Community Hospital – Maternity Care Unit and Neonatal Intensive Care Unit

Functional Program

B5.1 SERVICE DESCRIPTION

B5.1.1 Scope of Clinical Services

This functional program outlines the requirements for the centralized facilities for the Maternal NICU Program. The Maternity Care Unit (MCU) and Neonatal Intensive Care Unit (NICU) clinical services include:

- A labor triage services area
- Maternal/fetal/newborn services
- An antepartum/birthing/combined care unit with 28 Labor Birthing Recovery Postpartum (LDRP) rooms and 1 operating room
- A Level II NICU with provisions for 10 isolettes

The NICU provides separate facilities for the diagnosis and treatment of all NICU patients, adjacent to maternity services. Maternal/NICU services will be provided within an acute care environment that is appropriate for these patient groups. This requirement should influence all aspects of design of these areas, with the emphasis upon the creation of a non-threatening and family-friendly environment throughout all areas.

The Maternal NICU Program will be supported by an integrated interdisciplinary team of staff who are focused on meeting the needs of the women, their newborns and their families. The program will operate as a partnership with the community for continuity of care on public health programs and issues (e.g., prenatal care, post-delivery follow-up, etc.).

B5.1.1.1 Maternal/Newborn Services

The range of maternal/newborn services to be provided within this component include, but are not limited to:

- Counselling (preconception, prenatal, intrapartum and postpartum)
- Preadmission assessment
- Fetal/maternal assessment: non-stress tests and ultrasound
- Prenatal counselling, education and assessments (e.g., gestational diabetes)
- Parenting skills and maternal and infant care education
- Intrapartum care for mothers with normal to moderate risk deliveries
- Care for normal and level II newborns
- Postnatal care, including pre-discharge education and post-discharge follow-up clinics (e.g., parenting support, postpartum and neonatal clinics).
- Post-discharge newborn and neonate clinics will be closely linked to pediatric support; and
- High risk antepartum homecare

Labor Triage services to include:

- Labor assessment
- Induction services
- Direct admission process to a LDRP for women in labour, thereby, bypassing the Emergency department, and
- Labour assessments

<u>Maternal/Fetal/Newborn Outpatient Assessment</u> services are to include a range of diagnostics, assessments and consultations, bereavement counselling and selected procedures.

Antepartum/Birthing/Postpartum Combined Care Services to include:

- Fetal scalp monitoring
- Labour, birthing and recovery, and postpartum care for low to medium risk vaginal births in 28 LDRP suites
- Operative delivery and recovery services for emergent and elective C-section and trial forceps deliveries and recoveries in 1 operative delivery room

Medium/high risk births will be defined according to national criteria taking into account the care needs of the mother and baby.

<u>Level II NICU</u> including 10 isolettes providing Level II intensive care for neonates and high-risk newborns delivered in the hospital and referred in from area Level I center. Level II includes planned/anticipated care for infants with a gestational age greater than or equal to 34 weeks and 0 days and a birth weight greater than 1800 grams. A level of mild illness is expected to resolve quickly for those admitted to the NICU. The NICU will provide care of stable infants who are convalescing after intensive care and nasal oxygen with oxygen saturation monitoring (acute and convalescing). Staff will have the ability to initiate and maintain a peripheral intravenous and provide gavage feeding

Of the current birthing volumes, 20% of the in-hospital births are referred from outside the local health area catchment area and, therefore, a private room will be available for parents to care for their newborn baby to assist in the transition from the NICU to home.

The NICU will provide 'step-down' care to neonates being transferred back to the rural/remote areas from nearby Level III Neonatal Intensive Care Units. There will continue to be linkages with Level III centers within the regional area to help manage the patients referred.

B5.1.2 Scope of Education Services

Students from various disciplines will be present in these departments. These will include, amongst others, nursing and midwifery students.

- No medical residents are currently attending the program
- Nursing (undergraduate and graduate) students, up to 16 (8 mat, 8 NICU) at a time (on one shift)
- Midwifery students, 1 at a time
- Pharmacy undergraduates/residents, 1 at a time
- Physiotherapy students, up to 2 at a time
- Occupational therapy students, up to 2 at a time
- Respiratory therapy students, up to 2 at a time
- Dietetic intern, 1 at a time
- Social work students, up to 3 at a time.

