

# Treatment of autonomic dysreflexia for adults and adolescents with spinal cord injuries

A guide for clinicians in non-specialist units

March 2025

The information in this resource should not replace a clinician's professional judgement.

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## Management of autonomic dysreflexia for adults with spinal cord injury at a glance

### Basic principles

**Autonomic dysreflexia (AD) impacts a with spinal cord injury (SCI) at T6 level and above.**

When a person with an SCI presents with any symptoms of AD, a high index of suspicion is required.

AD is usually triggered by a noxious stimulus below the level of injury.

It is a **medical emergency** and needs immediate intervention.

### Immediate actions

If AD is suspected in a person with SCI, follow the treatment algorithm at Appendix 1.

### Planning

Be aware of the individual's baseline blood pressure, which could be low. A rise of 20-40mmHg above baseline may indicate AD.

Support people with SCI to be aware of the causes, symptoms and management of AD (see [AD medical emergency card](#)).

## Summary

Autonomic dysreflexia (AD) is a medical emergency that occurs in a person with a spinal cord injury (SCI) at or above the T6 spinal level.

AD is a potentially life-threatening condition and therefore it **requires immediate intervention**. Failure to recognise and promptly treat this condition can result in cerebral haemorrhage, seizure, stroke, cardiac arrhythmia and even death.

AD is most frequently caused by bladder, gastro-intestinal or skin issues that cause pain or discomfort – but any stimulus that would potentially cause irritation below the level of the spinal cord lesion can cause AD.

The **most common** signs and symptoms are:

- blood pressure (BP) is elevated at least 20mmHg above their usual baseline systolic level
- pounding headache which gets worse as the BP rises
- flushing or blotching of the skin, or profuse sweating above the level of the injury
- skin pallor, piloerection and cold peripheries below the level of injury.

In the event of an AD or suspected AD episode, follow the algorithm at Appendix 1 and summary of recommended treatments and responses at Appendix 2.

Individualised planning for prevention and early intervention – especially regarding bladder and bowel management and skin integrity – can help reduce risk of AD in people with SCI. Other areas that need to be considered are sexual activity and fertility treatments, pregnancy and labour, and some urological procedures.

