

THE PREPAREDNESS OF BLOEMFONTEIN RADIOGRAPHERS FOR COMMON MEDICAL EMERGENCIES

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Abstract

Radiographers need to know how to react appropriately when a patient has a medical emergency; this is not only essential but lifesaving. This reaction stems from a theoretical framework that guides an automotive sense of knowing what to do and how to assist. Having the correct equipment completes this circle. The objectives of this study was to evaluate the responses of Bloemfontein radiographers in emergency situations based on the awareness of their role in emergency procedures and their role in the application of pharmaceuticals and equipment on the emergency trolley. A checklist compiled from literature was used to evaluate the state of emergency trolleys at four hospitals in Bloemfontein through impromptu visits. A questionnaire was used to determine the preparedness of radiographers for common medical emergencies. The currency of their first aid training was also established. The study results showed that 50% of the emergency trolleys' content conformed to guidelines in literature; the other trolleys contained expired medicine. Forty-five percent of the radiographers in the sample did not know how to assist effectively when using an emergency trolley. Of the participants 73.5% would respond according to protocol in emergency situations. Fifty-three percent of the radiographers in the study did not have valid first aid certificates. This study showed that though most participating radiographers would respond to emergency situations according to protocol, certain aspects of their response have shortcomings. Additionally the availability of equipment and medication is cause for concern.

Keywords: Emergency situation, Emergency trolley, Reaction, Preparedness

1. INTRODUCTION

The time a patient spends in a radiology department can become longer due to the extent of the pathology that has a direct implication on the number of examinations that needs to be conducted. Additionally, in a busy x-ray department patients sometimes have to wait for long periods before being attended to. It should be noted that in cases of trauma, where time is of the essence, obtaining the desired results in the minimum amount of time could be lifesaving.

An emergency is an unexpected and serious situation which demands the medical practitioner's immediate attention.

Emergency patients are examined by a physician, blood loss is controlled, airways are checked and in addition intravenous fluids, pain and blood pressure medication are administered as required. Emergency patients usually arrive at the x-ray department in a relatively stable state. With all of the aforementioned in place, emergency patients can still be subject to sudden changes in their condition because of physical or psychological shock (Ehrlich, McCloskey & Daly, 2004: 259).

If a patient's condition deteriorates, appropriate responses are required from the radiographer in whose care the patient is. If you cannot act appropriately or timeously, it can lead to further complications or injuries to your patient (Ehrlich, McCloskey & Daly, 2004: 261). Using a mannequin, a time-based simulation study of 34 mock codes related to emergencies and cardiopulmonary arrest was done by Hunt at Johns Hopkins Simulation Centre. The findings of this study reveal that the quality of basic and advanced life support delivered to adults as a function of time, is low and contributes to poor outcomes (Hunt, Walker, Shaffner, Miller & Pronovost, 2008: e41).

Mole, McGuire Riley and Trewhella (2006: 553), did a study to assess general practitioners preparedness for medical emergencies. The results indicate that general practitioners in this study's responses were influenced by the availability of emergency equipment as well as the lack of emergency drugs. An emergency trolley must be available in all radiology departments. The trolley consists of all medication and equipment needed in case of an emergency situation. A qualified nurse should check stock levels and expiry dates at regular intervals.

Students receive the necessary Basic Life Support (BLS) training in their first year at the Central University of Technology, Free State and are encouraged to keep their knowledge up to date. This is done by renewal of the first aid certificate every two years (Claassens, 2007: 2). In the second and third year of study a radiography student is exposed to management of emergency situations such as allergic reactions and anaphylactic shock.

Reactions due to shock can vary from just crying to vomiting and fainting. Radiographers must be able to monitor such a patient to see any deterioration in his or her condition. The radiographer should not leave the patient alone and must call for help or sent for a doctor in cases of an emergency (Ehrlich, McCloskey & Daly, 2004: 259). Today patients are privileged to be attended to by a medical team, where treatment interventions are not limited by location in a hospital.

