

# **Supporting Students with Adrenal Insufficiency in School**

## **Standards of Care**

Including

Training Standards for School Personnel

April 2024

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## Introduction

Adrenal insufficiency (AI) is and can be initially misdiagnosed. AI occurs when the [adrenal glands](#) don't make enough of the hormone cortisol. There are two adrenal glands, located just above the kidneys. They work with the hypothalamus and pituitary glands in the brain. Cortisol helps break down fats, proteins, and carbohydrates in your body. It also controls blood pressure and affects how your immune system works.

Adrenal insufficiency can be primary, secondary, or tertiary.

- Primary adrenal insufficiency, or [Addison's disease](#)(AD): Damage to the adrenal glands do not make enough of the hormone's cortisol and aldosterone.
- Secondary adrenal insufficiency: The brain's pituitary gland does not produce enough ACTH (adrenocorticotropin), a hormone that influences cortisol production in the adrenal glands. This leads to low hormone levels.
- Tertiary adrenal insufficiency: The hypothalamus in the brain, a region that influences hormone production in the adrenal glands, produces too little corticotropin-releasing hormone (CRH), leading to low hormone levels (NIH, 2018), (Nistico, d., et al, 2022)

Adrenal Insufficiency is diagnosed by:

- Levels of adrenal hormones (ACTH) can be determined by blood and urine tests.
- Imaging tests, include X-rays, ultrasound, and MRI.

Adrenal Insufficiency management in the school setting includes:

- Staff training regarding adrenal insufficiency and adrenal crisis.
- Monitoring student health status and communicate with families and healthcare providers.
- Uphold emergency policies and procedures.
- Continue to maintain updated Individual Health Protocols, Action Plans, or Emergency Care Plans to address crises at school (Nistico et al, 2022).

**School personnel need to be prepared to provide care to students with adrenal insufficiency conditions including an adrenal crisis at school** and at all school-sponsored activities in which a student with adrenal insufficiency disease participates. To standardize the support for students with adrenal insufficiency in schools, the Michigan Departments of Education and Health and Human Services have garnered input from a multi-disciplinary team consisting of statewide stakeholders.

**Standards of Care** have been developed to guide schools in providing support to students with chronic health conditions which meet the requirements of the law and ensures that best practices are followed. These general standards are outlined in the [Michigan Standards of Care](#) document. The adrenal insufficiency specific standards of care and training standards are included in this document.

## Instructions: Supporting Students with Adrenal Insufficiency in School Training Toolkit

The school nurse is the most appropriate person in the school setting to provide care for a student with Adrenal Insufficiency (AI). Many schools, however, do not have a full-time nurse, and sometimes a single nurse must cover more than one school. Even when a nurse is assigned to a school full time, she or he may not always be available during the school day, during extracurricular activities, or on field trips. In circumstances where a nurse is absent or unavailable, the school remains responsible for arranging and implementing the agreed upon care that is necessary to enable the student with AI disease to participate in school and school-related activities. The school nurse or another qualified health care professional plays a major role in selecting and training appropriate staff and providing professional supervision and consultation regarding routine and emergency care of the student with Adrenal Insufficiency.

In Michigan, school districts may train school personnel to provide daily care and emergency medical assistance and rescue medications to students with adrenal insufficiency, in accordance with a health care provider's written statement. Best practice is set forth by [National Adrenal Diseases Foundation](#).

This toolkit is designed to guide the school nurse or other medical professionals in providing the most complete training according to standards set by the Supporting Students with Adrenal Insufficiency in School Standard of Care and Training Standards. The training standards outline the steps for supporting students with AI in school. These steps follow the [Safe and Legal Support for Students with Health and Medication Needs in School](#) guidance developed by the Michigan Association of School Nurses for medication administration Training. Once *Performance Standard Steps 1-3* of this toolkit are complete, the staff training, and ongoing management and support can be implemented.

All school personnel should be given training about AI and how to manage it in *Performance Standard Step 4*. This training should be broken down into different levels depending on the responsibility of each staff member towards the student with AI. The training should be administered by a school nurse or a qualified medical professional. Training should take place at the beginning of each school year and should be repeated when a current student is newly diagnosed with Adrenal Insufficiency or a student with Adrenal Insufficiency enrolls in the school. Refresher training is done as needed to support the student as his/her condition or needs change, as outlined in *Performance Standard Step 5*.

The Performance Standard Steps included in this kit outline the support that should be provided to students with AI in school in compliance with the law and best practice. Training must be documented and these records must be saved according to the [Michigan Records Retention and Disposal Schedule for Michigan Public Schools](#).

Training Presentations for the 3 tiers of training are available as links in this document and in the Supporting Students with AI in School Toolkit on the [Michigan Department of Education School Health Services](#) webpage. Additional resources for training are linked and marked in the training outline with a ►.

