# LABQUALITY

External Quality Assessment Scheme

# Preanalytics, microbiology Round 1, 2023

#### **Specimens**

Specimens are three case reports which are described at the end of this letter. Cases are presented also on the LabScala e-form.

#### Result reporting

Please enter the results via LabScala (www.labscala.com).

There are same questions for each of the three cases. We ask you to identify preanalytical errors and define your possible actions. If you do not find your answer from the drop-down menu, please describe your action and/or the preanalytical error in the free text Comment field (in English). Please choose your profession from drop-down menu. If you reply to this round as a group, then please choose group reply as a profession.

With one order you may return five results per case (5 results x 3 cases). In order to separate multiple results, give a respondent name in the field in question and you will receive a respondent specific result table for each of the results sent. If you want to send more than one result per case, press "Add response +" on the blue column, and new set of questions opens.

#### Pre-analytical questions

#### What would you do in this case?

I would accept the referral/sample/result with a comment that clarifies the consequences of the preanalytical error.

I would accept the referral/sample/result without a comment.

I would reject the sample for testing and ask for another sample.

I would ask for further information from the physician-in-charge/clinical staff before I might accept the referral/sample/result.

OTHER If you cannot find your corrective action from the list, please describe it precisely in the comment field (in English).

#### Which preanalytical errors did you find in this case?

The list of preanalytical errors has been updated to fit all four Labquality's preanalytical schemes. Please select the ones that are relevant to the cases presented here. You can find the options in LabScala drop-down menu by starting to write in the field.

#### Cases

#### Case 1

Patient: A 32-year-old woman who has had C-section a few weeks earlier. The staples of the wound have been removed six days ago, but now the wound is irritated and excretes pus. The doctor asks a nurse to clean the irritated area with NaCl and take a Aerobic bacterial culture from the wound. The doctor prescribes the patient antibiotics and promises to contact the patient once the culture result is confirmed.

The nurse prints the patient's sample labels and puts the labels and the sample into a transparent plastic pouch. Before delivery to the laboratory, samples from another patient are also added to the same pouch. Laboratory staff notices that the sample bag contains two named samples, one anonymous sample and a separate sheet with patient labels. The laboratory calls the unit that treated the patient. The nurse who took the sample assures that the sample belongs to the patient. The patient label is glued to the sample and the sample is cultured normally.

#### 2022-04-18

#### **INSTRUCTIONS**

Product no. 7802 LQ779323011-013/FI

The results should be reported no later than **May 15, 2023**.

#### **Inquiries**

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#### Case 2

Patient: An 86-year-old man with multiple illnesses is being treated in the hospital ward. Patient has severe spasticity in upper limbs. The patient does not communicate.

The patient has a fever of 38.5 degrees and the doctor makes a request for a blood culture. The laboratory does not visit the unit daily, so the samples are taken by a nurse of the treating unit. The nurse delivers the blood cultures to the laboratory and tells that taking the cultures turned out to be a challenge. She says that the samples were generally taken according to the instructions, but due to the spasticity of the limb, the cleaning of antecubital area may not have been done successfully.

#### Case 3

Patient: A 41-year-old healthy woman with severe pain in the pharynx. No visible patches. Strep A antigen test was negative, but a negative rapid test is confirmed by a throat culture. The nurse has previously used a gel transport tube, but now they are not available. The colleague gives the nurse an ESwab tube, which is completely unfamiliar to her.



The sample arrives at the laboratory three days later. The laboratory staff notices that there is a loose sampling stick inside the tube, but the container is missing the ESwab stick and the container's preservative.

#### Pre-analytical errors

No errors

Wrong request
Missing request

Too many requests

The requests have changed

Incorrect emergency requests ordered

Insufficient information about the person requesting

the analysis

Important background information of the patient

missing

Reference serum for the requested analysis missing Incorrect timing for the sample or follow-up sample Insufficient/incorrect guidance to sample collection

procedure

Patient prepared incorrectly No fasting or fasting not confirmed Possible medication not confirmed

Use of stimulants (alcohol, tobacco, drugs)

Physical exercise

Incorrect washing of the genital area
First portion of urine stream not discarded
Insufficient/incorrect patient ID confirmation

Too short bladder incubation time

Bladder incubation time not confirmed/marked

Incorrect/insufficient hand hygiene Phlebotomist had no disposable gloves

Unrefined sampling site Incorrect sampling site

Patient's arm supported poorly Punctured to a bruise/skin damage

Blood drop is dripping Cold puncture site

Inadequate or disordered equipment

Incorrect tourniquet usage

Too tight squeeze Wrong needle

No adapter/holder used Wrong angle of puncture Risk of needlestick injury Unsafe sharps disposal

Patient guided incorrectly after sampling

Wrong sample collection Wrong order of draw/sampling

Wrong timing of the phlebotomy/sampling

Punctured too early

Sample taken from the wrong drop

Unsuccessful puncture Discard tube not taken

Incorrect/insufficient sample marking/labeling Insufficient information about the sampling site

Wrong primary tube/sample container

Tube date expired Incorrect sample volume Low quality sample Haemolysed sample Lipemic sample Icteric sample

Air bubbles in the tube

Wrong temperature of the sample

Blood in the sample Contaminated sample Sample contains tissue fluid Incorrect sample material/type

Insufficient information about the sample composition

Sample should have been put to ice after

phlebotomy/sampling

Sample should not have been put to ice after

phlebotomy/sampling Sample not mixed

Too vigorous mixing of the sample The sample should not have been mixed

Insufficient clotting time

Too long lag time before handling the sample Centrifugated too soon after phlebotomy

Incorrect centrifuge settings Wrong secondary tube Wrong sample storage

Wrong sample handling prior to transport

Wrong transportation temperature Too long transportation time Wrong sample transport container Wrong means of sample transport

The sample transferred/packed to transport container

incorrectly

Faulty/defective transport container

Expired transport container

Insufficient/contradictory information in the request,

sample label or transport container Incorrect storage of test strips

Too old test strips
Cold test cassette
Analysis not repeated
Too old sample

Sample has a strong colour

Destroyed sample

Error when dipping the strip Wrong timing for reading the result

Poor lighting Suspicious result Patient safety risk

Incorrect usage of POC test

Incorrect interpretation/reporting process of

preliminary result

Incorrect preliminary result
Incorrectly functioning POC test
Incorrect result of the POC test

Inadequate instructions/quality guidance of the POC

test

Insufficient/incorrect interpretation of the result/POC

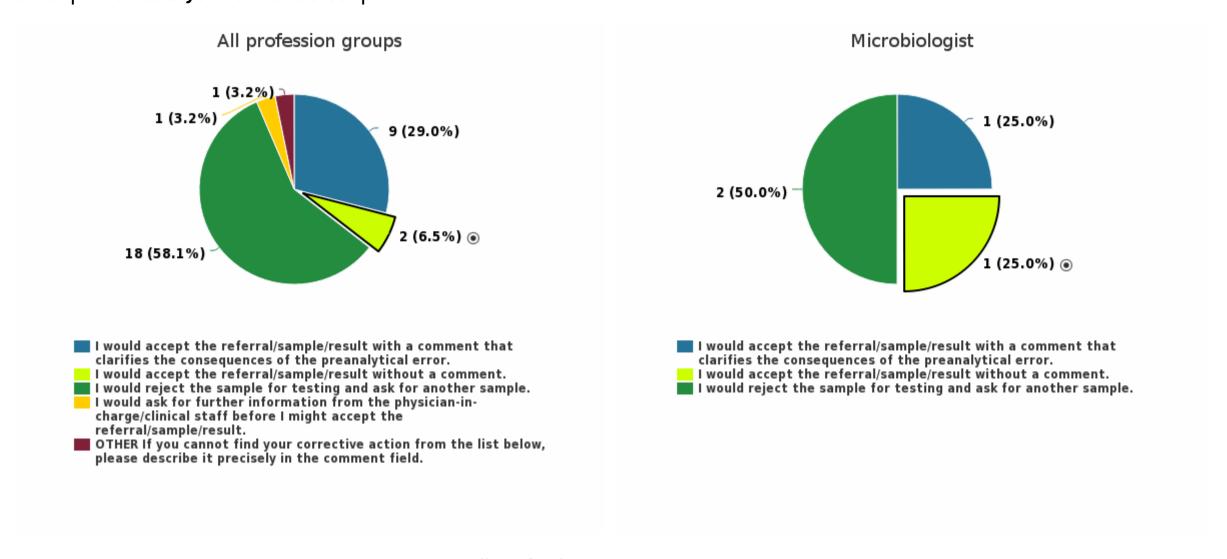
test

Insufficient/incorrect reporting of the result

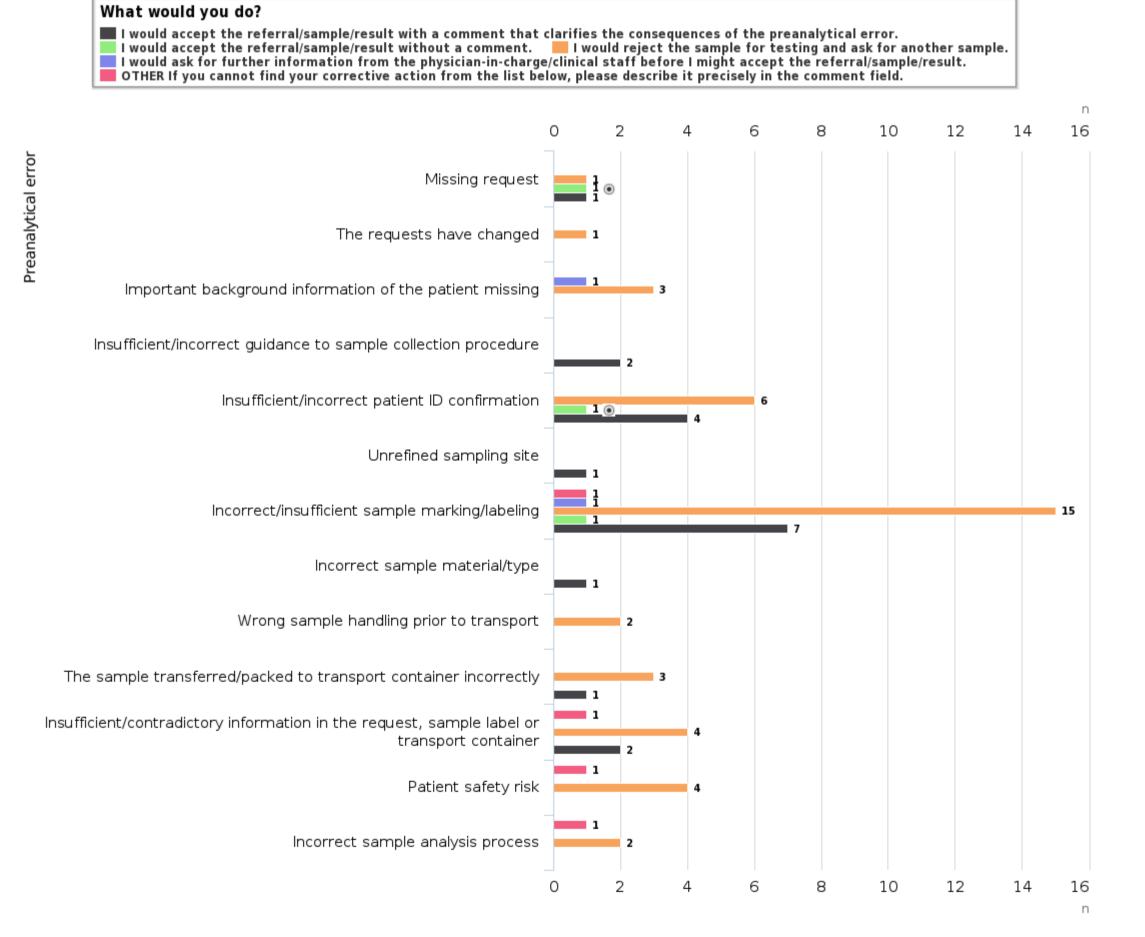
Incorrect sample analysis process



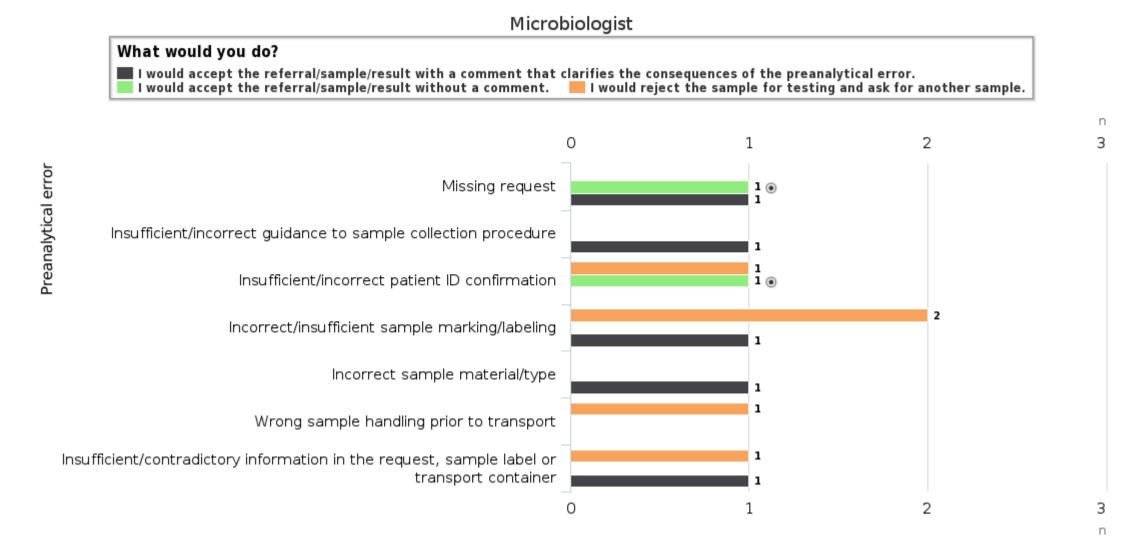
### Case 1|What would you do in this case? | AML





