
C Support Services

C1 DIAGNOSTIC SERVICES

C1.1 SERVICE DESCRIPTION

C1.1.1 Scope of Clinical Services

This section C1 sets out the requirements for the facilities supporting a range of diagnostic and treatment activities to be achieved or accommodated by Project Co in providing the Works and the Services, including:

- Outpatient specimen collection (phlebotomy)
- Cardiology diagnostics
- Pulmonary diagnostics
- Neurodiagnostics
- Vascular diagnostics

These activities primarily serve the needs of outpatients, but will also be accessed by inpatients on a regular basis. Discreet access by inpatients will be provided while also being readily available to outpatients to achieve the concept of 'one-stop shopping' during a single visit to the Abbotsford Hospital & Cancer Centre.

The Outpatient Specimen Collection area will assume responsibility for patient reception and registration for Diagnostic Services and procurement of routine blood and body fluid samples. Most of these will be sent via a direct link pneumatic tube system to Laboratory Medicine for evaluation, analysis and electronic reporting.

This facility will serve all ambulatory care programs and services, including the pre-admission clinic and Cancer Centre. Services will involve the collection of laboratory specimens from patients, serve as a drop off area for patients collecting specimens at home, and will be a customer-friendly, easily accessible facility, for both Abbotsford Hospital & Cancer Centre patients.

Specific services to be provided to Cancer Centre patients include:

- The collection of blood and urine prior to or following an appointment in the Cancer Centre for routine testing. These patients will typically arrive at the collection station a maximum one hour prior to their cancer centre appointment.
- STAT testing for patients undergoing chemotherapy, radiotherapy and seriously ill patients with "priority" requisitions.
- Skilled phlebotomists to perform venipunctures on all Cancer Centre patients who present themselves to the specimen collection area.
- Specimen collection for those Cancer Centre patients that cannot come to the laboratory i.e., very debilitated patients or patients in the Chemotherapy or medical daycare units by phlebotomist from the inpatient phlebotomy team.
- Bed/couch will be located in the specimen collection area for use by patients who need to lie down for short periods of time due to their condition.

Cardiology Diagnostics functions performed in this component will include:

- Electrocardiography (ECG)
- Stress ECGs, (treadmill)
- Ambulatory blood pressure monitoring
- Holter monitor hook up, dismantle and scanning
- Pacemaker clinic (insertions will be done in the ICU)

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This area will provide the stress exercise portion of the nuclear cardiology testing being administered through nuclear medicine in Medical Imaging and, therefore, would benefit from a relatively closer proximity.

Pulmonary Diagnostics services offered will include:

- Lung function tests
- Lung mechanics tests
- Exercise tests (respiratory)
- Bronchial challenge tests
- Respiratory and exercise therapy
- Sleep lab program (shared with neurology)
- Home O₂ assessments

Specialized facilities and equipment for a range of diagnostic sleep studies will be shared by pulmonary function laboratory, neurodiagnostics and ENT (see component A1 Ambulatory Care Centre). This area will also accommodate the administrative base for respiratory staff therapists.

Neurodiagnostic functions performed in this component include:

- Electroencephalography (EEG)
- Electromyography (EMG)
- Evoked potentials (EP)
- Ambulatory EEG
- Sleep program (shared with pulmonary diagnostics)

Vascular Diagnostics services offered will include:

- Duplex ultrasound examinations (may be conducted in Medical Imaging)
- ECG stress tests

C1.1.1.1 Current Trends

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

- *Increase in use of mobile ECG's rather than bringing patients to a centralized service.*
- *New equipment is typically more mobile.*
- *Patients requiring outpatient care are becoming older and also more dependent; therefore, the volume of patient's times per procedure is likely to be greater.*
- *A move toward more ambulatory monitoring of patients.*
- *There is an increasing demand for sleep attendance clinic sessions and flexible use standard size rooms will enable this service to expand.*

C1.1.2 **Scope of Education Services**

This component will provide resources for the following types/ numbers of students:

- BCIT – ECG/EEG techs, 1 each at a time
- Respiratory therapy student, 2 each at a time

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C1.1.3 Scope of Research Services

As a major facility in the FHA with a coexisting partnership with Cancer Centre participation in clinical trials research studies is expected to be significant. Programs will be developed to support such functions both in terms of technology and skilled professionals.

