*C*ardiac *A*rrest *R*egistry to *E*nhance *S*urvival - CARES

Complete Data Set for EMS, Hospital, and CAD Participants and Instructions for Abstracting and Coding Data Elements

January 1, 2013

Bryan McNally, MD, MPH (Principal Investigator)
Arthur Kellermann, MD, MPH (Co-Investigator)
Monica Mehta, MPH (Senior Program Associate)
Rachel Robb, MPH (Senior Program Associate)
Kimberly Vellano, MPH (Senior Program Associate)
Lucinda Klann (Minnesota CARES Coordinator & Analyst)

The CARES data dictionary is a document that reviews and explains every CARES data element in the EMS, Hospital, and CAD (Computer Aided Dispatch) datasets. This document is designed to be a helpful reference tool for participating agencies. In the data dictionary each data element is defined, the source is cited, and coding examples are provided. CARES staff has included additional examples for those elements that are the most frequently miscoded, as well as examples for unusual circumstances that may arise in the treatment of an out-of-hospital cardiac arrest.

Originally, the CARES dataset and dictionary were developed by a committee made up of experienced leaders and stakeholders in the field of emergency medicine (See Appendix A). Since that time, CARES staff has continued to update and refine the CARES dataset and dictionary based on feedback from CARES participants and relevant findings in the cardiac arrest literature. It is important to recognize that CARES was developed as a surveillance registry and not a research database; therefore, CARES is collecting only the minimum number of data elements that are known to be essential in the response and treatment of out-of-hospital cardiac arrest. In 2010, a supplemental list of optional elements was developed to allow for additional EMS, hospital and CAD times to be collected in those systems that wish to add these fields where resources allow.

The sources that were used for the development of the dataset and dictionary include the National EMS Information System (NEMSIS) and the Utstein template. A brief explanation of each source is provided below:

- NEMSIS is an effort to create a national EMS database. The NEMSIS dataset and dictionary include over 400 elements and have been through several updates. CARES has made every attempt to be NEMSIS compliant wherever possible. (http://www.nemsis.org/)
- Utstein is the recognized international standard for reporting out-of-hospital cardiac arrest survival. The Utstein recommendations are an attempt to develop and present consensus definitions for previously poorly defined areas of clinical epidemiology as they pertain to out-of-hospital cardiac arrest patients. [1]

CARES staff updates the data dictionary on an annual basis. Please feel free to contact CARES staff at cares@emory.edu with any questions or comments regarding this document.

[1] Jacobs I, Nadkarni V, Bahr J, et al; International Liaison Committee on Resuscitation; American Heart Association; European Resuscitation Council; Australian Resuscitation Council;New Zealand Resuscitation Council; Heart and Stroke Foundation of Canada; InterAmerican Heart Foundation; Resuscitation Councils of Southern Africa; ILCOR Task Force on Cardiac Arrest and Cardiopulmonary Resuscitation Outcomes. Cardiac arrest and cardiopulmonary resuscitation outcome reports: update and simplification of the Utstein templates for resuscitation registries: a statement for healthcare professionals from a task force of the International Liaison Committee on Resuscitation (American HeartAssociation, European Resuscitation Council, AustralianResuscitation Council, New Zealand Resuscitation Council, Heartand Stroke Foundation of Canada, InterAmerican HeartFoundation, Resuscitation Councils of Southern Africa).*Circulation.* 2004;110:3385-3397.

TABLE OF CONTENTS

No.	Data Item	Best Data Source/Alternate Data Source	Page
	EMS Dataset		
1	Incident Address	EMS Trip Sheet	5
2-4	Incident City, State, and Zip Code	EMS Trip Sheet	6
5-6	First Name & Last Name	EMS Trip Sheet	7
7	Patient Age	EMS Trip Sheet	8
8	Patient Age Units	EMS Trip Sheet	9
9	Date of Birth	EMS Trip Sheet	10
10	Gender	EMS Trip Sheet	11
11	Race/Ethnicity	EMS Trip Sheet	12
12	Patient's Past Medical History	EMS Trip Sheet	13
13	EMS Agency ID	EMS Trip Sheet	14
14	Date of Cardiac Arrest	EMS Trip Sheet	15
15	Incident #	EMS Trip Sheet	16
16	First Responder Agency	EMS Trip Sheet	17
17	Destination Hospital	EMS Trip Sheet	18
18	Location Type	EMS Trip Sheet	19-20
19	Arrest Witnessed	EMS Trip Sheet	21
20	Arrest After Arrival of 911 Responder	EMS Trip Sheet	22
21	Presumed Cardiac Arrest Etiology	EMS Trip Sheet	23-24
22	Resuscitation Attempted by 911 Responder	EMS Trip Sheet	25
23	Who Initiated CPR	EMS Trip Sheet	26
24	Type of Bystander CPR Provided	EMS Trip Sheet	27
25	Were Dispatcher CPR Instructions Provided?	EMS Trip Sheet	28
26	Was an AED Applied Prior to EMS Arrival?	EMS Trip Sheet	29
27	Who First Applied AED?	EMS Trip Sheet	30
28	Who First Defibrillated the Patient	EMS Trip Sheet	31
29	Did 911 Responders Perform CPR?	EMS Trip Sheet	32
30	First Arrest Rhythm of Patient	EMS Trip Sheet	33
31	Sustained ROSC	EMS Trip Sheet	34
32	Was hypothermia care provided in the field	EMS Trip Sheet	35
33	End of the Event	EMS Trip Sheet	36
34	When did first ROSC occur?	EMS Trip Sheet	37
35-37	Time Variables Estimated time of arrest Time of 1st defibrillatory shock Time of 1st CPR	EMS Trip Sheet	38
38	Mechanical CPR device used?	EMS Trip Sheet	39
39	Automated CPR feedback device used?	EMS Trip Sheet	40
40	Advanced airway successfully placed in the field?	EMS Trip Sheet	41
41	ITD used?	EMS Trip Sheet	42
42	Were drugs administered	EMS Trip Sheet	43
43	Vascular Access	EMS Trip Sheet	44
44	12 lead	EMS Trip Sheet	45
45	STEMI	EMS Trip Sheet	46
	Hospital Dataset		
46	Emergency Room outcome	Medical Record/Discharge Summary	47
47	Was hypothermia care initiated/continued in the hospital?	Medical Record/Discharge Summary	48
48	Hospital outcome	Medical Record/Discharge Summary	49
49	Discharge from the hospital	Medical Record/Discharge Summary	50
50	Neurological outcome at discharge from hospital	Medical Record/Discharge Summary	51

51	Was final diagnosis acute myocardial infarction?	Medical Record/Discharge Summary	52
52	Coronary Angiography performed?	Medical Record/Discharge Summary	53
53	Was a cardiac stent placed?	Medical Record/Discharge Summary	54
54	CABG performed?	Medical Record/Discharge Summary	55
55	Was an ICD placed and/or scheduled?	Medical Record/Discharge Summary	56
56-66	Time Variables Time call Received at Dispatch Center Time First Responder Dispatched Time of First Responder en route Time ambulance dispatched Time for ambulance en route Time first responder arrived at the scene Time ambulance arrived at the scene Time EMS arrived at the patient's side Time ambulance left scene Time ambulance arrived at the ED No First Responder dispatched	Computer Aided Dispatch	57

1. INCIDENT ADDRESS

Definition:

- The street address (or best approximation) where the patient arrested. In the event that the patient arrested after the 911 call was placed, the street address of the patient when the 911 call was placed should be recorded as the Incident Address.

Description:

- Street address can be used to map the location of the cardiac arrest using GIS technology and to identify patterns and clusters of cardiac arrest events.
- The ability to use GIS technology and to map cardiac arrest events is dependent upon the accuracy of the cardiac arrest address. For this reason, USPS standards are recommended for the coding of the address. The full document of these standards can be found at the USPS website *(http://pe.usps.gov/cpim/ftp/pubs/Pub28/pub28.pdf).*

Instructions for Coding:

- Fully spell out street addresses using standard USPS abbreviations. These abbreviations include, but are not limited to: ALY (alley), ANX (annex), APT (apartment), AVE (avenue), BLDG (building), BLVD (boulevard), BYP (bypass), CIR (circle), CT (court), CV (cove), DEPT (department), DR (drive), EXPY (expressway), FL (floor), HTS (heights), HWY (highway), JCT (junction), LBBY (lobby), LN (lane), LOOP (loop), MNR (manor), MTWY (motorway), OFC (office), PARK (park), PH (penthouse), PIKE (pike), PKWY (parkway), PL (place), PLZ (plaza), RAMP (ramp), RD (road), RDG (ridge), RM (room), RTE (route), SPUR (spur), SQ (square), ST (street), STE (suite), TER (terrace), TRCE (trace), TRL (trail), WAY (way), UNIT (unit), N (north), NE (northeast), NW (northwest), S (south), SE (southeast), SW (southwest), E (east), W (west).
- Uppercase letters are preferred.
- Use the "&" or "+" sign for indicating an intersection address.
- Do not use the "#" sign if there is an address unit designator such as APT, SUITE, or RM.
- Do not use periods, commas, or semicolons in the address.

