Steroid Induced Cushing's Syndrome

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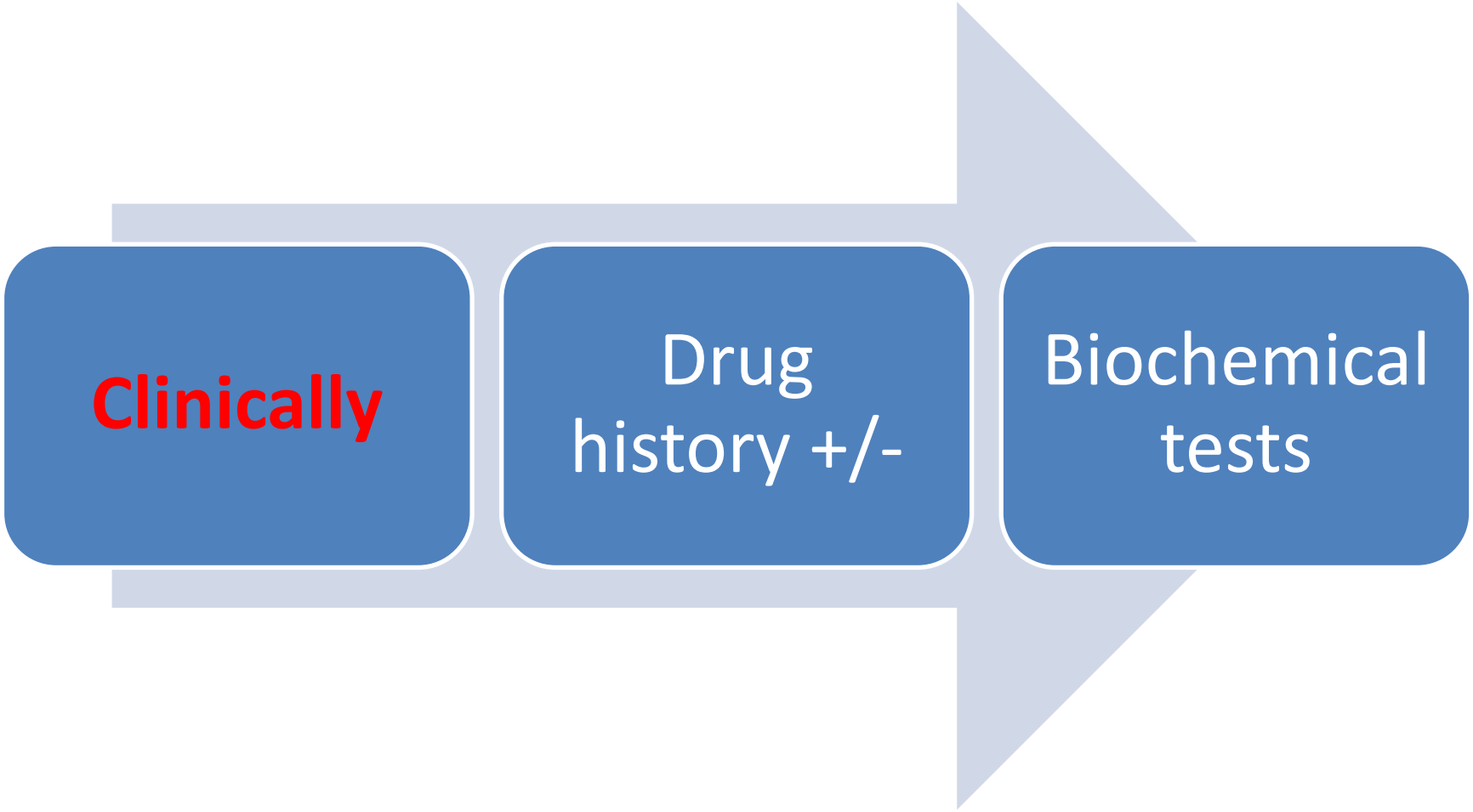
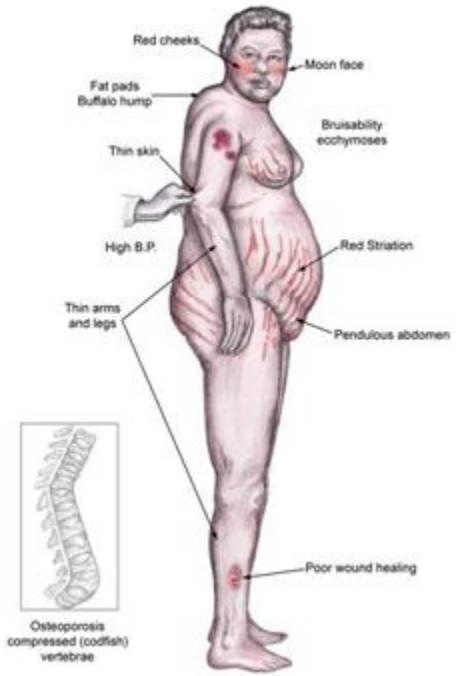
When to suspect Steroid Induced Cushing's Syndrome ?