C1.1.4 Specific Exclusions

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

- Cardiac angiography provided in other centres
- Bone marrow specimen procurements (see A3 General Day Care Unit)
- Fine needle aspirates (see A3 General Day Care Unit)

C1.2 OPERATIONAL DESCRIPTION

C1.2.1 Minimum Hours of Operation

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

- Outpatient specimen collection..... 0700h to 2000h, 5 days/week(plus 7 to 4 on Saturday)
- Cardiology diagnostics0700h to 1700h, 7 days/week (ECGs 24/7 days/week)
- Pulmonary diagnostics 0700h to 1700h, 6 days/week
- Neurodiagnostics 0700h to 1800h, 5 days/week
- Vascular diagnostics..... 0700h to 1700h, 5 days/week
- Sleep lab..... 5 nights/week

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C1.2.2 Patient Management Processes

C1.2.2.1 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 unit clerk. Inpatients will be portered to the component by 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 reports, tracings, x-ray films and notes, answering patient queries etc. are also undertaken here. All procedures will be scheduled through the booking clerk using the “community-wide scheduling model” on Meditech 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 particular 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.

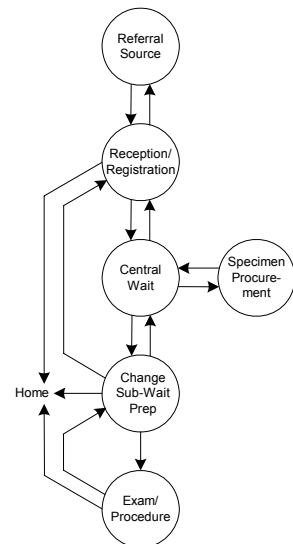
A small counselling room is required close to reception for patient counselling and confidential discussions.

C1.2.2.2 Waiting

Separate waiting areas are required for both outpatients and inpatients. Following arrival in the department and registration at reception, 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 technical 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 4 wheelchairs is required in this area. Most patients attend with at least 1 relative and the average number of patient visits per day is anticipated to be 200. Children will arrive for examination and some parents will attend with children and thus a child-friendly environment and play area will be provided near-by.

Patients will be called from the waiting areas by the technologist, and escorted to an examination room, preparation room or changing facilities. Changing and toilet facilities will be provided to serve the sub-waiting area in the cardiology area, and following changing and/or preparation, and immediately following examination, patients will wait in the changed sub-wait area close to their designated examination room.



Patient Flow Diagram

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C1.2.2.3 Change

Some outpatients and daycare patients will be required to remove some or all of their street clothing and wear a hospital gown prior to examination. Some patients will require assistance, 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.

Cardiology changing cubicles will be grouped close to the sub-wait area 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.

C1.2.2.4 Preparation

Some patients will require preparation prior to their examination or procedure.

C1.2.2.5 Examination/Procedure

Patients will be directed or escorted to the appropriate examination/procedure room within one or more of the procedure areas.

50% of the total ECGs will be performed on the Inpatient Units and Emergency. Equipment used for this purpose could be stored on the wards or in Emergency, however sufficient storage space for these mobile units in the component must be provided.

Any diagnostic procedures on prison clients require the attendance of prison guards with the patient at all times. These patients will be accommodated before the usual hours of operation to minimize their interaction with the public clients in the component.

C1.2.2.6 Post Examination

Following examination, the majority of patients will 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 or stretchers with nurses and caregivers.

Some patients who have been administered certain drugs will be required to wait in the department under observation until they can leave or return to the inpatient unit.

C1.2.2.7 Toilet Facilities

Patient toilet facilities will need to be provided close to the central waiting and sub-wait area (incl. toilets for persons with disabilities); additional provision will need to be made for patients who are undergoing sleep studies.

C1.2.3 **Patient Information Management**

Tapes, tracings, images and other recordings produced by the diagnostic tests will be interpreted by the physician, marked and reported, and the resulting information assembled into a report for part of the virtual patient record.

It is assumed that these reports/records will be paperless and reside on the FHA PACS system although some images will remain hard-copy.

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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.

C1.2.4 Staff Work Processes

C1.2.4.1 Preparation

Prior to undertaking any examination or procedure, the technologist or clinician 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 PACS image viewing equipment (monitors and standard x-ray film viewers), desk/bench space, access to telephone, etc.

