

# Concepts of professional practice for paramedics nursing essay



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This assignment will focus on the care pathways available for patients experiencing chest pain. It will examine the Myocardial Ischaemia National Audit Project (MINAP), the National Service Framework (NSF) for Coronary Heart Disease and the National Institute for Health and Clinical Excellence (NICE) clinical guidelines for assessment and diagnosis of a patient with recent chest pain. The rationale will be stated and focus will be on the implemented changes and how this impacts on the ambulance service. This essay will not mention any personal details or any identifiable information and therefore consent is not required.

The essay will discuss key concepts of the care pathway of the patient experiencing chest pain and how it affects the patient and the ambulance service. The essay will be divided into sections. The first will discuss the different policies in place, how they affect the ambulance service and are they achievable. The second issue to consider will be the different pathways available to the ambulance service when a patient presents with chest pain, exploring the ethical and clinical issues that they come up against from other healthcare professions. Then the third part will compare thrombolysis whether it be pre-hospital thrombolysis (PHT) or at the hospital and primary percutaneous coronary intervention (PPCI) highlighting the pros and cons of both procedures and if there is any potential gaps in the service. The fourth part will go on to describe what impact these changes has on the patient, the NHS and the ambulance service. Finally, some conclusions will be drawn as to whether or not the implementations have been successful locally/nationally in regards to meeting government plans set out by the NSF and NICE.

The rationale for choosing this pathway comes from the recent changes of how the NHS and the ambulance service treat a patient experiencing a cardiac event, the increase in pressure from the government and health authorities for the improvement of treatment and outcome for these patients. Patients' experiencing chest pain is very common and a myocardial infarction is a major cause of death and ill health, so it is important that a prompt diagnosis and appropriate treatment is optimum for the patient. According to the British Heart Foundation and the coronary heart disease statistics (2012) in 2010 180,000 people died from cardiovascular disease (CVD), 80,000 of these deaths were from coronary heart disease (CHD) and since 2002, these death rates have halved in England. They also stated that the decline in mortality from CHD over the past 20 years was due to the effectiveness of medical and surgical treatment.

MINAP is one of 6 national cardiac clinical audits that are managed by the National Institute for Cardiovascular Outcomes Research (NICOR), which is part of the Institute of Cardiovascular Science at University College London (UCL). NICOR is a partnership of several cardiovascular societies, including the Department of Health in England and the Welsh government and was established in 2006. The purpose for this was to provide information on quality and outcome of care provided to people with heart disease and to provide project management, technical infrastructure and statistical data for the national cardiac audits. MINAP records the great majority of patients having ST Elevation Myocardial Infarct (STEMI) in England and Wales but the statistics for No ST Elevation Myocardial Infarct (NSTEMI) patients are not accurate as some hospitals do not enter these figures. MINAP over the last

twelve years has made an important change to the way the management of a heart attack is implemented, it has introduced a policy to provide PPCI in cases of STEMI rather than thrombolytic therapy and to be performed as soon as possible: within 90 minutes of arrival at hospital (door-to-balloon time) and within 150 minutes of a patient's call for help (call-to-balloon time). A Study by Antman (2008) shows that the longer the delay to PPCI from the moment of coronary occlusion causes curvilinear damage not linear damage to the myocardial muscle and that the first few hours after the onset of infarct is crucial to the amount salvageable and where the phrase Time is Muscle comes from. This holds true whether the reperfusion is attempted by thrombolysis or PPCI. MINAP (2012) first reported statistics for patients who received PPCI within 120 minutes from calling for help: in England 62% and 79% of these patients were admitted directly to a Specialist Cardiac Unit. According to Antman et al (2004) and ACC/AHA guidelines, one in three patients who experience STEMI will die within 24 hours of the onset of ischemia and many of the survivors will suffer significant morbidity and for many patients experiencing the first episode of CHD will be death.

There are a several policies in place to ensure that patients experiencing in chest pain are referred to the right place and receive the correct treatment. Once a patient has called an ambulance complaining of chest pain, a clinician, this is not always a paramedic on a double crew ambulance, needs to decide if the pain is cardiac related, Cooper et al and the NICE guidelines (2010) provides key priorities for implementation when a patient presents with chest pain and a thorough assessment is required including a 12 lead ECG (electrocardiogram) before any diagnosis can be made whether it be

