

# Hphp6000 clinical decision making in contemporary paramedic practice

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## Introduction

The portfolio is a comprehensive evaluation of decision making in clinical settings within the Contemporary Paramedic Practice of the University of Cumbria. I am currently working with one of the large metropolitan ambulance services within the central station in the city. I am a full-time front-line paramedic for the last 2 years. The shifts therein involve rotation patterns between the staff and trainee student ambulance technicians. In addition, I get involved in regular shifts where I work as a single responder for the first-response cars. Among my professional contacts in practice include the patients, the relatives, health professionals, and the general public. I work under several staff with which I have professional contact and receive mentoring training.

This module is aimed at demonstrating the critical process of decision making and judgment in clinical settings through evidence-based paramedic practice. Additionally, a problem-based approach is employed and it is through this that the numerous disease-related symptoms, signs, and common disorder management is done, including injuries. The portfolio is thus demonstrative of the development of skills and knowledge in making of clinical decisions as it relates to the care management and assessment of the patients during the practice, as well as the effectiveness in response towards the changing aspects of practice for the pre-hospital environment. Apart from this, the respective impacts of the developments within the paramedic practice will be evaluated and the ideal practices for this proposed. Case studies will be employed all through the discussion, with the anonymity of the persons involved maintained as a measure of conforming

to the patient confidentiality principles stipulated within the Health & Care Professions Council (HCPC, 2007; 2008). The use of these cases is also ethically compliant, since the informed consent of the participants is duly certified prior to the commencement of the treatment practice.

1. Develop knowledge and critical understanding of theories and frameworks of clinical decision-making that will support clinical judgment in practice

Paramedics treat and transport patients in need of urgent care, and are often referred to as the ‘ backbone of the out of hospital emergency care’ system, with the ability of reducing mortality and morbidity of the patients (Mason, Knowles and Colwell, 2007). As part of their practice, therefore, they are faced with numerous situations that require making of judgments and decisions during their assessment and treatment of the patients, all of which could have a significant impact on the clinical safety and outcome of the patients under care (Mitchell and Dennis, 2006). For instance, the patients in need of the emergency medical services (EMS) are in diverse geographical locations, thus making it hard to access them.

Most of the emergency patients have time sensitive high acuity conditions making the clinical decision making among paramedics extremely critical. There is an inextricable link between the safety of the patient and the decisions made by the clinicians in charge (Panteli, 2009). The importance of making decisions together with the manner in which it occurs in the context of medical practitioners is influenced by the different models and theories of applicability in the service. As observed, the decision making is intuitive in nature and comes as a result of unconscious thinking (Young et al, 2007).

Among the theories that effectively address the clinical decision making and

judgment is the naturalistic paradigm of decision making. In this theory, it is acknowledged that human beings have cognitive limitations within their operations as far as their bounded rationality is concerned. For instance, Wang et al (2006), observes that decision making within the naturalistic environment have characteristics that include problems that are ill-structured, where the environment is dynamic with competing goals that are ill-defined and in constant evolution. In such circumstances like the emergency medical practice, time constraint is a common phenomenon, meaning the decision making process that requires assessing, interpreting and assimilating multiple data is at high risk of being compromised (Wang et al, 2008). In such case, the norms of the health facility together with the expectations are put on balance against the personal choices of the decision makers.

Thus, the naturalistic decision making personnel encounter indefinite problems, which equally has limited knowledge regarding the probable alternatives for action and their ultimate consequences (Wang and Katz, 2007). The theory uses an assumption that makers of decisions only act in terms of the perception they have regarding a given situation. It has thus been considered an ideal model within the chaotic environment where there are uncertain conditions with less information, and this prompts the practitioners to be primarily reliant on their respective experiences in decision making (Matlin, 2003).

