

BreastScreen Aotearoa
MONITORING REPORT No. 4

Women screened
between 1 January and 31 March, 2000

BreastScreen Aotearoa Independent Monitoring Group
Report to the Health Funding Authority

28 September 2000

Technical Report No. 24
Hugh Adam Cancer Epidemiology Unit
Department of Preventive and Social Medicine
Dunedin School of Medicine
University of Otago

The BreastScreen Aotearoa Independent Monitoring Group

The following are members of the BreastScreen Aotearoa Independent Monitoring Group (BSAIMG).

Dr Brian Cox, Public Health Physician

Dr Ann Richardson, Public Health Physician

Dr Jeremy Nicoll, Medical Physicist

Dr Norman Fitzgerald, Pathologist

Assoc. Prof. John Collins, Surgeon

Mrs Christine Rimene, Maori Health Researcher

Dr Anthony Doyle, Radiologist

Mrs Barbara Robson, Consumer Representative

Ms Thelma Brown is employed full-time to provide technical support to the monitoring group.

Under contract with the Health Funding Authority the monitoring group is required to monitor and evaluate aspects of BreastScreen Aotearoa, the national breast screening programme. The measures of performance assessed by the monitoring group are specified by the Health Funding Authority. The list of agreed measures of performance to be included in quarterly and annual monitoring reports to the Health Funding Authority is given in Appendix A. The monitoring group can also recommend to the Health Funding Authority additional monitoring and evaluation that it considers to be required.

The monitoring group received data for this report on May 29, 2000. The draft report was written in July 2000. The draft was sent to the Health Funding Authority on August 1, 2000 for comment and feedback and finalised on 28 September, 2000.

CONTENTS

Executive Summary	iv
Data and service issues encountered	vii
Recommendations regarding service issues encountered	ix
Recommendations regarding data issues encountered	xii
Section 1 – Data summary	
1.1 Registration rate - overall	1
1.2 Registration rate - ethnicity	2
1.3 Coverage rate - overall	3
1.4 Coverage rate – age group	5
1.5 Coverage rate - ethnicity	6
Section 2 – Provision of high quality screening and assessment	
2.1 Screened women who have no more than 4 films taken	7
2.2 Technical recall rate	8
2.3 Technical repeat rate	9
2.3.1 Technical repeat rate definition 1	9
2.3.2 Technical repeat rate definition 2	9
2.4 Assessment rate	10
2.5 Assessment records of the national monitoring data set	11
2.5.1 Outstanding assessment records for women screened up to 30 June 1999 ..	11
2.5.2 Outstanding assessment records for women screened June to Sept. 1999 ..	13
2.5.3 Outstanding assessment records for women screened Oct. to Dec. 1999 ..	14
2.5.4 Outstanding assessment records for women screened Jan. to Mar 2000 ..	15
2.6 False positive rate	18
2.7 Open surgical biopsy rate	19
2.8 Benign biopsy weight	20
2.9 Needle biopsy rates	21
2.10 Specificity of programme	22
Section 3 – Early detection of breast cancer	
3.1 Cancer detection rate	23
Section 4 – Summary of treatment	25
Section 5 – Provision of an appropriate and acceptable service	
5.1 Time taken providing results of screening	26
5.2 Time taken from screening visit to first offer of an assessment appointment ..	27
5.3 Time taken from assessment to final diagnostic biopsy	28
5.4 Time taken from final diagnostic biopsy to reporting assessment results	29
5.5 Time taken from reporting assessment results to first date offered for primary treatment	30
Appendix A – Performance parameters included in quarterly and annual reports ...	31
Appendix B – Population Projections BreastScreen Aotearoa (1999/2000)	41
Appendix C – The Place of Extended Assessment in the National Breast Screening Programme	44

Executive Summary

The national monitoring data set recorded that 83,834 women aged 50-64 were screened by BreastScreen Aotearoa up to March 31, 2000. Thus, 35.4% of the eligible population have been screened since the beginning of the programme in December 1998. For areas where screening started on 1 December 1998, at least 46.7% of the eligible population would have been expected to be screened by 31 March 2000 (assuming 70% coverage). Several lead providers did not start screening until January or February 1999, and some mobile units did not start until August 1999, so coverage is lower in these regions. Currently coverage of Maori and Pacific women continues to be lower than for other ethnic groups, and this is of concern, although it may reflect the later commencement of mobile screening in some regions.

The national monitoring data set records that 318 women have had a diagnosis of breast cancer through BreastScreen Aotearoa up to March 31, 2000. Performance measures for the January to March quarter of 2000 and cumulative results up to March 31, 2000 are provided in this report. Improvement in the completeness of assessment records in the national monitoring data set has occurred in the quarter and it is hoped that all lead providers will soon have more than 90% of their assessment records complete in the national monitoring data set. For the quarter ending March 31, 2000 five of the six lead providers had over 90% of their assessment records completed. BreastScreen Auckland and North did not reach the 90% threshold for completed assessment results in the national monitoring data set to be included in this report. The Health Funding Authority conducted a preliminary review, which provided some explanations regarding data provided for outstanding assessment records. Considering this and the fact that BreastScreen Auckland and North almost reached the 90% threshold we have chosen to make an exception and include their data in this report.

A major concern of the monitoring group continues to be incomplete records of women referred to assessment where the outcome of assessment has not been recorded in the national monitoring data set. Investigations by the Health Funding Authority are ongoing. It is hoped that the outcome of these investigations will be able to be reported in the next monitoring report from BSAIMG.

While many measures of performance were satisfactory, some of the six lead providers do not appear to have met the targets set in the Interim National Quality Standards. In some areas this may have been due to data entry errors but in others areas this is considered an unlikely explanation. It is important that errors resulting from data entry problems are investigated, so that these can be minimised in future, either by changes to administrative processes or changes to the information systems. Specific recommendations have been made by the monitoring group in some areas to encourage attainment of the targets set. A summary of performance measures of the lead providers for the period from the beginning of the programme to March 31, 2000, obtained from the national monitoring data set is shown in Table 1. The key identifying the lead providers listed can be found in the section titled "Data Summary" on page 1.

Table 1. Summary of lead provider and BreastScreen Aotearoa results against targets to 31 March, 2000.

Indicator	Lead Providers						
	ABS	HWL	MCH	HVH	BSS	HCO	BSA
Coverage (%) <i>- Target > 70%</i>							
Overall	31.0	*	37.1	33.1	38.9	47.0	35.4
Maori	26.2	*	18.5	17.6	15.2	15.8	21.5
Pacific	21.2	*	20.1	15.7	21.5	23.1	20.3
Other (not stated)†	30.6 (1,106)	*	37.0 (1,047)	32.3 (655)	32.8 (3,455)	46.6 (286)	33.8 (6,549)
Technical recall (%) <i>- Target (Fixed < 0.5%; Mobile < 3%)</i>							
Fixed	0.1	*	0.3	0.7	*	0.2	0.2
Mobile	0	*	6.3	0.7	*	0.5	1.5
Technical repeat (definition 2) (%) <i>Target < 3%</i>							
Fixed	1.2	*	1.2	2.0	*	1.1	1.3
Mobile	0.2	*	1.0	0.3	*	0.04	0.3
Assessment (%) <i>Target - prevalence screen - target is <10%, expected target is <7%</i> <i>- incidence screen - target is <5%, expected target is <4%</i>							
	7.4	*	4.8	5.8	6.2	7.9	6.6
False positive rate (%) <i>Target - prevalence round, target is <9%, expected target <6%</i> <i>- incidence round, target is <4%, expected target <3%</i>							
	*	*	4.0	4.8	5.5	8.0	5.2
Open surgical biopsy rate (%) <i>Target < 1%</i>							
	*	*	0.3	0.2	0.2	0.6	0.3
Benign biopsy weight (%) <i>Target 80% or more benign open biopsy should weigh <20g</i>							
	*	*	61.8	33.3	38.7	78.7	59.7

† number of women where ethnicity was not recorded

....continued

Table 1 (continued). Summary of lead provider and BreastScreen Aotearoa results against targets to 31 March, 2000.

Indicator	LEAD PROVIDERS						
	ABS	HWL	MCH	HVH	BSS	HCO	BSA
Needle biopsy rate (%)							
<i>Target – none</i>							
FNA	*	*	0.1	0.2	0.9	0.6	0.5
Core needle	*	*	1.3	0.6	1.6	0.7	1.2
Both	*	*	0	1.3	0.1	0.04	0.3
Specificity (%)							
<i>Target >93%</i>							
	*	*	96.0	95.1	94.5	93.1	94.8
Cancer detection rate (per thousand women screened)							
<i>Target - prevalence - ≥ 6 per 1000 women screened</i>							
<i>- incidence - ≥ 3 per 1000 women screened</i>							
	*	*	6.6	5.6	6.0	4.8	5.9
Time taken providing results of screening (%)							
<i>Target – 95% notified within 10 days</i>							
	97.1	*	99.0	98.0	98.1	72.0	94.8
Time taken from screening visit to first offer of an assessment appointment (%)							
<i>Target – at least 90% offered an assessment appointment within 14 working days of their final screening visit</i>							
	*	*	86.4	87.3	78.4	32.2	70.6
Time taken from assessment to final diagnostic biopsy (%)							
<i>Target 1 – at least 90% of women requiring needle biopsy procedure have that procedure completed within 7 days of their assessment</i>							
	*	*	93.7	97.2	87.4	96.1	91.6
<i>Target 2 – at least 90% of women requiring open biopsy procedure offered that procedure within 3 weeks of their assessment</i>							
	*	*	31.9	55.6	71.4	86.4	63.9
Time taken from final diagnostic biopsy to reporting assessment result (%)							
<i>Target – results reported to at least 90% of women within 7 days of final diagnostic biopsy</i>							
	*	*	81.1	84.0	49.4	51.7	72.2
Time taken from reporting assessment results to first date offered for primary treatment (%)							
<i>Target – at least 90% of women offered primary treatment within 3 weeks of the final diagnosis being reported to the women</i>							
	*	*	*	*	*	*	*

* Invalid or insufficient data available for reporting

Data and service issues encountered

Missing data

The HFA advised that BreastScreen Midland continued to have incomplete cumulative records for screening and assessment in the national monitoring data set. The HFA have investigated this and reported that measures are being undertaken by the lead provider to resolve this issue.

Outstanding data

Assessment records of the national monitoring data set continue to be incomplete. The process of reporting assessment results only occurs when the assessment process is complete. This system of reporting, results in incomplete records and BSAIMG has no indication within the national monitoring data set why the result is incomplete. BSAIMG has requested information on the status of all women with incomplete assessment records. It is important that we know the current status of *all* women with assessment records outstanding. A woman with an abnormality detected by mammography is potentially at high risk, and the programme must ensure that these women have been offered appropriate investigation and treatment if necessary. Information provided to BSAIMG in response to our request for information on the current status of all women with assessment records outstanding, shows that most women have received appropriate investigation, but because of missing data or inadequate data for some women, it does not reassure BSAIMG about the status of all these women. BSAIMG recommends that the HFA urgently take action to obtain the appropriate data. For women who were referred for assessment and whose assessment record is incomplete, if on inquiry no assessment has occurred, BSAIMG recommends that they be recalled for immediate assessment. For women who have exited the programme, BSAIMG recommends that the reasons for "exiting" are clarified, and recommends that these women are contacted by an appropriate health professional and offered assessment (at an alternative assessment centre if necessary). The involvement of Maori health workers, and the opportunity for whanau support must be offered to Maori women who have exited the programme. The HFA continues to investigate the reporting process for women with incomplete records.

Age Range

An interim policy was adopted by the HFA where women who were aged less than 65 at registration would be screened even if they were over 65 by the time they received an appointment (up to age 65 years and 6 months). However, women aged less than 50 and 65 years or more at screening have been excluded from the data for this report. A summary of the screening data for these women will be provided in the annual report of BSAIMG.

Duplicate NHI numbers

Thirty-six duplicate NHI numbers were received in the national monitoring data set. The HFA provided BSAIMG with a list of women who had transferred between regions from January 1999 to March 2000 with details from and to which lead provider they had transferred. BSAIMG have excluded these women from the registration, screening and assessment tables in this report, as assignation of these results to one lead provider would not be appropriate.

The national monitoring data set also included a list of duplicate entries in the registration data file. The duplicate entries were deleted by BSAIMG. BSAIMG have been advised that a duplicate entry probably occurs when a woman registered with one lead provider moves (after registration, but before being screened) and is screened through another provider.

