Nurse Station
Design Manual

workflow design
& project planning
Sustainable by design.
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Learning Objectives

Understand nurse station functions and work zones

- Become familiar with both administrative and clinical nursing duties
- Understand the responsibilities of individual nurse station work zones
- Be able to identify floor traffic patterns and volume of nursing staff

Know the key personnel

- Who are the medical staff members typically found in the nursing unit
- What are the individual responsibilities of the members of the nursing staff
- What is the role of the nursing administration in both the design and decision making process for Goelst casework selection

Understand the information workflow and chart management systems

- Identify both electronic medical record systems as well as traditional paper systems including patient chart distribution and placement
- Understand the flow of patient information throughout individual nurse station areas and how to optimize both floor space and traffic patterns
- Identify areas where patient charts reside and who is responsible for patient information at various steps in the clinical treatment process

Know the differences between Centralized and Decentralized units

- Establish if the design project is an expansion or patient floor redesign
- Identify what the administration’s nurse station expectations are and how to adapt based on the client’s specific workflow requirements
- Consider both the positive and negative aspects of centralized vs. decentralized productivity including various hybrid configurations

Provide a thorough “needs assessment” and GoelstCAD drawings

- Seek design input from various sources including administration, nurses, engineers, and architects and complete multiple preliminary walk-throughs
- Establish design requirements for the specific work areas to be built
- Calculate square footage and consider hardware, machinery, chart management and filing systems early in the design process
- Apply Goelst nurse station components in functional and aesthetic configurations using GoelstCAD software
Primary Nurse Station Function

In every healthcare facility there is a centralized work area that acts as the communication center for both administrative and clinical tasks associated with patient care. Multiple members of the healthcare staff occupy this space but the hospital nursing staff is ultimately responsible for the management and productivity of all nurse stations. Depending on the size and layout of the facility there may be single centralized nurse stations or a sub-set of multiple decentralized units that perform supplemental activities including direct patient care. The overall nurse station area may include additional support rooms located adjacent to the desk and charting areas. Medical supply storage, medication prep rooms, and clinical diagnostic areas may also be the responsibility of the nursing staff. Primary services of the nursing staff fall under the following categories:

1. Management and distribution of patient care charts and records
2. Monitoring of patients including administering of tests and treatment
3. Communication of patient’s condition to both physicians and visitors

The physical nurse station also serves as the initial point of contact for both visitors and patients. This area should retain a level of comfort and aesthetic properties that make it appear both professional and inviting to the public. Contemporary design elements for nurse stations are becoming increasingly important to high-end health care facilities.

The size of the nursing unit and the workflow systems are determined by the volume of hospital patients as well the space that has been allocated for patient care during the initial planning phases. Depending on the layout, staffing considerations, and philosophy of patient care, nurse stations will fall into one of the following categories:

1. Centralized Workflow - Centrally located nurse stations that act as main focal point
2. Decentralized Workflow - Strategically placed sub-units enabling direct patient care
3. Hybrid Workflow - Sub-units that work together with a central communication area

Additional Considerations
As with all application specific designs, preliminary planning will ensure success of the project. The following aspects relate to functional methods of nurse station design:

- Plan accordingly for effective chart management systems, filing, and storage
- Plan to reduce noise interference and maintain privacy near patient care rooms
- Establish optimal floor traffic plans and maintain visibility for nursing staff
- Design around computer workstations as well as patient monitoring equipment
Nursing Personnel

Physician
The physician or medical doctor has the ultimate responsibility of diagnosis, treatment, and care of hospital patients. It is the job of the physician to observe patients and prepare clinical orders including treatment and diagnostics which are then completed and documented by various members of the nursing staff.

Unit Secretary
The unit secretary assumes the role of receptionist in the nursing unit and also completes a wide variety of administrative tasks. The unit secretary is the prominent contact person in the nursing unit and is responsible for coordinating communication efforts among the nursing staff. The unit secretary will also manage patient information and billing records.

Head Nurse
The primary responsibility of the head nurse is to supervise the clinical work and activities of the nursing staff. This position will belong to an accredited registered nurse. The head nurse is also responsible for administrative duties including staffing and budget management. The head nurse will also enforce compliance with hospital policy and procedures as well government mandated regulations.

Staff Nurses
The staff nurses may be either registered or licensed practical nurses. These nurses will be assigned to individual patients and provide the majority of direct care. The staff nurses will administer physician ordered treatments and testing as well as evaluate patient care.

Unit Staff
Members of the unit staff have received less training than RN and LPN’s. The unit staff may include technicians, orderlies, aides, and volunteers. They are responsible for assisting the supervisory nursing staff by completing basic tasks such as transporting patients and changing bed linens.

Ancillary Staff
These staff members each have different supportive roles in the patient care process. Ancillary staff typically serve as consultants from various other hospital departments. Ancillary consultants may include pharmacists, dieticians, physical therapists, etc.

- Larger facilities and educational medical institutions may have an increased volume of students and residents requiring larger nurse stations with more specific needs
- Nurse station units located in speciality departments such as emergency, cardiology, and oncology may have varying staffing and functional requirements
Nursing Administration

Decision Making Process
The nursing administration will have the greatest influence over the decision to purchase Goelst nurse stations and casework. They may receive additional input from in-house architects, department heads, hospital engineers and facility managers. Their insight will also be critical in the planning and design phases for nursing configurations.

