

### P 13 Clinical microbiology I

To study: Sampling, material transportation (from textbooks, WWW etc.)  
 From spring term: Microscopy

#### Task 1: Indications of microbiological examination

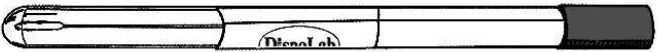
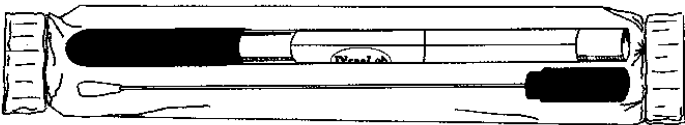
For following casuistics, fill in the table.



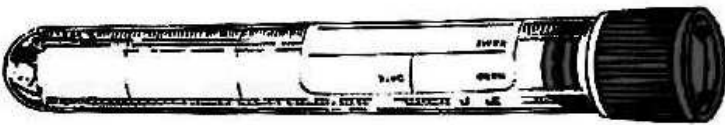
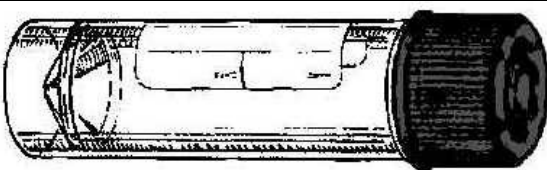
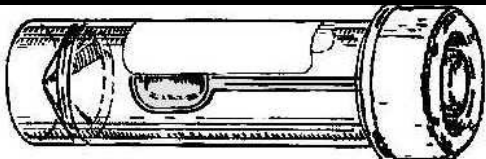


- ❶ Always fill in the case description (left collumn)
- ❷ Then try to find out your solution. Try to structure your answer followingly:  
 Microbiological examination: yes/no
  - ❖ if yes, what type of a specimen(s)
  - ❖ if no, what more steps, e. g. direct treatment – what antibiotic, etc.)
- ❸ After the three minute limit, write down correction made according to teachers explanation.

	Description of a case	Your solution (⌚ 3 minutes)	Correction according to teacher explanation
<b>a</b>			
<b>b</b>			
<b>c</b>			
<b>d</b>			

#### Task 2: Swabs and vessels

Observe the swabs on your table and fill in their „identity cards“.

Name: Plain swab		
	Stick may be made of	plastic, wood or aluminium
	Swab is made of	syntetic cotton
Practical use:		
Name: Amies swab		
	Stick is made of	plastic or aluminium
	Swab is made of	syntetic cotton
	Medium	Amies (Stuart, Cary Blair)
Note: The medium may contain charcoal (then it is black); without charcoal, it would be colourless.		
Practical use:		
variant with aluminium stick is used for		

<b>Name: Fungi-Quick swab</b>		
	Stick is made of	plastic
	Transport medium colour	colourless
Practical use:		
<b>Name: C. A. T. swab</b>		
	Stick is made of	plastic
	Transport medium colour	colourless
Practical use:		
<b>Name: Common test tube</b>		
	Sterile? (yes or no)	
	Description	made of polystyrene, 16 × 100 mm, 10 ml
Practical use:		
<b>Name: Sputum test tube</b>		
	Sterile? (yes or no)	
	Description	made of polystyrene or polypropylene, 26 × 92 mm, 30 ml
Practical use:		
<b>Name: Faeces container</b>		
	Sterile? (yes or no)	
	Description	made of polypropylene, 26 × 82 mm, 30 ml
Practical use:		
<b>Name:</b>		<b>Sampling vessel for urine</b>
	Sterile? (yes or no)	
	Description	made of polypropylene, 45 × 70 mm, 120 ml
Practical use:		

**Task 3: Other sampling methods than swabs and vessels**

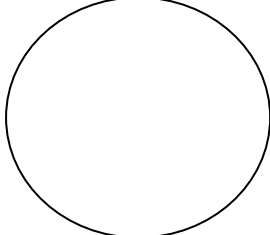
**a) Moulage method**

Perform the moulage method in pairs. Place a sterile filtration paper to your mate's forearm. Using forceps, transport it carefully to a Petri dish with agar. After 10 seconds, remove it and throw it away.

**b) Smears**

In some cases it is recommended to send directly microscopical smear to the laboratory (actinomycosis, gonorrhoea, but also other genital infections). In gynecologic problems, often two specimens of a vaginal smear is sent to the laboratory. After coming to the laboratory, one is stained using Giemsa staining and the other is stained using Gram staining.

Observe a result of a vaginal smear, and draw your result to the laboratory report. Write down, whether your slide was Gram or Giemsa stained.

