
C Support Services

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C3.1 SERVICE DESCRIPTION

C3.1.1 Scope of Clinical Services

This section C3 sets out the requirements for the centralized facilities for the provision of a range of Medical Imaging services utilizing various modalities at the Facility to be achieved or accommodated by Project Co in providing the Works and the Services. A major portion of the Fraser East area imaging procedures will be conducted at this site. The range of imaging services to be provided within this component includes:

- Radiography procedures will include general radiology, emergency radiology, tomography, intravenous pyelogram/genito-urinary, fluoroscopy, including interventional/non-interventional.
 - Selected workload currently being provided off-site by a private service provider (Valley Medical Imaging Service) will be transferred to the health centre and is built into the activity indicators in this specification.
- Ultrasonography (US) procedures will include general ultrasound, echocardiography, vascular studies, and interventional ultrasound.
- Computed Tomography (CT) procedures will include enhanced, non-enhanced and interventional procedures.
- Angiography/Interventional procedures will include selected angiography/angioplasty and interventional and CT angiography procedures.
- Magnetic Resonance Imaging (MRI) procedures will be introduced with this project and will be the only full range diagnostic and therapeutic service in the Fraser Valley Health Service Delivery Area.
- Nuclear Medicine (NM) scanning procedures will be introduced with this project. All radiopharmaceuticals used by this service will be supplied by a central pharmacy within the Lower Mainland or by another service provider, but some shielded on-site storage will be required within the hot lab facility.
- Position Emission Tomography scanning procedures will be introduced with this project in support of the cancer centre treatment planning needs as well as for general diagnostic needs. This technology will also include CT scanning capabilities in a combined PET/CT configuration. The radionuclides used in PET procedures will be acquired from off-site services.
- Diagnostic Mammography procedures will include breast specimen mammography, breast localizations and breast stereotactic biopsies.

A digital (filmless) medical imaging system utilizing a picture archiving communication system (PACS) will be provided in the new facility with high speed internet connections to other FHA facilities and radiologists' homes. All PACS information must be able to download to the BCCA Cancer Agency Information System (CAIS).

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C3.1.1.1 Current Trends

In providing the Works and Services, Project Co shall take into account the following trends:

- *A continued reduction in invasive angiography procedures due to advances in computed tomography and magnetic resonance imaging.*
- *The use of conscious sedation for a variety of interventional procedures is expected to increase in the future. It is estimated that the average number of interventional patients requiring pre or post procedure care will be approximately 12 per week. Nursing for these patients will be provided both within the Medical Imaging component and within the General Day Care Unit (A3).*
- *A fully digital system will result in higher productivity and consequential space economies (incl. fewer procedure rooms in selected modalities).*
- *Increases in use of computed tomography replacing general radiography.*
- *Consideration needs to be given to the potential for new technologies/modalities and higher volumes of workload in the future, including multi-user computer workstations, more interventional procedures (with new procedures likely replacing surgical intervention) and gene therapy.*
- *The presence of a cancer centre on site will generate a high demand on CT, MRI and PET services.*
- *The presence of a vascular surgery program on site will generate a high demand on general US and echocardiography services.*

Examination/procedure rooms should, therefore, be sufficiently flexible in design to accommodate future changes in use and technology.

C3.1.2 **Scope of Education Services**

Fraser Health Authority (FHA) will continue to provide formal radiology technologist student education programs in conjunction with the British Columbia Institute of Technology (BCIT) (4 students at a time), plus the occasional nursing student. In addition, radiologists will play a key role in regular clinico-radiological meetings with medical, nursing and other staff.

C3.1.3 **Scope of Research Services**

Any research activities taking place within this component in the future will be accommodated within the service space provided.

C3.1.4 **Specific Exclusions**

This specification excludes imaging services/requirements provided elsewhere, including:

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- General radiography and ultrasonography services provided by Valley Medical Imaging Service (VMI), the only other licensed medical imaging service in the Local Health Area
- Cardiac angiography
- Mammography screening currently off-site will be provided on-site in the Ambulatory Care Centre (see section A1 Ambulatory Care Centre)
- Fixed radiography in the trauma room in Emergency (see section A2 Emergency)
- Mobile radiography and fluoroscopy in Emergency (1 mobile), the Inpatient Care Units, ICU/CCU/Surgical Suite (1 C-arm mobile) and General Day Care (1 CR-arm mobile), including endoscopic procedures done under general anesthetics, and Morgue and Autopsy (1 mobile)
- Mobile ultrasonography in Emergency, Intensive Care Unit (ICU), Coronary Care Unit (CCU), post anaesthetic care unit (PACU), Maternity and Pediatric Inpatient Units
- Depending on the proximity of ICU to Surgical Suite, a computed radiography (CR) reader in the ICU (see section B4 Intensive/Stepdown Care Units)
- Neuro angiography
- In the Surgical Suite, there will also be a Faxitron (breast tissue) imaging station (could be located in the frozen section room) (see section C7 Surgical Services)
- Radiopharmaceutical and radionuclide substances required for nuclear medicine and PET scanning will be acquired of sources off-site

C3.2 OPERATIONAL DESCRIPTION

C3.2.1 Minimum Hours of Operation

Hours of operation for the component vary with each service as follows:

- Radiography 24/hrs./7 days/week
- Ultrasonography 0700h to 1700h/5 days/week
- Computed tomography 0700h to 2200h/5 days/week
- Magnetic resonance imaging 0700h to 1700h/5 days/week
- Nuclear medicine 0700h to 1700h/5 days/week

All services will operate during off-hours, weekends and holidays with staff provided on an on-call basis.

