



Safety Notice 014/10

1 November 2010

Autonomic Dysreflexia (Revised)

Distributed to:

- Chief Executives
- Directors of Clinical Governance
- Directors of Clinical Operations

Action required by:

- Directors of Clinical Governance

We recommend you also inform:

- Directors of Pharmacy
- Directors of Emergency Medicine
- Directors of Medical Services
- Directors of Ambulance Services
- Directors of Nursing and Midwifery
- Medical staff
- Nurses

Expert Reference group

Content prepared by the [Agency for Clinical Innovation \(ACI\)](#) State Spinal Cord Injury Service and reviewed by:

- NSW Ambulance Service
- Ministerial Taskforce on Emergency Care

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This Safety Notice supersedes Safety Notice 014/10 issued on 26 October 2010

Background

Autonomic dysreflexia is a medical emergency that can occur in people with spinal cord injury at or above the sixth thoracic (T6) level. It is a sudden and severe rise in blood pressure resulting from overactivity of an isolated sympathetic nervous system below the lesion, triggered by a nociceptive stimulus that can result in intracranial haemorrhage, fits, arrhythmias, hypertensive encephalopathy and even death. This potentially life-threatening condition requires immediate and decisive action.

Spinal units are very familiar with the diagnosis and treatment of autonomic dysreflexia. However, people with spinal cord injury most often present or are taken by an ambulance to their local healthcare facility. As spinal cord injury is not a common condition local healthcare professionals may have little or no experience in recognising or managing autonomic dysreflexia. This has resulted in preventable adverse outcomes with a minimum of 3-4 critical incidents reported each year in NSW.

Symptoms and Signs

The person may present with all or some of the following:

- Pounding headache, which gets worse as the blood pressure rises
- Flushing or blotching of the skin and/or profuse sweating above Spinal Cord Injury (SCI) lesion level
- Skin pallor and goose bumps below the SCI lesion level
- Blurred vision, nasal congestion (stuffiness)
- Chills without fever
- Shortness of breath, sense of apprehension or anxiety
- Hypertension - blood pressure is significantly elevated (at least 20-40 mmHg above normal resting systolic level)

Note: It is important to remember that blood pressure for individuals with high paraplegia or tetraplegia may usually be low, around 90-100/60 mmHg lying down and possibly lower whilst sitting. Therefore, patients with spinal cord injury may become symptomatic with blood pressure in the normal range for the general population

- Bradycardia (as secondary compensatory response to raised blood pressure).

Common Causes of Autonomic Dysreflexia

Any irritating stimulus below the level of the spinal cord injury lesion may precipitate autonomic dysreflexia. Causes of irritation include the following:

- Bladder-related: bladder distension, urine infection, calculus, epididymo-orchitis
- Bowel-related: bowel distension from constipation, inflamed haemorrhoids, chemical irritation from suppositories
- Skin-related: pressure sore, burn, ingrowing toenail
- Other: fractured bones, contracting uterus, acute abdominal condition.

Treatment

Refer to page 4 for the Autonomic Dysreflexia Treatment Algorithm.

Suggested Actions by Area Health Services

1. Review local practices to include the suggested actions.
2. Ensure an autonomic dysreflexia management algorithm is available in each health service.

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Treatment Alert

DO NOT use glyceryl trinitrate if sildenafil (Viagra) or vardenafil (Levitra) has been taken in the previous 24 hours or tadalafil (Cialis) in the previous 4 days. In situations where glyceryl trinitrate is contraindicated, an alternative (short-acting) anti-hypertensive agent, such as captopril should be used. Captopril, administered sublingually¹ as a 25mg tablet, has been shown to effectively lower blood pressure within 15 minutes. Advantages of sublingual administration are that the drug enters the general circulation directly, with therapeutic concentrations and onset of action achieved more rapidly than with oral administration. In addition, the partially dissolved tablet may be spat out if there is a very rapid reduction in blood pressure. A rectal examination or insertion of an indwelling catheter may exacerbate autonomic dysreflexia.

Suggested Actions

Emergency Departments and the Ambulance Service are often the first point of contact for the person with autonomic dysreflexia. To prevent delayed or missed diagnosis of autonomic dysreflexia, it is recommended that the following steps be followed.

Ambulance Officers and Services

- Ambulance triage officers should be familiar with the symptoms and signs of autonomic dysreflexia and be able to alert and dispatch Paramedics to respond quickly to this situation.
- When assessing a person with spinal cord injury at/above the T6 level, a high index of suspicion for autonomic dysreflexia is required. The person should be asked if they have had autonomic dysreflexia before and simple measures to reduce blood pressure should be taken.
- Ring ahead to alert the Emergency Department that a person with suspected autonomic dysreflexia is arriving.
- Ensure the autonomic dysreflexia management algorithm is readily available in ambulances.
- Provide education on autonomic dysreflexia management on a regular basis.
- Have glyceryl trinitrate sublingual (eg: Anginine tablets, Nitrolingual Pumpspray) or transdermal patches available.

