Medical Laboratory Technology

Professional Practice Leader (Charlton):
Andrea Tjahja, MLT, ART, BSC, BEd

Number of Members of Discipline:

SITE	FTE	PTE	POSITION
Charlton	355 147		Medical Laboratory Technologist Medical Laboratory Assistant This includes all Hamilton Regional Laboratory Medicine Program (HRLMP)

Scope of Practice

The practice of medical laboratory technology is the performance of laboratory investigations on the human body or on specimens taken from the human body and the evaluation of technical sufficiency of the investigations and their results.

Clinical Practice Achievements

Quality & Safety

Clinical Chemistry and Immunology:

- Implementation of Liaison XL instrument for Vitamin D, Renin and Aldosterone testing.
- Implementation of AU480 analyzer for drugs of abuse testing.
- Implementation of APGCMS Mass Spectrometer for peroxisomal profile testing (consolidation of Very Long Chain Fatty Acid Testing and Phytanic Acid testing onto one profile).

Core Laboratory:

- Conversion of the King Street Laboratory to Point of Care testing site.
- Selection and verification of Ortho Virto's instrumentation for chemistry testing.
- Elimination of Fecal Occult Blood Testing.
- Consolidation of body fluid differential testing to MUMC and SJHH.
- Streamline blood gas ordering to eliminate multiple orders in Meditech.
- Implementation of Continuous Quality Improvement (CQI) initiative across all HHS core laboratories.

Transfusion Medicine:

- Implementation of CAR T Therapy, a type of immunotherapy, used to treat specific forms of hard to treat leukemia and lymphoma; we are one of the first sites in Canada to provide this treatment.

Quality & Safety Continued...

Clinical Chemistry and Immunology:

- Implemented Code Omega Maternal and Pediatric at MUMC.
- Installation and validation of new instrumentation at all sites.
- Implementation of Immulink connection and testing with Haldimand War Memorial Hospital and West Haldimand Hospital.
- Switched to the provision of Fibrinogen for massive hemorrhage or DIC patients instead of Cryoprecipitate.
- Implementation of electronic ordering of blood cultures for transfusion reactions.

Virology

- Transferred Mycoplasma/Chlamydophila PCR to the clinical lab – test is now routine.
- Conducted a pilot for respiratory virus testing using small batch processing which resulted in decreased wait times and positively impacted bed management and IPAC.
- Developed Trichomonas vaginalis LAMP assay (molecular test) to replace wet preparation. Delays in transport make the wet preparation an unacceptable testing option and those delays do not affect molecular testing.
- Validated the fecal swab (Copan) for collection and transport of fecal specimens for both the bacterial and viral enteric pathogens. Will result in fewer containers required and be easier for nursing staff to collect.
- Developed a Hepatitis A PCR for serum/plasma and feces.
- Developed Pneumocystis jirovecii PCR to improve sensitivity of detection and differentiate between colonization and infection in the transplant population.

Microbiology

- Implemented process changes for handling positive blood cultures.
- Implementation of electronic inventory management system.
- Implementation of HHS Continuous Quality Improvement (CQI) initiative.
- Validation and planning of Viruo blood culture instrumentation.
- Full implementation of automated strainers for gram stain.
- Interdisciplinary collaboration between NICU, Bacteriology, Virology, and IPAC to identify and manage NICU Enterobacter outbreak.
- Implementation of new protocol for surveillance screening for Candida Auris.
- Implemented new ESBL/CPE biplate for improved isolation of ESBL and CPE.
- Implemented new CARBAS lateral flow assay for the detection of CPE.
- Collaborated with IPAC on CPE/ESBL screening pilot on several inpatient units across HHS.

Anatomic Pathology

- Standardized H & E stain across all HRLMP histology laboratories.
- Implementation of automated special strainers for improved consistency and quality.
- Standardized waste collection and disposal practices across all HRLMP histology laboratories.

Academic Pursuits

Education:

- Implemented new eLearning platform (Dual Code) with increased functionality for assignments, tracking and reporting.

