NOCTURNAL HEMODIALYSIS

Jennifer Lunt, CCHT

XCD Management
FINANCIAL DISCLOSURES

Employee of XCD Management
(Formerly North Central Pennsylvania Dialysis Clinics)
OBJECTIVES

• Explain differences between conventional hemodialysis and nocturnal hemodialysis
• Explain the pros and cons of the program both to the patient and to the unit
• NCPDC’s program with case studies
CONVENTIONAL HEMODIALYSIS

- Three times a week
- Three to five hour treatments
- Blood pump speeds 350-500 ml/min
- Dialysate flow rate 600-800 ml/min
- Heparin bolus/maintenance
- UF/Na+ profiling
NOCTURNAL HEMODIALYSIS

- Three times a week
- 8:00 treatments
- Blood pump speeds 300 ml/min
- Dialysate flow rate 500 ml/min
- Heparin bolus/maintenance
- UF/Na+ profiling
NOCTURNAL HEMODIALYSIS

Pros

• More gentle to the vascular system
• More effective dialysis with better clearances as shown by Kt/V and URR
• Less “recovery time”
• Fewer medications needed
• Fewer work interruptions
• More time with family during waking hours
• More availability for patients that need a schedule change or extra dialysis
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Cons

• Patients are away from home all night
• Some struggle to get comfortable
• Some find sleeping difficult
• Transportation can be an issue
• Limited support staff
• Reverse Osmosis (RO) system
• Staffing issues
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NCPDC’s Program

• Began January 2011
• Eight patients
• Local shared ride program (STEP) provided 24/7 service
• One nurse, one technician staffing nightly
• Weekly visits by nephrologists
• Monthly visits by dietitian and social worker
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NCPDC’s Program

• Conventional Dialysis
  M/W/F 6:00A – 9:00P (three shifts)
  T/Th/Sa 6:00A – 4:00P (two shifts)

• Nocturnal Dialysis
  Su/Tu/Th 8:00P – 4:00A (one shift)
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So, what about the RO backwashing?
NOCTURNAL HEMODIALYSIS

So, what about the RO backwashing?
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Criteria for Selection

• Patient choice
• Stable conventional hemodialysis treatments
• Attendance record
• Access considerations
• Hepatitis B status
NOCTURNAL HEMODIALYSIS

Patient A

- Female in her mid 60’s
- Does not work outside the home
- Legally blind
- Uses local shared ride program (STEP)
- Started dialysis 02/10 and then transferred to our facility the next month
- Access – Mature fistula
- 4:00 / 600 DFR / Fresenius 160
# NOCTURNAL HEMODIALYSIS

**Patient A**

<table>
<thead>
<tr>
<th>Timeline</th>
<th>URR</th>
<th>Kt/V</th>
<th>K</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>Last CH 04/11</td>
<td>86.0</td>
<td>2.24</td>
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<tr>
<td>Last NOC 12/11</td>
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NOCTURNAL HEMODIALYSIS

Patient A

- Left nocturnal dialysis shift when local shared ride program reduced their hours
- Stable on conventional hemodialysis
- Would go back to nocturnal if it were offered again and she could arrange transportation
- 4:00 / 600 DFR / Fresenius 160
Patient B

- Male in his mid 50’s
- Works full-time
- Cardiac patient
- Not very diet/fluid compliant
- New start to hemodialysis 03/07
- Access – mature fistula
- 4:00 / 800 DFR / Fresenius 200
## NOCTURNAL HEMODIALYSIS

### Patient B

<table>
<thead>
<tr>
<th>Timeline</th>
<th>URR</th>
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</thead>
<tbody>
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<tr>
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<td>71.0</td>
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NOCTURNAL HEMODIALYSIS

Patient B

• Went back to conventional hemodialysis when nocturnal dialysis closed
• Did okay, but would have gone back to nocturnal
• Continued to work fulltime
• Heart function declined
• 4:30 / 800 DFR / Fresenius 200
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Patient B

BORN
03/27/59

DIED
10/16/13
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Patient C

• Male in his mid 50’s
• “Retired” contractor (not on disability), but active around the house and with family
• Bradycardic needing pacemaker
• Began on an IJ, went to a fistula
• 4:00 / DFR 600 / Fresenius 180
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<thead>
<tr>
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<th>P</th>
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<tr>
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<td>Last CH 08/13</td>
<td>70.0</td>
<td>1.39</td>
<td>3.9</td>
<td>4.8</td>
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</table>
NOCTURNAL HEMODIALYSIS

Patient C

• Went to conventional hemodialysis when nocturnal dialysis closed
• Very difficult adjustment
• Access issues
• Struggled on conventional hemodialysis and went to peritoneal dialysis
# NOCTURNAL HEMODIALYSIS

Patient C

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<tr>
<td>First PD</td>
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* Patient has not been on PD long enough to give those results
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<td>PD 12/13</td>
<td>1.98*</td>
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NOCTURNAL HEMODIALYSIS

Patient C

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<tr>
<td>03/14</td>
<td>3.7</td>
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</tbody>
</table>
NOCTURNAL HEMODIALYSIS

Patient C

• Thriving!
• Feels better than while on conventional hemodialysis
• Blood pressure and heart rate normalized
• Enthusiastically working part-time with son
• He has gone from CAPD to CCPD
Patient D

- Female in her 60’s
- Conventional hemodialysis patient who ran a nocturnal shift after skipping one of her treatments. She runs twice a week.
- CH – 3:00 / DFR 600 / Fresenius 160
- NOC – 8:00 / DFR 500 / Fresenius 160
- Clearances only
# NOCTURNAL HEMODIALYSIS

## Patient D

<table>
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<tr>
<th>Timeline</th>
<th>Kt/V</th>
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*Puked her!*
NOCTURNAL HEMODIALYSIS
# NOCTURNAL HEMODIALYSIS

## EPO Dosages

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<th>Identifier</th>
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<tr>
<td>Patient 1*</td>
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<td>Patient 2</td>
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<td>180K Units</td>
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<td>Patient 4</td>
<td>15K Units</td>
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<tr>
<td>Patients 5/6</td>
<td>None</td>
<td>None</td>
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*HepB/HIV+*
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PO$_4$ BINDERS

Most patients discontinued use of PO$_4$ binders within a month of starting on the nocturnal shift.

Conversely, all the patients were back on PO$_4$ binders when they transitioned to a conventional hemodialysis shift.
Observations

- Patients did much better on nocturnal hemodialysis than on conventional hemodialysis in terms of bloodwork results and personal sense of well-being.
- They looked healthier!
- They had a feeling of “community.”
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NOCTURNAL HEMODIALYSIS

So, why did the shift close?

• Census fell to an unsustainable level (five in March 2013)
  – Reductions in the local shared ride program
  – Conventional hemodialysis patients were not interested in growing the shift
  – The “Sequester”

• Staffing challenges
  – Holidays
  – Call-offs
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NOCTURNAL HEMODIALYSIS

Lori Mahaffey, RN, CNN
Gwen Petrella, RN
The staff at XCD Management
Patients A, B, C, D, 1,2,3,4,5,and 6
Luke and Judy Lunt
Last, but not least Christ Almighty