Clinical Readiness Program: Combat Casualty Care KSAs

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The previous fragmented approach to expeditionary specialty skills training, refinement and retention was not sufficient to maintain critical wartime combat casualty care skill sets and has applicability to the civilian system.

We recognize, however, the discordance between the skills we train for in peacetime against the requirement in war. Identifying approaches to remain proficient in critical skills is a challenge for Navy Medicine. (BUMED SSG Critical Skills Sustainment)

Pre-deployment training surveys, observations, insights, and lessons (OIL) indicate that clinical specific pre-deployment training provided to deploying personnel does not consistently and/or adequately prepare individuals to quickly assume their medical duties while deployed. (MEDCOM OPORD 17-17)

Provision should be made for these teams to obtain experience in prehospital care, burn care, pediatric trauma, emergency general surgery. (NASEM ZPD)
KSAs 101

- KSAs are the specialty-specific Knowledge, Skills, and Abilities utilized by the expeditionary clinician
- KSAs were developed by clinicians based on JTS CPGs, case registries, and relevant literature
- Mapping KSAs to peacetime workload yields a readiness indicator (KSA score) for each clinician, MTF, and market
- Scores do not determine deployment readiness, but they help Commanders make decisions regarding deployment by optimizing the readiness of their clinicians and MTF
- Built off of these KSAs, Knowledge and Skills Assessments provide additional measures to identify and address gaps prior to deployment

KSAs provide a core metric to focus the Direct Care System on readiness. Surgery generates readiness by not only training the surgeon, but the entire system.
Clinician Readiness Program Timeline

Beginning with the establishment of the MHSSPACS\(^1\) in 2014, the Clinician Readiness Program has undergone multiple efforts in creation, validation, and expansion to the present.

**Jan 2015**
MCRMC\(^2\) releases report describing need for Essential Medical Capabilities

**Feb 2016**
MHS Modernization Study identifies medical force readiness as an issue area

**Oct 2014**
MHSSPACS established

**May 2015**
In partnership with ACS and representatives from all three services and the JTS, developed KSA Blueprint for General Surgery

**Mar 2017**
KSA Blueprint Session for Orthopedic Surgery, Critical Care, Emergency Medicine, Anesthesia, and CC/EM Nursing

**Sep 2017**
Clinician Readiness Program Proof of Concept (six MTFs)

**Jan 2018**
End of Proof of Concept for General Surgery and Orthopedic Surgery

**Jun 2018**
KSA Blueprint Sessions for Ophthalmology, CT Surgery, and Vascular Surgery

**Jun 2019**
DOD CAPE\(^3\) Review and Approval of General Surgery methodology

**Jul 2019**
KSA Blueprint Session for Trauma Surgery

**Feb 2019**
GAO Report released citing critical need for joint readiness metric

**Jun**
KSA Blueprint Sessions for Ophthalmology, CT Surgery, and Vascular Surgery

**May**
Defense Health Board, in report on surgical volume, recommends “The KSA program must be supported to validate its role in maintaining surgical readiness”

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1. Military Health System Strategic Partnership with the American College of Surgeons
2. Military Compensation and Retirement Modernization Commission
3. Cost Assessment and Program Evaluation

USU
Uniformed Services University
**ACGME Based Methodology**

- Developed by a Tri-Service team of 14 military surgeons with deployment experience facilitated by the ACS
- Educationally-based methodology exportable to all critical specialties

<table>
<thead>
<tr>
<th>Review of JTS CPGs, R2 Registry, References</th>
<th>Grouped into 8 Expeditionary Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound &amp; Amputation /Fx Mgt</td>
<td>Head and Spine Injury</td>
</tr>
<tr>
<td>Management of War Wounds</td>
<td>Cervical and TL Spine Injury</td>
</tr>
<tr>
<td>Compartment Syndrome and Fasciotomy</td>
<td>Concussion / mTBI Management</td>
</tr>
<tr>
<td>Amputation</td>
<td>Neurosurgical Management</td>
</tr>
<tr>
<td>Burn Care</td>
<td>Cervical Spine Evaluation</td>
</tr>
<tr>
<td>High Bilateral Amputations</td>
<td>Management of Severe Head Injury</td>
</tr>
<tr>
<td>Extremity Trauma/ Hands and Feet</td>
<td></td>
</tr>
</tbody>
</table>

