Forenames

Last name

Mersey and West Lancashire Teaching Hospitals

Hospital No

D.O.B.

NITROUS OXIDE TOXICITY PATHWAY

First Presentation: ED or Medical SDEC (Day 0)

Patient presenting with neurological abnormalities and a history of recreational Nitrous Oxide (N2O) use

1

Document N₂O use quantity

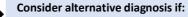
Neurological examination (use proforma overleaf)

oforma overleaf)

Investigations:

- FBC/U&E/LFT/TFT/B12/Folate/HIV/syphilis
- Send sample for storage (Separate Red EDTA)
- Homocysteine*
- Request urgent outpatient MRI Cervical & Thoracic spine

*Measure only if B12 in normal range. Send as add on request for storage sample. (Result may take days & will be reviewed in RANA/SDEC follow-up)



- Vision changes
- □ Recent infective illness
- □ Back pain
- □ Ascending symptoms
- □ Labile BP
- □ Tachycardia / arrhythmia

Red Flags:

- □ Immunosuppression
- ☐ History of cancer
- □ Fever
- ☐ Features of cauda equina syndrome

Treatment

Hydroxycobalamin 1mg IM STAT



Patient Education:

- 1. Stop using N2O immediately for B12 injections to work. Continued use may lead to irreversible worsening of their neurological function.
- 2. Stress importance of attending follow up injections and clinic reviews.
- 3. Provide RCEM PIL and signpost to local SMLT services



Discharge & Follow-Up

- 1. Call 1B mSDEC co-ordinator to arrange follow up on Medical SDEC in 2 days.
- 2. Clear safety netting to return if deterioration in symptoms

Admit

Refer for admission if patient is newly unable to self-care

Review on Medical SDEC (Day 2)

Review:

- Repeat full neurological examination
- Ensure patient is abstaining from N2O use
- Review MRI report and Homocysteine result if available



Discuss with AMU Consultant or on call Neurologist if concerns about a possible alternate diagnosis



Refer to Rapid Access Neurology Assessment clinic at Walton Centre (http://rana.walton.wiki/); document in notes Ensure arrangements in place for ongoing B12 injections on 1B mSDEC for 2 weeks (Mon/Wed/Fri)

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NITROUS OXIDE TOXICITY PATHWAY

Gait description (Do they require	walking aids?):
Romberg's test:	Time for ten metre walk test:
Note that findings are general	ally symmetrical in N ₂ O-SACD
Right side:	Left side:
Joint position sense loss to: UL: LL:	Joint position sense loss to: UL: LL:
Pinprick sensory loss to: UL: LL:	Pinprick sensory loss to: UL: LL:
Power (MRC flex/extend 0-5): Hip f: e: Shoulder - f: e: Knee f: e: Elbow - f: e: Foot d: p: Grasp -	Power (MRC flex/extend 0-5): Hip - f: e: Shoulder - f: e: Knee - f: e: Elbow - f: e: Foot - d: p: Grasp -
Reflexes (0 to ++++): Biceps: Knee: Ankle: Plantar:	Reflexes (0 to ++++): Biceps: Knee: Ankle: Plantar:
Other possible fin	dings in N ₂ O-SACD
Lhermitte's:	Psychiatric disturbance:
Pseudo- athetosis:	Vision change:
Bowel and bladder disturbances	(do they need a bladder scan?):

Association of British Neurologists Clinical Practice Guide: Nitrous Oxide-Induced Subacute Combined Degeneration of the Cord 12/2/2023

Use above proforma to standardise the review of neurology on Day 0, Day 2 and on any subsequent days when patient presents to mSDEC for B12 injections if patients states their neurology has worsened