

# PERFORMANCE HIGHLIGHTS

2007–8

10>

QMP–LS Review 2007–8

## EXTERNAL QUALITY ASSESSMENT

### INTRODUCTION

Efficiency and effectiveness; more for less; “Lean” — all words and phrases familiar to health care workers in terms of meeting objectives and the bottom line — all words and phrases that also drive the need for the changes that are occurring within the External Quality Assessment program. The main driver is the development and sustainability of a world-class program with limited human and financial resources. In addition to providing core EQA services to Ontario participants, the projects addressed during 2007–8 were aimed at achieving this objective:

- alignment of QMP–LS EQA surveys with international standards,
- use of information systems applications to create LEAN EQA operations,
- development of improved EQA information for participants.

### PROJECT HIGHLIGHTS

#### Alignment of QMP–LS EQA Surveys with International Standards

There are two current international guidelines that address activities associated with EQA:

- ISO/IEC 43.1 (1997). *Proficiency testing by interlaboratory comparisons — Part 1: Development and operation of proficiency testing schemes*
- ILAC G13:2007. *ILAC Guidelines for the Requirements for the Competence of Providers of Proficiency Testing Schemes*

ISO standard ISO/IEC CD 17043 2008. *Conformity Assessment — General Requirements for proficiency testing* is under development and is based on the above guidelines.

This document is currently a committee draft. Once it is an approved standard, it will replace the former two documents. During the past few years, QMP–LS has been striving to align all processes with all three of these documents. The changes associated with use of robust statistics and introduction of scoring schemes provide assessors with tangible evidence of conformance to standards. During 2007–8, the following were accomplished in achieving alignment with these standards:

- completion of validation of performance scores for quantitative EQA surveys,
- continued development of performance scores for qualitative EQA surveys,
- standardization and revision of processes and procedures for all discipline surveys,
- revision and publication of program information for all EQA surveys,
- internal audit of the program against ILAC G13 and ISO/IEC CD 17043.

#### Use of Information Systems Applications to Create Lean EQA Operations

Lean manufacturing may be defined as a systematic approach to identifying and eliminating waste through continuous improvement. Basic tenets of “Lean” are to handle a product only once wherever possible, ensuring that all processes add value and flow from customer demand. “Lean” identifies seven sources of waste: over-production (extra features), inventory (requirements), processing (additional steps), motion (finding information),

- transport systems not evaluated to ensure specimen integrity;
- inadequate monitoring of environmental conditions or incomplete records;
- clinically appropriate turnaround times not established; and
- responsibility for authorizing resumption of testing not established.

**Table 10. Laboratory Conformance at Assessment Visits**

Year	Average Conformance	Average Number of Applicable Requirements
2003-4	92.98%	471
2004-5	93.71%	480
2005-6	95.20%	440
2006-7	94.09%	422
2007-8	94.45%	445
All Assessments to March 31, 2008	94.90%	433

**Table 11. Assessment Visit Top Ten Non-conformances (April 1, 2007 to March 31, 2008)**

Rank	No.	Requirement	Total Non-conformances/ Times Assessed	No. Majors	No. Minors
1	VI.3	All laboratory technical procedures, including manufacturer's instructions used as procedures and electronic instructions, shall be documented and available at the workstation for relevant staff.	17/44	0	17
2	VI.1	All laboratory examinations shall be based on methods cited in published peer-reviewed texts or journals, or be recommended by international, national, or regional guidelines. If in-house developed procedures are used, they shall be validated for their intended use and fully documented.	16/44	0	16
2	VII.12	For examinations performed using different methods and/or equipment or at different testing sites, there shall be a defined mechanism to verify comparability of results.	16/39	0	16
4	V.B.3	There shall be instructions describing the necessary specimen preservatives to ensure integrity, and the acceptable temperature range for transit. Systems used to transport specimens to the laboratory shall be evaluated to ensure that designated temperature range requirements can be met during transit and that the preservatives used are an effective means to ensure stability during transit.	14/44	2	12
4	III.6	Work surfaces shall be chemical resistant, impermeable, durable and readily cleanable.	14/44	1	13

defects, waiting (by staff and participants) and transportation (hand-off time). In previous years, the “Lean” principles had been applied to the packaging and distribution of testing material from QMP-LS. QMP-LS also identified four major processes that were prime candidates for the application of “Lean” principles as seen in Table 1. During 2007-8 the development of new information systems processes to address the inefficiencies was completed, ready for implementation in 2008-9.

