



# INDUCED HYPOTHERMIA: The nursing care

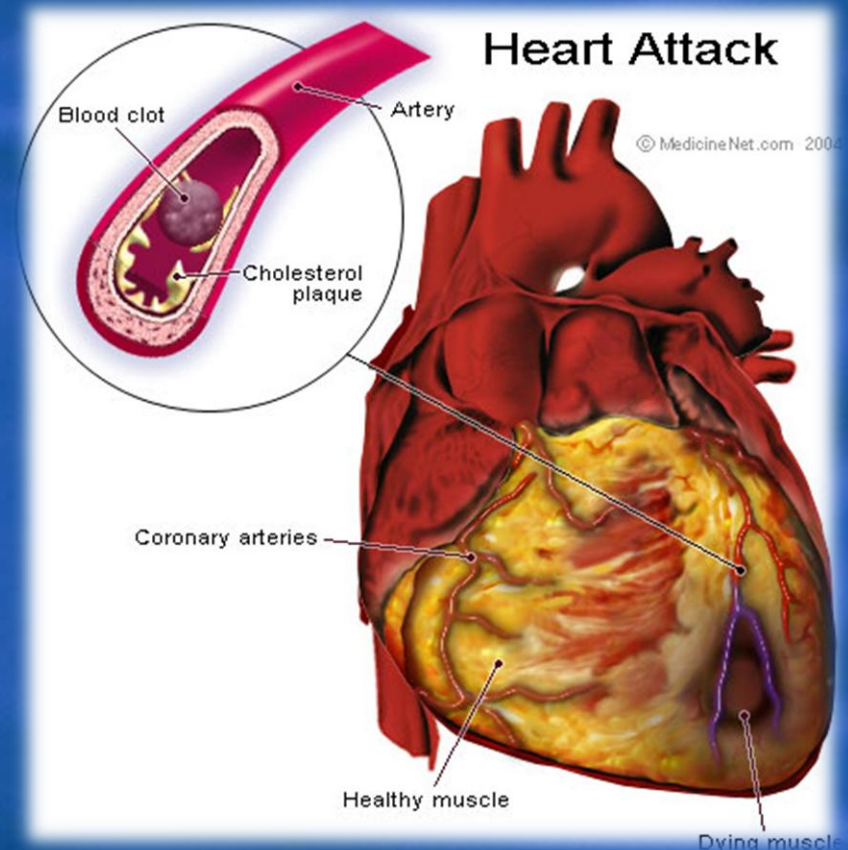
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# Sudden Cardiac arrest

- The most common cause of sudden cardiac arrest is coronary disease.
- More than 50% patients die before reaching the hospital and discharge survival rate is less than 5%.
- Brain ischemia can cause irreversible damage.
- Oxygen free radicals in the brain contributes to cell death.
- Formation of neurotransmitters is not in favour for survival.



# Induced hypothermia

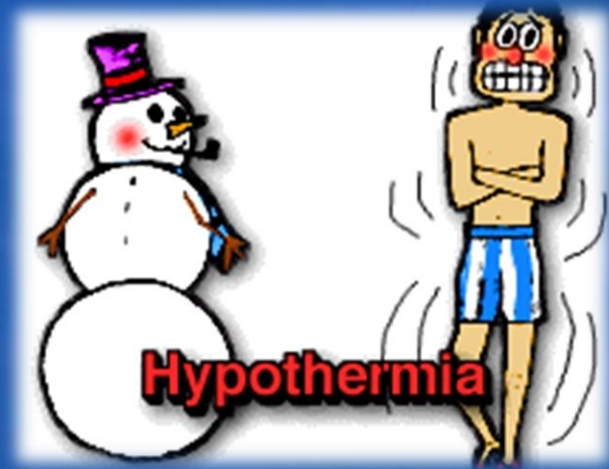


- Induced hypothermia has been demonstrated to decrease post resuscitation brain injury and improve survival in comatose patients.



