Learning Points

DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

Safe & Rationale Use of Corticosteroids (CS)

- Appreciate risks and benefits
- Do No Harm

Antibiotic Stewardship

Steroid Stewardship

Change Provider & Patient Expectations

- Provider and patient education
- Break old habits
- Think twice

Antibiotic Resistance – A Familiar Concept

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Antibiotic resistance has recently been tied to over 1.2 million deaths per year currently and that number is projected to be as many as 10 million people by 2050.

UCA & CUCM encourage commitment to safeguarding antibiotics for future generations by signing the

Antibiotic Stewardship Commitment

"Steroid Stewardship" first appeared in PubMed in 1996

What Are CS & *How* Do They Work?

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What Are Corticosteroids?

- Corticosteroids are man-made drugs that closely resemble cortisol, a hormone that your adrenal glands produce naturally. Corticosteroids are often referred to by the shortened term "steroids."

How Do Corticosteroids Work?

- When prescribed in doses that exceed the body's usual levels, CS produce anti-inflammatory and immunosuppressive effects, & alter metabolism and electrolytes, among others

Most Important & Broad-Spectrum Indications for CS

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Replacement therapy

- **Adrenocortical insufficiency**
  - Addison disease
- **Congenital adrenal hyperplasia**

Acute

- **Allergic reactions & anaphylactic shock**
- **Asthma** & exacerbation of **COPD**
- **Antiemetic** (nausea due to chemotherapy)
- Toxic **pulmonary edema**
- Acute exacerbation of **autoimmune diseases**
  - MS, Vitiligo, Uveitis, RA, SLE, hepatitis, etc
- **Nephrotic syndrome**
- **Cerebral edema**

Long-Term

- **Chronic Inflammatory diseases**
  - Asthma, COPD, inflammatory bowel disease
- **Rheumatoid diseases**
  - Sarcoidosis, Sjogren syndrome, SLE
  - Local symptomatic treatment
    - Anterior uveitis, steroid responsive dermatosis, tenosynovitis, OA, and JRA

Prophylactic

- **Organ transplant**
- **Preterm delivery**

What is STEWARDSHIP?

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- The Merriam-Webster Dictionary defines **STEWARDSHIP** as*: 'the conducting, supervising or managing of something; especially the careful and responsible management of something entrusted to one's care'*

- **STEWARDSHIP** is therefore *a behavior that embodies responsible planning and management of resources applicable not only to health but also to the environment, economics, property and cultural resources*

Steroid Stewardship includes

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- **Pre-prescription screening**
- **Medical care during corticosteroid use**
- **Appropriate monitoring after corticosteroid use**

CUCM Position Statement

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THE URGENT CARE CONVENTION

CUCM Position Statement

Corticosteroid Stewardship in Urgent Care Medicine

CUCM POSITION STATEMENTS - College of Urgent Care Medicine (coucm.org)

RECENT STUDIES

Oral Corticosteroid Stewardship Statement (Asthma)

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- Nearly 85% of 519 adults with asthma used at least one burst of OCS in the last 12 months
- 64% had done so two or more times
- Even short-term low-dose use of OCS (under 30 days) can result in serious health problems.
- One 2017 study revealed that U.S. patients using OCS short-term doubled (2X) their risk for fracture, tripled (3X) it for blood clots, and had a fivefold (5X) increased risk for sepsis

OCS Overuse in Asthma = A Treatment Plan Failure

November 2018[6] – American Lung Association, Asthma and Allergy Foundation of America, American College of Allergy, Asthma, and Immunology, Alliance for Patient Access

Don’t Prescribe Steroids Lightly [TSANZ[8]]

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- **Can occur with a lifetime cumulative dose as low as 500 mg of Prednisolone/Prednisone**

- **2020 study found that more than 25% of patients prescribed OCS were dispensed a cumulative dose of more than 1000 mg within 5 years**

https://medicalrepublic.com.au/dont-prescribe-steroids-lightly-tsanz/55673

Provider Education

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Provider Education on Steroid Stewardship is warranted for AECOPD

- Among 31 providers, initial dosing ranged from 40 to 625 mg/day

- Just 4 of the 31 (13%) of providers adhered to the recommended low dose (40 mg) of oral prednisone for patients with AECOPD

https://www.ajmc.com/view/researchers-say-provider-education-on-steroid-stewardship-is-warranted-for-aecopd

