Nursing Care of Patients With Disorders of Consciousness

Ana Cláudia Giesbrecht Puggina, Maria Júlia Paes da Silva, Caroline Schnakers, Steven Laureys

ABSTRACT

Management of severely brain-injured patients constitutes a social, economical, and ethical dilemma as well as a real challenge for the medical staff, as it requires specific expertise. The aim of this article is to explore the aspects of nursing care in patients recovering from coma such as difficulty of diagnosis, residual perception, clinical assessment, care and management, and communication with the patient and the family. The nursing care of patients with disorder of consciousness must be particular and specific for various reasons such as the difficult diagnosis, the problem of unconsciousness or lack of demonstration of consciousness, extremely complex clinical assessment, daily management with total dependence, communication with patients that requires special attention and training by health professionals, and communication with the family of these patients that requires more sensitivity and full involvement by the team.

Keywords: coma, consciousness disorders, nursing care, persistent vegetative state

Nursing care of patients with disorders of consciousness (DOCs) requires, from the nurse, specific knowledge, competence, and skills, as well as very particular planning and actions focused on the care for these noncommunicative patients. It is important that the specific professional continuously looks for enhancement and updates to work with these patients, mainly with regards to patients' perception capability, or the capacity to demonstrate the cortical functions such as tracking eye movement and diagnostic criteria used by the professionals, an area in which science has made recent discoveries and advances in neurosciences. The aim of this article is to explore the aspects of nursing care for patients with DOCs, which are related to difficult diagnosis, residual perception, clinical assessment, care and management, and communications with the patient and family.

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DOCs

These DOCs are clinical diagnostic entities where there are diffuse psychological losses, most of the time followed by a generalized reduction or alteration of the consciousness content, added to deficiencies for awakening (Plum & Posner, 1977); DOCs include different clinical entities such as coma, vegetative state (VS), and minimally conscious state (MCS).

The coma is a state where awakening deficit prevails. It is a state where the patient is unarousable and unresponsive. Clinically, it is characterized by an absence of eye-opening (not due to palpebral paralysis) even in the presence of strong stimulation and by the absence of awareness (Laureys, Boly, Moonen, & Maquet, 2009). It may be caused by lesions to the brainstem or the thalamus or by diffuse axonal injury (Plum & Posner, 1977; Rosenborg, 2009). In general, comatosed patients who survive gradually emerge within 2–4 weeks and evolve to a VS or MCS or directly to a complete recovery of consciousness (Laureys, Owen, & Schiff, 2004).

Patients in VS are awake, open their eyes spontaneously or in response to stimulation, and may survive for a long time without showing any manifestation of higher mental activity after, for example, a traumatic brain injury, stroke, or hypoxia (Plum & Posner, 1977). In these patients, there is no evidence of language comprehension or expression, although there is, in general, sufficiently preserved hypothalamic and brainstem autonomic functions to permit survival (Multi-Society Task Force on PVS, 1994).

The MCS is a recent clinical entity. In 2002, the Aspen Workgroup published the diagnostic criteria...
Clinicians often face exceptional challenges when examining patients with disorders of consciousness, particularly those patients who experience both impaired consciousness and aphasia.

Difficult Diagnosis

The assessment of the level and content of consciousness in brain-damaged patients is further complicated when patients, with such DOCs, have underlying deficits in the domain of communication functions, such as aphasia. The combined use of behavioral and neuroimaging assessment techniques appears to be particularly promising for disentangling impaired consciousness and aphasia (Majerus, Bruno, Schnakers, Giacino, & Laureys, 2009).

The quantification of brain activity by using functional neuroimaging can differentiate patients who sometimes only differ by a brief and small movement of a finger. Diagnostic methods as positron emission tomography (PET), magnetoencephalography, electroencephalogram, event-related potentials, and especially functional magnetic resonance imaging (fMRI) will substantially increase the understanding of patients with severe brain damage and will reduce the diagnosis errors regarding the patients with DOC (Laureys et al., 2004).