This study was conducted to ascertain the preparedness of radiographers during emergency medical procedures. Evaluation included their preparedness to assist when using the emergency trolley.

The standard of radiographer responses was assessed using a questionnaire that was completed by the participating radiographers and a checklist completed by the researcher that was used to determine the status of emergency trolleys.

2. OBJECTIVES OF THE STUDY

The following research objectives were realised:

- An investigation of the degree of conformity of radiographers' responses to emergency situations as described by guidelines from literature.
- An investigation of the status of the emergency trolleys in the radiology department.
- An investigation of the radiographers' abilities in the use of the emergency trolley.

3. METHODOLOGY

The population included diagnostic radiology departments at four hospitals in Bloemfontein, comprising private and government hospital departments. Two trauma level I hospitals and one hospital from levels II and III respectively were selected for this study. Permission to conduct the study was obtained from departmental heads and practice managers at the various institutions.

The researcher investigated the condition of the emergency trolleys at the departments using a checklist. The checklist of the medication and equipment that should be available on such a trolley was compiled from Chapman and Nakielny (2003: 347) and Jacoby (2004: 3).

The radiographers were informed of the purpose and objectives of the research. Radiographers were reassured that all information will be treated as confidential and were encouraged to be honest and open about the current situation at their practice. Radiographers were also made aware of the fact that results will be presented as part of the research day at the Central University of Technology and of the possibility of articles emanating from the study. Consent to participate in the study was obtained from 80 radiographers. The questionnaire was compiled from Chapman and Nakielny (2003: 347) and distributed amongst the participating radiographers at the four hospitals in this study. The questionnaire contained questions related to the first aid training of radiographers, general emergency procedures and the emergency trolley. The questionnaire also determined whether participating radiographers still had valid first aid certificates.

4. RESULTS

The results of the trolley checklist revealed that in three of the four x-ray departments involved in this study, the emergency trolley was located in the computed tomography suite. The fourth one at the level III hospital included in this study, was located in a storeroom. Fifty percent of the emergency trolleys (both from the private practices included in this study) contained all the necessary equipment and medication as prescribed in Chapman and Nakielny (2003: 347) and Jacoby (2004: 3) and were mobile and free of dust and other contaminants.

The trolley at the level III hospital needed a restocking in equipment and medication. The location of this trolley was very central but its mobility was compromised since one wheel was missing. The emergency trolley at the level I hospital, stationed in the scanner room lacked the required medication and some of the medication had exceeded the expiry date. The equipment on the trolley was incomplete and it was not mobile.

The questionnaires revealed that 91.25% of the participants know the location of the emergency trolley in their department. Only 6.25% did not know where to find the emergency trolley and 2.5% were not sure.

Twenty three percent of the radiographers in this study stated that the responsibility of emergency situation control is a balance between the radiographers, the nurses and doctors. They stated that radiographers must help the doctors and nurses where necessary. Sixty percent of the radiographers stated that it is the responsibility of the doctors and nurses, 11% said no and 6% did not know.

Ninety five percent of the radiographers involved will inform a doctor or nurse of an emergency situation. One radiographer (1.25% of the sample) will handle the situation on his/ her own and 3.75% were unsure whether they should inform anyone about the situation.

Sixty five percent of participants (see figure 1) stated that they knew how to respond according to protocol when a patient goes into anaphylactic shock, 25% indicated that they did not know how to respond to such a situation and 7.5% stated that they are not sure whether they know the correct response. One participant (1.25%) stated that in such a situation, he or she loses control and is not able to respond.

