Assessing the value of laboratory medicine in clinical care

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On behalf of the IFCC CPD Task Force on the Impact of Laboratory Medicine on Clinical Management and Outcomes
Importance of lab medicine

- Single highest-volume medical activity (Est 10-15 bn tests/year worldwide)
- Patient safety – fast, accurate diagnosis
- Essential to clinically cost-effective delivery of care
- Often the principal basis for costly downstream care – e.g. admission, imaging, biopsy
- Spans primary/secondary care
- Added value at pre- & post-analytical phases
Laboratory medicine - cost

- Global IVD market valued at $49.2 bn in 2012, growing at a rate of 7% from 2012 to 2017
- 3-5% of total healthcare costs worldwide
Lab results are vital!

- Example:
  Notification of a critical laboratory result led to change of treatment in
  - 98.0% of surgical in-patients
  - 90.6% of medical in-patients

  More than 40% were previously unsuspected findings

Lab-related causes of diagnostic error – areas to do better

- Inappropriate test ordered
- Appropriate test not ordered
- Appropriate test result not used properly
  - Knowledge deficit
  - Failure of synthesis
  - Misleading result
- Appropriate test result delayed/missed
- Appropriate test result wrong/inaccurate

(Epner & Astion, 2012)
Evaluation of diagnostic tests

- Technical efficacy
- Diagnostic accuracy
- Diagnostic decisions
- Therapeutic decisions
- Patient outcomes
- Economic evaluation

Effectiveness

Efficiency

Efficacy


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Evaluation of diagnostic tests

Effectiveness → Is this test HELPFUL?

Efficiency

Efficacy → Is this test MEANINGFUL?

Can I TRUST this test?

(P Bossuyt)
Components of test evaluation

- Analytical performance
- Clinical performance
- Clinical effectiveness
- Cost effectiveness
- Impact of testing on patient, organization, society

The vision

21st century medicine needs a flexible information resource:

- that facilitates selection of the right test on the right patients at the right time,
- with results delivered in a timely fashion to the right place
- accompanied by context-specific interpretation
- linked to guidance on agreed action to be taken (where appropriate)
- with validated patient-oriented clinical and economic outcome measures
Call to action (IFCC Task Force)

- Agree definition and validation of effectiveness measures – a “common currency” for outcomes
- Benchmark existing and new biomarkers in specified situations using commonly accepted effectiveness measures
- Improve utilization of new and existing biomarkers –
  - optimum testing strategies based on presenting complaint
  - support of effective requesting
  - timely and appropriate result transmission
  - availability of consultation and interpretation
  - audit of effectiveness in practice
Changing role of lab medicine

From:
- Specimen-centred
- Clinical testing
- Lab. performance
- Provider of results

To:
- Patient-centred
- Clinical decision-making
- Patient outcomes
- Partner in care
Get involved!

- IFCC is always looking for scientists and doctors who are willing to help develop the evidence supporting the value of laboratory medicine.

- Contact the IFCC office in the first instance:
  email ifcc@ifcc.org
References

- Special issue eJIFCC January 2015
  www.ifcc.org

- IFCC Task Force report
  “Current Evidence and Future Perspectives on the Effective Practice of Patient-Centered Laboratory Medicine”: Hallworth MJ et al.
  Clinical Chemistry – April 2015
  (doi:10.1373/clinchem.2014.232629)
Patient-Centered Laboratory Medicine

The role of the lab in improving patient outcomes

- Assist with management and treatment selection
- Define critical results
- Ensure follow up
- Perform clinical audit
- Develop guidelines for use of tests
- Provide utilization data
- Educate in laboratory medicine
- Train undergraduates
- Devise test profiles
- Develop order-entry systems
- Harmonize test names
- Provide context-specific help in test requesting
- Ensure appropriate test repertoire/formulary
- Help patients understand tests
- Lab Tests Online

Best Patient Outcome

- Test Request
- Sample
- Result
- Sample

Physician/Healthcare Professional

- Ensure fast, accurate analysis
- Ensure unique sample identification
- Ensure best location for analysis - establish and manage POCT if needed
- Determine best location for analysis - establish and manage POCT if needed
- Help patients understand tests
- Lab Tests Online

- Ensure critical results promptly
- Help patients understand result
- Choose best report format - paper/electronic
- Standardize units/report comments
- Develop appropriate reference intervals
- Deliver meaningful report
- Normalize methods
- Optimize lab processes
- Ensure analytical quality
- Provide appropriate transport/handling/storage - minimize preanalytical error
- Provide unique sample identification
- Enable evidence base