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CMPT's Annual General Meeting

The CMPT's Annual General Meeting was held on October 18th, 2010 at the Plaza 500 Hotel, Vancouver. As with every year, CMPT staff and members of the different Advisory Committees got together to discuss the activities of CMPT and its sister program POLQM during the 2009-2010 year.

The meeting started with a word from Dr. Michael F. Allard, Head of the Department of Pathology and Laboratory Medicine, University of British Columbia. He highlighted the importance of Quality programs in laboratory medicine and the great work CMPT has been doing.

Dr. Michael F. Allard

Mr. John Garratt

The CMPT staff then followed with a report of the different activities at CMPT such as research, editorial, financial, and certification and accreditation status.

As announced in the spring issue of Connections, CMPT is helping cIQc (Canadian Immunohistochemistry Quality Control program) move towards ISO certification and with the logistics that a national proficiency testing program requires.

Mr. John Garratt, from cIQc, attended the meeting and gave a presentation about cIQc's activities and progress.

The Annual General Meeting is a great place for members of the Advisory Committees to discuss about the programs, relevant issues, or talk about what's new in their laboratories.

Dr. Paul Levett

This year Dr. Paul Levett, from the Saskatchewan Disease Control Laboratory, Regina, SK, talked about their recent move to the new provincial public health laboratory and the difficulties of transferring such a laboratory to a new location, the importance of good planning and timing, and the logistics involved.

The Annual General Meeting closed with Dr. Michael Noble' s report on CMPT's programs, its activities, survey results, educational activities, projects in the last year, and goals and objectives for the coming year. (Please visit this year's Annual Report for a full Chair report - LINK).

Dr. Michael Noble

CMPT'S GOALS AND OBJECTIVES 2010 - 2011

CMPT continues to maintain its long term goals to be a consistent, reliable, innovative provider of external quality assessment services and education.

Consistent with that goal, this year CMPT proposed the following objectives:

P10_1	Continued work on P08_4 and P08_5
P10_2	Prepare Manuscript for Publication
P10_3	Continue to extend program menus for Clinical Bacteriology
P10_4	Continue to extend program menus for Water Bacteriology
P10_5	Continue to extend program menus for Mycology Plus
P10_6	Work with external agencies to promote international EQA education program within the next two years
P10_7	To seek external fnding for resarch opportunities
Q10_1	To make the decision about ISO 17043:2010
Q10_2	To seek renewal of ISO 9001:2008
Q10_3	To perform Satisfaction Survey on CMPT Critiques and Newsletter

Pending from last year:

P08_4 Increase non-program funding contracts by 5 percent. **Sustained funding but not increased.**

P08_5 Seek new alternate sources for challenge materials; particularly a problem for enteric parasitology. **Veterinary and laboratory sources identified.**

CMPT'S INTERNATIONAL EQA PROGRAM

South African Delegation

CMPT's International EQA program continues to attract participants from around the world interested in implementing EQA programs in their communities.

During the week of July 19-23, Dr. Olga Perovic, Ms. Vivian Fensham and Ms. Bhavanni Poonsamy from the National Institute for Communicable Diseases (NICD), National Health Laboratory Service in Johannesburg, South Africa, trained at CMPT.

Ms. Fensham, now the laboratory manager of the Microbiology services for Proficiency Testing, has been involved in EQA since 2002. That year she trained at CMPT and applied what she learned to the World Health Organization (WHO) sponsored and National Proficiency Testing (PT) programs, which she coordinates.

Ms. Poonsamy coordinates three Parasitology PT programs: Malaria, sponsored by the WHO, and the enteric and blood Parasitology national programs.

Dr. Perovic joined the NICD in November 2009. As part of her role as head of External Quality, Dr. Perovic used this visit to explore what CMPT has to offer as a centre for EQA training. As she mentioned, there are not many places that offer training in PT and accreditation.

