Clinical Procedure Adequacy

CAPD Specimen Collection

Baxter

The goal of the adequacy collection is to obtain the most accurate representation of waste removal (Kt/V_{urea}) as possible.

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Urine Collection

1. Have the patient completely empty their bladder; discard this urine and record the time. This time marks the beginning of the test.
2. Collect all subsequent urine voided for the next 24 hours.
3. End the test by having the patient empty their bladder. This final urine should be added to the 24-hour collection.
4. Send the entire 24-hour urine specimen to laboratory for determination of total volume and urine creatinine and urea nitrogen (UUN) measurement.

- The average of 24-hour urea nitrogen and creatinine clearance has been shown to have a reasonable approximation of Residual Kidney Function (RKF). However, the accuracy of this measurement depends on the careful collection of 24-hour urine. Especially in patients with very little function, inaccuracy in the timing of the collection can lead to incorrect results. Accuracy perhaps can be improved by the collection of a 72-hour specimen and dividing the result by 3; however, this is a time-consuming and cumbersome process. Patients will need to be instructed on the careful collection of 24-hour urine and make it a habit to bring these collections as part of the regular clinic visit.[1]
- Check with laboratory specific guidelines for proper handling and transport of 24-hour urine collection.

Batch Method

1. Have the patient drain and discard the first dialysate drainage of the day. For CAPD with a Dry Night, start collecting dialysate at the first exchange of Day One (because the patient has a dry night, the first drain will be at mid-day).
2. Have the patient save all drain bags for the next 24 hours. Check with laboratory specific guidelines for proper handling and transport of effluent specimen for dialysate creatinine and urea nitrogen measurement.
3. Obtaining dialysate specimen – two sample methods.
   a. Batch Method [See Figure 1]
      i. Have the patient bring all drain bags to the dialysis unit
      ii. Weigh or measure the volume in each drain bag. Record volume drained on the worksheet at the end of procedure (1 gram of volume weight = 1 mL). The clinician could opt to weigh the entire pooled drain collection, however, this may be cumbersome
      iii. Pool the entire volume of dialysate and mix thoroughly
      iv. A sample of any volume can be obtained from pooled and mixed dialysate. For example, 10-100 mL
      v. Send dialysate specimen to laboratory for creatinine and urea nitrogen measurement. Check with laboratory for correct tube/container for processing specimen. Follow laboratory specific guidelines for proper handling and transport of effluent specimen for dialysate creatinine and urea nitrogen measurement
         - If measuring Creatinine Clearance, dialysate creatinine concentration should be corrected for the presence of glucose, which interferes with some creatinine measurement methodologies. Each facility must determine this by specifically inquiring of its laboratory whether the creatinine assay used by that laboratory is altered by high glucose concentrations. Each laboratory should establish its own correction factor and should reestablish the correction factor if the laboratory's methodology changes[2]
      vi. Provide laboratory with Total Effluent Volume Drained (see worksheet)
      vii. Record the patient's height and weight per laboratory procedure

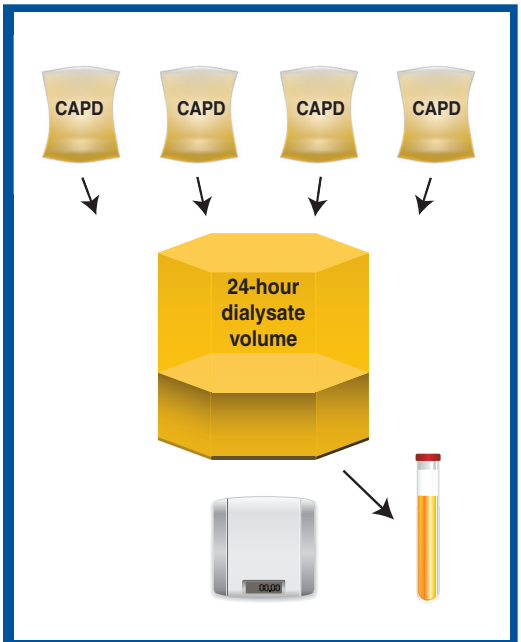

FIGURE 1. BATCH METHOD

Pool the entire volume of dialysate and mix thoroughly. Measure the 24-hour dialysate volume. Obtain a specimen. Send specimen to lab for creatinine and urea nitrogen measurement. Provide lab with 24-hour dialysate volume.

