OMA section on LABORATORY MEDICINE

Work2Quality*

Guidelines for Workload Measurement in Laboratory Medicine Professional Practices in Ontario – Transfusion Medicine

Companion document to Workload2Quality Pathology
Developed by and for Laboratory Physicians in Ontario

*A project of Path2Quality (A collaboration of the OMA Section on Laboratory Medicine and the Ontario Association of Pathologists)

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GLOSSARY OF TERMS

AABB	Association for the Advancement of Blood & Biotherapies
AATB	American Association of Tissue Banking
ACS TQIP	American College of Surgeons Trauma Quality Improvement Program
CAP	Canadian Association of Pathologists
CME	Continuing medical education
FTE	Full-time equivalent
OAP	Ontario Association of Pathologists
OHIP	Ontario Health Insurance Plan
OMA	Ontario Medical Association
OMA Section	OMA Section on Laboratory Medicine
P2Q	Path2Quality
SOB	Schedule of Benefits
TM	Transfusion medicine
W2Q	Work2Quality
W2QWG	Work2Quality Working Group
WG	Working group
WMS	Workload Measurement System

SECTION 1
IMPORTANCE OF A WORKLOAD MEASUREMENT SYSTEM FOR TRANSFUSION MEDICINE

GENERAL

Ontario's laboratory physicians share a common goal – the desire for an effective and efficient laboratory system that serves the best interests of the Province's citizens. An essential attribute of such a high-functioning laboratory system is appropriate resourcing. The guidelines here focus on one aspect of that – appropriate laboratory physician resourcing. Integral to the latter is a workload measurement system (WMS) that may be used for planning purposes.

This guideline is a companion document to be used along with the larger second version of Work2Quality released in September 2024 which provides a WMS for Diagnostic and Molecular Pathology (formerly Anatomical Pathology) and Diagnostic and Clinical Pathology (formerly General Pathology). For more detailed information about the history of workload measurement in Ontario as well as background material please refer to the larger document entitled *'Guidelines for Workload Measurement in Laboratory Medicine Professional Practices in Ontario – Diagnostic and Molecular Pathology/Diagnostic and Clinical Pathology.'*

BACKGROUND AND PURPOSE OF WORKLOAD MEASUREMENT FOR TRANSFUSION MEDICINE

Transfusion Medicine (TM) is a broad field that involves both clinical and laboratory medicine. The use of blood (e.g. collection, storage, safety, stewardship, hemovigilance) is a central tenet of TM, but it also involves aspects of immunohematology, apheresis, and coagulation. It is a rapidly evolving field as new blood products become available and as advancements in technology (e.g. genotyping) allow for more personalized transfusion medicine. TM laboratories require additional oversight as in addition to meeting Accreditation Canada laboratory standards, TM laboratories are regulated under the Blood Regulations and are subject to Health Canada inspections. As per the Canadian Society for Transfusion Medicine (CSTM) hospital standards (1) and Accreditation Canada (2), a medical director is needed to oversee activities of the laboratory and ensure compliance with the standards.

APPROPRIATE INFRASTRUCTURE SUPPORTS

The WMS here assumes that the practice of each group is adequately and equitably resourced, and that each group is equally able to respond to and discharge similar workload volumes. For this, many variables need to be equal, or at least balanced. Some variables relate to attributes of the professional staff themselves – more than just their number. For instance, depending on the complexity or other features of a group's workload, sub-specialty training of staff may be required. If that is not provided, it may be difficult for the group to discharge its work as efficiently as planned. Many other infrastructure supports that a host hospital or institution is responsible for help maximize a group's efficiency and allow it to perform at a high standard. The sorts of infrastructure supports that aid a professional group work to its potential include, but are not limited to:

- Skilled and efficient staff, for instance:
    - Technical staff;
    - Clerical and other support staff;
    - Information system support staff;
    - Blood conservation nurse;
    - Quality assurance officer;
    - Transfusion safety officer;
- Efficient technical and professional work processes with, for instance, automation and bar-coding in as many steps as possible;
- Laboratory information systems that adequately support efficient work processes, and related processes such as those of quality assurance and workload measurement;
- Effective communication tools, laboratory physician-to-laboratory physician, and laboratory physician-to-clinician, for instance: image capture, video-conferencing, internet access
- Adequate physical space, equipment and office accommodations for professional staff, with, for instance:
    - Ergonomic work-stations;
    - Computers with up-to-date software and applications that allow best practice;
- Readily available decision support tools, for instance:
    - Reference materials, such as text books;
    - Various web-based resources

If adequate infrastructure supports of the sort just listed are not available to the group, then the expectations of efficiency described in these *W2Q Guidelines* may not be reasonable or accomplishable. Either those infrastructure supports would have to addressed, or the expectations of these *W2Q Guidelines* modified to deal with the situation.

