

Introduction - Continuous Quality Improvement: DOQI Becomes K/DOQI and Is Updated : NATIONAL KIDNEY FOUNDATION – 2000

Web site: National Kidney Foundation: www.kidney.org

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Hemodialysis guidelines based on evidence-based medicine are now available. These are listed below along with references that were used to derive these recommendations, now used throughout the United States.

For further information and questions, consult the National Kidney Foundation web site.

GUIDELINE 1: Regular Measurement of the Delivered Dose of Hemodialysis (Evidence)

The dialysis care team should routinely measure and monitor the delivered dose of hemodialysis.

GUIDELINE 2: Method of Measurement of Delivered Dose of Hemodialysis (Evidence)

The delivered dose of hemodialysis in adult and pediatric patients should be measured using formal urea kinetic modeling (UKM), employing the single-pool, variable volume model.

GUIDELINE 3: Uniformity of Method of Measurement (Opinion)

All patients receiving hemodialysis in the same dialysis facility should have the delivered dose of hemodialysis measured using the same method.

GUIDELINE 4: Minimum Delivered Dose of Hemodialysis (Adults—Evidence, Children—Opinion)

The dialysis care team should deliver a Kt/V of at least 1.2 (single-pool, variable volume) for both adult and pediatric hemodialysis patients. For those using the U, the delivered dose should be

equivalent to a Kt/V of 1.2 (ie, an average U of 65%). U can vary substantially as a function of fluid removal, however.

GUIDELINE 5: Prescribed Dose of Hemodialysis (Opinion)

To prevent the delivered dose of hemodialysis from falling below the recommended minimum dose, the prescribed dose of hemodialysis should be Kt/V 1.3. In terms of U, a Kt/V of 1.3 corresponds to an average U of 70%, but the U corresponding to a Kt/V of 1.3 can vary substantially as a function of ultrafiltration.

GUIDELINE 6: Frequency of Measurement of Hemodialysis Adequacy (Opinion)

The delivered dose of hemodialysis should be measured at least once a month in all adult and pediatric hemodialysis patients. The frequency of measurement of the delivered dose of hemodialysis should be increased when: (1) patients are noncompliant with their hemodialysis prescriptions (missed treatments, late for treatments, early sign-off from hemodialysis treatments, etc), (2) frequent problems are noted in delivery of the prescribed dose of hemodialysis (such as variably poor blood flows, or treatment interruptions because of hypotension or angina pectoris), (3) wide variability in urea kinetic modeling results is observed in the absence of prescription changes, and (4) the hemodialysis prescription is modified.

GUIDELINE 7: Blood Urea Nitrogen (BUN) Sampling (Evidence)

Predialysis and postdialysis blood samples for measurement of BUN levels must be drawn at the same hemodialysis session. The same machine should be used for estimation of both samples. (Evidence)

GUIDELINE 8: Acceptable Method for BUN Sampling (Evidence)

Blood samples for BUN measurement must be drawn in a particular manner. Predialysis BUN samples should be drawn immediately prior to dialysis, using a technique that avoids dilution of the blood sample with saline or heparin. Postdialysis BUN samples should be drawn using the Slow Flow/Stop Pump Technique that prevents sample dilution with recirculated blood and minimizes the confounding effects of urea rebound.

GUIDELINE 9: Standardization of BUN Sampling Procedure (Opinion)

Hemodialysis facilities should adopt a single BUN sampling method. If several different methods are used, the sampling method should be routinely recorded. The sampling method used for a given patient should remain consistent. The predialysis and postdialysis BUN samples for a given patient should be processed in the same batch analysis at the laboratory.

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GUIDELINE 10: Use of the Association for the Advancement of Medical Instrumentation (AAMI) Standards and Recommended Practices for Hemodialyzer Reprocessing (Opinion)

When hemodialyzers are reused, they should be reprocessed following the Association for the Advancement of Medical Instrumentation (AAMI) Standards and Recommended Practices for reuse of hemodialyzers, with the exception of the AAMI guideline regarding baseline measurement of the total cell volume.

GUIDELINE 11: Baseline Measurement of Total Cell Volume (Evidence)

If a hollow fiber dialyzer is to be reused, the total cell volume (TCV) of that hemodialyzer should be measured prior to its first use. Batch testing and/or use of an average TCV for a group of hemodialyzers is not an acceptable practice.

GUIDELINE 12: Monitoring Total Cell Volume (Evidence)

During each reprocessing, the total cell volume (TCV) of reused dialyzers should be checked.

GUIDELINE 13: Minimum Required Total Cell Volume (Opinion)

Dialyzers having a total cell volume (TCV) < 80% of original measured value should not be reused.

GUIDELINE 14: Inadequate Delivery of Hemodialysis (Opinion)

If the delivered Kt/V falls below 1.2 or the Udeclines to <65% on a single determination, at least one of the following actions should be performed: (1) investigate potential errors in the delivery of the prescribed hemodialysis dose, (2) increase empirically the prescribed dose of hemodialysis, and/or (3) suspend use of the reprocessed hollow fiber hemodialyzer. The impact of these corrective interventions should be followed by performing more frequent measurements of Kt/V or U.

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GUIDELINE 15: Optimizing Patient Comfort and Adherence (Opinion)
Without compromising the delivered dose of hemodialysis, efforts should be undertaken to modify the hemodialysis prescription to prevent the occurrence of intradialytic symptoms that adversely affect patient comfort and adherence.

GUIDELINE 16: Strategies to Minimize Hypotensive Symptoms (Evidence)

Without compromising the delivered dose of hemodialysis, efforts should be undertaken to minimize intradialytic symptoms that compromise the delivery of adequate hemodialysis, such as hypotension and cramps. These efforts may include one or more of the following: avoid excessive ultrafiltration, slow the ultrafiltration rate, perform isolated ultrafiltration, increase the dialysate sodium concentration, switch from acetate to bicarbonate-buffered dialysate, reduce the dialysate temperature, administer midodrine predialysis, correct anemia to the range recommended by the K/DOQI Anemia Guidelines, and/or administer supplemental oxygen.

APPENDIX C: Anthropometric Determination of the Urea Distribution Volume

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