	Gram-Giemsa stain _____ _____ _____ _____
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**Task 4: Sampling in specific types of samples**

**a) Blood cultures**

Describe use of three types of vessels for blood culture.

blue	
green	
red	

Fill in, what data should not be missing on a order form in case of blood culture sending (only „material type/examination type“ field)

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Explain:

Why absolute sterility is necessary in blood culture samples more than in any other blood specimens (e. g. those sent for biochemical examination)?
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How many blood cultures should be taken and why?

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Fill in the missing fields in description of process of blood culture examination according to videoclip and teacher explanation.

A blood culture vessel comes to the laboratory. Here it is put into a \_\_\_\_\_.

The positivity is demonstrated by \_\_\_\_\_ and \_\_\_\_\_. When the cultivation is positive, a smear is prepared and the sample is \_\_\_\_\_ to blood and Endo agar. Also a preliminary \_\_\_\_\_ test is performed directly from the specimen; as the inoculum is not standardized here, its results are only \_\_\_\_\_.

**b) Urine**

According to teacher explanation, tick, what sentences concerning urine sampling and transportation are true/false.

Urine examination is recommended in non-complicated and necessary in complicated cystitis <input type="checkbox"/> true <input type="checkbox"/> false
Microbiologists recommend use of cathetrized urine as a routine way of sampling urine for bacteriology <input type="checkbox"/> true <input type="checkbox"/> false
It is not important, whether prepucium (in men) or labia minora (in women) is in the way of urine stream when sampling urine for bacteriology <input type="checkbox"/> true <input type="checkbox"/> false
External orifice of urethra should be carefully washed and eventually also disinfected before taking sampling urine for bacteriology <input type="checkbox"/> true <input type="checkbox"/> false
The vessel, that the patient urinates in, should be sterile <input type="checkbox"/> true <input type="checkbox"/> false
The test tube used for urine transporation to the laboratory should have yellow cap <input type="checkbox"/> true <input type="checkbox"/> false
The order form should contain information whether urine is „routinely taken“, cathetrized, punctated, or whether it is a specimen taken from a permanent catheter <input type="checkbox"/> true <input type="checkbox"/> false
Urine from permanent catether has the same value for bacteriological diagnostics as cathetrized urine (just for examination) <input type="checkbox"/> true <input type="checkbox"/> false
Urine specimen should be delivered to the laboratory in 2 hours after sampling, in impossible, it should be kept in refrigerator <input type="checkbox"/> true <input type="checkbox"/> false
Urine sample is better than urethral swab in gonorrhoea diagnostics <input type="checkbox"/> true <input type="checkbox"/> false

**c) Faeces samples for different types of pathogens and toxins**

For some purposes, it is possible to send rectal swabs. For some other purposes, it is necessary to send a specimen of stool. Sometimes also at refrigerator temperature.

Fill in the next table.

Stool sent for	Type of specimen	Stool sent for	Type of specimen
bacteriology		virology – virus isolation	
mycology		parasitology	
virology – antigen detection		detection of toxin of <i>Clostridium difficile</i>	

**Task 5: The order form**

**a) Order form filling in**

Fill in the following order form with a patient name and data and requested examination related with the disease that is written on a card that was given to you by a teacher

Kód pojišťovny	pežaduje díl A	IČP	Datum	Čís. dokladu	Pof. č.
		Odbornost		provedl díl B	
<b>POUKAZ NA VYŠETŘENÍ / OŠETŘENÍ</b>					
Pacient					
Č. pojištěnce	Základní diagnóza				
Variabilní symbol	Ostatní diagnózy				
Odeslán ad:	Kód náhrady				
Požadováno:					
Poznámka:					
	Dne:				
razítko a podpis lékaře	razítko a podpis				
VZP-06x/1999					

**b) Order form common mistakes**

To each of following order form, write down what is wrong. Some mistakes are mistakes of the order form, but you can also remark improperly requested examinations.

The image shows four medical order forms for Albus Dumbledore at St. Mungo's Hospital. Each form contains patient information, a table for ICD codes, and a 'Pozadovano' (Requested) field. The requested examinations are: 1. wound swab, 2. tissue for microbiology, 3. rectal swab for parasitology, and 4. serology of tuberculosis. Each form also includes a 'Poznámka' (Remarks) section with hospital contact information.

**Check-up questions:**

1. What microbiological examination is recommended in a patient with one month duration of dry cough with no findings at physical examination?
2. Try to define the importance of a well-filled in order form
  - a) for legal reasons
  - b) for economical reasons
  - c) for medical reasons
3. Explain the importance of microbiological examination for targeted antibiotic treatment.
4. Name at least two examples where, despite recommendations for targeted treatment, an empiric therapy is improved.