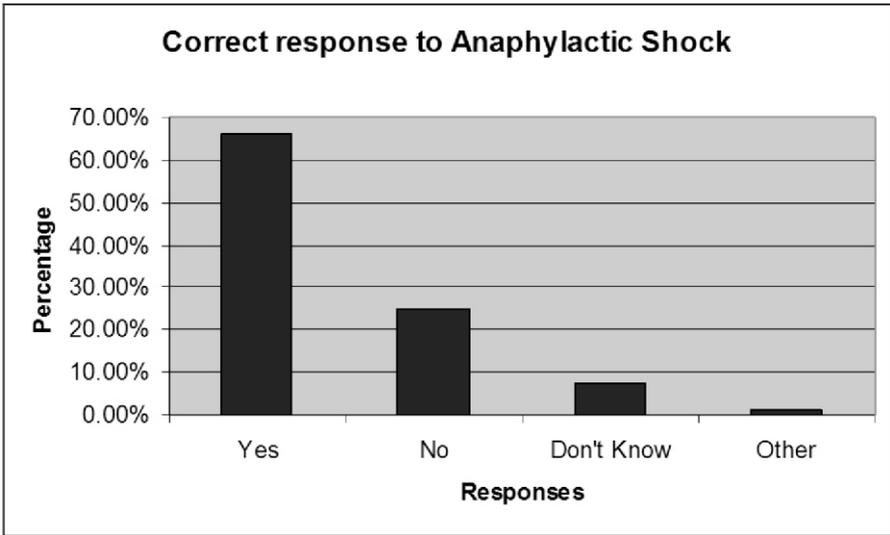


Figure 1: Appropriate reaction when a patient suffers from anaphylactic shock. The responses of the participating radiographers to a patient experiencing an epileptic seizure are illustrated in figure 2.

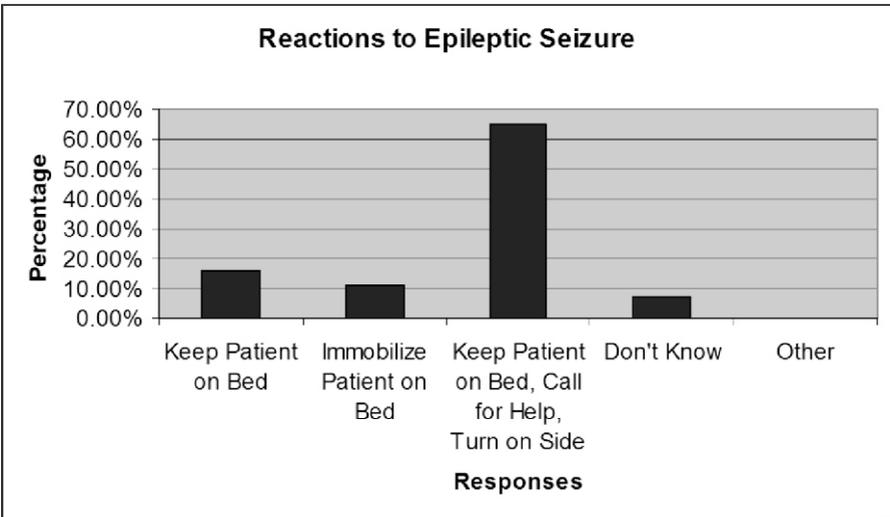


Figure 2: Appropriate reaction when a patient suffers from an epileptic seizure.

Sixty five percent indicated that they will keep a patient experiencing a seizure on the bed, call for help and turn the patient on his/ her side. The second highest group (16.25%) indicated that they would keep the patient on the bed.

Of the 80 radiographers involved, 67.5% indicated that they do not know how to assist with the basic operation of the defibrillator and 32.5% indicated that they do.

Fifty three percent of the radiographer's participating in the study stated that they do not have a valid first aid certificate. Forty two percent still have a valid first aid certificate, 3.75% of the sample does not know the currency of their certificates and 1.25% stated that it is not a requirement. From the results, it is clear that 53% of the radiographers cannot legally provide a patient with first aid care.

