Assessment of Home Environment for Home Haemodialysis

Presented by

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Nocturnal Home Hemodialysis

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Australia visit

5.2.06 – 10.2.06

Visit in Melbourne & Sydney

- Geelong Hospital
- Royal Melbourne Hospital
- St. Vincent's Hospital community Dislysis Centre
- Monash Medical Centre
- Sydney Dialysis Centre
- 3 Home Hemodialysis patients


ABOUT HAEMOSTASIS

Ken’s NHHD in a caravan in Australia

Feb 2006

伊利沙伯醫院

QUEEN ELIZABETH HOSPITAL

Princess Margaret Hospital
Jockey Club Nephrology and Urology Center

PMH Home HD History in 1979

- Cobe Centry II machine
- Limited water treatment - Deionisor
- Reuse dialyser & bloodline for 6 times
- Disinfection with Formalin
- Maintenance by patient
- No routine water culture

The First Hong Kong NHHD patient in 2006

A very favorable NHHD home environment

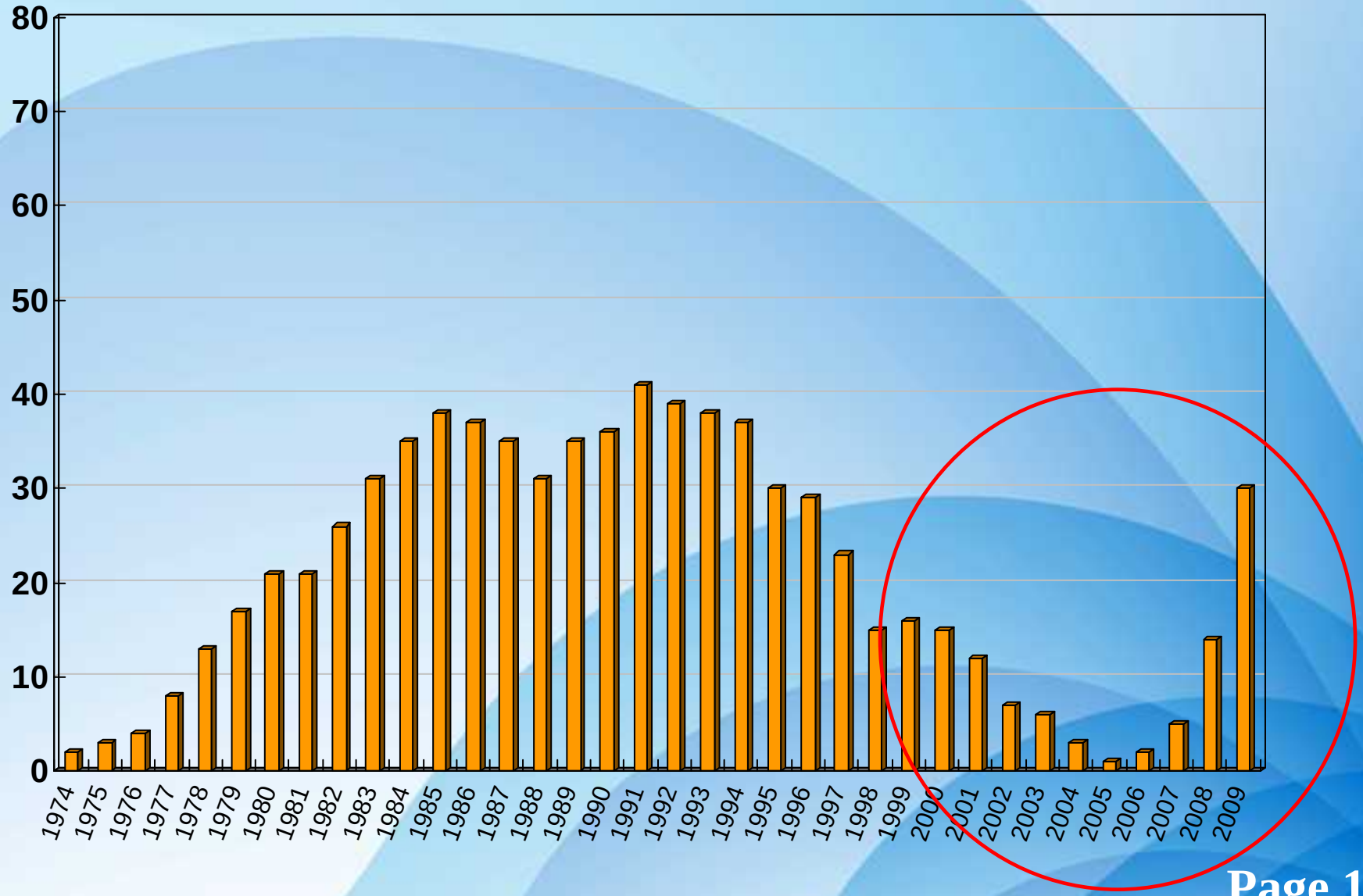
A very compliant NHHD patient



A Safe NHHD Journey



Home Hemodialysis History in HK



NHHD Program in Asia Countries

Hong Kong, SAR

Taiwan

Peking, China

Seoul, Korea

India

Home HD Safety

- Comply to NHHD treatment
- Infection control/waste/Sharps
- HD machine maintenance
- Water quality monitoring
- Single use dialyzer & blood lines
- Moisture detector
- Trouble shooting
- Bedside phone & lighting
- 24 hr Hotline & support system

Four factors addressing why people adopt or reject recommended health behaviours

- Preceptions of risks
- Perceptions of self
- Environmental condition, both physical & social
- Preceptions of costs and benefits of recommendations

Contract Learning…….. to prepare patient for Home HD

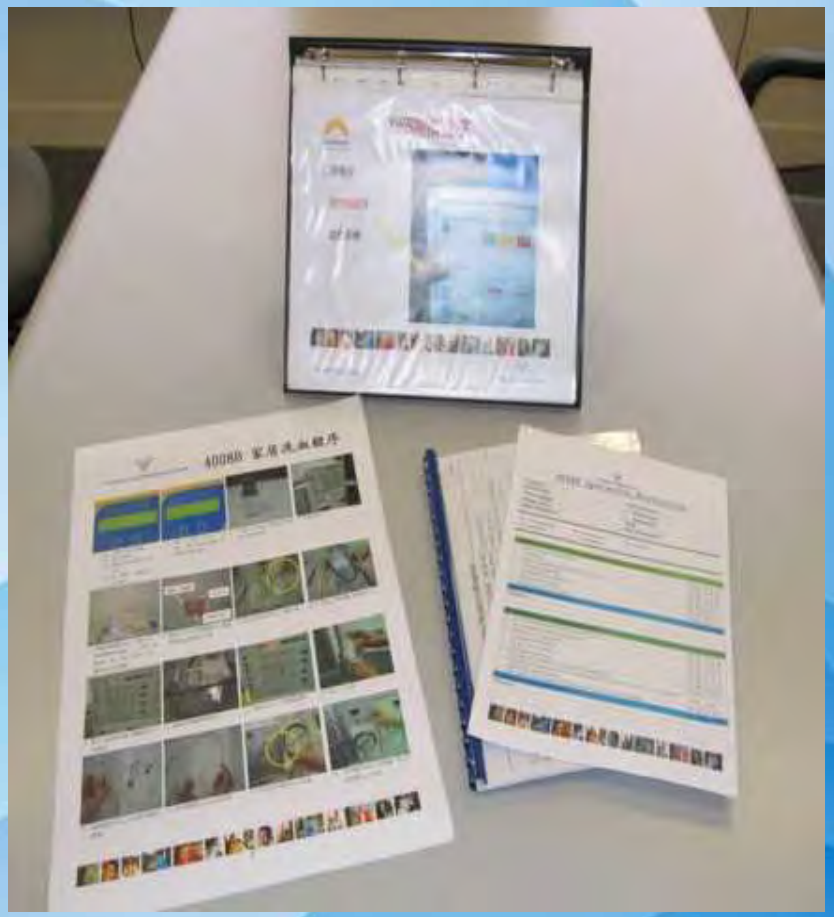
- Well structured training program with documentation of training & assessment
- Target goals agreed & achieved before going home
- Provided all reasonable safety measures
- Monitor & document training progress thoroughly
- Patient learning contract signed by training nurse and patient
- Home haemodialysis consent