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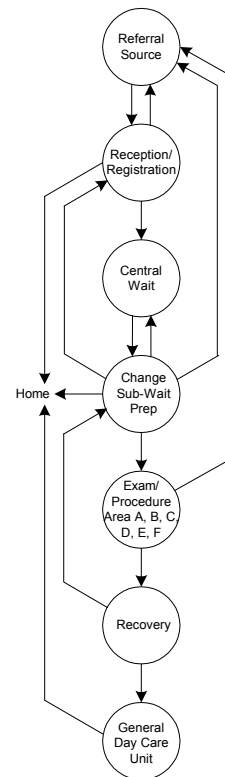
C3.2.2 Patient Management Processes

C3.2.2.1 Reception & Scheduling Desk

All scheduled and unscheduled patients (and/or accompanying porters and escort staff), clinicians, and visitors to the department are received at a central reception desk. All outpatients will register with the Medical Imaging clerk. Inpatients will be portered to the component by facility-wide porters. Patient information is checked against existing computer and manual records, and examination details are entered on the computer system. A variety of other tasks, including telephone call handling, appointment scheduling, patient preparation, receipt and dispatch of x-ray films and notes, answering patient queries etc. are also undertaken here. All imaging procedures will be scheduled through the Medical Imaging booking clerk using the “community-wide scheduling model” currently on-line.

Patients will generally be pre-booked by physicians and given instructions to prepare them for the examination at a later date. In some cases, it will be necessary to take a patient history and/or ask questions for which a greater degree of privacy is required and auditory privacy is thus important. Information regarding radiology examinations is displayed in poster and leaflet form. It is envisaged that a touch-screen, computer-based information and self-registration system will be available for patients in reception areas within the future.

A small counselling room is required close to reception for patient counselling and confidential discussions.



Patient Flow Diagram

C3.2.2.2 Waiting

Separate waiting areas are required for both outpatients and inpatients. Following arrival in the department and inpatients will be taken or directed to an inpatient waiting area, suitable for wheelchairs, stretchers or beds and ambulant patients together with their escorts and carers to an outpatient area. This area is kept under observation by nursing and radiography staff, in case assistance or clinical intervention is required.

Other patient and visitors will be directed to wait in an outpatient waiting area, close to the reception until they are called for their examination or other appointment. Provision for up to 10 wheelchairs is required in this area. Most patients attend with at least 1 relative and the average number of outpatient visits per day is anticipated to be 325. Children will arrive for examination and some patients will attend with children and thus a child-friendly environment and play area will be provided.

Patients will be called from the waiting areas by the technologist, nurse or radiologist, and escorted to the examination room, preparation room or changing facilities. Changing and toilet facilities will be provided to serve each sub-waiting area, and following changing and/or preparation, and immediately following examination; patients will wait in the changed sub-wait

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area closest to their designated examination room. A nurse's base is required close to the patient recovery area for patient observation.

The assisted movement of patients to/from Medical Imaging will be managed by porters based in Materiel Services. This will be equipped with desk space, porter communication system, and radio base station.

C3.2.2.3 Change

Most outpatients and daycare patients will be required to remove their street clothing and wear a hospital gown prior to examination. Some patients will require assistance from a nurse or caregiver, particularly those who are frail or disabled. Additionally, some daycare patients arriving from other hospitals will arrive on stretchers or wheelchairs and need assistance to change.

Changing cubicles will be grouped close to the sub-wait areas and examination rooms, and provision made for assisted/wheelchair access cubicles.

Patient's clothing and belongings are placed by the patient in a basket or carrier bag, and are retained by the patient. In the case of patients undergoing daycare procedures, the belongings will be handed to the nurse in charge and secured until the patient is ready to go home.

C3.2.2.4 Preparation

Some patients will require preparation and a pre-exam consult prior to their examination. This may involve being asked to drink water or other fluids, or undergo a minor clinical procedure, for example:

- ultrasound patients will often be required to drink large amounts of water in the sub-wait area
- CT/MRI/US patients will often be required to drink oral contrast media prior to examination. In a high percentage of cases, patients will have a cannula inserted into a vein prior to examination. This will take place in a patient prep/recovery area close to CT/MRI/US with the patient seated or supine.

Some patients undergoing US, CT scan, MRI scan or angiography/ interventional procedures may require conscious sedation, which will take place in a holding/infusion area. Patients from critical care who are awaiting examination may also use this space.

C3.2.2.5 Examination

Patients will be directed or escorted to an examination room within one or more of the procedure areas where the exam will take place.

With respect to protection from all radiation sources, the Facility will comply with Applicable Law and Good Industry Practice.

C3.2.2.6 Post Examination

Following examination, the majority of patients will change back into their street clothes and leave the department. Inpatients, transport patients and patients from other hospitals will need to wait until porters or transport is available in the waiting area adjacent to the inpatient waiting area. This area will need to be large enough to accommodate up to 6 patients in chairs with nurses and caregivers.

Some patients who have undergone interventional procedures or who have been administered certain drugs will be required to wait in the department under observation until they can leave or

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return to the inpatient unit. A recovery area with 6 stretcher bays and monitoring equipment will be required for those patients who have undergone interventional procedures.

C3.2.3 Patient Information Management

This output specification assumes that all imaging equipment will be acquiring digital images from all modalities and that images will be reported from high resolution monitors, stored on a fast access digital system and made available for viewing throughout all clinical departments on all hospital sites, together with radiological reports. The FHA PACS (picture archiving and communications system) will be fully integrated with the radiology information system (RIS), digital dictation/voice recognition system, hospital information system (HIS) and scheduling systems. The dictation and scheduling systems will be provided by FHA and integrated with other FHA sites.

The functioning of one-stop outpatient clinics will rely on real-time access to radiological investigations. Patients will be referred on the day of clinic attendance to Imaging for investigation. These investigations will be provided in the centralized Medical Imaging department, and the ability of the department to meet this need is critically dependent upon a versatile scheduling system. Appropriate space will need to be provided for scheduling staff and computer equipment both within Imaging and the outpatient areas.

The Meditech system recently installed will in the future contain scheduling capabilities and interface with the FHA PACS and dictation systems.