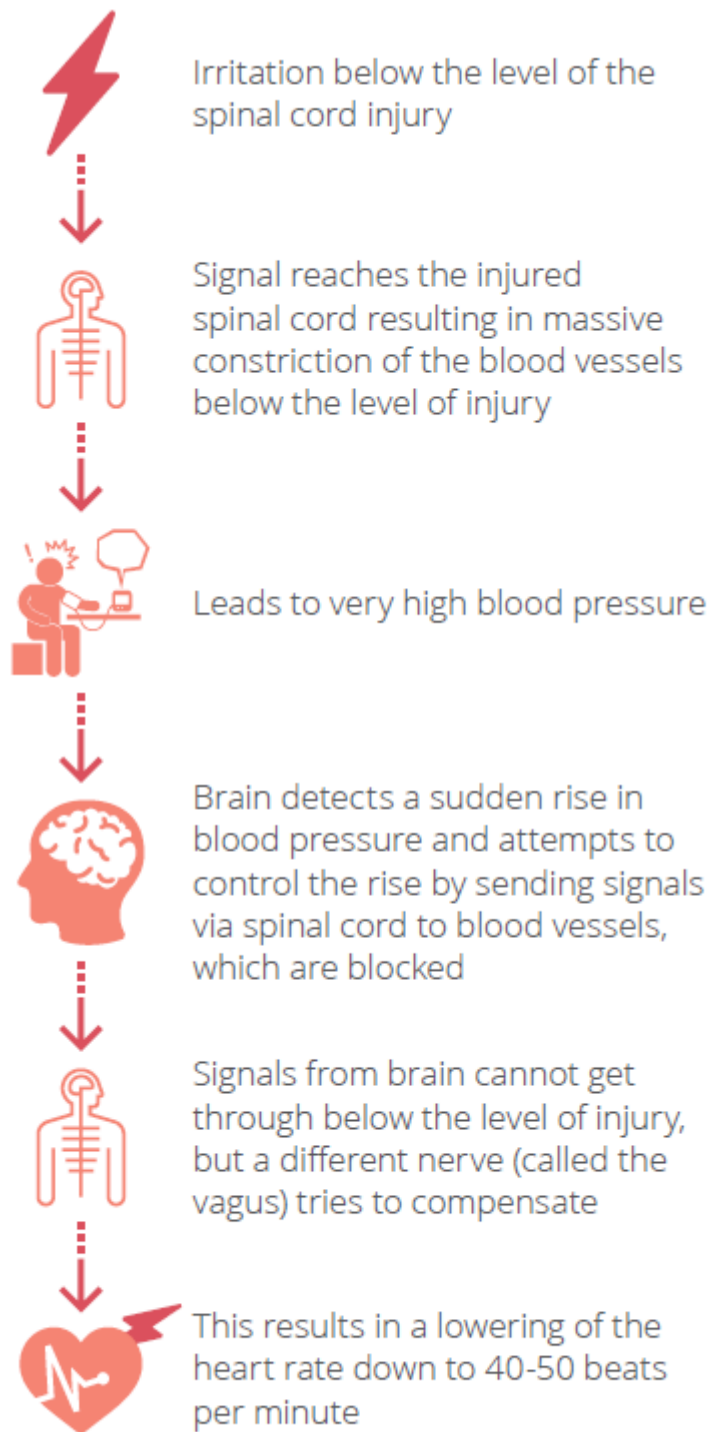
## Autonomic dysreflexia

AD is a medical emergency that occurs in a person with a spinal cord injury at or above the T6 spinal level. It is a condition of sudden high blood pressure, which may continue to rise. Failure to recognise and promptly treat this condition can result in cerebral haemorrhage, seizure, stroke, cardiac arrhythmia and even death.

AD is characterised by a sudden and severe rise in blood pressure (at least 20-40mmHg systolic above baseline) due to a noxious stimulus. It is a potentially life-threatening condition and therefore it **requires immediate intervention**. Escalate according to your local Clinical Emergency Response System (CERS).

Please remember:

- Usual baseline BP for people with an SCI is commonly around 90-100mmHg systolic.
- AD is usually accompanied by symptoms however, 'silent AD' may occur in rare instances.
- If left untreated the BP can **rapidly rise** to extreme levels, for example, above 200mmHg systolic.

**Figure 1: Autonomic dysreflexia causes and effects**

Source: Middleton JW, Arora M, McCormick M and O'Leary D, 2023<sup>1</sup>

## Information

### Signs and symptoms

A person with SCI who is experiencing AD may present with all or some of the following signs and symptoms.

The **most common** signs and symptoms are:

- BP is elevated at least 20mmHg above their usual baseline systolic level
- pounding headache which gets worse as the BP rises
- flushing or blotching of the skin, or profuse sweating above the level of the injury
- skin pallor, piloerection and cold peripheries below the level of injury.

Other signs and symptoms include:

- dilated pupils and blurred vision
- chills without fever
- bradycardia
- shortness of breath
- sense of apprehension or anxiety
- people with limited cognitive and communication skills including young children may have nonspecific irritability.

### Pathophysiology

In a person with SCI **there is loss of descending inhibitory control from the brain stem**, leading to an exaggerated sympathetic response. A stimulus – for example, something irritating or painful – below the level of injury, activates sympathetic reflexes. This causes generalised constriction of the blood vessels resulting in severe hypertension. **Isolation of the sympathetic nervous system from the vasomotor centre of the brain prevents control of this hypertension.** The increased BP is sensed by the baroreceptors in the aortic arch and the carotid sinus causing vagal activation and a **secondary bradycardia**, although sometimes tachycardia can occur.



## Causes

Most AD episodes are caused by problems with the bladder (up to 80%) or bowel. Examples include:

### Bladder

- Blocked or kinked catheter
- Full drainage bag
- Obstructed urine flow due to improper positioning or securement of drainage equipment
- Urinary tract infection (UTI)
- Renal or bladder calculi
- Some urological procedures
- Use of catheter maintenance solution for management of catheter blockage or UTI prevention

**Note:** People at risk of AD, must be thoroughly assessed by a specialist clinician prior to initiating use of any catheter maintenance solution, such as citric acid (Suby G or Solutio R), polyhexamethylene biguanide (PHMB) or hypochlorous acid (Microdox).<sup>2</sup>

### Bowel

- Bowel distension
- Constipation
- Bowel care techniques
- Anal fissures
- Inflamed or worsening haemorrhoids

### Skin

- Pressure injuries
- Burns
- Ingrown toenails
- Insect bites
- Restrictive clothing causing skin irritation or damage

### Other causes

- Epididymo-orchitis
- Fractures
- Worsening spasms
- Haematoma
- Sexual stimulation
- Dysmenorrhea
- Labour

- Stomach ulcers
- Appendicitis
- Gallstones

## Treatment

The principles of treatment are:

1. Recognise and remove the cause.
2. Manage the blood pressure.
3. Monitor the patient's vital signs.
4. Prevent future episodes.

Refer to the algorithm at Appendix 1 and table at Appendix 2 for steps to treat AD.

When treating urinary system causes, **be alert for sudden hypotension due to rapid draining of an over-distended bladder** and/or sudden resolution of AD.

An individualised bladder and bowel management plan, that is regularly reviewed in response to changing needs, helps prevent conditions that can cause AD.