To Prepare a Clean Learning & Home Like Environment

HOME HAEMODIALYSIS Day Training Room

To Standardize Infection Control Practices for Home HD

- NHHD pamphlet & booklet
- Patient NHHD record & assessment report
- Training pathway manual
- Procedure photo guide/ flyer/flipchart/poster
- Pre & post home risk assessment checklists
- Monitoring parameter checklist
- Machine Chinese labeling
- Consumable purchasing & home stocktake list



NHHD Training Pathway in Infection Control

HD treatment, principle & trouble shooting

Priming, On & Off HD, Cannulation

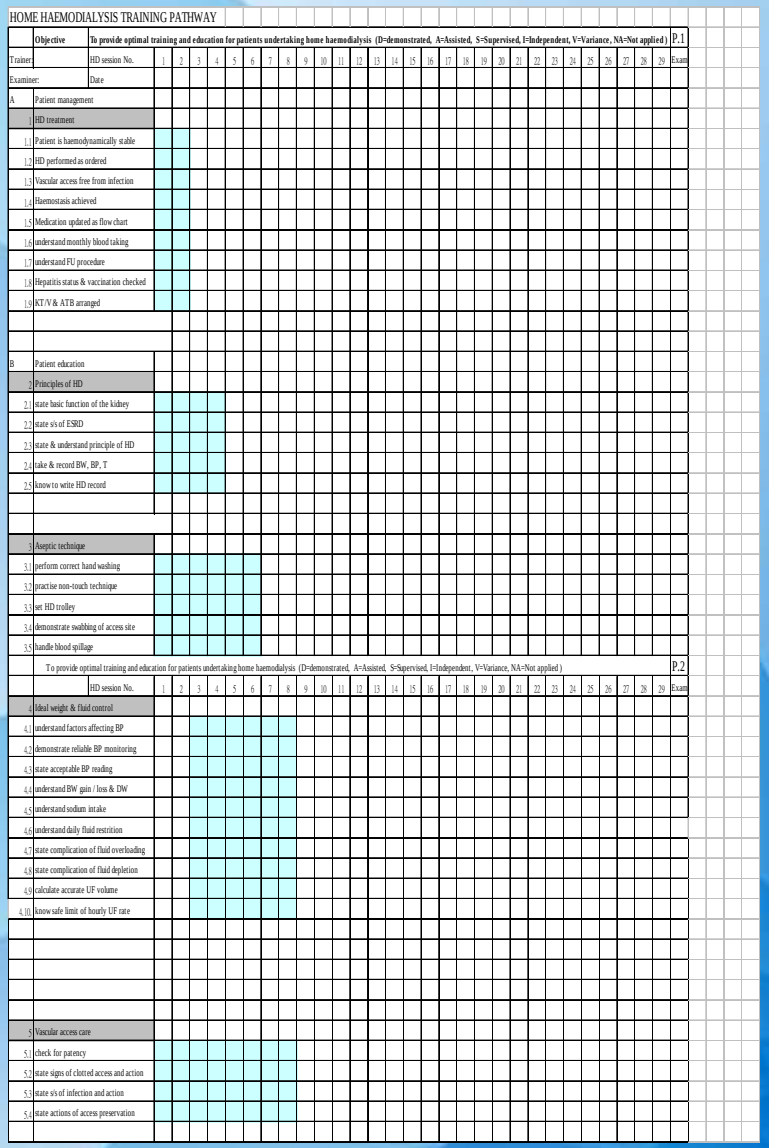
Ideal BW & fluid control

Heparin preparation

Nutrition & medication

At Home

- ★ **Aseptic technique**
- ★ **Vascular access care**
- ★ **Machine operation, disinfection & maintenance**
- ★ **Blood spillage, Wastes & sharps handling**
- ★ **Water & dialysate culture sampling**
- ★ **Home & personal hygiene**


HOME HAEMODIALYSIS TRAINING PATHWAY

Objective: To provide optimal training and education for patients undertaking home haemodialysis (D=demonstrated, A=Assisted, S=Supervised, I=Independent, V=Variance, NA=Not applied) P.1

Trainer | HD session No. | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 Exam

Examiner: | Date

A Patient management

1 HD treatment
- 1.1 Patient is haemodynamically stable
- 1.2 HD performed as ordered
- 1.3 Vascular access free from infection
- 1.4 Haemostasis achieved
- 1.5 Medication updated as flow chart
- 1.6 understand monthly blood taking
- 1.7 understand FU procedure
- 1.8 Hepatitis status & vaccination checked
- 1.9 KT/V & ATB arranged

B Patient education

2 Principles of HD
- 2.1 state basic function of the kidney
- 2.2 state s/s of ESRD
- 2.3 state & understand principle of HD
- 2.4 take & record BW, BP, T
- 2.5 know to write HD record

3 Aseptic technique
- 3.1 perform correct hand washing
- 3.2 practise non-touch technique
- 3.3 set HD trolley
- 3.4 demonstrate swabbing of access site
- 3.5 handle blood spillage

To provide optimal training and education for patients undertaking home haemodialysis (D=demonstrated, A=Assisted, S=Supervised, I=Independent, V=Variance, NA=Not applied) P.2

HD session No. | 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 Exam

4 Ideal weight & fluid control
- 4.1 understand factors affecting BP
- 4.2 demonstrate reliable BP monitoring
- 4.3 state acceptable BP reading
- 4.4 understand BW gain / loss & DW
- 4.5 understand sodium intake
- 4.6 understand daily fluid restrition
- 4.7 state complication of fluid overloading
- 4.8 state complication of fluid depletion
- 4.9 calculate accurate UF volume
- 4.10 know safe limit of hourly UF rate

5 Vascular access care
- 5.1 check for patency
- 5.2 state signs of clotted access and action
- 5.3 state s/s of infection and action
- 5.4 state actions of access preservation

NHHD Pre & Post Training Home Visit Assessment

First home visit before training & on 1st home HD attended by RN & supplier trainer who train patient

Monthly routine maintenance & report by supplier technician

NHHD OPD FU 2 weekly then to 2 monthly and PRN 'Crisis' home visits by Renal team

