FRESENIUS MEDICAL CARE




# Transforming Home Dialysis in Western Australia: A 19 year Journey of Innovation and Reach

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# Context and Challenge

# Geographic and Healthcare Context of Western Australia



### Challenging Geography and Population

Western Australia's vast area and dispersed population create significant barriers for healthcare delivery and patient access.

### Impact on Renal Patients

Long distances forced many dialysis patients to relocate, causing social, cultural, and emotional challenges especially for Aboriginal communities.

### Innovative Home Dialysis Model

A statewide home dialysis service was designed to overcome geographic barriers through logistics, communication, and tailored patient education.

### Sustainable Long-term Care

The model emphasizes sustainability, ensuring lifelong dialysis therapy support adapted to diverse cultural and literacy backgrounds.

# Delivering Dialysis Across a Vast State




Western Australia is the **largest state in Australia** (2.5 million km²), creating significant challenges in access to care.

**Distance from healthcare services** has major personal, cultural, and emotional impacts for patients with kidney failure

Relocating to metropolitan centers for dialysis leads to:

- Separation from family and support networks
- Loss of employment and routine
- Disconnection from cultural obligations and Country

The program was designed to address both:

- Technical demands of dialysis
- Human factors critical for long-term success

# Life on the Road

## Welcome to Country

Burringurrah, 500kms

East of Carnarvon




## The wildlife

Meet the locals.



## Tiny Planes

The only way to get there!



# Defining the Core Problem to Be Solved



**Problem of Inconsistent Training**

Inconsistent teaching practices caused variable patient confidence and skill retention, impacting safety in home dialysis care.

**Need for Structured Framework**

A structured training framework was essential to ensure safety and quality while allowing adaptation to diverse patient needs.

**Sustainability Challenges**

Sustainability required scalable training solutions to address staff turnover, geographic expansion, and growing patient numbers.

**Education as Clinical Skill**

Improving how nurses teach was recognized as a vital clinical skill, central to driving long-term quality outcomes.

# Program Aims and Design

# What we did:

- HHD In 2013 we carried out a Home Haemodialysis Training Curriculum Review:
- Found that Training material needs to be useful at every step of the way.  There was a lack of standardised practice across both training units in relation to training material and relevant competencies.

- The Training materials needs to be simple for the patient to follow and easy for them to refer to when at home.
- To be stored in one place there were too many versions stored in work computers all over the place.

- For the staff to know patients are competent to go home and the patient is confident that they have the required skills to dialyse at home.

# Peritoneal Dialysis

- 2016:  Slightly later than the HHD training as there were already training materials for patients:
- To revise current PD training material and improve patient understanding of PD
- Reduce peritonitis rates.
- To provide unity and structure to the information that patients are provided with.
- To supply a training resource for all nurses that can be utilised to help new PD staff train patients.

# Implementation and Methods

# Identifying Variability in Early Practice

## Variability in Training Delivery

Home dialysis training varied widely due to personal teaching styles despite nurses being skilled and committed.

## Impact on Patient Experience

Inconsistent education caused variable patient confidence and preparedness, affecting training outcomes.

## Focus on Educator Preparation

Focus shifted to improving educator preparation and teaching methods rather than blaming patient challenges.

## Quality Improvement Approach

Recognizing variability enabled system-level change and strengthened practice through reflective quality improvement.

- ? remove

# HHD Before the quality Improvement and After it 2013-2026

**Start dialysis:**

Turn water on at the sink.

Switch power on.

RO Display

| |
|---|
| STANDBY<br>SELECT: ON |

Press for 2 seconds.

RO Display

| |
|---|
| SELF TEST<br>PLEASE WAIT |

Self test is for 5-10 minutes. Wait until self test finishes.

RO Display

| |
|---|
| ON<br>SELECT: OFF |

RO is now ready for dialysis

Switch dialysis machine on.

Press rinse, machine will rinse for 16 minutes.

