Meeting Point-of-Care Expectations of the Clinician

Sverre Sandberg
Norwegian Quality Improvement of Primary Care Laboratories
Bergen, Norway

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Anamnesis
Clinical Findings

Pre-pre
(test requesting)

Pre-analytical phase

Post-post (interpretation)

Post-analytical (report)

Analysing
What do we know and what are clinicians interested in?

- Analytical principles
- Logistic
- Sample handling
- Effective laboratory practice
- Biochemistry
- IT

But they have expectations that we know are not interested in...
What do we know and what are clinicians interested in?

- Analytical trueness and imprecision
- Biological variation – critical differences
- Probabilities
- Sensitivity / specificity
- Likelihood ratios (LRs)

What tests to use?
Clinicians want to use POC tests when a “quick” result is necessary

**Expectations:**
Results when needed
Robust and easy to use
Correct result
Cost effective (if they have to pay)
But

It is not really expectations, but they take for granted that every POC instrument is:

Robust and easy to use and give a correct result in a short time.
And therefore

- They just buy the instrument and use it

- And we have to tell them that they need us

- How?
Example 1 – B-glucose
An example:
Glucose— in primary care

mmol/L
U-strips and clinical decision making

Together with the urine we distributed a case history

Mrs. Hansen, 65 years, is consulting you for control of the BP (170/95). She brings an urine sample and tells you about some dysuria the last week. Two years ago she was treated for urinary tract infection.

What is the probability that she has an urinary tract infection? .................

The urine strip shows: nitritis ____* and leukocytes ____* 

* to be filled in by co-worker after result from control material
Urine strips

After this result: What is the probability of urinary infection? .............
- and how will you handle the situation?

- do nothing
- treat her with ................
- request the following tests........
- other measures............
Urine strips and probability for infection

Pre- and posttest probability (%)
All POC instruments do not have excellent quality and analytical quality matters in relation to clinical decision.
Based on such results

The Norwegian government established an organisation that should fulfill the expectations of the clinicians in primary health care concerning the laboratory

- Noklus
What are the needs of the clinicians and the patients?

- Which constituents that shall be requested and where they should be analysed.
- That the results are correct.
- To have someone to consult when something goes wrong.
- Advices about what instruments to buy.
- Correct interpretations of the results.
Selection of tests dependent on

Need
Analytical quality
User friendliness
Clinical setting
Costs
Better outcome for patients

Start with POC

Decreased costs for society/clinician

Increased costs for society/clinician

Poorer outcome for patients

Do not start with POC
Recommendations
Basic repertoire at the doctors office

Hb
Glucose
CRP
ESR
Urine strips

Blood i faeces
HCG
Streptocock A-antigen
Mononucleosis

Reimbursement

NOKLUS is in dialogue with the Norwegian government and the Norwegian medical association concerning which tests that should be reimbursed
What are the needs of the physicians and the patients?

- Which constituents that shall be requested and where they should be analysed.
- That the results are correct.
- To have someone to consult when something goes wrong.
- Advices about what instruments to buy.
- Correct interpretations of the results.
EQAS for primary health care and hospital laboratories

EQAS for Primary health care

General Practitioners
Office personell, Nurses

EQAS for Laboratories

Clinical chemists
Statisticians
Med. lab. tech.

Clinicians
Nurses

?
What about internal quality control?

It is difficult to convince clinicians that it is important.

Is it important?
How correct should the result be?

What analytical quality specifications do clinicians expect.

They do not know much about trueness and imprecision. If asked directly, they usually expect zero error.

If asked indirectly, the situation is different.
The patient is a 76-year-old man with permanent atrial fibrillation and hypertension who is treated with warfarin and antihypertensives. The therapeutic interval for this patient is INR 2.0-3.0 (target INR 2.5). He is otherwise healthy and is feeling well at the moment. His INR results have been stable, and have varied between 2.0 and 2.8 during the last months.

His INR today is 2.3, and you decide not to change the warfarin dose.

If you were to decrease his warfarin dose, how high must this next INR value be? ________.
Change from 2.3
Difference between two results

Calculations of CD or RCV

\[ CD = z \cdot \sqrt{2} \cdot \sqrt{CV_{ws}^2 + CV_a^2} \]

\[ CV_a = \sqrt{(CD / z \cdot \sqrt{2})^2 - CV_{ws}^2} \]
Clinicians react close to a decisions limit.

When calculated the expected CVa for INR POC instrument was about 3.4
HbA1c

A 45 year-old, considerably overweight woman with 5 children. She was diagnosed with type II diabetes 4 years ago and you are her physician. Her diabetes treatment was a total daily dose of 7 mg glibenclamide and 500 mg metformine. She has a tight every-day schedule paying little attention to her diet and without time for exercise.
HbA1c

By consultation now the HbA1c is 9.1 % (DCCT value)
You do what you find appropriate.

What do you mean the HbA1c test-result should be at the next consultation for the value to indicate:

A. **Better diabetes control:**
   HbA1c value must have decreased to at least ......%

B. **Poorer diabetes control:**
   HbA1c value must have increased to at least ......%
HbA1c – results from 7 countries

Median percentage change in HbA1c to indicate poorer or better control was 0.7 % (0.5 – 0.9) which corresponds to a 8% (0.7/9.1) change in HbA1c from 9.1

25 % would react on changes of less than 4%
HbA1c: Importance of analytical CV
(pre-test prob. = 0.05)
What are the needs of the physicians and the patients?

- Which constituents that shall be requested and where they should be analysed.
- That the results are correct.
- To have someone to consult when something goes wrong.
- Advices about what instruments to buy.
- Correct interpretations of the results.
Scandinavian evaluation of laboratory equipment for primary health care
- SKUP provides neutral and independent information about quality and user-friendliness of point of care instruments

- SKUP provides high quality evaluations of instruments for the manufacturers

- SKUP distributes the information, regardless of the results of the evaluations (www.skup.nu)

- Cooperation with CIRME
## Choose component

### Summaries and Reports

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### The three latest reports

- GlucoMen LX
- Diaquick Strep A test
- SKUP/2008/69*
Thank you