Nursing Administration
The nursing staff should be proactive and provide information concerning specific nursing unit functions and requirements such as equipment needs and traffic patterns. The head administrator should be the primary contact for selling nurse station products and related casework on the patient care floor. Additional design considerations include:

- Providing space for patient monitoring equipment to increase efficiency
- Reconfigurability is important as nursing technology is rapidly evolving
- The ability to change components quickly without much loss in production time
- The nurse station should include organized and efficient chart filing systems
- A design should maximize storage space including vertical and overhead units
- The staff will also be concerned with the durability of casework components
- Aesthetic considerations and modern design elements are also a top priority

In-House Architect
The hospital architect will likely be interested in the design and configuration of nursing units and casework. The architect may even be instrumental in selecting Goelst casework in addition to the head nursing administrator. Their interests in Goelst may include the use of modular components and the ability to make custom design and aesthetic configurations. The architect may also work closely with in-house engineers and carpenters.

Hospital Administration
The hospital administration will generally support the decision made by the nursing staff to purchase casework from specific vendors. Additional considerations may include:

- Budget concerns and financial factors including depreciation, repair, and reuse
- The ability to reconfigure quickly and maximize vertical storage space
- The administration will be highly interested in contemporary design aesthetics
Information Flow & Charting

The use of medical charts and filing systems are critical to the success of patient care. The efficiency of a chart management system can have direct results on the level of care a patient receives. In clinical care, a unique paper trail is created for each individual patient. Charting is defined as the act or functional area where notation and transcription is completed on the patient chart resulting from physician ordered testing and/or treatment. Digital charting technology is being utilized by some hospitals but paper is still the primary record keeping method. In fact, less than two percent of hospitals and clinics have transitioned entirely to paperless charting systems. The current trend is to utilize computer workstations while also relying on hard copy information.

The chart management system and the flow of written information through the nursing unit must be addressed in the preliminary planning phase. Specific charting areas and distribution patterns should be identified during the initial needs assessment to ensure the success of any casework application. Additional design considerations include:

1. Identify all chart storage requirements and paper filing areas
2. Establish floor traffic plans and points of access for the nurse station
3. Designate functional areas including charting and dictation early

It is not uncommon for end-users to have a concept or system for chart management and placement developed before beginning the casework design. If further insight is required by the end-user it will be beneficial to be aware of standard chart distribution cycles.

Chart Storage and Notation

By utilizing both hard copy files and computer workstations, horizontal work space can be very limited in and around the Nurse Station. Overhead casework and vertical storage cabinets are necessary to store charts and to house forms. The most common method of chart management incorporates vertical and horizontal stacks of clipboards that are made readily available to hospital personnel. Multiple dictation surfaces including physician only and outgoing chart areas will be located in close proximity to filing and storage.

Goelst product applications:

- Storage racks with multiple slots can be achieved using 17 series mailslot cabinets
- 18 series overhead cabinets with slots can also be used to increase vertical storage
- Three-ring patient binders require a minimum of 3” in width for storage slot space
Electronic Health Records

Advancements in technology have had a noticeable influence on every aspect of our daily lives. However, in the healthcare industry where such innovations directly impact the quality of patient care, we have yet to see technological advancements significantly revolutionize healthcare record keeping and storage.

The use of traditional paper charts remains the preferred method of patient record management in the majority of U.S. hospitals and doctors’ offices. Most individuals and institutions are reluctant to transition to a comprehensive electronic record system. The reasons for such resistance include the initial up-front costs of upgrading computer hardware and software as well as the delays and impact on productivity that may potentially result from such a massive infrastructure project. Regardless of the potential benefits it is apparent that it will be quite some time before the majority of patient health records become fully digital. There is a wealth of patient information that would need to be included in a digital file format. The challenge for supporters of the electronic system is to seamlessly integrate all facets of patient care information including diagnostics, physicians’ notes, billing info and clinical history into a single digital interface. Numerous software developers are at work producing administrative programs that are capable of managing every aspect of a patient’s health record. There is an obvious need for a universal electronic application that is accessible by all healthcare providers. It is a basic technology language barrier that currently prohibits one hospital’s computer network from communicating with another’s.

Universal integration of digital records appears to be a long way out. A recent national survey revealed that less than two percent of hospitals have transitioned exclusively to electronic health records. The same survey indicates that approximately 10 percent of U.S. hospitals have only begun the process of implementing electronic medical records. These hospitals have at least one department that currently utilizes digital record keeping. When compared to the progress of other countries, the U.S. ranks very low in its efforts to adopt evolving healthcare management technology. Dr. David Blumenthal, head of the institute for health policy at Massachusetts General Hospital cites that only 17 percent of American doctors have completely abandoned paper charts and replaced them with digital formats.