BSAIMG also deleted duplicate entries from the screening detail file of the national monitoring data set. These records contained identical NHI numbers but different lead provider codes. In the registration file of the national monitoring data set, some entries recorded by NHI number had more than one source of identification recorded, or more than one date of birth, or more than one domicile code registered with more than one lead provider. These duplicate entries were also excluded from the data set used for this report. BSAIMG recommends that lead providers and the HFA investigate these duplicate NHI numbers. It could be dangerous for two women to have the same NHI number. In the worst-case scenario, if two women in one region shared an NHI number, it could lead to the wrong woman being investigated for breast cancer, while the affected woman remained untreated. Similarly, women screened by one lead provider, but assessed by another lead provider appear as duplicate entries. This is a limitation of a system which is not truly a national database, but six separate lead provider databases. There is potential for women to be placed at risk if BSAIMG is unable to track their results following an assessment performed by a different lead provider from the screening lead provider.

Screening episode and round number

The data field for screening episode is the field that BSAIMG intends to use to calculate results for incident and prevalent screens. The HFA are currently investigating the use of this field to ensure that all lead providers use it consistently. The Data Management Manual states that screening episode is “01” for a woman’s first screen and thereafter “02...” or greater number should be recorded. If a woman has an incomplete first screen, BSAIMG would not receive her record because it is incomplete, and would not know that the screening episode was a prevalence screen. If the woman presents for another screen, it will be recorded as screening episode 2 and the national monitoring data set would not have a record of the first screen.

Ethnic affiliation

No specific ethnic affiliation was recorded for 1,728 (7.6%) of the screening records for this quarter. The cumulative number of women with no specific ethnicity stated, excluding BreastScreen Midland, was 6,549 (7.8% of all women screened). BSAIMG recommends that all lead providers assign ethnic group appropriately wherever possible.

Type of screening unit

BreastScreen Midland has correctly recorded screening sites in the national monitoring data set for this quarter but cumulative records record more than the two valid values.

The HFA have advised BSAIMG that the cumulative record of the number of women screened at a mobile unit in the national monitoring data set for BreastScreen South continued to be inaccurate. Updated information will be provided in the next BSAIMG report.

Technical repeat and recall rates

The HFA continue to work with lead providers to develop a consistent understanding of definitions associated with these data items. Sample scenarios are also to be entered into lead provider information systems to ensure that results are being accurately recorded.

Referral to assessment

All lead providers have a referral to assessment rate recorded for the quarter. BreastScreen Midland had incomplete cumulative screening and assessment records due to difficulties with their information system. Therefore, no cumulative assessment performance measures have been calculated for this lead provider.

According to the national monitoring data set received by BSAIMG, BreastScreen Auckland and North have outstanding data for 12% of the women referred for assessment. BSAIMG has been informed that the outstanding data includes data for women who have exited the programme and women on extended assessment, as well as women with incomplete assessment records. It is the responsibility of lead providers to ensure that women who exit the programme receive appropriate advice and investigation elsewhere. The lead provider should also obtain data about the outcome for these women. BSAIMG receives an extra month's data in addition to the data for each quarter, to allow lead providers adequate time to complete assessment records for each quarter. The practice of extended assessment is undesirable (recommendation 5, page 17). Because more than 10% of all referrals to assessment for BreastScreen Auckland and North did not have a completed assessment record, no cumulative assessment performance measures have been calculated for this lead provider.

Recommendations regarding service issues encountered

1. Coverage

Lead providers should calculate their coverage using percentages supplied in Table 1.3.1. Any lead providers who are behind in their coverage should make every effort to increase their screening rates. At present there is a window of opportunity where lead providers are still some months from the commencement of the second screening round. This window should be used to screen as many women as possible, in order to avoid the potential difficulties of trying to complete the first screening round at the same time as beginning the second screening round. Delays in offering second round screening to women would not be acceptable, since women have been promised regular two-yearly mammograms as part of BreastScreen Aotearoa.

2. Ethnic coverage.

If lower screening coverage of Maori and Pacific women recorded in this report persists, the invitation process may need to be reviewed to establish whether it is due to a lack of, or ineffective, invitation for these women. If many Maori and Pacific women are declining despite an appropriate invitation then appropriate health promotion services may be required by some or all lead providers. Some preliminary investigation of reasons for the lower coverage of Maori and Pacific women is required. Lead providers should monitor their own identification and enrolment procedures to ensure that Maori and Pacific women have equity of access to breast screening, as part of their routine quality assurance procedures. Documented results of these quality assurance procedures should be examined when each lead provider is audited.

3. Technical Recall Rate.

Investigation of the reasons for the high technical recall rate for BreastScreen Coast to Coast at their mobile site is required.

4. Referral to assessment rate.

Epidemiological measures of the quality of the assessment process should produce an appropriate combination of referral to assessment rate, cancer detection rate, sensitivity, specificity and false positive rate. Four of these measures of performance are calculated for six lead providers in this report. BreastScreen HealthCare continues to have relatively high rates of referral to assessment, in combination with relatively low specificity and consequently a high false positive rate. It is possible that this is the result of radiological

practice by this lead provider. The reasons for the relatively high rate of referral need to be investigated to determine its cause and efforts to reduce the referral rate should be undertaken. If the relatively high rate of referral is due to a particular practice of a radiologist then some retraining with subsequent re-evaluation of performance should be undertaken.

5. *Extended assessment.*

The incomplete assessment records in the national monitoring data set raise concern that some women may be undergoing extended assessment. Sometimes this is called early recall, deferred assessment, periodic mammographic follow-up or other similar terms. This is where a clear decision about whether a woman should be referred for assessment is deferred, and instead, the woman is asked to return for another mammogram after an interval of some months (the interval varies) or to return to assessment clinic for further investigation. This is not considered by the monitoring group to be best practice. No national protocol exists for this practice and considerable variation in its application is likely. It is clear from the information provided to us by the HFA from lead provider analysis of incomplete assessment records, that extended assessment is occurring. Some women in this group may develop clinical cancer while no decision of screening is reached, while for many asymptomatic women considerable anxiety from an abnormal result would not be alleviated. Under current data collection processes, the assessment records of these women may not become part of the national monitoring data set until their assessment has been completed and this may be up to two years after the date of screening. As a consequence, BSAIMG is unable to monitor the practice of extended assessment. This needs to be explored urgently by the Health Funding Authority and made transparent in the national monitoring data set. Extended assessment is considered by BSAIMG to be inappropriate (see Appendix C for a statement from BSAIMG on extended assessment). BSAIMG recommends that the HFA requests any protocols for extended assessment that lead providers may have developed.

6. *Needle biopsy rate.*

Explanation of the different use of needle biopsy procedures by BreastScreen Central should be requested by the HFA from this provider. If FNA is considered to produce uncertain results then core biopsy should be used as an alternative rather than an additional procedure.

7. *Inter-rater and intra-rater reliability of radiological reporting.*

It is recommended that inter-rater and intra-rater reliability should be routinely calculated for all radiologists who read screening films for lead providers.

Because of its relatively high referral rate, low specificity, and high false positive rate, it is strongly recommended that BreastScreen HealthCare carry out a review of film reading. The inter- and intra-rater reliability of the radiologists should be assessed. This was done during the pilot phase of the screening programme that is now run by BreastScreen HealthCare. There should be an urgent review of positive films where the outcome of assessment is known. This will allow the radiologists to review known false positive films and true positive films. Reviewing positive films in this way may help the radiologists to adjust their "cut-off" point for referral to assessment if necessary. BSAIMG is aware that film reading is a complex task, and that it is difficult to increase specificity while maintaining high sensitivity, but recommends that BreastScreen HealthCare carry out a review with the aim of increasing specificity while maintaining appropriate sensitivity.

8. *Timeliness of reporting screening results.*

As indicated in Monitoring Report Number 3, BreastScreen HealthCare urgently needs to improve the timeliness of the reporting of screening results to women.

9. *Timeliness of first offer of an assessment appointment.*

As recommended in Monitoring Report Number 3, the HFA should seek explanation from lead providers as to why there is ongoing difficulty in ensuring women are offered an assessment appointment within 14 working days of their final screening visit.

10. *Timeliness of open biopsy.*

From the cumulative record of the national monitoring data set, none of the lead providers have been able to offer 90% or more of the women who need it an open surgical biopsy within three weeks of their assessment appointment. The HFA should seek explanation from lead providers as to why there is ongoing difficulty in ensuring women are offered an open surgical biopsy within an appropriate timeframe.

11. *Time taken from final diagnostic biopsy to reporting assessment results.*

As recommended in Monitoring Report Number 3 considerable improvement needs to be made by some lead providers for this target to be met.

Recommendations regarding data issues encountered

1 Correction of the historical record for some data fields.

Some values for fields of the national monitoring data set in the past have not been compatible with valid values of the Data Management Manual, for example, screening site (field B04.03). The historical record needs to be corrected.

2. Validation procedures for some fields.

Some of the fields used to calculate technical recall and technical repeat rates need to be validated. A sample of records where technical repeats or technical recalls have occurred should be reviewed to see whether the information has been appropriately captured in the national monitoring data set.

3. Incomplete assessment records.

There is a danger that the number of incomplete assessment records may become too great for them to be easily corrected. This could jeopardise the ability of the BSAIMG to monitor many aspects of the assessment process. BSAIMG has identified records of women for whom assessment records of the national monitoring data set were incomplete. When the case records of these women are checked to determine what their outcome of assessment has been or whether they are part of an extended assessment process this information needs to be incorporated into the national monitoring data set. BSAIMG understands that this is being conducted by the HFA. BSAIMG do not believe that extended assessment is desirable within BreastScreen Aotearoa and recommends that women on extended assessment are identified urgently and offered immediate assessment. For women who were referred for assessment and whose assessment record is incomplete, if on inquiry no assessment has occurred, BSAIMG recommends that they be recalled for immediate assessment.

4. Benign biopsy weight.

The completeness and accuracy of the data collected needs to be checked. Fictitious results should not be entered into the national monitoring data set.

1. Data Summary

The key to the tables which appear in this document is:

ABS = BreastScreen Auckland and North

HWL = BreastScreen Midland

MCH = BreastScreen Coast to Coast

HVH = BreastScreen Central

BSS = BreastScreen South

HCO = BreastScreen HealthCare

1.1 Registration rate - overall

Registration is completed when a woman has completed a registration and informed consent form. The registration rate was 9.8% in this quarter with an overall registration rate of 40.1% to March 31, 2000. The date of registration is not recorded and therefore BSAIMG is only able to calculate total registrations in the national monitoring data set. Numbers of registrations for the quarter are then calculated by the difference in total registrations between periods. If lead providers are to screen women at the rate required to reach 70% coverage, at least 9% of the eligible women in any region should be registered and screened in each quarter (section 1.3). BreastScreen Auckland and North, BreastScreen Coast to Coast, and BreastScreen Central; have registered fewer than 9% of the eligible women in their region in this quarter.

The numbers of women registered by BreastScreen Aotearoa are shown in Table 1.1.

Table 1.1. Overall registration rates by lead provider.

Lead provider	Quarterly number registered (% of projected population)		Cumulative number registered (% of projected population)	
ABS	7,193	(7.5)	33,390	(34.6)
HWL	6,950	(15.3)	22,145	(48.9)
MCH	2,516	(6.5)	14,951	(38.9)
HVH	2,740	(8.7)	10,968	(35.0)
BSS	5,891	(11.7)	21,591	(42.7)
HCO	2,352	(11.0)	10,644	(49.8)
TOTAL	27,642	(9.8)	113,689	(40.1)

Recommendation - None

1.2 Registration rate – ethnicity

Of the 113,689 women registered with the programme, 6,514 were Maori, 2,023 were Pacific women, 97,079 were of other ethnicity and for 8,073 ethnicity was not stated. This represented 26.7%, 23.7% and 38.8% of the Maori, Pacific Island and other ethnic groups (includes those of solely European descent), respectively. The proportion of women for whom ethnicity was not stated at registration decreased for BreastScreen Midland for this quarter and varied by lead provider from 2.8% for BreastScreen HealthCare to 17.3% for BreastScreen South.