Examples:

Code	Location
102 MAIN ST SW APT 12	Apartment #12 at "102 Main Street Southwest"
CLIFTON RD NE & N DECATUR RD NE	Intersection of "Clifton Road Northeast" and "North Decatur Road Northeast"

2, 3, & 4. INCIDENT CITY, STATE, & ZIP CODE

Definition:

- The city or township (or best approximation), state, and zip code where the patient arrested. In the event that the patient arrested after the 911 call was placed, the city or township, state, and zip code of the patient when the 911 call was placed should be recorded as the Incident City, State, & Zip Code.

Description:

- Incident location information can be used to map the location of the cardiac arrest using GIS technology and to identify patterns and clusters of cardiac arrest events.
- The ability to use GIS technology and to map cardiac arrest events is dependent upon the accuracy of the cardiac arrest address. For this reason, USPS standards are recommended for the coding of the address. The full document of these standards can be found at the USPS website *(http://pe.usps.gov/cpim/ftp/pubs/Pub28/pub28.pdf).*

Instructions for Coding:

- Uppercase letters are preferred.
- City names should be spelled out in their entirety.
- States should be indicated using the standard USPS two-letter abbreviations.
- Zip Codes should be indicated using the standard 5-number USPS zip codes.
- "99999" should be used if the zip code is unknown and cannot be determined.

Examples:

Code	Location
NEW YORK NY 10065	New York, NY 10065
ATLANTA GA 30327	Atlanta, GA 30327

5. & 6. FIRST NAME & LAST NAME (If Available)

Definition:

- The patient's first (given) name.
- The patient's last (family) name.

Description:

- Patient names are essential for ensuring accuracy in locating outcome information from hospitals.
- This information is protected in confidence and should not be withheld based on HIPAA concerns. Please contact the CARES Project Coordinator (CPC) or your agency's CARES liaison for questions.
- When the individual CARES record is complete and verified with matching hospital data, the patient name (as well as the date of birth) will be "scrubbed" from the registry to de-identify the record.

Instructions for Coding:

- If the patient's name is known, indicate the first and last name.
- If the patient's name is unknown, list as "John/Jane Doe."

Examples:

Code	Name
Bill Smith	First name: Bill Last name: Smith
John Doe	Unidentified male patient
Jane Doe	Unidentified female patient

7. PATIENT AGE

Definition:

- The patient's age (calculated from the date of birth or best approximation).

Description:

- Allows for categorization of patients according to their age at the time of cardiac arrest when used in conjunction with patient age units.

Instructions for Coding:

- Both "Patient Age" and "Patient Age Units" must be coded.
- If the patient's actual age is not known, it should be estimated and recorded.
- If a child is less than one year, enter the number of months. If older than one year, do not enter months.
- If a child is less than one month, enter the number of days. If older than one month, do not enter days.
- This is an all-inclusive registry – please enter patients of ALL ages.

Examples:

Code	Age
001	1 day, 1 month, or 1 year when combined with "Patient Age Units."
011	11 days, 11 months, or 11 years when combined with "Patient Age Units."
064	64 years when combined with "Patient Age Units." (If the age is 64 days, the age should be recorded as 002 with the "months" code for "Patient Age Units.")

8. PATIENT AGE UNITS

Definition:

- The units by which the age is documented.

Description:

- Allows for categorization of patients according to their age at the time of cardiac arrest.
- Detailed pediatric age groups may identify those cardiac arrests that are associated with congenital heart defects that may be inherited (such as prolonged QT Syndrome and Wolf-Parkinson-White Syndrome).

Instructions for Coding:

- Select the appropriate units for the recorded age in the previous field.

Field Values:

Code	Age Unit Options
1	Years
2	Months
3	Days

9. DATE OF BIRTH

Definition:

- The patient's date of birth.

Description:

- Patient date of birth is essential for ensuring accuracy in locating outcome information from hospitals.
- This information is protected in confidence and should not be withheld based on HIPAA concerns. Please contact the CARES Program Coordinator or your agency's CARES liaison with questions.
- When the individual CARES record is complete and verified with matching hospital data, the patient's date of birth (as well as the patient's name) will be "scrubbed" from the registry to de-identify the record.

Instructions for Coding:

- All dates should be entered with 8 digits in the following form: MMDDYYYY
- Do not leave any component of the date (month, day, or year) blank unless the date of birth is unknown. In such cases, mark the "DOB unknown" box and leave the date field blank.

Example:

Format	Code	Date
MMDDYYYY	07252004	July 25, 2004

10. GENDER

Definition:

- The patient's gender.

Description:

- The sex of the patient may be an important risk factor for cardiac arrest and resuscitation interventions.

Instructions for Coding:

- The patient's sex as recorded in the patient record or by self-report.

Field Values:

Code	Gender Options
1	Male
2	Female

11. RACE / ETHNICITY

Definition:

- The patient's race or ethnicity as defined by the OMB (US Office of Management and Budget; http://www.whitehouse.gov/omb/ OR http://www.whitehouse.gov/omb/fedreg_1997standards/).
    - American Indian or Alaska Native: A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.
    - Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
    - Black or African American: A person having origins in any of the black racial groups of Africa.
    - Hispanic/Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.
    - Native Hawaiian or Other Pacific Islander: A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
    - White: A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.
    - Unknown

Description:

- The race/ethnicity of the patient may be an important risk factor for cardiac arrest and resuscitation interventions.

Instructions for Coding:

- Assign race/ethnicity of patient as considered by patient, family, or healthcare provider.
- If the patient is of mixed race, select the category that is most appropriate.
- Currently, OMB allows for coding of more than one race. However, due to the structure of one answer for each data field, CARES will only accept one answer. In these cases, select the most appropriate/applicable race.

Field Values:

Code	Race/Ethnicity Options
1	American-Indian/Alaska-Native
2	Asian
3	Black/African-American
4	Hispanic/Latino
5	Native-Hawaiian/Other-Pacific-Islander
6	White
9	Unknown

12. PATIENT'S PAST MEDICAL HISTORY ***OPTIONAL ELEMENT***

Definition:

- Patient's past medical history.

Instructions for Coding:

- Code any and all that are known as part of the past medical history of the patient.
- Other would apply for any other chronic diseases that are known but not classified by the existing choices.

Field Values:

Code	Options
1	No
2	Unknown
3	Heart Disease
4	Diabetes
5	Cancer
6	Hypertension
7	Renal disease
8	Respiratory disease
9	Hyperlipidemia
10	Stroke
11	Other

Examples:

Example	Appropriate Code/Value
The patient has a history of heart disease.	3 – Heart Disease
The patient has diabetes, renal disease and history of a stroke.	4 – Diabetes, 7 – Renal Disease, and 10 – Stroke
Patient has ALS (amyotrophic lateral sclerosis).	11 – Other
Patient is unresponsive and EMS is unable to obtain any past medical history.	2 – Unknown

13. EMS AGENCY ID

Definition:

- For desktop data entry and for automatic extraction, this field is auto-populated.
- The state-assigned provider number for the Emergency Medical Service (EMS) responding agency.
- For CARES, EMS is defined as personnel who respond to the medical emergency in an official capacity (i.e. respond to the 911 call) as part of an organized medical response team AND are the designated transporter of the patient to the hospital.
    - NOTE: By this definition, organized responding personnel who are not the designated transporter of the patient to the hospital are characterized as a "First Responder" and are not part of the EMS system.
    - NOTE: By this definition, physicians, nurses, or paramedics who witness a cardiac arrest and initiate CPR but are not part of the organized rescue team are characterized as Lay person Medical Provider and are not part of the EMS (or First Responder) system.

Description:

- EMS that provided out-of-hospital care to the patient in cardiac arrest.
- Not nullable. A unique value must be provided to create a unique record ID within the database.
- All EMS agency demographic information is associated with the EMS agency number.

Instructions for Coding:

- Use the official code for your EMS agency assigned by the state.
- If you do not know your agency's ID, please contact your CARES liaison or CARES staff.

Example:

EMS Agency ID	EMS Agency
000003	Shady Grove EMS

14. DATE OF CARDIAC ARREST

Definition:

- Date cardiac arrest occurred.

Description:

- Allows the calculation of survival time based on consecutively timed events from this index date.

Instructions for Coding:

- Use the date of event as recorded in the EMS trip sheet.

Example:

Format	Code	Date
MMDDYYYY	07252009	July 25, 2009

15. INCIDENT

Definition:

- The unique number automatically assigned by the EMS agency for each patient care report (PCR).

Description:

- The number will be used to identify each unique event within the CARES database.
- Not nullable. A unique value must be provided to create a unique record ID within the database.
- Where applicable, it will trace and link dispatch information (CAD data) for EMS and first responders.

Instructions for Coding:

- This is essential information for follow-up and linking data, and should not be missing.
- Use the record number as recorded in the EMS trip sheet.
- There are 15 characters designated for this field. When the incident number is less than 6 characters, do not use preceding "0"s unless the information is transmitted by XML file.
- If letters are used in the incident number, they should be recorded as capital letters.
- NOTE: Agencies may refer to this number in different terms (e.g., Call #). Please note the CARES definition relates to the unique number assigned by the EMS Agency.

Examples:

Call #	Examples
1234	Four (4) number incident #
123456	Six (6) number incident #
AB6468	Incident # with letters and numbers
000000123456789	Incident # with more than 6 characters with preceding "0"s.

