOT SCREENING**

### **Background**

Newborn bloodspot screening is offered to live infants whose parents/guardians have consented.

Newborn Screening for phenylketonuria and congenital hypothyroidism has been in progress since 1965 and 1979 respectively. Newborn screening for cystic fibrosis was added in Scotland in February 2003.

### **Aim of screening programme**

The aim of the screening programme is to identify, as early as possible, abnormalities of body chemistry 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 which is found in around 1 in 8,000 babies born; congenital hypothyroidism which affects approximately 1 in 3,500; and cystic fibrosis, an inherited condition affecting 1 in 2,500 babies born in Scotland.

### **Benefits of programme**

The programme can detect serious conditions before symptoms appear and treatment is then offered at an early stage when it is likely to be more effective. For example, babies born with phenylketonuria cannot metabolise an amino acid called phenylalanine which is a component of protein found in every day foods including milk. Toxic levels of phenylalanine may build up causing irreversible brain damage unless the baby is urgently started on a special diet. With prompt treatment the baby is very likely to develop normally.

### **Recommended age to perform screen**

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, received a blood transfusion or are born prematurely and when repeat testing is required.

## The screening test

Blood is taken by the community midwife from the baby's heel using a blood letting device and collected on a bloodspot card consisting of special filter paper. It is then sent to the National Newborn Screening Laboratory in Yorkhill Glasgow for analysis. The blood is analysed for markers of the 3 conditions phenylketonuria, congenital hypothyroidism and cystic fibrosis.

## Screening pathway

The screening process requires excellent communication and co-ordination between the hospital and community midwifery service, the National Laboratory at Yorkhill, the Screening Department at Templeton and the paediatric service as is demonstrated in the following pathway (**Figure 6.1**) for phenylketonuria and congenital hypothyroidism. There is a separate cystic fibrosis pathway. (**Figure 6.2**) as double testing is required.

## Eligible population

All newborn babies of residents in NHS Greater Glasgow and Clyde.

Figure 6.1 Newborn Screening Process – Phenylketonuria (PKU) & Congenital Hypothyroidism (CHT)

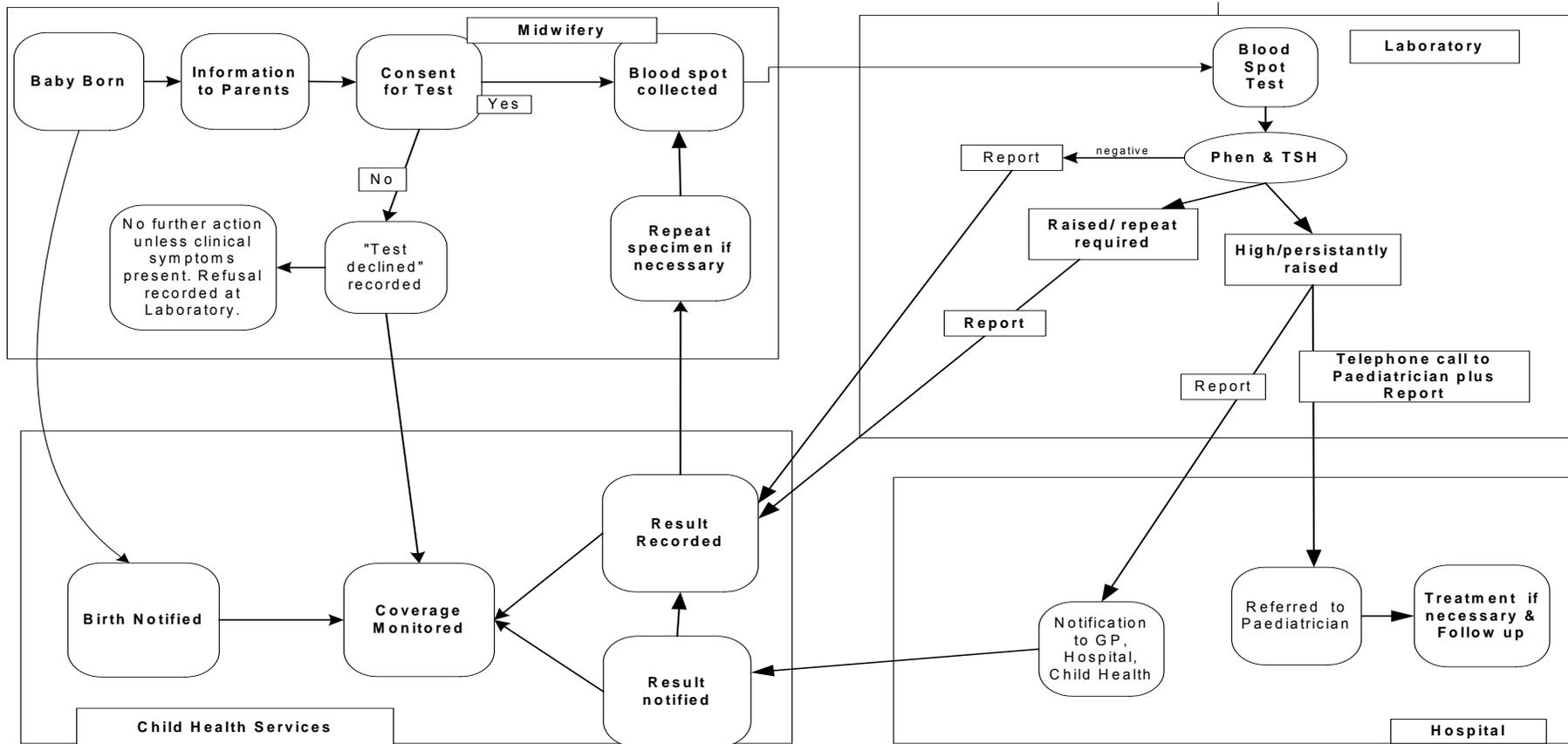
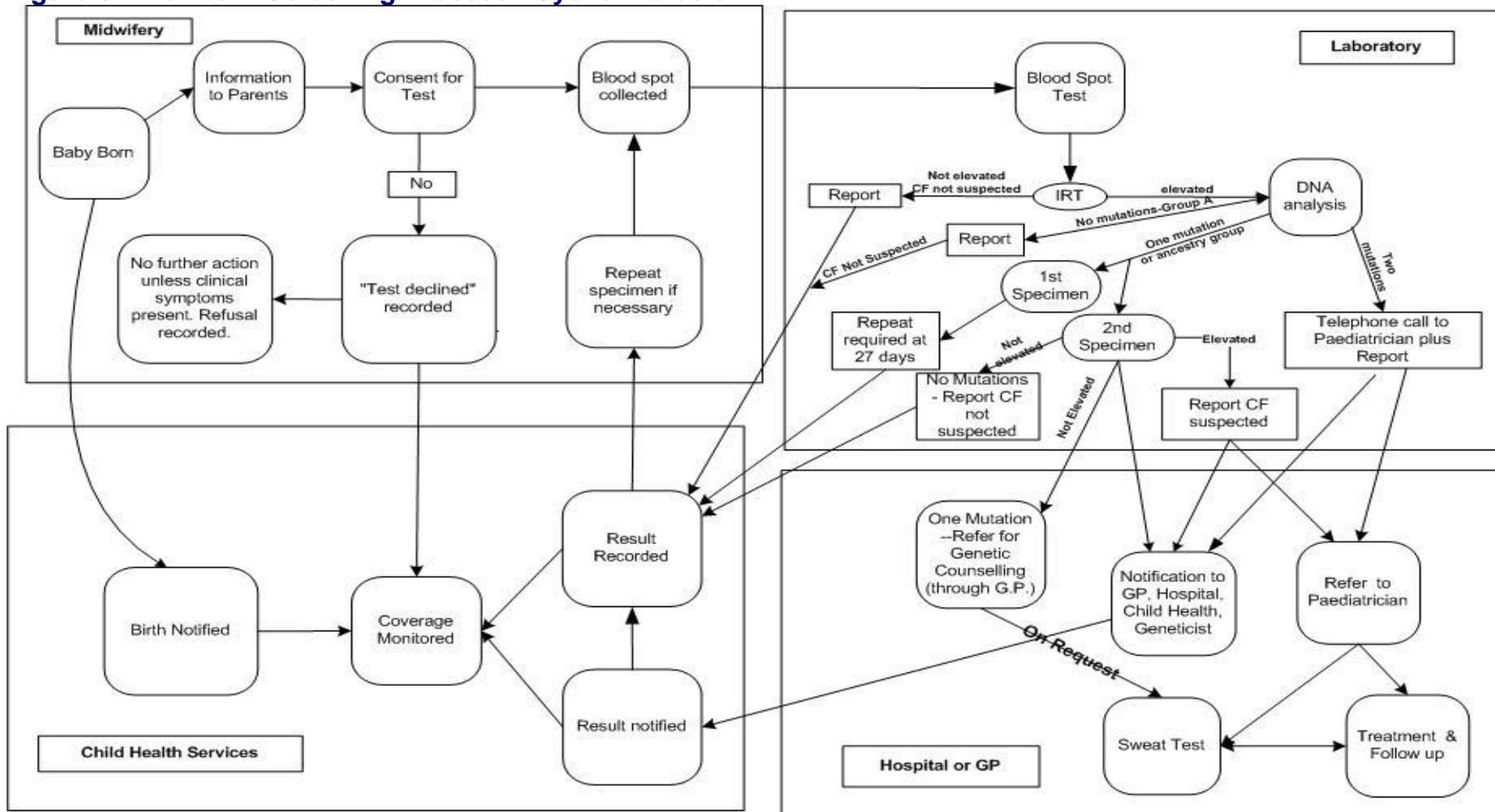