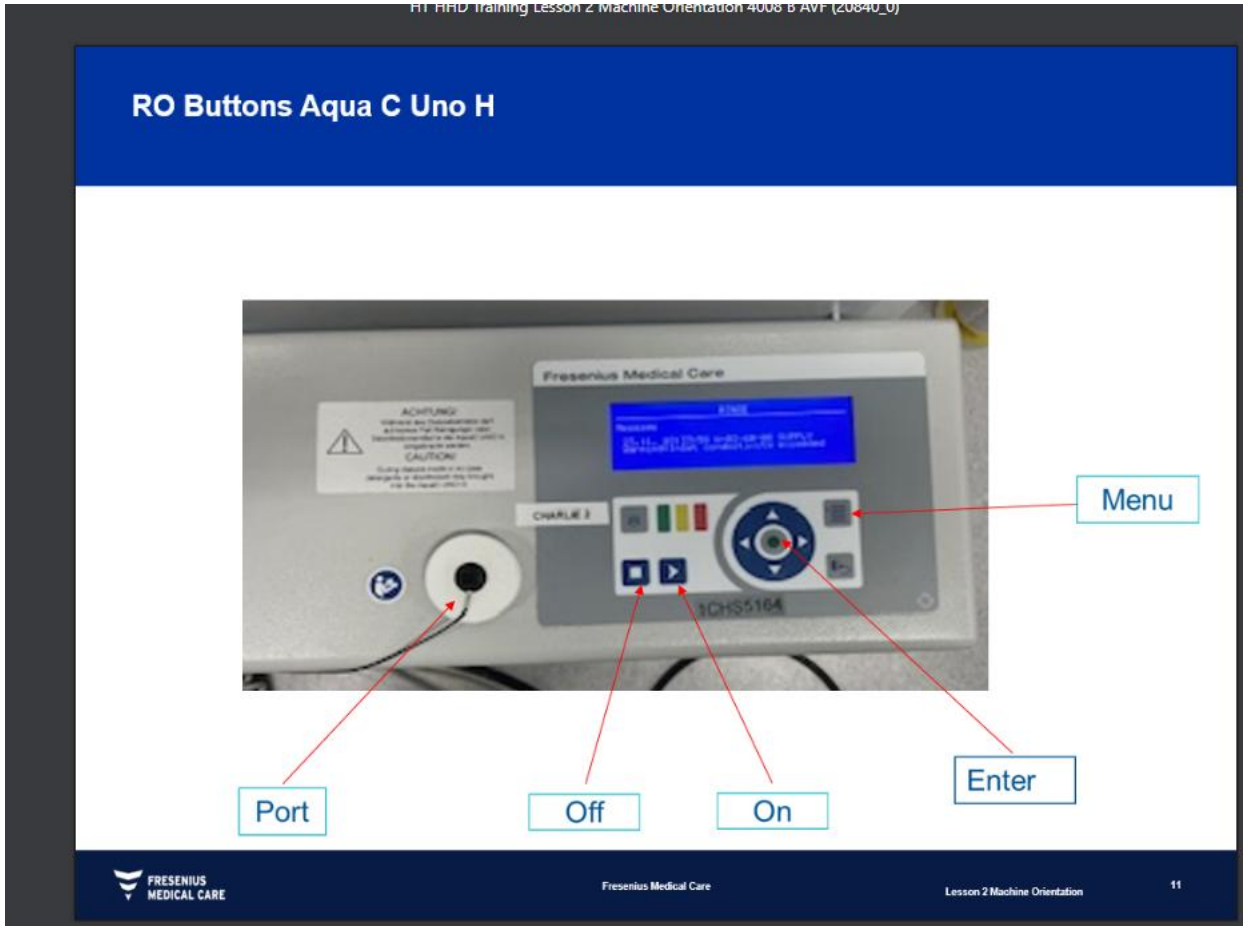
After 10 minutes of rinse, when machine time is down to 5 minutes, go outside and do the chlorine test with the test strips. Should be less than 0.1.

**When machine finishes rinse:**

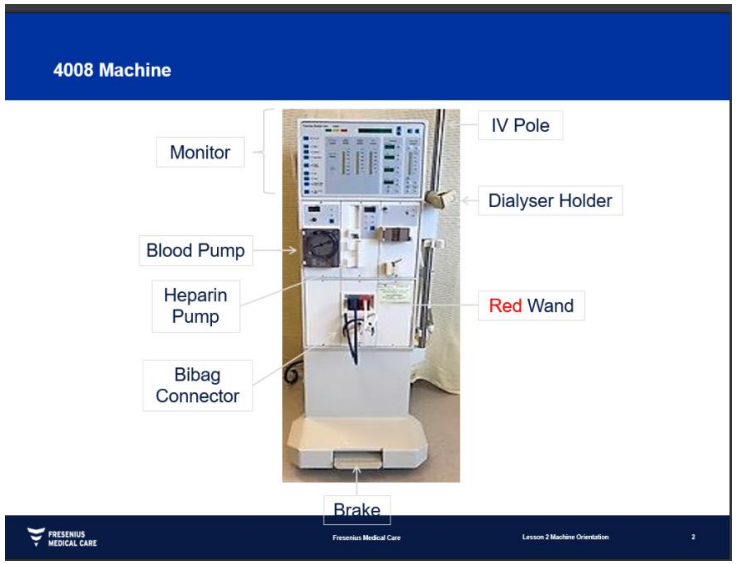
“Mandatory rinse end” on machine.