16. FIRE/FIRST RESPONDER AGENCY

Definition:

- The name and state-assigned code number for the First Responder agency.
- For CARES, a First Responder agency is defined as personnel who respond to the medical emergency in an official capacity as part of an organized medical response team but are not the designated transporter of the patient to the hospital.
    - NOTE: By this definition, organized responding personnel who are the designated transporter of the patient to the hospital are characterized as "EMS" and are not considered a "First Responder."
    - NOTE: By this definition, physicians, nurses, or paramedics who witness a cardiac arrest and initiate CPR but are not part of the organized rescue team are characterized as Lay person Medical Provider and are not part of the First Responder (or EMS) system.

Description:

- First Responder agency that provided out-of-hospital care to the patient in cardiac arrest.
- All First Responder agency demographic information is associated with this field.
- Where applicable, it will trace and link dispatch information (CAD date) for First Responders.

Instructions for Coding:

- Use the official code for your EMS agency assigned by the state.
- The names and/or codes of the First Responder agency may be documented on the EMS trip sheets.
- For desktop data entry and for automatic extraction, this field is in a "drop-down menu" format.
- If a First Responder agency was not dispatched, this field can be left blank. (However, an explanatory comment should be provided in the "General Comments" box).
- If a First Responder agency was dispatched, this field MUST be completed. This is independent of whether or not the First Responder actually provided direct care to the patient.
- If more than one First Responder agency was dispatched, the unit that arrived first at the scene should be indicated as the "First Responder" for this field.
- First Responder does not need to be on the scene first.

Example:

Code	First Responder Agency
003	Shady Grove Fire Department

17. DESTINATION HOSPITAL

Definition:

- The hospital that the patient was transported to.

Description:

- Destination Hospital name and/or code is essential for matching outcome data to the record.
- When possible, state issued hospital codes should be used along with the name of the hospital.
- Important for grouping data by destination location, which also allows data to be sorted by geographic areas in many agencies.
- Provides information on overall service area as well as patterns and times for agency configuration.

Instructions for Coding:

- This field must be completed for all patients that are transported to the hospital. This is independent of whether or not the patient was later admitted to the hospital.
- For desktop data entry and for automatic extraction, this field is in a "drop-down menu" format.
- The destination hospital should be documented on the EMS trip sheet.
- This field can only be left blank when the patient was not transported to the hospital.

Example:

Code	Destination Hospital
321	Shady Grove Hospital

18. LOCATION TYPE

Definition:

- The type of location for the address given in field 1.
- This should be the type of location where the patient arrested. In the event that the patient arrested after the 911 call was placed, the type of location should be for the address of the patient when the 911 call was placed.
    - Ex: if patient arrests in the back of the ambulance, the location type should be coded as the place where the call was made from.

Description:

- Allows categorization of cardiac arrest according to type of location. This may allow for a greater understanding of high frequency arrest locations that can be targeted for prevention or response programs.

Instructions for Coding:

- Select the location type that is most appropriate based on the definitions below:

Field Values:

Code	Values & Definitions
01	Home/Residence – Includes apartment, boarding house, institutional place of residence, halfway house, group home, dormitory building, private home, residential house, home premises, private driveway, private garage, private garden, private walkway, swimming pool within private residence or garden, and yard of home.
02	Public/Commercial Building –Includes any building used by the general public, including bank, café, state, public, and private schools, casino, church, cinema, clubhouse, commercial shop, courthouse, dance hall, farm, fire station, daycare, hotel, jail, market, movie theater, music hall, nightclub, office building, opera house, parking garage, post office, public hall, restaurant, broadcasting station, and store. Excludes home garage (see Home/Residence), industrial building/workplace (see Industrial Place), and physician's office (see Healthcare Facility).
03	Street/Hwy – Includes all public roadways, and sidewalk or road not associated with a residence or business.
04	Nursing Home –Includes all medical residential institutions that are licensed by the state as nursing homes or assisted-living centers.
05	Healthcare Facility – Doctor's office, dialysis clinic, free standing clinic (unless meeting the definition of Hospital).
06	Place of Recreation – Includes amusement park, baseball field, basketball court, beach resort, cricket grounds, football field, golf course, gymnasium, hockey field, holiday camp, ice palace, lake resort, mountain resort, playground, public park, racetrack, resorts of all types, riding school, rifle range, skating rink, sports grounds, stadium, public swimming pool, tennis court and other recreational locations within an educational institution (such as playground, gymnasium). Excludes occurrence in private house, private garden, private swimming pool, and private yard (See Home/Residence).
07	Industrial Place – Includes building under construction, dockyard, dry dock, factory building or premises, garage (place of work), industrial yard, loading platform in factory or store, industrial plant, mine, quarry, railway yard, shop (place of work), warehouse, and workhouse.
08	Transport Center – Includes bus station/terminal, train/subway station, ferry terminal and airport.
09	Other – Is to be used when location is not included in the above categories. Includes parking lot, boat/ferry. When this option is selected, please indicate/describe the location type in the free text field.

Examples:

Example	Appropriate Code/Value
Patient arrested while on a private tennis court located in the backyard of a residential home.	01- Home/Residence
Patient arrested while on a tennis court at the Shady Grove Country Club.	06- Place of Recreation
Patient was walking down the street. Not feeling well, the patient approached a nearby home to ask for help. Upon stepping on the private porch, the patient had a cardiac arrest.	01- Home/Residence
Patient had a cardiac arrest while in the Shady Grove Supermarket.	02- Public/Commercial Building
Patient had a cardiac arrest in the parking lot of the Shady Grove Supermarket.	09- Other
Patient arrested at the Shady Grove Neighborhood Church.	02- Public/Commercial Building
Patient arrested while in his/her college dorm room.	01- Home/Residence
Patient arrested while on dialysis at the Shady Grove Dialysis Clinic.	05- Healthcare Facility
Patient arrested while in the Atlanta airport.	08- Transport Center

19. ARREST WITNESSED

Definition:

- A witnessed arrest is one that is seen or heard by another person.

Description:

- To be able to determine a true Utstein survival rate in a given community it is necessary to identify those patients who have been witnessed to collapse.

Instructions for Coding:

- A witnessed arrest is one that is seen or heard by another person.
- If the patient was found after an uncertain period of time (the arrest was neither seen nor heard), then the arrest is considered an unwitnessed arrest.

Field Values:

Code	Options
1	Witnessed arrest
2	Unwitnessed arrest

Examples:

Example	Appropriate Code/Value
The patient was found on the floor of the kitchen by her husband. He did not see or hear her fall but immediately called 911.	2 – Unwitnessed Arrest
The patient's wife heard a load 'thud' in the next room. She immediately walked into the room to find the patient on the floor unconscious/unresponsive and called 911	1 – Witnessed Arrest
EMS was called to the home of the patient, who complained of shortness of breath. The patient was awake and alert when EMS arrived and the first monitored cardiac rhythm was sinus tachycardia of 150 bpm. After 2 minutes of monitored sinus tachycardia, the patient went into ventricular fibrillation. Resuscitation was begun, etc.	1 – Witnessed Arrest
EMS was called to the corner of Main Street and 14th Street for a possible cardiac arrest. Upon arrival, the patient was found lying on the sidewalk with no pulse. The couple, who had called 911, was interviewed and stated they found the patient while walking to their car.	2 – Unwitnessed Arrest
EMS was called to the YMCA for a possible cardiac arrest. Upon arrival the patient was found lying on the gym floor with no pulse. Several other people were playing basketball when the event occurred, but no one heard or saw the patient collapse.	2 – Unwitnessed Arrest

20. ARREST AFTER ARRIVAL OF 911 RESPONDER

Definition:

- Indicates if the patient arrested before or after the arrival of a 911 responder.

Description:

- Allows data to be sorted based on when the arrest occurred: before/after the arrival of a 911 responder.
- Patients who experience a cardiac arrest after the arrival of EMS or First Responder personnel are in the best of circumstances to be resuscitated by trained personnel with the equipment to provide immediate defibrillation.

Instructions for Coding:

- If the arrest occurred after the arrival of a 911 responder, mark Yes.
- If the arrest did not occur after the arrival of a 911 responder, mark No.
- NOTE: If this field is marked "Yes," then field 19 (Arrest Witnessed) should be coded as a "Witnessed Arrest."

