ΔΙΑΓΝΩΣΗ
ΚΑΙ ΠΡΟΣΥΜΠΤΩΜΑΤΙΚΗ ΔΙΑΛΟΓΗ

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Β’ Παθολογική Κλινική
Δημοκρίτειο Πανεπιστήμιο Θράκης
ΕΙΣΑΓΩΓΗ
Ένα μέγεθος για όλους;
Έχεις πακέτο...

1) Ζάχαρο
2) Ουρία
3) Αξονική Τομογραφία
ΔΙΑΓΝΩΣΗ ΚΑΙ ΠΡΟΣΥΜΠΤΩΜΑΤΙΚΗ ΔΙΑΛΟΓΗ
ΔΙΑΓΝΩΣΗ
«Τι εστίν αλήθεια;»

(Κατὰ Ιωάννην, ἸΗ΄ 38)
Table 3.1 Six definitions of normal

1. **Gaussian**: the mean±2 standard deviations; this assumes a normal distribution for all tests and results in all “abnormalities” having the same frequency.

2. **Percentile**: within the range, say of 5–95%; has the same basic defect as the gaussian definition.

3. **Culturally desirable**: when “normal” is that which is preferred by society, the role of medicine gets confused.

4. **Risk factor**: carrying no additional risk of disease; nicely labels the outliers, but does changing a risk factor necessarily change risk?

5. **Diagnostic**: range of results beyond which target disorders become highly probable; the focus of this discussion.

6. **Therapeutic**: range of results beyond which treatment does more good than harm; means we have to keep up with advances in therapy!
Table 3.2  Is this evidence about a diagnostic test valid?

1. **Measurement**: was the reference ("gold") standard measured independently, i.e. blind to our target test?

2. **Representative**: was the diagnostic test evaluated in an appropriate spectrum of patients (like those in whom we would use it in practice)?

3. **Ascertainment**: was the reference standard ascertained regardless of the diagnostic test result?

   (Fourth question to be considered for clusters of tests of clinical prediction rules: was the cluster of tests validated in a second, independent group of patients?)

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<table>
<thead>
<tr>
<th>Diagnostic test result (serum ferritin)</th>
<th>Target disorder (iron deficiency anemia)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive (&lt;65 mmol/L)</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td></td>
<td>731</td>
<td>270</td>
</tr>
<tr>
<td>Negative (≥65 mmol/L)</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td></td>
<td>78</td>
<td>1500</td>
</tr>
<tr>
<td>Totals</td>
<td>a+c</td>
<td>b+d</td>
</tr>
<tr>
<td></td>
<td>809</td>
<td>1770</td>
</tr>
</tbody>
</table>


Prevalence = (a + c)/(a + b + c + d) = 809/2579 = 31%.

Positive predictive value = a/(a + b) = 731/1001 = 73%.

Negative predictive value = d/(c + d) = 1500/1578 = 95%.

Sensitivity = a/(a + c) = 731/809 = 90%.

Specificity = d/(b + d) = 1500/1770 = 85%.

LR+ = sensitivity/(1 – specificity) = 90%/15% = 6.

LR – = (1 – sensitivity)/specificity = 10%/85% = 0.12.
Neuropad: Meta-analysis

✓ OR = 9.54 (95% CI: 7.1-12.83)
✓ Sensitivity: 85%
✓ Specificity: 56%
✓ PPV: 50%
✓ NPV: 86%

<table>
<thead>
<tr>
<th>Target disorder</th>
<th>SpPin (and specificity) [presence rules in the target disorder]</th>
<th>SnNout (and sensitivity) [absence rules out the target disorder]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ascites (by imaging or tap)</td>
<td>Fluid wave (92%)</td>
<td>History of ankle swelling (93%)</td>
</tr>
<tr>
<td>Pleural effusion</td>
<td>Auscultatory percussion note loud and sharp (100%)</td>
<td>Auscultatory percussion note soft and/or dull (96%)</td>
</tr>
<tr>
<td>Increased intracranial pressure (by CT scan or direct measurement)</td>
<td>Loss of spontaneous retinal vein pulsation (100%)</td>
<td></td>
</tr>
<tr>
<td>Cancer as a cause of lower back pain (by further investigation)</td>
<td>Age &gt;50 or cancer history or unexplained weight loss or failure of conservative therapy (100%)</td>
<td></td>
</tr>
</tbody>
</table>
**Table 3.5** Questions to answer in applying a valid diagnostic test to an individual patient

1. Is the diagnostic test available, affordable, accurate, and precise in our setting?

2. Can we generate a clinically sensible estimate of our patient’s pre-test probability?
   - From personal experience, prevalence statistics, practice databases, or primary studies?
   - Are the study patients similar to our own?
   - Is it unlikely that the disease possibilities or probabilities have changed since this evidence was gathered?