From left to right: Dr. Olga Perovic, Dr. Michael Noble, Ms. Vivian Fensham, and Ms. Bhavanni Poonsamy

As with many of the international visitors to CMPT, the formation of a panel of experts to help with results evaluation and recommendations seems to be a critical issue for the South African PT program as well. They now have some local advisors, but they would like to involve experts from all over the country in the near future.

Although each delegate had different expectations, one common issue was laboratory accreditation. As the only proficiency testing program in North America to seek certification to ISO 9001, CMPT is the right choice to guide them through the process. "We have a lot of questions and Mike is going to get a lot of emails from me" said Ms. Fensham.

"I want to take this opportunity to thank you all for excellent training, time spent with us, opening possibility for future communications and hospitality."

Dr. Olga Perovic

The experience was very positive for them and, both CMPT and the South African delegation, would like to keep in touch for future collaboration.

CMPT has provided education and training in EQA to participants from different parts of the world including Thailand, Zimbabwe, South Africa, Belgium, and China and continues to work with both WHO and the ILAC Proficiency Testing Consultative group towards more opportunities for education, training and mentoring for PT providers.

SPECIMEN REJECTION CRITERIA FOR SPUTA

This article was submitted by Dr. Greg Horsman on behalf of the Microbiology QA Committee, Saskatchewan

Assessment of specimens submitted to a clinical microbiology laboratory for culture is an important aspect for determining the extent of workup necessary. Most criteria are based on collection and transport time. When parameters fall outside of limits, new specimens should be collected. In addition, microbiology laboratories need a system in place to reject poor quality sputa submitted for bacterial culture in adults with a clinical diagnosis of pneumonia.

In the clinical microbiology laboratory, Gram stains are prepared of all sputa submitted for bacterial culture to determine the extent of contamination with saliva, and therefore, acceptability of the specimen for bacterial culture.

This specimen rejection tool does not apply to:[1]

1. Neutropenic patients, <1.0x109/L
2. HIV patients
3. Specimens for tuberculosis culture
4. Specimens for fungal culture
5. Patient treated with steroids (prednisone-equivalent dosage of more than 20 mg per day for two weeks or longer).
6. Children
7. Acute bronchitis
8. Patient with Cystic Fibrosis

Exclusion tools have evolved over time. Presently there are two main systems used in clinical laboratories to evaluate sputa for rejection. One system, Q score, incorporates analysis of quantification of neutrophils and epithelial cells and the presence of mucus.[2,3]

When working up specimens from immunosuppressed patients, laboratories employing Q score, as a rule, modify the criteria and base rejection on the amount of squamous epithelial cells only. The other system is based on microscopic examination of the Gram stain of the sputum samples and quantification of only squamous epithelial cells (SEC). In this system, sputa with squamous epithelial cells of 10 or more per average 10X field are rejected.

Murray and Washington (1987) [4,5] found the number of isolates correlate well with number of epithelial cells when compared to isolates from concurrent transtracheal aspirates. In this study the number of white blood cells (WBC) bore no relationship to the number of isolates. It has been reported that samples with > 10 SECs and a combination of large number of pus cells (i.e. ratio of 10 X pus to epithelial cells), and a single morphotype consistent with a pathogen can grow a pure growth of a potential pathogen. [6]

The second system uses the number of SEC only, to exclude a sputum with > 10 SEC per 10 X (low power) except for those with many pus cells and single morphotype consistent with a pathogen.

As the number of immunosuppressed patients increases in the health care system, the challenge of having risk factor information available to the laboratory increases correspondingly.

A system that uses only epithelial cells and not WBC will have less interference from causes of immunosuppression. In addition a system measuring fewer variables is more intuitive and easier to standardize. This in turn, leads to less inter-operator variability, which is an important aspect in ensuring quality assurance.