C1.2.4.2 Post Examination

Following examination, technologists will examine and collate the final tracings, test results 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 any Clinical Waste associated with the examination.

C1.2.4.3 Reporting

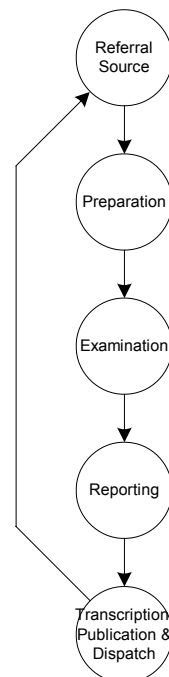
ECG examinations are reviewed and reported upon by a cardiologist.

This process takes place either in a reporting area or occasionally in the cardiologist's office. 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 by Project Co as a transcription pursuant to the E10 Service Category) or automatically transcribed via a voice to text system. Access to old reports (via Information Management), communication system linked to all areas.

C1.2.4.4 Staff Services

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



Process Flow Diagram

C1.2.5 Materiel Services

Four weeks' inventory of supplies will be accommodated in the off-site materiel services warehouse. One week's inventory of these supplies will be stored in this component.

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Medical and surgical supplies, and other dedicated medical and surgical consumables are supplied to the department and held in cupboards in each examination area including in a storage cart alcove.

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

C1.2.6 Linen/Housekeeping Services

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

C1.2.7 Equipment Asset Management

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

C1.3 ACTIVITY INDICATORS

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

C1.3.1 Hospital Activity

Unit	Minimum Projected Yearly Activity
<u>Outpatient Specimen Collection</u> Accessioning (# of patients)	31,345
<u>Cardiology Diagnostics</u> ECG Testing (exams) # OP Exams # IP Exams	
Subtotal	16,520
Holter Monitor (exams) # OP Exams # IP Exams	505 -
Subtotal	505
Pacemaker Clinic (visits) # OP Exams # IP Exams	
Subtotal	300
ECG Stress (exams) # OP Exams # IP Exams	
Subtotal	3,501
<u>Pulmonary Diagnostics</u> PF Procedures # OP Exams # IP Exams	
Subtotal	12,064 -
	12,064

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Unit	Minimum Projected Yearly Activity
<u>Neurodiagnostics</u>	
EEG Exams # OP Exams # IP Exams	
Subtotal	955
Evoked Response Tests # OP Exams # IP Exams	
Subtotal	290
EMG Tests # OP Exams # IP Exams	
Subtotal	260
<u>Vascular Diagnostics</u>	
Stress Tests # OP Exams # IP Exams	
Subtotal	2,200

C1.3.2 Cancer Centre Activity (Incl. in Hospital Activity above)

C1.4 PEOPLE REQUIREMENTS

This component will have a total staff complement in the range of 21 FTE, consisting of 7 phlebotomists, 10 technologists/technicians, and 4 clerical/administrative personnel.

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

Functional Areas	Patients	Staff	Visitors	Others	Total
Reception/Waiting Area	10-12	3	8-10	1	22-26
Outpatient Specimen Collection	6	5	2-3	1	14-15
Cardiology Diagnostics	8-10	4	4-5	4-6	20-25
Pulmonary Diagnostics	4	2	2-3	1-2	9-11
Neurodiagnostics	3	2	1-2	1-2	7-9
Vascular Diagnostics	1	1	1	1-2	4-5
Sleep Lab Program	2	2	1-2	1-2	6-8
Administrative/Technologists Area	0	15-20	0	5-6	20-26
Support Area	0	1-2	0	0	1-2