B5.1.3 Scope of Research Services

The MCU and NICU will participate in multi-centered research studies involving interdisciplinary teams. It is expected that there could be 2-3 studies ongoing at any one time.

B5.2 OPERATIONAL DESCRIPTION

B5.2.1 Minimum Hours of Operation

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

Maternal/newborn services

- Labor triage: 24 hours a day, 7 days a week
- Maternal newborn outpatient service: 0800 1600, Monday to Friday\
- Birthing: 24 hours a day, 7 days a week
- Postpartum and antepartum inpatients: 24 hours a day, 7 days a week
- NICU: 24 hours a day, 7 days a week

B5.2.2 Patient Management Processes

Maternal/Newborn Services

B5.2.2.1 Reception/Registration

Patients will usually be referred through their family physician, obstetrician, or midwife; in some cases, they may be self- referred. Every attempt will be made to register mothers through the hospital registration area.

Appointments will have been scheduled through the hospital booking/scheduling system. Patients attending outpatient clinics will register/check-in at the hospital registration area.

Patients utilizing birthing services will also be pre-registered for their inpatient stay and upon presentation will require only verification of information; however, there will also be the ability to register in the labor birthing recovery postpartum (LDRP) room or birthing suite.

B5.2.2.2 Labor Triage/Antepartum Assessment

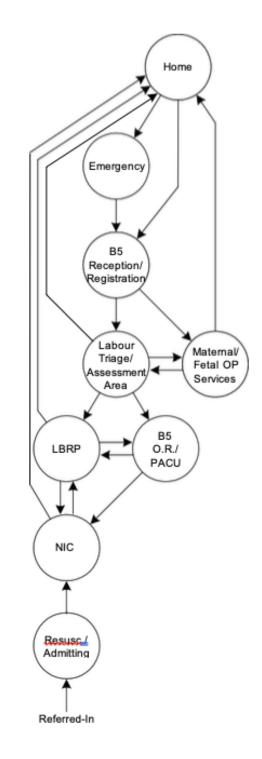
A labor triage and antenatal assessment area will be available to assess patients for delivery readiness utilizing ultrasound, induction and catheter insertions.

If patients are assessed to be ready for delivery, they will be provided with a LDRP or prepared for a cesarean birth, or if not ready, either be sent home, or asked to wait/ambulate.

For women who are deemed to be low to medium risk, labour, delivery, recovery and postpartum care will be in the LDRP. Mothers requiring an antenatal stay will be admitted to a LDRP bed on the Maternal Care Unit.

B5.2.2.3 Maternal/Newborn Care Unit

This area contains sufficient support space so as to eliminate or minimize the need for patients or staff to leave the unit for routine patient care activities. Spaces for patient



bathing, examination, treatment, education, and interaction with other patients and visitors are available within the unit, as are those support spaces frequently utilized by nursing and support staff. Spaces will not be shared with other inpatient units on the same floor as this is considered a closed unit.

Facilities should support the concept of family-centered care and education through accommodation of:

- Larger patient bedrooms
- Baby bathing in room
- Rooming-in of babies
- Family visitation
- Non-institutional finishing and environment

A special consideration in the design of this unit is to develop a home-like environment where family members can freely interact. Acoustical privacy between patient rooms is important in achieving this concept.

Provide all patients with exterior views from their beds. Each patient bed area will be provided with visual and acoustic privacy from activities in adjacent areas. Wall, floor and ceiling surfaces as well as furnishings must be carefully designed/selected so as to create a bright, cheerful, home-like environment.

Allow adequate space in each patient bedroom for isolettes as babies will room-in with mothers and a sleep bed/chair for the support person. Provision should also be made for a sink and cupboard and counter space in support of the rooming-in concept. A separate hand hygiene sink will be provided in the provider work area.

All spaces utilized by patients must be designed for safe use by persons with disabilities (e.g., handrails in corridors and bathrooms).

Provide attractions within the unit to encourage early ambulation of patients. Comfortable, attractive lounges, with outside access if possible, are to be created where a patient can obtain either privacy or interaction and can have a snack (cookies, toast) with tea/coffee. Corridors will be attractive and wide enough to encourage patient ambulation without interference with staff or materials movement.