Even though more than half of the radiographers do not have a valid first aid certificate, 93.75% claim that they are still able to perform CPR. Only 6.25% of the radiographers state that they do not know how to perform CPR. These results are shown in figure 3.

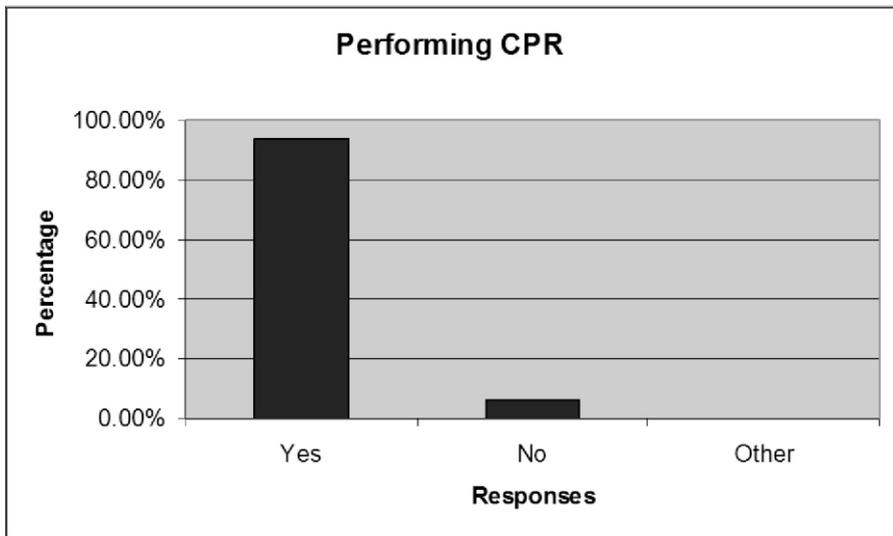


Figure 3: Performing Cardiopulmonary Resuscitation

Radiographers were asked to choose whether the cardiopulmonary resuscitation (CPR) cycle given were correct. The CPR cycle used as yardstick is prescribed by the American Heart Association in collaboration with International Liaison Committee on Resuscitation: two breaths and thirty heart compressions (American Heart Association & ILCOR, 2010: Online). Of the participating radiographers, 55% knew the correct ratio of breaths versus massages as can be seen in figure 4.

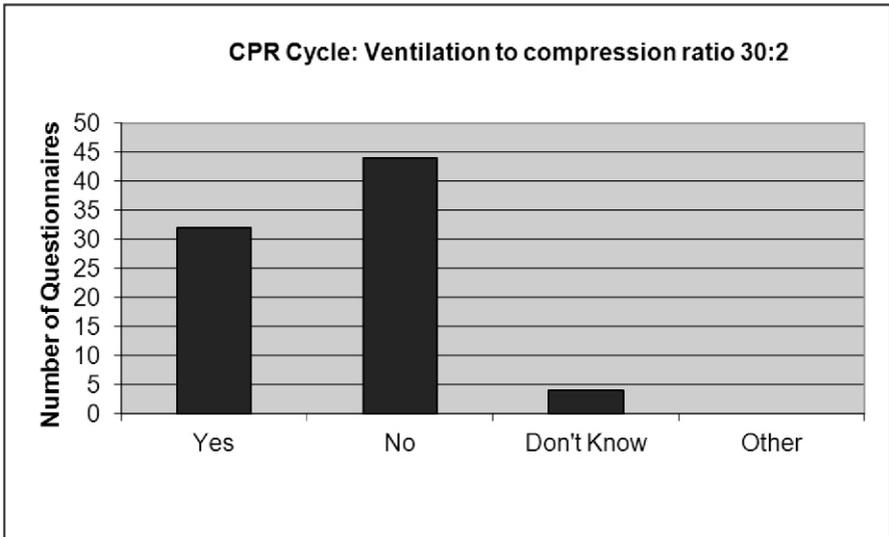


Figure 4: Cardiopulmonary Resuscitation cycle

Forty percent (32 of participants) of the radiographers gave the wrong ratio and 5% (4 of the 80 participants) of the radiographers do not know the correct ratio of breaths versus heart compressions.