Rigorous behavioral assessment is usually sufficient to establish a patient's level of wakefulness and awareness. However, it is becoming increasingly apparent that, in some patients, damage to the motor system may prevent overt responses to commands, even though the cognitive ability to perceive and understand such commands may remain intact (Owen, Schiff, & Laureys, 2009). The problem of misdiagnosis has been assessed in a number of studies. In 1996, a study by Andrews and coworkers on 40 chronic patients referred to as being in the VS showed that 17 (43%) were considered as having been misdiagnosed; 7 of these had been presumed to be vegetative for longer than 1 year, including 3 for over 4 years. Most of the misdiagnosed patients were blind or severely visually impaired. All of them remained severely physically disabled, but nearly all of them were able to communicate their preferences using eye pointing or a touch-sensitive single switch buzzer in quality of life issues (Andrews, Murphy, Munday, & Littlewood, 1996, Childs, Mercer, & Childs, 1993).

A more recent study compared the clinical consensus diagnosis of 103 patients provided by the physician on the basis of the medical staff's daily observations with the diagnoses derived from Coma Recovery Scale-Revised (CRS-R) assessments performed by the research staff. All of the patients were assigned a diagnosis of VS, MCS, or "uncertain diagnosis." Among the 44 patients diagnosed with VS based on the clinical consensus of the medical team, 18 (41%) were found to be in MCS following standardized assessment with the CRS-R. Among the 41 patients with a consensus diagnosis of MCS, 4 (10%) had recovered from MCS, according to the CRS-R. Most patients (89%), having been assigned an uncertain diagnosis by clinical consensus, were in MCS based on CRS-R findings. Despite the importance of diagnostic accuracy, the rate of misdiagnosis of VS apparently has not substantially changed in the past 15 years (Schnakers et al., 2009). This is most likely because generally this area does not involve patients who will be cured; therefore, there is little or no motivation to research deeply into this area. This study is important because it highlights this lack of research.

Residual Perception

The clinical and paraclinical examination of residual self-consciousness in noncommunicative severely
brain-damaged patients remains exceptionally challenging. Passive presentation of the patient's own name and own face is known to be effective attention-grabbing stimuli when clinically assessing consciousness at the patient's bedside. Event-related potential and functional neuroimaging studies, using such self-referential stimuli, are currently being used to disentangle the cognitive hierarchy of self-processing (Laureys, Perrin, & Brédart, 2007).

A study researched the detection integrity of using the person's own name in patients in a behaviorally well-documented VS and patients in an MCS. The auditory-evoked potentials were recorded using the patient's own name and to seven other first names in 15 brain-damaged patients. The results suggested that partially preserved semantic processing could be observed in noncommunicative brain-damaged patients, notably for the detection of salient stimuli, such as the subject's own name. This function seems delayed in MCS and (if present) in VS patients. More importantly, a P3 (or P300) response, which is a event-related potential, can be evoked in response to unexpected target words, does not necessarily reflect conscious perception, and cannot be used to differentiate VS from MCS patients (Perrin et al., 2006).

Another study applied a hierarchical fMRI auditing processing paradigm to determine the extent of retained language processing in a group of 14 etiologically heterogeneous patients in VS (n = 7), MCS (n = 5), or in a severely disabled condition having recovered from an MCS (n = 2). Three different levels of speech processing were assessed: (a) Low-level audit responses were measured using a contrast between a set of auditing stimuli and a silence baseline, (b) midlevel speech perception processing abilities were assessed by comparing intelligible speech to unintelligible noise stimuli, and (c) high-level semantic aspects of speech processing were assessed by comparing sentences that were made difficult to understand by the presence of words that were semantically ambiguous as compared with matched low-ambiguity sentences. As expected, the two severely disabled but conscious patients showed preserved speech processing at all of the three levels. However, contrary to the diagnostic criteria defining the VS, three patients (one traumatic and two nontraumatic etiology) showed some evidence of preserved speech processing. The remaining four patients (one traumatic and three nontraumatic), with a diagnosis of VS, showed no significant activation in response to sound as compared with silence. These results provide further evidence that a subset of patients, fulfilling the behavioral criteria for the VS, retain islands of preserved cognitive functions that cannot be observed using methods that rely on the patients' ability to make overt motor responses (Coleman et al., 2007).

Schiff et al. (2002) studied five patients in a persistent vegetative state (PVS) with different behavioral features by means of [18F]fluorodeoxyglucose-PET, fMRI, and magnetoencephalography. Each patient's brain expressed a unique metabolic pattern. Among three of the five patients, coregistered PET/fMRI showed islands of relatively preserved brain metabolism correlating with isolated fragments of behavior. The variations in cerebral metabolism in chronic PVS patients indicated that some cerebral regions can retain partial functions in catastrophically injured brains.

In summary, several recent functional neuroimaging studies have shown residual cortical function in undeniably vegetative patients. This cortical activation, however, seems limited to primary "low-level" areas and does not imply "higher-order" integration considered necessary for conscious perception. Minimally conscious patients in contrast show large-scale, high-order cerebral activation, apparently dependent on the emotional relevance of the stimulation (Laureys et al., 2005). Functional neuroimaging studies also seem to herald prognostic information as patients with high-order cortical activation more often show good recovery (Di, Boly, Weng, Ledoux, & Laureys, 2008).

Clinical Assessment

The assessment of patients with DOC is extremely complex and frequently depends on subjective interpretations of the observed spontaneous and volitional behavior (Owen et al., 2009). The objective assessment of consciousness is difficult due to its first-person nature. For this reason, clinicians need to infer awareness via the evaluation of motor activity and command following (Demertzi et al., 2008).

Assessment of awareness is not a matter of all or nothing. Recovery of awareness may be a very gradual process, with sometimes great leaps forwards, but more often subtle changes, and also sometimes setbacks. For the patient recovering from coma, it is of utmost importance that the nursing staff adapts their assessment to the level of awareness in which the patient currently is. The subtlest signs of awareness, as well as their fluctuation, must be reliably captured as they are the only means for avoiding misdiagnosis, but also for communicating with these patients (Majerus, Gill-Thwaites, Andrews, & Laureys, 2005).

The evaluation needs a considerable amount of time, measured in weeks rather than hours, and during different times of the day, if varying levels of functions must be identified and correctly classified (Wild, 2007). The nursing staff can and must contribute with relevant information for the assessment of awareness, mainly due to the more prolonged and intense contact that these professionals have with the patients as compared with
other staff members. To do this, it is important that the nursing professionals are mindful and guided about the differential diagnostic criteria for each of these clinical entities encountered following coma (Table 1).

For this aim, it is important that medical caregivers know and incorporate, in their daily clinical practice, one or more of the several existing behavioral scales (Table 2) employed for the standardized evaluation of consciousness levels in these patients. Validated standardized behavioral scales for vegetative and minimally conscious patients have been shown to reduce diagnostic error however regrettably remain underused in clinical routines (Laureys et al., 2005). This is most likely due to lack of knowledge of the behavior scales and outdated professionals with regard to new theories, procedures, and technological advances.

In addition to the assessment of awareness, other clinical signs of physical examination of patients with DOC must be daily and carefully observed such as pupillary reflex (assessing size and photoreactivity),

<table>
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<tr>
<th>TABLE 1. Diagnostic Criteria for Disorders of Consciousness</th>
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<tr>
<td>Coma (Laureys et al., 2009)</td>
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<tr>
<td>1. No evidence of awareness of themselves or their environment.</td>
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<tr>
<td>2. No wakefulness manifested by the presence of sleep–wake cycles (i.e., no periods of eye-opening).</td>
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<th>Vegetative state (Multi-Society Task Force on PVS, 1994)</th>
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<tbody>
<tr>
<td>1. No evidence of awareness of themselves or their environment.</td>
</tr>
<tr>
<td>2. No evidence of sustained, reproducible, purposeful, or voluntary behavioral responses to visual, auditory, tactile, or noxious stimuli.</td>
</tr>
<tr>
<td>3. No evidence of language comprehension or expression.</td>
</tr>
<tr>
<td>4. Intermittent wakefulness manifested by the presence of sleep–wake cycles (i.e., periods of eye-opening).</td>
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<tr>
<td>5. Sufficient preservation of autonomic functions to permit survival with adequate medical care.</td>
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<td>6. Bowel and bladder incontinence.</td>
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<td>7. Variable preservation of cranial nerve and spinal reflexes.</td>
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<th>Minimally conscious state (Giacino et al., 2002)</th>
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<tbody>
<tr>
<td>1. Following simple commands.</td>
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<td>2. Gestural or verbal yes/no responses.</td>
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<tr>
<td>3. Intelligible verbalization.</td>
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<tr>
<td>4. Purposeful behavior, including movements or affective behaviors that occur in contingent relation to relevant environmental stimuli and they are not due to reflexive activity. Some examples of qualifying purposeful behavior include:</td>
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<tr>
<td>• appropriate smiling or crying in response to the linguistic or visual content of emotional, but not to neutral topics or stimuli;</td>
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<tr>
<td>• vocalizations or gestures that occur in direct response to the linguistic content of questions;</td>
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<tr>
<td>• reaching for objects that demonstrates a clear relationship between object location and direction of reach;</td>
</tr>
<tr>
<td>• touching or holding objects in a manner that accommodates the size and shape of the object;</td>
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<tr>
<td>• pursuing eye movement or sustained fixation that occurs in direct response to moving or salient stimuli.</td>
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<th>Locked-in syndrome (American Congress of Rehabilitation Medicine, 1995)</th>
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<tbody>
<tr>
<td>1. Presence of sustained eye-opening (bilateral ptosis should be ruled out as a complicating factor).</td>
</tr>
<tr>
<td>2. Preserved basic cognitive abilities.</td>
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<tr>
<td>3. Aphonia or severe hypophonia.</td>
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<tr>
<td>4. Quadriplegia or quadripareisis.</td>
</tr>
<tr>
<td>5. A primary mode of communication that uses vertical or lateral eye movement or blinking of the upper eyelid.</td>
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</tbody>
</table>

*Notice that this state is not a disorder of consciousness.*
TABLE 2. Examples of Behavioral Scales Available

<table>
<thead>
<tr>
<th>Scale Name</th>
<th>Publication Year</th>
<th>Country (City)</th>
<th>Structure</th>
<th>Use and Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glasgow Liege Scale (Born, 1988)</td>
<td>1988</td>
<td>Belgium (Liège)</td>
<td>Same items as the GCS plus a subscale for brainstem reflexes (6 items).</td>
<td>Completes the GCS with quantified analysis of five brainstem reflexes.</td>
</tr>
<tr>
<td>Coma Recovery Scale-Revised (Giacino et al., 2004)</td>
<td>2004</td>
<td>United States (New Jersey)</td>
<td>23 items divided in 6 subscales: auditory, visual, motor, oromotor/verbal, communication, and arousal.</td>
<td>Reliable tool that distinguishes the minimally conscious state from the vegetative state.</td>
</tr>
<tr>
<td>Wessex Head Injury Matrix (Shiel et al., 2000)</td>
<td>2000</td>
<td>England (Cambridge)</td>
<td>58 items of behavior; as from arousal, social interaction, communication, cognitive organization until memory.</td>
<td>Can be used from the coma to complete recovery of awareness but particularly sensitive to minimally conscious state.</td>
</tr>
<tr>
<td>Full Outline of Unresponsiveness Scale (Wijdicks, Bamlet, Maramattom, &amp; Manno, 2005)</td>
<td>2005</td>
<td>United States (Rochester)</td>
<td>16 items divided in 4 subscales: eyes opening, motor response, brainstem reflexes, and respiration.</td>
<td>Remains fully applicable in intubated patients and provides greater neurological detail than the GCS, recognizes a locked-in syndrome, and assesses brainstem reflexes, breathing patterns, and the different stages of herniation.</td>
</tr>
</tbody>
</table>

vomit reflex, corneal reflex, oculocephalic or vestibular reflex and vital signs (respiratory frequency, heart rate, blood pressure, and temperature), and focal convulsions (Smeltzer & Bare, 2002). Nurses and healthcare workers should also know the difference between reflex movements (such as blinking to visual treat) and voluntary behaviors (such oriented responses to pain or eye tracking). It is also important to standardize the assessment of clinical signs. For example, the assessment of eye tracking, often the first sign of recovery of consciousness after VS, should employ a mirror, not a moving object as is classically used (Vanhaudenhuyse et al., 2008).