B5.2.2.4 Newborn Care

All newborns will be assessed in the LDRP by nursing and medical staff. Normal healthy babies will remain with their mother. If necessary, a newborn will be moved to the infant resuscitation room and from there to the NICU for closer monitoring and observation.

Provide the nursery areas with exterior light and views.

Wall, floor and ceiling surfaces as well as furnishings must be carefully designed/selected so as to create positive environment for staff morale and to stimulate neonate perception but must not interfere with the natural skin tone of the infants.

Capability to reduce/subdue lighting for rest periods is necessary.

The area should have acoustical isolation from external and internal noise.

The NICU should contain sufficient support space so as to eliminate or minimize the need for staff to leave the unit for routine patient care activities. Space for patient examination and treatment will be available within the unit, as will spaces frequently utilized by nursing staff.

Some babies may be discharged back to their mother if she is still a registered inpatient or they will be discharged home.

The spatial organization of the NICU is based upon three principal factors: the continuous observation, monitoring and treatment of the newborn infants; the movement of staff and supplies related to the provision of medical and supportive nursing care; and the maintenance of a clean environment which corresponds to the activities of patient care.

In keeping with the above-mentioned principles, the NICU will be organized internally into two major zones - restricted and non-restricted.

The restricted zone will include the patient care areas and attached patient care support facilities. In each patient room there will be a clearly designed space for families to sit, rest and participate in the care of their infant.

The non-restricted zone will include the administrative and staff support facilities related to the comprehensive operations of the NICU. The activity and environmental conditions in the restricted zone will be regulated by the nursing staff. Patient care facilities will constitute the primary work areas within this zone.

The NICU facilities must be isolated from outside traffic. The staff and visitor's entry to the patient care areas will be strictly controlled internally and limited to specific individuals. The scrub/gowning areas will be located at the entries to the restricted zone.

B5.2.3 PATIENT INFORMATION MANAGEMENT

The information technology strategy will support the department as follows:

- Booking/scheduling system available at any workstation in the Hospital or outside to those who have privileges to the system
- Statistics and indicators will be captured from registration and care databases to minimize re- entry
- Telehealth set-up for patient care consults and staff education, including a teaching channel in 2-3 languages
- WIFI will be available for all patients, families and visitors
- Test ordering and results reporting will be by data link with other departments/services

- Linkage to other area hospitals and to electronic NICU Health Network, Regional Perinatal Registry, etc.
- Data will be structured in a way that facilitates outcomes research and continuous quality improvement analysis

B5.2.4 SECURITY AND PERSONAL SAFETY

The design of the Facility shall consider patient, staff and visitor safety principles in site layout, building design, landscaping, and lighting:

- natural surveillance
- hierarchy of space
- territoriality
- target hardening
- access control.

Optimized views and visibility will be provided by glazing corridor walls and doors where function allows. Locate public washrooms and public change rooms so that they are accessible directly from high use public areas and circulation paths.

B5.2.5 INFECTION CONTROL

Routine infection control practices and principles shall be utilized, maintained and practiced ensuring a safe environment for all patients, staff and visitors in the Facility.

Handwashing sinks

- Provide sinks with integral counters and back-splashes constructed out of solidsurface seamless materials in all isolation rooms, ante rooms, and in locations.
- Provide hand hygiene sinks convenient to nurse stations and in standardized locations in all patient care areas. There shall be at least one handwashing sink for every three beds in open plan areas, and one in each patient room.
- For each patient room a sink shall be located in the toilet room. In addition to the sink in the toilet room, a hand hygiene sink shall be provided in the patient room outside of the patient's cubicle curtain so that it is accessible to staff. In rooms that include an anteroom, the hand hygiene sink shall be located in the anteroom.
- Provide hand hygiene sink within each procedure, examination, treatment and clinical room. The hand hygiene sink will be in addition to any utility sinks provided.
- Provide hand hygiene sink conveniently accessible to the nurse stations, medication stations, and nourishment center.
- Provide a hand hygiene sink in each soiled workroom or soiled holding room.

 Provide employee hand hygiene sinks in each room where clean or soiled linen is processed and handled.