As illustrated in figure 5, 76.25% of the radiographers know what the abbreviation ABC implies in relation to medical emergencies, 7.5% of the radiographers gave the wrong answer and 16.25% did not know.

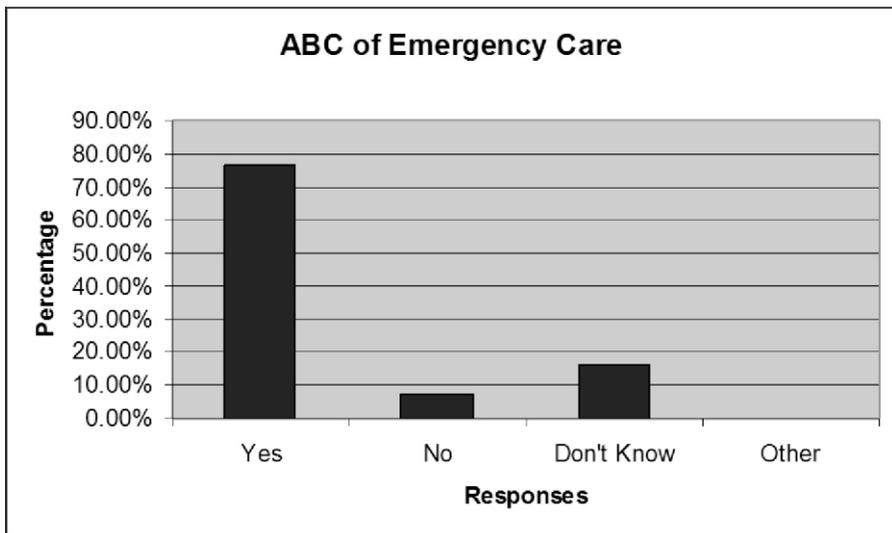


Figure 5: Use of the ABC of Emergency care

Seventy five percent of radiographers would respond according to protocol if they had to deal with an open wound. This entails protecting themselves by wearing gloves, applying pressure to the wound and lifting the affected area higher than the level of the heart and keeping the patient warm.

5. DISCUSSION

Only 50% of the emergency trolleys in this study conformed to the standard recommended in literature. Of the eleven types of equipment needed on the trolley, two departments in this study did not comply. One included department did not have variations in the size of certain equipment. There were no paediatric face masks or smaller needles available. The assumption could thus be made that such a department would not be able to respond should a child experience an emergency such as breathing difficulty. Results show that 49% of the radiographers in this study stated that they did not know which important medication should be available on the emergency trolley. Even though radiographers knew where the emergency trolley was, the results of the study reveal that half of the sample would be able to effectively assist a doctor during medical emergencies.

Emergency situations require assistance from a doctor or nurse. In the simulation study at Johns Hopkins Simulation centre the average time for physicians to arrive at an emergency was 3 minutes. These timelines indicate that the first responders' actions could determine the outcome of such a situation (Hunt, Walker, Shaffner, Miller & Pronovost, 2008: e41). It is a good sign that 95% of the radiographers in this study will call for help. The one who has indicated that he/ she will handle the situation alone is not conforming to his/ her scope of practice. What is also concerning is that 3.75% did not know whether to inform the doctor and nurse if an emergency situation occurs.

The correct response to a patient showing anaphylactic shock is crucial. Since radiographers use contrast media in some specialist procedures, it is imperative that they know how to identify precursors to shock because of allergies caused by contrast media.

