Anaesthesia At Remote Locations

Essay
Submitted for the Partial Fulfillment
of the Master Degree in
Anaesthesiology

By
Abeer Mostafa Kamel
(M.B., B.Ch.) Ain Shams University

Under Supervision of

Prof. Dr.
Yousri Robien Ghatas
Professor of Anaesthesiology
Faculty of Medicine
Ain Shams University

Prof. Dr.
Sohir Abass Sadek
Professor of Anaesthesiology
Faculty of Medicine
Ain Shams University

Dr. **Ashraf Abdel Baki**
Lecturer of Anaesthesiology
Faculty of Medicine
Ain Shams University

FACULTY OF MEDICINE
AIN SHAMS UNIVERSITY
1998

ACKNOWLEDGMENT

First of all thanks my ***GOD,*** *for enabling me finish this work*

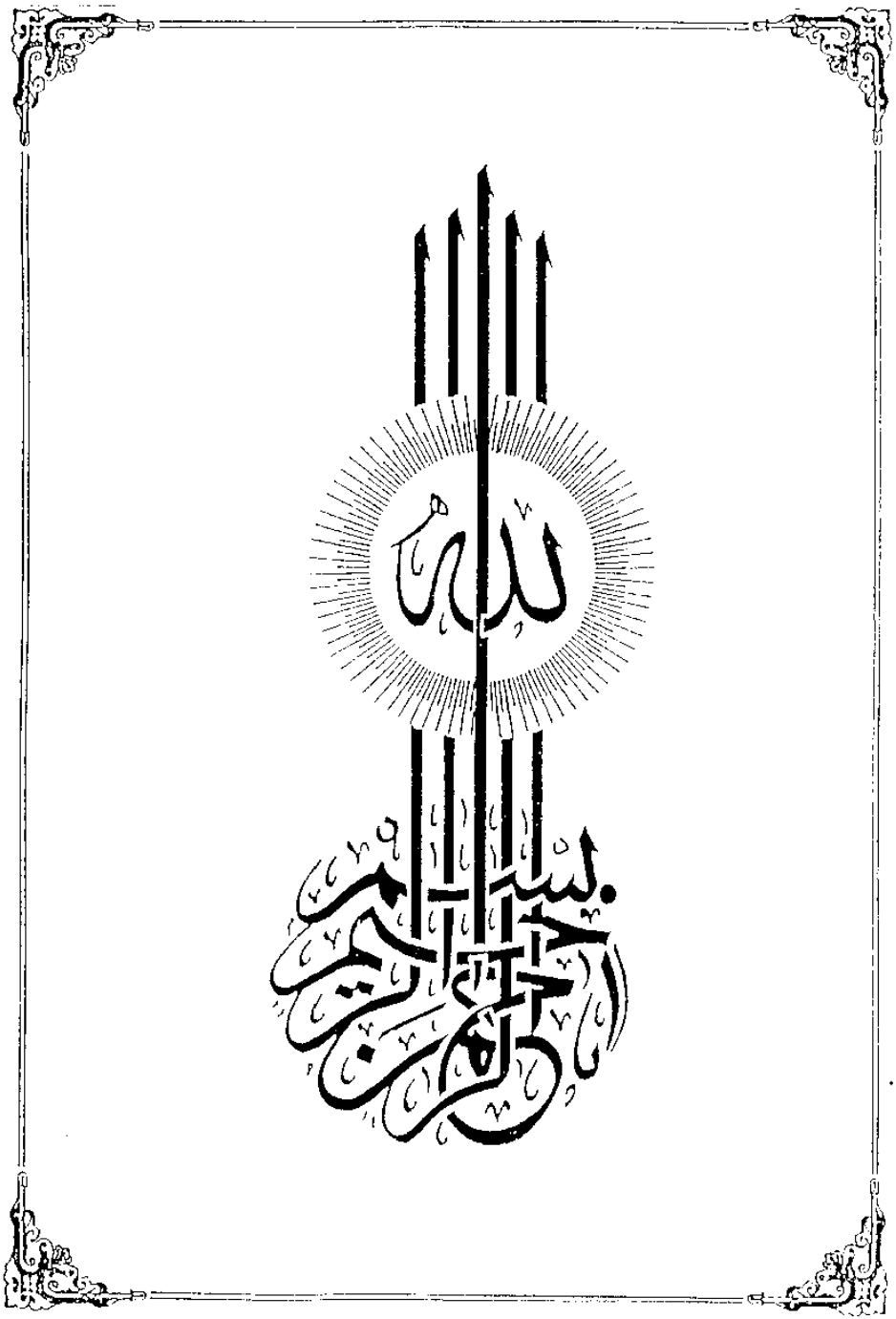
I would like to express my sincere thanks and appreciation to prof. Dr. ***Yousri Robien****, Professor of anaesthesia, faculty of medicine, Ain Shams University for his great efforts continuous support and encouragement throughout the whole work. I'm greatly honored to work under his supervision.*

