



Pre/post-analytical surveys

a complementary service of EQA centers
and valuable continuing education tool

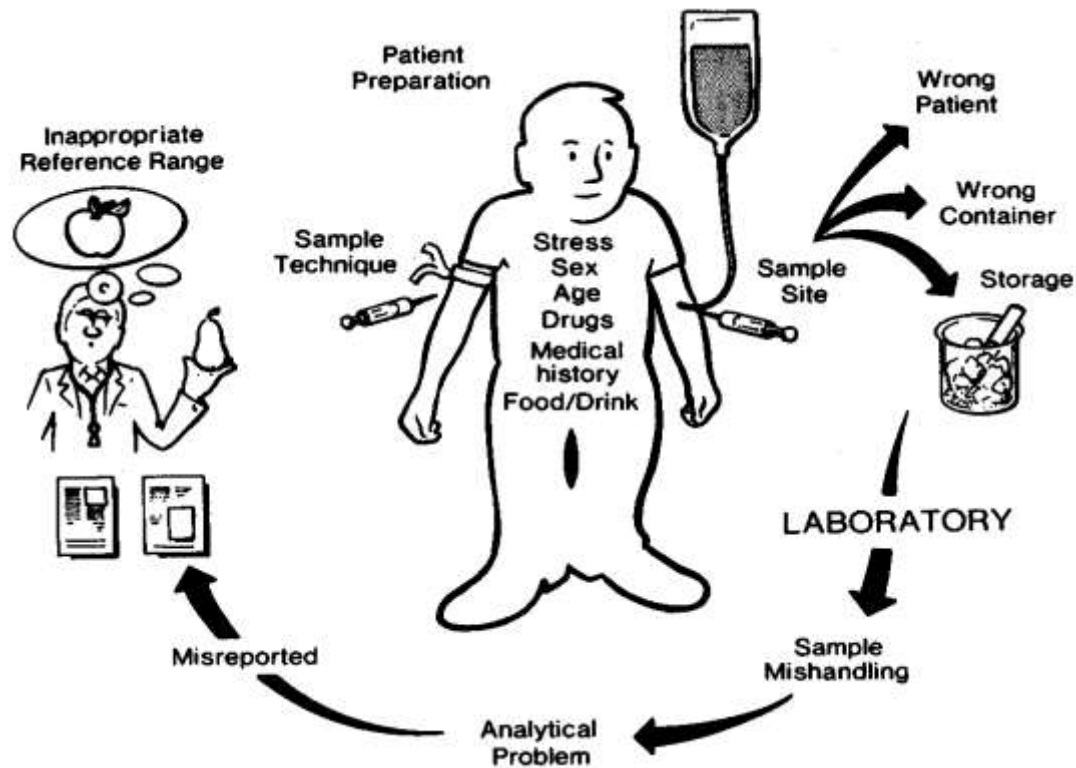
Quality Control Centre Switzerland - Teamwork :

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Analysis cycle



From Dr. Renze Bais, Royal North Shore Hospital, Sydney, with permission



Errors in laboratory testing

- 68% pre-analytical phase
- 18% postanalytical phase
- Only 14% analytical phase

(Plebani & Carrano, Clin.Chem. 1997 : 43 : 1348-51)

- At present, fewer errors but the distribution in the different phases is roughly the same



Questionnaire setup

- Multiple choice questionnaire (MCQ)
- 10 questions in 2 parts
 - ▶ Part I : general domains of laboratory analysis
 - ▶ Part II: specialised domains
- Evaluation on 5 or 10 questions
- Sample (1 survey)
- Twice a year
- Free of charge for CSCQ-members



Questionnaire validation

Preparation (CSCQ, FAMH student, ...)

(Foederatio Analyticorum Medicinalium Helveticorum - Ass.of Swiss Medical Laboratories)



Control by CSCQ (scientific level,
wording, ...)



Validation by experts in the
different specific fields



Results submission

- Exclusively on the Web
- Simple clicks on checkboxes
- 3 languages available dynamically (French, Italian and German)




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Fichier Edition Affichage Favoris Outils ?

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EQAcom2

Quality Control Center Switzerland

Logged in on 2011-09-15 15:18:47

Survey

- 11-09-MB
- 11-09-MA
- 11-09-HE
- 11-09-HD
- 11-09-CH
- 11-06-PA
- 10-06-PA

Options

- [Modifications](#)
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Results entry

Survey **11-06-PA** of the laboratory **9997**

Remember Data entered on this page are taken into account by the CSCQ only if you click on the [Send to the CSCQ](#) button (at the bottom of this form), before changing pages (other survey or sample)

Warning ! Modification in the formulation of questions.
When the singular form is used in a question, one box only is to be ticked.
When the plural form is used in a question, several boxes are to be ticked.

