CAN THE QUALITY OF MAMMOGRAPHY IN CANADA BE IMPROVED?

Report of the Consultation on the Results of the National Survey of Canadian Mammographic Facilities

February 4 and 5, 1998

Government Conference Centre
Ottawa, Ontario

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Executive Summary

Film/screen mammography is one of the most important tools currently available for screening and diagnosis of breast cancer. The production of state-of-the art diagnostic images places extraordinary demands on the equipment and personnel involved in all steps of the process. The primary goal of the mammography facility is to produce the best possible diagnostic image (maximum benefit) followed by the lowest possible radiation dose (minimum risk).

From 1985 through 1992, the United States Food and Drug Administration (US FDA) conducted a series of surveys to assess the performance of U.S. mammography facilities. These surveys indicated a continual improvement in performance, mainly due to technological advances, but also indicated persistent problems with quality control, especially in the critical area of film processing. As a result of problems identified in these surveys, the U.S. Congress enacted and fully funded the *Mammography Quality Standards Act (MQSA)* in 1994, which requires mandatory federal certification for all U.S. mammography facilities. Since the MQSA was enacted, the performance of U.S. facilities has improved markedly.

In 1994, the Radiation Protection Bureau coordinated a similar survey of Canadian mammographic facilities in all provinces and territories to provide a "snapshot" assessment of their performance. The results indicate that at the time of the survey Canadian facilities were operating at typical levels found in the US pre-MQSA (1992) and exhibited similar deficiencies and problems.

As a result of the identification of problems in Canadian mammography facilities, the Radiation Protection Bureau took the further step of bringing together all of the key stakeholders from across Canada for a consultation meeting on the issue. The object of the meeting was to provide a series of consensus recommendations to the Minister of Health for courses of action to correct the identified problems and improve the quality of mammography in Canada. These recommendations are presented below.

Specific Recommendations to the Minister of Health

Recommendations from individual theme groups (see Section 3) often overlap, indicating that the problems and ideas are similar across the whole spectrum of participants. Most of the recommendations resulting from the meeting were addressed directly or indirectly to the Federal Minister of Health.

Recommendation I:

That the Minister, with cooperation of the provinces, convene a group of experts to develop

National Standards for the technical aspects of mammography. The National Standards would be incorporated into the Canadian Association of Radiologists' Mammography Accreditation Program and would be reviewed regularly to ensure that they reflect improvements in the procedure.

Recommendation II:

That the Minister of Health in conjunction with Provincial Ministers of Health ensure that a mandatory National Certification/Accreditation Program be established, not through legislation, but based on the Canadian Association of Radiologists' Mammography Accreditation Program

Recommendation III:

That the survey of mammography facilities should be repeated on a periodic basis by Health Canada in collaboration with the Provinces and Territories.

Recommendation IV:

That Health Canada establish a National Calibration/Reference Facility for technical aspects of mammography facility surveys, particularly film processing, image quality and dosimetry.

Recommendation V:

That Health Canada establish a reliable surveillance data base which will include such information as number of women screened versus those undergoing diagnosis, data from non-organized screening, number of mammograms that have to be redone, and benign to malignant ratio.

Recommendation VI:

That the Minister of Health ensure that a national scientific consensus on guidelines/advice be reached on the ages and frequency for screening and a recognized voice of authority be established on mammography issues for the public across Canada to ensure public awareness, and a consistent message with appropriate targeting of all groups.

Recommendation VII:

The Minister should provide adequate resources:

- for mammography research to improve the health of Canadians and with a side

benefit to promote high technology industry in Canada; and
- to assist the Canadian Association of Radiologists improve implementation, auditing and development of the Mammography Accreditation Program.

Recommendation VIII:

The Minister should establish an umbrella organization to promote cooperation, collaboration and sharing of information with regard to mammography research.

General Recommendations

In addition, a number of recommendations were made in areas falling under the provincial jurisdiction, within a professional organization's responsibility, or those involved with mammography.

Recommendation IX:

We recommend that we build on what has already been done by all stakeholders involved with breast cancer, improve communication between the components and build strong collaborative ties between:

- the elements of the Canadian Breast Cancer Initiative;
- Radiation Protection agencies - federal, provincial and territorial;
- Canadian Association of Radiologists and its accreditation program;
- various Colleges of Physicians & Surgeons;
- Canadian Association of Medical Radiological Technologists;
- Canadian Organization of Medical Physicists; and
- Canadian College of Physicists in Medicine.

