

Autonomic Dysreflexia





Autonomic Dysreflexia

Objectives:

- 📌 Educate patients, family members, carers as to the cause of **autonomic dysreflexia**
- 📌 How to recognise symptoms
- 📌 How to facilitate prompt and appropriate treatment

Learning Outcomes:

- 📌 You will be able:
- 📌 To identify the causes of **autonomic dysreflexia**
- 📌 Recognise symptoms
- 📌 Facilitate prompt and appropriate treatment

Autonomic Dysreflexia

Effects of Autonomic Dysreflexia

Potentially Life threatening condition

May occur anytime following SCI above T6

Medical Staff

Unfamiliar with the condition

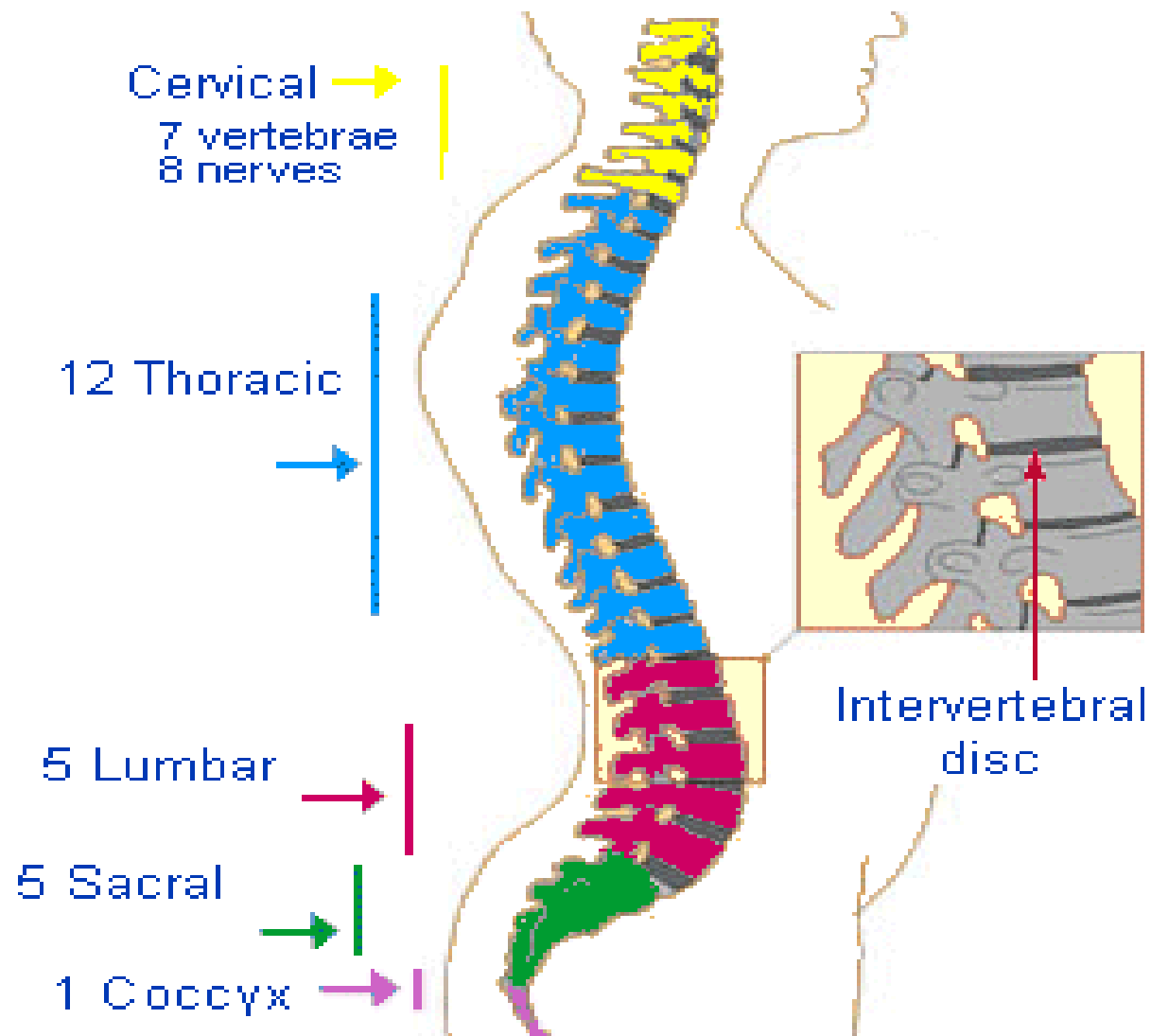
Unfamiliar as to treatment and seriousness; rely on you for information!