[Print](#) (your form with the results you entered and stored into the CSCQ database)

Questionnaire on the pre and post-analytical phases

1 Part I of the questionnaire is based on general questions regarding pre- and post-analytical phases. Part II contains more specific medical laboratory questions. Would you like to be evaluated on part I only or on all questions?

- Part I only (questions 2 to 6)
- Part I (questions 2 to 6) and part II (questions 7 to 11)

2 What is the INR used for?

- Monitoring patients receiving oral anticoagulant therapy with vitamin K antagonists



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Survey **11-06-PA** of the laboratory **9997**

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Questionnaire on the pre and post-analytical phases

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Part I only (questions 2 to 6)
 Part I (questions 2 to 6) and part II (questions 7 to 11)

2 What is the INR used for?

Monitoring patients receiving oral anticoagulant therapy with vitamin K antagonists
 Monitoring patients receiving standard heparin therapy
 Monitoring patients receiving low molecular weight heparin therapy
 Evaluating the coagulation intrinsic pathway factors

3 Which reasons can explain a low hematocrit in an otherwise healthy patient?

A significant time lapse between the blood collection and the analysis
 An insufficient sample homogenisation before the analysis
 The presence of a ...



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Echier Edition Affichage Foyons Outils

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Enquête 11-06-PA du laboratoire 9997

Rappel Les informations saisies dans cette page ne sont prises en compte par le CSCQ que si vous cliquez sur le bouton **Transmettre au CSCQ** (en bas de ce formulaire), avant de changer de page (autre enquête ou échantillon)

Attention ! Modification dans la formulation des questions.
Quand une question est écrite au singulier, un seul choix est à cocher.
Quand une question est écrite au pluriel, plusieurs choix sont à cocher.

[Imprimer](#) (votre formulaire avec les résultats déjà saisis et mémorisés au CSCQ)

Questionnaire sur les phases pré et post-analytique

1 La partie I porte sur des questions générales des phases pré- et post-analytiques, la partie II concerne des domaines de médecine de laboratoire plus spécifiques. Souhaitez-vous être évalués uniquement sur la partie I ou sur la totalité des questions ?

- la partie I uniquement (questions 2 à 6)
- la partie I (questions 2 à 6) et la partie II (questions 7 à 11)

2 Quelle est l'utilisation de l'INR ?

- Surveiller le traitement des patients sous anticoagulant oral avec antagonistes de la vitamine K
- Surveiller le traitement des patients sous héparine standard
- Surveiller le traitement des patients sous héparine à bas poids moléculaire
- Évaluer l'activité des facteurs de la voie intrinsèque de la coagulation

3 Quelles peuvent être les raisons d'un résultat d'hématocrite abaissé chez un sujet sain ?

- Un laps de temps important entre la prise de sang et l'analyse
- Une homogénéisation insuffisante de l'échantillon avant mesure
- Une présence d'un caillot dans le tube de prélèvement

Terminé

Internet local 150%



Results evaluation

→ Weighted MCQ evaluation:

Question n° 4	Correct choice	Participant selection	Weight	Example
Choice 1	Valid	<input checked="" type="checkbox"/>	m_1 if match nm_1 if mismatch	m_1
Choice 2	Valid	<input type="checkbox"/>	m_2 if match nm_2 if mismatch	nm_2
Choice 3	Not valid	<input type="checkbox"/>	m_3 if match nm_3 if mismatch	m_3
Choice 4	Not valid	<input type="checkbox"/>	m_4 if match nm_4 if mismatch	m_4

Response to the question accepted :
if sum of weights > threshold



Global performance

Question	Weight	Participant response	Example
1	w_1	Accepted	w_1
2	w_2	Not accepted	0
3	w_3	Accepted	w_3
4	w_4	Accepted	w_4
5	w_5	Not accepted	0
6	w_6	Accepted	w_6
7	w_7	Accepted	w_7
8	w_8	Accepted	w_8
9	w_9	Accepted	w_9
10	w_{10}	Not accepted	0
Total	30		$w_1 + w_3 + w_4 + w_6 + w_7 + w_8 + w_9$

- Score = sum of the weights
- FAC, performance factor

Score	FAC
0 - 5	5 : bad
6 - 10	4 : poor
11 - 15	3 : insufficient

Score	FAC
16 - 20	2 : borderline
21 - 25	1 : very good
26 - 30	0 : excellent



Report (1)

Adobe Reader [RapportQCMIComplet_A5.pdf]

Chêne-Bourg, 2011-09-15

Concern: Report for the external quality control scheme : 11-08-PA

Dear Madam, Dear Sir,

COMMENTS ON THE RESULTS

- Question 2 had already been submitted in 2008 with the same evaluation criteria. The percentage of correct answers remains high and stable at 85 % (84 % in 2008) which is the highest percentage of correct answers in this survey.

singular form was used in the question.

