**Additional file 1 - Effect of the rate of signs and symptoms**

**Overview**

We present the results for the simulation study assessing the effect of the rate of signs and symptoms on the performance of the bias correction method. For a description of the simulation study design, refer to the Design of simulation studies under the Gaussian assumption section in the main text.

**Effect of the rate of signs and symptoms**

In Figure S1, the Type I error rate declined as the rate of signs and symptoms increased. The Type I error rate of the corrected analysis was below nominal at low disease prevalence and ranged from 0.06 to 0.14 at high prevalence. The Type I error rate of the observed analysis ranged between 0.05 and 0.07 at low prevalence and 0.97 to 1.00 at high prevalence.

In Figure S2, increasing the rate of signs and symptoms had no effect on the correct rejection fraction at low disease prevalence, but improved the correct rejection fraction at high prevalence. The correct rejection fraction for the true analysis was 0.77 at low prevalence and 1.00 at high prevalence. The correct rejection fraction for the corrected analysis ranged from 0.56 to 0.59 at low prevalence and 0.72 to 0.94 at high prevalence. By contrast, the observed analysis had a correct rejection fraction of zero across all prevalences.

In Figure S3, the wrong rejection fraction for the corrected analysis is near zero across all rates of signs and symptoms and disease prevalences. For the observed analysis, however, the wrong rejection fraction ranged from 0.51 to 1.00.

Under the conditions of the simulation, a study investigator using the observed results would either incorrectly decide that the worst screening test was best, or conclude that there was no difference between the two screening tests.
Figure S1 - Effect of the rate of signs and symptoms on Type I error rate

The nominal Type I error was fixed at 0.05 and is indicated by the red line.
Figure S2 - Effect of the rate of signs and symptoms on the correct rejection fraction

The correct rejection fraction is the proportion of times the hypothesis test rejects when the alternative is true and the choice of the superior screening test is aligned with the true state of nature.
Figure S3 - Effect of the rate of signs and symptoms on the wrong rejection fraction

The wrong rejection fraction is the proportion of times the hypothesis test rejects when the alternative is true and the choice of the superior screening test is opposite the true state of nature.