

How to Make EBM Teaching Fun: Enhancing diagnostic understanding using chocolate

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1. What Problem was Addressed?

- Health professionals find understanding statistics difficult, particularly interpreting diagnostic tests¹.
- As teachers, we have found it hard to produce an engaging introduction to the topic.
- Poor interpretation of tests has consequences: for health systems; and for patients - they are exposed to the harms of mis-diagnosis (over and under)

Question:

- How to develop an accessible, engaging educational tool that allows learners to reach key learning objectives about diagnostics?



Reference:
1. Helping Doctors and Patients Make Sense of Health Statistics. Gerd Gigerenzer G., et al *Psychological Science in the Public Interest* Vol 8, Issue 2, pp. 53 - 96

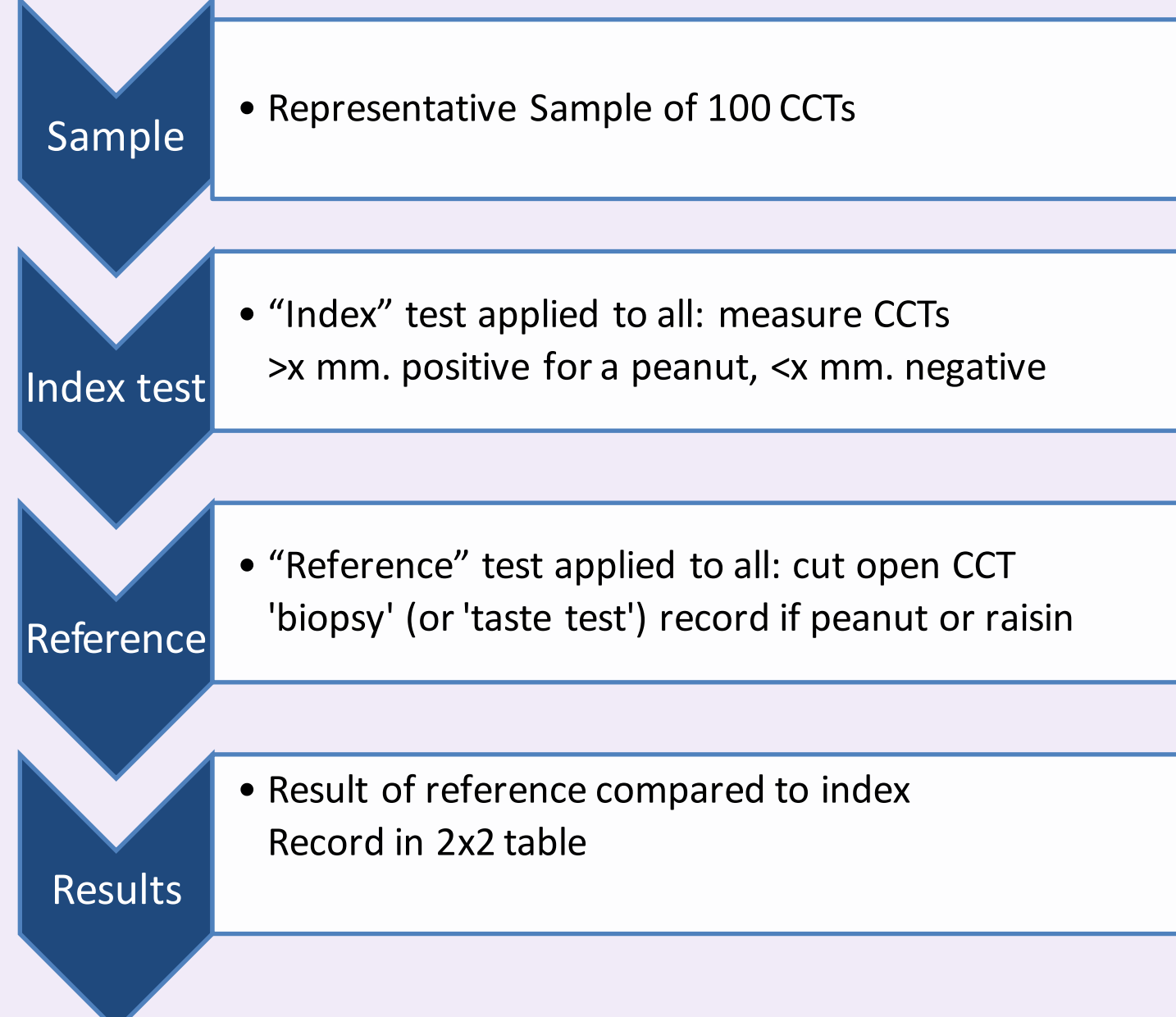
2. What was Tried?