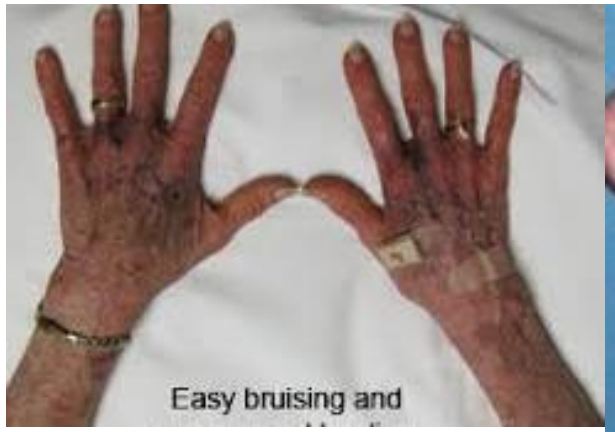

Clinically
Drug history +/-
Biochemical tests

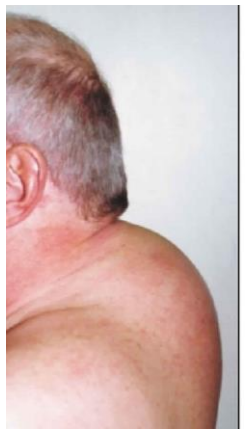
Clinically ……..