Princess Margaret Hospital
Home Haemodialysis Training Assessment

Affix Patient Full Gum Label

Delete when inappropriate

Pre Training Assessment & Home Visit			
Date of assessment		**Date of home visit**	
Training mode	Home/ Nocturnal / Independent / Helper : Name _____ (Relationship:)		
Finance	Working/ Unemployed/ Retired/ Pension/ CSSA/ Other:		
Present employment	Type: Working time:		
Marital status	Single/ Married/ Other :		
Family support	Alone/ Live with :		
Education level	Primary/ Secondary/ Tertiary/ Other:		
Visual acuity	Normal/ Glasses/ Other:		
Hearing	Normal/ Hearing aid/ Other:		
Mobility	Steady/ Tremors/ Arthritis/ Other:		
Cognition	Concentration/memory :		
Living situation	Room / Flat / House / Own / Rent Area : sq.feet (no.of Rm:) Storage space : Lighting:		
Home environment	Unpaved/ Paved / Vehicle access / Steps/ Stairs/ Lift		
Life style	Pets		
Post Training Assessment :			
Post training examination date:			
Self day HD in hospital date:			
Self Nocturnal HD in hospital date:			
Monthly hospital supplies			
Self purchasing item			
Supplier support			
Plumbing readiness			
HD & RO machine installation & function			
RO water analysis result			

Home visit assessment

Living situation

Home environment

Life style

Machine installation site

Storage area

Self purchase consumables

Electricity & lighting

Bedside phone

Plumbing system

Water pressure & quality

Infection Control Home Round

Home & Machine / Equipment maintenance & cleanliness

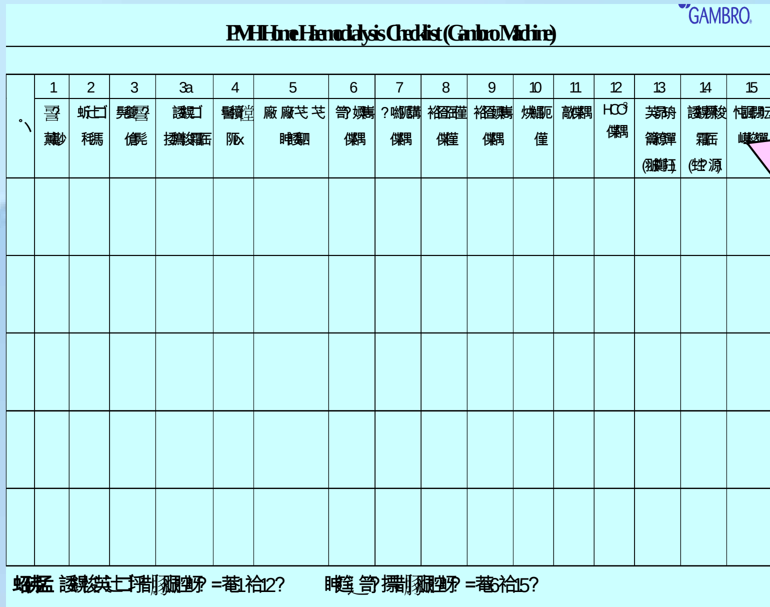
Consumable & dialysate utility, storage & expiry

Vascular Access assessment

Water / dialysate samples

Sharps & waste handling

NHHD Patient Checklist on Infection Control



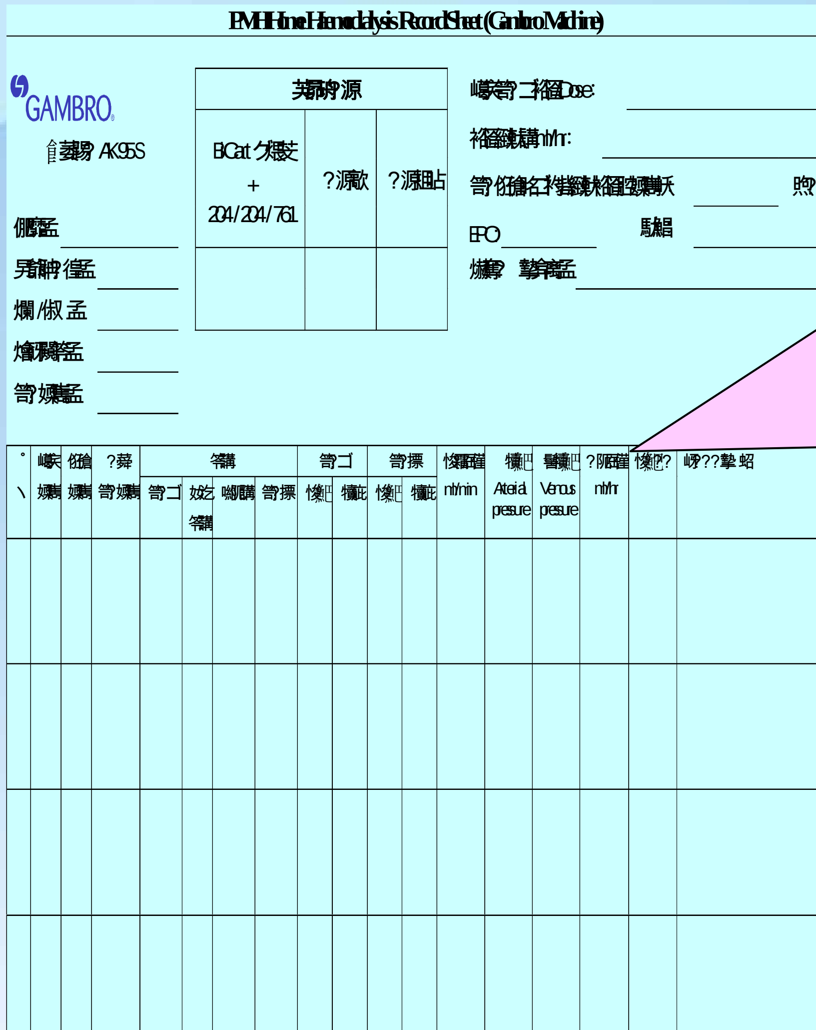
Consider RO & HD machines disinfection and change of filters validity before each HD

Confirm RO machine on standby mode to maintain auto flushing at all times

Complete heat disinfection & rinse mode before priming

Check Chlorine test

NHHD Patient Record on Infection Control



Check body temperature before & after HD

Call hotline if sepsis s/s during HD

Countercheck HD record by fax & on FU

Clean machine afteruse with 1:49 clorox

Support after Patient Discharged Home

Technical support

- After training, Install & test HD machine and portable RO
- Monthly
  -Home visit to check machines
  -RO product water analysis for chemical contaminants and microbiologic standard (< 200cfu/ml)
  - RO machine disinfection & Bleaching of HD machine
  -Change of filters
- Quarterly and Annual maintenance
- 24 hours emergency technical support

Nursing support

- First home HD visit
  Conduct risk assessment to ensure home HD safety
- Monitor each home HD progress by fax HD record to ward for monitoring
- Monthly countercheck stocktaking & order consumable supply
- Arrange disposal of sharps
- 24 hour on call dialysis nurse support

