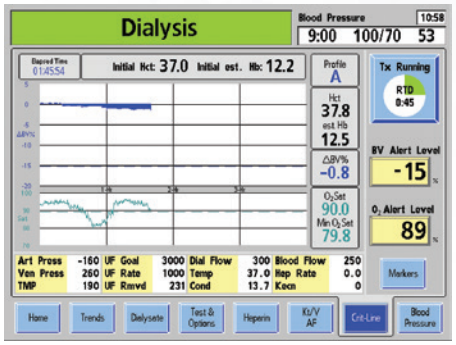
CLiC PROFILE GUIDE

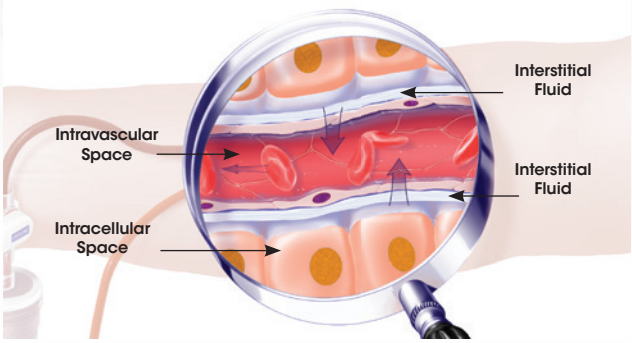
Powerfully Simple

The CLiC™ device provides clinicians with real-time information about blood volume (BV) changes during dialysis. This includes the dynamics of BV changes as described in profiles A, B and C as well as the plasma refill rate, which can be performed during or at the end of the dialysis treatment. The CLiC device must always be used in conjunction with the patient's clinical assessment and existing medical history before altering a dialysis treatment.

Profile A

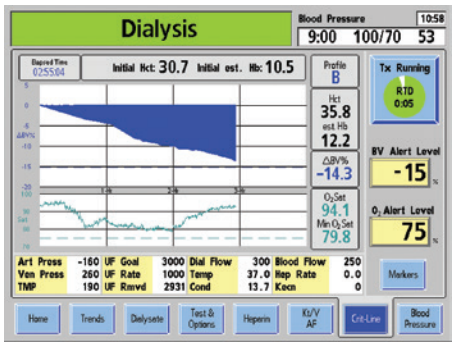


Profile A will be displayed when the measurements taken over the previous 15 minutes result in a profile that is ≤ -3% per hour.

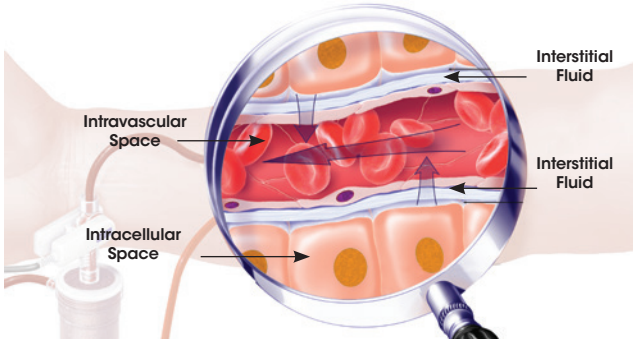


This profile is represented as a flat or positive slope. This indicates that the patient's plasma refill rate is occurring at the same or greater rate than the ultrafiltration. Profile A suggests that the ultrafiltration rate might be increased without immediate intradialytic symptoms.

Profile B

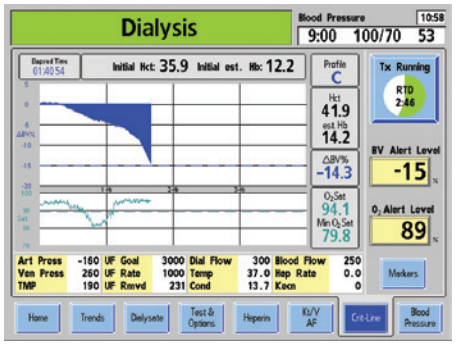


Profile B will be displayed when the measurements taken over the previous 15 minutes result in a profile that is > -3% per hour and ≤ -6.5 % per hour.

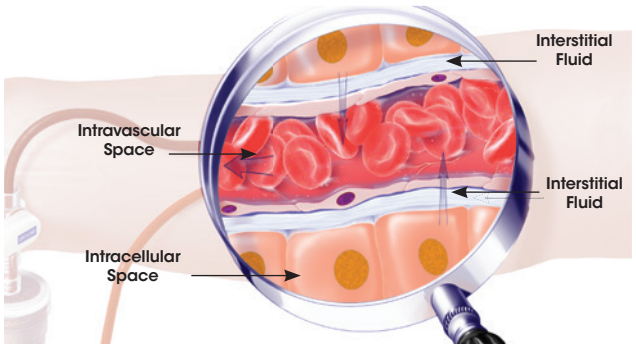


A Profile B, or gradual slope, has been targeted to find the best compromise between a high ultrafiltration rate and the prevention of intradialytic symptoms. The ideal slope is not a fixed percentage of change in BV, and will vary from patient to patient.