**Table 1. Applying Lean Principles to Four Major EQA Processes**

<b>EQA Process</b>	<b>Source of Waste</b>	<b>I.S. Solution</b>
Use of hard copy worksheets	Processing; motion; waiting; transportation	Develop Web-based data entry system with worksheets posted in QView™
Manual performance evaluation	Processing; motion; waiting; transportation	Develop computer-assisted scoring systems
Use of hard copy correspondence	Processing; motion; waiting; transportation	Improve survey reports posted in QView™ to include scores and required corrective action and to minimize the need for correspondence
Use of hard copy discordant finding investigation	Processing; motion; waiting; transportation	Develop Web-based data entry system with completed forms posted in QView™

These new processes should be fully implemented by the end of 2008. The benefits to participants will be ready access of and availability to information regarding EQA reporting, performance and improvement activities.

**Development of Improved EQA Information for Participants**

Not only is QMP-LS working to improve the delivery of information but also to improve the content of information provided regarding the EQA program. In 2007-8, improvements were made to the content of EQA program information and survey reports. In addition, use of Webinars was adopted as the QMP-LS method of choice for delivery of education and information to participants, particularly when interaction is required.

**Improved EQA Program Information**

During 2007-8, the hard copy EQA program information contained in the Laboratory Proficiency Testing Program (LPTP) discipline binders was revised and posted on QView™, QMP-LS’ password-protected extranet document server. An overview of this information was also posted on the EQA section of the QMP-LS Web site. This information will be automatically updated by QMP-LS as required.

**EQA Survey Reports**

EQA survey reports have been developed to include detail of performance scores and required action to be taken by the participant. Cumulative survey reports graphically display performance over time and provide a summary of performance for management and supervisory personnel. These reports will be available with the 2008-9 EQA surveys.

**Webinars to Introduce Changes to EQA Surveys**

QMP-LS has acquired the capability to provide Webinars and Webcasts to its participants to provide active exchanges of information with participants as changes in the EQA program occur. The first Webinar/Webcast was entitled: *Performance Scores for Quantitative Chemistry and Hematology EQA Surveys*, which introduced participants to the use of Percent Allowed Difference (PAD) scores and the associated survey reports. It is

anticipated that the use of Webinars and Webcasts will continue throughout 2008 to introduce to participants the use of Web-based data entry of EQA data as well as qualitative performance scores for the various disciplines.

## **EQA CORE ACTIVITIES**

### **Provision of EQA Services to Ontario Medical Laboratories**

Provision of EQA services to Ontario medical laboratories is the primary objective of the EQA division. In 2007-8, QMP-LS provided 107 challenge surveys (including 6 Web-based surveys), 4 patterns-of-practice surveys and 1 questionnaire. The parameters monitored by the surveys are listed by discipline in Table 2. The scope of EQA surveys provided is shown in Table 3. The number and type of laboratory participant are shown in Table 4. The testing material sub-contractors for each discipline and the reference laboratories are shown in Table 5.

**Table 2. Parameters Monitored by QMP-LS, by Discipline**

#### **CHEMISTRY**

##### **Chemistry-General**

Albumin  
Albumin Excretion Rate (AER)  
Bicarbonate  
Bilirubin, Total  
Blood Gases (pH, pCO<sub>2</sub>, pO<sub>2</sub>, Na<sup>+</sup>, K<sup>+</sup>, Glucose, Ionized Calcium)  
Hb A<sub>1c</sub>  
Calcium, Total  
Chloride  
Creatinine  
Glucose  
Magnesium  
Phosphate  
Potassium  
Protein, Total  
Sodium  
Total Iron, TIBC, UIBC, Transferrin Saturation  
Urate  
Urea  
Urine Chemistry (Quantitative Protein, Sodium, Potassium, Creatinine, Osmolality)

##### **Drug Monitoring**

Acetaminophen  
Carbamazepine  
Digoxin  
Drugs of Abuse  
Ethanol  
Gentamicin  
Lithium  
Phenobarbital