Current legislation requires patient records to be retained for a minimum of 7 years (including current year). Active hard-copy (7 years) film storage will be held in the component initially, but eventually will significantly be reduced in size, assuming a totally filmless system. Current patient film (up to one month) is held adjacent to the reception counter. Future needs for a darkroom, a dry laser processor and for film storage will not be entirely eliminated. The processed film library will be substantially reduced in the future, although planned for at this time.

Also refer to Output Specifications, Section 3: Non-Clinical Services, subsection D1 Information Management; Section 5: Design and Technical, subsection 5.3.17 Technology and Communication Systems; and Section 6: IT/Tel Services.

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C3.2.4 Staff Work Processes

C3.2.4.1 Preparation

Nursing and other staff prepare oral contrast and other preparations which are administered to patients prior to their examination. Some patients will require some level of pre-exam preparation and this is undertaken on the examination couch in the exam room. Other patients may require the insertion of an intravenous cannula, and this will be undertaken in a preparation area close to the examination room.

For some ultrasound, CT, MRI, fluoroscopy and all angiography and interventional procedures, nursing staff will prepare sterile trolleys and instruments in a clinically clean environment.

Prior to undertaking an imaging examination or procedure, the technologist or radiologists will review the request and clinical information supplied by the referring clinician, together with any images (digital or film) and the patient's records. They may also consult with the clinician or other colleagues via telephone or in person, adjacent to the examination room. They will explain the nature of the examination to the patient and, in some cases, it may be necessary to obtain further details from the patient.

These areas will require space and an appropriate environment for image viewing equipment (monitors and standard x-ray film viewers), desk/bench space, access to telephone and HM, etc.

C3.2.4.2 Post Examination

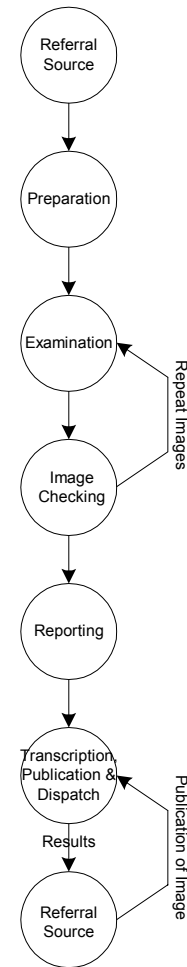
Following examination, technologists will examine and collate the final images and patient records prior to submitting them for reporting. This process will take place in an area away from patient areas.

Following some examinations, staff will be required to clear away sterile trolleys and clinical waste associated with the examination.

C3.2.4.3 Reporting

All examinations are reviewed and reported upon by a radiologist. This process takes place either in a reporting area or occasionally in the radiologist's office. Reporting areas will require subdued ambient lighting and sufficient space for 1 operator and up to 3 additional clinicians. A standard x-ray illuminator will also be required for viewing films sent from other hospitals or retrieved from the archives.

Reports will be dictated either onto a digital dictation system (for subsequent transcription) or automatically transcribed via a voice to text system. Access to old reports will be via radiology information system, a communication system linked to all areas.



Process Flow Diagram

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Radiological viewing/reporting areas will be required for each of the main procedure areas as follows:

Area	Workstations
Procedure Area A – General Radiology/Tomography/Trauma/Chest/Fluoroscopy	2
Procedure Area B – Special Procedures/Angiography/Interventional	2
Procedure Area C – Ultrasonography/Diagnostic Mammography	4
Procedure Areas D & E – Cross Sectional Imaging (CT/MRI)	2
Procedure Area F – Nuclear Medicine/PET	2

The above workstation requirements are estimated and will need to be verified once the equipment and PACS configuration is known.

C3.2.4.4 Transcription – Approval

Reports that are dictated will be transcribed by Project Co as part of the E10 Service Category. Space will be required to be configured for receiving visitors to the department, and handling telephone queries, etc. as well as office functions such as photocopying, printing, scanning, etc.

A laser imager room will be required for hard copy printing and subsequent film finishing. This area will be well ventilated and have sufficient workspace and conventional film viewing equipment for 2 staff.

C3.2.4.5 Clinico-Radiological Meetings

Radiologists have a key role in many multidisciplinary teams, and regular clinico-radiological meetings are held. Meetings comprise of up to 20 staff and viewing/projection facilities are essential for the examination of radiological images for such assemblies. The location of the meeting room will be within 2 to 3 minutes of the main clinical areas, as radiologists are frequently called from meetings to provide clinical advice.

C3.2.4.6 Staff Services

Conference, break room and locker facilities for staff will be provided in the component.

C3.2.5 Materiel Services

An inventory of imaging film products as well as chemistry replenishment supplies will be accommodated in the off-site Materiel Services warehouse. An inventory of these supplies will be stored in this component.

Medical and surgical supplies, catheters, surgical packs and other dedicated medical and surgical consumables are supplied to the department and held in a central store. Sterile instruments and packs used for interventional cases will be prepared in a sterile preparation area in Materiel Services.

Also refer to Output Specifications, Section 4: Facility Management Services, subsection E7 Materiel Services, and Section 2: Clinical Services, subsection C8 Sterile Processing Services.

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C3.2.6 Linen/Housekeeping Services

Refer to Output Specifications, Section 4: Facility Management Services, subsections E5 Housekeeping Services and E6 Laundry/Linen Services.

C3.2.7 Equipment Asset Management

A satellite Biomedical Engineering workshop will be located in the support services area. As part of the E2 Service Category, Project Co will provide services, Biomedical Engineering staff will provide full equipment support/maintenance services except for CT, MRI and ultrasound, through Service Contracts.

Also refer to Output Specifications, Section 4: Facility Management Services, subsection E2 Biomedical Engineering; and Section 7: Equipment.

C3.3 ACTIVITY INDICATORS

The table below summarized the projected activity for medical imaging services which must be addressed by Project Co in performing the Works and the Services.