# Performance Standard Steps to Supporting Students with Adrenal Insufficiency in School

## **Performance Standard Step 1:** Review the Legal Considerations

- a. [Michigan School Code](#)
- b. [Michigan Public Health Code](#)
- c. [FERPA](#)
- d. [Individuals with Disabilities Act of 1997 \(IDEA\) 34 CFR Part 300](#)
- e. [Section 504, Rehabilitation Act of 1973](#)

## **Performance Standard Step 2:** Assemble the Student's Health Care Plans

- f. ► **ECP** Adrenal Insufficiency/Addisons Disease (AI/AD) Emergency Care Plan can be considered the **MMP** or Medical Management Plan including the **MAA** Medical Authorization (Prepared by the Student's Personal (AI/AD) Health Care Team).
- g. ► **IHP** Individualized Health Care Plan (Prepared by the School Nurse).

## **Performance Standard Step 3:** Coordination of Care: School Health Team AI/AD Health Care Team

- h. Meet with student's parent(s)/guardian(s) to review Health Care Plans and identify the support that will be provided according to the student's specific needs.

## **Performance Standard Step 4:** Train School Personnel

The three tiers of support build on each other.

- i. Tier 1- General Staff Awareness (All staff members)
- j. Tier 2- Emergency Care (MERT Team and Daily Support Staff)
- k. Tier 3- Daily Support (Daily Support Staff)
  - i. Varies by individual student need

## **Performance Standard Step 5:** Ongoing Adrenal Insufficiency Management and Support

The checklist on the following page is the Adrenal Insufficiency specific Standard of Care tool that can be used to ensure that all steps are completed when providing care to students with Adrenal Insufficiency in schools.

## Safe & Legal Support of Students with Adrenal Insufficiency/Addison Disease Checklist

Key:			
<b>DSP</b>	Designated School Personnel	<b>PA</b>	Physician's Assistant
<b>ECP/MMP</b>	Emergency Care Plan/Medical Management Plan	<b>NP</b>	Nurse Practitioner
		<b>RN</b>	Registered Nurse
<b>MAA</b>	Medication Administration Authorization	<b>SSH Team</b>	Student-specific Health Team
<b>MERT</b>	Medical Emergency Response Team	<b>*SSH Team includes:</b> Parent(s), Student, DSP Registered Nurse/ PA/ NP/ Medical Provider-Endocrinologist	
<b>Please note: Timely completion of each step is an expectation for all members of SSH Team</b>		<b>** Based on Michigan law and current best practices</b>	

- Non-Emergent Health Need Identified - ***Student with Adrenal Insufficiency/Addisons Disease.***
- If Emergency is suspected, Call 9-1-1 immediately.**
- Parent Provides:
  - ECP /MMP; includes routine/daily care and emergency action steps.
- DSP/RN verifies forms are complete.
- Student specific meeting with parent, administrator, teacher, DSP, and RN/Trainer to provide input to the POC based on the ECP /MMP, MAA, and student needs (i.e., student's daily schedule).
- Building administrator identifies and designates school personnel to be trained.
- DSP determines training needs and arrange skill-based training for SSH Team\*.
- SSH Team participates in skill-based training\*\*.
- STOP:** Verify all forms are appropriately signed and training is complete before DSP assume responsibility for provision of care.
- DSP establishes student-specific health file and medication administration record.
- DSP distributes ECP/MMP to SSH Team members/other school staff per FERPA guidelines.
- DSP provides care to student as outlined in ECP /MMP.
- DSP documents in student health records all care (including student responses to care)
  - In the event of non-urgent unexpected response or error, follow school procedure.
  - Inform parent in a timely manner.
- In the event of **suspected emergency, always call 9-1-1 first**, then parent
  - Follow ECP /MMP emergency plan
  - Follow school policy for responding to emergencies (See MERT protocol).
- DSP maintains regular communication with SSH Team. If appropriate, evaluate for eligibility for a Section 504 Academic Accommodations Plan.

## Performance Standard Step 1: Legal Considerations

The [Michigan School Code](#) and [Public Health Code](#) (applicable for schools with school nurses) dictate the legal requirements for support provided in schools to students with health and medication needs. Three laws apply to students with adrenal insufficiency, The Americans with Disabilities Act ([ADA](#)), the Individuals with Disabilities Education Act ([IDEA](#)) and [Section 504 of the Rehabilitation Act of 1973](#), require schools to provide accommodations for students if their health condition affects their education.

