

# Pattern of admission to surgical intensive care unit of Tikur Anbessa Hospital for mechanical ventilatory support

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## Abstract

**Background:** Mechanical Ventilation is a supportive measure for patients who are in respiratory failure.

**Objective:** Designed to identify the commonest pathology responsible for admission to the unit for mechanical respiratory support.

**Method:** A prospective case study conducted for a period of one year (April 1996 - March 1997)

**Result:** Among the 256 admission to the Surgical Intensive Care Unit (SICU) of Tikur Anbessa Hospital, 122 (47.7%) consecutive patients were on mechanical respiratory support for a period ranging from 2-40 days with a mean duration of 5.4 days. Sixty-six (54%) patients belong to the age group between 16-30 years mainly due to severe head injury (24.6%) or complications of pregnancy (11.5%). Patients are admitted and mechanically ventilated due to respiratory failure, CNS and systemic problems secondary to head injury, eclampsia and sepsis.

**Conclusion:** Measures to fully equip the set-up with the proper Ventilators, with the desirable modes of Ventilation and other materials like the airway equipments are needed to deal with the commonest pathologies identified, and susceptible group observed assist in providing efficient service. [*Ethiop. J. Health Dev.* 2001;15(3):193-195]

## Introduction

This report is the first in its nature in Ethiopia since the Surgical Intensive Care Unit (SICU) is the only unit in the country that provide a regular respiratory support for patients.

to the newly developed modes of ventilation, i.e. Synchronised intermittent mandatory ventilation (SIMV), Biphasic positive airway pressure ventilation (BPAP)...etc.

MV is a supportive measure for all patients in any form of respiratory failure until the primary cause is reversed(4). The cause for respiratory failure ranges from a failure of the central neural control to the peripheral mechanical failure and/or problem in the lungs primarily affecting gas exchange(5).

The purpose of the study was to describe the pattern of admission for respiratory support & their common indication. The study is believed to identify the commonest pathology & susceptible groups to design a better management strategy and the necessary logistics.

Mechanical Ventilation (MV) has been used as a supportive measure for saving life since 1888. It was started using a simple foot pump(1) and subsequently an improved ventilator mode, i.e. Intermittent Positive pressure ventilation (IPPV), was developed in 1920s in relation with general anaesthesia & endotracheal intubations (2). Since then the mode of delivery of mechanical respiratory support has been gradually improved to the present types of 3<sup>rd</sup> generation ventilators that deliver a range of ventilator modes varying from the simple IPPV

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## Subjects and Methods

This is a prospective study of descriptive case series nature conducted for a period of one year i.e. from April 1<sup>st</sup> 1996 to the end of March 1997, at the surgical intensive care unit (SICU) of Tikur Anbessa Hospital. All consecutive patients needing respiratory support for more than 24 hours were included in the study. Patients needing ventilatory support for less than 24 hours are excluded because these group constitutes patients ventilated for short duration until the effect of drugs given to them wears off (Anesthetic or Sedatives for pre-eclampsia and or eclampsia management). The indications(6) (Table 1) used in considering mechanical respiratory support were *hypoxaemia* as defined by the low oxygen saturation ( $SaO_2 < 90\%$ ), *to protect and maintain the airways* for deeply comatous patients who have no airway reflex to protect and maintain it patent because of a posteriorly falling tongue and the other major group of indications were Neuromuscular problems related to the different pathologies

Table 1: Indications for respiratory support

Diagnosis	No. of cases	%
Pulmonary insufficiency	83	68
To protect & maintain the airways	35	28.7
Post operative respiratory failure	7	5.7
Total	125*	

\*The total number exceed 122 because of double indication in three patients

Among the variables studied were the universal variables, vital signs, Glasgow coma score, oxygen saturation using Nellcor pulsoximeter, indication, duration and complication of mechanical ventilation.

## Result

A total of 122 cases were admitted for respiratory support during the one-year study period that constitute 47.7% of total SICU admission (256) during the study period and of these 66 were males & 56 females with a male to female ratio of 1.2:1. The age group mostly

affected is between 16-30 years (Table2). Out of the total number of cases surgical patients were 74(60.7%), medical 13(10.7%), Obstetric 24(19.7%), Gyn 9(7.4%) Orthopaedics & paediatric one each (0.8%) (Table 3). The commonest specific pathologies that needed mechanical respiratory support include cases of severe head injury (30), eclamptic patients (10), Burn cases (6), Pelvic abscess (4) and poly-trauma patients (3).

Table 2: Frequency of cases on Mechanical ventilatory support at different age group

Age	No. of cases	%
1 - 15	11	9
16 - 30	66	54
31 - 45	25	20
46 - 60	13	11
61 - 75	07	6
Total	122	100

Table 3: Frequency of patents admitted to SICU from the different Departments

Department	No. of cases	%
Surgical	74	60.7
Gyn. Obs	33	27.0
Gyn	9	7.4
Obs	24	19.7
Medical	13	10.7
Paediatrics	1	0.8
Orthopaedic	1	0.8
Total	122	100

The commonest indications for respiratory support (Table1) were pulmonary insufficiency with hypoxaemia in 83 patients (68%) followed by for reasons of protecting and maintaining patients airway in 35(28.7%)and few patents 7(5.7%) were ventilated post operatively

patients airway in 35(28.7%) and few patients 7(5.7%) were ventilated post operatively because they fail to achieve adequate respiratory effort.

Most patient (60%) were ventilated for an average of 2-5 days and the duration vary from 2 days up to 40 days with a mean duration of 5.4 days.

### Discussion

The majority of Patients admitted for ventilatory support were surgical cases (Table 3) and are mainly head injury cases 30(24.6%). The high frequency of head injury patients needing mechanical ventilation is probably related to the severity of the 1<sup>o</sup> insult, i.e. severe brain contusion and/or intracranial bleeding, and also due to 2<sup>o</sup> insult to the brain as a result of severe hypoxaemia, hypercarbia and hypotension that affect the cerebral perfusion to result further damage. The other group are of Ob/GY cases and all patients are admitted due to problems related to complication of pregnancy i.e. cases of Eclampsia, pelvic peritonitis & ruptured uterus.

Septic patients the focus being either Gynaecological or intra-abdominal are mainly ventilated because of a problem in their lungs as part of the septic process and/or as part of the multiple organ dysfunction they develop.

Measures to fully equip the set-up with the proper Ventilators that serve the majority of patients with the desirable modes of Ventilation and provide optimal gas exchange for the including airway equipments to deal with the commonest pathologies identified, and susceptible group observed assist in providing efficient service.

Reducing road traffic accident which is the highest in the world and effective public health measures for reducing pregnancy related morbidities could reduce the observed pathologies needing mechanical respiratory support in the susceptible groups.

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