# Coma - Some important material

**Abstract:** *In the spectrum of shades, coma might be compared to the darkest shade.....read on, as the article unveils the different shades of coma through definitions, different questions one need to have the answers of, materia medica and tips on what to do.*

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## A) Definition

"Coma is a state of brain function. The human brain performs at different levels of consciousness. Each level does not have distinct boundaries, but rather, blends into the level above it and below it. At the highest level of performance, the mind is perceived as alert, sharp, quick to respond to varying forms of input. Through a gentle phasing down, the brain may become progressively less responsive until, at the lowest level of function, the brain is in a state of coma. This represents the last state before death.

The different shades progress from extremely dark to almost white. Here coma might be compared to the darkest shade where the color can still be distinguished before becoming black. The lighter and lighter represent levels of consciousness; to almost white, at which point the brain is in a state of full alertness. Is this lowest end of the spectrum of consciousness not equivalent to the state of sleep that we all go through every night? In outward appearance indeed it is, but if brain function is measured during sleep, through electroencephalography, the brain is found to be in a state of readiness to respond to certain external or internal forms of stimulation and can jump from a "coma-like" state to full alertness in an instant.

This close outward similarity between sleep and coma triggered the most widely used definition of coma which states that *"coma is a sleep-like state from which an individual cannot be aroused"*. In all its simplicity and apparent clarity, this definition is fraught with inaccuracy and danger, though its very simple wording has allowed it to endure over many decades. Most professionals have accepted the definition and interpreted it in its most concrete sense, but herein lies the inaccuracy and the danger. Upon closer scrutiny, looking at the first part of the definition - "coma is a sleep-like state", a redundancy appears. The word coma is derived from the Greek word Koma, meaning "state of sleep". The term was first used by the Greek father of medicine, Hippocrates, to describe this very state of the brain at the lowest end of the spectrum of function. If "Koma" is translated into English, the definition then reads "the state of sleep is a sleep-like state". To that redundancy we must add the danger implied in describing coma as a "sleep-like state". To most individuals, a "sleep-like state" sounds quite benign, a short-lived situation and followed

rapidly by an "awake-like state". When this does not happen, families are perplexed, frustrated and distraught.
The second half of the definition "from which an individual cannot be aroused" is clearly inaccurate, for thousands of individuals have eventually been aroused from coma. The danger in that portion of the definition is in its interpretation, by the professionals who erroneously assume that since the individual cannot be aroused, then no effort should be made to arouse the individual and such a statement becomes a self-fulfilling prophecy.

The late Dr Edward B LeWinn, former chief, Albert Einstein College of Medicine in Philadelphia and later Medical Director of Clinical Research at the Institute for the Achievement of Human Potential, attempted to correct the definition, stating more accurately that "coma is a sleep-like state from which an individual has not yet been aroused". The simple change from cannot to has not yet, lifts all sense of hopelessness and creates a mindset in which efforts will be made to achieve the awaited arousal. The frustration, depression and anger of the families is significantly reduced. The motivation of the professional staff is increased. Potential for the future is enhanced as attitudes shift from negative to positive. A whole new mood is created in which relatives and professionals can work hand-in-hand.

The LeWinn definition, while clearly creates beneficial attitudinal problem, does not resolve the "sleep-like-state" issue. Sleep and indeed coma, convey to the minds of most families and professionals a state of unawareness of one's surroundings. For many years this author taught families that when signs of awareness were present, the individual was no longer in a coma. But while an individual in a coma is unresponsive, we have no way of determining what the individual can hear or may be aware of. The term unresponsive applies to movement and language. When both are absent, an individual is incapable of letting anyone know whether he/she can see, hear, or understand. While a person described as being in a coma, may be totally unaware of his or her state or environment, others may have some or even full awareness, contrary to our own perception. Many a recovered patient has described events that occurred when everybody believed they were still in a coma. I was impressed by a 23 y old Judy, who remained unresponsive in an intensive care unit bed for three months. When the professor, under whom I was working at the time, made his daily rounds with his whole staff in tow, several minutes would be spent at each bedside, talking and discussing the illness; but Judy's bed was always bypassed with a brief "Judy is in a coma. She'll never wake up"! One day Judy did wake up and gradually regained her speech. As I sat at the end of her bed she told me that she "always remembered that darn professor refusing to stop by her bed, saying that she would not wake up"! Behind her apparent unawareness, Judy was totally conscious. Many similar stories abound.
The author believes that all ambiguity can be eliminated if coma is redefined as "a state of unresponsiveness from which an individual has not yet been aroused".