B5.2.6 Staff Work Processes

Maternal/Newborn Services

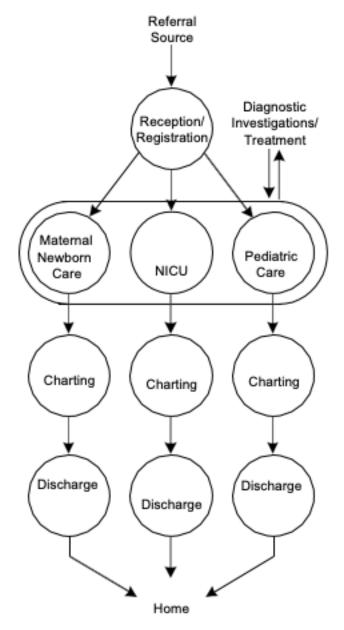
B5.2.6.1 <u>Maternal/Newborn Care Unit</u> The parent/newborn care station will be centrally located to minimize distances to patient bedrooms. Beds closest to the nurses' station will be used for non-acutely ill antepartum patients.

The resuscitation room will be located in close proximity to the operative delivery room and the NICU.

The unit is to be sufficiently compact and designed so as to provide the patient with the secure feeling that nursing staff are close at hand.

Aside from the care station, other spaces frequently used by care providers will be located as close as possible to patient bedrooms (e.g., medications room, conference/charting area, clean utility and soiled holding rooms), while other support spaces could be further removed from patient bedrooms.

All providers must have areas where they can discuss or document patient condition/information in private. Whereas the nursing desk will be highly accessible to patients and their visitors, an acoustically private conference area will be provided immediately adjacent to the care team base.



B5.2.6.2. NICU

A care team base will be provided for the use of all staff. This work area will be centrally located so as to minimize distances to each neonatal area and to permit direct visual supervision of all activities in the unit.

Intermediate care involves continuous observation and monitoring of environmentally isolated infants. Infant rooms will be located so as to permit the team members to view all patients and monitoring equipment from provider work areas in the patient room. An isolation annex within the nursery area will be separated from the nursery area by glass walls and doors.

All other spaces frequently used by care providers will be located as close as possible to patients (e.g., clean and soiled utility, equipment storage, etc.).

Staff members assigned to the NICU will initially enter through the staff change areas in the obstetrical suite. They will remove their street clothes and the nurses will change into working clothes. All staff members and parents will scrub and gown prior to entering the NICU areas.

Clean supplies are to be delivered directly by supply technicians to the clean utility room. Supply technicians should not penetrate other areas of the NICU. Supplies are held or transferred by internal staff to appropriate use areas. Similarly, soiled materials (held in separate soiled utility rooms), will be able to be removed without Materiel Services staff entering the infant care area.

B5.2.6.3 Surgical Supplies

Sterile supplies are generally all processed in Sterile Processing Services (see section C8). Sterile and general supplies are to be delivered in case carts via a dedicated handling system directly to the sterile holding area (sterile core) of the obstetrical operating room.

At the time of their use in a procedure, the case carts are transferred to the obstetrical operating room and packs are opened and prepared. The cart remains in the operating room during the course of the procedure. Any back-up supplies needed during the performance of the procedure are delivered by the sterile holding area staff to the operating room circulating nurse.

All equipment, which cannot or need not be sterilized, is maintained in a designated area attached to the patient/staff corridor.

Following the procedure, all instruments, equipment and soiled or contaminated materials are removed from the operating room in appropriate bags placed in the case carts in which they were delivered. Supplies to be reprocessed in Sterile Processing Services are transferred to the soiled holding room. All supplies which are in the operating room following the procedure are considered contaminated, whether used or

not, and must be removed from the operating room as described before re-use.

Soiled case carts are held in a soiled holding room until returned to Sterile Processing Services decontamination area for sorting and distributing to the respective processing areas (laundry, trash disposal, etc.). The material is then sterilized and packed in Sterile Processing Services, arranged on case carts and the process begins again.

B5.2.6.4 Staff Services

Create a separate staff break/team room on the unit where staff may take breaks in a relaxed, acoustically sound insulated environment with direct access to natural daylight.