##### **Drug Monitoring (continued)**

Phenytoin  
Salicylate  
Theophylline  
Tobramycin  
Valproic Acid  
Vancomycin  
**Endocrinology**  
Thyrotropin (TSH)  
Free Thyroxine (FT<sub>4</sub>)  
Free Triiodothyronine (FT<sub>3</sub>)  
Vitamin B<sub>12</sub>  
Ferritin  
Cortisol  
Total Testosterone  
Follicle Stimulating Hormone (FSH)  
Luteinizing Hormone (LH)  
Parathyroid Hormone  
Progesterone  
Prolactin  
Chorionic Gonadotropin (CG)  
Alpha Fetoprotein (AFP)  
Estradiol  
Prostate Specific Antigen (PSA)  
Free PSA  
Dehydroepiandrosterone sulphate (DHEA-S)  
Vitamin D3

##### **Enzymes, Cardiac Markers & Lipids**

Alkaline Phosphatase (ALP)  
Alanine Aminotransferase (ALT)  
Amylase  
Aspartate Aminotransferase (AST)

**Table 2. Parameters Monitored by QMP-LS, by Discipline (continued)**

**Enzymes, Cardiac Markers & Lipids (continued)**

- Gamma Glutamyl Transferase (GGT)
- Lactate Dehydrogenase, Total (LD)
- Lipase
- Total Creatine Kinase (Total CK)
- CK-2
- Serum Myoglobin
- Serum Troponin I
- Serum Troponin T
- Cholesterol
- Triglycerides
- HDL-cholesterol (HDL-C)
- LDL-cholesterol (LDL-C)

**Immunology**

- Antinuclear Antibody (ANA)
- Rheumatoid Factor (RF)
- Antimicrosomal Antibody (MAH)
- Anti-TPO
- High Sensitivity CRP (hsCRP)
- Anti ds-DNA
- Specific Proteins:
  - IgG
  - IgA
  - IgM
  - IgE
  - C3
  - C4

Protein Electrophoresis

**Maternal Serum Screening**

- Serum Analytes:
  - Alpha Fetoprotein (AFP)
  - Total Human Chorionic Gonadotropin (Total hCG)
  - Unconjugated Estriol ( $\mu E_3$ )
  - Dimeric Inhibin-A (DIA)
  - Free beta Human Chorionic Gonadotropin (free  $\beta$ -hCG)
  - Pregnancy-Associated Plasma Protein A (PAPP-A)
- Multiple of Median (MoM):
  - AFP, hCG,  $\mu E_3$ , DIA, free  $\beta$ -hCG and PAPP-A
- Initial Positive Rate (IPR):
  - Trisomy 18
  - Trisomy 21
  - Open Neural Tube Defect (ONTD)
  - All screening modalities (i.e. MSS3, MSS4 and IPS5)

**Hematology**

**Bone Marrow**

- Aspirate and/or Biopsy preparation
  - Descriptive Morphology
  - Diagnosis

**Coagulation**

- International Normalized Ratio (INR)
- Activated Partial Thromboplastin Time (APTT)
- Heparin Assay
- Factor VIII
- Factor IX
- D-dimer
- Thrombophilia Investigation:
  - Activated Protein C (APC) Resistance
  - Antithrombin
  - Protein C
  - Protein S
  - Anticardiolipin Antibody (ACA)
  - Factor V Leiden
  - Prothrombin Gene Mutation
  - Russell Viper Venom (dilute and confirm)

**Flow Cytometry**

- Lymphocyte Immunophenotyping (HIV)
- Leukocyte Immunophenotyping (Hematological Investigation)
- CD34+ Stem Cell Enumeration

**Red Cell Disorders**

- Hemoglobin S Screen
- Hemoglobin Fraction Quantitation

**Morphology**

- Peripheral Blood Film:
  - Differential Leukocyte Count
  - Descriptive Morphology
  - Diagnosis

**Routine Hematology**

- Leukocyte Count
- Erythrocyte Count
- Hemoglobin
- Hematocrit
- Mean Corpuscular Volume
- Thrombocyte Count
- Automated Leukocyte Differential
- Reticulocyte Count
- Body Fluid Cell Count

**Table 2. Parameters Monitored by QMP-LS, by Discipline (continued)****Transfusion Medicine**

ABO and Rh Grouping and Interpretation  
 Antibody Detection  
 Antibody Identification  
 Direct Antiglobulin Testing (DAT)  
 Crossmatching  
 Phenotyping  
 Antibody Titration