Students with adrenal insufficiency (AI) or Addison's Disease (AD) may qualify under ADA for reasonable accommodations in the school setting so they are successfully supported, and their schooling is not adversely affected by their disability or perceived disability. The Individuals with Disabilities Act of 1997 (IDEA) 34 CFR Part 300 guarantees access to education and related services to assist children with disabilities who benefit from special education. Section 504 of the Rehabilitation Act of 1973 protects the rights of children with special health-care needs (CSHCN) by providing accommodations to those not eligible for special education.

## Performance Standard Step 2: Coordination of Care

Collaboration and cooperation are key elements in creating a Circle of Support for planning and implementing successful support for students with adrenal insufficiency at school. To work collaboratively, a school health team should be assembled to include people who are knowledgeable about adrenal insufficiency, the school environment, Federal, State, Education, and Nursing laws. The school health team is distinct from the student’s personal health care team.

The school health team members work together to implement the medical orders in the Adrenal Insufficiency Emergency Care Plan (ECP/MMP) developed by the student’s personal health care team, using the strategies outlined by the school nurse in the Individualized Health Care Plan (IHP).

In addition, the school health team should be part of the group that develops and implements the student’s Section 504 Plan, if there is a need for one.

<b>School Health Team</b>	Student with adrenal insufficiency Parent/Guardian School nurse or other qualified personnel Other school health care personnel Trained adrenal insufficiency Support Personnel Principal and other administrators 504/IEP Coordinator Office Staff Teacher(s) Guidance counselor Coach(es) and other school staff members responsible for the student
<b>Personal Health Care Team</b>	Student with adrenal insufficiency Parent/Guardian Medical Provider/Endocrinologist for Adrenal Insufficiency Medical Provider Pulmonologist Other Medical Specialists Nurse Adrenal Insufficiency Educator (if available) Clinic Social Worker (if available)

## Performance Standard Step 3: Student Health Plans

► **Adrenal Insufficiency/Addison's Disease Emergency Care Plan/Medical Management Plan ECP/MMP** Provides explicit steps for how to avoid and respond to an adrenal crisis.

### **Information in the ECP/MMP includes:**

- Contact information (parents/guardians and student's health care providers)
- List of known triggers to avoid
- Student specific symptoms and action steps
- Assessment of student's self-care skills for identifying Adrenal Crisis warning signs
- What first aid may or must not be provided
- When and how to administer pain and/or rescue medications, post-administration monitoring requirements
- Activity restrictions
- Guidance for sports and physical activities
- 72-hour disaster, lockdown, or emergency plan

### ► **Medication Administration Authorization (MAA)**

Provides the health care provider's orders that allow for medication to be on school property and to be administered to students according to Physician's, Physician's Assistant's (PA) or Nurse Practitioner's (NP) instructions and written parent/guardian permission.

### ► **IHP Individualized Health Care Plan (Prepared by the School Nurse)**

sometimes called the nursing care plan, is based on the medical orders in the student's ECP/MMP and MAA and incorporates an assessment of the school environment as well as student-specific information (e.g., familial, any supplies needed and where they will be kept).

- Participation in all school-sponsored activities and field trips, with coverage provided by the school nurse or trained school personnel.
- Guidelines for communicating with the family and the student's personal health care team.
- List of trained adrenal crisis emergency personnel.
- Plan and timeline for training and supervising trained adrenal crisis response personnel and other school personnel.
- Timeframe for ongoing review of student outcomes.
- Strategies to ensure the student is not subject to penalties for health care appointments and to provide accommodations during the school day.
- Maintenance of confidentiality and the student's right to privacy (psychosocial, and developmental information).

[Sample Individualized School Health Plan](#), (Cardeneli, D., et al., 2023)

### **Information in the IHP may include:**

- Plan for supporting the student daily (including avoidance of known adrenal crisis triggers, adhering to the student's medical plan, and promoting physical activity).

## Performance Standard Step 4: Training

Adrenal Insufficiency care must be carried out as specified in the student's Emergency Care Plan/Medical Management Plan (ECP/MMA).

Nonmedical school personnel, called "trained adrenal insufficiency personnel" or "designated school personnel" can be trained and supervised to safely support students with adrenal insufficiency in the school setting. In addition to learning how to perform general adrenal insufficiency care tasks, trained school personnel should receive student-specific training, be supervised by the school nurse, and follow the guidelines in place per the endocrinologist recommendations.

Care tasks performed by trained school personnel may include knowledge to identify symptoms of adrenal insufficiency and adrenal crisis, administration of medication (oral and intramuscular), medication side effects, storage and access of medication and calling for emergency services. Training should also stress the importance of early treatment.

The school nurse has a critical role in training and supervision of trained school personnel to ensure the health and safety of students with adrenal insufficiency. In addition, a student's health care provider or adrenal insufficiency specialist may assist in training non-medical personnel. Given the rapid changes in technology, therapies, and evidenced-based practice, the school nurse who provides students with adrenal insufficiency disease and facilitates training for school personnel has a professional responsibility to acquire, maintain knowledge and competency related to adrenal insufficiency.