Formal Teaching:

- Mohawk MLA program instructors.
- Clinical Coordinator, Genetics Program, Michener Institute.
- Clinical Coordinator, Cytology Program, Michener Institute.
- Clinical Instructor, Transfusion Medicine, Michener Institute.

Internal Teaching/Education:

- Participated in nursing annual review sessions at all HHS sites.
- Participated in project with ICU at JHCC to provide laboratory tours for nursing staff.
- Participated in Take Our Kids to Work Day at both HHS and SJHH.
- Transfusion medicine education for midwives.
- Provided a 2-week job shadow for a staff member from Rankin Inlet, Nunavut.

Clinical Teaching/Education:

- Increased cohort of General Medical Laboratory Technology students to include students from St. Clair College, Michener Institute for Education at UHN, Ontario Tech University (formerly University of Ontario Institute of Technology) in all 5 disciplines: chemistry, hematology, microbiology, histology and transfusion medicine.
- Training program for residents and fellows.
- Training program for Medical Laboratory Technology students from Michener Institute for Education at UHN for Genetics and Diagnostic Cytology.
- Training program for Medical Laboratory Assistant students from Mohawk College.
- Post-doctoral Fellowship in Clinical Microbiology.
- Training new MLA, MLT and Pathologist Assistants across the HRLMP.
- Participated in Take Our Kids to Work Day at both HHS and SJHH.
- Provided laboratory tours for Grade 12 students as part of the Specialized High Skills Major in Science at HHS.
- Participated in co-op placement with job shadowing for high school students at King Street campus laboratory and specimen collection centre.

Academic Pursuits

Continuing Education:

Staff

- Completion of HHS Re-Imagining Leadership Program.
- Start of mini-MBA program.
- Completion of Leadership in Biosafety Program.
- Recruitment and training of 2 new MLTs in Electron Microscopy.
- Recruitment of Master's level Pathologist Assistant graduate.
- MLA skill mix training in Microbiology to include handling of positive blood cultures.

Professional Practice Development

- 12th Annual HRLMP Rapid Fire Showcase attracted over 100 participants from across HRLMP.
- 2019 National Medical Laboratory Week Celebration for HRLMP staff.
- Partnered with Medical Laboratory Professionals Association of Ontario (MLPAO) for Connect Education Day.
- Numerous "Lunch n' Learn" sessions hosted by vendors and professional associations.

Scholarly Pursuits

Research:

- Research projects led by 3 Ontario Tech University MLT students related to Transfusion Medicine, Histology and Microbiology; projects initiated in September 2019 and will be completed by April 2020.
- HRLMP participated in >140 research studies in collaboration with the following disciplines/ departments:
    - Anatomy and Kinesiology.
    - Cardiology.
    - Emergency/ICU.
    - Endocrinology.
    - Epidemiology.
    - Gastroenterology.
    - Geriatrics.
    - Hematology and Transfusion Medicine.
    - Immunology/Allergy.
    - Infectious Diseases.
    - Medicine.
    - Mental Health.
    - Nephrology.
    - Neurology.

Scholarly Pursuits

Research Continued...

- HRLMP participated in >140 research studies in collaboration with the following disciplines/departments:
  - Nuclear Medicine.
  - Nutrition Services.
  - Obstetrics/Gynecology
  - Oncology.
  - Pathology/JCC Clinical Trials.
  - Pediatrics – including Pediatric Gastroenterology, Pediatric Endocrinology.
  - Psychiatry.
  - Respirology.
  - Rheumatology.
  - Special Immunology Services (SIS).
  - Stem Cell.
  - Surgical.
  - Thrombosis.
  - Urology.

Publications:

- HRLMP produced >180 publications and >90 abstracts and posters, several of which were authored by Medical Laboratory Technologists.

