Competencies Required By Anesthesiologists Managing Critically ill Medical And Surgical Patients In An Intensive Care Unit: A WFSA Survey

Critical Care Medicine (CCM) has emerged as an independent specialty over the last few decades. Anesthesiologists being perioperative physicians, often practice CCM full time or part-time. Deficiencies have been noted by experts in the Anesthesiology training in certain competencies required for the management of critically ill medical and surgical patients in the ICU. This is often compounded by considerable variation in the training curriculum of the Anesthesiologists based on the geographical region.

The Intensive & Critical Care Medicine Committee of the World Federation of Societies of Anesthesiologists (WFSA), has developed a preliminary survey of recently qualified Anesthesiologists, to review the existing competencies for CCM in the Anesthesiology curriculum across the globe. The results of this survey will be used to identify the gaps and additional competencies required for Anesthesiologists to practice Critical Care in ICU through expert consensus, using a Delphi process.

This survey should be attempted by those who have COMPLETED ANESTHESIOLOGY TRAINING (not including Internship or Fellowships) IN THE LAST THREE YEARS (between 2018-2021).

The survey will take about ten minutes to complete. This survey is divided into two parts, section one includes basic demographic details and section two includes core competencies in Critical Care under six domains. Participation is voluntary. Your identity will be kept confidential. By responding to the survey, consent is implied for participation and use of the data.

The study is registered with <u>clinicaltrials.gov</u> (Identifier no: NCT05007704).

Please read the instructions provided for each question carefully and feel free to provide feedback, at the end of the survey. Please contact us for any comments, feedback or technical support at <u>WFSA.competencyCCM@gmail.com</u>

Please enter your email address if you wish to proceed with the survey.

* Required

1. Email *

Acronyms used in this survey

ICU: Intensive care unit COPD: Chronic obstructive airway disease DKA: Diabetic ketoacidosis HHS: Hyperosmolar hyperglycemic syndrome PIH: Pregnancy-induced hypertension PPH: Postpartum haemorrhage VAP: Ventilator-associated pneumonia CLABSI: Central line-associated bloodstream infections CAUTI: Catheter-associated urinary tract infection ECMO: Extracorporeal membrane oxygenation RRT: Renal replacement therapy CVP: Central venous pressure ScVO2: Central venous oxygen saturation SVO2: Mixed venous oxygen saturation VCO2: Carbon dioxide production EOL: End-of-life

Demographic data

2. What is your age (in years)? *

3. Gender?

Mark only one oval.

🔵 Female

____ Male

Prefer not to say

Other:

4. Country of residence? *

Mark only one oval.



Antigua and Barbuda

Argentina
Armenia
Australia
Austria
Austrian Empire
Azerbaijan
Baden
Bahamas
Bahrain
Bangladesh
Barbados
Bavaria
Belarus
Belgium
Belize
Benin (Dahomey)
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei
Brunswick and Lüneburg
Bulgaria
🔵 Burkina Faso (Upper Volta)
Burma
Burundi
Cabo Verde
Cambodia
Cameroon
Canada
Cayman Islands
Central African Republic
Central American Federation
Chad

Chile China Colombia Comoros Congo Free State Costa Rica Cote d'Ivoire (Ivory Coast) Croatia Cuba Cyprus Czechia Czechoslovakia Democratic Republic of the Congo Denmark Djibouti Dominica) Dominican Republic Duchy of Parma East Germany (German Democratic Republic) Ecuador Egypt) El Salvador Equatorial Guinea Eritrea Estonia Eswatini Ethiopia Fiji Finland France Gabon Gambia Georgia Germany

Ghana Grand Duchy of Tuscany Greece Grenada Guatemala Guinea Guinea-Bissau Guyana Haiti Hanover) Hanseatic Republics Hawaii Hesse) Holy See Honduras Hungary lceland India Indonesia Iran Iraq) Ireland Israel Italy Jamaica Japan Jordan Kazakhstan Kenya Kingdom of Serbia/Yugoslavia) Kiribati Korea Kosovo Kuwait

Kyrgyzstan Laos Latvia Lebanon Lesotho) Lew Chew (Loochoo) Liberia Libya Liechtenstein Lithuania Luxembourg Madagascar Malawi Malaysia Maldives Mali) Malta) Marshall Islands Mauritania Mauritius Mecklenburg-Schwerin) Mecklenburg-Strelitz Mexico Micronesia Moldova Monaco Mongolia Montenegro Morocco Mozambique Namibia Nassau* Nauru Nepal

