

## Part 8: Post–Cardiac Arrest Care

### 2015 American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care

Clifton W. Callaway, Chair; Michael W. Donnino; Ericka L. Fink; Romergryko G. Geocadin;  
Eyal Golan; Karl B. Kern; Marion Leary; William J. Meurer; Mary Ann Peberdy;  
Trevonne M. Thompson; Janice L. Zimmerman

#### Temperature Management

##### Page 468: **Avoidance of Hyperthermia**

After rewarming to normothermia from TTM, many studies have noted that fever occurs in a significant proportion of patients.[64–71] Occurrence of hyperthermia during the first few days after cardiac arrest was associated with worse outcome in 2 studies [70,71] but not in others.[64–69]

Though the evidence that supports avoiding hyperthermia is weak in post arrest patients, the intervention is relatively benign. In addition, fever is associated with worsened neurologic injury in comatose patients receiving intensive care for other conditions. [72, 73] Therefore, the recommendation of the avoidance of fever is based on expert opinion that a relatively benign procedure is reasonable to perform in the face of a potential for worsening ischemic brain injury

##### **2015 Recommendation—New**

It may be reasonable to actively prevent fever in comatose patients after TTM  
**(Class IIb, LOE C-LD).**

##### Page 467: **Targeted Temperature Management**

Reflecting that a variety of temperature targets are now used, the **term *targeted temperature management (TTM)*** has been adopted to refer to **induced hypothermia** as well as to **active control of temperature at any target.**

##### **2015 Recommendations—Updated**

- **Class I, LOE B-R for VF/pVT OHCA:** We recommend that comatose (ie, lack of meaningful response to verbal commands) adult patients with ROSC after cardiac arrest have TTM
- **Class I, LOE C-EO for non-VF/pVT** (ie, “nonshockable”) and **in-hospital cardiac arrest**
- **Class I, LOE B-R:** We recommend selecting and maintaining a constant temperature between **32°C and 36°C** during TTM
- **Class IIa, LOE C-EO:** It is reasonable that TTM be **maintained** for at least **24 hours** after achieving target temperature

Temperature sensitivity of the brain after cardiac arrest may continue for as long as brain dysfunction (ie, coma) is present, making the upper limit of duration for temperature management unknown

There are no direct comparisons of different durations of TTM in post–cardiac arrest patients. The largest trials and studies of TTM maintained temperatures for 24 hours [40] or 28 hours [47] followed by a gradual (**~0.25°C/hour**) **return to normothermia.**

Specific features of the patient may favor selection of one temperature over another for TTM. Higher temperatures might be preferred in patients for whom lower temperatures convey some risk (eg, bleeding) [48, 49] and **lower temperatures** (32-34°C) might be preferred when patients have clinical features that are worsened at higher temperatures (**e.g, seizures, cerebral edema**). [50-52].

Therefore, all patients in whom intensive care is continued are eligible.

Providers should note that allowing patients to warm to temperatures **above 36°C** would be more akin to the control group of the earlier trials and **not consistent** with the current **TTM recommendations**.

#### Page 468: Hypothermia in the Prehospital Setting

Five randomized controlled trials [53-57] compared the post-ROSC use of cold intravenous fluids to induce hypothermia to no fluids.

When cooling maneuvers were initiated in the prehospital setting, neither survival nor neurologic recovery differed for any of these trials alone or when combined in a meta-analysis. One trial found an increase in **pulmonary edema and re-arrest** among patients treated with a goal of prehospital infusion of 2 L of cold fluids. [57]

Whether different methods or devices for temperature control outside of the hospital are beneficial is unknown.

#### ***Recommendation—New***

**Class III: No Benefit, LOE A:** We recommend **against** the routine prehospital cooling of patients after ROSC with **rapid infusion of cold intravenous fluids** (Class III: No Benefit, LOE A).