**Adil Abbasi MD**

**June28, 2025**

# Negative Inspiratory Force (NIF) OR Maximal Inspiratory Pressure (MIP)

## What is NIF?

- **Definition:**
  NIF is the maximum pressure a patient can generate during a forceful inhalation against a blocked airway (usually measured at the mouth).
- **Units:**
  Measured in **centimeters of water (cm $H_2O$)**.

## Clinical Use

- **Assessment of Respiratory Muscle Strength:**
  - **NIF** is used to evaluate the strength of the diaphragm and other inspiratory muscles.
  - It is especially important in patients with neuromuscular disease, and to assess readiness for weaning from mechanical ventilation.

## How is NIF measured?

- The patient exhales fully, then inhales as forcefully as possible against a blocked mouthpiece.
- The most negative pressure generated (below zero) is recorded.

## Normal and Critical Values

- **Normal:**
  Usually **-80 to -100 cm $H_2O$** (healthy adults).
- **Acceptable for Weaning:**
  **>-30 cm $H_2O$** (i.e., more negative than -30 cm $H_2O$; e.g., -40, -50, etc. is better).
- **Critical Value:**
  **>-20 cm $H_2O$** (i.e., less negative than -20 cm $H_2O$ indicates respiratory muscle weakness and risk of failure).

| Parameter | Description |
|---|---|
| **NIF** | Negative Inspiratory Force (a.k.a. Maximal Inspiratory Pressure, MIP) |
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| **Weaning** | At least -30 cm $H_2O$ (the more negative, the better) |
| **Critical** | >-20 cm $H_2O$ (less negative suggests weakness) |

## Key Clinical Application

- **If a patient's NIF is less negative than -20 cm $H_2O$** (e.g., -15 cm $H_2O$), they may not have adequate respiratory muscle strength to maintain spontaneous breathing and are at risk for ventilatory failure.
- NIF is commonly used in **ICUs** to help decide if a patient can be safely extubated.

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