Lead provider	Quarterly number registered (% of projected population)				Cumulative number registered (% of projected population)			
	Maori	Pacific	Other	Not stated	Maori	Pacific	Other	Not stated
ABS	804 (9.8)	303 (5.0)	5,971 (7.3)	115	2,518 (30.7)	1,466 (24.3)	28,247 (34.3)	1,159
HWL	774 (11.9)	27 (6.2)	6,883 (17.9)		2,148 (33.0)	183 (42.3)	18,726 (48.8)	1,088
MCH	270 (5.6)	16 (5.5)	2,071 (6.2)	159	963 (20.0)	63 (21.5)	12,832 (38.5)	1,093
HVH	131 (6.1)	59 (4.4)	2,360 (8.5)	190	413 (19.3)	213 (16.0)	9,647 (34.6)	695
BSS	94 (5.0)	15 (4.6)	4,511 (9.3)	1,271	320 (17.2)	73 (22.5)	17,458 (36.1)	3,740
HCO	35 (4.0)	3 (2.8)	2,281 (11.9)	33	152 (17.5)	25 (23.1)	10,169 (49.9)	298
TOTAL	2,108 (8.6)	423 (5.0)	24,077 (9.6)	1,034	6,514 (26.7)	2,023 (23.7)	97,079 (38.8)	8,073

* BreastScreen Midland quarterly figure decreased.

Recommendation - none

1.3 Coverage - overall

Definition – this is a population-based measure of the proportion of women 50-64 years of age who have had a screening mammogram in the programme.

Target - > 70% of women aged 50-64 are to be screened by the programme within each two year screening cycle.

From the national monitoring data set, at least 83,834 women had a screening mammogram as part of BreastScreen Aotearoa up to March 31, 2000 (Table 1.3). Overall, approximately 35.4 % of all women aged 50-64 years were screened in the programme.

Coverage has been measured by dividing the number of eligible women screened by the number of eligible women expected from projected annual mean usually-resident population projections derived from the 1996 census. Coverage rates are shown as percentages for each lead provider and for the whole country. The target screening coverage for BreastScreen Aotearoa is greater than 70% of women aged 50-64 years after two years of screening.

Table 1.3. Overall number of women screened and per cent coverage by lead provider.

Lead provider	Quarterly number screened (% of projected population)		Cumulative number screened since December 1998 (% of projected population)	
ABS	7,405	(7.7)	29,683	(31.0)
HWL	3,359	(7.5)		
MCH	2,746	(7.1)	14,312	(37.1)
HVH	2,065	(6.9)	10,232	(33.1)
BSS	4,969	(9.8)	19,668	(38.9)
HCO	2,128	(10.1)	9,939	(47.0)
TOTAL	22,672	(8.0)	83,834	(35.4)

* BreastScreen Midland cumulative figure excluded

The HFA advised that BreastScreen Midland continued to have difficulties with their information system. Whilst all screening records have been included for the current quarter, outstanding records from previous quarters had not been updated before the data was transferred for this report. As a consequence, cumulative performance measures that are expressed as a percentage of women screened have not been calculated for BreastScreen Midland.

In each three-month quarter, based on a target of 70% coverage, lead providers would need to screen, on average, just under 9% of eligible women. Only BreastScreen HealthCare and BreastScreen South screened at least 9% of the eligible women in their region in the last quarter. It is very important for lead providers to maintain adequate screening coverage. If a lead provider takes more than two years to cover the eligible population, the lead provider is likely to encounter major difficulties with scheduling. These difficulties would arise because the lead provider would have to start the second screening round (for women who were first screened two years earlier), at the same time as trying to complete the initial screening round. The potential risk is that the lead provider would fail to meet the required two-year screening interval. Any increase in the length of the screening interval will decrease the ability of BreastScreen Aotearoa to reduce breast cancer mortality.

Because different lead providers (and their sub-contractors) started screening at different times, expected coverage will differ by lead provider. BSAIMG has commencement dates for the main fixed screening units and mobile units for each lead provider, but does not have commencement dates for all sub-contractors. Therefore, Table 1.3.1 below is provided to enable lead providers to calculate their expected coverage, (based on the target of 70% coverage), according to the month of commencement of screening. Lead providers can monitor their own progress by dividing the number of women screened at 31 March 2000 by the number of women in each region or sub-contractor region.

For the previous pilot screening centres, BreastScreen Midland and BreastScreen HealthCare, screening commenced for both fixed and mobile units in January 1999. These regions should have screened 43.8% of the eligible women by 31 March 2000. BreastScreen HealthCare has met this target, but the required data are unavailable for BreastScreen Midland.

Table 1.3.1. Expected coverage by 31 March 2000, according to month of commencement of screening (assuming at least 70% coverage of the target population)

Date of commencement	Expected coverage (% of eligible population screened by 31 March 2000)
1 December 1998	46.7%
1 January 1999	43.8%
1 February 1999	40.8%
1 March 1999	37.9%
1 April 1999	35.0%
1 May 1999	32.1%
1 June 1999	29.2%
1 July 1999	26.3%
1 August 1999	23.3%
1 September 1999	20.4%

For the sixteen months to March 31, 2000, this target represents 46.7% of eligible women. Due to delays in the start of screening and the availability of mobile screening units, some lead providers will have lower than expected coverage for 1999. From the data provided for this report BreastScreen Auckland and North continue to have the lowest overall screening coverage and BreastScreen HealthCare the highest coverage of the five lead providers for whom coverage was calculated. All lead providers assessed except BreastScreen Coast to Coast and BreastScreen Central had increased coverage rates compared to the previous quarter. BreastScreen Central had the lowest coverage for the quarter at 6.9% of the projected population.

Recommendation 1 - service issue

Lead providers should calculate their coverage using the percentages supplied in Table 1.3.1. Any lead providers who are behind in their coverage should make every effort to increase their screening rates. At present there is a window of opportunity where lead providers are still some months from the commencement of the second screening round. This window should be used to screen as many women as possible, in order to avoid the potential difficulties of trying to complete a screening round at the same time as beginning the second screening round. Delays in offering second round screening to women would not be acceptable, since women have been promised regular two-yearly mammograms as part of BreastScreen Aotearoa.

1.4 Coverage - by age group

The number of women screened and coverage for the 50-54, 55-59 and 60-64 year age groups are shown by lead provider in Table 1.4. Overall coverage of about 7% was achieved in each age group for this quarter. To March 31, 2000, slightly higher coverage was achieved in each successively older age group.

Table 1.4. Age specific number of women screened and per cent coverage by lead provider.

Lead provider	Quarterly number screened (% of projected population)			Cumulative number screened (% of projected population)		
	50-54	55-59	60-64	50-54	55-59	60-64
ABS	3,306 (8.1)	2,329 (7.5)	1,770 (7.3)	12,579 (30.9)	9,405 (30.4)	7,699 (31.9)
HWL	1,062 (5.9)	1,186 (8.1)	1,111 (8.8)			
MCH	1,191 (7.6)	867 (7.0)	688 (6.4)	5,763 (37.0)	4,546 (36.9)	4,003 (37.3)
HVH	929 (7.1)	624 (6.3)	512 (6.5)	4,184 (31.8)	3,423 (34.7)	2,625 (33.4)
BSS	2,065 (9.8)	1,521 (9.5)	1,383 (10.2)	8,104 (38.5)	6,128 (38.4)	5,436 (40.2)
HCO	887 (10.2)	685 (10.2)	556 (9.6)	3,975 (45.8)	3,304 (49.4)	2,660 (45.9)
TOTAL	9,440 (8.1)	7,212 (8.0)	6,020 (8.1)	34,605 (34.9)	26,806 (35.4)	22,423 (36.1)

* BreastScreen Midland cumulative figure excluded (see section 1.3)

For this quarter, BreastScreen Midland appears to have experienced lower coverage in the youngest age group from the sample of records available.

Recommendation - none

1.5 Coverage - ethnicity

Coverage up to March 31, 2000, was lower among Maori and Pacific women compared to other, mainly European, ethnic groups. In this quarter, the lower coverage among Maori and Pacific women was not as marked as that for the entire year. This is encouraging and may represent improvements made by lead providers in reaching Maori and Pacific women and greater use of mobile screening in this quarter. In particular, BreastScreen Auckland and North have maintained good coverage of Maori women in this quarter.

Table 1.5. Overall number of women screened and per cent coverage by ethnic group.

Lead provider	Quarterly number screened (% of projected population)				Cumulative number screened (% of projected population)			
	Maori	Pacific	Other	Not stated	Maori	Pacific	Other	Not stated
ABS	716 (8.7)	305 (5.0)	6,262 (7.6)	122	2,144 (26.2)	1,281 (21.2)	25,152 (30.6)	1,106
HWL	319 (4.9)	7 (1.6)	2,968 (7.7)	65	*	*	*	*
MCH	251 (5.2)	13 (4.4)	2,311 (6.9)	171	893 (18.5)	59 (20.1)	12,313 (37.0)	1,047
HVH	98 (4.6)	57 (4.3)	1,758 (6.3)	152	378 (17.6)	209 (15.7)	8,990 (32.3)	655
BSS	79 (4.2)	17 (5.2)	3,689 (7.6)	1,184	284 (15.2)	70 (21.5)	15,859 (32.8)	3,455
HCO	32 (3.7)	4 (3.7)	2,058 (10.0)	34	137 (15.8)	25 (23.1)	9,491 (46.6)	286
TOTAL	1,495 (6.1)	403 (4.7)	19,046 (7.7)	1,728	3,836 (21.5)	1,644 (20.3)	71,805 (33.8)	6,549

* BreastScreen Midland cumulative figure excluded (see section 1.3)

If improvements in the proportion of Maori and Pacific women screened are made, the differences in coverage between ethnic groups may not be as great at the end of the two-year screening cycle. However, if coverage continues to be low, the lack of information about the number of women identified and invited will make discernment of the reasons for low coverage difficult, as it will not be known if the cause is a lack of personal invitation or rejection of the invitation. Therefore, it will be difficult to target possible remedies for low coverage.

Recommendation 2 – service issue

If lower screening coverage of Maori and Pacific women recorded in this report persists, the invitation process may need to be reviewed to establish whether it is due to a lack of, or ineffective, invitation for these women. If many Maori and Pacific women are declining despite an appropriate invitation then appropriate health promotion services may be required by some or all lead providers. Some preliminary investigation of reasons for the lower coverage of Maori and Pacific women is required. Lead providers should monitor their own identification and enrolment procedures to ensure that Maori and Pacific women have equity of access to breast screening, as part of their routine quality assurance procedures. Documented results of these quality assurance procedures should be examined when each lead provider is audited.

2. Provision of high quality screening and assessment

The national monitoring data set was more complete for this report but still lacked sufficient data to provide a report of the measures of performance of the screening and assessment procedures of all lead providers.

Several important departures in the coding of data fields were identified in monitoring report number 3 and remained in the cumulative data of the national monitoring data set. However, the data coding problems appear to have been rectified in the data covering this quarter. These coding errors meant that it is not yet possible to calculate for the period December 1998 to March, 2000: the proportion of women having four films or less at screening, the technical recall rate, or the technical repeat rate (definitions one and two) by mobile and fixed sites for the cumulative records of some lead providers.

2.1 Screened women who have no more than 4 films taken.

Target - Minimum of 80% of women screened have 4 films or less.

From the data available, the number of films per women by lead provider and mobile and fixed screening centres, are shown in Table 2.1.

Table 2.1. Proportion of women having 4 films or less at screening by lead provider.

Lead Provider	Quarter (%)		Cumulative rate (%)	
	Fixed	Mobile	Fixed	Mobile
ABS	89.8	99.1	90.5	97.5
HWL*	89.5	81.1		
MCH	88.2	81.3	87.7	89.5
HVH	90.5	97.2	90.0	97.6
BSS**	72.4	74.6		
HCO	75.2	74.5	74.8	75.9
TOTAL	84.5	85.1	87.9	88.3

* BreastScreen Midland cumulative records excluded (see section 1.3)

** BreastScreen South cumulative records excluded (see section 2)

BreastScreen HealthCare continues not to meet the target for the proportion of women screened who had four films or less at screening. This is largely due to the use of smaller films in BreastScreen HealthCare. BreastScreen South also did not meet the target this quarter. Other lead providers appear to have met this target.

Recommendation 1 – data issue

Some values for fields of the national monitoring data set in the past have not been compatible with valid values of the Data Management Manual, for example, screening site (field B04.03). The historical record needs to be corrected.

2.2 Technical recall rate

Definition - Number of women recalled for technical repeats as a percentage of number screened.

Target - Mobile < 3%
- Fixed < 0.5%

The target given above has been taken from the Data Management Manual and is different from that listed in the Interim National Quality Standards. The number of women recalled for technical reasons as a percentage of the number of women screened is shown in Table 2.2.

