

Appendix II: Coding System for Verbal Communications and Activities

Last Updated 03/15/93

Ver. 2.1

OCS TOOLS CODES FOR DECISION-MAKING UNDER STRESS PROJECT

- o As described elsewhere, various subsets of codes are utilized in separate passes through the video tapes of interest.
- o In all passes, the liberal use of the OCS Comments field is encouraged.
- o In the case of the "behavioral" codes (i.e., Observation, Intervention, Activities, and Communication Behaviors) the agent of the behavior (i.e. the initiator) is coded with a two-character code prepended to the code used otherwise. Staff members are categorized as anesthesiologists, surgeons, other physicians, CRNAs, other nursing staff, and other technical staff (e.g., X-ray technicians). Staff members within each of these categories are numbered, e.g.:

A1 -- attending anesthesiologist
A2 -- assisting anesthesiologist or anesthesiology fellow
...
S1 -- attending surgeon
...
P1 -- other physician
...
C1 -- first CRNA to appear
...
N1 -- first nurse to appear
...
T1 -- first technician to appear
...
O1 -- officer or emergency medical tech
...

The numbering scheme applies to individuals throughout the case, and does not change as participants come and go during the treatment session. The intent is not to identify individuals per se, but to ascribe various behaviors and communications to the above categories of care givers.

- o In all instances where there is some uncertainty about which code to use (or which distinguishing character in a code), an "X" is used in place of the uncertain character(s).

Figure II.1: Coding System for Verbal Communications and Activities

Miscellaneous codes

- MC Miscellaneous *comment*; useful information or an opinion offered by the data analyst or by a subject matter expert (put content in OCS Comments field)
- ME Miscellaneous *event* worth noting but not otherwise captured by event codes (put content in OCS Comments field)
- MA Miscellaneous *activity* of participants worth noting but not otherwise captured behavior/performance codes (put content in OCS Comments field)

Physiological Events (these codes are entered with reference to the patient physiological data that is displayed on the video tape or with reference to the patient physiological data file that is logged on-site; normal and abnormal ranges are as defined in the LOTAS decision trees and task analyses)

- PH Heart rate abnormality
- PB Blood pressure abnormality
- PO Oxygen saturation abnormality
- PC End tidal CO₂ or other respiratory abnormality
- PT Body temperature abnormality
- PV Venous pressure abnormality

Codes for Monitoring the Data Strip on the Video

- MH Heart Rate appears on the data strip
- MB Pressure " "
- MO SaO₂ " "
- MC End tidal CO₂ " "
- MT Temperature " "
- MV Venous Pres. " "

Alarms Events

- AA Alarm, airway-related (i.e., ventilator, mass spec -- end tidal CO₂ pulse oximeter O₂ saturation)
- AC Alarm, circulatory-related (i.e., Mennen -- blood pressure, heart rate)
- AO Alarm, other equipment (e.g., IV infusion devices, etc)
- AE Alarm, external (e.g., intercom, pager, beeper, phone)

Figure II.1. Coding System for Verbal Communications and Activities (continued - p.2 of 5).

Observation Behaviors (these activities are often done in conjunction with interventions/manipulations; for coding purposes, intervention/manipulation codes should take precedence over observation codes; use observation codes only when an observation is apparent in the absence of a related manipulation/intervention)

- OP Observe, monitor, or check patient *directly* without reference to instrumentation or equipment
- OE Observe, monitor, or check the functioning of instrumentation or equipment *for other than the purpose of taking a reading* (e.g., observe integrity of oximetry sensor, blood pressure cuff, etc.)
- OR Observe, monitor, or check instrumentation or equipment *for the purpose of taking a reading* (e.g., take reading from Mennen)

Communication Behaviors

- CP Communicate with patient (meaningful communication between staff member and patient)
- CO Communicate with oneself (utterances that are seemingly "absent-minded"; i.e., not directed at teammates)
- CQ Ask a task-relevant question or ask for assistance
- CA Provide an answer or other direct response to an inquiry or request for assistance
- CQ2 Ask a task-relevant question or ask for assistance for a second time (let the digit reflect how many times the question was asked)
- CA2 Provide an answer or other direct response to an inquiry or request for assistance (let the digit reflect how many times the answer was given)
- CI Provide task-relevant information unsolicited
- CS Communicate a strategy, plan or schema
- CD Communicate a directive, give instructions, or delegate tasks, but not in a strategic sense
- CR Other task-relevant communication
- CN Non-task relevant communication (but directed at a teammate or at the patient)
- CU Unintelligible verbalization

Activity Behaviors (i.e., activities of the anesthesiology team)

- PA Preparatory activity (e.g., workstation set-up; mixing drugs)
- TA Treatment activity (direct, hands-on intervention with the patient)
- SA Supervisory activity (not hands-on intervention; directing the activity of teammates)
- RA Recording information activity (i.e., writing)
- NA Not actively involved but present in the environment (not necessarily in the cameras field of view)
- ZA Absent (after having been present previously)

Figure II.1. Coding System for Verbal Communications and Activities (continued - p.3 of 5).

