

Should I ask for this test? The implications of pre-test probability in requesting a diagnostic test.

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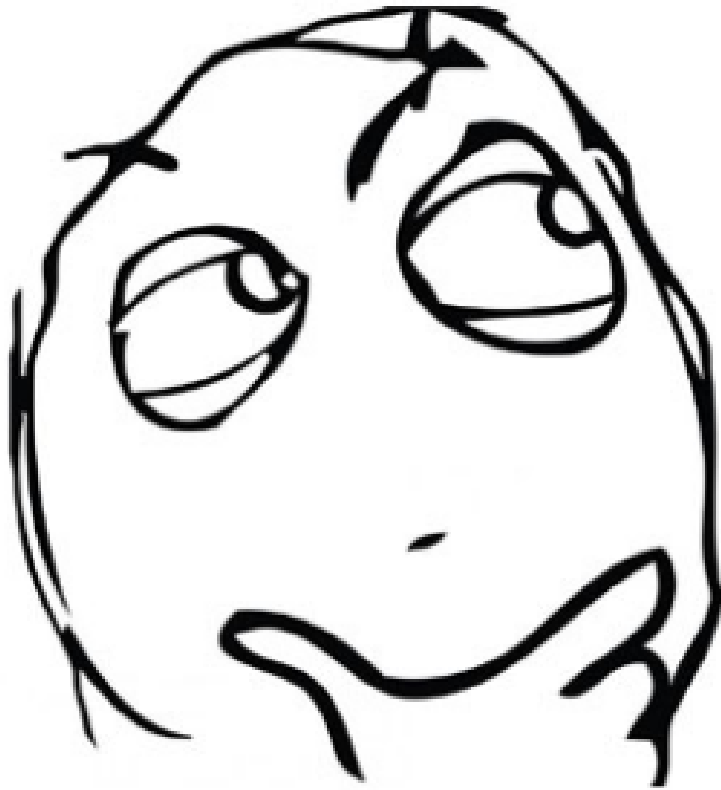
$$\sqrt{\sum |x - \bar{x}|^2}$$

SD =

Outcome
Yes No

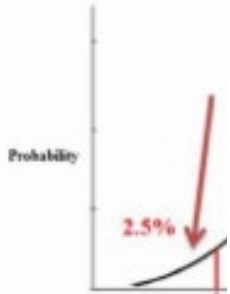
$$SE = \frac{\sigma}{\sqrt{n}}$$

c)



HMM...

$$\frac{)^2 + (5-3)^2}{}$$



$\alpha = 0.05$

	0.975	0.990
	$\chi^2_{0.025}(r)$	$\chi^2_{0.01}(r)$
6	0.872	1.237
7	1.239	1.690
8	1.646	2.180
9	2.088	2.700
10	2.558	3.247
	3.940	4.865
	5.024	6.635
	7.378	9.210
	9.348	11.34
	11.14	13.28
	12.83	15.09
	14.45	16.81
	16.01	18.48
	17.54	20.09
	19.02	21.67
	20.48	23.21



JAMAevidence

THE RATIONAL CLINICAL EXAMINATION

EVIDENCE-BASED CLINICAL DIAGNOSIS

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Diagnostic Microbiology Development Program



What ARE the key messages, from evidence-based literature?

- Tests should complement history/physical examination.
- Clinical information and paraclinical test's combined probabilities can add to diagnostic accuracy (1).
- Doing a test that does not help in the diagnostic process increases patient risk and expenses.
- The pre-analytical and post-analytical phases have significant impact on result quality.
- A good quality result that is interpreted correctly will lead to best patient outcome.

1): Halkin, Reichman, Schwaber, Paltiel, Brezis, & Halkin, A. (1998). Likelihood ratios: Getting diagnostic testing into perspective. *QJM : Monthly Journal of the Association of Physicians*, 91(4), 247-258.

Clinical diagnosis: history (including risk factors and exposures)/examination.



Select tests to either rule in or rule out diagnoses.



Interpretation of results, in relation to our diagnosis!