Important

That you are aware of the signs and symptoms

That you know how to implement prompt treatment

Autonomic Dysreflexia



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The Vertebral Column

4 major curves:

1. Cervical
2. Thoracic
3. Lumbar
4. Sacral

Provides:

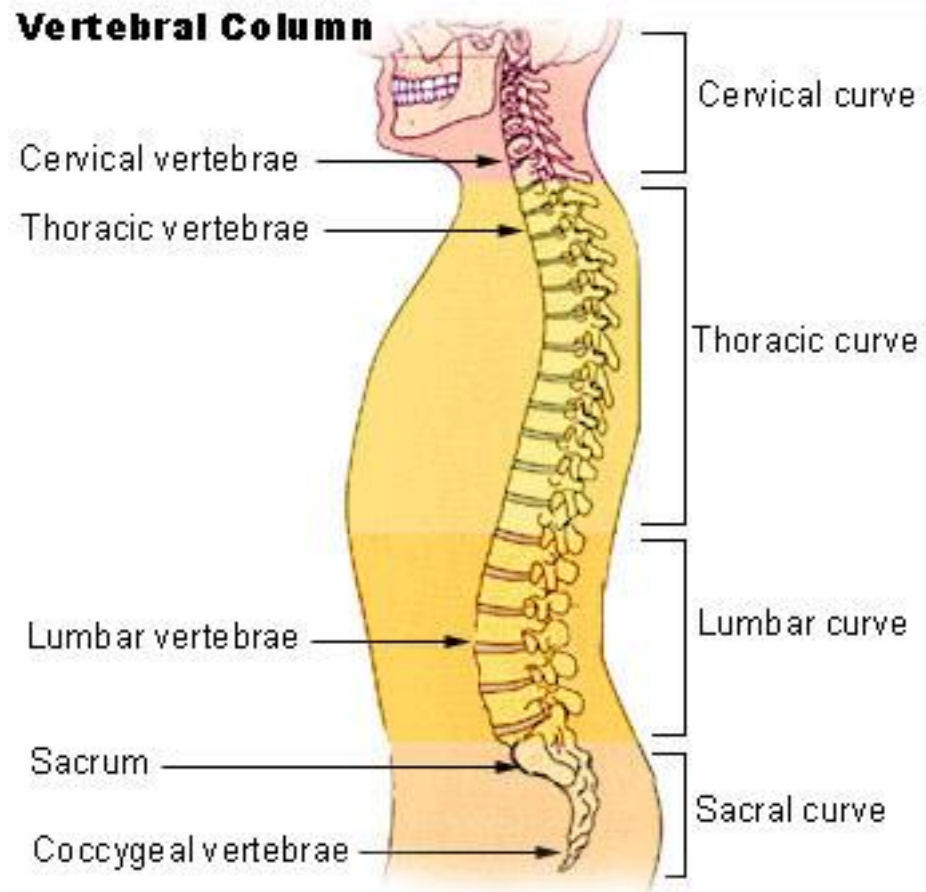
Support

Protection

Allows nerves to exit

Site for muscle attachment

Movement