Key Recommendations for Practice

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Clinical recommendation	Evidence rating
Do not prescribe systemic CS for **acute bronchitis** or **acute sinusitis**	**B**
Insufficient evidence to support routine us of systemic CS with **acute pharyngitis**	**B**
Do not prescribe systemic CS for **allergic rhinitis**	**C**
Insufficient evidence to support routine use of systemic CS in **lumbar radiculopathy**	**B**
Systemic CS appear to be safe and effective alternative to NSAIDS in **acute gout**	**B**
Do not prescribe systemic CS in **carpal tunnel syndrome**	**B**
Systemic CS are recommended within three days of the onset of **Bell's Palsy**	**A**
Insufficient evidence to support routine adjunct use of systemic CS in **Herpes zoster**	**B**

Dexamethasone and Pharyngitis

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- **Insurance database of over 1.5 million patients looking at AE (Short courses & low doses)**
- **Patients prescribed CS had double the risk for sepsis, a 60% increase for venous thromboembolism, and a 25% increase for fractures in the 5- to 90-day period following exposure**
- **Needed to harm from 3,000 for sepsis to 800 for fractures**
- **Increased risks for older patients**

https://www.acepnow.com/article/dexamethasone-helpful-treating-pharyngitis/2/

Steroid Therapy Increases Risk of Blood Clots in IBD Patients

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- **IBD associated with 1.5- to 3-fold increased risk of venous thromboembolism [VTE] events (mainly DVT)**
- **58,518 patients**
- **3,260 VTE events occurred**
- **CS associated with significantly higher rate of VTE complications (Odds ratio of 2.2)**
- **Treatment with anti-TNFα agents resulted a 5-fold decreased risk of VTE compared to CS**

https://academic.oup.com/ecco-jcc/article/12/4/489/4694102

Steroids and Acute URI

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- **Recent analysis of nearly 10 million outpatient medical visits in the United States showed that nearly 12 percent of patients with acute respiratory conditions were prescribed systemic steroids**
- **Found that prescriptions for steroids like prednisone to treat acute respiratory ailments nearly doubled from 2007 to 2016.**
- **Patients in the southern US were 14-fold more likely to receive steroid injections for ARTI than those in the Northeast**

https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003058 (3/21/20)

Corticosteroids & COVID-19[13]

- 86 adult patients with COVID-19 pneumonia admitted to the general ward
  - Randomly assigned to either receive methylprednisolone or not for 7 days
  - No clinical difference of between the methylprednisolone group and control group
  - Throat viral RNA detectability in the methylprednisolone group was 11 days (6–16 days) compared to the control group of 8 days [2–12 days], *p* = 0.030)

- CS showed a positive effect of CS on need for and duration of mechanical ventilation
  - Dexamethasone at a dose of 6 mg once daily for up to 10 days decreased 28-day mortality in patients with COVID-19 on respiratory support.
- Patients *NOT* requiring oxygen showed no benefit

- https://ccforum.biomedcentral.com/articles/10.1186/s13054-020-03400-9

https://www.thelancet.com/article/S2213-2600(20)30530-0/fulltext

Corticosteroids and Pneumocystis jirovecii pneumonia (3/23)