Recommendation X:

Minimum standards on continuing education and training for key providers of breast imaging services should be part of any mandatory National Standard. Professional bodies at both the Federal and Provincial levels be delegated with the authority to develop and make such standards mandatory. Augmented funding for professional organizations may be necessary (Radiologists, Physicists, Technologists) and it may be necessary to establish an advisory group to determine how best to do this.

Recommendation XI:

That a multi-stakeholder working committee be established to define the outcome measurement tools for quality, costing, and data collection, and that an overall chair be appointed for this mammography initiative with sub-committees in areas such as

Quality Assurance, Accreditation and Standards.

CAN THE QUALITY OF MAMMOGRAPHY IN CANADA BE IMPROVED?

Report on the Consultation of February 4 - 5, 1998

1. Background

Under the *Radiation Emitting Devices Act* of 1980, the federal government is responsible for ensuring that diagnostic X-ray equipment, which includes mammographic X-Ray equipment, meets specific safety requirements at the time of sale or importation. It is also responsible under the *Canada Labour Code* for the installation and operation of radiographic equipment within federal facilities. In 1994, Health Canada published Safety Code 33 - "Radiation Protection in Mammography" - which provides guidance on the installation and operation of mammographic X-Ray Equipment to provincial authorities and personnel responsible for mammography facilities.

Health Canada's Radiation Protection Bureau (RPB) in collaboration with all the Provinces and Territories initiated a national survey of Canadian mammographic facilities, in 1994, to assess their equipment and imaging performance. The survey involved the inspection of 338 facilities, or 60% of all mammography facilities in Canada. The ability to detect lesions and the radiation dose delivered to the patient were assessed using the same protocol as was used by the US Food and Drug Administration (FDA) in a similar 1992 survey. The results of the survey show that 90% of the images produced would pass today's image quality criteria, but that 50% of the units had quality control problems with the film processing and handling. The radiation dose was lower than in the corresponding U.S. study.

The only accreditation program for mammography facilities in Canada was established by the Canadian Association of Radiologists (CAR) in 1992. This program is primarily voluntary and 41% of mammography facilities have received accreditation. In certain provinces, accreditation to this program is being made mandatory particularly with respect to the breast screening programs. The program does not involve on site inspection of the facilities as required by US regulations under the *Mammography Quality Standards Act* (MQSA). Basic information about this program can be found in Appendix 1.

The United States enacted the Mammography Quality Standards Act (MQSA) in 1994 to address the deficiencies identified by the Nationwide Evaluation of X-Ray Trends (NEXT) surveys in the 1980's and by the U.S. Senate Committee on Labour and Human Resources in 1992. This Act is designed to ensure quality mammography by placing requirements on mammography facilities through mandatory federal facility certification including quality assurance. These requirements are enforced consistently on a nationwide basis by annual inspection.

On February 4 and 5, 1998, a consultation in the form of a workshop was held in Ottawa to determine how the quality of mammography in Canada can be improved most effectively. Experts from all fields involved in mammography, the provincial and territorial governments and other

stakeholders accepted the task of providing the Minister of Health with advice and recommendations. A list of the participants can be found in Appendix 1.

2. The Consultation

2.1. The Purpose

The purpose of the consultation was:

> To bring together as many stakeholders as possible to review the results of the National Survey of Canadian Mammographic Facilities, to identify and analyse issues and to work together to provide, options/recommendations which also take into account social and economic considerations, for the Minister of Health.

2.2. The Process

A committee to plan the consultation was established and met on November 12, 1997. It consisted of representatives from organizations that are concerned about or have expertise in mammography. The committee developed the purpose for the consultation, the process to be followed and identified the national organizations to be consulted in addition to the provinces and territories. A list of the planning committee members is also included in Appendix 2.

The consultation itself held on February 4-5, 1998 took the form of a facilitated workshop where the participants were asked to work together:

- to identify and analyse the issues raised by the Report on the National Survey of Canadian Mammographic Facilities;
- to discuss and to agree upon the elements essential to ensure that mammography facilities produce the highest quality image possible - *the desired state*;
- to describe what's happening now - *the current state*;
- to determine if a gap exists and develop ideas for closing the gap between the two states;
- to rework the ideas for improvement into recommendations / options / advice to be passed to the Minister of Health or other responsible authorities.