The descriptive theory concentrates more on the manner in which the individuals make decisions and judgment. Within this theory, there exist no limitations to the logicity or rationality of the individual involved, but is

basically interested in the manner the person makes real world judgment and decisions, as determined by the actual ecologies, context, conditions, and the environment in which such decisions are made (LeGault, 2006). Interaction, context and ecology are undoubtedly the major pillars upon which interpretation is made in the descriptive theory (Aitken, 2003). The model acknowledges the limitations of the human memory hampering the decision making and judgment. The descriptive model together with the JDM theories have special focus on heuristic, investigating, errors, and biases within the JDM (Laing et al, 2008). The distinctive feature of the descriptive theories is their lack of concern for judgment quality or the qualitative outcome of the decisions made. However, the model is evaluated on the basis of its empirical validity together with the degree at which the model complies with the observed choices in decisions and judgment (Hogarth, 2001).

The normative theory on its part aims at discovering how rational individuals make decisions as they seek to determine how the decisions ought to be made in the optimal or ideal world, with the decisions made on the basis of logic and the resultant conclusions supported by probable and clear evidence (Hobgood et al, 2004). The normative theories are thus dependent on the probabilities and statistics as described by the domain of positivist, with the aim of evaluating the manner in which good judgments ought to be made and ideal outcomes achieved.

#### Case study

This is a 22 year old male who upon assessment presents with numerous signs and symptoms that include hyperaemic conditions which he has

unsuccessfully tried to manage by use of paracetamol tablets bought from the chemist. He equally demonstrates a series of fainting spells and is so weak for the past two days. He does not have a previous history of fainting and the blood pressure assessment shows normal. His nephew aged 16, with which they live at the grandmother's house, calls the emergency number for paramedic services, perhaps due to the inability to take the patient to the hospital. The family is of a low social class and this is among the reasons the patient has not been taken to the hospital due to lack of healthcare cover, or due to inability to acquire other means of transport to the healthcare facility.

In this case, decisions made by the paramedic must be considerate of the reasons behind the patient not seeking for medical attention beforehand. This means the services offered by the paramedics must be at least subsidized or free, and prescriptions for expensive medications would be futile.

2. Enhance your knowledge and skills in the management of uncertainty and the application of reasoning in the assessment and management of care

Uncertainty and risk management among paramedics is understood to be the development of approaches through which changes can be effected in consequences, severity, and likelihood of an event in line with the paramedics' objective (Forster et al, 2007). Essentially, the management of the risks and uncertainties in the practice should be done prior to the occurrence of an event. This means that the management of risks ought to be done during the objective management by the team or organization involved (Evans, 2008). After the objectives have been developed, there

should be the development of uncertainty management process to enable effective management of the risks related to the set objectives of the practice. As much as uncertainty management basically involves avoiding and mitigating the resultant losses, it may equally result in the identification of other new opportunities, including the innovative and cost-effective provision of healthcare service using limited human resources(Davis, 2008). Making of ideal decisions in practice involves the application of evidence-based cognitive skills that are influenced by the decision theory and critical thinking (Croskerry, 2009). As demonstrated through the modern sequential model, problem solving is depicted as a five stage process consisting of the felt difficulty, defining the character of the identified difficulty, proposals of the possible remedies, examination of the suggestions brought forth, and observation and experimentation of the rejection and acceptance of the proposed remedies (Croskerry, 2009). In addition, the decision making process within must be inclusive of the three major phases that include finding of the occasions during which decisions can be made, establishing the probable action courses, and selecting among the proposed courses for action. The three phases have since been described as intelligence, design and choice respectively (Croskerry, 2009). The patient care quality within the emergency care settings is determined by the effectiveness of the decisions made by the paramedics and other healthcare professionals involved. It is understood that knowledge of the clinical decision making theories is key in enhancing the quality of patient care together with the critical evaluation of the decisions made for the better management of patients' conditions (Croskerry, 2003). It can thus be inferred that the models for decision

making facilitate deconstruction of the decision making pathway thus enabling each of the procedures involved to be comprehensively analyzed, and their respective weaknesses addressed.

