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Definition:

positivity of a disease

1. positive predictive value
2. negative predictive value
3. sensitivity
4. specificity

sensitivity

Definition:

positivity of a disease

Definition

negativity in health

1. positive predictive value
2. negative predictive value
3. sensitivity
4. specificity

specificity

who is include a sensitivity test
(TP, FP, FN, TN)

true positives and false negative

what is the formula for sensitivity

$TP / TP + FN$

when should a 100% sensitive test be
used (3)

1. screening for a disease
 2. excludes disease when negative
 3. includes pts when disease is positive
- catch words includes and exclude

what are the interpretation of a test with 100% sensitivity when it returns normal in a pt	<p>1. always has a negative predictive value of 100% bc ($PV- \frac{TN}{TN + FN}$</p> <p>2. it must be a N test result (excludes the disease) since there are not FN: a TN is a TN or normal</p> <p>3. ex serum ANA has 100% sensitivity for SLE: a negative ANA excludes SLE</p>
what are the interpretation of a test with 100% sensitivity when it returns positive in a pt	<p>1. may be TP or FP (FP is a positive test result in a normal person)</p> <p>2. people with the disease are always included</p> <p>3. ex a positive serum ANA includes all people with SLE but does not confirm SLE since other diseases have positive ANA (RA, systemic sclerosis)</p>
what does true negative mean	normal test result in a person without the disease
what does false positive mean	the test is false bc said pt positively has the disease
what is the formula for specificity	$\frac{TN}{TN + FP}$
when do we use a 100% specific test	to confirm a disease bc there are no FP test results so a positive must be a TP

what are the interpretation of a test with 100% specificity when it returns positive in a pt	<p>1. confirms the disease in the pt</p> <p>2. PPV is always 100% ($PPV = \frac{TP}{TP + FP}$)</p> <p>3. must be a TP since there are no FP</p> <p>4. ex anti-SM for SLE is 100% specific so all pt with positive anti-Sm have SLE</p>
what are the interpretation of a test with 100% specificity when it returns negative in a pt	<p>1. may be TN or FN bc FN are not in the formula for specificity</p> <p>2. it does not exclude the disease</p> <p>3. ex if anti-Sm is neg in pt it does not mean that pt doesn't have SLE could have variant</p>
2 standard deviations covers how many of the population	95%
how do you calculate the reference interval of a test when given the mean of the test and 1 SD	<p>1. double the SD to include 95% of the population (if the mean of the test is 100 and the SD is 5 then 2SDs is 10)</p> <p>2. the reference interval is between 90 to 110 ($100 - 10$ is 90 and $100 + 10$ is 110)</p> <p>3 so for each test 5% of the pop will have test results outside of this reference interval</p>
SD is a marker of precision OR accuracy	precision- reproducibility of the test, it is NOT a marker of accuracy

T/F a test with the highest sensitivity increases the prevalence of the disease	true- it picks up more people with the disease since it is a good screening test
T/F a test with high specificity are good screening test bc they confirm the disease and help differential between TP and FP	False- a test with high specificity are poor screening test bc they ONLY CONFIRM the disease and help differential between TP and FP
what are the effects of increasing the upper limits of normal of a test reference interval on: sensitivity, specificity, PPV, NPV	<ol style="list-style-type: none"> 1. increases specificity and PPV 2. decreases sensitivity and NPV
what are the effects of decreasing the upper limits of normal of a test reference interval on: sensitivity, specificity, PPV, NPV	<ol style="list-style-type: none"> 1. increases sensitivity and NPV 2. decreases specificity and PPV
what is the formula for prevalence	$P = I \times D$ <p>Incidence (new cases over a period of time)</p> <p>Duration of disease</p> <p>or $TP + FN / \text{everything (TP, FN, FP, TN)}$</p>
as duration decreases what happens to prevalence	<p>decreases and vice versa, as duration increases prevalence increases</p> <p>incidence is constant</p>

list 4 normal changes in pregnancy seen in lab values	<ol style="list-style-type: none"> 1. increase in plasma volume than RBC mass (decrease in Hb and Hct bc diluted) also GFR and creatinine increased since more plasma and decreased serum BUN again bc more plasma diluted 2. increase alkaline phosphatase (from placenta) 3. respiratory alkalosis- estrogen/progesterone effects on CNS center 4 increase T4 and cortisol
what are the normal 2 main lab difference between men and women	<ol style="list-style-type: none"> 1. Fe studies are lower in women, serum Fe and ferritin 2. lower Hb in women
list 3 normal difference in lab values of children vs adults	<ol style="list-style-type: none"> 1. increase serum alkaline phosphatase (osteoblast release enzyme when stimulated bc vit d to increase bone mineralization) 2. increase serum phosphate (to get Ca⁺ into bone) 3 decrease in Hb
what are 3 effects of high HbF in newborns in lab values	<ol style="list-style-type: none"> 1. left shift of oxygen dissociation curve- causes tissue hypoxia 2. stimulates EPO 3. increase RBC production so will increase Hb

list 4 protective features of HbF in newborn

1. left shift of oxygen dissociation curve
2. protect newborn from sickle cell
3. protects from Beta-thalass
4. HbF synthesis is increases with hydroxyurea
5. HbF resistant to alkali/acid denaturation

which lipid component is most affected by fasting

triglycerides- bc come from chylomicrons which are obtained from diet

which 2 lipid components are not affected by fasting

1. cholesterol CH
2. HDLs

T/F fasting is necessary for an accurate LDL level

true- $LDL = CH - HDL - TG/5$ so if TG are falsely increased by chylomicrons from the diet it will falsely lower the calculated LDL

how does alcohol and barbiturate enhance the cytochrome system in the liver SER

1. induces SER hyperplasia
2. increase synthesis of gamma-glutamyltransferase (GGT)
3. decrease of drug levels owing to increase metabolism of drug

T/F H2 blockers and proton pump blockers inhibit the cytochrome system in the liver SER

true- H2 blocker- cimetidine
omeprazole

list 6 abnormal lab findings in alcholics	<ol style="list-style-type: none">1. inceased cytochrome p-450 (increase GGT so good marker for alcholics)2. increase NADH and its breakdown products (lactate, hypertriglyceridema bc increase G3P which yeild TG)3. increase ketoacids syntheiss4. increase fatty acid synthesis5. hyperuricemia6. increase anion gap bc of lactate and beta-OHB
what 5 abnormal lab test are found in smokers	<ol style="list-style-type: none">1. respiratory acidosis- air gets in but can't get out so CO2 stays in2. hypoxemia- low PaO23. increase CO levels- CO from cigarettes4. secondayr polycythemia- low PaO2 stimulate EPO5. absolute neutrophilic leukocytosis- decreases leukocyte adhesion to endothelial
which 2 lipoproteins carrry TGs	chylomicrons- 85% and VLDL-55%
how is Ca+2 transported in blood	<p>albumin-40%</p> <p>47% free bc metabolically active</p> <p>13% bound to other substances</p>

what is the effect of low albumin on calcium

low serum albumin=low calcium bound of albumin so hypocalcemia but no tetany present since ionized levels are normal

if 2 test are ordered on a pt, what are the chances of a FP result

about 10%

what is the effect of pregnancy on serum cortisol

serum cortisol is increased due to increases in the binding protein and not the free hormone level