The consultation process dealt primarily with the technical aspects of mammography from the time the person is positioned for the mammogram to the time the film is provided to the radiologist for diagnosis. However, since the consultation brought together many different responsible and concerned parties, the process provided the participants with the time and opportunity to identify and discuss other issues related to mammography. In these cases, the group will decide to whom the recommendations should go.

The agenda for the workshop can be found in Appendix 3.

The workshop facilitators ensured that the themes were initially identified through small groups. Working groups were then set up to examine each theme, the issues surrounding the theme and to develop recommendations of what action, if any, was required. Each working group made a presentation in a plenary session, which reflected the results of their discussion and their recommendations. The recommendations were discussed by all the participants to determine if there was a consensus on the recommendation(s) or if a change was required in order to obtain a consensus.

It was agreed that a draft report of the meeting would be prepared by the Radiation Protection Bureau. It was also agreed in plenary that, where the same or similar recommendations were put forward by more than one group, they would be consolidated and the draft report circulated to all participants for review and comment. The draft report and recommendations will then be revised and finalized.

3. Major Themes and Recommendations of the Working Groups

During the initial small group sessions, issues that affect the quality of mammography or were of concern to the participants were identified. Eight themes were identified:

- Service Delivery and Patient Centred Care
- Research
- Professional Education and Training and Development
- Public Education
- National Standards
- Quality Management
- Outcomes - Risk/Benefit
- Accreditation and Implementation

The following sections summarize the discussions and recommendations from each working group.

3.1. Theme 1: Service Delivery and Patient Centred Care

The working group felt that there were many gaps in service to the patient. One of largest gaps was poor communication by all those involved in service delivery to the patient at all stages of the process. For example, not being able to attract 66% of eligible women for screening mammograms and not informing patients that arrive for either diagnosis or screening the first time of the "pain" that they may experience or adequately explaining the radiation "fear" issue.

A seamless breast cancer care system would be ideal with follow up films provided

immediately if an abnormality is detected. Currently, the patient may have an additional wait of several weeks before another appointment is booked for a follow-up mammogram or other procedures.

The issues identified and discussed included:

- Credible, truthful communication to patient about the pain and the risk;
- Enough time to counsel patients;
- Seamless Breast Cancer Care with standardization of care;
- Prepare professionals to communicate with patients;
- Periodic patient/population surveys (reaching hard to reach); and
- Evaluation of the impact of 'our' work here.

It was also noted that most of these issues had been covered by the Canadian Breast Cancer Initiative and the Canadian Breast Screening Initiative.

Recommendation 1: We recommend that we:

- build on what has already been done through the Canadian Breast Cancer Screening Initiative, the Canadian Breast Cancer Initiative (eg Professional Education and communication, Breast Cancer information Program) and the Canadian Association of Radiologists' Mammography Accreditation Program (CAR/MAP), and;

- that we improve communication between these components.

Recommendation 2: **W**e recommend that we build strong collaborative ties with all components involved with mammography:

- Radiation Protection Agencies
- Canadian Association of Radiologists
- various Colleges of Physicians & Surgeons
- various Canadian Associations of Medical Radiological Technologists
- various Canadian Organizations of Medical Physicists
- Canadian College of Physicists in Medicine

3.2. Theme 2: Research

With respect to the current state of Canadian research related to the technical aspects of mammography the group indicated that it was inadequate, even though some mechanisms are in place to identify problems and to provide some solutions. The limited research that is being done is of good quality. The main cause was seen to be lack of resources directed toward research and the lack of effective collaboration and coordination. The survey of

mammographic facilities has shown that there is still a gap in our knowledge regarding the application of modern mammography.

Any overall program in mammography quality must include a research component dealing mainly with problems encountered in the clinical and regulatory environment. The research should be done within one "virtual" organization or network, which should be seen as a "knowledge centre." This would reduce duplication and be more cost effective. The research should be mostly applied in nature, be both reactive and proactive and be used to identify, evaluate, study and solve problems and concerns. It should focus its efforts in problem areas that have been identified or areas that are seen as potentially problematic in the future. It should be looking mainly at technical issues. There is a need for a team that could respond quickly to solve problems within an acceptable time-frame and to make solutions relevant to users. Issues dealing with socio-economic or medical issues could be part of a network, but could be addressed by other groups or organizations. It is also felt that there is a need for some basic research, for example into the risk/benefit aspects of mammography. This type of research is best left to universities and industry.