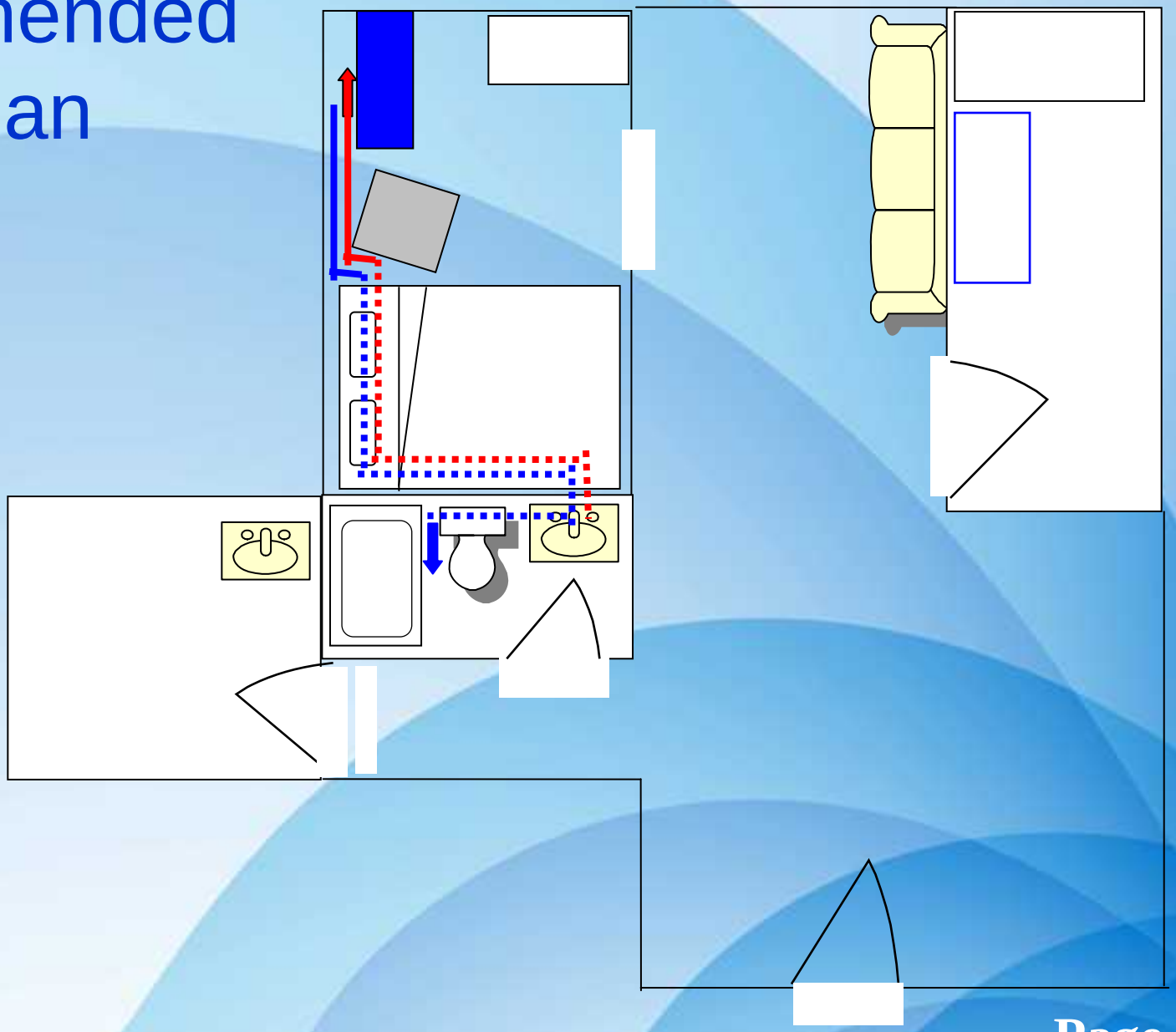
Wastes & Sharps Disposal

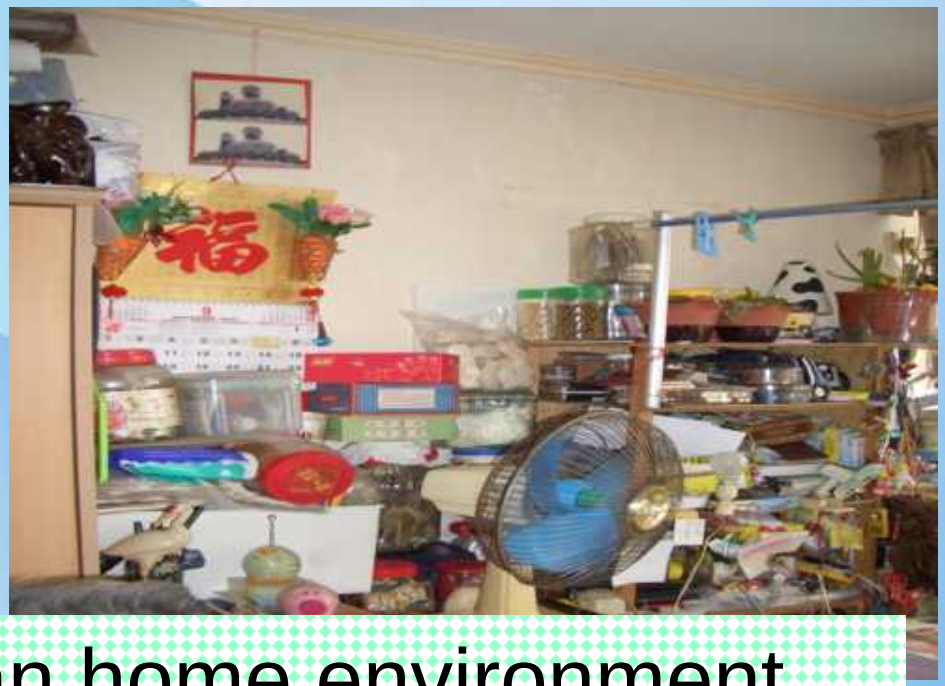
Rinse away blood from bloodline with normal saline & cap circuit to form a close system before disposal in black garbage bag

Collect heparin glass vials on hard container & seal up with sharps alert label before disposal

Discard non-capped needles in Sharp box, seal up box lid with strapping on ¾ full & bring back hospital on FU

Recommended Home Plan





To achieve a clean home environment for NHHD.....