3. Will the resulting post-test probabilities affect our management and help our patient?
   - Could it move us across a test–treatment threshold?
   - Would our patient be a willing partner in carrying it out?
   - Would the consequences of the test help our patient reach his or her goals in all this?
### Table 3.6  Guides for critically appraising a report about pre-test probabilities of disease

1. Is this evidence about pre-test probability valid?
   - Did the study patients represent the full spectrum of those who present with this clinical problem?
   - Were the criteria for each final diagnosis explicit and credible?
   - Was the diagnostic work-up comprehensive and consistently applied?
   - For initially undiagnosed patients, was follow-up sufficiently long and complete?

2. Is this evidence about pre-test probability important?
   - What were the diagnoses and their probabilities?
   - How precise were these estimates of disease probability?
<table>
<thead>
<tr>
<th>Symptom or clinical problem</th>
<th>Source</th>
<th>Work-up</th>
<th>Disease probabilities</th>
</tr>
</thead>
</table>
| Anemia of chronic disease  | 90 adults admitted to a general medical ward of a county hospital in North America\(^a\) | Clinical exam, blood testing, selected other testing | Infection, 36%  
Inflammation, 6%  
Malignant, 19%  
Renal, 15%  
Other, 24% |
| Dizziness >2 weeks         | 100 adult patients seen in primary care sites in one North American city\(^b\) | Clinical exam, neurological, ophthalmologic, and psychological testing, selected other tests | Vertigo, 54%  
Psychiatric, 16%  
Multicausal, 13%  
Other, 19%  
Unknown, 8% |
<table>
<thead>
<tr>
<th>Diagnostic test result</th>
<th>Serum ferritin (mmol/L)</th>
<th>Target disorder (Iron deficiency) present</th>
<th>Target disorder absent</th>
<th>Likelihood ratio</th>
<th>Diagnostic impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Very positive</td>
<td>&lt; 15</td>
<td>474</td>
<td>59 (474/809)</td>
<td>20</td>
<td>1.1 (20/1770)</td>
</tr>
<tr>
<td>Moderately positive</td>
<td>15–34</td>
<td>175</td>
<td>22 (175/809)</td>
<td>79</td>
<td>4.5 (79/1770)</td>
</tr>
<tr>
<td>Neutral</td>
<td>35–64</td>
<td>82</td>
<td>10 (82/809)</td>
<td>171</td>
<td>10 (171/1770)</td>
</tr>
<tr>
<td>Moderately negative</td>
<td>65–94</td>
<td>30</td>
<td>3.7 (30/809)</td>
<td>168</td>
<td>9.5 (168/1770)</td>
</tr>
<tr>
<td>Extremely negative</td>
<td>≥ 95</td>
<td>48</td>
<td>5.9 (48/809)</td>
<td>1332</td>
<td>75 (1332/1770)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>809</td>
<td>100 (809/809)</td>
<td>1770</td>
<td>100 (1770/1770)</td>
</tr>
</tbody>
</table>
ΠΑΡΑΔΕΙΓΜΑ: ΔΙΑΒΗΤΙΚΗ ΝΕΥΡΟΠΑΘΕΙΑ

<table>
<thead>
<tr>
<th>Chronic insidious sensory neuropathy</th>
<th>Acute painful neuropathy</th>
<th>Proximal motor myopathy</th>
<th>Diffuse motor neuropathy</th>
<th>Focal nerve palsy</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image 1" /></td>
<td><img src="image2" alt="Image 2" /></td>
<td><img src="image3" alt="Image 3" /></td>
<td><img src="image4" alt="Image 4" /></td>
<td><img src="image5" alt="Image 5" /></td>
</tr>
</tbody>
</table>

Pressure
- III, IV, VI
- VII
- Phrenic
- Thoracic
- Common peroneal
Herman WH, Kennedy L.

Underdiagnosis of peripheral neuropathy in type 2 diabetes.

Papanas N, Vinik AI, Ziegler D.