As part of its mandate, the "umbrella" group would oversee cooperation between governments, organizations, industry, and users. The federal government should also promote such cooperation and communication by sponsoring an annual meeting on mammography, either by itself or as part of a larger meeting or conference.

It was also perceived that excellent research may encourage industries to participate in a mammography quality program by providing resources and creating high value jobs. It may provide Canada with a worldwide leadership role.

Recommendation 3: We recommend that the Minister should provide adequate resources for mammography research to improve the health of Canadians and with a side benefit to promote high technology industry in Canada.

Recommendation 4: We recommend that the Minister should establish an umbrella organization to promote cooperation, collaboration and sharing of information.

Recommendation 5: We recommend that **t**he Minister should promote public awareness of mammography in Canada.

3.3. Theme 3: Professional Education and Training and Development

"The performance of mammography in order to reduce the mortality and morbidity from breast cancer is critically dependent on the training and skills of the professionals involved."

Due to the rapid advances which continue to be made in mammography, both film/screen and digital, staff at all levels must continuously update their skills and knowledge to be

capable of providing state-of-the-art mammograms.

Currently, the quality of continuing training and education for mammography professionals is viewed as quite variable in both quality and application. It is felt that this variability is due to the lack of mandatory requirements (standards), funding and time, with regional disparities playing an important role in less populous areas of the country.

With regard to who would be involved in setting the requirements and programs in this field, the professional societies such as Canadian Association of Radiologists, the Canadian Association of Medical Radiological Technologists and the Canadian College of Physicists in Medicine must play the leading role. The various levels of government should be primarily sources of funding, and agents to even out regional disparities.

Some minimum requirements on continuing education and training should be part of any mandatory National Standard.

Recommendation 6: We recommend that augmented funding for professional training and development for key providers of breast imaging services be provided. (Radiologists, Physicists, Technologists). It may be necessary to establish an advisory group to determine how best to do this.

Recommendation 7: To achieve uniform application of standards, we recommend that professional bodies at both the Federal and Provincial levels be delegated with the authority to make such standards mandatory.

3.4. Theme 4: Public Education

It is essential to ensure that women understand when and under what circumstances they should seek a mammogram and what conditions of service delivery (model, personnel, equipment) are optimal. This information should be available to all women of applicable ages, regardless of their race, ethnicity, income category or location.

A major obstacle is an inconsistent message on when (what age), how often and where screening mammography should be sought. There is no "voice of authority" that would provide consistent information to physicians, other health care workers or women. It is not easy to get information, and this is further complicated by additional factors, such as language, education, geography, culture, age and family decision maker which all affect women's understanding and incorporation of information into their decision making.

Recommendation 8: We recommend that the Minister of Health ensure that there be a mandatory National Certification/Accreditation Program.

Recommendation 9: We recommend that the Minister of Health ensure that a national scientific consensus on guidelines/advice be reached on the ages for screening and frequency.

Recommendation 10: We recommend that the Minister of Health support the establishment and confirmation of a voice of authority on mammography issues for the public across Canada to ensure a consistent message with appropriate targeting of all groups.

3.5. Theme 5: National Standards

To obtain quality mammograms, it is essential that a set of standards must be used. The term standard was defined as a set of limits for which any deviation outside these limits would be unacceptable. These standards must:

- include limits on technical parameters necessary to achieve the best image quality possible for both screening and diagnostic mammography while minimizing patient radiation dose;
- also address technical problems dealing with the need for consistently high quality images, film processing, and quality assurance and quality control procedures;
- be written in such a way as to avoid discouraging new development in the field of mammography. However, any new equipment development has to provide equal or greater image quality than with existing techniques, or provide additional benefits over present mammography.
- be applicable nationally and be mandatory;
- should be mandated provincially;
- be built on existing standards, either national or international;
- be developed by experts from all sectors of mammography: government, clinical experts, academia, advocacy group and industry;
- recognize the Canadian context and be open to all stakeholders for inputs and comments;
- be published for broad distribution; and
- be constantly evolving to address new technologies and techniques, with periodic revisions and reviews.

It was felt that these standards should be linked to an accreditation system for mammographic facilities. Many options for implementing a mandatory program were discussed. They included having funding linked to accreditation, provincial or federal legislation.

The presence of standards alone was seen as insufficient to assure quality mammography.

