Patients with Acute Kidney Injury Dialyzing in the Chronic HD Unit

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Areas of Focus

- Acute Kidney Injury – causes, RRT prior to discharge to chronic dialysis unit, key transition questions
- Clinical Management – differences from the dialysis patient chronic kidney disease
- Coverage and Payment – differences from chronic dialysis
- Survey "risks" – providing care to patient with AKI in chronic unit

How did the patient "get" AKI and end up on dialysis?

- Let's start at the beginning – and talk about what leads to AKI and decisions about renal replacement therapy

- Mary Schira

Causes – Acute Kidney Injury

- Sepsis
- Hypovolemia, hypoperfusion
- Nephrotoxic Injury
- Rarely a single event/etiology – think of AKI as a syndrome
- Why cause matters

Kidney Replacement Therapy - AKI

- Continuous renal replacement therapies
- Intermittent hemodialysis
- Indications for dialysis – unable to "control:"
  - Acidosis
  - Electrolyte imbalance
  - Intoxication
  - Overload (volume)
  - Uremia

KDIGO (2012) Kidney Replacement Therapy for AKI

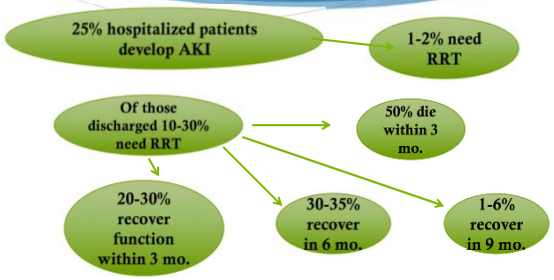
- Use dialyzers with a biocompatible membrane for IHD and CRRT in patients with AKI. (Low quality evidence)
- Use continuous and intermittent RRT as complementary therapies in AKI patients. (Not graded)

*Kidney Disease: Improving Global Outcomes (KDIGO). Acute Kidney Injury Work Group. KDIGO Clinical Practice Guideline for Acute Kidney Injury. Kidney International, Suppl. 2012; 2: 1-138

KDIGO (2012) Kidney Replacement Therapy for AKI

- Choice of modality for RRT primarily based on availability of and Experience with treatment and patient's hemodynamic status.
- PD in AKI limited, except in pediatrics and areas with "limited resources".
- Outcomes with CRRT and IHD similar related to hospital mortality, ICU mortality, length of hospital stay, recovery of kidney function at discharge.
- "Cross over" between modalities common.

Scope of AKI and Recovery



What do we "know" about…..

- Timing of RRT: no benefit related to all cause mortality, dialysis dependence at 90 days, LOS in ICU or hospital
  - Bhatt & Das (2017). BMC Nephrology, 18: 78.
- CRRT vs IHD: trend to higher likelihood recovery kidney function with CRRT
- Recovery of kidney function in individuals who leave the hospital with altered kidney function?

What do we "know" about…..

- 8.5% patients remained on RRT at 6 mo.; of those off RRT at 6 mo., 3.8% with ESKD within 5 yrs (Gammelager, et al. (2013). *Critical Care, 17*
- 23% patients off RRT by 90 days; of those, 7% with ESKD 3 yrs. (Wu, et al. (2014). *BioMed Research International.*
- 45% of patients had GFR < 15 at DC - decreased to 18% at 24 mo. , subsequently rose to 27%. (Duran & Concepcion. (2014). *Kidney International, 18.*

Decreased Likelihood Kidney Recovery

- Advanced age
- Male gender
- Multiple comorbidities
- Pre-existing CKD
- Low serum Albumin
- Complex surgical procedures
- High need for mechanical physiologic support
- Nephrotoxin exposure
- Overall severity of AKI + ↑duration of injury →nonrecovery of kidney function + progression to ESKD

Challenges

- Definition of and time frame to determine recovery
  - Acute Disease Quality Workgroup (2017). Acute kidney disease and renal recovery: Consensus report of the Acute Disease Quality Initiative 16 Workgroup. *Nature Reviews*.
- No current recovery predictive scoring systems
- Need long term follow up – increased risk for ESKD even though recovered sufficient kidney function to DC dialysis therapy

Recovery of Kidney Function

- Recovery = sustained independence from RRT
- Gradual – variable time frame
- Oliguric vs non-oliguric injury
  - Urine volume
  - Urine characteristics (waste, electrolyte removal)
  - Serum markers (creatinine/cystatin, urea, electrolytes)
  - Cellular vs functional biomarkers (e.g. NGAL vs creatinine)
- Continuum of recovery
  - Full → CKD → ESKD

Care of Patient Recovering From Acute Kidney Injury

- Think of patient as "post AKI", not "pre CKD"
- Transition from acute to chronic unit
  - Communication and scheduling essential
  - Same nephrologist/APRN continuing to manage?
  - Primary Care and Specialty Providers also managing?
  - Living at home? Rehab center? Nursing home?
  - Other therapies in process – scheduling?

Care of Patient Recovering From Acute Kidney Injury

- Key Questions
  - How has RRT been delivered in-patient? How long on CRRT? IHD?
  - How has the patient tolerated intermittent dialysis?
  - Last hemodialysis treatment?
  - Most recent lab studies?
  - When was access placed (expect a central venous catheter)? Complications with access to date?
  - Nutrition status?
  - Discharge medications?
  - Psychological/emotional status of patient and family?

Goals of Patient Care – AKI in the Chronic Dialysis Unit

- Support recovery of kidney function
- Support recovery from acute illness that led to the complication of AKI
- Support patients and families through the questions, concerns, and fears about recovery of kidney function

But Wait: What About Payment?

- Let's talk about payment changes for the care of individuals with AKI in chronic outpatient dialysis facilities
  - Glenda Payne

Coverage and Payment

- Trade Protection Extension Act of 2015 (TPEA)
- Included coverage and provided payment for dialysis furnished by an End Stage Renal Disease (ESRD) facility to an individual with Acute Kidney Injury (AKI)
- Effective date: January 1, 2017

AKI Definition for This Payment

- "Individual with acute kidney injury: an individual who has acute loss of renal function and does not receive renal dialysis services for which payment is made under (the ESRD program)."

AKI +Dialysis ≠ Medicare Coverage

- Not "blanket coverage" for all patients with AKI
- Benefit is for beneficiaries already Medicare eligible
- A diagnosis of AKI is not the same as being certified as a patient with ESRD

How Will Payment Be Determined?

- The payment will be under Part B of Medicare
- Payment amount = same as the base rate for chronic renal dialysis services + any adjustments made to that rate
- Payment rate will be published each year, in the annual ESRD PPS rule or a Federal Register notice.
  - No change to method of calculating the rate = publish a notice
- For 2017: base rate is $231.55
  - CMS will NOT apply the 50¢ Network reduction

PPS Rates: Same for ESRD and AKI

- Set by rule making each year
- Proposed rule published in July
- Final rule published in November
- Rate is updated annually by "bundled market basket percentage increase factor minus a productivity adjustment…adjusted for wages and any other amounts deemed appropriate by the Secretary…"

What Would Be Included in the PPS Rate for AKI?

- Renal dialysis services as provided to ESRD patients
- Every item/service considered to be renal dialysis services under the ESRD PPS:
  - Drugs
  - Biologicals
  - Laboratory services
  - Supplies

Payment Differences for AKI

- Can bill Medicare for non-renal dialysis items and services
  - Receive separate payment in addition to the PPS rate
- Examples :
  - Lab tests to gauge kidney function and adjust the dialysis prescription to optimize kidney recovery
  - Tests for a biochemical indication of a urea cycle defect resulting in hyperammonemia

Differences in AKI payment

- ALL treatments furnished in a week
  - Because the intent of dialysis is curative with AKI
- Other items and services (e.g., drugs, biologicals, lab services, supplies)
  - Not considered renal dialysis services but would be provided to a person with AKI in a hospital outpatient setting

Differences in AKI Payment

- Two treatments on the same day
  - Treatment starts in ESRD facility
  - Transferred to an ER before treatment completed
    - For an "unforeseen but valid reason"
  - Both the ESRD facility and the hospital would be paid
  - Expected to be a rare occurrence and must be fully documented

Differences in AKI Payment

- No payment for home or self dialysis
- Why?
  - Expected that the duration of treatment for patients with AKI will be short
  - AKI patients will require supervision by qualified staff during treatment
- Will pay for in-center PD

Vaccine Administration

- ESRD facilities may furnish vaccines to beneficiaries with AKI and bill Medicare

CMS Monitoring of Billing

- New program = closer scrutiny
- CMS expects variation in:
  - Frequency of dialysis (may be more or less than 3 X a week)
  - Services
  - Billable items
- Billing will be monitored

How Do We Bill for AKI Services

- "How to" and codes will be published
- "Billing requirements will be implemented and furnished through sub-regulatory guidance"
- Low Volume Payment Adjustment (LVPA):
  - Facilities should include AKI dialysis treatment in their counts for purposes of the LVPA

How Will AKI Claims Be Identified

- Through ALL of the following:
- A specific condition code (Type of Bill- TOB 72X, Condition Code 84 (Dialysis for AKI)
- An AKI diagnosis
- An appropriate revenue code, and
- An appropriate Common Procedural Terminology code

AKI Diagnosis Codes

- N17.0 Acute kidney failure with tubular necrosis
- N17.1 Acute kidney failure acute cortical necrosis
- N17.2 Acute kidney failure with medullary necrosis
- N17.8 Other acute kidney failure
- N17.9 Acute kidney failure, unspecified

More AKI Diagnosis Codes

- T79.5XXa Traumatic anuria, initial encounter
- T79.5XXD Traumatic anuria, subsequent encounter
- T79.5XXS Traumatic anuria, sequela
- N99.0 Post procedural (acute) (chronic) renal failure

Billing: Must Include Revenue Code

- Code for modality of dialysis furnished:
  - 082X: In Center HD
  - 083X: PD—outpatient or home
  - 084X: CAPD
  - 085X: CCPD
- And CPT code G0491: "Dialysis procedure at a Medicare certified ESRD facility for AKI without ESRD"
- Or G0491: dialysis Acute Kidney no ESRD)

QIP and AKI

- QIP measures were developed for ESRD
  - Are not appropriate for AKI patients
- Data from AKI patients should not be included in data submitted for the QIP

How different can it be to actually manage a patient with AKI on dialysis?

- Let's talk about the many different needs and challenges in managing a patient with AKI

  - Elaine Go

How Different?

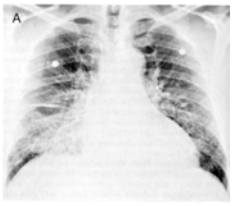
- Very different = there is EXPECTATION for recovery of renal function
- 2728 is not signed
- MD orders are specific to AKI
- Established protocols for anemia and mineral bone management may not apply
- Weekly assessment of serum creatinine (trends)
- Assessment of residual kidney function = 24 Hr urine for volume, urea and creatinine clearance

Outpatient Care

- Requires close monitoring of (lab, urine output, medication (avoid nephrotoxic medications, co morbidities)
- Every treatment detailed assessment and weekly if not more frequent care planning by IDT
- Dialysis prescription is adjusted frequently to accommodate changes in native kidney function

Fluid Management is Critical

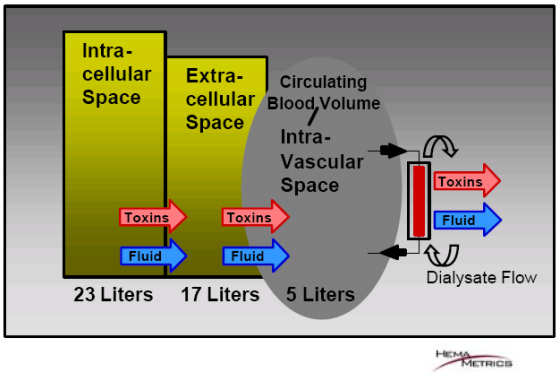
- GOAL – Renal Function Recovery
- Avoid Intradialytic hypotension



Patient Characteristics

- Anemia = iron indices and ESA requirement
- Cardiac disease
- Advanced age
- Diabetes
- Low albumin
- Medications = timing of medications to dialysis

Three Compartment Model



Assessment of Fluid status

- Know urine output
- Salt restriction
- Ostomies ?
- Increasing appetite during recovery?
- May need more frequent treatment for safe fluid removal
- Accurate pre and post dialysis weights (may need to be witnessed if in doubt)
- Volume monitoring during HD

Asymptomatic Intradialytic Hypotension: The Need for Pre-Emptive Intervention

Wendi Bradshaw
Paul N. Bennett

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Goal

To provide an overview of the physiological importance of rapid blood pressure decrease during hemodialysis, and the pathological consequences of repeated asymptomatic and symptomatic hypoperfusive episodes.

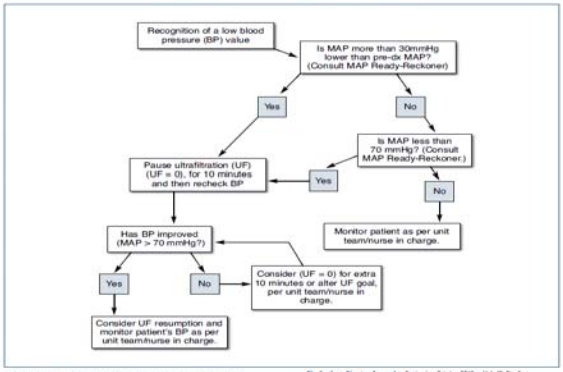
Objectives

1. Define intradialytic hypotension (IDH).
2. Discuss the challenges IDH poses to patients and nephrology clinicians in hemodialysis settings.
3. Describe the use of an algorithmic intervention pathway that considers mean arterial pressure (MAP) as the blood pressure metric to reduce IDH in patients on hemodialysis.