Neuropathy in prediabetes: does the clock start ticking early?


Key points

- A substantial proportion of individuals with prediabetes has neuropathy and vice versa.
- People with prediabetes generally have less severe neuropathy than those with overt diabetes mellitus.
- The most sensitive test to assess glucose metabolism is the oral glucose tolerance test, which should be performed in patients with idiopathic neuropathy.
- The main underlying mechanisms implicated in the pathogenesis of neuropathy are hyperglycemia, microvascular abnormalities, dyslipidemia and the metabolic syndrome.
- Treatment involves lifestyle modification to improve control of hyperglycemia and cardiovascular risk factors, but its long-term efficacy is uncertain.
Papanas N, Ziegler D.

New diagnostic tests for diabetic distal symmetric polyneuropathy.

Papanas N, Boulton AJ, Malik RA et al.


Table 3—Multiple-level LRs (90% CIs) across different stages of neuropathy

<table>
<thead>
<tr>
<th>Time to complete color change (s)</th>
<th>0–2</th>
<th>3–5</th>
<th>6–8</th>
<th>9–10</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–360</td>
<td>14.18 (4.98–28.12)</td>
<td>3.46 (1.08–11.33)</td>
<td>0.00 (0.00–0.74)</td>
<td>0.00 (0.00–0.95)</td>
</tr>
<tr>
<td>361–600</td>
<td>0.90 (0.16–2.63)</td>
<td>10.40 (4.54–24.58)</td>
<td>0.21 (0.08–0.51)</td>
<td>0.00 (0.00–0.22)</td>
</tr>
<tr>
<td>601–1,000</td>
<td>0.00 (0.00–2.39)</td>
<td>7.51 (3.23–18.00)</td>
<td>0.37 (0.15–0.83)</td>
<td>0.00 (0.00–0.30)</td>
</tr>
<tr>
<td>1,001–1,200</td>
<td>0.00 (0.00–2.23)</td>
<td>0.09 (0.03–0.23)</td>
<td>12.05 (6.37–23.17)</td>
<td>0.44 (0.19–0.98)</td>
</tr>
<tr>
<td>&gt;1,200</td>
<td>0.00 (0.00–2.19)</td>
<td>0.00 (0.00–0.07)</td>
<td>0.57 (0.28–1.09)</td>
<td>18.44 (9.55–36.35)</td>
</tr>
</tbody>
</table>
Προσμπτωματική διαλογή!!
Table 3.9  Guides for deciding whether a screening or early diagnostic maneuver does more good than harm

1. Is there RCT evidence that early diagnosis really leads to improved survival, or quality of life, or both?
2. Are the early diagnosed patients willing partners in the treatment strategy?
3. How do benefits and harms compare in different people and with different screening strategies?
4. Do the frequency and severity of the target disorder warrant the degree of effort and expenditure?

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Εφαρμογή στη θεραπεία

Screen detection

Usual
detection

No screening

Death

Lead time

Ineffective screening

Death

Apparent increase
in survival

Lead time

Effective screening

Death

Real increase
in survival

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Εφαρμογή στην έρευνα

Randomize

Screen

Screen

Treat disease early

Treat disease at usual time

Outcome

Outcome

Screen

Early disease

No disease

Randomize

Treat disease early

Treat disease at usual time

Outcome

Outcome

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ΣΥΜΠΕΡΑΣΜΑΤΑ
Συμπεράσματα

1) Διάγνωση: υποβοηθείται με τη μεθοδική ερμηνεία δοκιμασιών

2) Προσυμπτωματική διαλογή: υποβοηθείται με τη μεθοδική ερμηνεία δοκιμασιών

3) Ποσοτική έκφραση (π.χ. LRs): εξαιρετικά ωφέλιμη
ΝΑ ΣΟΥ ΠΟ! ΑΥΤΟΣ ΠΟΥ ΒΡΑΙΝΕΙΣ ΤΕΛΕΥΤΑΙΑ...

ΝΑΙ;

...ΕΙΝΑΙ ΑΠΟ ΚΑΛΗ ΟΙΚΟΓΕΝΕΙΑ;

ΝΑΙ, ΡΕ ΜΑΝΑ! ΝΑ ΣΚΕΦΤΕΙΣ Ο ΠΑΤΕΡΑΣ ΤΟΥ ΕΙΝΑΙ ΣΤΗ ΛΙΣΤΑ ΛΑΓΚΑΡΝΤ!