Periodic national surveys for the purpose of evaluating the performance of equipment vis-à-vis the standards were essential. It was also felt that an organization seen as a "knowledge centre" should be created to provide technical support, for governments, clinicians, technical groups, for the implementation and application of the standards.

Recommendation 11: We recommend that the Minister, with the cooperation of the provinces/territories, should convene a group of experts to develop National Standards for Technical Aspects of Mammography.

Recommendation 12: We recommend that the Minister, with the cooperation of the provinces, should develop a mechanism involving professional bodies to implement mandatory National Standards for the Technical Aspects of Mammography.

Recommendation 13: We recommend that the Minister in collaboration with the Provinces and Territories should repeat the survey immediately and then on a periodic basis.

3.6. Theme 6: Quality Management

Although quality management is an integral part of the larger subject of National Standards, the results of the survey indicate that it should receive special consideration. Many of the problem areas outlined in the report, such as film processing and darkroom fog, are issues that are normally detected and corrected by the implementation of and dedication to an appropriate mandatory Quality Systems program.

It was recognized that Canada has long been a leader in the international field of Quality Systems, and that we should not attempt to "reinvent the wheel" of quality systems development. Comprehensive treatments of the general principles of quality systems are already outlined in standards documents which have been accepted as National Standards of Canada, and the group turned to one such document to provide guidance for a "check list" of specific items which should be included in a Quality System for mammography in Canada. Many aspects of a quality assurance are already included in the prescribed program of activities that must be carried out to obtain CAR accreditation.

A commitment to quality at all levels of the mammographic process by qualified people having access to a continuing training program was considered essential. A strong management commitment, coupled with internal and external audits was considered especially important in motivating staff. An operational quality system is recognized to be an extremely dynamic process.

In order to provide meaningful measurements, the test equipment used in the evaluation of film processing and radiation dose must be properly calibrated. A national reference standard for sensitometric evaluation must be available to all facilities and/or accreditation

inspectors. Legal considerations surrounding mandatory accreditation standards also require traceability to national standards of radiation dose. It was felt that such a reference facility would best be implemented and maintained by Health Canada.

Recommendation 14: We recommend that mammography facilities must have in place a mandatory quality system, such as ISO 9000. The requirements of such a system, would include: management responsibility, Quality System, document and data control, process controls, inspection and testing, control of test equipment, corrective and preventive action, control of quality records, internal quality audit, training and qualification, servicing and acceptance testing

Recommendation 15: We recommend the establishment of a National Calibration and Reference Facility to provide calibration and control material for the evaluation of film processors and radiation survey meters. (Health Canada).

Recommendation 16: We recommend that, to determine the cost of implementation of mammography quality systems, a pilot project, which implements the recommended quality system in a cross section of mammography facilities, be carried out. (CAR and appropriate regulatory agencies).

3.7. Theme 7: Outcomes - Risk/Benefit

It was decided that Risk/Benefit should be a subset of Outcomes. The group spoke of the need to collect data, improve care, Continuous Quality Improvement (CQI), on a local level. The definition of Outcomes was introduced: A measurable consequence of a programme. The measurable elements should be: CQI, radiological, patient satisfaction, provider satisfaction, rate of early detection, efficiency of early detection, effectiveness of early detection, optimize risk/benefit, cost efficiency and effectiveness, opportunity cost, cost avoidance, false positives and false negatives, and mortality.

Currently, basic health data is missing with respect to mammography that is essential to targeting efforts and measuring the consequence of programmes. The missing health data includes such items as whether a procedure is for diagnostic or screening purpose, and the frequency of mammography procedures.

The group directed its recommendations to how the improvement in quality and its measurement could be achieved.

Recommendation 17: We recommend that a multi-stakeholder working committee be established to define the outcome measurement tools for quality, costing, and data collection, and that the Deputy Ministers of Health identify the collaborative groups.

Recommendation 18: We recommend that an overall chair be appointed for this mammography initiative and that chairs for each sub-area (Quality Assurance, Accreditation and Standards) be appointed. Each Chair be given the following list of tasks: appoint committee members, review what has already been done, piggy back the cost onto an existing programme, set milestones and deadlines.

