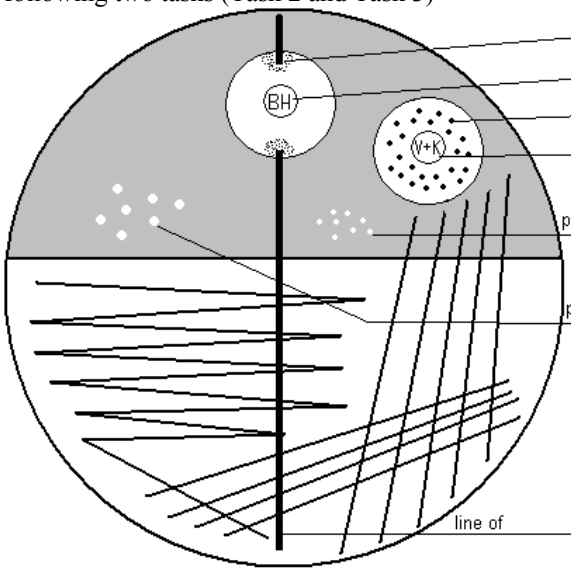
P 14 Clinical microbiology II

To study: Infections of various organs and organ systems (from textbooks, WWW etc.)
From spring term: Microscopy, culture, biochemical identification

Task 1: Search for respiratory pathogens in practical microbiology

With help of your teacher and the slideshow, describe following picture. Use the knowledge from this picture in following two tasks (Task 2 and Task 3)



possible pathogen:

disc containing

possible pathogens:

disc containing and

possible pathogen (tiny, colourless, haemolysis)

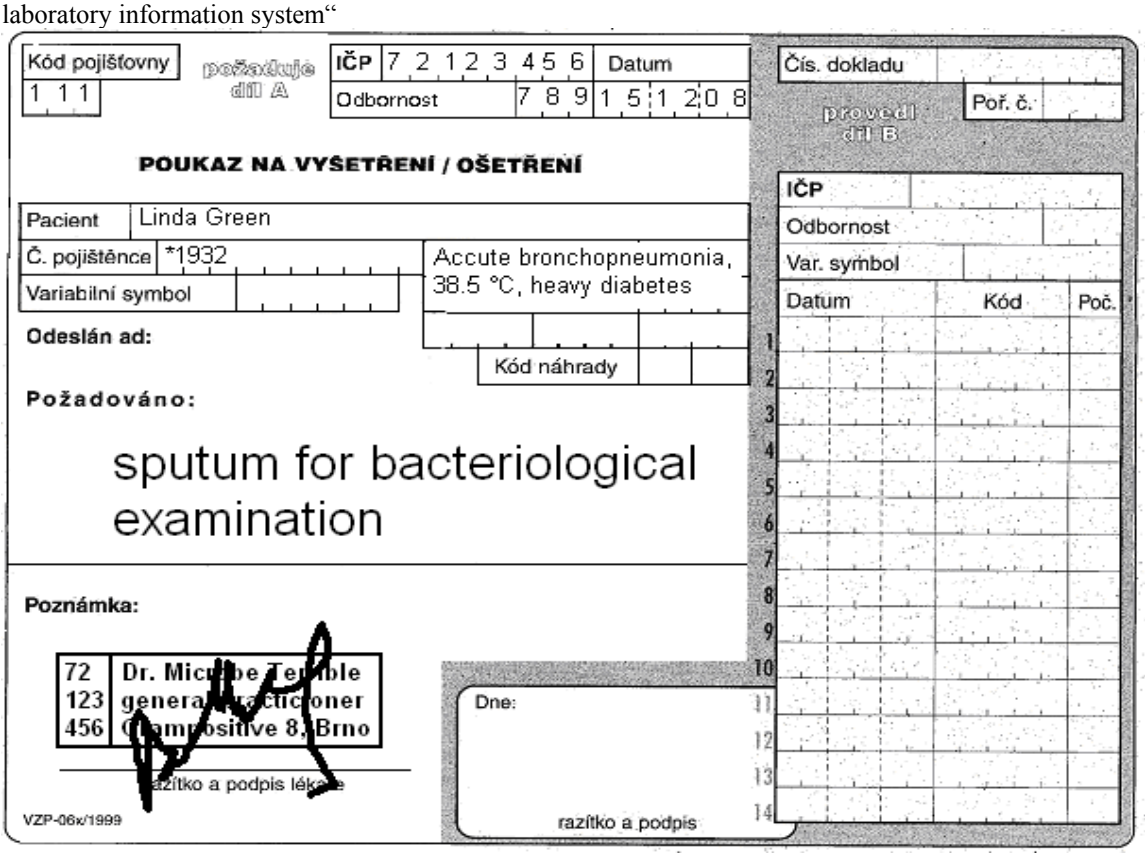
possible pathogen (something larger, white, haemolysis)

