Transitional Cares in Hematology: A Systematic Review

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Abstract

Background: Transitional care is constituted by a set of actions with the goal of ensure coordination and continuity of health care during the transition of a patient between different health settings. The aim of this model of care is to improve the outcomes of subjects discharged from the hospital with an elevated risk of re-hospitalization with an elevated resource consuming pattern of care. Several studies concerning outcomes of onco-hematological patients after discharge from the hospital for anti-neoplastic treatments have been published to define access criteria, feasibility and safety of domiciliary care during the chemotherapy-induced neutropenia.

Aim: To evaluate the impact of transitional care programs on re-hospitalization of discharged hematological to home from published randomized controlled trials.

Methods: Five databases have been searched by two reviewers. Results were screened to identify articles about adults admitted for treatment of hematological malignancies and discharged to home with comprehensive care programs or gold standard procedure. Controversies about including articles in the review were discussed with a third reviewer.

Results: No studies have been found that would respectfully the inclusion criteria, but two studies are considered for their relevancy.

Conclusions: Although many studies on transitional care are reported, we found evidence of efficacy of a comprehensive transitional care model to reduce the hospital readmission in onco-hematological patients. More research is needed in this field in order to define subsets of patients that could benefit from a comprehensive transitional care.

Keywords: Transitional care; Discharge patients; Hematological malignancies

Background

Transitional care is defined as “a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care within the same location. Representative locations include hospitals, sub-acute and post-acute nursing facilities, patients’ homes, primary and specialty care offices, and long-term care facilities” [1].

If transitional care is not well managed, the quality of the process and the safety of the patient in transition are at risk, resulting in re-hospitalization and poor health outcomes [1]. Hospital readmissions are expensive and often avoidable [2]. The adverse effects resulting from bad transitions can be prevented by the implementation of evidence-based and clinically effective interventions. To date, although several studies showed the importance of transitional care in improving health outcomes, few data are available about different models of transitional care and about different settings of transition [3]. Therefore, it is necessary to develop new and creative effectiveness-driven strategies [4] based on experimental studies demonstrating improved hospital delivery outcomes. In Italy, oncohematological diseases play an important role in terms of hospital admissions, complexity of management, and costs of prolonged hospital stay: for this reason we turned our attention to hematological transitional care. In fact, they affect different age groups; there are different forms, both in the number of cases diagnosed each year than in prognosis, with high survival rates. On the other side, new therapeutic approaches with targeted therapies are able to chronicize lymphoproliferative or myeloproliferative disease ensuring good quality of life to a high percentage of elderly people, also for previous incurable diseases. The increase of the medium to long-term control of these diseases (AIL 2013) led to increased costs for healthcare. To reduce re-hospitalization, complications, and costs of health care, assistance outside the hospital for hematologic cancer patients is a safe, well-accepted and efficient option, if there is hospital – territorial collaboration [5–12].

The purpose of our study is to summarize existing literature on randomized controlled trials (RCTs) assessing the efficacy of transition therapies implemented at discharge from the hematology department to home care (of the patient or caregiver), considering as outcomes re-hospitalization and access to the emergency service.

Methods

We conducted a systematic review of literature with the Cochrane Collaboration Method.

Inclusion Criteria

Only randomized controlled clinical trials were included. Participants were >16 years old, hospitalized for the treatment of hematologic neoplasia and discharged from hematology departments at home (own or caregiver). The treatment for the group of cases included structured treatment programs dedicated to patients with malignant hematologic pathologies who, at discharge from the hospital department, go to home (own or caregiver); such programs may include multidisciplinary teams, may be initiated during admission and may also include interventions through different technologies (telephone, telemedicine, etc.). The treatment for the control group included discharge from the hospital’s hematology department to the home (own or caregiver)
Vascular myelopathy is the most frequent myelopathy occurring during HIV infection, its prevalence varies from 20 to 55% according to autopsy series [7]. Its incidence is low [2]. It results from the intramyelinic vacuolation of the spinal cord [7]. It can be isolated or affect a patient with HIV encephalitis. Its diagnosis is pathological and remains elimination [2]. The clinical presentation is polymorphic and some histologically confirmed myelopathies remain asymptomatic. Clinical signs, which are typical only at the severe stage of the disease, are those of a spastic paraparesis with proprioceptive ataxia and occasionally genito-sphincter and erection disorders [7]. Clinical diagnostic criteria have been proposed by the American Academy of Neurology AIDS. The spinal cord MRI, whose interest is primarily to eliminate other causes of myelopathy, is usually normal. More rarely, it highlights T2 hyperintensities located mainly in the posterior columns. Sometimes in older and/or severe, the marrow is atrophic. Lumbar puncture (LP) is usually normal [7]. Treatment is based on ART that cross the hematencephalic barrier, always associated with symptomatic treatment (physical therapy, vitamin B12, analgesics and muscle relaxants) [7].

We consulted the following databases: Cochrane Central Register of Controlled Trials, MEDLINE, EMBASE, CINAHL, Science Citation Index e Web of Science. In order to identify non-indexed studies, we also conducted a gray literature research: Open Grey, Grey Literature Report, Joanna Briggs Institute, National Institute for Health and Care Excellence, ClinicalTrials.gov. We also revised bibliographies of all the studies included. There was no need to contact the authors of the studies for any clarification regarding the information provided. No time limits have been set for the studies studied. Two authors (FG and MGG), independently, conducted screening of titles and abstracts. Subsequently, the two authors, independently of each other, verified that full texts of the non-excluded articles complied with the inclusion criteria. Then we used CONSORT checklist to conduct a critical evaluation of the included studies. Finally, we create a flow chart to illustrate the selection process of the studies included in the PRISMA guidelines. Controversies were discussed with a third reviewer.

Research Methods

The research on MEDLINE led to 459 studies. Research through other sources led to the identification of 53 studies. Out of these 512 studies, 509 were excluded after title and abstract screening because they do not fulfill inclusion criteria. The full text of the remaining three studies was critically evaluated. In figure 1, it shows the selection process for studies. None of the three included studies fulfilled the inclusion criteria established in the research protocol; however, two studies [13,14] permit a careful analysis in order to evaluate effectiveness of transit therapies in the discharge of patients with hematologic neoplasms (Figure 2).

Faucher C, et al. Randomized study of early hospital discharge following autologous blood SCT: medical outcomes and hospital costs enrolled 158 participants aged 18 to 65 years. Patients affected by not leukemic hematological malignancies treated with high dose chemotherapy and autologous SCT have been included in the study and randomized to be discharged at day 0 after transplant at home with a caregiver available 24 hours and resident within 45 minutes of car from the hospital (case group) or to stay in hospital until full hematological recovery (as control group). Patients in the case arm were followed 1-3 times a week until the end of the study on a patient-outpatient basis after adequate caregiver and patient’s education. The study demonstrates that early discharge is safe and feasible, and it is highly dependent on social factors (e.g., availability of caregiver, distance between home and hospital).

Talcott JA, et al. Safety of early discharge for low–risk patients with febrile neutropenia: a multicenter randomized controlled trial enrolled 117 participants aged more than 18, outpatient at the time of enrollment, with low-risk fever (not indications of rehospitalization except TC > 38° and ANC < 500 μL) with chest x-rays and negative blood culture and resident within 2 hours road from First Aid. Patients were randomized to receive antibiotics at-in-patient regimen (controls) or to receive the same antibiotic treatment after early discharge at home (case) during home follow-up patients were treated with antibiotics until resolution of neutropenia and if afebrile. Daily nurse evaluation was warranted and medical evaluation every 2-3 days or in case of clinical deterioration. Daily intake of 2 liters fluid, full blood-count control and creatinine 2 times/week, and finally the execution of blood culture if recurrent fever were ensured. The study proved the safety of an outpatient antibiotic treatment and/or non-hospital care of patients, in the setting of “low risk” patients.

Results

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Discussions

The goal of our review was to evaluate the efficacy of transitional cares from hematological wards to patient’s home as presents in international literature. Although in the literature many studies about the importance of transitional care are present in the setting of hematological patients [5-12], we have not found RCTs evaluating their effectiveness in reducing hospital readmission.

The goal of the Faucher C, et al. study [13] was to evaluate the economic impact of an early discharge program after high dose chemotherapy. Primary outcome was the number of in-hospital days and the secondary outcome were the number of clinic
Table 1: Features of the included articles

<table>
<thead>
<tr>
<th>Article</th>
<th>Setting</th>
<th>Participants</th>
<th>Age</th>
<th>Eligibility</th>
<th>Cases</th>
<th>Controls</th>
<th>Endpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faucher C, et al. 2012</td>
<td>Hospital-hematology and home</td>
<td>158</td>
<td>18-65 years</td>
<td>- hematological malignancy (except acute leukemia) or a solid tumor</td>
<td>- Early discharge to home on the same day they had PBSC reinfusion</td>
<td>- Inpatient from DO until hematological recovery</td>
<td>- Primary: total number of days spent in hospital</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Indication of HDCRT with PBSC rescue</td>
<td>- Home treatment with antibiotic regimens</td>
<td>- Inpatient with antibiotic regimens</td>
<td>- Secondary: number of days of fever, infections, hematologic recovery, transfusions and real costs</td>
</tr>
<tr>
<td>Talcott JA, et al. 2011</td>
<td>Hospital-hematology and home</td>
<td>117</td>
<td>&gt;18 years</td>
<td>- Outpatients at participating sites with postchemotherapy fever (100.5°F) and neutropenia (absolute neutrophil count (ANC) less than 500/μL) that persisted after at least 24-hour inpatient observation - Radiograph and blood cultures without evidence of infectious - Ability to use emergency medical assistance - Residence within 2 hours by surface transportation to a hospital - Permission of the patient's treating physician - Informed consent</td>
<td>- Home treatment with antibiotic regimens</td>
<td>- Primary: any medical complication during period, defined as any medical event requiring urgent intervention</td>
<td>- Internal: hospital readmissions, clinical complications, patient's safety and health system's costs, it is possible to care at home patients with specific multidimensional characteristic and with a strict collaboration between hospital and territorial health services (5,9)</td>
</tr>
</tbody>
</table>

The patient could choose to remain in hospital to continue broad spectrum antibiotics or to continue antibiotics at home, supported by a multidisciplinary team. This approach is modern and patient centered but impairs the power of the randomization.

Considering the primary outcome, the results of the Talcott's study underline that the transitional care project for early discharge in hematological patients with malignancies is safe, realistic and efficacy only if the patients have a febrile neutropenia with low-risk and in suitable outpatient settings with appropriate surveillance for unexpected clinical deterioration.

Domiciliary care can reduce patient's hospitalization that could be dangerous for hematological patients (12). To reduce hospital readmissions, clinical complications, patient's safety and health system's costs, it is possible to care at home patients with specific multidimensional characteristic and with a strict collaboration between hospital and territorial health services (5,9).

**Limitations**

The present review considered only study in English and Italian language.

**Conclusions**

The absence of RCTs evaluating the effectiveness of care interventions aimed to the transition for hematological patients from hospital to home compared to hospital readmissions, suggests that experimental studies are needed to measure this outcome. Randomized controlled trials should therefore be carried out in order to assess whether appropriate transition care programs are
effective in reducing hospital readmissions and subsequently, based on these, to create consistent guidelines for the clinical practice in the different settings (hospital, home, outpatient resources) according to scientific evidence.

Oncohematological patients Cost and cost-effectiveness studies also emphasize the importance of transition care for this category of patients; indeed, they have suggested that home care is an efficient service for these subjects because it reduces the inadequate use of the beds and the cost of treatment compared to traditional hospital admissions [15]. Various home care programs, besides satisfying both patients and their family members, have proven to be cheaper than hospital care. However, to provide home care services tailored to the specific needs of people with hematologic neoplasms it is important to carry out a detailed analysis of the various factors contributing to the end-related costs of home care and how such cost drivers differ in relation to the characteristics of the assisted. In fact, patients with hematologic diseases exhibit clinical features (palliative chemotherapies, transfusion needs, high frequency of infections and hemorrhages, etc.) that require specialized home care services [16]. In this regard, a further aspect that could be investigated is the social point of view which includes non-medical direct costs (e.g. transport costs) and indirect (e.g. caregiver productivity) in order to assess the effects of implementation of transition care programs. These results could require funding for the creation of programs based on the specific needs of hematologic patients at the different clinical stages of their disease in order to avoid inappropriate hospitalization and early hospitalization.

Conflicts of Interest

There are no conflicts of interest.

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