## Other considerations

### Urological and sperm retrieval procedures

Cystoscopic (transurethral and suprapubic), urodynamic, and sperm retrieval procedures present unique challenges in managing individuals with SCI at T6 and above because these procedures can cause AD.<sup>3</sup> In Australia it is recommended if the person is known to be highly sensitive to noxious stimuli, or to have experienced AD during these procedures previously, prophylactic anti-hypertensive medication needs be considered under specialist guidance.

### Sexual activity

After SCI, individuals retain the capacity for sexual desire and mental arousal, but will have altered physical and arousal manifestations, depending on their level of injury and completeness. Individuals with SCI are fully capable of sexual response and enjoyment, and they often rate sexual functioning as their highest health priority after SCI.<sup>3</sup>

AD is likely to be more severe with stronger and longer genital stimulation, but often symptomatic AD decreases over time (months and years). The individual with SCI must balance symptoms and risks of sexually induced AD with the benefits of sexual activity and the rewards of intimacy.<sup>3</sup>

### Pregnancy and reproductive health

Pregnant women are prone to postural hypotension. Women with an injury at or above T6 can develop AD with uterine distension and contractions, and about half report increased episodes during pregnancy. These patients are usually managed in a specialist unit.

Antihypertensives such as nifedipine tablet (category C in pregnancy) or nitroglycerine patch may be used. Thermoregulation is also affected, which can complicate intrapartum management.

Women with SCI must discuss with their obstetrician exactly how labour and delivery will be managed and have a **multidisciplinary care plan**.<sup>3</sup>

For women with injuries above T6 who present with hypertension during pregnancy, labour, or delivery, it is critical to differentiate preeclampsia from AD (preeclampsia occurs with the same frequency in able-bodied women and in women with disabilities) so that it is not misdiagnosed. Use of general or epidural anaesthetics may assist in reducing AD risks. Delivery in women with SCI can also be complicated by hip disarticulation, contractures, heterotopic ossification, and severe spasticity.<sup>3</sup>

### **Environment**

Factors in the physical environment may impact the nervous system and cause AD, such as extreme temperatures.

### **Post-autonomic dysreflexia episode management**

The sympathetic nervous system may be hyperactive for a few days after an episode of AD, putting the person at increased risk of a further episode of AD.

### **Recurrent autonomic dysreflexia**

An AD episode that happens soon after an initial episode may be caused by **hyperactivity of the sympathetic nervous system** following the first episode. Alternatively, it may indicate that the first episode was treated **without the cause being resolved**.

Frequent episodes of AD are usually indicative of an underlying cause that has not been identified and resolved. The cause may be another recurring health issue as frequent UTIs, or constipation.

## Management actions

### Immediate actions

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Follow the algorithm at Appendix 1 and summary of recommended treatments and responses at Appendix 2. See below for more detailed troubleshooting in specific areas.

Take a thorough approach to identifying and addressing the cause of AD with every episode.

### Planning

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- Know the baseline blood pressure for each person with SCI. It is worth noting that the usual baseline blood pressure for a person with SCI may be low – around 90-100mmHg lying down and possibly lower while sitting.
- Support people with SCI to be aware of what their usual baseline blood pressure is, and what AD symptoms are.
- Regularly review management plans for a person's bladder, bowel and skin integrity.

The following resources will assist in planning and managing care:

- [Spinal Cord Injury Bowel Management: Guide for clinicians in non-spinal units](#)<sup>4</sup>
- [Spinal Cord Injury Bladder Management: A guide for clinicians in non-specialist units](#)<sup>5</sup>
- [Pressure Injury Toolkit for Spinal Cord Injury and Spina Bifida](#)<sup>6</sup>

See also [Additional resources](#) on autonomic dysreflexia listed in this guide.

### Planning for other procedures and activities

Additional information about specific conditions and procedures that may trigger AD, is outlined below.

### Urological and sperm retrieval procedures

The following is based on procedures described in the clinical practice guidelines published by Paralyzed Veterans of America (PVA) and the Consortium for Spinal Cord Medicine.<sup>3</sup>

- Note that when an individual is transferred from a wheelchair to the urology table, frequently the BP transiently elevates but then decreases after a few minutes.
- Cystoscopic procedures involve bladder and urethral instrumentation, as well as bladder distention, which are triggers for AD.
- Sperm retrieval procedures include the use of penile vibratory stimulation (PVS) and electroejaculation (EEJ). The unique challenge with PVS or EEJ sperm retrieval procedures is that ejaculation is a potent trigger for AD and there can be a sudden severe elevation in BP during ejaculation. The healthcare provider needs to carefully monitor and anticipate a BP elevation and know the best strategies to manage AD in these situations.
- Pre-procedure prevention and planning is important. Support the individual by:

- discussing prescribed medications with the team to optimise best outcomes of the procedure (such as anticholinergic medications, alpha-blockers)
  - encouraging a recent bowel movement (within 1-2 days)
  - treating UTI, if present
  - considering withholding any as-needed medications that may elevate BP (such as ephedrine, midodrine)
  - withholding any medications such as a PDE5i, which may not allow nitrates to be used to treat AD.
- If the procedure triggers an AD episode, follow the AD Treatment Algorithm at Appendix 1.
  - If, prior to the procedure, an individual presents with a systolic BP greater than 20mmHg above their usual baseline systolic BP, evaluate for possible causes of AD then manage and monitor it.
  - Consider rescheduling the procedure if AD persists despite finding and correcting any obvious reversible causes.
  - Consider decreasing the risk of AD before urethral instrumentation such as cystoscopy by inserting lignocaine jelly into the urethra at least 3-5 minutes before urethral instrumentation.
  - In individuals who are prone to AD or have a recent history of AD, consider prophylactic pharmacological treatment to decrease the risk of AD before cystoscopic procedures and sperm retrieval procedures.
  - During and immediately after the above procedures, BP should be monitored frequently and the AD Treatment Algorithm (Appendix 1) followed.

### **Sexual activity**

The following is based on procedures described in the clinical practice guidelines published by PVA and the Consortium for Spinal Cord Medicine.<sup>3</sup>

- Encourage individuals with SCI at T6 and above to be aware that sexual activity and stimulation (including vibratory stimulation) may provoke AD, and to periodically monitor their BP during sexual activities with a home BP monitor.
- If sexual activity causes symptomatic AD, individuals should be encouraged to immediately cease sexual stimulation and follow AD protocol.
- Consider prescribing pharmacological prophylaxis prior to sexual activity in selected individuals who have:
  - developed AD with systolic BP greater than 150mmHg, i.e. during vibratory stimulation, ejaculation, orgasm, sperm retrieval or urological procedures
  - symptomatic AD and/or systolic BP greater than 150mmHg prior to sexual activity.

**Contra-indications for pharmacological prophylaxis:**

- History of symptomatic orthostatic hypotension (OH)
- Taking medication that may potentiate hypotension.
  - If pharmacological treatment for AD is used in a home setting, instruct individuals on how to recognise, monitor and treat pharmacologically induced hypotension. For men using a PDE5i, ensure alternatives to glyceryl trinitrate (GTN) are available in the home, such as 25mg captopril, for pharmacological treatment.
  - Instruct individuals at risk of AD to recheck BP within five minutes of cessation of sexual activity, regardless of symptoms.
  - If the individual's high BP does not resolve after five minutes, refer to steps for treatment of AD.
  - Instruct individuals that if all conservative home measures to treat AD or pharmacologically induced hypotension following sexual activity are unsuccessful, call 000 or visit the emergency department urgently.

**Reproductive health and pregnancy**

The following is based on procedures described in the clinical practice guidelines published by PVA and the Consortium for Spinal Cord Medicine.<sup>3</sup>

- Screening procedures such as mammograms or Pap smears, and contraceptive procedures such as insertion of IUD, have the potential to trigger AD.
- Instruct healthcare professionals that women with SCI who have the potential of developing AD are at increased risk of severe AD during pregnancy, labour and delivery, and should be followed by a multidisciplinary team.
- An antepartum consultation with an anaesthetist and the establishment of a plan for induction of anaesthesia at the onset of labour is recommended to assess the risk of AD and to prevent it.
- In pregnant women prone to AD, careful and frequent monitoring of the foetus is recommended, especially during labour and delivery.
- AD must be differentiated from preeclampsia during pregnancy and labour to ensure appropriate treatment.
- Although individuals with SCI may not perceive pain during labour, anaesthesia should be used to prevent AD in women with SCI above T6. Epidural anaesthesia is the most reliable method of preventing AD by blocking stimuli that arise from pelvic organs.
- Educate women who have the potential to develop AD that postpartum breastfeeding, breast engorgement, or mastitis may trigger AD.

## Referrals and community-based spinal cord injury care

AD prevention and management requires continued interdisciplinary support and specialist input from a range of medical and allied health services, whether the person has been living with SCI for weeks or years.

An interdisciplinary approach to assessment and planning is best practice. This involves specialists being aware of each other's work with and contributing to a single integrated care plan for the person. This is usually overseen by a lead health professional, such as a GP or a nominated member of an acute care team.

### Common referral pathways

#### Spinal rehabilitation specialists

Spinal rehabilitation specialists can provide an over-all systems review to ensure AD prevention and management is optimised. Contact details for NSW specialist spinal cord injury services are outlined below. Further information is available at the [ACI Spinal Cord Injury Referral Directory](#).