Autonomic Dysreflexia in Spinal Cord Injury

Spinal cord and nerves

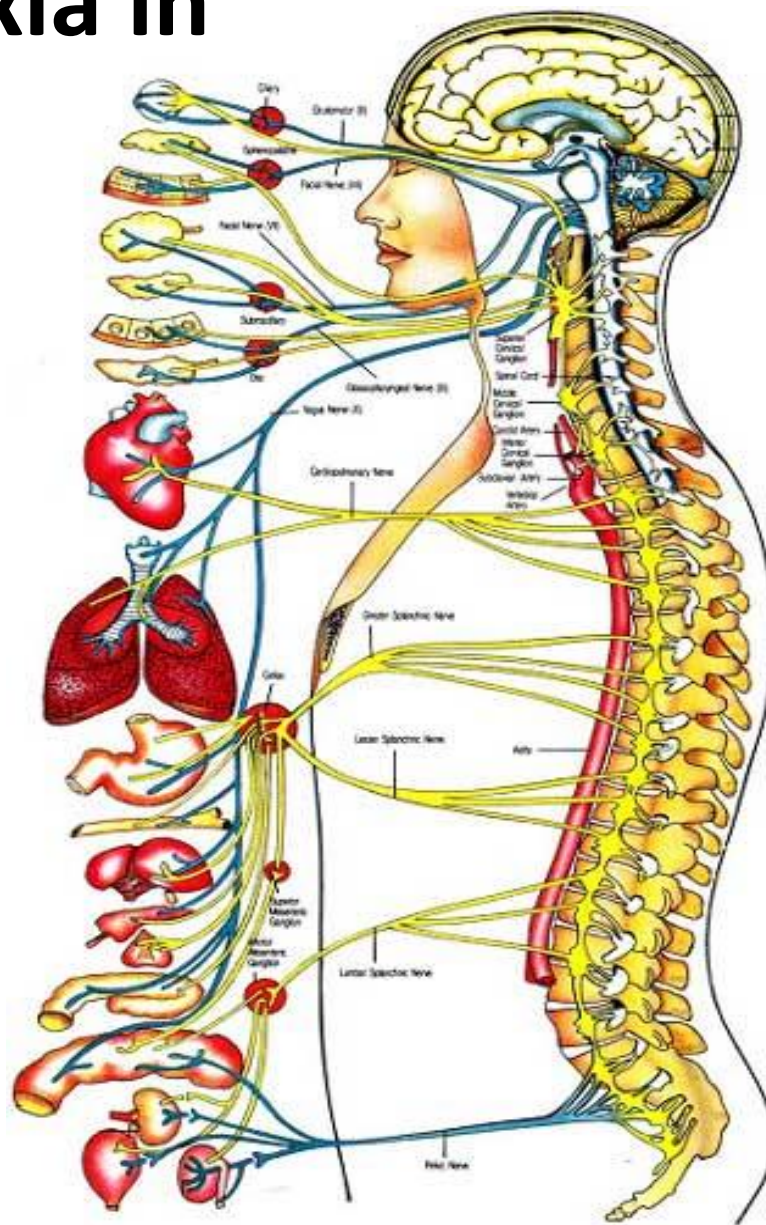
Nerve bundles exit the spinal cord and supply different organs and functions as they progress down the spinal cord.

The lower the injury the less organs are affected.

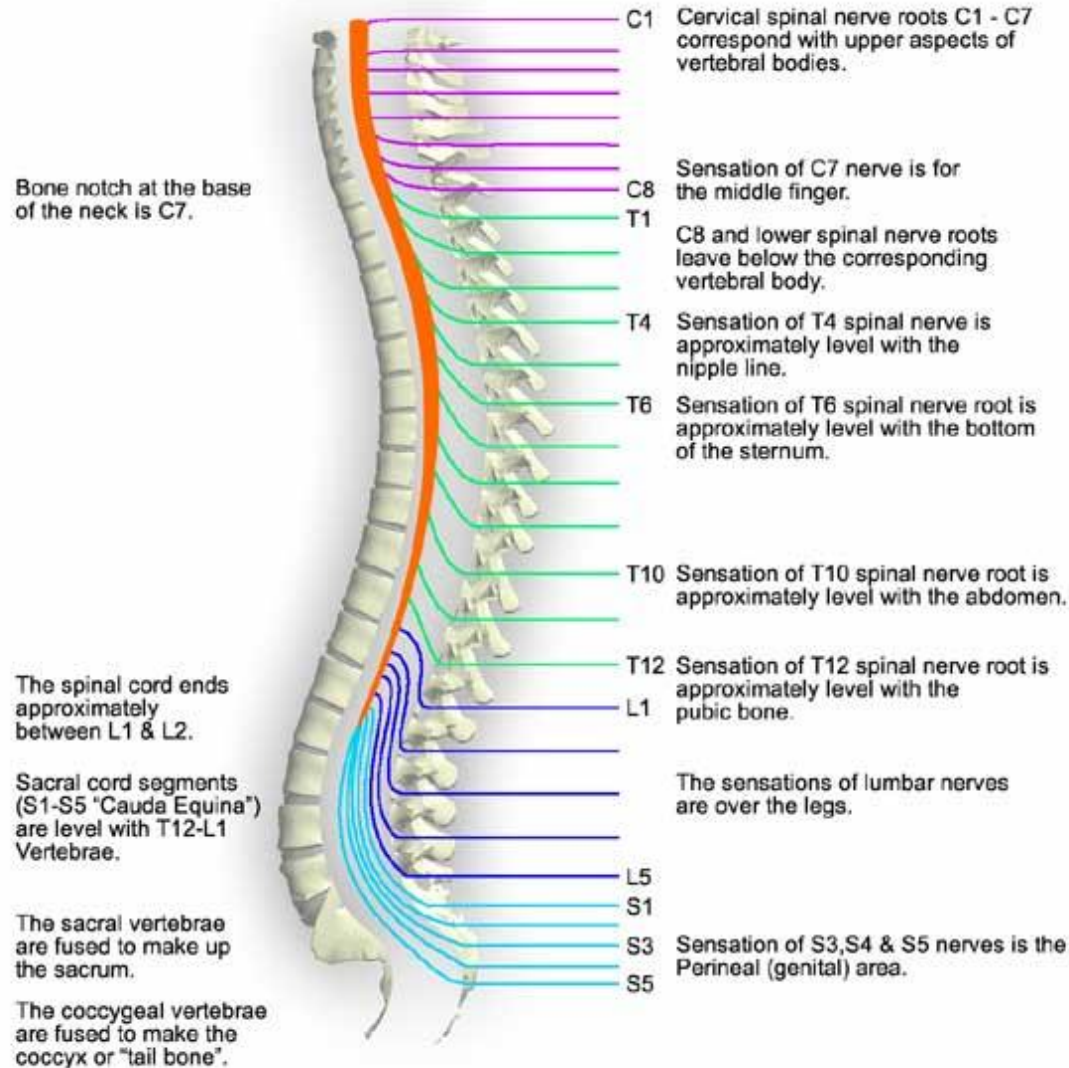
The higher the injury the more organs are affected including the lungs.

