COVERAGE:

Continuous renal replacement therapy (CRRT), continuous hemofiltration, or intermittent hemofiltration/hemodialysis is considered medically necessary as a supportive treatment for acute renal failure (ARF).

Hemoperfusion is considered medically necessary when used in the treatment of life threatening drug overdoses and aluminum toxicity.

Outpatient dialysis therapy at a center or unit for patients with chronic renal failure (CRF) or end stage renal disease (ESRD) is considered medically necessary and eligible for coverage when ordered by the patients attending physician.

Home Dialysis Therapy for patients with CRF or ESRD is considered medically necessary when ordered by a physician. Patients are eligible for home dialysis therapy when they meet the following criteria:

1. Are unable to leave home due to an illness or injury (such as but not limited to: CVA, bedbound, tracheostomy, ventilator dependent or multiple fractures); OR

2. Are dependent on the assistance of caregiver or devices such as motorized wheelchairs, scooters, or oxygen to leave the home; OR

3. Requires medically controlled transportation for travel.

If the Home Dialysis Therapy is considered medically necessary, the following services or equipment are also considered medically necessary:

- Equipment, supplies, and solutions required for home hemodialysis or home peritoneal dialysis AND/OR

- A formal dialysis-training course, as a one time only benefit.

Note: For information on support services for assistance in equipment malfunctioning and/or maintenance, refer to the Pricing section for guidelines.

The following programs are considered convenience services and are not considered medically necessary for patients who require home dialysis therapy:

- Assisting with the dialysis processes and/or answering questions at
the patient's home, (by a helper or dialysis technician AND/OR staff member) for either hemodialysis or peritoneal dialysis, AND/OR

- Additional and separate dialysis training for the patient and/or a helper by course/program or individual sessions, outside of, or in addition to, the outpatient dialysis treatment given to the patient in the center or clinic.

**Note:** Services provided by a dialysis technician and/or staff member are also known as staff-assisted.

**DESCRIPTION:**

When acutely or chronically failing kidneys can no longer adequately excrete waste products, regulate acid-base balance and maintain sodium and water hemostasis, RRT should be instituted. The methods for accomplishing RRT are:

- Continuous RRT (CRRT)/Hemofiltration,

- Hemodialysis and Peritoneal Dialysis, OR

- Kidney Transplantation (this procedure is not addressed in this policy).

RRT may be done inpatient (to meet acute patient requirements) or outpatient (either in a dialysis center/unit OR at the patient's home/living quarters to meet the patient's long term requirements).

RRT is used to treat patients with:

- ARF due to sudden multiple organ system failure, excessive fluid needs, or shocklike states where recovery/convalescence may last from four to six weeks;

- CRF due to ongoing renal dysfunction having progressed (perhaps from chronic renal insufficiency) to a level resulting in systemic manifestations and may last for an unspecified length of time; or

- ESRD progression from CRF where dialysis or kidney transplantation is needed to sustain life.
CRRT/Hemofiltration is a general term describing a variety of techniques used to provide acute renal support for patients with ARF. CRRT is most typically offered in the inpatient setting.

CRRT are differentiated according to the:

- Kinds of access -
  1. Arteriovenous (artery to vein) OR
  2. Venovenous (vein to vein);

- Type of clearance -
  1. Convective (the process which uses the force of fluid to remove solutes and is optimized by infusing replacement fluid) OR
  2. Diffusive (the process by which ions move from an area of higher to lower concentration) OR
  3. Combination of convection and diffusion simultaneously;

- Type of filter used; AND

- Need for fluid replacement.

The following are the most common types of CRRT:

- Slow continuous ultrafiltration (SCUF) - the patient's own blood under normal arterial pressure passes through a specialized hemofiltration membrane to remove up to fourteen liters per day of fluid. However, clearance of small solutes may be inadequate requiring additional adjunctive hemodialysis;

- Continuous arteriovenous hemofiltration (CAVH) - the patient's own blood pressure is used to move blood through a highly permeable membrane via a circuit originating in an artery and terminating in a vein. Solute clearance occurs by convection. The ultrafiltrate volume is replaced with a replacement fluid;

- Continuous venous-venous hemofiltration (CVVH) - similar to CAVH, except that the circuit originates and terminates in a vein. The patient's blood is pumped through the permeable membrane by a peristaltic pump;
Continuous arteriovenous hemodialysis (CAVHD) – similar to CAVH, but also add a diffusive clearance component using a countercurrent dialysate flow. Fluid replacement is not routinely administered, since the solute clearance is primarily diffusive;

Continuous venous-venous hemodialysis (CVVHD) – similar to CVVH, but also adds a diffusive clearance component using a countercurrent dialysate flow. Fluid replacement is not routinely administered, since the solute clearance is primarily diffusive;

Continuous arteriovenous hemodiafiltration (CAVHDF) – similar to CAVHDF, but solute and fluid removal is accomplished by diffusion and convection simultaneously; OR

Continuous venous-venous hemodiafiltration (CVVHDF) – similar to CVVHDF, but solute and fluid removal is accomplished by diffusion and convection simultaneously.

Currently CVVHD and CVVHDF are used most commonly.