The current trend does have the potential to shift. This year the Obama administration approved a stimulus bill that allocates $19 billion in funds and incentives for implementation of computerized medical records. The majority of small hospitals surveyed have cited budget constraints as the primary impediment to making the transition. Resistance by doctors is also a primary factor for the reluctance to make the shift. It should be noted that these facts reflect the statistics of public and private hospitals and not government institutions. The largest exception would be Veterans Administration facilities which have been using computerized records for the past 10 years and our slated to receive a large portion of stimulus funds to facilitate future digital expansion. For all other healthcare facilities it remains critical to design workflows, casework, and equipment around traditional paper chart systems and storage requirements until other means become a reality.
Patient Chart Placement

In order to ensure the success of the nursing unit configuration, a well organized chart management and information flow system should be established during the casework design and layout phase. Problems with efficiency and traffic flow may occur if chart placement is designed after the casework is installed. It is beneficial to do a department walk-through to map the flow of charts and to identify any potential areas of congestion.

1. Chart Process - Identify the steps for patient charting in the nursing unit
2. Chart Placement - Identify locations where charts are stored during care

Patient Rounds
At the start of the charting process patients will be placed in a waiting or exam room. The chart is then picked up from the nurse station by the physician who then begins rounds.

- 18 series overhead cabinets with slots can also be used to increase vertical storage
- Three-ring patient binders require a minimum of 3” in width for storage slot space

Order Entry
The physician examines the patient and labels testing and treatment instructions on the chart for the nurses. The chart is then dropped-off and organized by the Unit Secretary.

- A specific area at the Unit Secretary should be designated for chart organization
- A minimum of 2 linear feet should be reserved for the order entry work surface

Active Chart Holding
After the Unit Secretary initiates the orders, the nursing staff completes the requested tasks then files the chart in a mutually accessible storage area or Active Chart Holding.

- This area should be highly visible and accessible by all nursing staff and physicians
- This is the largest patient chart area and will require up to 10 linear feet per 30 beds
- A storage slot for every bed is required which is achieved with multiple shelving units

Patient Discharge
When patient treatment is completed or if the patient is not admitted to the hospital, discharge orders are written by the physician and stored in a separate charting area.

- The patient discharge area will have the smallest volume of patient charts at one time
- This area should be highly visible and accessible by nurses and the Unit Secretary
Charting Diagram

The patient charting process is repeated several times a day and tends to be cyclical in nature. Members of the nursing staff and physicians will need access to charts at various locations. The diagram below illustrates the flow of information through the nursing unit.

1. Chart resides in racking system at nurse station until taken on rounds by physician
2. Physician examines patient and writes orders for medications, tests, and treatments
3. Physician returns updated patient chart to nurse station storage racks
4. Charts are collected by the Unit Secretary after rounds are completed
5. Secretary reads orders and schedules tests
   - Forms are completed
   - Unit Secretary enters patient info into computer
   - Treatment tasks are written on schedule board
6. Active charts are ordered, coded, and labeled for nurses to review
7. Chart orders are assessed and reviewed by nursing staff before being initiated
8. Charts are returned to Unit Secretary after treatment is complete
9. Charts are prepared for next patient rounds or patient is discharged
10. Forms and orders are emailed, faxed, or sent via pneumatic tubes
11. Patient chart orders are sent to labs, radiology, and/or pharmacy

The charting diagram above illustrates the flow of information through the nursing unit.
Centralized Unit Secretary

The Unit Secretary is the most central functional area in the entire nursing unit. It acts as the main communications hub for all nursing and administrative tasks. The Unit Secretary is the point where the charting system both begins and ends for patients. Most of the administrative and clinical tasks performed in this area are cyclical in nature. The Unit Secretary is responsible for recording all patient information, updating charts and billing info, computer data entry, scheduling test and treatments, and monitoring of phone systems.

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The Unit Secretary area should remain set apart from other areas in the nursing unit to ensure the privacy of the workers. However the configuration should also remain accessible by staff members, patients and visitors. Additional design considerations include:

- The Unit Secretary area will require a minimum of 6-8 linear feet of work space
- To ensure privacy, all non-essential foot traffic in this area should be limited
- The Unit Secretary will require chart storage space and casework for paper filing
- To facilitate reconfiguration 12 series mobile pedestals may be used for filing
- A work surface for chart notation and sorting of orders should also be included

Planning Around Equipment

The Unit Secretary staff is responsible for completing a wide variety of clinical and administrative tasks. There will also be a variety of equipment and computer hardware that should be considered while designing. Functional space in this area may have multiple uses which requires planning for both multitasking as well as access by various personnel.

- The Unit Secretary will have multiple computer workstations and flat screen monitors
- Communication equipment including phone consoles and faxes will also be present
- Multiple printers for charts, labels, and diagnostics may also be required
- If the hospital is using electronic health records this equipment will also be present
- Other equipment including pneumatic tube systems may be shared by the staff
Unit Secretary Diagram
The design sample featured below represents a typical Goelst Unit Secretary configuration and incorporates our latest modified G-Wall components. The rendering below also includes the recommended locations for clerical equipment often found at the Unit Secretary which includes computer hardware, printer/faxes, and telephones. The curvilinear shapes reflect contemporary nurse station design aesthetics. A more fashionable and upscale appearance of casework and reception areas is becoming increasingly important to high-end healthcare institutions who are relying on visual appeal now more than ever in an effort to market to potential clients and to retain business.
Staff Nurse Charting

The hospital Staff Nurses will require their own work area for writing and organizing notes and physician orders. At the nurse station “charting” is defined as the physical space where notation, chart sorting, and treatment scheduling are carried out by the staff nurses. This notation and chart storage area should remain separate from both Active Chart Holding, the Unit Secretary, and the Physician Dictation area. Patient charts will arrive at the nurse charting area after the Unit Secretary has entered all of the necessary patient information into the computer database.

