PZ14 Revision for the practical examination

This practical session is not compulsory but students are highly recommended to attend (even another than their own group session, though should a problem with the hall capacity occur, "native" students will receive precedence).

This protocol is for your use only, it is not necessary to get it signed

Task: Orientation at survey of knowledge for the practical examination

Follow the presented survey and add your own notes according to the teacher's explanation and practical demonstration.

Attention! It is only an orientation at survey; at the practical examination you cannot raise objections that something "was not in the survey". The practical examination assesses the knowledge obtained during two terms of education, **not** the knowledge of a survey.

The ba	asic requirements for each topic	Student's notes
Micro	scopy	
Gram st	aining:	
*	be able to perform it	
*	be able to observe a preparation and to	
	identify G+/G- cocci/bacilli (+arrangement),	
	yeasts, epithelial cells, WBCs	
*	know the principle	
Wet mo	unt, other staining methods perfomed in	
practica	ls (survey)	
(Ziehl-N	Neelsen staining, see Acid fast bacteria)	
Interpre	tation of microscopic findings (importance of	
epithelia	al cells, leucocytes)	
Cultu	re	
Most in	nportant culture media	
*	be able to recognize blood agar, Endo agar	
	and Mueller Hinton agar	
*	be able to describe the function of all the	
	fourteen media from J02	
Inoculat	tion (be able to inoculate a strain/a swab)	
Descrip	tion of colonies (practically)	
Bioch	emical identification	
Catalase	e test	
*	be able to perform it	
*	understand its principle	
*	be able to give an example of its use in	
	diagnostics	
Strip tes		
*	know the most important ones (oxidase,	
	PYR, INAC) and to give examples of their	
	use	
*	be able to use them practically (incl. reading	
	the results)	
	MIU and other similar tests	
*	know their practical use and what they detect	
Entoret	est-like tests	
	be able to read an Entero- or Staphy-test and	
	o describe its principle	
Further		
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Outer influences disinfection and starilisation	n
Outer influences, disinfection and sterilisation	
The safety rules in the laboratory	
The most common disinfectants and sterilization	
methods and the way they are used (chloramin,	
NaOCl, Ca(OCl) ₂ , iodine-povidone, hydrogen	
peroxide, peracetic acid, ajatin, UV-rays disinfection,	
hot air and steam sterilization, radiation sterilization)	
To understand the methodological difference between	
testing the growth limit and the survival limit	
To be able to read corresponding tests (Task 1, P06)	
To know how effect of disinfection and sterilization	
can be tested	
Antimicrobial drugs	
To know principles of microdilution test, diffusion	
disk test and E-test, to be able to read the results of all	
of them and to interpret them	
To understant the importance of MIC and its	
comparison with breakpoint level	
To know basic methods of testing the factors of	
resistance (beta-lactamases)	
Serological tests (J06 to J08)	
To be able to read the results any of these tests;	
students will get the necessary information (dilution in	
the first well, c. o. counting in ELISA etc.)	
To be able to describe the basic indication for the test	
and to interpret these results in combination with other	
parameters; including ASO!	
The principle of antigen/analysis reactions and its use	
for antigen detection in a specimen/antigen analysis of	
a strain/antibody detection	
To understand the major interpretation difference	
between direct and indirect diagnostic methods	
To know the principles of agglutination, precipitation,	
agglutination on carriers, CFT, neutralisation (ASO,	
HIT, VNT), reactions with labelled components,	
western blotting, incl. differences between them	
To understand titers, titer dynamics, seroconversion,	
importance of IgM/IgG (and knowing what reactions	
enable their detection – importance of conjugate),	
avidity (A-aspiring students) To be able to construct the scheme of HBsAg and anti-	
HBs testing	
To understand the terms "heterophilic antibodies" and	
"anticomplementarity test"	
Detection of nucleic acid	
To know the basic indication for these methods in microbiology	
microbiology To understand the difference between methods	
To understand the difference between methods	
with/without amplification	
To know the basic principle of the reaction, including	
two major ways of product detection	
To understand the importance of internal control	
To be able to read practically a PCR result (in a	
picture), including IC result interpretation	
Further notes:	
r artifer notes.	

