



WASH

2014
Karen
Stockton

Objectives

- Understand how the physical environment can play a role in the transmission of disease.
- Learn how to incorporate key infection control principles into the design and construction of healthcare facilities
- Apply WASH concepts to existing and future designs of your facilities.

Old units



New Hemodialysis

- Properly spaced pods
- Individual stations
- 1 hands-free sink per 4 stations
- Airborne negative pressure rooms
- Cleanable materials
- Proper storage
- “innovative” new hook-ups for hemodialysis

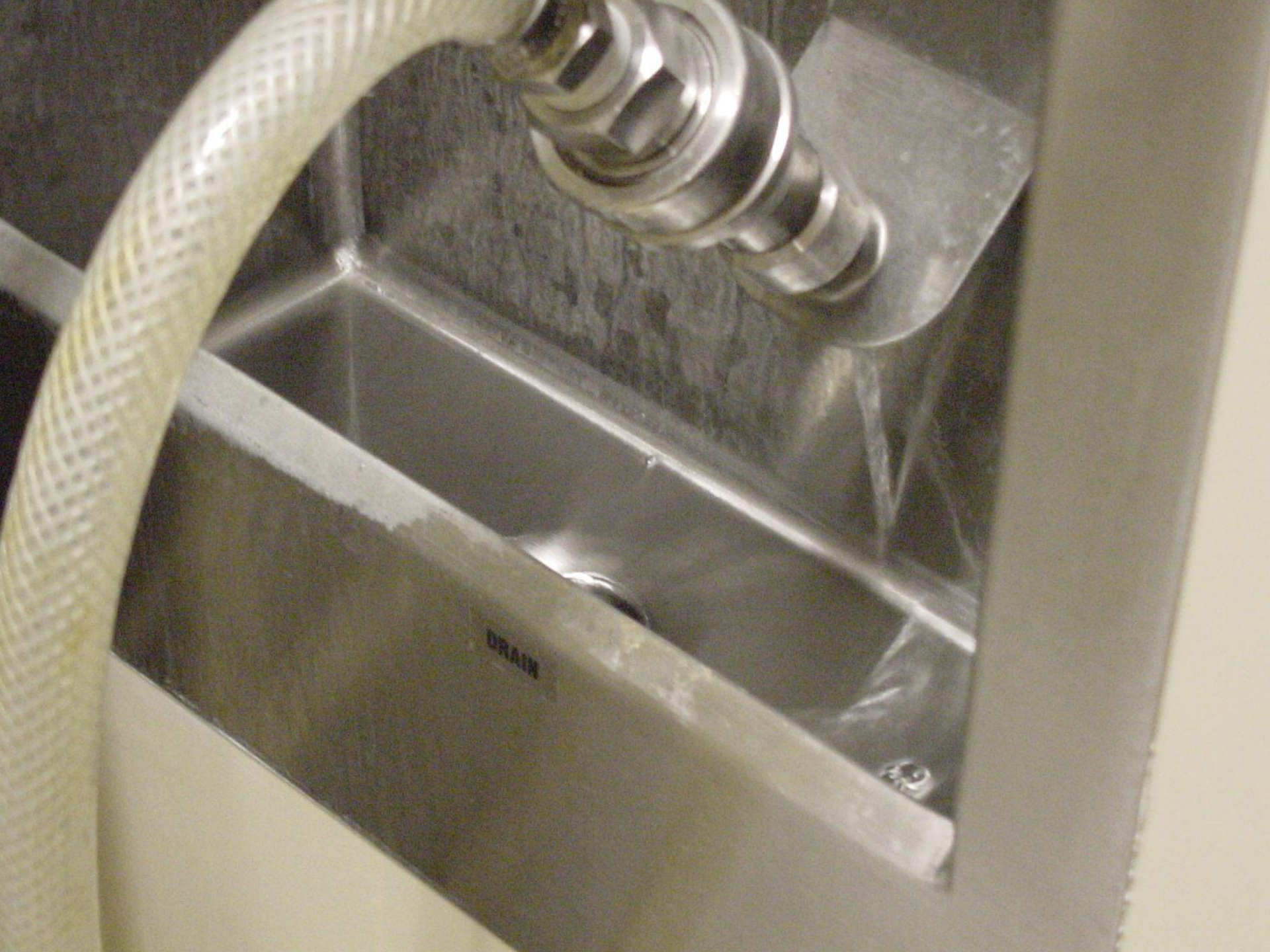
New Design





Enterococcus casseliflavus

- High rate of *E. casseliflavus* bloodstream infections in hemodialysis patients
- Localized to patients in one hemo unit