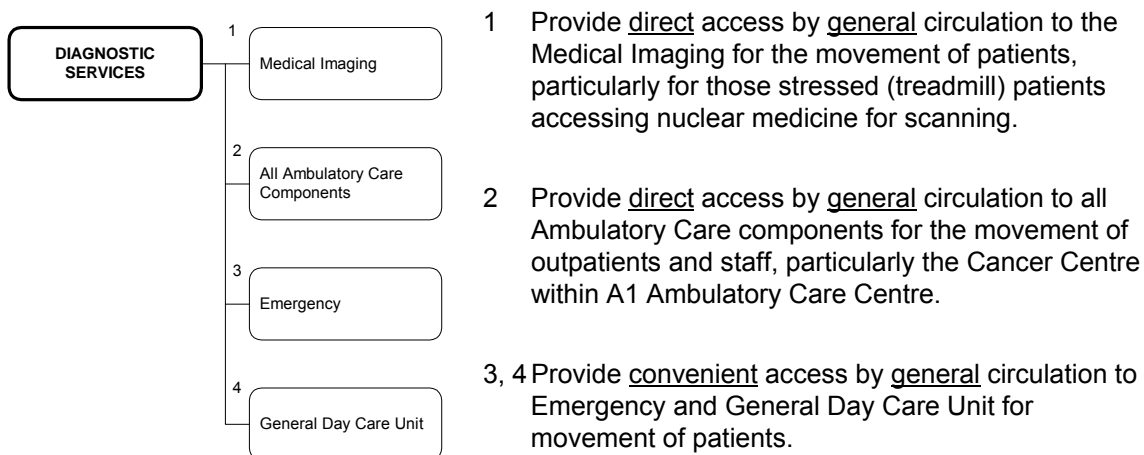
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C1.5 DESIGN CRITERIA

C1.5.1 Key External Relationships

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



Note:

- 1 Provide direct, internal pneumatic tube (dedicated) access to Laboratory Medicine for the movement of specimens.
- 2 Provide direct access from the main outpatient entry for patient convenience.

C1.5.2 Key Internal Relationships/ Environmental Considerations

The following will be achieved:

C1.5.2.1 Zoning

Create 2 zones within each subcomponent corresponding to patient access/flow patterns:

- A public zone including outpatient/visitor waiting area and offices
- A testing/treatment zone with restricted access

C1.5.2.2 Circulation/Flow

Provide wheelchair and bed access capabilities in all public and testing zones within the component for portable oxygen cylinders accompanying patients, and other equipment.

C1.5.2.3 Cardiac Arrest Access

Provide unimpeded access for the cardiac arrest team to all patient areas with access to a dedicated crash cart.

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C1.5.2.4 Privacy

Provide visual and acoustic privacy for patients undergoing tests or therapy.

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

C1.5.2.5 Accessibility

Provide bed accessibility to all patient care areas.

C1.5.2.6 Flexibility

Provide the flexibility to accommodate new technologies as they evolve.

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

C1.5.2.7 Patient Environment

Provide a temperature controlled environment in change cubicles, clinic and procedure areas.

C1.5.2.8 Ventilation

In pulmonary diagnostics ensure good ventilation in particular for “breathless” patients. These rooms will need negative pressure for potential TB containment.

Provide a temperature controlled environment in procedure areas. In particular, keep cool and dry for EEG, and warm for EMG.

Also refer to Output Specifications, Section 5: Design and Technical, subsection 5.3.15.14 Heating, Ventilation and Air Conditioning Systems.

C1.5.2.9 EMG & Evoked Potential Procedures

These procedures must be located away from electro-magnetic interferences (could be a problem if this component located next to nuclear medicine). Electrical power lines serving EMG equipment must be clearly separated from other electrical lines.

C1.5.2.10 Isolation of EEG and Sleep Lab Procedures

Locate EEG and sleep lab procedure areas peripherally in less active areas and away from interference of other machines and human traffic. Provide a computer link between EEG and the sleep lab.

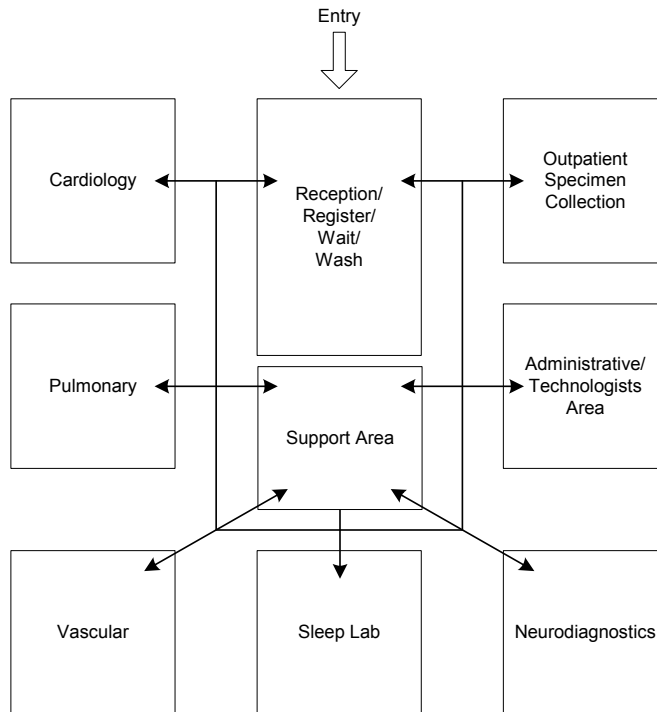
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C1.5.2.11 Component Functional Diagrams