- **Asymptomatic IDH**
- **Drop in MAP**
- **Preemptive pausing of UF ~10 mins**

Figure 1
Intradialytic Hypotension Prevention Pathway for an Asymptomatic Patient

Monitoring MAP suggests heightened awareness of patient status, which can indicate early and important changes in patient condition (deterioration).



Source: Monash Health, 2014. Used with permission.

Vascular Access

- Non tunneled dialysis catheter
- Tunneled dialysis catheter
- Maturing AV Fistula
- Educate patient in access care = dressing at all times, dry at all times, to be accessed by dialysis personnel only
- Educate patient on vein preservation

Other Aspects of Care

- Patient and family education

1. Medication – know why it is given, avoid nephrotoxic agents
2. Fluid volume prescription
3. Dietary modifications
4. Urine output monitoring
5. Progress to previous level of activity
6. Coordinated multiple health provider care

Other Aspects of Care

- Patient and family support

1. Allow to express fears, concerns
2. Recovery of kidney function varies and may take months
3. Encourage patient and family to be engaged in all aspect of care

Recovering from AKI

- Decreasing serum creatinine trends
- Increasing urine volume, creatinine and urea clearance
- Improving overall chemistries and other blood tests
- Improving sense of well being
- May take weeks to months

Recovering from AKI = Dialysis on Hold

- Weekly if not more frequent lab draw
- Usually done in the dialysis unit = if a difficult "stick", specimen drawn from tunneled dialysis catheter
- Dialysis catheter care done at the same time
- On going education and supportive care done at this time
- Consider removal of dialysis catheter vs line sepsis at some point

What else will be different in providing care to patients with AKI?

- Let's talk about differences in conditions for coverage and assuring patients are dialyzed safely

- Glenda Payne

Conditions for Coverage & AKI

- CMS stated a belief that the current ESRD facility requirements are sufficient to ensure AKI patients are dialyzed safely
  - Infection control protocols = same
  - Care planning: provision in CfC for more frequent review if indicated by patient condition
- Commenters agreed changes in the CfC were NOT needed

Conditions for Coverage

- NO CHANGES to ESRD CfC were included in the Final Rule

Admission Assessment

- Will need to meet current requirement for RN assessment before the first treatment
- Will need to focus on cause of AKI
- Current level of kidney function
- Education needs may be different
  - Acute failure = less time for education prior to admission to ESRD facility

Dialysis Prescription

- May not use routine ESRD orders
- May need more or fewer treatments/week
- May need shorter treatment times
- Likely will not have a permanent access
- May need more frequent lab
- May need repeated evaluation of native kidney function

Patient Assessment/Plan of Care

- IDT will need to focus on prompt evaluation and response to individual needs
- PA/POC required within 30 days of admission
  - May need to consider patient "unstable"
- Recognize needs may be different from ESRD
- Be alert to changes in native kidney function
  - May need to change dialysis Rx
    - Shorter, less frequent treatments

Coordination of Care

- Close communication with nephrologist
- Careful transitions of care

  Facility ↔ Hospital
  - Medications
  - Post dialysis weight
  - Laboratory studies pending

Survey "Risks" for Care of AKI Patients

- Not recognizing different needs
- Failing to evaluate native kidney function
  - Timely
  - Repeatedly

Transition to Home or ESRD

- Requires on-going evaluation of native kidney function
- What will the "cut-off" for AKI be?
  - Historically, 90 days

Protect and Encourage

- MONITOR return of kidney function
- AVOID
  - Nephrotoxins
  - Intradialytic hypotension
  - Interdialytic hypertension
- ADJUST and REVISE hemodialysis prescription
- EDUCATE
  - Current function
  - Continued recovery
  - Changes in therapy – medications, dialysis

Are you ready for these questions your patient might ask?

- How long before you'll know if my kidneys will recover?
- What happens if some but not all of my function comes back?
- What's the longest time you've seen for kidneys to recover?
- I've noticed that I pee less on the days I come here for treatment. Does that mean this treatment helps or hurts my chances of getting better?

MORE questions…..

- I peed 4 times yesterday! Does that mean I don't have to go on the machine today?
- I feel like I'm getting weaker instead of stronger, especially on days I come here. How can I be sure I'm getting better?
- I'm afraid my insurance is going to run out. What do I do?
- I have to go to rehab for strengthening 3 days a week. Between that and this I'm so tired I just want to sleep. What am I doing wrong?
- Why can't I do this at my local hospital instead of here?

What questions do YOU have?

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