Table 2.2. Technical recall rates per 100 women screened (per cent) by lead provider.

Lead Provider	Quarter (%)		Cumulative rate (%)	
	Fixed	Mobile	Fixed	Mobile
ABS	0	0	0.1	0
HWL*	0.1	2.4		
MCH	0.1	6.6	0.3	6.3
HVH	1.0	1.1	0.7	0.7
BSS**	0.2	2.9		
HCO	0.3	1.7	0.2	0.5
TOTAL	0.2	2.1	0.2	1.5

* BreastScreen Midland cumulative records excluded (see section 1.3)

** BreastScreen South cumulative records excluded (see section 2)

All lead providers except BreastScreen Central met the target for technical recalls to the fixed unit. BreastScreen Coast to Coast again recorded a quarterly result above the target for technical recalls to a mobile unit. As in Monitoring Report Number 2 it is suggested that the values in the fields (used to calculate technical repeat rates) in the national monitoring data set require validation.

Recommendation 2 – data issue

Some of the fields used to calculate technical recall and technical repeat rates need to be validated. A sample of records where technical repeats or technical recalls have occurred should be reviewed to see whether the information has been appropriately captured in the national monitoring data set.

Recommendation 3 – service issue

Investigation of the reasons for the high technical recall rate for BreastScreen Coast to Coast at their mobile site is required.

2.3 Technical repeat rate

2.3.1 Technical repeat rate – Definition 1

Definition 1 (from the Data Management Manual) – Number of women with technical repeats (including technical recalls) as a percentage of number screened.

Target - <3%

BSAIMG consider that the definition of technical repeats in the Data Management Manual is incorrect. This will be addressed in the review of the Interim National Quality Standards. The definition preferred by BSAIMG, is Definition 2, the number of technical repeat films as a percentage of the total number of films taken.

Recommendation - None

2.3.2 Technical repeat rate – Definition 2

Definition 2 - Number of technical repeat films as a percentage of the total number of films taken.

Target - < 3%.

The technical repeat rate as defined by the monitoring group (definition 2) is shown in Table 2.3.2.

Table 2.3.2. Technical repeat rate per 100 films taken by lead provider.

Lead Provider	Quarterly technical repeat rate		Cumulative technical repeat rate	
	Fixed	Mobile	Fixed	Mobile
ABS	0.9	0.4	1.2	0.2
HWL*	0.7	0.4		
MCH	0.8	2.2	1.2	1.0
HVH	1.4	0.4	2.0	0.3
BSS**	1.5	0.9		
HCO	1.3	0.03	1.1	0.04
TOTAL	1.1	0.6	1.3	0.3

* BreastScreen Midland cumulative records excluded (see section 1.3)

** BreastScreen South cumulative records excluded (see section 2)

From the data provided, all lead providers appear to have met the target of less than 3 films repeated per 100 films for technical reasons. In general, the rates continue to be considerably lower than the target. However, it is possible that either the target has been set high, or the relevant data is not accurately recorded in the national monitoring data set. BSAIMG Monitoring Report Number 2 suggested that entry of the values in the relevant fields of the national monitoring indicator set requires validation.

Recommendation – none

2.4 Assessment rate

Definition - Number referred to assessment as a percentage of number screened.

Target – prevalence screen: target is < 10% and the expected target is < 7%
incidence screen: target is < 5% and the expected target is < 4%

Women with positive screening tests are referred for assessment. These women are clearly at higher risk of breast cancer than women with negative mammograms, and must be offered appropriate assessment. The number of women referred is determined by the underlying prevalence of breast cancer in the population and by the sensitivity and specificity of the screening test. A screening programme with high sensitivity will correctly identify most of the women with breast cancer (women with true positive mammograms), and they will be referred for assessment appropriately. The specificity of the screening programme contributes to the referral rate because women with false positive mammograms will also be referred. The lower the specificity of screening, the higher the number of women with false positive tests. Thus, it is important to maintain high specificity, in order to reduce the number of women with false positive tests and the associated unnecessary anxiety and investigations for these women (see section 2.10). Also, referral to assessment would be high if symptomatic women were being screened in the programme. BreastScreen Aotearoa preferred policy is that women with symptoms should be referred to their general practitioner with an appropriate letter for clinical review even if they have negative mammograms, as a normal screen result alone cannot exclude breast cancer in the presence of symptoms.

The rates of referral to assessment are shown in Table 2.4 below.

Table 2.4. The rate of referral to assessment per 100 women screened by lead provider.

Lead Provider	Quarterly assessment rate (%)	Cumulative assessment rate (%)
ABS	7.7	7.4
HWL*	5.7	
MCH	4.9	4.8
HVH	6.2	5.8
BSS	6.5	6.2
HCO	7.3	7.9
TOTAL	6.6	6.6

* BreastScreen Midland cumulative records excluded (see section 1.3)

From the data available, BreastScreen HealthCare, a pilot study area that is expected to be mainly carrying out incidence screens, had a rate of referral to assessment of 7.3% in this quarter, down from 9.0% in the previous quarter. However, this quarterly result and the cumulative result of 7.9% still appears high considering this lead provider will be mainly screening women who have already been screened before, and taking into account the results for this lead provider for specificity and the false positive rate. This referral rate exceeds the minimum assessment rate target of less than 5% for incidence screens. BSAIMG Monitoring Report Number 2 recommended that BreastScreen HealthCare examine their referral to assessment protocols to reduce the rate of referral to assessment. This would still appear to be required (see Table 3.2 and the associated recommendation).

Recommendation 4 – service issue

Epidemiological measures of the quality of the assessment process should produce an appropriate combination of referral to assessment rate, cancer detection rate, sensitivity, specificity and false positive rate. Four of these measures of performance are calculated for six lead providers in this report. BreastScreen HealthCare continues to have relatively high rates of referral to assessment, in combination with relatively low specificity and consequently a high false positive rate. It is possible that this is the result of radiological practice by this lead provider. The reasons for the relatively high rate of referral need to be investigated to determine its cause and efforts to reduce the referral rate should be undertaken. If the relatively high rate of referral is due to a particular practice of a radiologist then some retraining with subsequent re-evaluation of performance should be undertaken.

2.5 Assessment records of the national monitoring data set

As indicated in the previous report, assessment records of the national monitoring data set continued to be incomplete. Many records of the national monitoring data set do not have an outcome of assessment recorded. The number of these outstanding records severely limits monitoring of this vital aspect of the quality of the programme against the targets set. An additional month's screening and assessment records were included in the data extracted for this report because women screened towards the end of March 2000 may not have completed the assessment process until the following month. Information on assessment for nearly all women should therefore be included if timeliness targets are met (see section 5.2 and 5.3).

It is the responsibility of BreastScreen Aotearoa to ensure that women with abnormal mammograms receive appropriate and timely follow-up. BSAIMG has identified some women who had abnormal mammograms, but there is no information about what happened to these women subsequently. Some of these women had their abnormal mammograms over a year ago. It is vital that we find out what has happened to all of these women. It is the lead providers responsibility to ensure that all women receive appropriate notification and offer of assessment investigation (and treatment if necessary). Women who have had abnormal mammograms may have breast cancer. In the worst case scenario, the lack of information on a women who has been referred for assessment, may mean that the woman never received her results or her assessment appointment. This would represent a failure of the national screening programme, and would be unacceptable.

2.5.1. Outstanding assessment records for women screened up to 30th June 1999.

In the first monitoring report 394 women referred to assessment had no assessment entries. On receiving the national monitoring data set for this report a check was made of outstanding records from previous months. The number of outstanding assessment records in the national monitoring data set for each lead provider by month of screening is given in Table 2.5.1 to Table 2.5.12 below.

Previous reports recorded that 394 assessment records were outstanding to June 30, 1999, and 257 (65.2%) remained outstanding as at September 30, 1999. This figure increased slightly, with the transfer of the national monitoring indicator data to 261 outstanding records to December 31, 1999. As at March 31, 2000 the number of outstanding records for the period January 1, 1999 to June 30, 1999 was 259.

Table 2.5.1. Outstanding assessments for women screened in January, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
ABS	1	1
HCO	10	10
Total	11	11

Table 2.5.2. Outstanding assessments for women screened in February, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
ABS	5	5
HVH	1	1
HCO	17	17
Total	23	23

Table 2.5.3. Outstanding assessments for women screened in March, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
ABS	4	4
HVH	0	4
BSS	1	1
HCO	9	9
Total	14	18

Table 2.5.4. Outstanding assessments for women screened in April, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
ABS	3	2
HWL	7	7
HVH	2	2
HCO	1	1
Total	13	12

Table 2.5.5. Outstanding assessments for women screened in May, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
ABS	63	62
HWL	20	20
HVH	2	1
HCO	3	3
Total	88	86

Table 2.5.6. Outstanding assessments for women screened in June, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
ABS	75	73
HWL	26	25
HVH	10	10
BSS	1	1
Total	112	109

2.5.2 Outstanding assessment records for women screened July to September 1999

Outstanding assessment records for the period 1 July – 30 September 1999, are recorded in Tables 2.5.7, 2.5.8 and 2.5.9.

Table 2.5.7. Outstanding assessments for women screened in July, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
HVH	1	1
HCO	1	1
Total	2	2

* BreastScreen Auckland and North and BreastScreen Midland records excluded (see section 1.3)

Table 2.5.8. Outstanding assessments for women screened in August, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
MCH	4	4
BSS	6	3
HCO	1	0
Total	11	7

* BreastScreen Auckland and North and BreastScreen Midland records excluded (see section 1.3)

Table 2.5.9. Outstanding assessments for women screened in September, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
MCH	6	4
HVH	5	4
BSS	3	3
HCO	1	1
Total	15	12

* BreastScreen Auckland and North and BreastScreen Midland records excluded (see section 1.3)

2.5.3. Outstanding assessment records for women screened October to December 1999

Table 2.5.10. Outstanding assessments for women screened in October, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
MCH	1	1
HVH	3	2
BSS	4	3
HCO	5	5
Total	13	11

* BreastScreen Auckland and North records excluded (see section 2.5.4)
BreastScreen Midland records excluded (see section 1.3)

Table 2.5.11. Outstanding assessments for women screened in November, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
MCH	2	0
HVH	2	7
BSS	8	0
HCO	6	3
Total	18	10

* BreastScreen Auckland and North records excluded (see section 2.5.4)
BreastScreen Midland records excluded (see section 1.3)

Table 2.5.12. Outstanding assessments for women screened in December, 1999.

Lead provider	Number outstanding as at 31 December, 1999	Updated number outstanding as at 31 March, 2000
MCH	2	1
BSS	2	2
HCO	1	1
Total	5	4

* BreastScreen Auckland and North records excluded (see section 2.5.4)
BreastScreen Midland records excluded (see section 1.3)

2.5.4. Outstanding assessment records for women screened January to March 2000

Outstanding assessment records for the period 1 January – 31 March 2000, are recorded in Tables 2.5.13, 2.5.14 and 2.5.15.

Table 2.5.13. Outstanding assessments for women screened in January, 2000.

Lead provider	Number referred in January, 2000	Number outstanding for January 2000 at April, 2000	Percentage outstanding for January 2000 at April, 2000
ABS	127	16	12.6
HWL	26	1	3.9
MCH	33	1	3.0
HVH	20	2	10.0
Total	205	20	9.8

Table 2.5.14. Outstanding assessments for women screened in February, 2000.

Lead provider	Number referred in February 2000	Number outstanding for February 2000 at April, 2000	Percentage outstanding for February 2000 at April, 2000
ABS	205	12	5.9
HWL	84	6	7.1
HVH	37	1	2.7
BSS	108	1	0.9
HCO	73	2	2.7
Total	507	22	4.3

Table 2.5.15. Outstanding assessments for women screened in March 2000.

Lead provider	Number referred in March, 2000	Number outstanding for March 2000 at April 2000	Percentage outstanding for March 2000 at April 2000
ABS	235	36	15.3
HWL	81	10	12.4
MCH	58	2	3.5
HVH	70	6	8.6
BSS	156	13	8.3
HCO	53	11	20.8
Total	653	78	11.9

Resolution of these outstanding assessment records is required urgently lest the task of tracking and recording what happened to these women becomes too onerous, and before even more time elapses between referral and completed assessment records in the national monitoring data set for these women.

A summary of the outstanding assessment results for the quarter is shown in Table 2.5.16.