| Transfusion and Resuscitation                | Airway and Breathing                |
| Frozen Blood                                 | Trauma Airway Management            |
| Damage Control Resuscitation                 | Acute Respiratory Failure           |
| Fresh Whole Blood                            | Trauma Anesthesia                   |
| Inj Doc Resus Record                         | Inhalational Injury                 |
| REBOA for Hemorrhagic Shock                  |                                     |
| Emergency Thoracotomy                        |                                     |

| Military Other                               | Universal Domains                   |
| UXO Management                               | Systems Based Practice              |
| TCCC/ Prehospital Care                       | Practice Based Learning and Improvement |
| EPW & Detainee Care                           | Interpersonal and Communication Skills |
| Obstetric / GYN Acute Care                    | Professionalism                      |
| Pediatric Trauma                              |                                     |
| In Theater Transport                          |                                     |
| Clinical Mgt of Mil Working Dogs             |                                     |
| Initial Care of ocular/adnexial injuries     |                                     |
| Joint Trauma System                           |                                     |

**Joint Trauma System (JTS)**

- Developed by a Tri-Service team of 14 military surgeons with deployment experience facilitated by the ACS
- Educationally-based methodology exportable to all critical specialties
Eight Critical Wartime specialties have been developed with Tri-Service representation.

<table>
<thead>
<tr>
<th>KSA Blueprint Session Scope</th>
<th>Specialties Developed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defense Health Agency (DHA)</td>
<td>General Surgery</td>
</tr>
<tr>
<td>Army Medical Department (AMEDD)</td>
<td>Trauma Surgery* (MD)</td>
</tr>
<tr>
<td>Air Force Medical Service (AFMS)</td>
<td>Orthopedic Surgery (MD)</td>
</tr>
<tr>
<td>Navy Bureau of Medicine (BUMED)</td>
<td>Critical Care (MD, RN) -Role 3 only-</td>
</tr>
<tr>
<td></td>
<td>Emergency Medicine (MD, RN)</td>
</tr>
</tbody>
</table>

**KSA Blueprint Session**

- Defined Role 2+ expeditionary clinician by Specialty
- Defined scope of expeditionary practice by Specialty
- Utilized SME, JTS CPGs, case logs and external materials to determine necessary expeditionary skills
- Developed ~3,790 KSAs organized into 63 Domains by Specialty

**KSAs Produced**

<table>
<thead>
<tr>
<th>Specialty</th>
<th>KSAs</th>
<th>Domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen Surg</td>
<td>487 KSAs</td>
<td>8</td>
</tr>
<tr>
<td>Ortho Surgery</td>
<td>281 KSAs</td>
<td>5</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>350 KSAs</td>
<td>7</td>
</tr>
<tr>
<td>CC Nursing</td>
<td>523 KSAs</td>
<td>8</td>
</tr>
<tr>
<td>Critical Care</td>
<td>325 KSAs</td>
<td>8</td>
</tr>
<tr>
<td>Trauma Surgery</td>
<td>988 KSAs</td>
<td>11</td>
</tr>
<tr>
<td>ED</td>
<td>486 KSAs</td>
<td>8</td>
</tr>
<tr>
<td>ED Nursing</td>
<td>352 KSAs</td>
<td>8</td>
</tr>
</tbody>
</table>

Informs NDAA Sections 703, 705, 706, 708, 725
Clinical Readiness Lifecycle

1. Periodic Knowledge Assessment:
   Individual assessment of expeditionary clinical knowledge. KSA baseline lists periodically updated via the JTS/JTTED.

2. Maintain Clinical KSAs:
   MTF practice aligned with KSAs to maintain readiness related clinical skills. Gaps addressed through VA and TAA's.

3. Skills Assessment:
   Deliver in pre-deployment “window.” Complete expeditionary clinical skills assessment, train/retrain as needed. Conduct team training as necessary.

4. Deployment Ready:
   Knowledge assessment and skills training Information provided to Services to determine “deployment ready.”
General Surgery Threshold

Impact of Military Trauma Care and Research

- Injury Severity Score
- Case Fatality Rate - Afghanistan

Sponsored by the U.S. Army Institute of Surgical Research
Each threshold is structured to address unique specialty healthcare factors and data, utilizing available information and the most relevant metrics for each specialty.