Aliquot Method

b. Aliquot Method [See Figure 2]

   i. Weigh or measure the drain volume in each drain bag. Record volume drained on worksheet at the end of the procedure (1 gram of volume weight = 1 mL)

   ii. Mix each drain bag thoroughly prior to drawing each specimen

   iii. Draw a specimen from each dialysate bag. Take an equal % specimen from each bag. For example, to take a 1/1,000 specimen move the decimal point three places to the left. If the volume is 2,300 mL, the amount of dialysate effluent to be drawn from the bag is 2.3 mL

   iv. Mix all specimens together in the same container

   v. Send container with effluent specimen to the laboratory for creatinine and urea nitrogen measurement

      - If measuring Creatinine Clearance, dialysate creatinine concentration should be corrected for the presence of glucose, which interferes with some creatinine measurement methodologies. Each facility must determine this by specifically inquiring of its laboratory whether the creatinine assay used by that laboratory is altered by high glucose concentrations. Each laboratory should establish its own correction factor and should reestablish the correction factor if the laboratory's methodology changes[2]

   vi. Provide lab with Total Effluent Volume Drained as calculated on the worksheet

   vii. Record patient's height and weight per laboratory procedure

4. Draw a serum specimen to laboratory for creatinine and urea nitrogen (BUN). If using **PD Adequest** software, in addition to urea and creatinine, serum specimen should be sent for albumin and glucose measurements.

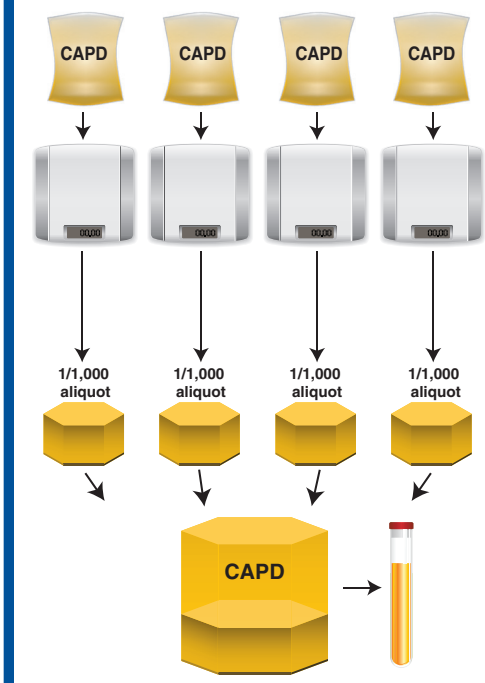

FIGURE 2. ALIQUOT METHOD

Each full drain bag of dialysis fluid is weighed. A 1/1,000 aliquot is taken from each of the drain bags based on the drain volume of each bag. The specimens are mixed and a dialysate effluent specimen is sent to the lab.

CAPD Therapy Volume Worksheet

THERAPY VOLUME INFUSED

PD Exchange Fill Volume _____

Number of Daily PD Exchanges x_____

Total Therapy Volume Infused =_____

EFFLUENT VOLUME DRAINED

BATCH METHOD

PD Exchange #1 Drain Volume _____

PD Exchange #2 Drain Volume +_____

PD Exchange #3 Drain Volume +_____

PD Exchange #4 Drain Volume +_____

Total Effluent Volume Drained =_____

Batch Specimen Volume _____

ALIQUOT METHOD

PD Exchange #1 Drain Volume	_____	Aliquote Amount	_____
PD Exchange #2 Drain Volume	+_____	Aliquote Amount	_____
PD Exchange #3 Drain Volume	+_____	Aliquote Amount	_____
PD Exchange #4 Drain Volume	+_____	Aliquote Amount	_____
Total Effluent Volume Drained	=_____	**Aliquote Sample**	_____

EXAMPLE
Aliquot Method Worksheet

THERAPY VOLUME INFUSED

PD Exchange Fill Volume	2,500 mL
Number of Daily PD Exchanges	x 4
Total Therapy Volume Infused	**= 10,000 mL**

EFFLUENT VOLUME DRAINED

ALIQUOT METHOD

PD Exchange #1 Drain Volume	2,650 mL	Aliquote Amount	2.65 mL
PD Exchange #2 Drain Volume	+ 2,800 mL	Aliquote Amount	2.80 mL
PD Exchange #3 Drain Volume	+ 2,700 mL	Aliquote Amount	2.70 mL
PD Exchange #4 Drain Volume	+ 2,950 mL	Aliquote Amount	2.95 mL
Total Effluent Volume Drained	**= 11,100 mL**	**Aliquote Sample**	**11.10 mL**

References

1. National Kidney Foundation. 2006 Updates Clinical Practice Guidelines and Recommendations. Available at www.kidney.org. Accessed November 1, 2011.
2. National Kidney Foundation. K/DOQI Clinical Practice Guidelines for Peritoneal Dialysis Adequacy, 2000. *Am J Kidney Dis.* 2001;37(Suppl 1):S65-S136.

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