

## Neuroleptic Malignant Syndrome

Neuroleptic Malignant Syndrome is a severe neurological complication of typical antipsychotic and neuroleptic medication use, which is rapidly progressive and life-threatening and occurs in up to 3% of patients taking neuroleptic medications. The acronym FEVER is helpful for describing the symptoms patients display with this syndrome. Patients display Fever, sometimes in excess of 40°C, and Encephalopathy, which encompasses a wide range of presentations, from delirium to stupor and coma. Patients have unstable Vital signs as a result of autonomic instability in the form of tachycardia, hypertension, dyspnea, and diaphoresis. Lab values in this syndrome show Elevated CPK enzyme, which correlates to the severity of illness. Finally, patients show Rigidity of their muscles, described as "lead pipe" rigidity, with increased tone and stable resistance to all ranges of motion. The reversal agent associated with treating this disease is Dantrolene sodium, which is a direct-acting skeletal muscle relaxing agent and is very effective in treating neuroleptic malignant syndrome. Other drugs can be used, including Bromocriptine, which is a dopaminergic agonist.



PLAY PICMONIC

### FEVER Acronym

#### F-E-V-E-R Flames

The FEVER Acronym is used to describe the hallmark features of NMS. These are Fever, Encephalopathy, Vital signs unstable, Elevated enzymes (CPK), and Rigidity of muscles.

### Fever

#### Fever-beaver

Patients with NMS often have fever presenting as the initial sign, with temperatures above 38°C and often above 40°C. The symptom of fever is due to hypothalamic dopamine receptor blockade.

### Encephalopathy

#### Altered Brain

Neuroleptic malignant syndrome can lead to encephalopathy, which may present in patients as altered mental status, delirium, agitation, and even progression to coma.

### Vital Signs Unstable

#### Unstable Vital-grounds

Those with neuroleptic malignant syndrome have unstable vital signs due to autonomic instability. Typically, tachycardia is seen, along with high blood pressure, tachypnea, and diaphoresis.

### Elevated Enzymes

#### Up-arrow Enzyme

Patients with this syndrome often have elevated enzymes, with CPK enzyme levels greater than 1000 IU/L. Values this high are more specific for NMS, and there is a direct correlation between CPK elevation and disease severity and prognosis.

### Rigidity of Muscles

#### Stone Muscle-man

Neuroleptic malignant syndrome leads to profound muscle tone, and patients can be described as having a "lead pipe" rigidity.

### Reversal Agent

## D2 Agonists

### Doberman (2) Tutu Dragonist

Because it is theorized that neuroleptic malignant syndrome occurs as a result of dopaminergic receptor blockade, dopaminergic agonists are used to treat this condition.

## Bromocriptine

### Broom-crypt Keeper

Bromocriptine is a dopaminergic agonist medication used to restore lost dopaminergic tone in patients with neuroleptic malignant syndrome. This medication should be continued up to 10 days after initial treatment for NMS and should then be tapered down. Patients can alternatively be given amantadine, which has dopaminergic and cholinergic effects.

## Dantrolene

### Denture-lion

Dantrolene is a direct-acting skeletal muscle relaxant and is effective in treating malignant hyperthermia. Another method of medical therapy is with dopaminergic agonists, such as bromocriptine.