Table 2.5.16. Summary of the number of women referred to assessment in the quarter 1/1/2000 to 31/3/2000 for which no outcome of assessment is recorded in national monitoring data set.

Lead provider	Number of women referred to assessment January to March 2000	Number of women referred to assessment with no outcome of assessment recorded as at April 2000	Percentage of women referred to assessment with no outcome of assessment recorded as at April 2000	Number of women known to have exited lead provider assessment before result known
ABS	567	64	11.3	-
HWL	191	17	8.9	-
MCH	134	3	2.2	-
HVH	127	9	7.1	-1
BSS	321	14	4.4	-
HCO	156	13	8.3	1
Total	1496	120	8.0	2

A summary of the cumulative number of outstanding assessment results for women screened in the national programme to March 31, 2000, is shown in Table 2.5.17.

Table 2.5.17. The cumulative percentage and number (n) of assessment records where the outcome of assessment is not recorded in the national monitoring data set as at April 2000.

Lead provider	Percentage of assessment results with assessment result not recorded as at April 2000 (n)	Percentage of women screened with assessment result not recorded as at April 2000	Number of women exited lead provider assessment before result known
ABS*			
HWL**			
MCH	1.9 (13)	0.1	5
HVH	6.9 (41)	0.4	7
BSS	2.2 (27)	0.1	2
HCO	8.1 (64)	0.6	1
TOTAL	4.4 (145)	0.3	15

* BreastScreen Auckland and North records excluded

** Breast Screen Midland records excluded (see section 1.3)

The cumulative number of outstanding assessment records for BreastScreen Auckland and North is greater than 10% of all assessment records for this lead provider so cumulative results have not been shown. BreastScreen Auckland and North have provided a review of the outstanding assessment records to the HFA but the records could not be presented in the national monitoring data set for this report. This will be included in the next monitoring report.

The lack of a complete outcome of assessment records is a major concern for BSAIMG. Women referred to assessment have a greater chance of having breast cancer than other women and the national monitoring data set of the programme currently is unable to record the outcome of assessment for many of these women. BSAIMG has provided to the HFA, for review of the case records, a list of NHI numbers (which we receive encrypted form) of women referred for assessment but for whom no outcome of assessment has been recorded in

the national monitoring data set. Although the HFA has obtained information from lead providers about most of these women, BSAIMG is still not reassured, because the required information is missing or inadequate for some women. Thus BSAIMG is unable to report the outcome of assessment for all these women. This is unacceptable to the BSAIMG.

Recommendation 5 – service issue

The incomplete assessment records in the national monitoring data set raise concern that some women may be undergoing extended assessment. Sometimes this is called early recall, deferred assessment, periodic mammographic follow-up or other similar terms. This is where a clear decision about whether a woman should be referred for assessment is deferred, and instead, the woman is asked to return for another mammogram after an interval of some months (the interval varies) or to return to assessment clinic for further investigation. This is not considered by the monitoring group to be best practice. No national protocol exists for this practice and considerable variation in its application is likely. It is clear from the information provided to us by the HFA from lead providers analysis of incomplete assessment records that extended assessment is occurring. Some women in this group may develop clinical cancer while no decision of screening is reached, while for many asymptomatic women considerable anxiety from an abnormal result would not be alleviated. Under current data collection processes, the assessment records of these women may not become part of the national monitoring data set until their assessment has been completed and this may be up to two years after the date of screening. As a consequence, BSAIMG is unable to monitor the practice of extended assessment. This needs to be explored urgently by the Health Funding Authority and made transparent in the national monitoring data set. Extended assessment is considered by BSAIMG to be inappropriate (see Appendix C for a statement from BSAIMG on extended assessment). BSAIMG recommends that the HFA requests any protocols for extended assessment that lead providers may have developed.

Recommendation 3 - data issue

There is a danger that the number of incomplete assessment records may become too great for them to be easily corrected. This could jeopardise the ability of the BSAIMG to monitor many aspects of the assessment process. BSAIMG has identified records of women for whom assessment records of the national monitoring data set were incomplete. When the case records of these women are checked to determine what their outcome of assessment has been or whether they are part of an extended assessment process this information needs to be incorporated into the national monitoring data set. BSAIMG understands that this is being conducted by the HFA. BSAIMG do not believe that extended assessment is desirable within BreastScreen Aotearoa and recommends that women on extended assessment are identified urgently and offered immediate assessment. For women who were referred for assessment and whose assessment record is incomplete, if on inquiry no assessment has occurred, BSAIMG recommends that they be recalled for immediate assessment.

2.6 False positive rate

Definition - Number with false positive screening results as a percentage of number screened.

Target - prevalence round: target is < 9% and the expected target is < 6%
- incidence round: target is < 4% and the expected target is < 3%

Sufficient data was available to calculate the false positive rate for all lead providers compared to only four in the previous quarterly report. Overall, the programme false positive rate as estimated from four of the six lead providers is well within the target (Table 2.6).

Table 2.6. False positive rate per 100 women screened by lead provider.

Lead Provider	Quarterly false positive rate (per 100 women)	Cumulative false positive rate (per 100 women)
ABS	6.1	
HWL**	5.0	
MCH	4.0	4.0
HVH	5.2	4.8
BSS	5.7	5.5
HCO	6.3	8.0
TOTAL	5.5	5.2

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded (see section 1.3)

From the data provided, three of the four lead providers who are predominantly conducting prevalent screening met the target for the false positive rate per 100 women screened.

BreastScreen HealthCare, which is predominantly conducting incident screening, again had a higher false positive rate for this quarter than the target. This trend continues for this lead provider, although there has been a slight improvement this quarter from 7.8% last quarter. In Monitoring Report number 3, BSAIMG recommended that BreastScreen HealthCare investigate the reasons for the relatively high referral to assessment rate and indicated that if this rate were reduced it would be likely to reduce the high false positive rate.

Recommendation – See recommendation following Table 3.2 (section 3.1).

2.7 Open surgical biopsy rate

Definition - Number of women having open biopsy as a percentage of women screened.

Target - < 1%

The open surgical biopsy rate is shown in Table 2.7. This parameter of performance was available for all six lead providers in this quarter.

Table 2.7. Rate of open surgical biopsy per 100 women screened and numbers of women by lead provider.

Lead Provider	Quarterly open surgical biopsy rate per 100 women screened (number of women)	Cumulative open surgical biopsy rate per 100 women screened (number of women)
ABS*	0.2 (12)	
HWL**	0.1 (4)	
MCH	0.2 (5)	0.3 (45)
HVH	0.1 (1)	0.2 (18)
BSS	0.1 (7)	0.2 (40)
HCO	0.3 (6)	0.6 (58)
TOTAL	0.2 (35)	0.3 (161)

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded (see section 1.3)

All six lead providers met this target.

Recommendation - None

2.8 Benign biopsy weight

Definition - Number with benign open biopsy where weight of benign lesion is less than 20 grams as a percentage of number with benign open biopsy.

Target - 80% or more of open biopsies (benign result) should weigh < 20gm.

The percentage of open biopsies weighing less than 20 grams is shown in Table 2.8.

Table 2.8. Per cent of open biopsies weighing < 20gm per 100 women screened and numbers of women with open biopsies <20gm by lead provider.

Lead Provider	Quarterly percent of benign biopsies weighing less than 20gm (n)	Cumulative percent of benign biopsies weighing less than 20gm (n)
ABS*	41.7 (5)	
HWL**	0 (0)	
MCH	0 (0)	61.8 (21)
HVH***		33.3 (4)
BSS	57.1 (4)	38.7 (12)
HCO	33.3 (2)	78.7 (37)
TOTAL†	34.4 (11)	59.7 (74)

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded

*** BreastScreen Central did not record any open benign biopsy for the quarter.

Cumulatively, none of the five lead providers for whom we have data have reached the target. It should be pointed out that these results are based on small numbers in each quarter (32 benign surgical biopsy were performed this quarter), and thus it may be preferable to regard this as a target that is most appropriately measured yearly rather than quarterly. If high biopsy weights continue an audit of the procedure for these women should be conducted. In view of the somewhat low rate of open surgical biopsy, it is possible that open biopsy is being reserved for women with large abnormalities with greater biopsy specimen weight. However, BSAIMG have been informed that at least one lead provider has entered fictitious biopsy weights for some women.

Recommendation 4 – data issue

The completeness and accuracy of the data collected needs to be checked. Fictitious results should not be entered into the national monitoring data set.

2.9 Needle biopsy rates

Definition

- Number of women undergoing fine needle aspiration (FNA) as a percentage of number screened.
- Number of women undergoing core biopsy as a percentage of number screened.

Target

- None set

The needle biopsy rates for six lead providers are shown in Table 2.9.

Table 2.9. Rate of needle biopsy per 100 women screened and numbers of women undergoing needle biopsy (n) by lead provider.

Lead Provider	Quarterly			Cumulative		
	FNA % (n)	Core needle % (n)	Both†† % (n)	FNA % (n)	Core needle % (n)	Both†† % (n)
ABS*	0.1 (10)	2.3 (167)	0.1 (9)			
HWL**	0.4 (13)	0.4 (14)	0.03 (1)			
MCH	0.04 (1)	1.3 (35)	0 (0)	0.1 (11)	1.3 (180)	0 (0)
HVH	0.2 (3)	0.4 (8)	1.3 (26)	0.2 (21)	0.6 (59)	1.3 (132)
BSS	0.7 (36)	2.0 (101)	0 (0)	0.9 (183)	1.6 (320)	0.1 (11)
HCO	0.4 (9)	0.9 (20)	0.1 (2)	0.6 (59)	0.7 (65)	0.04 (4)
TOTAL	0.3 (72)	1.5 (345)	0.2 (38)	0.5 (274)	1.2 (624)	0.3 (147)

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded (see section 1.3)

†† Women who have both FNA and core needle procedures

BreastScreen Central continues to exhibit a different pattern in the use of biopsy procedures, with a greater preference for both core needle and FNA. This may reflect a desire for greater security in the final diagnosis for this lead provider.

Recommendation 6 – service issue

Explanation of the different use of needle biopsy procedures by BreastScreen Central should be requested by the HFA from this provider. If FNA is considered to produce uncertain results then core biopsy should be used as an alternative rather than an additional procedure.

2.10 Specificity of the Programme

Definition - Number with true negative screening results as a percentage of this number plus the number with false positive screening results.

Target - > 93%

Specificity is a measure of the proportion of women without breast cancer who undergo further investigation after screening. If specificity is low, a higher number of women will have false positive tests requiring further investigation. Further investigation creates considerable anxiety for women and if too frequent can be expensive for the programme.

The specificity of the programme for lead providers during this quarter and up to the end of 1999 is shown in Table 2.10.

Table 2.10. Specificity of the programme by lead provider.

Lead Provider	Quarterly specificity (%)	Cumulative specificity (%)
ABS*	93.8	
HWL**	95.0	
MCH	96.1	96.0
HVH	94.8	95.1
BSS	94.3	94.5
HCO	93.7	93.1
TOTAL	94.4	94.8

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland records cumulative excluded (see section 1.3)

Overall, the specificity of the programme as measured by these lead providers met the target set. BreastScreen HealthCare is now meeting the target for specificity.

Recommendation - See recommendation following Table 3.1 below.

3. Early detection of breast cancer

3.1 Cancer detection rate

Definition – number with diagnosed breast cancer per 1000 women screened.

Target - prevalence round: target is ≥ 6 per 1000 women screened
 - incidence round: target is ≥ 3 per 1000 women screened

Quarterly and cumulative cancer detection rates are shown in Table 3.1. Interpretation of the cancer detection rates with respect to the targets depends on the cancers detected by screening being asymptomatic. BreastScreen Auckland and North and BreastScreen Coast to Coast met the quarterly target. Cumulative results for the three lead providers predominately screening women in their prevalent round are close to the expected target, however, BreastScreen Central has a slightly lower cancer detection rate than the target. BreastScreen Midland has recorded a low cancer detection rate for this quarter which may indicate that final diagnosis results were not recorded within the national monitoring data set or random variation due to a low average quarterly number of detected breast cancers expected.

BreastScreen HealthCare continues to meet the incident screening target for women detected with breast cancer during subsequent screening rounds.

Table 3.1. Cancer detection rate by lead provider per 1000 women screened and the number of women with cancer detected.