cardiac related or a different diagnosis made. In 2000 The NSF for CHD set out a ten year plan to recognise the importance of modern prevention and primary care as well as the contribution of the more specialised services. Several standards were set for the pre-hospital treatment of a patient; receive help from an individual equipped with and trained in the use of a defibrillator within an 8 minute response, assessed professionally, treated with aspirin and thrombolysis given within 60 minutes. In 2001 the Department of Health recognised that the paramedic played a significant role in reducing the call to thrombolytic therapy and discussions with the Joint Royal Colleges Ambulance Liaison Committee (JRCALC), Ambulance Service Association (ASA), the Royal College of Physicians and the MINAP team introduce thrombolytic training for the pre-hospital setting. They produced a White Paper Saving Lives: Our Healthier Nation to show commitment to reducing the death rate from heart disease and related illnesses such as stroke in those aged under 75 by two-fifths by 2010, this was achieved with in 5 years (NSF CHD 2008). In 2003 the National Infarct Angioplasty Project (NIAP) was set up by the DoH with the British Cardiovascular Society (BCS) and British Cardiovascular Intervention Society (BCIS) as an observational study to examine and test the feasibility of angioplasty becoming the primary treatment for STEMI in England. They promised to evaluate and implement referral networks; transferring of patients and access arrangements; with facilities including staff. This is to include examining the process of setting up the angioplasty service; assessing the implications on the emergency services and identifying any barriers; comparing the costs and outcomes of providing angioplasty and thrombolysis based care. This study was completed in 2008 By NIAP. The on-  
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going research into this area will offer very clear benefits to the people of this country.

There have been significant advances to the diagnosis and management of heart disease over the last several years which have impressively improved the patients' outcome but the mortality and morbidity linking with myocardial infarcts remain high. The key to reducing this outcome is for early intervention, recognising a cardiac event and rapid treatment therapy. Establishing whether or not a cardiac event has occurred is vital as the shorter the interval between onset of symptoms and receiving the correct treatment increases the survival rate. There are 3 treatment routes available to the ambulance service when a patient presents with chest pain and diagnosis is very important to which option the clinician will take: 1) the patient will be transported to Accident and Emergency (A&E), 2) the patient would go to a specialist cardiac centre within their region but if the travelling time to the unit is over 120 minutes from patient calling to balloon time (DoH 2008a) or PPCI is not available then the patient would then receive thrombolytic therapy (option 3). The assessment of a patient presenting with chest pain does not change regardless of the decision where the patient will be treated and transported to. According to Cooper et al (2010) a clinician needs to determine if the chest pain is cardiac related and a full history from the patient will establish this. Checking immediately if the patient has currently got chest pain or if they are pain free will initiate first line of treatment with aspirin and GTN. The clinician needs to establish what time the pain started or when it was at its worst as this may affect which treatment the patient will receive. If the patient has no ECG changes and the

clinician has established that the chest pain is not cardiac related then the patient will go to A&E. However, if the patient has STEMI then the clinician will need to contact the specialist cardiac unit in the local area. They will need a full history of the account and will need to establish some details from the 12 lead ECG done by the clinician, this can also be sent to the specialist cardiac unit by telemetry in some regions of England allowing the paramedic, Cardiac Nurses and cardiologist to discuss findings on the ECG and the decision-making for the patient with STEMI (McLean et al 2008). After discussing the details with the cardiologist a decision can be made if the patient will receive PPCI or PHT.

Fletcher and colleagues first reported the use of thrombolytic therapy in patients with STEMI in 1958 and many trials in the 1960's and 1970's were performed but abandoned due to lack of evidence to support efficacy of the treatment (NICE 2002). They already knew that a thrombolytic drug breaks down a blood clot so that blood flow is restored to the heart muscle and preventing further damage. The sooner the blood flow can be restored, the less chance there is of death to the heart muscle. In the UK, four thrombolytic drugs are available for use to treat STEMI, these all act in the same way by promoting the activity of circulating plasminogen. Streptokinase was used for many years before alteplase was introduced in the 1980's and later reteplase and tenecteplase in the 1990's. Streptokinase is derived from the streptococcal bacteria and the body has the ability to build up immunity or have an allergic reaction to and was recommended that it would only be administered once. It was also the only thrombolytic drug that needed to be given by IV Infusion and not by IV bolus. Thrombolysis was

introduced fairly quickly into hospital Critical Care Units and A&E department soon after the publication of clinical trials in 1988, with a treatment window of up to six hours after the onset of symptoms. Pre-hospital Thrombolysis was introduced to the ambulance service in 2000 and in 2002 NICE introduced a guidance in which they recommended that reteplase or tenecteplase would be the preferred option for pre-hospital thrombolysis. In 2008 it was reported that 11 out of 12 ambulance services in England and the Welsh Ambulance Service were treating patients with PHT (MINAP 2008). The proportion of people treated with thrombolysis within the NSF standard of 60 minutes from call for professional help exceeded the national target level of 68% during 2008 but the number of people treated with thrombolysis has reduced during 2008 as the focus of the ambulance service has shifted towards Primary Percutaneous Coronary Intervention (PPCI).