Eisenberg & Johnson (1995: 334) explained that epilepsy is a condition which disturbs brain impulses and leads to a loss in consciousness or violent seizures. The correct response to this condition is imperative. One should never try to immobilize an epileptic patient during a seizure since it will only lead to injuries for both you and the patient. Keeping the patient from falling from the bed is very important because it will prevent additional injuries, but it should not be your only response. Keeping the patient on the bed, turning him/ her on his/ her side and calling for assistance is the correct response, depending on the situation. Most of the respondents of this study would follow the correct procedure.

Fifty three percent of the radiographer's participating in the study stated that they do not have a valid first aid certificate. This shows that the first aid training of radiographers is lacking and that structured intervention like CPD accompanied by practical demonstrations is needed. Owen, Mugford, Follows and Plummer in 2006 compared three simulation-based training methods for management of medical emergencies (Owen, Mugford, Follows, Plummer, 2006: 205). This study showed that simulation training prepared participants better to manage emergencies. Simulation also cultivated the skill to manage other emergencies not previously encountered.

A valid first aid certificate should be a requirement upon employment similar to Health Professional Council registration and should be checked on a regular basis. Owen, et al. (2006: 205) indicates that we should revisit the method used to empower radiographers to deal with medical situations and that training should be a continuous process. Another reason for poor responses as argued by Hunt, Walker, Shaffner, Miller & Pronovost, (2008: e41) that states “despite the fact that hospital nurses and physicians have usually received training in resuscitation, there is no guarantee that they have retained the skills necessary to deliver high-quality resuscitation efforts”.

A general statement applicable to all practitioners registered with the Health Professions Council of South Africa is that the scope of practice depends on what the practitioner was taught and deemed to be competent in (Health Professions Council of South Africa, 2009: Online). Not all radiographers can be deemed competent to use of the defibrillator. Yet 32.5% of radiographers responded that they do know how to assist the basic operation of the defibrillator indicating benefit of continued professional development. It can be argued that radiographers should at least be able to assist qualified personnel when defibrillation is required. Qualified responders may need assistance in adjusting the kilovoltage or applying gel on the paddles, which can be very valuable during an emergency.

Though the majority of radiographers in this study claim that they know how to perform CPR, follow-up questions suggest that some will need a refresher course to keep abreast with the latest developments in doing CPR. Only one of the institutions that formed part of this study have clear guidelines pertaining to CPR training, stating that all staff members are required to undergo training once per year (van Turha, 2004: 3) and that new employees must undergo basic CPR training within the first month of appointment (van Turha, 2004: 3). The majority of radiographers (76%) knew what the correct CPR sequence should be but only 55% knew the correct ratio of breaths versus heart massages when doing CPR.

In relation to managing open wounds, radiographers were questioned about the three basic principles to remember when confronted with an open wound. According to Claassens (2007: 17) the three principles are to protect yourself first by putting on gloves.

Then pressure should be applied to the wound and it should be lifted until it is higher than the level of the heart. The last principle is to keep the patient warm and shock to a minimum. Seventy five percent of the participating radiographers chose this correct option and would be able to manage open wounds. The remaining 25% are endangering themselves and the patient through improper management of open wounds.

6. CONCLUSION

The research has shown that the status of emergency trolleys evaluated during this study (n=4) is not uniform and that not all of them conform to the guidelines in literature. It can also be concluded that radiographers, participating in this study (n=80) do not have adequate knowledge of the emergency trolley, but in most instances they do know how to respond correctly to an emergency situation. Not all radiographers that completed the questionnaires during this study have valid a first aid certificates and consequently cannot legally perform first aid.

7. LIMITATIONS AND RECOMMENDATIONS

Limitations of this study included questionnaires that were incomplete or not returned at all. The aforementioned limitation can be overcome by using shorter questionnaires and by making it more user friendly. Questionnaires were also not completed by radiographers on leave or sick leave. Prior knowledge of the intended visit by the researcher could have resulted in emergency trolleys being checked and updated. This possible compromise was evaded by visiting the department involved a second time, allowing the researcher to observe the true state of the emergency trolleys.

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