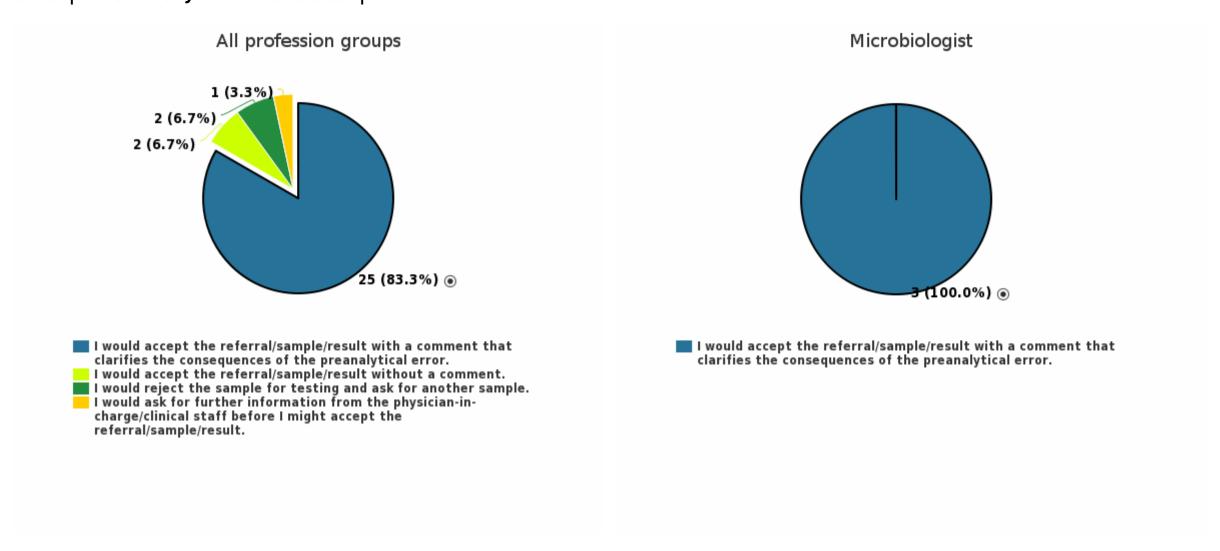


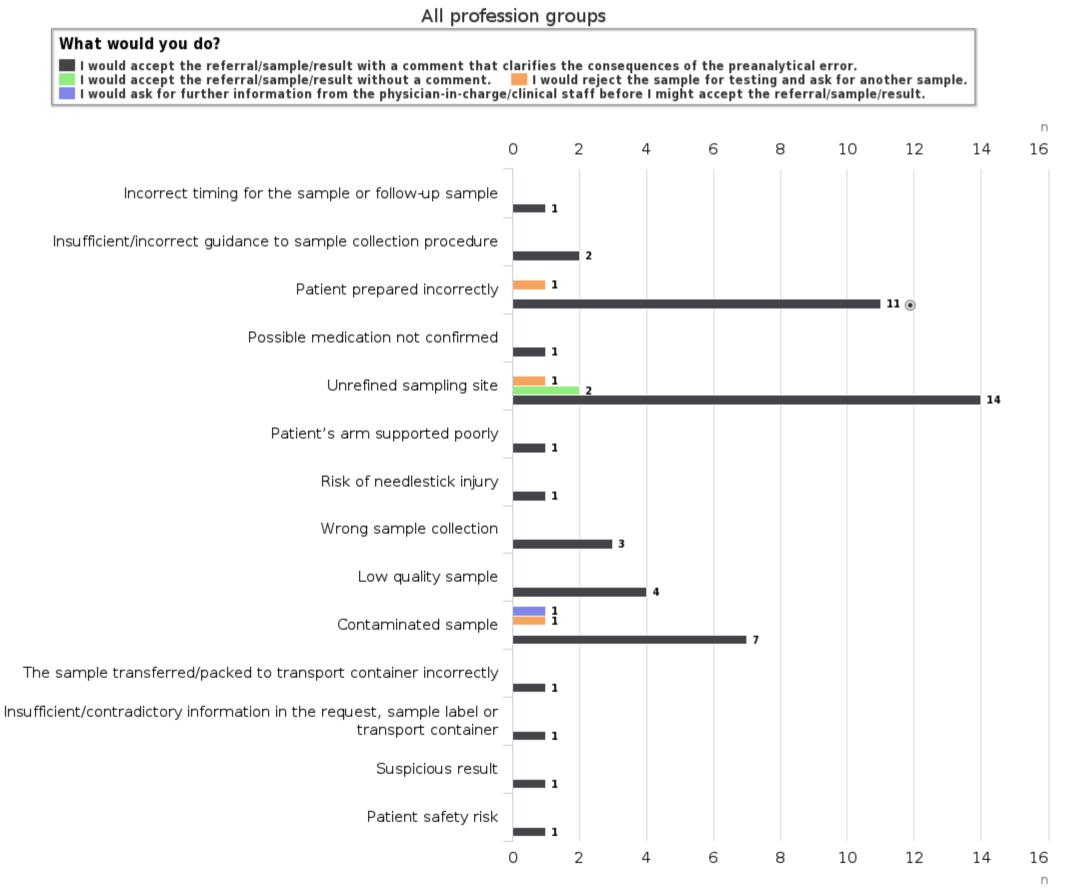




# LABQUALITY

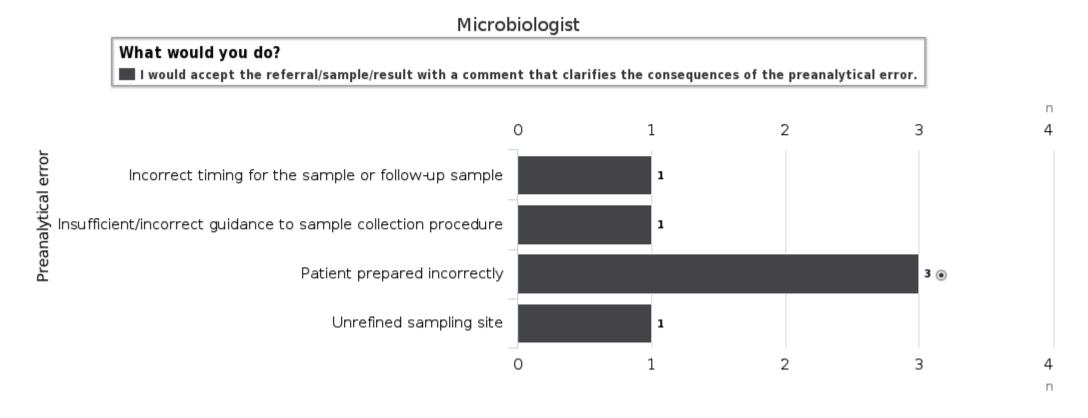
### Case 2|What would you do in this case? | AML





Preanalytical error



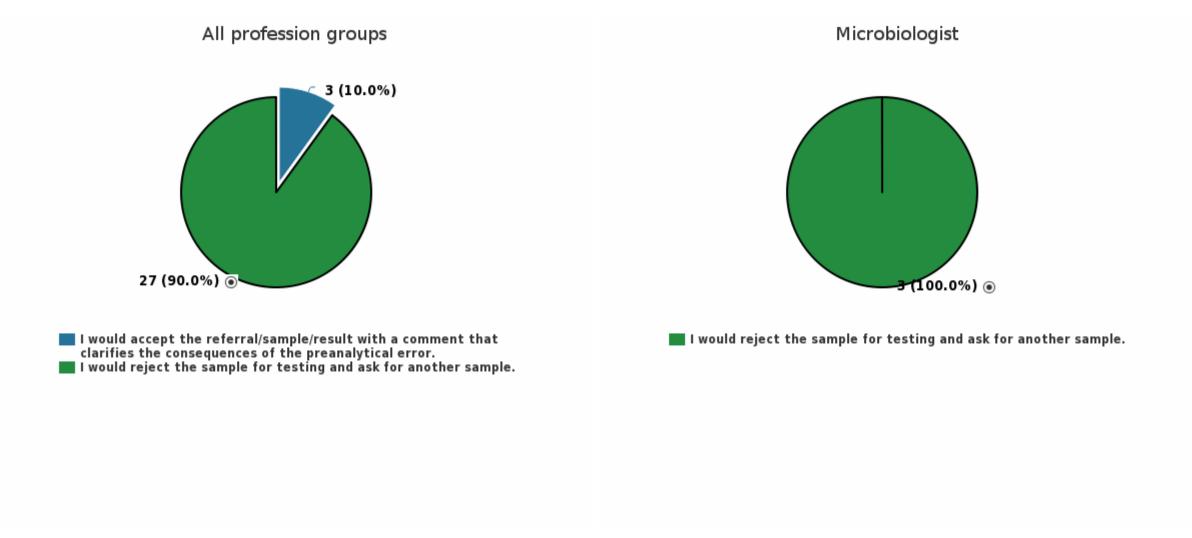


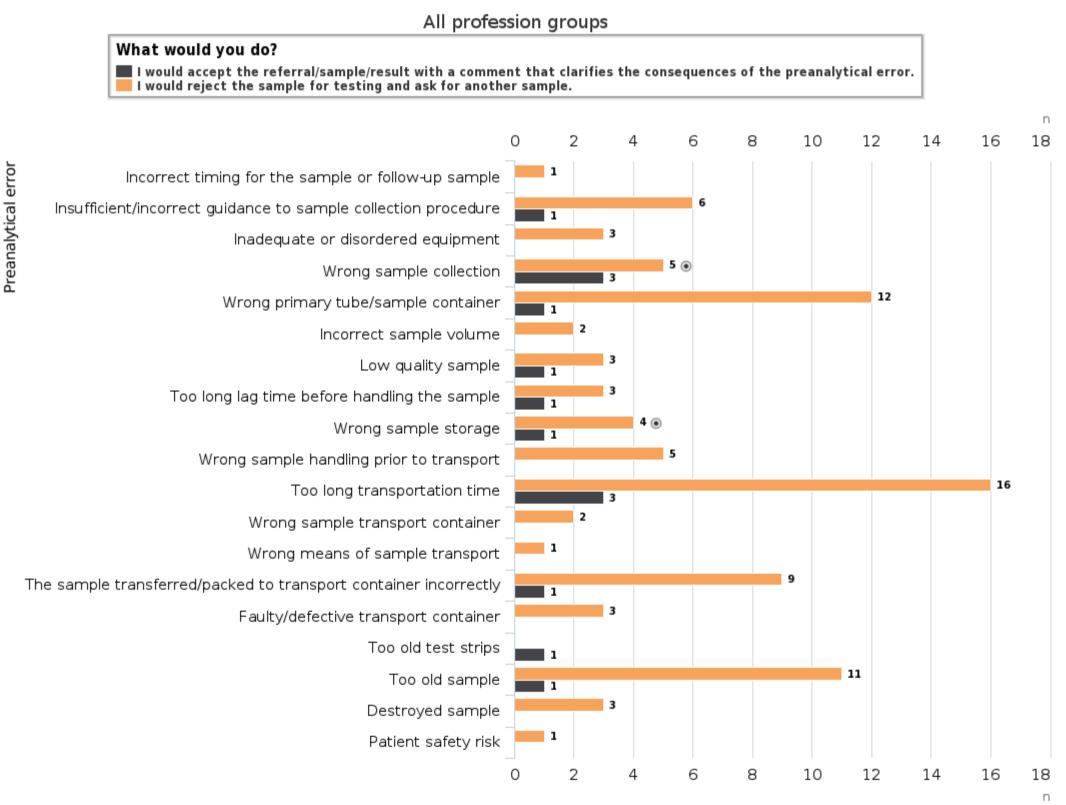
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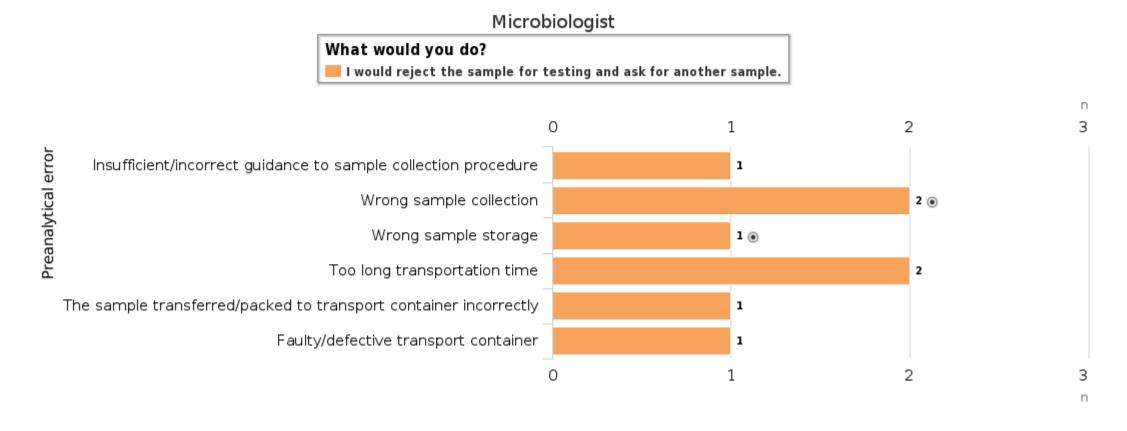