Profile C



Profile C will be displayed when the measurements taken over the previous 15 minutes result in a profile that is > -6.5% per hour.



Represented as a steep slope, this profile indicates a rapid decrease in blood volume and bears a higher risk for intradialytic symptoms.

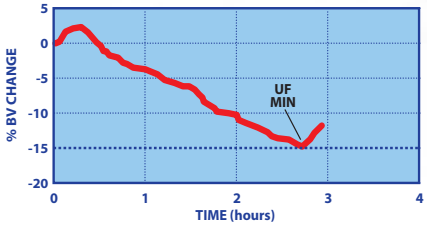
Assessment of Crash Symptoms

Cramping, Nausea, Vomiting, Lightheadedness, Hypotension

Points to Consider

1. Follow facility standard rescuscitation protocol
2. Decrease goal to minimum ultrafiltration rate
3. Perform a thorough clinical evaluation of the patient
4. Assess oxygen saturation
5. Consider adjusting BV Alert level
6. Reassess target weight
7. Reassess patient medications and other potential root causes

Assessment of Plasma Refill



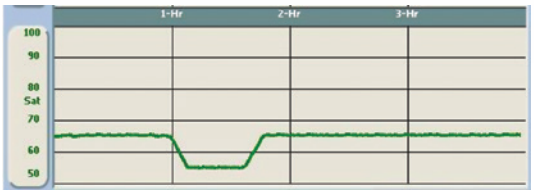
1. Reduce UF rate to minimum (300 ml/hr)
2. Record Hct (H1), wait 10 minutes
3. Record Hct value (H2)
4. If H1-H2 is ≥ 0.5, patient has refill, indicating that additional fluid may be available for removal.
5. If H1-H2 is <0.5, no vascular refill is present.

Arterial Oxygen Saturation

Assessment of Low Arterial Oxygen Saturation

From graft or fistula Normal Range ≥ 90%

Venous Oxygen Saturation



Assessment of Low Mixed Venous Oxygen Saturation

From catheter Normal Range 60-80%

References:

1. Rodriguez HJ, Domenici R, Diroll A, Goykhman I. "Assessment of Dry Weight by Monitoring Changes in Blood Volume During Hemodialysis using Crit-Line" *Kidney Int* 68 (2005): 854–861.
2. Goldstein S, Smith C, Currier H. "Non-invasive Interventions to Decrease Hospitalization and Associated Costs for Pediatric Patients Receiving Hemodialysis" *JASN* 14 (2003): 2127-2131.
3. Michael M, Brewer ED, Goldstein SL. "Blood Volume Monitoring to Achieve Target Weight in Pediatric Hemodialysis Patients" *Pediatr Nephrol* 19 no. 4 (2004): 432-437.
4. Sinha AD, Light RP, Agarwal R. "Relative Plasma Volume Monitoring During Hemodialysis Aids the Assessment of Dry Weight" *Hypertension* 55 (2010): 305–3110.
5. Reddan, DN, Szczech, LA et al. "Intradialytic Blood Volume Monitoring in Ambulatory Hemodialysis Patients: A Randomized Trial" *Journal of American Society of Nephrology* 16 (2005): 2162-2169.
6. Jain SR, Smith L, Brewer ED, Goldstein SL. "Non-invasive Intravascular Monitoring in the Pediatric Hemodialysis Population" *Pediatr Nephrol* 16 no. 1 (2001):15-8.

Indications for Use: The CLiC device is used with the 2008T hemodialysis machine to non-invasively measure hematocrit, oxygen saturation and percent change in blood volume. The CLiC device measures hematocrit, percent change in blood volume and oxygen saturation in real time for application in the treatment of dialysis patients with the intended purpose of providing a more effective treatment for both the dialysis patient and the clinician. Based on the data that the monitor provides, the clinician/nurse, under physician direction, intervenes (i.e., increases or decreases the rate at which fluid is removed from the blood) in order to remove the maximum amount of fluid from the dialysis patient without the patient experiencing the common complications of dialysis which include nausea, cramping and vomiting. The CLiC blood chamber is a sterile, single use, disposable, optical cuvette designed for use with the CLiC monitor's sensor clip during acute and chronic hemodialysis therapy to non-invasively measure hematocrit, percent change in blood volume and oxygen saturation. The blood chamber is connected between the arterial bloodline and the dialyzer within the extracorporeal circuit during the hemodialysis treatment. The 2008T hemodialysis machine is indicated for acute and chronic dialysis therapy.

Caution: Federal (US) law restricts these devices to sale by or on the order of a physician.

Note: Read the Instructions for Use for safe and proper use of these devices. For a complete description of hazards, contraindications, side effects and precautions, see full package labeling at www.fmcna.com.

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