Blood Pressure Telemonitoring in a Large US PD Population

Martin Schreiber, MD; Mike Gonzales, MPH; Bram Van Hout, MSc; Brooke Bowlby, Michelle Cassin, RN; Jodi Holly-Kestel, RN, MSN Ed

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Disclosures

Martin Schreiber, Mike Gonzales, Bram Van Hout, Brooke Bowlby, Michelle Cassin, and Jodi Holly-Kestel are all employees of DaVita Inc.
Home Remote Monitoring (HRM)

- HRM is a telehealth strategy that utilizes cellular technology to transmit patients' biometric data collected at home to the electronic health record of their dialysis provider.
- In April 2017, an HRM program was launched nationwide for peritoneal dialysis (PD) patients at a US large dialysis organization (LDO).

Objective
This study evaluated longitudinal trends in blood pressure (BP) control among PD patients participating in the HRM program.
Methods

Patients
• Dialyzing with PD
• Participating in the HRM program from April 2017 - January 2020

Data for This Analysis
• Data were abstracted from LDO electronic medical records.
• Outcomes tracked monthly included for all patients:
  - Mean BP
  - Mean arterial BP (MABP)
  - Number of transmitted BP measurements
  - Number of BP alerts
  - Number of antihypertensive (anti-HTN) medications prescribed
• BP alert thresholds were determined on a patient-by-patient basis by the treating physician.
Results through January 2020

21,081 Eligible Patients
- Average age = 59 years
- 57% male

BP Results
- Number of individual transmitted BP measurements: >3.5 million total
  - 170 readings/patient on average over the 43-month (total) study period
- Number of patients achieving target BP (<130/80 mmHg): 34%

• BP alerts: 764,658 total (36 BP alerts/patient)
  - Most common actions in response to alerts: changes in medications and prescribed ultrafiltration volume

• Number of anti-HTN medications prescribed
  - 0 in 30% of patients
  - 1-3 in 23% of patients
  - >3 in 47% of patients
MABP Results as of January 2020

MABP by Study Month

Calculation: MABP = SBP + 2(DBP)/3
Updated Results through June 2020

Number of Patients between April 2017 and June 2020
• Active HRM patients = 21,731 since inception to current
• 19,795 included with 90 day BP transmission results as of June 2020

BP Results
• Number of individual transmitted BP measurements: 4.5 million total
  – 179 readings/patient on average over 41 months
• Target BP (<130/80 mmHg) values: 34% (n=145,025)
• BP values >130/80 mmHg: 66% (n=275,429)

• BP alerts: 915,000 total
  – 40 BP alerts/patient
### BP Results

#### Systolic BP categories (mmHg)

<table>
<thead>
<tr>
<th>Systolic BP categories (mmHg)</th>
<th>Number of readings (N=4,128,412)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;110</td>
<td>561,811</td>
</tr>
<tr>
<td>110 -130</td>
<td>1,301,586</td>
</tr>
<tr>
<td>131-160</td>
<td>1,700,400</td>
</tr>
<tr>
<td>&gt;160</td>
<td>566,028</td>
</tr>
</tbody>
</table>

#### Mean arterial pressure (MAP) (mmHg)

<table>
<thead>
<tr>
<th>Mean arterial pressure (MAP) (mmHg)</th>
<th>Number of readings (N=4,128,412)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;97</td>
<td>2,188,665</td>
</tr>
<tr>
<td>≥97</td>
<td>1,939,747</td>
</tr>
</tbody>
</table>
Conclusions

• HRM can be successfully employed to capture patient BP readings in the home environment.

• HRM identified a significant percentage of PD patients with uncontrolled BP.

• Ongoing studies are focused on antihypertensive medication selection/classes and prescription design components (i.e., UF rate/day, and current wt. vs target wt.)

• HRM could be a potentially useful component of clinical programs designed to improve BP control and cardiovascular outcomes.