#### Case 3|What would you do in this case? | AML









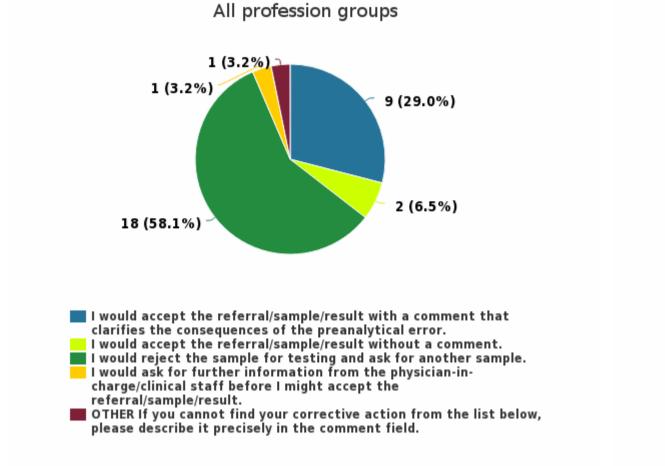


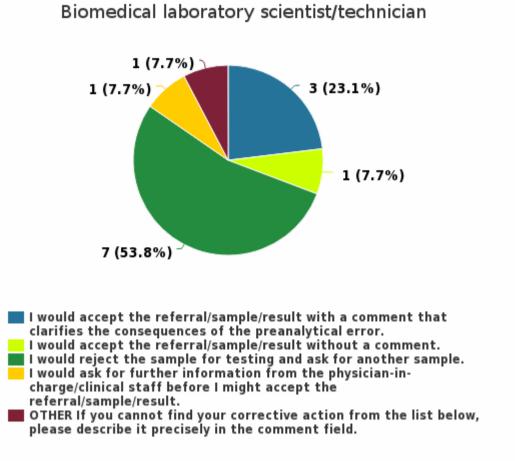


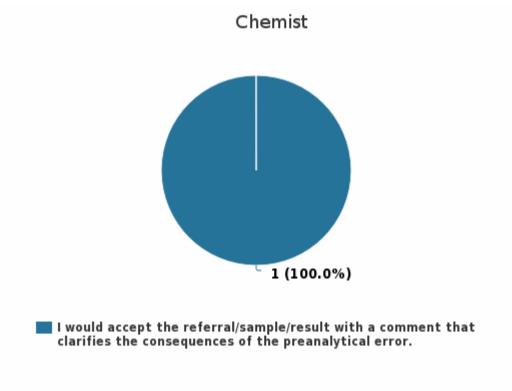


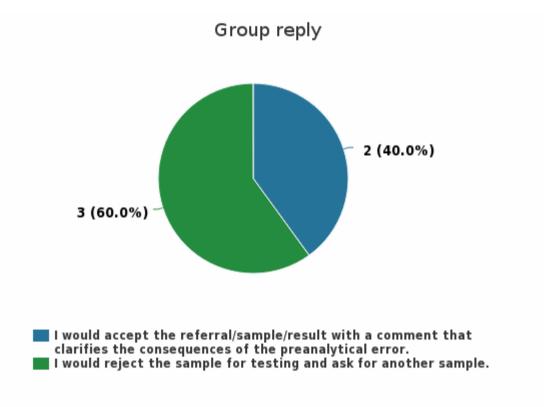


### Case 1|What would you do in this case?

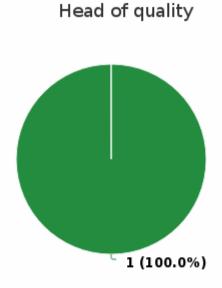






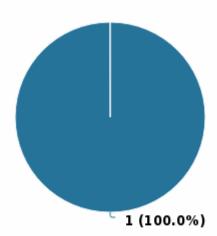


# Preanalytics, microbiology, April, 1-2023



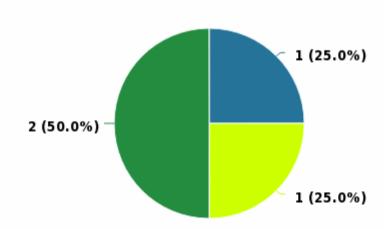
I would reject the sample for testing and ask for another sample.





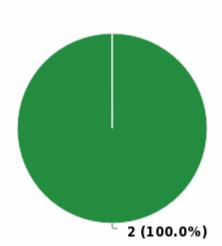
I would accept the referral/sample/result with a comment that clarifies the consequences of the preanalytical error.





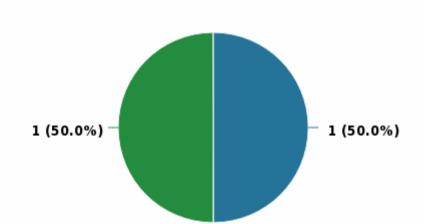
I would accept the referral/sample/result with a comment that clarifies the consequences of the preanalytical error.
 I would accept the referral/sample/result without a comment.
 I would reject the sample for testing and ask for another sample.

### Nurse



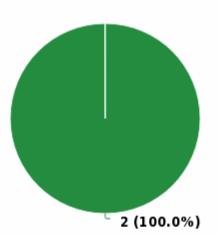
I would reject the sample for testing and ask for another sample.

### Other, what?



I would accept the referral/sample/result with a comment that clarifies the consequences of the preanalytical error.
 I would reject the sample for testing and ask for another sample.

### Student



I would reject the sample for testing and ask for another sample.

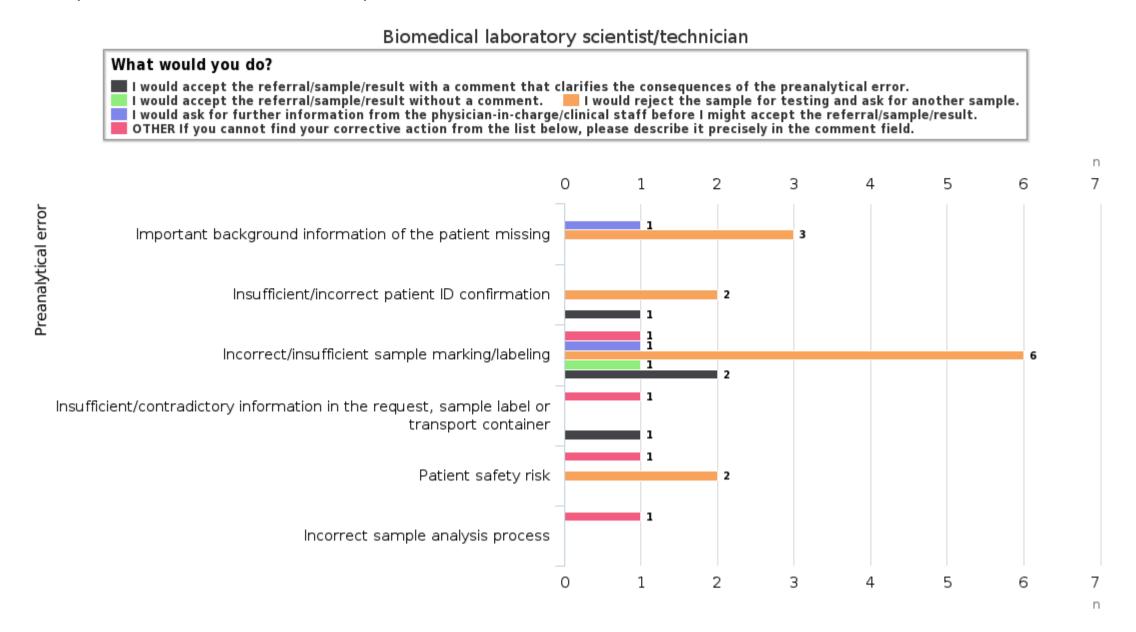
Preanalytical error

### Case 1|What would you do in this case?|All profession groups

# All profession groups What would you do? I would accept the referral/sample/result with a comment that clarifies the consequences of the preanalytical error. I would accept the referral/sample/result without a comment. I would reject the sample for testing and ask for another sample. I would ask for further information from the physician-in-charge/clinical staff before I might accept the referral/sample/result. OTHER If you cannot find your corrective action from the list below, please describe it precisely in the comment field. n 16 0 10 12 14 Missing request The requests have changed Important background information of the patient missing Insufficient/incorrect guidance to sample collection procedure Insufficient/incorrect patient ID confirmation Unrefined sampling site Incorrect/insufficient sample marking/labeling 15 Incorrect sample material/type Wrong sample handling prior to transport The sample transferred/packed to transport container incorrectly Insufficient/contradictory information in the request, sample label or transport container 1 Patient safety risk Incorrect sample analysis process 0 6 10 12 14 16