3.8. Theme 8: Accreditation and Implementation

The study confirmed the variability in performance of mammography quality (including some facilities functioning at the state of the art). This can be also observed from the 50% initial failure rate of current CAR-MAP applications. In the current situation, with non-mandatory CAR accreditation, there are no on-site inspection by CAR staff, only 41% of facilities have accreditation, and there is no mechanism for oversight by an advisory committee. The CAR-MAP requires inspection of equipment by a medical physicist annually. However, this is on behalf of the facility rather than CAR.

It is desirable to implement a uniform, mandatory program which will meet the demands of consumers, eliminate existing variability in performance due to equipment and technique, and be based on the current CAR program which is developed further. Such a program should not be required by a federal law, but rather operated by CAR with the support from government.

Recommendation 19: We recommend that the Provincial Ministers of Health be encouraged to accept the CAR Mammography Accreditation Program* (MAP) as mandatory (tied to reimbursement**) by 2002.

* does not imply accepting MAP in its current form, but rather building on it.
** or to general accreditation, etc.

Recommendation 20: We recommend that appropriate federal funding and assistance be provided to CAR to improve implementation, auditing and development of the MAP.

Recommendation 21: We recommend that a committee (professionals, consumers, international experts, governments) be established to advise the MAP so as to ensure accountability of the program to consumers and other stakeholders.

Recommendation 22: We recommend that mechanisms be put in place to guide evolution of the technical and credentialing standard of the program.

Recommendation 23: We recommend that advice be available to ensure that an internationally high standard of quality is set and maintained current.

Appendix 1: Canadian Association o f Radiologists Mammography Accreditation Program.

THE CANADIAN ASSOCIATION OF RADIOLOGISTS
L'ASSOCIATION CANADIENNE DES RADIOLOGISTES

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THE CANADIAN ASSOCIATION OF RADIOLOGISTS
MAMMOGRAPHY ACCREDITATION PROGRAM (CAR-MAP)
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With the encouragement and support of the American College of Radiology (ACR), the CAR-MAP began in 1992 as a voluntary program of accreditation of mammography facilities in Canada. The goals were to establish standards for mammography, encourage quality assurance practices and ensure high quality images at a low radiation dose.

The CAR-MAP is similar to the ACR-MAP with some exceptions. The ACR accepts applications for accreditation from physicians who are not certified radiologists but meet all other guidelines of the program. The CAR-MAP accepts only radiologists certified in Diagnostic Radiology by the Royal College of Physicians and Surgeons of Canada or by the Corporation Professionnelle des Medecins du Quebec who meet the other guidelines of the program.

The CAR-MAP assesses radiologists, technologists and equipment as well as the quality assurance program. The evaluation consists of a 3 part survey with sections to be completed by the radiologist, technologist and physicist.

PERSONNEL

Each **radiologist** must have completed 40 hours of continuing medical education (CME) on mammography. If the radiologist has completed 4 weeks of mammography instruction during residency training, this is accepted in lieu of the 40 hours of CME. Every 3 years, another 15 hours of mammography CME must be completed. Each radiologist must read a minimum of 480 mammograms per year. The maintenance of records concerning outcome data, correlation of positive mammograms with biopsy results and calculation of the positive predictive value is the responsibility of the radiologist.

The **mammography technologist** must be certified by the Canadian Association of Medical Radiation Technologists (CAMRT) or have an equivalent provincial license. Special training in mammography is necessary.

PHANTOM AND CLINICAL IMAGES

For each unit to be accredited, the facility must submit a phantom image exposed with a dosimeter. Radiation dose is calculated from the dosimeter and the phantom image is evaluated by a team of specially trained physicist reviewers. Two sets of clinical images from each unit (from a patient with fatty and a patient with dense breasts) are submitted and evaluated by specially trained experienced radiologist reviewers.

STATISTICS

The numbers of applications completed and in progress have risen steadily over the past five years. As of February 1998, 383 applications have been received, representing **62%** of all mammography units in Canada. The application process has been completed for 337 units and 255 units **(41%** of all units in Canada) have been accredited by the CAR-MAP. Six units in Canada have been accredited by the American College of Radiology.

The initial failure rate is about **50%** and with reapplication this drops to **24%,** supporting the premise that this is an educational process. The leading reason for failure continues to be problems with the phantom image followed by problems with clinical images.

The percentage of units that have passed CAR-MAP accreditation by province varies from a high of **64%** in Quebec (92 of 143) to a low of **0%** in Prince Edward Island (0 of 2) and **0%** in the Northwest Territories (0 of 1). Alberta **(63% -** 37 of 59) and Manitoba **(62% - 8** of 13) are next in percentage of facilities that are accredited. The largest number of units without accreditation is in Ontario where only 79 of *257* units **(31%)** have complied with the program.