External Committees:

- Consultants to the External Quality Assurance (EQA) division of the Institute for Quality management in Healthcare (IQMH).
- Assessors for IQMH Laboratory Accreditation Program
- Chair, St. Clair College Medical Laboratory Science PAC.
- POCT Testing Advisor.
- Member of the Ontario IQMH Virology Committee.
- Member, LHIN Transfusion medicine Working Group.
- Member, Ontario Regional Blood Coordinating Network Regional Advisory Committee.
- Member, Southern Ontario Transfusion Services Network Planning committee.
- Co-Chair, Ontario Transfusion Transmitted Injuries Surveillance System Education Committee.

External Committees Continued...

- CMMTG Laboratory Committee.
- Member, Canadian Society for Transfusion Medicine – Standards Committee.
- Member, Ontario Transfusion Quality Improvement Plan Steering
- Committee.

External Presentations:

- Collaboration with MLPAO to create 2 YouTube videos to help increase awareness of the role of the Medical Laboratory Technologist.
- Presented microbiology poster at ECCMID – Lab automation for competence assessment.
- Presented microbiology poster at ASM – Group A Strep Chromagar.
- Presented microbiology poster at CACMID – Group A Strep Chromagar.
- Poster presentation for Transfusion Medicine at CBMTG 2019 Annual Conference.

Leadership:

- Engaged with Deloitte to refresh the HRLMP strategic plan.
- Implementation of Abbott i-STAT point of care analyzers for electrolytes, blood gases and troponin I in six health centres in Baffin Region, Nunavut.
- Provided support to Nunavut regional laboratories and health centres for point of care testing, quality control and competency assessment and teaching slides.
- Transferred SJHH-developed Respiratory virus assay on the BD MAX. Method was shared with Brantford General and provided training. There are now 3 labs using this method (Brantford, Trillium, and Shared Hospital Labs).
- Developed algorithm for the cultural isolation of Shiga-toxin-producing E. coli (STEC) on Chromagar. Presented the algorithm at AMMI-CACMID and to Public Health Inspectors. Convinced Public Health Lab in Toronto to incorporate the plates from our algorithm into their procedures resulting in better isolation rates.
- Developed cost per test for all laboratory tests to allow for better decision making on pricing across various external clients resulting in annual revenue increase.
- Implemented the Billing and Accounts Receivable (BAR) module – an automated billing system to streamline billing processes and source date from one system.
- Continued collaboration on the HHS morgue overflow review and re-design project.
- Implementation of contract to perform microbiology services for Women's College Hospital.

Discipline Goals 2020

Major Initiatives for 2020:

- Create a work plan for the next 5 years for implementation of the HRLMP strategic plan.
- Successful IQMH Laboratory Accreditation Peer Assessment and ISO15189 accreditation.
- Implement Abbott i-Stats in eleven additional health centres in Nunavut.
- Continue to provide leading edge educational opportunities for HRLMP staff.
- Increase skill mix across several disciplines.

Clinical Chemistry and Immunology:

- Implementation Biorad Unity quality control software and auto verification.
- Consolidation of Special Proteins.
- Increase revenue generation for Laboratory Reference Centre.

Core Laboratory

- Implementation of Virto's analyzer as major chemistry platform.
- Selection, validation and implementation of new coagulation analyzers.

Virology

- Implementation of fecal swab for collection and transport of fecal specimens.
- Implementation of Hepatitis A PCR for serum/plasma and feces.
- Implementation of Pneumocystis jirovecii PCR to improve sensitivity of detection and differentiate between colonization and infection in the transplant population.
- Continue discussions with Thailand regarding transfer of Respiratory Virus assay to them.

Anatomic Pathology

- Implement new FISH platform and onboard some related tests that are currently being outsourced.
- Consolidation of histology technical services to Charlton site.

Transfusion Medicine

- Administration of Kell negative red cells for females of child bearing potential to reduce the risk of antibodies.
- Implement automated ABO confirmation of blood units.
- Implement automated RH and K antigen phenotyping.

Genetics and Malignant Hematology

- Planning for relocation and consolidation of genetic services.
- Evaluation of RBC software.
- Consolidation of flow cytometry services to one site (Juravinski).
- Selection, validation and implementation of new flow cytometry instrumentation.
- Centralize body fluid morphology.