**MICROBIOLOGY****Bacteriology**

Aerobic and anaerobic isolation and identification of organisms from:  
     Blood  
     Genital specimens  
     Throat swabs  
     Urine  
     Body fluids  
     Other swabs/pus  
     Sputum  
     Stool samples  
 Quantitative urine cultures  
 Interpretation and reporting of cultures  
 Antimicrobial susceptibility testing  
 Interpretation and reporting of susceptibility findings  
 Serological grouping and identification  
 Gram stain interpretation  
 Detection of *Clostridium difficile* toxin  
 Mycobacteriology  
 Detection of acid-fast bacilli from direct smears  
 Quantification of acid-fast bacilli

**Mycology**

Isolation and identification of:  
     Dermatophytes  
     Moulds  
     Yeasts  
 Wet preparations for fungal elements

**Parasitology**

Wet preparation examination of stool samples  
 Preparation of faecal concentrates  
 Staining of samples for gastrointestinal parasites  
 Identification and quantification of parasites  
 Use of special stains

**Virology**

Antibody detection:

**Virology (continued)**

Cytomegalovirus (CMV)  
 Hepatitis A , B, and C  
 HIV  
 Rubella IgG  
 Varicella-zoster virus (VZV)  
 Antigen Detection:  
     Chlamydia trachomatis  
     Respiratory Syncytial Virus (RSV)  
     Influenza A virus  
     Influenza B virus  
     Parainfluenza virus

**GENETICS****Cytogenetics**

Blood  
 Bone Marrow  
 Tumour  
 Tissue  
 Amnion Cells  
 Fixed cell culture

**Molecular Diagnostics of Inherited Diseases**

– Suspended for 2007

**ANATOMIC PATHOLOGY****Histopathology****Histotechnology**

Routine stains  
 Special stains  
 Immuno-histochemistry stains

**Cytopathology**

Gynecological  
 Non-Gynecological  
 Respiratory:  
     Sputum  
     Bronchial washings  
     Bronchial brushings

## Urinary

Body fluids  
 Fine needle aspiration of breast  
 Fine needle aspiration of head and neck:  
     Thyroid  
     Lymph node  
     Salivary glands

**OTHER****Point-of-Care Testing**

Glucose Meters

**Table 3. 2007-8 EQA Surveys for Ontario**

Survey	Challenge	Dry	Pattern of Practice	Questionnaire
Bacteriology	6	...	1	1
Acid Fast Stain	2	...	...	...
Routine Chemistry	11	...	...	...
Drugs	6	...	...	...
Enzymes	4	...	...	...
Lipids	3	...	...	...
Blood Gases	2	...	...	...
Cytogenetics	2	...	...	...
Inherited Diseases	0	...	...	...
Cytology	3	...	1	...
Routine Hematology	7	1	...	...
Coagulation	10	...	...	...
Red Cell Disorders	4	1	...	...
Morphology	3	1	...	...
Bone Marrow	2	1	...	...
Flow Cytometry	6	1	...	...
Endocrinology	3	...	...	...
Immunology	3	...	...	...
Maternal Serum Screen	NA*	NA*	NA*	NA*
Transfusion Medicine	6	1	1	...
Virology	10	...	...	...
Mycology	2	...	...	...
Intestinal Parasites	2	...	...	...
Histotechnology	2	...	...	...
Glucometers	2	...	1	...
<b>Total Surveys</b>	<b>101</b>	<b>6</b>	<b>4</b>	<b>1</b>

\* No surveys conducted in 2007-8

**Table 4. Comparison of Types of Ontario Laboratories Participating in QMP-LS**

Laboratory Facility Type	Number of Laboratories						
	2001	2002	2003	2004	2005	2006	2007
Community	53	54	47	44	40	34	34
Hospital	181	182	180	182	182	179	178
Public Health	11	12	12	12	12	12	12
Psychiatric	0	0	0	1	1	1	0
Canadian Blood Services	6	6	6	6	5	2	2
Federal Government	2	1	1	1	1	1	1
Other	1	2	2	1	1	2	1
<b>Total</b>	<b>254</b>	<b>257</b>	<b>248</b>	<b>247</b>	<b>242</b>	<b>231</b>	<b>228</b>