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Downrange Workload Volume Data</th>
<th>KSA Score per Patient Encounter Volume</th>
<th>Diversity Adjustment (reflecting unique KSAs across domains)</th>
<th>Coding Used</th>
<th>Mandatory minimums for specific procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Surgery</td>
<td>✓</td>
<td>N/A</td>
<td>✓</td>
<td>CPT</td>
<td>X</td>
</tr>
<tr>
<td>Ortho</td>
<td>✓</td>
<td>N/A</td>
<td>X</td>
<td>CPT</td>
<td>X</td>
</tr>
<tr>
<td>Critical Care</td>
<td>Not available</td>
<td>✓</td>
<td>X</td>
<td>ICD-10, CPT</td>
<td>✓</td>
</tr>
<tr>
<td>Emergency Medicine</td>
<td>Not available</td>
<td>✓</td>
<td>X</td>
<td>ICD-10</td>
<td>✓</td>
</tr>
<tr>
<td>Anesthesia</td>
<td>✓</td>
<td>N/A</td>
<td>X</td>
<td>CPT</td>
<td>X</td>
</tr>
<tr>
<td>Trauma Surgery</td>
<td>✓</td>
<td>✓</td>
<td>X</td>
<td>ICD-10, CPT</td>
<td>X</td>
</tr>
</tbody>
</table>

✓ = Included in threshold  
X = Not included in threshold  
N/A = Doesn't apply to specialty  
Not available = Data not available for specialty
Knowledge and Skills Assessments

Periodic assessment of fundamental expeditionary knowledge, skills, and abilities delivered via proctored, web-based, multiple-choice examination.

Exam Development Based on KSA Blueprint

Proctored Student Testing
General Surgery Knowledge Gaps

Knowledge deficits identified in all domains:

- Largest - Domains rarely performed during non-deployment.
- 25% all test items missed by 50% of test takers.
- 18 sub-domains missed by 85% of test takers.

[Pie chart showing distribution of knowledge gaps across various domains: Transfusion & Resuscitation 17%, Head & Spine Injury 18%, Torso Trauma 5%, Critical Care/Prevention 10%, Expeditionary Unique 25%, Universal Domains 4%, Wound & Amputation/Fractures 13%, Airway & Breathing 8%]
Expeditionary Surgeon Combat M-Curriculum

Sections

- Airway and Breathing
- Critical Care and Prevention
- Head/Spine Injuries
- Military Focused
- Transfusion and Resuscitation
- Torso Trauma
- Universal Topics
- Wound/Amputation/Fractures
ASSET+ Course

- Developed by USU Department of Surgery, MHSSPACS Surgical Skills Committee, ACS Committee on Trauma
- Standardized curriculum to train, re-train, and assess essential skills for expeditionary surgeons
- 1 : 1 Faculty-Learner mentoring
- Emphasis on procedural skills and decision making
- Case-based, procedural videos, simulation enabled (cadavers, simulators),
- Written and performance-based assessments
ASSET+ Course

Perfused Cadavers

Craniotomy  External Fixation  Lateral Canthotomy  Emergent C-Section

Procedural Simulators
"I just wanted to let you know that on my first trauma call I got a patient with a SFA GSW that required a resuscitative thoracotomy, extraperitoneal control of the iliac artery and SFA shunt with fasciotomies. I had a senior partner helping, but the ASSET+ exposure work made a world of difference for me. I'm hoping the guy makes it, but 48 hours out he's still alive. I really am grateful for being a part of the course a couple weeks ago. Thank you for all the work you've done for military trauma surgeons like me."
Relevance to Reserve Component

- Developed with American College of Surgeons and scalable to other professional organizations (ASA, ACEP)
- Metric calculated from standard workload capture (CPT, ICD, E&M)
  - Opportunity to ‘re-define’ RC drilling to focus on ‘readiness’
- Assessments provide CME and professional education
  - Knowledge assessment 60 CME – 50% of ABS 5 year requirement
  - ASSET+ prepares surgeons for surgical recovery

**WE NEED TO ‘FIGHT LIKE WE TRAIN’**