C3.3.1 Hospital Activity

Unit	Minimum Projected Yearly Activity
<u>Inpatient Care</u>	
Acute Care Beds	300
Total Patient-Days	90,700
<u>Emergency Visits</u>	
	60,000
<u>Ambulatory Care Visits/Exams</u>	
	31,094
<u>General Day Care Visits/Cases</u>	
	26,499
<u>Surgical Day Care Cases</u>	
	9,800
<u>In-Component Services</u>	
<u>General Radiology</u>	
IP Exams	13,022
OP Exams	41,478
Subtotal	54,500
<u>Computed Tomography</u>	
IP Exams	2,500
OP Exams	10,500
Subtotal	13,000
<u>Magnetic Resonance Imaging</u>	
IP Exams	600
OP Exams	2,400
Subtotal	3,000
<u>Ultrasound</u>	
General/Obstetrics	3,000
IP Exams	8,200
Subtotal	11,200

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Unit		Minimum Projected Yearly Activity
Echocardiography	IP Exams	1,900
	OP Exams	3,100
Subtotal		5,000
Total Ultrasound		16,200
<u>Diagnostic Mammography</u>	IP Exams	20
	OP Exams	1,980
Subtotal		2,000
<u>Nuclear Medicine</u>	IP Exams	1,350
	OP Exams	7,650
<u>Positron Emission Tomography</u>	IP Exams	225
	OP Exams	2,025
Total Nuclear Medicine		11,250
<u>Out-of-Component Services</u>		
<u>Mammography Screening</u>	OP Exams (see A1 Ambulatory Care Centre)	15,000
<u>Mobile</u>	Total Mobiles, less Chests	2,945
	Mobile Chest Exams	4,330
Total, Out-of-Component		22,275

C3.3.2 Cancer Centre Activity

Unit	Minimum Projected Yearly Activity
<u>In-Component Services</u>	
General Radiology – OP Exams	6,086
Computed Tomography – OP Exams	2,184
Magnetic Resonance Imaging Exams	Incl. in Hospital
Ultrasound – OP Exams	720
Nuclear Medicine – OP Exams	540
PET – OP Exams	Incl. in Hospital
<u>TOTALS, IN-COMPONENT</u>	
General Radiology – Exams	60,586
Computed Tomography – Exams	15,184
Magnetic Resonance Imaging – Exams	3,000
Ultrasound – Exams	16,920
Diagnostic Mammography – Exams	2,000
Nuclear Medicine – Exams	9,540

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C3.4 PEOPLE REQUIREMENTS

This component will have a total staff complement in the range of 85 FTE, consisting of 56 technologists, 6 nurses and 23 clerical/administrative personnel, plus 6-8 radiologists.

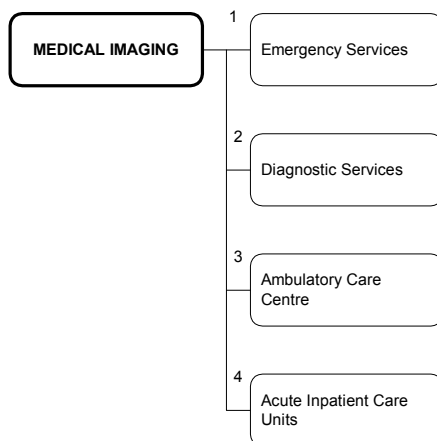
It is anticipated that the key functional areas in the component will need to accommodate the following numbers of people.

Functional Areas	Patients	Staff	Visitors	Others	Total
Reception/Control Area	22	7	10	0	39
Procedure Area A – General Rad/Tomo	15	19	5	2-3	41-42
Procedure Area B – Special/Angio/Interv	3	4	1	1-2	9-10
Pre/Post Procedure Prep/Recovery Area	6	3	2	1-2	12-14
Procedure Area C – Ultrasonography/Mammography Area	29	15	5	1-2	50-51
Procedure Area D – Computer Tomography	8	9	2	1-2	20-21
Procedure Area E – MRI	8	12	2	1-2	22-23
Procedure Area F – Nuclear Medicine/PET	26	9	5	1-2	41-42
Support Services/Staff Work Areas	0	6	0	2-3	8-9
Administration/Education Area	0	30	0	2-3	32-33

C3.5 DESIGN CRITERIA

C3.5.1 Key External Relationships

The following key relationships will be achieved in the priority order as numbered for the purposes stated:



- 1 Provide direct access by internal horizontal circulation to Emergency services for movement of patients, staff, and equipment, sometimes on an immediate basis.
- 2 Provide direct access by internal circulation to Diagnostic Services (stress testing area) for the movement of patients for nuclear scanning.
- 3 Provide direct access by general circulation to the Ambulatory Care Centre for the movement of outpatients, staff and equipment.
- 4 Provide convenient access by general circulation from all acute Inpatient Care Units for the movement of patients, staff and equipment.

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C3.5.2 Key Internal Relationships/ Environmental Considerations

The following will be achieved:

C3.5.2.1 Zoning

Provide 5 functionally distinct zones of activity within the component as follows:

- Patient reception/control area/waiting
- Procedure areas (including changing and changed waiting)
- Post-procedure recovery area
- Support services, staff work, film processing, sorting/finishing, viewing/reporting and filing
- Administration/education

C3.5.2.2 Procedure Area Clusters

Create 6 clusters of procedure areas as follows:

- General radiology, tomography, and trauma/chest/ fluoroscopy
- Ultrasonography/mammography
- Computed tomography
- Magnetic resonance imaging
- Special procedures (angiography/interventional)
- Nuclear medicine/PET scanning

C3.5.2.3 Multiple Entry Points

There could be 5 entry points to the component, 1 for Emergency patients, 1 for inpatients, 1 for outpatients and 1 for staff. There may also be a direct entry to General Day Care if located contiguously with it. However, planning should consider the advantages of co-location of entry points to facilitate control, safety and convenience.