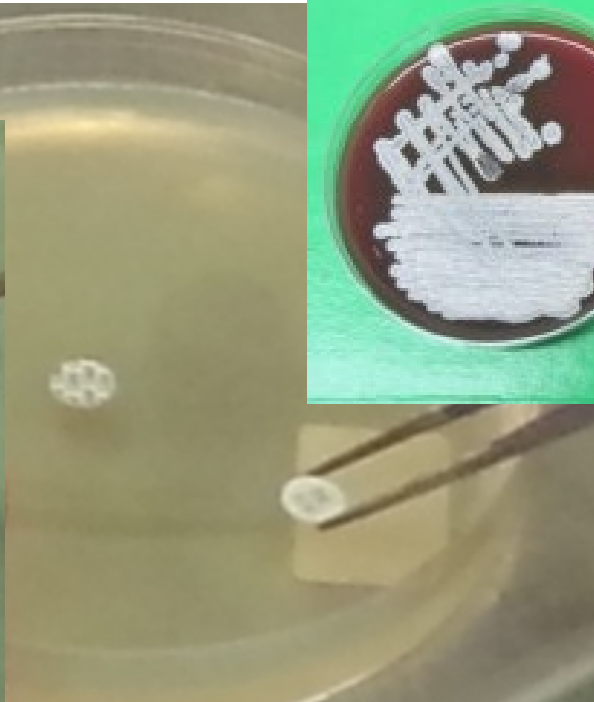
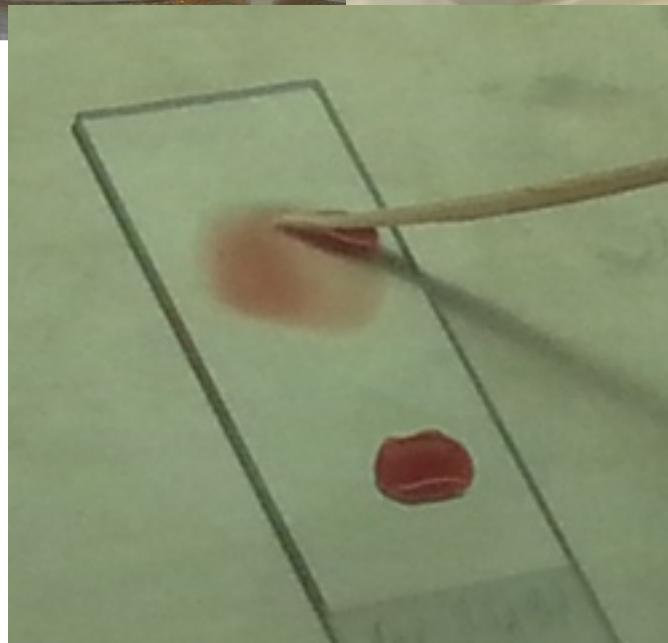


What defines a pre-test probability and how does it influence diagnostic testing?

- Epidemiological data
 - Is this disease prevalent in my setting? If so, how common?
- Clinical impression through history, which includes risk factors and examination.
 - A differential diagnosis is usually formed at that stage with most likely to least likely diagnosis
- Selecting appropriate tests:
 - Are relevant quality tests available in my setting?
 - Will this test have additional value to the clinical diagnosis?
 - Why am I doing this particular test?
 - Am I trying to confirm a diagnosis?
 - Am I trying to disprove a diagnosis which I think is unlikely?

Examples

- 22 years old female patient with 8 weeks pregnancy comes because of sore throat and runny nose and sneezing, patient is afebrile. Doctor requests a CBC and finds the WCC is 11 000/mm³ and predominantly neutrophils. Should he give antibiotics?
- 16 years old male patient with nephrotic syndrome, comes for follow up, doctor finds 1+ leucocytes in a urine dipstick, which he ordered to check for proteinuria. What should the doctor do now?