Since this area is mutually accessed it should be located in between the Unit Secretary area and any secondary work stations. Depending on the size of the hospital and volume of patients, this area may be subdivided into acute, trauma, or critical care sections.

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The Staff Nurse Charting Area is characterized by busy traffic flows and large volumes of personnel. This area is primarily composed of computer workstations and writing surfaces used for patient chart notation and storage. Additional design considerations include:

- As is the case with all communal nursing areas, charting should remain highly visible
- With the evolution of technology and computer hardware in recent years, in addition to traditional paper filing systems, charting space has become even more limited
- Vertical storage including **18 series overheads** can increase essential charting space
- A minimum of 4 linear feet of work surface space per person is recommended if the staff nurses’ charting area includes multiple computer terminals
- It is best to use quantitative linear feet to assign seating in the nurse charting area
- Refrain from specifying an overall seating area in the charting configuration and then assigning as many workstations as possible regardless of ergonomics
- Charting work surfaces may also require additional space for telephone equipment, reference manuals, hospital binders, and medical research
- Charting areas may also require **11 series base unit filing cabinets and tack panels**
**Staff Nurse Charting Diagram**

The nursing area below represents the typical symmetrical layout for the charting/dictation area found in hospitals. The symmetry of the center work surface provides pass-through capabilities of files and paperwork between the nurses and the physicians located at the adjacent dictation area. Note that the forward nurse stations have been designed using radiused G-Wall components to achieve a highly aesthetic yet functional design. The center writing area is constructed of standard goelst casework products including 18 series overhead cabinets for increased storage and a Goelst worktop with supporting panels. Also note the various locations of computer hardware, reference binders, and manuals.
Physician Dictation

The physicians’ dictation area is generally a secluded area in the nursing unit where physicians can review patient information including test results and treatment progress, make notations to charts, and dictate orders to be transcribed by staff nurses. The dictation area will typically be located in close proximity to the Staff Nurse Charting Area so that patient charts can be passed back and forth and notes can quickly be compared. A constructive dialogue between physicians and the nursing staff is essential to providing team oriented patient care. Coordinated healthcare is becoming the new trend in nursing and patient care.

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The physicians’ dictation area is generally exclusive and requires a high degree of privacy. It is often the most interior portion of the nursing unit and may be positioned adjacent to a back wall if one is available. It should be located far away from high traffic areas including hallways, corridors, and visitor access points. Additional design considerations include:

- Dictation areas should be close to or adjacent to Active Chart Holding in order to quickly initiate patient rounds and to review tasks completed by the staff nurses

- The dictation area closely resembles the Staff Nurse Charting Area and in some cases the two areas may be connected in a symmetrical joint configuration

- An average of 36-48 inches of work surface per physician should be designated

- Depending on the various methods of transcription, doctors may utilize telephone and/or computer equipment at the dictation area in addition to a writing surface

- To further ensure privacy the dictation area should remain far from the Unit Secretary

- Dictation areas should also have limited direct access and adjacency to open areas

- Partial height G-Walls and/or clear acrylic panels also ensure visual/auditory privacy

- Physicians may also require a minimal amount of personal form and paper file storage
Physician Dictation Diagram
The functional area below is characterized by typical elements found in the Physician Dictation area. The casework products used should provide significant storage space and adequate writing surfaces. In this diagram the forward section is constructed of straight G-Wall components and the rear area includes 18 series overhead cabinets and base cabinets. Note the use of transaction counters on the G-Wall nurse station. These components will provide much needed privacy for the physician while he/she performs tedious medical transcription and reviews patient care progress.
Patient Chart Storage

Areas designed for both notation and storage of patient charts should be included in almost all nurse station designs. The patient chart areas should be accessible by both nurses and physicians yet remain separate from visitors and members of the public.

As discussed previously the charting process is essential to patient care. In order to provide casework solutions for the most common chart organization methods a stacking/racking system for patient charts should be established during the preliminary design phase.

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Patient charts are typically accessed while hospital staff is on the move. Charting and holding areas should remain centrally located and highly visible to personnel. An assessment of traffic flow patterns in and around the chart storage area is recommended to prevent potential congestion in the workflow. Additional design considerations include:

- Establish if the charting system is paper based, digital, or a combination of the two
- Identify storage areas including order in/out, active holding, and patient discharge
- Patient charts/clipboards may be filed either horizontally or vertically
- Charting should be located close to the Unit Secretary but remain a separate area

**Active Chart Holding**

Once doctors' orders are completed the patient chart is placed in the Active Chart Holding area to await either discharge by the attending physician or the next set of rounds. Active Chart Holding will be the largest and most congested chart storage area. As the volume of charts and complexity of the management system increase the likelihood for inefficiency and errors also increases. This area will have its own specific design considerations:

- Active Chart Holding should be the most centrally accessible area in the nurse station
- This area should remain highly visible and accessible by all hospital caregivers
- A work surface of 10 linear feet per 30 beds is recommended for Active Chart Holding
- Either a single or double row of chart storage racks is also recommended
- Utilize either 17 series mailslots or 18 series overhead cabinets for Active Holding
- As technology and computer hardware becomes more prevalent in the nursing unit horizontal space for chart storage will become even more limited
Patient Chart Storage

The rendering below illustrates a Goelst Nurse Station that has been specifically designed to function as a Patient Chart Storage area. As mentioned previously, the success of the hospital’s charting system is integral to the level of patient care that is provided. A significant amount of time and preliminary planning should be reserved for both chart organization and storage.

