The ICU Follow-Up Clinic: A New Paradigm for Intensivists

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Over the last 15 years the management of patients admitted in the ICU has changed dramatically. A growing number of well designed randomized controlled studies have been published, resulting in improved medical care and reduction of short-term morbidity and mortality. Despite these important achievements, little attention has been placed on the long-term complications of subjects discharged from the ICU. This review will focus on the most common long-term outcomes post-ICU admission, and will emphasize the importance of developing ICU clinics to provide comprehensive care to ICU survivors. We also describe our experience regarding the organization, functioning, and limitations for the development of our post-ICU clinic. *Key words: ICU; morbidity; mortality; long-term complications.* [Respir Care 2012;57(5):764–772.

Introduction

Intensive care medicine is a field that treats the most critically ill patients, those with higher risk of morbidity and mortality. Since the first case of hemodynamic resuscitation was reported in 1830, when intravenous fluid therapy was utilized in the cholera epidemic, critical care medicine has slowly evolved. In 1953, the first ICU was created, motivated by the poliomyelitis epidemic.[1] The field has

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rapidly advanced since 1970, when the first Swan-Ganz catheter for bedside monitoring was introduced.[2] Over the last 10 years, many studies have been published utilizing survival rate as the primary outcome parameter. Studies showing benefits with the utilization of low tidal volumes on mechanical ventilation,[3] the application of a conservative fluid strategy in patients with ARDS,[4] and the initiation of early goal-directed therapy in severely septic patients[5] have set our current standards when facing critically ill patients. Nevertheless, most of these trials have focused on the occurrence of primary outcomes during hospitalization, or up to 180 days after ICU discharge. At present, it is increasingly recognized that ICU survivors and their families suffer important long-term complications, which are usually underestimated by ICU practitioners.[6] In fact, some reports have associated short-term benefits (eg, conservative fluid management) with undesirable long-term consequences (eg, neurocognitive deficits). Other alterations observed in these patients, such as abnormal pulmonary function tests, reduced physical and emotional functioning, decreased quality of life (QOL), and increased use of healthcare resources deserve particular attention. This review will focus on the aforementioned post-ICU long-term outcomes. It will also discuss the importance of following these patients in specialized post-ICU clinics. These clinics should aim to identify evolving clinical problems, initiate appropriate treatments, and refer to specific consultants.

Long-Term Outcomes Post-ICU Admission

Prior reports revealed that about two thirds of ICU survivors experience important problems in various aspects of life, such as physical functioning, mental health, work issues, and limitations in everyday life tasks.[7] The following describes the most commonly reported long-term complications in ICU survivors.

Quality of Life

Studies addressing QOL in ICU survivors have relied on results of specific questionnaires that were designed to assess multiple life domains. Validated instruments, such as the 36-item Medical Outcomes Study Short-Form questionnaire (SF-36),[8] the EuroQOL (EQ-5D),[9] the Sickness Impact Profile (SIP),[10] the Nottingham Health Profile (NHP),[11] and the Research and Development Form 36 (RAND-36),[12] have been frequently utilized. Although these tools evaluate independent domains, they are also able to provide overall QOL scores. In clinical studies, the most commonly utilized tool has been SF-36.[6] This questionnaire assesses a total of 8 domains: physical function, role physical, bodily pain, mental health, role emotional, social function, general health, and vitality. The combination of the first 3 domains provides a "physical component" score, and the combination of the second 3 provides a "mental component" one. General health and vitality contribute equally to both components. A recently published review[6] included 53 studies addressing QOL post-ICU. The authors included articles that analyzed outcomes up to 10 years post-ICU discharge. The SF-36 instrument was utilized in 55% of these studies. Interestingly, the analysis revealed that long-term QOL depended largely on diagnostic categories. Patients admitted in the ICU due to ARDS, prolonged mechanical ventilation, severe trauma, and severe sepsis appeared to have worse QOL over time, compared with sex- and age-matched controls. Furthermore, even though the physical component improved slowly over the years, mental and emotional aspects declined even further. These findings are in agreement with another systematic review[8] that analyzed QOL in 7,320 ICU survivors. These patients presented lower QOL for all domains except bodily pain. Recently, some authors have specifically focused on outcomes in selected ICU groups.