C3.5.2.4 Traffic Control

Reduce travel distances by locating routine high-volume procedure areas closest to the patient entry/reception point (e.g., trauma, general radiography, chest and ultrasound closest to the Emergency entry).

The emergency/trauma procedure room, CT scan room, angiography room, one ultrasound room and current film files will be available 24 hours a day, 7 days a week. During off hours, the rest of the component will be planned to exclude non-staff access.

C3.5.2.5 Access & Circulation

Provide generous and direct circulation systems in all patient areas to allow for the efficient movement of both ambulatory and wheelchair/stretchers/bed patients. The requirement for bed access throughout will be carefully addressed.

Some access routes and circulation systems must allow delivery paths for large pieces of equipment. Height, width, and floor loads must be considered in the design of these access routes. MRI and CT equipment in particular will be large and heavy.

C3.5.2.6 Patient vs. Staff Access

The whole component will be planned to reflect the need for dual/separate access for patients/staff. All procedure rooms will have an access for patients from a patient/public corridor associated with patient changing/washrooms, etc., as well as a separate access for staff from a restricted corridor associated with staff work/reporting areas.

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C3.5.2.7 Flexibility/Adaptability

Provide a configuration and type of construction for procedure rooms, which may accommodate future changes in imaging technology. Provide a special, modular structural ceiling system (unistrut) over all procedure rooms to allow future changes in ceiling mounted equipment, except for MRI, CT and ultrasound, where equipment is generally floor mounted.

Film storage space should have the potential to be converted to other functions when digital modes of image storage are fully implemented.

Also refer to Output Specifications, Section 1: Key Site and Building Design Criteria, subsection 1.2.3.3 Flexibility and Expandability.

C3.5.2.8 Supervision of Patients

Ensure that there are provisions for an internal intercom system and that there is close visual supervision of all patients requiring observation pre- and post-procedure including preparation for procedures (e.g., CT, injection), and patients needing observation while recovering from procedures. Consider use of CCTV observation connected to procedure room to support observation during periods of short staffing (especially in CT). The location of the CCTV monitors must respect the need for patient privacy.

C3.5.2.9 Patient Privacy

Provide visual and acoustic privacy for patients in all changing, consultation, examination and treatment spaces. Changed waiting areas will be screened from the adjacent circulation spaces. The function of patient changing/undressing in a public area and the invasion of privacy associated with this activity needs to be addressed at every level of design. Ideally, changed patients should not have to cross public circulation space in order to access procedure rooms from changed waiting areas.

Also refer to Output Specifications, Section 1: Key Site and Building Design Criteria, subsection 1.2.5.4 Acoustics.

C3.5.2.10 Safety / Security

Patient communications with staff, staff-to-staff communications, and patient and staff surveillance are considered critical in this area.

Also refer to Output Specifications, Section 1: Key Site and Building Design Criteria, subsection 1.2.2.3 Security and Personal Safety.

C3.5.2.11 Positive Healing Environment

Refer to Output Specifications, Section 1: Key Site and Building Design Criteria, subsection 1.2.5.1 Healing Environment.

C3.5.2.12 Visitor Waiting

Patient escorts will be encouraged to wait for fast turn-around patients in order to be available to take them home following a procedure.

C3.5.2.13 Protection / Shielding Measures

Provide X-ray radiation protection as required by current codes and standards. Ensure no radio frequency problems throughout, but particularly in ultrasound and MRI examination rooms.

Provide "in-use" lights in corridors for radiation-use procedures and signs on all doors indicating radiation hazard.

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Also refer to Output Specifications, Section 5: Design and Technical, subsection 5.3.13.2 Radiation Protection.

C3.5.2.14 Special Environments

Provide infection control/aseptic environments for special procedures rooms (CT, MRI & US probe cleaning). Provide separate clean and soiled utility rooms with hopper disposal equipment.

Also refer to Output Specifications, Section 1: Key Site and Building Design Criteria, subsection 1.2.4.5 Infection Control; and Section 5: Design and Technical, Division 15 Mechanical.

C3.5.2.15 Special Technical Requirements

Provide fully dimmable lighting in all patient areas.

Provide patient vital signs monitoring capabilities in special procedure areas and pre- and post-recovery areas.

Provide floor capacity to support the high loads associated with film storage.

Provide sufficient power capacity, air conditioning capacity, and access for future expansion of service.

Provide appropriate ventilation and environmental controls throughout, with the means to do an air quality check in the vicinity of the processing areas (dry laser/dark room).

Provide a minimum 3.0 metres ceiling height in procedure rooms, with a minimum 1 metre space above for heating, ventilating and air conditioning systems.

Provide pneumatic tube connections to/from the Laboratory and Pharmacy.

Also refer to Output Specifications, Section 5: Design and Technical.

C3.5.2.16 Ergonomics Considerations

Floor construction/finishes should compensate for the long periods of standing, typical in the medical imaging workplace.

Also refer to Output Specifications, Section 1: Key Site and Building Design Criteria, subsection 1.2.4.6 Ergonomics.

C3.5.2.17 Interior Design Considerations

Create an environment in all patient-accessed areas that is user-friendly, comfortable, non-technical appearing, and as therapeutic as possible through the use of graphics, piped music, simple circulation systems, etc.

Also refer to Output Specifications, Section 1: Key Site and Building Design Criteria, subsection 1.2.5 Indoor Environmental Quality.

C3.5.2.18 Location of Multi-Viewer

One multi-viewer will be retained, pending complete digitization, located in one of the radiologist's offices and thus be potentially available to more than 1 modality. A darkroom

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facility will also be retained even when digitization is complete in order to facilitate film processing (mobile studies) and quality control testing.

X-ray view boxes will continue to be provided to view historical files, located in various locations throughout the component.

