

Supplemental Materials for the study:

RETRAINING FOR PREVENTION OF PERITONITIS IN PERITONEAL DIALYSIS PATIENTS – A RANDOMIZED CONTROLLED TRIAL

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PRACTICAL TEST

INFORMATION FOR THE INVESTIGATING NURSE

Patient identification								
Date	<table><tr><td></td><td></td><td></td><td></td></tr></table>					<table><tr><td></td><td></td></tr></table>		
	Year	Month						
		Day						
Name of testing nurse								
The test is performed in the patient's home		Yes <input type="checkbox"/> No <input type="checkbox"/>						
(Can be performed in the patient's home or at the clinic)								
Time after PD start months								

Patients in the control group

- should not perform the practical test.

Patients in the retraining group

- should perform the practical test at 1, 3, 6 and 12 months after the start of PD, every sixth month thereafter and after every peritonitis episode until the end of the study. The first test can be performed within the 2 weeks before and after the due date (1 month after the start of PD). Thereafter, it can be performed within the 3 weeks before and after the due date. The practical test should be performed in either the patient's home or at the hospital before she/he completes the questionnaire.

The patient should be asked to perform a PD exchange and exit-site care. The patient should prepare the procedure her/himself by removing the protective wrapping from the bag, bringing/asking for the necessary equipment and placing it in a suitable position. Patients using APD (Automated Peritoneal Dialysis) should do a manual PD exchange and prepare a cyclor. A nurse fills in the protocol during the procedure without interrupting the patient. After the test, the steps that need to be corrected are discussed, retrained and retested on the same day or at a later stage until the goal is achieved.

Patients who do not perform exit-site care themselves can skip step E, but step D must be correctly performed. Otherwise the helper should be retrained.

Goal: All steps should be performed correctly.

PRACTICAL TEST – CHECK LIST

Step A. Preparation for a bag exchange

- | | | |
|--|------------------------------|-----------------------------|
| 1. Did the patient bring all the necessary equipment? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 2. Did the patient place the equipment on the table in an appropriate way? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 3. Did the patient check to ensure that the new bag was undamaged? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

The step was performed correctly

Yes ☐ No ☐

Step B. Hand hygiene technique

- | | | |
|---|------------------------------|-----------------------------|
| 1. Did the patient use alcohol-based hand rub technique? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 2. Did the patient use sufficient alcohol to wet the hands and did the patient rub her/his hands with alcohol all over? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 3. Did the patient rub her/his hands until the alcohol had dried? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4. Did the patient touch anything before connecting/disconnecting? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

The step was performed correctly

Yes ☐ No ☐

Step C. PD exchange

- | | | |
|--|------------------------------|-----------------------------|
| 1. Was the connection and disconnection done correctly?
(APD patients should do a daytime exchange) | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 2. Was the patient's technique good, safe and without risk of contamination? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4. For CAPD patients: Did the patient check if the dialysate was cloudy? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 5. For APD patients: Were the cyclor connections properly connected? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

The step was performed correctly

Yes ☐ No ☐

Step D. Inspection before exit-site care

Exit care is usually performed by the patient

Yes ☐ No ☐

Exit care is usually performed by a helper

Yes ☐ No ☐

Inspection before the exit-site care:

1. If the patient uses dressing: Is the dressing correctly applied?

Yes ☐ No ☐

2. Is the catheter well secured?

Yes ☐ No ☐

3. Is the catheter placed above groin level?

Yes ☐ No ☐

The step was performed correctly

Yes ☐ No ☐

STEP E. Exit-site care:

1. Has the patient prepared the procedure using proper equipment?

Yes ☐ No ☐

2. Did the patient disinfect her/his hands before cleaning the exit site?

Yes ☐ No ☐

3. Did the patient clean the exit site using a correct technique?

Yes ☐ No ☐

4. Did the patient secure the catheter correctly?

Yes ☐ No ☐

The step was performed correctly

Yes ☐ No ☐

STEP F. Hand rub using fluorescent alcohol using a UV lamp

The patient should alcohol-based hand rub technique using fluorescent alcohol and hold her/his hands under the UV light.