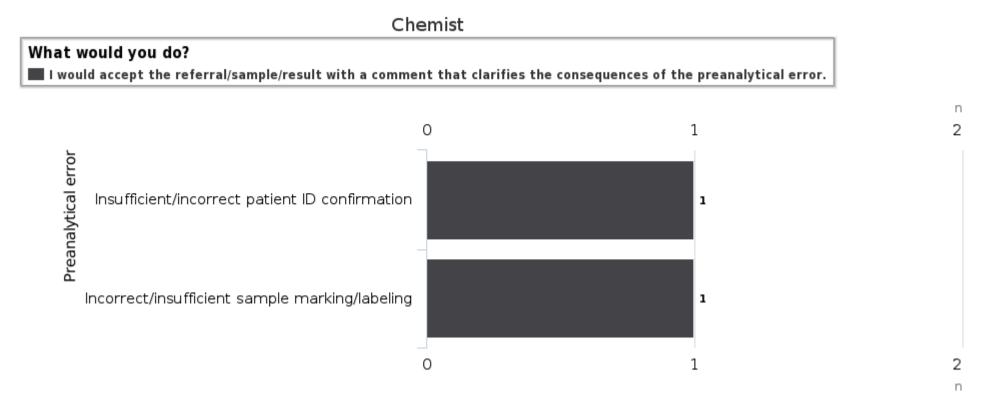


### Case 1|What would you do in this case?|Biomedical laboratory scientist/technician



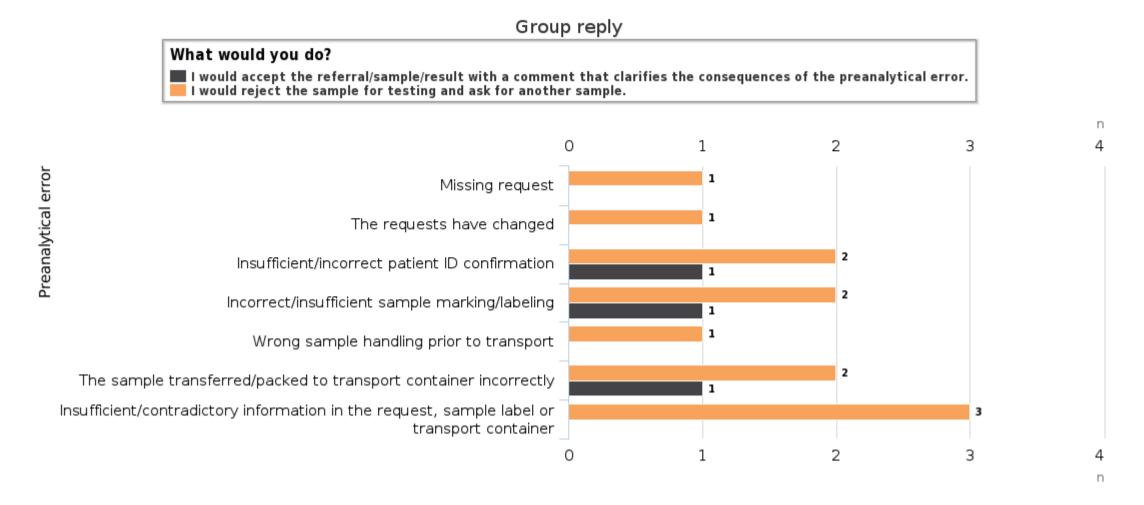


# Case 1|What would you do in this case?|Chemist



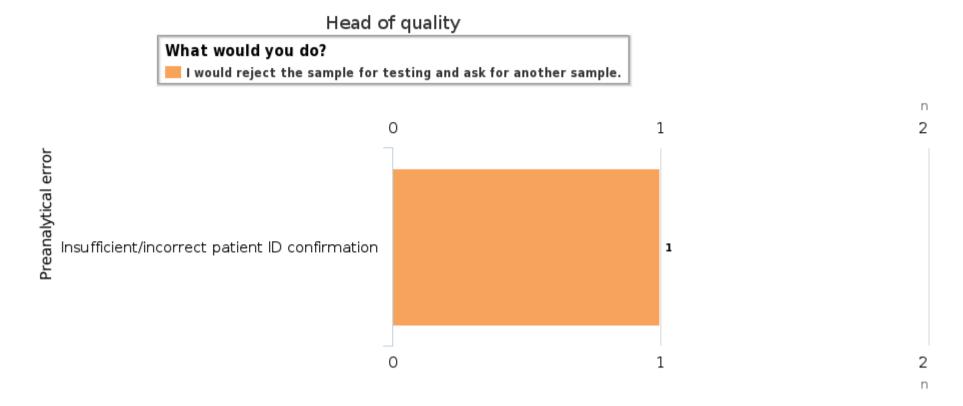


### Case 1|What would you do in this case?|Group reply



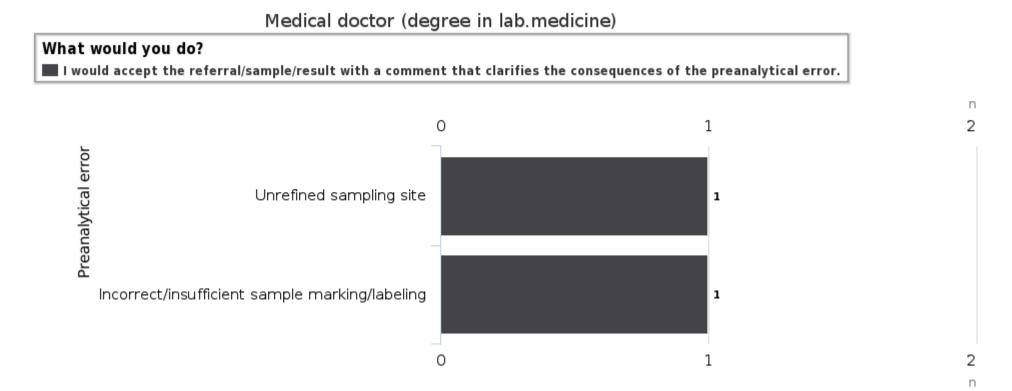


# Case 1|What would you do in this case?|Head of quality



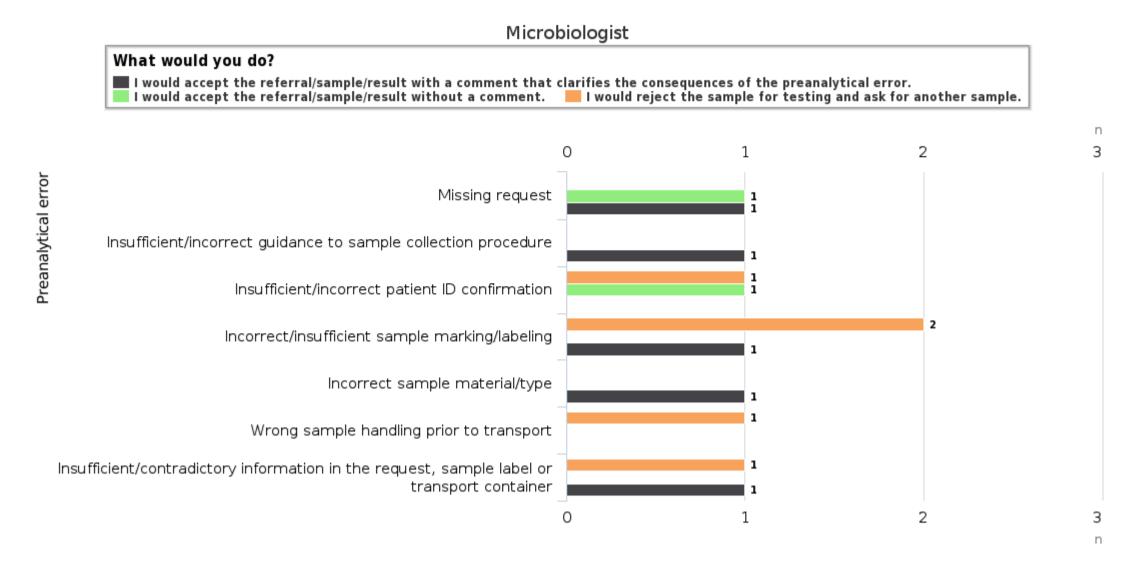


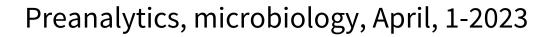
# Case 1|What would you do in this case?|Medical doctor (degree in lab.medicine)





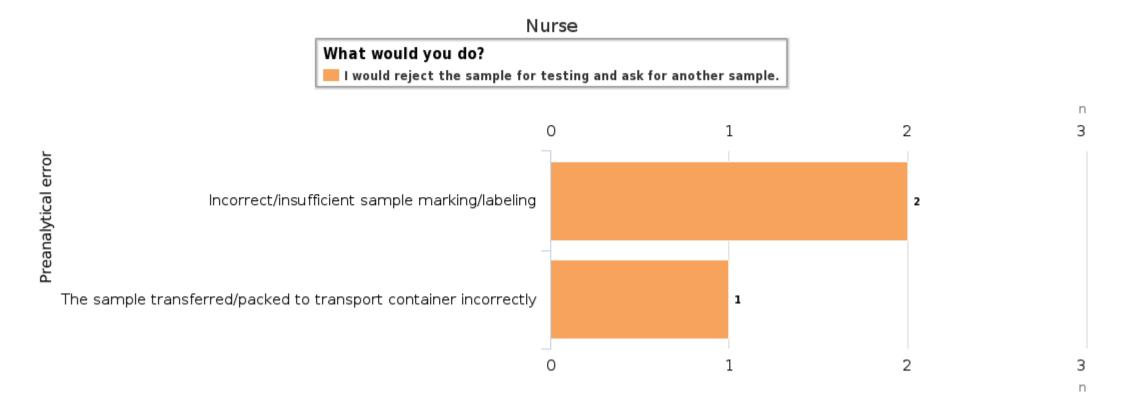
### Case 1|What would you do in this case?|Microbiologist