**Care and Management**

Patients with DOC are challenging patients regarding both the nursing care and their daily management in both acute and chronic phases, including aspects such as pain assessment and treatment, prevention of skin injuries and pressure ulcers, articular deformations, muscle spasticity, nutrition, hydration and deglutition problems (risk of aspiration pneumonia), respiratory and cardiovascular functions, total dependence for activities of daily living (Table 3), and management of intracranial pressure (Table 4).

An important issue of care is pain and symptom management in patients with DOC. Pain and suffering controversies, in these patients, continue to be debated in the scientific, medical, ethical, and legal communities. Pain responses should be routinely monitored with a concurrent understanding of the neurobehavioral and neurological status of the patient in question and should be considered in all persons with DOCS and should be adequately treated. Appropriate use of scales, specifically designed for people with DOC, should be considered in conjunction with documentation of the nature, consistency, and temporal lag (if any) of pain responses in an attempt to facilitate appropriate pain management strategies as well as communications among the treating health staff (Schnakers & Zasle, 2007). A recent survey has shown different opinions between nurses and medical doctors regarding possible perception of pain in the VS (Demertzis et al., 2009). Schnakers and coworkers (2010) have developed a Nociception Coma Scale specifically for assessing, monitoring, and communicating possible perception.
TABLE 3. Proposals for Nursing Care Actions and Management

- Be attentive to possible signs of pain such as facial expression (grimaces) or body movements (agitation) when potential painful areas are being stimulated.
- Use a standardized scale for assessing, monitoring, and communicating about possible pain perception (e.g., the “nociception coma scale”).
- Tell the patient if you detect pain in order to recognize his discomfort, reassure him in explaining which measures will be taken to alleviate his/her pain.
- Prevent the appearance of pressure ulcers by repositioning the patient at an appropriate frequency, alleviate the pressure at the vulnerable areas (sacral region, calcaneus, elbow, etc.) with cushions or a pyramidal mattress, avoid the use of humi diapers during prolonged times, keep hydration through appropriate oral and cutaneous ways, perform comfort massages after the bath.
- Help the patient to perform passive exercises to avoid spasticity.
- Prevent the appearance of physical deformations by using appropriate positioning and the use of leather straps.
- Take care of the patient’s nutritional requirements.
- As frequently as possible, record the patient’s weight.
- Continuously monitor the respiratory functions by using auscultation, percussion and respiratory frequency, thoracic expansibility, signs of dyspnea, oxygen saturation, arterial gasometric levels as well as the preservation of the cough reflex.
- Be attentive to significant alterations of vital signs.
- Keep the privacy and avoid body exposure similarly to what is done with other patients.
- Schedule a proper time and a routine for bedside bathing. The routine can help the patient to follow the procedure.
- Maintain frequent and appropriate oral hygiene even if the patient does not feed orally in order to prevent dental problems.
- Maintain the patient’s physical appearance such as shaving for men, hairdressing, and make-up for women.


of pain in patients with DOCs after coma. The No-
icception Coma Scale is a tool that permits better definition of behavioral signs of nociception and their correlation with functional neuroimaging data. Indeed, clinical signs (e.g., grimaces) are often considered as behavioral signs of nociception in the assessment of noncommunicative patients. However, these behaviors are not considered to be clear signs of consciousness.

TABLE 4. Proposals for Actions to Maintain Adequate Intracranial Pressure (ICP) and Cerebral Perfusion Pressures (CPP)

1. Maintain ICP below 20 mmHg in order to improve outcomes.
2. Maintain CPP between 50 and 70 mmHg.
3. Drain cerebrospinal fluid to decrease ICP.
4. Do not induce hyperventilation to decrease ICP.
5. Do not administer sedation to prevent ICP increases.
6. Do not administer Mannitol, which can decrease ICP.
7. Do not administer Norepinephrine as it may maintain adequate or increase CPP.
8. Do not administer intensive insulin therapy for serum glucose greater than 110 mg/dl; it may reduce ICP.
9. Do not elevate the head of the bed 30° to maintain or decrease ICP and to maintain or increase CPP.
10. Do not remove rigid cervical collars; it may decrease ICP.
11. Do not keep normothermia; it may prevent ICP increase.
12. Cerebrospinal fluid drainage may be an effective treatment for low CPP.
13. Administer antiepileptic drugs in order to decrease the incidence of early posttraumatic seizures.

Note. From American Association of Neuroscience Nurses (2008).
Functional neuroimaging assessed the central processing of noxious somatosensory stimuli in PVS compared healthy controls. In PVS patients, overall cerebral metabolism was 40% of normal values. Somatosensory stimulation of PVS patients, at intensities that elicited pain in controls, resulted in increased neuronal activity in primary somatosensory cortex, even if resting brain metabolism was severely impaired. However, this activation of primary cortex seems to be isolated and dissociated from higher-order associative cortices necessary for conscious perception (Laureys et al., 2002). Another study compared brain activation, induced by bilateral electrical stimulation of the median nerve, in 5 patients in MCS, 15 controls, and 15 patients in a PVS with functional neuroimaging. The results showed that cerebral correlations of pain processing are found in a similar network in controls and patients in MCS but are much more widespread than in patients in PVS. These findings might be objective evidence of a potential pain perception capacity in patients in MCS, which supports the idea that these patients need analgesic treatment (Boly et al., 2008).

Another issue relates to the patient's immobility and the development of pressure ulcers as well as to articulator alterations and spasticity. The decerebrated or decortized posture makes appropriate positioning difficult and can cause physical deformations (Smeltzer & Bare, 2002). Most of the patients with DOC, particularly the patients in VS and MCS, show major physical immobility or even complete immobility or quadriplegia.

Risk factors such as urinary and fecal incontinence, alteration of consciousness level, and fractures can favor the appearance of pressure ulcers in these patients, mainly in the sacral region. A study showed that 23 of 186 patients, interned in a neurological intensive care unit, developed at least one pressure ulcer (incidence of 12%) after an average stay of 6 days (Filé et al., 2001). This problem is even much more important in the chronic setting.

Regarding nutrition, patients with DOC and mainly in coma have an increase of caloric and protein requirements. The nutrition, being modified to less than the corporeal needs, can also be related to the metabolic alterations, hydric restriction, and inappropriate keeping of liquids and electrolytes.

Patients in VS or MCS show particular nutritional issues. Problems frequently encountered are undernourishment, high fluid requirements, bowel management, and vomiting. We should also look at the practicalities of long-term tube feeding. Once medical stability has been achieved; feeding these patients is almost always successful with the patient's body weight restored to being within normal limits. In addition, body weight is part of a person's identity, so its restoration may have emotional benefits for relatives (Finch, 2005).

Regarding the self-care of patients with DOC, this skill is fully jeopardized, thus causing total impossibility to perform activities such as daily hygiene, bathing, dressing, and feeding. The nurse must plan care aimed at continuously keeping the best possible physical status of the patient. This care is important for the patient, but even more for his or her family as it keeps the dignity of the patient and satisfies the wishes of the relatives that the patient is being well taken cared of.

As regards to the respiratory function, the patients with DOC have some factors that make them susceptible to respiratory complications such as aspirations of the aeral ways, endotracheal tube or tracheostomy, ineffective clearance of the aeral ways, jeopardized mobility, and improper nutritional support and hydration.

The evaluation of the vital signs is also of extreme importance as regards to the worsening analysis of the neurological status because, in proportion to the increase of the cerebral compression, the vital signs tend to be reverted: tachypnea, hypotension, and bradycardia (Smeltzer & Bare, 2002).