- We would also like to remind you that a green square means that your answer is correct. An orange triangle means that the answer is not the expected one but is acceptable. Finally, a red circle means that a fatal error occurred, the answer to the question is therefore considered as incorrect.

COMMENTS ON THE RESULTS

- Question 2 had already been submitted in 2008 with the same evaluation criteria. The percentage of correct answers remains high and stable at 85 % (84 % in 2008) which is the highest percentage of correct answers in this survey.
- The median score of all participants is 18/30. Participants answering 5 or 10 questions obtain the same score. This score demonstrates the educational importance of this survey.
- For the first five questions, the lowest percentage of correct answers corresponds to question 3 (35%). If we consider all ten questions, the lowest percentage of correct answers corresponds to question 7 (33%). We notice that for these two questions, all boxes had to be ticked.

NEXT 2011 SURVEY

Survey	Shipping date



Report (2)

Adobe Reader - (RapportQCMComplec_A5.pdf)

YOUR PERFORMANCE

Score: 21 (maximum : 30)

Global assessment (FAC): Very good (1)

SIS 051 SWISS INSPECTION SERVICE

Report approved by: D. Kessler and Dr X. Albe.

YOUR PERFORMANCE
Score: 21 (maximum : 30) Global assessment (FAC): Very good (1)

Correction: = choice to be ticked = choice not to be ticked = choice to be ticked or not

Survey 11-06-PA

Question	All participants	Received results	Correction	Your lab
Question 1 Weight: 0				
Part I of the questionnaire is based on general questions regarding pre- and post-analytical phases. Part II contains more specific medical laboratory questions. Would you like to be evaluated on part I only or on all questions?				
Part I only (questions 2 to 6)		63 (14%)	<input checked="" type="radio"/>	<input type="checkbox"/>
Part I (questions 2 to 6) and part II (questions 7 to 11)		389 (86%)	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>
Comments None				
Question 2 Weight: 3	Correct answers : 386/452 (85%)			
What is the INR used for?				
Monitoring patients receiving oral anticoagulant therapy with vitamin K antagonists	425 (94%)	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Monitoring patients receiving standard heparin therapy	12 (3%)	<input type="radio"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Monitoring patients receiving low molecular weight heparin therapy	6 (1%)	<input type="radio"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Evaluating the coagulation intrinsic pathway factors	51 (11%)	<input type="radio"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>



Report (3)

	Received results	Correction	Result
otherwise healthy patient?			
the	174 (38%)	⊗	<input type="checkbox"/> ▲
is	351 (78%)	⊗	<input checked="" type="checkbox"/> ■
	306 (68%)	⊗	<input checked="" type="checkbox"/> ■
	267 (59%)	⊗	<input checked="" type="checkbox"/> ■

Participants	Received results	Correction	Result	Your lab
35%)				Correct answer ✓
in an otherwise healthy patient?				
ollection and the	174 (38%)	⊗	<input type="checkbox"/> ▲	
the analysis	351 (78%)	⊗	<input checked="" type="checkbox"/> ■	
tube.	306 (68%)	⊗	<input checked="" type="checkbox"/> ■	
	267 (59%)	⊗	<input checked="" type="checkbox"/> ■	



Report (4)

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Question 7	All participants	Received results	Correction	Your lab
Weight: 3	Correct answers : 128/389 (33%)			Result Wrong answer

Which of the following situations may interfere with the result obtained with a rapid beta haemolytic Streptococcus A detection test in a throat swab?