The procedure may be repeated.

Did the fluorescence cover all parts of the hands?

Yes ☐ No ☐

PRACTICAL TEST – RESULTS FORM

All steps were performed correctly at the first attempt

Yes ☐ No ☐

If **No**– indicate the steps that need to be retrained and write comments below.

Retraining can take place on the same day or later but should be completed within two weeks.

Retrain until the goal is achieved and test the retrained steps.

A ☐

B ☐

C ☐

D ☐

E ☐

F ☐

Test of retrained steps

Date:

Name of nurse:

All steps (A-F) were performed correctly at the first attempt or after retraining

Yes ☐ No ☐

QUESTIONNAIRE

INFORMATION FOR THE INVESTIGATING NURSE

Patients in the control group

- should not fill in the questionnaire.

Patients in the retraining group

- should fill in this questionnaire at 1, 3 and 6 months after the start of PD, every sixth month thereafter and after every peritonitis episode until the end of the study. The first test should be performed within two weeks of the due date the first time (one month after the start of PD). Thereafter the test should be performed within the 3 weeks before or after the due date of the study visits.

Give the questionnaire to the patient just before she/he is to fill it in and not in advance.

Ask the patient to fill in a 24 item questionnaire

Each question can have one or more correct answers. The patient should indicate the correct answer/answers with a pen. If the patient has language or reading problems, somebody can read the questionnaire to her/him. Even patients who do not use a dressing over the exit site should answer all the questions. Patients who need a helper for exit-site care can skip questions numbered 11-13. The correct answers are provided in the answer sheet.

The following points will be given:

2 points = Correct answer. All correct answers were ticked

1 point = All of the correct answers were not ticked but no answer was incorrect

0 point = An incorrect answer was given with or without correct answers

The points for each question should be recorded and the total number of points calculated.

Maximum points: 48 (2 x 24)

The goal is for the patient to score at least 38 points (80 % of maximum points)
--

Patients who are not capable of performing exit-site care themselves

do not have to answer questions numbered 11-13 correctly
--

The maximum number of points will be 42 (2 x 21)
--

The goal in this group will be to score at least 34 points (80 % of maximum)

After the test, the nurse should go through the questionnaire and the answers with the patient. Ask the patient if she/he filled in the questionnaire her/himself. Discuss the items that were incorrectly answered or unanswered. If the goal was not met, the patient should be retrained and retested until the goal is achieved. Retraining and retesting can take place on the same day as the questionnaire was completed or as soon as possible but no later than two weeks. Enter the total number of points on the answer sheet if the goal was reached or if any items need to be retrained. When the goal is achieved, fill in the result on the case record form.

QUESTIONNAIRE

Patient identification code

Date
Year Month Day

Time after PD start months

Planned follow-up visit in the study

Yes ☐ No ☐

Follow-up after peritonitis or restart after a temporary PD break

Yes ☐ No ☐

Dear Madam or Sir,

It is well known that regular repetition is important for learning. We therefore ask you to answer the following questions aimed at verifying how much you remember of the information we gave you during the training before you started peritoneal dialysis. The questions are focused on how to avoid infection during PD. It is important that you try to answer the questions yourself. Questions you cannot answer should be left blank. When you have finished, we will go through the questions and answers together.

**1. Where can germs be found? Which answer is closest to your understanding?
(tick just one alternative)**

- a. In the waste bin
- b. On dirty clothes
- c. On the skin and nails
- d. Everywhere

2. What do germs need to live and multiply? (tick all correct answers)

- a. Moisture
- b. Nutrition
- c. Heat

**3. If you are familiar with PD and always very careful not to touch the connections when performing the exchanges, do you need hand disinfection before the exchange?
(tick just one alternative)**

- a. No
 - b. It is not necessary if I have washed my hands carefully with soap and water
 - c. Yes
-

4. What is the purpose of rubbing the hands with alcohol before a PD exchange? (tick just one alternative)

- a. To reduce the risk of hand infection
 - b. To reduce the amount of germs on the hands, thereby reducing the risk of infection in the bowel if you happen to touch the connections by mistake
 - c. To reduce the amount of germs on the catheter
-