The risk management practice should entail proper establishment of the context, identification of the risk, analysis of the identified risk, evaluation of the risk and the ultimate treatment of the diagnosed risk by the paramedics (Croskerry, 2003). There is a need for the ambulance team to ensure creation of list of risks on the basis of the events that could lead to creation, enhancement, prevention, degradation, acceleration or eventual delay of the objectives of the practice. Uncertainty identification must also be inclusive of any cascading or cumulative impacts of a given event (Croskerry, 2002). Several techniques and tools could be used, among which are the utilization of individuals who have adequate knowledge in the industry.

There is then a clear definition of the challenges faced by the decision making team, together with the decisions made on the basis of the method perceived to have the best outcome. For instance, the decisions made should reflect a high level of multiple alternatives, with a host of positive actions and results from the same (Campeau, 2008). Quite often, this fails to suit the stressful, dependent and uncontrolled environment for making decisions as experienced by the paramedics in their practices. The naturalistic decision making practice is done within environments that are not well defined and may lead to a wrong perception and ascertaining of the individual experience of the personnel (Campbell, Croskerry and Bond, 2007). The emergence practices always experience time constraints, and the evaluation and interpretations involved is virtually obtained from numerous



high-stake sources.

Prescriptive theories on their part are meant to enhance the decisions and judgments of the individual at the time of practice. The major focus of this is thus to ensure that the personnel's judgment is helped or improved (Brafman and Brafman, 2008). As part of the uncertainty management, there is need for evaluation of the prescriptive application models together with the related theories all meant to help in the judgment and decision making process, and the principal question asked here is whether or not the model made the judgment any better. The application of the prescriptive theories is in many contexts (Aitken and Mardegan, 2000). For instance, the decision tree and decision analysis are common practices in medicine for the purposes of improving the decision making and judgment of the medics. On the other hand, the introduction and eventual adoption of the prescriptive model for the purposes of judgment and decision making within the clinical settings for the purpose of formulation and use of clinical policies and guidelines (Bair, Smith and Lichty, 2005). The clinical guidelines are the prescriptive tools for use in facilitating the decision making for both patients and practitioners as far as the appropriate practices for health-care in certain circumstances is concerned.

The uncertainty management is also dependent on the guidelines which provide an outline of operational procedures, information, and guidelines together with options, and are quite often termed as protocols (Banning, 2008). As tools for management of the emergency practices within the paramedic context, the guidelines seek to enhance the care quality together with ensuring standardization of care. With this, there is minimal variation in

clinical practices, as well as low level of non-evidence based practices (Blanchard et al, 2009). It has also been discovered that clinical guidelines are important tools for benefiting the patients and the users, despite the fact that their usage is significantly problematic, especially considering that they may result in a one answer illusion for complex problems.

3. Critically evaluate ways in which evidenced based practice will support clinical judgment and clinical decision-making.

Evidence-based practice can be described as the 'the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' according to Sackett et al (1996; p. 7). In this case, it is viewed as the procedure that results in the synthesis of expertise in technical fields, by use of the most useful evidence at hand obtained from systematic research studies, together with the preferences and values of the patients. This fact is further emphasized by Brafman and Brafman (2008), when they suggest that the practice ought to be reinforced and built further, and never be replaced, and must be practiced within the context of clinical experience and judgment. By this virtue, it is evident that the research evidence is an integral part of the clinical decision making process (Campbell, Croskerry and Bond, 2007).

In the context of paramedic emergency practices, evidence-based practice can be perceived as the integration of the expertise of the healthcare personnel in the field together with most effective externally acquired evidence within the field, more particularly from research studies on the relevant population (Campeau, 2008). The prime essence of evidence-based practice advocacy is to enhance the quality and efficiency of the emergency

team in attending to the cases they come by. According to the Health and Care Professions Council (HCPC) practices, all the activities in line with the objectives of the council must be compliant with the evidence-based practice for justification of decisions made. In addition, the preservation of professional knowledge is maintained up-to-date and the practices therein maintained at the certified practice scopes. The implementation of evidence-based practice exerts a significant level of pressure on the paramedics to ensure application of credible evidence for every individual patient through a search for relevant evidence, employing clinical judgment, and ensuring proper consideration of the system resources and patient value.