Learners perform their own diagnostic validation study measuring chocolate coated raisins and peanuts.

The scenario:

- A factory making both chocolate covered peanuts and raisins (chocolate covered things: CCTs).
- A quantity of peanuts has been added to the raisins.
- You need to separate the peanuts from the raisins, using an index test of measuring the CCT's largest dimension.

The Instructions for performing the study:

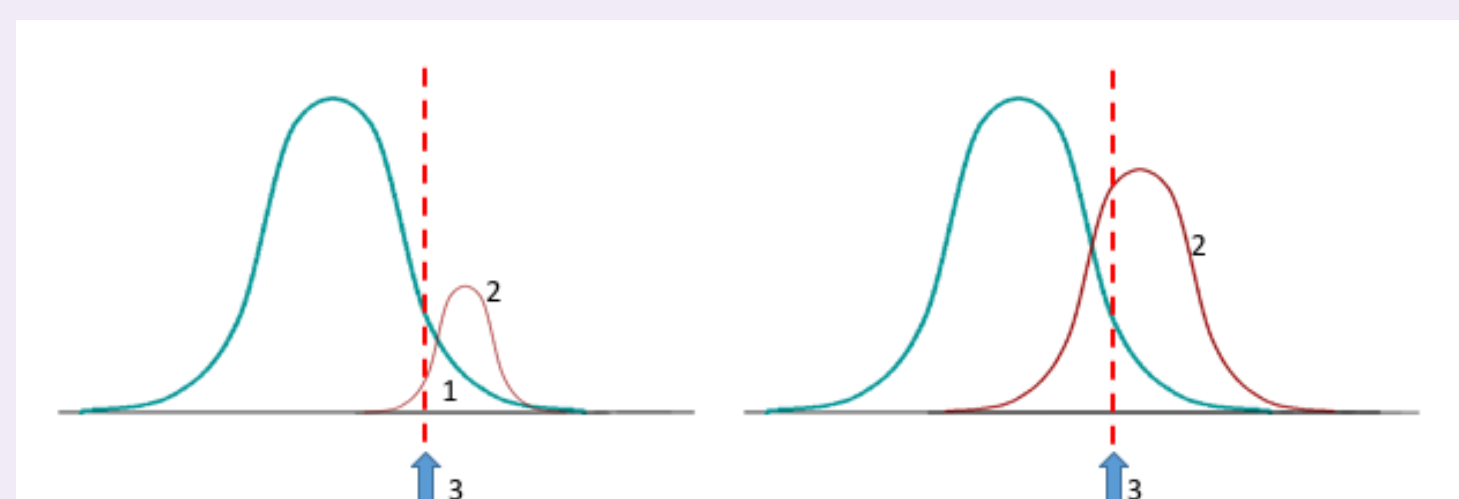


Resources needed:

2 prepared batches of mixed CCTs, rulers, plastic knives and a table for recording results.

3. What Lessons were Learned?

A Graphical Representation of the results for two batches (green: choc coated raisins, red: choc coated peanuts)



Some of the possible learning opportunities:
1. false positive and negative rates
2. prevalence
3. The decision rule

We recommend using 2 batches:

- With different 'prevalences' of choc coated peanuts (20%+50%)
- but same test sensitivities/specificities (70% -80%)

Results /Learning Outcomes:

Learners are able to:

- Calculate the tests sensitivity and specificity; positive and negative predictive value for each sample
- Model the effect changing prevalence and the decision rule has on the meaning of the test
- Describe biases in diagnostic studies
- Consider errors in clinical measurements

Limitations:

- Preparation time, those with nut allergies couldn't full participate (yet to happen)

Conclusion

The tool is engaging and accessible and has helped both health professionals understand the meaning of and even get a taste for, diagnostic tests.

Teaching materials available at:

https://drive.google.com/open?id=1HUvX913BNUJVAa5rEXDn6LkaF16z_B3B

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