Figure 6.2 Newborn Screening Process: Cystic Fibrosis

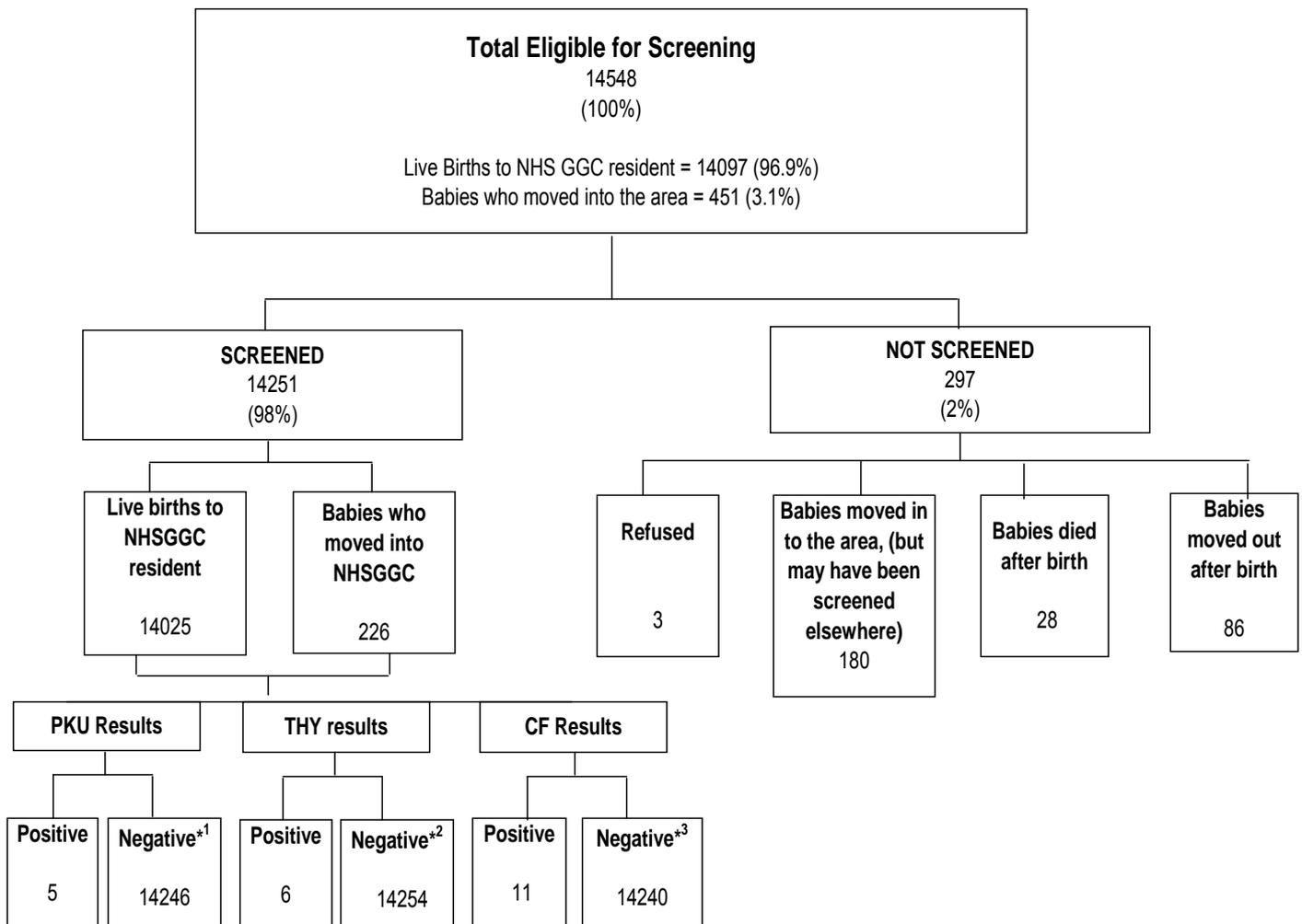


## Delivery of screening programme 2009/10

### Uptake of newborn bloodspot screening in NHS Greater Glasgow and Clyde

14,251 babies resident in NHS Greater Glasgow and Clyde were screened in 2009/10, that is 98% of the total eligible population of 14,548 (see Figure 6.3).

**Figure 6.3: Summary of newborn bloodspot screening uptake for babies born on 1 April 2009 to 31 March 2010**



Source: SIRS

\*1 Total includes 11 verifications

\*2 total includes 11 verifications

\*3 Total includes 5 carriers; 13 late tests; 12 verifications.

**Figure 6.3** illustrates uptake rates and the results of the screening programme from 1 April 2009 to 31 March 2010.

Of the 297 (2%) not screened, only three refused screening, 266 moved in or out of the area and 28 babies died. There were five positive cases of phenylketonuria detected, six babies with congenital hypothyroidism and 11 babies with cystic fibrosis. All received appropriate management within the timescale of the standard.

**Table 6.1** shows the percentage uptake of bloodspot screening by CH(C)P area and by deprivation category. The total percentage uptake for babies born to residents in the most deprived areas was 97.9% and 98.4% in the least deprived areas.

**Table 6.1: Percentage uptake of Newborn Bloodspot Screening by CH(C)P and deprivation category for the period 1 April 2009 to 31 March 2010.**

CH(C)P	Most Deprived		SIMD		Least Deprived	Total
	1	2	3	4	5	
East Glasgow	97.2	96.5	95.2	98.9	100.0	97.1
East Dunbartonshire	100.0	95.9	99.2	98.7	99.1	98.6
East Renfrewshire	98.4	97.6	98.9	98.0	98.1	98.2
Inverclyde	98.4	99.3	100.0	100.0	100.0	99.2
North Lanarkshire <sup>1</sup>	96.3	97.7	98.4	100.0	100.0	98.8
North Glasgow	97.9	96.6	97.5	97.3	98.1	97.8
Renfrewshire	99.5	99.7	98.1	99.3	98.9	99.2
South East Glasgow	97.4	95.7	98.5	97.9	98.7	97.2
South Lanarkshire <sup>1</sup>	98.7	98.9	97.6	98.2	100.0	98.7
South West Glasgow	98.0	97.6	99.5	97.6	96.2	98.0
West Dunbartonshire	98.7	98.4	100.0	97.6	97.8	98.7
West Glasgow	96.7	97.1	94.1	93.5	96.9	96.1
<b>Total</b>	<b>97.9</b>	<b>97.5</b>	<b>98.0</b>	<b>98.1</b>	<b>98.4</b>	<b>98.0</b>

Source: Child Health; Extracted 10 May 2010

SIMD=Scottish Index of Multiple Deprivation 2006

Note

1. NHSGGC residents only

**Table 6.2** shows that, in 2009/10 of the 15,477 bloodspot samples received, 172 (1.1%) bloodspot specimens could not be analysed due to insufficient amounts of blood on the bloodspot card. This required repeat bloodspot screening tests to be carried out on babies. 169 (1%) samples received had taken more than seven days to arrive at the laboratory due to a national postal strike. Contingency plans put in place involved samples being transported using hospital transport or couriers.

National standards require that 95% of positive cases of congenital hypothyroidism and phenylketonuria are to 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 6.2: Specimen test outcomes for Greater Glasgow and Argyll and Clyde for period 1 April 2009 and 31 March 2010**

Outcome	Argyll & Clyde	Glasgow	Total
Refused	2	3	5
Partial Refusal (CF)	0	0	0
Insufficient	49	123	172
Unsatisfactory:			0
Expired cards	14	16	30
>14 days in transit	2	2	4
Other	0	2	2
Updated info	45	80	125
IRT Tested late (total)	4	12	16
IRT tested late (born in Scotland)	3	5	8
>7 days to reach the lab	61	108	169
Ref PKU	2	3	5
Ref TSH	2	6	8
Ref CF	3	10	13
Ref Carrier (CF)	1	4	5
Normal	4453	10993	15446
<b>TOTAL TESTS</b>	<b>4461</b>	<b>11016</b>	<b>15477</b>

Insufficient as % of total	1.1	1.1	1.1
Unsatisfactory as % of total	1.37	0.89	1.03
Expired cards as % of total	0.31	0.15	0.19
IRT tested late as % of total	0.09	0.11	0.10
IRT tested late (born in Scotland) as % of total	0.07	0.05	0.05
>7 days to reach lab as % of total	1.4	1.0	1.1

Source: National Newborn Screening Laboratory

**Notes**

**Refused** = parents refused all tests

**Insufficient** = insufficient blood to perform all tests

**Unsatisfactory** = specimen damaged or of poor quality

not issued until the relevant information is received

Cystic Fibrosis is not reliable after 6 weeks

**>7 days to reach the lab** = more than 7 days from specimen collection to receipt at the laboratory

paediatricians for further investigations. Some of these may not be confirmed as cases of PKU

investigations. Some of these may not be confirmed as cases of Congenital Hypothyroidism

may not be confirmed as cases of CF

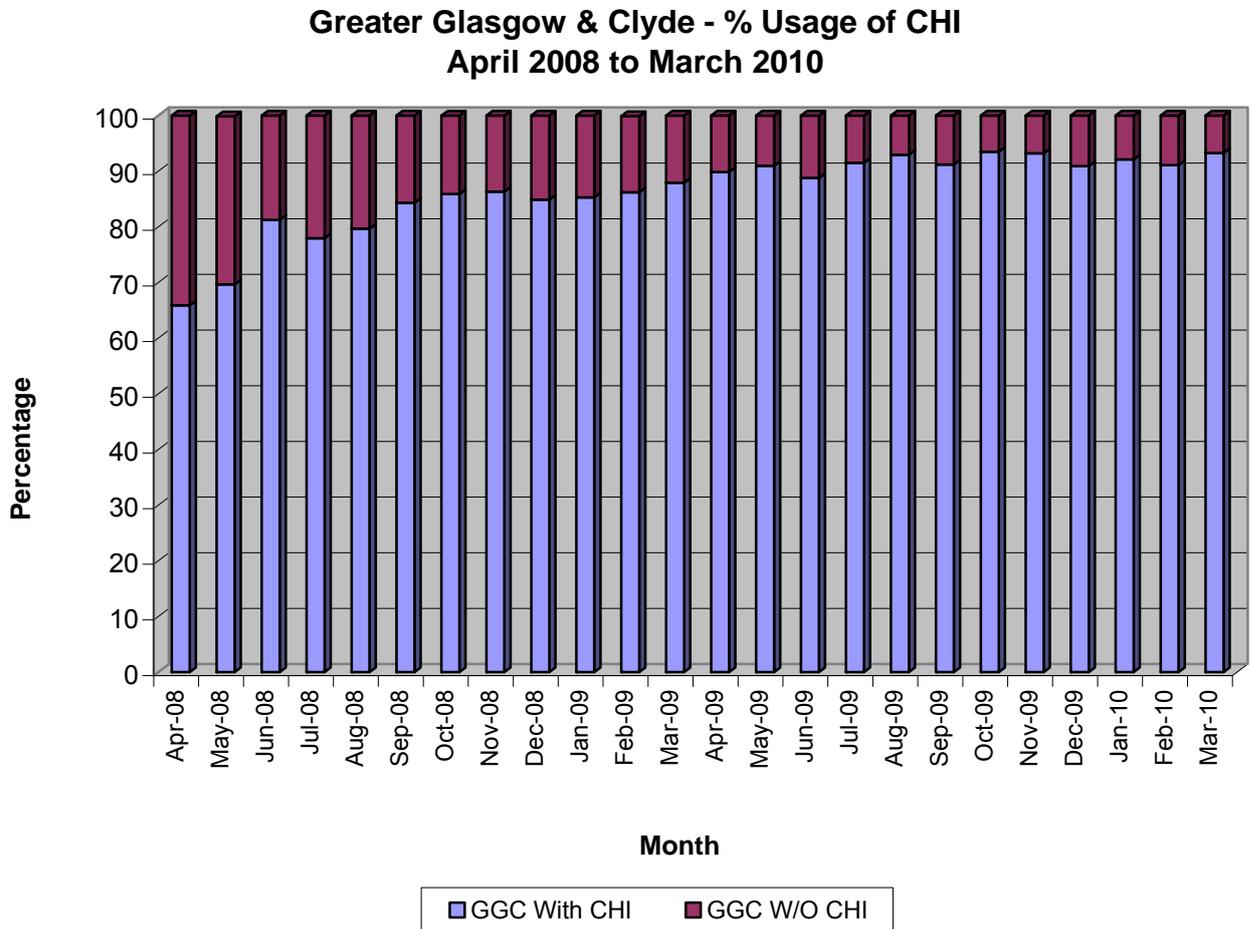
**Ref Carrier CF** = babies referred as probable carriers of Cystic Fibrosis

**Total Tests** = Total number of specimens received

In 2009/10, there was a continued increase in the use of the patient identifier number (called the Community Health Index (CHI)) on bloodspot cards

**Figure 6.4** compares the number of bloodspot cards with a CHI number received by Greater Glasgow and Argyll and Clyde with the rest of Scotland. It shows that Greater Glasgow and Argyll and Clyde's CHI compliance was above the national average consistently from April 2009 until March 2010. The number on bloodspot cards with a CHI sent for analysis increased from 87.9% in April 2009 to 93.3% in March 2010 compared to the national average of 63.9% in April 2009 and 83.9% in March 2010.