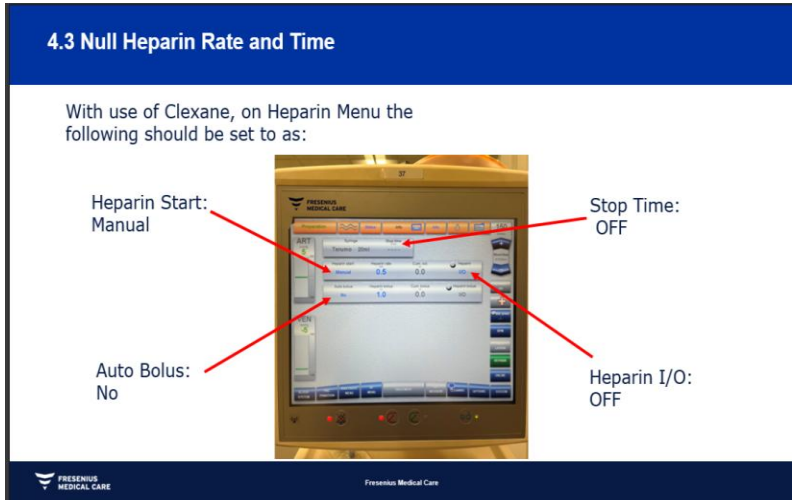
Put machine into test with bibag and bottle.

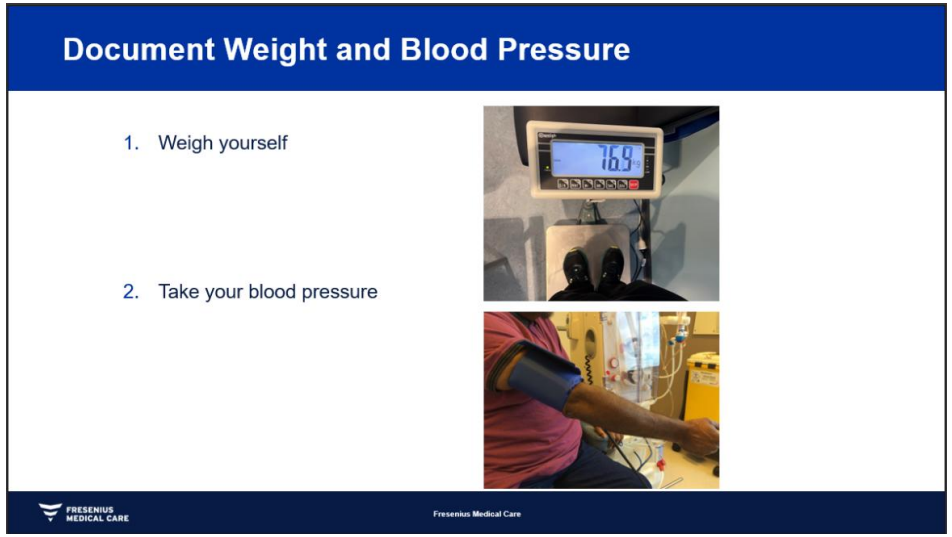
Use machine for dialysis.



# Training manuals for the patients were created to be simple but effective



# Nurse Guidance on the steps and looking at why if needed the patients were not achieving their Millstones

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ID number _____
Family name _____
Given names _____
Date of Birth____/____/____Sex □ M □ F
(Affix patient Identification label here)

3.3 Competency Booklet & Training Planner

| Stage 1 (Weeks 1-2) | |
|---|---|
| **Admission** | **Training** |
| □ Consent and docs signed and uploaded on Euclid:<br>□ Rights and responsibilities;<br>□ HHD contract<br>□ Nursing admission form<br>□ Photo ID<br>□ Access Photo<br>□ BCM<br>□ ANZDATA<br>□ EuCliD: HD prescription, Medication list, Alert/Allergies<br>□ Book Iron test dose with parent hospital if no history of previous dose<br>□ Organise Standing order/medication chart to be signed<br>□Subsidy form given<br>□Hepatitis B database & EuCliD<br>□Primary Patient List<br>□Bactroban for CVC | ☐ Pre and post bloods (Day 1)<br>☐ Hand Hygiene<br>☐ Machine overview<br>☐ Machine set up<br>☐ Water chlorine testing<br>☐ Needle removal and clean up<br>☐ Emergency disconnection discussion<br>☐ Emergency Care of AVF/AVG<br>☐ Give Emergency fistula pack with Cap<br>☐ Emergency saline discussion<br>☐ Blood line safety checks<br>☐ UF Goal Calculation<br>☐ Give Blood pressure machine and stethoscope<br>☐ Inform consultant and hospital start of training<br>☐ Patient achieved Milestones<br>If not, why not?<br>_____<br>☐ Discuss with Clinical Coordinator |

| Training Nurse: |
|---|
| Sign: |
| Date: |

**Barriers to Learning:**

( ) Decreased motor skill/ dexterity
( ) Anxiety
( ) Decreased hearing
( ) Depression
( ) Decreased vision (use of glasses/ blind)
( ) Fatigue
( ) Low reading literacy
( ) Memory problems
( ) Low numeracy literacy
( ) Language barrier
( ) Other Please specify :_____