In Hemodialysis (for patients with ARF, CRF, or ESRD), an apparatus known as a hemodialyzer, removes certain elements (wastes and salts) and excess fluid from the blood by virtue of the difference in the rates of their diffusion through a semi-permeable membrane.

With Hemoperfusion (for patients with drug overdoses or aluminum toxicity), toxic substances are removed from the blood using a charcoal or resin artificial kidney. It can be used in conjunction with hemodialysis, and usually requires one or two treatments.

In Peritoneal Dialysis (for patients with ARF, CRF, or ESRD), a special solution is introduced into the peritoneal cavity. Toxic wastes, excess fluid, and electrolytes move from the blood by diffusion across the peritoneal membrane into the dialysis fluid, which is then drained.

The types of peritoneal dialysis are:

Continuous ambulatory peritoneal dialysis (CAPD) – the most common type which does not require any machinery. After the dialysate remains in the abdomen for several hours, the solution is drained and fresh dialysate is refilled into the abdomen starting the cleaning process again;

Continuous cyclic peritoneal dialysis (CCPD) – similar to CAPD, except that a machine automatically fills and drains the dialysate
from the abdomen, generally during sleeping hours; or

- Manual intermittent peritoneal dialysis (IPD) - similar to CCPD, but usually done inpatient for ARF patients as it may take longer (12 to 48 hours) than CCPD;

- Automated cycler IPD - uses an automated system that cycles the infusion and removal of dialysate, generally during sleeping hours, for hospitalized or at home patients with CRF.

Within a few years after the establishment of dialysis (hemo and peritoneal) procedures used in the hospital or dialysis center/unit, guidelines were developed for training the patient to accomplish home dialysis therapy. The initial motivation of home dialysis was to save money, but an additional advantage is the psychological benefit the patient enjoys by the independence that home dialysis therapy provides.

Home hemodialysis and home peritoneal dialysis are now accepted methods of caring for patients with CRF or ESRD. Although the patient does much of the work, most training programs insist that a helper be present during the treatments. In most cases, the helper is a spouse, parent, or friend. The training period varies. In most cases, the patient will be treated in the dialysis center/unit as an outpatient two to three times weekly while the patient and the helper learn the details of the procedure and feel competent to perform the procedure at home. This usually takes four to six weeks, but may take as long as three to four months. After the patient has completed training, physicians, nurses, and dialysis technicians are available by phone to answer questions. The physician continues to evaluate the patient's condition.

RATIONALE:

CRRT is considered an established form of supportive therapy for patients with ARF. Continuous therapies offer the advantage of a more even control of fluids and electrolytes, compared to intermittent hemodialysis, which results in a saw tooth pattern of control. In addition, hemodynamic stability is enhanced such that dialysis does not need to be prematurely terminated, a common complication of intermittent hemodialysis in acutely ill patients. Also, hypotension accompanying intermittent dialysis makes it difficult to administer blood products or total parental nutrition (TPN), further complicating the treatment of these critically ill patients.

Hemodialysis is preferred to peritoneal dialysis in patients with wounds or fistulas and in those with a recent (less than one year)
intra-abdominal vascular prosthesis. Most CRF patients require hemodialysis three times weekly to maintain a state of well being.

Hemoperfusion is an adjunct treatment with life threatening overdoses and aluminum toxicity. It can be used in conjunction with hemodialysis and requires one or two treatments only.

Peritoneal dialysis is less stressful than hemodialysis in hemodynamically unstable patients with CRF and is readily adaptable to home use.

PRICING:

Support services at home for equipment malfunctions and maintenance should be included in the rental cost of the dialysis equipment.

REFERENCES:

RENAL REPLACEMENT THERAPY
THE802.002
BlueReview POSTED DATE: 3/23/2004
EFFECTIVE DATE: 7/1/2004

• “Continuous Renal Replacement Therapies.” BCBSA Consortium Health
8.02.01.
Osteoporosis Education System - 1995-2000 Merck & Co., Inc. (Web
• Medscape “Clinical Correlates – Acute Renal Failure.” 2000. Prepared
by Scott Gottlieb, M.D. (Medscape Medical Students: 1-8) (Web Site):
• Winchester, J.F., “Dialysis and Hemoperfusion in poisoning.”
• Palmetto GBA “Home Health Eligibility Criteria.” Home Health
  http://www.palmettogba.com/palmettoproviders.nsf/0/85256a46000501491a852566f9005f1e9c/$FILE/hhaman2elig.pdf
• Centers for Medicare and Medicaid Services “National Coverage
Determinations (NCD’s) Ultrafiltration, Hemoperfusion and

DISCLAIMER:

State and federal law, as well as contract language, including
definitions and specific inclusions/exclusions, takes precedence over
Medical Policy and must be considered first in determining coverage.
The member’s contract benefits in effect on the date that services are
rendered must be used. Any benefits are subject to the payment of
premiums for the date on which services are rendered. Medical
technology is constantly evolving, and we reserve the right to review
and update Medical Policy periodically.
HMO Blue Texas physicians who are contracted/affiliated with a
capitated IPA/medical group must contact the IPA/medical group for
information regarding HMO claims/reimbursement information and other
general polices and procedures.