**Table 5. Testing Material Suppliers and Reference Laboratories, 2007-8**

<b>Testing Material Suppliers</b>	<b>Reference Laboratories</b>
<b>CHEMISTRY DISCIPLINES</b>	
<b>Chemistry-General</b>	
Bio-Rad Laboratories (Canada) Ltd. Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario	Reference Laboratory, Ortho Clinical Diagnostics Inc., Rochester, New York
The Credit Valley Hospital, Mississauga, Ontario	Diabetes Diagnostic Laboratory, University of Missouri-Columbia, Columbia, Missouri
<b>Drug Monitoring</b>	
Centre for Addiction and Mental Health, Toronto, Ontario The Credit Valley Hospital, Mississauga, Ontario	Centre for Addiction and Mental Health, Toronto, Ontario
<b>Endocrinology</b>	
ThermoFisher Scientific, Austin, Texas Toronto General Hospital, University Health Network, Toronto, Ontario	
<b>Enzymes, Cardiac Markers and Lipids</b>	
Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario	Reference Laboratory, Ortho Clinical Diagnostics Inc., Rochester, New York
The Credit Valley Hospital, Mississauga, Ontario	Northwest Lipid Research Core Laboratory, University of Washington, Seattle
<b>Immunology</b>	
Keystone Biologicals, Hatboro, Pennsylvania	
<b>Maternal Serum Screening</b>	
United Kingdom National External Quality Assessment Service (UK NEQAS)	
<b>Point-of-Care Testing (Glucose Meters)</b>	
Bio-Rad Laboratories, Benicia, California	
<b>HEMATOLOGY DISCIPLINES</b>	
<b>Hematology-Routine</b>	
Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario	Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario
R&D Systems, Inc., Minneapolis, Minnesota	
<b>Hematology-Red Cell Disorders</b>	
Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario	Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario
<b>Hematology-Flow Cytometry</b>	
London Health Sciences Centre, London, Ontario R&D Systems, Inc., Minneapolis, Minnesota	
<b>Coagulation</b>	
Affinity Biologicals Inc., Ancaster, Ontario	Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario
Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario	
Somagen Diagnostics Inc., Edmonton, Alberta South Manchester University Hospitals, Manchester, U.K.	
<b>Morphology and Hematology-Bone Marrow</b>	
Various laboratories throughout the province of Ontario	London Health Sciences Centre, London, Ontario Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario

**Table 5. Testing Material Suppliers and Reference Laboratories, 2007-8 (continued)**

Testing Material Suppliers	Reference Laboratories
<b>HEMATOLOGY DISCIPLINES (continued)</b>	
<b>Transfusion Medicine</b>	
Immucor/Gamma, Houston, Texas London Health Sciences Centre/Canadian Blood Services, London, Ontario	The Credit Valley Hospital, Mississauga, Ontario Royal Victoria Hospital, Barrie, Ontario
<b>MICROBIOLOGY DISCIPLINES</b>	
<b>Bacteriology</b>	
London Health Sciences Centre, London, Ontario	Central Public Health Laboratory, Toronto, Ontario London Health Sciences Centre, London, Ontario
AFB Smears Central Public Health Laboratory, Toronto, Ontario	Mount Sinai Hospital, Toronto, Ontario The Credit Valley Hospital, Mississauga, Ontario The Ottawa Hospital, Ottawa, Ontario Hamilton Regional Laboratory Medicine Program, Hamilton, Ontario Sunnybrook Health Sciences Center
<i>Clostridium difficile</i> Toxin Clinical Microbiology Proficiency Testing (CMPT), Vancouver, BC	
<b>Mycology</b>	
Sporometrics Inc., Toronto, Ontario – purchased from culture collections: University of Alberta Microfungus Collection and Herbarium, Edmonton, Alberta (UAMH); The Centraalbureau voor Schimmelcultures (CBS), The Netherlands, and; Agricultural Research Service (ARS) Culture Collection, National Center for Agricultural Utilization Research, Peoria, Illinois, U.S.A.	Central Public Health Laboratory, Toronto, Ontario Wadsworth Centre for Laboratories and Research, Albany New York Laboratoire de Santé Publique du Québec, Ste-Anne-de-Bellevue, Quebec
<b>Parasitology</b>	
Various participating laboratories (distributed by London Health Sciences Centre)	
<b>Virology</b>	
London Health Sciences Centre, London, Ontario ZeptoMetrix Corporation, Franklin, Massachusetts Interstate Blood Bank, Memphis, Tennessee	Central Public Health Laboratory, Toronto, Ontario National HIV Reference Laboratory, Health Canada, Ottawa, Ontario
<b>ANATOMIC PATHOLOGY</b>	
Various participating laboratories	
<b>CYTOLOGY</b>	
Various participating laboratories	
<b>GENETICS</b>	
Various participating laboratories	

### **QMP-LS Scientific Committees and Volunteers**

Eleven scientific committees provide advice and support to the EQA program. In 2007-8, QMP-LS hosted a total of 39 scientific committee meetings involving 66 laboratory physicians, scientists and medical laboratory technologists. The names of these volunteers are listed in Appendix A. As representatives of the Ontario laboratory community, scientific committee members provide advice to QMP-LS regarding the fundamental design of EQA surveys and ensure clinically relevant selection of challenges and appropriate performance evaluation.