Field Values:

Code	Options
1	Yes
2	No

Examples:

Example	Appropriate Code/Value
The patient was found on the floor of the kitchen by her husband. He did not see or hear her fall but immediately called 911.	2 – No
The patient's wife heard a load "thud" in the next room. She immediately walked into the room to find the patient on the floor unconscious/unresponsive and called 911.	2 – No
EMS was called to the home of the patient, who complained of shortness of breath. The patient was awake and alert when EMS arrived and the first monitored cardiac rhythm was sinus tachycardia of 150 bpm. After 2 minutes of monitored sinus tachycardia, the patient went into ventricular fibrillation. Resuscitation was begun, etc.	1 – Yes
EMS and a First Responder were dispatched to the Shady Grove Sporting Club for a patient complaining of mild chest pain. The First Responder arrived on scene to find the patient awake and alert. After 1 minute, the patient went into full cardiac arrest. Resuscitation efforts were begun. EMS personnel arrived 2 minutes later, etc.	1 – Yes

21. PRESUMED CARDIAC ARREST ETIOLOGY

Definition:

- Indication of the etiology or cause of the cardiac arrest.
- **All cardiac arrests of non-traumatic etiology MUST be entered into CARES including: presumed cardiac, drowning, respiratory causes, electrocution, drug overdose, presumed poisoning/intoxication, asphyxia, and exsanguinations.**
- An arrest is presumed to be of cardiac etiology unless it is known or likely to have been caused by trauma, drowning, respiratory causes, electrocution, drug overdose, presumed poisoning/intoxication, asphyxia, exsanguinations, or any other non-cardiac cause as best determined by rescuers.
- In cases where seemingly minor "trauma" may be present but not likely the cause of the arrest, cardiac etiology should be considered (i.e. minor MVC with patient slumped over, a minor fall).
- Trauma - defined as out-of-hospital injury (e.g. blunt or penetrating trauma, burns, etc.) resulting in traumatic arrest.
- Respiratory - underlying respiratory disease or a respiratory mechanism as the primary cause of arrest, e.g. acute respiratory event that is likely the cause of the cardiac arrest
- Drowning - submersion in water with no evidence of other contributing factors such as drug poisoning or trauma prior falling into the water.
- Electrocution - primary cause of arrest due to electric shock, i.e. by a source of high voltage current.
- Other - only to be used if the cause of arrest is known and documented but is not one of the available options (presumed cardiac etiology, trauma, respiratory, drowning, or electrocution).

Description:

- This field allows for categorization based on evidence to suggest the presumed etiology of the arrest. This will allow for the best chance of identifying patients that are otherwise presumed to have a primary cardiac etiology and help establish an Utstein survival rate for a community.

Instructions for Coding:

- The arrest is said to be of "presumed cardiac etiology" unless it is known or likely to have been caused by a non-cardiac cause (see definitions above).
- "Other" should only be used if the etiology is ***known*** and documented but is not one of the available options (presumed cardiac etiology, trauma, respiratory, drowning, or electrocution). "Other" is not the default answer and therefore should not be used for "unknown" etiologies.
- Additional information when available from the hospital (if the patient is transported) or medical examiner's office (death certificate) that may help clarify the etiology should also be used when available.
    - If the hospital determines the etiology to be other than what is listed by pre-hospital providers, the pre-hospital agency should be notified and the etiology changed in CARES with approval of pre-hospital provider.
- If the arrest is selected as a non-cardiac etiology, explain the circumstances of the arrest in the "General Comments" free text field.

Field Values:

Code	Etiology Options
1	Presumed Cardiac Etiology
2	Trauma
3	Respiratory
4	Drowning
5	Electrocution
9	Other

Examples:

Example	Appropriate Code/Value
EMS was called to the home a patient who complained of shortness of breath. The patient was awake and alert when EMS arrived and the first monitored cardiac rhythm was sinus tachycardia. The patient then went into ventricular fibrillation. Resuscitation was begun, etc.	1 – Presumed Cardiac Etiology
EMS was called to a dialysis clinic to find patient in full cardiac arrest. No other information was provided.	1 – Presumed Cardiac Etiology
EMS arrived on scene to find patient unresponsive on the floor of a public building. Bystander stated that the patient exhibited seizure-like activity before becoming unresponsive. The patient had no history of seizures.	1 – Presumed Cardiac Etiology
EMS was called to the home of a one month old cardiac arrest patient. The patient had no prior medical history, and the cause of arrest is unknown.	1 – Presumed Cardiac Etiology
EMS is called to the home of a forty year old man for an attempted suicide. Patient is found hanging and resuscitation efforts are initiated.	2 – Trauma
EMS was called to the home of a patient who complained of shortness of breath. EMS arrived to find the patient awake and alert. The patient had a medical history of asthma. After two minutes the patient stopped breathing and went into respiratory arrest.	3 – Respiratory
EMS was dispatched to a possible cardiac arrest. Upon their arrival the patient was unconscious in the swimming pool. The patient did not have a pulse when he was removed from the pool.	4 – Drowning
EMS arrived at a college dormitory to find patient unconscious and unresponsive. Drug paraphernalia was located near the patient. Friends of the patient said she had been using cocaine and heroin throughout the day.	9 – Other
EMS arrived on scene to find patient lying in bed unresponsive. The patient had end stage cancer and was in hospice care.	9 – Other
Patient found in a parked car in his garage, suspected of carbon monoxide poisoning.	9 – Other
Patient found with exsanguinations, felt to be from a gastrointestinal hemorrhage.	9 - Other
EMS responds to an infant arrest believed to be Sudden Infant Death Syndrome (SIDS) or Sudden Unexpected Infant Death (SUID), the unexpected, sudden death of a child under age 1 in which an autopsy does not show an explainable cause of death.	9 - Other

22. RESUSCITATION ATTEMPTED BY 911 RESPONDER (or AED shock given prior to EMS)

Definition:

- Indication of an attempt to resuscitate the patient who is in cardiac arrest.
- A resuscitation attempt is defined as the act of attempting to maintain or restore life by establishing or maintaining airway (or both), breathing, and circulation through CPR, defibrillation, and other related emergency care techniques.
- Bystander CPR that results in ROSC without the need for defibrillation or 911 Responder CPR would not be considered a resuscitation attempt.
- Patients with signs of obvious death (dependent lividity, rigor mortis, decomposition) where initial efforts may have been initiated will not be considered as attempted resuscitation. This includes cases where First Responders may start CPR but upon arrival of ALS, efforts are ceased due to obvious signs of death.

Description:

- Allows data to describe the number of cardiac arrests within the EMS patient population which resulted in resuscitative efforts.

Instructions for Coding:

- Determine if a 911 Responder attempted resuscitation, as defined above.
- If the patient was defibrillated successfully prior to 911 responders arrival and post-resuscitative care was provided, then this field must be marked "Yes".
- If the patient only received bystander CPR, and did not require defibrillation or 911 responder CPR efforts, then this field must be marked "No".
- This field is independent of whether or not resuscitation efforts were later stopped at the scene (for any reason).

Field Values:

Code	Field Options
1	Yes
2	No

Examples:

Example	Appropriate Code/Value
EMS arrived on scene to a lay person performing CPR on a patient with dependent lividity. EMS terminated the resuscitation effort (without ever performing CPR themselves) due to the futile nature of the event.	2 – No
After witnessing a man collapse, a lay person performed CPR and a lay person medical provider applied an AED (but did not defibrillate), resulting in a full resuscitation of the patient prior to arrival of EMS. EMS transported the patient to the hospital, providing supportive care only.	2 – No
After witnessing a man go into cardiac arrest, a lay person performed CPR and a lay person medical provider applied an AED (with AED defibrillation), resulting in a full resuscitation of the patient prior to arrival of EMS. EMS transported the patient to the hospital, providing supportive care only.	1 – Yes
EMS found patient in PEA arrest, and patient was treated per ACLS guidelines without change. Patient's wife requested that resuscitation efforts be stopped, and patient was pronounced per protocol.	1 - Yes
First Responders arrived on scene, started CPR, and placed AED. EMS arrived and found patient with dependent lividity/rigor mortis. Patient pronounced per protocol.	2 – No

23. WHO INITIATED CPR

Definition:

- Identifies the initial person to perform CPR.
- Cardiopulmonary resuscitation (CPR) is an attempt to restore spontaneous circulation by performing chest compressions with or without ventilation.

Description:

- Used to measure Bystander and First Responder involvement.

Instructions for Coding:

- If CPR was not initiated, select "Not Applicable".
- Select who initiated CPR using the definitions below.
- If the person who initiated CPR fits the definitions for both "Lay Person Family Member" and "Lay Person Medical Provider," then "Lay Person Medical Provider" should be selected.
- If arrest occurs at a Nursing Home, assume Lay Person Medical Provider initiated CPR unless otherwise specified.

Field Values:

Code	Definition
9	Not Applicable
1	Lay Person – Someone not responding to the medical emergency in an official capacity (i.e. not part of the response team to the 911 call). Known family members and medical providers are excluded from this group for this question. *(See "Lay Person Family Member" and "Lay Person Medical Provider" below.)*
2	Lay Person Family Member – Lay person who is known to be a family member of the patient.
3	Lay Person Medical Provider – Physicians, nurses, or paramedics who are not part of the organized rescue team.
4	First Responder (non-EMS)
5	Responding EMS personnel

Examples:

Example	Appropriate Code/Value
After attending the symphony, a couple saw a woman suddenly collapse to the sidewalk. Since there was no pulse the man began chest compressions while the woman called 911.	1 – Lay Person
Police responded to a 911 call at a single family dwelling at 123 Smith Road. When police arrived wife stated she saw her husband collapse while he was washing dishes but she did not perform CPR. Since there was no pulse police began chest compressions.	4 – First Responder
After attending a movie, a group of nurses heard someone call for help in the parking lot. A man was found on the ground with no pulse and no respirations. CPR was initiated by the nurses.	3 – Lay Person Medical Provider
If CPR was not initiated by any bystander or EMS team/Private ambulance crew, indicate "Not Applicable". E.g. A case whereby there is obvious sign of death (rigor mortis, lividity or decapitation) and resuscitation was not attempted at all.	9 – No CPR Initiated

24. TYPE OF BYSTANDER CPR PROVIDED

Definition:

- Describes type of CPR performed by a bystander.
- "Compressions and ventilations" is defined as a combination of chest compressions and mouth or bag ventilations.
- "Compressions only" is defined as manual chest compressions performed with no attempt at ventilations.
- "Ventilations only" is defined as mouth or bag ventilations performed with no attempt at compressions.

