CSMLS ● SCSLM

Canadian Society for Medical Laboratory Science
Société canadienne de science de laboratoire médical

Simulation and Competency Obtainment

Executive Summary
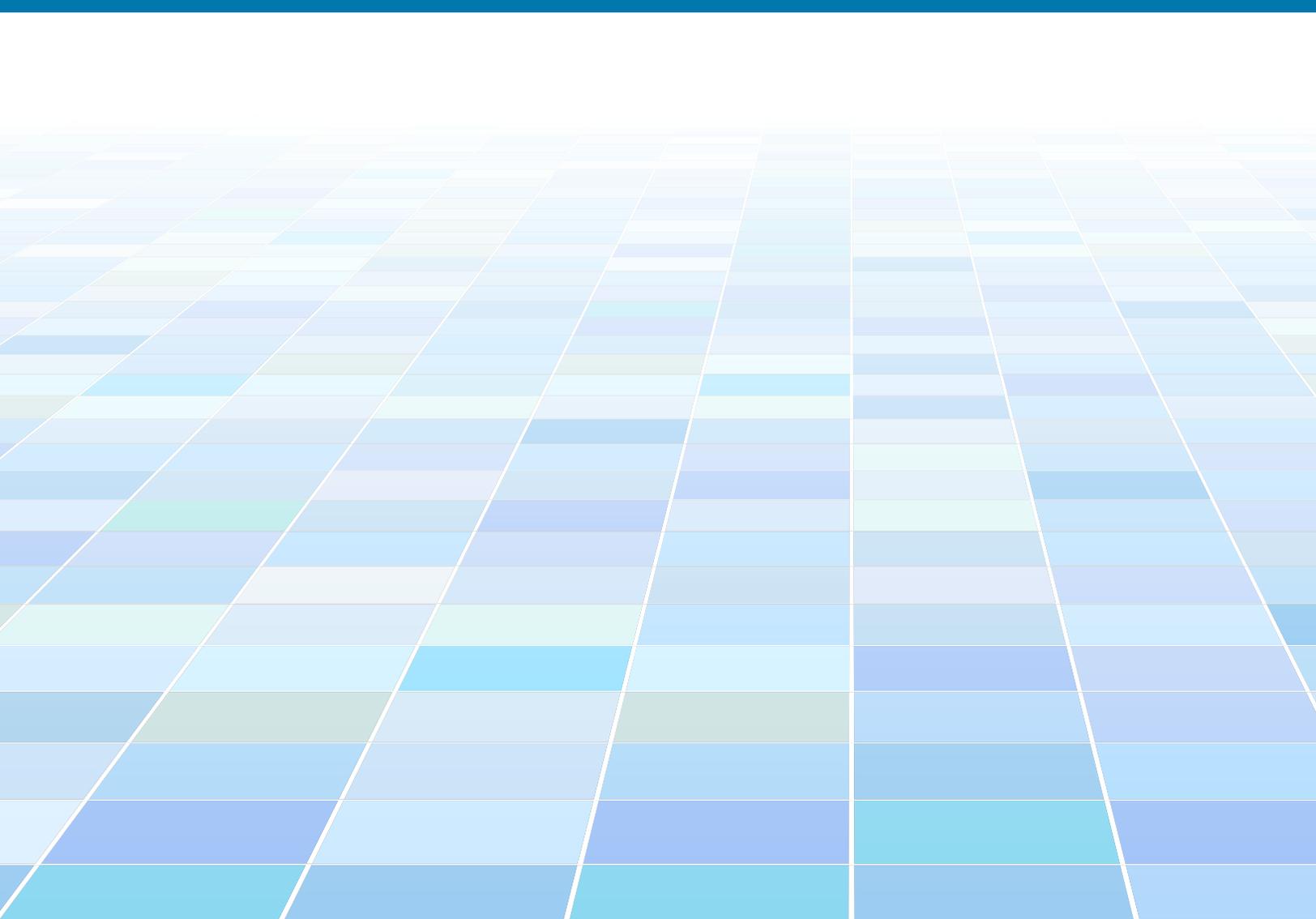## Educator Committee Recommendations

