

# **Training Protocol: Treatment of Students with ADRENAL CRISIS**

Oregon Health Authority – Public Health Division

ORS 433.800 – 433.830;  
OAR 333-055-0000 – 333-055-0035

2018 Version

*Authorized for use by the Oregon Health Authority, Public Health Division*

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## **INTRODUCTION**

In 2015, the Oregon legislature amended **ORS 433.800 – 433.830** (laws pertaining to the training of lifesaving treatments) to authorize certain individuals to be trained to administer medication to students diagnosed with adrenal insufficiency who are suffering from an adrenal crisis when a licensed health care provider is not immediately available and whose parent or guardian has provided the necessary medication and equipment for administration.

The Oregon Administrative Rules supporting this law (**OAR 333-055-0000 to 333-055-0035**) were amended and adopted by the Oregon Health Authority (OHA) - Public Health Division in February 2016 to support this training on the treatment of students with adrenal insufficiency. The OHA - Public Health Division, is responsible for developing these training programs.

## **ACKNOWLEDGEMENTS**

We would like to acknowledge the School Nurse Advisory Group of the Oregon Department of Education for their assistance in reviewing and editing this training protocol.

## **TRAINING REQUIREMENTS**

This training program must be conducted by one of the following individuals:

- A physician licensed to practice in Oregon; or
- A nurse practitioner licensed to practice in Oregon; or
- A registered nurse licensed in Oregon.

The training should be provided on behalf of a student with a known diagnosis of adrenal insufficiency that places them at risk for adrenal crisis. This training protocol should be used in conjunction with the OHA developed PowerPoint presentation. The person to be trained must be 18 years of age or older and must have, or reasonably expect to have, responsibility for or contact with a student diagnosed with adrenal insufficiency described above. Individuals who are likely to fall under the definition of the law include public or private school employees and school volunteers.

In addition to taking the required training course described above, trainees are encouraged to obtain and maintain current training in first aid and CPR, as well as training on Bloodborne Pathogens.

# **SCHOOL HEALTH MANAGEMENT PLANS**

Parents or guardians of children with adrenal insufficiency must notify school personnel of their child's medical needs to initiate a health management plan (may be included in a 504 Plan or Individualized Education Plan (IEP)). A registered nurse practicing in the school setting (hereafter called a school nurse) is the lead staff for the development and implementation of a health management plan. The health management plan is a tool that the school nurse uses to translate medical orders for school personnel to follow.

*The health management plan addresses the following elements:*

- specific actions for school personnel to perform;
- a plan for communicating with parents and the child's medical providers;
- school policies and procedures for administering medications, including parental authorization;
- procedures for handling bodily fluids as encountered with vomiting, injections; and
- an action plan for each child who has adrenal insufficiency, which includes information about medications, dosage, method of administration and frequency, procedures to follow during field trips or outings, and how to handle emergency situations including signs and symptoms specific to the student. The child's medical provider writes and signs medical orders to support the child's health management plan at the school.

The decision to give medication to a student diagnosed with adrenal insufficiency is based upon the student's health management plan and recognition of the signs of adrenal crisis and should not be postponed.

## **ADRENAL INSUFFICIENCY TRAINING**

This training protocol may be used for initial training purposes or retraining. While Oregon administrative rules require that persons be retrained once every three years, the OHA encourages and recommends that school personnel who may be responsible for, or in contact with, a student diagnosed with adrenal insufficiency be trained every year to maintain awareness.

The training includes the following topics:

- General information about adrenal insufficiency and the dangers associated with adrenal insufficiency;
- Recognition of symptoms of a person who is experiencing adrenal crisis and common factors that lead to adrenal crisis;

- The types of medications that are available for treating adrenal crisis;
- The proper administration of medication that treats adrenal crisis; and
- Necessary follow-up treatment.

While there is no prescribed time frame for conducting this training, the trainer should allow enough time for trainees to:

- Read through the protocol;
- Observe the procedure for administering medication to treat adrenal crisis;
- Provide a return demonstration of the procedure for administering medication to treat adrenal crisis;
- Ask questions; and
- Complete the open-book evaluation tool.

Trainers should consider the trainees' past experiences with giving injections and their current comfort level to determine how best to demonstrate the procedure and provide an opportunity to practice. If a trainee is being retrained, the trainer should consider the trainee's existing knowledge to determine the degree to which certain topics within the protocol should be emphasized.

## **STATEMENT OF COMPLETION OF TRAINING**

A "Treatment of Adrenal Crisis - Statement of Completion" can be found at the end of this training protocol. The trainer will use their professional judgment to determine if the trainee has satisfactorily completed the training requirements. When the trainee satisfactorily completes the requirements, the trainer will sign and date the statement of completion.

## **WHAT IS ADRENAL INSUFFICIENCY?**

Adrenal insufficiency is an endocrine, or hormonal, disorder that occurs when the adrenal glands do not produce enough of certain hormones. Adrenal hormones, such as cortisol and aldosterone, play key roles in the functioning of the human body, such as regulating blood pressure and metabolism, and the body's response to stress.

Adrenal insufficiency can be primary or secondary. Addison's disease, the common term for primary adrenal insufficiency, occurs when the adrenal glands are damaged and cannot produce enough of the adrenal hormone cortisol. The adrenal hormone aldosterone may also be lacking in those with Addison's Disease. Addison's disease affects 110 to 144 of every 1 million people in developed countries.

Secondary adrenal insufficiency is much more common and occurs secondary to another process such as tumor, infection or certain medication which causes the pituitary gland (a pea-sized gland at the base of the brain) to fail to produce enough adrenocorticotropin (ACTH), a hormone that stimulates the adrenal glands to produce the hormone cortisol. If ACTH output is too low, cortisol production drops. Eventually, the adrenal glands can shrink due to lack of ACTH stimulation.

## **ADRENAL CRISIS**

### **What is adrenal crisis?**

Adrenal crisis is a sudden, severe worsening of symptoms associated with a student diagnosed with adrenal insufficiency, such as severe pain in the lower back, abdomen or legs, vomiting, diarrhea, dehydration, low blood pressure or loss of consciousness.

### **What can trigger a crisis?**

Students with adrenal insufficiency may experience an adrenal crisis in many circumstances including illness, such as the cold or flu; an injury, such as a twisted ankle or broken bone; exposure to stressful situations, such as a fire-drill; or missing or stopping steroid medications.

### **What are the signs and symptoms?**

Signs and symptoms associated with adrenal crisis may include:

|   |                               |
|---|-------------------------------|
| Headache  | Stomach ache                  |
| Nausea or vomiting  | Diarrhea                      |
| Low back pain or leg pain   | Muscle weakness or cramping   |
| Fever (over 100°F)  | Loss of appetite              |
| Red cheeks (not related to physical activity)   | Dark rings under the eyes     |
| Lethargy – can't stay awake   | Trouble focusing or confusion |
| Dizziness or lightheadedness  | Fainting or passing out       |
| Changes in emotional behaviors – student may seem more upset, angry or tearful than is usually normal |                               |

### **When do I treat?**

It is important that school personnel become familiar with the student's health management plan which will identify signs and symptoms the student may experience along with appropriate treatment.

The speed at which a student's health status may worsen is related to age, physical

condition, and underlying circumstances. Vomiting and diarrhea account for most crises because the body is unable to absorb oral medication.

When a student experiences physical or emotional stress, a "stress dose" of medication is often given. The student's health management plan will have instructions for oral stress dosing for minor illness or injury. Depending on the severity of an event, an injection may be necessary.

- Note: "stress dose" is when a person is given a larger than normal dose of their prescribed medication, as directed by their healthcare provider.

It is important to identify the symptoms of adrenal crisis and medicate the student appropriately based on the student's health management plan. Do not wait.

### **Scenarios**

Case 1: A 16 year-old high school student has had vomiting and diarrhea from food poisoning. The student has adrenal insufficiency from chronic steroid use for asthma. She is weak, confused, and has low blood sugar. Although it might be assumed that she is just dehydrated with low blood sugar from not eating and drinking, in fact she is in adrenal crisis from not being able to absorb her steroids.

Case 2: An elementary student with Addison's disease falls off the swing during recess and has scraped his knees and elbows and is limping but doesn't appear to have any broken bones. He begins to complain about a stomach ache. While the injuries are not severe, the child may be experiencing adrenal crisis and should be given an oral stress dose or an injection based on the student's health management plan and prescriber orders.