Codes for Intubation

- TO Give oxygen (may use anesthesia mask, nasal, o2 tent, or non-rebreather.)
 TP Positioning the head and neck for intubation
 TC Apply cricoid pressure (Pressure applied by an assistant other than the person intubating; pressure applied with thumb and finger on neck at level of voice box.)
 TA Give intravenous drugs into I.V. infusion (usually pentothal and succinyl choline = "sux") to "induce" anesthesia.
 TS Suction of airway in the process of intubation (use other codes for suction at other times.)
 TL Laryngoscope in mouth. Suction may occur after laryngoscope inserted to allow clear visualization of larynx.
 TM Tube in mouth. Onotracheal intubation - conventional - preceded by laryngoscope.
 TN Tube in nose. (Nasotracheal intubation - note if right or left side - patient may have cervical spine injury - intubation maybe "blind" with no laryngoscope insertion.
 TU Cuff of tube inflated (Cuff up.)
 TH Hand ventilate with resusutator bay - observe chest then listen.
 TB Listen over both sides of chest (should see head move to right and left.)
 TO Listen over stomach (individual should reach down further out of camera view.)
 TV Connect ventilator.
 TB Listen over chest again to confirm ventilator is ventilating.
 TE Is Co2 signal appearing? (The end-tidal Co2 should be monitored to confirm the tracheal tube is in the trachea.)
 TT Tube taped in position.

Intervention/Manipulation Behaviors

- II Initial instrumentation of the patient; adding something new (e.g., attaching sensors, intubation, installation of arterial line, venous pressure sensor, or IV access)
 IS Manipulate sensors or other equipment already attached to the patient (i.e., after initial installation of that equipment) (e.g., take a blood pressure manually)
 ID Manipulate drugs or other anesthetic agents being given to the patient (by whatever route)
 IF Manipulate fluids being given to patient (other than blood) (this includes suctioning the patient) DO NOT USE THIS AS A SUCTION CODE DURING INTUBATION
 IB Manipulate blood being given to or taken from the patient (e.g., blood infusion to the patient, draw blood)
 IV Manipulate ventilator or other oxygen supply to the patient OTHER THAN DURING INTUBATION
 IH Other hands-on manipulation of the patient
 IE Manipulate equipment at other than the interface with the patient (e.g., set dials, calibration, silence or reset alarms)

Figure II.1. Coding System for Verbal Communications and Activities (continued - p.4 of 5).

The following coding schemes are used to transcribing audio tapes and to encode subjective ratings. Recording the anesthesiologist remarks on to audio tape and coding their subjective ratings into OCS can be done at the same time. You may not get all of the comments into OCS while they are reviewing the video tape, so use the audio tape to fill in the remaining comments in the OCS file.

Codes for Transcribing Audio Tapes - when transcribing audio tapes use the following codes for SME (subject matter expert) comments

SMEA1C The first three characters indicate it is a SME. The fourth character indicates the SME is the attending and the last character indicates this is a transcribed comment.

SMEB1C This is used for an SME pass with a non-attending anesthesiologist

SMEB2C This is used for a second SME pass with a non-attending anesthesiologist

Codes for Subjective ratings

SRA13 This five character code is used for subjective ratings. The first two characters (SR) indicate that this is a subjective rating. The next character (A) indicates the rater is the attending anesthesiologist (use a B if it is the second rating pass with another anesthesiologist). The fourth character indicates which item is being rated (e.g. noise, diagnostic uncertainty). The final character is the rating (1-5) on the scale.

SRB26 This "B" in this code is used when a second anesthesiologist rates the case.

Codes for Number of People working on the Case

NP32 The first two characters refer to Number of People working on the case. The next two characters are digits. The first digit indicates how many members of the anesthesia team are on camera. The last digit indicates how many of the members of the anesthesia team on camera are actively working on the case.

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Figure II.1. Coding System for Verbal Communications and Activities (continued - p.5 of 5).