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Definition of Simulation

For the medical laboratory profession, as derived by participants at the National Simulation and Clinical Placement Educator Forum (2016), simulation is defined as:

"Simulation is an educational technique used to imitate real life scenarios (in part or whole), which enables participants to demonstrate and receive feedback on knowledge, skills, abilities and/or judgment. This can include but is not limited to communication, problem-solving, critical thinking and the ability to collaborate and work effectively within a health care team. Simulation can reflect simple to complex situations or processes and can be accomplished in any of the following examples:

- through interactive written case-based scenarios;

- computerized laboratory information system gaming;

- inter- or intra-professional role playing;

- standardized patients;

- task trainers such as rubber arms for phlebotomy;

- virtual simulation for specimen identification;

- haptic simulation;

- high fidelity simulation, or

- hybrids of any of these examples.

Similar to healthcare simulation, academic student simulation encompasses a range of activities with a broad common purpose of improving the effectiveness and efficiency of services and ultimately, enhancing competency acquisition by students in a safe and secure environment that reduces potential harm to patients, students, and the laboratory and general healthcare systems."

Purpose

The report describes the use of simulation for assessment and evaluation purposes of CSMLS MLA competencies as defined by academic stakeholders within three consensus-building sessions. The information has been used to draft CSMLS recommendations for the maximum use of simulation in evaluation, replacing sign-off in the clinical practicum, of MLA competencies and their practice domains.

Methodology

To continue this movement and originating from the HHR shortage conversations and CSMLS Simulation and Clinical Placement Initiative, academic stakeholders have reached out to CSMLS across time indicating a need to better understand how simulation can be used in the assessment and evaluation of MLA and MLT general competency profiles. CSMLS was able to facilitate this conversation within three groups, of which the discussions and results are presented in this report.
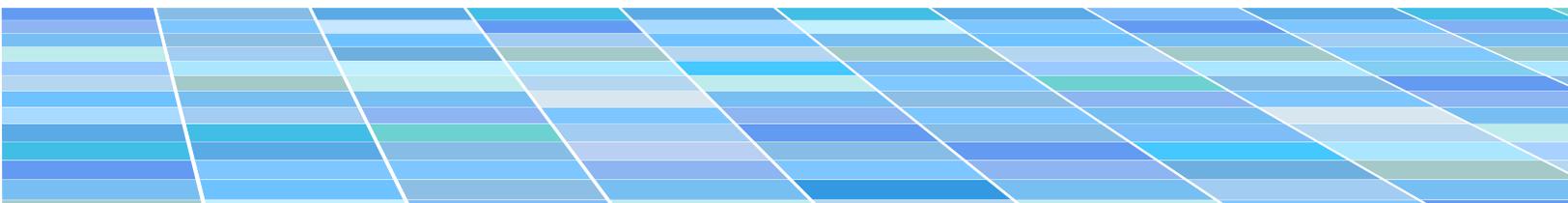
1. Uniting Simulation Education Event (Nov 15, 2018; open to all members).

2. CSMLS Educator Committee (Nov 17, 2018)

3. CSMLS MLA Exam Panel Meeting (Jan 25 – 27 2019)

4. CSMLS Educator Committee (finalize recommendations, August 19, 2019)

Results

Consensus building activities proved the integrity of the process to create a national perspective. After the initial set of preliminary recommendations were derived by the stakeholders, CSMLS, subsequently, consulted internally to draft the final results (Appendix A contains competency level recommendations). These recommendations are based on a few pivotal points:

1. CSMLS will set a maximum limit for simulation within the evaluation. Assessment using simulation can be used in the vast majority of competencies and therefore not to be defined in this report.