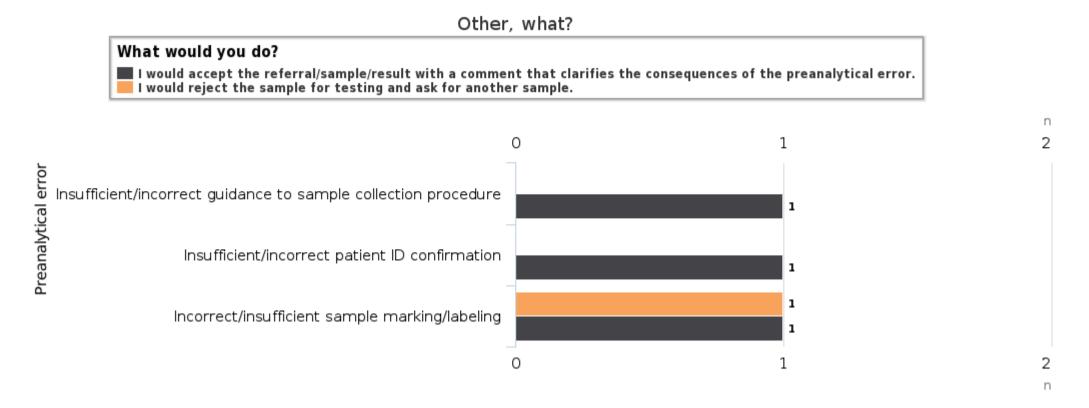


# Case 1|What would you do in this case?|Nurse



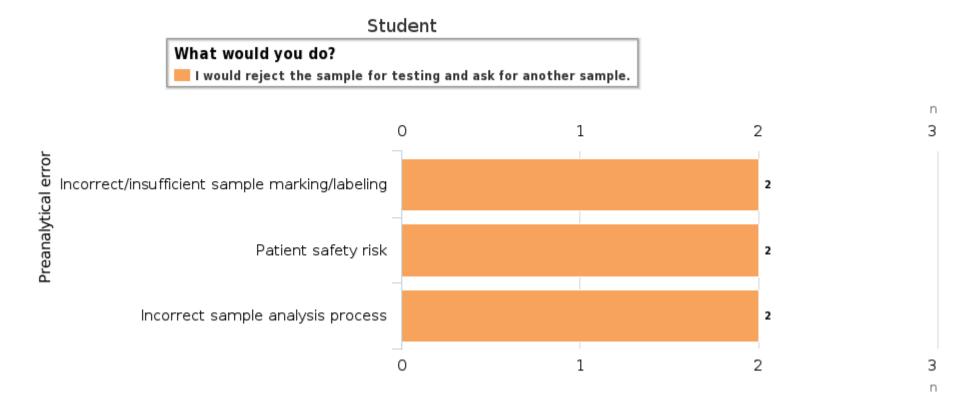


## Case 1|What would you do in this case?|Other, what?





# Case 1|What would you do in this case?|Student



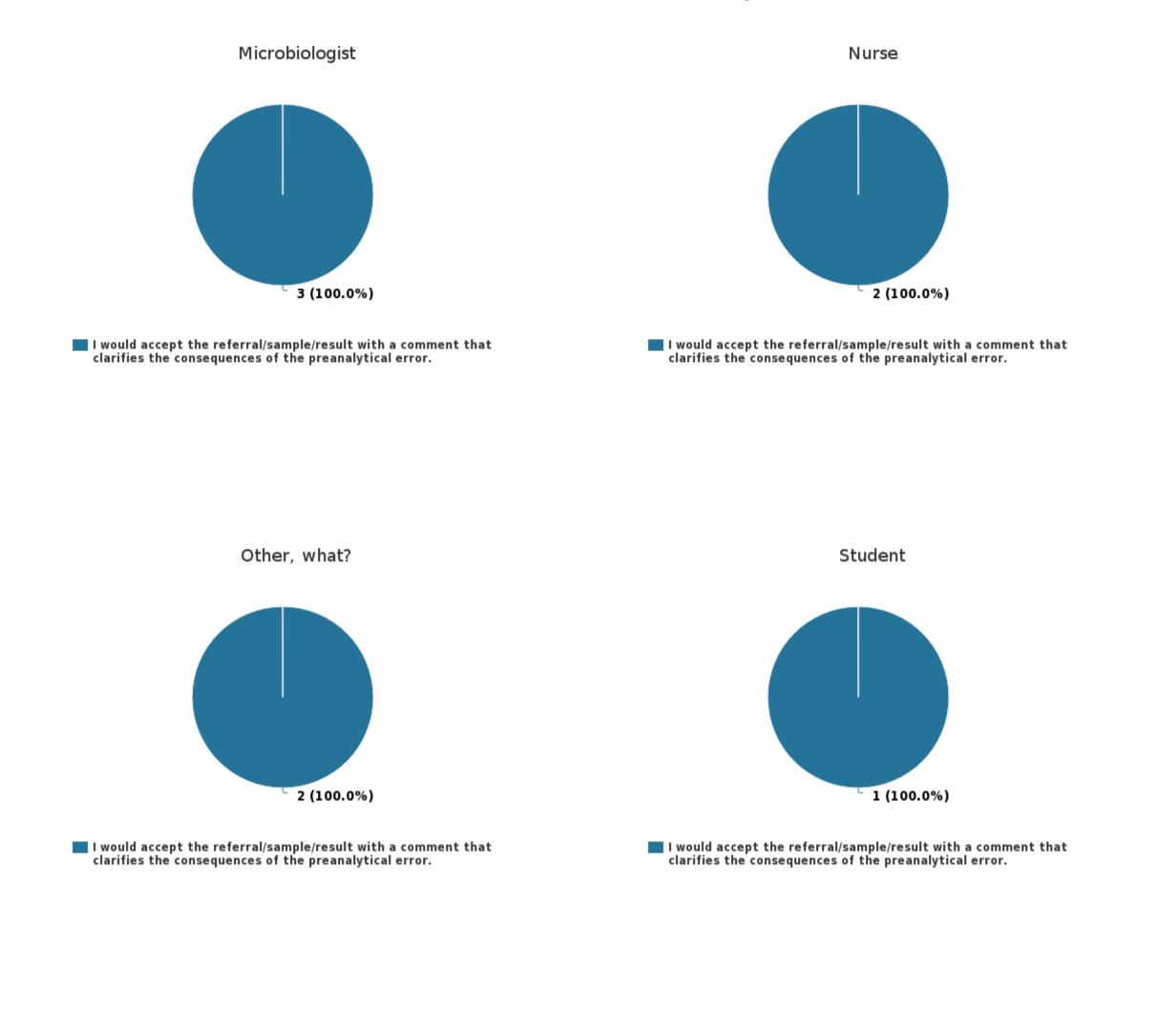


#### Case 2|What would you do in this case?



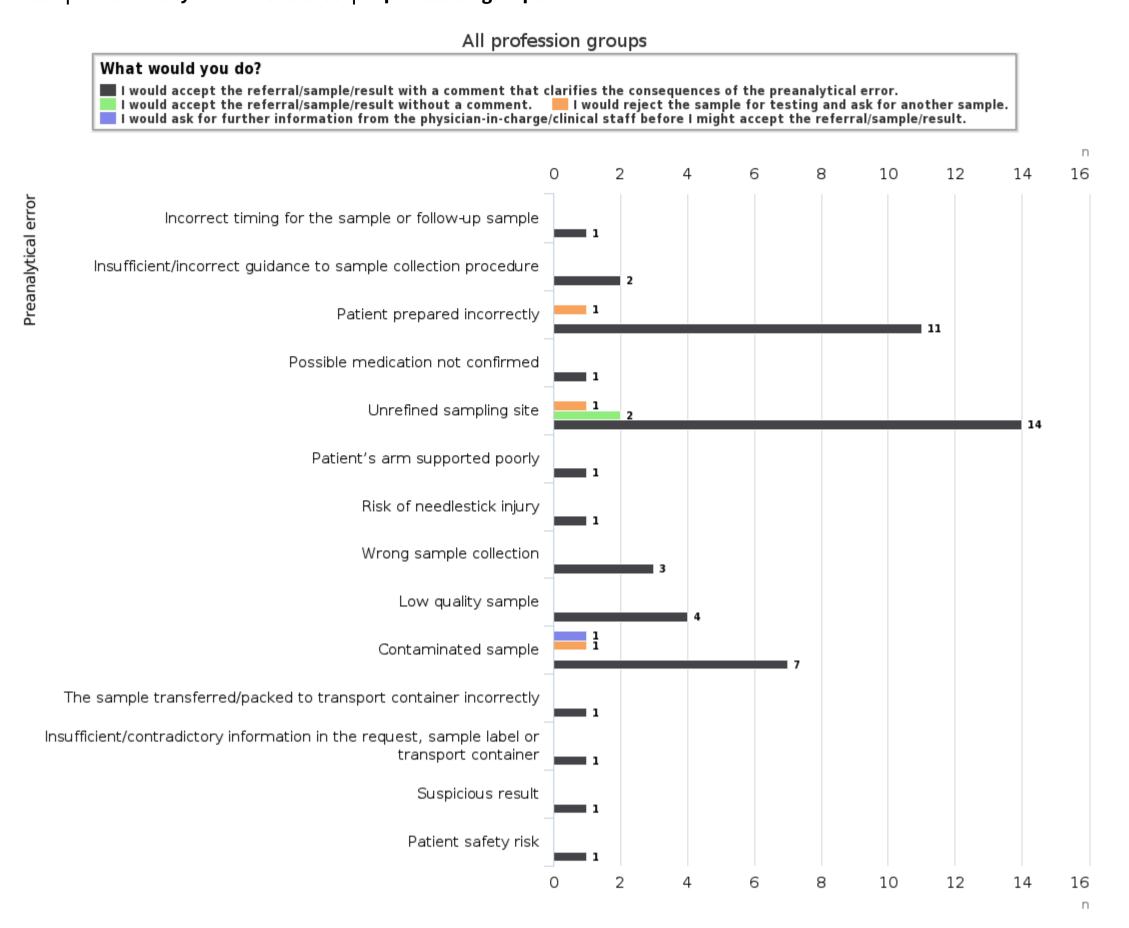


# Preanalytics, microbiology, April, 1-2023



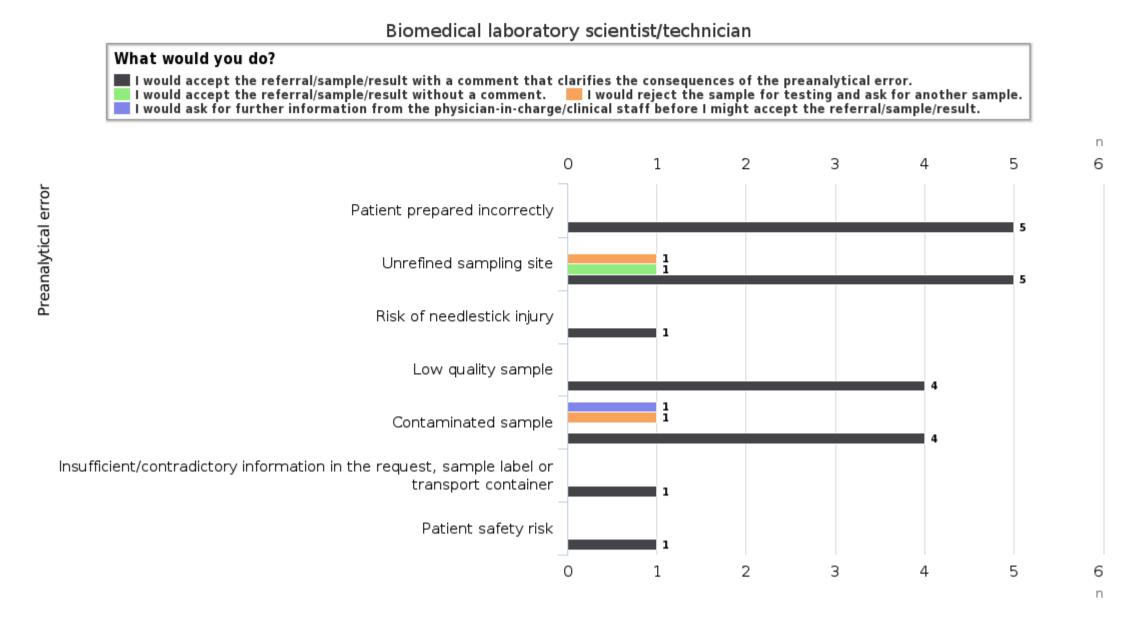


### Case 2|What would you do in this case?|All profession groups



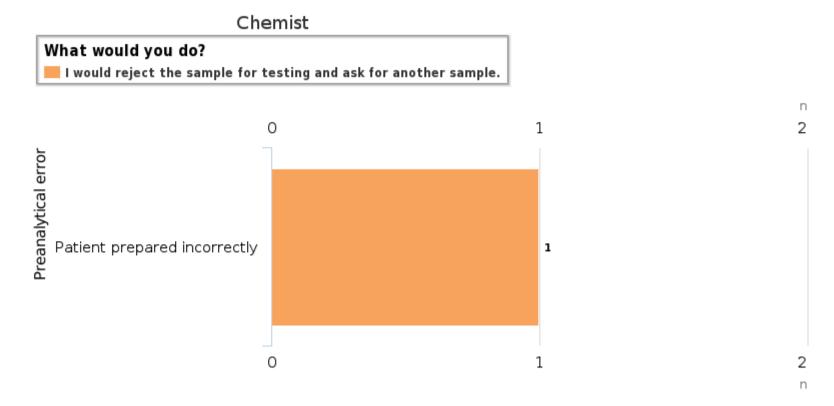


### Case 2|What would you do in this case?|Biomedical laboratory scientist/technician



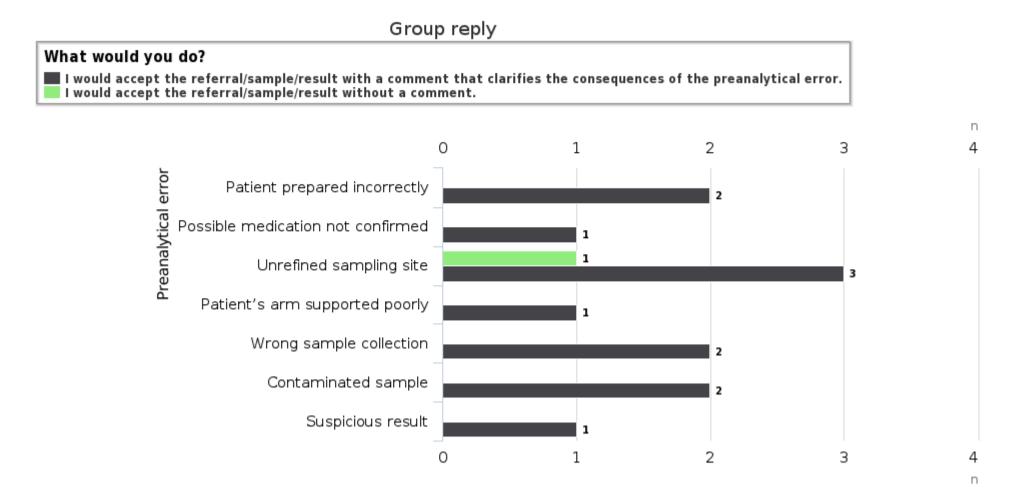


# Case 2|What would you do in this case?|Chemist





### Case 2|What would you do in this case?|Group reply

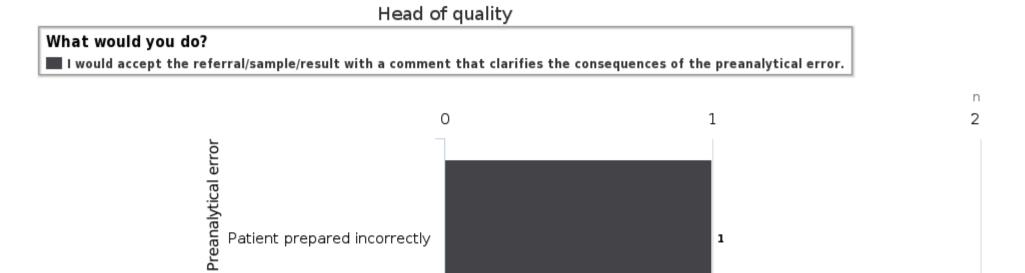


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# Case 2|What would you do in this case?|Head of quality

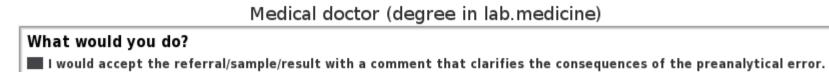


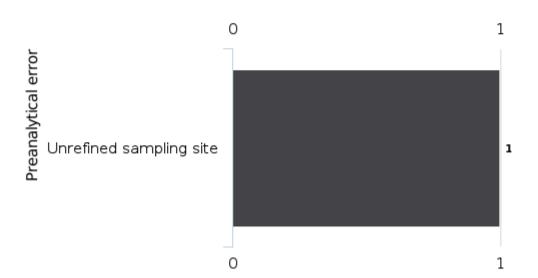


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# Case 2|What would you do in this case?|Medical doctor (degree in lab.medicine)