A House Keeper

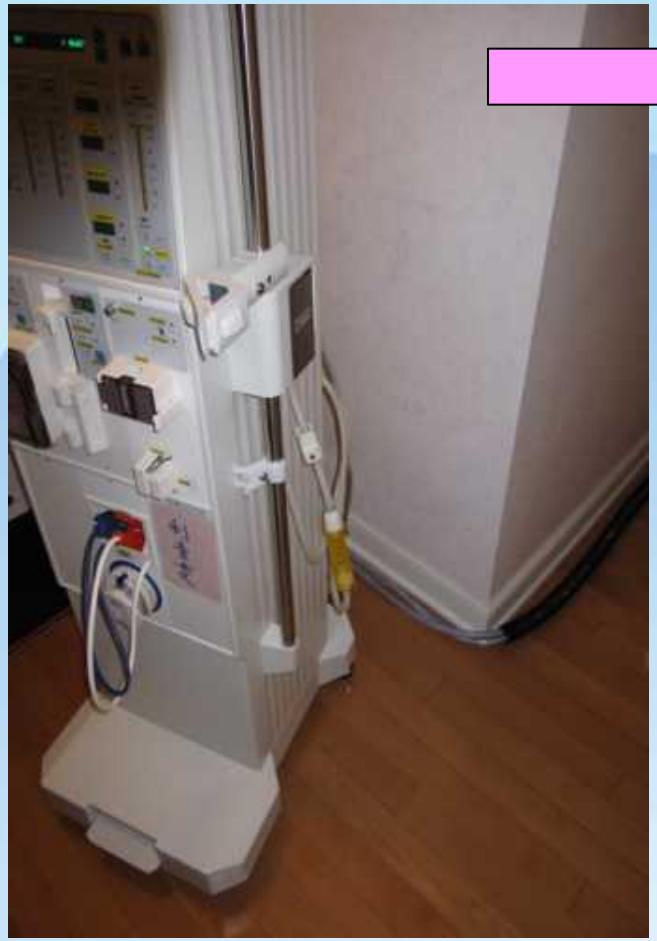
A Home Planner

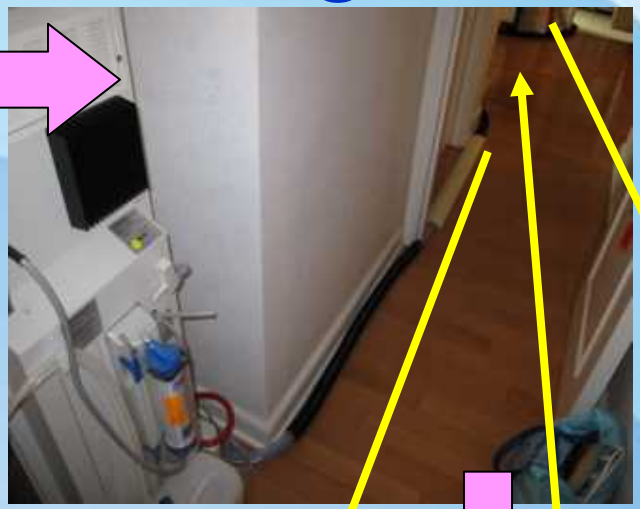
A Furniture Designer

A Mediator to compromise….