BASIS FOR CODE RELATIVITY AND FACTORS TAKEN INTO ACCOUNT FOR THE TRANSFUSION MEDICINE GUIDELINES

TM physician workload models must recognize the major component of oversight and stewardship. In British Columbia, the TM physician workload model proposed that TM physician time is split between 70% oversight and 30% clinical care/interpretive reporting. Since the model in British Columbia was created in 2016, regulatory requirements have increased such as regular Health Canada inspections. Thus, we suggest an allocation of 80% for oversight of laboratory activities and 20% clinical care.

Currently, hospital TM laboratories in Ontario must report monthly and annual workload data to the Ministry of Health. Several laboratory activities such as testing volume, inventory preparation/storage, and product issuing are captured in these workload units. We propose using these volumes to capture the TM oversight activity.

Based on data from Trillium Health Partners (THP) and Sunnybrook Health Sciences Centre, each organization reported 2.2 million laboratory workload units for the 2022 – 2023 fiscal year. Both organizations have reasonable TM physician coverage – THP has 2.0 TM physician FTE and Sunnybrook has 1.9 TM physician FTE. Therefore, we propose that 1 million laboratory workload units would require 0.8 TM physician FTE for oversight and stewardship activities (see Appendix A). Laboratory workload includes both service and non-service units.

Additional codes (see Section 4 for the Clinical Case / Interpretive TM Workload) would be used to capture clinical care / interpretative activities (estimated to be about 0.2 FTE for every 1 million laboratory workload units).

We considered oversight complexity and economies of scale. Clinical programs that increase oversight complexity include stem cell transplant, solid organ transplant, cardiac surgery, high volume or complex obstetrics (e.g. intrauterine transfusions), hemoglobinopathy, hemophilia, apheresis, extracorporeal membrane oxygenation (ECMO) and trauma. However, the need for a higher FTE due to complexity is likely balanced by economies of scale given that hospitals with complex programs will have increased volumes. Therefore, the proposed workload model does not include FTE adjustments for oversight complexity or economies of scale. The current model also does not account for decreased blood utilization that may occur due to stewardship and quality initiatives led by TM physicians.

Remuneration for on-call services would be accounted for by a separate process. As most calls involve clinical case work, the clinical codes (see Section 4) could be used in conjunction with an overnight premium. Calls from clinicians for assistance with blood product ordering through an electronic medical record (EMR) system should also be considered.

SECTION 2 FOUNDATIONAL ELEMENTS

DETERMINATION OF A 'DENOMINATOR' FOR THE WMS

Further, the *W2Q Guidelines* propose the manner in which workload should be assessed, and suggest a 'denominator' that may be applied to the aggregate of that work – to determine how many FTE's would ordinarily/ ideally be required/ available to perform that volume of work.

The denominator chosen by the W2Q WG is currently 7,500 W864 equivalents. This figure is supported by the experience to-date trialling the *W2Q Guidelines* by some of the W2Q WG, and by the early feedback from some of the laboratory directors who were provided the first draft of the *W2Q Guidelines.*

The first edition of the W2Q guidelines were based on the OHIP Schedule of Benefits and CPT codes with correlation to time based studies. As a rough guideline, there are 52 weeks/year and about 8 weeks of time off (inclusive of vacation and CME allotment) leaving 44 weeks. There are about 10 statutory holidays and subtracting this time, results in 42 working weeks or 210 working days. Using an average workday of 7.5 hours, this equates to 1575 hours or 94,500 minutes. Using the denominator of 7500, this equate to 12.6 minutes/W864.

W2Q Guidelines
Using a denominator of 7500 workload units, baseline code W864 equates to approximately 12 minutes.

The aggregate of the workload a group performs is determined by adding up (using the *W2Q Calculator;* see below) the workload units (W864 equivalents) for all of the services the group performs; it is then divided by the 'denominator' (7500 W864 equivalents per FTE) to determine how many FTEs 'worth' of work the group performs.