This is why some tetraplegic patients require artificial ventilation or implantation of phrenic nerve pacers.

The nerve supply necessary to make their lungs work are no longer able to do this.



Autonomic Dysreflexia





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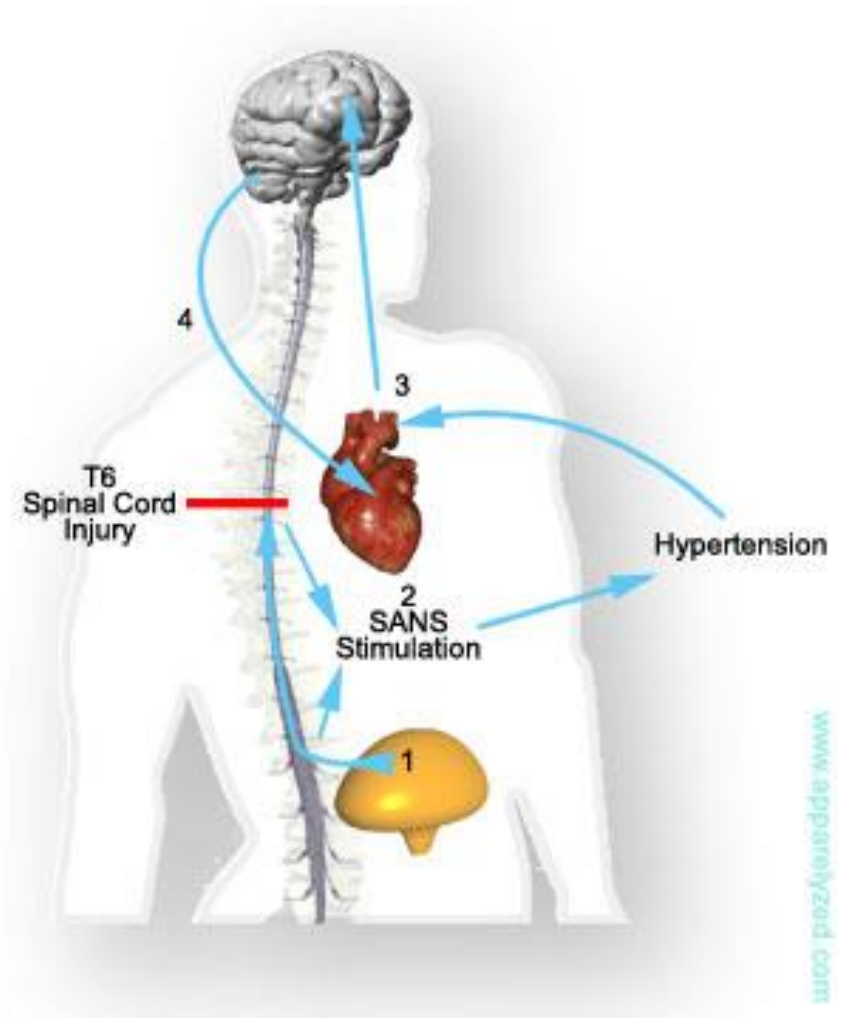
Together, the spinal cord and the brain make up the central nervous system (CNS).

The PNS controls the somatic nervous system, which regulates muscle movements and the response to sensations of touch and pain, and the autonomic nervous system, which provides nerve input to the internal organs and generates automatic reflex responses.

Afferent –from sensory organs (somatic)

Efferent- Action potentials to muscles and glands (autonomic)

The autonomic nervous system is divided into the sympathetic nervous system, which mobilizes organs and their functions during times of stress and arousal, and the parasympathetic nervous system, which conserves energy and resources during times of rest and relaxation.

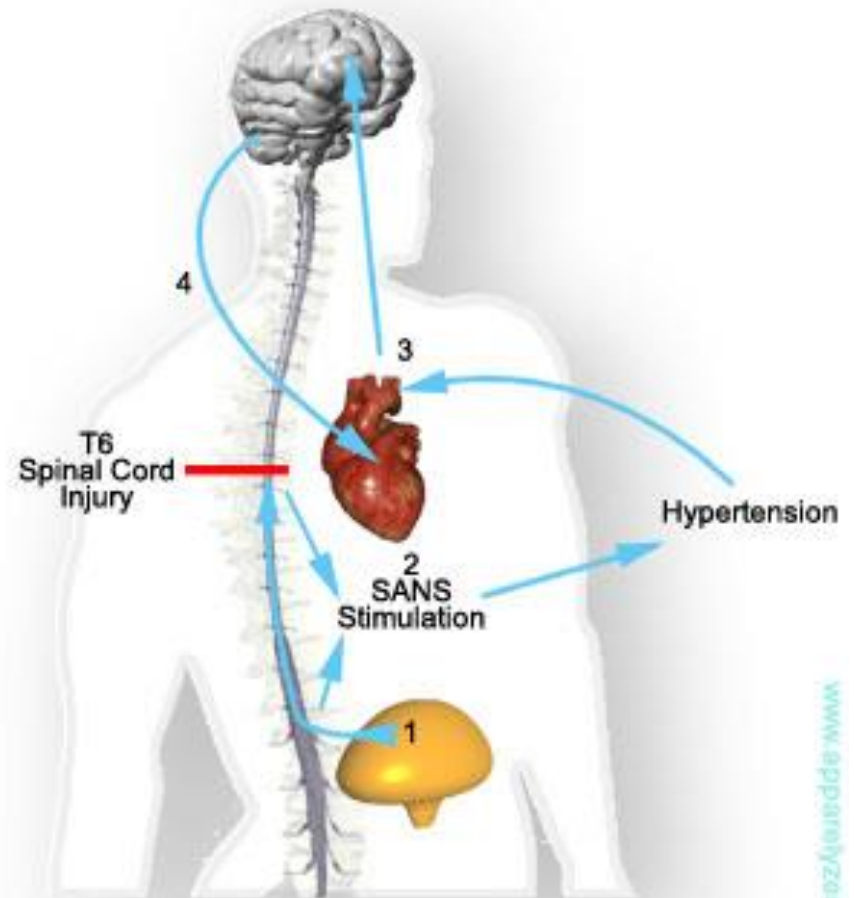




Autonomic Dysreflexia

The autonomic nervous system normally maintains body homeostasis via its two branches, the parasympathetic autonomic nervous system (PANS) and the sympathetic autonomic nervous system (SANS). These branches have complementary roles through a negative-feedback system; that is, when one branch is stimulated, the other branch is suppressed.

The effects of PANS stimulation are the opposite of the SANS; for the most part, these are constriction of the pupil, decreased heart rate, as well as increased peristalsis and tone of the gut.