In January 2008, the process for selection and appointment of scientific committee members was modified to include the nomination of candidates from the laboratory community at large. At the beginning of each calendar year, a list of available committee positions is now published in the *QMP-LS News* and on the QMP-LS Web site. Interested candidates may be nominated through completion of the nomination form, which provides a description of the required qualifications of candidates. This process was highly successful in attracting many well-qualified individuals to join the committees. As always, QMP-LS is extremely grateful for the commitment and support of Ontario laboratory professionals and wishes to thank all of those individuals who donate so much of their valuable time and expertise to the program.

### **EQA Survey Highlights**

Information regarding 2007-8 EQA survey activity is well described in the survey reports and committee comments, available through QMP-LS' password-protected document server, QView™.

#### ***Clinical Chemistry Highlights***

As recommended by the Canadian Society of Nephrology, in order to report an estimated glomerular filtration rate (eGFR) laboratories must use serum/plasma methods traceable to the isotope dilution mass spectrometry (IDMS) reference method. This requires instrument manufacturers to re-calibrate their methods for creatinine, which will lead to a probable change in creatinine concentrations by approximately 5%-10%. During this conversion period, QMP-LS is requiring participants to report when their method has been calibrated to the IDMS method so that results may be analyzed separately. By the end of 2007-8, 87% of Ontario laboratories had reported creatinine method traceability to the IDMS standard.

#### ***Statistical Analysis of Small Peer Groups***

Participants performing quantitative surveys in chemistry and hematology surveys were advised that laboratories reporting results in peer groups of less than five participants could not be analyzed statistically and as a result, such laboratories will not be able to use their participation in QMP-LS as evidence of satisfactory performance in external quality assessment (EQA) activities for accreditation purposes. They were advised to seek an alternative assessment program (AAP), which may be a non-QMP-LS proficiency testing/EQA scheme or a program of split sample testing. Due to the rapid changes in methodology, which impact peer group sizes, laboratories are expected to continue to notify QMP-LS of changes in methodology and participate in QMP-LS surveys even when participating in an AAP.

#### ***Patterns-of-Practice Surveys***

- Process Validation in Transfusion Medicine
- Status of Practice in Cytology
- Use of Quality Indicators in Microbiology
- Update on Use of Point-of-Care Tests in Hospitals

**Questionnaires**

- Antimicrobial Resistance in Common Hospital Pathogens in Ontario

**Laboratory Performance**

The scientific committee evaluation of survey responses during 2007-8 included assessment of error based on the clinical significance of discordant findings. Lesser errors are assessed for results that exceed the established acceptable limits and significant errors for results that have the potential to cause mistreatment or misdiagnosis. Scientific committees correspond with participating laboratories regarding the discordant findings, requesting feedback on the cause and corrective action. Unacceptable or incomplete participant responses prompt further communication, continuing to monitor performance and/or an offer of an on-site consultation.

One on-site consultation in Hematology (Coagulation) was conducted during 2007-8. No laboratory was declared non-proficient.

**Reports to Participants**

Reports provided to participants include preliminary reports of the assigned values (consensus or reference values), summary information of all participant responses as well as reports of individual laboratory performance. In addition, the scientific committees provide educational feedback in the form of committee comments, broadsheets and practice guidelines. During 2007-8, the following were provided to participants:

- 102 provisional reports
- 109 general survey reports
- 104 committee comments
- 3 broadsheets