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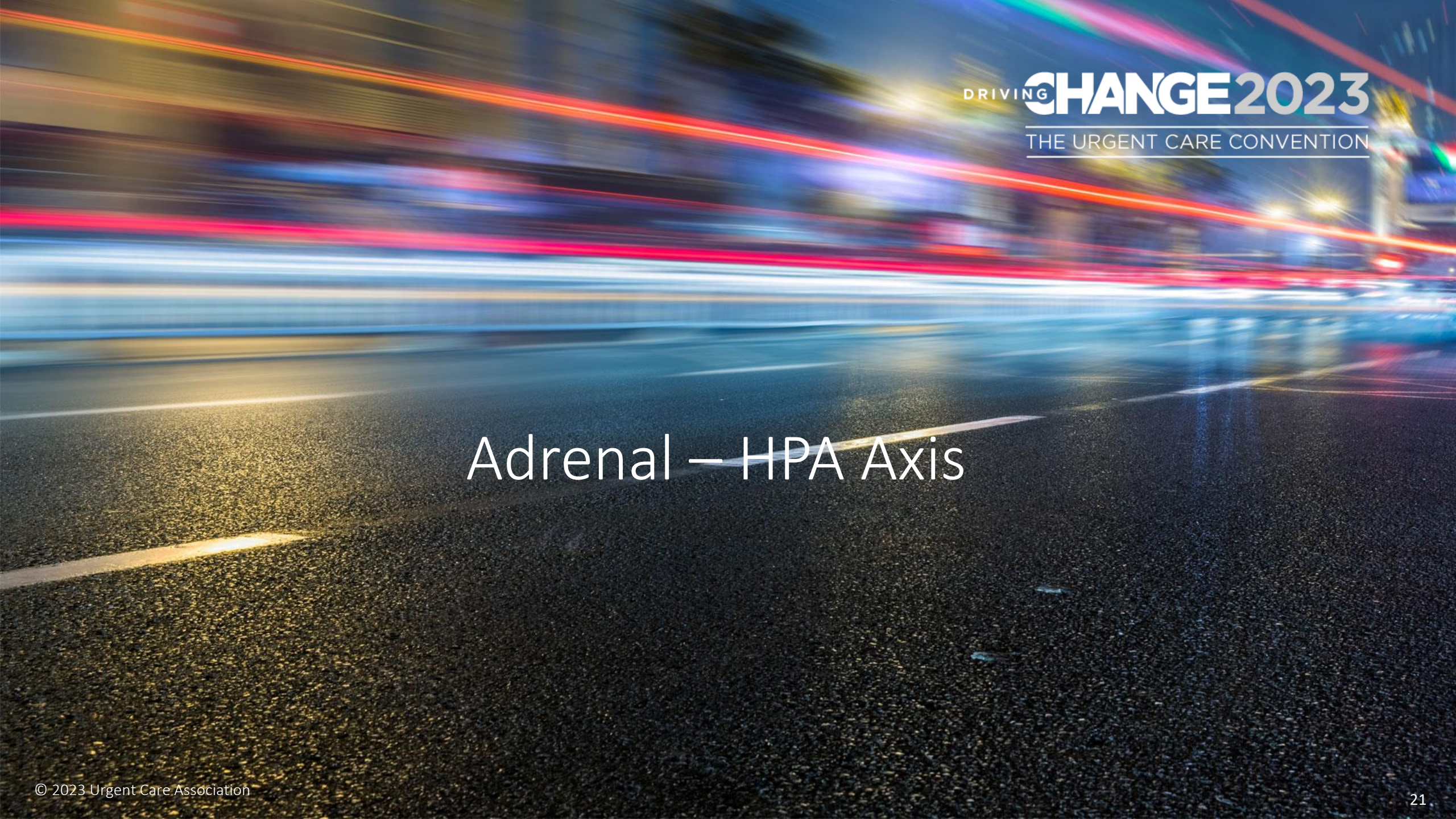
Previous corticosteroid exposure associated with an increased *Pneumocystis jirovecii* pneumonia mortality among HIV-negative patients.

Patients who died were more likely to have previously received dexamethasone (35% *versus* 16%, $p < 0.001$) or prednisone (49% *versus* 29%, $p < 0.001$).

Primary risk factor for PJP includes cell-mediated immunity defects, such as those present in malignancy, hematopoietic stem cell or solid organ transplantation, and those receiving corticosteroids or other immunosuppressive therapies to treat autoimmune diseases