2. CSMLS will not set minimum limits for evaluation using simulation to accommodate needs for programs to create flexible models.

3. CSMLS recognizes that evaluation of competencies may require multiple evaluations across time or between scenarios, and therefore, it is possible the practice domain percentage and the competency percentage for evaluation by simulation may not appear congruent at face-value. However, a full review does show appropriateness as discussed in the report.

CSMLS Recommendations for Simulation Evaluation by Practice Domain

MLA Practice Domains	Simulated Curricula for Assessment Recommendations	
	Prioritization	% of Curricula
1. Safe Work Practices	Essential	≤ 80%
2. Data and Specimen Collection and Handling	High	≤ 70%
3. Pre-analytical Procedures	High to essential	≤ 75%
4. Reagent Preparation	Essential	≤ 100%
5. Communication and Interaction	None to moderate	≤ 40%
6. Quality Management	High to essential	≤ 75%
7. Professional Practice	High to essential	≤ 50%
8. Critical Thinking	High	≤ 50%

Note: The Educator Committee recommends that it be clear in the documents that maintenance of competence is expected, even when signed off. As well as a statement that some competencies have been deemed NOT eligible for simulation assessment, due to the need to mimic actual workflow and volume of specimens in a day to day workplace environment. This can be accommodated through the use of a PREAMBLE for the Recommendations for Simulation document (MLA).

Appendix A: CSMLS Recommendations for Simulation in Assessment of MLA Competencies

Category 1: Safe Work Practices

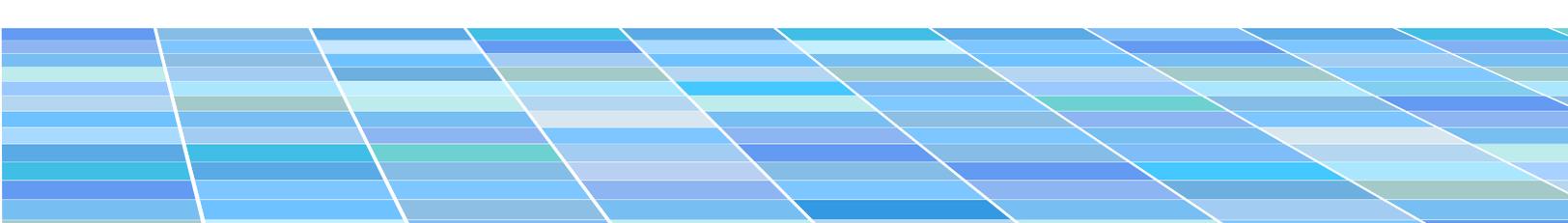| Practice Domain: ≤ 80% of curriculum can use simulation for assessment (maximum)		Can simulation be used for assessment?
1.01	Applies the principles of routine practices	No
1.02	Uses personal protective equipment, e.g. gloves, gowns, mask, face shields, aprons	No
1.03	Applies laboratory hygiene and infection control practices	No
1.04	Minimizes possible dangers from biological specimens, laboratory supplies and equipment	No
1.05	Uses laboratory safety devices, e.g. biological safety cabinet, fume hood, laminar flow cabinet, safety pipetting device, safety container and carrier, safety shower, eye wash station	Yes
1.06	Labels, dates, handles, stores and disposes chemicals, dyes, reagents and solutions according to legislation, e.g. WHMIS	Yes
1.07	Handles and disposes sharps	Yes
1.08	Stores, handles, transports and disposes biological and other hazardous materials according to legislation	Yes
1.09	Uses disinfection and sterilization methods	Yes
1.10	Minimizes potential hazards related to disinfection/sterilization methods	Yes
1.11	Applies measures in response to laboratory accidents/incidents	Yes
1.12	Applies spill containment and clean up procedures for biological and other hazardous materials	Yes
1.13	Responds appropriately to workplace emergencies	Yes
1.14	Reports and documents all incidents related to safety and personal injury	Yes
1.15	Applies proper ergonomic principles to minimize risk of injury	No

