

# Nurse initiated thrombolysis

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Coronary disease contributes to a high mortality and morbidity each year (Cowie, 2002). Thrombolytic therapy during elevated S-T segment elevation in acute myocardial infarction and new left bundle branch block (STEMI) has been found to have advantages in coronary disease management (Fibrinolytic Therapy Trialists Collaborative Group, 1994; Clare and Bullock, 2003) which include symptomatic delay and 30/1000 mortality reduction.

Evidentiary studies suggest that six-hour delay in thrombolytic treatment implicates significant reduction in the mortality rate of thrombolytic therapy recipients (i. e. 30/100 before 6 hour treatment to 10/1000 upon 13-18 hour treatment) thus invoking systematic methods on the management of cardiology department to reduce time delays (Fibrinolytic Therapy Trialists Collaborative Group, 1994).

The National Service Framework for coronary heart disease devised the 20 minute intervention (Department of Health, 2000) from the clinical onset of the disease, the so called ' door-to-needle-time', in response to heart malady. The door to needle time has been changed to 30 minutes as of April 2002 indicated for patients with myocardial infarction (Smallwood, 2004).

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To reduce the possible time delay and to reach the 75 % goal reception of thrombolytic myocardial infarction (MI) patients at 30 minutes, an alternative model, Phase III, were set by Coronary Heart Disease Framework (Department of Health, 2000) with an overall inclusion or additive roles of nurses that would cover initial assessment and administering thrombolytic therapy to uncomplicated myocardial infarction cases.

Nurse-initiated thrombolytic (NIT) practice is relatively new, and the studies, qualitative or quantitative in approach, are few. Most of the topics for NIT study would include NIT feasibility, reliability, and perceptive dimensions. In the following paper, there is an attempt to create a review of the different studies concerning nurse-initiated thrombolysis. Elucidation of roles and nurse's pivotal roles are deducted from the studies.

## **Assessment**

Quin et al. (1998) conducted a study on the assessment of coronary nurses' ability to determine patient suitability for the thrombolytic therapy using clinical and electrocardiographic standards and they found that majority of the nurses, 85 % of sample population, showed safe and appropriate management decisions. The study population was limited to only ten Coronary Care Units (CCUs) in Yorkshire and Northern England and the methodology and data collection consists of vignettes and questionnaire forms for finding out suitability of nurses decisions.

Andrews et al (2003) attempted to test track records of two acute chest pain nurse specialists (ACPNS) for 9 months within Accident and Emergency (A&E) Department of Diana, Princess of Wales Hospital and they found that the NIT

diagnosis and administration by ACPNS achieved a median door-to-needle time of 23 minutes compared to 56 minute fast track system thus indicating time reduction and over-all efficacy in thrombolytic therapy in the Coronary Care Unit.

Data obtained for tracking period from 91 patient records and 72 % (acute chest pain nurse specialists) ACPNS reception. A remarkable 51 % significant difference in patient proportion within 30 minute thrombolytic therapy was found between ACPNS and fast track system initiated by the on-call-medical-team.

Qasim et al (2002) conducted comprehensive analyses and compared statistical variances of door to needle times for patients with acute myocardial infarction amongst three phases (I: 1989-95; II: 2: 1995-7; 1997-2001) at Princess Royal Hospital in Telford, England. Their study indicated 9 %significant difference by patients treated within 30 minutes from Phase 1 (range 5-300 minutes) and Phase 2 (range 5-180 minutes) treatment audits.

Systematic clinical review showed 0% improper NIT administered by coronary care thrombolysis nurses from a population of 24 patients which indicate 100% NIT efficacy. CCU (Coronary Care Unit) thrombolysis nurses accomplished set requirements prior to NIT practice— F and G grades and electrocardiogram interpretation. Qasim reported that fast-track and NIT may provide for myocardial infarction and bundle branch block management.

Other studies similarly agreed on the adoptive role of nurses in thrombolytic treatment and suggested improvement in the coronary department by

focusing at A&E department to improved thrombolysis (Heatherington et al., 2002).

Loveridge (2004) on her study on the diagnostic interpretation of district general hospital (DGH)-, teaching house-, Coronary Care Unit (CCU)- and Minor Injury Nurses (MIU) nurses, indicated otherwise when she concluded that NIT is not feasible because of their lack of diagnostic skill and ECG (electrocardiogram) interpretation. Loveridge reiterated Savage and Channer's (2002) concerns regarding risk of rapid assessment which includes intracerebral hemorrhaging from inappropriate drug administration and misdiagnosis. She finally concluded that NIT is un-feasible and requires education and training, a developmental program to secure NIT practice.

### **NIT experiential dimension and ethics**

Humphreys and Smallwood (2004) counseled on the ethical aspects of nurse-initiated thrombolysis which focuses on the awareness and responsibility of NIT practice addressing related issues on the morality of professional practice and medical malpractice. Patient autonomy should always be considered and consent from the patients must always be obtained.

Nurse's perception or amicability towards NIT are positive in terms of attitude-orientation as indicated by the qualitative study conducted by Smallwood and Humphrey (2007) on thrombolytic agent administrators. Twelve nurses from a MidWestland Hospital in England that were authorized to administer thrombolytic agent were asked to complete an open-ended questionnaire on the expansive role of nurses on NIT.

The study suggested overall acceptability of NIT work and other major themes that emerged were perception of 'pressure' to deliver best practice and patient management under NIT conditions. Thrombolytic activity and the additive roles, as suggested by the results of the study were 'desirous' based on a personal motivation to do good for the patients and to reach professional growth.

## **Criticisms**

Nurse feasibility based from the limited collation of studies was generally 'agreed upon' strategy to reduce time delays in coronary management. The authors (Quin et al., Andrews et al., and Qasim et al.) concluded that nurse-initiated thrombolysis is a safe and effectual practice for MI infarction and STEMI but, it is noted that there were the statistical 'weakness' on the methods that they adapted. Most notable is that they all have an extremely limited sample population for the NIT nurses and the administered population (i. e. MI patients). Additionally, the studies were all focused on the speed of thrombolytic delivery and not on patient safety.

There are no studies yet constructed on massive or consolidated studies for the NIT nurses in the A&E and CCU departments. Although Loveridge attempted to compare feasibility of different departmental nurses for NIT, she adopted Quin's 'vignette' method and concluded that NIT is not feasible for the current clinical environment. In reality, although nurses may have positive outlooks for the NIT management and their expansive roles, more consideration should be made on actual NIT efficacy.

Aside from Andrews et al., there were no clinical studies yet on NIT which may determine actual field efficacy. On the level of practical practice, nurse initiated thrombolysis requires improvement in the nursing professional community. Methodologically poor studies on nurse-initiated thrombolysis indicate the need for further study of its' clinical outcomes and efficacy.

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