By applying exclusion criteria, patients with a clinical diagnosis of pneumonia should produce cultural results leading to etiology of infection. In addition, you may see morphotypes in the Gram stain suggestive of aspiration pneumonia. For example, stained smears showing many polymorphonuclear leukocytes and many mixed respiratory flora morphotypes, especially those suggesting streptococci or anaerobes would be consistent with aspiration pneumonia – which can be seen in hospitalized patients as well as those admitted directly from the community. In addition, following culture incubation, review plates for relative quantities of each isolate, correlating culture results with gram-smear results.

References

1. García-Vázquez, E., M. A. Marcos, J. Mensa, A. de Roux, J. Puig, C. Font, G. Francisco, and A. Torres. 2004. Assessment of the usefulness of sputum culture for diagnosis of community-acquired pneumonia using the PORT predictive scoring system. Archives of Internal Medicine 164:1807-1811.

2. CCQLM Microbiology Working Group. 2004. Guideline for quantitative interpretation of Gram stains. Accessed 2nd October 2009, from www.cpsa.ab.ca/Libraries/Pro.../Gram_Stain_Guideline.sflb.ashx

3. Kuijper, E. J., J. van der Meer, M. D. de Jong, P. Speelman, and J. Dankert. 2003. Usefulness of Gram stain for diagnosis of lower respiratory tract infection or urinary tract infection and as an aid in guiding treatment. European Journal of Clinical Microbiology & Infectious Diseases 22:228-234.

4. Murray, P. R., and J. A. Washington. 1975. Microscopic and bacteriologic analysis of expectorated sputum. Mayo Clinic Proceedings 50:339-344.

5. Murray, P. R., E. J. Baron, J. H. Jorgensen, M. L. Landry, and R. H. Yolken. 2007. Manual of Clinical Microbiology, 9th ed, ASM Press, Washington, D.C.

6. Isenberg, H. D. 2004. Clinical Microbiology Procedures Handbook, 2nd. ed, ASM Press, Washington, D.C. p 3.2.1.20.

SPECIMEN REJECTION CRITERIA FOR SPUTA

CMPT Clinical Bacteriology Committee - Response to Dr. Grey Horsman and the Microbiology QA Committee, Saskatchewan

Much has been written about interpretation of the quality of sputum samples and the correlation of the sputum gram smear with the culture of respiratory bacterial pathogens. The literature generally states that higher relative number of polymorphonucelar neutrophils (PMNs) with lower numbers of squamous epithelial cells (SECs) is supportive of a good quality sample with a better likelihood of finding a pathogen in the specimen.

For known immunocompromised patients this tenet may not hold up. There have been a variety of scoring systems proposed to give a Quality or Q-score to the sample, but the principles identified below are really only those that are important. Giving a sputum sample a +1 or -1, or incorporating mucous into the scoring does not significantly change what is really a simple outcome.

Translating this into quantifiable numbers, the literature states that under low power (x10 objective), a sample with > 25 PMNs and < 10 SECs is considered a good quality sample. The quality of the sample generally deteriorates as the number of SECs increases. While the supportive literature is old (Murray and Washington, 1975; Geckler et al., 1977), their observations and science still holds. The presence of higher proportions of SECs indicates a poorer quality specimen that will not yield a true picture of the pathogen in the sample.

A proposal to quality score an expectorated sputum sample based on number of SECs (< 10 per low power field as a good quality sample) is totally consistent with Geckler's recommendations (and those of CMPT). The Geckler study differed from that of Murray and Washington because he reviewed samples from patients with a paired collection of sputum and transtracheal aspirate (TTA) whereas Murray and Washington compared results of random collections of sputa and TTAs.

The Geckler study suggested that if sputa with < 10 SECs grew a respiratory pathogen, then the TTA would also grow that pathogen. If the good quality sputum did not grow a pathogen it was still possible that a pathogen would be cultured from the TTA. In many circumstances, it is not possible to access a TTA, so the sputum is the only mechanism.