Virology	
To know the ways of isolating a virus (including	
individual structures of a fertilized egg)	
To be able to differentiate a cell culture with/without	
CPE (in simplex cases only) and to understand, what a	
CPE is	
(plus serology: HIT, VNT, see serology)	
To be able to perform basic interpretation of tests for	
hepatitis A, B and C together	
Parasites	
To know basic methods for parasites (Faust, Kato,	
Graham; thick and thin smear; C. A. T. swab and	
Giemsa stained smear for trichomonads; indirect	
diagnostics of tissue parasites)	
To be able to distinguish the most common helmint	
eggs (tapeworm, pinworm, common roundworm,	
whipworm) and tapeworm proglottid	
To know the basic principles of sampling for	
parasitology	0(. 112)
Easily culturable bacteria and yeasts (P01–I	'U0; J13)
To be able to find out (and utilize practically) a	
diagnostic algorithm to identify common bacteria	
except G+ rods (<i>Staphylococcus aureus</i> , coagulase- negative staphylococci, <i>Streptococcus pyogenes</i> , <i>S</i> .	
agalactiae, S. non-A-non-B, S. pneumoniae, oral	
streptococci, Enterococcus faecalis, E. faecium,	
Escherichia coli, Klebsiella pneumoniae, Salmonella	
enterica, Proteus sp., Pseudomonas aeruginosa, other	
G– non-fermenters, <i>Haemophilus influenzae</i> , <i>H</i> .	
parainfluenzae, Pasteurella multocida, Neisseria	
gonorrhoeae, Neisseria meningitidis, oral neisseriae,	
Moraxella catarrhalis, Candida albicans, Candida	
sp.)	
For G+ rods: to know their main characteristics; to be	
able to identify practically coryneform rods according	
to their palisade arrangement	
Anaerobic bacteria	
To be able to describe an anaerobic jar and an	
anaerobic box, their parts and their function	
For clostridia: to know their main characteristics; to be	
able to identify C. tetani according to its sphaerical	
terminal endospore	
Acid-fast rods	
To know the principle of Ziehl-Neelsen staining, to be	
able to distinguish between the pictures of positive and	
negative findings and pictures stained using other	
staining methods	
To know the principles of acid-fast rod culture, to	
know basic media, to be able to distinguish pictures of	
positive findings/negative findings/pictures describing	
something else	
To interpret results of an indirect test for TB	
(examination of cell mediated immunity) Further notes:	

Spiral bacteria To explain the use (and complications in use) of direct methods in spirochete diagnostics To understand screening/confirmatory reactions for Borrelia and Treponema To be able to read and interpret the tests (see also Serology) Fungi To know basic diagnostic methods used in mycology To be able to read a microscopy preparation made of filamentous fungi To know the basic principles of sampling for mycology See also "Easily culturable bacteria and yeasts (P01–P06; J13)" Biofilm To know the diagnostic methods of biofilm detection To know the difference between three most typical methods of venous catheter microbiologic diagnostic To be able to read the results of the biofilm growth: glucose/time experiment (see J14 Task 4) To be able to read MBEC values and to interpret the method interpret the method interpret with (see MBEC values and to interpret the method interpret with (see MBEC values and to interpret the method interpret the method interpret with (see MBEC values and to interpret the method interpret with (see MBEC values
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To be able to read MBEC values and to interpret the
result (in comparison with MIC)
Clinical microbiology
To be able to read a result of pharyngeal swab culture
To be able to read a result of sputum culture
To be able to read a result of anal swab culture
To be able to read a result of urine culture
semiquantitatively and qualitatively
To be able to read a result of wound swab culture
To be able to read a result of wound indirect imprint
culture
To be able to read a result of blood culture
(both microscopy and culture), including
understanding of automated culture and its principles
To be able to read a result of vaginal smear (including
counting the Nugent score)
Explain the function and importance of Dentocult
SM
For a simple mini-casuistry, be able to find out the
best sampling method, including finding the best swab
or container (practically)
To understand basic principles of sampling under
various circumstances

Further notes: