

## IC deep sleep and then ...

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*People who have been on ventilation in the ICU are often very anxious, confused and often have horror and nightmare-like thoughts. It is often difficult to get through to them, but is related to the nature of the sleep period. The longer the deep sleep-period, the more anxious. Understanding it means there is also something you can do about it! Also there is a complex immune and auto immune process going on, so we need to take a step back and try to understand what is happening before we apply extensively ventilation or medication.*

We put them to sleep to be able to ventilate people. Then they have less trouble with the tube in their throat and the oxygen pushed into the lungs. When they are brought out of that 'sleep', there is often anxiety, anxiety and (severe) confusion. They can suffer cognitive damage in the long run.

What does this mean and why does it happen? Can this be treated? Yes, for that we need to understand the process of sleep and its functions.

Sleep has five phases and two major tasks: deep sleep to rest physically and REM sleep, also known as dream-sleep to restore the brain psychologically and prepare for the day. Both are necessary. REM sleep is called REM because of the rapid eye movements behind the closed eyes during this phase. The other four stages are called NREM (not REM), the most essential of which is deep sleep. All those phases have different brain wave frequencies, the deep sleep slow waves, the REM sleep fast waves, beta waves that are not that different from the waves of being awake, the alpha waves. Due to the small difference between REM and waking brain waves, one can sometimes confuse the distinction between sleeping and waking.

If people sleep too shortly or stay awake overnight, people will miss REM sleep and it has to be caught up, to enable to restore the brain. In ICU people are often kept in deep sleep for several days. This means that REM sleep is suppressed for a longer period of time. If you skip REM sleep (staying awake overnight, for example, or in deep sleep for days), REM/dream sleep is caught up, 100 to 200 minutes per night, even if you don't remember dreaming.

When people come out of the ICU they supposedly have a "delirium", they are very anxious, very restless, confused strange act even weird or 'psychotic. This is most of the time just the dream sleep that is invading the waking state and because of the strange circumstances, people confuse the sleep and nightmares with a waking state. Bouts of thoughts that were lingering about during deep sleep are turned into dreams full of anxiety up to conspiracy theories. Even when it seems that you can speak with them, you cannot get through to them, because they are in a dream state. This REM-sleep is the period during which the processing of information, the clearing of the brain takes place.

It is not always clear that someone is dreaming. For example, there is "sleeping with open eyes" or "sleepwalking", in which people can show active behavior while they sleep. Dream sleep is of great importance in "clearing the brain" after ventilation, but also after electroshock therapy, and in maturing the brain during the growth of the child. There may be "pavor nocturnus" - nocturnal panic. Those are fairly short "attacks of fear and panic," from a few minutes to half an hour, during which one cannot get through to that person and

the same person has no memory of it later. It is not a real panic attack, not fear, but the dream sleep, nightmare, that pushes itself through into waking. So it is catching up on sleep, REM-sleep while at the same time being awake. People are very worried when this happens with someone, because they think the person is well awake. This happens often with children during their process of maturation of the brain.

In the ICU when people have been taken off the ventilator and are awake, the urge to dream begins. REM sleep, as it were, sweeps the brain clean. The good connections are strengthened, the bad ones erased. Extremely important to keep the brain in order.

Extremely important after such a invasive experience at the ICU.

So awakening is not simply accompanied by "restlessness", "confusion" or "fear", but it will mainly be dreams that push themselves into waking. There are lucid moments, but also moments of confusion and anxiety and even terror. 'Lucid' is probably awake, 'confused' is probably dreaming.

Cognitive deficit later on is therefore mainly (having or having had) a lack of dream sleep.

The confusion, restlessness is in fact favorable instead of unfavorable when it is dream sleep. People often don't want to sleep anymore because they are so restless when REM sleep is catching up. They are afraid to go to sleep, which is of course not helping, not healthy.

### **What can you do about this at the ICU and afterwards?**

*First, consider whether ventilation is effectively necessary. It is rather invasive, and less invasive methods are needed, with less damage afterwards.*

1: Give repeated explanations during the deep sleep period, about what is going on. Keep talking to the patient during the nursing contacts. It enters the brain. As it has also been discovered that the outside world can penetrate a coma.

2: make the ventilation period as short as possible.

3: build up to the awake situation as slowly as possible. That creates agitation, which could simply REM-sleep, which is healthy. We find agitation unpleasant for the patient, but the brain needs REM sleep.

4: Have a loved one make a video in which he / she welcomes the patient after the long fight and says that it is good, that there is improvement and that they are doing well. That such a man or woman hears the calm familiar voice of his loved ones. In Corona time: that the nurses always play this video during the agitation and deeper sleep (easy to make a loop technically). This penetrates the dream sleep and makes the patient calmer.

5: Make sure there is something, a music that the patient likes so much, a quiet music, his or her family knows what, and switch it on (in a loop) when they fall asleep. That decreases the fear of falling asleep.

6: In Corona Time: If necessary, let the family stroke the person while they are wrapped in plastic to give comfort and a feeling of security. Sitting next to someone, talking quietly, repeatedly reassuring, stroking the head and hand and talking reassuringly, will make the sleep start in a positive sense, it will 'color' the sleep. Human contact is actually healing for people; it stimulates the production of its own analgesic and calming hormones, such as oxytocin and endorphins. Then no medication is needed quickly. The more REM sleep, the more brain recovery.

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