CMPT has always advocated that the only way to confidently and accurately distinguish and quantify SECs in sputum is by screening with a low power (x10) objective. Using this method and determining an average of < 10 SECs per low power field provides the best possible determination of the quality of the sputum sample.

With the exception of known immunocompromised patients, and for examination of sputa for pulmonary tuberculosis, laboratories should be using these criteria for determining which sputa should be further cultured. Laboratories that do not routinely culture sputum samples but do perform gram smears should equally screen those samples to establish early for their clinicians the likelihood of a pathogen being recovered in the specimen, and as a laboratory quality assurance and utilization tool.

Poor quality samples that are sent out to labs that would then perform a gram smear, find excessive SECs, and reject the sample, will only delay discovery of possible causal respiratory agents in these patients.

References

Murray PR and JA Washington. 1975. Microscopic and bacteriologic analysis of sputum. Mayo Clin Proc. 50: 339 – 344.

Geckler RW, DH Gremillion, CK McAllister and C Ellenbogen. 1977. Microscopic and bacteriological comparison of paired sputa and transtracheal aspirates. J. Clin Microbiol. 6: 396 – 399.

M101-1 *Streptococcus milleri* group or *Streptococcus anginosus* group?

Streptoccoccal taxonomy has undergone a number of changes with the introduction of molecular methods. The classification of streptococci has traditionally considered the hemolytic patterns of the organisms in culture, and classifying as either beta-hemolytic, alpha-hemolytic or non-hemolytic. Beta-hemolytic streptococci include *S. pyogenes*, *S. agalactiae, S. dysgalactiae, S. equi,* and *S. canis*. However, this classification can be confusing as some clinically significant non-beta-hemolytic species (*S. dysgalactiae* subsp. *dysgalactiae*) are excluded and some non-pyogenic beta-hemolytic species (*S. anginosus* group) are included. The term 'pyogenic streptococci' is considered to be more precise for the above organisms, and excludes the *S. anginosus* group. Some of these species are further characterized by Lancefield grouping.

The alpha-hemolytic streptococci can be broadly lumped as *S. pneumoniae* and the viridans streptococci. The viridans streptococci is composed of five species groups have been designated as the *S. mitis* group, the *S. mutans* group, the *S. salivarius* group, the *S. bovis* group and the *S. anginosus* group.

Relevant to this critique, the small colony forming *S. anginosus* group consists of three distinct species *S. anginosus, S. constellatus*, and *S. intermedius* and also includes organisms previously designated as group F streptococci, *S. milleri* group and *S. milleri*, which no longer has species standing.

Further reading

1. Facklam R. What happened to the streptococci: Overview of taxonomic and nomenclature changes. Clin Microbiol Rev. 2002; 15: 613-630

2. Doern CD, Burnham CD. It is not easy being green: The viridans group streptococci, with focus on pediatric clinical manifestations. J Clin Microbiol. 2010; 48: 3829-3835

3. Spellberg BJ; Brandt C. *Streptococcus*. In: Murray ea, ed Manual of Clinical Microbiology. Vol 1. 9th ed. ed. Washington, DC.:ASM; 412

M101-1 The importance of interpretive notes

The challenge was a *Streptococcus constellatus* (*S. anginosus* group) isolated from a midstream urine of an 82 year old female in a long term care facility. It was anticipated that laboratories would recognize this organism as an unlikely pathogen in this patient and report the growth with a comment about the clinical relevance. (Please see "The importance of interpretive notes" by Dr. M. Noble on page 6).

Streptococcus species are rarely identified in urine samples. With the exception of beta-hemolytic streptococci, when present, they nearly always represent contamination of the specimen.

Reporting a correct identification, but not adding an interpretive comment was downgraded to 3.

1. Nicolle L, Bradley S, Colgan R, Rice J, Schaeffer A, Hooton T. Infectious diseases society of America guidelines for the diagnosis and treatment of asymptomatic bacteriuria in adults. Clinical Infectious Diseases. 2005;40:643-654.