**Figure 6.4 Percentage of bloodspot screening sample cards received with and without a Community Health Index number**



Source: National Newborn Screening Laboratory

## **Information systems**

Information on Pregnancy and Newborn Bloodspot screening tests is provided by the National Laboratory's Information Management System and data is 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).

## **Challenges and future priorities**

Preparations started for the extension of bloodspot screening to cover sickle cell testing and Medium Chain Acyl CoA Dehydrogenase Deficiency (MCADD). Disease specific implementation groups have been set up to agree the pathway for implementing these changes by October 2010.

## Appendix 7.1

### Members of Newborn Bloodspot Screening Steering Group As at March 2009

Dr Emilia Crighton	Consultant in Public Health Medicine (chair)
Mrs Betty Adair	Clinical Lead Midwife
Mrs Donna Athanasopolous	PERL Resources Co-ordinator
Ms Elizabeth Callander	Lead Midwife
Dr Anne Devenny	Consultant Paediatrician
Mrs Dorothy Finlay	Consultant Midwife
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Mrs Annie Hair	CHP Children's Services Lead
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Joan MacKenzie	Laboratory Newborn Screening Co-ordinator
Mrs Eleanor McColl	Screening Service Delivery Manager
Mrs Julie Mullin	Assistant Programme Manager, Screening Dept
Mrs Diane Paterson	Lead Midwife
Dr Andrew Powls	Consultant Neonatologist
Ms Liz Terrace	Lead Midwife
Mrs Janice Winter	Clinical Effectiveness Manager
Ms Irene Woods	Lead Midwife

## SUMMARY

### CHAPTER 7: UNIVERSAL NEWBORN HEARING SCREENING

- The Universal Newborn Hearing Screening (UNHS) Programme was introduced across NHS Greater Glasgow and Clyde in 2005.
- 14,111 babies born in 2009/10 in NHS Greater Glasgow and Clyde. 6,071 (43%) of babies were born to residents living in the most deprived areas.
- Of the 14,111 babies born in 2009/10, 13,679 were screened for a hearing loss giving an overall uptake of 97%. 1,544 babies required a second stage follow up and, of these, 203 (13%) babies were referred to audiology and, of those, 27 babies were confirmed with a hearing loss (0.2% of the screened population). 432 (3%) babies did complete the screening programme. These include babies who did not turn up for screening, are deceased or have moved away from their current home address or transferred to another Board area.
- 6,071 (43% of total babies born) babies were born to residents living in the most deprived areas.
- An information leaflet for parents on prominent and folded ears is given out at the same time as the neonatal hearing assessment with details of the direct access clinics.
- NHS Greater Glasgow and Clyde is currently undertaking a value for money exercise of current IT provision and exploring alternative solutions. The outcome of the exercise will be completed by January 2011.

## **CHAPTER 7: UNIVERSAL NEWBORN HEARING SCREENING**

### **Background**

The Universal Newborn Hearing Screening (UNHS) Programme was introduced across NHS Greater Glasgow and Clyde in 2005.

The screening tests are carried out in maternity units for Greater Glasgow residents and in the community for Clyde and Argyll and Bute residents of NHS Highland.

One to two babies in every 1,000 are born with a hearing loss in one or both ears. It is not easy to identify that a young baby has a hearing loss. The objective hearing screening test allows those babies who do have a profound hearing loss to be identified early. Early identification is known to be important for the development of the child. It also means that support and information can be provided to parents at an early stage.

### **Aim of screening programme**

The aim of the screening programme is the early detection of permanent congenital hearing impairment. In addition, babies with mild and unilateral losses are also being identified and receive ongoing review.

### **The screening test**

There are two types of equipment used to screen babies' hearing in the Greater Glasgow and Clyde area. Automated Auditory Brainstem Response (AABR) is used in the hospital setting and Otoacoustic Emissions (OAE) are used in the community setting. In the hospital setting an AABR is used for both the first and second screening stages. In the community model OAEs are used for the first screening stage and both OAE and AABR are used for the second stage of screening.

### **Screening setting**

There are two strands to the Greater Glasgow and Clyde screening protocol. In Greater Glasgow, the majority of screening takes place in the maternity unit at the mother's bedside. In the Clyde, most of the screening takes place in the baby's home. There are outpatient clinics at Princess Royal, Southern General and Royal Alexandra Maternity hospitals as well as Inverclyde and Vale of Leven Community Midwifery Units. The units cover babies who require a second screen, babies discharged within six hours of birth, babies born at home, and babies who transfer into the area.

## Benefits of programme

Evidence suggests that early identification and treatment of babies with hearing loss is beneficial and the programme is being continuously evaluated to confirm this. Prior to the introduction of the NHS Greater Glasgow and Clyde Universal Newborn Hearing Screening programme, bilateral hearing impairment was identified on average at 17 months of age. Since the programme's introduction, the age of identification has been lowered to less than three months allowing appropriate intervention to take place before the critical age of six months.

## Screening pathway

In Greater Glasgow, the hearing screen is carried out by dedicated hearing screeners, based in the maternity units, when the baby is one to two days of age. If babies do not obtain clear responses in both ears at this stage they are re-screened either whilst still in the maternity unit or at an outpatient clinic. If no clear responses are obtained again then at this stage babies are referred on to the audiology department at the Royal Hospital for Sick Children (RHSC) for diagnostic testing.

In Clyde, the hearing screen is carried out by health visitors in the baby's home within six to 12 days of birth. If babies do not obtain clear responses in both ears at this stage they are referred to the UNHS hub in Royal Alexandra Hospital for further testing. If no clear responses are obtained at this stage then babies are referred on to their local Audiology Department for further testing.

There is also a pathway for risk factor identification and ongoing surveillance for the Special Care baby Units and Neonatal Intensive Care Units and this is incorporated into the clinical staff training programme.

## Delivery of the screening programme 2009/10

### Eligible population

The screening programme covers all babies born to Greater Glasgow and Clyde residents and any babies moving into the area who are aged less than six months. Babies who are resident from other NHS Board areas but are born in NHS Greater Glasgow and Clyde are also screened by NHSGGC screeners.

**Table 7** shows that there were 14,111 babies born in 2009/10 in NHS Greater Glasgow and Clyde. 6,071 (43%) of babies were born to residents living in the most deprived areas.

A breakdown of the number of babies born split by CHCP area and by deprivation category is shown in Table 7.

**Table 7: Total number and percentage of live babies born to NHS Greater Glasgow and Clyde residents split by CHCP area and by deprivation category (SIMD) from 1 April 2009 to 31 March 2010.**

CH(C)P	SIMD					Total	Total %
	Most deprived			Least Deprived			
	1	2	3	4	5		
Argyll & Bute <sup>1</sup>	3	3	1	9	6	22	0.2%
East Dunbartonshire	70	158	121	145	426	920	6.5%
East Glasgow	1099	212	96	83	14	1504	10.7%
East Renfrewshire	55	75	93	98	497	818	5.8%
Inverclyde	371	142	72	152	63	800	5.7%
North Glasgow	1043	55	76	102	100	1376	9.8%
North Lanarkshire <sup>1</sup>	28	37	58	94	22	239	1.7%
Renfrewshire	686	288	329	286	267	1856	13.2%
South East Glasgow	513	438	199	231	78	1459	10.3%
South Lanarkshire <sup>1</sup>	216	160	85	148	84	693	4.9%
South West Glasgow	825	344	190	74	77	1510	10.7%
West Dunbartonshire	446	298	179	78	41	1042	7.4%
West Glasgow	716	286	216	177	219	1614	11.4%
Unassigned/other Health Board area <sup>2</sup>						258	1.8%
<b>Total</b>	<b>6071</b>	<b>2496</b>	<b>1715</b>	<b>1677</b>	<b>1894</b>	<b>14111</b>	
<b>% Total</b>	<b>43.0%</b>	<b>17.7%</b>	<b>12.2%</b>	<b>11.9%</b>	<b>13.4%</b>		

Source: ESP

Notes:

1. Only residents of NHS Greater Glasgow and Clyde

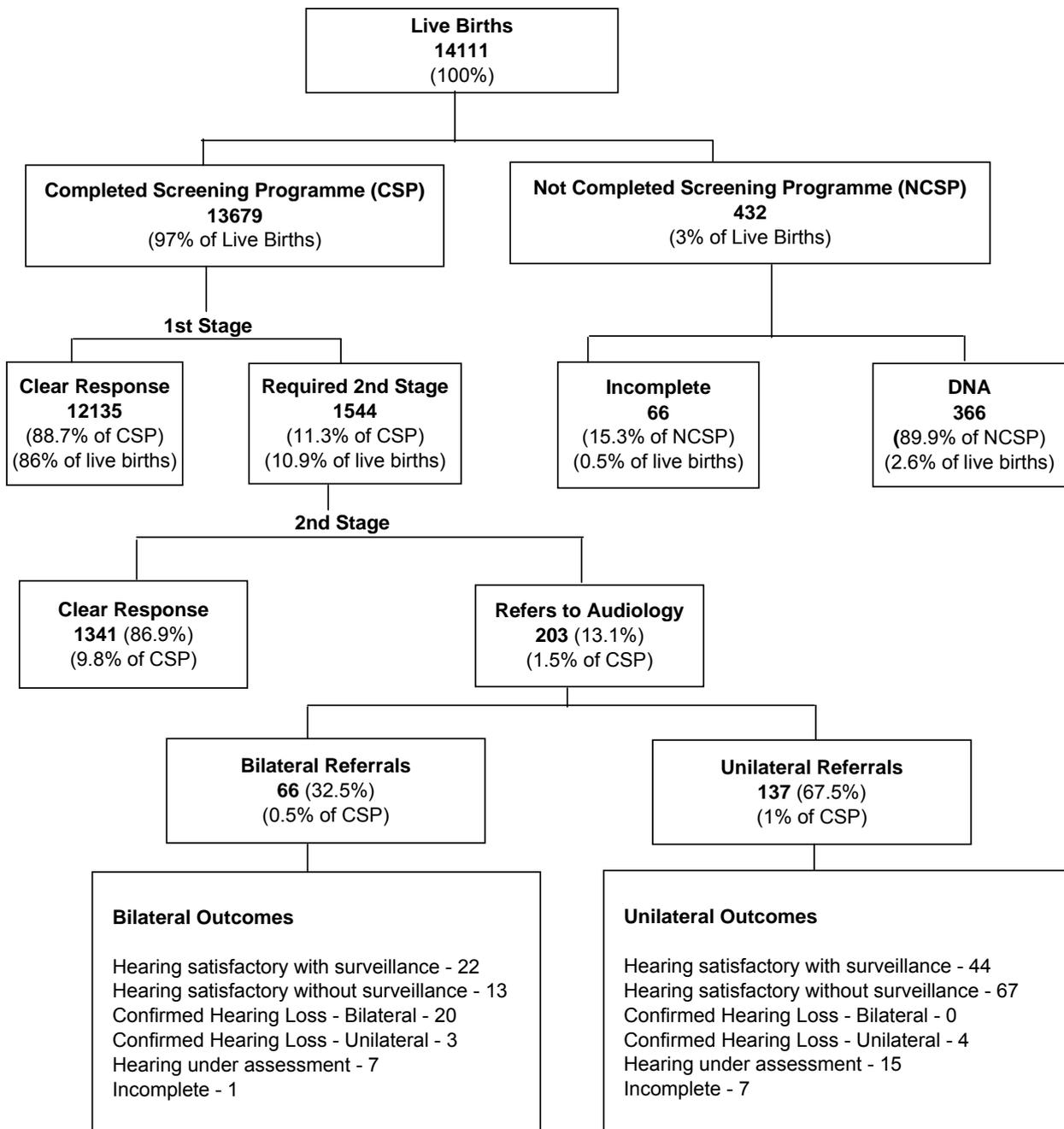
2. In total there were 14,111 live births. In addition to breakdown above - 146 babies could not be assigned to a CH(C)P or SIMD due to incomplete/incorrect postcodes. 258 babies were from another Health Board Area.