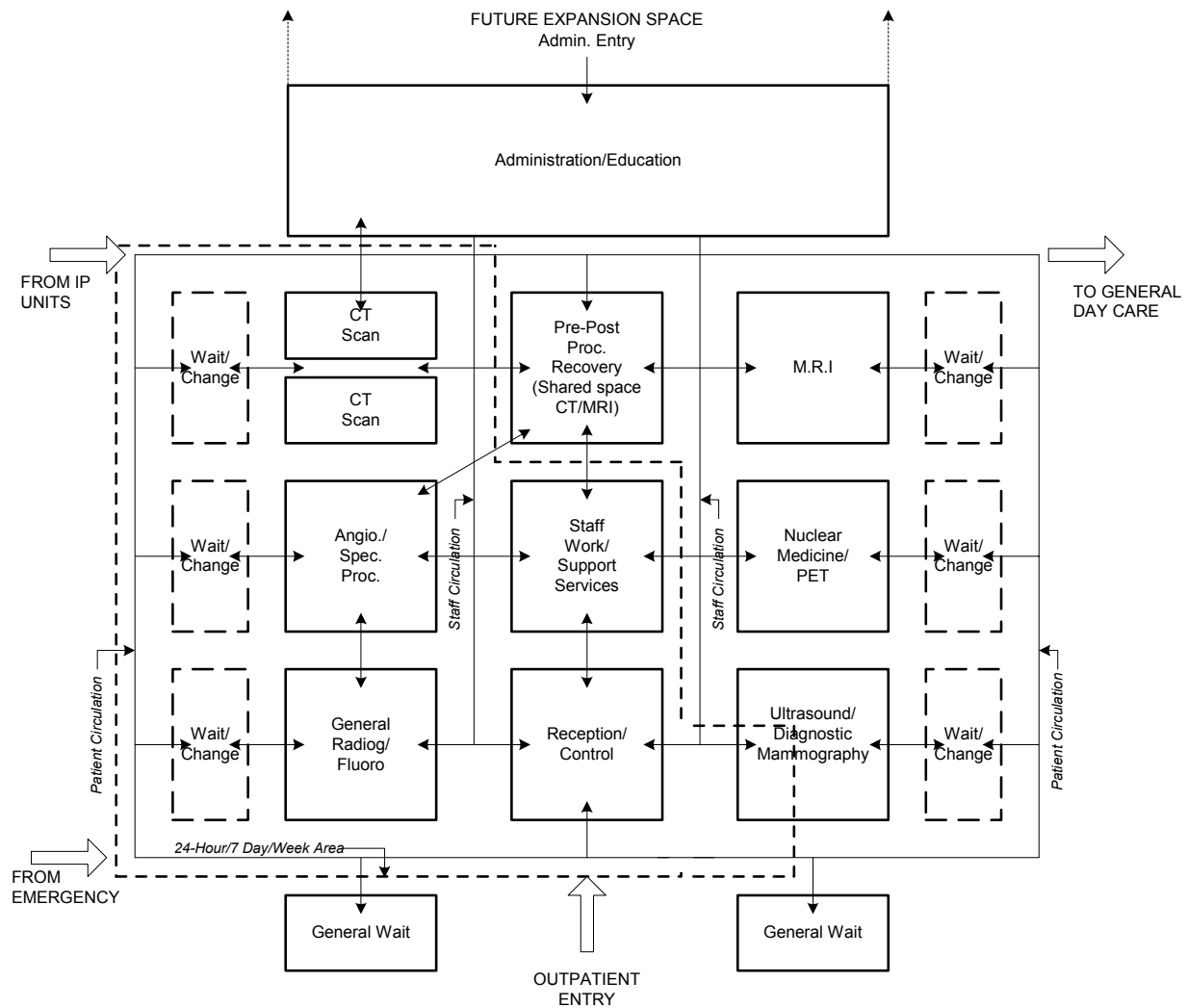
C3.5.2.19 Computer Room

A cooled, ventilated PACS computer server room will be provided.

C3.5.2.20 Component Functional Diagrams

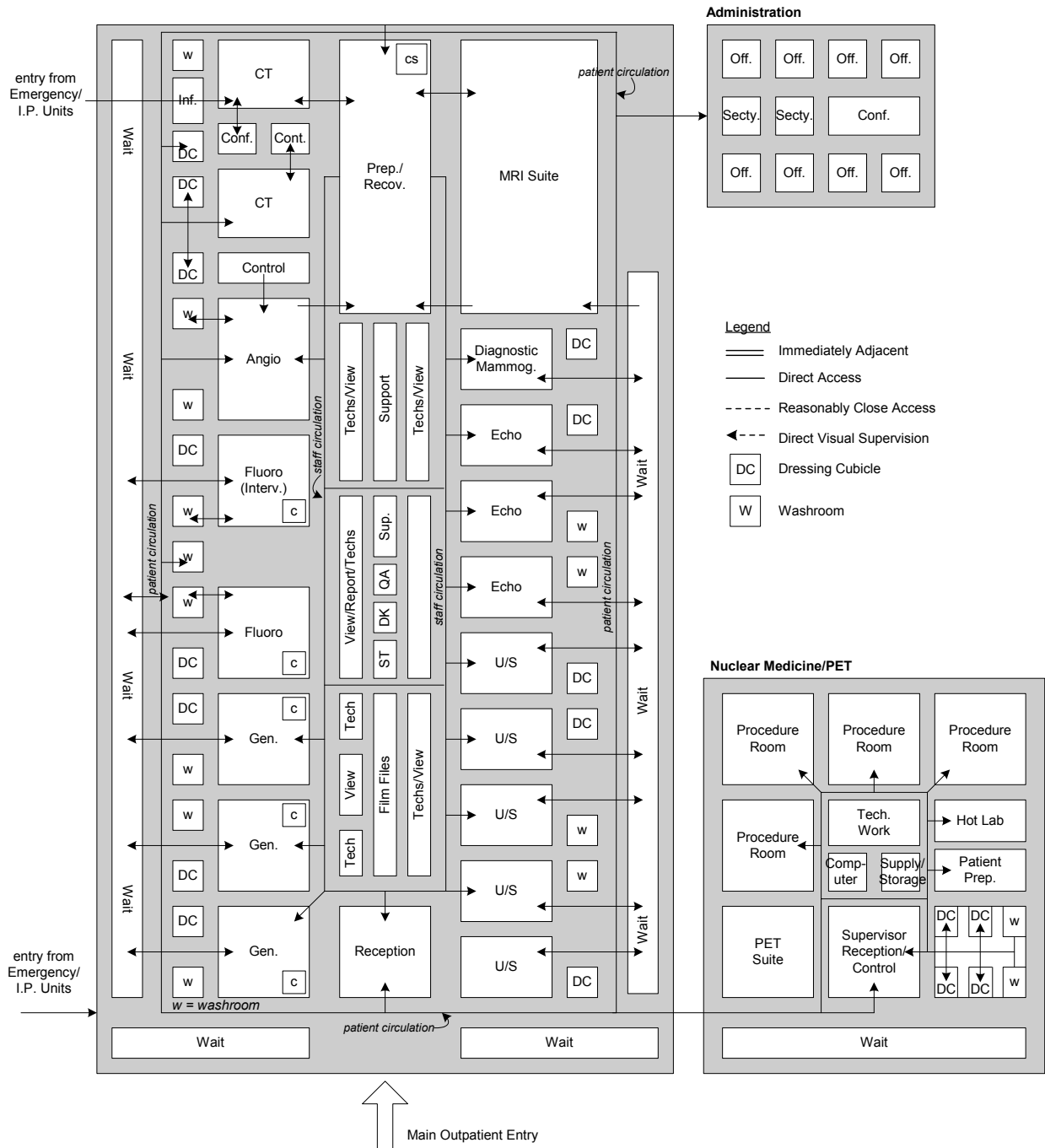
The spatial organization of this component will be generally as shown in the diagrams below.