Swab storage at room temperature for 48 hours prior to 236 (61%)

Question 7
Weight: 3
Correct answers : 128/389 (33%)
Received results
Correction
Your lab
Result Wrong answer

Which of the following situations may interfere with the result obtained with a rapid beta haemolytic Streptococcus A detection test in a throat swab?

answer of correct at least 3 cases were tested. Group A streptococcus bacteria are the major cause of bacterial pharyngitis. Using rapid antigen tests to detect group A beta-haemolytic streptococci allows faster diagnosis, but several pre-analytical situations may impact the result. The swab must be quickly analysed, the manufacturer's instructions specify the maximum storage time. Using two swabs for each collection process is recommended in order to increase the inoculum size, especially with a low number of bacteria. Swab contact with mucous membranes and teeth may interfere with the analysis. Among potential effects are abnormal sample migration, non specific fixation, or sample dilution. Rapid kits have to be used at room temperature. Low kit temperature may affect the chemical reaction allowing the visualisation of results. ((Facklam R.R., and Washington II, J.A., Streptococcus and Related Catalase-Negative Gram-Positive Cocci. In: Manual of Clinical Microbiology, Balows A., ed. 5th Edition, 1991, 29: 241)



Report (5)

Comments

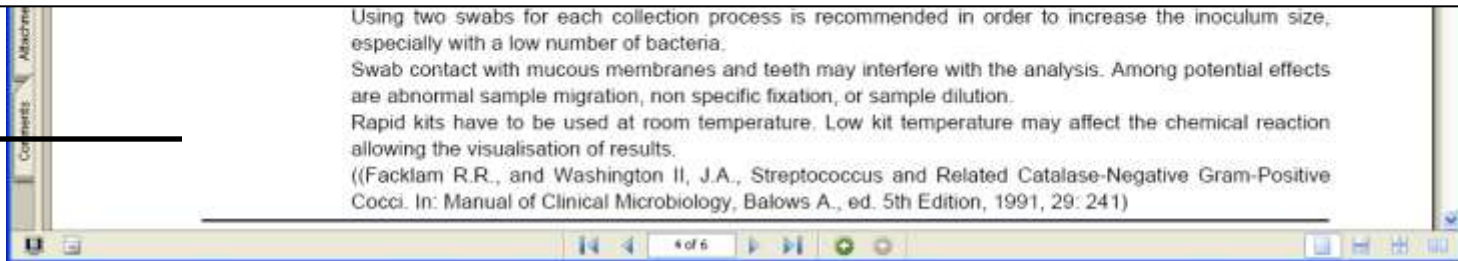
Very few participants (11%) dared ticking the four boxes, although all were correct. We considered the answer as correct if at least 3 out of 4 boxes were ticked. Group A streptococcus bacteria are the major cause of bacterial pharyngitis. Using rapid antigen tests to detect group A beta-haemolytic streptococci allows faster diagnosis, but several pre-analytical situations may impact the result.

The swab must be quickly analysed, the manufacturer's instructions specify the maximum storage time. Using two swabs for each collection process is recommended in order to increase the inoculum size, especially with a low number of bacteria.

Swab contact with mucous membranes and teeth may interfere with the analysis. Among potential effects are abnormal sample migration, non specific fixation, or sample dilution.

Rapid kits have to be used at room temperature. Low kit temperature may affect the chemical reaction allowing the visualisation of results.

((Facklam R.R., and Washington II, J.A., Streptococcus and Related Catalase-Negative Gram-Positive Cocci. In: Manual of Clinical Microbiology, Balows A., ed. 5th Edition, 1991, 29: 241)





A complementary service

- Analytical phase is widely investigated while representing only 1/7 of the errors
- Only a small number of pre-analytical errors can be revealed by “analytical phase” surveys (errors in storage, ...)
- Awareness of the importance of the pre and post analytical phases