Emergency Departments

- On arrival at the Emergency Department, the patient should be seen immediately by the triage nurse. Suspected autonomic dysreflexia should be assigned a Category 2.
- Care should be directed by the most senior doctor present in the Emergency Department (ED) with appropriate specialist consultation.
- The cause of autonomic dysreflexia needs to be identified and treated for resolution. If no cause is found and/or autonomic dysreflexia persists, blood pressure must be adequately controlled. Management of hypertensive crisis with intravenous medication may be required to control blood pressure, while contact is being made with a spinal specialist about further management (see below).
- After resolution of an autonomic dysreflexia episode, blood pressure should be monitored for 4 hours. In some severe cases of autonomic dysreflexia, the person should be admitted for observation.
- Ensure the autonomic dysreflexia management algorithm (refer to page 4) is easily available in the ED and education on autonomic dysreflexia management is provided.
- For facilities using the EDIS/FirstNet, a clinical alert should be entered onto the system noting that **"the patient is at risk of autonomic dysreflexia please refer to Safety Notice 014/10 – Autonomic Dysreflexia for guidance in the management of this condition"**.

Staff in general hospitals and wards

- Any person with spinal cord injury at/above the T6 level should have a "when necessary" order for sublingual glyceryl trinitrate (eg Nitrolingual Pumpspray or Anginine tablet/s) recorded on the drug chart on admission.
- Development of symptoms and signs of autonomic dysreflexia requires immediate attention to assess blood pressure and look for reversible causes. If a reversible cause is not rapidly found, prompt medical review is necessary to further assess possible causes and initiate appropriate treatment.
- The autonomic dysreflexia management algorithm (refer to page 4) should be easily accessible.
- For facilities using the electronic medical record a clinical alert should be entered onto the system noting that **"the patient is at risk of autonomic dysreflexia please refer to Safety Notice 014/10 – Autonomic Dysreflexia for guidance in the management of this condition"**.



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Further Advice about Patient Management

If glyceryl trinitrate or captopril do not lower the blood pressure sufficiently and/or the cause of the autonomic dysreflexia has not been identified, please contact, via the hospital switch board, the on-call Spinal Cord Injury Physician at either Royal North Shore Hospital (02) 9926 7111 or the Prince of Wales Hospital (02) 9382 2222.

Other Suggested Actions

- Consult the patients and carers, determine if they know about this condition as they can often suggest a cause of the symptoms and management strategies.
- Check if patients are carrying an Autonomic Dysreflexia Management Card that can assist to identify the cause of symptoms and provide treatment strategies.
- It is suggested that Autonomic Dysreflexia is noted in the EDIS, NSW Health medical record or Electronic Medical Record Alert and NSW Ambulance Service Alert (Protocol 71 or electronic Mobile Data Terminal) systems.

Further Information about Autonomic Dysreflexia

The [NSW State Spinal Cord Injury Service](#) website includes clinical information sheets and practice guides about:

- [Treatment of Autonomic Dysreflexia for Adults](#)² with spinal cord injury
- [An Overview of Skin and Pressure Ulcer Management](#)³
- Management of the [Neurogenic Bladder](#)⁴ in spinal cord injury
- Management of the [Neurogenic Bowel](#)⁵ in spinal cord injury