DRAIN

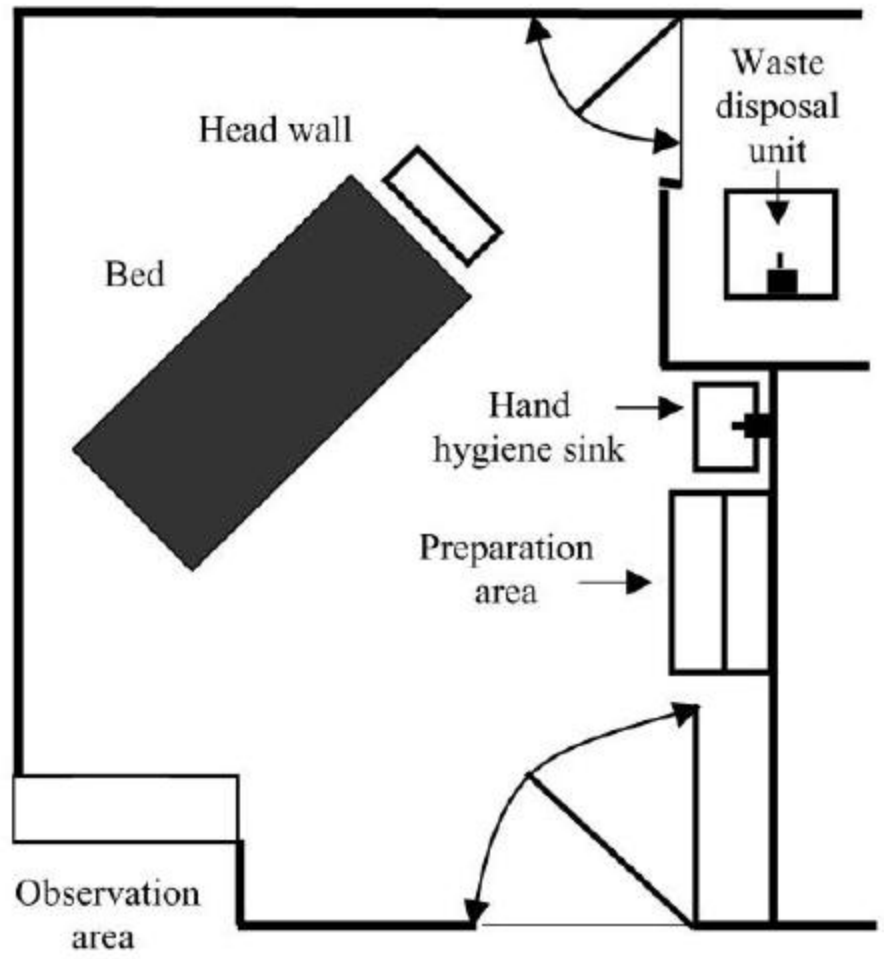
Adaptation of design



ICU design 2004

- New construction—36 beds
 - 6 negative pressure
 - 28 single rooms
 - 1 double room
- ✓ Enclosed waste disposal/hemo drains
- ✓ Dedicated hand washing sinks
- ✓ Staff able to observe patients from outside the room











Do NOT
use
Caution

1 2 2006



8 6 2006



EXCLUSIVE
Leonard Cohen
on the upside of
going broke P.52

DEATH TRAPS
BAD HOSPITAL
DESIGN KILLS
4,000 A YEAR
P.40

MACLEAN'S

www.macleans.ca

JUNE 23rd 2008

THE
HOCKEY NIGHT
IN CANADA
FIASCO
THE THEME SONG
IS JUST THE
BEGINNING
P.46

Death traps

Eight thousand Canadians die of hospital-acquired infections each year. One simple change could save half of them. Why aren't we doing it?

NICHOLAS KOHLER | June 11, 2008 |



ORIGINAL ARTICLE

Outbreak of Multidrug-Resistant *Pseudomonas aeruginosa*
Colonization and Infection Secondary to Imperfect
Intensive Care Unit Room Design

Susy Hota, MD; Zahir Hirji, MHSc; Karen Stockton, MHSc; Camille Lemieux, MD, LLB; Helen Dedier, MLT;
Gideon Wolfaardt, PhD; Michael A. Gardam, MD, MSc

Sink design behind Toronto hospital deaths

Toronto Star, The Canadian Press

December 15, 2008

It's a cruel irony that in a setting where clean hands are critical, the sinks turned out to be the problem.



Class Action Commenced Against Toronto General Hospital in Relation to Bacterial Outbreak and Deaths

TORONTO, Jan. 6 /CNW/ - A class action claim was issued with the Ontario Superior Court of Justice on December 24, 2008, on behalf of patients who were infected by the *Pseudomonas aeruginosa* ("Pseudomonas") outbreak while at Toronto General Hospital between December 1, 2004 and March 31, 2006 (the "Pseudomonas Outbreak"). *Pseudomonas* is described as multidrug-resistant

We learned...

Med-Surg. I.C.U.