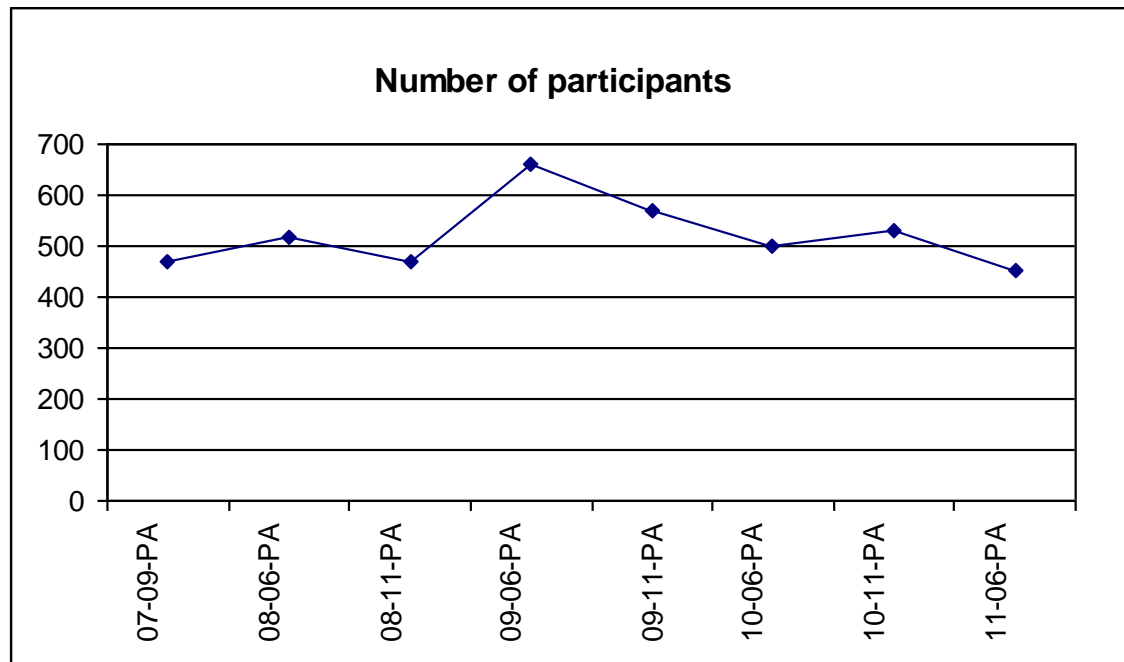


Continuing education tool for each actor

- FAMH-student
- Internal CSCQ staff formation
- Experts (benefits from participant feed-back)
- Medical office staff: often the only continuing education
- Professional laboratories
 - first meeting to select the choices
 - second meeting to discuss argued answers

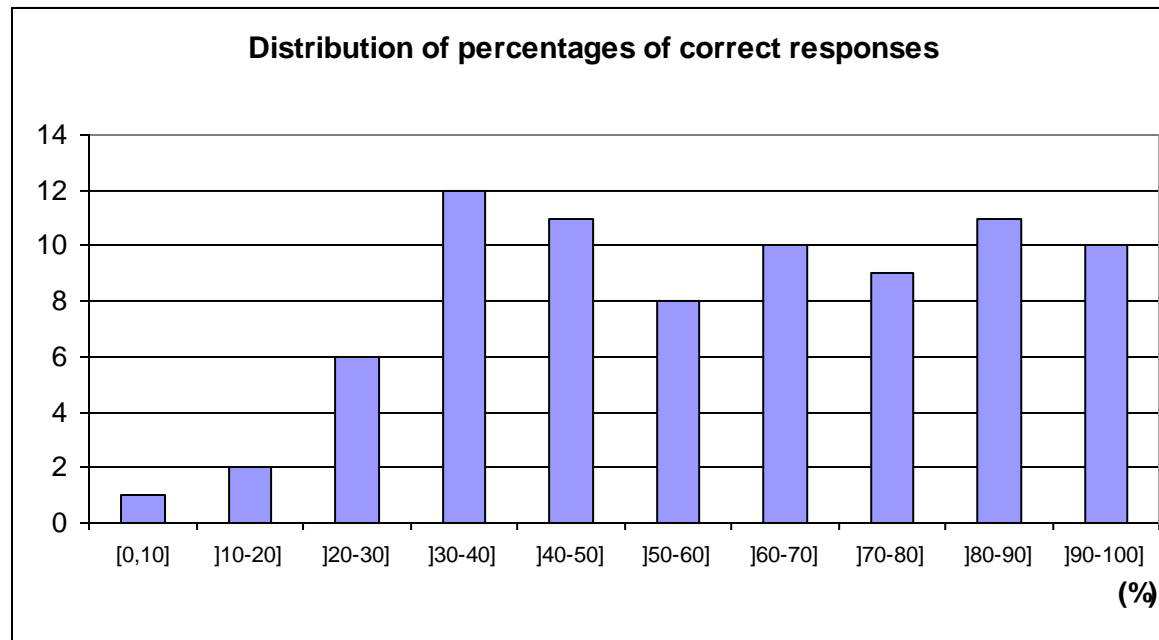


Statistics (1)





Statistics (2)





Conclusions

- Surveys available in 3 languages
 - Two participation levels (5 / 10 questions)
 - Easy tool for submission
 - Extensive report
 - High number of participants despite non mandatory
 - Recognized by FAMH and Swiss Society of Clinical Chemistry as continuing education
 - Belongs to the accredited domain
-



Prospective

- Extension to schemes including laboratory data
- Open to English speaking people
- Exchange of questions with others EQA Centres