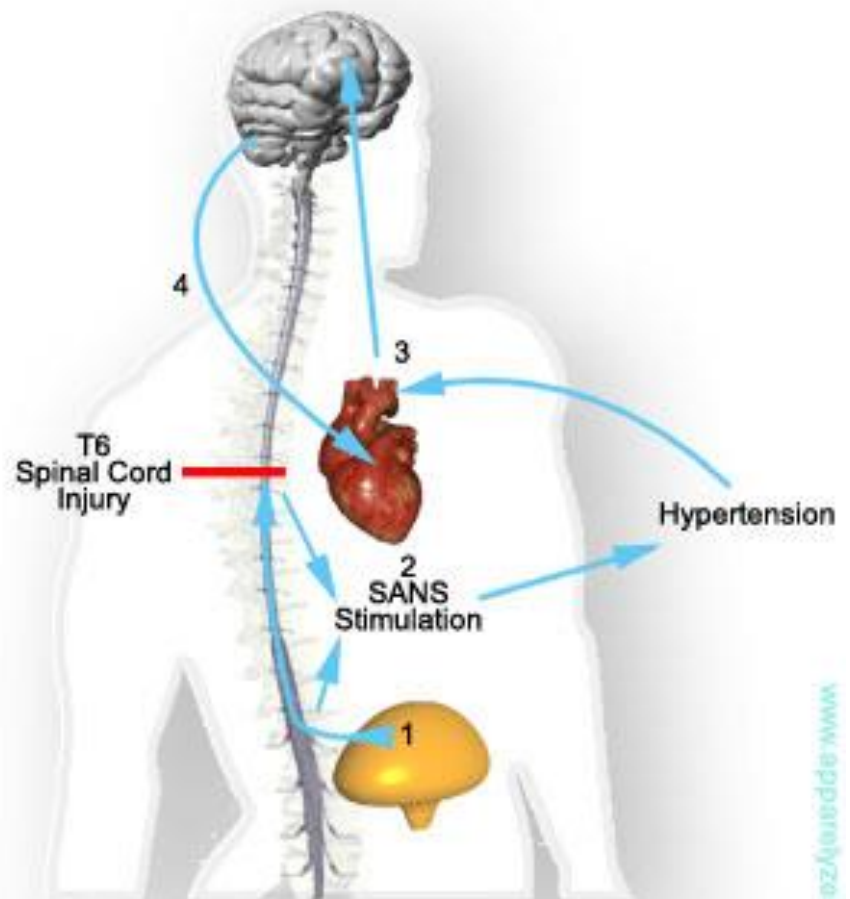


Autonomic Dysreflexia

The PANS and SANS exit at different sites in the CNS. The PANS exits via the midbrain, pons, medulla (cranial nerves [CN] III, VII, IX, and X), and the sacral level of the spinal cord.

The SANS exits via the thoracic and lumbar segments of the spinal cord. There is a major sympathetic output (called the splanchnic outflow) between T5 and L2.

The site of the SCI also interrupts the two branches of the autonomic nervous system and disconnects the feedback loop, causing the two branches to function independently.





Autonomic Dysreflexia

The ascending information reaches the major splanchnic sympathetic outflow (T5-T6) and stimulates a sympathetic response.

The sympathetic response causes vasoconstriction, resulting in hypertension, pounding headache, visual changes, blurred vision, anxiety, pallor.





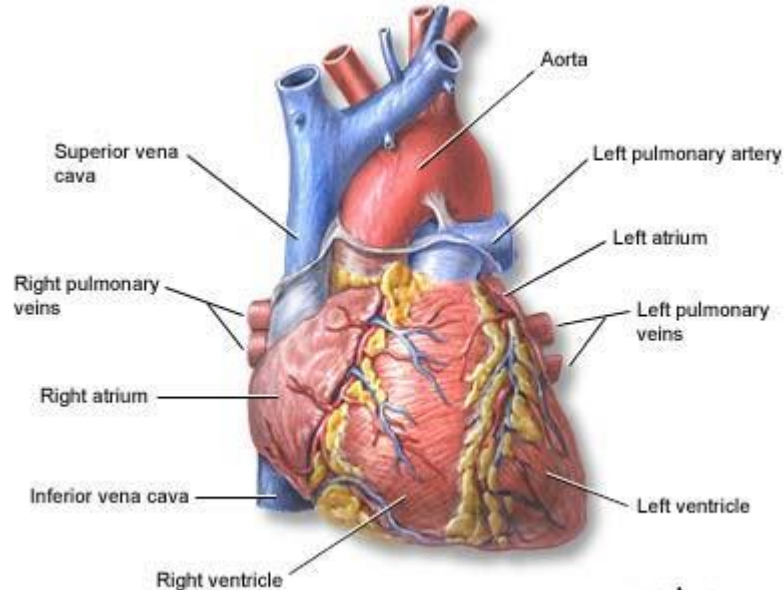
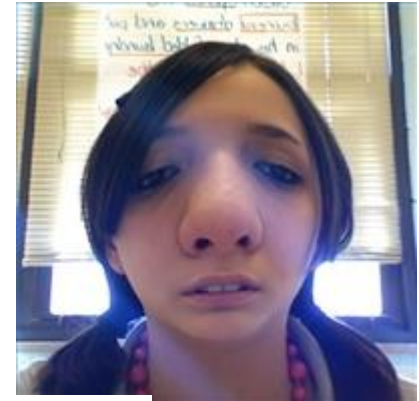
Autonomic Dysreflexia

Goose bumps appear below the level of injury.