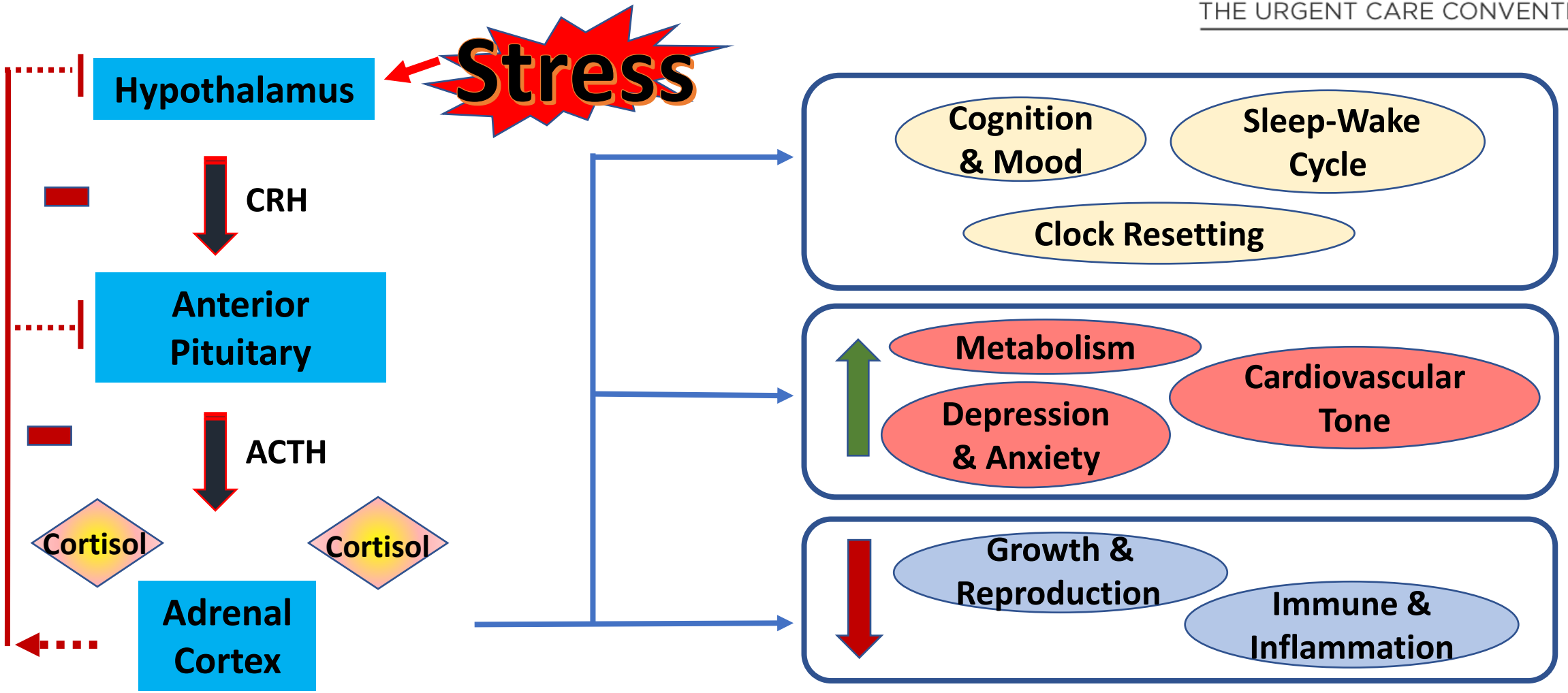
Current mortality assessment in HIV-positive patients with PJP is estimated between 1% and 15%, compared to an estimated 30–40% mortality in HIV-negative patients

https://journals.sagepub.com/doi/full/10.1177/20499361231159481



Adrenal – HPA Axis

HPA Axis



Cortisol

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Suppresses antibody production

Stimulates pro-inflammatory T-cell death

Modulates glucose homeostasis

Enhances the activity of epinephrine (adrenalin) and norepinephrine

Cortisol and adrenaline have been shown to sensitize peripheral nerves directly

Elevated cortisol levels block osteoblasts (bone-building cells)

Circadian Rhythm
Daily Cortisol & Melatonin Cycles

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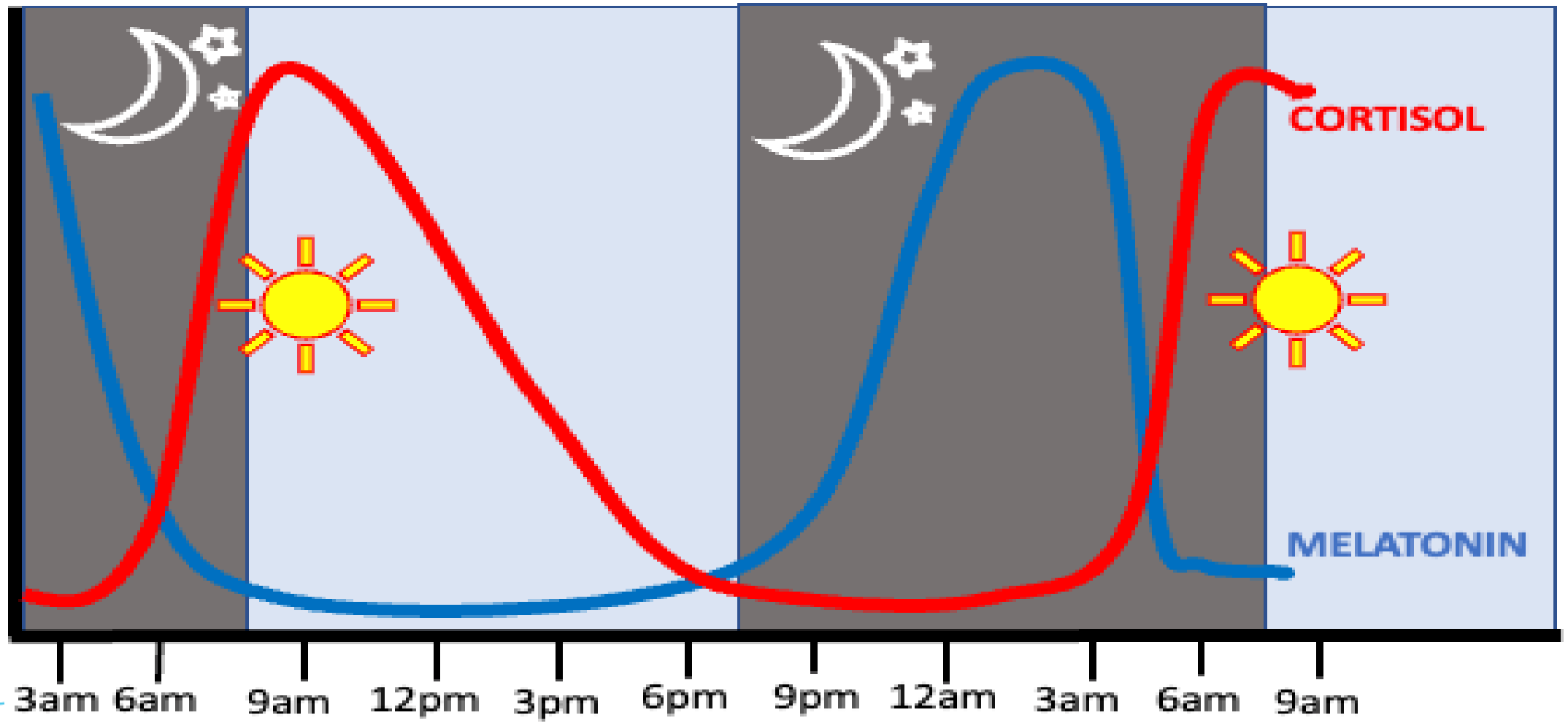