5. What factors are important to remember when you rub your hands with alcohol? (tick all correct answers)

- a. Using a sufficient amount of alcohol to wet all parts of the hands
 - b. Rubbing the alcohol all over your hands
 - c. Letting your hands dry
 - d. Not touching anything before connecting/disconnecting the catheter or applying a new dressing on the catheter exit site
-

6. At what moments during a PD exchange and exit-site care is it important to use hand disinfection? (tick all correct answers)

- a. Before disconnecting
 - b. Before connecting
 - c. When the PD exchange is finished and the protective cap is put on
 - d. Before cleaning the exit site
-

7. In what situations can germs enter the peritoneum through the dialysis catheter during disconnection and connection when performing a PD exchange? (tick all correct answers)

- a. If you touch the unprotected connections
 - b. If you talk when you disconnect or connect
 - c. If you sneeze or cough when you disconnect or connect
 - d. If you have a pet on your lap while you perform the exchange
 - e. If you leave the catheter disconnected for a while after the PD exchange before putting on a protective cap (for example, because you have to get a protective cap from your store or answer the telephone)
-

8. You are going to do a PD exchange when visiting a friend. When connecting your catheter for PD you accidentally touch the unprotected PD bag connection. You did not bring an extra PD bag. What do you do? (tick just one alternative)

- a. You perform the PD exchange as usual and hope that all will be well
 - b. You clean the PD connection with alcohol and perform the PD exchange
 - c. You stop the PD exchange and place a sterile protecting cap on the catheter
-

9. You are doing a PD exchange at home and have just removed the protecting cap when you drop the catheter on your lap. What do you do then? (tick just one alternative)

- a. You perform the PD exchange as usual
 - b. You clean the catheter tip with alcohol and perform the PD exchange
 - c. You place a sterile catheter cap on the catheter, wait for half an hour, and then perform the PD exchange
 - d. You stop the PD exchange, place a new protective cap on the catheter and contact your PD clinic/hospital to get the catheter line changed before the next PD exchange
-

10. How often should the exit-site dressing be changed when the exit site is not infected? Please answer the question even if you do not use a dressing or if you do not change the dressing yourself. (tick all correct answers)

- a. Every other week
 - b. 1-3 times a week
 - c. After every shower
 - d. If the dressing has become wet from perspiration
 - e. If the dressing is loose
-

11. When you perform your exit-site care, it is important to look for signs of infection. What signs can indicate an exit site infection? (tick all correct answers) Please, answer this question even if you do not use an exit-site dressing. If you do not change the dressing yourself, skip questions numbered 11-13 and go to question number 14.

- a. Redness
 - b. Swelling
 - c. Discharge of pus or blood
 - d. Such discharge on the dressing
 - e. Tenderness or pain when you gently touch the catheter tunnel – the part of the catheter that passes under the skin
 - f. If there is a scab surrounded by red skin
-

12. When cleaning the exit site, you discover a scab and the surrounding skin is slightly inflamed. The covering dressing is clean and dry. What should you do? (tick all correct answers) Please answer this question even if you do not use a dressing.

- a. I clean the exit site and change the dressing as usual and hope that the redness will disappear in a couple of days
 - b. I clean and inspect the exit site carefully every day. If I am not sure what to do, or if moisture or pus appears I contact my PD clinic/hospital
-

13. After a week the exit site has become markedly inflamed with pus. What does this indicate and what should you do? (tick just one alternative)

- a. Exit-site infection. I clean the exit site daily and hope that the infection will disappear
 - b. Exit-site infection. I contact my PD clinic/hospital the same day and ask for advice
-

14. Is it important that your PD catheter is well secured to the abdomen? If so, why? (tick just one alternative)

- a. Yes, it helps to conceal the catheter under my clothes
 - b. No, it is not necessary because I never pull my catheter
 - c. Yes, by securing the catheter I can prevent accidentally pulling my catheter, which can trigger trauma and bleeding at the exit site, making it easier for germs to start growing and an infection to develop
-