## Uptake of the screening programme

Of the 14,111 babies born in 2009/10, 13,679 were screened for a hearing loss giving an overall uptake of 97% (**Figure 7.1**). 1,544 babies required a second stage follow up and, of these, 203 (13%) babies were referred to audiology and, of those, 27 babies were confirmed with a hearing loss (0.2% of the screened population). 432 (3%) babies did not complete the screening programme. These include babies who did not attend for screening, are deceased or have moved away from their current home address or transferred to another Board area.

**Figure 7.2** illustrates the activity for the service in Greater Glasgow and **Figure 7.3** illustrates the activity for the service delivered in Clyde.

**Figure 7.1: Summary of UNHS uptake and results for period 1 April 2009 to 31 March 2010: NHS Greater Glasgow and Clyde**



#### Definitions

**1st Stage** - is first AABR for Glasgow and the first OAE for Clyde

**2nd Stage** - is the second AABR for Glasgow and the second OAE and first AABR for Clyde

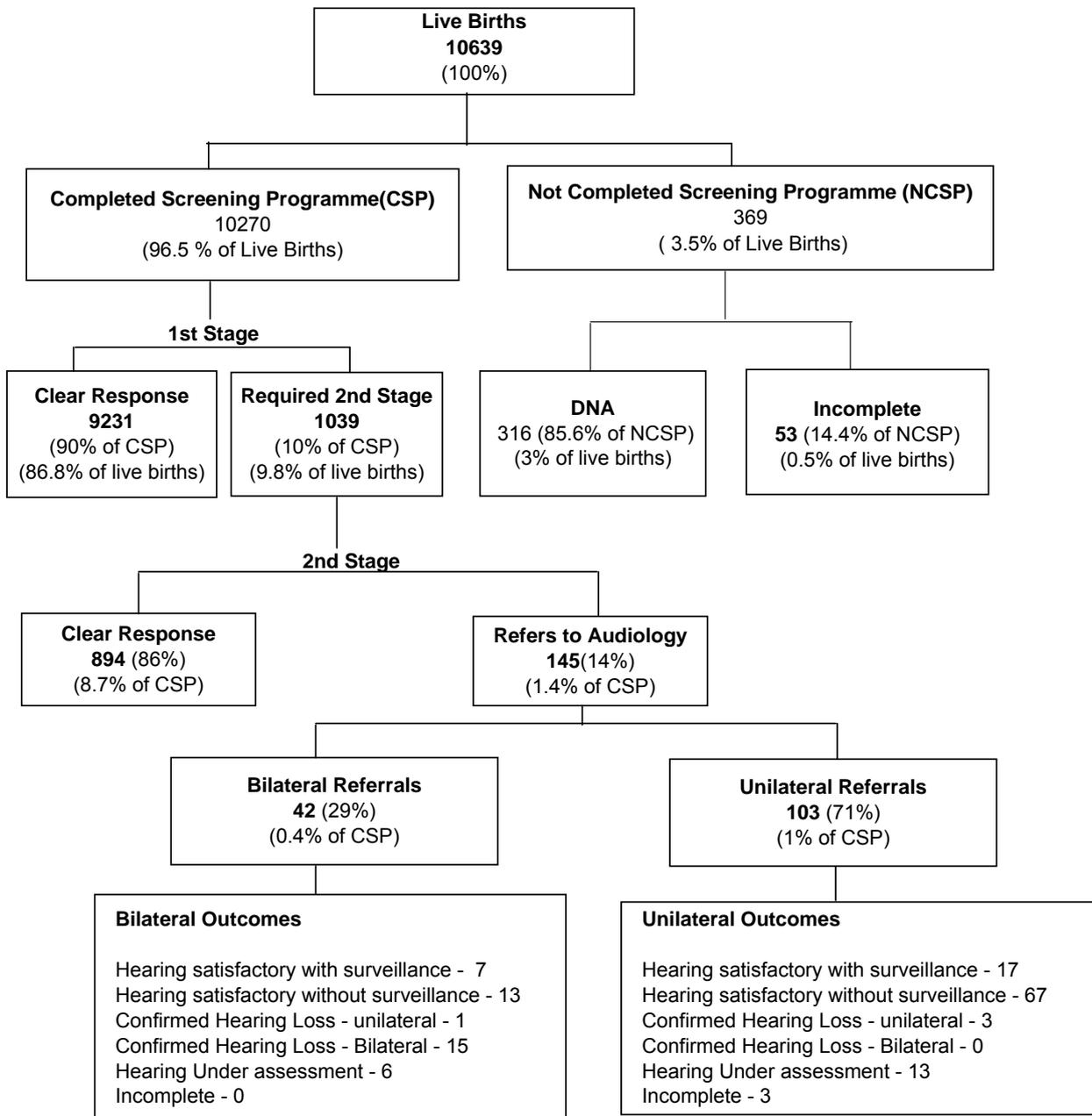
**Results Pending** - Includes all babies who we are still trying to complete the screen

**Incomplete/Not Completed** - all babies we cannot complete a screen for ie DNA's, deceased, transferred out or moved away etc

**Clear Response** - is a pass, though some have follow up but majority don't

**Outcomes** - as agreed with undefined being better wording for the possible hearing loss and incompletes including DNA, deceased and pendings etc.

**Figure 7.2: Summary of UNHS uptake and results for period 1 April 2009 to 31 March 2010: Greater Glasgow**



#### **Definitions**

**1st Stage** - is first AABR for Glasgow and the first OAE for Clyde

**2nd Stage** - is the second AABR for Glasgow and the second OAE and first AABR for Clyde

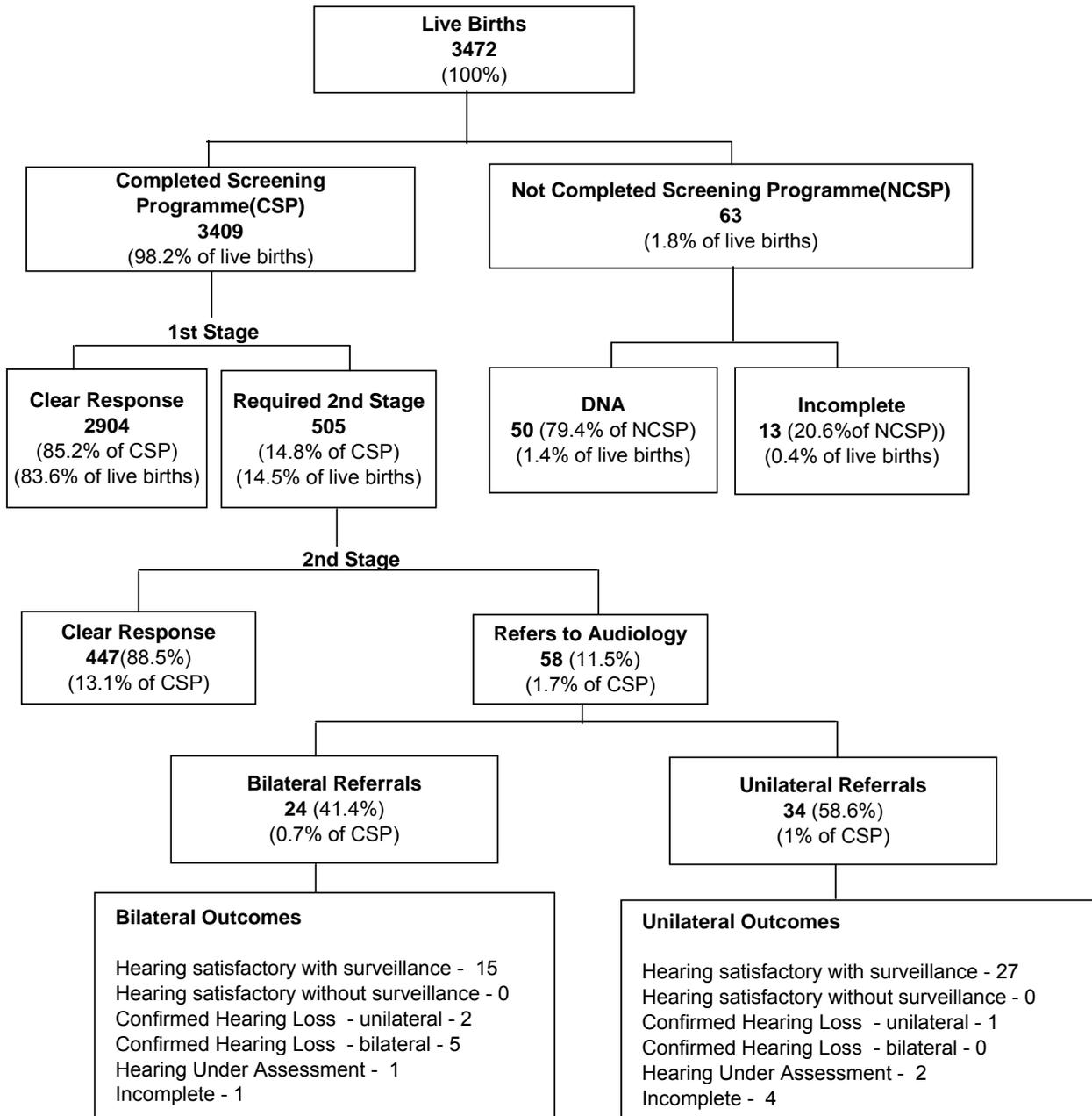
**Results Pending** - Includes all babies who we are still trying to complete the screen

**Incomplete/Not Completed** - all babies we cannot complete a screen or diagnostic assessment for ie DNA's, deceased, transferred out or moved away etc

**Clear Response** - is a pass (though some have followed up due to risk factors)

**Hearing under assessment** - all babies who have referred from the screen and their diagnostic assessment is ongoing

**Figure 7.3: Summary of UNHS uptake and results for period 1 April 2009 to 31 March 2010: Clyde**



**Definitions**

**1st Stage** - is first AABR for Glasgow and the first OAE for Clyde

**2nd Stage** - is the second AABR for Glasgow and the second OAE and first AABR for Clyde

**Results Pending** - Includes all babies who we are still trying to complete the screen

**Incomplete** - all babies we cannot complete a screen for ie DNA's, deceased, transferred out or moved away etc

**Clear Response** - is a pass, though some have follow up but majority don't

**Outcomes** - as agreed with undefined being better wording for the possible hearing loss and incompletes including DNA, deceased and pendings etc.

