Replacing Paper with Digital Recording

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Addressing the needs to achieve the highest standards at multidisciplinary team meetings at the Stroke Unit of Broomfield Hospital, an electronic version is applied instead of the traditional paper model. This is to ensure that patients within the unit are receiving appropriate care and their progress is monitored throughout their entire journey. This also enables the stroke team to retrieve old information anywhere in the hospital, electronically, from previous documentations to compare progress of rehabilitation. The electronic model also helps when assessing readmission or those who attend the stroke clinics to clarify new onset changes from residual weakness. The tool kit estimates Barthel Index score for activities of daily living and Rivermead Mobility Index for physical capacity assessment weekly as the team attending the meetings. The goals from all disciplines, physiotherapists, occupational therapists, speech and language therapists, and nurses are clearly documented along with patient cognition, emotion, and perception. This initiative commenced in late April 2013 and the first clinical outcome assessments performed at the beginning of September 2013, enabling the stroke team to assess rehabilitation activities and achievements. Front-line staff expressed satisfaction with the initiative model, which successfully managed to monitor and analyze the rehabilitation activities within the stroke unit. **Key Words:** Stroke—multidisciplinary team meeting—rehabilitation—E health.

Introduction

Stroke mortality rates have improved significantly since stroke units were established and thrombolysis was introduced.[1] Stroke rehabilitation requires a multidisciplinary approach with targets to overcome neurologic deficits and complications. National guidelines recommend[1] screening stroke patients for transfer, pressure area risk, continence, vision, communication, and nutrition. To monitor activities and process achievements, it is recommended to use reliable index scores, for example, National Institution of Health Stroke Scale and Barthel Index (BI) score.

In addition to the medical and therapists' goals, each patient in the stroke unit has to be assessed for cognition, emotion, and swallowing on a regular basis. Patients, by the end of the inpatient rehabilitation, are provided with a plan for returning to work and receiving long-term health and social support.[1] Trust achievements across the country are monitored and regular surveys are mandated for all stroke units in Wales and England National Health Service (NHS) ensuring excellent service is delivered.[2] The monitoring system's National Sentinel Stroke Clinical Audit followed by Sentinel Stroke National Audit Programme reviews the patient's entire journey. All patients have to be screened for swallowing, physiotherapy, occupational, and speech and language therapists' input within 72 hours. The other points that are stressed in Sentinel Stroke National Audit Programme are assessment for continence, communication, nutrition, mood, and cognition.[3]

Group working is a core practice in stroke medicine and geriatric medicine in general. The team consists of a mixture of expertise and skills allowing for interdependent work of intensive clinical management and rehabilitation. Regular meetings between the disciplines are to ensure best quality of care for stroke patients.[4]

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Received December 27, 2013; revision received June 20, 2014; accepted August 1, 2014.

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1052-3057/$ - see front matter

http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2014.08.003

Table 1. *Questionnaire*

(1) Have you received training in using the system for example, step-by-step, in house training, face to face?
(2) Do you understand the outcome measures and goals?
(3) Is it user friendly?
(4) Is it efficient in practice?
(5) Dose it promote communication among the attendees?
(6) Does it facilitate the MDT's decision making process?
Other comments……

Abbreviation: MDT, multidisciplinary team meeting.

Multidisciplinary team (MDT) meeting rooms should be prepared and equipped with necessary tools such as adequate technology to check results or facilitate reliable communications.[5,6]

Currently, at the Stroke unit of Mid Essex Hospital Trust, there is an interdepartmental meeting once a week. Interdepartmental or interdisciplinary are all terms referring to a group sharing a common physical space. This is the most common MDT meeting model in geriatric medicine, which allows ideas and suggestions among health care professionals to be shared and to cross over into another space.[7] Therefore, an individual from a health-allied professional can advise, enforce, and express value in managing patients. The team implements an electronic, instead of paper, version in documenting the meeting events. Using scores of BI and Rivermead Mobility Index (RMI) for physical capacity assessment can monitor patients' progression in rehabilitation after stroke.

Documentation is always a concern in health care settings. Therefore, the electronic MDT (eMDT) model is initiated to enhance documentation and enable the retrieval of information. This also helps service monitoring and obtaining data for future studies.

Methodology

The proposal of using digital documentation instead of a paper version has been discussed among the team. Applying recognized scales and index is regarded as an essential step to having objective and concise documentation to assess progression within the stroke rehabilitation unit. This project targets patients with acute stroke and excludes those with general acute medical conditions and stroke mimics. Auditors studied all possible international scales that can be used in this context and agreed to apply BI score and RMI for physical capacity assessment. BI score consists of 10 items that measure a person's daily activities of living and mobility,[7] whereas RMI for physical capacity assessment is a measure of a person's capability related to bodily mobility.[8] BI score is regarded an essential tool to estimate personal care ability, which has been used widely in clinical rehabilitation researches. RMI for physical capacity assessment is widely accepted by physical rehabilitation studies and easy to apply in MDT meetings. In addition to the previously mentioned reasons, the wide usage of these scores in researches and rehabilitation projects will enable the stroke team to compare their outcome with national and international studies.

Table 2. *Details of discipline respondence*

Activity	Doctors	Therapists	Social services	Nurses
Training	4	5	0	0
Goal	4	5	1	8
Usage	4	5	2	5
Efficiency	4	5	1	6
Communication	4	5	1	6
Facilitate process	4	5	0	5

The program developed with the assistance of the Information Technology Department at Broomfield Hospital. Trainee doctors and therapists received face-to-face training in how to use, register information, and print out documents whenever necessary.

This new system cost nothing as it was done locally within the trust existing resources. My-SQL software program (used by Broomfield Hospital; Oracle, Redwood Shores, CA) is used for this purpose, and patient's demographic information was extracted from Trust PAS system. During the MDT meetings, junior doctors and therapists entered the data as discussion progress. The discussions are guided by the new scoring systems and allow further extension for each discipline. Three additional boxes are designated, one for each of medical team, nurses, and therapist (speech and language, occupational, and physiotherapists). There was no additional cost as mentioned before; therefore, the MDT team used existing desktops in the stroke MDT room.

Service Monitor

The first service survey included data up to the beginning of September 2013, 21 weeks after initiation of the project. There were 413 entries for 172 patients from 23 April, 2013, to 10 September, 2013, and 78 cases received more than a week of stroke rehabilitation. The aim of the first service monitor was as follows:

(1) Assess process outcome and feasibility. Therefore, a questionnaire (Table 1) was distributed to the whole stroke team at Broomfield hospital who were involved in the MDT meetings.
(2) Assess the functionality of this new model and its ability to capture informative data to assess the clinical outcome of the stroke rehabilitation ward. With the help of software, the data were transferred to Microsoft Access for analysis. Linear regression was applied to assess the relationship between length of stay and outcome of