For additional details, please refer to the document: *'Guidelines for Workload Measurement in Laboratory Medicine Professional Practices in Ontario: Overview and Diagnostic and Molecular Pathology/Diagnostic and Clinical Pathology.'*

W2Q Guidelines
OHIP SOB is indexed to code L864 and W2Q Guidelines to code W864 so that these systems are aligned (L864 and W864 have a common definition)

SECTION 3 W2Q GUIDELINE USE

DETERMINATION OF STAFF AVAILABLE FOR SERVICE WORK

In order to assess whether a group is or is not appropriately staffed, the first task for those responsible for workload measurement is to determine how many staff are available for service work. In this, a number of factors need to be taken into account.

i) NUMBER OF FTES IN BUDGET

The base number from which the workload measurement committee will generally start is the number of FTEs in the budget provided by the hospital/ institution for the group.

ii) ADJUSTMENT FOR ACADEMIC, ADMINISTRATIVE, QUALITY or OTHER CLINICAL WORK

A workload measurement system must acknowledge the role that laboratory physicians play in the academic, educational, administrative and quality mission of many hospitals. Many laboratory physicians have been contracted or hired to work only a certain percentage of their time in direct clinical work; the remainder of their time is meant to be devoted to administration, teaching, continuing medical education, quality improvement projects, or research, and that work is measured in other ways. The amount and distribution of this 'protected' time will vary depending on the practice setting. For example, most academic centers expect a minimum percentage of a laboratory physician's time to be devoted to academic pursuits. Individuals with specific academic accountabilities may have further protected time.

Similarly, those laboratory physicians with administrative roles will often have specific time set aside for laboratory operations. Laboratory directors and other laboratory physicians in administrative leadership roles (e.g. heads of service, directors of specific parts of a larger laboratory) will be required to manage laboratory operations as well as represent the laboratory at medical advisory and other facility meetings. These considerations should be part of the negotiated arrangement between the hospital and the laboratory physician. In this, these negotiated percentages of time for academic and administrative work are removed from the FTE count as this time is not available for clinical work.

DETERMINATION OF IDEAL STAFF COMPLEMENT

The major function of any workload measurement system is to determine how much service work the group performs, and then to determine how many laboratory physicians are appropriate to perform that work. The following are the steps for that purpose.

i) W2Q CALCULATOR FOR WORKLOAD DATA ANALYSIS

A calculator will be available from the OMA Section and OAP web-sites. The calculator includes the relative weighting of clinical services (Section 4). Embedded in the calculator are the formulas that will allow tallying of services, with computation of overall workload and estimated full-time equivalents (FTE) required for that work.

ii) APPLICATION OF WORKLOAD 'DENOMINATOR'

Once the group's workload measurement committee aggregates the workload data, it will need to apply the 'denominator' described earlier to determine how many FTEs' work is being performed by the group. This 'denominator' is provided as part of the *Calculator.*

iii) COMPARISON OF STAFF AVAILABLE WITH IDEAL STAFF COMPLEMENT

One of the most important functions of the workload measurement system is in the comparison of the number of staff available in the group for service work with the ideal FTE count for the amount of work performed – the derivation of each of those values described above.

If the numbers provided by analysis determine that the staff available for service work and ideal FTE count for the work performed are roughly similar, then the group is likely right-staffed'. If not, then the group may have a case to approach their host hospital's/ institution's administration for redress.

What degree of imbalance requires incremental staffing increase may be affected by many factors, for instance whether infrastructure supports mitigate or accentuate the imbalance. Determination of this is, necessarily, a local matter. So too is consideration of other forms of redress, for instance providing incentives for performing work in excess of that which might ordinarily be expected by a certain staffing number. Likewise, it may be that practices in certain geographies will require a premium of sorts for the benefit of having a laboratory physician on-site.

SECTION 4 Table of Codes and Relative Values

W2Q Code - may only be applied once per specimen, unless otherwise noted	Service Performed by Pathologist(s)/ Scientist(s)	Relativity (with W864 1.0 = 12.6 min)	Number of Services Performed	Weighted Services
TRANSFUSION MEDICINE SERVICES TABLE				
	CLINICAL CARE			
WTM1	Transfusion or Blood products consultation - Routine order review - no review of patient's history or medical records	0.80		
WTM2	Transfusion or Blood products consultation - Routine order review - with review of patient's history or medical records	1.60		
WTM3	Transfusion phone or secure email/messaging consultation from medical team - no review of patient's history or medical records	0.80		
WTM4	Transfusion phone or secure email/messaging consultation from medical team - with review of patient's history or medical records	1.60		
WTM5	Interpretation of antibody investigation - Routine (e.g. single antibody, no clinically significant antibody)	1.60		
WTM6	Interpretation of antibody investigation - Complex (e.g. > 1 antibody, pan reactive)	2.40		
WTM7	Interpretation of genotyping investigations	1.20		
WTM8	Interpretation of special investigation results (e.g. HLA typing, HLA antibody testing)	0.80		
WTM9	Transfusion Reaction - Routine/simple - reviewed with transfusion safety officer/MLT	0.80		
WTM10	Transfusion Reaction - Routine/simple (e.g. FNHTR, minor allergic)	1.20		
WTM11	Transfusion Reaction – Complex/Severe	2.80		
WTM12	Transfusion Reaction - Completion of TTISS Report	1.20		
WTM13	Transfusion Reaction - Complex requiring report to Health Canada	9.50		
WTM14	Special product request (e.g. rare blood, SCIG, home factors, panhematin) - initial consultation (includes discussion with CBS)	3.20		
WTM15	Tracking/monitoring special blood product usage per request (e.g. monitoring response to HLA platelets)	1.60		
WTM16	Special product request - follow up	1.60		
WTM17	IVIG request review - indications, & dose calculation	1.60		
WTM18	IVIG request review – off-label indication review	3.00		