Much more thanks are deticated to prof. Dr. ***Sohir Abaas,*** *Professor of anaesthesia, faculty of medicine, Ain Shams University for her sincere guidance, valuable advice and kind supervision throughout this work.*

Also, I am very grateful to Dr. ***Ashraf Abdel Baki,*** *lecturer of anaesthesia, faculty of medicine, Ain Shams University he gave me much of his time to follow my work and gave useful advice and help to put this work in a suitable form.*

Thank You

Abeer Mostafa Kamel



Contents

List of Tables

List of Figures

CHAPTER I
INTRODUCTION

▪ In 1987 publications attest to the increasing frequency with which support and advice from anaesthesiologists is being sought outside operation's room. This on - call anaesthesia services are frequently provided to the radiology, cardiology, radiation oncology, and psychiatric department. **(Gallagher, 1987).**

Pediatric oncologists, radiologists, and endoscopists provide the vast majority of sedation for such procedures. In united state a survey of sedation practices by radiologists for computed tomographe (CT) scanning in children found that most hospitals did not require signed consent for CT, with light sedation even when contrast medium was used. Signed consent for CT with deep sedation was required in 62% of hospitals. **(Keeter et al., 1990).**

From the anaesthesiologist's perspective, the potential hazards are multiple. Equipment may consist of items no longer used in the operation's room. Scheduling does not typically reflect the considerations given to operation's room scheduling, such as induction, emergence, and transport times before the next case. **(Messick et al.,1990).**

Anaesthesiologists should be involved early with other specialists, engineers, and architects in planning an extramural location to help direct and justify the reasons for placing equipment and oxygen risers in certain locations, or to plan extra

space where anaesthetic induction and emergence may be needed. **(Koskinen, 1995).**

Facilities and equipment: -

Few extramural locations are designed to deliver anaesthetics. Although most newer facilities have pipeline sources of oxygen and suction, they may be in an area away from the patient's head. Extraroom to be used as a preoperative holding or recovery area is relatively rare.

Equipment in peripheral anaesthetizing locations tends to be less frequently used and occasionally is incompatible with operating room equipment. It must be rigorously examined before use. Missing or faulty anaesthetizing or monitoring apparatus must be repaired or replaced, involving close coordination with the anaesthesia technicians and biomedical engineers. **(Messick et al., 1990).**

Cleanup, turnover and restocking plans must be specific for proper support by anaesthesia technicians. A storage area large enough to stock resupply materials must be readily available and a routine established for surveillance of adequate stock and supplies. This is essential for extramural locations because short supply items outside the operating room are not as readily obtained. **(Cote, 1993).**

Redundancy of nondisposable supplies is other issue, two laryngoscopes must be available, electrocardiographic monitor with battery operated monitor for back up and transport. Drugs should be checked according to the usual operating room routine, and outdated items replaced. Gas cylinder supplies must be reliable for areas designed without piped oxygen. Wall suction supply or portable suction is needed. **(ASA, 1995).**

Personnel: -

Non - anaesthesia personnel involved in the care of patients in areas remote from the operating room site may be less familiar with the overall management of anaesthetized patients. In addition, paramedical personnel other than nursing personnel usually present in the surgical site, anaesthesiologist, must plan accordingly and bring additional anaesthesia personnel as indicated. **(Henneberg et al., 1992), (ASA,1995).**

Monitoring: -

Appropriate patient monitoring is required. The American Society of Anaesthesiologists require that, the electrocardiogram be continuously displayed through out the anaesthesia, that arterial blood pressure and heart rate be determined at intervals not greater than every five minutes, and that additional evaluation of circulatory function be performed by a minimum of one of monitoring a peripheral pulse by palpation or ultrasound, pulse

plethysmography, auscultation of heart sounds, monitoring of direct (intraarterial) blood pressure or oximetry . **(ASA, 1988).**