Corticosteroid Conversion Chart

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Glucocorticoid	Approximate Equivalent Dose		Anti-Inflammatory Potency	Plasma Half-life	Biologic Half-life
Cortisone	25 mg	312 mg	0.8	0.5	8-12
Cortisol (Hydrocortisone) (Cortef)	20 mg	**250 mg**	1.0	1.5 - 2	8-12
Prednisone	5 mg	62 mg	4	3.4 - 3.8	18-36
Prednisolone	5 mg	62 mg	4	2.1 - 3.5	18-36
Methylprednisolone (MDP = 84 mg total)	4 mg	50 mg	5	2.5 - 3.5	18-36
Dexamethasone	0.8 mg	**10 mg**	25	3 - 4.5	36-72

HPA Axis Suppression

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Drug	Cortisone	Hydrocortisone	Prednisone	Methylprednisolone	Dexamethasone
Equivalent dose	25	20	5	4	0.75
Mineralocorticoid potency	2+	2+	1+	0-0.5+	0
Biological half-life	8–12	8–12	24–36	24–36	36–54
Daily dose causing HPA axis suppression (mg)	25–30	20–30	7.5 mg	7.5	1–1.5

Corticosteroids in Urgent Care

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Prednisone

- Intermediate-acting
- 4 times as potent as Cortisol
- Our body makes the equivalent of 5 mg per day

Methylprednisolone

- Intermediate-acting
- 5 times as potent as Cortisol
- 25% stronger than Prednisone

Dexamethasone

- Long-acting
- 25 times as potent as Cortisol & even longer-acting
- 6 times as potent as Prednisone or Prednisolone

HPA Axis Suppression – Considerations [18]

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Any patient who has received a glucocorticoid in a dose equivalent to 20 to 30 mg/day of prednisone for more than 5 days should be suspected of having HPA suppression.

Patients taking 5mg prednisolone or equivalent for longer than 4 weeks are at risk of HPA axis suppression and adrenal crisis if physiologically stressed

In regimens longer than 2 weeks, dose tapering is suggested as the best method of glucocorticoid withdrawal.

A typical tapering regimen can last anywhere from days to weeks depending on the dose of prednisone and length of treatment

HPA Axis Suppression – Considerations [18]

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There are data demonstrating HPA axis suppression after a single intra-articular glucocorticoid injection. This can last up to 14 to 28 days

It is reported that 20% of patients given epidural glucocorticoids still had significant reductions in cortisol levels after 3 weeks.