A landmark publication[13] evaluated 109 survivors of ARDS at 3, 6, and 12 months after discharge. Notably, the scores for physical functioning and physical role were extremely low compared with an age- and sex-matched control population. The aforementioned scores improved over time from 3 to 12 months post-discharge. Nevertheless, at 1 year, scores for all domains except emotional role were below those of control subjects. Interestingly, physical domains improved in parallel with distance walked in 6 min, indicating the impact of muscle wasting, weakness, and polyneuropathy in the overall QOL post-ICU discharge. Noteworthy, the same group published a follow-up study[14] in which an ARDS cohort was evaluated 5 years post-ICU discharge. Consistently, these patients continued having persistent exercise limitations and reduced physical QOL. In both studies, 6-min walk distance was utilized as a marker of exercise limitation. The mean score on the physical component of the SF-36 at 5 years remained approximately 1 standard deviation below the control group. Fortunately, these domains improved over time, most notably among patients younger than 52 years old. Nevertheless, neither younger nor older patients returned to normal predicted levels of physical function at 5 years.

The evaluation of QOL in patients discharged from surgical ICUs has been gaining increasing attention.[15] A recent study assessed 834 patients who had survived 6 years post-surgical ICU discharge. Out of those subjects, 575 patients agreed to answer the EuroQol-6D (EQ-6D) questionnaire. The authors chose the aforementioned questionnaire because it combined the original QOL EQ-5D[9] and added questions on cognitive functioning. Interestingly, QOL on these patients was analyzed according to their surgical classification. Subjects with trauma, vascular, gastrointestinal, oncological, and general surgery were evaluated in a combined fashion and also independently. In

Table 1. Recovery of Lung Function Among Patients With ARDS During the First 12 Months After Discharge From ICU

	Percent of Predicted		
	3 Months	6 Months	12 Months
FVC	72	80	85
FEV_1	75	85	86
TLC	92	92	95
RV	107	97	105
D_{LCO}	63	70	72

TLC = total lung capacity
RV = residual volume
D_{LCO} = carbon monoxide diffusion capacity
Adapted from Reference 13, with permission.

comparison with the general Dutch population, the QOL for the entire study population was lower than average. Nevertheless, the QOL of patients with an oncological diagnosis remained almost equal when compared with the general population. It is possible that this overly optimistic conclusion has been the result of survivorship bias. As many patients with cancer might have not survived to answer QOL questionnaires, only those subjects who survived were naturally selected to participate in the study. Notably, patients undergoing trauma and vascular surgery were associated with long-term loss of their QOL. Once more, mobility and usual activity represented the most affected domains, in concordance with other studies discussed above.[14] In summary, these findings reveal that ICU-acquired weakness and immobility prevail as important contributors to long-term function and QOL outcomes in ICU survivors.

Lung Function

Long-term pulmonary function post-ICU discharge has been an area of growing interest, particularly in survivors of severe acute respiratory syndrome (SARS)[16,17] and ARDS.[13,14] The latter group was studied at 3, 6, and 12 months, and 2 and 5 years post-ICU discharge.[13] Patients had a mild restrictive pattern at 3 months post-ICU discharge. However, at 12 months, total lung capacity and FEV_1 progressively improved, reaching values of 95% and 86% of predicted, respectively. Carbon monoxide diffusion capacity (D_{LCO}) improved over 12 months, reaching a maximum of 72% of predicted. Six-min walk distance also improved. However, its value remained 66% of predicted at 12 months post-ICU discharge (Table 1).[13] Importantly, distance walked was mainly limited by muscle wasting and weakness, foot drop, immobility of large joints, and dyspnea.[13] Interestingly, the evaluation of this cohort of patients 5 years after discharge did not reveal further changes in pulmonary function parameters (FEV_1, FVC, D_{LCO}); however, distance walked in 6 min showed some improvement, reaching 76% of predicted.[14]

Further studies focused on pulmonary function in SARS survivors.[16] At 12 months post-hospital discharge, 30% of the patients had cough, 20% had sputum production, and 30% had shortness of breath. However, the group means of FEV_1, total lung capacity, and D_{LCO} were all within normal limits. It is noteworthy to mention that only 11 patients (12% of the subjects) required admission to the ICU. When the authors compared pulmonary function of patients who required mechanical ventilation with those who did not, there was no significant difference in the aforementioned parameters. Health status evaluated by the St George Respiratory Questionnaire (SGRQ) revealed that daily physical activities (activity score) and psycho-social functions (impact score) were impaired, compared with the population norms. A similar study also evaluated 117 SARS survivors[17] and revealed that at 3 months these patients had a normal median 6-min walk distance, reaching 81% of predicted. In most cases, FEV_1, total lung capacity, and D_{LCO} remained normal for the duration of the follow-up. Conversely, the subgroup of patients who required ICU presented evidence of restrictive disease at 3 and 6 months after discharge, normalizing their lung function 12 months later. These results mimic those reported in ARDS patients.[13] In conclusion, ICU survivors of pulmonary processes, such as ARDS and SARS, usually normalize their pulmonary function tests within a year. Exercise capacity, evaluated by 6-min walk test, may remain below normal values due to muscular weakness and/or ICU-acquired neuropathy. Additionally, prior studies suggest that patients who stay in ICU for longer than 14 days may experience one or more large joint contractures, affecting their exercise capacity.[18] Further investigation to prevent this debilitating complication is warranted.

Psychological Outcomes and Cognition

Psychological outcomes in ICU survivors were widely evaluated. Post-traumatic stress disorder (PTSD) was particularly addressed.[19,20] A study that evaluated 78 patients post-ICU discharge revealed that at 3 months, 14% met criteria for the diagnosis of PTSD.[21] The authors interviewed patients 3 months after ICU dismissal, utilizing the Davidson Trauma Scale (DTS) instrument for the assessment of PTSD.[22] This tool evaluates core aspects of PTSD, such as intrusive phenomena (eg, flashbacks), avoidance of the trigger event, and hyperarousal (eg, hypervigilance). Another prospective study evaluated the influence of social support during ICU stay on the incidence of PTSD.[23] After following these patients for 5 years, the authors concluded that family support might improve psychological outcome in this group of patients.[24] Interestingly, a recent study examined the effect of a diary outlining the details of

the patients' ICU stay in the development of PTSD.[25] Briefly, subjects admitted for at least 72 hours were included in this study. During the ICU hospitalization, healthcare providers wrote daily reports regarding the patients' experiences, and accompanied them with photographs. After 1 month post-discharge, these patients were given their diaries and evaluated 3 months later for the presence of PTSD. A control group received standard of care practice. Notably, the intervention group had 8% lower incidence of PTSD, compared with the control group. Despite this provoking result, many questions still remain, such as whether prior psychiatric conditions affected this outcome, and whether utilized standard of care practice can be generalized to other institutions. Another area of great interest has been sexual dysfunction among ICU survivors. A study performed in the context of an ICU follow-up clinic in the United Kingdom showed that 43.6% of ICU survivors reported sexual dysfunction.[26] Interestingly, this study evaluated 127 patients at 6 and 12 months post-ICU discharge. During this evaluation, patients were asked to complete a questionnaire specifically designed for the evaluation of sexual dysfunction,[27] as well as a survey validated for the detection of PTSD.[28] Notably, the presence of sexual dysfunction was not associated with sex, length of ICU stay, need of mechanical ventilation, inotropic support, need of hemodialysis, or tracheostomy. However, there was a significant association between sexual dysfunction and PTSD.

It is increasingly recognized that patients admitted in ICU may experience other forms of psychological distress. The presence of anxiety and depression has been particularly addressed.[29] Studies focused mostly on trauma patients revealed that certain risk factors, such as duration of mechanical ventilation, stay in ICU, unemployment, educational status, and pain memory, were related to the development of post-ICU depression and anxiety.[30]

Another outcome that has been gaining attention has been the presence of neurocognitive dysfunction post-ICU discharge. Current data suggest that neurocognitive impairment following ICU admission is common, and may persist up to 6 years post-discharge.[31] A study focusing on ARDS patients revealed that neurocognitive dysfunction occurred in 70% subjects at hospital discharge, in 45% at 12 months, and in 47% at 2 years post-discharge.[32] Another cohort presented similar results.[33] A study that assessed medical ICU survivors found a prevalence of neurocognitive dysfunction as high as 33% at 6 months post-discharge.[34] Memory is usually the most affected domain, followed by executive function and attention.[31] Interestingly, ICU stay, severity scores (eg, Acute Physiology and Chronic Health Evaluation [APACHE] II), duration on mechanical ventilation, and number of days on sedatives, narcotics, or neuromuscular blockers are not associated with cognitive alterations in this group of patients,[31] whereas duration of delirium is.[35] However, it is worth noting that many of the mentioned variables have been associated with delirium. Therefore, an indirect association between these variables and cognitive impairment might still be present. Other potential risk factors for the development of cognitive dysfunction were lately described, such as hypoxemia,[36] sepsis and cytokine mediation,[37] and glucose dysregulation.[38] Despite the aforementioned recognition of the importance of cognitive impairment after ICU stay, few patients are usually evaluated for this complication after ICU discharge. It is possible that this entity may remain undetected among providers, as dysfunction is often subtle and in certain circumstances affects only a few domains (eg, memory).[31] Perhaps the most important strategy in order to minimize long-term cognitive dysfunction might be its prevention. The application of the "ABCDE" bundle,[39] which consists of awakening (A) and breathing trial (B), choice of sedatives and analgesics (C), daily delirium monitoring (D), and early mobility (E), showed that mechanically ventilated patients were 3 times more likely to return to independent functioning at hospital discharge, and had shorter duration of delirium.[39,40] Recent reviews with detailed and extended information on cognitive impairment can be found elsewhere.[31,41]

Nutrition

A lot of effort has been recently placed on the importance of feeding critically ill patients. However, little attention was given to long-term nutrition care in ICU survivors.[42] Malnutrition in hospitalized patients has been associated with poor outcomes, manifested by nosocomial infections, prolonged stay, and mortality.[43] Despite this information and publication of various consensus statements,[44,45] ICU patients typically receive only 60–80% of the prescribed enteral energy. This is thought to be due to feeding intolerance, procedures, transportation, and hemodynamic instability.[46-48] A recent study[42] that evaluated adequacy of oral intake in critically ill patients revealed that oral intake on days 2 through 7 post-extubation remained suboptimal, with only 5–29% of the population consuming more than 75% of their caloric requirements. Furthermore, the assessment of body weight over 12 months in ARDS survivors showed that, upon discharge, these patients had lost 18% of their baseline body weight.[13] Notably, at 12 months these subjects were still 2–3% below their baseline body weight. Further research is needed on long-term nutritional outcomes post-ICU admission.

Polypharmacy

The Joint Commission has identified medication reconciliation prior to discharge as one of its patient safety objectives. As ICU survivors usually require care in dif-

ferent settings post-discharge, they are particularly vulnerable to experience medication problems such as polypharmacy. Hence, the Joint Commission goals may face some obstacles when applied to patients discharged from ICUs. A study found that 14.1% of patients older than 65 years old had medication discrepancy when discharge medication lists were compared with medications reviewed 24–72 hours post-discharge.[49] Among the reasons for these discrepancies, 33.9% were due to nonintentional nonadherence, 14.5% were due to conflicting information from different informational sources, and 16.1% were secondary to incomplete or inaccurate discharge instructions. The problem of polypharmacy correlates with age, comorbidity, disability, and the number of medications.[50,51] A study that included a geriatric population showed that the application of an algorithm to recommend drug discontinuation was not related to significant adverse effects or deaths.[52]

Complications in Family Members of ICU Survivors

Relatives of ICU patients usually stay for long periods of time by the bedside while patients are extremely ill. Despite the usual support provided by nurses, family members are usually traumatized by ICU experiences.[53] A randomized controlled trial allocated family members of ICU patients to an intervention that consisted on an ICU rehabilitation manual or usual care. The manual addressed areas such as nutrition, exercise, and techniques of relaxation. Assessments of anxiety, depression, and PTSD were performed at discharge, 8 weeks, and 6 months later. The authors utilized the Hospital Anxiety and Depression Scale (HADS),[54] which detects the presence of symptoms of anxiety and depression, utilizing cutoffs of 11 and over. For the detection of PTSD, the Impact of Events Scale (IES)[55] was used. No differences were observed between groups at 8 weeks and 6 months. Notably, 22–24% of family members had symptoms of anxiety at 6 months, and 49% of relatives fulfilled criteria for PTSD at that point.[53] Interestingly, these high rates of PTSD also correlated with high prevalence of PTSD in patients. A recent study aimed to assess risk factors for the development of PTSD and depression in family members of patients who died in ICU or were transferred out of the unit within 30 days.[56] Among the 226 relatives who were surveyed, PTSD and depression were found in 14% and 18.4%, respectively. In conclusion, anxiety disorders, PTSD and depression are common in caregivers of ICU survivors. Early evaluation of family members with eventual psychological intervention deserves further consideration.

Healthcare Utilization and Costs Post-ICU Discharge

Healthcare utilization, with its associated costs, represents an important and usually overlooked aspect after hospital discharge. A recently published study assessed trajectories of care and resource utilization in recipients of prolonged mechanical ventilation.[57] Out of 103 survivors, there were 150 readmissions over the course of 1 year. Notably, these readmissions occurred within 3 months post-discharge. There were a total of 457 transitions, which included transportations to several healthcare facilities such as long-term acute-care, skilled nursing, and inpatient rehabilitation facilities. Interestingly, over the course of 1 year, each patient needed a median of 4 transitions. In terms of costs, initial hospitalization accounted for most of them, however, transitions and transportations still represented a considerable amount of resource utilization. Given these facts, the development of ICU follow-up clinics, in which intensivists provide continuity of care from the ICU setting to the out-patient clinic, might impact healthcare resource utilization and readmission rate.

ICU Follow-Up Clinic

Usually, an ICU stay is considered successful if a patient survives to go to the floor. Little attention has been given to long-term outcomes after hospital discharge. In 1989, the Kings Fund report emphasized the need to look at both morbidity and mortality after critical illness.[58] Hence, a pioneering ICU follow-up clinic was started in Reading, United Kingdom. This service was termed "Intensive After Care After Intensive Care," and occurred for a half day, twice a month. The program followed those patients who remained in ICU for 4 days or more, and followed them up at 2, 6, and 12 months post- discharge. In a survey performed in the United Kingdom, 298 ICUs were consulted, asking whether they ran a follow-up clinic, and which patients were invited to attend. Two hundred sixty-six (89.3%) ICUs replied.[7] A follow-up ICU clinic was run in 30% of surveyed institutions, and over half of them were led by a nurse. The majority of clinics saw only patients who had been treated in ICU for 4 days or longer. Most clinics utilized a locally derived health-screening questionnaire (62% of clinics), as well as other validated QOL forms (41%). HADS and PTSD tools were used in 36% and 18% of programs, respectively. The survey also evaluated whether other healthcare services had a prenegotiated access. Fifty-one percent did not have other services. A clinical psychologist was provided in 30%; psychotherapy in 29%; ear, nose, and throat specialist in 13%; urologist in 10%; and dietitian in 2% of participating programs. The authors concluded that ICU follow-up clinics were not widely established in the United Kingdom. However, in those programs in which ICU follow-up clinics existed, a 4-point questionnaire administered to the patients revealed great satisfaction with these services. A recent pragmatic, nonblinded, multicenter, randomized controlled trial studied whether nurse led ICU follow-up programs improved outcomes in ICU survivors.[59] Two

hundred eighty-six patients were recruited, and half of them were allocated to the intervention group. Patients randomized to the intervention arm joined a physical rehabilitation program developed by physiotherapists. Patients in the control group were followed in accordance with standard clinical practice, which specifically involved follow-up appointments with their general practitioners. Subjects were assessed for psychological morbidity, requirement for specialist medical referral, and review of current drug treatment. Notably, nurse led ICU follow-up clinics showed no evidence of being effective or cost-effective. Nevertheless, many limitations were present in the study design. First, as the authors reported, the intervention did not account for other aspects of a patient's illnesses, such as delirium or cognitive impairment. Second, as the patient allocation was not blinded, it is possible that this study may have been subjected to sample selection bias, perhaps including more or less disabled patients in the intervention group. In this context, generalizability of the aforementioned results becomes cumbersome. Last, standard clinical practice for the control group was not defined, affecting its external validity. Despite recognizing that post-ICU care is still in its infancy, the following describes eventual services that could be provided in ICU follow-up clinics.