All school personnel should be given training about adrenal insufficiency conditions. Training should be broken down into different levels depending on the responsibility of each staff member in dealing with the student with adrenal insufficiency. The training should be administered by a school nurse or adrenal insufficiency specialist.

School personnel should be encouraged to have up to date training in First Aid, CPR and Blood Borne Pathogens.

Training should take place at the beginning of each school year and when a student with adrenal insufficiency enrolls in the school. Refresher training is done as the needs of the student changes.

In addition, school nurses should evaluate the skills of the staff who are trained on a regular basis and document these findings.

An Adrenal Insufficiency Training Documentation Form should include student specific training. The trainer shall document the training.

## Tier 1 Training Outline

Administered to all school personnel at the beginning of the year. This training may be provided at a staff meeting.

Tier 1 Training content: (15 – 20 Minutes) determine amount of time

Short video: [Adrenal Sufficiency United](#)

Dangers of adrenal Insufficiency

Roles and responsibilities of individual staff members

Suggested handouts include:

[Children with Adrenal Insufficiency](#)

[Newly Diagnosed – Adrenal Insufficiency](#)

[General Information](#)

[National Adrenal Insufficiency Foundation](#)

## Tier 2 Training Outline

Designed for school personnel who have responsibility for providing emergency care to the student with adrenal insufficiency during a adrenal crisis, including but not limited to: MERT Team, classroom, physical education, music, and art teachers, as well as other personnel such as lunchroom staff, coaches, and bus drivers.

Tier 2 training content: (1-2 Hours)

- Content from Tier 1 with specific instructions for responding to an emergency
- Expanded view of Adrenal Insufficiency
- Common factors that lead to adrenal insufficiency
- Recognition of symptoms requiring emergency action
- Emergency Care PowerPoint
- Emergency Care Plan / Medical Management Plan - how to activate in case of an emergency
- Medications (oral and injections, stress dose, when given, side effects, storage, access)
- Check with local EMS to determine if they stock and/or administer IM Solu-Cortef in an emergency situation
- [Adrenal Crisis Action Plan](#)
- [Adrenal Crisis Alert Flyer for Children](#)
- [Adrenal Crisis Care Letter for Emergency Staff](#)
- [Emergency Handouts](#)
- [Emergency Treatment, Identification and Medical Information](#)
- [Emergency Kit for Adrenal Insufficiency Patients](#)
- [Emergency Steroid Injections](#)
- [Disaster Preparedness Guidelines for Patients with Adrenal Insufficiency](#)
- [Demo dose vials solu-cortf hydrocortisol](#)

## Adrenal Insufficiency Emergency Response Protocol (sample)

**Adrenal Insufficiency identified → note the time, and initiate actions below:**

❖ **Call 9-1-1 immediately:**

- Make call from location of incident, if possible
- Use speaker mode on phone, if possible
- Be prepared to provide EMS Dispatcher with location name and address and the entrance door number nearest to the emergency location
- Do not hang up the phone until instructed to do so by the EMS Dispatcher

❖ Notify front office of Medical Emergency:

- ❖ **Announcement** (  OVER-HEAD;  WALKIE-TALKIE) to alert trained Medical Emergency Response Team (MERT) members:

*"Attention Staff and Students, we are now going into Lock-in (Verbiage for all to stay in place) for a medical emergency in Room \_\_\_\_\_ . MERT team please respond."*

❖ Available MERT members immediately carry out assigned tasks:

- Take AED and any emergency medical supplies and medication (if ordered)
- Inform Central Administration of Emergency
- Contact parents. Meet them in the parking lot
- Meet the ambulance. Unlock the gate/door/ direct traffic
- Copy the medical records of the student; provide to EMS
- Control the scene: clear the area by directing uninvolved students to alternate location
- Document emergency and response on Emergency Response/Incident Report form
- Conduct debriefing session of incident and response following the event

❖ Response Team members will immediately initiate the student's specific Emergency Care Plan (ECP) or "Basic First Aid" if no plan is on file:

- Do not delay or second guess whether the child is in crisis – when in doubt, administer the medication as directed in the student's health plan and call 911.
- Administer a stress dose of medication(s) oral or injection as ordered for triggers/symptoms
- An extra emergency hydrocortisone injection kit or intramuscular injections should be available
- Keep airway open, monitor breathing –  
**If no breathing/ineffective breathing, start CPR and use AED**
- Ensure that 9-1-1 has been called

**PLEASE NOTE:** Regardless of any other instructions/requests you have received, **always call 9-1-1 if:**

- You are unsure of what to do
- Change in alertness or confusion
- **Severe** pain
- The student is having difficulty breathing and/or severe pain

## Tier 3 Training Outline

The initial Student Specific meeting with the Students School Health Team may serve as the training for daily support.