# The nursing care

- Nurses have an important role in the process of lowering patient's body temperature.
- Reach the target temperature ( $32^{\circ}\text{C} - 34^{\circ}\text{C}$ ) as soon as possible and maintain it for 24 hours.
- Therefore nurses should develop nursing profession and standards for induced hypothermia and ensure holistic care and best teams.



# Best teams



The induced hypothermia should start immediately after successful CPR.



Direct transfer to the cathlab for PCI and continuing of induced hypothermia.

Continuing of induced hypothermia and maintenance of body temperature for 24 hours.





# Team work from the beginning



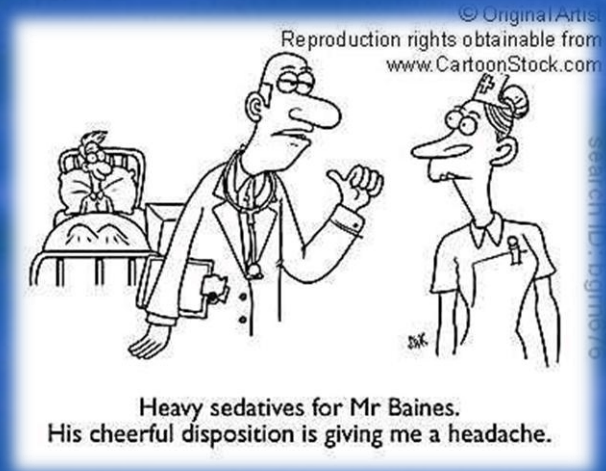
- Prompt start of induced hypothermia.
- During the transport cold i.v. fluids and ice pack should be administered.
- Transfer in cold ambulance
- Patient should be given sedatives and relaxants.

- In ER and/or CATHLAB continuing of cold i.v. fluids application, ice packs and other therapy.
- Insercion of urinary catheter with sensor for body temperature mesurment.
- Prompt PCI and resolving the coronary occlusion.



# Nursing care in ICU

- Very important is to keep patient sedated and relaxed.



- 30mL/kg of cold i.v. crystalloid fluids (4°C) for 30min.





- Protected ice bags on head, neck, armpits, inguinal area, ankles and wrists.
- Observation of body parts with ice bags.

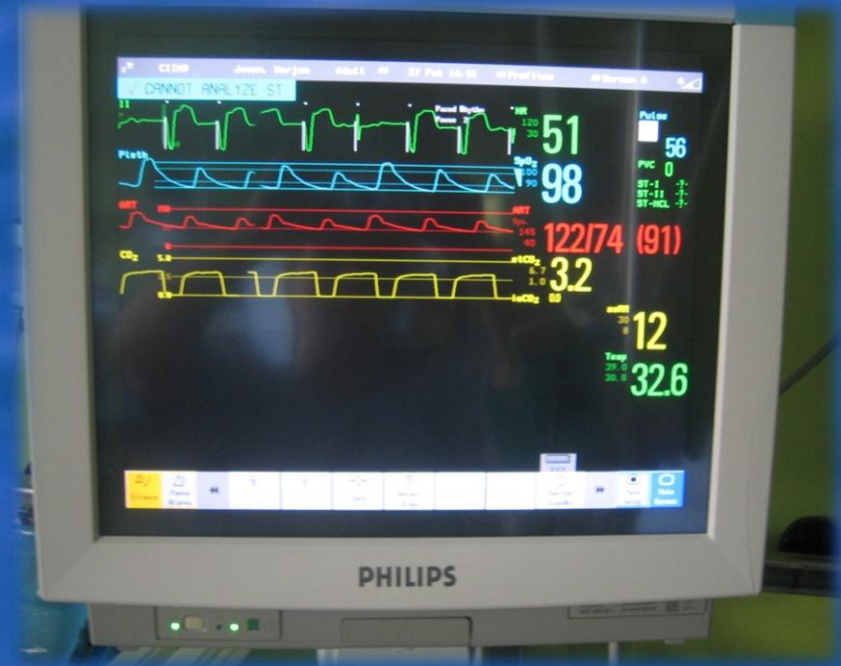


- The heater of air in the respirator should be off during induced hypothermia.