Description:

- This field allows for categorization on type of bystander CPR and will provide information on the survival rate with each method.
- Determine if a bystander performed CPR.
- If a bystander performed, then determine type of CPR.
- You should only choose one field.

Field Values:

Code	Field Options
1	Compressions and ventilations
2	Compressions only
3	Ventilations only

Examples:

Example	Appropriate Code/Value
EMS arrived on scene while two bystanders are performing CPR on a patient. Bystanders were providing ventilations with chest compressions.	1 – Compressions and ventilations
EMS arrived on scene while a bystander is performing chest compressions only. Ventilations were not attempted.	2 – Compressions only
EMS arrived on scene while a bystander is performing ventilations only. Compressions were not attempted.	3 – Ventilations only

25. WERE DISPATCHER CPR INSTRUCTIONS PROVIDED?

Definition:

- Indicates if dispatcher CPR instructions were provided to the caller.

Instructions for Coding:

- For the answer to be "Yes", the 911 dispatcher must have provided CPR instructions to the caller.
- For the answer to be "No", the 911 dispatcher must not have provided CPR instructions to the caller.
- We are asking whether CPR instructions were provided, not whether CPR was performed (this is asked in Questions 23 and 24).

Field Values:

Code	Options
1	Yes
2	No
3	Unknown

Examples:

Example	Appropriate Code/Value
Bystander calls 911 and is provided with CPR instructions.	1 - Yes
Bystander calls 911 and is not offered CPR instructions.	2 - No

26. WAS AN AED APPLIED PRIOR TO EMS ARRIVAL?

Description:

- To determine the incidence of automated external defibrillator (AED) use prior to EMS arrival.
- This question is designed to capture both public access defibrillation (PAD) and First Responders with an AED (as opposed to a monitor defibrillator).

Instructions for Coding:

- To be coded "Yes", the machine would need to have the pads applied to the patient with a minimum of one analysis performed, regardless of whether or not a shock is indicated.
- Indicate whether AED was used to defibrillate patient.

Field Values:

Code	Definition
1	Yes, with defibrillation
2	Yes, without defibrillation
3	No

Examples:

Example	Appropriate Code/Value
EMS responded to a possible cardiac arrest at Town Center Mall. Upon arrival a female patient was found on the floor with mall security at her side and an AED in use. Pads had been applied and one shock had been given.	1 – Yes, with defibrillation
After the fitness instructor applied the AED to the collapsed jogger in the health club, she reported to the responding EMS personnel that the AED indicated an unshockable rhythm. Therefore, she did not defibrillate the patient.	2 – Yes, without defibrillation
EMS was called to the YMCA for a possible cardiac arrest. Upon arrival a man was found lying on the gym floor with no pulse. Several other people were playing and watching a basketball game when the event occurred. Several bystanders saw the man collapse and were at his side. EMS applied monitor/defibrillator.	3 – No
Police respond to a possible cardiac arrest and arrive to find a woman down and receiving bystander CPR. The police carry and apply an AED to the patient with no shock advised.	2- Yes, without defibrillation
A man collapses at a downtown café; first on the scene is an engine company from the fire department. They apply an AED and shock the patient and start CPR prior to ALS arrival.	1- Yes-with defibrillation

27. WHO FIRST APPLIED AED?

Description:

- Identifies the individual who initially applied/used the AED during the resuscitation.
- To determine the frequency of use of publicly available AEDs during resuscitations.

Field Values:

Code	Definition
9	Not Applicable (device not used)
1	Lay Person (lay person not known to be a family member)
2	Lay Person Family Member (lay person known to be family member)
3	Lay Person Medical Provider
4	First Responder (non-EMS)
	If yes, was it applied by Police?
1	○ Yes
2	○ No

Examples:

Example	Appropriate Code/Value
EMS responded to a possible cardiac arrest at Town Center Mall. Upon arrival a female patient was found on the floor with mall security at her side and an AED in use. Pads had been applied and one shock had been given	1 – Lay Person
Police responded to a 911 call at a single family dwelling at 123 Smith Rd. When police arrived wife stated she saw her husband collapse while he was washing dishes but she did not perform CPR. Since there was no pulse police began chest compressions. An AED was applied by police and police noted that the patient was shocked once.	4 – First Responder (non-EMS), then "Yes"

28. WHO FIRST DEFIBRILLATED THE PATIENT?

Description:

- Identifies the individual who was responsible for first defibrillating the patient.
- To determine the frequency of defibrillatory shocks among bystanders and responders.

Field Values:

Code	Definition
0	Not applicable
1	Lay Person (lay person not known to be a family member)
2	Lay Person Family Member (lay person known to be family member)
3	Lay Person Medical Provider
4	First Responder (non-EMS)
	If yes, did the police defibrillate the patient?
1	○ Yes
2	○ No
5	Responding EMS personnel

Examples:

Example	Appropriate Code/Value
EMS responded to a possible cardiac arrest at Town Center Mall. Upon arrival a female patient was found on the floor with mall security at her side and an AED in use. Pads had been applied and one shock had been given	1 – Lay Person
Police responded to a 911 call at a single family dwelling at 123 Smith Rd. When police arrived wife stated she saw her husband collapse while he was washing dishes but she did not perform CPR. Since there was no pulse police began chest compressions. An AED was applied by police and police noted that the patient was shocked once.	4 – First Responder (non-EMS), then "Yes"
EMS was called to the YMCA for a possible cardiac arrest. Upon arrival a man was found lying on the gym floor with no pulse. Several other people were playing and watching a basketball game when the event occurred. Several bystanders saw the man collapse and were at his side. EMS applied Monitor/Defibrillator and provided shocks.	5 – Responding EMS Personnel

29. DID 911 RESPONDERS PERFORM CPR? ***OPTIONAL ELEMENT***

Definition:

- Indicates if 911 responder (BLS and/or ALS) performed CPR.

Instructions for Coding:

- For the answer to be "yes", CPR must be performed by 911 Responder (BLS and/or ALS).

Field Values:

Code	Options
1	Yes
2	No

Examples:

Example	Appropriate Code/Value
911 responder performed CPR.	1 – Yes
911 responder arrived on scene to a lay person performing CPR on a patient with dependent lividity. Responder terminated the resuscitation effort (without ever performing CPR themselves) due to the futile nature of the event.	2 – No
After witnessing a man go into cardiac arrest, a lay person performed CPR and a lay person medical provider applied an AED (but did not defibrillate), resulting in a full resuscitation of the patient prior to arrival of 911 responder. 911 responder transported the patient to the hospital, providing supportive care only.	2 – No
After witnessing a man go into cardiac arrest, a lay person performed CPR and a lay person medical provider applied an AED (with AED defibrillation), resulting in a full resuscitation of the patient prior to arrival of 911 responder. 911 responder transported the patient to the hospital, providing supportive care only.	1 – No
911 responder found patient in PEA arrest, and patient was treated per ACLS guidelines without change. Patient's wife requested that resuscitation efforts be stopped, and patient was pronounced per protocol.	1 – Yes
First responders arrived on scene, started CPR, and placed AED. 911 responder arrived and found patient with dependent lividity and rigor mortis. Patient was pronounced per protocol.	2 – No

30. FIRST ARREST RHYTHM OF PATIENT

Description:

- The first monitored rhythm is the first cardiac rhythm present when a manual (monitor/defibrillator) or AED (automated external defibrillator) is attached to a patient after cardiac arrest. If the AED does not have a rhythm display, then it may be possible to determine the first monitored rhythm from a storage data card, hard drive, or other device used by the AED to record data. If the AED has no data-recording device, then the first monitored rhythm should be classified simply as "unknown shockable" or "unknown unshockable." This data point can be updated later if the AED has downloadable capability.
- The initial rhythm that the patient was found to be in as indicated by EMS personnel. For the purposes of uniform reporting, the Utstein group classifies a deflection on the surface ECG < 1mm amplitude (calibrated 10 mm/mv) as asystole; 1 mm or more is ventricular fibrillation.

Instructions for Coding:

- In order to obtain the first monitored rhythm from the AED, it must have a working recording cartridge. The recording cartridge provides an electronic copy of the recorded rhythms and respective defibrillations that may be delivered. This cartridge must be retrieved after the arrest for review by the principle investigators or registry medical director.
- For manual defibrillators, the first monitored rhythm should be recorded in the patient care narrative by EMS paramedics.
- If an AED is used during the event and is without a recording cartridge, selection should only be made from "Unknown shockable rhythm" or "Unknown unshockable rhythm."