The ICU Follow-Up Clinic Model

There is no one accepted model for the delivery of ICU follow-up clinics. They may be led by a nurse or doctor, or a combination of both. They should include other members of the healthcare system, such as psychiatrists, physical therapists, respiratory therapists, social workers, pharmacists, and palliative care specialists.[60] A primary nurse-led approach is the most common, with 55% of the clinics utilizing this model.[26] In our institution the ICU follow-up clinic is led by a board certified intensivist, in collaboration with a nurse and pharmacist. The clinic functions on a weekly basis, for a half-day per week. At this time, only subjects who received mechanical ventilation for a minimum of 48 hours are followed, at 1, 3, 6, and 12 months post-hospital discharge. A standard visit consists of the evaluation of QOL, utilizing one of the validated tools mentioned above[6]; assessment of cognitive function, utilizing the Montreal Cognitive Assessment (MoCA) tool[61]; evaluation of pulmonary function tests, including flow-volume loops and 6-min walk test; generation of a medication reconciliation form; and weight assessment.

Physical and Psychiatric Evaluation

Based on the results of the physical components of the QOL questionnaire, patients may be referred to physical therapy. Prior reports suggested that physical training improves gait, balance, strength, flexibility, and endurance in patients surviving critical illness.[62] One study has evaluated physical rehabilitation during the ward phase post-ICU stay.[63] Interestingly, patients were given a self-help rehabilitation manual 1 week post-discharge from ICU. This strategy was supported by physical therapy follow-up visits on the ward, telephone support after discharge home, and clinic visits 8 weeks and 6 months post-hospital dismissal. Notably, patients included in this arm presented statistically significant improvement in SF-36 physical components score. Consequently, the United Kingdom National Institute of Clinical Excellence (NICE) recently published a clinical guideline entitled "Rehabilitation After Clinical Illness."[64] The guideline recommends a structured rehabilitation program that includes rehabilitation goals, a self-directed rehabilitation manual, and a contact point after discharge from ICU and hospital. The ICU follow-up clinic is possibly the ideal setting in which patients, physical therapists, and physicians may achieve the aforementioned recommendations.

The assessment of the QOL questionnaire, specifically its emotional component, is also utilized as a screening tool for the presence of psychiatric distress. In our practice, we refer to physical therapy and/or psychiatric assessment those patients with QOL physical/emotional scores that measure at least 1 standard deviation below the population norm. It is worth mentioning that the aforementioned practice lacks supporting evidence, and further research would be needed to assess whether it is associated with improvements in outcomes or not.

Cognition-Based Interventions

The MoCA tool is a brief cognitive screening tool with high sensitivity and specificity for detecting mild cognitive impairment.[61] Utilizing a cutoff score of 26, this tool presents a sensitivity and specificity of 90% and 87%, respectively. The importance of detecting mild cognitive impairment relies on eventual interventions that might change its progressing course. Cognition-based interventions may offer the opportunity to maintain or improve cognitive functions.[65] Cognitive training is an intervention that provides structured practice on tasks relevant to aspects of cognitive functioning, such as memory, attention, language, or executive function. This training can be offered in many modalities such as individual or group sessions, including paper or computerized modes. A recent meta-analyses published in the Cochrane Database[66] aimed to assess the effectiveness of cognitive training. Thirty-six randomized controlled studies were considered for analysis, including 2,229 patients. Patients with mild cognitive impairment presented significant training gains, compared with controls, particularly in the immediate and delayed recall (memory domain). Despite this encouraging information, these results should be taken cautiously, as in-

cluded studies varied enormously in regard to investigated domains, type and frequency of interventions, and outcome variables. Also, as the authors recognize, it was not obvious how the evaluation instruments were matched to the training contents. Therefore, whether cognitive training is useful, and which of its modalities bring the most benefits, remain open questions. The ICU follow-up clinic may provide the opportunity to advance our knowledge in this area.