Commonly, when coma lasts for a month or more, the individual's eyes may be open and even blink though the person's stare is vacant, no purposeful responses occur, and no signs

of awareness appear. (Remember the case of a person in Munnabhai MBBS) At this state, most physicians will say that the individual is in a "persistent vegetative state" or PVS. This term was developed by Drs Brian Jennett and Fred Plum, an outstanding neurosurgeon and a well recognized neurologist respectively. The intent was to describe a condition in which the vegetative or anatomic functions, such as breathing, maintaining a normal blood pressure, digesting and eliminating foods were maintained and would persist indefinitely in the absence of awareness. Unfortunately, the term has become horribly misused and has been a death sentence for many, aside from the devastating misinterpretation by most nonprofessionals. The word vegetative is read by families as meaning "vegetable-like", giving the impression that their loved one is being treated like a cabbage or a turnip. All human dignity is destroyed. The permanence of the condition reflected in the word "persistent" removes all sense of hope and since there is no hope, then no significant treatment will be applied. The end result is a slow death by infection or even by slow starvation, often in individuals who may have full awareness despite appearances to the contrary. Compounding the devastating sentence, many physicians do not even wait a full month to assign their verdict, despite the recommendation of Drs Jennett and Plum, originators of the term PVS, to wait three months before making a determination. Many physicians will solemnly announce to a family two or three days after onset of coma that their loved one is in a persistent vegetative state and declare unambiguously that nothing can be done, adding insult to injury and preventing treatment at the most treatable stage. Only brain death is untreatable in the spectrum of brain functions.

With the new definition...has not yet been aroused" there are no time boundaries to which the definition need be confined. It does not preclude continuation of treatment or onset of new treatment even weeks and months after the original insult to the brain.

Additional qualifications of a coma have led to further confusion. Physicians and nurses frequently classify coma as light, moderate or deep, the implication being that a deep coma has a worse prognosis than a light one. While the implication in itself is totally false, the qualifications are highly subjective. What appears as a "light coma" to one, may be a "moderate coma" to a different observer. Fluctuation in the levels of an individual's reflex responses frequently vary from moment to moment several times a day. As a result, a single observer may at different times of the same day classify a coma as deep, light or moderate. There are no qualitative, quantitative or prognostic values to such a classification, but there are frequent frustrations and moments of despair for families who never obtain a clear determination of the state of their loved one. Jennett and Teasdale, recognizing the pitfalls of subjective qualifications, developed what is known as the Glasgow Coma Scale or GCS.

(Refer Dr Ch Asrani's article for GCS).

One limitation to the use of the GCS is the uncertainty as to how long after the onset of coma or injury does it remains a useful assessment tool, and whether it is applicable to brain injuries resulting from causes other than a blow to the head. The author has used the scale in all forms of brain injury with equal satisfaction.

Other scales have tried to improve on the Glasgow Coma Scale, measuring different functions, sometimes in great detail. Neurorehabilitationists (therapists specialized in rehabilitation of brain injured individuals) are fond of the Rancho Los Amigos scale, developed at the rehabilitation institute of the same name in California. The scale assigns a value of I to VIII to the different levels of brain function from low to high. The main deficit in this system resides on the number of progressively improving function within one category that go unrecognized. Some therapies are designed as a function of the level assigned to an individual, some therapies may be delayed or denied because progress has not been recognized. Some scales are so detailed that they become cumbersome and take too long. They remain of academic interest, but have no practical value.

Coma represents the lowest level of function of the brain prior to death. As a general rule, if a patient survives the first 7-10 days, then long-term survival can be expected. The quality of that survival remains a subject of the debate."

**Article by Mihai D Dimancescu**, MD, Chairman of the Board, Coma Recovery Association, Inc, USA

In people with diabetes, two conditions associated with very high blood glucose may cause coma; these are *diabetic ketoacidosis* (DKA) and *hyperosmolar hyperglycemic state* (HHS). Severe hypoglycemia, or very low blood glucose, may also lead to coma. It's important for all people with diabetes to learn to recognize these conditions and respond accordingly.

