



Interdisciplinary Team Model in Spinal Unit: Piacenza Experience from Theory to Practice

Ciardi G^{1,2}, Ricci E^{1,2*}, Lamberti G^{1,2} and Casati V¹

¹Department of Rehabilitative Medicine, Azienda Usl Piacenza, Italy

²Physiotherapy Degree Course, University of Parma, Italy

*Corresponding author: Emanuela Ricci, Department of Rehabilitative Medicine, Azienda Usl Piacenza, Italy, Email: emanuela.ricci@unipr.it

Editorial

Volume 6 Issue 1

Received Date: April 20, 2023

Published Date: May 04, 2023

DOI: 10.23880/aphot-16000246

Editorial

Interdisciplinary team model (ITM), in medicine, helps clinicians in the management of most complex conditions, in which evidence suggests that a combined approach improve patient's outcome and quality of cares [1,2]. ITM has now become a standard in different expertise area, and is increasingly the subject of Nice guidelines [3,4] and best practice documents [5-8].

In a ITM each member, while maintaining his own particularities in approaching to the patient, integrates with other professionals by agreeing on communication and treatment strategies; thus, modes of decision-making change, becoming common on the basis of shared objectives [9]. Scientific literature has extensively described the cornerstones of ITM approach [10].

1. Group management (leadership)
2. Effective communication
3. Personal growth and development of team members
4. Availability of adequate resources
5. Knowledge sharing
6. Mutually supportive climate
7. Clarity of objectives
8. Quality of standards of care
9. Respect for role

In rehabilitation, too, ITM approach enjoys numerous testimonies in the literature, and today represents the central axis around which care pathways are centred. Extensive scientific evidence, to date, recommends ITM approach for different conditions: management of chronic pain [11,12], rehabilitation of patients with oncological and neurological pathologies [13-16], management of the frail elderly [17]

and children rehabilitation [18].

ITM represents a basic element in the management of the spinal cord injury patient, since the sharing of knowledge, management of high rehabilitation complexity, and the orientation towards a continuous 24-hour rehabilitation needs an interdisciplinary decision-making approach. Even if each professional is mainly dedicated to his expertise intervention, a simultaneous and shared action of several operators is needed for the proper management of complex spinal cord injury associated problems. In this article we'll briefly expose our work experience in Spinal Unit, summarizing three main interdisciplinary team (IT) interventions.

In our experience at Azienda Usl Piacenza, ITM approach foresees the involvement (depending on the patient's level of injury and degree of autonomy) of a number of professionals: physiatrist, physiotherapist, nurse, speech therapist, neuropsychologist, social worker, occupational therapist. IT acts in each rehabilitation activity, sharing the proposals during meetings and briefings, and identifying the objectives and the figures involved. We will focus, in particular, on some moments in which the simultaneous action of the team members is evident: management of autonomic dysfunctions, management of the tetraplegic patient's hand, management of spasticity.

IT in Autonomous Dysfunction

The path of care and rehabilitation of autonomous problems associated with spinal rod injury (bladder / bowel

dysfunctions) in our reality is entrusted to a specific service, which takes charge of the patient during hospitalization; the service includes a physiatrist specialized in the treatment of autonomous dysfunctions and three trained nurses. Once the type of bladder and bowel damage has been defined through anamnesis, clinical examination, evaluation scales as NBD score/Qualiveen questionnaire, urodynamic examination intestinal tracer's study [19] a personalized pharmacological and rehabilitative treatment is set, to be continued throughout the hospitalization. So other professionals join IT: ward nurse, physiotherapist and occupational therapist. In fact, if the patient is routed to intermittent self-catheterization, he will perform a specific in-room training with nurses, to learn the correct execution of the manoeuvre; physiotherapists and occupational therapists will focus, instead, on achieving maximum autonomy in chair-bed and chair-toilet transfers, in order to make the patient able to perform self-catheterization in different postures and circumstances. Similarly, for patients with indication to the permanent catheter, all figures of IT focus on autonomy in the management of the bag during activities of daily living and transfers, regularity in emptying, prevention lower urinary tract infections. Similarly, for neurogenic bowel, the patient will be able to perform a specific training for evacuation management with the ward nurse, and will focus on autonomy in movements with physiotherapist and occupational therapist to perform sitting manoeuvres. The team, periodically, shares patient's acquired skills and reviews treatment objectives.

