False positives in online HIV testing services:

Managing and communicating risk

SH:24 Sexual health: 24 hours a day

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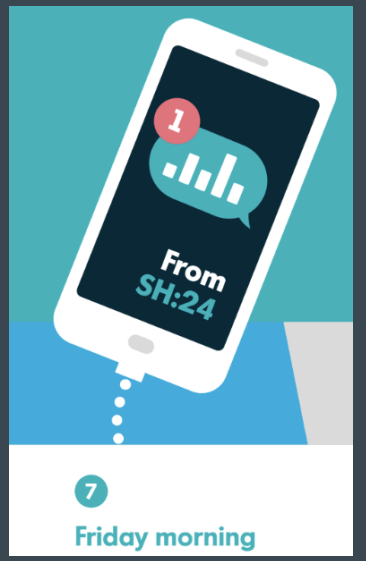
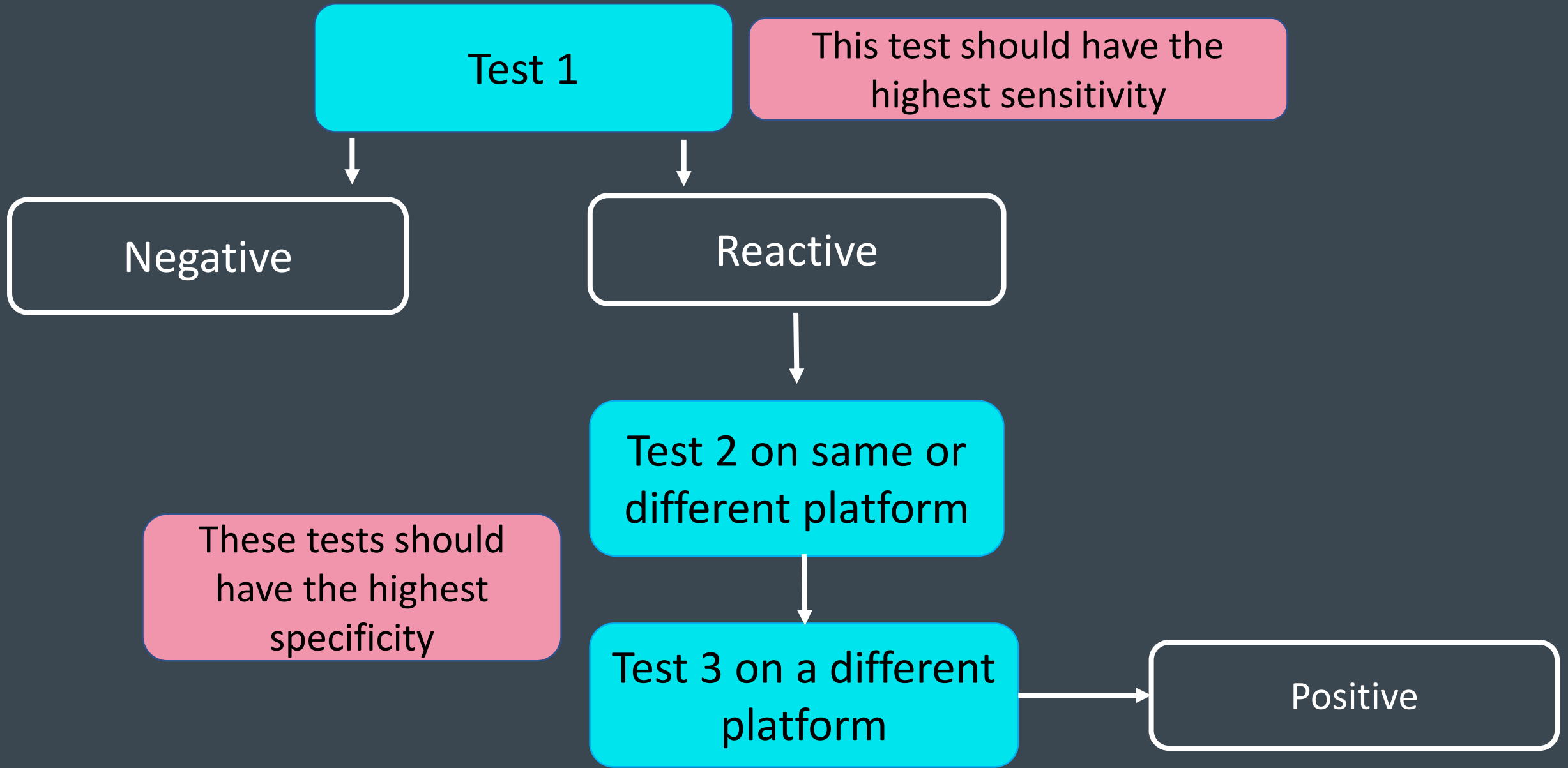
Online testing for chlamydia, gonorrhoea, HIV and Syphillis



HIV testing algorithm



Test 1

This test should have the highest sensitivity

Reactive

These tests should have the highest specificity

Test 2 on same or different platform

Test 3 on a different platform

Positive

What is the positive predictive value of a reactive result in UK populations using online sexual health services?

July 2015-
November 2018

Adequate samples
99,319

Positivity = 0.25%

New positivity = 0.029%

Reactive
1041 (1.05%)

Reported results of confirmatory testing
704 (74.2%)

True positive
New diagnosis
29 (4.1%)

True positive
Previously diagnosed
218 (31%)

False positive/
Negative
457 (64.9%)

Positive predictive value – the probability that subjects with a positive screening test truly have the disease

Scenario 1
Includes known positives

$$\frac{\text{true positives}}{\text{true positives} + \text{false positives.}}$$

$$\frac{218 + 29 = 247}{218 + 29 + 457 = 704} \quad X\ 100 = 35\%$$

Positive predictive value – the probability that the subjects with a positive screening test truly have the disease

Scenario 2 excludes known positives

$$\frac{\text{number of true positives}}{\text{true positives + false positives}}$$

$$\frac{29}{29 + 457} \times 100 = 5.9\%$$

False positive rate

Proportion of all true negatives that yield a positive result

$$\text{False positive rate} = \frac{\text{False positives}}{\text{False positive + true negative}}$$

$$= \frac{475}{475 + 98278} = 0.46\%$$

Online HIV testing

29 new HIV diagnoses

457 people manage a reactive result that is subsequently confirmed negative

1-999

6-35% of reactives will be confirmed positive

More blood?

More numbers?

More communication ?

Rapid completion of algorithm?

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