Hypertension stimulates the baroreceptors in the carotid sinuses and aortic arch.

The patient may complain of a stuffy nose.

The PANS is unable to counteract these effects through the injured spinal cord, however. Instead, the PANS attempts to maintain homeostasis by slowing down the heart rate





Autonomic Dysreflexia Signs

The brainstem stimulates the heart, through the vagus nerve, causing bradycardia and vasodilation above the level of injury.

The patient appears flushed and blotchy above the level of the injury.

The PANS impulses are unable to descend past the lesion, and therefore no changes occur below the level of injury.



What can cause Autonomic Dysreflexia

Overfull bladder

- Urine infection, bladder stones
- Blocked catheter

Impacted bowel

- Wind, manual evacuation
- Cramps, stomach bugs, constipation

Skin

- Burns and scalds, sun burn
- Pressure sores, in growing toe nail

PAIN

- Any painful stimuli which would cause discomfort



Autonomic Dysreflexia

PAIN

- Triggers
- sympathetic response

Physical & Visual symptoms

- At the level of the SCI, the pain signal is interrupted and prevented from being transmitted to the cerebral cortex
- Headache, goose bumps, blocked nose, blurred vision, Hypertension, Bradycardia, flushed blotchy skin.

Emergency Treatment

- Immediate treatment required



Autonomic Dysreflexia Treatment

- 📌 Sit the affected person up
- 📌 Attempt to establish the cause and remove the painful stimuli
- 📌 If symptoms persist administer Nifedipine to lower blood pressure
- 📌 Blood pressure should be monitored every 3-5 minutes
- 📌 Nifedipine can be administered every 15 minutes..know when to dial 999



Autonomic Dysreflexia

Identification & Removal of stimuli

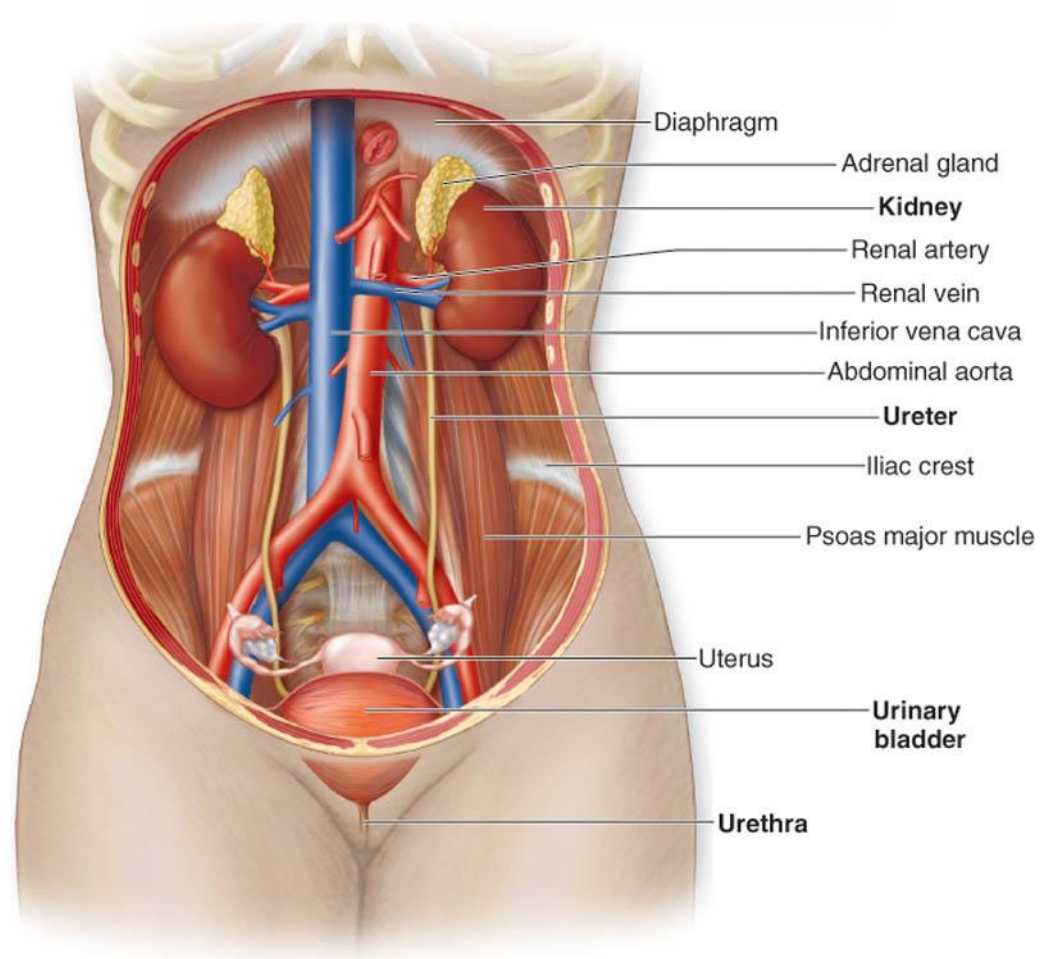
☒ Check catheter tubing for blockages, kinks, twisted.