High-dose inhaled steroids have been described as causing HPA axis suppression in about 10% of patients

Adrenal Insufficiency

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Symptoms may include

- Lethargy, fatigue
- Nausea and vomiting
- Arthralgias, myalgias
- Low blood pressure (hypotension) that may cause light-headedness or fainting when the affected person stands after sitting or lying down
- Shock

Signs and tests

- Typically, a patient who has been taking steroids and has developed this condition will exhibit features similar to Cushing's syndrome (round face, obesity around the waist, abdominal striae), while having symptoms of adrenal insufficiency. Tests will look for:
  - Low cortisol level
  - Low sodium
  - Hypoglycemia
  - Depressed response to ACTH

Who Should be Issued a Steroid Emergency Card?[17]

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3 or more short courses (7-14 days) of high-dose oral glucocorticoids (≥ 40 mg prednisone/day) within the last 12 months, and for 12 months after stopping

3 or more intra-articular/intramuscular glucocorticoid injections within the last 12 months, and for 12 months after stopping

Repeated courses of dexamethasone as an antiemetic in oncology regimens, and for 12 months after stopping

Contraindications & Side Effects

Contraindications

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- Hypersensitivity
- Peptic ulcer disease, severe GERD
- Varicella infections
- Herpes simplex keratitis
- Uncontrolled viral or bacterial infections
- Systemic fungal infections
- Live or live-attenuated vaccines
- Drug interations
- Glaucoma or Cataracts
- Dementia or Advanced Age
- Mental Health Issues
- Liver Disease or Heavy alcohol
- Uncontrolled hypertension
- CHF or recent MI (LV wall rupture)
- Osteoporosis
- Uncontrolled hypertension

Side Effects of CORTICOSTEROIDS

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- **C**ushing's syndrome
  - Moon facies, Buffalo hump
- **O**steoporosis
  - Elderly women
- **R**etardation of growth
  - Pediatrics
- **T**hin skin, easy bruising
  - Delayed wound healing
- **I**mmunosuppression
- **C**ataracts & glaucoma
  - Cholesterol/Lipids
- **O**edema
  - Salt & fluid retention
- **S**uppressed HPA axis
- **T**eratogenic [4,5]
- **E**motional disturbances
  - Depression, Anxiety
- **R**ise in blood pressure
  - R & L Heart Failure
- **O**besity
  - Central/Truncal
- **I**ncreased hair growth
  - Hirsutism
- **D**iabetes mellitus
  - Hyperglycemia
- **S**tria
  - Red/Purple stretch marks
  - Stomach ulcers

Purpura

Easy bruising

Fragile skin

Fragile skin

Facial hair, acne, moon face – typical symptoms of Cushing's syndrome

Acne

Acne

Hyperpigmentation in Addison's disease

Skin thinning

Skin thinning

4 Common Side Effects of Inhaled Steroids [16]

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Hoarseness or Dysphonia

- Affects more than 30% of people on steroid inhalers

Oral Thrush

- Affects roughly 3% of users

Osteoporosis

- Adults on long-term, high-dose inhaled steroids have a 27% greater risk

Vision Problems

- Cataracts & Glaucoma
- 2018 study in the Digital Journal of Ophthalmology found that adults who used inhaled budesonide (Symbicort, Pulmicort) for 6 months or longer had significant increases in inner eye pressure.

Even a Few Days of Steroids May Be Risky

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- **Study of more than 2.6 million people found that taking corticosteroids for 14 days or less (mean of 3 days) was associated with an increased risk of**
  - **GI bleeding (1.8) – incidence rate of 27.1 per 1,000 person-years (16.8)**
  - **Sepsis (1.99) – incidence rate of 1.5 per 1,000 person-years (1.4)**
  - **Heart failure (2.37) – incidence rate of 1.3 per 1,000 person years (0.4)**
- Almost 60% of the indications were for skin disorders, such as eczema and urticaria, and for respiratory tract infections, such as sinusitis and acute pharyngitis. Among specialties, dermatology, ENT, family practice, internal medicine, and pediatrics accounted for **88%** of prescriptions

https://www.medscape.com/viewarticle/933569

https://www.physiciansweekly.com/short-burst-oral-steroids-tied-to-severe-aes/ July, 2020

Drug Interactions That Effect Corticosteroids Efficacy

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DECREASE Glucocorticoid concentration

- Antiseizure
  - Carbamazepine, Phenytoin, Phenobarbital
- Antimicrobials/Antivirals
  - Efavirenz, Nafcillin, Rifampin, Rifabutin, Cobicistat

INCREASE Glucocorticoid concentration & risk

- Antimicrobials
  - Azithromycin, Clarithromycin
- Antifungal
  - Itraconazole, Ketoconazole
- Antiviral (HIV & HCV)
  - Protease inhibitors
- Estrogens
  - OCP
- Immunosuppressants
  - Cyclosporin, tacrolimus