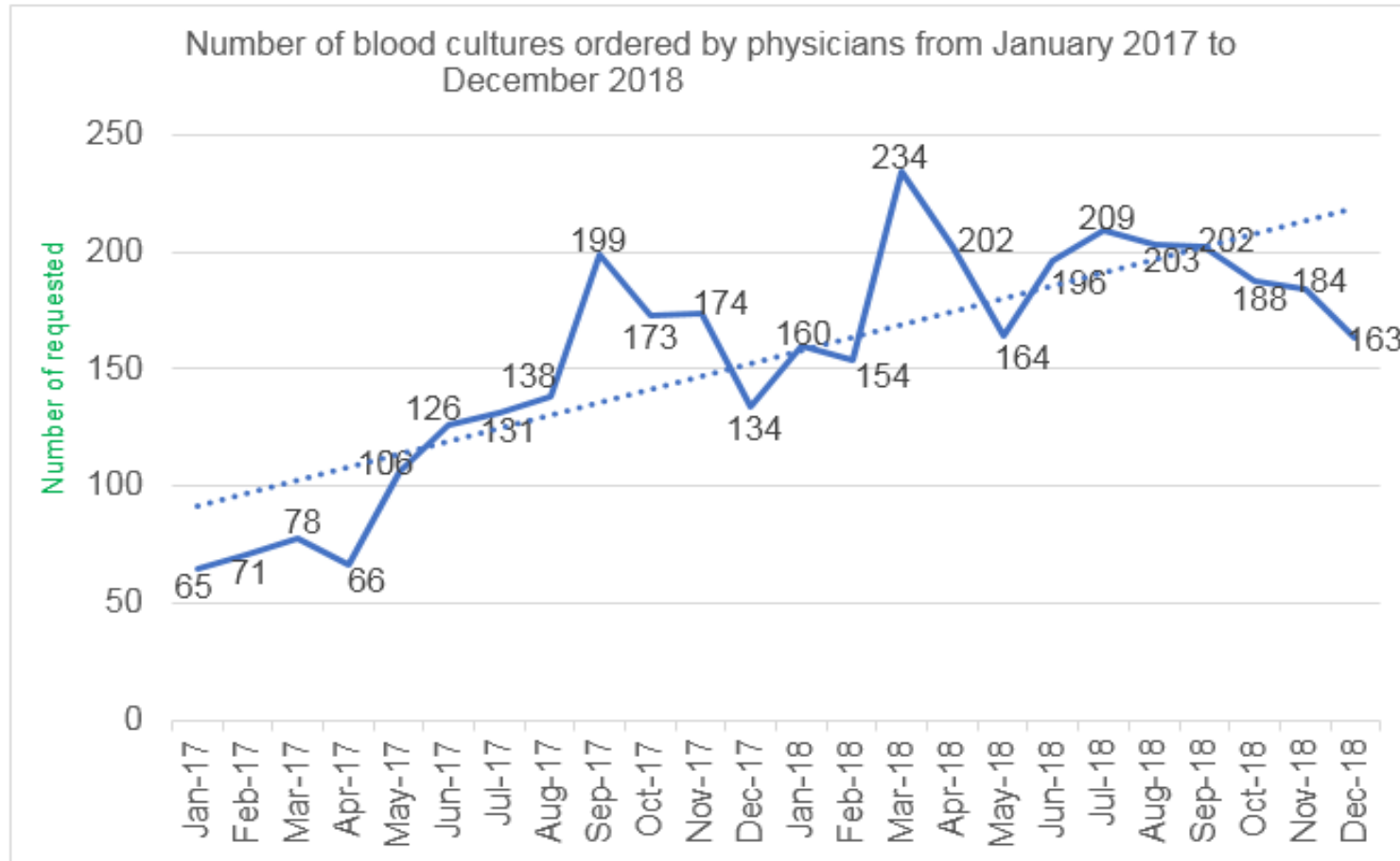
The physician and microbiology testing

- A pre-requisite to correct ordering and interpretation of microbiology results is for physicians to have a general understanding of microbiology principles and laboratory processes.
- This ensures:
 - Appropriate testing is performed
 - Appropriate interpretation of test result
 - Assists doctors in selecting the correct treatment for patients