Ideally, at least four adults should be trained as a Tier 3. Monitoring all employees who assist students with adrenal insufficiency care is the responsibility of each school. All supplies for treatment, including the materials necessary to administer rescue medications, are provided by the parent/guardian.

504 accommodations may be put in place to support the student. Tier 3 Trainees may also be responsible for assuring the school personnel are following appropriate accommodations and the accommodations are updated as necessary.

Occasionally, it may be necessary to administer routine medications at school.

Tier 3 training/Student Specific Meeting content: (as necessary)

- Impact of AI disease on behavior, learning, and other activities
- Tips and planning needed for the classroom and for special events
- What to do during a [schoolwide emergency](#) (e.g., lockdown or evacuation)
- Overview of the legal rights of students with AI in the school setting
- Student-specific training, when addressing each AI care task, including:
  - 504 Plan, IEP, or other education plan
  - Clear identification and understanding of the task as outlined in the student's MMP
  - Importance of recognizing an Adrenal Crisis
  - Trigger avoidance
    - Each student's specific triggers (stressful situations, injury, school drills, illness, or missing/stopping steroid medications).
  - Symptom recognition
    - Each student's specific symptoms:(severe vomiting/diarrhea, dehydration, sudden pain in lower back, abdomen, or legs, dark rings under eyes or face, fever 100.0° F or >100.4° F, lethargy, fainting, unable to focus, increased emotional behavior changes, and blood pressure changes (decrease in systolic or diastolic blood pressure)
    - Include overlap of gastrointestinal symptoms
  - How to document all care tasks provided
  - Plan for ongoing evaluation
  - Medication administration on possible routine, PRN, and [emergency IM injection](#)
  - Debriefing adrenal crisis-situation

[National Adrenal Diseases Foundation](#), [Oregon School Nurse Association](#)

# TRAINING: Content and Resources for School Nurses

## School Nurse Adrenal Inefficiency Overview

- [Educational Video on Primary Adrenal Insufficiency- Osmosis](#)
- [Adrenal Insufficiency](#) (continuing education activity)
- [Non-Diabetes, Endocrine Issues at School](#) (PPT)

**Prevalence and Incidence** Primary Adrenal Insufficiency (Addison disease) is rare. The incidence is 0.6 per 100,000 of the population per year. The total number of people affected by this condition at a given time ranges from 4 to 11 per 100,000 of the population. In adults, the common age of presentation is 30 to 50 years. It is more common in women (Munir, et al., 2024). The annual incidence of Central Adrenal Insufficiency (CAI) is 14-28 per 100,000 individuals (Nistico et al., 2022).

## Causes of Adrenal Insufficiency

### Adrenal Inefficiency Overview

- [Adrenal Insufficiency & Addison's Disease](#)
- [Newly Diagnosed – Adrenal Insufficiency](#)
- [Adrenal Insufficiency Test](#)

Adrenal insufficiency can be primary, secondary, tertiary. SAI and TAI, is sometimes referred to as Central Adrenal Insufficiency (CAI).

**Primary adrenal insufficiency (PAI)** Adrenal insufficiency, or Addison's disease, is a condition where the [adrenal glands](#) do not produce enough of the stress hormone cortisol. Cortisol is a glucocorticoid that is used to regulate blood pressure, metabolism, anti-inflammatory response, and emotional behavior. Without sufficient cortisol, the body cannot perform daily activities, and cannot respond to stressors like illness and injury. Someone who has adrenal insufficiency needs to take synthetic cortisol every day for maintenance, with additional doses during times of stress (Huecker, M., et al., 2023). Acquired PAI is caused primarily by autoimmune Adrenalitis and can occur at any age.

**Secondary adrenal insufficiency (SAI)** This starts when the pituitary gland does not make enough of the hormone ACTH (adrenocorticotropin). The adrenal glands do not make enough cortisol. Sudden withdrawal from long-term exogenous steroid use can be cause SAI. [SAI Fact Sheet](#) (NADF, 2022).

**Tertiary adrenal insufficiency (TAI)** When the hypothalamus does not make enough corticotrophin, the pituitary gland does not make enough adrenocorticotropin (ACTH). The condition presents with subtle and rather non-specific signs and symptoms that develop over weeks and months and is often

missed, leading to a delay in diagnosis; as such, a high level of clinical suspicion is required to make the diagnosis, ([Kumar, Wassif, 2022](#)).

