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| --- | --- |
| **NAME OF DOCUMENT** | **Collection of peritoneal dialysis fluid sample for cell count and culture** |
| **TYPE OF DOCUMENT** | **Clinical Business Rule** |
| **FUNCTIONAL GROUP/SUBGROUP**  *(e.g. Clinical Patient Services/ Admission and Discharge)* |  |
| **DATE OF PUBLICATION** | **27/8/13** |
| **RISK RATING** | **Medium** |
| **REVIEW DATE** | **27/8/16** |
| **FORMER REFERENCE(S)** |  |
| **EXECUTIVE SPONSOR or**  **EXECUTIVE CLINICAL SPONSOR** |  |
| **AUTHOR** | **Renal CNC** |
| **KEY TERMS** | **Peritoneal dialysis**  **PD effluent** |
| **SUMMARY** | **Describes the process for the collection of PD fluid samples to obtain a cell count and culture** |

# 1. PURPOSE & SCOPE

The purpose of this policy is to outline:

1. The correct procedure for the collection of peritoneal dialysis fluid samples to obtain a white cell count and culture.
2. The circumstances under which a PD sample should be collected

This is an extended skill and must only be performed by nurses assessed as competent

# 2. RESPONSIBILITIES

Registered nurses

Enrolled nurses

Medical officers

# 3. DEFINITIONS

### Definition of NHMRC grades of recommendations

|  |  |
| --- | --- |
| **Grade of**  **Recommendation** | **Description** |
| **A** | Body of evidence can be trusted to guide practice |
| **B** | Body of evidence can be trusted to guide practice in most situations |
| **C** | Body of evidence provides some support for recommendation(s) but care should be taken in its application |
| **D** | Body of evidence is weak and recommendation must be applied with caution |

**Peritoneal dialysis (PD)** – A treatment option for patients with stage 5 chronic kidney disease which uses the peritoneum as a semipermeable membrane to remove excess toxins and fluid from the patient’s blood.

**CAPD:** Continuous ambulatory peritoneal dialysis

**4. COMPETENCY/ASSESSMENT**

Yes

# 5. CLINICAL BUSINESS RULE

## 5.1 WHEN TO CULTURE PD FLUID

A specimen of PD fluid should be collected under the following circumstances:

1. Presence of fibrin in the PD effluent
2. Patient is febrile – temperature > 37.5
3. Symptoms suggestive of peritonitis
   * + - Cloudy peritoneal dialysis fluid
       - Abdominal pain / tenderness
       - Fever
       - Chills / rigors
       - Nausea
       - Vomiting
       - Diarrhoea

## 5.2 OBTAINING A CELL COUNT AND CULTURE

The handling of dialysate is important in establishing the causative agent. Cloudy peritoneal dialysis effluent should be treated as peritonitis until proven otherwise. The optimal culture technique includes:

50 mls of PD effluent in yellow top specimen jar

10 mls of PD effluent inoculated into each of the two blood culture bottles. Blood culture techniques improve the yield of culture (1)

5 mls of PD fluid collected into a purple top EDTA tube

Check whether patient already has PD fluid in the peritoneal cavity

### 5.2.1 Equipment

1. CAPD freeline solo bag (1.5%)
2. Minicap
3. IV pole
4. Blue sheet
5. 50 ml syringe
6. 20 ml syringe
7. 5 ml syringe
8. Yellow top specimen jar
9. Blood culture bottles
10. EDTA tube
11. 21 guage needles x 5
12. Alco wipes x 3
13. Sterile gloves

### 5.2.2 Procedure

1. Wash hands
2. Collect equipment
3. If the patient is empty perform a freeline solo bag exchange (2), infusing at least one litre of PD fluid. The fluid should be left to dwell for a minimum of one hour.
4. If the patient has fluid in the abdomen drain patient out using freeline solo bag
5. Once patient has completely drained cap patient off using a minicap

### 5.2.3 Collection of PD specimen

1. Wash hands
2. Don non sterile gloves
3. Place drained bag of PD fluid on metal trolley
4. 1 minute hand wash
5. Don sterile gloves
6. Swab injection port of PD bag with alco wipe
7. Using 50 ml syringe and 21 guage needle draw up 50 mls of PD effluent.
8. Remove needle and empty contents of syringe into yellow top specimen jar, being careful not to touch the sides of the jar with the syringe.
9. Swab injection port of PD bag
10. Using 20 mls syringe and 21 guage needle draw up 20 mls of PD effluent.
11. Change needle, carefully remove caps from blood culture bottles and swab the top of each blood culture bottle with an alcowipe, inject 10 mls of PD effluent into each bottle, changing needles between bottles.
12. Using the 5 ml syringe and 21 guage needle draw up a further 5mls of PD effluent and inject it into the EDTA tube.
13. Discard all equipment and PD effluent
14. Wash hands
15. Label specimens

### 5.2.4 Ordering tests in eMR

1. Culture and sensitivity:
   * + Select culture other specimen (Max 4)
     + From tests required box select cell count, culture (includes gram stain & M/C&S)
2. WCC: From the order screen select body fluid WCC
3. Differential count: from the order screen select “differential cell count body fluid”

If the PD fluid is turbid, the peritonitis protocol should be implemented following the collection of specimens (3)

### 5.2.5 Interpretation of results

1. A cell count > 100 / ul and / or greater than 50% polymorphonuclear cells is diagnostic of peritonitis
2. The fluid may have an elevated cell count with no growth (culture negative peritonitis)
3. The fluid may have a positive culture with a cell count < 100

# 6. DOCUMENTATION

# 7. COMPLIANCE EVALUATION

Audit of adequacy of microbiological sampling

Percentage of samples which are culture negative (should be < 20%) (4)

# 8. RELATED POLICIES/PROCEDURES/GUIDELINES/BUSINESS RULES

|  |  |
| --- | --- |
| Number | Policy/Procedure/Guideline/Business Rule |
| *1* | *CAPD freeline solo exchange* |
| 3 | Assessment and mangagement of peritonitis |

# 9. EXTERNAL REFERENCES

*Use numbered list format, to correspond with numbers in text*

|  |  |
| --- | --- |
| Number | Reference |
| *.*  *2* | Lamiere, N. and VanBiesen, W. (2009) Peritonitis In Nolph and Gokal's Textbook of peritoneal dialysis (Eds, Khanna, R. and Krediet, R. T.) Springer-Verlag, New York. |
| 4 | Kam-Tao- D. G.Li, P., Szeto, C. C., Piraino, B., Bernadini, J., Figueiredo, A. E., Gupta, A., Johnson, D. W., Kuijper, E. J., Lye, W. C., Salzer, W., Schaefer, F. and Struijk (2010) Peritoneal dialysis related infections recommendations: 2010 update Peritoneal Dialysis International, 30, 393-423. |

# 10. REVISION & APPROVAL HISTORY

|  |  |  |
| --- | --- | --- |
| Date | Revision No. | Author and Approval |
| 1 | 27/8/13 | M Kelleher |

# Appendix 1:

# *Add Appendices (if applicable)*