**Royal North Shore Hospital SCI Unit** **Phone (02) 9926 7111**

**Royal Rehab SCI Unit** **Phone (02) 9808 9269**

**Prince of Wales Hospital SCI Unit** **Phone (02) 9382 2222**

**NSW Spinal Outreach Service** **Phone (02) 9808 9666**

Multidisciplinary transitional outreach program for patients discharged from the NSW State Spinal Cord Injury Service units

**Rural SCI Service** **Phone (02) 9808 9666**

Network of nine specialist medical and multidisciplinary spinal clinics per year across rural NSW

#### Regional Spinal Services

Hunter Spinal Cord Injury Service (community-based rehab) Advice Line **Phone (02) 4925 7888**

Royal Newcastle Centre (inpatient rehab for low and incomplete SCI) **Phone (02) 4921 3000**

Port Kembla Hospital Rehabilitation Service **Phone (02) 4223 8203**

#### Medical practitioner

Medical practitioners working with people with SCI can provide prescriptions for GTN, or other anti-hypertensive medication if GTN is contra-indicated.

## About the project

This is one of four clinical resources on the provision of SCI care, developed primarily for clinicians who work with people with SCI in non-specialist settings. These include resources on **bladder**, **bowel**, **skin** and **AD**. They have been developed to fill a knowledge gap identified by non-specialist services, to support the co-design of a Spinal Cord Injury Networked Model of Care.

The purpose of this clinical resource is to provide a summary of considerations for SCI care, sufficient to guide basic care and support clinicians to seek further information.

**Information** about the impact of autonomic dysreflexia is outlined in the Summary, followed by AD prevention and management that includes:

- immediate actions
- planning.



## Background

This is a clinical resource on prevention and management of AD for people with SCI, particularly from the time of injury in acute care.

The target audience is healthcare professionals who are providing healthcare to people with SCI in a non-specialist context, with limited access to specialist resources. An intended outcome of this resource is to reduce unwanted variation in care for people with SCI between specialist and non-specialist sites.

### Spinal cord injury

SCI is damage to the spinal cord. As the spinal cord is a critical neural pathway between the brain and the rest of the body, SCI results in reduced function and mobility. The reduction can be to different extents, depending on the type of injury and the level of injury. The damage to the spinal cord may be complete or incomplete. Also, the higher the injury, the more parts of the body will have reduced or no function or mobility.

Spinal cord damage may be due to trauma such as a motor vehicle collision or a workplace injury, or non-traumatic causes such as infection, cancer or degenerative disorders.

### Consultation and evidence review

This resource was developed in line with the ACI Principles for Developing Clinical Guidance (2021).

Consultation with healthcare professionals was facilitated by the NSW State Spinal Cord Injury Service. The process included these actions:

- Formation of a working group that included clinicians from non-specialist settings to determine training needs and ensure content was fit for purpose. In addition, clinicians with specialist knowledge were involved to ensure content was current and evidence based.
- The working group met regularly online to co-produce and refine the core content in this resource. The regular meetings had their own value, beyond delivering this resource. They contributed to a shared understanding and shared language between specialist and non-specialist clinicians on matters related to SCI care.
- Final consultation with key healthcare professionals in non-specialist and specialist SCI units was conducted for review and approval.

To inform the development of this resource, a PubMed search was conducted on 17 March 2023 of terms (("autonomic dysreflexia"[MeSH Terms] OR "autonomic dysreflexia"[Title/Abstract] OR "autonomic hyperreflexia"[Title/Abstract]) AND ("spinal cord injuries"[MeSH Terms] OR "spinal cord injur\*"[Title/Abstract]) AND ("blood pressure"[MeSH Terms] OR "blood pressure determination"[MeSH Terms] OR "arterial pressure"[MeSH Terms] OR "blood pressure"[MeSH Terms] OR "blood pressure"[Title/Abstract] OR "elevated blood pressure"[Title/Abstract]) AND 2013/01/01:3000/12/31[Date - Publication]) AND ((humans[Filter]) AND (english[Filter])). Broader studies were opportunistically gathered from snowball searches informed by reference lists of key articles and stakeholder advice.

Google was searched for grey literature using key terms such as "autonomic dysreflexia" AND "blood pressure" OR "hypertension".

## Guideline review

Clinical guidelines that inform this work include those by the Spinal Cord Injury Rehabilitation Evidence (SCIRE)<sup>7</sup> and the PVA with the Consortium for Spinal Cord Medicine.<sup>3</sup>

## Further information

This resource is an adjunct to other more detailed resources currently available on AD prevention and management for people with SCI. It functions as:

- a framework of basic care and is **intended as a starting point** for further discussion with spinal cord injury unit specialists
- a **complement to local policies and guidelines** that supports staff to develop a deeper understanding of the needs of people with SCI building on their current practice – **not an alternative or replacement resource**.

A range of more detailed resources, with different purposes and target audiences, have been used in the development of this document. They provide **further information** for people with SCI, their families and diverse professionals in the care team. See [Additional resources](#) for more information.

## Additional resources

### Health Maintenance for Adults with Spinal Cord Injuries

SCI Wellness Project – Royal Rehab with University of Sydney and icare, 2020

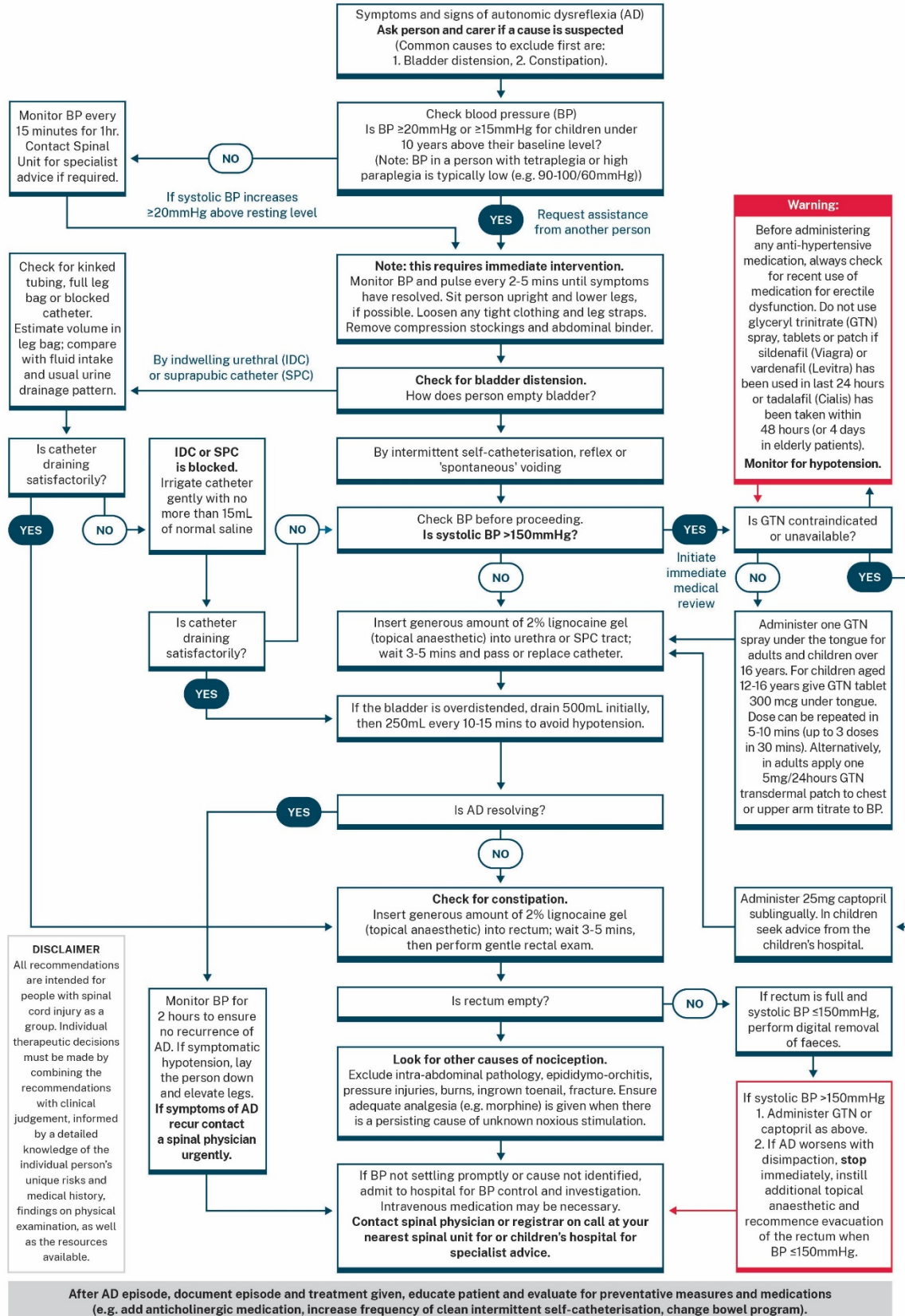
**Targets:** People with SCI

**Content:** Know about your autonomic nervous system; check if you have a problem (warning signs); management of autonomic dysreflexia; what will happen if you do not manage your autonomic dysreflexia 'just in time'; take-home messages; glossary; further resources.