**Central Adrenal Insufficiency (CIA)** is classified as secondary or tertiary adrenal insufficiency depending where the impairment is located. Diseased production or the release of adrenocorticotrophic (ACTH) can originate either from a pituitary disease (secondary adrenal insufficiency) or from an impaired release of corticotropin-releasing hormone (CRH) from the hypothalamus (tertiary adrenal insufficiency), (Nistico, D. et al. 2022)

## Triggers

(may include but not limited to)

- Not receiving treatment for an AI such as Addison’s disease
- Damage to the adrenal gland, including adrenal gland diseases or surgery
- Dehydration
- [Hypopituitarism](#)
- Infection
- No longer taking a glucocorticoid medication (prednisone) after taking it for a long time
- Mental or emotional stress (stressful situation may be school wide safety drills or incidence)
- Illness (cold/flu/infection)
- Injury to body

## Signs and Symptoms of Adrenal Insufficiency

Children with AI symptoms are mild only when a person is under stress.

Each person’s symptoms may vary:

Weakness	Fatigue
Dizziness	Lack of appetite
Dehydration (fluid loss)	Weight loss
Muscle aches	Nausea (Upset Stomach)
Vomiting	Diarrhea
Low blood pressure (even fainting)	Low sugar levels
Irregular or no menstrual periods (women)	Dark Skin (Addison’s Disease only)
Black-color around nipples, mouth, rectum, scrotum, or vagina (Addison’s Disease only)	

**Best Practice:** If one or more of the above mild symptoms are present follow the ECP/MMP if available, otherwise

- Administer hydrocortisone for stress dosing if order is written.
- Contact the school nurse, parent/guardian, school administrator.
- Monitor for changes, call 911 if necessary.

## Chronic Symptoms and Signs of Addison's Disease

### Signs and Symptoms

- Hyperpigmentation of exposed and non-exposed parts of the body
- Extreme weakness
- Salt craving
- Unintentional weight loss
- Chronic diarrhea

These symptoms may look like other health problems. Always see your healthcare provider for a diagnosis (John Hopkins Medicine, 2024). [Hopkins Medicine](#)

## What Happens During an Adrenal Crisis or Addisonian Crisis?

An adrenal crisis can affect anyone, but mostly affects people between the ages of 30-50 and children. Approximately 42% of people with AI will have a crisis. People with primary adrenal insufficiency, [Addison's disease](#) are at the highest risk of developing Addisonian crisis, especially if their condition is not managed well or has not been diagnosed.

Adrenal crisis refers to an overwhelming and life-threatening adrenal insufficiency. It is a sudden severe worsening of symptoms and is the result of an extreme physical or emotional stress that does not get the necessary steroid coverage.

Cortisol affects almost every organ and tissue in your body. Some the functions include:

- Regulating your body's stress response
- Helping control your metabolism
- Suppressing inflammation
- Regulating blood pressure
- Regulating blood sugar
- Helping control your sleep-wake cycle

A crisis may occur if the level of steroids is lowered or decreased suddenly. The symptoms of an Addisonian crisis include the symptoms of adrenal insufficiency or Addison's disease, but if not treated, it can lead to:

- Shock:
  - Is a critical condition brought on by the sudden drop in blood flow through the body. If shock [symptoms](#) are not treated, it can lead to permanent organ damage or even death.
  - [Michigan's Emergency First Aid Guidelines for Schools](#) for Shock

- Seizure:
  - A seizure is a sudden, uncontrolled burst of electrical activity in the brain that may be brought on by a stress reaction.
  - [Michigan's Emergency First Aid Guidelines for Schools](#)
  
- Coma:
  - Is a state of prolonged loss of consciousness. It can have a variety of causes, including traumatic head injury, stroke, brain tumor, or drug or alcohol intoxication. A coma may even be caused by an underlying illness, such as diabetes or an infection.
  - Coma is a medical emergency. Quick action is needed to preserve life and brain function. Health care providers typically order a series of blood tests and a brain scan to try to learn what is causing the coma so that proper treatment can begin. [Symptoms](#)

**Best Practice:** If you suspect a student is having any symptoms of an adrenal crisis, give the [emergency medication injection](#), call 911, and activate your Medical Emergency Response Team (MERT).

Work with family to determine their understanding of disease and management.

# Adrenal Crisis Alert in Children

## Signs/Symptoms/Diagnosis – Acute Adrenal Failure

Teachers should have access to an emergency or medical management care plan for a student with adrenal insufficiency/crisis that lays out instructions for what to do if a fever occurs during the school day.

### **Orthostatic hypotension** (drop in blood pressure when sitting or standing)

Orthostatic hypotension, also called postural hypotension, is a form of low blood pressure that happens when standing after sitting or lying down. Orthostatic hypotension can cause dizziness or lightheadedness and possibly fainting. The swings in blood pressure from standing and sitting because of orthostatic hypotension can be a risk factor for stroke due to the reduced blood supply to the brain.