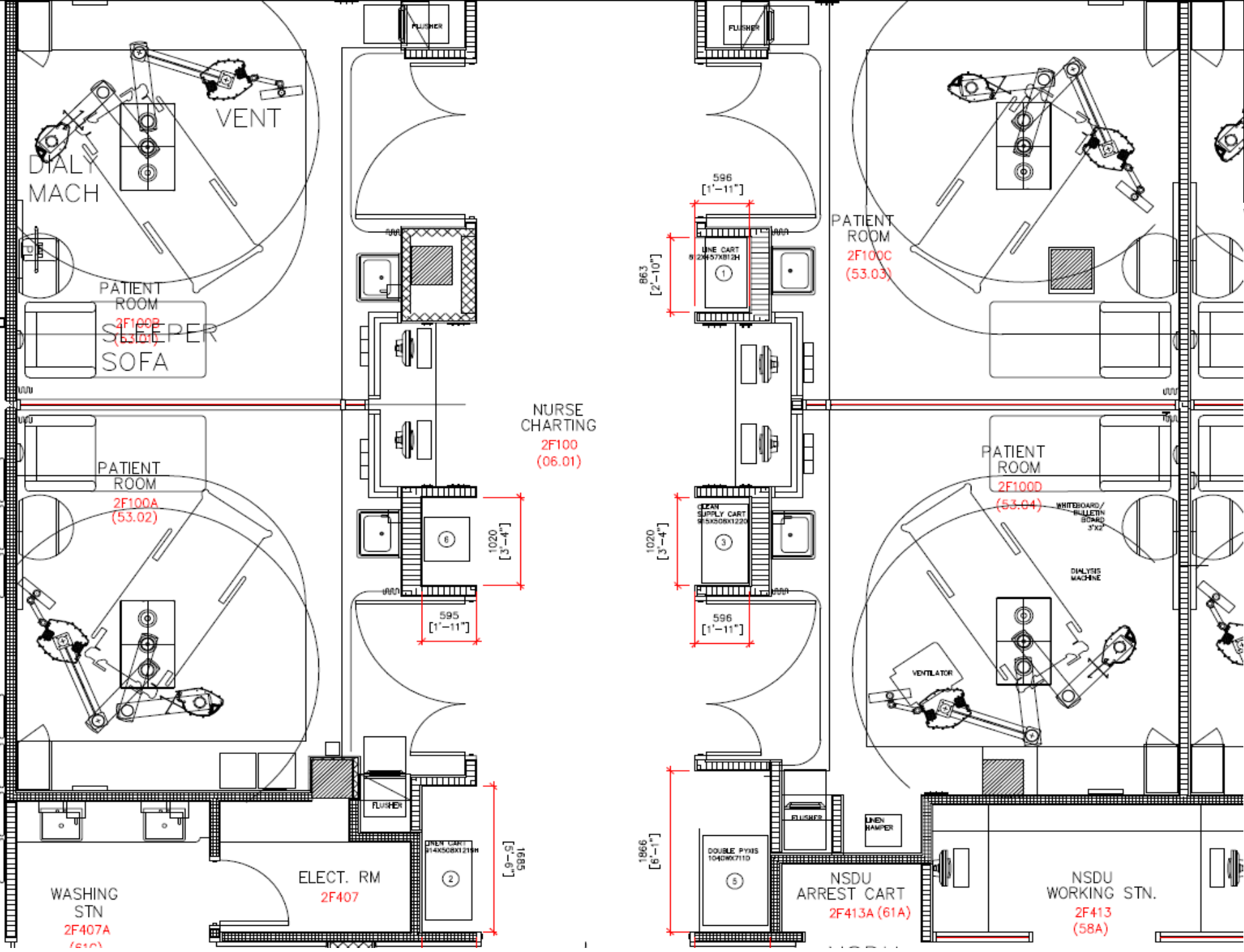




13 9 2007

Space Program

REF	SPACE NAME	AREA REQUIREMENTS			REMARKS	BENCHMARKS NSF	EXISTING NSF
		UNITS	NSF/UNIT	NSF			
INTENSIVE/CORONARY CARE UNIT (25 BEDS)							
01	<u>Patient Care Area</u> 1-Bed Room, Private	20	225	4500	Patient bed, monitors, utility supplies cart, sinks, mobile computer terminal, supplies storage, hemodialysis equipment. Controllable lighting, natural light Electronic charting, medication order entry (MoeMar) capabilities	215-225/bed	
02	Flusher/Disinfector, Patient	6	50	300	1 per 4-bed pod, 2 per 6-bed pod		
03	1-Bed Room, Private, Isolation	5	225	1125	Patient bed, monitors, utility supplies cart, sinks, mobile computer terminal, supplies storage, hemodialysis equipment. Controllable lighting, natural light Electronic charting, medication order entry (MoeMar) capabilities		
04	Flusher/Disinfector, Patient	5	50	250	1 per isolation room, in the room		
05	Ante Room	5	60	300	Incl. sink, counter, hampers, computer terminal		
06	Decentralized Nurse Charting	12	30	360	One for every 2 patient rooms,		