It cannot be ignored that the general research on pre-hospital practices is less comprehensive and the available information fails to have the required quality for the purpose of ensuring effectiveness in emergency medical services. On the other hand, the variable standardization parameters for the paramedic experts in terms of their educational and professional expertise, poses a different challenge for the implementation of the evidence-based practice and decision making. With these circumstances, Sackett (1996) suggests that individuals exhibit variability in terms of their education, proficiency, and experience, and such variability is bound to undermine the respective abilities of the paramedics in making sound and competitive judgments and decisions.

Evidence shows that as much as paramedic officers have a positive attitude towards the evidence-based practice, and regard it highly as one of the fundamental practices, there exist numerous barriers at personal and institutional level, which hinder efficient implementation of this (Croskerry,

2002). Among the major factors that influence the application of evidence-based decision making in the paramedic field, as far as decision making is concerned, are beliefs, understanding, together with the individual attitudes of the practitioners towards evidence-based practice. On the other hand, there may be barriers that compromise the adoption of this practice, lack of training in the practice, less reliable or less popular sources of information, together with their individual searching skills for the relevant literature (Croskerry, 2003). Considering the information-intensive nature of the evidence-based practice, there must be a threshold beyond which the available medial information should measure prior to its adoption for use. Additionally, there is need for the medical libraries by which the practitioners update their skills to remain updated, and the staff offered comprehensive development training for the purposes of improving their skills in searching and utilization of skills (Croskerry, 2003).

On the other hand, the effective application of the evidence-based process would demand basic skills needed in the paramedic field, as well ability of the staff involved to discover knowledge gaps, to formulate questions related to the practice, carry out literature research effectively, be able to apply the evidence rules in the determination of study validity, manage to effectively apply the findings from literature for solving the problems of the patient, and effectively involve the patients or other persons related to the patient in the process of decision making (Croskerry, 2009). However, the new challenges encountered by the paramedics as they seek to implement the evidence-based practice includes a reconciliation of the patient values with the available evidence, and clinical judgment, and this is very difficult, especially

when the practitioners have a low level of experience in the field (Croskerry, 2009).

The adoption of evidence-based practice within the ambulance services thus needs support from the organization as far as the identification of the fitting evidence for application in service is concerned, based on the circumstances of practice (Evans, 2008). Initial stages of evidence-based practice utilize this at both clinical development and policy levels, and aim at offering them the platform upon which the framing of paramedic framework can be done. The evolution of the services provided by the paramedics from the traditional experience-based on the most efficient evidence-based could be realized through availing of protocols that are easily comprehensible, together with summaries of the evidence for use in their practices (Davis, 2008).

#### Case study

A husband calls on the ambulance services in order to have his 27 year old wife checked since she has a burning sensation in her left foot. On arrival, the team finds two ladies all of the approximated age of the patient, but there is not any man within the household. Asking for who had been sick among the two, every one of them denies such complaints and states that their household has not been visited by a man in the recent few months. However, from a far look one of the paramedics is able to identify a sore wound on one of the ladies, who is apparently too drunk, and this brings confrontations between the lady and the team. It is not convenient that the paramedics forcibly treat the patient without her consent, and they are forced to leave. It is evident that the caller male was merely a concerned neighbour who had been disturbed by the problem the lady went through yet

she never sought for medical attention.

The decision by the paramedics to leave demonstrates their failure to convince the patient that their services were needed and could get her condition better. The paramedics need better professionally persuasive tactics in order to carry out their practices in all communities and social classes.