Communication With the Patients
In spite of studies that show that patients with MCS can perceive pain and emotion, the nursing team may not be well prepared to handle these challenging DOC patients and may neglect verbal interaction and pain and symptom management in these patients. A study on verbal communications with patients in coma on 21 members who belonged to the nursing team (technicians and nurses) of an intensive care unit showed that 90% of the care procedures were performed in "silence" as regards to the patients (Cardim, Costa, Nascimento, & Figueiredo, 2004). Ferreira et al. (2000) reported similar results using a semistructured interview with 10 medical and nursing professionals. The authors revealed that the interactions with the patients in coma were rare. Another study attempted to assess the attitudes and practices of five intensive care nurses toward verbal communication with unconscious patients. The design incorporated 4-hourly observational periods and structured interviews. The results indicated that intensive care nurses spend, on average, 5% of their time verbally communicating with unconscious patients. Most of these communications involved informing the patient about immediate procedural matters or providing reassuring statements (Baker & Melby, 1996).

A nonparticipant observational study aimed at exploring how much and what types of verbal communications
critical care nurses use when caring for unconscious or sedated patients. Sixteen critical care nurses were observed in 4-hour episodes, and their verbal communications were transcribed and timed. Seven categories of verbal communications emerged: procedural/task intentions, orienting information, reassurance, apologies/cease to discomfort, efforts to elicit a response, intentional and unintentional distraction, and social conversation with colleagues while recognizing the patient’s presence. The category of verbal communications, referred to the procedure or task purpose, was the most frequent. The average time devoted by the nurses to the verbal communications was 4.5 minutes for the 4 hours of observation. These findings highlight the need for formal support systems and continued education for nurses about the benefits of verbal communication (Elliott & Wright, 1999).

Caring in a worthwhile and respectful way for a patient with DOC requires special attention by the nursing team and a more adapted approach regarding the recognition of the human person. Involuntary attitudes, such as the very common parallel conversations during medical care procedures for patients with DOC, need to be avoided as it is not known how much and when these patients are perceptive about what is going on around them. It is possible that they hear negative comments that would affect their internal thinking; thus, they would give up and their physical profile would deteriorate. With this in mind, it is important that they fight to regain consciousness to come out of their situation. The recovery team involves the patient also. The full involvement in what is being performed is a component of the care; without it, we could get away from our professional deontology and ethics; it is a challenge to learn how to handle this with all of the patients regardless of their consciousness level (Table 5).

### Communication With Family

A study assessed communication by healthcare professionals looking at interviews with 22 family members. It showed that family members of traumatic coma patients want information that is as accurate as possible, provided by doctors and nurses in an understandable manner and leaving room for hope. At first, family members can do no more than passively absorb the information the receive. After some time, they actively start working with the received information and learn what to build their hopes on. In this way, concrete hopes evolve and seem to be strongly determined by realistic medical information. Information that is more positive than warranted is not appreciated at all. It leads to false hope and, once its real nature becomes apparent, may lead to increased distress and loss of trust in healthcare professionals (Verhaeghe, Van Zuuren, Defloor, Duynstee, & Grypdonck, 2007a, 2007b).

Hope was the most prominent theme when family members were confronted with traumatic coma. Hope was found to evolve stepwise up and down, being dependent on daily events and information: big steps at first, smaller later on. Hope helps family members to keep going and to manage their care for the patient and for each other. They alternate their moments of despair, and in their interactions, they respect each other's hope (Verhaeghe et al., 2007a, 2007b). Coma and DOC are not always well represented in the media. A study analyzed how nine soap operas in the United States portray the likelihood of recovery for patients in coma. The authors looked at 64 characters that experienced a period of unconsciousness.

### TABLE 5. Proposal for Actions as Regards Communication With the Patient

- Introduce yourself to the patient; tell him or her your name, job, and what will be done to him/her.
- Guide and inform the patient about each medical care procedure that is performed, explain its purpose and the way it is done.
- Always call the patient by her/his name regardless the level of consciousness.
- Do not speak too loud as if the patient was deaf.
- Communicate with the patient by using the appropriate voice tone; sometimes, it will require to stay somewhat closer to the patient's ear.
- Avoid parallel talks with your workmate while care procedures are performed to the patient, particularly the most intimate ones.
- Concentrate on the relationship and the activity that is performed. This action keeps the dignity of the patient and reinforce the relation professional–patient.
- Use nonverbal communication (eye contact, smiles, and touches).