Bathroom behind wardrobe

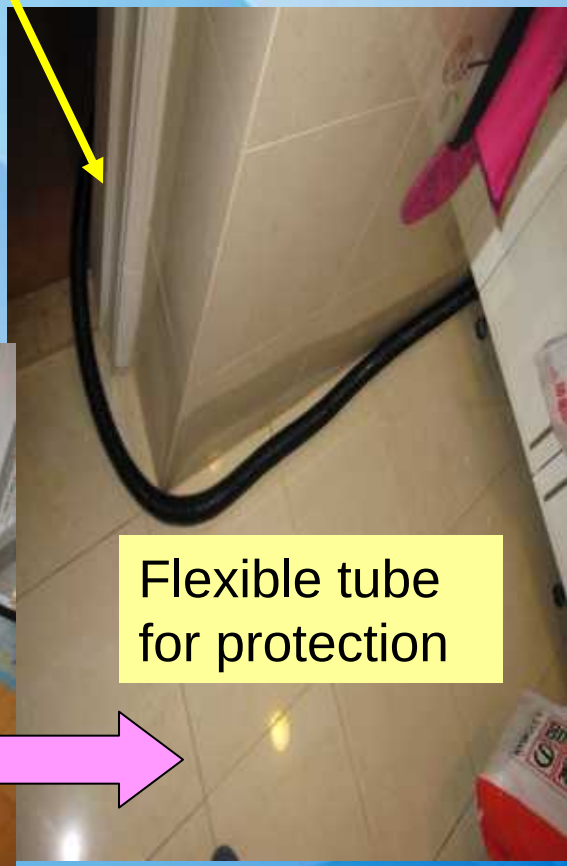
Protection of Long Water Pathway





Corridor

Sitting room



Flexible tube for protection

Bathroom

Bedroom opposite to bathroom

Provision of stainless steel tray for risk of water flooding

Moisture detector on floor

Good Lighting for NHHD procedure

Innovative handmade head light

Moisture Detector

On AVF for bleeding

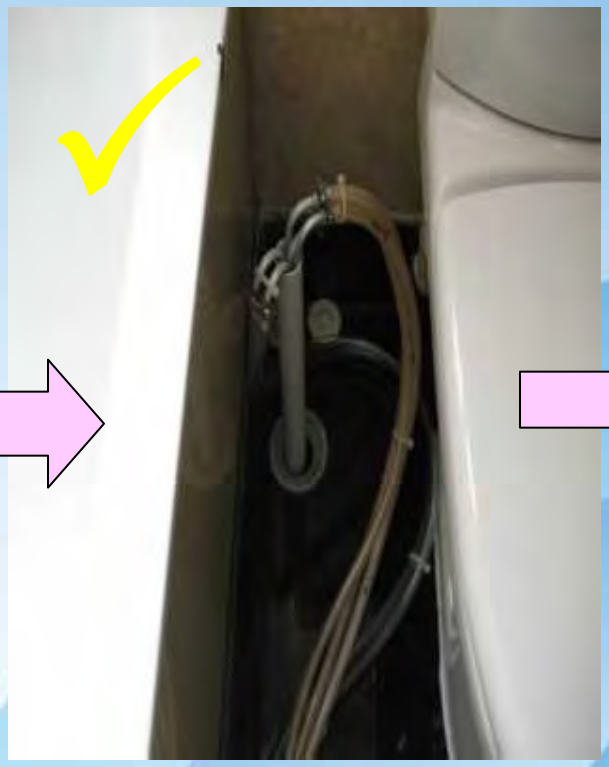
On floor for

water leakage

Clean & Tidy Consumable & Dialysate Storage

A cleanable stainless steel trolley for vascular access cannulation

A Drainage System with Air Gap & Prevention of Water Backflow



Pets - An invader

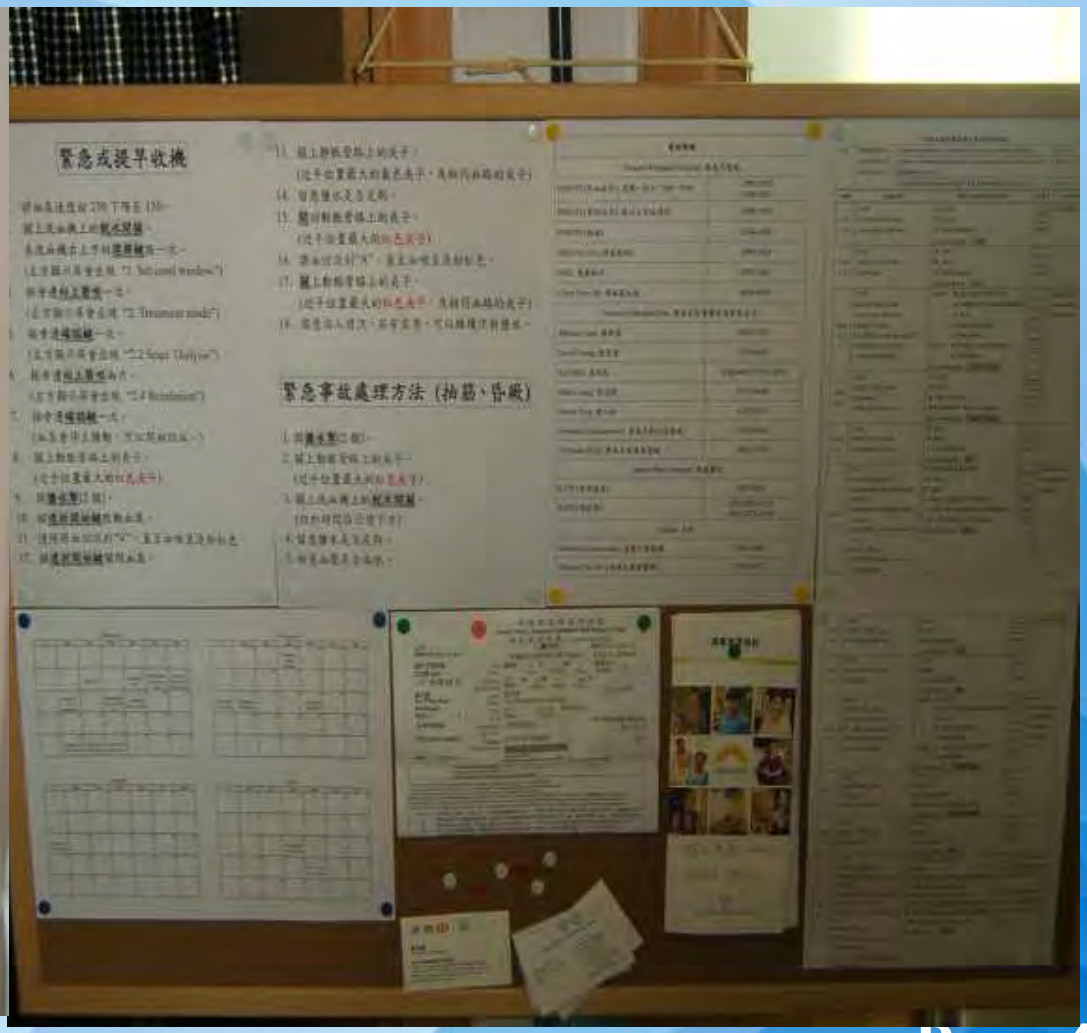
Explain risk on case referral - No pets & plants allowed

Pets are strictly forbidden in HD area for infection control

Ensure personal hygiene & environmental cleanliness prior to HD preparation

Home Notice Board of

Emergency Call and contingency Procedure



Aseptic technique in HD preparation

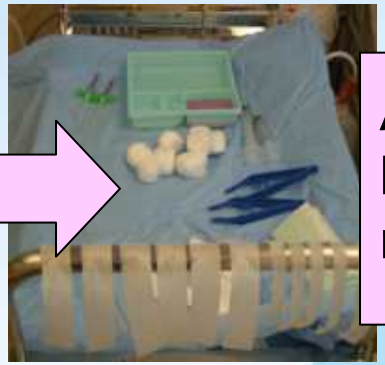
7 Steps hand washing

Non-touch technique in line assembly

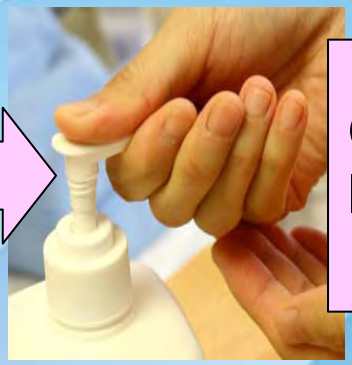
Trolley alcohol disinfection

7 Steps hand washing

Sterile Dressing set



Alcohol hand rub



Cannu-lation

NHHD Buttonhole Cannulation Technique

Buttonhole Technique
for AV Fistulae only

"Establish the Track"
- Same "sticker" for a minimum of 8 cannulations (diabetics may take longer).
- Same angle, depth, and insertion site every treatment.
- When the track is established, change to blunt needles and other "stickers" (e.g., patients and other staff).

Procedure
- Assess the access completely.
- Remove the scabs from previous needle insertions with tweezers, using aseptic technique.
- Clean sites with betadine or per unit protocol.
- Using the 3-point technique, stabilize the access and pull the skin taut, this allows for temporary pain interruption and easier cannulation.
- Insert the needles at the exact angle and depth for every cannulation.
- When flashback is observed, lower angle of insertion.
- Advance needle down the center of the vessel.
- Place tape (securely, but not tightly) over the wings and the insertion site.
- Confirm good flow using a syringe.
- Place chevrons, made from ½" plastic tape, under the needle, then cross over each wing in an "X" pattern to secure needles.
- Continue "On" procedure per unit protocol.

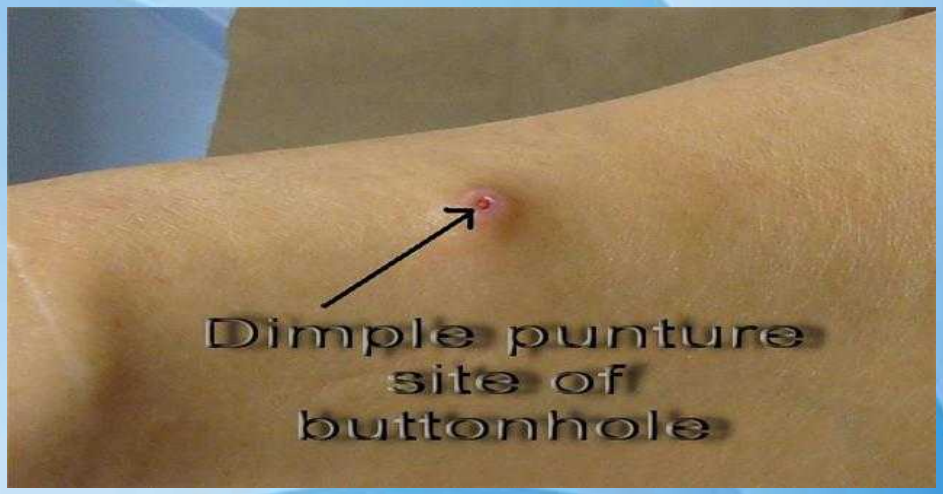
Don'ts
- Don't use excessive force when first changing to blunt needles.
- Don't use sharp needles after track is formed – it can cut the walls forming scar tissue and bleeding during dialysis.

Troubleshooting
- If the sites you chose are in a dip or curve that was not noticed on the primary assessment, simply choose a different site.
- If, after the weekend, you have trouble with blunt needles, switch back to sharp needles for a couple of treatments being very careful to stay in the track.
- If you have to use a different site (other than the buttonhole), stay at least 1" away from the buttonhole track to prevent damage to the buttonhole track.
- If you have bleeding around the needles during dialysis, and are using sharp needles, the track wall may be getting cut.

