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Article of Interest

Burnier, et al. End-digit preference in general practice: A comparison of the conventional auscultatory and electronic oscillometric methods. Blood Pressure. 2008. (Click to Access)

Context and Study Objective

The importance of appropriate technique to ensure accurate blood pressure (BP) measurement is well known. Less publicized is the deleterious habit of rounding the final digit of the systolic or diastolic pressure (commonly to zero or five), a practice known as "end" or "terminal digit preference." Burnier sought to characterize the frequency of this phenomenon and whether the use of electronic BP monitors eliminated this bias.

Design, Setting, and Participants

Utilizing BP readings from a trial evaluating the effects of calcium channel blocker therapy on BP control, the frequency with which the final digits 0-9 appeared was calculated. Trial BPs were measured by physicians with either an electronic or manual unit and then transcribed onto a report form. They were unaware that end digit preference was being studied.

Results

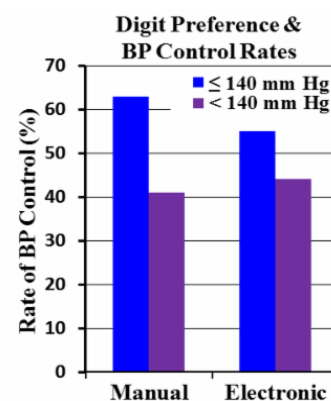
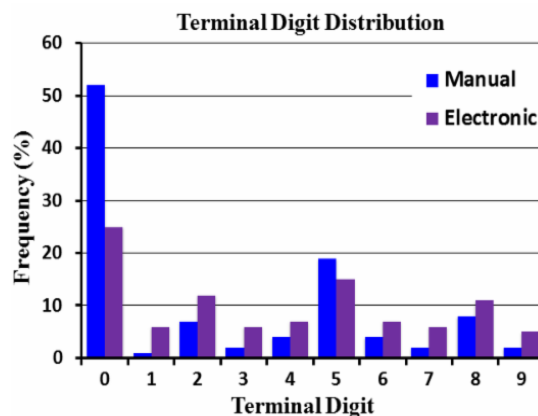
-500 physicians, 2200 patients participated; 7000 readings obtained. 40% of measurements were taken with a digital device.

-Fig 1: With a manual machine, the terminal digit for systolic pressures was "0" in 50% of readings and "5" in 20% (each digit should be represented equally).

Using an electronic monitor, the terminal digit was "0" in 25% of readings and "5" in 15%.

-Fig 1: Odd terminal digits were less frequently recorded than even ones.

-Fig 2: When rates of controlled BP were defined as a value less than (<) 140 systolic, this target was achieved at least 20% less often as compared to a goal pressure of less than or equal to (\leq) 140 systolic,



Clinical Perspective

-While emphasis is placed on using correct technique and a validated sphygmomanometer to ensure accurate readings, end digit preference is an underreported yet clinically meaningful error. Even in research studies where researchers are educated on this bias, it persists.

-Use of electronic BP machines reduces this practice and therefore offers an important advantage over manual devices.

-As noted in fig 2, rounding a reading of 142 to 140 mm Hg or 147 to 150 mm Hg results in marked differences in control rates.

-In summary, precision matters. Directly record an electronic value. With manual methods, deflate at a rate of 2 mm Hg/ second to ensure a clear-cut reading.