### **What is not an Adrenal Crisis?**

The symptoms of adrenal crisis mimic the symptoms of many other illness or diseases. The key is to inquire about the diagnosis of adrenal insufficiency and consult the student's health management plan.

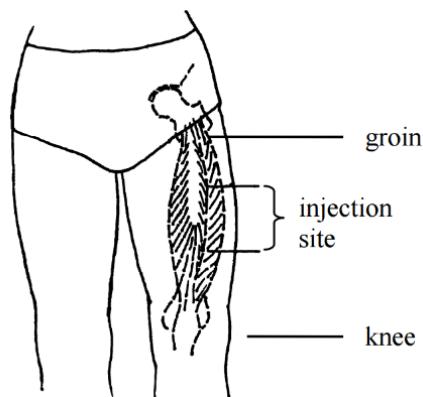
## **TYPES OF MEDICATION and ADMINISTRATION**

There are many medications that a student may be prescribed to treat adrenal insufficiency. Hydrocortisone is a steroid that naturally occurs in the body and allows the body to metabolize glucose and control vascular activity to maintain blood pressure. It also controls water and salt balance within the body. In order to keep adrenal insufficiency under control, a student is often required to take a daily,

oral dose of medication to supplement what the body is not producing. The medication prescribed must be taken per the prescriber's order. A prescriber order for medication will include:

- Name of student
- Name of medication
- Dosage to administer
- Method to administer
- Time or symptoms when to administer

When there is suspected adrenal crisis, additional doses of oral medication may be necessary, or an injectable medication, such as Solu-Cortef or Solu-Medrol. These injectable medications are given intra-muscularly, which means that it is injected into a large muscle such as the thigh.



**CONSULT THE STUDENT'S HEALTH MANAGEMENT PLAN FOR THE APPROPRIATE MEDICATION AND ADMINISTRATION.**

### **Possible side effects of medications to treat an adrenal crisis**

High blood pressure, rapid heart rate, swelling, high blood sugar, agitation, confusion, or psychosis (behavioral disorder that may include hallucinations or delusions).

### **Storage**

Oral medication should be stored at room temperature (68°-77°F) and away from excess heat and moisture.

Injectable medications should be stored at room temperature (68°-77°F), in a dry place protected from light. The powder must be reconstituted with the sterile water and should not be mixed until just before it is injected during an adrenal crisis emergency. The reconstituted solution should only be used if it is clear.

## **Access**

Plans should be in place to assure that medication is readily available and in close proximity to the student. This must include field trips or other off-campus functions. Depending on the age of the student and district policies, it may be advisable for students to carry their own medication during these special activities, and trained personnel must accompany the student.

## **Materials needed**

|                  |                              |
|------------------|------------------------------|
| Medication       | Syringe and injection needle |
| Alcohol swab     | Cotton ball or tissue        |
| Sharps container | Gloves                       |

## **Preparation of medication:**

**Prior to administering medication, CALL 9-1-1**

- 1) Gather materials and check the expiration date.

The injection must be given in the lateral thigh. It will be necessary for the student to pull down pants or raise a skirt. This should occur in a private location and steps should be taken to make the student as comfortable as possible. Consider having a blanket or curtain. It is recommended that two personnel be present if possible.

- 2) Wash hands.
- 3) Put on gloves.

### **Using an “Act-o-Vial”:**



- 4) Press down on plastic activator of the Act-o-Vial to force diluent into the lower chamber.
- 5) Gently mix the solution by turning the vial upside down several times. Do not shake. (The solution is initially cloudy but then clears. If the solution does not get clear, do not administer and wait for rescue personnel to arrive.)
- 6) Remove the plastic tab covering center of stopper.