In addition to the required oxygen analyzer with a low oxygen concentration limit alarm, measurement of oxygen saturation (SaO2) by pulse oximetry is strongly encouraged. Adequate illumination and exposure of the patient to facilitate assessment of the patient's colour is required during all procedures. The adequacy of ventilation of the patient must be evaluated continuously, quantitative monitoring of end- tidal CO_2 or volume of expired gas is encouraged. When mechanical ventilation is used, continuos use of advice capable of detecting disconnection of components of the breathing system is required, and its alarm must include an audible signal. **(Sornat and Kemp, 1985), (JCAHO, 1996).**

The standards of practice: -

The practice standards adapted by the American Society of Anaesthesiologists in 1986 for basic intraoperative monitoring also apply to extramural locations. In addition the Harvard - affiliated hospitals established " standards for an anaesthetizing location in a Non - operating room area "in 1986.

Table (1-1) :- Standards for an anaesthetizing location In Non - OR area

The following items are required to meet minimal standards. All items are required for each location. Items of equipment must be comparable to those used in an OR and be maintained according to OR standards.

- Source of piped oxygen.
- Oxygen available in anaesthesia machine cylinder(s).
- Suction apparatus, including separate suction for scavenging of anaesthesia gases.
- Anaesthesia machine (and ancillary supplies and equipment).
- Adequate monitoring equipment to allow adherence to standards of practice.
- Sufficient electrical outlets to satisfy anaesthesia machine and monitoring equipment requirements.
- Adequate illumination for the patient , anaesthesia machine and monitoring equipment
- Sufficient space for continuos access to the patient anaesthesia machine and monitoring equipment.
- Emergency cart with defibrillator, emergency drugs and other resuscitation equipment equivalent to that in the operating rooms.
- Attending anesthesiologist readily available.
- Reliable means of two - way communication to summon help.

▪ **Adapted from department of anaesthesia, Harvard Medical School standards of practice II.**

Practice standards promulgated by the **American Academy of Pediatrics (Committee on drugs, 1992)** are exceeded by established practice standards in anaesthesiology.

Table (1-2) Guidelines For Monitoring And Management Of Pediatric Patients During And After Sedation For Diagnostic And Therapeutic Procedures .

Facilities :-

The practitioner who uses any type of sedative medication or general anaesthetic agent must have available the proper facilities, personnel, and equipment to manage any reasonably foreseeable emergency situation experienced by the patient and as mandates by state law.

Back - up emergency services :-

Back - up emergency services should be identified with a protocol outlining to necessary procedures for their immediate employment for non- hospital facilities, an emergency assist system should be established with the nearest hospital emergency facility, and ready access to ambulance service must be assured.

Equipment :-

A positive pressure oxygen delivery system that is capable of administering greater than 90% oxygen at a 5L/min flow for at least 60-min must be available. All equipment must be able to accommodate children of all ages and sizes.

Inhalation sedation equipment must :-

1- Provide a maximum of 100% and never less than 20% oxygen concentration at a flow rate appropriate to the child's size.
2- Have fail - safe system that is checked and calibrated annually.

- Equipment that is appropriate for the technique being used and that can monitor the physiologic state of patient before, during and after the procedure must be present.
- An emergency cart or kit must be readily accessible and should include the necessary drugs and equipment to resuscitate a nonbreathing and unconscious patient and provide continuos support while that patient is being transported to a medical facility. There must be documentation that all emergency equipment and drugs are checked and maintained on a scheduled basis.

Informed consent :-

Each family is entitled to be informed and to give consent regarding risks of conscious sedation, deep sedation and general anaesthesia. Written consent should be obtained according to the procedure outlined by individual state laws.

Responsible adult :-

The pediatric patient shall be accompanied to and from the office by a parent, legal guardian, or responsible adult who shall be required to remain at the

office for the entire treatment period.

Documentation :-

Prior to treatment:

The practitioner must document each sedation and general anaesthetic procedure in the patient's chart. Documentation shall include instructions to parents, dietary precautions , vital statistics (weight and age) , preoperative health evaluation (including risk assessment, health history , and review of systems with a statement as to airway patency , vital signs , and physical examination), child's physician and rationale for sedation

During treatment:

Documentation must include vital signs at specific intervals before, during and after the procedure as well as medications given.

After treatment:

The time and condition of the child upon discharge should de documented.

Specific guidelines are provided for conscious sedation, deep sedation and general anaesthesia.