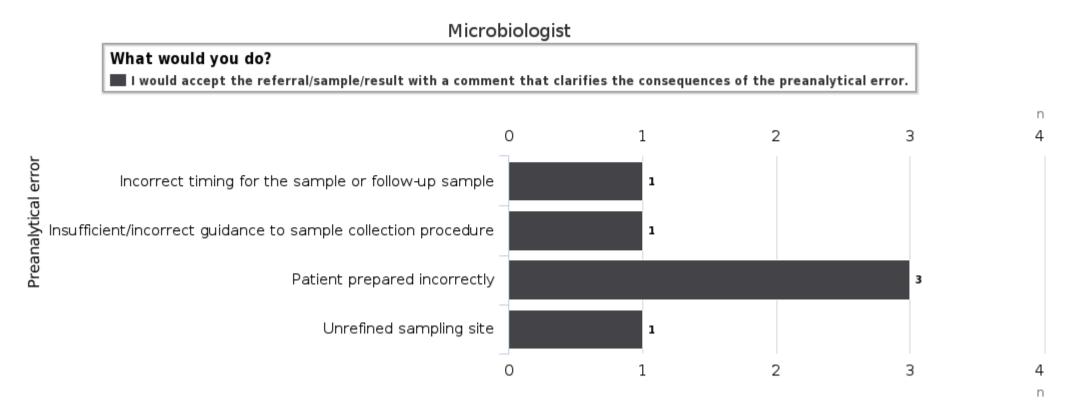


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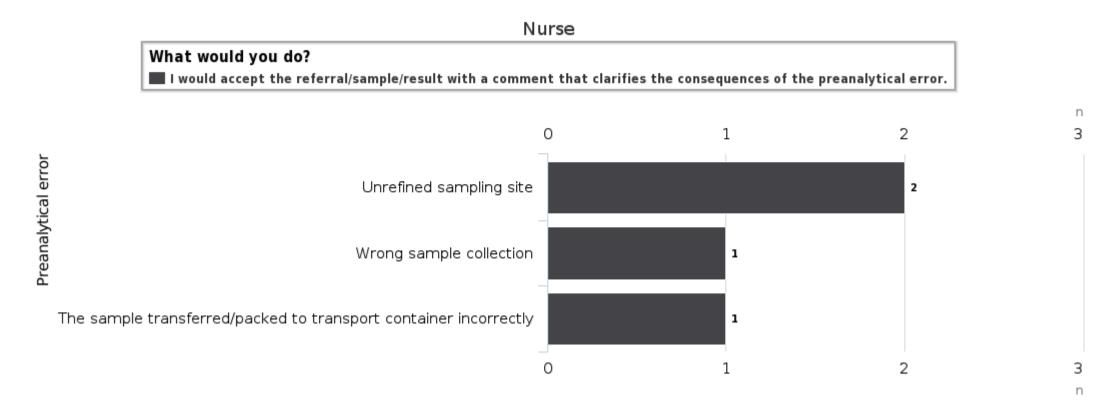


# Case 2|What would you do in this case?|Microbiologist



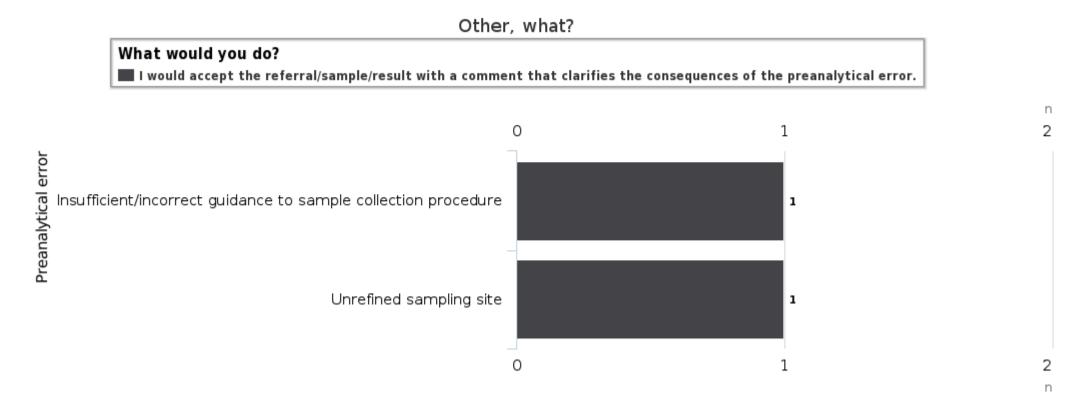


# Case 2|What would you do in this case?|Nurse





# Case 2|What would you do in this case?|Other, what?



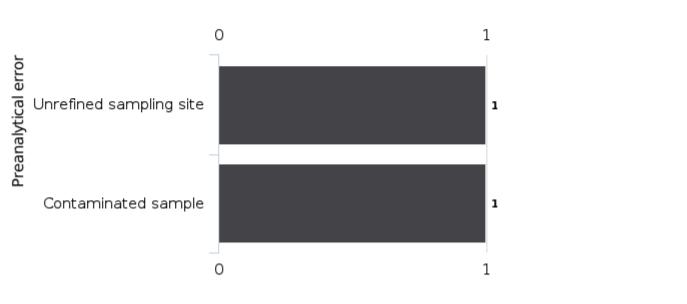
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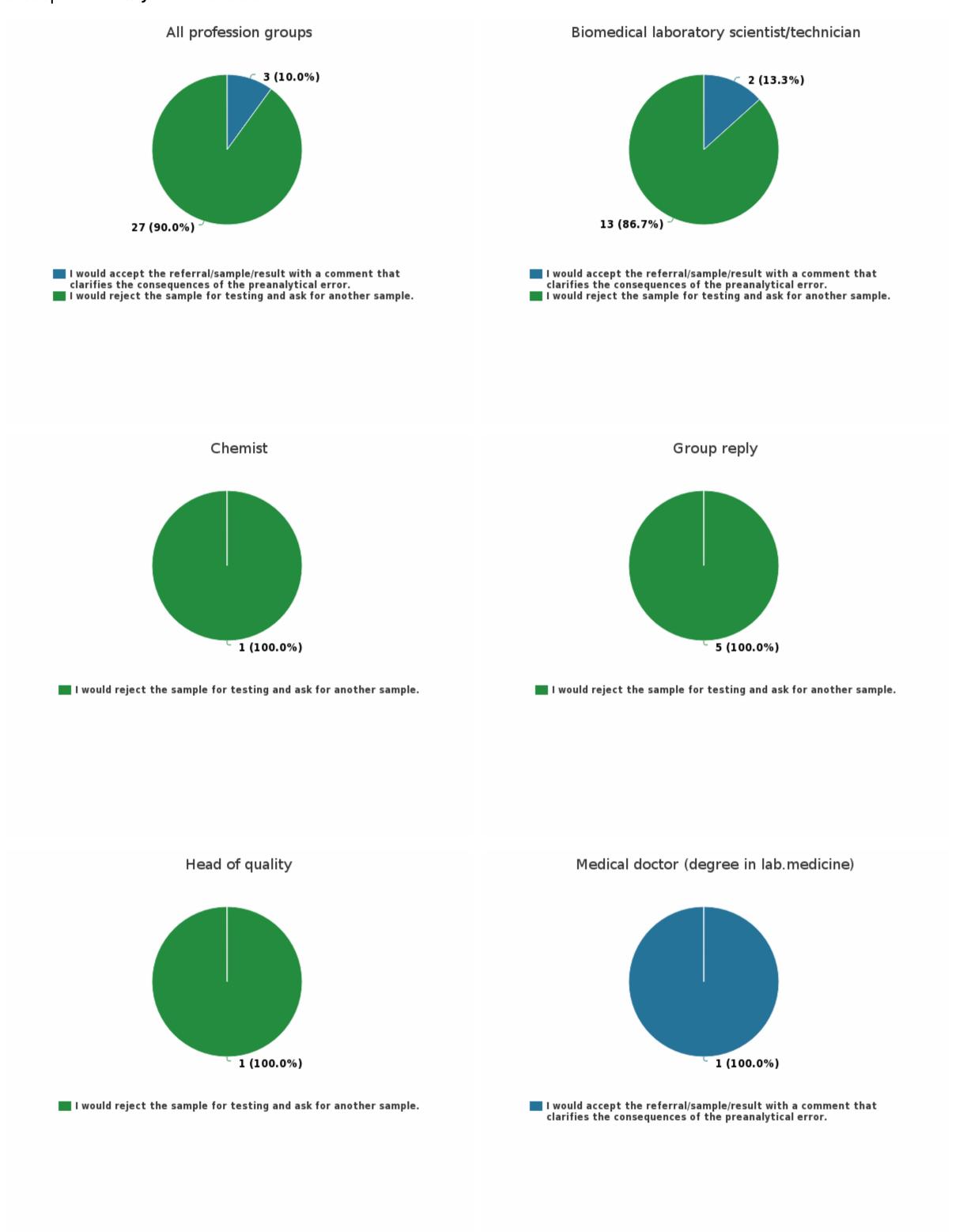
# Case 2|What would you do in this case?|Student





