# Supplemental Online Content

Picone DS, Chapman N, Schultz MG, et al. Availability, Cost, and Consumer Ratings of Popular Nonvalidated vs Validated Blood Pressure–Measuring Devices Sold Online in 10 Countries. *JAMA*. Published online May 2, 2023. doi:10.1001/jama.2023.2661

**Supplement 1.** eMethods

This supplemental material has been provided by the authors to give readers additional information about their work.

**Study overview.** The analysis was performed using the 100 best-selling lists for blood pressure measuring devices (devices herein) from the Amazon e-commerce business. Amazon is currently the world's largest e-commerce provider. A higher ranking out of 100 on the best-selling lists indicates greater sales.

The number and percentage, cost, and consumer ratings (out of five stars) of the clinically validated and non-validated automated devices were determined. When data collection commenced, Amazon had dedicated online stores in 17 countries where there was a specific Internet country code (e.g. amazon.com.**au** for Australia; amazon.co.**uk** for the United Kingdom). All 17 websites were examined to determine if a device best-selling list was available. Data collection was excluded from the Netherlands, China, Turkey, Brazil, Singapore and the United Arab Emirates because device 100 best-selling lists were not available. Data for Japan was excluded because the validation status of devices could not be determined with confidence due to English translation difficulties. Thus, 10 countries were available for inclusion in the final analysis: Australia, Canada, France, Germany, India, Italy, Mexico, Spain, United Kingdom and the United States of America.

**Validated device listings.**

International validated device listings STRIDE-BP (https://www.stridebp.org/bp-monitors) and Medaval (https://medaval.ie/blood-pressure-monitors/) were used to determine the validation status of devices.

Country specific validated device listings were also searched where available. These included the USA (U.S. Validated Device Listing https://www.validatebp.org/), Canada (Hypertension Canada listing https://hypertension.ca/bpdevices), Germany (German Hypertension League - Deutsche Hochdruckliga, Quality Seal Protocol https://www.hochdruckliga.de/betroffene/blutdruckmessgeraete) and United Kingdom (British and Irish Hypertension Society listing https://bihsoc.org/bp-monitors/).

Practical guidance on how to use the validated device listings is available from https://www.menzies.utas.edu.au/education/blood-pressure-resources. The guidance is available in 16 languages.

**Data recording, cleaning and processing.**

Data from the best-selling lists from all 10 countries were accessed within the same one-hour period (14.00-15.00 Australian Eastern Standard Time between 14 April 2020 and 29 September 2020 and 14.00-15.00 Australian Eastern Daylight Time between 4 February 2020 and 31 March 2020 and between 13 October 2020 and 19 January 2021). Data were recorded every two weeks.

There was high consistency of the percentages of validated devices identified in the best-selling lists from full analysis of the data recorded every two weeks from two countries. For this reason and due to the volume of manual data processing required to determine validation status of the devices, data recorded at eight-week intervals was fully processed and analysed for all 10 countries in the study. This data processing method provided seven time points for the analysis.

Inclusion criteria for the primary analysis were that the devices were automated or semi-automated and measured BP either via an upper-arm cuff or wrist cuff. All devices that met these criteria were included, even if the intended primary use was not self-home use (e.g. office or professional devices could have been included). If identical device were identified within the same best-selling list at any time point these were also included. The reason that identical devices were included was to ensure a complete recording of the best-selling lists. A

single best-selling list could list duplicate devices because different individual 'sellers' that operate within the Amazon online marketplace may sell the same devices.

Mercury or non-mercury (e.g. aneroid) manual auscultatory devices, cuffless devices as well as cuffs, stethoscopes and carry cases for devices were excluded. Search results other than automated devices, such as storage cases for devices, pulse oximeters and other irrelevant results were also excluded.

Data that were recorded included the device description, cost, consumer ratings and number of consumer ratings. The cost of each device was recorded in the local currency for each country and converted to U.S. dollars to allow standardized comparisons. The currency conversion rates were accessed from https://www.xe.com/currencytables/ and the conversion rate was applied for the date that the data were recorded. The consumer rating out of five stars for each device was extracted for analysis. The way that Amazon measures and displays the overall consumer rating for a product is based on a machine-learning platform that weights consumer reviews. Greater weight is placed on newer reviews, and also if the reviewer is a verified Amazon purchaser, as well as and the most helpful reviews (as voted by other customers). More details on consumer ratings are available from https://www.amazon.com/gp/help/customer/display.html?nodeId=GQUXAMY73JFRVJHE and https://www.cnet.com/tech/services-and-software/amazon-updates-customer-reviews-with-new-machine-learning-platform).

**Statistical analysis.** Percentages of devices that had been validated, cost of devices and consumer ratings were reported as median and interquartile range. Analyses were also performed after stratifying the devices into quartiles according to cost, and separately, quartiles according to consumer ratings. Data were analysed using R version 4.1.1 (2021-08-10).