## **Universal Newborn Hearing Screening Network**

NHS Greater Glasgow and Clyde Universal Newborn Hearing Screening Network enables staff to share knowledge and experiences.

### **Neonatal ear splinting service**

Prominent or abnormally folded ears are found in approximately 5% of newborns. Traditionally such deformities are usually corrected with surgery when the child is older. Several studies worldwide have shown splinting of ear deformities in the first few months of life to be a safe and effective treatment with good long-term results. We have developed an information leaflet for parents on prominent & folded ears to be given out at the same time as the neonatal hearing assessment with details of the direct access clinics.

### **Information systems**

The hearing screening programme is supported by a web based IT application – eScreener Plus (eSP) Northgate Newborn Hearing Screening - into which all screening results and demographic data are entered. The Child Health Surveillance Programme Pre-School system (CHSP-PS) is also an important feature of the screening programme recording screening outcomes and is used as a failsafe to ensure all babies are offered hearing screening.

NHS Greater Glasgow and Clyde is currently undertaking a value for money exercise of current IT provision and exploring alternative solutions. The outcome of the exercise will be completed by January 2011.

A local IT project to allow Clyde screeners to transfer screening data electronically into eSP was piloted by Health visitors in Greenock in 2010. Following evaluation, it was decided not to implement the project across all Clyde sites due to the revision of current applications.

### **Challenges and future priorities**

Maintain service performance and ensure that all babies are offered a hearing screening test within the first four weeks of life, and complete screening by 10 weeks of age.

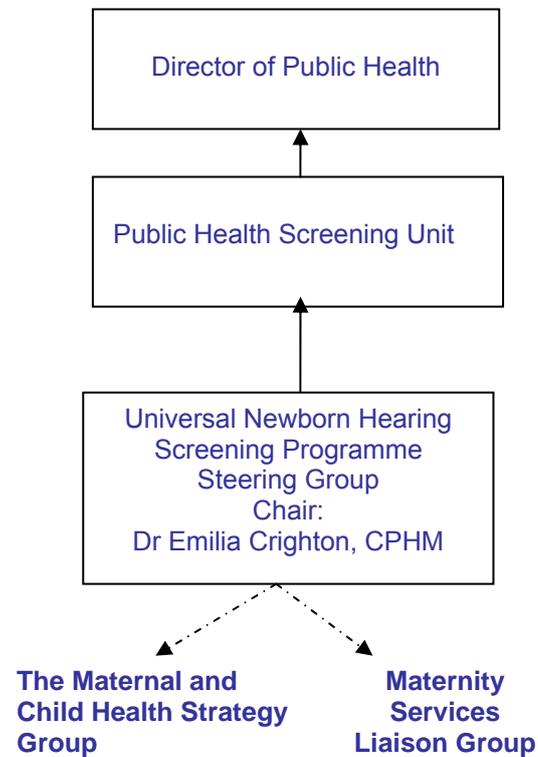
Complete the value for money exercise to ensure that appropriate IT solutions supporting the screening programme are cost effective.

## Appendix 7.1

### Universal Newborn Hearing Screening Programme Steering Group (As at March 2010)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Mrs Betty Adair	Lead Midwife
Mrs Donna Athanasopolous	PERL Resource Manager
Mrs Angela Bonomy	National Audiology Services Manager
Ms Elizabeth Callander	Lead Midwife
Mrs Patricia Carmichael	Paediatric Audiology Services Manager
Ms Gail Carroll	Assistant Technical Officer
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Mrs Annie Hair	CHP Children's Services Lead
Mrs Leigh Hamilton	Newborn Hearing Screening Manager
Mr James Harrigan	Head of Audiology
Mr Forbes Lauder	Head of Audiology
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Eleanor McColl	Screening Service Delivery Manager
Dr Juan Mora	Consultant Audiological Physician
Mrs Julie Mullin	Assistant Programme Manager, Screening Dept
Mrs Debbie Murray	Senior Support Officer/Secretary
Dr Andrew Powls	Consultant Neonatologist
Ms Janice Winter	Clinical Effectiveness Manager
Dr Madeline White	Consultant Neonatologist
Ms Heather Young	Family Support

## Appendix 7.2

**Reporting Structure:  
Universal Newborn Hearing Screening Steering Group****Key:**

\_\_\_\_\_ Direct Reports  
----- Network Links

## SUMMARY

### CHAPTER 8: DIABETIC RETINOPATHY SCREENING

- 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.
- 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.
- There were 55,832 NHS Greater Glasgow and Clyde residents with a diagnosis of diabetes at 2 April 2010. This represents an increase of 3,137 (6%) from the previous year 2008/09. The current prevalence of diabetes among NHS Greater Glasgow and Clyde residents is 4%.
- Of the total eligible population, 48,459 (86.8%) residents were offered screening. Of those, 88.6% (42,916) were screened. This means that in total 76.9% of total eligible diabetic population in were screened in 2009/10.
- 7,373 people were not eligible for screening because they were either permanently or temporarily suspended from the programme. This represents an increase of 14% (909) from the previous year 2008/09.
- 23,351 (41.8%) of the total population with diabetes in NHS Greater Glasgow and Clyde are known to be resident in the most deprived areas compared to 7,915 (14.2%) who live in the least deprived areas. The largest proportion of people with diabetes was among the 50 – 79 year olds.
- 4,546 invited to be screened did not attend their appointment. This represents a decrease of 360 from 2008/09 returns.
- A survey carried out found that there was no clear pattern as to why patients failed to turn up. Some of the reasons included not receiving a letter, forgetting, not well, do not want to attend and bereavement.
- Work will continue to try to reduce the number of people not taking up appointments.

## **CHAPTER 8: 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, laser 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**

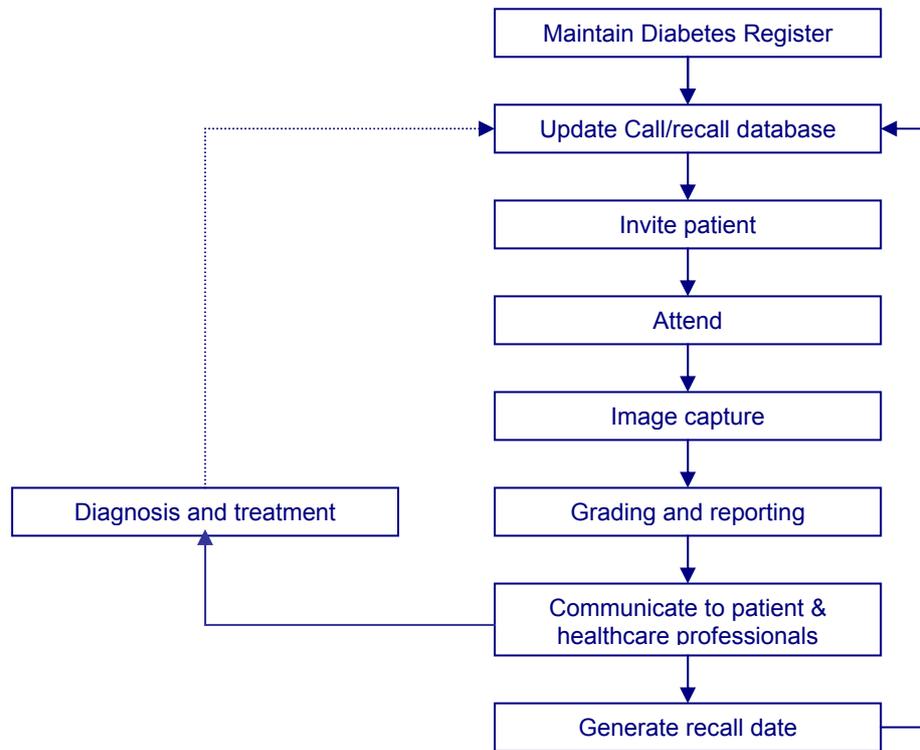
The screening programme takes place in a variety of settings. This can either be at a fixed site or within a mobile screening unit, which visits health centres and other locations around the area. In 2009/10 across Greater Glasgow and Clyde there were six fixed site locations and four mobile screening units which visited 15 locations.

The Glasgow service also provides a slit lamp service from their seven sites for patients who are not suitable for retinal photography.

## Foreseen benefits of programme

To identify and treat sight threatening diabetic retinopathy.

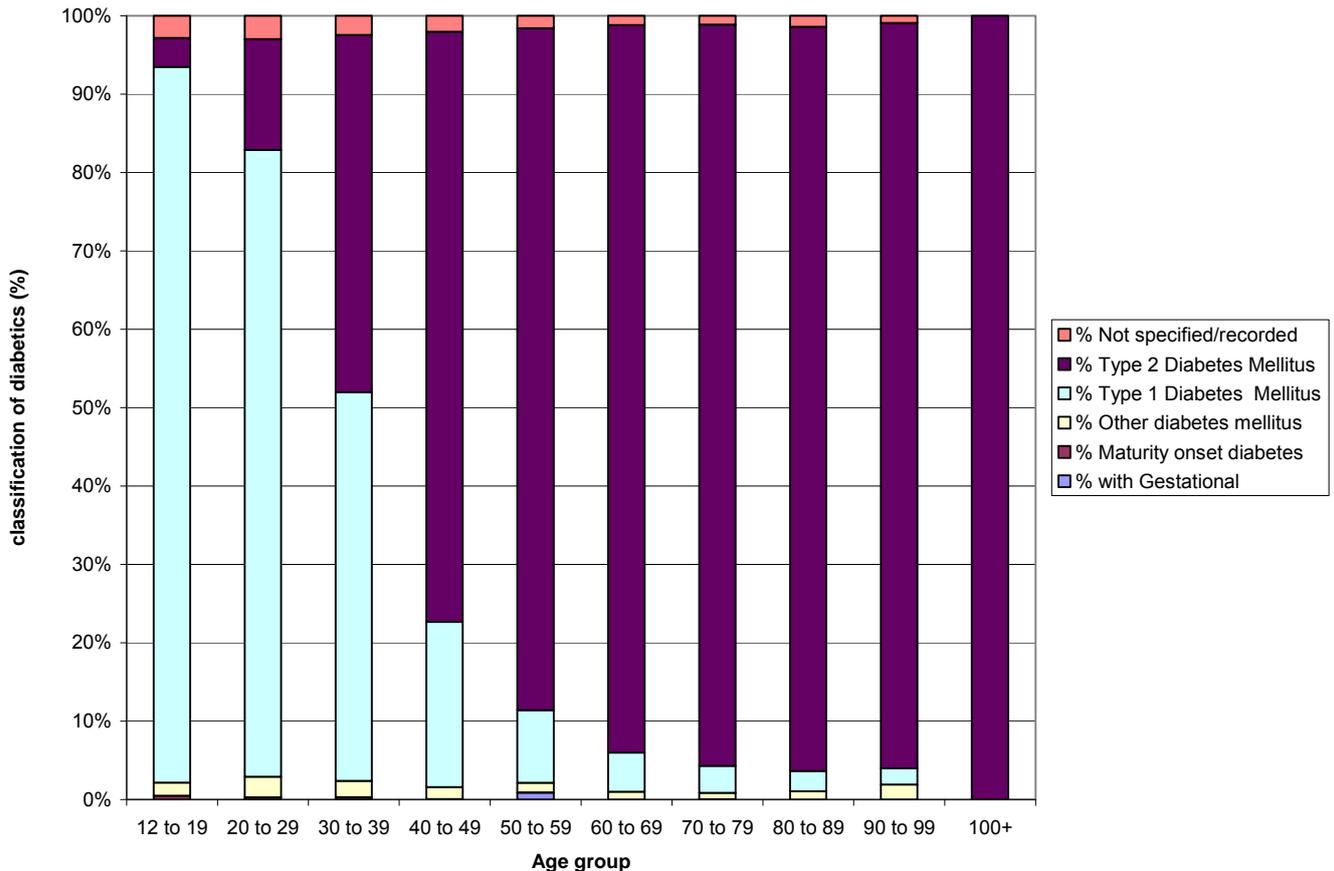
Figure 8.1 illustrates the Diabetic Retinopathy screening pathway