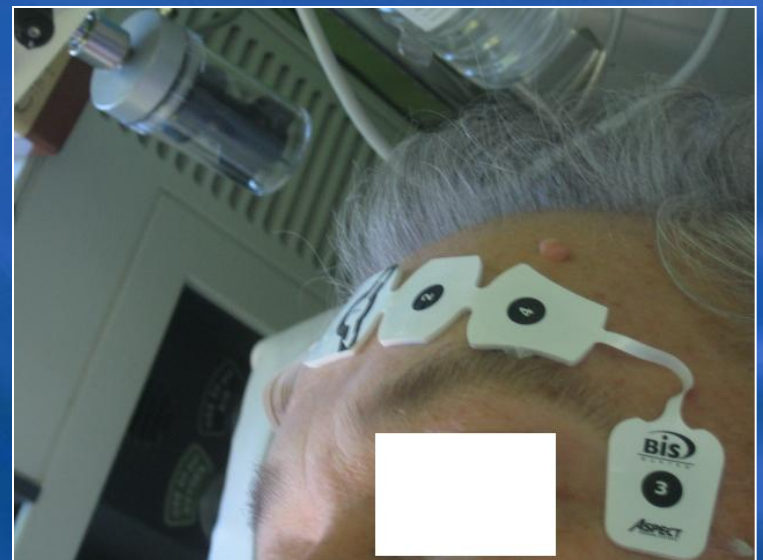




- Monitoring the body temperature in the bladder.
- Insertion of central venkateter.
- Arterial line placement.
- Blood lab. tests.
- ECG monitoring.



- Bispectral Index Scale (BIS) monitoring.



# Maintenance of body temperature for 24 hours

- Administering cold i.v. fluids, sedatives and relaxants, if necessary ice bags.
- Vital signs measurements.
- Monitor the ECG (bradycardia).
- Blood samples and laboratory tests (Glc increases, increased diuresis, K<sup>+</sup> is lower, prolonged coagulation time...)
- After induced hypothermia (after 24 hours) often rebound hyperthermia appears – it must be inhibited.



# KOIIIM (2003-2010)

Primary cardiac arrest with ROSC admitted to ICU (n=701)

Conscious 160 (23%)  
(101 STEMI, 59 No STEMI)

CAG/100 (99%)    CAG/33 (56%)  
PCI / 99 (98%)    PCI/21 (36%)

Alive 96 (95%)

Hospital survival  
with CPC½ 96  
(95%)

Alive 51 (86%)

Hospital survival  
with CPC½ 48  
(81%)

Comatose 541 (77%),  
(224 STEMI    317 No STEMI)

Hypothermia 317 (59%-  
68%)

CAG/205 (92%)    CAG/124 (39%)  
PCI / 194 (87%)    PCI/41 (13%)

Alive 142 (63%)

Hospital survival  
with CPC½ 95  
(42%)

Alive 155 (49%)

Hospital survival  
with CPC½ 93  
(29%)



# Conclusions

- Survival and quality of life improves.
- Simple protocol of inducing hypothermia without high costs (can be started everywhere).
- Team work from beginning of CPR until the end of inducing hypothermia in ICU.
- Awareness of all side effects, complications and physiological signs and nurse should promptly react in case of adverse events.
- Education and training of nurses play an important role.





A close-up photograph of a garden bed. In the foreground, a large purple crocus flower is in full bloom, showing its six petals and bright yellow stamens. To its left, a white snowdrop flower is also in bloom, with its characteristic three petals and a green tinge at the base. Several other purple crocus buds and one white snowdrop bud are visible in the background. The ground is covered with brown mulch and green foliage. A semi-transparent dark blue rectangular box is overlaid in the upper right corner, containing the text "THANK YOU!" in white, bold, sans-serif capital letters.

**THANK YOU!**