Drugs That Are Affected by Corticosteroids

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Increases drug effects

- Digoxin
- Furosemide, HCTZ, others
  - Potentiate K wasting effect
- Fluoroquinolone
  - Increased risk of tendinopathy
- NSAIDS

Decreases drug effects

- Hypoglycemic drugs
- Isoniazid
- Warfarin
- Rilpivirine (NRTI)
- Lisinopril
- Amlodipine
- Apixaban (Eliquis)
- Hydrocodone

MEDICOLEGAL & RISK MANAGEMENT

Conditions Treated, Litigation Claims, and Complications Associated with Corticosteroids [12]

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Condition Treated	Litigations Claims	Complications
Pain (23%)	Allegations of negligent use (65%)	Usually, multiple
Asthma or other pulmonary condition (20%)	Lack of proper informed consent (36%)	Avascular necrosis (39%)
A dermatologic condition (18%)	Failure to diagnose or misdiagnosis (22%)	Mood changes (16%)
A non-dermatologic autoimmune condition (17%)	Multiple allegations (25%)	Visual complaints (14%)
Allergies (6%)	Wrongful death (4%)	Infectious complications (14%)

STEROID-RELATED LITIGATION

- Nurse in her 40s developed aseptic necrosis of the right shoulder and both hips
- Taking high dose prednisone for 6 months
- She was being treated for ITP by a hematologist and sarcoidosis by a pulmonologist. She claimed that both defendants negligently prescribed prednisone for an extended period without proper monitoring
- In a jury trial, each defendant were each found 50% negligent. The patient was awarded $4.1 million in damages

Do NOT Assume That Patients Are Only Getting Prescriptions From You

Steroid-Related Litigation

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- A young man sought care from his internist for complaints of cough and congestion. The doctor prescribed medications, including methylprednisolone for a period of one month
- Patient was later diagnosed with bilateral cataracts and AVN of the hips
- Required to undergo bilateral cataract extraction and a total hip replacement
- Settled in mediation for $835,000

Steroid-Related Litigation

- Short-term corticosteroids (CSs), most commonly defined as short-term prednisone (STP) 40 to 60 mg or its equivalent, either tapered or level, prescribed over a few days to 3 weeks (total dose, 400-600 mg)
- Orthopedic literature finds that CSs are one of the most common causes of AVN
- Court cases consistently find that patients must be informed of treatment risks and options
- Informed consent and thorough documentation are required when prescribing STP

https://pubmed.ncbi.nlm.nih.gov/18038699/

Risk Management

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- **Corticosteroids have been reported as the third most frequent medication involved in malpractice claims, oftentimes leading to disproportionately costly payments.**

- **Most common specialties involved in corticosteroid related medicolegal cases included dermatology (12%), primary care (10%), and neurologists or neurosurgeons (6%)**

- **Most common complications were avascular necrosis (39%), changes in mood (16%), and vision changes (14%)**

Corticosteroid Patient Education

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Even < 30 days low dose of oral steroids can result in health problems

- Double the risk of a fracture
- Triple the risk of blood clots
- Up to a fivefold increase in the risk of sepsis.

There is evidence AGAINST the use of CS for acute sinusitis, acute bronchitis, allergic rhinitis, acute urticaria, or carpal tunnel syndrome.

There is insufficient evidence to support the use of steroids with acute pharyngitis, low back pain with or without radiculopathy, or shingles.

Common drug interactions include warfarin, digoxin, antidiabetic drugs, azithromycin, ketoconazole, and NSAIDS

Steroids can help some patients to feel better faster, but with significant risks. And the more often they are used, and especially inappropriately, then the greater the risk of complications.

A short burst of oral steroids as short as 3 days may increase risks of:

- GI bleeding
- Sepsis
- Heart failure

Corticosteroid Patient Education

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We are all aware that there has been concerns about overusing antibiotics. The same is true of steroids, oral and/or injectable.

All medications can be beneficial or cause complications, side effects, or deadly harm. With both antibiotics & steroids, the risk of negative consequences increases each time taken without a justifiable reason.

Steroids do have a place in medicine for certain conditions. The problem is with overuse or using steroids without evidence of any proven benefits or when the risks outweigh the benefits.