## Delivery of Screening Programme 2009/10

There were 55,832 NHS Greater Glasgow and Clyde residents with a diagnosis of diabetes at 2 April 2010. This represents an increase of 3,137 (6%) from the previous year 2008/09. The current prevalence of diabetes among NHS Greater Glasgow and Clyde residents is 4%.

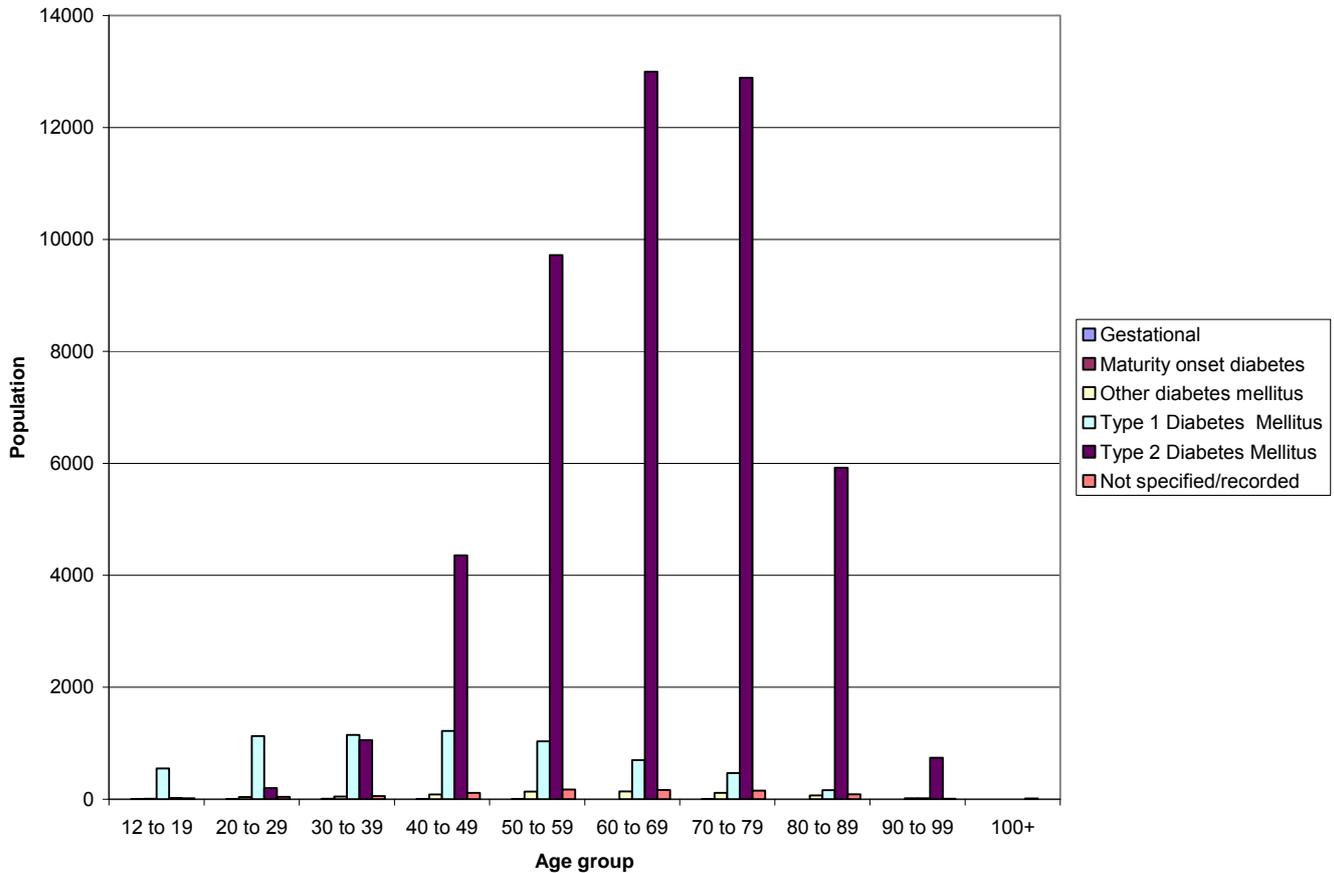
**Figure 8.2 Classification of diabetes for the total diabetic population**



The number of patients with diabetes in NHS Glasgow & Clyde increases with age and peaks between 60-69 years. With increasing age there is a shift in the classification of diabetes.

In **Figure 8.3** shows that the majority of people with diabetes who are under 40 years old have early onset 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 and is associated with lifestyle factors such as diet, exercise and obesity.

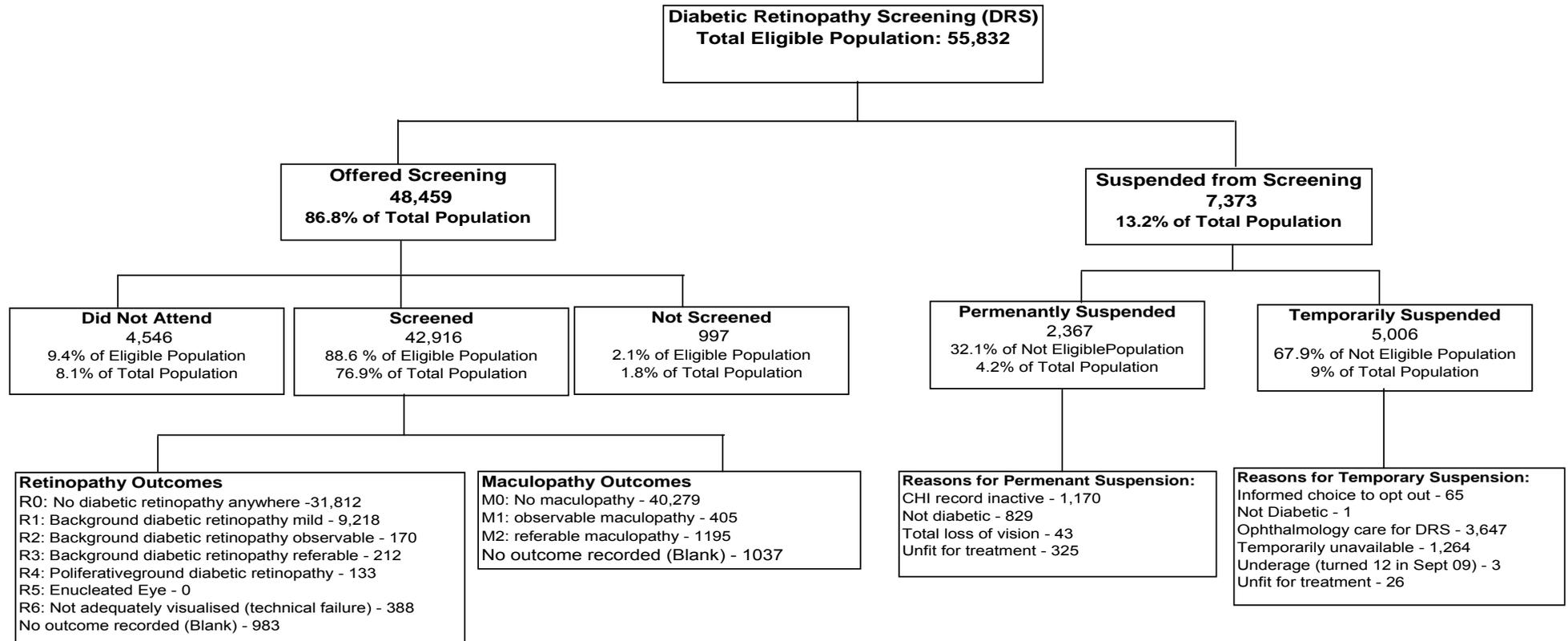
**Figure 8.3** Number of patients with diabetes in NHS Greater Glasgow and Clyde by type of diabetes and age.



**Figure 8.3** is a summary of the uptake and results of NHS Greater Glasgow and Clyde Diabetic Retinopathy Screening programme for the period 1 April 2009 to 31 March 2010.

Of the total eligible population, 48,459 (86.8%) were offered screening. Of those, 88.6% (42,916) were screened. This means that in total 76.9% of total eligible diabetic population in NHS GGC were screened in 2009/10. 7,373 people were not eligible for screening because they were either permanently or temporarily suspended from the programme. This represents an increase of 14% (909) from the previous year 2008/09.

**Figure 8.3: Summary uptake and results of NHS Greater Glasgow and Clyde Diabetic Retinopathy Screening Programme for period 1 April 2009 to 31 March 2010**



**Notes:**

Screened assumptions: It has been assumed that patients who had dates outwith the current screening financial year (ie 2009/10) were screened within the financial year being reported on. Age of patient has been calculated as 31st March 2010.  
 Data extracted: 2nd September 2010  
 Source: Soarian

**Table 8.1 Total eligible population for Diabetic Retinopathy Screening split by CH(C)P and age group.**

**Table 8.1** shows the distribution of the population with diabetes across deprivation categories and by age group. 23,351 (41.8%) of the total population with diabetes in NHS GGC are known to be resident in the most deprived areas compared to 7,915 (14.2%) who live in the least deprived areas. The largest proportion of people with diabetes was among the 50 – 79 year olds.