Mycology 1001-1 *Candida glabrata* - Susceptibility to Fluconazole reporting

Isolates of *C. glabrata* generally have reduced susceptibility to fluconazole.

While MICs of 4 ug/mL are usual and would be reported as susceptible using CLSI breakpoints, infections with such isolates are often slow to resolve. It would certainly not be clinically wrong in an isolate of this species from blood to change the S-DD result (susceptibility is dependent on achieving the maximal possible blood level) to resistant to preclude the use of fluconazole in this strain.

One of the laboratories doing disk diffusion reported a zone diameter of 18mm and interpreted this result as "susceptible." However, according to CLSI document M27 –A3 this result should be reported as S-DD. The broad range of zone diameter observations (18 – 29 mm) for fluconazole with this isolate identifies potential difficulties with reading disk diffusion tests for these antifungal agents. Considerable experience is required to ensure that readings are accurate, because these agents are large molecules and may diffuse variably in agar media.

Knowledge of the species and understanding of the usual degrees of susceptibility can assist in determining if the result is likely to be appropriate for that strain.

1. CLSI. Method for antifungal disk diffusion susceptibility testing of yeasts; approved guideline-second edition. Wayne, PA.: Clinical and Laboratory Standards Institute; 2009:M44-A2.

2. CLSI. Reference method for broth dilution antifungal susceptibility testing of yeasts; approved standard - third edition. Wayne, PA.: Clinical and Laboratory Standards Institute; 2008:M27-A3.

THE IMPORTANCE OF INTERPRETIVE NOTES

This article by Dr. Michael Noble highlights the reasons for interpretive comments in laboratory reports

An abstract written in the Lancet includes the following:

"5 typical microbiology reports were circulated to the medical staff of a 900-bed teaching hospital and they were asked for their interpretations. Approximately 160 completed replies were received and it was clear that the reports were often misinterpreted; one report (isolation of a gram-negative rod from sputum) was misinterpreted by four doctors out of five. The reasons for this failure of communication seem to be the use of jargon and unfamiliar names of bacterial species, and use of ill-defined reporting conventions. The omission of a clear-cut conclusion from many reports also contributed to misunderstanding. These deficiencies in reporting practices result in unnecessary antibiotic therapy and unnecessary work for the laboratory, since clinicians are more likely to ask for a repeat of a test with a doubtful interpretation. Communications with clinicians would be more effective if microbiologists ensured that each report is free of jargon, states what conclusion can be drawn from the test, and makes recommendations, where appropriate, for antibiotic therapy." [1]

The points made are clear and consistent with the principles of Patient Safety, and go directly to the core of the impacts of confusion associated with post-examination error.

What is so interesting is that the article was written over thirty years ago.

Over the years, the CMPT Clinical Bacteriology Advisory Committee has committed itself to the value and importance of reporting clarity through the regular and routine use of interpretive and cautionary notes as an integral component of the medical laboratory report.

Recent critiques (M044-1, M052-3, M094-5) indicate the committees strong belief in the value of interpretive and cautionary notes.

Medical laboratories are part of the diagnostic service because they provide information that can be used for patient care. In some situations the information aids in diagnosis, in other situations aids in the direction of therapy.

The use of interpretive and cautionary notes or guides is seen by both laboratories and clinicians as positive assistance in understanding medical laboratory information.

Guidance for reporting results is given in the ISO standard 15189:2007 which requires that reports include both, results and the interpretation of results where applicable. The use of interpretive and cautionary notes is clearly in compliance with this international standard.

Interpretive and cautionary notes are not intended to undermine or demean the knowledge, experience, and expertise or authority of clinicians that send the samples to the laboratory for examination. They do however, provide a context commonly seen for recognized results patterns that distinguish between results more commonly associated with infection versus those more commonly associated with colonization or contamination.