**VARK Assessment**

**Visual** _____
**Aural** _____
**Read/Write** _____
**Kinesthetic** _____

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ID number _____
Family name _____
Given names _____
Date of Birth____/____/____Sex □ M □ F
(Affix patient Identification label here)

3.3 Competency Booklet & Training Planner

| Stage 2 (Weeks 2-3) | Stage 3 (Weeks 3-4) |
|---|---|
| **Access (AVF/AVG/CVC)** | **Troubleshooting** |
| ☐ Access care<br>☐ Access assessment<br>☐ Preparation/ Cannulation<br>☐ Patient connection and disconnection<br>**Troubleshooting Machine Alarms**<br>☐ Arterial alarm<br>☐ Venous alarm<br>☐ TMP alarm<br>☐ Conductivity alarm<br>☐ Air detector alarm<br>☐ Blood leak alarm<br>☐ Heparin alarm (not on)<br>☐ UF alarm<br>☐ Other alarms (shunt cover, dialyser ports, conc line not connected, etc.)<br>☐ Patient achieved Milestones<br>If not, why not?<br>_____<br>☐ Discuss with Clinical Coordinator | **Blown arterial/venous needle**<br>☐ Reinfusion via arterial needle<br>☐ Early reinfusion<br>☐ Care of access post infiltration<br>**Medication Administration**<br>☐ EPO<br>☐ IV Iron<br>☐ Clexane / Heparin<br>**Other**<br>☐ Circulation<br>☐ Adjusting Heparin time<br>☐ Patient achieved Milestones<br>If not, why not?<br>_____<br>☐ Discuss with Clinical Coordinator |

# Peritoneal Dialysis Training Initiatives

- 2007

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stay•safe® BAG - EXCHANGE

PREPARATION

1. Remove your catheter extension from clothing
2. Wash hands
3. Clean work surface with disinfectant
4. Collect equipment and place on work surface
   - hand disinfectant
   - new cap
   - warm bag (check clarity, expiry date, % glucose)
5. Disinfect hands
6. Open new bag
7. Aseptic handwash
8. Squeeze bag to check for leaks, hang up new bag
9. Uncoil Lines
10. Place the disc into the organiser and allow the

CONNECTION

1. Disinfect hands
2. Unscrew the protective coloured cap from the disc
3. Unscrew the catheter extension and screw onto the disc
4. Open white clamp. The disc is already in the outflow ● position.
   Drain out will commence. THIS WILL TAKE APPROX 20 MIN
6. When drain is complete turn to flush ●● position. Count 5 seconds
7. Turn dial to inflow ●●● position.

DISCONNECTION

8. When inflow is complete turn dial to ●●●●
9. Close the white clamp on catheter extension
10. Disinfect hands
11. Remove white cover from new cap then screw on to used cap in right side of organiser

# 2007-2016: Multi Language with some pictures:

## stay.safe CAMBIO DELLA BUSTA

**PREPERAZIONE**

1. Lavare le mani - Normale



2. Pulire il tavolo con il disinfettante

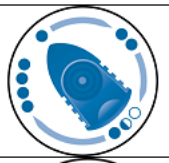


3. a. Prendere Busta
   b. Prendere Tappo
   c. Prendere Aqium Disinfettante

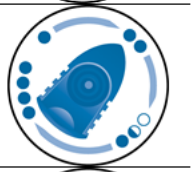
4. Aprire la busta senza toccare la sacca



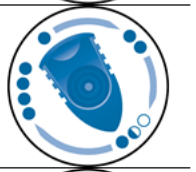
16. DRENAGGIO
    - aspettare 20 minuti



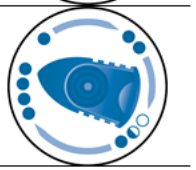
17. Girare per LAVARE
    - contare fino a 5



18. Girare per RIEMPIRE
    -aspettare 10 minuti



19. Girare per CHIUDERE



# Ongoing refining of the Step by Step for PD patients

- 2016 and Onwards:

| Step | Picture | Instruction |
|---|---|---|
| 1. |  | Social hand wash |
| 2. |  | Clean work surface and organiser with Cliniclean |
| 3. |  | Collect<br>a. Bag<br>b. Cap<br>c. Hand gel |
| 4. |  | Open bag, leave in cover |
| 5. |  | Remove your tube from clothing |
| 6. |  | Wash hands – 2 minutes |
| 18. |  | DRAIN OUT – Wait 20 minutes |
| 19. |  | Turn to FLUSH - Count to 5 slowly |
| 20. |  | Turn to FILL - Wait 10 minutes |
| 21. |  | Turn to CLOSE |
| 22. |  | Close WHITE CLAMP on your tube |
| 23. |  | DISINFECT HANDS |
| 24. |  | Unscrew cover from NEW cap |