Common pharyngeal flora mostly consists of
a) _____ appearance: _____
b) _____ appearance: _____

line of because of

Task 2: Case A

For this casuistic, documented by a the order form, try to examine corresponding sample (sputum), to find a pathogen and to make a conclusion and interpretation. Step by step, fill in the individual fields in the „screen of laboratory information system“



Patient: Linda Green *1932 Dg.: Pneumonia						
Specimen: Sputum	Ordered by: Dr. Microbe Terrible					
Bacterium A: description	Conclusion:		Interpretation			
Bacterium B: description	Conclusion:		Interpretation			
Bacterium C: description	Cata-lase	10 % NaCl	Hyaluronidase	Co[illegible]	[illegible]	
Antibiotic susceptibility test (bacterium C)			Final conclusion and recommendment for treatment:			

Microscopy result:
Epithelial cells:
WBCs:
Bacteria (describe):

a) Microscopy of sputum

Look at the smear prepared of your specimen. Try to find individual objects (bacteria, host cells). Fill in the field „Microscopy“:
+++ = more than 10 in the observation area
++ = less than 10 in the observation area
+ = only rare (one or less per an observation area)
0 = none

b) Description of bacteria

On blood agar, describe size, colour and haemolytical properties of given bacteria. Do not describe other characteristics. Take into account, that there was no growth visible on Endo agar. Bacteria A and B should be bacteria considered to be parts of normal flora. Bacterium C will be a pathogenic bacterium, that will be more tested in parts c) and d)

c) More tests

Fill in the results of catalase test, hyaluronidase test and growth on blood agar with 10 % NaCl for Bacterium C.

d) Antibiotic susceptibility

Fill in the antibiotic susceptibility test for Bacterium C. Write down allways name of antibiotic and „S“ or „R“ (susceptible or resistant). Reference zones are written on your table.

e) Final conclusion

Try to formulate several words for general practicioner. Especially try to find out (with help of your teacher) what antibiotics among susceptible ones would be the best antibiotic of choice.

Task 3: Case B

Also for this casuistic, documented by a the order form, try to examine corresponding sample (throat swab), to find a pathogen and to make a conclusion and interpretation. Step by step, fill in the individual fields in the „screen of laboratory information system“. The way of doing it is like in previous task.

Patient: Martin Blue *1991 Dg.: Accute tonsilitis						
Specimen: Throat swab Ordered by: Dr. Microbe Terrible						
Bacterium A: description	Conclusion:		Interpretation			
Bacterium B: description	Conclusion:		Interpretation			
Bacterium C: description	Cata-lase	Bile--aesc.	PYR	CAMP	Conclusion:	Interpretation
Antibiotic susceptibility test (bacterium C)			Final conclusion and recommendment for treatment:			

Task 5: Case D
In case of cystitis, there is one difference: the urine is examined (semi) quantitatively.
Before solving the problem, try to fill in the following table (for finding of one only species).

Number of colonies on agar	Number of bacteria in one microliter (µl)	Number of bacteria in one mililiter (ml)	Interpretation
<10			
10–100			
>100			

Form for results of Enterotest 16:

ONPG	1H	1G	1F	1E	1D	1C	1B	1A	2H	2G	2F	2E	2D	2C	2B	2A
+	black	blue	red	blue	red	green	black	blue	blue	yellow	yellow	yellow	yellow	yellow	yellow	yellow
–	colourless	green	yellow	green	yellow	yellow	colourless	yellow	yellow	green	green	green	green	green	green	green
?																
1	2	4	1	2	4	1	2	4	1	2	4	1	2	4	1	2
Code:						Identification						% prob.			T index	

Patient: Carolina Red *1952 Dg.: accute cystitis			
Specimen: normal urine Ordered by: Dr. Microbe Terrible			
Growth on Blood agar:	Growth on Endo agar:	Conclusion:	Interpretation
Quantity:	Enterotest 16 result:		
Antibiotic susceptibility test		Final conclusion and recommendment for treatment:	

Check-up questions:

1. Why some samples (like sputum) are microscopied and some are not?

2. Why for each type of specimen another set of media is used?

3. Pathogens are usually susceptible to more than one antibiotic. Try to explain at least some factors for decision, what antibiotic should be used.

4. How would be the semiquantitative examination of urine be biased if the urine would not be properly taken and transported?