SEE NOTE#2

Hand sink

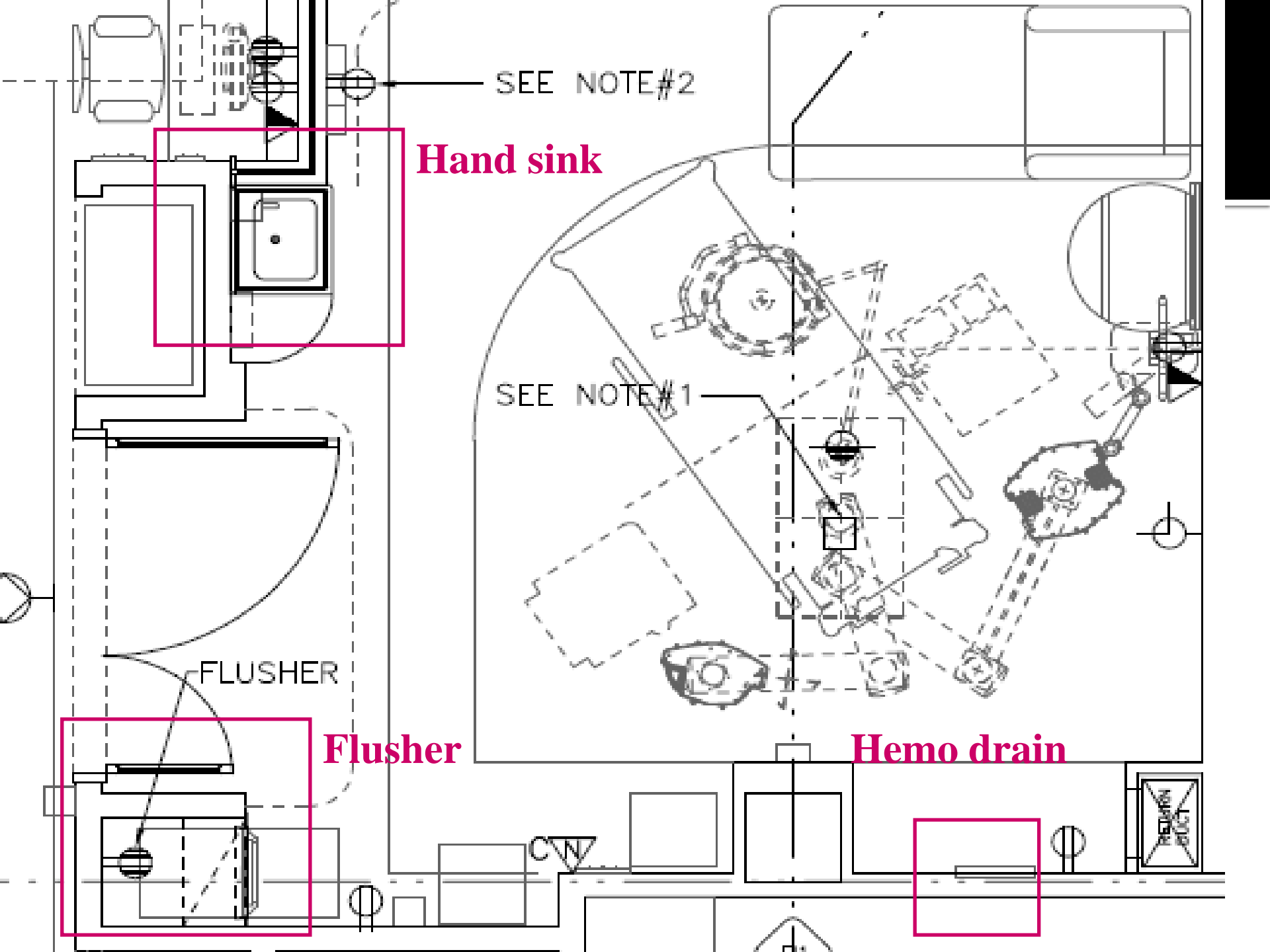
SEE NOTE#1

FLUSHER

Flusher

Hemo drain

REWORK PRODUCT





17 8 2008

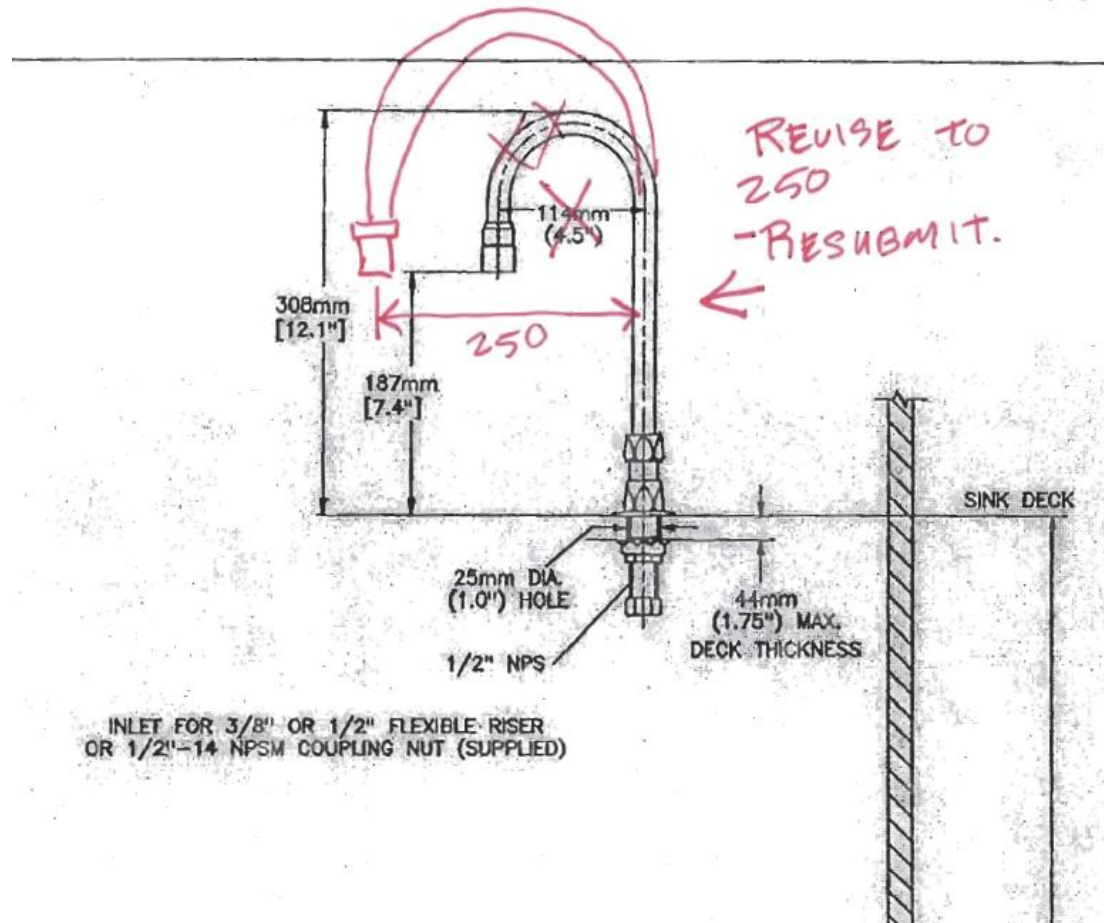
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14 8 2008

SPECIFICATIONS

L-1



SPECIFICATIONS

1.0 Title Patient Sink

2.0 General

Revised:

Install 915 Above Floor

Use 250mm Gooseneck

BACKSPLASH: SLOPED
TOP EDGE AND COVE
RADIUS BASE

48 X 48 STEEL
ANGLE GALV

BUILD UP TOP OF
BOWEL TO PROVIDE
REQUIRED DEPTH

PAINT STEEL THAT
PROJECTS.
SEALANT

POSITIVE SLOPE TO
DRAIN

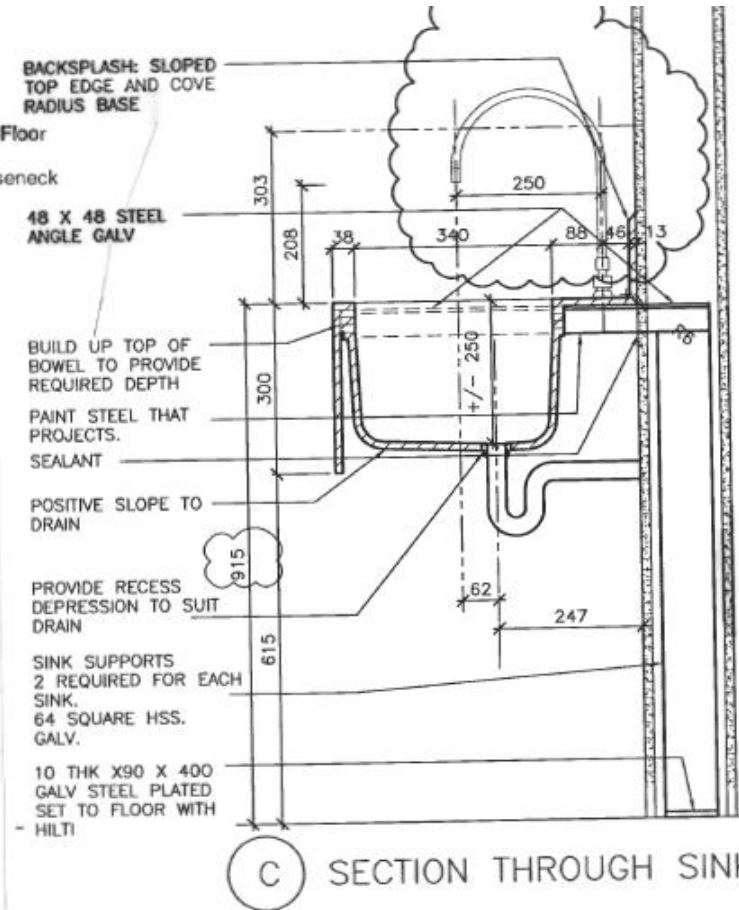
PROVIDE RECESS
DEPRESSION TO SUIT
DRAIN

SINK SUPPORTS
2 REQUIRED FOR EACH
SINK.
64 SQUARE HSS.
GALV.

10 THK X90 X 400
GALV STEEL PLATED
SET TO FLOOR WITH
HILTI

11 CORIAN SINK
A-700 SCALE 1:10

IN PATIENT ROOMS





17 8 2008




Supporting Standards



Community and Hospital Infection Control Association



Z8000-11



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and Construction Interest
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CHICA-CANADA POSITION STATEMENT
Healthcare Facility Design Position Statement
<p>All acute healthcare facilities (e.g., hospitals) should be able to promote and support an environment that is safe for patients, visitors and healthcare workers. Planning of healthcare facilities, room designs, surfaces and processes should take into account the chain of transmission of infectious agents, so users can easily take steps to avoid spreading potentially harmful microorganisms. There are Canadian Standards to address Infection Control for Construction and Renovation, Routine Practices and Additional Precautions, Sterilization and specific disease entities. Currently, there are no Canadian Infection Control Standards to address the overall design of healthcare facilities. Infection Prevention and Control concepts need to be incorporated into design, to facilitate desired practices by the healthcare worker and to provide a safe environment.</p> <p>1. Infection Prevention and Control Professionals should be involved in all phases of healthcare facility design, construction and renovation. This includes but is not limited to:</p> <ul style="list-style-type: none"> ▪ participation in proposal for funding ▪ design planning ▪ review of tender documents and mockups ▪ final commissioning

Canadian health care facilities



2008

2011

The Best 4 letter word

Waste

Air

Space

Hand Hygiene



WASTE

- How will you dispose waste?
- How do you manage soiled items?
 - Used equipment (suture tray, bed pan, commode)
- How far do staff have to go to access waste facilities?
- What volume/frequency of waste are they managing?
- Access to toilets for patients

WASTE

- Toilets in each in-patient room
- Type of waste disposal (hopper, enclosed units i.e. macerator/washer disinfectors)
- Wands/sprayers?
- Processing centrally or locally?
- Housekeeping closets?

SPACE

- The correct number of rooms per area (storage, clean, soiled, housekeeping, alcoves)
- Not occupied---often compromised

The Best 4 letter word

Waste

Air

Space

Hand Hygiene

AIR

Important because:

- Temperature
- Odour
- Humidity
- Exposure to gases

AIR

- Air exchanges per hour (ACH)
- Dedicated vs. general exhaust
- Positive/negative pressure rooms (airborne infection control room (AII))
- Pressure differential requirements
- Filtration levels

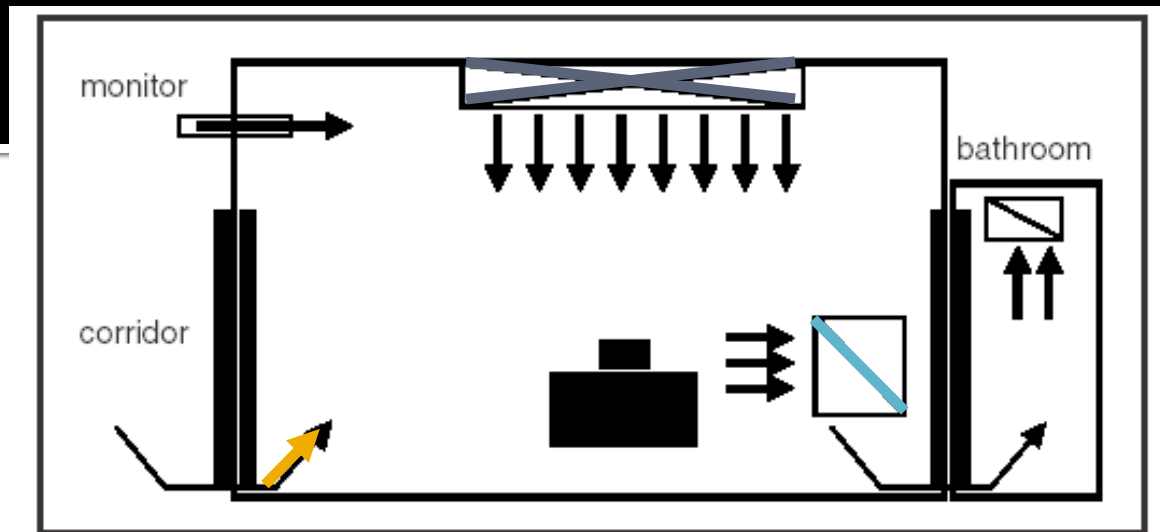
AIR

- Maintenance
- Monitoring
- Design new or tie in
- Redundancy

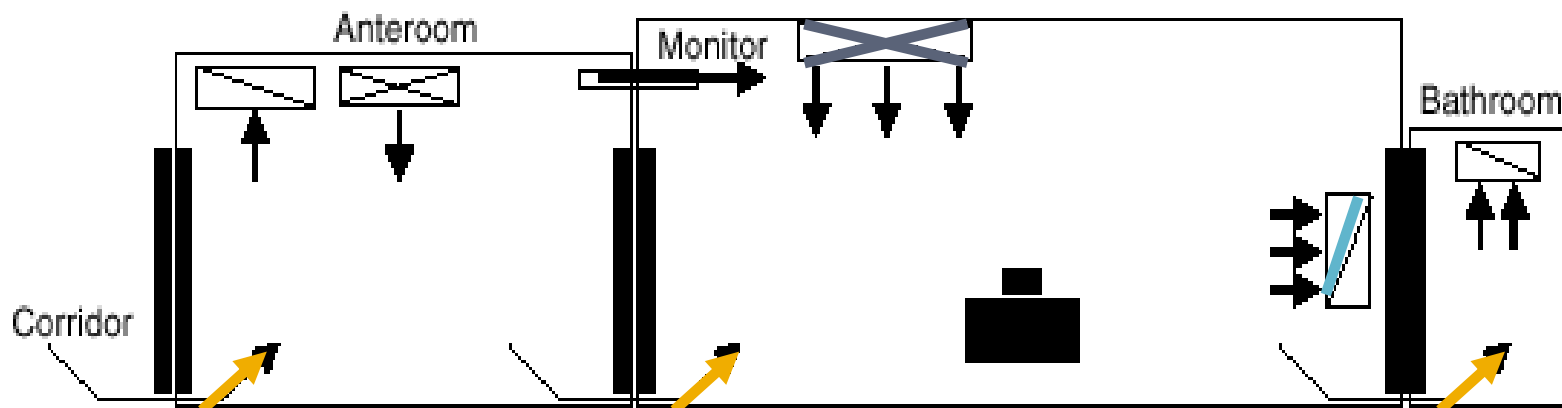
AIR

- Flow from clean to dirtier areas
- Back up systems for critical areas
- Dampers and controls accessible for maintenance

Standard room air



Negative Pressure room (All)



CONTROLS/ACCESS

- Validating monitors and controls
- Maintenance
- User understanding

Special requirements for heating,
ventilation, and air-conditioning
(HVAC) systems in health care facilities



The Best 4 letter word

Waste

Air

Space

Hand Hygiene

SPACE

- Total space per area
- Separation between items/clients
 - Waiting area, storage, soiled, clean
- # Single rooms
- Clearances around beds for access
- Carts in halls
- Personal protective equipment storage

SPACE

- Model activities in the area
 - Nursing/transportation/equipment/supplies/
Support services
- Adjacencies
 - Who needs access?
 - Where are clean/dirty rooms?
 - Movement from clean to dirty

SPACE

- Minimum separation between seated patients, Inpatients and critical patients
- Pods for segregation i.e. waiting room clusters
- Transportation/flow considerations

SPACE

- Not occupied---often compromised
- The correct number of rooms per area (storage, clean, soiled, housekeeping, alcoves)