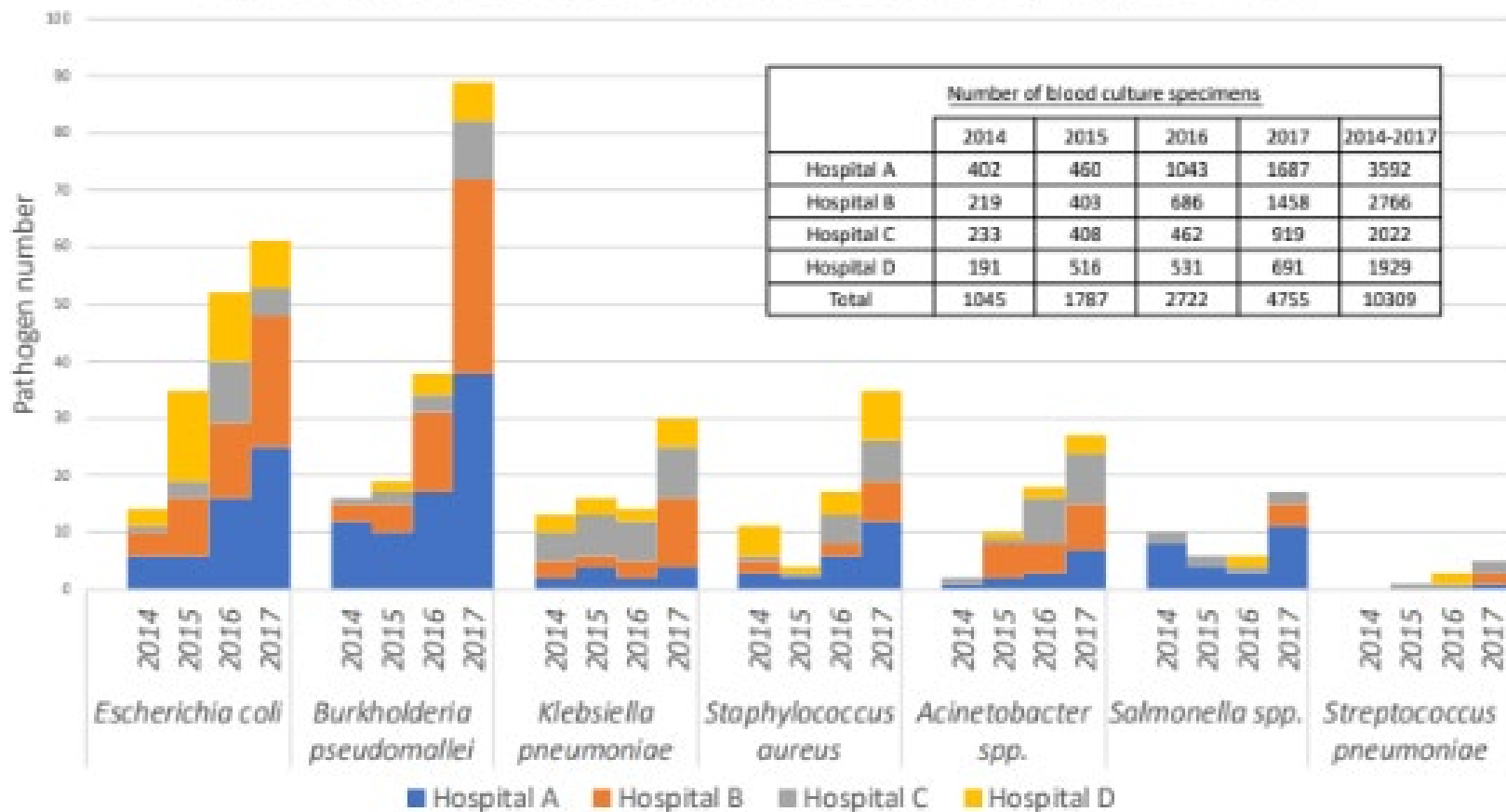
DMDP's role in bridging the gap.



How does targeted training impact practices?



Number and distribution of target blood pathogens, 2014-2017



Successes and Challenges of Cumulative Antibibiogram Development in Cambodian Provincial Hospitals

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What are our end-points of testing?

- To make diagnosis, select appropriate treatment and improve patient outcomes.
- Avoid unnecessary testing. Avoid unnecessary treatment. Avoid patient harm.
- To provide local data support to guideline development. This can only be achieved if microbiology specimens are collected in a systematic manner for the right indications.
- To provide quality epidemiological data which can be used to guide local/national healthcare policy.

Conclusion

- **Clinical judgement**, which is formed through history and examination and consideration of local epidemiology is essential = **pretest probability**
- Testing should be **carefully selected** by doctors.
- Doctors should **understand the limitations** of testing.
- **Proper collection techniques** should be adhered to.
- Doctors need to **carefully interpret results**.
 - Testing should not be used as a standalone tool to confirm or rule out a diagnosis.
- **Communication** between the laboratory and the hospital (doctors/nurses/management) is key
- **Quality results = pre-analytical + analytical + post analytical phases**