### **Drawing up the medication from a vial:**

- 7) Wipe the top of the vial with an alcohol swab.
- 8) Take cap off the syringe

- 9) Insert needle squarely through center of plunger-stopper until tip is just visible.
- 10) Invert vial and withdraw required dose.
- 11) Talk with student and reassure them; let them know what you are going to do.
- 12) Uncover the area to be injected (lateral thigh).
- 13) Use alcohol wipe to cleanse the injection site.
- 14) Hold the syringe like a dart.
- 15) Using thumb and first two fingers of the opposite hand, spread the skin while pushing down lightly.
- 16) Dart the needle into the injection site, going straight in at a 90-degree angle.
- 17) Inject entire contents of syringe.
- 18) Withdraw the syringe quickly and discard into sharps container.
- 19) Using a cotton ball or tissue, massage the injection site gently.
- 20) Talk with student and give additional reassurance, if necessary.
- 21) Notify parent/guardian.
- 22) Clean up and dispose of waste safely.

If medical assistance was not summoned, call 9-1-1 or have someone do this for you. DO NOT LEAVE THE STUDENT UNATTENDED. Advise the dispatcher of the type of medication that was given. A student who is treated should be seen by a primary care provider (doctor, nurse practitioner, physician's assistant). The student's health presentation may not immediately improve after the medication is given.

After administering the medication, turn the student on his or her side and monitor breathing. If the student's health worsens, call 9-1-1 to provide updated information.

## **FOLLOW-UP AND CONSULTATION AFTER ADRENAL CRISIS EPISODE**

Once a student has been given emergency treatment for symptoms of adrenal crisis, the parent or guardian should consult the student's primary care provider. The parent or guardian is also responsible for obtaining additional medication to replace what was used in case of future emergency.

### **Documentation**

After caring for a student experiencing an adrenal crisis, it will be important to

document your actions. Include the following in written form to the school nurse or school administrator:

- Symptoms recognized
- Dose and time of injection
- Time that EMS was called and arrived
- Transfer of care to parent or EMS

## REVIEW

**Adrenal insufficiency** is an endocrine, or hormonal disorder that occurs when the body is unable to produce enough adrenal hormones, such as cortisol and aldosterone. These hormones are needed to help a body respond to stressors such as illness and injury.

Students diagnosed with adrenal insufficiency are usually taking daily, oral medication and will have a health management plan on file with the school. School personnel who will be responsible for or be in contact with a student diagnosed with adrenal insufficiency need to become familiar with the student's health management plan and understand the signs and symptoms of adrenal crisis.

**Adrenal crisis** is a sudden, severe worsening of symptoms associated with adrenal insufficiency including, but not limited to, severe pain in lower back, abdomen or legs; vomiting; diarrhea; dizziness; changes in emotional behavior; and loss of consciousness.

An adrenal crisis may be triggered by a sudden or lengthy illness such as the cold or flu; an injury that might occur on the playground or in gym; or exposure to stressful situations, such as a fire drill.

**Recognizing and responding** to a student who may be experiencing an adrenal crisis may be lifesaving. Signs and symptoms of an adrenal crisis include:

|  |                               |
|--|-------------------------------|
| Headache   | Stomach ache                  |
| Nausea or vomiting   | Diarrhea                      |
| Low back pain or leg pain  | Muscle weakness or cramping   |
| Fever (over 100°F)   | Loss of appetite              |
| Red cheeks (not related to physical activity)                                  | Dark rings under the eyes     |
| Lethargy – can't stay awake  | Trouble focusing or confusion |
| Dizziness or lightheadedness   | Fainting or passing out       |
| Changes in emotional behaviors – student may seem more upset, angry or tearful |                               |

than is usually normal

Do not delay or second guess whether the child is in crisis – when in doubt, provide the medication as directed in the student's health management plan. This may include giving additional oral doses or an injection.

Contact the parent or legal guardian and call 9-1-1.

**Preventing** an adrenal crisis is not always possible. It involves recognizing signs of potential stress and avoiding injury. That is why participating in this training is helping to **prepare** you in recognizing symptoms and administering medication. Steps should be taken to ensure that students with adrenal insufficiency have current medication available for use and that parents are communicating with the school when the student has been ill.

## **LIABILITY**

ORS 433.830 provides immunity to those that successfully complete this training when the person acts in good faith while rendering emergency treatment, except where such action can be described as wanton misconduct.

ORS 433.830 also provides immunity to institutions, facilities, agencies or organizations when acting in good faith to allow for the rendering of emergency treatment, except where such conduct can be described as wanton misconduct.