Field Values:

Code	Definition
00	Ventricular Fibrillation
01	Ventricular Tachycardia
02	Asystole
03	Idioventricular/Pulseless Electrical Activity (PEA)
06	Unknown Shockable Rhythm
07	Unknown Unshockable Rhythm

Examples:

Example	Appropriate Code/Value
Monitor/Defibrillator was available to rhythm interpretation by First Responder or EMS. Ventricular Fibrillation was the presenting rhythm interpreted by trained personnel.	00 – Ventricular Fibrillation
An AED was used by bystander or First Responder that did not provide observation of rhythm for interpretation. The AED advised to deliver a shock. This is the first arrest rhythm regardless of actual rhythm observed after EMS interpretation.	06 – Unknown Shockable Rhythm

31. SUSTAINED ROSC (20 consecutive minutes) or present at the end of EMS care

Definition:

- Return of Spontaneous Circulation (ROSC) is defined as the restoration of a palpable pulse or a measurable blood pressure
- Sustained ROSC is deemed to have occurred when chest compressions are not required for 20 consecutive minutes and signs of circulation persist.
- 20 minutes can be estimated as it is understood these times can be hard to quantify.

Instructions for Coding:

- If a patient has a subsequent loss of spontaneous circulation after "Sustained ROSC" this subsequent arrest is NOT coded as a new event. After the cardiac arrest event that resulted in the initial 911 call all subsequent arrests after ROSC are considered part of the initiating event.

Field Values:

Code	Definition
1	No
2	Yes, but pulseless at end of EMS care (or ED arrival)
3	Yes, pulse at end of EMS care (or ED arrival)

Examples:

Example	Appropriate Code/Value
After defibrillation, patient monitored rhythm returned to sinus tachycardia with a palpable carotid pulse. There was no further fibrillation or asystole. Patient remained stable and was transported to the ED. ROSC was sustained through arrival and at the ED.	3 – Yes, pulse at end of EMS care (or ED arrival).
After defibrillation, patient monitored rhythm returned to sinus tachycardia with a palpable carotid pulse. After 10 minutes, the patient became flaccid and asystolic. Chest compressions were restarted.	1 – No
After defibrillation, patient monitored rhythm returned to sinus tachycardia with a palpable carotid pulse. After 22 minutes, the patient became flaccid and asystolic. Chest compressions were restarted and spontaneous circulation did not reoccur during transport or arrival at ED.	2 – Yes, but pulseless at end of EMS care (or ED arrival)

32. WAS HYPOTHERMIA CARE PROVIDED IN THE FIELD

Description:

- Hypothermia care is provided in the field if measures were taken to reduce the patient's body temperature by means of external cold pack application to armpits and groin and administration of cold intravenous saline bolus, with or without sedation or other medications.

Field Values:

Code	Definition
1	Yes
2	No

Examples:

Example	Appropriate Code/Value
20 y/o intubated male achieves prehospital ROSC, remains comatose, and EMS applies cold packs and cold IV fluid bolus.	1 – Yes
34 y/o female achieves ROSC and is awake and alert shortly after defibrillation. She does not receive hypothermia care.	2 – No

33. END OF THE EVENT

Definition:

- The reason that CPR or other resuscitation efforts were discontinued.
- A resuscitation event is deemed to have ended when death is declared or spontaneous circulation is restored and sustained for 20 minutes or longer.
- If a DNR is produced, even if resuscitative attempts have already been started, this field should be coded "Effort ceased due to DNR"

Description:

- This variable will be used to quantify the number of patients who had resuscitation terminated in the field and which patients were transported to the hospital.
- The final destination of the patient at the end of the EMS call.
- If a DNR is produced, even if resuscitative attempts have already been started, this field should be coded "Effort ceased due to DNR"

Field Values:

Code	Definition
1	Pronounced in Field
2	Pronounced in ED
3	Effort ceased due to DNR
4	Ongoing Resuscitation in ED

Examples:

Example	Appropriate Code/Value
Patient expired without being transported.	1 – Pronounced in Field
Following transfer of patient to hospital, EMS had knowledge that resuscitation efforts were terminated by ED staff.	2 – Pronounced in ED
EMS arrived, initiating CPR and applying an AED. In the meantime, the patient's family presented a valid DNR. All resuscitative attempts were terminated.	3 – Effort ceased due to DNR
Whether or not the patient had a pulse upon arrival, the patient was continuing to receive care by hospital staff at time of EMS departure from hospital. Note: this includes patients with sustained ROSC, who have no impairment whatsoever, but had experienced cardiac arrest during this event. ***This option is vital to request outcomes information from the destination hospital.*** If, for some reason, the End of the Event is unknown and the patient was transported to the hospital, this option should be coded.	4 – Ongoing Resuscitation in ED

34. WHEN DID ROSC FIRST OCCUR? ***OPTIONAL ELEMENT***

Definition:

- Return of Spontaneous Circulation (ROSC) is defined as the restoration of a palpable pulse or a measurable blood pressure

Description:

- Useful when determining the timing of when ROSC first occurred

Field Values:

Code	Options
1	Never
2	After Bystander CPR only
3	After Bystander defib shock
4	After 911 Responder CPR only
5	After 911 Responder defib shock
6	After ALS
9	Unknown

Examples:

Example	Appropriate Code/Value
The patient had return of a sustained pulse immediately after being defibrillated by EMS providers	5 – After 911 Responder defib shock
The patient was noted to have a pulse and blood pressure upon EMS arrival after bystander CPR was performed.	2 – After Bystander CPR only
The patient never had a pulse throughout treatment.	1 – Never
After EMS providers completed 2 minutes of CPR a sustained pulse was detected.	4 – After 911 Responder CPR only
After First Responder provides a defibrillation a pulse is noted	5 – After 911 Responder defib shock
After 2 minutes of First Responder CPR a pulse is noted.	4 – After 911 Responder CPR only

35. ESTIMATED TIME OF ARREST
36. TIME OF 1ST DEFIBRILLATORY SHOCK
37. TIME OF 1ST CPR

Instructions for Coding:

- Use the time as documented on the EMS trip sheet
- Allows the calculation of survival time based on consecutively timed events.
- Avoid missing time data since the intervals calculated between consecutive events are fundamental to the CARES Registry.
- All times collected for the CARES Registry should be coded in a uniform manner. Uniformity of this data collection will allow accurate calculation of resuscitation time intervals and survival time which is the fundamental purpose of the CARES Registry.

35. Estimated time of arrest:

Bystander witnessed arrest: time of arrest can be presumed to be time of 911 call in the absence of other information. This also applies to an arrest that was *heard.*
EMS witnessed: this should be known from run sheet (or can be deduced if vitals are documented).
Unwitnessed, but recently seen: example: "We saw him 10 minutes prior to finding him collapsed." Time of arrest can be assumed to be 10 minutes prior to call OR unknown. Anything greater than 10 minutes should be coded as Unknown.

36. Time of first shock:

This includes both AED use AND manual mode on a monitor/defibrillator.
If the first shock is manual: Use the info on the run sheet or actual print out/scan of event from device.
If the first shock is from a PAD or BLS crew AED: If possible, time should be obtained from AED downloads.

Examples:
BLS crew placed device and shocked upon arrival: defib time would be roughly equal to time at patient side.
BLS crew arrived, did 2 mins CPR, placed device and shocked: defib is two minutes after time at patient side.
BLS crew arrived, did CPR for undetermined amount of time, and eventually shock was advised: defib time is unknown.

37. Time of first CPR:

This is CPR performed by *anyone*, not just 911 Responder.
Bystander witnessed arrest with bystander CPR: CPR start time is time of call in the absence of other information.
Unwitnessed with bystander CPR: CPR start time is time of call in the absence of other information.
EMS witnessed: should be same as "Estimated Time of Arrest".

Code	Definition
HH:MM:SS	Time should be recorded based on military time. The first two digits represent the hour 00- 24. The second two digits represent the minutes 00-59. The last two digits are seconds 00-59. A colon should separate the hour, minutes and seconds.

Examples:

Code	Definition
01:23:45	Twenty three minutes and 45 seconds after 1 o'clock in the morning
16:30:15	Four thirty and 15 seconds in the afternoon

38. MECHANICAL CPR DEVICE USED? ***OPTIONAL ELEMENT***

Definition:

- Indicates if a mechanical CPR device was used during the course of resuscitation at the ED.
- If mechanical CPR device was used, indicate which type of device was applied.
- Choose only one that applies from the list provided.
- Defined as an automated device which can take over the chest compressions for the rescuer.

Instructions for Coding:

- If mechanical CPR device was used, indicate which type of device was applied.
- Choose only one that applies from the list provided.

Field Values:

Code	Options
1	Yes
2	No
	If 'Yes', please specify:
1	Load Distributing Band (AutoPulse™)
2	Active Compression/Décompression (LUCAS™ device)
3	Mechanical Piston
4	Other

Examples:

Example	Appropriate Code/Value
An "AutoPulse" cardiac life support pump was used during resuscitation.	1 – Yes, then 1 – Load Distributing Band
A "LUCAS" chest compression system was used during resuscitation.	1 – Yes, then 2 – Active Compression/Decompression

39. AUTOMATED CPR FEEDBACK DEVICE USED? ***OPTIONAL ELEMENT***

Definition:

- Indicates if CPR Feedback device was used.
- Automated CPR Feedback device is defined as any device that automatically senses the performance of CPR in real-time during resuscitation care and provides either audio or video information on CPR performance.

Instructions for Coding:

- Code "Yes" if automated CPR feedback device used.