WTM19	Uncrossmatched blood request review	0.80		
WTM20	Massive Hemorrhage Protocol - case consultation	2.40		
WTM21	Massive Hemorrhage Protocol review - individual case	3.60		
WTM22	Patient blood management - initial patient case consultation	3.00		
WTM23	Patient blood management – follow up	1.20		
WTM24	Apheresis: initial patient consultation	6.40		
WTM25	Apheresis: follow up	1.60		
WTM26	ECMO: Blood management consultation	2.40		
WTM27	Tissue bank: Donor Screening Questions	0.40		
WTM28	Tissue bank: Donor Chart Review	2.40		
WTM29	Recall notification	1.60		
WTM30	Recall notification – follow up	0.80		

APPENDIX A – OVERSIGHT & STEWARDSHIP ACTIVITIES

Administrative activities

1) Standard operative procedures (SOPs) including development, revision and annual review.
2) Clinical policy and guidelines including development, stakeholder consultation, implementation, and monitoring including audit (e.g. transfusion guidelines, massive hemorrhage protocols, blood shortage plans, positive patient identification, transfusion reactions)
3) Facilitate and participate in mandated quarterly hospital transfusion committees.
4) Represent Transfusion Medicine at hospital committees/working groups as required (including Code Orange, Massive hemorrhage protocols)
5) Provide gatekeeping for products/components, perform utilization audits and report back to MOH as required (eg. TM MD must review MOH IVIG forms prior to agreeing to release the product, collect data on utilization and appropriateness of utilization). Audits and review of findings is mandated by the MOH or related organizations.
6) Participate in, develop and update hospital contingency plans for blood shortages.
7) Regularly review utilization patterns for components and products and assist with inventory management, including establishing green/amber/red phases of inventory for each product
8) Keep and regularly review statistics on transfusion reactions for QI
9) Review, investigate and collaborate in developing corrective actions for incidents and errors related to transfusion medicine; keep and regularly review statistics on incidents/errors for QI
10) Develop/oversee tissue banking policies, processing and distribution.
11) Lead/participate in/oversee the hospital's patient blood management program
12) Where applicable, oversee homecare program for blood products and recombinant clotting factors
13) Lead/participate in provincial and federal programs related to TM (e.g. National Advisory Committee on Blood and Blood Products)
14) Oversee utilization of special transfusion equipment (e.g. intraoperative cell salvage and blood warmers)

Educational activities

1) Train transfusion safety officer/nurse, patient blood management coordinator, medical laboratory technologists re: medical aspects of transfusion
2) Provide ongoing education on hospital transfusion guidelines and initiatives to reduce unnecessary blood exposure.

3) Develop/oversee/provide education on transfusion medicine for all involved in blood transfusion at a hospital level – physicians, nurse practitioners, physician assistants, anesthesia assistants, midwives, nurses, RT, perfusionists, porters, etc. – Accreditation Canada requirement
4) Develop educational tools for patients, hospital staff e.g. patient pamphlets, e-learning, websites
5) Develop monographs for blood products

Quality and Regulatory Activities

1) Review and sign off validation, external (eg. IQMH) and internal proficiency testing – IQMH requirement
2) Ensure compliance with current versions of relevant standards/regulations/requirements, assist with preparation and participate in accreditation visits by IQMH, Health Canada and Accreditation Canada (and potentially others – AABB, AATB, CAP, ACS TQIP, Nuclear Safety)
3) Develop/oversee TM continuous quality improvement program – IQMH requirement
4) Regular monitoring of quality improvement indicators (e.g. preanalytic, analytic, and postanalytic metrics)

APPENDIX B – REFERENCES, W2Q TRANSFUSION MEDICINE WORKING GROUP MEMBERS, AND ACKNOWLEDGEMENTS

References

1. Canadian Society for Transfusion Medicine. Standards for Hospital Transfusion Services. 2021

2. Accreditation Canada. Transfusion Services. 2019.

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