Letters to the Editor

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Miscuffing: A Problem With New Guidelines

To the Editor:

Cuff dimensions have been a source of controversy for many years. Early guidelines of the American Heart Association recommended a cuff width 20% wider than the diameter of the arm or thigh and a cuff length “sufficient to half-encircle a limb...provided care is taken by the operator to place it on the side of the compressible artery.”

For adults, a cuff width of 12 cm was recommended. In the next recommendation, the cuff width for adults was 12 to 14 cm, but was larger (18 to 20 cm) in obese persons. However, a bladder length of 30 cm was suggested to nearly or completely encircle the limb. Subsequent reports (Table 1) have recommended a bladder width and length of 40% and 80% of arm circumference. Alternatively, the ideal arm circumference is 2.5 times the bladder width.

There are many publications that point to the influence of cuff size on blood pressure measurement. Different-sized cuffs on the same person result in different blood pressure readings. Generally, these publications suggest that too narrow of a cuff spuriously elevates the recorded blood pressure in a patient with a large arm circumference, and too wide a cuff lowers the measured blood pressure in a smaller arm.

The latest recommendation on blood pressure measurement in humans seems to contribute to miscuffing of patients. Table 2 compares the 1993 and 2005 American Heart Association guidelines for cuff width-to-arm circumference percent. This comparison suggests that the 1993 guidelines are closer to the ideal cuff width of 46% of the arm circumference, as suggested in the 2005 guidelines. Thus, we believe that the 1993 guidelines for cuff width should be used.

Virtually all of the epidemiological and clinical trial data that we use to classify persons as hypertensive and to guide therapy have been collected using trained personnel and cuff sizes that have been based on cuffs available for years from the major suppliers. If we change the cuff recommendations, we will not be able to use the data collected up to 2005 using cuffs that are not the same as the newly recommended ones. The unavailability of the cuffs recommended in the 2005 guidelines would create a major financial problem for all those facilities that want to use the 2005 guidelines. All of the current cuffs would have to be replaced.

Table 1 shows the American Heart Association guidelines for cuff width. Table 2 shows the cuff width-to-arm circumference percent for lower and upper arm circumferences.

Disclosures

All authors are members of the Sphygmomanometer Committee of the Association for the Advancement of Medical Instrumentation.

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TABLE 1. Cuff Size in American Heart Association Guidelines (in cm)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Adult</td>
<td>17–26: 11×17</td>
<td>Not listed</td>
<td>22–26: 10×24</td>
<td>22–26: 12×22</td>
</tr>
</tbody>
</table>

TABLE 2. Cuff Width-to-Arm Circumference Percent for Lower and Upper Arm Circumferences

<table>
<thead>
<tr>
<th>Variable</th>
<th>1993</th>
<th>1993</th>
<th>2005</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lower</td>
<td>Upper</td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>Small Adult</td>
<td>45.5</td>
<td>38.5</td>
<td>54.5</td>
<td>46.2</td>
</tr>
<tr>
<td>Adult</td>
<td>48.1</td>
<td>38.2</td>
<td>59.3</td>
<td>47.1</td>
</tr>
<tr>
<td>Large Adult</td>
<td>45.7</td>
<td>36.4</td>
<td>45.7</td>
<td>36.4</td>
</tr>
<tr>
<td>Thigh</td>
<td>44.4</td>
<td>38.5</td>
<td>35.6</td>
<td>30.8</td>
</tr>
</tbody>
</table>

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Hypertension is available at http://www.hypertensionaha.org

DOI: 10.1161/01.HYP.0000229663.60259.e0

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Hypertension. 2006;48:e4; originally published online June 12, 2006;
doi: 10.1161/01.HYP.0000229663.60259.e0
Hypertension is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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Print ISSN: 0194-911X. Online ISSN: 1524-4563

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World Wide Web at:
http://hyper.ahajournals.org/content/48/1/e4

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