Field Values:

Code	Options
1	Yes
2	No

Examples:

Example	Appropriate Code/Value
"PocketCPR", a CPR Feedback device, was used during resuscitation	1 - Yes
MRX AED audio feedback was used during resuscitation	1 - Yes
QCPR device was used during CPR	1 - Yes

40. ADVANCED AIRWAY SUCCESSFULLY PLACED IN THE FIELD?

*****OPTIONAL ELEMENT*****

Definition:

- Indicates if an advanced airway was used.

Instructions for Coding:

- If advanced airway was used, indicate which type of airway was applied during ED resuscitation. Check only one that applies from the list provided.
- Abbreviations:
  - ET-endotracheal intubation
  - LMA laryngeal mask airway
- Please note that Oropharyngeal (also known as oral airway, OPA or Guedal airway) and Nasopharyngeal airways are NOT advanced airways but are only airway adjuncts.

Field Values:

Code	Options
1	Yes
2	No
	If 'Yes', please specify:
1	Combitube
2	King airway
3	LMA
4	Oral/Nasal ET
5	Other

Examples:

Example	Appropriate Code/Value
The patient had oral tracheal intubation performed after being defibrillated into a perfusing rhythm.	1– Yes, then 4 – Oral/Nasal
The patient had a King Airway device inserted after a failed intubation attempt.	1 – Yes, then 2 – King airway

41. ITD USED? ***OPTIONAL ELEMENT***

Definition:

- The impedance threshold device (ITD) is a device that allows positive pressure ventilation but prevents inspiration caused by negative pressure within the chest.
- It is assumed in this question that the ITD was placed on the BVM. Please select the next airway it was used on (unless it was only used on the BVM).

Instructions for Coding:

- If the device is used during resuscitation, the method of how it was used should be indicated.

Field Values:

Code	Options
1	No
2	Yes
	If "Yes", select how:
1	o Bag valve mask
2	o Endotracheal tube
3	o Combitube
4	o King airway
5	o LMA
6	o Oral/Nasal ET
7	o Other

Examples:

Example	Appropriate Code/Value
No ITD was applied during resuscitation	1 – No
An ITD was applied to an ET tube and used during CPR	2 – Yes, Oral/Nasal ET

42. WERE DRUGS ADMINISTERED? ***OPTIONAL ELEMENT***

Definition:

- Describes drugs that were administered during ED resuscitation.

Instructions for Coding:

- Indicate "yes" or "no"
- Check all that apply from the list provided. Indicate which of the listed drugs were administered during ED resuscitation.

Field Values:

Code	Options
1	Yes
2	No
	If 'Yes', select drugs given
1	Epinephrine
2	Atropine
3	Amiodarone
4	Bicarbonate
5	Dextrose
6	Lidocaine
7	Vasopressin
8	Other

Examples:

Example	Appropriate Code/Value
A total of 6 mg of epinephrine and 2 mg of Atropine were provided during the code.	1 - Yes, then 1 - Epinephrine and 2 - Atropine
The patient was defibrillated once and successfully regained a pulse and was then started on a Amiodarone infusion with bolus provided	1 -Yes, then 3 - Amiodarone
No drugs were administered during the code.	2 - No

43. VASCULAR ACCESS? ***OPTIONAL ELEMENT***

Definition:

- Describes which, if any, devices were inserted into a vein, which permits administration of intermittent or continuous infusion of parenteral solutions or medications.

Instructions for Coding:

- Code "No IV" if no intravenous catheter was used.
- Code "IV" if intravenous catheter was used.
- Code "IO" if intraosseous catheter was used.

Field Values:

Code	Options
1	No IV
2	IV
3	IO

Examples:

Example	Appropriate Code/Value
An intravenous catheter was placed in the patient right arm	2 - IV
An intraosseous catheter was placed in the right tibia.	3 - IO

44. 12 LEAD? ***OPTIONAL ELEMENT***

Definition:

- An 12 lead electrocardiogram (ECG) is a recording of the electrical activity of the heart using specific wires (leads) place on the chest wall and extremities.

Description:

- An ECG may be performed on the patient in the field during post resuscitation care and can assist in identifying those patients that may be having evidence of a myocardial infarction evidence by certain ECG changes (ST elevation on the ECG).
- Evidence of ST elevation myocardial infarction is abbreviated as (STEMI) and is coded as a separate field.

Field Values:

Code	Options
1	Yes
2	No

Examples:

Example	Appropriate Code/Value
A 12 lead ECG was performed after the patient was resuscitated on the way to the hospital	1 - Yes
No 12 lead ECG was performed during post-resuscitative care in the field.	2 - No

45. STEMI? ***OPTIONAL ELEMENT***

Definition:

- STEMI = A myocardial infarction with ST elevation. Requires a 12 lead electrocardiogram (ECG) to be to be performed and analyzed.
- Location refers to anatomical region of the heart that has developed myocardial necrosis (tissue death), as evidence by ST elevation in these respective ECG leads.

Instructions for Coding:

- If "yes", please select location of anatomical region of the heart that has developed myocardial necrosis

Field Values:

Code	Options
1	Yes
2	No
3	Unknown
	If 'Yes', select location
1	Anterior
2	Inferior

Examples:

Example	Appropriate Code/Value
The patient has evidence of ST elevation in their anterior ECG leads.	1 – Yes, then 1 – Anterior
The patient does not have evidence of any ST elevation on their ECG	2 – No

HOSPITAL DATASET

46. EMERGENCY ROOM OUTCOME

Description:

- The final disposition of the patient from the emergency department.
- This variable will be used to quantify the outcome of the patient from emergency department specifically. It will be used to differentiate the outcome in the field (EMS resuscitation) and the outcome from the hospital (hospital survival) from the outcome in the emergency department.

Instructions for Coding:

- This variable should not be left blank. All the information from the EMS trip sheet and patient medical record should be used to complete this data field.
- If "Transferred to another acute care facility from the emergency department" (Code 3) is selected, the destination hospital should be documented using the corresponding drop-down menu. If a transfer hospital is not selected, CARES will prompt the user to choose one from the drop-down menu or to type the name of the facility (if not listed) in the comments box.
- Codes for hospitals receiving transfers are established through the CARES registry for each particular EMS Agency. Contact the CARES Coordinator if the correct hospital is not located on the drop-down menu.

Field Values:

Code	Definition
1	Resuscitation terminated in ED
2	Admitted to hospital
3	Transferred to another acute care facility from the emergency department

Examples:

Example	Appropriate Code/Value
Patient was received in the ED after successful resuscitation in the field by EMS personnel. Patient blood pressure was liable upon receiving in the ED and continued to deteriorate. Patient was pronounced dead in the ED 20 minutes after arrival.	1 – Resuscitation terminated in ED
Patient was received in the ED after successful resuscitation in the field by EMS personnel. Patient blood pressure was adequate upon receiving in the ED and continued to improve after the addition of Dopamine. Patient was transported to the CCU.	2 – Admitted to hospital
Patient was received in the ED with ongoing resuscitation by EMS personnel. Patient was stabilized in the ED after the addition of Dopamine. Patient was transported to Pine Valley Tertiary Care Hospital for further intervention.	3 – Transferred to another acute care facility from the emergency department
Pt was taken directly from the field to the cath lab.	2 – Admitted to hospital

47. WAS HYPOTHERMIA CARE INITIATED/CONTINUED IN THE HOSPITAL

Description:

- Hypothermia care is provided in the hospital if measures were taken to reduce the patient's body temperature by either non-invasive means (administration of cold intravenous saline, external cold pack application to armpits and groin, use of a cooling blanket, torso vest or leg wrap devices) or by invasive means (use of a cooling catheter inserted in the femoral vein).

Instructions for Coding:

- Indicate "Yes" or "No"
- Indicate whether hypothermia procedures (e.g. external cooling-ice packs or cooling blankets/pads and internal cooling – cold IV fusion or invasive catheter lines for internal cooling) were performed in ED.
- If the patient is admitted or transferred, then this field is required.
- This field should not be left blank, even if a facility is not providing hypothermia. If hypothermia is not being provided, then "No" should be selected.
- In the case of a transfer, this field should be completed by the original destination hospital.

Field Values:

Code	Definition
1	Yes
2	No

48. HOSPITAL OUTCOME

Description:

- The final disposition of the patient from the hospital.
- This variable will be used to quantify the outcome of the patient from the hospital.

Instructions for Coding:

- This variable should not be left blank. All the information from patient medical record and discharge summary should be used to complete this data field.
- If "Transferred to another acute care facility" (Code 4) is selected, the destination hospital should be documented using the corresponding drop-down menu. If a transfer hospital is not selected, CARES will prompt the user to choose one from the drop-down menu or to type the name of the facility (if not listed) in the comments box.
- If "Not yet determined" (Code 8) is selected, the patient will remain in the hospital's inbox until the patient has been discharged and a final outcome has been selected.
- Codes for hospitals receiving transfers are established through the CARES registry for each particular EMS Agency. Contact the CARES Coordinator if the correct hospital is not located on the drop-down menu.