## **RESOURCES**

Adrenal Insufficiency United - Recognizing and Managing Adrenal Insufficiency in the Adrenal Insufficient Student – <http://aiunited.org>

Betterle, C. & Morlin, L. (2011). Autoimmune Addison's Disease. In: L. Ghizzoni, M. Cappa, G. Chrousos, S. Loche, & M. Maghnie, Eds. *Pediatric Adrenal Diseases. Endocrine Development.* Vol. 20 (pp 161-172). Padova, Italy: Karger Publishers.

Grossman, A. (2018). Secondary Adrenal Insufficiency. *Merck Manual.* Retrieved from: <https://www.merckmanuals.com/professional/endocrine-and-metabolic-disorders/adrenal-disorders/secondary-adrenal-insufficiency>.

National Institute of Diabetes and Digestive and Kidney Diseases - Adrenal Insufficiency and Addison's Disease - <https://www.niddk.nih.gov/health-information/endocrine-diseases/adrenal-insufficiency-addisons-disease>.

Neary, N. & Nieman, L. (2010). Adrenal insufficiency: etiology, diagnosis and treatment. *Current Opinion in Endocrinology, Diabetes and Obesity* (3):217–223.

U.S. National Library of Medicine, MedlinePlus - Acute adrenal crisis – <https://www.nlm.nih.gov/medlineplus/ency/article/000357.htm>

World Health Organization - WHO best practices for injections and related procedures toolkit –  
[http://apps.who.int/iris/bitstream/10665/44298/1/9789241599252\\_eng.pdf](http://apps.who.int/iris/bitstream/10665/44298/1/9789241599252_eng.pdf)

## **LEGAL REFERENCES**

Oregon Statute - ORS 433.800-433.830

OHA-Public Health rules – OAR 333-055-0000 – 333-055-0035

Department of Education rules – OAR 581-021-0037

# Treatment of Adrenal Insufficiency Quiz

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. What is the organ that the adrenal gland sits on top of?
  
  2. What is the prescribed dose of medication called that a student needs during an adrenal crisis?
  
  3. What plan should you review that is on file with the school that describes the student's adrenal crisis signs, symptoms and medication dosage and administration?
  
  4. List three things that could trigger an adrenal crisis in a student diagnosed with adrenal insufficiency.
    - a) \_\_\_\_\_
  
    - b) \_\_\_\_\_
  
    - c) \_\_\_\_\_

5. List five signs or symptoms that a child can exhibit when suffering from an adrenal crisis.
- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_
- d) \_\_\_\_\_
- e) \_\_\_\_\_
6. Who is able to conduct this training on responding to an adrenal crisis?
7. What Oregon Revised Statute authorizes persons to be trained to administer medication to students diagnosed with adrenal insufficiency who are suffering from an adrenal crisis?
8. Training on adrenal insufficiency is required every \_\_\_\_\_ years, but the Oregon Health Authority recommends retraining every \_\_\_\_\_ year(s) to maintain competency.

9. When a child with adrenal insufficiency suffers a physical or emotional event, they are unable to produce the stress hormone \_\_\_\_\_ and need a ‘stress dose’ of their prescribed medication to avoid permanent disability or death.
  
10. When in doubt \_\_\_\_\_ the student with their stress dose of medication.
  
11. When reconstituting any injectable drug to be given to a child suffering from adrenal crisis, if the solution remains \_\_\_\_\_, you are instructed not to administer the drug and wait for EMS providers.
  
12. If a child with adrenal insufficiency suffers a skinned knee, will they necessarily require a stress dose of their medication?

What if that child suffers a broken ankle?

## **Treatment of Adrenal Crisis – Statement of Completion**

*This certifies that:*

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*Address:*

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*Has completed an approved training program covering recognition of symptoms of adrenal crisis and proper administration of medication to treat adrenal insufficiency, pursuant to ORS 433.800 to 433.830 and rules of the Oregon Health Authority, Public Health Division. Under ORS 433.825 and OAR 333-055-0035, this person is authorized to administer medication in an emergency situation involving a student diagnosed with adrenal insufficiency who is experiencing symptoms of adrenal crisis.*

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*Signature of Authorized Trainer*

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*Date Trained*