In a recent study from one laboratory, [2] guides were viewed positively by clinicians who indicated that narrative interpretations saved time in analysis and increased the accuracy of their diagnosis in 70–80% of the cases. In addition, the narrative interpretation also improved the ability of physicians to target the needed tests for a specific clinical situation.

Consider the use of interpretive and cautionary notes as a step towards improved patient safety.

It is important to appreciate that the laboratory usually does not have complete clinical information thus notes should be seen as suggestive or probable guides and not as definitive. Consistent with this, as a cautionary note, Lim et. al. [3] noted that interpretive guides in clinical chemistry can be problematic in complex evaluations when they are not written by highly knowledgeable individuals.

In summary, the use of interpretive and cautionary notes or guides is seen by both laboratories and clinicians as positive assistance in understanding medical laboratory information. It is thus, both appropriate and responsible for proficiency testing programs like CMPT, to ensure that these notes are found in the informational reports that laboratories send to clinicians.

In CMPT we refer to that as a measure of clinical relevancy. We consider the absence of appropriate interpretive or cautionary notes as a potential post-examination error.

So, it is not just about process, nor is it just about the CMPT score. Consider the use of interpretive and cautionary notes as a step towards improved patient safety.

Dr. Michael Noble; Chair, CMPT

1. Ackerman VP, Pritchard RC, Obbink DJ, Bradbury R, Lee A. Consumer survey on microbiology reports. Lancet. 1979 Jan 27;1(8109):199-202.

2. Laposata, M. Patient-specific Narrative Interpretations of Complex Clinical Laboratory Evaluations: Who Is Competent to Provide Them? Clinical Chemistry 50, No. 3, 2004: 471-2.

3. Lim EM, Sikaris KA, Gill J, Calleja J, Hickman PE, Beilby J. et al. Quality assessment of interpretative commenting in clinical chemistry. Clin Chem, 2004:50:632–7.

Don't forget to check Dr. Noble's Blog on Medical Laboratory Quality:

"MAKING MEDICAL LAB QUALITY RELEVANT"

http://www.medicallaboratoryquality.com/

GET CONNECTED

Announcements

* CMPT's 2009-2010 Annual Report is now available online:

http://www.cmpt.ca/background/annual_report_2009_2010_index.html

Upcomming events

November

Quality Indicators: Measure to Manage

November 18 • 1:00–2:00 PM Eastern (US)

CLSI teleconference

http://www.clsi.org/Content/NavigationMenu/Education/Teleconferences/Nov_18_2010.htm

December

AST for Infrequently Isolated or Fastidious Bacteria

December 2 • 1:00–2:00 PM Eastern (US)

CLSI teleconference

http://www.clsi.org/Content/NavigationMenu/Education/Teleconferences/Dec_2_2010.htm

January 2011

Tuberculosis: Immunology, Cell Biology and Novel Vaccination Strategies

January 15 - 20, Vancouver, BC, Canada

More information:
http://www.keystonesymposia.org/meetings/viewMeetings.cfm?MeetingID=1111

April 2011

CACMID 2011 Annual Conference

Arpil 7, Montreal,QC, Canada

More information: http://www.ammi.ca/annual_conference/index.php

May 2011

21st ECCMID/27th ICC

May 7 - 10, Milan, Italy

More information: http://www.eccmid-icc2011.org/

June 2011

UBC Program Office Quality Weekend Workshop

June 18 - 19

More information: www.polqm.ca

4th Congress of European Microbiologists FEMS

June 26 - 30, Geneva, Switzerland

More information: http://www.fems-microbiology.org/website/nl/page142.asp

ABOUT CONNECTIONS

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www.cmpt.ca/newsletter_connections.html

We want to hear from you.

Have an idea for an article? Is there a topic you'd like to see covered? Do you have any questions or want to announce an event? Drop us a line.

Don't like something we're doing? Let us know.