Medical Decision

Original Data

```
          polyp
size_1cm   NNP  NP
  [0,10)   401  68
  [10,80)   17 155
```

Recoded Data for Decision Test Statistics

	Gold Positive	Gold Negative	Total
Test Positive	155	17	172
Test Negative	68	401	469
Total	223	418	641

	n
Total	641 [a]
Diseased	223 [b]
Healthy	418 [d]
Positive Tests	172 [e]
Negative Tests	469 [f]
True Test	556 [g]
Wrong Test	85 [h]

[a] Total Number of Subjects

[b] Total Number of Subjects with Disease

[d] Total Number of Healthy Subjects

[e] Total Number of Positive Tests

[f] Total Number of Negative Tests

[g] Total Number of True Test Results

[h] Total Number of Wrong Test Results

	Ratios
Sensitivity	69.51 % [a]
Specificity	95.93 % [b]

	Ratios
Accuracy	86.74 % [d]
Prevalence	34.79 % [e]
Positive Predictive Value	90.12 % [f]
Negative Predictive Value	85.50 % [g]
Post-test Disease Probability	90.12 % [h]
Post-test Health Probability	85.50 % [i]
Positive Likelihood Ratio	17.0905
Negative Likelihood Ratio	0.3179

[a] Sensitivity (True Positives among Diseased)

[b] Specificity (True Negatives among Healthy)

[d] Accuracy (True Test Result Ratio)

[e] Disease Prevalence in this population

[f] Positive Predictive Value (Probability of having disease after a positive test using this experimental population)

[g] Negative Predictive Value (Probability of being healthy after a negative test using this experimental population)

[h] Post-test Probability of Having Disease (Probability of having disease after a positive test using known Population Prevalence)

[i] Post-test Probability of Being Healthy (Probability of being healthy after a negative test using known Population Prevalence)

		95% Confidence Interval	
Decision Statistics	**Estimate**	**Lower**	**Upper**
Apparent prevalence	26.83 %	23.44 %	30.44 %
True prevalence	34.79 %	31.10 %	38.62 %
Test sensitivity	69.51 %	63.01 %	75.48 %
Test specificity	95.93 %	93.57 %	97.61 %
Diagnostic accuracy [a]	86.74 %	83.87 %	89.27 %
Positive predictive value	90.12 %	84.65 %	94.14 %
Negative predictive value	85.50 %	81.98 %	88.56 %
Proportion of subjects with the outcome ruled out	73.17 %	69.56 %	76.56 %
Proportion of subjects with the outcome ruled in	26.83 %	23.44 %	30.44 %
Proportion of false positives	4.07 %	2.39 %	6.43 %
Proportion of false negative	30.49 %	24.52 %	36.99 %

[a] Proportion of all tests that give a correct result.

Decision Statistics	Estimate	95% Confidence Interval	
		Lower	Upper
Diagnostic odds ratio [a]	53.7673	30.6243	94.3995
Number needed to diagnose [b]	1.5281	1.3682	1.7675
Youden's index [d]	0.6544	0.5658	0.7309
Likelihood ratio of a positive test	17.0905	10.6428	27.4444
Likelihood ratio of a negative test	0.3179	0.2605	0.3879

[a] How much more likely will the test make a correct diagnosis than an incorrect diagnosis in patients with the disease.

[b] Number of patients that need to be tested to give one correct positive test.

[d] Youden's index is the difference between the true positive rate and the false positive rate. Youden's index ranges from -1 to +1 with values closer to 1 if both sensitivity and specificity are high (i.e. close to 1).

Medical Decision

Original Data

```
             polyp
size_1cm_down NNP  NP
      (10,80]   9 149
      [0,10]  409  74
```

Recoded Data for Decision Test Statistics

	Gold Positive	Gold Negative	Total
Test Positive	149	9	158
Test Negative	74	409	483
Total	223	418	641

	n
Total	641 [a]
Diseased	223 [b]
Healthy	418 [d]
Positive Tests	158 [e]
Negative Tests	483 [f]
True Test	558 [g]
Wrong Test	83 [h]

[a] Total Number of Subjects

[b] Total Number of Subjects with Disease

[d] Total Number of Healthy Subjects

[e] Total Number of Positive Tests

[f] Total Number of Negative Tests

[g] Total Number of True Test Results

[h] Total Number of Wrong Test Results

	Ratios
Sensitivity	66.82 % [a]
Specificity	97.85 % [b]

	Ratios
Accuracy	87.05 % [d]
Prevalence	34.79 % [e]
Positive Predictive Value	94.30 % [f]
Negative Predictive Value	84.68 % [g]
Post-test Disease Probability	94.30 % [h]
Post-test Health Probability	84.68 % [i]
Positive Likelihood Ratio	31.0324
Negative Likelihood Ratio	0.3391

[a] Sensitivity (True Positives among Diseased)

[b] Specificity (True Negatives among Healthy)

[d] Accuracy (True Test Result Ratio)

[e] Disease Prevalence in this population

[f] Positive Predictive Value (Probability of having disease after a positive test using this experimental population)

[g] Negative Predictive Value (Probability of being healthy after a negative test using this experimental population)

[h] Post-test Probability of Having Disease (Probability of having disease after a positive test using known Population Prevalence)

[i] Post-test Probability of Being Healthy (Probability of being healthy after a negative test using known Population Prevalence)

		95% Confidence Interval	
Decision Statistics	**Estimate**	**Lower**	**Upper**
Apparent prevalence	24.65 %	21.36 %	28.18 %
True prevalence	34.79 %	31.10 %	38.62 %
Test sensitivity	66.82 %	60.22 %	72.96 %
Test specificity	97.85 %	95.95 %	99.01 %
Diagnostic accuracy [a]	87.05 %	84.20 %	89.55 %
Positive predictive value	94.30 %	89.46 %	97.36 %
Negative predictive value	84.68 %	81.15 %	87.77 %
Proportion of subjects with the outcome ruled out	75.35 %	71.82 %	78.64 %
Proportion of subjects with the outcome ruled in	24.65 %	21.36 %	28.18 %
Proportion of false positives	2.15 %	0.99 %	4.05 %
Proportion of false negative	33.18 %	27.04 %	39.78 %

[a] Proportion of all tests that give a correct result.

Decision Statistics	Estimate	95% Confidence Interval	
		Lower	Upper
Diagnostic odds ratio [a]	91.5030	44.6786	187.4009
Number needed to diagnose [b]	1.5465	1.3895	1.7803
Youden's index [d]	0.6466	0.5617	0.7197
Likelihood ratio of a positive test	31.0324	16.1545	59.6126
Likelihood ratio of a negative test	0.3391	0.2814	0.4088

[a] How much more likely will the test make a correct diagnosis than an incorrect diagnosis in patients with the disease.

[b] Number of patients that need to be tested to give one correct positive test.

[d] Youden's index is the difference between the true positive rate and the false positive rate. Youden's index ranges from -1 to +1 with values closer to 1 if both sensitivity and specificity are high (i.e. close to 1).

References

[1] The jamovi project (2021). *jamovi*. (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org.

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