Diabetic ketoacidosis is a serious imbalance in blood chemistry causing about 100,000 hospitalizations each year, with a mortality rate of under 5%. It typically occurs when a person has high blood sugar and insufficient insulin to handle it. Without adequate insulin, the body breaks down fat cells for energy, flooding the bloodstream with metabolic by-products called ketoacids. Meanwhile, the kidneys begin filtering large amounts of glucose from the blood and producing large amounts of urine. As the person urinates more frequently, the body becomes dehydrated and loses important minerals called electrolytes. If not treated, these serious imbalances can eventually lead to coma and death.

Hyperosmolar hyperglycemic state most commonly affects elderly people. Like DKA, HHS starts with high blood glucose and insulin deficiency and causes people to urinate frequently and become dehydrated. HHS also impairs the ability of the kidneys to filter glucose from the bloodstream, making the blood glucose level rise even higher. Because of the extreme dehydration, HHS can be life-threatening, with a mortality rate of 15%, and is even more difficult to treat successfully than DKA. Both conditions can occur in any diabetic. They may be triggered by insulin deficiency or by any major stress to the body, which can cause the counter-regulatory hormones to surge and elevate blood sugar levels. The most common triggers for infections such as strep throat, pneumonia, a foot ulcer, intestinal flu, or a urinary tract infection.

The best way to prevent DKA or HHS is to prevent high blood glucose in the first place. Since they most commonly occur during an illness, work out "sick-day management" rules with your health-care provider before you become ill. Be alert to signs and symptoms of very high blood glucose (including thirst, increased appetite, frequent urination, and weight loss) as well as symptoms of dehydration (such as dryness of the mouth, cracked lips, sunken eyes,

weight loss, and dry skin). In severe cases, you may experience vomiting, weakness, and confusion. People with DKA may experience abdominal pain and note a "fruity" odor to the breath due to the presence of ketones.

Both DKA and HHS warrant a trip to the emergency room so that all facets of your blood chemistry can be carefully monitored and treated.

Severe hypoglycemia can lead to coma by starving the brain of its primary source of energy, glucose. Hypoglycemia can result from too much insulin, a decrease or delay in food intake, or an increase in physical activity. Typical symptoms of mild hypoglycemia include tremors, sweating, heart palpitations, and hunger. When hypoglycemia becomes severe, brain function is affected, causing symptoms as mood changes, confusion, irritability, and drowsiness. Individuals may eventually lapse into coma or convulsions.

People who use insulin or oral diabetics should always carry shelf-stable carbohydrate such as Life Saver candies, juice boxes, or glucose gel or tablets just in case. If you show signs of severe hypoglycemia, friends and family should try to get you to consume a food or drink containing carbohydrate (preferably one with little or no fat).

**B) Checklist**

Someone who is unconscious is not sleeping. Rather, an unconscious person is hard to rouse or can't be made aware of his or her surroundings. Unconsciousness is caused by illness, injury or emotional shock.

**Signs And Symptoms**

There are many levels of unconsciousness. Some are more serious than others. Levels include unconscious episodes that are:

- Brief. Examples are fainting or blacking out.
- Longer. The victim is incoherent when roused.
- Prolonged. A person in a coma, for example, can be motionless and not at all aware of his or her surroundings for a very long time.

Causes of Unconsciousness

- Carbon monoxide poisoning
- Hypothermia (low body temperature usually caused by over-exposure to cold temperatures or cold water)
- Stroke
- Shock
- Epilepsy
- Heat exhaustion
- Diabetic coma
- Excessive bleeding
- Alcohol abuse
- Drug overdose
- Poisoning
- Head injury/concussion
- Low blood sugar
- Too fast, too slow and/or irregular heartbeats. Heart attack. Heart valve disease

Look for a medic alert information if you find a person unconscious. It could be on a bracelet or a neckchain. It could be in his or her wallet on a card or on a sticker on the back of his or her driver's license. It can identify the person's medical condition.

**Questions to Ask**

Is the person not breathing and has no pulse?
Do CPR and Seek Emergency Care.

Has the person stopped breathing?
Do Rescue Breathing and Get Emergency Care.
**Note:** In both the above conditions if the person also has a head, neck or spinal injury, keep the head, neck and back perfectly still. Do not tilt the head back to clear the airway. Lift the chin forward instead.