Management of Tetraplegic Hand

Hand management in quadriplegic patients is a real challenge for IT, and requires a 24-hour management. The first evaluation of motor skills is performed by physiatrist through ASIA scale [20], defining neurological/ motor/ sensitivity levels, and if a complete/incomplete injury is occurred. Physiotherapist, on the other hand, specifically verifies the strength, elasticity and articulation of the upper district. Patients with complete lesions between C5 and C7 may have indication to the "functional hand" protocol. This modality, introduced for the first time in 2000 by CNOPUS [21] (national assembly of spinal unit operators) provides, depending on the level of injury and preserved muscles, the creation of a muscle shortening of finger flexors, in order to obtain the ability to perform light grips and achieve greater fine motor skills. Indication and tools used (brace/patches, patches only) depends on innervation of key muscles: brachial biceps only (level C5), radial extensor of the carpus (level C6), simultaneous presence of both and brachial triceps (level C7). In patients with higher injury level (C5) physiotherapist and occupational therapist define hand closure with patch and position brace in 24 hours: in particular, positioning is performed on the first day for a few

hours, in order to verify oedema or skin problems onset. If the patient does not develop adverse effects, the hand is closed completely from the next day, except for hygiene and physiotherapy treatment. In this phase collaboration between nurse and physiotherapist is maximum, both for the prevention of skin damage, pain and spasticity: during the afternoon and at night, in fact, ward nurse checks the hand and, if necessary, evaluates to remove the bandage reporting the next day to the physiotherapist during the briefing. This management continues until muscle shortening is created (in our experience up to six months), and a specific mobilization and hygiene strategies for hand and wrist are employed: open the fingers with flexed wrist/ close the finger when wrist is extended.

All improvements in hand function are verified with the physiatrist, and re-evaluated by physiotherapists through Arat score/box and blocks test/ Fugl-Meyer score [22].

Spasticity Management

Spasticity is a severe life-long sign of spinal cord injury, and requires an integrated approach; in traumatic spinal cord injury spasticity development is often delayed to "automatism phase". In our experience evaluation of spasticity is performed firstly by the physiatrist with Modified Ashworth scale (MAS) [23], which defines severity and localization. Physiotherapists, during treatments, repeat MAS to explore spasticity worsening/improvement and responsivity to rehabilitation. IT, during briefings, decide the best curative approach, which can involve: drugs; postural cares; exercise; relaxing techniques; standing; hydrokinesiotherapy; occupational therapy; bracing. Severe forms of spasticity could require major interventions, as nerve blocks or intrathecal therapies; IT members, in every case, play a central role in an early and continuous intervention aimed to "break" spasticity chain during the day. Physiotherapist define his rehabilitation plan, integrating stretching, active exercise, hypertonia-inhibiting postures, active and passive mobilisation, core stability strengthening, neuromuscular facilitation, early therapeutic standing.

Ward nurse, instead, controls the aligned posture in bed and in wheelchair during the day, ensuring safe and helpful positions for the patient in performing activities of daily living. Occupational therapist, moreover, studies the best wheelchair posture and the most useful aids for patient comfort, and carries out functional treatments aimed at the execution of movement through compensatory strategies. An integrative figure in IT, the hydrokinesiotherapist, execute swimming pool treatments, in order to take advantage of the beneficial action of hot water on reflex spinal cord circuits. The entire IT periodically re-discusses the effectiveness of the treatment and any corrections to be made.

Conclusion

ITM model, in our experience, in a mainstay in spinal cord acute rehabilitation, because it allows the integration of complementary treatment modalities, with careful supervision of patient's conditions and complications development; this is in agreement with scientific literature, which supports the effectiveness of this modality [24-26]. Indeed, each practitioner, from his/her own specific professional perspective, brings proper contribution to the common goal, raising the level of care and providing a more effective and personalised rehabilitation.