It is hoped that all mammography units in Canada will soon become accredited. Canadian women are being told the advantages of having their mammogram at an accredited facility and are encouraged to seek mammography only at such a facility.

Appendix 2.

1. Participants in the mammography workshop.

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2. Planning committee of the mammography workshop

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Dr. Françoise Bouchard, Disease Prevention Division, Health Canada

Mr. Paul Chaloner (Recorder), Radiation Protection Bureau, Health Canada

Mr. Lothar Doehler, X-ray Inspection Services, Ontario Ministry of Health

Ms. Janet Ferguson, Breast Cancer Society of Canada

Ms. Louise Joly, Canadian Association of Radiologists

Mr. Christian Lavoie, P.Eng., Radiation Protection Bureau, Health Canada

Dr. Elizabeth Nielsen (Chair), Radiation Protection Bureau, Health Canada

Ms. Diane Sutherland, RTR, CBI, Canadian Association of Medical Radiological Technologists

Mr. Gord Symonds, Radiation Protection Bureau, Health Canada

Dr. Martin J. Yaffe, Canadian Organization of Medical Physicists

Appendix 3: Agenda of Consultation

Can the Quality of Mammography in Canada be Improved?

A Consultation on the Results of the National Survey of Canadian Mammographic Facilities
Ottawa, Ontario
February 4 - 5, 1998
Gatineau Room, Government Conference Centre
2 Rideau Street, Ottawa

AGENDA

Consultation Objective: To bring together as many stakeholders as possible to review the results of the National Survey of Canadian Mammographic Facilities, to identify and analyse issues and to work together to provide, options / recommendations / advice which also take into account social and economic considerations, for the Minister of Health.

February 4, 1998

8:30 - 9:00 am	Registration/Refreshments
9:00 - 9:30 am	Welcome Administrative Details Opening Remarks - Dr. Létourneau, Radiation Protection Bureau
9:30 - 10:00 am	Importance of Image Quality to Clinical Outcomes. Presentation by Dr. Nancy Wadden, Canadian Association of Radiologists
10:00 -10:30 am	The National Survey of Canadian Mammographic Facilities. Presentation by Gordon Symonds, Radiation Protection Bureau
10:30 - 10:45 am	Refreshment Break
10:45 - 11:00 am	The Consultation - What is our objective for consulting with concerned parties? What do we want the process to give us? What will we left with at the end of the workshop?

	Introduction of Facilitators Overview of the Facilitation Process
11:00 - 12:00 pm	The Desired State of Mammography in Canada. Based on what you' ve read, have listened to today, and your own knowledge and experience what elements are essential to ensure that mammography facilities produce the highest quality image possible? How would you describe the desired state for mammography in Canada? On what do we agree?
12:00 - 1:15 pm	Lunch in the Sussex Room

How Participants Will Be Involved For The Next Day and a Half

Firstly, we will address the technical aspects of mammography from the time the person is positioned for the mammogram to the time the film is provided to the radiologist for interpretation. Recommendations are for The Minister of Health. The facilitation process will involve both large and smaller group sessions. Participants will:

* discuss and agree upon a description of the desired state of mammography in Canada;
* describe what's happening now, the current state;
* determine if a gap exists and develop ideas for closing the gap between the two states;
* identify forces which might hinder and forces which might help the acceptance or implementation of the ideas;
* determine ways of dealing with or using these forces;
* rework the ideas for improvement into recommendations / options / advice to be passed to the Minister of Health or other responsible authorities.

Secondly, since the consultation brings together many different responsible and concerned parties, our process will provide us the time and opportunity to discuss other issues related to mammography. In these cases the group will decide to whom the recommendations will go.

4:30 pm End of first day

February 5, 1998

8:30 - 9:00 am	Refreshments
9:00	Continuation of Consultation

	Refreshment Breaks and lunch are scheduled for the same times as February 4, 1998
2:45 pm	Review of recommendations. Consensus seeking.
3:45 pm	Wrap-up and concluding remarks.
4:00 pm	End of second day

Consultation Product

1.) Recommendations / options / advice for consideration by the Minister of Health.
2.) Recommendations / options / advice to other responsible authorities.