Does the person have a head or neck injury?
Is the person bleeding a lot?
Get Emergency Care and give first aid for head

injury and/or neck/spine injury.

Did the person show these signs of an insulin reaction or low blood sugar before unconsciousness?

- Lack of coordination · Seizure
- Bad temper, angry outburst
- Confusion · Pale skin
- Sweating · Trembling

Get Emergency Care and give first aid before emergency care:

- Place a small amount of sugar under the victim's tongue. He or she may have a tube of a sweet source for emergencies.
- Keep the victim's airway open.
- Place victim on his or her side.
- Do not give liquids.

With or without a medic alert tag for diabetes: Did the person have these signs of a diabetic coma?

- Fast and weak pulse
- Rapid, deep breathing
- Red, dry, warm skin
- Fruity breath odor (can smell like grape juice or nail polish remover (acetone)
- Vomiting

Seek Emergency Case

Has the person been stung by an insect? Give shot from emergency insect sting kit, if available. Follow other instructions in kit and Get Emergency Care.

When you shake the person, does he or she not respond after 2 minutes, but is still breathing and has not been seriously injured? Get Emergency Care and give first aid before emergency care. Put the victim in the "Recovery Position".

Has the person fainted or blacked out? Give first aid and Seek Emergency Care.

### C) Homoeopathic First Aid

"The symptoms of coma are unresponsiveness and complete lack of awareness of one's surroundings. The first priority in unconsciousness is to check the victim's ABC's, air passages, breathing and circulation. If the victim is not breathing use mouth-to-mouth resuscitation. If a neck injury is suspected do not twist or rotate the head when giving artificial respiration. Very gently slightly raise the chin to open the air passages. Check the mouth and throat for foreign matter or internal discharges such as vomit, mucus and blood. Then begin mouth-to-mouth resuscitation. If the heart has stopped beating begin CPR immediately. If the victim is breathing maintain an open airway and loosen tight clothing, especially around the neck. If you suspect a severe fracture, neck or back injury do not move the individual except to maintain an open airway. If there is no injury to the spine, or severe fracture place the victim in the recovery position and check for the reason for the unconsciousness. Treat any life threatening injuries first. Keep the victim warm, do not give anything to drink, and do not leave them alone. Call emergency. The first responder is often called to assist in unconsciousness from a traumatic injury or concussion. The first remedy to use in this circumstance is *Arnica*. Some specific remedies are listed below with the conditions for which they are suited.

### Materia Medica

*Aconite* (2): Alternating stupefaction and restlessness with mild delirium twitching,

starts as in a fright, pulse frequent.
***Arnica*** (3): Unconsciousness from traumatic injuries and concussions.
***Antimonium-Tart*** (1): Death rattle, great rattling mucus with no ability to expel it. Paralysis of the lungs.
***Belladonna*** (2): Convulsions and coma from a high fever. Face is red and hot but the extremities are cold. Spasms and twitching of muscles during coma.
***Cannabis-indica*** (1): Deep sleep-like coma. Choking on swallowing, things go down the wrong way. Frightful dreams.
***Carbo-veg*** (3): Looks like a corpse, almost lifeless. Body is cold, icy blue, stagnant circulation, breath is cold.
***China*** (2): Coma after loss of vital fluids, especially blood.
***Digitalis*** (2): Coma due to heart and circulatory problems. Unconsciousness after coition.
***Helleborus*** (3): Complete unconsciousness, heart beat and pulse slow, skin only moderately warm, bowels inactive involuntary urination. Stupor and coma.
***Hyoscyamus*** (3): Complete loss of consciousness, pupils dilated. Apoplexy, snoring, involuntary stool and urine.
***Ignatia*** (1): Unconsciousness do to emotions such as unrequited love and grief. Hysteria.
***Lachesis*** (2): Stupefaction or loss of consciousness, blue face, and convulsive movements, tremor of extremities. Coma due to stroke or heart attacks.
***Moschus*** (1): Catalepsy. Unconsciousness from hysterical fainting, fits and convulsions.
***Nux-moschata*** (3): As if intoxicated. Cold extremities, extreme dryness of the mucus membranes and skin. Mouth is dry. tongue adheres to the roof of the mouth, but there is no desire to drink.
***Nux-vomica*** (3): Unconsciousness from alcohol or drugs. Stroke, falls into coma, face pale, head hot, pulse quick and hard, after a hearty meal or abuse of alcohol.
***Opium*** (3): Complete insensibility, no mental grasp of anything. Paralysis of the brain. Eyes half closed, pupil contracted, eyes red and bloodshot. Complete loss of consciousness, apoplectic state.
***Phosphoric-acid*** (2): Mental debility and apathy leads to unconsciousness. Delirium, with great stupefaction. Listlessness. The affects of grief and shock.
***Zincum-met*** (1): Unconsciousness with automatic motions, rolls head from side to side. Impending paralysis of the brain. Poisoning from suppressed eruptions or discharges. In chronic disease trembling, convulsive movements, and frigidity feet.