Field Values:

Code	Definition
1	Died in the Hospital
2	Discharged Alive
3	Patient made DNR
	If yes, choose one of the following:
1	○ Died in the hospital
2	○ Discharged alive
3	○ Transferred to another acute care hospital
4	○ Not yet determined
4	Transferred to another acute care hospital
8	Not yet determined

Examples:

Example	Appropriate Code/Value
Patient was admitted to CCU after successful resuscitation from sudden cardiac arrest. Patient became unstable after 2 days in the CCU. Blood pressure could not be maintained after pharmacological support. Patient arrested at 04:30 after being admitted to the CCU. Resuscitation attempts were unsuccessful and patient was pronounced dead at 6:00.	1 – Died in the Hospital
Patient was received in the ED after successful resuscitation in the field by EMS personnel. Patient blood pressure was adequate upon receiving in the ED and continued to improve after the addition of Dopamine…..Patient was transported to the CCU……Patient remained stable and Dopamine was weaned off in 12 hours. Patient was transferred to the floor and discharged home after one week in the hospital.	2 – Discharged Alive
Patient was admitted to CCU after successful resuscitation from sudden cardiac arrest. Patient is still in the CCU and has not yet been discharged from the hospital.	8 – Not yet determined

49. DISCHARGE FROM THE HOSPITAL

Description:

- This variable will be used to determine the type of destination and the frequency of each destination type for discharged patients.

Instructions for Coding:

- If the field "Hospital Outcome" has a value of "Discharged Alive," this variable should not be left blank. All the information from patient medical record and discharge summary should be used to complete this data field.
- Rehabilitation facility is defined as an establishment for "treatment or treatments designed to facilitate the process of recovery from injury, illness, or disease to as normal a condition as possible."
- Skilled nursing facility is defined as "an establishment that houses chronically ill, usually elderly patients, and provides long-term nursing care, rehabilitation, and other services. Also called *long-term care facility*, *nursing home*. Hospice facility is defined as a providing special care for people who are near the end of their life. Note: If a patient is discharged home with hospice care, this should be coded as "Home/Residence."

Field Values:

Code	Definition
1	Home/residence
2	Rehabilitation facility
3	Skilled nursing facility/Hospice

Examples:

Example	Appropriate Code/Value
After two weeks in the CCU following sudden cardiac arrest, and a week on the floor, the patient was discharged home with follow up orders.	1 – Home/residence
After 3 weeks in the CCU and 5 weeks on the floor patient was transported to Sunshine Rehabilitation Hospital for further treatment.	2 – Rehabilitation facility
After an extensive stay at Memorial Hospital, the patient was discharged with severe cerebral disability in a hospice facility.	3 – Skilled nursing facility/Hospice

50. NEUROLOGICAL OUTCOME AT DISCHARGE FROM HOSPITAL

Description:

- Survival without higher neurological outcome is suboptimal; therefore it is important to attempt to assess neurological outcome at discharge.
- This variable will be used to determine the frequency of neurological outcome in resuscitation survivors at the time of discharge.

Instructions for Coding:

- The level of cerebral performance of the patient at the time of discharge from the hospital. The following simple, validated neurological score is referred to as the Cerebral Performance Category, CPC.
- 1 = Good Cerebral Performance – Conscious, alert, able to work and lead a normal life.
- 2 = Moderate Cerebral Disability – Conscious and able to function independently (dress, travel, prepare food), but may have hemiplegia, seizures, or permanent memory or mental changes.
- 3 = Severe Cerebral Disability – Conscious, dependent on others for daily support, functions only in an institution or at home with exceptional family effort.
- 4 = Coma, vegetative state.
- If the field "Hospital Outcome" has a value of "Discharged Alive," this variable should not be left blank. All the information from patient medical record and discharge summary should be used to complete this data field.
- If a record is coded as discharged to a 'Rehabilitation Facility' or 'Skilled Nursing Facility/Hospice' with 'Good Cerebral Performance' at time of discharge, CARES will prompt the use to clarify in the comments box.
- If a record is coded as discharged to 'Home/Residence' with 'Severe Cerebral Performance' or 'Coma, vegetative state' at time of discharge, CARES will prompt the user to clarify in the comments box.

Field Values:

Code	Definition
1	Good Cerebral Performance; CPC 1
2	Moderate Cerebral Disability; CPC 2
3	Severe Cerebral Disability; CPC 3
4	Coma, vegetative state; CPC 4

Examples:

Example	Appropriate Code/Value
At discharge, patient was conscious, alert, able to work and lead a normal life.	1 – Good Cerebral Performance
At discharge, patient was conscious and able to function independently but had some permanent memory changes.	2 – Moderate Cerebral Disability
At discharge, patient was unable to function independently with severe cognitive disability,	3 – Severe Cerebral Disability
Patient was in a vegetative state at time of discharge.	4 – Coma, vegetative state

51. WAS FINAL DIAGNOSIS ACUTE MYOCARDIAL INFARCTION?

*****OPTIONAL ELEMENT*****

Description:

- Determine the number of cardiac arrests that were eventually confirmed as a myocardial infarction.
- This question refers to the etiology of the initial event only.

Instructions for Coding:

- Indicate "Yes" or "No"
- In the case of a transfer, this field should be completed by the destination hospital.

Field Values:

Code	Definition
1	Yes
2	No

52. CORONARY ANGIOGRAPHY PERFORMED? ***OPTIONAL ELEMENT***

Definition:

- Coronary Angiography is a therapeutic procedure used to treat the stenotic (narrowed) coronary arteries of the heart.
- Indicate whether emergency coronary angiography was performed after patient has ROSC.

Coding Instruction:

- If yes, please provide date and time of the coronary angiography.
    - Use initial groin puncture of the femoral artery as the time of procedure.

Field Values:

Code	Options
1	Yes
2	No
3	Unknown
	If yes, provide date and time

Examples:

Example	Appropriate Code/Value
Coronary Angiography was performed on the patient.	1 – Yes; provide date and time
Coronary Angiography was not performed on the patient.	2 – No

53. WAS A CARDIAC STENT PLACED? ***OPTIONAL ELEMENT***

Definition:

- A cardiac stent is a small mesh tube that is introduced into the coronary artery and is used to prop it open during a PCI procedure

Field Values:

Code	Options
1	Yes
2	No
3	Unknown

Examples:

Example	Appropriate Code/Value
A cardiac stent was placed.	1 – Yes
A cardiac stent was not placed.	2 – No

54. CABG PERFORMED? **OPTIONAL ELEMENT***

Definition:

- CABG is defined as a coronary artery bypass graft

Coding Instruction:

- Indicate whether CABG was performed after patient has ROSC.

Field Values:

Code	Options
1	Yes
2	No
3	Unknown

Examples:

Example	Appropriate Code/Value
CABG was performed on the patient.	1 – Yes
CABG was not performed on the patient.	2 – No

55. WAS AN ICD PLACED AND/OR SCHEDULED? ***OPTIONAL ELEMENT***

Definition:

- ICD - An implantable cardioverter-defibrillator (ICD) is a small battery powered electrical impulse generator which is implanted in patients who are at risk of sudden cardiac death due to vfib and vtach.

Coding Instructions:

- Indicate "yes" if ICD was placed and/or scheduled.

Field Values:

Code	Options
1	Yes
2	No
3	Unknown

Examples:

Example	Appropriate Code/Value
ICD was placed.	1 – Yes
ICD was not placed.	2 – No

57. TIME CALL RECEIVED AT DISPATCH CENTER
58. TIME FIRST RESPONDER DISPATCHED
59. TIME OF FIRST RESPONDER EN ROUTE
60. TIME AMBULANCE DISPATCHED
61. TIME FOR AMBULANCE EN ROUTE
62. TIME FIRST RESPONDER ARRIVED AT THE SCENE
63. TIME AMBULANCE ARRIVED AT SCENE
64. TIME EMS ARRIVED AT PATIENT SIDE
65. TIME AMBULANCE LEFT SCENE
66. TIME AMBULANCE ARRIVED AT ED
56. No First Responder Dispatched

Instructions for Coding:

- Use the time as documented on the computer aided dispatch (CAD) records
- Allows the calculation of survival time based on consecutively timed events.
- Avoid missing time data since the intervals calculated between consecutive events are fundamental to the CARES Registry.
- All times collected for the CARES Registry should be coded in a uniform manner. Uniformity of this data collection will allow accurate calculation of resuscitation time intervals and survival time which is the fundamental purpose of the CARES Registry.

Code	Definition
HH:MM:SS	Time should be recorded based on military time. The first two digits represent the hour 00- 24. The second two digits represent the minutes 00-59. The last two digits are seconds 00-59. A colon should separate the hour, minutes and seconds.

Examples:

Code	Definition
01:23:45	Twenty three minutes and 45 seconds after 1 o'clock in the morning
16:30:15	Four thirty and 15 seconds in the afternoon

APPENDIX A

CARES data element ad hoc panel:

Mickey Eisenberg, MD, PhD, University of Washington School of Medicine
Ray Fowler, MD, University of Texas Southwestern
Ian Greenwald, MD, Emory University School of Medicine
Richard Hunt, MD, Center for Disease Control and Prevention
Alex Isakov, MD, MPH, Emory University School of Medicine
Greg Mears, MD, University of North Carolina School of Medicine
Peter Moyer, MD, PhD, Boston University School of Medicine
Eric Ossmann, MD, Emory University School of Medicine
Arthur Yancey, MD, MPH, Emory University School of Medicine