Primary Percutaneous Coronary Intervention starts by an angiogram; this is a procedure performed by inserting a catheter into an artery and then guided under x-ray image until it reaches the heart. The cardiologist prefers to use the Transradial access as there are fewer complications than using any other site (Amoroso and Kiemeneij 2010). A dye is then injected into the arteries of the heart and the position and shape of any narrowing's or blockages will show on the x-ray image. A cardiologist will then decide if percutaneous coronary intervention (PCI) or a coronary artery bypass graft (CABG) will be the best procedure for the patient. If PCI is the best option then a balloon is fed over the catheter and placed where the narrowing of the artery is, the balloon is then inflated and pushes the blockage out of the way. Usually a small stent made from wire mesh is then fitted in place like scaffolding to



stop the artery from collapsing. Since the introduction of PPCI the number of patients receiving PHT has declined, 210 patients received PHT in England in 2011/12 compared to 824 in 2010/11, a decrease of 75% (MINAP 2012).

Coronary heart disease statistics (2012) state that over 87, 000 percutaneous coronary interventions (PCIs) are now carried out every year in the UK, more than three times as many as a decade ago. While PHT has the advantage of being administered to the patient earlier than PPCI, PPCI has proven that it is more reliable at opening the arteries and a lower risk of the artery re-occluding within the next few hours or days (MINAP 2008) and are at less chance of getting any complications than if the patient received PHT. More patients are potentially suitable for PPCI than thrombolysis, and PPCI is associated with fewer strokes and recurrent heart attacks during the hospital admission.

Since the publication of NSF CHD in 2002, waiting times for heart surgery have dramatically dropped, in 2002 7, 558 people waiting for CABG and 4, 364 of these waiting for more than three months, by 2008 this had fallen to 1, 670 people waiting and only 6 of these waiting for more than three months. In 2007 improvements to existing guidelines were implemented so that patients received the best treatment following a myocardial infarction, including future management plans and secondary prevention; all patients would be advised to increase their daily activity, aiming to increase exercise capacity; All patients that smoke would be advised to quit and referred to smoking cessation with in the primary care; patients would be advised to cut down on fats and cholesterol rich products and would be offered treatment to prevent further cardiac events. The increase in prescriptions for

cholesterol-reducing statins has more than doubled over the last three years, this has contributed by cutting the mortality rate for coronary heart disease and the number of myocardial infarctions each year (NSF CHD 2002).

According to Newby et al (2000) it is not cost effective to the NHS to pay for an extra day, increasing the stay from 3 to 4 days for a specialised bed in CCU to prevent death after thrombolytic therapy. A recent study by Daniel et al (2012) showed that patients after PPCI could be discharged as early as 2 days after treatment in low-risk patients and proving a significant saving for the National Health Service. The NHS was slow to adapt to the PPCI as the first line of management for STEMI because of the cost implications of a 24 hour a day, seven days per week and the absence of an

existing efficient working model. But evidence from both North America and European health authorities clearly showed that in the long term PPCI is more cost effective or at the very worst on par compared with thrombolysis (Melikian et al 2005). The findings show that although thrombolysis was cheaper in the acute setting, the difference disappeared over a 12 month period and if the patient had no further complications within the 12 month period the cost was significantly less after PPCI. PPCI at \$25, 431 per patient and \$36, 798 per patient that received thrombolysis.

There are many policies providing guidance for the ambulance service and the NSF CHD stipulates that 75% of category A calls should be reached within 8 minutes, this 8 minutes starts from when the patient calls for help. For some ambulance services this target was a challenge as they had a dispersed rural population and long travelling times. These ambulance

services made the decision to bring in rapid response vehicles (RRVs) which are ordinary cars staffed usually by a single person but not always a paramedic; they could be community first responders that are volunteer members trained in basic life support and carry a defibrillator. The introduction of standby points in which emergency vehicles will wait at a strategic location in the community. These strategies actually put more pressure on the ambulance crew; 1) as no extra trained ambulance personnel on the road, 2) an increase in emergency calls of nearly 60% between 1994/5 to 2000/1, 3) under constant time pressures including missed breaks and mealtimes. These issues started to affect the health and safety of ambulance personnel and the patient. This can also affect the time to balloon target as the single responder could be waiting for some time for an ambulance to arrive to transport the patient to hospital. The response to the patient is within the 8 minutes also depends upon the accuracy of the Automated Medical Priority Dispatch System (AMPDS) that the emergency medical dispatcher (EMD) is using in the control centre when taking the call for help. The relationship between control and the paramedic can get strained somewhat due to wrong AMPDS codes being used or the dispatcher does not update the system and give any further information to the ambulance crew. A study done by Clawson (2007) shown that the AMPDS for call taking is more accurate and consistent than a human EMD that can be subjective and have experienced based determinations.