## References

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2. Kelly LC, Glinsky JV, Harvey LA. A case report of three people experiencing intractable autonomic dysreflexia following instillation of Uro-Tainer® Polyhexanide 0.02%. *Spinal Cord Series and Cases*. 2024;10(1):17. DOI: 10.1038/s41394-024-00626-5
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7. Krassioukov A, Blackmer J, Teasell R, et al. Autonomic Dysreflexia Following Spinal Cord Injury. *Spinal Cord Injury Rehabilitation EvidenceS*, Version 6. Vancouver: Spinal Cord Injury Rehabilitation Evidence (SCIRE); 2014. p. 1-50.

# Appendix 1: Treatment algorithm for autonomic dysreflexia in people with spinal cord injury



## Appendix 2: Summary of recommended treatments and interventions

Summary of recommended treatment and interventions, with accompanying rationale

Action and intervention	Rationale
<p>Check blood pressure (BP) to assess if BP is elevated.</p> <p>Use an appropriate size cuff.</p> <p>If BP is elevated:</p> <ul style="list-style-type: none"> <li>Sit patient as <b>upright</b> as possible.</li> <li><b>Remove all tight clothing</b> including abdominal binders.</li> </ul>	<p>Elevated BP is a sign of AD.</p> <p>Incorrect cuff size can give inaccurate BP readings.</p> <p>Sitting the person upright encourages pooling of blood in lower extremities and abdomen to decrease venous return, reduce BP and buffer rises in BP.</p>
<p><b>Obtain assistance</b> from other staff member.</p>	<p>Two people are required to monitor and treat patient.</p>
<p><b>Monitor BP and pulse rate</b> every two to five minutes until episode has completely resolved.</p>	<p>BP will continue to rise, often rapidly, until successfully treated. After treatment of the precipitating cause of AD, the BP may continue to drop lower than the baseline BP because of the persistent effect of the medication used to treat AD. It is essential to continue monitoring BP closely during all interventions and until the episode has resolved with BP returning to usual baseline level.</p>
<p>Perform thorough assessment of the patient to determine cause of autonomic dysreflexia.</p> <p><b>Beginning with urinary system:</b></p> <p>If catheter is in situ:</p> <ul style="list-style-type: none"> <li>Check entire urinary drainage system for kinks, blockages, overfilled drainage bag and correct catheter placement.</li> <li>If problem such as kink or blockage is identified, rectify immediately.</li> <li>Estimate bladder volume via bladder scan or by comparing leg bag volume with that day's fluid intake and output.</li> <li>If catheter appears to be blocked attempt to unblock catheter by pulling back on the syringe. If block persists, gently irrigate catheter with 10-15mL of normal saline at body temperature.</li> <li>If catheter is not draining, remove and <b>replace the catheter</b> instilling lignocaine gel 2% into the urethra or SPC tract.</li> <li>If the elevated BP is greater than 150mmHg systolic prior to catheterisation, consider rapid-onset and short-duration</li> </ul>	<ul style="list-style-type: none"> <li>Episode of autonomic dysreflexia will not resolve until cause is identified and rectified.</li> <li>The urinary tract, particularly bladder distension, is the commonest cause of autonomic dysreflexia.</li> <li>Obstruction of urine outflow may result in bladder overdistension.</li> <li>Existing catheter may be blocked with sediment or blood.</li> <li>Allowing unobstructed flow of urine may resolve episode.</li> <li>Irrigation may remove blockage. Large volume of fluid instilled in bladder may further exacerbate autonomic dysreflexia.</li> <li>Removing and replacing a catheter can exacerbate the rise in BP. The use of a short-acting agent such as topical nitropaste will help prevent further increases in BP during the catheter change. Lignocaine gel may decrease sensory input and relax sphincter for catheterisation.</li> <li>Sudden decompression of a large volume of urine, while expected to normalise BP, may cause hypotension, particularly if the person has already</li> </ul>