The most notable characteristics of the chart area below include the use of 17 series mailslot storage cabinets. Also note that the mailslot cabinets have been designed to be both horizontal and vertical. This represents a common system of hospital chart organization in which orientation of the chart reflects a patient’s care status. For example a vertical chart may represent that the patient is awaiting further testing and/or treatment where as a horizontal chart may represent that the patient is awaiting discharge from the hospital. For every project it is important to collaborate with the nursing staff and administration to define specific hospital protocol which may have a direct impact on casework design and implementation. Also note the use of radiused G-Wall components to construct the nurse station.
Patient Monitoring

Both nurses and physicians will need to track patient vital signs while working at the nurse station. Remote cardiac monitors that display the patient’s heart rate, blood pressure, and EKG recordings will be found in almost all nursing units. Patient monitoring equipment usually consists of multiple flat-panel screens and will have a designated location within the nurse station. The patient monitoring area should remain highly visible to all personnel and may even require seating and a dictation work surface for recording information on patient charts. In an effort to conserve space, patient monitors may be either ceiling or wall mounted. There may also be a dictation area present that is reserved for physicians.

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To ensure successful planning of casework, certain factors should be addressed during the initial needs assessment of the nursing unit. Additional design considerations include:

- Which members of the nursing staff will need direct access to patient screens?
- Will diagnostic printing equipment also be required with the monitoring equipment?
- What is the quantity of patient monitors required, their sizes, and dimensions?
- Will additional storage space for monitor reference manuals also be required?

Future Trends in Patient Monitoring

As technology continues to evolve both the quantity and size of patient monitors are proportionally decreasing. Multiple patients can now be monitored on a single computer screen. Also the introduction of automated monitoring software in recent years is also decreasing the need for multiple personnel to be responsible for individual patient monitors.
Patient Monitoring

The rendering below includes both the aesthetic and functional characteristics of all of the nurse stations we have seen thus far. The curvilinear elements created by the radiused G-Wall components provide expansive counter space while balancing both privacy and visibility of monitoring stations. The monitoring area should remain spacious to allow for multiple personnel to easily view the patient monitors.

Individual monitors may be ceiling mounted, wall mounted, or placed directly on work surfaces. The size, number, and location of patient monitors needs to be specified during the preliminary needs assessment to ensure that all casework is properly configured around the equipment.
Medical Preparation

In an effort to increase functionality, support areas in and around the nursing configuration may be designated for specific clinical tasks. In this case there may be a medication prep room adjacent to the nurse station. There may also be a sterile area inside the nurse station where medications are prepared and stored prior to patient treatment.

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Medical preparation is also a high volume staff area and should be carefully considered during the preliminary design phase to prevent work surfaces and storage areas from becoming overly cluttered and inefficient. Additional design considerations include:

- A refrigerated area should be included for cold storage medications
- A 14 series sink cabinet should be included to enable sterile hand washing
- An 80 FTV floor mounted foot pedal may also be included on the sink unit
- Storage space for supplies as well as narcotic substances should also be included
- If a secured automated dispensing unit is being used allocate a 24” x 30” space
- If controlled substances are stored in casework include locks on doors and drawers
- Use 18 series cabinets for overhead storage of reference manuals and binders
- Tack panel surfaces may also be used to display protocols and announcements
- Medical Preparation areas will average 8 linear feet in width
- A minimum of 4 linear feet should be designated for an unobstructed work surface

Future Trends in Medical Preparation Areas

As centralized nurse stations continue to evolve into more coordinated support areas for decentralized workflows the presence of medication prep areas is likely to increase. By incorporating multifunctional areas, greater flexibility can be achieved by the nursing staff. Establishing a more efficient use of hospital resources and limited floor space during the design phase is becoming increasingly significant.
Medical Preparation
The rendering below illustrates a typical medical preparation area and its adjacency to the nurse station. In this configuration, medication prep is an open area that is accessible to both the nursing staff and physicians. In some hospital layouts the medication prep area may be a separate room but in other cases it may be located in close proximity to other nursing areas in an effort to increase collaborative care and to limit isolation amongst the nursing staff. It is important to collaborate with the nursing staff and physicians to identify specific requirements for the medication prep area.

In either setting the prep area will have specific characteristics. The design should include adequate storage space, at least one sink, a refrigeration unit and secure storage for narcotics and controlled substances.
Holding and Receiving

A support area for laboratory testing specimens and other items should also be included in the nurse station design. Throughout the patient care process multiple specimens including blood work and tissue samples will need to be sent to and from the lab areas. This is typically achieved through the use of a dual tube pneumatic transportation system.