Category 2: Data and Specimen Collection and Handling

Practice Domain: ≤ 70% of curriculum can use simulation for assessment (maximum)		Can simulation be used for assessment?
2.01	Demonstrates fundamental knowledge of medical terminology, physiology, anatomy and disease processes	Yes
2.02	Verifies relevant information is provided for test request	Yes
2.03	Provides information to the client on specimen collection, transportation and storage	Yes
2.04	Confirms the identity of the patient and performs venipuncture and capillary blood collection to obtain appropriate samples for laboratory analysis	Yes
2.05	Performs sample collection and chain of custody procedures relating to specimens with legal implications	Yes
2.06	Adheres to established protocols for labeling and traceability of specimens	No
2.07	Delivers specimens taking into account priority and stability	Yes
2.08	Assesses specimen suitability for testing	Yes
2.09	Verifies that the pertinent data on the specimen and requisition correspond	No
2.10	Accessions specimens into laboratory information systems	No
2.11	Adheres to guidelines for specimen retention, storage, transportation and disposal	Yes
2.12	Prepares specimens for analysis	No
2.13	Identifies, documents and initiates corrective action for pre-examination (preanalytical) errors	No
2.14	Prepares documentation, packages specimens for shipping, seals and labels shipping containers in accordance with Transportation of Dangerous Goods (TDG) regulations	Yes
2.15	Describes the role of the laboratory in point-of-care testing	Yes
2.16	Performs point-of-care techniques, identifies sources of interference and initiates corrective action as delegated	Yes

Category 3: Pre-Analytical Processes

Practice Domain: ≤ 75% of curriculum can use simulation for assessment (maximum)		Can simulation be used for assessment?
3.01	Loads specimens for analysis on laboratory equipment	No
3.02	Prepares smears manually or using automated equipment	Yes
3.03	Performs routine staining and cover slipping either manually or using automated equipment, e.g. Jenner-Giemsa, Gram, Wright, Hematoxylin and Eosin, Papanicolaou, Leishman	Yes
3.04	Selects appropriate culture media, inoculates and incubates specimens using aseptic technique	Yes

Category 4: Reagent Preparation

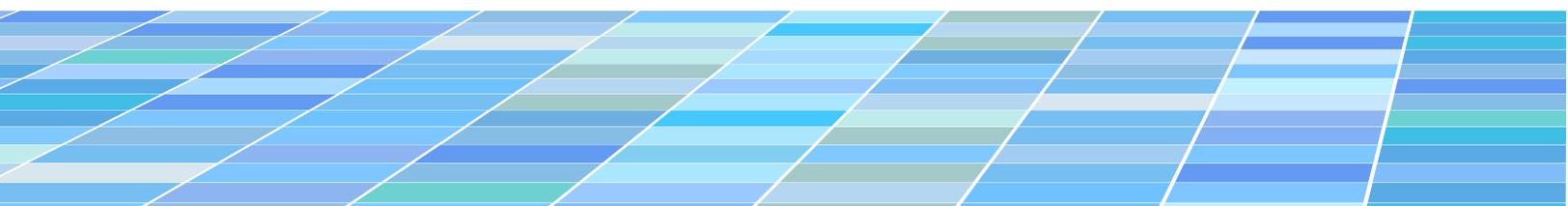| Practice Domain: ≤ 100% of curriculum can use simulation for assessment		Can simulation be used for assessment?
4.01	• Prepares/stores reagents, solutions, stains or media to specifications • Performs calculations/dilutions for reagent preparation	Yes
4.02	Uses reagent preparation equipment, e.g. pH meter, balance, autoclave	Yes
4.03	Cleans glassware according to specifications	Yes