References

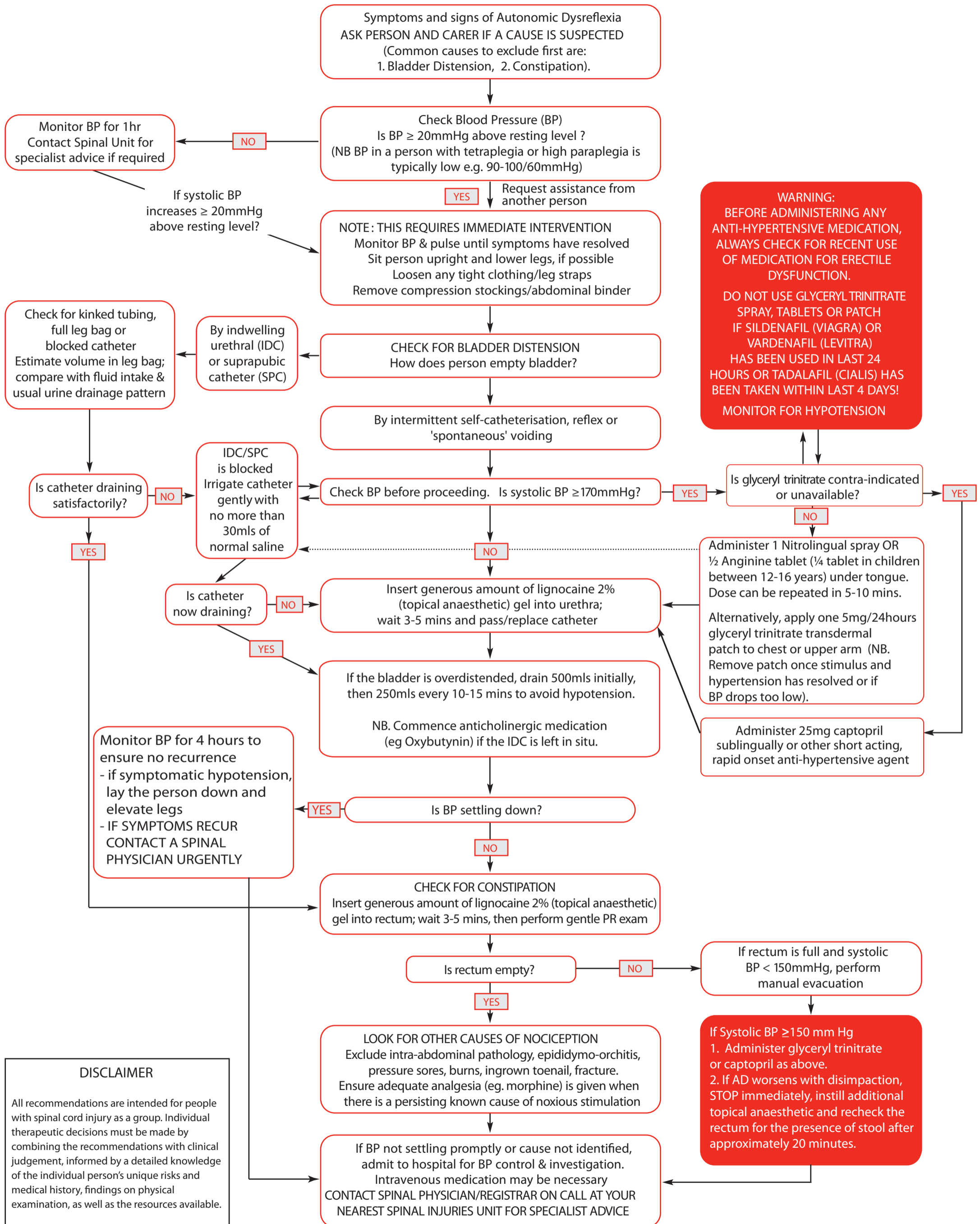
- 1 **MARTINDALE - The Complete Drug Reference** Copyright 2009 Pharmaceutical Press. (**captopril**) Sean C. Sweetman, ed (2009). *Martindale: The Complete Drug Reference* (36th edition ed.). London: Pharmaceutical Press.
2. http://www.health.nsw.gov.au/resources/gmct/spinal/Auto_Dysreflexia_Fact_sheet_pdf.asp – accessed 29 October 2010
3. <http://www.ciap.health.nsw.gov.au/downloads/specialty/Skin.pdf> - accessed 29 October 2010
4. http://www.ciap.health.nsw.gov.au/downloads/specialty/sci_neurogenic_bladder.pdf - accessed 29 October 2010
5. http://www.ciap.health.nsw.gov.au/downloads/specialty/Bowel_Booklet.pdf - accessed 29 October 2010

Other References

Sublingual captopril - a pharmacokinetic and pharmacodynamic evaluation. Al-Furaih TA, McElnay JC, Elborn JS, Rusk R, Scott MG, McMahon J, Nicholls DP. *Eur J Clin Pharmacology* 1991 40: 393-398.

Evaluation of Captopril for the Management of Hypertension in Autonomic Dysreflexia: A Pilot Study. Esmail Z, Shalansky KF, Sunderrji R, Anton H, Chambers K, Fish W. *Archives of Physical Medicine & Rehabilitation* 2002, Vol 83, 604-608

Treatment Algorithm for Autonomic Dysreflexia (Hypertensive Crisis) In Spinal Cord Injury



WARNING:
BEFORE ADMINISTERING ANY ANTI-HYPERTENSIVE MEDICATION, ALWAYS CHECK FOR RECENT USE OF MEDICATION FOR ERECTILE DYSFUNCTION.
DO NOT USE GLYCERYL TRINITRATE SPRAY, TABLETS OR PATCH IF SILDENAFIL (VIAGRA) OR VARDENAFIL (LEVITRA) HAS BEEN USED IN LAST 24 HOURS OR TADALAFIL (CIALIS) HAS BEEN TAKEN WITHIN LAST 4 DAYS! MONITOR FOR HYPOTENSION

Monitor BP for 4 hours to ensure no recurrence
- if symptomatic hypotension, lay the person down and elevate legs
- IF SYMPTOMS RECUR CONTACT A SPINAL PHYSICIAN URGENTLY

DISCLAIMER
All recommendations are intended for people with spinal cord injury as a group. Individual therapeutic decisions must be made by combining the recommendations with clinical judgement, informed by a detailed knowledge of the individual person's unique risks and medical history, findings on physical examination, as well as the resources available.
This revised algorithm was re-endorsed for use by the Australian and New Zealand Spinal Cord Society (ANZSCOS) in September 2010.
This project was funded by the Motor Accidents Authority of NSW.

If Systolic BP ≥ 150 mm Hg
1. Administer glyceryl trinitrate or captopril as above.
2. If AD worsens with disimpaction, STOP immediately, instill additional topical anaesthetic and recheck the rectum for the presence of stool after approximately 20 minutes.