Staff changing rooms and half size lockers will be planned integrally within the Maternal/Newborn Care Unit to allow for the opportunity of maintaining a high degree of sterile discipline. Students and volunteers will also have space for coat storage in the coat closets. Purse lockers will be provided for personal valuables and will be shared across shifts. A staff break/team room will be provided for beverage making, staff debriefing, grieving and rest.

B5.2.7 MATERIAL SERVICES

Instruments will be provided to the operative delivery room and LDRP's using a case cart system. Local 'flash' sterilization for exceptional items, dropped instruments, etc. will be available in the birthing area. A "prep" room, separate from the clean supply room, will be provided to clean these instruments prior to flash sterilization. Case carts will be delivered by direct aces elevator. It is assumed that a delivery cart system operating on a just-in-time schedule will be established.

Supplies to the Inpatient Care Units will be provided using a top-up system and delivered by Material Services. Items will be bar-coded and scanned as used, or at daily/weekly checks with ordering automatically linked to the stockless provider.

Linen and housekeeping services will be provided by the on-site contractor

B5.3 ACTIVITY INDICATORS

The table below summarized the projected activity for maternal NICU program services which must be accommodated:

B5.3.1 Hospital Activity

Unit	Minimum Projected Activity
Birthing Unit # Live Births - Normal - Under 2,500 Grams - C-Sections	1,672 88 440
Total <u>Maternal/Newborn Care Unit</u> # Cases # Patient-Days ALOS (Days) % Occupancy # LDRP Beds Set-Up	2,200 2,616 6,541 2.5 64.0 28
<u>Maternal/Fetal OP Services</u> OBS Non-Stress Tests Rhogam Injections	2,700 240
NICU # Cases # Patient-Days ALOS (Days) % Occupancy # Isolettes Set-Up	310 3,103 10 85.0 10

B5.4 PEOPLE REQUIREMENTS

This department will have a total staff complement in the range of 111 FTE, consisting of 103 nurses, 1 social worker and 7 clerical/administrative personnel.

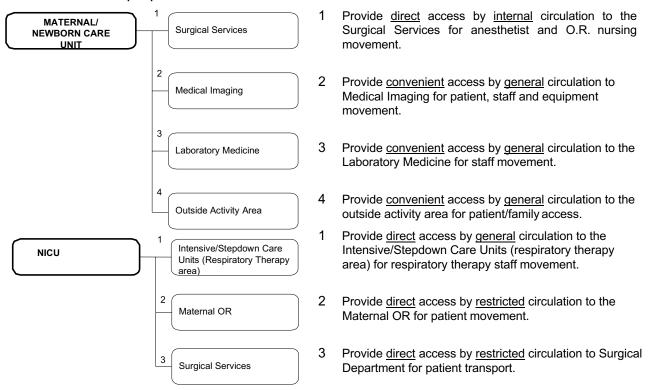
It is anticipated that the key functional areas in the department will need to accommodate the following maximum number of people.

Functional Areas	Patients	Staff	Visitors	Others	Total
Maternal/Newborn Care Unit Reception Area Labour Triage Area Maternal/Fetal OP Services Area Antepartum/Birthing/Combined Care Area	5-6 6 4-5 25-28	2-3 4-5 3-4 25-27	4-5 5-6 2-3 20-25	1-2 2-3 2-3 3-5	12-16 17-20 11-15 73-85
Staff Facilities	0	8-10	0	2-3	10-13
NICU Patient Care Area	10	12-13	10-12	2-3	34-38

B5.5 DESIGN CRITERIA

B5.5.1 Key External Relationships

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



B5.5.2 Key Internal Relationships/ Environmental Considerations

The following will be achieved:

B5.5.2.1 <u>Maternal/Newborn Care Unit</u>

Provide security of drugs by locating automatic dispensing cabinet in the medications room under the direct visual supervision of nurses in the nurses' station and by providing a card swipe system.