Category 5: Communication and Interaction

Practice Domain: ≤ 40% of curriculum can use simulation for assessment (maximum)		Can simulation be used for assessment?
5.01	Practises effective communication with colleagues, patients/clients and other health care professionals: • Active listening • Verbal communication • Non-verbal communication • Written communication • Conflict management • Identifies barriers to effective communication • Uses technology appropriately to facilitate communication	Yes
5.02	Demonstrates effective teamwork skills	No
5.03	Demonstrates interdisciplinary/interprofessional team skills: • Communication • Collaboration • Role clarification • Reflection	No
5.04	Demonstrates adaptive skills when interacting with patients/clients	No

Category 6: Quality Management

Practice Domain: ≤ 75% of curriculum can use simulation for assessment (maximum)		Can simulation be used for assessment?
6.01	Demonstrates knowledge of quality systems essentials (QSE)	Yes
6.02	Follows established protocols as defined in policy, process and procedure manuals	No
6.03	Prepares and runs quality controls/standards on equipment, to be validated by a medical laboratory technologist	Yes
6.04	Assists in updating procedures and protocols, as well as other reference information and communication	Yes
6.05	Participates in workflow analysis to identify issues and solve problems	Yes
6.06	Identifies, documents and reports deficiencies that may affect the quality of testing	No
6.07	Performs and documents preventative maintenance and reagent changes, according to established protocols	Yes
6.08	Recognizes malfunctions in equipment/instruments, initiates and documents corrective action	No
6.09	Participates in continuous quality improvement activities	No
6.10	Demonstrates knowledge of risk management	Yes
6.11	Participates in internal and external quality assurance activities, e.g. proficiency testing, audits, accreditation	Yes
6.12	Demonstrates knowledge of inventory maintenance	Yes
6.13	Demonstrates information management skills, e.g. computer, laboratory information systems and related technology	Yes

Category 7: Professional Practice

Practice Domain: ≤ 50% of curriculum can use simulation for assessment (maximum)		Can simulation be used for assessment?
7.01	Maintains confidentiality of health care information	No
7.02	Complies with legislations that govern the medical laboratory profession	No
7.03	Recognizes limitations of own competence and seeks action to resolve	No
7.04	Obtains informed consent prior to procedure and respects a patient's right to refuse	No
7.05	Recognizes potentially dangerous situations and understands the right to refuse unsafe work	No
7.06	Takes responsibility and is accountable for professional actions	No
7.07	Recognizes the need for and participates in continuing education and training	Yes
7.08	Promotes the image and status of the profession of medical laboratory science as members of the health care team	No
7.09	Recognizes how ethical issues in the health care environment affect the medical laboratory assistant and clients	Yes
7.10	Demonstrates knowledge of the health care system, professional laboratory organizations and their responsibilities	Yes
7.11	Demonstrates knowledge of the determinants of health and their implications for the laboratory system	Yes
7.12	Respects the diversity, dignity, values, and beliefs of patients/clients and colleagues	No
7.13	Demonstrates knowledge of interpersonal skills: • Recognizes signs of individual and group stress • Recognizes signs of patient stress • Exhibits empathy when assisting patients and colleagues	Yes

Category 8: Critical Thinking

Practice Domain: ≤ 50% of curriculum can use simulation for assessment (maximum)		Can simulation be used for assessment?
8.01	Demonstrates knowledge of a dynamic environment; adapts and responds to change	Yes
8.02	Recognizes that change initiated in one area may impact other areas of health care services	Yes
8.03	Engages in reflective practice; stops and thinks about practice, consciously analyzes decision making and draws conclusions to improve future practice	No
8.04	Organizes work to accommodate priorities	No
8.05	Maximizes efficient use of resources, e.g. time, equipment, personnel	No
8.06	Demonstrates effective problem solving/trouble-shooting strategies and initiates appropriate follow up	Yes
8.07	Contributes to implementation strategies that integrate timelines, resource management and communication related to projects or research/studies	Yes
8.08	Demonstrates the ability to make evidence-based decisions	Yes