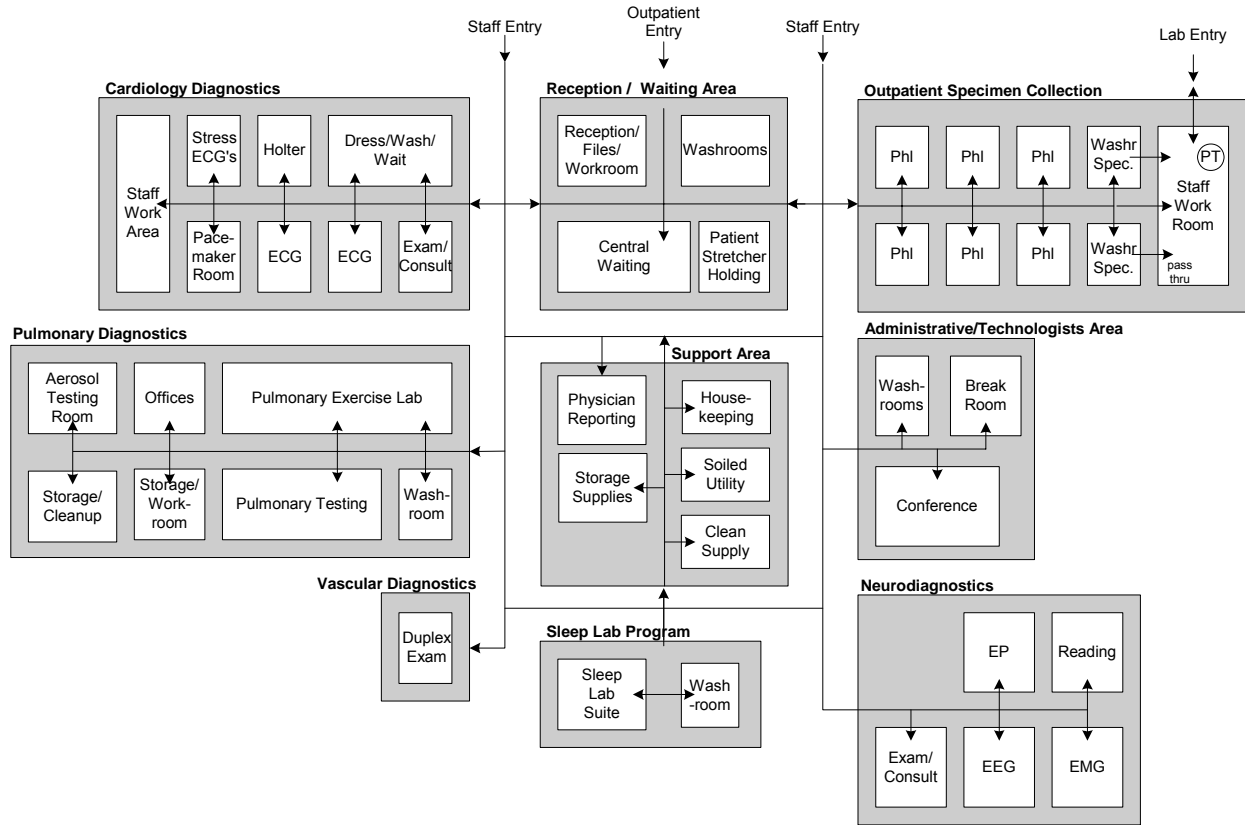
The spatial organization of this component will be generally as shown in the diagrams below.