C3.5.2.20.1 Macro Relationship Diagram



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C3.5.2.20.2 Micro Relationship Diagram



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C3.5.3 Schedule of Accommodation (Note: Spaces listed in parentheses () are spaces supporting services provided by Project Co and are included in the total net square metres.)

Ref	Space	Area Requirements		
		units	nsm/unit	nsm
	<u>Reception/Control Area</u>			
01	Reception/Control Centre	1		25.0
02	Booking Clerk	1		12.0
03	Wheelchair Holding Area	1		4.0
04	Counselling Room	1		8.0
05	Office Equipment Room	1		10.0
06	Waiting Area, General	1		35.0
07	Waiting Area, Inpatient	1		31.0
08	Washroom , Patient, Wheelchair Access	2	3.5	7.0
	Subtotal			132.0
	<u>Procedure Area A, General Radiology/Tomography/Trauma/ Chest/Fluoroscopy</u>			
09	Waiting Area, General	1		15.0
10	Washroom, Patient	3	2.5	7.5
11	Washroom, Patient, Wheelchair Access	1		3.5
12	Dressing, Cubicle, Patient	7	1.5	10.5
13	Dressing Cubicle, Patient Assisted	3	2.5	7.5
	Procedure Rooms			
14	General/Trauma	3	28.0	84.0
15	Fluoroscopy (Remote) (Interventional)	1		35.0
16	Washroom, Patient, Wheelchair Access	1		3.5
17	Fluoroscopy (Conventional)	1		28.0

C Support Services
C3 MEDICAL IMAGING

Ref	Space	Area Requirements		
		units	nsm/unit	nsm
18	Viewing/Reporting Room, Radiologist	1		10.0
19	Workroom, Technologists	1		12.0
20	Soiled Utility Room	1		(6.0)
21	Clean Supply Holding Room	1		(6.0)
	Subtotal			228.5
	<u>Procedure Area B, Special Procedures/Angiography/Interventional</u>			
22	Washroom, Patient, Wheelchair Access	1		3.5
23	Dressing Cubicle, Patient	1		1.5
24	Dressing Cubicle, Patient Assisted	1		2.5
	Patient Preparation/Recovery Area/Nurse Alcove			0 ¹
25	Procedure Room	1		50.0
26	Control/Monitor Room	1		10.0
27	Scrub Alcove			1.0
28	Viewing/Reporting Room, Radiologists	1		10.0
29	Workstation, Technologist	1		3.0
	Subtotal			81.5
	<u>Pre-/Post-Procedure Prep./Recovery Area</u>			
30	Stretcher Area	1		48.0
31	Locker Area, Patient	1		4.0
	Consent Room			0 ²
32	Care Station	1		6.0
33	Clean Supply Holding Room	1		(8.0)

¹ See pre-/post-procedure prep./recovery area.

² See MRI area.

C Support Services

C3 MEDICAL IMAGING

Ref	Space	Area Requirements		
		units	nsm/unit	nsm
34	Soiled Utility Room	1		(8.0)
35	Washroom, Patient, Wheelchair Access	1		3.5
36	Crash Cart Alcove	1		0.5
	Subtotal			78.0
	<u>Procedure Area C, Ultrasonography/Diagnostic Mammography</u>			
37	Waiting Area, General	1		32.0
38	Washroom, Patient	1		2.5
39	Dressing Cubicle, Patient	14	1.5	21.0
40	Dressing Cubicle, Patient Assisted	2	2.5	5.0
41	Procedure Room, US	3	15.0	45.0
42	Washroom, Patient, Wheelchair Access	2	3.5	7.0
43	Procedure Room, US, Large	2	18.0	36.0
44	Procedure Room, Echocardiography	3	15.0	45.0
45	Washroom, Patient, Wheelchair Access	1		3.5
46	Procedure Room, Diagnostic Mammography	1		16.0
47	Dark Room, Film Store/Processor	1		10.0
48	Viewing, Reporting Room, Mammographer	1		6.0
49	Office, Supervisor	1		9.0
50	Viewing/Reporting Room, Radiologist	1		10.0
51	Workroom, Technologist	1		18.0
52	Probe Disinfecting Room	1		8.0
	Subtotal			274.0