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The holding and receiving area tends to also be a high traffic area. A specific area that is easily accessible should be designated for the holding and receiving area. Additional design considerations include:

- This area should be located below the standing height work surface
- This area will require multiple storage and shelving units
- Patient specimens are sensitive items and storage should maintain confidentiality
- Multiple storage units are needed to prevent disorganization and accidental breakage
Holding and Receiving

The rendering below represents a small cross section of the nursing unit that is responsible for the storage and management of patient specimens. From this station the nurses will collaborate with laboratories such as pathology to administer tests then record various results. The casework for the specimen holding area should include shelving and/or drawer base cabinets to ensure safe storage and confidentiality of patient specimens.

17 series mailslot cabinets have been included to provide adequate specimen storage within a minimal space. The base cabinet also includes file drawers for chart and record storage. A computer terminal has also been included to provide a means of digital notation and date entry. The transaction counter top increases the element of privacy for sensitive patient information. Lastly the holding and receiving area is typically located in close proximity to a pneumatic tube system (not pictured) to increase efficiency of laboratory testing. Always establish specific user requirements before designing casework.
Cart Holding and Distribution

Various transportation carts will also require significant storage space in and around the nursing unit. The nursing staff will require mobile carts to complete certain clinical tasks as well for transporting supplies. Crash carts, pharmacy medication carts, meal carts, and mobile computer carts should be made available to various nursing personnel.

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Additional design considerations include:

- Plan casework designs around the mobile cart traffic patterns
- Designate potential bottlenecks during initial needs assessment and plan accordingly
- For emergency departments ensure that crash carts are located in close proximity
- Thermofoil and laminate are both ideal for minimizing impact damage from carts
Administrative Area

The head nurse may require an individual desk or administration area adjacent to the nursing unit. This desk area should be close enough to enable collaboration with other staff members but far enough away to prevent any congestion of traffic flows.

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Additional design considerations include:

- Depending on the size of the facility there may be multiple Administrative areas.
- Desk areas should remain semi-private but also provide visibility for support staff.
- Desk requirements will include space for computer hardware and file folder storage.
Planning for Equipment

Depending on the department that the nurse station is located in a variety of equipment and technology may be present. While planning nursing and casework configurations both the location and accessibility of equipment should be addressed. If the nursing area is a redesign, equipment upgrades are likely to be a major component of the design. Also future upgrades in hardware should be considered when allocating specific work spaces.

Telephones
Telephones will be present at the Unit Secretary, most charting areas, and all dictation areas. Quantity and size of telephones should be included in the work surface dimensions.

Patient Intercom
An intercom system will typically be in place on patient care floors. This equipment enables communication between the nurse station and the patient room. Intercom systems are most effective in a centralized workflow environment. The intercom system is usually located at or near the Unit Secretary desk.

Computer Hardware
Regardless of the emphasis on paper charting systems computer workstations are integral to the nursing process. In order to effectively plan nurse station work surfaces and modular power integration the number of computer workstations should be calculated and spaced out accordingly during the planning phase. In the charting area the writing space may also include a computer which requires increased width of the work surface.

Printers
Nursing stations may require multiple types of printers. The largest and most commonly used printers output diagnostic images including radiology and neurology documents. These printers are generally located close to the Unit Secretary desk. Patient monitoring equipment may also have dedicated printing devices for time based EKG and heart rate diagnostics. Normal desktop printers for charting and labeling may also be required.

Patient Monitors
Equipment for monitoring patient vital signs will always be present at the nursing unit. In areas such as the ER and ICU there may be an emphasis on continual patient monitoring. There should be a central area where all the equipment is located. Some hospitals even include video monitors to enable 24/7 visual monitoring of patients that are not directly visible. Designated monitoring areas should be included in the preliminary design.

Patient Charts
Since charts are the primary method of documentation and communication in patient care a storage area should be centrally located and easily accessible by personnel. This information should also be located away from public view and kept confidential. There are a variety of ways to store charts including racking systems and storage slots. There may also be a need for long-term storage of forms including file cabinets and mobile pedestals.
Centralized vs. Decentralized

Methods of workflow design on patient care floors will be designated as either centralized or decentralized depending on quantity and orientation of individual nurse stations. Debates have existed for quite some time as to which system of productivity is most efficient.

Centralized Nursing Units
The central stations have typically been designed to be central command areas. These stations function as the data center for patient information and also supervise traffic patterns between secondary units. They are also the main entry and focal point for patients and visitors. The central station also houses the majority of computer and technical equipment on the patient floor. Data entry areas, diagnostic printers, patient monitors, charting and dictation areas along with medication preparation and storage rooms will comprise the centralized nursing unit. These units have long been the standard in hospital design however as mobile, digital technology emerges and the majority of the established nursing population continues to age, sub-stations the enable bed side nursing and direct patient care are now being considered for larger healthcare facilities.

Decentralized Nurse Stations
Shifting from central to decentralized nurse stations is becoming increasingly popular in healthcare design. Technology including cellular phones, laptop computers, and handheld devices have contributed to the success of nursing sub-stations. The majority of nurses prefer the decentralized workflow. Bedside care provides a more direct patient relationship and personalized approach to clinical treatment. The multiple sub-units also allow the nursing staff to walk less during shifts thereby preventing fatigue and inefficiencies. However if not configured properly decentralized nurse stations can create some performance issues. Nurses can feel to isolated from colleagues and supervisors which may compromise team morale and social aspects of communal productivity.