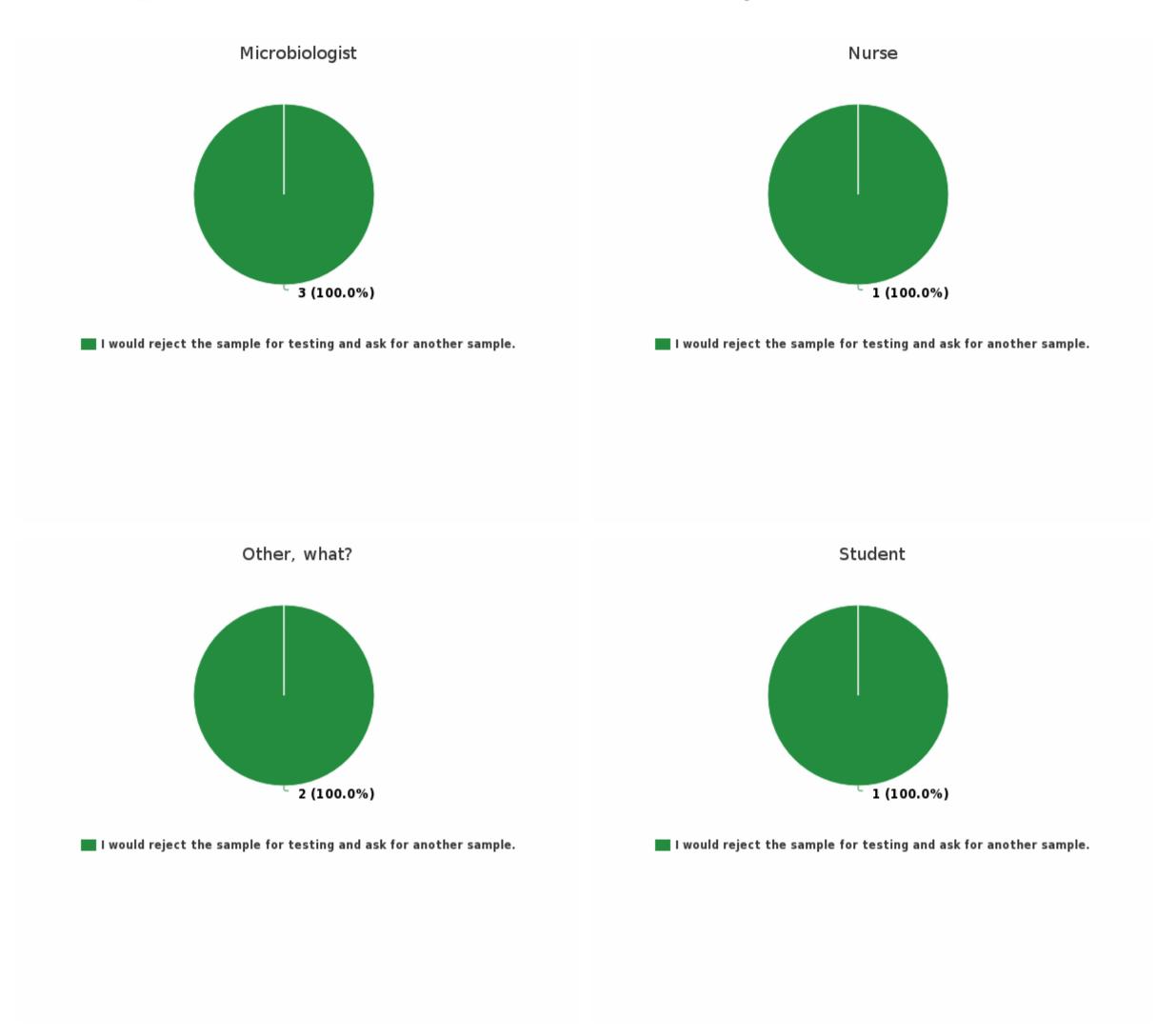


### Case 3|What would you do in this case?



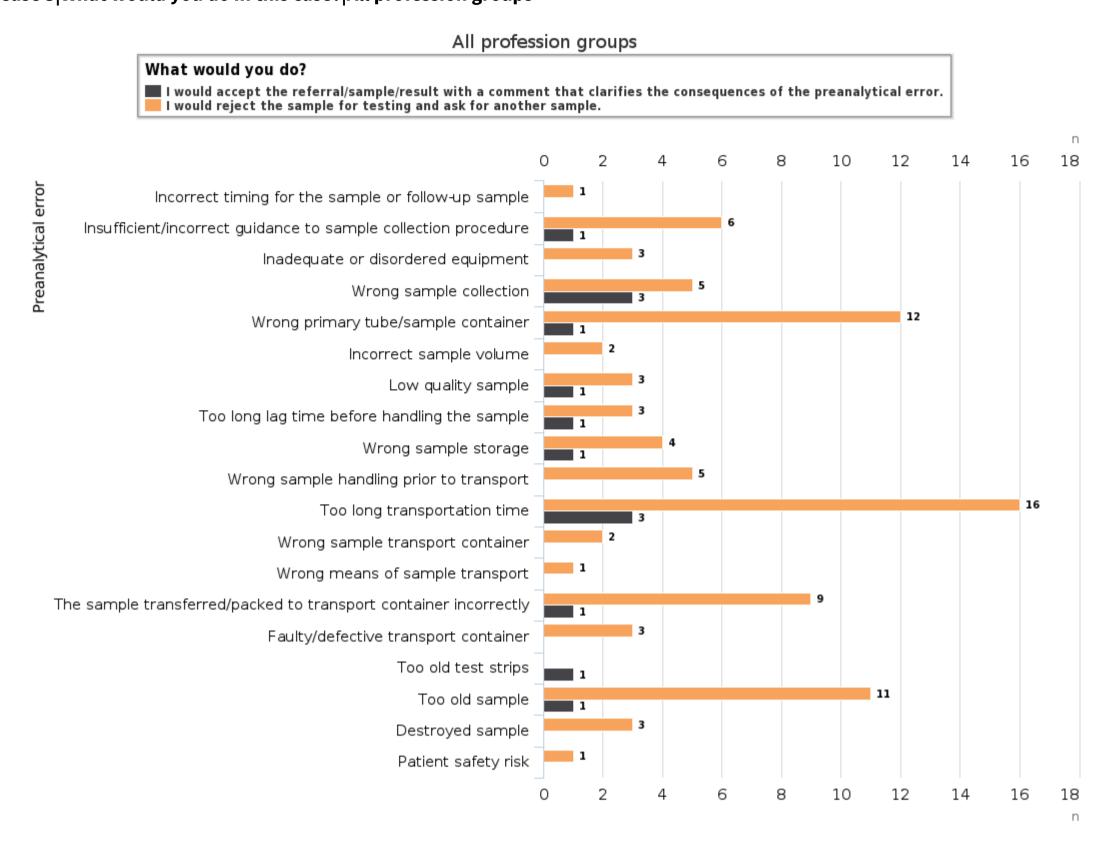


# Preanalytics, microbiology, April, 1-2023



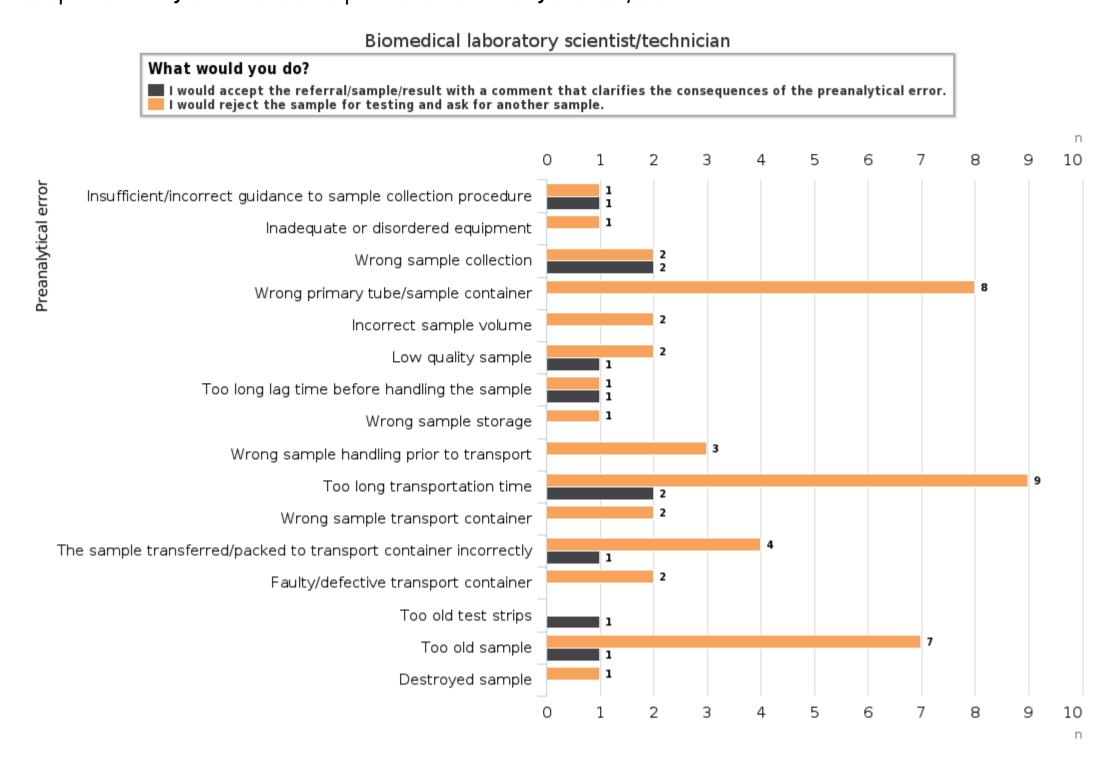


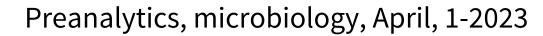
### Case 3|What would you do in this case?|All profession groups





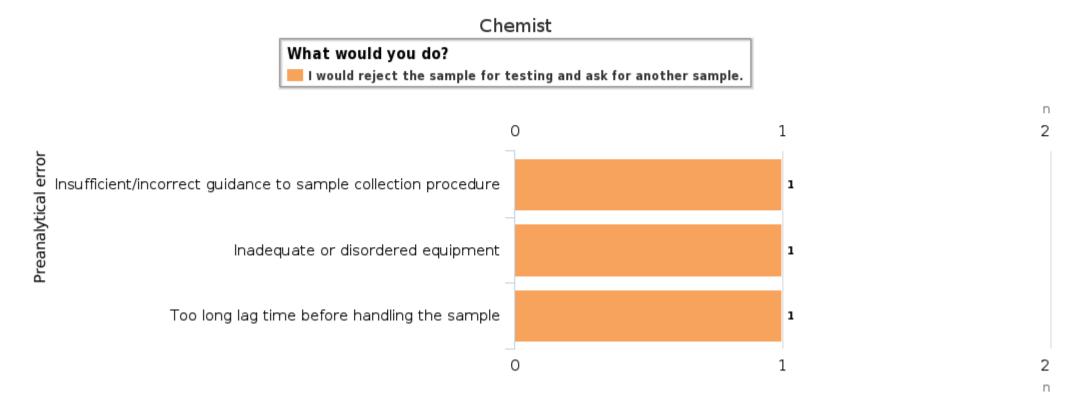
### Case 3|What would you do in this case?|Biomedical laboratory scientist/technician





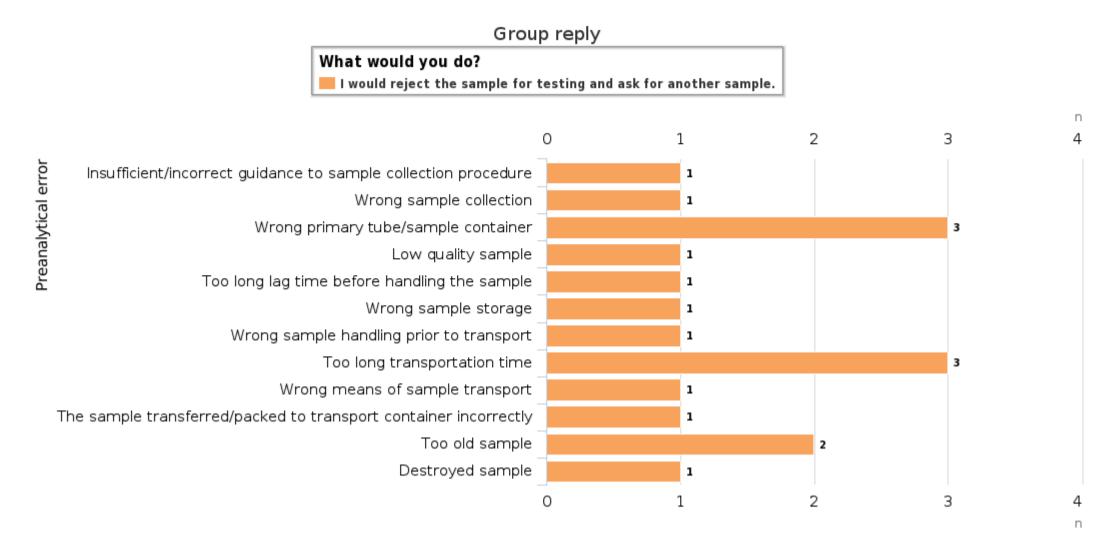


## Case 3|What would you do in this case?|Chemist



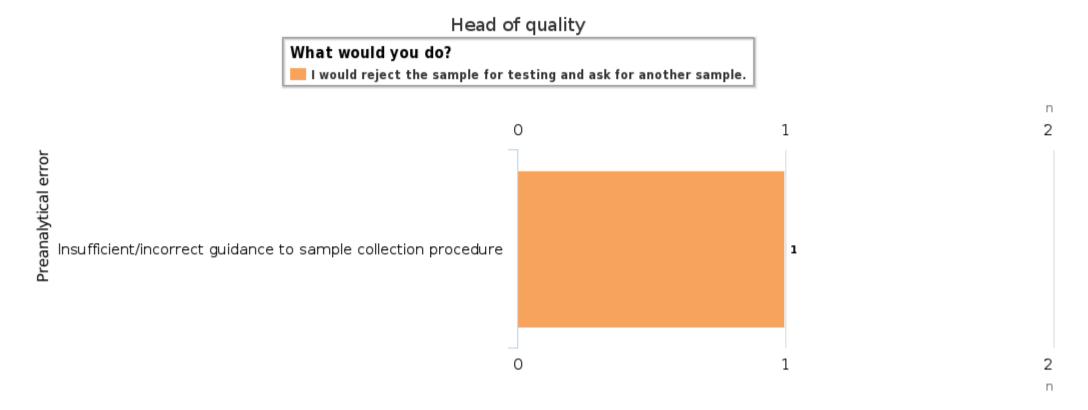


## Case 3|What would you do in this case?|Group reply





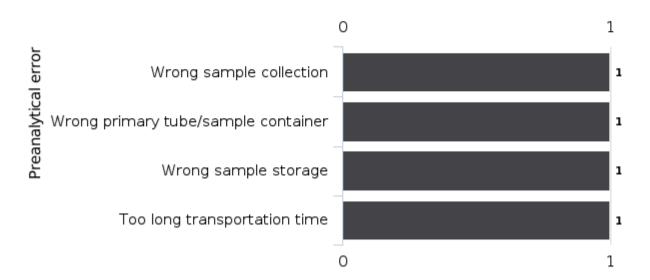
## Case 3|What would you do in this case?|Head of quality