☒ If blocked, remove catheter and re-catheterise;

☒ Perform intermittent catheterisation.

☒ **NEVER FLUSH A BLOCKED CATHETER WHEN SOMEONE IS DYSREFLEXIC**

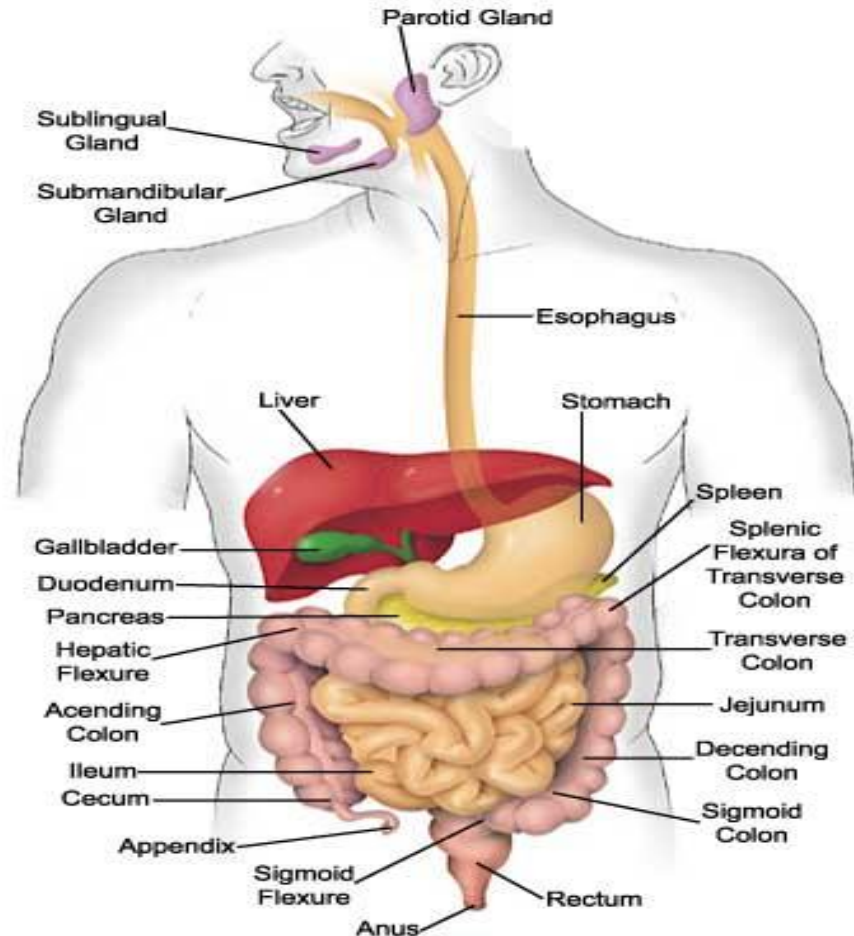
☒ **IT WILL ONLY MAKE THINGS WORSE.**





Autonomic Dysreflexia Management

- ❑ Check for a distended or impacted bowel
- ❑ Administer anaesthetic gel into the rectum to assist with blocking painful stimuli (instillagel, lignocaine, lidocaine)
- ❑ Using the lubricant gently remove the stool
- ❑ Manual evacuation can in itself cause autonomic dysreflexia.





Autonomic Dysreflexia

Causes

Pressure Sores

- Keep affected area pressure free, paracetamol can be administered every 6 hours up to a maximum of 8 tablets in 24 hours.

Burns, scald, sunburn

- Apply cold water and or a cooling lotion

Menstrual cramps- in growing toe nail

- Administer analgesia such as paracetamol – seek medical advice for treatment as required.