The Accident and Emergency department is chaotic and complex environment and it is very important that a clear and concise handover is communicated between the ambulance crew and the nurses. Ambulance

crews usually have just one opportunity to convey information about their patients to the nurses in the A&E department. The nurses naturally focus on their assessment of the patient and therefore can be distracted from listening to the handover from the crew. This can lead to important information being lost, miscommunicated or not communicated at all. This can be especially difficult if the ambulance crew have been waiting a considerable amount of time due to the increase of patients attending the A&E department. A&E departments have targets to meet and these are 1) to treat and discharge home, 2) treated and admitted to a ward within four hours of being booked in with 95% median times, 3) that no patient should be waiting greater than twelve hours before being treated (DoH 2010). Majority of hospitals have now adopted the SBAR tool (Thomas et al 2009) for patient handover, S - Situation: what is the situation; why are you calling the physician? B - Background: what is the background information?, A - Assessment: what is your assessment of the problem?, R - Recommendation: how should the problem be corrected?. Some of the older ambulance personnel are finding a little difficult to adapt to this as they were trained to handover differently.

Not all patients live within the 60 minutes call to balloon time and therefore these patients would still receive thrombolytic therapy. Unfortunately there is a clinical assessment that needs to be done before establishing if the patient can receive the treatment. The assessment is set out with a primary assessment and a secondary assessment (Boland 2002). The primary assessment consists of the clinical findings of the patient by the paramedic and the secondary assessment consists of eight questions that the patient

would need to answer and how the patient answers the question could indicate a contra-indication to thrombolysis. Paramedics felt that the lack of training/experience in thrombolysis did not give them the confidence to proceed with the thrombolytic therapy. Paramedics excluded patients and withheld thrombolysis due to interpreting onset of pain over the six hour threshold but the hospital protocol gives them a twelve hour window.

A study by Whitbread (2002) shows that a paramedic after attending a two day training course has the ability to interpret a 12 lead ECG and diagnose with accuracy a STEMI and no significant difference in their ability compared to cardiologists. It is also the patients right to refuse the treatment, the paramedic needs to take into account the patients values and preferences regarding thrombolytic therapy and it appears to be highly variable, the patients' response may depend on their previous experiences with the treatment or how it can affect their if they have any side effects after receiving the treatment as explained by the paramedic (MacLean et al 2012).

Now the NHS has fully committed to PPCI for patients with STEMI, the Specialist Cardiac Centres, the ambulance service and the A&E department all need to work together. Interprofessional teamwork is essential for the delivery of high quality healthcare and care pathways are often said to promote teamwork, but there is evidence showing that this is not the case. A study done by the European Quality of Care Pathway (EQCP) (2012) showed that poor teamwork and communication was a contributing factor in more than one-half of medical errors made. It is important that the relationship between different professions is respected and that the knowledge and skills

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are recognised between the professions as it can compromise the patients' treatment and safety.

Although the specialist cardiac centre provides all the specialised treatment for the patient under the one roof, some patients will be further away from the families than they would like, these patients need reassurance from everyone that comes in contact with them, the paramedic, nurses and the doctors so they feel that they are getting the best and this will help in their recovery. Patients were positive about their experiences of primary angioplasty and impressed by the speed and efficiency of it all. Patients also expressed confidence in the procedure and the care by all staff but felt they had poor understanding of the management of their condition and they felt let down by primary care after discharge from hospital (Radcliffe 2009).

There are very few studies done on the patients' experience of the follow up care available to them after discharge from hospital.

What became clear in this assignment was that the best care pathway for a patient experiencing chest pain of a cardiac origin is PPCI. It is of extreme importance that a patient is assessed by a medical profession suitably qualified and be able to diagnose a STEMI as soon as possible. It is vital that the patient receives the correct treatment as early as possible as the delay to treatment could have a significant effect on the patients health. Although thrombolytic therapy is not the primary treatment for patients with STEMI it still plays a significant part for the ambulance service and patients who live in rural areas as the travel time is outside the national guidelines. There is a willingness from paramedics to get a patient referred to the best care

pathway available to them but find it difficult when the specialist cardiac  
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centres do not believe that a paramedic is qualified enough to make a referral. It is clear that there could be more training available to encourage better teamwork with in the NHS, having more of an understanding of what each individuals skills and knowledge of PPCI can be brought forward to have better relations. Although the initial cost of setting up PPCI would have been a massive financial outlay in the long term it will be more beneficial to the NHS as treatment costs are lower, the cost for the patient to stay in hospital is reduced and most of all the patient is less likely to have any long term complications from the procedure.