Age Group	Scottish Index of Multiple Deprivation 2006 (SIMD)					Unassigned	Total	% Most deprived (SIMD=1)
	Most Deprived		Least Deprived					
	1	2	3	4	5			
12 to 19	214	93	81	85	122	4	599	35.7%
20 to 29	564	260	200	181	185	19	1409	40.0%
30 to 39	1049	466	268	267	237	28	2315	45.3%
40 to 49	2647	1141	713	601	638	44	5784	45.8%
50 to 59	4644	2055	1361	1418	1516	72	11066	42.0%
60 to 69	5785	2615	1793	1642	2091	74	14000	41.3%
70 to 79	5730	2697	1685	1507	1943	65	13627	42.0%
80 to 89	2409	1257	804	704	1039	28	6241	38.6%
90 to 99	305	162	94	72	141	6	780	39.1%
100+	4	1	2	1	3	0	11	36.4%
<b>Total</b>	<b>23351</b>	<b>10747</b>	<b>7001</b>	<b>6478</b>	<b>7915</b>	<b>340</b>	<b>55832</b>	<b>41.8%</b>

Source: Soarian  
Data extracted on 2 September 2010

Notes:

Unassigned SIMD: Postcode incomplete or only partial postcode recorded - unable to assign SIMD.

## Service review

Diabetic Retinopathy Screening staff meet regularly to review service quality and identify areas for improvement. The number of people not showing up for appointments was identified as an area for improvement. As a result, following up on people who do not show up for their appointments was implemented. Clinics with a high rate of non attendance will be targeted.

A survey carried out found that there was no clear pattern as to why patients failed to turn up. Some of the reasons included not receiving a letter, forgetting, not well, do not want to attend and bereavement.

Work will continue to try to increase the number of people taking up appointments.

## 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-DC is an essential component for effective Diabetic Retinopathy Screening. It provides both the diabetes population register for the DRS call/recall and feedback the results of the Diabetic Retinopathy Screening to clinical staff involved in the care of patients with diabetes.

Work was completed in June 2009 to integrate the NHS Greater Glasgow and Clyde diabetes information management systems across NHS Greater Glasgow and Clyde.

## Challenges and future priorities

- It is anticipated that the number of people with diabetes will continue to increase that would require additional service capacity in the future. At present the current prevalence of diabetes for NHSGGC is 4%.
- Work will continue to try and increase the number of people taking up appointments. We will explore technical options, like texting, to remind people about their appointments.

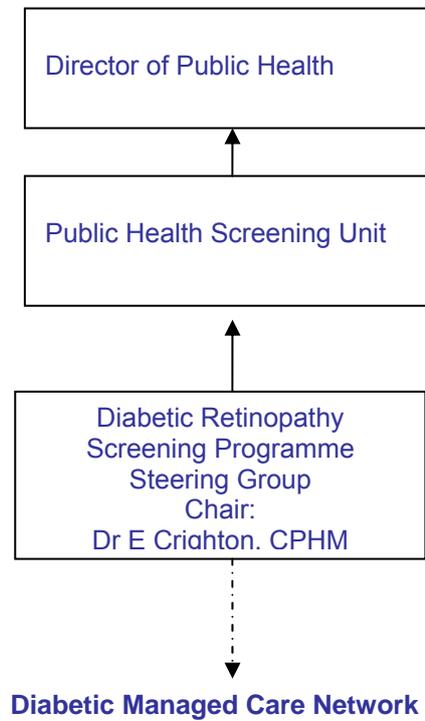
## Appendix 8.1

### Members of Diabetic Retinopathy Screening Steering Group (As at March 2010)

Dr Emilia Crighton	Consultant in Public Health Medicine (chair)
Mrs Donna Athanasopolous	PERL Resources Co-ordinator
Mrs Jean Blackwood	Programme Director, Clyde Condition Management Programme
Mrs Eileen Ferguson	Lay Member
Mr James Ferguson	Lay Member
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Mrs Annie Hair	Head of Children's Services
Mr Carsten Mandt	Co-ordinator for MCN for Diabetes
Mrs Fiona Heggie	Clinical Nurse Co-ordinator
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Eleanor McColl	Screening Service Delivery Manager
Nicola McElvanney	AOC Chair
Mr Eddie McVey	Optometric Advisor
Ms Patricia Morrison	DRS Manager
Mrs Elizabeth Rennie	Programme Manager, Screening Dept
Ms Karen Ross	MCN & CDM Planning Manager
Mr David Sawers	DRS Service Manager
Dr William Wykes	Consultant Ophthalmologist

## Appendix 8.2

### Reporting Structure: Diabetic Retinopathy Screening Steering Group



**Key:**  
\_\_\_\_\_ Direct Reports  
----- Network Links

## SUMMARY

### CHAPTER 9: PRE-SCHOOL VISION SCREENING

- All children born between 1 March 2005 and 28 February 2006 were offered pre-school vision screening in 2009/10.
- 13,511 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening. 41% of children live in deprived areas.
- 10,175 children were screened out of 13,235 eligible children in 2009/10. This gives an overall uptake rate of 76.9%. The uptake rate varied across the geographical location from 67.2% in East Glasgow to 81.8% in West Glasgow.
- 4,082 (30.8%) of the eligible children were invited to be seen by a hospital Orthoptics Department.
- 604 (4.6%) of eligible children were already attending an eye clinic.
- 125 (0.9%) parents refused consent for their children to be screened.
- 8,534 children were screened in a nursery setting; that represents 83.9% of all screened children and 64.5% of all eligible children.
- Following screening, 2,761 (27.1%) children were referred for further assessments. Of these, 520 (17.7%) were referred to an Optometrist for further assessment. This represents 3.8% of the total eligible population.
- 7,362 (70.9%) of children screened had a normal result following screening.
- Despite all efforts to recruit to the vacant Orthoptist post in East Glasgow, the post remains unfilled due to a national shortage of Orthoptists.

## CHAPTER 9: PRE-SCHOOL VISION SCREENING

### Background

Orthoptic, nursery based, Vision Screening is routinely offered to all pre school age children resident in NHS Greater Glasgow and Clyde area since 2006.

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.

### Screening setting

The screening takes place in a child's nursery setting. Children that are not registered with nurseries are screened in a secondary care setting.

### 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 2005 and 28 February 2006, 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, those whose nursery is unknown to the screening programme and the children that miss their appointment within the nursery are invited to a hospital Orthoptic Department 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.

## Eligible population

All children resident in the NHS Greater Glasgow and Clyde born between March 2005 and 28 February 2008 were offered screening for visual impairment between four and five years of age in the pre-school year.

In 2009/10 13,511 children aged between four to five years old were identified using the Community Health Index System as being eligible for pre-school vision screening (Table 10.1). 5,524 (41%) children lived in the most deprived areas.

**Table 9.1: Total number of eligible NHSGGC child residents split by CH(C)P area and by deprivation category**

CH(C)P	Scottish Index for Multiple Deprivation					Unable to assign to SIMD <sup>2</sup>	Total
	Most Deprived		Least Deprived				
	1	2	3	4	5		
East Dunbartonshire	72	184	112	172	569	5	1114
East Glasgow	981	163	109	96	16	16	1381
East Renfrewshire	67	81	93	111	650	5	1007
Inverclyde	423	144	71	160	88	12	898
North Glasgow	853	58	47	89	85	12	1144
North Lanarkshire <sup>1</sup>	24	30	60	128	26		268
Renfrewshire	564	265	400	271	398	15	1913
South East Glasgow	451	337	151	213	74	7	1233
South Lanarkshire <sup>1</sup>	247	136	62	181	76	16	718
South West Glasgow	763	254	172	89	83	4	1365
West Dunbartonshire	411	313	151	86	46	1	1008
West Glasgow	668	218	159	118	224	9	1396
Unassigned <sup>3</sup>						66	66
<b>Total</b>	<b>5524</b>	<b>2183</b>	<b>1587</b>	<b>1714</b>	<b>2335</b>	168	13511
<b>% of total</b>	<b>41%</b>	<b>16%</b>	<b>12%</b>	<b>13%</b>	<b>17%</b>	1%	

Source: Visionworks

Date Extracted: 2nd September 2010

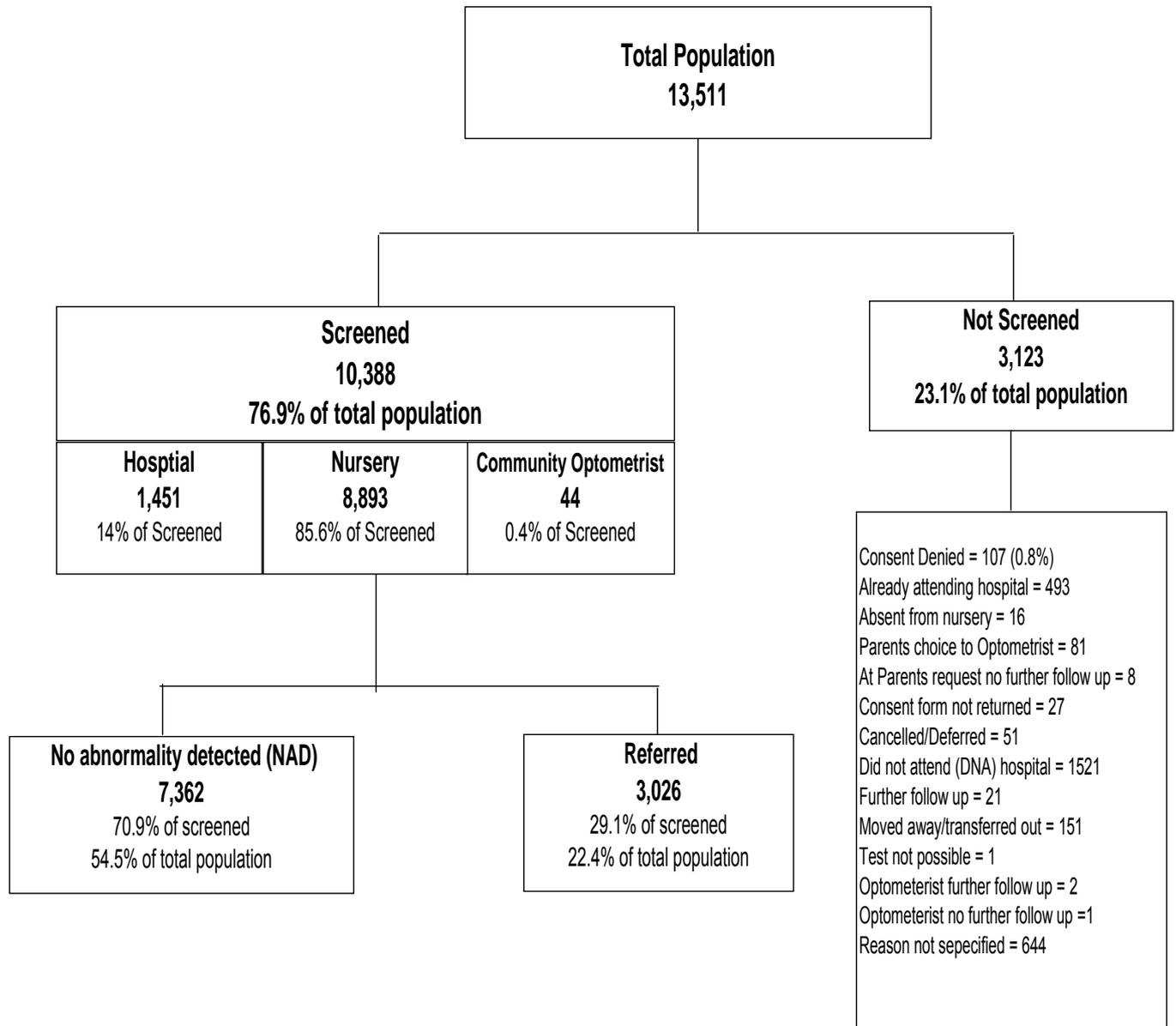
Notes:

1. NHSGGC residents only
2. Unable to assign to a SIMD due to incomplete or incorrect postcode
3. Unable to assign to CHCP due to income or incorrect postcode.