lasting at least 24 hours. Fifty-seven (89%) patients recovered fully, five (8%) died, and two (3%) remained in a VS. Mortality for nontraumatic and traumatic coma was significantly lower than what would be predicted as per the medical data (nontraumatic, 4% vs. 53%; traumatic, 6% vs. 67%). On the day that patients regained consciousness, most (49/57; 86%) had no evidence of limited motor function, cognitive deficit, or residual disability needing rehabilitation. Compared with medical knowledge, patients in this media sample had a much better than expected chance of returning to normal functions (nontraumatic, 91% vs. 1%; traumatic, 89% vs. 7%). Hence, the portrayal of coma in soap operas is overly optimistic. Although these programs are presented as fiction, they may contribute to unrealistic expectations of recovery sometimes encountered in family members of DOC patients (Casarett, Fishman, MacMoran, Pickard, & Asch, 2005).

In a similar study, the authors reviewed 30 movies from 1970 to 2004 with actors depicting prolonged coma. The time in a comatose state varied from days to 10 years. Awakening occurred in 1 of 30 motion pictures (60%). Awakening was sudden with cognition intact, even after prolonged time in a coma. Actors personified “Sleeping Beauty” (eyes closed, beautifully groomed; Wijdicks & Wijdicks, 2006). Cinematic “distortion” can also be understood as a compensatory artistic device that counters societal perceptions about brain injury, which themselves may be inaccurate. From this broader cultural context, poetic license on the part of a filmmaker could be construed as a corrective (Fins, Shukla, Wijdicks, & Wijdicks, 2007).

Relatives face a critical situation of having a beloved family member with DOC, taking into account many previous beliefs and experiences. Considering the hope of the family members as a natural process for facing the situation that they are going through is a way for fully respecting them. Relatives are also not used to their beloved’s new “image” and behavior and will need to be “prepared” to live through this new reality. Overcoming the lack of verbal communications is also a challenge being faced by the relatives. They may be needed to be stimulated to talk to the patient and to touch him or her. These guidelines may seem obvious to us but, many times, the relatives do not take action due to being concerned about bothering the medical care and procedures. Finally, the nurse is responsible for the job of welcoming and guiding the relatives, constantly seeking more participation of the family in the recovery of the patient (Table 6).

**Finaly**

The management of DOC patients is particularly challenging for the medical staff as it requires specific expertise such as clinical assessment of consciousness level or pain detection in these non-communicative patients. Procedures have been developed to help clinicians (e.g., standardized behavioral scales such as the CRS-R to detect signs of consciousness or the Noception Coma Scale to detect the presence of pain) and can be included in the patient’s daily care (Giacino, Kalmar, & Whyte, 2004; Schnakers et al., 2010). An appropriate knowledge about VS versus MCS diagnosis criteria and residual perception is also essential as the medical staff has to correctly inform the family about the patient’s medical status. Finally, it is very important to establish a nonverbal or basic communication with the patient as well as to avoid conflicts and maintain a communication of good quality with the family. Indeed, an adequate management can

**TABLE 6. Proposal for Actions as Regards Communication With the Family**

- Guide and inform the relatives about the current clinical status of the patient and what is being done for his or her improvement, looking for being both objective and careful about the way this information is provided.
- Bring the relatives to a separate room when giving important information in order to preserve their privacy.
- Pay attention to the reactions of the family members as regards their loss.
- Encourage the expression of feelings and fears between family members.
- Prepare the next of kin to the patient’s physical and behavioral changes.
- Consider family’s hope as being a natural coping process (but do not encourage false hope).
- Stimulate the relatives to come close to the patient during the visiting time (talking to and touching the patient).
- Recognize the importance of spiritual needs in relatives and support these if necessary.
- Encourage strategies used by the family to cope with the situation and decrease stress and support their decision making.

*Note: From Carpenito-Moyet (2006) and North American Nursing Diagnosis Association (2006).*
optimize the chance of the patient’s recovery and is therefore crucial to initiate in severely brain-injured patients recovering from coma.

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