The Best 4 letter word

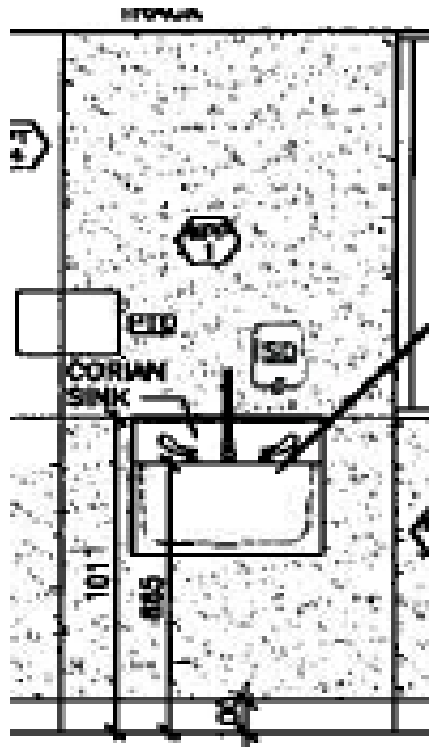
Waste

Air

Space

Hand Hygiene

HAND HYGIENE



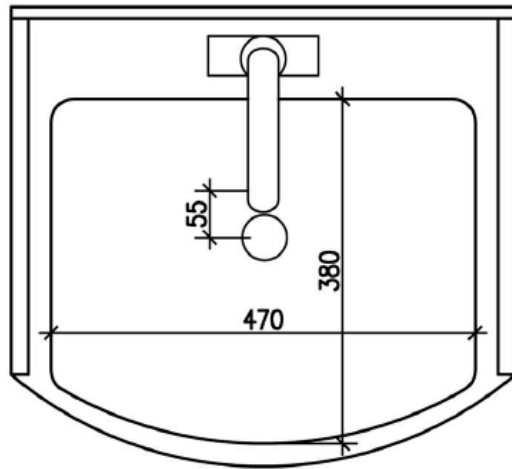
1. Material
2. Size
3. Flow
4. Location and number
5. Controls
6. Backsplash
7. Hand Drying
8. Accessories (soap/lotion)

HAND HYGIENE

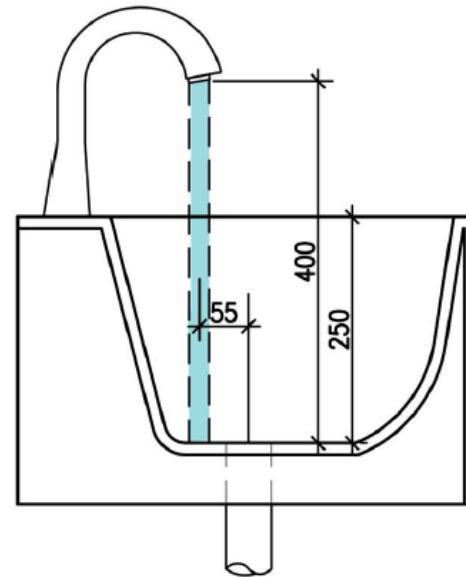
- Non-porous, durable to avoid cracking
- Size to avoid splashing and recontamination
- Spout alignment, aerators, strainers and overflows
- How far from patients and how many per bed/area
- Control of activation(hands-free), back up for electronic
- Dispensers/dryers
- Alcohol hand sanitizer