4. Identify and critically discuss key issues for the development of Pre Hospital Care Practice including the analytical skills necessary to respond to new policy directives

Pre-hospital care is inclusive of a relatively wide field of medical conditions, amongst which are the medical interventions, physical allocations, and clinical providers. The medical conditions are extensively variable from minor injuries and illnesses to the emergencies that are life-threatening (Evans, 2008). In this case, therefore, the expected pre-hospital services are also varied, ranging from the simple practices such as first aid to the pre-hospital emergency anaesthesia and advanced emergency care. The paramedic healthcare providers and other ambulance professionals provide the services within variable settings such as the rural, urban, and remote settings, as well as the general incorporation of the unscheduled and out-of-hospital care (Davis, 2008).

The evolution of ambulance services has since taken a wider dimension encompassing a clinical environment that is inclusive of the paramedic emergency services, urgent care, the 111 services, together with the rescue teams and hazardous responses (Campbell, Croskerry and Bond, 2007). With time, the pre-hospital care practice has moved to adopt the Higher Education

Institutions that have since been acknowledged as a progression of practice, profession, integrity theory, self-evaluation and critical theory. With the availability of the Higher Education Institution, clinicians have enhanced their abilities to make sound and valid clinical decisions that are evidence-based as far as the management of the patients is concerned, and they have simultaneously done this while conforming to the regulations of their practice.

As a developing field of practice within the medical care system, pre-hospital care is on constant growth. Among the most common constituents of this service today is the emergency medical services, medical rescue, the retrieval medicine, telemedicine, dispatch and communication, pre-hospital physician response together with medical direction, as well as the disaster medicine (Campbell, Croskerry and Bond, 2007). There is an increased collaboration and interaction amongst the variable medical emergency authorities that include the police, fire services, military Authorities, and civil defence. In addition, there is a greater encouragement for the interactions among the departments of the hospital emergency.

The most notable aspect within the emergency services has, however, been the perennial abuse of the services by those perceived to be in need. For instance, there seems to be little or no knowledge of the threshold requirement for an emergency case. The availability of minimum resources for emergency practice means the resources can only be effective if used for the befitting purposes (Bair, Smith and Lichty, 2005). The cases of persons calling on the emergency help when actually their conditions could be efficiently handled by the hospital services in their residential environment

have always compromised the service. In this circumstance, the ambulance staff have always run at the scene for urgent treatment, or for referrals of the cases beyond the field care, but got disappointed that the situations did not actually deserve their attention.

There is evidence enough to suggest that there has been too much importance attached to the availability of the pre-hospital services at the expense of the actual quality expected from such healthcare interventions (Bair, Smith and Lichty, 2005). The recent adoption of the secondary triage within the pre-hospital services means the staff involved need to undergo the befitting professional training in the same for the purposes of upholding their efficiency and relevance in the field. This means there have to be a certain standard operating procedures for the respective levels of services to ensure harmony in the offered services, and ensures their conformity to the evidence-based decision making practice.

Adoption of the remote triage could result in the ultimate change in the manner of operation for all paramedics and other related clinical personnel considering that those who lack the required educational expertise to make informed evidence-based decisions could be tasked with acquisition of clinical advice within the remote settings of the patient when necessary (Bair, Smith and Lichty, 2005). This means that the allocation of the limited ambulance resources can only be ascertained based on the available information collected thus reducing the misallocation of the available resources during the practice.

There has been a major hurdle in the practice, which has ideally been occasioned by the lack of evaluation of how effective the care service



provided by the pre-hospital team is in managing the health conditions witnessed during emergencies. There have been doubts on the necessity and cost effectiveness of certain practices (Campbell, Croskerry and Bond, 2007). For instance, the lack of sufficient professional skills among the practitioners has continuously put in doubt the actual effectiveness of the services rendered, and this has been aided by the minimal evidence-based assessment of the pre-hospital practices in general.