A single steroid injection can:

- Increase chances over the next 1-2 months of infection, bone fracture, and possibly a blood clot
- Cause sleepless nights, mood changes, and jitteriness over the next 1-2 weeks
- Increase your blood sugar/glucose levels, especially if you have diabetes

Patient Education and Informed Consent

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There are several avenues to informed consent, but the most appropriate is a dialogue between physician and patient, with physician documentation of the discussion in the patient's medical chart

A consent form does not replace this process, but some physicians believe it serves as a memory jog for both themselves and their patients

DRIVE CHANGE

THREE STEPS OF CS STEWARDSHIP

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Pre-prescription stewardship

Awareness of the right indication for use, patient counseling & education & screening for metabolic or endocrine conditions

During administration

Instruct patients about duration of therapy, the tapering schedule, & the dangers of abruptly stopping

Post-steroid stewardship

Monitoring patients for adverse events and acting in time to minimize their impact on the patient

Action Steps

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01

Do NOT Assume That Patients Are Only Getting Prescriptions From You

02

Do NOT Assume That Even Short Courses of Oral Steroids Are Without Risk

03

Think Twice

&

Break Old Habits

04

Inform Patients Of The Risks

&

Document

Learning Points → Goal

DRIVING CHANGE 2023
THE URGENT CARE CONVENTION

Safe & Rationale use of corticosteroids

- Appreciate risks and benefits
- Do No Harm

Antibiotic stewardship

Steroid Stewardship

Change provider & patient expectations

- Provider and patient education
- Break old habits
- Think twice

Steroid Stewardship Statement

Informed Consent & Documentation

Corticosteroid Stewardship .....

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Corticosteroid Stewardship Statement

- Provider and Patient education
- Informed consent
- 3 rules of stewardship
  - Pre-prescription screening
  - Care during use
  - Monitoring after use

DRIVING CHANGE 2023

Session Evaluation

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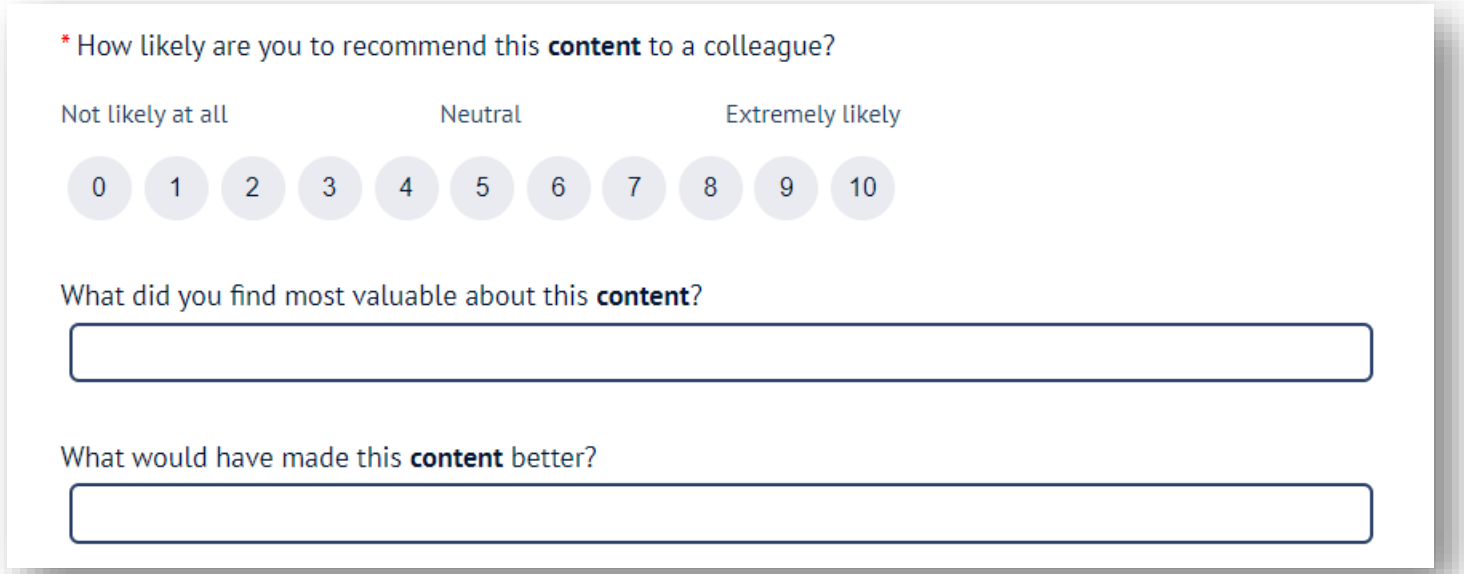
- Your feedback is valuable, take a moment to complete the survey for this session.
- To claim CME, you must complete a separate survey available after the convention.



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