References

1. Andreatta P, Marzano D (2012) Healthcare management strategies: interdisciplinary team factors. *Curr Opin Obstet Gynecol* 24(6): 445-52.
2. Ciemins EL, Brant J, Kersten D, Mullette E, Dickerson D (2016) Why the Interdisciplinary Team Approach Works: Insights from Complexity Science. *J Palliat Med* 19(7): 767-770.
3. NICE (2022) Clinical Guidelines. COVID-19 rapid guideline: managing COVID-19 National Institute for Health and Care Excellence, London: National Institute for Health and Care Excellence.
4. NICE (2023) Delirium: prevention, diagnosis and management in hospital and long-term care National Institute for Health and Care Excellence Guidelines. London: National Institute for Health and Care Excellence.
5. Chou R, Gordon DB, de Leon-Casasola OA, Rosenberg JM, Bickler S, et al. (2016) Management of Postoperative Pain: A Clinical Practice Guideline From the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council. *J Pain* 17(2): 131-57.
6. Schaper NC, Netten JJV, Apelqvist J, Bus SA, Hinchliffe RJ, et al. (2020) Practical Guidelines on the prevention and management of diabetic foot disease (IWGDF 2019 update) *Diabetes Metab Res Rev* 36(1): 3266.
7. Hinchliffe RJ, Powell JT (2013) Improving the outcomes from ruptured abdominal aortic aneurysm: interdisciplinary best practice guidelines. *Ann R Coll Surg Engl* 95(2): 96-7.
8. Ranhoff AH, Saltvedt I, Frihagen F, Raeder J, Maini S, et al. (2019) Interdisciplinary care of hip fractures.: Orthogeriatric models, alternative models, interdisciplinary teamwork. *Best Pract Res Clin Rheumatol* 33(2): 205-226.
9. Singh R, Küçükdeveci AA, Grabljevec K, Gray A (2018) The role of Interdisciplinary Teams in Physical and Rehabilitation Medicine. *J Rehabil Med* 50(8): 673-678
10. Nancarrow SA, Booth A, Ariss S, Smith T, Enderby P, et al. (2013) Ten principles of good interdisciplinary team work. *Hum Resour Health* 11: 19.
11. Gatchel RJ, McGeary DD, McGeary CA, Lippe B (2014) Interdisciplinary chronic pain management: past, present, and future. *Am Psychol* 69(2): 119-130.
12. Holmner PE, Fahlström M, Nordström A (2013) The effects of interdisciplinary team assessment and a rehabilitation program for patients with chronic pain. *Am J Phys Med Rehabil* 92(1): 77-83.
13. Le Danseur M (2020) Stroke Rehabilitation, *Crit Care Nurs Clin North Am* 32(1): 97-108.
14. Pundlik J, Perna R, Arenivas A (2020) Mild TBI in interdisciplinary neurorehabilitation: Treatment challenges and insights. *NeuroRehabilitation* 46(2): 227-241
15. Lexell EM, Flansbjerg UB, Lexell J (2014) Self-perceived performance and satisfaction with performance of daily activities in persons with multiple sclerosis following interdisciplinary rehabilitation. *Disabil Rehabil* 36(5): 373-378.
16. McNeely ML, Dolgoy N, Onazi M, Suderman K (2016) The Interdisciplinary Rehabilitation Care Team and the Role of Physical Therapy in Survivor Exercise. *Clin J Oncol Nurs* 1: 20.
17. Saltz CC (1988) The interdisciplinary team interface between geriatrics and rehabilitation medicine. *Adv Clin Rehabil* (2): 132-54.
18. Taczała J, Wolińska O, Becher J, Majcher P (2020) An Interdisciplinary Model of Treatment of Children with Cerebral Palsy in Poland. Recommendations of the Paediatric Rehabilitation Section of the Polish Rehabilitation Society. *Ortop Traumatol Rehabil* 22(1): 51-59.
19. Tate DG, Wheeler T, Lane GI, Forchheimer M, Anderson KD, et al. (2020) Recommendations for evaluation of neurogenic bladder and bowel dysfunction after spinal cord injury and/or disease. *J Spinal Cord Med* 43(2): 141-164.

20. Kirshblum SC, Burns SP, Biering-Sorensen F, Donovan W, Graves DE, et al. (2011) International standards for neurological classification of spinal cord injury (revised 2011). *The journal of spinal cord medicine* 34(6): 535-46.
21. Valsecchi L, Ruth J, Cassinis A (2000) Il Posizionamento Dell'Arto Superiore E La Mano Funzionale. *Linee Guid Elabor dal CNOPUS (Coordinamento Naz Oper Prof delle Unità Spinali)*1-13.
22. Prange-Lasonder GB, Alt Murphy M, Lamers I, Hughes AM, Buurke JH, et al. (2021) European evidence-based recommendations for clinical assessment of upper limb in neurorehabilitation (CAULIN): data synthesis from systematic reviews, clinical practice guidelines and expert consensus. *J Neuroeng Rehabil* 18(1): 162.
23. Harb A, Kishner S (2022) *Modified Ashworth Scale* Stat Pearls. Treasure Island (FL): StatPearls Publishing.
24. Moulin P, Gohritz A, Meunzel J (2014) Spinal cord injury: still an interdisciplinary challenge [corrected]. *Orthopade* 43(7): 625-635.
25. Rathore FA (2021) The Impact of Interdisciplinary Spinal Cord Injury Rehabilitation on Improving Neurological Outcomes. *Global Spine J* 11(5): 817-818.
26. Nas K, Yazmalar L, Şah V, Aydın A, Öneş K (2015) Rehabilitation of spinal cord injuries. *World J Orthop* 6(1): 8-16.