**REPERTORIUM**

**COMA, unconsciousness**- *Acon, ARN, ant-t, bell, cann-i, CARB-V, Chin, Dig, HELL, Hyos, ign, Lach, mosch, NUX-M, NUX-V, OP, Ph-ac, zinc.*
**asphyxia**- *ANT-T, Carb-v.*
**alcoholic coma**- *gels, Glon, NUX-V, hyos, kali-br, stram.*
**catalepsy**- *camph.*
**coition, after**- *Agar, asaf, DIG.*
**concussion** of the brain- *ARN, nat-s, Op.*
**dead** , lies as if- *Arn, Carb-v.*
**delirium tremens**, alcoholism- *NUX-V.*
**diarrhea**- *ars.*
**eating**- *caust, Mag-m, NUX-V, ph-ac.*
**croup**- *Carb-v.*
**emotion, after**- *Acon, Cham, COFF, IGN, LACH, mosch, Op, nux-m, Ph-ac, phos, verat.*
**epilepsy**- *ars, BUFO, kali-bi, OP, plb.*
**eruptions, suppression of** - Zinc.
**fever**- *ARN, Bell, NAT-M, OP.*
**fright**- acon, op.
**rage**- *stram.*

**heart disease**- *Ars, Aur, DIG.*
**angina pectoris**- *Arn, CIMIC.*
**hemorrhage**- *CHIN, Sabin.*
**meningitis**- *APIS, Rhus-t, VERAT.*
**cerebrospinal**- *HELL.*
**pain**- *HEP, Nux-m.*
**pregnancy**- *cann-i, Nux-m, Nux-v, sec.*
**shock, from injury**- *Arn, Op.*
**stroke**- *ARN, Bar-c, Hyos, LACH, OP, Phos, Stram.*
**sunstroke**- *Bell, GLON, lach, Op.*
**wound**, flesh- *Calen*
Source: Homoeopathic Online Education - http://simillimum.com

TIPS FROM Dr MAGANBHAI DESAI

Dr Desai observes "It is the toxemia of the brain which begins with delirium, passes into stupor with convulsions and affects the senses one by one and ends in coma. So only the total elimination of the toxins can assure the complete cure by bringing all the senses back to normal condition one by one in the reverse order of the affection. This condition, when not properly treated by steady repetition, leaves behind its sequele in proportion to the toxicity left over.

Whatever be the seriousness of the head injury which results in coma, *Ledum-pal* 1M should be given every 5 minutes. Dr Desai emphasizes that 'It can stave off the condition of coma...*Arnica* is equally useful but its action is not so swift as that of *Ledum*".

*(separate article in next issue)*

# How is a Vegetative State different from Coma?

A patient in "Coma" is described as some one whose eyes are continuously closed and who cannot be aroused to a wakeful state.

"Vegetative State", is another version, which exists, similar to coma, of diminished consciousness. It is similar to coma but the eyes are open and can briefly track objects or sounds; but many patient's limbs are spastic. The possibility of recovery from vegetative state depends on how long the state has lasted. In a follow up study with 34 patients, post traumatic, who opened their eyes spontaneously within two weeks of injury, 74% eventually achieved a satisfactory outcome.

In those whose eyes opened between the second and fourth week; 32% improved while only 18% of patients who opened their eyes during the second month eventually recovered.

SOME INDICATION OF PROBABLE OUTCOME

**Follow-up Results in 140 Patients Vegetative at 1 Month After Injury**

| Age at Injury | Total Number of cases | % Independent at 1 year |
|---|---|---|
| < 20 years | 53 | 19 |
| 20-40 years | 46 | 9 |
| > 40 years | 41 | 0 |

Abstracted from internet by Dr SUSHMA JAISWAL