15. How can you protect your catheter from pulling or trauma? (mark all correct answers)

- a. Securing the catheter to the skin by means of tape
 - b. Placing the catheter in your underpants
 - c. Using a catheter anchoring device, for example a catheter belt
 - d. Wearing loose clothes
 - e. Wearing trousers/skirts with a tight belt
 - f. Ensuring that the seat belt does not apply pressure to the catheter when travelling by car
-

16. A man with CAPD is going to a party and wears his best suit. It is a little tight over his stomach and around his waist. The next day he notices that his abdomen is sore at the point where the catheter passes through a tunnel under the skin. His exit site looks normal. What is he suffering from? (tick just one alternative)

- a. Friction skin sore
 - b. Exit-site infection
 - c. Infection in the catheter tunnel under the skin
 - d. Peritonitis
-

17. One day when you are preparing a PD exchange and remove the outer bag, you notice that it is wet inside and that fluid is dripping from the tubing lines. What should you do? (tick just one alternative)

- a. Dry the PD bag and the tubing lines with a towel and do the PD exchange
 - b. Discard the PD bag and take another one
-

18. You had lunch with the family at a restaurant on a Saturday. The following night you wake up with cramp-like abdominal pain and nausea. Nobody else in the family feels sick. What should you always suspect when you develop such symptoms? (tick just one alternative)

- a. Food poisoning
 - b. Gastroenteritis
 - c. Peritonitis
-

19. What should you do? (tick all correct answers)

- a. You wait and see if the symptoms disappear
 - b. You take a painkiller
 - c. You drain the PD fluid, check if it is cloudy (or test the fluid for white blood cells with a dip stick test if you are used to doing such a test) and refill with new fluid despite it being the middle of the night. Thereafter you immediately contact your PD clinic/hospital for advice if the PD fluid is cloudy (or if the dip-test is positive)
-

20. You decide to drain your PD fluid in the middle of the night and find that it is as clear as water. Does this indicate peritonitis? (tick just one alternative)

- a. Yes
 - b. No
-

21. The next morning your PD fluid is cloudy. Does this indicate peritonitis? (tick just one alternative)

- a. Yes
 - b. No
-

22. What do you do then? It is a Sunday morning. You still have stomach pain but it has not become worse. (tick just one alternative)

- a. You wait to see if the stomach pain will disappear during the day
 - b. You wait until the next PD exchange to check if the PD fluid is still cloudy
 - c. You wait until Monday morning when you call your PD clinic, which is closed on weekends
 - d. You immediately contact your hospital or go there
-

23. Which of these symptoms are common in peritonitis? (tick all correct answers)

- a. Fever
 - b. Cloudy dialysis fluid
 - c. Stomach pains
 - d. Nausea and vomiting
 - e. Leg cramps
-

24. Is it true that the fluid in a PD bag should always be clear and transparent?
(tick just one alternative)

- a. Yes
 - b. No
-

Thank you for your cooperation!

QUESTIONNAIRE – ANSWERS

Patient identification

Date
 Year Month Day

Name of the testing nurse

1.	d	
2.	a + b + c	
3.	c	
4.	b	
5.	a + b + c + d	
6.	a + b + d (not c)	
7.	a + b + c + d + e	
8.	c	
9.	d	
10.	b + c + d + e (not a)	
11.	a + b + c + d + e + f	
12.	b	
13.	b	
14.	c	
15.	a + c + d + f (not b and e)	
16.	c	
17.	b	
18.	c	
19.	c	
20.	b	
21.	a	
22.	d	
23.	a + b + c + d (not e)	
24.	a	
Total score		

Was the goal achieved at the first attempt?

Yes ☐ No ☐

If no,

Was the goal achieved after retraining?

Yes ☐ No ☐

Which questions were retrained?

State the question numbers:

.....

Document this in the case report form

Points

2 p = Correct answer/all correct answers ticked

1 p = All correct answers not ticked but no incorrect answers given

0 p = Incorrect answers with or without correct answers

Goal

At least 38 p

**If the patient does not perform exit-site care
 her/himself:** At least 34 p