Hybrid Workflows
This is precisely why the hybrid solution is gaining favor in hospital design. In the future hospitals will utilize decentralized workflows to keep nurses in close proximity to their patients while providing communal areas for staff collaboration. This balance increases productivity while enabling team oriented healthcare. Current healthcare trends emphasize collaborative care among multiple departments. By converting central units into consultation and meeting areas members of the staff can dialogue constructively to coordinate patient care. This also preserves the team dynamic while preventing a sense of isolation.

Future Trends
Flexibility and multi-use spaces are now becoming solutions for both hospital budget constraints and limited space. As real estate becomes a greater expense, hospital design will attempt to consolidate functional areas. Designing multi-use areas will optimize floor space. For example, patient rooms are now being designed based on ever changing needs of the hospital. These flexible rooms can quickly be converted to Intensive Care Units by adding additional equipment and personnel. Modular and reconfigurable casework such as Goelst allows hospitals to achieve both flexibility and increased functionality.
Further Planning Considerations

When completing a nurse station design there are specific requirements for individual work areas that should be met to ensure successful casework configurations. This section will discuss a general overview of elements that should be applied to the design of nursing units and patient care floors as a whole. These items are just guidelines and individual design projects will still require an analysis and thorough needs assessment to meet specific facility requirements that please both personnel and patients alike.

Visibility

The issue of visibility and recognizability in and around the Nurse Station by both staff, patients, and visitors is critical to the visual organization of the healthcare facility. The ability for the nursing staff to see and be seen will vary depending on the size, function, and location of the Nursing Unit. Additional visibility design considerations include:

- The Unit Secretary should be the initial point of contact for the nurse station. Both patients and visitors in waiting should be able to easily access the Unit Secretary.

- Both height and configuration of casework should allow staff to easily see all the areas around the nurse station while maintaining confidentiality of stored patient charts.

- Visibility for staff inside of the Emergency Department while in the centralized unit is even more critical. This area may include hollow G-Wall portions with acrylic windows that enable visibility while maintaining privacy. Visibility and privacy are often at odds.

- In critical care departments visual access to patients is mandatory. This may be achieved by the use of cameras and video monitors. In this case additional storage space may be necessary to accommodate all of the necessary equipment.

Noise Control and Privacy

Noise Control, Privacy, and Visibility are all interrelated within the nurse station. A successful nurse station design must resolve all of these issues to provide optimal patient care. These areas should be prioritized during the initial planning phase of the nursing unit.

- Patient confidentiality including chart storage should be maintained at all times.

- Unauthorized access to the nursing staff by visitors should be kept to a minimum.

- Sound absorbent surfaces including tack panels may be used to reduce noise levels.

- Patient areas should be distanced from the Unit Secretary. Day to day reception activities including phone calling and direction of personnel contributes to noise levels.

- Also use discretion when locating chart storage areas and staff scheduling boards.
Traffic Flows
Preliminary designation of traffic patterns in and around the nursing unit will increase productivity and efficiency of care while maintaining the safety and well being of hospital patients. When considering traffic and workflow patterns be sure to address:

- Traffic patterns between patients and public waiting areas should remain balanced.
- While organizing traffic patterns in the nurse station and designating entrances and exits refrain significantly from compromising critical work space and counter space.
- Each walkthrough opening included in the design will remove approximately 3 feet of counter space. Lift gates and door gates may be utilized to increase privacy.

Aesthetics
Human beings are visual and subjective observers by nature. Nothing in a hospital will speak more to the patients and visitors about the level of healthcare they could potentially receive than the aesthetics of the facility and the functional areas. The hospital administration will make a significant effort to make their facility appear more marketable by placing emphasis on both the architectural and interior visual characteristics of the nursing units.

- The aesthetics of the nurse station design and the materials should provide a psychological effect for the patient that exudes confidence, assurance, and safety.
- Aesthetics are also maintained by eliminating unnecessary clutter and disorganization form the nursing unit. This should result from a thorough needs assessment.
- Hospitals are competing more than ever to attract potential clients. The marketability of design aesthetics is becoming increasingly important for the administration.

Flexibility
By showcasing the flexibility of the Goelst modular casework system, the hospital administration will have a better understanding of the longevity and value of the product. Flexibility also provides solutions to changing requirements including, function, technology, and regulatory standards including ADA compliance.

- Since technology and functional requirements change so rapidly a modular casework system is ideal for maintaining both flexibility and potential of product.
- The adjustability of storage and shelving components is ideal for increasing flexibility of casework. Chart organization and patient volume are always subject to change.
- Additional flexible elements may include the use of wire management systems that can adapt to changes in technology. Functional work surface materials that support multiple uses including both administrative and clinical tasks also increase flexibility.
Graphical Overview

G-Wall Nurse Station Components

**Visual Reference Guide**

This visual reference section features descriptions and item numbers for G-Wall components used for nurse station design. The G-Wall design system is engineered to provide a wide variety of custom nurse station and reception counter configurations using a small assortment of flexible Goelst products. For a comprehensive list of our entire product catalog including available dimensions, please consult the Graphical Overview brochure.