B5.5.2.2 <u>NICU</u>

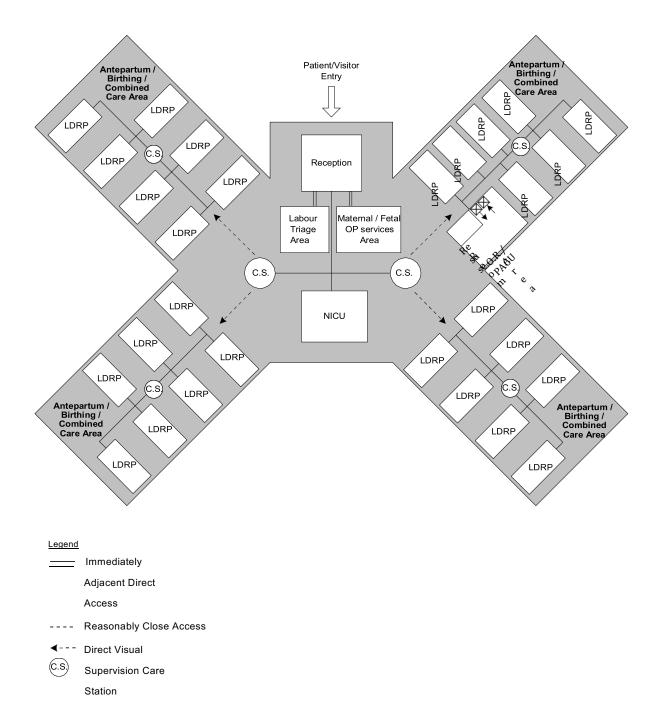
Essential to provide controlled access into and out of the unit, with alarmed locks, etc., to protect patients (e.g., patient abduction).

All patient care areas must be accessible to portable x-ray equipment.

B5.5.2.5 Departmental Functional Diagrams

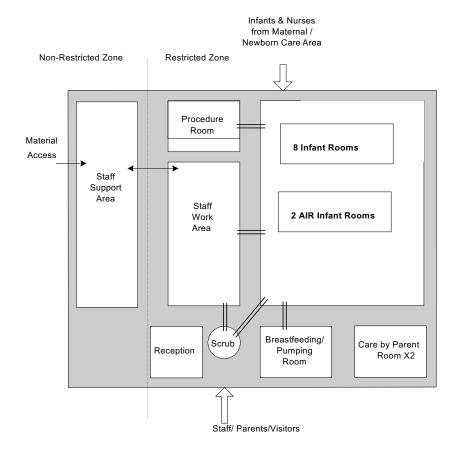
The spatial organization of each department will be generally as shown in the diagrams below.

B5.5.2.5.2 Micro Relationship Diagrams



Maternal/Newborn Care Unit

CPS Elevators



NICU

B5.5.3 Schedule of Accommodation (Canadian) or Space Plan (USA)

				Sq Ft/ Unit	NSM	Sq Ft
	Rec	eption Area	-			
1	Reception/Registration Desk	1			12	129
2	Office Equipment Room	1			10	108
3	Waiting, Family	1			16	172
4	Washroom, Public, Wheelchair Type	1			4.5	48
5	Storage Alcove, Stretcher/ Wheelchair	1			5.5	59
	Total(Reception Area)				48	516
	Tri	iage Area	-			
6	Care Station	1			8	86
7	Triage/Antepartum Assessment Room	6	14	151	84	904
8	Washroom, Patient, Wheelchair Type	1			5	54
9	Storage, Equipment	1			6	65
10	Interview/Counseling/Quiet Room	1			12	129
11	Clean Supply Holding Room	1			8	86
12	Soiled Utility Room	1			8	86
13	Soiled Holding Room	1			8	86
	Total (Triage Area)		1		139	1496
	Maternal/Fetal/Net	wborn OP Se	rvices Area			
14	Assessment Room, NST	3	9.5	102	28.5	307
15	Exam/Consult Rooms	2	11	118	22	237
16	Procedure Room, Ultrasound	1	1		14	151
17	Restroom, Patient, Wheelchair Access	2	3.5	38	7	75
18	Multi-Use Staff and Pt Education Room	1			40	431
	Total (Maternal/Fetal/Newborn OP)				111.5	1201
	LDRP Care Clu	uster (3 total o	clusters)	<u> </u>		
19	LDRP Room	7	30	323	210	2260
20	Restroom, Pt, Wheelchair	7	10	108	70	753
21	Storage, Equipment/Supplies	7	3	32	21	226
22	Care Station	1			8	86
	Subtotal (per cluster)	-	1		309	3325
	Subtotal (3 clusters total)		+		927	9975
			+			
	LDRP/O	R Care Cluste	er			
23	LDRP Room	7	30	323	210	2260
24	Restroom, Pt, Wheelchair	7	50	525	70	753
25	Storage, Equipment/Supplies	7			21	226
25	Care Station	1	1		8	86
20	Operating Room, Obstetrical	1	1		65	700
27	Scrub Alcove	1	1		4.6	50
28	Scrub Alcove Sterile Holding Room, Recovery	1	1		4.6	108
30	Recovery Room -2 bays	1	1	├	24	258
31	Infant Procedure/ Resuscitation/ Admitting Room	1		├	14	151
31		1		├	14	
32	Soiled Holding Room	1		├	12	129 129
35	Housekeeping Closet		1	├		
	Total (LDRP/OR Care Cluster)		1	├	450.6	4850
	Defient C	are Support A	102			
24			aca		20	215
34	Patent Dining and Multipurpose Room	1		├	20	215
35	Nourishment/Buffet Area	1		├	8	86
36	Food Cart Alcove Food	1	+	┝────┤	0.5	5
37	Service Galley	1		┝────┤	20	215
38	Shower, Wheelchair/Stretcher	1		┝────┤	10	108
	Total (Pt Care Support Area)		1		58.5	629