## Delivery of screening programme 2009/10

Of the 13,511 eligible children, 10,388 (76.9%) were screened for a visual abnormality, giving an overall uptake of 76.9%. 3,026 (22.4%) were referred for further assessment (figure 10.1) 107 (0.8%) parents refused consent for their children to be screened.

**Figure 9.1** illustrates the activity for the service in Greater Glasgow and Clyde for the school year 2009.



Source: Visualworks (extracted 2 September 2010)

<sup>1</sup> 44 NHSGGC children were screened by NHS Lanarkshire

**Table 9.2** shows that, of the 10,388 children screened, 7,362 (70.9%) had a normal result; 3,3026 (29.1) were referred for further assessment. Of the 3,948 of children who live in the most deprived areas, 34.4% were referred for further assessment. 23.1% of children living in the least deprived areas were referred for further assessment.

**Table 9.2 Pre-school vision screening uptake and outcomes by deprivation category**

Total					
SIMD	Number of children screened	No abnormality detected (NAD)	% NAD	Referred for further assessment	% Referred
1	3948	2589	65.6%	1359	34.4%
2	1667	1151	69.0%	516	31.0%
3	1263	937	74.2%	326	25.8%
4	1392	1062	76.3%	330	23.7%
5	1997	1536	76.9%	461	23.1%
Unassigned <sup>1</sup>	121	87	71.9%	34	28.1%
<b>Total</b>	<b>10388</b>	<b>7362</b>	<b>70.9%</b>	<b>3026</b>	<b>29.1%</b>

Source: Vision Works. Date extracted: 2 September 2010

1. Unable to assign to SIMD due to incorrect postcode.

**Table 9.3** 10,388 children were screened out of 13,511 eligible children in 2009/10. This gives an overall uptake rate of 76.9%. The uptake rate varies across the CH(C)P areas from 64.1% in East Glasgow to 87.5% in East Dunbartonshire. It is thought that the low uptake in the East Glasgow is a reflection of the initial staff shortages in the screening programme in this area.

The highest proportion of children screened that were referred for further investigation was seen in West Glasgow (43.3%) and the lowest was 18.1% in Renfrewshire.

**Table 9.3 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	Total number of children screened	Total number of children not screened	Uptake	% NAD <sup>3</sup>	% Referred
East Dunbartonshire	1114	976	138	87.5%	69.8	30.2
East Glasgow	1381	885	496	64.1%	66.3	33.7
East Renfrewshire	1007	845	162	83.9%	78.1	21.9
Inverclyde	898	731	167	81.4%	78.1	21.9
North Glasgow	1144	849	295	74.2%	65.8	34.2
North Lanarkshire <sup>1</sup>	268	189	79	70.5%	73.0	27.0
Renfrewshire	1913	1603	310	83.8%	81.9	18.1
South East Glasgow	1233	852	381	69.1%	72.9	27.1
South Lanarkshire <sup>1</sup>	718	563	155	78.4%	68.9	31.1
South West Glasgow	1365	1033	332	75.7%	66.6	33.4
West Dunbartonshire	1008	822	186	81.5%	67.9	32.1
West Glasgow	1396	993	403	71.1%	56.7	43.3
Unassigned <sup>2</sup>	66	47	19	71.2%	74.5	25.5
<b>Total</b>	<b>13511</b>	<b>10388</b>	<b>3123</b>	<b>76.9%</b>	<b>70.9</b>	<b>29.1</b>

Source: Visionworks

Date Extracted: 2nd September 2010

Notes:

1. NHSGGC residents only
2. Unable to assign to CHCP due to incomplete or incorrect postcode.
3. NAD = no abnormality detected

**Table 9.4** shows the percentage uptake of Preschool Vision screening by CH(C)P and by deprivation category. The uptake varies across the CH(C)P areas from 64.1% in East Glasgow and 87.5% in East Dunbartonshire at 87.5%.

**Table 9.4 Percentage uptake split by CH(C)P and by deprivation category**

CH(C)P	SIMD06					Unassigned <sup>1</sup>	Total
	Most Deprived		Least Deprived				
	1	2	3	4	5		
East Dunbartonshire	91.7%	82.6%	87.5%	90.1%	88.0%	80.0%	87.5%
East Glasgow	62.3%	68.1%	69.7%	71.9%	50.0%	62.5%	64.1%
East Renfrewshire	80.6%	76.5%	81.7%	85.6%	85.2%	80.0%	83.9%
Inverclyde	80.6%	73.6%	93.0%	85.6%	84.1%	58.3%	81.4%
North Glasgow	71.5%	82.8%	76.6%	84.3%	83.5%	75.0%	74.2%
North Lanarkshire <sup>2</sup>	62.5%	53.3%	70.0%	76.6%	69.2%		70.5%
Renfrewshire	78.0%	84.9%	87.3%	85.2%	86.9%	80.0%	83.8%
South East Glasgow	66.5%	64.4%	67.5%	78.4%	85.1%	42.9%	69.1%
South Lanarkshire <sup>2</sup>	70.4%	86.8%	77.4%	82.9%	76.3%	93.8%	78.4%
South West Glasgow	72.9%	78.3%	79.1%	74.2%	89.2%	50.0%	75.7%
West Dunbartonshire	78.1%	81.8%	82.1%	90.7%	91.3%	100.0%	81.5%
West Glasgow	68.9%	72.0%	69.2%	60.2%	83.9%	77.8%	71.1%
Unassigned <sup>1</sup>						71.2%	71.2%
<b>Total</b>	<b>71.5%</b>	<b>76.4%</b>	<b>79.6%</b>	<b>81.2%</b>	<b>85.5%</b>	<b>72.0%</b>	<b>76.9%</b>

Source: Visionworks Date extracted: 2 September 2010

Notes:

1 Unassigned = incomplete or incorrect postcode. Assigned CHCP by using Postcode Sector where possible. Unable to assign SIMD.

2 NHS Greater Glasgow and Clyde residents only

## Workforce Issues

Despite all efforts to recruit to the vacant Orthoptist post in East Glasgow, the post remains unfilled. This is due to a national shortage of Orthoptists. Mop up clinics to screen children by North and South Glasgow Orthoptists were arranged to cope with the backlog of children to be screened. In addition, an orthoptist from the Southern General service agreed to screen nursery children in East Glasgow every Thursday during term time.

## Information systems

The VisualWorks system supports the delivery of the programme across NHS Greater Glasgow and Clyde.

## Challenges and future priorities

The recruitment of Orthoptists to allow the delivery screening as agreed continues to be a challenge and priority for the pre-school vision programme.

Equality impact assessment to be carried out in Summer 2010.

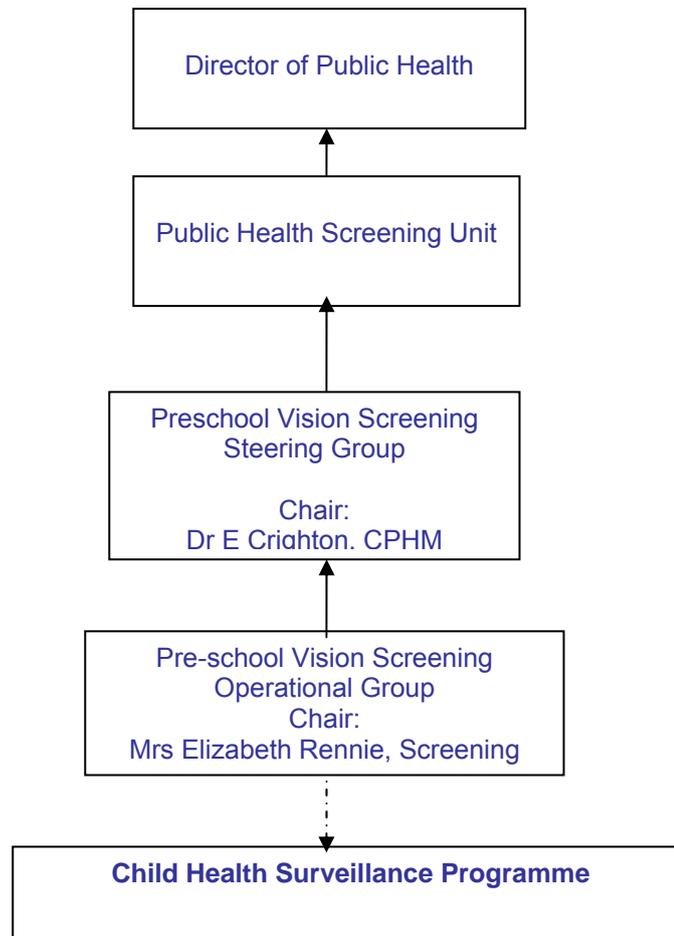
## Appendix 9.1

### Members of Pre-school Vision Screening Steering Group (As at March 2009)

Dr Emilia Crighton	Consultant in Public Health Medicine (Chair)
Mrs Donna Athanasopoulos	PERL Resources Co-ordinator
Mrs Joan Ballantyne	Head Orthoptist
Mrs Angela Carson	Head of Optometry
Ms Mary Cunningham	Clinical Service Manager
Mrs Maggie Darroch	Optometrist
Ms Irene Forrest	Nursery Lead
Mrs Fiona Gilchrist	Assistant Programme Manager, Screening Dept
Ms Susan Groom	General Manager
Ms Shogufta Haq	Health Promotion Officer
Mrs Marian Hodgeson	Head of Pre-Five Children Strategy
Mrs Annette Little	Information Analyst
Miss Denise Lyden	Project Officer
Mrs Eleanor McColl	Screening Service Delivery Manager
Mr Stephen McLeod	General Manager -Specialist Children's Services
Ms Linda Morris	Senior Health Promotion Officer
Mrs Debbie Murray	Secretary/Senior Support Officer
Mrs Elizabeth Rennie	Programme Manager, Screening Dept
Mrs Diane Russell	Head Orthoptist
Mrs Elaine Salina	Principal Optometrist

## Appendix 9.2

### Reporting Structure: Pre-School Vision Screening Steering Group



## Key:

- \_\_\_\_\_ Direct Reports  
 - - - - - Network Links

## ACKNOWLEDGMENTS

This annual report was prepared by the Public Health Screening Unit in collaboration with members from the screening programmes steering groups, Public Health Protection Unit, Annette Little from Information Services, Stuart Imrie, Cytogenetics Laboratory, Joan Mackenzie, National Newborn Screening Laboratory and Jenny Crossley, Regional Pregnancy Screening Laboratory.

Many thanks 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.