Lead Provider	Quarterly cancer detection rate (number with cancer detected)	Cumulative cancer detection rate (number with cancer detected)
ABS*	6.6 (49)	
HWL**	1.8 (6)	
MCH	7.7 (21)	6.6 (95)
HVH	4.8 (10)	5.6 (57)
BSS	5.2 (26)	6.0 (118)
HCO	4.2 (9)	4.8 (48)
TOTAL†	5.3 (121)	5.9 (318)

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded (see section 1.3)

The cancer detection rate is determined by the underlying prevalence of breast cancer in a region, together with the sensitivity (the ability to correctly identify women with breast cancer) of the test. It is important to maintain high sensitivity so women with breast cancer are not missed. But specificity is also important. While a high level of suspicion in film reading may improve sensitivity, it may also result in high referral rates, and high numbers of false positive tests (and low specificity). For this reason, it is vital for each lead provider to take note of the referral to assessment, specificity, and false positive rate in addition to the cancer detection rate for their region. The best way to reduce false positive results is for radiologists to review their films. Inter- and intra-rater reliability should be calculated for all the radiologists who read screening films for the lead provider. In particular, positive films where the final outcome is known (after assessment) should be reviewed, so that radiologists can re-examine true positive and false positive films. This should be part of the routine quality assurance procedures carried out by each lead provider. Documented results of these quality assurance procedures should be examined when each lead provider is audited.

A summary of referral to assessment, specificity, the false positive rate and the cancer detection rate is recorded in Table 3.2 by lead provider for the quarter 1/1/00 to 31/03/00.

Table 3.2 Referral to assessment, specificity, false positive rate and cancer detection rate by lead provider for this quarter.

Lead provider	Referral to assessment per 100 women screened	Specificity (%)	False positive rate per 100 women screened	Cancer detection rate per 1000 women screened
ABS	7.7	93.8	6.1	6.6
HWL	5.7	95.0	5.0	1.8
MCH	4.9	96.1	4.0	7.7
HVH	6.2	94.8	5.2	4.8
BSS	6.5	94.3	5.7	5.2
HCO	7.3	93.7	6.3	4.2
TOTAL	6.6	94.7	5.3	4.7

An increase in referral to assessment rate is often associated with an increase in the false positive rate and a reduction in specificity. This is evident in Table 3.2. The results for BreastScreen HealthCare reflect this relationship with, relative to other providers, a high rate of referral to assessment, a high false positive rate and lower specificity overall, although this has improved in the last quarter. It is of concern that the referral to assessment and false positive rates are high for BreastScreen HealthCare. BreastScreen HealthCare is conducting mainly incidence screening, so will have baseline mammograms for most women. This normally results in increased specificity and a reduction in the referral to assessment and false positive rates. Examination of the referral to assessment protocol for this lead provider may reduce the referral to assessment and false positive rate and increase specificity.

Recommendation 7 – service issue

It is recommended that inter-rater and intra-rater reliability should be routinely calculated for all radiologists who read screening films for lead providers.

Because of its relatively high referral rate, low specificity, and high false positive rate, it is strongly recommended that BreastScreen HealthCare carry out a review of film reading. The inter- and intra-rater reliability of the radiologists should be assessed. This was done during the pilot phase of the screening programme that is now run by BreastScreen HealthCare. There should be an urgent review of positive films where the outcome of assessment is known. This will allow the radiologists to review known false positive films and true positive films. Reviewing positive films in this way may help the radiologists to adjust their "cut-off" point for referral to assessment if necessary. BSAIMG is aware that film reading is a complex task, and that it is difficult to increase specificity while maintaining high sensitivity, but recommends that BreastScreen HealthCare carry out a review with the aim of increasing specificity while maintaining appropriate sensitivity.

4. Summary of treatment

The national treatment data set and related collection of treatment data have not been finalised, and treatment data have not yet been received by the monitoring group. Therefore, this section has not been completed in this report.

The Health Funding Authority had previously advised that all treatment data up to December 31, 1999, was to be in the national monitoring data set by June 30, 2000. This data was expected to be transferred to BSAIMG by the end of July, 2000. The HFA recently confirmed that a delay has occurred with provision of the treatment data and the transfer of data in version 2.12 of the Data Management Manual will not occur until late September or early October 2000. BreastScreen Midland data will not be available in version 2.12 until late November 2000.

5. Provision of an appropriate and acceptable service

5.1 Time taken providing results of screening

Definition - Date of providing results to women minus date of final screening visit.

Target - 95% notified within 10 working days.

From the national monitoring data set the time taken to provide the results of screening to women for each lead provider is shown in Table 5.1.

Table 5.1. Time taken to provide results of screening to women for each lead provider.

Lead Provider	Quarterly % notified within 10 working days (number of women)	Cumulative % notified within 10 working days (number of women)
ABS	97.6 (7,224)	97.1 (28,813)
HWL*	99.9 (3,354)	
MCH	99.5 (2,731)	99.0 (14,170)
HVH	97.6 (2,016)	98.0 (10,029)
BSS	98.0 (4,872)	98.1 (19,270)
HCO	39.0 (830)	72.0 (7,159)
TOTAL	92.7 (21,027)	94.8 (79,441)

* BreastScreen Midland cumulative records excluded (see section 1.3)

Overall, the programme has not met this target for this quarter. From the five lead providers for which data was assessed up to March 31, 2000, the programme is marginally below the 95% target.

All lead providers listed except BreastScreen HealthCare have met the target of 95% of women notified of their screening result within 10 working days of screening in this quarter and up to March 31, 2000. Also, BreastScreen HealthCare did not meet this target in the previous quarter with only 46.7% notified within 10 working days. The result for this quarter indicates a poorer performance with only 39% of women being notified within 10 days of their screening mammogram. Delays in notification of screening results may create anxiety in women, which could potentially reduce programme acceptability and rescreening rates. Monitoring Report Number 3 indicated that immediate action was needed by BreastScreen HealthCare to rectify delays. This continues to be required.

Recommendation 8 – service issue

As indicated in Monitoring Report Number 3, BreastScreen HealthCare urgently needs to improve the timeliness of the reporting of screening results to women.

5.2 Time taken from screening visit to first offer of an assessment appointment

Definition - Date of first available appointment offered for assessment minus date of final screening visit.

Target – At least 90% of women offered an assessment appointment within 14 working days of their final screening mammogram.

The time taken from screening visit to first offer of an assessment appointment is shown in Table 5.2.

Table 5.2. Time taken from screening visit to first offer of an assessment appointment for the women screened by each lead provider.

Lead Provider	Quarterly % offered assessment within 14 working days (number of women)	Cumulative % offered assessment within 14 working days (number of women)
ABS*	82.0 (465)	
HWL**	77.0 (147)	
MCH	88.8 (119)	86.4 (591)
HVH	86.6 (110)	87.3 (522)
BSS	85.4 (274)	78.4 (960)
HCO	28.2 (44)	32.2 (254)
TOTAL	77.5 (1159)	70.6 (2,327)

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded (see section 1.3)

Overall, none of the five lead providers listed, have reached the target of 90% of women offered an assessment appointment within 14 working days of their final screening mammogram visit. BreastScreen HealthCare was considerably below the target for this measure of performance at 28.2%. BreastScreen South has improved their quarterly result from 63.6% for the quarter December 31, 1999 to 85.4% for the quarter to March 31, 2000. In Monitoring Report Number 3 BSAIMG recommended that the HFA seek further explanation from lead providers as to why women are not being offered an assessment appointment within 14 working days of their final screening visit. This continues to be required. Lead providers should routinely monitor all the timeliness indicators as part of regular quality assurance.

Recommendation 9 – service issue

As recommended in Monitoring Report Number 3, the HFA should seek explanation from lead providers as to why there is ongoing difficulty in ensuring women are offered an assessment appointment within 14 working days of their final screening visit.

5.3 Time taken from assessment to final diagnostic biopsy.

Definition

- Date of needle biopsy minus date of first level assessment.
- Date first offered for open surgical biopsy minus date of first level assessment.

Target

- At least 90% of women requiring needle biopsy procedure have that procedure completed within 7 days of their assessment.
- At least 90% of women requiring open biopsy procedure are offered that procedure within 3 weeks of their assessment.

This measure of performance is shown in Table 5.3 for five lead providers. Cumulative results of this performance measure are recorded for four lead providers.

Table 5.3. Percentage and numbers of women (n) receiving biopsy within 7 days of the date of first level of assessment for needle biopsy and 3 weeks for open surgical biopsy.

Lead Provider	Quarterly		Cumulative	
	Percentage for which needle biopsy completed within 7 days of assessment (n)	Percentage for which open biopsy offered within 3 weeks of assessment (n)	Percentage for which needle biopsy completed within 7 days of assessment (n)	Percentage for which open biopsy offered within 3 weeks of assessment (n)
ABS*	100.0 (186)	30.8 (4)		
HWL**	78.6 (22)	25.0 (1)		
MCH	97.2 (35)	60.0 (3)	93.7 (179)	31.9 (15)
HVH	97.3 (36)	100.0 (1)	97.2 (206)	55.6 (10)
BSS	85.4 (117)	57.1 (4)	87.4 (449)	71.4 (30)
HCO	93.5 (29)	100.0 (6)	96.1 (123)	86.4 (51)
TOTAL	93.4 (425)	52.8 (19)	91.6 (957)	63.9 (106)

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded (see section 2)

Delays in receiving needle biopsy were commonest for women of BreastScreen Midland and BreastScreen South in this quarter. The number of open biopsies in the quarter was too small for meaningful quarterly comparison with the target.

All four lead providers with a cumulative result recorded had delays beyond the target in offering women an open biopsy procedure within three weeks of their assessment. BreastScreen Central was significantly below the target, which is of concern. It was recommended in Monitoring Report no 3 that the organisation and availability of these diagnostic services needed to be investigated by all lead providers and improved immediately.

Recommendation 10 – service issue

From the cumulative record of the national monitoring data set, none of the lead providers have been able to offer 90% or more of the women who need it an open surgical biopsy within three weeks of their assessment appointment. The HFA should seek explanation from lead providers as to why there is ongoing difficulty in ensuring women are offered an open surgical biopsy within an appropriate timeframe.

5.4 Time taken from final diagnostic biopsy to reporting assessment results.

Definition - Date of reporting final biopsy results to woman minus date of final diagnostic biopsy.

Target - Results reported to at least 90% of women within 7 days of final diagnostic biopsy.

For five lead providers, the percentage of women receiving results within 7 days of their final diagnostic biopsy is shown in Table 5.4.

Table 5.4. Time taken from final diagnostic biopsy to reporting assessment results for women of each lead provider.

Lead Provider	Quarterly % results within 7 days (number of women)	Cumulative % results within 7 days (number of women)
ABS*	65.5 (133)	
HWL**	7.1 (2)	
MCH	85.4 (35)	81.1 (184)
HVH	81.6 (31)	84.0 (179)
BSS	42.8 (59)	49.4 (261)
HCO	35.3 (12)	51.7 (89)
TOTAL	56.4 (272)	72.2 (947)

* BreastScreen Auckland and North cumulative records excluded (see section 2.5.4)

** BreastScreen Midland cumulative records excluded (see section 1.3)

From the national monitoring data set, up to the end of March 2000, none of the six lead providers had been able to meet the target and overall, the programme was performing well below the target set. BSAIMG have been advised that computer software for data entry of the relevant fields has been a problem. Two lead providers, BreastScreen Central and BreastScreen HealthCare, achieved the target in the last quarter but failed to reach the target during this quarter. BreastScreen Midland's result reflected a problem with the information system.

These results suggest that assessment services and reporting processes of many lead providers may not be sufficiently organised to meet the targets. It was recommended in Monitoring Report Number 3 that the administration of this reporting process needed to be reviewed and improvements made. This continues to be the required.

Recommendation 11 – service issue

As recommended in Monitoring Report Number 3 considerable improvement needs to be made by some lead providers for this target to be met.

5.5 Time taken from reporting assessment results to first date offered for primary treatment.

Definition - Date first offered primary treatment minus date of reporting final biopsy results to woman.

Target – At least 90% of women offered primary treatment within 3 weeks of the final diagnosis being reported to the woman.

As treatment data is not yet recorded as part of the national monitoring data set this target cannot be measured. Table 5.5 has been left blank.

Table 5.5. Time from reporting assessment results to first date offered primary treatment for women of each lead provider.