It must be acknowledged that there is a significant advancement in the clinical practices in the recent past, most notably the improvement of the medical dispatch, modification of the protocols together with the software assistance needed in the practice (Bair, Smith and Lichty, 2005). On the other hand, the recent investment of the otherwise expensive resources, that includes helicopters, and the overwhelming reactions from a section of the healthcare crews, who have acknowledged the efficiency enhanced through such inputs. However, the financial control of the entire practice cannot be ignored, and the inappropriateness with which the field has seen much resources utilized has put in question the real commitment of the various healthcare institutions in ensuring sustainable use of resources. Decision making being a key factor of practice, evidence is expected to inform the allocation of the resources for any situation arising.

The push for better services is solely driven by the desire to enhance the patient experience in the community setting. In addition, it is always desired that the service delivery be done with the deserved consistency and this is only ensured through safe decision making on the part of the community paramedics (Bair, Smith and Lichty, 2005). It is particularly important for the

success of any given practice innovation that definite measures of the outcome be identified for the purpose of influencing the institution of the procedure for governance. In this case, therefore, the utilization of clinical audits becomes a key component for the reliable determination of the provided service quality. Over time, the paramedics have constantly managed to demonstrate to the patients that they either need or do not need the hospital treatment, although the validity of such decisions has been put into question for lack of evidence or protocols.

5. Critically review the evidence base underpinning practice innovation and the likely impact of proposed changes in practice.

In order to establish the association between the challenges faced by the community in their quest to have quality paramedic services, and the outcome of better planning by the paramedic professions, Campbell, Croskerry and Bond (2007) critically evaluate the factors leading to the low-level paramedic services within the community. They affirm through their findings that the causes of the poor paramedic care in the wider part of the rural population are more of inadequate planning of the medical care practices, particularly the inappropriate usage of the available resources, together with low skills of professionalism among the care providers. Similarly, Eisenberg, Bergner and Hallstrom (2009) present a review of evidence-based analysis of the practices at hand and the proposed changes, together with whether or not such innovations are valid in facilitating sound decision making.

Safety and quality of healthcare are among the most dominant aspects of a health care system together with its agenda. Clinical decision makings and

judgments among the health care professionals is essential in facilitating competitiveness of care delivery (Campbell, Croskerry and Bond, 2007). Within the human society that is in constant need of safety and quality care enhancement, there is a strong correlation between the availability of resources, professional judgment and decision making, and safety and quality of care offered to the society. The society is in greater need of transparency in the decisions made by the relevant healthcare policy-makers and institutions on their behalf. Bair, Smith and Lichty (2005) propose that the core paramedic quality improvement lies in the evidence-based practice philosophy, together with its aim towards closing the evidence-practice gap. The evidence-based gap, according to the interpretation by Evans (2008), is the existing difference between the known in regard to the paramedic care provided to the society, and the manner in which the care needs to be provided in a systematic and informed program.

Within the recent times, there has been a significant amount of resources channelled towards the closure of the evidence-based gaps while pursuing safe and high-quality paramedic services. In the real sense, however, much of the health care offered by the professionals within emergency healthcare does not have an evidence-base. This can be partly associated with the general infancy of the paramedic practice as a healthcare profession, together with the nature and complexity involved in providing safe and high quality health care within the emergency setting. The paramedics have a range of competing priorities while performing their routine practices. According to Croskerry (2009), it is hardly expected that the paramedics in charge of patient management use evidence in their practices, especially

with the critical conditions of the patients they take care of. In practice, no evidence-based practices are seen, and the paramedics would not have their priorities largely focused on evidence, or the closure of the evidence gap through research. There is often a great concern by the paramedics towards provision of best possible care based on the available resources, within an uncontrolled, unpredictable and difficult setting.