Airway and Pulmonary Evaluation

Post-intubation tracheal stenosis complicates 10–22% of all intubated patients, depending on whether tracheostomy was needed or not.[67,68] A retrospective study evaluated 31 patients with post-intubation tracheal stenosis and aimed to describe its possible risk factors.[69] Notably, patients with tracheal stenosis had remained intubated for an average of only 5 days. Furthermore, the quantification of the stenoses revealed that tracheal lumens were affected in a range of 70–78% of their diameter. Prior studies showed the utility of pulmonary function tests and flow-volume loops for the detection of upper-airway obstruction.[70,71] In our clinic, pulmonary function tests are performed every visit to assess whether airway complications or lung abnormalities post-mechanical ventilation remain. Additionally, as few ICU survivors require oxygen therapy post-hospital discharge,[13] 6-min walk tests are routinely performed.

Medication Reconciliation Form

Despite the paucity of reports in the area of polypharmacy, it is not uncommon to encounter ICU survivors being treated with multiple medications. A study performed in a geriatric population revealed that a significant percentage of older patients experienced medication discrepancies after making the transition from hospital to home.[49] In this context, particular attention should be placed on the assessment of opioid and benzodiazepine dependence, as well as eventual withdrawal. The ICU follow-up clinic provides a proper setting to review and adjust medications and dosages. The presence of a pharmacist in each encounter adds an invaluable contribution by addressing adverse effects and interactions, and by reconciling medication lists in every visit. The effectiveness of this strategy requires further investigation.

Palliative Care and Social Worker Assessment

Involvement of palliative care services in patient care has been associated with better understanding of diagnosis and prognosis,[72] increased patient satisfaction, improved symptom control,[73] and decreased healthcare utilization.[72] Contrarily, a study performed in 11 hospitals, in which 131 healthcare providers were surveyed regarding their perception about palliative care services, revealed that most participants perceived this specialty as a type of care that focuses mostly on terminal diseases, facilitating end-of-life decisions, and involved in the care of "actively dying" patients.[74] Nowadays, palliative care specialists encourage a broader view of their specialty by focusing on symptom relief and promotion of QOL among subjects with life-limiting chronic diseases. Palliative medicine consultation in the context of ICU follow-up clinics may increase opportunities to address a variety of patient needs, such as psychological concerns, spiritual needs, physician-patient-family communication, and goals of care.

The role of social work in adult critical care was barely investigated. A systematic review of the literature aiming to investigate the role of social workers in ICUs showed only 12 articles associated with this topic, of which only 3 were clinical studies.[75] Most articles identified social workers as psychosocial counseling professionals, facilitators of communication between patients and families, and agents available to reduce family stress. Social worker participation in ICU follow-up clinics may facilitate the evaluation of family members of ICU survivors, and anticipate eventual complications commonly seen in these individuals.

Limitations in Delivery of Post-ICU Care

Unfortunately, many obstacles are faced when attempting to deliver post-ICU care. First, there is lack of supporting evidence showing its effectiveness. Second, financial constraints may limit the number of services provided or, eventually, their quality. Lack of source of funding may represent a key limiting aspect, as ICU clinics are not always included in the general ICU budget. Last, the United States is suffering an important intensivist shortage, which some authors describe as "dramatic, alarming, compelling, unprecedented, and threatening".[76-78] This scenario, with its incremental staffing reduction, may occlude further opportunities for the creation and development of these type of clinics.

Summary

In summary, ICU follow-up clinics seem intuitively to be important for both patients and relatives. Despite the fact that lack of supporting evidence and financial constraints still remain, there is now a growing understanding of long-term outcomes in ICU survivors. Further experience is needed to truly evaluate the impact of ICU follow-up clinics in long-term outcomes of ICU survivors.

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