B5.5.3 Schedule of Accommodation (Canadian) or Space Plan (USA)

	Space	Units	NSM/ Unit	Sq Ft/ Unit	NSM	Sq Ft
		Staff Work A	Area			1
39	Care Team Base	2	16	172	32	344
40	Pneumatic Tube Station	2	1	11	2	22
41	Medications Room	2	7	75	14	151
42	Dictation Cubicle	2	1.5	16	3	32
43	Conference/Team Report Room	2	18	194	36	388
44	Crash Cart Alcove	1			0.5	5
45	Office, Chief of OBGYN	1			9	97
46	Office, Patient Care Coordinator	1			9	97
47	Restroom, Staff	1			2.5	27
48	Clean Supply Holding Room	2	12	129	24	258
49	Soiled Utility Room	2	10	108	20	215
50	Linen Cart Alcove	2	2	22	4	43
51	Soiled Holding Room	2	12	129	24	258
52	Storage, Equipment	1			20	215
53	Housekeeping Closet	1			5	54
	Total (Staff Work Area)				205	2206
		Staff Facilit	ies	<u> </u>		
54	Break/Team Room, Staff	1	1		26	280
55	Locker/ Change Room, Male	1			4.5	48
56	Washroom, Male	1			6	65
57	Shower Room	1			4	43
58	Locker/ Change Room, Female	1			20	215
59	Washroom, Female	1			12	129
60	Shower Room	1			4	43
61	On-Call Room	4	7		28	301
62	Toilet, Staff On-Call	1	,		3.5	38
02	Total (Staff Facilities)	1				1162
		NICU Area	a	<u> </u>	100	1102
	Patient Care Area					
63	Scrub/ Gowning Ante Room	1			4	43
64	Reception/Clerical Desk	1			4	43
65	Bassinet Room	8	16	172	128	1378
66	Medication Room	1			6	65
67	Bassinette - AIR Room	2	10	108	20	215
68	Isolation Anteroom	2	5	54	10	108
69	Breastfeeding/ Pumping Room	1			8	86
70	Staff Work Area	1			10	108
71	Pneumatic Tube Station	1	1		1	100
72	Crash Cart Alcove	1	1		0.5	5
73	Office Patient Care Coordinator	1	1		9	97
74	Quiet Consultation Room	1	1	+ +	9.5	102
75	Care By Parent Room	2	12	129	24	258
76	Restroom, Parent, Wheelchair Access	1	12	123	3.5	38
77	Waiting, Family	±	<u> </u>	┟────┼	3.3	50
78		1		├	9	97
	Clean Supply Holding Room		<u> </u>			
79	Alcove Linen Cart	1			2	22
80	Soiled Utility Room	1			8	86
81	Soiled Holding Room	1	<u> </u>	├ ────┤	8	86
82	Storage, Equipment	1		├ ────┤	25	269
83	Break/Team Room Staff	1			2.5	27
84	Washroom, Staff	ļ	ļ			
	Total (NICU Area)	ļ	ļ		292	3144
		1	1	I		1