Hou, Rego and Service (2013) identify that there are numerous uncoordinated fragments that challenge the delivery of paramedic services in the rural areas, including the poor resource availability for primary care delivery, and the geographical isolation of the regions. Similarly, the population in the rural settings tends to be sicker or older than that within the urban settings. Therefore, the changes to be initiated by the paramedic teams in order to facilitate improved care and reduce the high rates of morbidity and mortality (Daly, 2012). The paramedicine community seals the gap in the deficient rural settings, which are characterized by limited or complete lack of primary care. The paramedic team seeks to overcome the challenges within their field of practice, amongst which is the overlap of their duties with those of the other healthcare institutions. Similarly, the lack of clarity in regard to the community expanded roles of the paramedics could result in resistance from the other professionals within healthcare (Eisenberg, Bergner and Hallstrom, 2009). As a result of this, the community paramedic programs are tasked with the address of varying issues as related to their scope of practice.

In the context of paramedic emergency practices, evidence-based practice can be perceived as the integration of the expertise of the healthcare

personnel in the field together with most effective externally acquired evidence within the field, more particularly from research studies on the relevant population (Campeau, 2008). The prime essence of evidence-based practice advocacy is to enhance the quality and efficiency of the emergency team in attending to the cases they come by. According to the Health and Care Professions Council (HCPC) practices, all the activities in line with the objectives of the council must be compliant with the evidence-based practice for justification of decisions made (Brady, 2014). In addition, the preservation of professional knowledge is maintained up-to-date and the practices therein maintained at the certified practice scopes. The implementation of evidence-based practice exerts a significant level of pressure on the paramedics to ensure application of credible evidence for every individual patient through a search for relevant evidence, employing clinical judgement, and ensuring proper consideration of the system resources and patient value.

Conclusion: the qualitative study ascertains that the significance of planning in the healthcare settings is of the essence in the provision of adequate and proper services. Most countries are experiencing hard pressure where extra budgets have had to be made to cater for the additional expenses for healthcare services. This has been the main reason for the incorporation of the operational research (OR) through which they are capable of estimating the future service demands for the purpose of building sufficient capacity, select the location for healthcare facilities to ensure effectiveness in attending to the population, during the designing of the emergency facilities.

## Introduction

Making decisions on the best practices in the paramedics begins with the ability of the concerned team to identify the different forms of problems and the population they are tasked with providing care to, followed by identification of the numerous alternative care practices, before choosing the most appropriate for the patients at their disposal (Campbell, Croskerry and Bond, 2007). However, the decisions made by the paramedics are equally dependent on the facilities and resources available for the practice, and this constitutes the main focus of the practitioners' efficiency. For instance, some local settings are long distances away from the nearest hospitals and healthcare centres available, making it particularly hard for the paramedic practitioners to access their areas of residence, or the referral hospital facilities for further medication.

The scarcity of the healthcare facilities, owing to the poor resource allocation in the regions, constitutes the greatest challenge in practice prompting the increase in the number of patients in need of the ambulance services.

However, it is believed that the paramedics based within the community who have high skills of treating and assessing their patients are more likely to improve the service quality received by the patients near from their places of residence, and this is important in enhancing healthcare in the rural settings even when the hospital facilities cannot be easily reached.

## Literature Search Aims

The use of literature review is for the purposes of availing an opportunity for presentation of the data and other research-based information and knowledge, together with the relevant objective critique of the study findings

in the literature for the purposes of laying grounds for improvement on the information available. Papageorgiou (1978) is regarded one of the earliest researchers to have provided the earliest OR survey aimed at solving the problems within the healthcare settings, through which the highlights of the operations, design and hospital management and ways of improving them were analyzed (Bair, Smith and Lichty, 2005). In this study, it was discovered that the OR methodologies have been sufficiently productive in the solving of the healthcare problems.