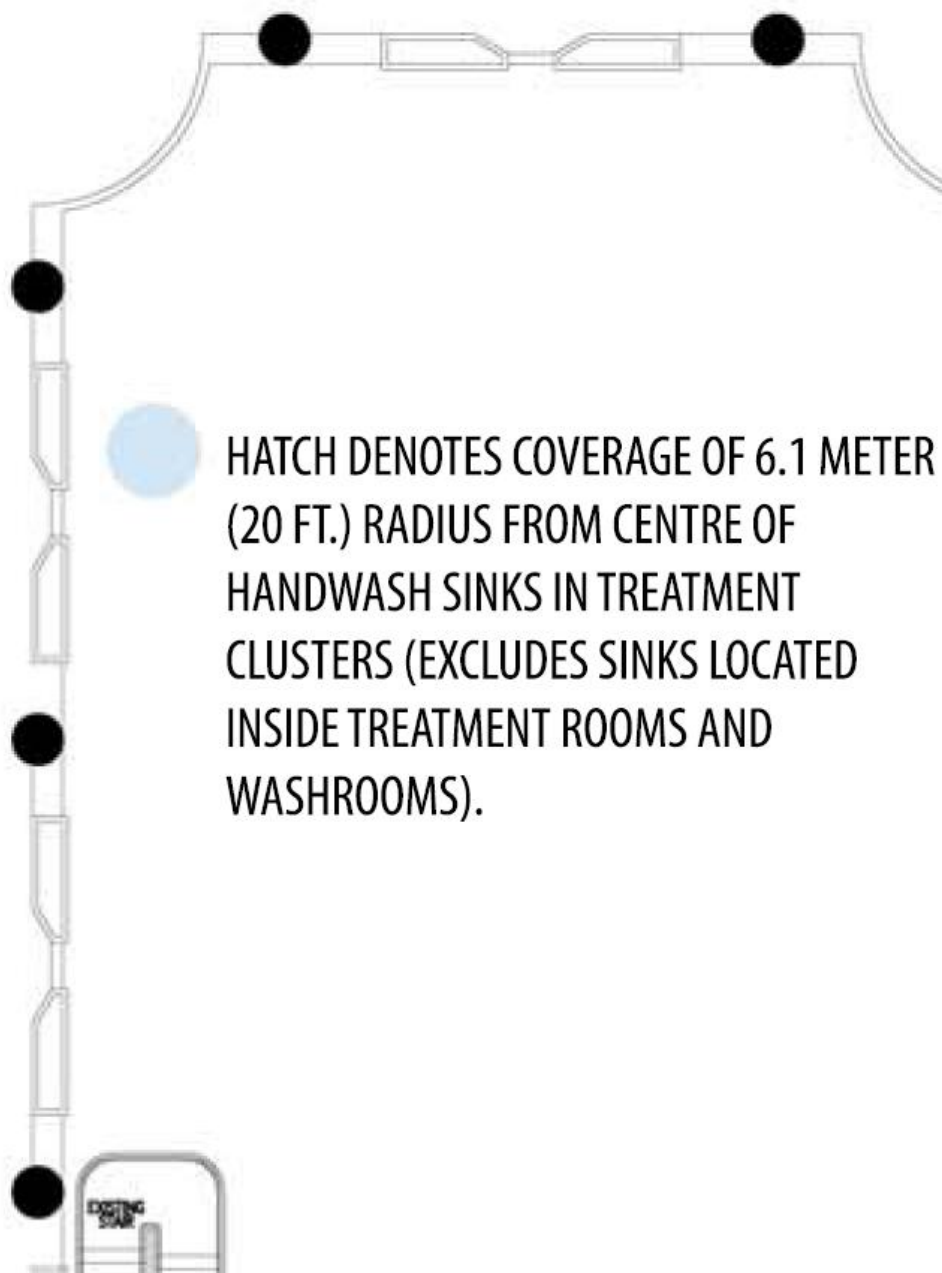
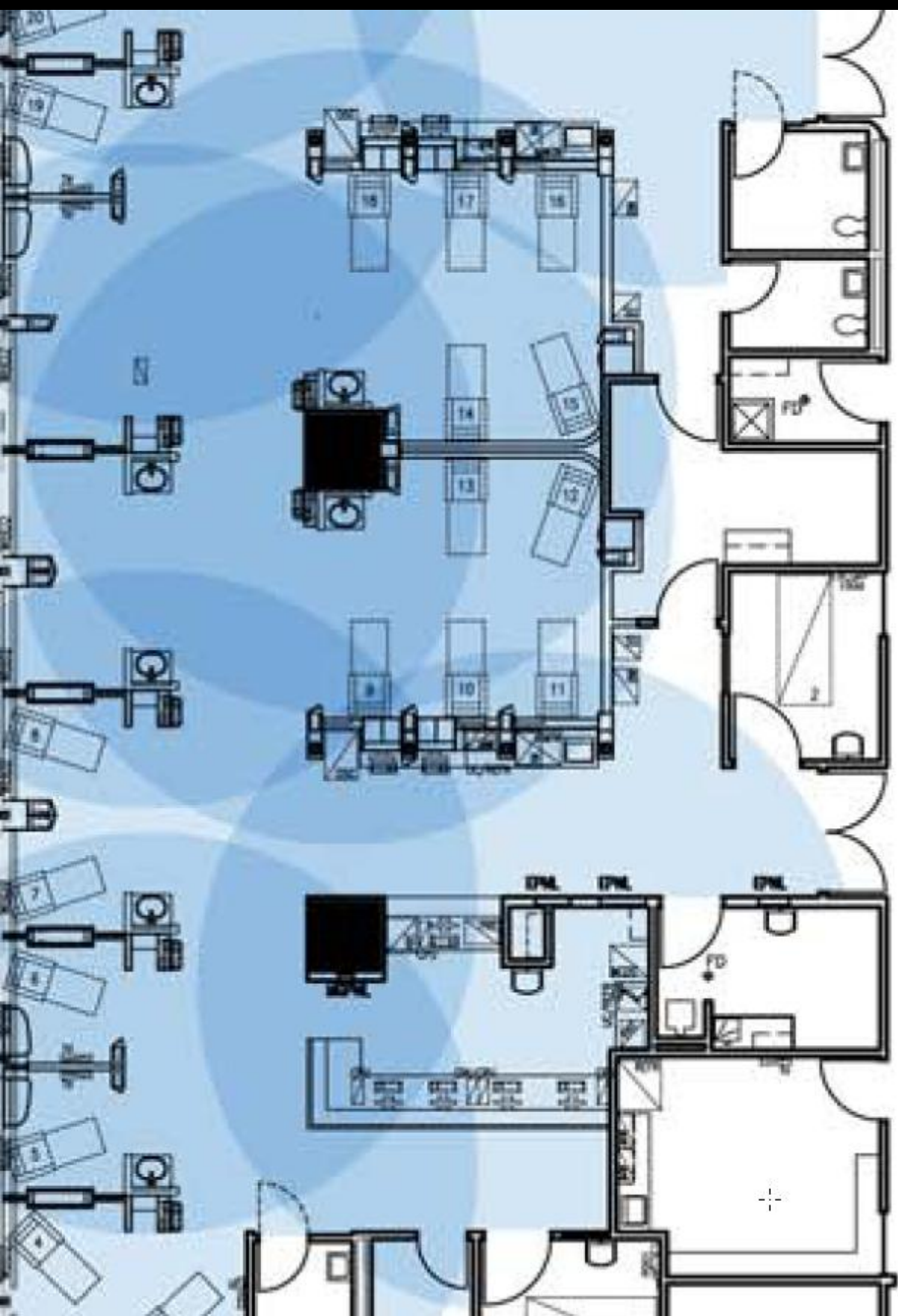
HAND HYGIENE



PLAN



SECTION



The Best 4 letter word

Waste

Air

Space

Hand Hygiene

Materials

MATERIALS/FINISHES

- Floor - vinyl, terrazzo, carpet, applied epoxy
- Ceiling - acoustic tile, Mylar, drywall
- Materials (laminates/corians/stainless/wood/carpet/fabrics)
- Paint quality (epoxy/washable/flat)
- Backsplash and accessories

MATERIALS/FINISHES

- Seams/surface cleanability
- Resistance to disinfectants and repeat water exposure
- What location is the material used in?
- Where is the material specified in the project?

NEXT STEPS

- Know your resources
- Identify the players and the process
- Get involved as early as possible
- Make modifications if new design is not an option
- Develop minimum standards for your facility
- Create policies and procedures
- Commissioning/auditing