C1.5.2.11.1 Macro Relationship Diagram



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C1.5.2.11.2 Micro Relationship Diagram



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C1.5.3 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/Waiting Area</u>			
01	Reception Area	1		15.0
02	Central Files Storage	1		10.0
03	Workroom, Office Support	1		8.0
04	Central Waiting Room	1		25.0
05	Washroom, Patient, Wheelchair Access	1		3.5
06	Washroom, Patient, Wheelchair Type	1		4.5
07	Patient Stretcher Holding Area	1		12.0
	Subtotal			78.0
	<u>Outpatient Specimen Collection Area</u>			
08	Phlebotomy Station	2	3.5	7.0
09	Phlebotomy Station, Wheelchair	2	4.5	9.0
10	Phlebotomy Prep/Stretcher/ Pediatrics/Cancer Room	2	10.0	20.0
11	Washroom, Specimen, Wheelchair Access	2	3.5	7.0
12	Staff Workroom	1		15.0
13	Pneumatic Tube Station	1		1.0
	Subtotal			59.0
	<u>Cardiology Diagnostics Area</u>			
14	Dressing Cubicle, Patient	2	1.5	3.0
15	Dressing Cubicle, Patient Assisted	1		2.5
16	Washroom, Patient, Wheelchair Access	1		3.5

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Ref	Space	Area Requirements		
		units	nsm/unit	nsm
17	Waiting Area, Gowned Patients	1		8.0
18	Exam/Consult Room	1		10.0
19	Exam Room, Resting ECG	2	10.0	20.0
20	Holter Monitoring Room	1		15.0
21	Pacemaker Clinic Room	1		10.0
22	Stress Testing Room, ECG	2	15.0	30.0
23	Staff Work Area	1		8.0
24	Crash Cart Alcove	1		0.5
	Subtotal			110.5
	<u>Respiratory Services: Pulmonary Diagnostics Area</u>			
25	Laboratory, Pulmonary Exercise	1		25.0
26	Washroom, Patient, Wheelchair Access	1		3.5
27	Laboratory, Pulmonary Testing	1		20.0
28	Office, Clinical Chief RT	1		9.0
29	Office, Multipurpose	1		9.0
30	Aerosol Testing Room	1		4.5
31	Storage and Workroom	1		34.0
32	Storage, Clean-Up Area	1		8.0
	Crash Cart Alcove			0 ¹
	Subtotal			113.0
	<u>Neurodiagnostics Area</u>			
33	Exam Room, EP	1		13.0

¹ See Cardiology Diagnostics Area, Ref. 24.

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Ref	Space	Area Requirements		
		units	nsm/unit	nsm
34	Exam Room, EEG	1		13.0
35	Exam Room EMG	1		13.0
36	Exam/Consultation Room	1		11.0
37	Reading Room/Dictation	1		10.0
	Subtotal			60.0
	<u>Vascular Diagnostics Area</u>			
38	Exam Room, Duplex Ultrasound	1		15.0
	Subtotal			15.0
	<u>Sleep Lab Program</u>			
39	Sleep Laboratory & Multiple Latency Sleep Testing	2	15.0	30.0
39-1	Sleep Laboratory & Multiple Latency Sleep Testing (shelled in)	2	15.0	30.0
40	Monitoring Room	1		12.0
41	Washroom, Patient, Wheelchair Access	1		3.5
	Subtotal			75.5
	<u>Administrative/Technologists Area</u>			
42	Conference/Seminar Room	1		15.0
43	Break Room, Staff	1		15.0
44	Staff Coat Closet	1		1.5
45	Washroom, Staff	2	2.5	5.0
	Subtotal			36.5
	<u>Support Area</u>			
46	Physician Reporting Area	1		12.0
47	Storage, Equipment/Supplies	1		20.0

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Ref	Space	Area Requirements		
		units	nsm/unit	nsm
48	Storage Alcove	1		3.0
49	Soiled Utility Room	1		(8.0)
50	Clean Supply Holding Room	1		(8.0)
51	Housekeeping Closet	1		(5.0)
	Subtotal			56.0
	Total			603.5

C1.6 DESIGN GUIDANCE

Project Co is referred to:

- CSA Z317.201

C1.7 OTHER SPECIFICATIONS

Diagnostic services are primarily based in the Diagnostic Services area, however, other specifications that will be consulted are:

- A1 Ambulatory Care Centre
- A3 General Day Care Unit
- C2 Laboratory Medicine
- C6 Rehabilitation Services
- C7 Surgical Services