Orthostatic hypotension can be mild and episodes may be brief. Long-lasting orthostatic hypotension can signal more-serious problems. It is important to see a health care provider if you frequently feel lightheaded when standing up. Occasional orthostatic hypotension is usually caused by dehydration or lengthy bed rest. (Mayo Clinic, 2022).

**Best Practice:** If you suspect a student is having any symptoms of an adrenal crisis, give the [emergency injection medication](#), call 911, and activate your Medical Emergency Response Team (MERT).

### **Severe vomiting/diarrhea**

The main risk of serious vomiting/diarrhea is dehydration which needs immediate medical treatment with Adrenal Insufficiency or Adrenal Crisis. Diarrhea usually causes stomach cramps and nausea. Signs of dehydration include: decrease in urine, dark smelly urine and sometimes bleeding from the rectum. At the start of the illness, it is common to vomit everything. This can last for 3 or 4 hours. Children then often become stable and change to mild vomiting. The younger the child, the greater the risk for dehydration (Seattle Childrens, 2024).

**Best Practice:** If you suspect a student is having any symptoms of an adrenal crisis, give the [emergency medication injection](#), call 911, and activate your Medical Emergency Response Team (MERT).

### **Severe dehydration**

Hydration occurs when you use or lose more fluid than you take in. If the fluids are not replaced, dehydration occurs. The most common cause of dehydration in children is severe vomiting and diarrhea. Mild to moderate dehydration can be treated with fluids, but severe dehydration needs immediate medical treatment.

**Best Practice:** If you suspect a student is having any symptoms of an adrenal crisis, give the [emergency medication injection](#), call 911, and activate your Medical Emergency Response Team (MERT).

- Accommodations should be made for student to always have access to water in school and on the bus.

### **Pain: Sudden penetrating pain in lower back, abdomen, or legs**

Pain may occur anywhere in the body (most commonly in the arms, legs, abdomen and back). The unpredictable nature of pain associated with adrenal crisis may create a sense of uncertainty that may cause unusual behavior. A child who is typically easy-going and attentive in the classroom may become grumpy, uncooperative, and unresponsive. Many children with adrenal insufficiency/crisis suffer with pain daily and still behave “normal,” focusing on their schoolwork and engaging in classroom activities. It is important to recognize when a student’s pain is worse than usual or no longer tolerable.

**Best Practice:** If you suspect a student is having any symptoms of an adrenal crisis, give the [emergency medication injection](#), call 911, and activate your Medical Emergency Response Team (MERT).

- Be responsive to complaints of pain.
- A student will come to know whether their pain is mild or moderate and will pass, or whether it is necessary to call his or her parents or go to the hospital.
- Do not encourage the student to simply bear the pain.
- In clinic or hospital settings, doctors often use a scale of 1-10 to rate pain. Use this type of scale to check in periodically with a student to learn the difference between the student’s usual level of pain and when emergency contacts need to be called.

### **Fever**

As the crisis worsens, the person will experience chills, sweating, and fever if the condition remains untreated, severe dehydration eventually follows, leading to symptoms of shock or convulsions.

- For a fever exceeding 100.4°F, double the oral corticosteroid dose is recommended.
- For a fever exceeding 102.0°F, triple the oral corticosteroid dose is **recommended. (NIH, 2023).** (Review ECP/MMP for instructions).

**Best practice:** If you suspect a student is having any symptoms of an adrenal crisis, give the [emergency medication injection](#), call 911, and activate your Medical Emergency Response Team (MERT).

- Be alert for signs of fever.

- Teachers should have access to an emergency or medical management care plan for a student with adrenal insufficiency/crisis that lays out instructions for what to do if a fever occurs during the school day.

## Medications, Treatment and Actions

[Hormone replacement therapy](#) corrects the decreased levels of steroid hormones the body is not able to make enough of. Medications to replace cortisol and aldosterone may be given in multiple doses throughout the day to mimic changes that the body goes through.

Medication recommendations vary based on the individual and the treatment plan prescribed by his/her healthcare provider.

### Routine Medications:

- Hydrocortisone is given two to three times per day
- Prednisone and Dexamethasone are prescribed less frequently.
- Fludrocortisone is given if the adrenal glands are not making enough aldosterone
  - People with secondary and tertiary adrenal insufficiency and usually make enough aldosterone and do not need to take fludrocortisone., (NIH, National Library of Diabetes, Digestion, and Kidney Disease, 2022).

### Rescue Medication:

Hydrocortisone is given for stress or trauma as an emergency IM injection, of Solu Cortef (powder or solution).

High doses of glucocorticoids are not harmful for a short period, but can cause death. Your body needs much more cortisol than usual during times of physical stress such as illness, serious injury, low blood glucose, low blood sodium, and high blood, and potassium.