## Case 3|What would you do in this case?|Medical doctor (degree in lab.medicine)

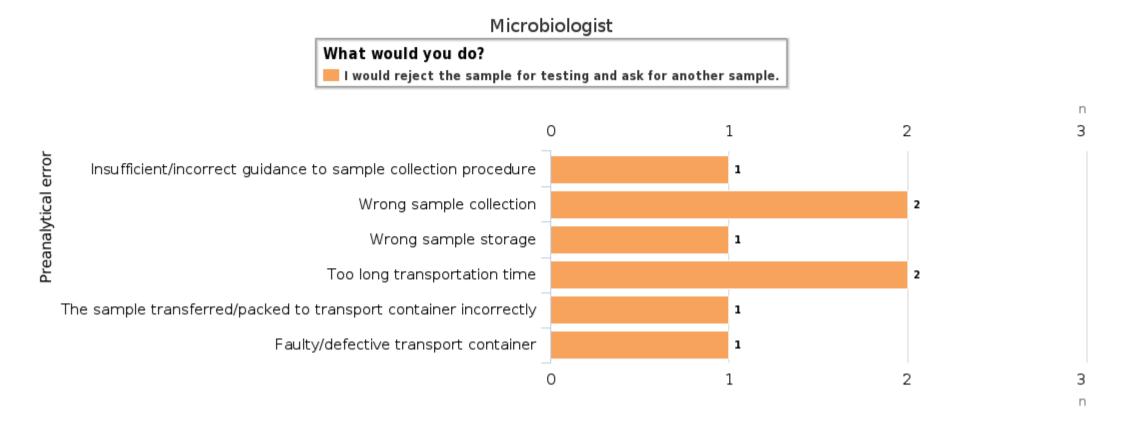


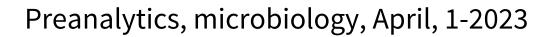


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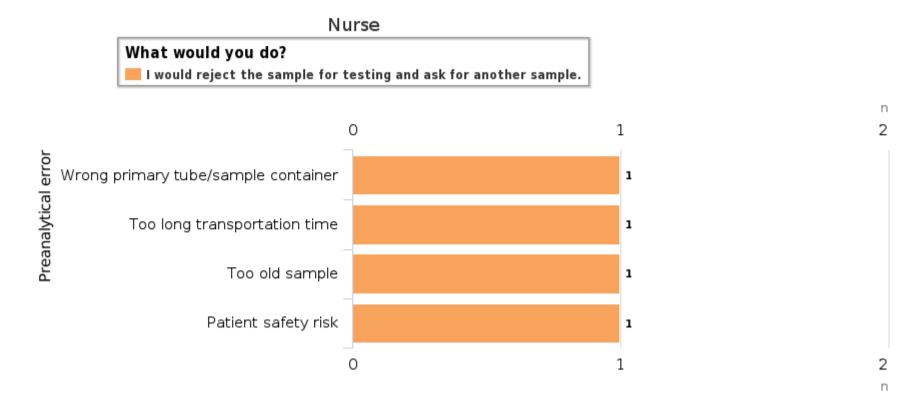
## Case 3|What would you do in this case?|Microbiologist





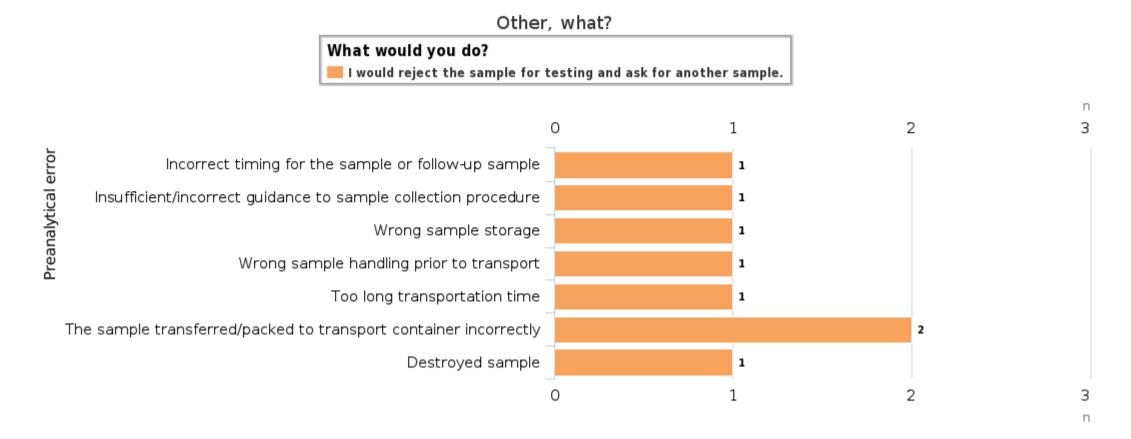


## Case 3|What would you do in this case?|Nurse



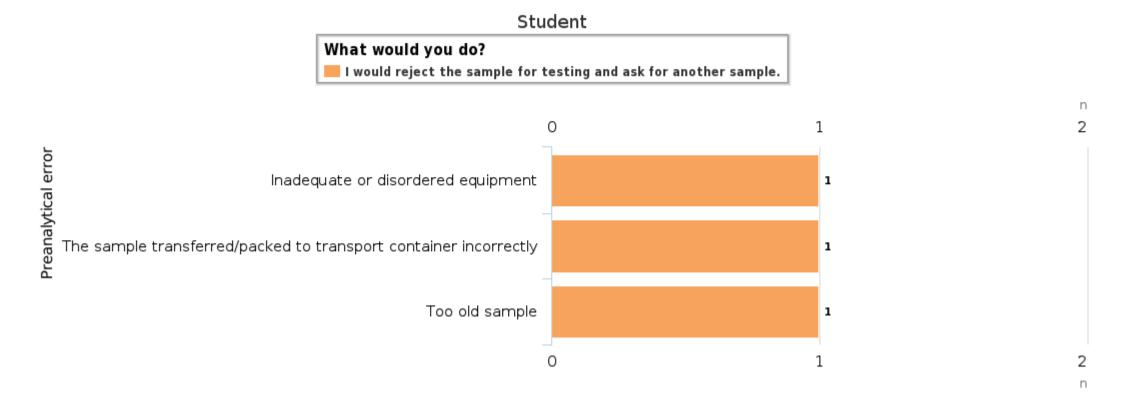


## Case 3|What would you do in this case?|Other, what?





## Case 3|What would you do in this case?|Student





## Preanalytics, microbiology, April, 1-2023

#### **Report info**

**Participants** 

27 participants from 10 countries.

**Report info** 

Suggestions of what would be the correct action in every case are done based on general recommendations. There might be some differences between organizations and countries, and some other action might also be valid and correct. The idea of these rounds is to get the participants to think about their own laboratory's procedures from a preanalytical point of view.

Results are grouped according to the informed participants' profession. Reported actions are shown in pie diagrams as percentages. Bar charts represent action answers in different colours as counts and they are grouped by different preanalytical errors. Laboratory's own results are marked with a black radio button. If you have not reported any results you will get a note: "You have not responded in time, only global report is available." In case you have any questions regarding the reports, please contact the EQA coordinator.

## LABQUALITY

**External Quality Assessment Scheme** 

# Preanalytics, microbiology Round 1, 2023

#### **Specimens**

Specimens of this EQA round were three case reports. Participants were asked to find preanalytical errors and define their possible actions. Results are grouped by profession.

#### Report info

Please see the description of the data analysis on the last page of the laboratory-specific reports and global reports. It is important to read the Final report first, because it contains important information of the cases and results in each round.

#### Case 1

Patient: A 32-year-old woman who has had C-section a few weeks earlier. The staples of the wound have been removed six days ago, but now the wound is irritated and excretes pus. The doctor asks a nurse to clean the irritated area with NaCl and take a Aerobic bacterial culture from the wound. The doctor prescribes the patient antibiotics and promises to contact the patient once the culture result is confirmed.

The nurse prints the patient's sample labels and puts the labels and the sample into a transparent plastic pouch. Before delivery to the laboratory, samples from another patient are also added to the same pouch. Laboratory staff notices that the sample bag contains two named samples, one anonymous sample and a separate sheet with patient labels. The laboratory calls the unit that treated the patient. The nurse who took the sample assures that the sample belongs to the patient. The patient label is glued to the sample and the sample is cultured normally.

#### **Comments - Expert**

58% of the respondents would have rejected the sample and 29% would have accepted the sample but given a statement that shows the consequences of the preanalytical error. However, 6.5% of the respondents would have accepted without a separate statement and 3.2% would have consulted the unit from which the sample was requested.

It is clear, that mistakes were made in the preanalytical phase of the case and those should not be ignored. In this situation, the laboratory staff cannot be sure that the sample was taken from the person named on the patient label sheet. In microbiological samples, however, it is often necessary to consider how unique the sample is and how, for example, the started antibiotic affects the situation. In the case in question, taking a new sample would not have required demanding measures, and due to the started course of antibiotics, taking a new sample would not necessarily be needed, if the wound began to heal well. The correct solution in that case is therefore to reject the sample and, if necessary, ask the treating entity to deliver a new sample.

#### Preanalytical errors:

- 1. Incomplete/insufficient sample marking/labeling
- 2. Insufficient/incorrect patient ID confirmation
- 3. Wrong sample handling prior to transport

#### 2023-05-24

#### **FINAL REPORT**

Product no. 7802

Subcontracting: Sample preparation

 Samples sent
 2023-04-18

 Round closed
 2023-05-15

 Final report
 2023-05-24

#### Request for correction

Typing errors in laboratory's result forms are on laboratory's responsibility. Labquality accepts responsibility only for result processing. Requests must be notified by writing within three weeks from the date of this letter.

#### Authorized by

EQA Coordinator Mira Saarinen mira.h.saarinen@labquality.fi

EQA Coordinator Riitta Viertola riitta.viertola@labquality.fi

#### **Expert**

Fulltime Lecturer Anniina Friman Turku University of Applied Sciences

#### **Labquality Oy**

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#### Case 2

Patient: An 86-year-old man with multiple illnesses is being treated in the hospital ward. Patient has severe spasticity in upper limbs. The patient does not communicate.

The patient has a fever of 38.5 degrees and the doctor makes a request for a blood culture. The laboratory does not visit the unit daily, so the samples are taken by a nurse of the treating unit. The nurse delivers the blood cultures to the laboratory and tells that taking the cultures turned out to be a challenge. She says that the samples were generally taken according to the instructions, but due to the spasticity of the limb, the cleaning of antecubital area may not have been done successfully.

#### Comments - Expert

Blood cultural samples always requires careful cleaning of the sampling area to ensure that the normal flora of the skin does not get enriched in the sampling container. A total of 83.3% of the respondents would accept the samples but would add a separate statement indicating a preanalytical error in sampling, and 6.7% would reject the samples completely. Of the respondents, 6.7% would receive the samples without adding a separate statement and 3.3% would request a consultation from the treating entity before accepting the samples.

For challenging patients, taking a high-quality blood culture sample is not easy. Although a repeat blood culture sample is relatively easy to take, it should be noted that a septic infection progresses very quickly. In case of serious infection, the samples should be analyzed, unless taking a new sample immediately is possible. However, it is important that a statement about the preanalytical error applied to the sample is added. The information recorded in the statement is important for the analyzing unit, but of course also for the unit who is responsible for the treatment of the patient. In addition to commenting, it would be good to instruct the treatment unit to deliver new blood cultural samples from the patient.

#### Preanalytical errors:

- 1. Wrong sample collection
- 2. Unrefined sampling site
- 3. Contaminated sample (possible)

#### Case 3

Patient: A 41-year-old healthy woman with severe pain in the pharynx. No visible patches. Strep A antigen test was negative, but a negative rapid test is confirmed by a throat culture. The nurse has previously used a gel transport tube, but now they are not available. The colleague gives the nurse an ESwab tube, which is completely unfamiliar to her.



The sample arrives at the laboratory three days later. The laboratory staff notices that there is a loose sampling stick inside the tube, but the container is missing the ESwab stick and the container's preservative.

#### Comments - Expert

The results in this case were quite unanimous. Of the respondents, 90% of the respondents would reject the sample completely and 10% would accept the sample but would add a separate statement that shows the consequences of the preanalytical error. The ESwab sampling and transport tube contains a liquid solution that improves the preservation of bacteria. Vegetable protein has also been added to the fluff stick added to the sample container, which improves the preservation of the vitality of sensitive bacteria. In the case in question, it was said that the sample's journey was delayed (over 3 days). In addition, it turned out that the sample stick has traveled to the laboratory unit in a completely dry sample container. It is very likely that the bacteria under investigation will not remain viable in the situation. In the case of the patient in question, we wanted confirmation of a negative rapid test result. When the delayed arrival of the sample and the incorrect sample issue and its processing is considered, a positive throat streptococcal culture result for the patient would still be possible. The right decision in this situation is to reject the sample and, if necessary, ask the treating entity to deliver a new sample from the patient.

#### Preanalytical errors:

- 1. Too long transportation time
- 2. Wrong sample collection  $\rightarrow$  insufficient guidance for sample collection procedure
- 3. Too old sample

#### **End of report**