Barriers to Success
- Heavily scarred accesses from multiple problematic needle sticks
- Large amounts of subcutaneous tissue
- Stenosis present – buttonhole won't improve clearances on a stenotic access
- Not having the same cannulator during track formation

Benefits
- Patient can, and should, learn to self-cannulate.
- Less painful for the patient.
- Fewer infections.
- Fewer missed sticks. extends the life of the AVF
- Fewer infiltrations.
- Blunt needles meet OSHA Bloodborne Pathogen requirements – safer for the staff and the patient

Buttonhole sites- different look



Benefits

Patient can, and should, learn to self-cannulate.
Less painful for the patient.
Fewer infections & aneurysms.
Fewer missed sticks
Extends the life of the AVF
Fewer infiltrations.
Blunt needles meet OSHA Bloodborne Pathogen requirements – safer for the staff and the patient

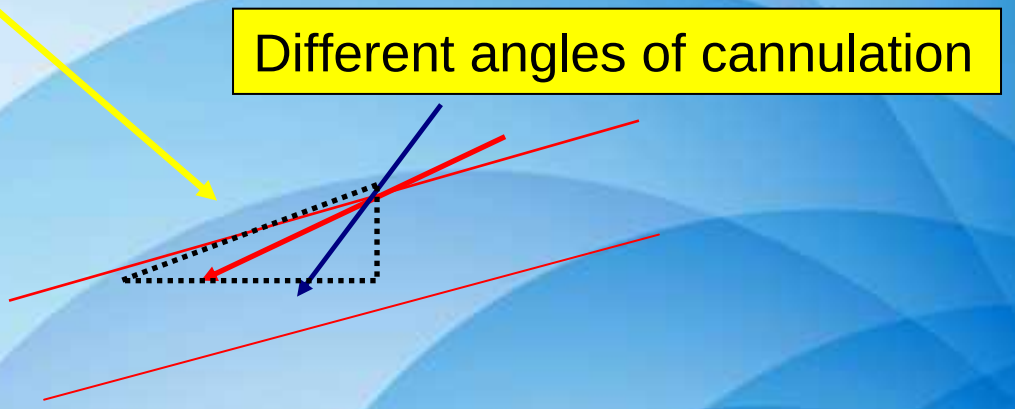
Infected Buttonhole Sites / Tunnel Track

- Improper skin cleansing
- Improper scab removal - not completely remove the scabs
- Contaminated needles - multiple attempts of cannulation with same needle

Infected Buttonhole Sites/ Tunnel track (Cont'd)

Trouble spot in the tunnel

- Not following the originator's angle of entry
- Create **pocket** that can allow bacteria and blood to collect, which can cause tunnel infection



Do's & Don't of Scab Removal

- Don't flip the scab off with the needle your will use for cannulation
- Don't use a sterile sharp needle as you could cut the patent's skin
- Don't allow patients to pick at their scabs with nails
- Don't stick through scabs
- Do moisten the scabs with sterile NS gauze
- Do stretch skin around scab in opposite direction

Our healthy Buttonhole sites

Skin Disinfection

1. Assess AVF before cannulation

2. Wash hands from fingertips to elbow with Hibiscrub (scrub access site for at least 10 seconds) & dry thoroughly.

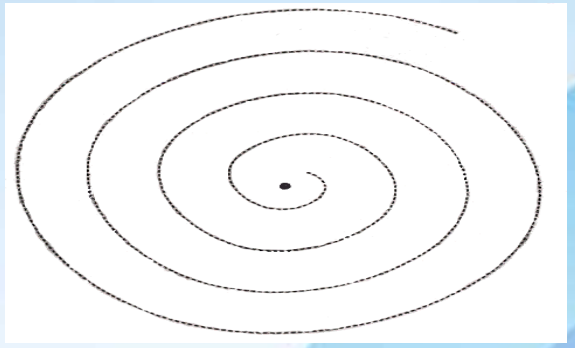
3. Moisten and loosen scabs with sterile normal saline gauze for 15-20 minutes

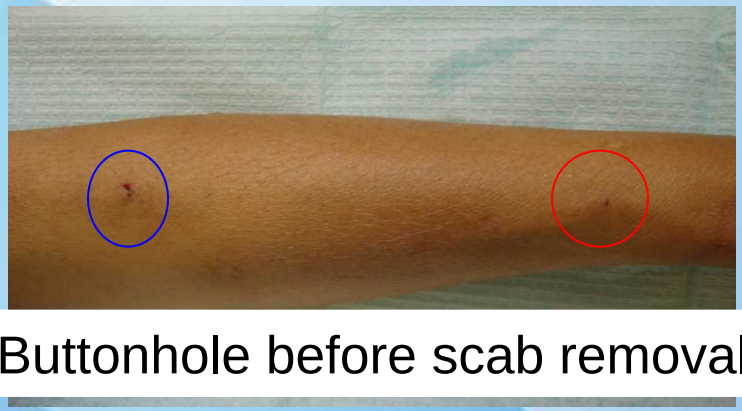
4. Disinfect each BH site with separate alcohol prep (2% Chlorhexidine Gluconate in 70% alcohol) before scab removal.

Proper Cleansing Technique

Proper site preparation reduce infection rate (Scabs are loaded with *Staph aureus)*
Scabs must be completely removed before secondary disinfection

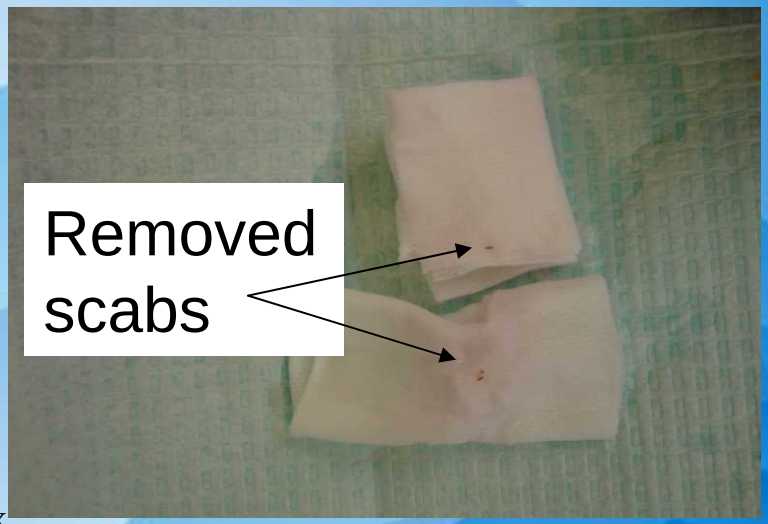
Scrub the skin using a circular outward motion covering an area of 4-5 cm in diameter for at least 30 sec. Allow air dry. (Chlorhexidine in 70 % Alcohol)





Buttonhole before scab removal

After scab removal



Source: http://fistula.memberpath.com/HealthcareProfessionals/WheredoIstartifIamadialysiscenter/CannulationoftheAVFistula.aspx