\bigcirc	Netherlands
\bigcirc	New Zealand
\bigcirc	Nicaragua
\bigcirc	Niger
\bigcirc	Nigeria
\bigcirc	North Macedonia
\bigcirc	Norway
\bigcirc	Oldenburg
\bigcirc	Oman
\bigcirc	Orange Free State
\bigcirc	Pakistan
\bigcirc	Palau
\bigcirc	Panama
\bigcirc	Papal States*
\bigcirc	Papua New Guinea
\bigcirc	Paraguay
\bigcirc	Peru
\bigcirc	Philippines
\bigcirc	Piedmont-Sardinia*
\bigcirc	Poland
\bigcirc	Portugal
\bigcirc	Qatar
\bigcirc	Republic of Genoa*
\bigcirc	Republic of Korea (South Korea)
\bigcirc	Republic of the Congo
\bigcirc	Romania
\bigcirc	Russia
\bigcirc	Rwanda
\bigcirc	Saint Kitts and Nevis
\bigcirc	Saint Lucia
\bigcirc	Saint Vincent and the Grenadines
\bigcirc	Samoa
\bigcirc	San Marino
\bigcirc	Sao Tome and Principe

Saudi Arabia) Schaumburg-Lippe* Senegal Serbia Seychelles) Sierra Leone Singapore Slovakia Slovenia Solomon Islands Somalia) South Africa South Sudan Spain Sri Lanka Sudan Suriname Sweden Switzerland Syria Tajikistan Tanzania Texas* Thailand Timor-Leste Togo) Tonga) Trinidad and Tobago Tunisia Turkey) Turkmenistan) Tuvalu Two Sicilies*

Uganda

Ukraine
Ounited Arab Emirates
United Kingdom
Ounited States of America
Uruguay
Uzbekistan
Vanuatu
Venezuela
Vietnam
Württemberg*
Yemen
Zambia
Zimbabwe

5. Country of training in Anesthesiology? *

Mark only one oval.

Afghanistan Albania Algeria Andorra Angola Antigua and Barbuda Argentina Armenia Australia Austria Austrian Empire Azerbaijan Baden Bahamas Bahrain Bangladesh

Barbados Bavaria Belarus Belgium Belize Benin (Dahomey) Bolivia) Bosnia and Herzegovina Botswana Brazil Brunei) Brunswick and Lüneburg Bulgaria Burkina Faso (Upper Volta) Burma Burundi Cabo Verde Cambodia Cameroon Canada) Cayman Islands Central African Republic Central American Federation Chad Chile China Colombia Comoros Congo Free State) Costa Rica Cote d'Ivoire (Ivory Coast) Croatia Cuba Cyprus

Czechia Czechoslovakia) Democratic Republic of the Congo Denmark Djibouti Dominica **Dominican Republic** Duchy of Parma East Germany (German Democratic Republic) Ecuador Egypt El Salvador) Equatorial Guinea Eritrea Estonia) Eswatini) Ethiopia) Fiji Finland France Gabon Gambia Georgia Germany Ghana Grand Duchy of Tuscany Greece Grenada Guatemala Guinea Guinea-Bissau Guyana Haiti Hanover

Hanseatic Republics Hawaii Hesse Holy See Honduras Hungary Iceland India Indonesia Iran) Iraq Ireland Israel Italy Jamaica Japan Jordan) Kazakhstan Kenya) Kingdom of Serbia/Yugoslavia Kiribati Korea Kosovo Kuwait Kyrgyzstan Laos Latvia Lebanon Lesotho Lew Chew (Loochoo) Liberia Libya Liechtenstein Lithuania

Luxembourg Madagascar Malawi Malaysia Maldives Mali Malta Marshall Islands Mauritania Mauritius) Mecklenburg-Schwerin) Mecklenburg-Strelitz Mexico Micronesia Moldova Monaco Mongolia) Montenegro Morocco) Mozambique Namibia Nassau* Nauru Nepal Netherlands New Zealand Nicaragua Niger Nigeria North Macedonia Norway Oldenburg Oman Orange Free State

\bigcirc	Pakistan
\bigcirc	Palau
\bigcirc	Panama
\bigcirc	Papal States*
\bigcirc	Papua New Guinea
\bigcirc	Paraguay
\bigcirc	Peru
\bigcirc	Philippines
\bigcirc	Piedmont-Sardinia*
\bigcirc	Poland
\bigcirc	Portugal
\bigcirc	Qatar
\bigcirc	Republic of Genoa*
\bigcirc	Republic of Korea (South Korea)
\bigcirc	Republic of the Congo
\bigcirc	Romania
\bigcirc	Russia
\bigcirc	Rwanda
\bigcirc	Saint Kitts and Nevis
\bigcirc	Saint Lucia
\bigcirc	Saint Vincent and the Grenadines
\bigcirc	Samoa
\bigcirc	San Marino
\bigcirc	Sao Tome and Principe
\bigcirc	Saudi Arabia
\bigcirc	Schaumburg-Lippe*
\bigcirc	Senegal
\bigcirc	Serbia
\bigcirc	Seychelles
\bigcirc	Sierra Leone
\bigcirc	Singapore
\bigcirc	Slovakia
\bigcirc	Slovenia
\bigcirc	Solomon Islands

