Post Acute and Long Term Care: online web based system of data management

National Network for Integrated Continuous Care Portugal – RNCCI
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Background
Benchmarking and research are essential for post acute and long term care. The use of an integrated tool for bio-psychosocial evaluation implies an extensive data analysis as well as data pertinent to management. Registration on paper needs further construction of data bases to analyze results.
Heinemann refers that critical research needs include developing validated measures, standardizing measures and timing of routine measurement and quality assurance purposes across sites of care, examining differences in content and processes of care both within facilities of the same type and across types of facilities, identifying patient characteristics that vary by region, cultural characteristics, and referral patterns and implementing a ''strategic plan for effectiveness research'' that is characterized by collaboration between health authorities, researchers, and care sites *(Heinemann AW, 2007).*
Although the individual aspects of health and social care services for people who depend on continuous support are now an area of extensive research in many countries, the concepts, indicators and models for international comparisons and for the identification of good practice across countries are still very much in their infancy. Even at a national level, methodology and measurement is often deficient to bring these aspects or elements together *(Health systems and long-term care for older people in Europe, 2008)*.

Objectives
To develop a paper-free on-line web based system of data management for the National Network for Continuous Integrated Care (RNCCI), that allows on line registration of the evaluation made with the integrated bio-psychosocial tool, and the registration of data related to referrals from hospitals and primary care and admissions to RNCCI, that allow real time results, pertinent to management and for professionals.

Methods
Software prototyping (allows continuous improvement through feed-back from users) is the basic development ongoing methodology. The web-based solution has a relational database management system to allow queries and different reports models and different access levels.
There was a focus on professional training related to the IT tool and registration. There are online reports concerning the different parameters registered.
The referencing management system - *GestCare CCI* - was developed on the premise of becoming a technological solution that, involving the registration of information related to all the stages of the admission and users referencing route in RNCCI, should:

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- Provide, to the various stakeholders data recording instruments, as well as access to all information relevant to the fulfilment of their organizational role in the referencing circuit - providers, EGA (hospital discharge management teams / CS (primary health care centres), ECL (local coordination teams), ECR (regional coordination teams) and UMCCI (Mission Unit for Integrated Continuous Care – National Coordination);
- Know, on schedule, the volume and characteristics of reported needs and the saturation of the Network (time, volume and level of decision);
- Identify possible bottlenecks associated with organizational profiles found in the RNCCI operation.

In terms of referencing process of the National Network for Integrated Continuous Care (RNCCI) presupposes the existence of four operational levels, corresponding to EGA and CS, ECL, ECR and Care Providers. There is a fifth level, focused on monitoring and regulation, fulfilled by UMCCI.

The referencing circuit of a given patient begins with his enrolment in *GestCare CCI* (creation of an episode), responsibility assumed by an EGA or CS. As soon as the patient's process is considered to be sufficiently documented, so that an assessment in terms of admission criteria to the network and proper identification of the type of care appropriate to the needs of the patient can be carried out, the case is transferred (via *GestCare CCI*) to the ECL authority so that it can assess the existence of the criteria and the adequacy of the typology proposed by EGA / CS.

The function of the ECL - Local Coordination Team associated with the patient's preferential home address (ECL-PA) is, after the initial proposal validation with or without corrections, to refer the patient to the ECR so that a vacancy is identified assigned to the patient.

Once this situation occurs, the patient's record is referred to the ECL, which speaks to the identified Carer, to proceed with admission, as has mentioned above.

The description given is used to justify two primary needs. The first is that the system has to be available anywhere and at any time, providing updated information to those who need it. This immediately implied the choice of a web-based solution. The second, equally important, was the need to integrate into *GestCare CCI*, the management work-flow previously described which led to the creation of the system's backbone.

In addition to meeting these two needs, which are merely the first step in fulfilling the given goals, it was necessary to identify, develop and implement the different assessment modules that allow the characterization of the patient's overall status, in order to provide the kind of care most appropriate to the patient's needs, among the various possibilities offered by the RNCCI. To better meet these needs and their rapid evolution, we chose to use prototyping as the development methodology. In this sense the main objective is to allow users to evaluate form and function, gathering their feedback earlier in the project, rather than having to interpret and evaluate the solution based on descriptions.

Likewise, in order to facilitate research and generate essential information for proper monitoring and evaluation of the Network's performance and its various stakeholders, the current solution (web-based) has a relational database management system and different access levels.

Results

Its implementation began in the first trimester of 2008 on a voluntary basis with continuous engagement of professionals. Nowadays all the referrals are made online allowing characterization of hospital management of discharges to RNCCI, characterization of the users referred allowing monitoring of adequate referrals as well as individual parameters registered with the integrated tool for bio-psychosocial evaluation and the monitoring of the outcomes related to deliver of care.
Since its implementation there are 61.401 registries on the system.

At the moment, *GestCare CCI* consists of several application modules that allow recording and history storage:

- ECR - characterization
- ECL - characterization
- EGA/CS - characterization
- Providers - characterization
    - Contract (depending on the type and location)
        - Contract History (all revisions that occurred)
- Patient ID
    - Episode (in RNCCI)
        - Medical Evaluation
        - Nurse Evaluation
        - Social Evaluation
        - Assessment - Others (rehabilitation medicine, physiotherapy, psychiatry, psychology, occupational therapy, etc ...)
        - IAI – Bio-psychosocial Evaluation Method
        - Pressure Ulcer Risk Evaluation (Braden, B. J. 2007)
        - Pressure Ulcers characterization tool
        - Falls Risk Evaluation (Morse, J M. 1997)
        - Pharmaceuticals (consumption)
        - EAD – Diagnostic Tests
        - Bandages and dressings (consumption)
        - Hospital/Nosocomial Infection (Healthcare-Associated Infections)
        - Contribution Calculation (Social Security)
        - Pain Evaluation
        - Discharge Note
        - Diabetes Assessment
        - Adverse Drug Reactions Notification
        - Acute exacerbations

In order to ensure proper implementation and maintenance of the system, some additional services are provided, including:

Help Desk - Ensure the safe and effective guidance to the various users of the system. In order to cover the period of operation of the various institutions, a person per day should be assigned to this task *(8 hours x 5 days).*

Training - The correct use of the system by those involved in the National Integrated Network of Continued Care presupposes that they are familiar with and able to work with the system. In this context, we consider the training of new entrants (new units / contracts, new EGA / CS or ECL) a key factor to the correct operation of the Network. Likewise, update sessions are provided, for those who already use the RNCCI and that, due to the implementation of new features, require additional knowledge.

The Maintenance / Management System consist of:

- Verification of data consistency
- Creation of new contracts, users and entities
- Correction of abnormal situations (data)
- Correction of deficiencies (System)
- Backup execution and monitoring
- Security updates
- Performance tests
- Performance updates
- Monitoring system status

There is ongoing development of new features.

Conclusion/Application to practice

This data management system allows having real time results at a national, regional, local, and unit level, making benchmarking possible to obtain with a large number of registries. The use of similar methodologies will allow international benchmarking and would contribute to research in post acute and long term care

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