Lead Provider	Quarterly % women offered primary treatment within 3 weeks	Cumulative % women offered primary treatment within 3 weeks
ABS		
HWL		
MCH		
HVH		
BSS		
HCO		
TOTAL		

APPENDIX A

The BreastScreen Aotearoa Independent Monitoring Group (BSAIMG) provides information routinely to the Health Funding Authority (HFA) and lead providers in the form of quarterly and annual reports. Reports include information about the key parameters of BreastScreen Aotearoa, as outlined below. Each report also will make comment on any problems with data collection, the consistency and interpretation of the data, and will make recommendations for improving collection processes.

The reports will assess the data of BreastScreen Aotearoa, and of individual providers, with respect to the National Monitoring Indicator Set (NMIS). The reports will also indicate when revision of the NMIS is required, and the HFA will be informed of these new requirements, together with a justification for any change to the NMIS.

National averages will be stated within each individual lead provider report to enable performance comparisons. Recommendations to lead providers and the HFA will also be included when action is required to improve or maintain the performance of BreastScreen Aotearoa.

Information to be included routinely in quarterly reports is identified with an asterisk. Other information will be provided six-monthly or annually but some results cannot be provided until the end of a screening round. The BSAIMG will also report on other issues of importance as and when they arise.

A2.0 KEY PARAMETERS

These parameters relate to the screening pathway, from registration of eligible women, screening, and assessment, to diagnosis and treatment. Within each stage of the screening pathway certain parameters will be measured. These parameters have been chosen because they can be used as indicators of the acceptability, effectiveness, and efficiency of BSA.

A2.1 IDENTIFICATION AND INVITATION

Identification and invitation of eligible women are essential components of a national breast cancer screening programme. Irrespective of the quality of the other aspects of the programme, a programme that fails to identify and invite a high proportion of the eligible population will also fail to have the desired impact on breast cancer morbidity and mortality. Current identification and invitation processes do not allow the BSAIMG to accurately assess these aspects of the national programme.

A2.1.1 Registration rate *

This rate will be measured by dividing the number of registered women (from provider records) as a percentage of the number of eligible women according to projected population numbers. Registration rates, with 95% confidence intervals, will be calculated for each provider area, and for the whole country, by age group. The target registration rate is 85% by the end of the prevalence round, and the performance of BSA against this target will be reported after the end of the prevalence screening round.

A2.1.2 Coverage rate *

Coverage will be measured by dividing the number of women screened (from provider records) by the number of eligible women according to projected population numbers. Coverage rates will be calculated for each provider area, and for the whole country (if data is available from Health Benefits Ltd for private sector screening of women), by age group. Coverage rates for BSA and for the private sector will also be calculated separately. The target is >70% of women aged 50-64 years in BSA. The performance of BSA with respect to this target will be measured at the end of the prevalence screening round.

A2.2 SCREENING TEST

The validity of the screening test will be examined by calculating its sensitivity and specificity. The screening test is the point of entry for a woman with breast cancer. If her cancer is missed, she cannot benefit from early detection. Because the test is not perfect, some women will have false positive or false negative tests. These should be kept to a minimum in order to avoid unnecessary anxiety and investigations, or false reassurance.

A2.2.1 Radiation dose/Optical density

The mean absorbed dose to glandular tissue (MGD) for a test object (routinely collected as part of equipment calibration and maintenance) will be obtained from provider records and reported in each annual report. Optical density, a measure of film density and mammographic quality will be obtained from provider records and reported in each annual report.

A2.2.2 Number of films taken *

The number of films taken for each woman screened will be obtained from provider records. This will be compared against the target of a minimum of 80% of women having 4 or fewer films. Numbers of films per woman will be calculated by provider, and for mobile versus fixed screening centres.

A2.2.3 Technical recall rate *

The number of women recalled for extra films for technical reasons (from provider records) will be divided by the number of women screened (from provider records). Technical recall rates will be calculated according to screening round, by provider, and for mobile versus fixed screening centres. Targets are <3% for mobile units and <0.5% for fixed units.

A2.2.4 Technical repeat rate *

The number of technical repeat films will be divided by the total number of films taken (from provider records). Technical repeat rates will be calculated according to screening round, by provider, and for mobile versus fixed screening centres. The target is <3%.

A2.2.5 Sensitivity (estimate)

Sensitivity will be estimated by dividing the number of women with screen-detected breast cancer by the sum of this number and the number of women with interval cancers in the year following a negative screen. The target is 90%. Sensitivity will be estimated for each screening round by age group and by region and provider.

A2.2.6 Specificity (actual)

Specificity will be calculated after a complete screening round, by dividing the number of women with true negative screening tests by the sum of this number and the number of women with false positive tests. In order to measure the number of women with true negative tests, it will be important to measure the number of women with false negative tests (interval cancers). This information will have to be obtained from provider records (negative tests) and also from the Cancer Registry of the NZHIS (women diagnosed with interval cancers following a negative test). Specificity will be calculated by age group and by region and provider. The target is >93%.

A2.2.7 Specificity (approximate)*

Specificity can be estimated before the second screening round by dividing all negative tests (including false negatives) by the sum of all negatives and false positives. This is an adequate estimate of specificity (although false negatives have been included in the numerator and the denominator) because the number of false negatives is very small in relation to the number of true negatives. This information will be obtained from provider records. Specificity will be estimated by age group and by provider. The target is >93%.

A2.2.8 Positive predictive value (PPV)

The number of women with breast cancer diagnosed through the screening programme will be divided by the sum of this number and the number of women with false positive screening tests (i.e.: the number of women with screen-detected cancer as a percentage of all women referred for assessment). This information will be obtained from provider records. The positive predictive value will be calculated by screening round, by age group, and by region and provider, and will be reported in each annual report. The target PPV is $\geq 9\%$.

A2.3 ASSESSMENT

Women with positive screening tests will be referred for assessment. The number referred will be determined by the underlying prevalence of breast cancer in the population and by the sensitivity and specificity of the screening test. Ideally the assessment process will determine which women with positive screening tests actually have breast cancer and require treatment, while minimising unnecessary anxiety and investigations in the other women.

A2.3.1 Assessment rate *

The assessment rate will be calculated by dividing the number of women referred for assessment by the total number of women screened. Assessment rates will be calculated by screening round, by age group, and by provider. Targets for the prevalence screening round are <7% (expected) and <10% (minimum). Targets for the incidence screening rounds are <4% (expected) and <5% (minimum). These targets will not be measured until after the end of each screening round.

A2.3.2 False positive rate of mammograms *

The false positive rate will be calculated by dividing the number of women with false positive screening results (women referred for assessment but who do not have breast cancer diagnosed as a result) divided by the total number of women screened. This information will be obtained from provider records. The false positive rate will be calculated by age group, and by provider. Targets for the prevalence screening round are <6% (expected) and <9% (minimum). Targets for the incidence screening rounds are <3% (expected) and <4% (minimum). These targets will not be measured until after the end of each screening round.

A2.3.3 Needle biopsy rate *

The needle biopsy rate will be calculated by dividing the number of women undergoing FNA divided by the number of women screened. This information will be obtained from provider records. The needle biopsy rate will be calculated by age group, and by provider. No target has been set for the needle biopsy rate.

A2.3.4 Benign biopsy weight

The weight of benign biopsy is measured to ensure 80% weigh less than 20g. The rate is calculated by the number of benign biopsies, which weigh less than 20g as a percentage of the number of benign open biopsies.

A2.3.5 Open surgical biopsy rate *

The open surgical biopsy rate will be calculated by dividing the number of women undergoing open surgical biopsy divided by the number of women screened. This information will be obtained from provider records. The open surgical biopsy rate will be calculated by age group, and by provider. The target for the open surgical biopsy rate is 1% or less.

A2.3.6 Benign biopsy rate *

The benign biopsy rate will be calculated by dividing the number of women with benign open surgical biopsy divided by the number of women screened. This information will be obtained from provider records. The benign biopsy rate will be calculated by age group, and by provider. The targets are <10 per 1,000 women screened in the prevalence round and <5 per 1,000 women screened in the incidence rounds. The performance of BSA with respect to these targets will be summarised in the annual reports.

A2.4 DIAGNOSIS

The number of women diagnosed with breast cancer as a result of BSA will be partly determined by the underlying prevalence of breast cancer in the eligible population, but also by the quality of the screening and assessment procedures. After diagnosis, the size and node status of cancers detected can be used as an indicator of the effectiveness of BSA.

A2.4.1 Pre-operative diagnosis rate

This will be calculated by dividing the number of women whose breast cancers were diagnosed by needle biopsy by the total number of women with breast cancer diagnosed through the screening programme. This information will be obtained from provider records. The target is $\geq 70\%$. The pre-operative diagnosis rate will be calculated by age group, and by region and provider, and will be reported annually.

A2.4.2 Cancer detection rate *

The cancer detection rate will be calculated by dividing the number of women with breast cancer diagnosed through the screening programme by the number of women screened. This information will be obtained from provider records. The cancer detection rate and 95% confidence interval will be calculated by age group, and by region and provider. The targets are <6 per 1,000 women screened in the prevalence round and <3 per 1,000 women screened in the incidence rounds. The performance of the programme with respect to these targets will be reported in the annual reports.

In the prevalent round the cancer detection rate is expected to be at least three times the expected breast cancer incidence rate in the absence of screening. In the incident round it is expected to be at least 1.5 times the expected breast cancer incidence rate in the absence of screening. The expected incidence rate in the absence of screening will be estimated based on historical data from the Cancer Registry, taking into account relevant demographic trends.

A2.4.3 Invasive cancer rate

This will be calculated by dividing the number of women with invasive breast cancer detected through the screening programme by the number of women screened. This information will be obtained from provider records. The invasive cancer rate and 95% confidence interval will be calculated by age group, and by region and provider, and reported six-monthly. The target is 4.8 per 1,000 women screened.

A2.4.4 Small invasive cancer detection rate

As above, but for cancers $\leq 10\text{mm}$. The target is 1.2 per 1,000 women screened per incident round.

A2.4.5 Proportion of women diagnosed with nodal involvement

The proportion of women with nodal involvement will be calculated by dividing the number of women with breast cancer involving axillary nodes diagnosed through the screening programme by the total number of women diagnosed with breast cancer diagnosed through the screening programme. This information will be obtained from provider records. The proportion will be calculated by age group, and by region and provider, and will be reported six-monthly. The target is that at least 70% of women with cancers detected by BSA should be node negative (i.e. less than 30% node positive).

A2.4.6 Proportion of DCIS

As above, but for DCIS. The target is that 10-25% of all cancers detected by BSA should be DCIS.

A2.4.7 Interval cancer rate

The interval cancer rate will be calculated by dividing the number of women with breast cancer detected within 12 months of a negative screen by the total number of women with negative screening tests during that screening round. This information will be obtained from the providers and from the Cancer Registry. The interval cancer rate, and 95% confidence interval, will be calculated by screening round and by region, and reported annually. The targets are <0.6 per 1,000 women screened within 1 calendar year of a negative screen, and <1.2 per 1,000 women screened between the 1st and 2nd year of a negative screen.

A2.4.8 Proportion of women with cancers detected by the programme

The proportion of women with cancers detected by the programme will be calculated by dividing the number of women with breast cancer diagnosed through the programme by the total number of women in the eligible age-range diagnosed with breast cancer in a given period. This information will be obtained from the providers and from the Cancer Registry. The proportion will be calculated by screening round, by age, and by region, and reported annually.

A2.5 TIMELINESS

The following relate to the requirement for the programme to ensure prompt and appropriate treatment for women who take part in the National Breast Cancer Screening Programme. The information will be collected from the providers, and where appropriate, from NZHIS. The dates of screening, providing results of screening, assessment, providing assessment results, date of biopsy, providing biopsy result, date of final diagnostic biopsy, result of final biopsy, and date first offered for primary treatment will be collected. The time taken for the following indicators will be calculated according to screening round and by region. The indicators will be reported quarterly.

A2.5.1 Time to recall after a negative screen

Eligible women should be offered mammograms at two-yearly intervals. The percentage of eligible women recalled within 24 months of their previous screen will be measured.

A2.5.2 Time taken to provide results of screening *

The target is for 95% of women to be notified within 10 working days of the screening examination.

A2.5.3 Time taken from screening visit to first assessment appointment *

The target is for 90% of women to be offered their assessment appointment within 14 working days of their final mammogram.

A2.5.4 Time taken from final assessment to final diagnostic biopsy *

The target is for 90% of women requiring needle biopsy to have that procedure completed within 7 days of their assessment, and for 90% of women requiring open surgical biopsy to be offered that procedure within 3 weeks of their assessment.