Somalia
South Africa
South Sudan
Spain
Sri Lanka
Sudan
Suriname
Sweden
Switzerland
Syria
Tajikistan
Tanzania
Texas*
Thailand
Timor-Leste
Тодо
Tonga
Trinidad and Tobago
Tunisia
Turkey
Turkmenistan
Tuvalu
Two Sicilies*
Uganda
Ukraine
United Arab Emirates
United Kingdom
United States of America
Uruguay
Uzbekistan
Vanuatu
Venezuela
Vietnam
Württemberg*

Yemen	(
Zambia	(
Zimbabwe	$\left(\right)$

In which year did you complete your anesthesiology training? (excluding internship/fellowship) *

Mark only one oval.

\bigcirc	2018
\bigcirc	2019
\bigcirc	2020
\bigcirc	2021

7. What was the duration of the Anesthesiology training (in years)? (excluding internship/ fellowship) *

Mark only one oval.

- 1 2 3 4 5 6
- 8. Did you work in ICU during your Anesthesiology training? *

Mark only one oval.



- 9. If yes, duration of the training in the ICU (in months)?
- 10. In which ICUs did you work during the training? Choose all that apply

Check all that apply.

Medical-Surgical (including cardiac surgery and neurosurgery)

Cardiology

Trauma

Neurology

Paediatric

Transplant

Other (please specify in the comment section)

11. Comments



Competency and skill assessment

12. 1. How would you rate your competency regarding the DISEASE DIAGNOSIS AND MANAGEMENT (does not include initial resuscitation) of the following medical conditions after having completed your Anesthesiology training? * Rate your experience for each of the item below on a Likert scale

	1. Never seen	2. Have observed the management	3. Can manage under supervision	4. Can manage with minimal assistance	5. Can manage independentl
Cerebrovascular accidents (Ischemic or Hemorrhagic	\bigcirc				\bigcirc

Stroke)

Coma	\bigcirc				\bigcirc
Seizure disorder	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Neuromuscular disorders (e.g., Myasthenia gravis, Meningitis, Guillain barre syndrome etc.)					
Respiratory emergencies (e.g. acute severe asthma, acute exacerbation of COPD, etc.)					
Acute respiratory distress syndrome	\bigcirc	\bigcirc			
Acute coronary syndromes	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Acute heart failure	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Arrhythmias	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Common acid-base problems	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Electrolyte disturbances	\bigcirc	\bigcirc	\bigcirc		
Endocrine emergencies (e.g.DKA/HHS)		\bigcirc	\bigcirc	\bigcirc	\bigcirc
Acute Poisoning	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Acute kidney injury	\bigcirc		\bigcirc		\bigcirc
Acute liver injury	\bigcirc				\bigcirc
Obstetric emergencies(e.g. PIH, PPH, Puerperal sepsis)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

Sepsis	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Healthcare- associated Infections (e.g. VAP, CLABSI, CAUTI)					\bigcirc
Brain death		\bigcirc	\bigcirc		\bigcirc

13. 2. How would you rate your PROCEDURAL skills, after having completed your Anesthesiology training? *

Rate your experience for each of the items below on a Likert scale

	1. Never seen	2. Have observed	3. Have assisted	4. Can perform under supervision	5. Can perform independently
Arterial catheterization	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Central venous catheterization	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Vascular cannulation for ECMO	\bigcirc	\bigcirc	\bigcirc		
Vascular cannulation for RRT	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Intraosseous access	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Tracheal Intubation	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Bronchoscopy for diagnostic procedures	\bigcirc	\bigcirc	\bigcirc		
Percutaneous tracheostomy	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Intercostal drain Insertion	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Thoracocentesis	\bigcirc	\bigcirc		\bigcirc	\bigcirc
Pericardiocentesis	\bigcirc	\bigcirc		\bigcirc	
Abdominal Paracentesis	\bigcirc	\bigcirc		\bigcirc	\bigcirc

Pulmonary artery catheter	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Defibrillation and cardioversion	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Transthoracic or transvenous cardiac pacing	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Nasogastric/jejunal tube insertion	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Urethral catheterization	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Intrathecal drainage and catheterization	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Epidural space catheterization	\bigcirc	\bigcirc	\bigcirc		\bigcirc

14. 3. How would you rate your competency regarding the following MONITORING OR THERAPEUTIC INTERVENTIONS after having completed your Anesthesiology training? * Rate your experience for each of the items below on a Likert scale