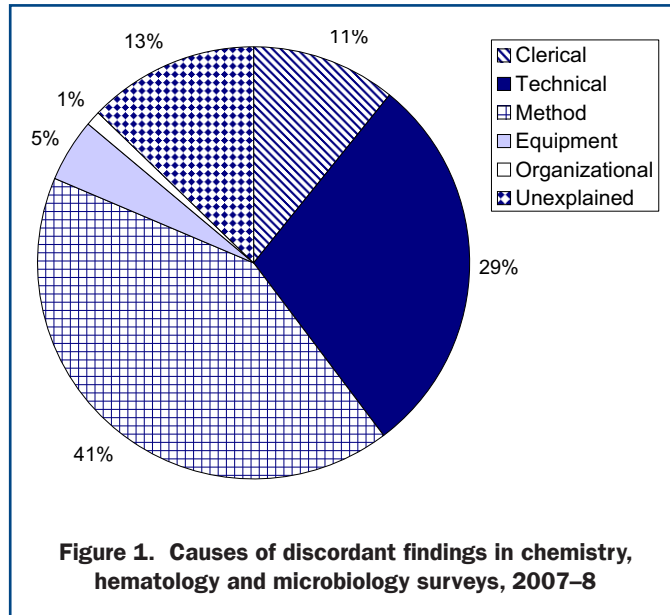
The titles of the broadsheets published this year are:

- *Body Fluid Cell Counts and Differential Analysis*
- *Precision Goals in Clinical Chemistry*
- *Estimated Glomerular Filtration Rate*

- 1 guideline

The title of the guideline published this year is:

- *Guidelines for Split Sample Testing - Quantitative EQA Surveys*



**Figure 1. Causes of discordant findings in chemistry, hematology and microbiology surveys, 2007-8**

**Investigation of Discordant Findings**

Participants that report discordant results in EQA surveys are requested to investigate and report a summary of the investigation and corrective actions to QMP-LS. The overall discordance rate for the 12-month period between April 2007 and March 2008 was 0.97%. Summary information for causes of discordance in Chemistry, Hematology and Microbiology surveys is included in Figure 1.

The most common categories of discordance were associated with method-related issues (41%) and technological causes (29%). The method-related issues involved problems with accuracy and precision of automated systems and kit methods, erroneous calibrator value assignment by the manufacturer, use of inadequate or inappropriate quality control programs and use of inadequate or out-dated procedures or reporting protocols. Technological issues included inadequate response to quality control results, failure to follow written procedures and sample handling issues.

The nature and contributing causes of discordant results have not changed significantly over the past five years. Laboratories would be able to eliminate a significant proportion of problems with EQA (and also patient) results if the following was adequately implemented:

- initial and on-going validation of methods and their associated quality control programs;
- initial and on-going training and competency assessment of staff;
- maintenance of procedures.

For more detailed discussions regarding causes of discordant findings, see the discipline-specific supplementary committee comments posted on QView™.

#### **Services to Other Jurisdictions**

In addition to services provided to Ontario laboratories, QMP-LS provides EQA services to other jurisdictions on a cost-recovery basis. The surveys most commonly provided are listed in Table 6. In addition, we provide separate microbiology surveys to 22 member countries of CARICOM and separate cytology surveys to Alberta laboratories.

**Table 6. Number of Participating Ontario Laboratories in 2007-8 vs. Out-of-Province (April 2007 to March 2008)**

<b>Discipline</b>	<b>Ontario</b>	<b>Out-of-Province</b>
Anatomic Pathology	73	1
Chemistry-General	196	2
Drug Monitoring	163	0
Endocrinology	133	1
Enzymes, Cardiac Markers	193	2
Lipids	131	0
Immunology	61	3
Maternal Serum Screening	NA*	NA*
Hematology-General	205	4
Flow Cytometry	24	14
Red Cell Disorders	73	1
Coagulation	187	3
Hematology-Morphology	194	0
Transfusion Medicine	178	0
Bacteriology	105	0
Mycology	21	2
Parasitology	18	0
Virology	87	3
Genetics	11	9
Cytology	78	1
Point-of-Care Testing	186	1

\* No surveys conducted in 2007-8

## LOOKING AHEAD

During 2008–9, the changes to EQA survey models should be completed. By the end of 2008, participants should be able to:

- enter EQA survey responses on-line using Web-based data entry system;
- view the majority of survey reports within 2–3 weeks of completion of the survey and perform any necessary investigation and implementation of corrective actions;
- submit discordant findings investigations on-line using Web-based data entry system;
- access all current EQA survey related descriptions, reports and educational information through QView™ at any time.

It is anticipated that on-line submission of information will facilitate prompt analysis and evaluation of information, and rapid correction of any problems.

In 2009, when changes to the programs are complete, QMP–LS will offer basic survey information to manufacturers to enable them to track performance of their kits, instruments and reagents and enable them to implement prompt corrective actions for their products as required.