# Education package like HD was formalised more and Standardised

## Options During Treatment – Terminate Treatment

You may want to use this option if you have to come off quickly

- Press the Therapy Icon




- Use the arrows to highlight treatment options & press




- Use the arrows to highlight terminate treatment & press




- Confirm that you want to end your treatment by pressing the "Confirm" button




FRESENIUS MEDICAL CARE | Fresenius Medical Care | Harmony Lesson 3 Options During Treatment | 3

## Dehydration (not enough fluid in your body)

**Signs and Symptoms:**

- Decreased weight
- Low Blood Pressure
- Dizziness - (especially when standing up quickly)
- Increased thirst
- Dry mouth & skin
- Leg cramps & weakness



**Caused By:**

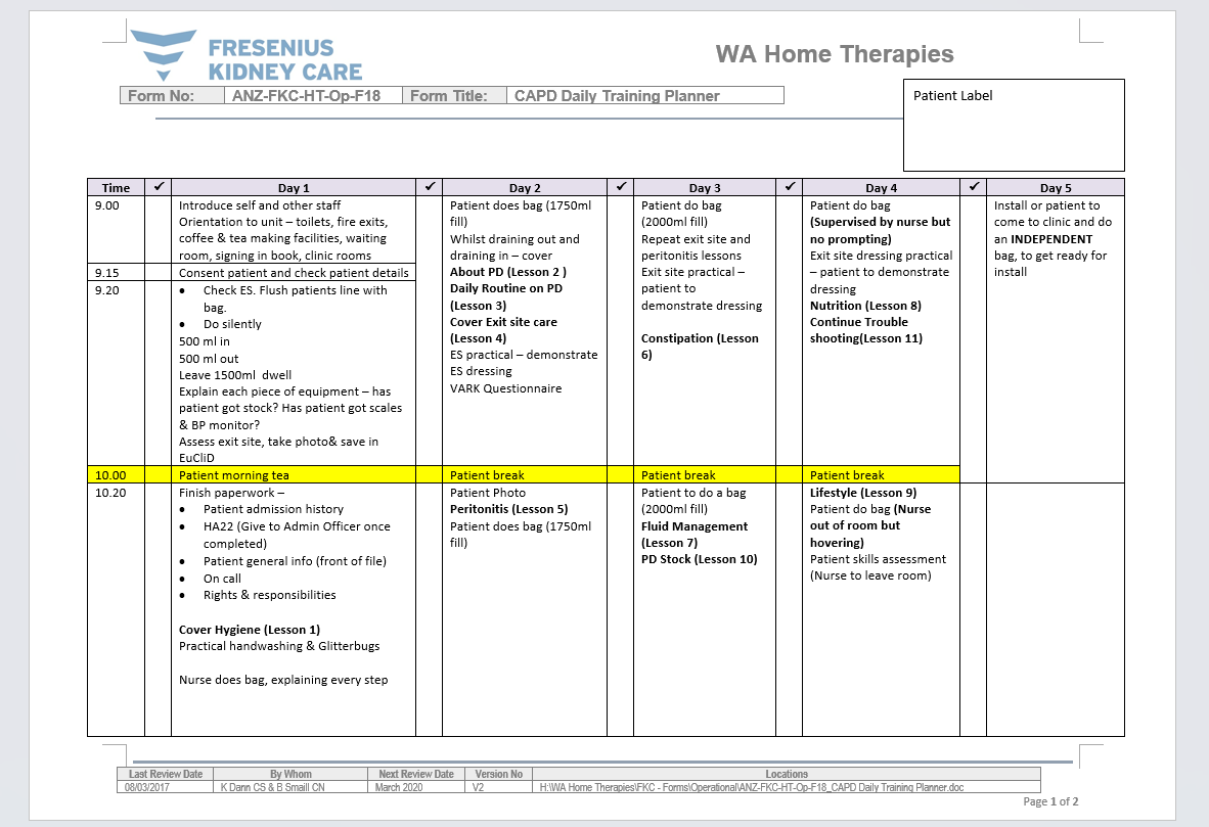
- Sweating
- Diarrhoea



- Too much drainage from bags
- Vomiting

FRESENIUS MEDICAL CARE | Fresenius Medical Care | CAPD Lesson 7 Managing Your Fluid and Weight | 10

# Biggest change to our PD program



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WA Home Therapies

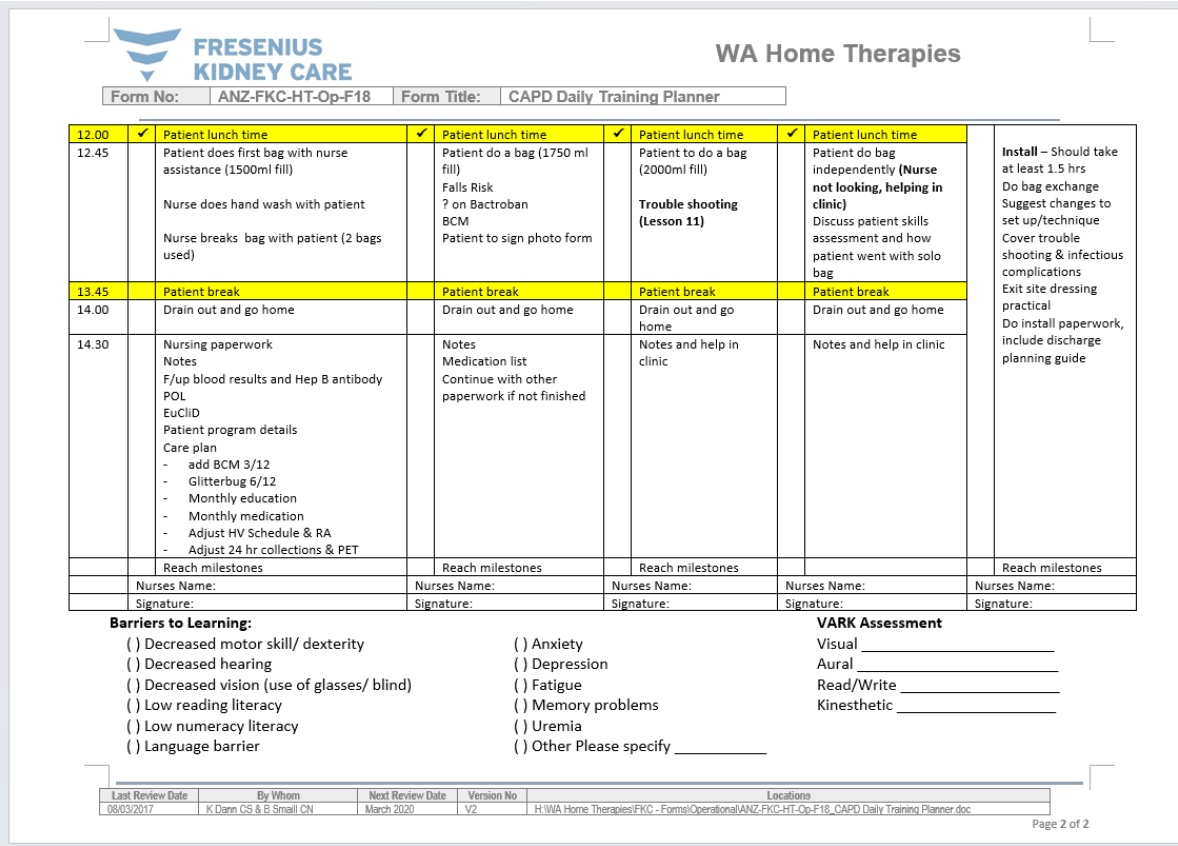
| Form No: | ANZ-FKC-HT-Op-F18 | Form Title: | CAPD Daily Training Planner |
|---|---|---|---|

Patient Label

| Time | ✓ | Day 1 | ✓ | Day 2 | ✓ | Day 3 | ✓ | Day 4 | ✓ | Day 5 |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.00 | | Introduce self and other staff<br>Orientation to unit – toilets, fire exits, coffee & tea making facilities, waiting room, signing in book, clinic rooms | | Patient does bag (1750ml fill)<br>Whilst draining out and draining in – cover<br>**About PD (Lesson 2 )**<br>**Daily Routine on PD (Lesson 3)**<br>**Cover Exit site care (Lesson 4)**<br>ES practical – demonstrate ES dressing<br>VARK Questionnaire | | Patient do bag (2000ml fill)<br>Repeat exit site and peritonitis lessons<br>Exit site practical – patient to demonstrate dressing<br><br>**Constipation (Lesson 6)** | | Patient do bag **(Supervised by nurse but no prompting)**<br>Exit site dressing practical – patient to demonstrate dressing<br>**Nutrition (Lesson 8)**<br>**Continue Trouble shooting(Lesson 11)** | | Install or patient to come to clinic and do an **INDEPENDENT** bag, to get ready for install |
| 9.15 | | Consent patient and check patient details | | | | | | | | |
| 9.20 | | • Check ES. Flush patients line with bag.<br>• Do silently<br>500 ml in<br>500 ml out<br>Leave 1500ml dwell<br>Explain each piece of equipment – has patient got stock? Has patient got scales & BP monitor?<br>Assess exit site, take photo& save in EuCliD | | | | | | | | |
| 10.00 | | Patient morning tea | | Patient break | | Patient break | | Patient break | | |
| 10.20 | | Finish paperwork –<br>• Patient admission history<br>• HA22 (Give to Admin Officer once completed)<br>• Patient general info (front of file)<br>• On call<br>• Rights & responsibilities<br><br>**Cover Hygiene (Lesson 1)**<br>Practical handwashing & Glitterbugs<br><br>Nurse does bag, explaining every step | | Patient Photo<br>**Peritonitis (Lesson 5)**<br>Patient does bag (1750ml fill) | | Patient to do a bag (2000ml fill)<br>**Fluid Management (Lesson 7)**<br>**PD Stock (Lesson 10)** | | **Lifestyle (Lesson 9)**<br>Patient do bag **(Nurse out of room but hovering)**<br>Patient skills assessment (Nurse to leave room) | | |

| Last Review Date | By Whom | Next Review Date | Version No | Locations |
|---|---|---|---|---|
| 08/03/2017 | K Dann CS & B Small CN | March 2020 | V2 | H:\WA Home Therapies\FKC - Forms\Operational\ANZ-FKC-HT-Op-F18_CAPD Daily Training Planner.doc |

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FRESENIUS KIDNEY CARE

WA Home Therapies

| Form No: | ANZ-FKC-HT-Op-F18 | Form Title: | CAPD Daily Training Planner |
|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 12.00 | ✓ | Patient lunch time | ✓ | Patient lunch time | ✓ | Patient lunch time | ✓ | Patient lunch time | |
| 12.45 | | Patient does first bag with nurse assistance (1500ml fill)<br><br>Nurse does hand wash with patient<br><br>Nurse breaks bag with patient (2 bags used) | | Patient do a bag (1750 ml fill)<br>Falls Risk<br>? on Bactroban<br>BCM<br>Patient to sign photo form | | Patient to do a bag (2000ml fill)<br><br>**Trouble shooting (Lesson 11)** | | Patient do bag independently **(Nurse not looking, helping in clinic)**<br>Discuss patient skills assessment and how patient went with solo bag | **Install** – Should take at least 1.5 hrs<br>Do bag exchange<br>Suggest changes to set up/technique<br>Cover trouble shooting & infectious complications<br>Exit site dressing practical<br>Do install paperwork, include discharge planning guide |
| 13.45 | | Patient break | | Patient break | | Patient break | | Patient break | |
| 14.00 | | Drain out and go home | | Drain out and go home | | Drain out and go home | | Drain out and go home | |
| 14.30 | | Nursing paperwork<br>Notes<br>F/up blood results and Hep B antibody<br>POL<br>EuCliD<br>Patient program details<br>Care plan<br>- add BCM 3/12<br>- Glitterbug 6/12<br>- Monthly education<br>- Monthly medication<br>- Adjust HV Schedule & RA<br>- Adjust 24 hr collections & PET | | Notes<br>Medication list<br>Continue with other paperwork if not finished | | Notes and help in clinic | | Notes and help in clinic | |
| | | Reach milestones | | Reach milestones | | Reach milestones | | | Reach milestones |
| | | Nurses Name: | | Nurses Name: | | Nurses Name: | | Nurses Name: | Nurses Name: |
| | | Signature: | | Signature: | | Signature: | | Signature: | Signature: |

**Barriers to Learning:**

( ) Decreased motor skill/ dexterity
( ) Decreased hearing
( ) Decreased vision (use of glasses/ blind)
( ) Low reading literacy
( ) Low numeracy literacy
( ) Language barrier
( ) Anxiety
( ) Depression
( ) Fatigue
( ) Memory problems
( ) Uremia
( ) Other Please specify _____

**VARK Assessment**

Visual _____
Aural _____
Read/Write _____
Kinesthetic _____

| Last Review Date | By Whom | Next Review Date | Version No | Locations |
|---|---|---|---|---|
| 08/03/2017 | K Dann CS & B Small CN | March 2020 | V2 | H:\WA Home Therapies\FKC - Forms\Operational\ANZ-FKC-HT-Op-F18_CAPD Daily Training Planner.doc |

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# PD Nursing Training Guide

**Patient Milestones**

If there are milestones that the patient is not achieving please speak to your Clinical Nurse.