	1. Never seen	2. Have observed	3. Can perform under supervision	4. Can perform with minimal assistance	5. Can perform independentl
Intracranial pressure monitoring	\bigcirc	\bigcirc			\bigcirc
Basic hemodynamic monitoring (e.g., CVP and invasive arterial pressure monitoring)					
Advanced hemodynamic monitoring (e.g. cardiac output monitoring etc)	\bigcirc	\bigcirc			
Transthoracic echocardiography	\bigcirc		\bigcirc	\bigcirc	\bigcirc
Transesophageal	\bigcirc	()	$(\)$	\bigcirc	()

echocardiography				\smile	
Core temperature monitoring	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
End-tidal carbon dioxide monitoring			\bigcirc	\bigcirc	\bigcirc
Monitoring ventilator graphics	\bigcirc		\bigcirc		\bigcirc
Intra-abdominal pressure monitoring	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Monitoring tissue oxygenation (e.g. lactates, ScVO2, SVO2, VCO2 gap)	\bigcirc				
Point-of-care ultrasound	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Arterial blood gas interpretation	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Antimicrobial drug therapy (dose, duration, and common side effects)	\bigcirc	\bigcirc			
Blood or blood products administration	\bigcirc	\bigcirc	\bigcirc	\bigcirc	
Intravenous fluids	\bigcirc	\bigcirc	\bigcirc		
Vasoactive drugs therapy	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
High flow nasal oxygen (HFNO) therapy	\bigcirc	\bigcirc			
Non-invasive ventilation	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Basic Invasive mechanical ventilation	\bigcirc		\bigcirc	\bigcirc	\bigcirc
Advanced Invasive	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

mechanical ventilation					
Renal replacement therapy (RRT)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	
Extra corporeal membrane oxygenation (ECMO)	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Enteral or parenteral nutritional support	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

15. 4. How would you rate your competency with RESUSCITATION after having completed your Anesthesiology training? *

Rate your experience for each of the items below on a Likert scale

	1. Never seen	2. Have observed the management	3. Can manage under supervision	4. Can manage with minimal assistance	5. Can manage independentl
Difficult airway management	\bigcirc	\bigcirc		\bigcirc	\bigcirc
Respiratory arrest	\bigcirc	\bigcirc	\bigcirc \bigcirc		
Basic life support	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Advanced cardiac life support	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Poly-trauma	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Life-threatening hemorrhage	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Sepsis and septic shock	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Shock from different etiologies (e.g, anaphylactic, cardiogenic, obstructive shock)	\bigcirc				

16. 5. How would you rate your competency with COMMUNICATION SKILLS and END-OF-LIF CARE after having completed your Anesthesiology training? * Rate your experience for each of the items below on a Likert scale

	1. Never seen	2. Have observed	3. Can perform under supervision	4. Can perform with minimal assistance	5. Can perform independentl
Communication with patients and family	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Communication with other health care professionals	\bigcirc	\bigcirc			\bigcirc
Team co-ordination	\bigcirc	\bigcirc			\bigcirc
Dispute resolution	\bigcirc	\bigcirc			\bigcirc
Patient counseling for procedures.	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Patient counseling for prognosis	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Documentation of communication in the medical record	\bigcirc	\bigcirc			
Decision making and counselling for EOL care	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Counselling for organ donation	\bigcirc	\bigcirc	\bigcirc		\bigcirc

17. How would rate your competency for PATIENT SAFETY, CRISIS RESOURCE MANAGEMENT and RESEARCH after having completed your Anesthesiology training? *

*Vulnerable patient is a person in need of special care, support, or protection because of age, disability, or risk of ab or neglect. Rate your experience for each of the items below on a Likert scale.

	1. Never considered	2. Have observed	3. Have assisted	4. Can perform under supervision	5. Can perform independently
Steps of patient identification	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Documentation and handovers	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Safe use of high alert medications	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Time out and surgical safety checklist	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Hand hygiene	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Healthcare-associated Infection prevention bundle	\bigcirc	\bigcirc	\bigcirc		\bigcirc
Identification of vulnerable patients*	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Transportation of a critically ill patient	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Triage	\bigcirc	\bigcirc	\bigcirc	\bigcirc	
Optimal resource management e.g. oxygen, ventilators, ICU beds, human resources					
Research/ audits /quality indicators	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

 Do you feel that the competencies you have acquired during your Anesthesiology training are sufficient to practice Critical Care? *

Mark only one oval.

	1	2	3	4	5	
Sufficient	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	Not sufficient

- 19. Are there any other (than those listed above) competencies required for CCM that you fe unprepared for?
- 20. Comments and feedback if any, about the survey

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