C Support Services

C3 MEDICAL IMAGING

Ref	Space	Area Requirements		
		units	nsm/unit	nsm
	<u>Procedure Area D, Computed Tomography (C.T.)</u>			
53	Waiting Area, General	1		6.0
54	Holding/Infusion Area	1		18.0
55	Washroom, Patient, Wheelchair Access	1		3.5
56	Dressing Cubicle, Patient	2	1.5	3.0
57	Dressing Cubicle, Patient Assisted	1		2.5
58	Locker Area, Patient	1		3.0
	Procedure Room			
59	Scanner Room	2	36.0	72.0
60	Control Room	2	15.0	30.0
61	Viewing/Reporting Room, Radiologist	1		10.0
62	Workroom, Technologist	1		3.0
63	Office, Supervisor	1		10.0
	Subtotal			161.0
	<u>Procedure Area E, Magnetic Resonance Imaging</u>			
64	Waiting Area, General	1		10.0
65	Patient Interview/Consent Room	1		8.0
66	Dressing Cubicle, Patient	1		1.5
67	Dressing Cubicle, Patient Assisted	1		2.5
68	Washroom, Patient, Wheelchair Access	1		3.5
69	Procedure Room	1		40.0
70	Control/Computer	1		20.0
71	Cryogen Storage	1		6.0

C Support Services

C3 MEDICAL IMAGING

Ref	Space	Area Requirements		
		units	nsm/unit	nsm
72	Viewing/Reporting Room, Radiologist	1		8.0
73	Workroom, Technologist	1		3.0
74	Clean Supply/Storage Room	1		(8.0)
75	Soiled Utility Room	1		(8.0)
	Subtotal			118.5
	<u>Procedure Area F, Nuclear Medicine/PET</u>			
76	Reception/Control Area	1		12.0
77	Waiting Area, General	2	14.0	28.0
78	Washroom, Patient	2	2.5	5.0
79	Washroom, Patient, Wheelchair Access	1		3.5
80	Dressing Cubicle, Patient	6	1.5	9.0
81	Dressing Cubicle, Patient Assisted	2	2.5	5.0
82	Patient Preparation Cubicle/ Injection Room	3	6	18.0
83	Unassigned Reference Number	0		0.0
84	Unassigned Reference Number	0		0.0
85	Isotope (Hot) Lab., Medium Level	1		16.0
85-1	Stor. Cupbd., Radioactive	1		4.0
86	Alcove, Thyroid Uptake	1		3.5
	NM Procedure Rooms			
87	Gamma Camera	2	28.0	56.0
88	Gamma Camera	1		28.0
89	Bone Densitometry	1		16.0
	PET/CT Scanner Suite			
90	Procedure Room	1		30.0

C Support Services
C3 MEDICAL IMAGING

Ref	Space	Area Requirements		
		units	nsm/unit	nsm
91	Control Room	1		15.0
92	Injection/Wait Room	1		11.0
93	Radiopharmaceutical Prep Room			0 ³
94	Washroom, Patient, Wheelchair Access	1		3.5
95	Computer Room	1		5.0
96	Workstation, Supervisor	1		8.0
97	Viewing/Reporting Room, Radiologists	1		8.0
98	Workroom, Technologists	1		15.0
99	Storage, Isotope Disposal	1		3.0
100	Clean Supply Holding Room	1		(8.0)
101	Soiled Utility Room	1		(8.0)
102	Storage Alcove, Equipment	1		8.0
	Subtotal			326.5
	<u>Support Services/Staff Work Area</u>			
103	Alcove, Dry Laser Processing	1		5.0
104	Storage, Active Film Files	1		50.0
105	Computer Room, RIS	1		10.0
106	Workshop, Biomedical Engineering	1		(11.0)
107	Storage, Mobile X-Ray Units	1		(6.0)
108	Office, Quality Assurance	1		9.0
109	Housekeeping Closet	2	5.0	(10.0)

³ See isotope (hot) lab.

C Support Services
C3 MEDICAL IMAGING

Ref	Space	Area Requirements		
		units	nsm/unit	nsm
110	Break Room, Staff	1		36.0
111	Staff Coat Closet	1		4.0
112	Shower, Staff	1		3.0
113	Washroom, Staff, Male	1		7.0
114	Washroom, Staff, Female	1		12.0
Subtotal				163.0
<u>Administration/Education Area</u>				
115	Office Area, Secretaries	1		12.0
116	Office, Radiologist	1		9.0
117	Office, Medical Director	1		9.0
118	Workstation, Secretary	1		6.0
119	Office, Administrative Director	1		12.0
120	Office, Manager	1		9.0
121	Office, Clinical Instructor	1		9.0
122	Office, Physicist	1		9.0
123	Conference Room/Library	1		30.0
124	AV Equipment Store	1		6.0
Subtotal				111.0
Total				1674.0

C3.6 DESIGN GUIDANCE

Project Co is referred to:

- Radiation Protection
- Nuclear Safety and Control Act

C Support Services

C3 MEDICAL IMAGING

C3.7 OTHER SPECIFICATIONS

Imaging services are primarily based in the Medical Imaging department, however, imaging services are also provided throughout the facilities.

Specific requirements for these include:

- Dedicated space for parking and storage of mobile x-ray equipment and recharging batteries. (These will be provided in the Emergency, Surgical Suite, Critical Care Units and on each inpatient floor or general ward areas.) These areas will not obscure corridors and will be adequately ventilated and afford appropriate levels of fire protection.

The imaging requirements for these locations are specified in the Surgical Suite Specification and the Inpatient Units Specifications.

Other specifications that will be consulted are:

- A1 Ambulatory Care Centre
- A2 Emergency
- A3 General Day Care Unit
- B1 Comprehensive Cardiology Care Units
- B4 Intensive/Stepdown Care Units
- C7 Surgical Services