Action and intervention	Rationale
<p>pharmacological management to reduce the systolic BP without causing hypotension.</p> <p>For a person with a urodome or intermittent self-catheterisation or external collection device, with distended bladder and unable to void:</p> <ul style="list-style-type: none"> <li>lubricate urethra generously with lignocaine gel, wait 3-5 minutes, pass a catheter, drain urine</li> <li>leave catheter in until reason for retention is addressed. Collect urine sample.</li> </ul> <p><b>** Be alert for sudden hypotension due to rapid draining of bladder and/or sudden resolution of autonomic dysreflexia. If the bladder is overdistended, drain 500mL initially, then 250mL every 10-15 mins to avoid hypotension.</b></p> <p><b><i>If the catheter is draining and BP remains elevated continue to next step.</i></b></p>	<p>been given pharmacological agents to decrease BP.</p> <ul style="list-style-type: none"> <li>New catheter should run freely.</li> </ul> <p><b>Please note:</b></p> <ul style="list-style-type: none"> <li><b>Clamping of catheter for any reason, even for a short period of time, is contra-indicated in a person with spinal cord injury with injury level of T6 and above (at risk of AD).</b></li> <li>Administration of 10mL of 2% lidocaine solution into the existing catheter 3-5 minutes prior to catheter change demonstrated a significant reduction in systolic BP immediately after the catheter change.</li> <li>It is important to exclude a urinary tract infection by collecting a fresh catheter sample for microscopy, culture and sensitivity.</li> </ul>
<p><b>If BP continues to be elevated, suspect faecal impaction as the cause:</b></p> <ul style="list-style-type: none"> <li>If BP greater than 150mmHg, consider pharmacological management to lower and stabilise BP prior to lying person down and performing a rectal examination (PR) and/or faecal disimpaction.</li> <li>Instil a generous amount of lignocaine gel into the rectum.</li> <li>Wait approximately 5 minutes before performing gentle PR examination.</li> <li>If necessary, perform a digital removal of faeces (DRF) using a generously lubricated gloved finger - gently remove any stool which is present. Use of an enema to assist with evacuation may be considered.</li> <li>If symptoms of autonomic dysreflexia worsen, <b>STOP</b> digital removal of faeces immediately, administer oral antihypertensive agent and instil additional lignocaine. Wait until the BP is stable at or below 150mmHg systolic and repeat digital removal of faeces.</li> </ul> <p><b><i>If rectal examination reveals no stool in the rectum, continue to next step.</i></b></p>	<ul style="list-style-type: none"> <li>Faecal impaction is the second most common cause of autonomic dysreflexia.</li> <li>Medication will help to control precipitous rises in BP. Clinical judgement is essential when making decisions about pharmacological management, considering the actual BP level and how rapidly BP is changing.</li> <li>Local anaesthetic will be required, even if patient has no or markedly reduced sensation since PR check and/or manual removal of faeces may exacerbate autonomic dysreflexia.</li> <li>Wait to allow action of lignocaine.</li> <li>If cause is faecal impaction, autonomic dysreflexia will not resolve until removal of stool.</li> <li>Digital stimulation may exacerbate autonomic dysreflexia.</li> </ul>

<p><b>Commence systematic survey of patient for other causes of autonomic dysreflexia, which may include following:</b></p> <ul style="list-style-type: none"> <li>• pressure area</li> <li>• post-operative irritation or pain</li> <li>• ingrown toenail</li> <li>• burn</li> <li>• fracture</li> <li>• intra-abdominal pathology, e.g. gastric ulcer.</li> </ul> <p>If cause with persisting nociception is found, administer adequate analgesia.</p> <p>If no cause can be found and symptoms persist consider administration of analgesics and obtain assistance from Spinal Unit Consultant.</p>	<p>Autonomic dysreflexia will not resolve without finding and remediating the underlying cause.</p> <p><b>Medical assistance is required</b> for additional treatment and control of symptoms – patient will need a thorough physical examination and may require radiological studies and intravenous pharmacological intervention to prevent complications such as stroke.</p>
<p><b>After successful identification of the trigger and treatment of the elevated BP, monitor the individual for symptomatic hypotension or recurrence of AD every 2-5 minutes until the BP is stable.</b></p> <p><b>Episode is considered to be resolved when:</b></p> <ul style="list-style-type: none"> <li>• Cause of autonomic dysreflexia has been identified.</li> <li>• BP restored to usual baseline level for individual.</li> <li>• Pulse returned to usual rate.</li> <li>• Patient is comfortable with no signs of autonomic dysreflexia.</li> </ul> <p><b>Following resolution of episode of AD:</b></p> <ul style="list-style-type: none"> <li>• If the individual is an inpatient or in the clinic, monitor closely for at least 2 hours for recurrent AD or hypotension post-episode.</li> <li>• If at home, instruct individual to seek medical attention if symptoms recur.</li> <li>• Document episode, cause and treatment in notes.</li> <li>• Educate patient, carers, significant others.</li> </ul>	<p>After treatment of the precipitating cause of AD, the individual's BP may continue to drop lower than baseline because of the persistent effect of the medications used to treat the AD.</p> <p>Some 'hyperactivity' of the sympathetic nervous system may be experienced. Patient should be monitored for any exacerbation or reappearance of symptoms, so they can be quickly and appropriately treated.</p> <p>Additional education may be required to help recognition of symptoms, treatment and strategies to avoid further episodes as much as possible.</p> <p>The NSW State Spinal Cord Injury Service has developed various resources and tools to assist recognition and management of AD.</p> <p>This includes the <a href="#">AD emergency card</a> and the AD Treatment Algorithm at Appendix 1.</p> <p><b>It is important to also alert the patient and carers to the possibility of increased susceptibility to further episodes over following few days.</b></p>