**G-Wall Components**

The modular G-Wall system consists of straight and radiused (curved) wall panels. The G-Wall panels may specified in a variety of configurations and finishes. The hollow G-Wall panels also integrate modular power and electrical wiring making their use ideal for work areas that require significant computer hardware and other electronic devices.

**Straight and Radiused G-Wall**

20SHD

20RNS 29IN

20RNS 12IN

**Brackets**

The modular G-Wall system includes steel standards that enable the use of repositionable mounting brackets and cantilevered work surfaces. The G-Wall nurse stations do not require individual support panels to mount work surfaces. Heavy duty support brackets are sufficient when securing modular worktops and front panels to G-Wall configurations.

**Mounting and Support Bracket**

20WTB

**Additional Components**

The G-Wall nurse station incorporates a cylindrical corner transition that allows for angled orientation of multiple nursing areas. The 20 CNR is a hollow, powder coated steel tube that joins together the G-Wall panels. End panels are the last element to be applied to the nurse station and are ideal for creating a finished look for the casework.

**Finished Ends and Corner Transitions**

80FDE

20CNR
Designing with G-Wall

20 Series G-Walls
Understanding G-Wall's modular system and customizable functional components is critical in effectively designing with the product. The G-Wall unit is divided into 5 individual sections that may be specified in any number of combinations to satisfy user defined requirements. The primary custom configurations employ solid fascia panels, modular power, pass-throughs, and/or acrylic fronts. The following diagrams define G-Wall design parameters in a graphic format.

G-Wall Design Considerations
- 20SHD panels are to be used for double sided G-Walls
- 20SHS single sided panels should be used when nurse stations are located adjacent to structural walls
- Gang box cut-outs should be specified as either “Power-2” for a 2-Gang Box or “Power-4” for a 4-Gang Box. The holes are pre-cut and centered on the panels. For off-set placement specify holes as “field cut”
- Use “Power-0” for side cut-outs only
- Backsplashes are not required for cantilevered worktops

G-Wall Nurse Stations
To specify a nurse station that has countertops at sitting height assign the following attributes:
3rd Section = Power-0
2nd Section = 567 mm
Toe Section = 169.5 mm

Transaction height counter top shown as 12” deep with 1” overhang 25WWS8600112

Work Top 25WWS4200121
Support Bracket 20WTB0101819
Pedestal 11BBF1802920
Finished End Panel 80FDE0104105
G-Wall Panels - 20SHD 20SHD4206005
Side cut-out for power in 3rd Section (Power-0)
Nurse Station Design

Basic Information Sheet

**General Information:**

<table>
<thead>
<tr>
<th>Project</th>
<th>Area</th>
<th>Description</th>
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<tbody>
<tr>
<td>Area Supervisor</td>
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<tr>
<td>Total Seats</td>
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<tr>
<td>Secretaries</td>
<td>Doctors</td>
<td>Case Managers</td>
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<tr>
<td>Maximum Patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chart Racks</td>
<td>Chart Size = W x H x D</td>
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</tr>
<tr>
<td>Special Area</td>
<td>Phone</td>
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<tr>
<td>Special Needs</td>
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<tr>
<td>LF of File Storage</td>
<td>LF of Binder Storage</td>
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**Equipment List:**

<table>
<thead>
<tr>
<th>Description</th>
<th>W x H x D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desk Printer</td>
<td>W x H x D</td>
</tr>
<tr>
<td>Desk Printer</td>
<td>W x H x D</td>
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<tr>
<td>Floor Printer</td>
<td>W x H x D</td>
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<tr>
<td>Shredder</td>
<td>W x H x D</td>
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<td>Fax Machine</td>
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<td>Monitor</td>
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<tr>
<td>Pyxis Box</td>
<td>W x H x D</td>
</tr>
<tr>
<td>Dressing Cart</td>
<td>W x H x D</td>
</tr>
</tbody>
</table>
# Basic Information Sheet

## Telemetry:
- Monitors ________________ W __________ x H __________ x D __________
- CPU’s ________________ W __________ x H __________ x D __________
- Recorders ________________ W __________ x H __________ x D __________
- Printer ________________ W __________ x H __________ x D __________
- Data Critical ________________ W __________ x H __________ x D __________

## Miscellaneous:
- Counter Top Material ___________________________
- Back Splash Type ___________________________ Include sinks ________________ Y/N
- Tack Board ___________________________ Color ___________________________
- Cabinet Material ___________________________
- Locks on all ____________ Locks on some ____________ Keyed alike ____________
- Task Lighting ___________________________ Y/N ___________________________
- Soffits = Open / Closed / Sloped ___________________________
- Metal peds or Wood peds ___________________________
- CPU Platforms ____________ Y/N
- Keyboard Trays ____________ Y/N
- End Cap Type ____________

## Installation Requirements:
- Union ____________ Y/N
- Loading Dock ____________ Y/N
- Freight Elevator ________________ Y/N
- Stairs ___________________________
- Curb Side Delivery ___________________________
- Parking ___________________________
- Security ___________________________
- POC ___________________________
- Phone ___________________________

## Miscellaneous Other:
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Nurse Station
Design Manual

workflow design
& project planning