A2.5.5 Time taken from final diagnostic biopsy to reporting assessment results *

The target is that 90% of women should have received their results within 7 days of their final diagnostic biopsy.

A2.5.6 Time taken from reporting assessment results to first date offered for primary treatment*

The target is that 90% of women are offered primary treatment within 3 weeks of the final diagnosis being reported to them.

A3.0 QUARTERLY REPORT PROCESS

- A3.1** BSAIMG receives cleaned data in agreed format from NZHIS within one month of quarter end.
- A3.2** BSAIMG drafts quarterly report as agreed proforma within two months of quarter end.
- A3.3** BSAIMG discusses the draft with lead providers (own report) before it is finalised.
- A3.4** HFA and lead providers' review draft reports and feedback within one month of receiving reports.
- A3.5** BSAIMG assesses feedback and finalises its report.
- A3.6** BSAIMG electronically transfers final quarterly report to the HFA within two weeks of receiving feedback. If a serious issue becomes apparent it will be discussed with the HFA prior to this transfer.
- A3.7** HFA circulates reports to each lead provider (own report).
- A3.8** BSAIMG forwards a copy of the report directly to the HFA Screening Advisory Group chair.

A4.0 DATA

- A4.1** Lead providers have responsibility to collect data in such a way as to ensure that an accurate timely and consistent set of health data is available for comparative purposes (Chapter 1, DMM p1.5).
- A4.2** Lead providers have responsibility to adhere to the minimum standards for the collection and management of data as set out in Chapter 2, Minimum Standards, BreastScreen Aotearoa, and DMM.
- A4.3** The funder, lead providers, and BSAIMG are to adhere to the guiding principles of data collection and management described in the document “NZHIS Guide to Data Requirements”.
- A4.4** BSAIMG will utilise the same title, definition, numbering and lettering for indicators as outlined in the DMM.
- A4.5** All quantitative information will be provided directly to BSAIMG by NZHIS as agent for the HFA.
- A4.6** BSAIMG will utilise projected population figures for calculation of the registration rate and population coverage.
- A4.7** Quarterly and annual reports will include women screened and assessed in that quarter who have a screening and final diagnosis recorded. Reports may include details of a previous screening quarter’s assessment data – if this occurs it will state which screening quarter the assessment data relates to.
- A4.8** Round reports will include all women screened and assessed in a defined 24-month period.

Appendix B

Population Projections BreastScreen Aotearoa (1999/2000)

Population denominator data

The eligible populations in these reports have been calculated from projected resident populations in each lead provider district, provided by Statistics New Zealand. The projections are based on the New Zealand Census 1996, assuming medium fertility, medium mortality, medium inter-ethnic mobility and medium migration. The populations have been calculated as the mean of the projected populations for the years 1999 and 2000.

Table 1. Population projections BreastScreen Aotearoa (1999/2000).

Population Projections BreastScreen Aotearoa (1999/2000)	
BreastScreen Auckland & North	95,855
BreastScreen Midland	45,085
BreastScreen Coast to Coast	38,627
BreastScreen Central	30,901
BreastScreen South	50,524
BreastScreen HealthCare	21,155
Total	282,147
70% coverage over two years	197,502
Number screened per annum at 70% coverage	98,751

Table 2. Population projections (1999/2000) by age group.

Population Projections (1999/2000) Summary by age group				
	50-54	55-59	60-64	Total
BreastScreen Auckland	40773	30922	24160	95855
BreastScreen Midland	17881	14641	12563	45085
BreastScreen Coast to Coast	15575	12328	10724	38627
BreastScreen Central	13171	9860	7870	30901
BreastScreen South	21031	15976	13517	50524
BreastScreen HealthCare	8675	6690	5790	21155
Total	117,106	90,417	74,624	282,147

Ethnic group denominators

The denominators for each ethnic group are also taken from the census and calculated from projected resident populations in each lead provider district, provided by Statistics New Zealand. Statistics New Zealand utilise a confidentiality assurance technique of randomly rounding census statistics to base three. This enables the greatest amount of census data to be released without compromising the privacy of individual responses. As a consequence the ethnicity denominator in Table 3 differs from the overall coverage denominator in Table 1.

In the census it is possible to choose more than one ethnic group. Where more than one category has been chosen, priority is given to certain ethnic groups for the purposes of classification by the New Zealand Health Information Service (NZHIS). Thus, if a woman chooses more than one category and one of these is Maori, she is counted as Maori.

Table 3. Population projections (1999/2000) by ethnicity.

Population Projections (1999/2000)				
Summary by ethnicity				
	Maori	Pacific	Other	Total
BreastScreen Auckland	8,190	6,045	82,290	96,525
BreastScreen Midland	6,515	433	38,355	45,303
BreastScreen Coast to Coast	4,815	293	33,308	38,416
BreastScreen Central	2,143	1,333	27,855	31,331
BreastScreen South	1,865	325	48,340	50,530
BreastScreen HealthCare	868	108	20,380	21,356
Total	24,396	8,537	250,528	283,461

The priority for multiple ethnic group reporting is shown below:

Table 4 Multiple ethnic group reporting priority list.

Ethnic group	Priority for multiple ethnic group reporting
European not further defined	20
NZ European / Pakeha	21
Other European	19
Maori	1
Pacific Island not further defined	9
Samoaan	7
Cook Island Maori	6
Tongan	5
Niuean	4
Toleauan	2
Fijian	3
Other Pacific	8
Asian not further defined	14
South East Asian	10
Chinese	12
Indian	11
Other Asian	13
Middle Eastern	17
Latin American / Hispanic	15
African	16
Other	18
Not stated	99

Source: New Zealand Health Information Service. Data Dictionary Appendix Revision 4.3. Wellington: NZHIS, 1997.

Appendix C

The Place of Extended Assessment In the National Breast Screening Programme

Background

“Extended assessment” (otherwise termed periodic mammographic follow-up or short-term recall) has been proposed as a method of managing abnormalities identified on routine screening mammography. It is advocated by some radiologists as a suitable method for managing abnormalities that are not considered unequivocally benign but do not appear to warrant the performance of a biopsy. It was first advocated by the prominent Californian Radiologist Ed Sickles in a landmark paper in *Radiology* in 1991 [1]. Another paper by Ximena Varas in 1992 [2] supported his approach.

It is worth noting that Dr Sickles’ paper covered the period 1978 – 1987 and Dr Varas’ paper covered the period 1987 – 1989. This was prior to the introduction of accurate stereotactic and ultrasound guided core needle biopsy for mammographic lesions. Part of the motivation for their approach was to avoid the cost and morbidity associated with hookwire localisation biopsies if these were not strictly necessary. Both of these series included symptomatic patients as well as those who had lesions discovered on screening mammography. Both included women under age 50.

The only paper I have found relating to the use of extended assessment in a formally organised breast screening programme is that of J.S. Dawson and A.R.M. Wilson in *Clinical Radiology* in 1994 [3]. This paper included 131 patients from the British NHSBSP.

Advantages of Extended Assessment

Proponents of this approach point to Dr Sickles’ overall figures of 17 cancers found among 3,184 probably benign lesions for a positive predictive value (PPV) of 0.5%. His positive predictive value for well-defined solid nodules was 2%. Dr Varas had a similar positive predictive value amongst 558 patients of 1.7%. Drs Dawson and Wilson had an overall positive predictive value amongst 128 women of 3.9%. On this basis, proponents argue that this is a safe method for reassuring woman that the abnormality found in their breast is benign.

Disadvantages and Controversies in Extended Assessment

Close examination reveals numerous problems in applying the results of the above three studies to a National Breast Screening Programme.

1. Of 28,458 mammograms that Dr Sickles read, he identified 3,184 lesions that were subjected to extended assessment. This is 11.2% of the population - far higher than is considered acceptable in the Breast Screening Programme even for recall to assessment, let alone for extended assessment over a period of 3 – 3.5 years. A worst case analysis would be that, had Dr Sickles used extended assessment in only 1%, the cancer rate (PPV) among this group could have been as high as 5.5%.
2. Dr Sickles himself in his article and in presentations since that time has emphasised that his figures applied only to the conditions under which he was operating. These conditions are not in any way similar to those under which Breast Screen Aotearoa operates.

3. The patient population in the first two studies was different from that in the New Zealand Breast Screening Programme. In fact, Varas' study showed a risk of cancer in those with microcalcifications aged over 50 of 6.2%. This would clearly be unacceptable.
4. The overall positive predictive value of 3.9% in the only study from a breast screening programme makes this approach hard to justify when the role of assessment in the screening programme should be to provide a high degree of assurance to woman that their lesion is either benign or malignant. Furthermore, in this same study, the rate of cancer in areas of parenchymal deformity/stellate density was 15%. This is clearly totally unacceptable.
5. There is no universal agreement on what constitutes a probably benign lesion. The three studies quoted above do not have the same criteria for this. A more recent study by Berg [4] looking at interobserver variability for radiologists using the American BI-RADS lexicon for describing mammograms showed high rates of inter and intraobserver variability. In practical terms, this means that it is unlikely that radiologists would reliably assign lesions to this method of assessment in a uniform manner across different sites or even within the same site, even for the same radiologist on different occasions.
6. Anecdotal unpublished evidence from within New Zealand (Middlemore mammography audit) and from the British NHSBSP (Richard Sainsbury, Oral Communication 1999) indicates a high rate of misapplication of extended assessment with an unacceptable rate of cancers within this group. This applies both within the NHSBSP and in informal screening within New Zealand. It is a serious concern that transfer of the same standards for using extended assessment from New Zealand private practice into the screening programme will lead to unacceptably high numbers of cancers being included in this group.
7. Both the NHSBSP and the New Zealand programme have attempted to limit the use of extended assessment to <1%. However, use in the NHSBSP has "crept" so that, in 1998, use was over 1% in 48% of units and over 2% in 24% of units [5]. If allowed to continue, it is likely that this creep will occur in New Zealand also.
8. A woman undergoing assessment in the screening programme should emerge from it with a positive and negative predictive value for cancer of close to 100%. Rates of 99-100% negative and around 99% positive PV are achievable with properly performed image guided biopsy techniques. Dawson achieved only 96.1% negative predictive value using extended assessment in the NHSBSP and I do not think this is acceptable.
9. There is, at present, no useful data to suggest that the New Zealand screening programme performs even up to the level of the NHSBSP for extended assessment, let alone at a level that would be acceptable in the current environment surrounding screening programmes.

Summary and Recommendation

Although "extended assessment" has been used successfully by some individuals for the management of certain types of lesions, it was developed primarily to deal with the cost and morbidity of hookwire localisation biopsy. That method of biopsy has subsequently been supplanted by the much less costly and much less invasive techniques of stereotactic and ultrasound guided core biopsy (and, in some hands, fine needle aspiration cytology). The studies that support extended assessment mostly do not apply to mass screening programmes of the type operating in New Zealand. The single study drawn from the NHSBSP demonstrates considerable risk attached to this procedure. Subsequent publications from the NHSBSP show

concern amongst the breast screening community about the levels of early recall performed in the NHSBSP and the possibility of adverse psychological consequences.

There is, therefore, no good evidence to support the use of extended assessment. There is clearly some very real risk associated with it. This particularly relates to the possibility of cancers being included in this group and erroneously followed or, even worse, having the woman in question drop out of extended assessment and therefore present with an interval cancer at a later stage. Extended assessment therefore should not be used in the screening programme. If a lesion cannot be demonstrated by mammography and ultrasound to have a sufficiently low probability of malignancy that it can be safely left until the next two yearly screen, it should be subjected to tissue diagnosis by a reliable and proven method.

References

- [1] Sickles EA. Periodic Mammographic Follow-up of Probably Benign Lesions: Results in 3,184 consecutive cases. *Radiology* 1991; 179:463 – 468
- [2] Varas X, Leborgne F, Leborgne JH. Non-palpable, Probably Benign Lesions: Role of Follow-up Mammography. *Radiology* 1992; 184:409 – 414
- [3] Dawson JS, Wilson ARM. Short term Recall For “Probably Benign” Mammographic Lesions Detected in a Three Yearly Screening Programme. *Clinical Radiology*. 1994; 49:391 – 395
- [4] Berg WA et al. Breast Imaging Reporting and Data System: Inter and Intraobserver Variability in Feature Analysis and Final Assessment. *AJR* 2000;174:1769 – 1777
- [5] Ong GJ, Austoker J, Michell M. Early rescreen/recall in the UK National Health Service breast screening programme: epidemiological data. *J Med Screen* 1998; 5:146-155