- [Stressing Guidelines for Adults](#)
- [Stressing Guidelines for Children](#)
- [Emergency Handouts](#)
- [How to Administer Solu-Cortef via Intramuscular Injection Using ACTC-Vial System](#)
- [Demo dose vials for Solu-cortf injections](#)

**Best Practice:** Students should always carry a steroid emergency card and medical alert identification. In addition, each student should be equipped with a glucocorticoid injection kit for emergency use and both student and parents should be educated on how to use it.

Education should include students, families, and school staff training for emergency administration of IM Hydrocortisone, the importance of a dose of medication being missed, and understanding the medication administration plan (Nistico et al., 2022) (Cardeneli, D. et al., 2023).

[Michigan Association of School Nurses Safe and Legal Support of Student's Health and Medication](#)

## Prognosis

People with AI can live a normal and active life if they are properly monitored and treated. With proper treatment and regular follow-ups, children grow normally and achieve puberty without difficulty. All patients with adrenal insufficiency need long-term glucocorticoid replacement therapy (Nistico, D., et al., 2022).

## Potential 504 Accommodations

Additional steps to support students with AI may include evaluation for 504 accommodations. The accommodations necessary and will vary depending on student need. Accommodations that to be considered include:

- Implement a regular procedure for ensuring the steroid-dependent student receives copies of any lesson handouts they miss through absence. Adjust workload if necessary.
- Arrangements for students to carry or have access to their emergency care kit.
- Guidance for physical activity (snacks, fluids, injections before physical activities).
- Exams (extra time, change in environment, take at home with supervision, medication before exams, breaks in between major tests).
- Transition to another school.
- Permission to carry a water bottle throughout the day to stay hydrated.
- School trips and sports [Non-Diabetes, Endocrine Issues at School](#)
- Provide buddy system if necessary (Addison's Self-Help Group, 2015).

## Impact on Daily Life and School Performance

Communication between families and the school is essential to ensure success in managing AI and educational needs of the student. Sometimes families are hesitant to share that their child adrenal AI disease. There is a possibility that the student may have symptoms of AI, but does not have a diagnosis. Literature states that many healthcare providers are lacking information about AI and families do not understand all that is involved in this diagnosis. If teachers and/or staff are not informed, it can result in the student lacking appropriate accommodations.

A student with (AI) school experience may be affected when there are (may include but not limited to):

- Unexpected episodes of illness in school or at home
- Frequent medical appointments
- Pain (arms, legs, stomach, back)
- Emotional changes
- Stress reactions

- Fear of a adrenal crisis reaction or even death
- Problems with self esteem
- Feelings of isolation or that they are the 'only ones' with the illness experience
- Experience body changes (hyperpigmentation)
- Increased risk for school absenteeism

To support a student's successful school experience staff should monitor for (may include but not limited to):

- Signs of decreased school performance
- Teasing and/or bullying by other students
- Be aware of mental health concerns
- Refer for a consultation with school counselor, social worker, or psychologist
- Discuss all concerns with parents
- Refer for educational or neurocognitive testing if notice changes in school performance

Many children with AI can adapt both emotionally and socially to the stress. Teachers and staff can provide opportunities which help increase self-esteem such as encouraging participation, assign leadership roles to the child in classroom activities.

## Resources

[Addison's Self-Help Group When a student has Addison's – A Guide for schools and parents \(sample IHP\)](#)

[Adrenal Crisis Action/Medical Management Plan](#) (Albuquerque Public Schools)

[Adrenal Insufficiency School Nursing 101](#)

[Adrenal Insufficiency Toolkit for School Nurses](#) (training videos, templates, professional development, resources)

[Adrenal Insufficiency – A guide for teachers and school nurses](#)

[CARES Foundation School Nurse Packet](#)

[Loudoun County Public Schools Adrenal insufficiency action plan.](#)

[MASN Safe and Legal Support of Student's Health and Medication Needs \(includes Epinephrine Auto Injector & Naloxone training tools\)](#)

Medication [Demo Dose® Solu-Cortf Hydrocortisone Injection Vials](#)

[National Adrenal Diseases Foundation](#)

- [Children with Adrenal Insufficiency](#)
- [Emergency Handouts](#)
- [Solu-Cortef Emergency Injection procedure](#)
- [Pediatric Adrenal Insufficiency Webinar](#)
- [Pediatric Adrenal Action Plan with Pictograms](#)

[National Institute of Health, National Library of Medicine Adrenal Insufficiency Continuing Education Activity](#)

[Non-Diabetes, Endocrine Issues at School](#) (PPT)

[Oregon Health Authority Public Health-Training Protocol Treatment of Students with ADRENAL CRISIS](#)

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