The research involved a controlled trial group together with the intervention and control groups from both the rural and urban settings. The study was thus carried out on 40 respondents, which was a sample regarded sufficient as a representation of the population under study. The data analysis was done through double blind re-examination obtained from the trials and subsequently, the data assessed separately by the paramedic personnel in quest to isolate the medical emergency uncertainties (Bair, Smith and Lichty, 2005). The subsequent study of observation puts in doubt the effectiveness of deploying paramedic personnel in regions where their access to the main medical centres is compromised. The problem of health resource location has been previously studied by numerous researchers, among which are Campbell, Croskerry and Bond (2007), who studied the sustainable community healthcare planning within the rural settings of the developing nations. In this, considerations were made from the bottom-up and up-bottom location of the hierarchy and efficient planning models for the health scheme of the community used and suggested within the Mixed Integer Program in the determination of locations regarded to have a maximal

sustainable facility number. According to the international Transactions in Operational Research (2010) and International Federation of Operational Research Societies Murawski and Church (2009), the improvement of accessibility to the healthcare resources is a problem that requires linking of the available resources to the facility locations already in existence together with the transportation network in use.

Ndiaye and Alfares (2008) focus on a slightly unique problem when they concentrate on the problem involved in the selection of location for public health services, especially in the communities that are constantly moving due to their nomadic practices, who will ultimately settle in a for a short season. In this, the author presents an inter-programming binary model for determination of the optimal number together with the related locations for units of binary healthcare that are sufficiently satisfactory for the demands that vary with seasons.

Rahman and Smith (1999) believes it is difficult to acquire more suiting sites for setting up of the healthcare facilities within the rural areas and made a model of the problem as maximal location covering. This model was thus solved using methods of heuristic together with the data acquired from Bangladesh.

#### Conclusion and Further Research Suggestion

From the research findings, it can be concluded that the scope of practice within the field of paramedics has to be conveniently coiled in order to suit the respective needs of the patients in need of the services. In this case, therefore, the decisions to be made by the medical personnel in planning and implementing the required health care services are determined by other



variables, which are personal, environmental, as well as economic. For instance, it can be seen that the distribution and the skills needed for practice by the paramedics are influenced by the distance of the hospital facilities from the region of practice. It is thus suggested that the resources be influenced by the respective life behaviours of the population for which the services are planned, as well as the formula for institution distribution by the relevant authorities.

#### Conclusion and action plan

Throughout the portfolio, I have been able to provide the various aspects of paramedic practice, among which is the highlight on the theories relevant in service provision, particularly as far as the decision making practice is concerned. A proper link between the proposed theories together with the case studies for the practice is ideal in demonstrating the practicality of the theories within the field. On the other hand, the portfolio demonstrates a proper and critical understanding of the frameworks and theories within the decision making clinical practices meant to give support to the judgments made in practice. The link between this and the case study is ideal for demonstrating the contextual relevance of the models and theories therein. It can also be seen that the portfolio makes significant steps towards improvement of the skills and knowledge of the reader as far as uncertainty management together with use of reasoning in management and assessment of care is concerned.

Based on the findings herein, it is evident that clinical judgments are determined by both personal and institutional factors, all of which must be incorporated in making sound and valid choices of practice for the patients.

On the other hand, as claimed by Shaban (2005), application of evidence-based practices are dependent on one's ability to integrate personal expertise in clinical practices with the most relevant clinical evidence from outside, especially through the findings of clinical research. The different theoretical findings and frameworks proposed herein for the purposes of enhancing paramedic practices have been highlighted, all of which have changed my perspective towards paramedic service provision (Wood, 2012). For instance, in the traditional settings, the activities had been rather regarded more voluntary, meaning little academic skills were provided to the practitioners, and were ideally entrusted with first aid services. However, with the expansion of the practice, and more people becoming needy for the same, the enhanced academic and professional skills incorporated means the professional have bigger responsibilities, demanding greater degree of thinking and decision making, based on proven research findings. As a measure of ensuring the paramedic services are improved, I believe in the evidence-based decision making practice, with the adoption of the consultative models, which are undoubtedly important in enhancing judgment.

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