Removal of scab

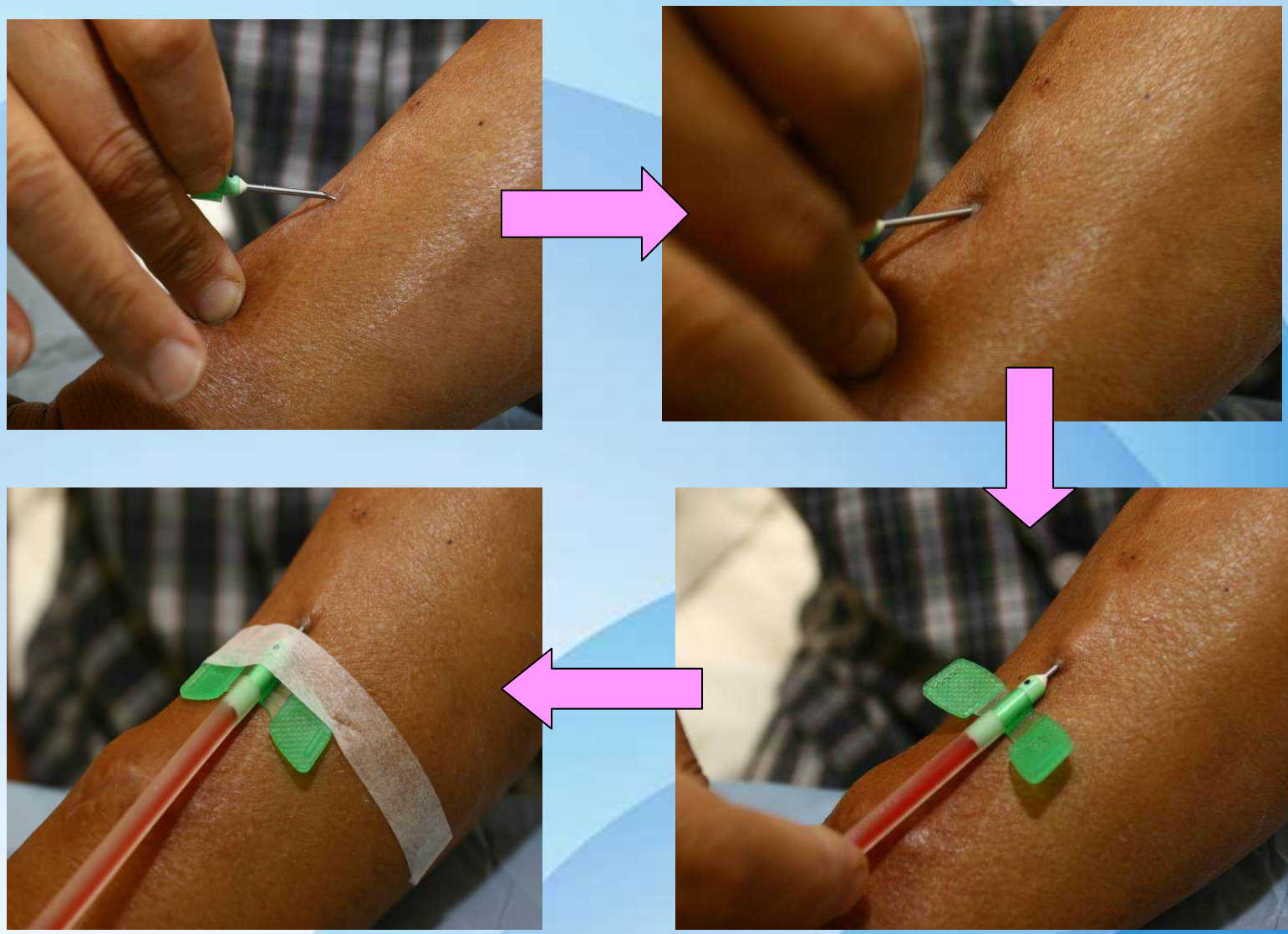
5. Remove each scab with sterile saline. gauze. (Don't scratch the scab with fingernail)

6. Redisinfect the BH cannulation site after scab removal with Chlorhexidine in70 % Alcohol swabs & remove residual disinfectant with sterile NS swabs

7. Apply tourniquet to facilitate easier cannulation.

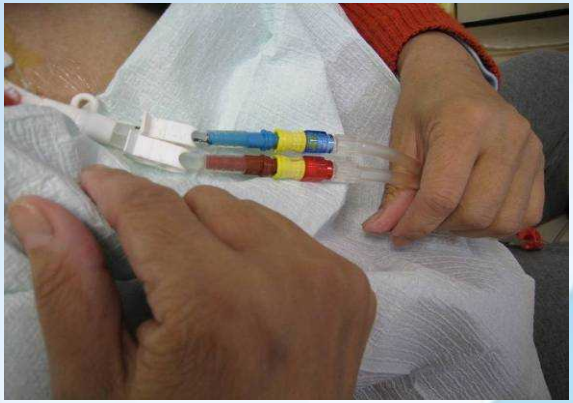
8. Pull skin taut to straighten the fistula.

Cannulation without touching buttonhole



An Innovative Simple Mobile Vein Stablizer created by patient

Permcath and Tego connector

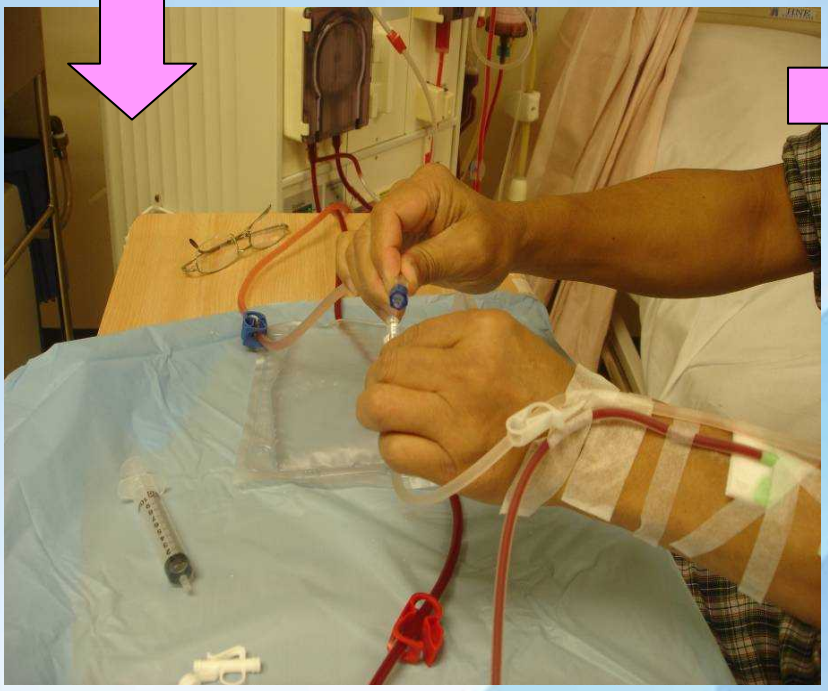


Decrease chance of contamination by change of connectors once per week

When the Tego is not activated, the silicone seal completely closes fluid path eliminating blood exposure & air entry

Easier for self-care & disinfection

Non-touch Technique in Phlebotomy and Washback and Circuit Connection & Disconnection



Infection Surveillance

- Keep track patient's infections
- Periodically report trend of infections
- Investigate every infection underlining causes
- Regularly monitor patient's compliance through proactive questioning by phone call & during follow up
- Pay home visit PRN & at least yearly
- Provide experience sharing & refresher training as reinforcement

Thanks for

PMH & QEH
NHHD Team &
Patients' Assured Performance in Infection Control