Milestones that the patient should be able to reach:

**Day 1:** Patient can competently wash hands
Patient recognises drain in, drain out and dwell
Patient has an understanding of, and recognises clean and dirty surfaces
Patient should recognise all equipment e.g. organiser

**Day 2:** Patient is able to do a PD bag exchange with nurse assistance
Patient starts to have an understanding of exit site care, peritonitis and constipation

**Day 3:** Patient performs bag exchange independently with minimal prompting
Patient can discuss exit site care, peritonitis and constipation

**Day 4:** Patient can do bags independently
Patient has knowledge of nutrition, lifestyle, stock, fluid management and trouble shooting
Patient recognises contamination
Patient can answer skills assessment questions

**Day 5:** Patient is able to do bag exchange independently in their own home
Patient can verbally discuss trouble shooting and infectious complications

| Action/information | Rationale |
|---|---|
| **Organiser**<br>Comes in flat square box | Patients often don't see the equipment when unpacking |
| **Organiser holder**<br>Comes in bigger square box | |
| **Disinfection caps**<br>Only 10/7 worth in each box | Patients often under estimate how many they have |
| **IV Pole**<br>2 different types - train on the one the patient has/will receive | ↓ confusion when doing bags at home |
| **Surface cleaner** (Cliniclean)<br>• Use antibacterial spray and wipe if run out<br>• Can put into spray bottle for ease of use | Gives alternatives<br>Patients can be heavy handed with Cliniclean<br>Surfaces must be dry before use |
| **Warming PD Fluid**<br>• Take patient over and show them the warmer<br>• Get them to put their hands on the warmer plate | Practical demonstration increases knowledge<br>Can't cause burns |
| **Area for Exchange**<br>• Free from pets | Decrease risk of peritonitis |

**Story**
- Rabbit chewed on PDC when it wasn't secured to the skin
- Cat sitting on knee clawed a hole in an unanchored PDC
- Patient on APD → cat sleeping in room → played with tubing overnight. Pierced lines → patient got feline peritonitis

Nursing Training Guide CAPD

**Day 1**

| Action/information | Rationale |
|---|---|
| Introduce self & orientate to unit | Make patient comfortable in surroundings |
| Reassure patient.<br>→ explain what will happen during training week | Patients are extremely anxious on 1st day of training |
| Flush patient | Ensure PDC patency<br>Demonstrate exchange procedure |
| Do Flush with out explaining steps | Allows patient to observe the procedure |
| Leave in 1.5L | Ensure patient comfort<br>↓ risk of leaks |
| Explain each piece of equipment<br><br>→ ask patient to bring in delivery order | Patient becomes comfortable with equipment<br>Patient may be missing stock in initial order |
| Assess exit site – take photo | Base line point for ongoing exit site care |
| **Lesson 1 - Hygiene** | |
| Hand Hygiene<br>• Show PD Lesson 1 on hygiene | Gives theoretical basis for hygiene |
| Patient practices hand hygiene<br>• with nurse prompting and timing length of wash | Patient is competent with handwashing before doing bag exchange |
| Use Glitterbug | |
| • Put cream on hands. Patient does quick hand wash. Use UV light. | Demonstrates that quick hand wash is not thorough enough |
| • Patient does 2 minute hand wash<br>→ Use UV light again | Demonstrates difference between quick hand wash and 2 minute hand wash |
| Nurse does first bag, explaining each step. See Appendix 1 | |
| **Equipment:**<br>**Paper towels**<br>• Run out → use kitchen roll<br>• Get paper towel holders PS710 Extra Slimline Towel Dispenser for $16 from Bunzls in North Perth, Ph: 9328 4200<br>• Can use plastic container with hole cut like a tissue box (demo) | Gives alternatives in handling paper towels |

# Outcomes and Impact

# Home Dialysis Benefits




- Growth of Home Hemodialysis (HHD)
- In 2007, there were 28 patients on HHD in Western Australia
- By 2025, this has increased to over 100 patients
- Patients are now supported across all regions of the state
- Multiple models of care are in place:
  - Treatment at home
  - Treatment in community health facilities

# Peritoneal Dialysis (PD) Improvements



- Introduction of targeted nurse-led training initiatives has significantly improved patient outcomes
- Peritonitis rates decreased from 0.44–0.59 episodes per patient-year (2011–2017)
- Improved to an average of 0.25 episodes per patient-year by 2025
- Current performance is well below the ISPD KPI target of <0.4 episodes per patient-year
- Continuous year-on-year improvement since 2017

# Statewide Expansion and Reach



### Program Expansion

The program successfully expanded from three hospitals doing their own thing to a comprehensive statewide model, reaching more isolated regions with home dialysis support.

### Consistent Quality Care

Expansion throughout the state was achieved without compromising care quality through standardization and strong training frameworks.

### Remote Community Support

Patients in geographically isolated areas receive ongoing structured training and support  with trained Spoke nurses rolled out from 2018 for home dialysis treatment.

### Scalable Health Services

The program exemplifies how specialized health services can be decentralized while maintaining high standards.

# Mt Lawley – The house! 2007 Clinic





Home from home

Garden check-ups



# Some of the team that we have 19 years later