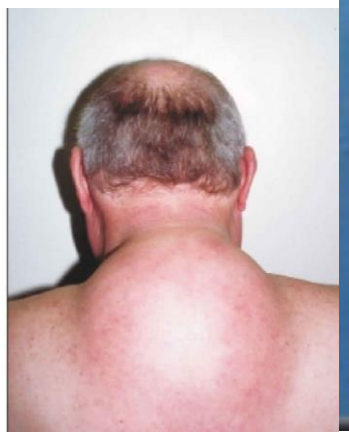


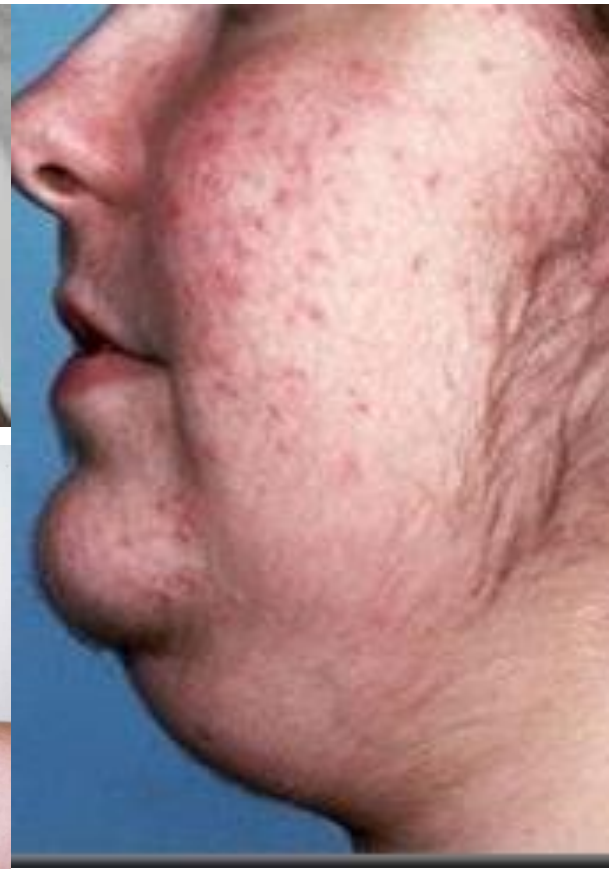
Clinical Features

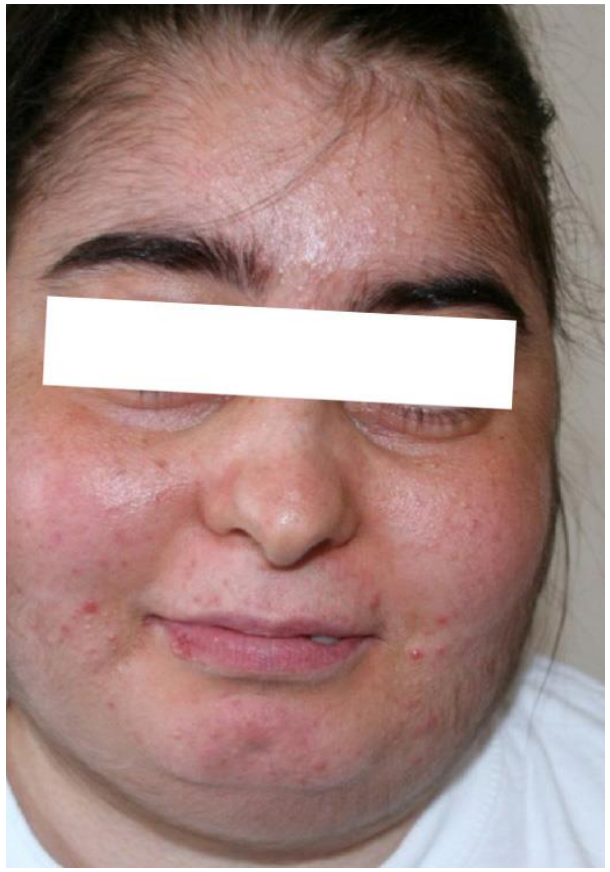
- 90 – 100 %
  - Central obesity
  - Rounded face (“moon face”)
  - Facial plethora
  - Decreased libido
- 70 - 90 %
  - Purple striae
  - Menstrual disturbances
  - Hirsutism
  - **Erectile dysfunction**
  - Hypertension
- 50 - 70 %
  - Muscle weakness
  - Posterior neck fat deposit (“buffalo hump”)

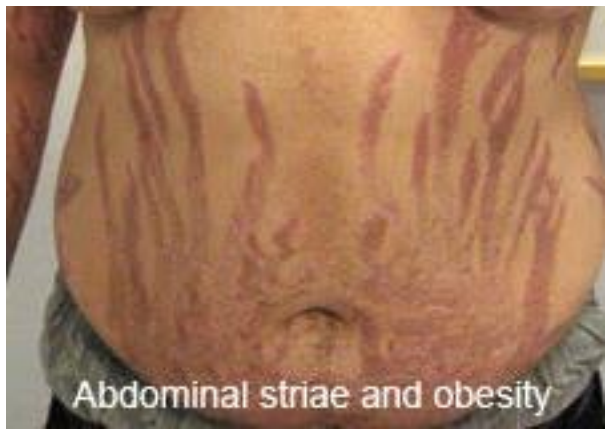

Easy bruising and

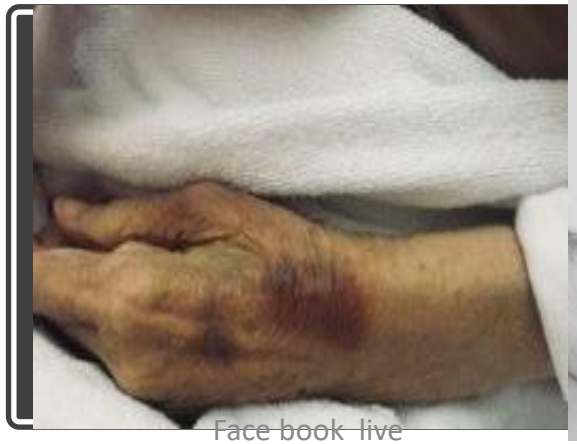


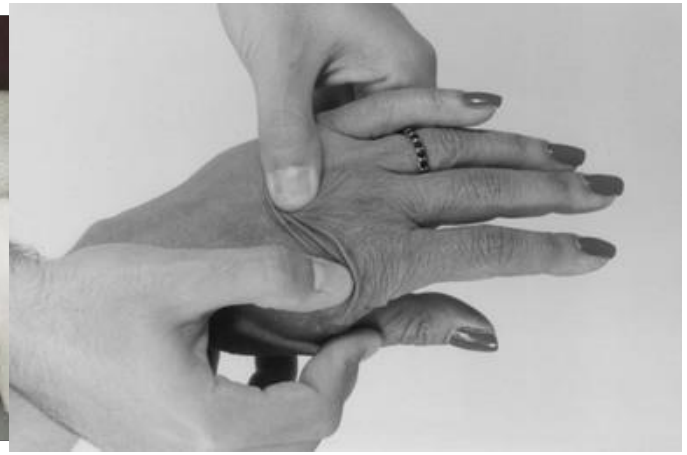







Abdominal striae and obesity





Cushing's syndrome

- Cushing's syndrome (hypercortisolism) is a hormonal disorder caused by prolonged exposure high levels of hormone called glucocorticoid

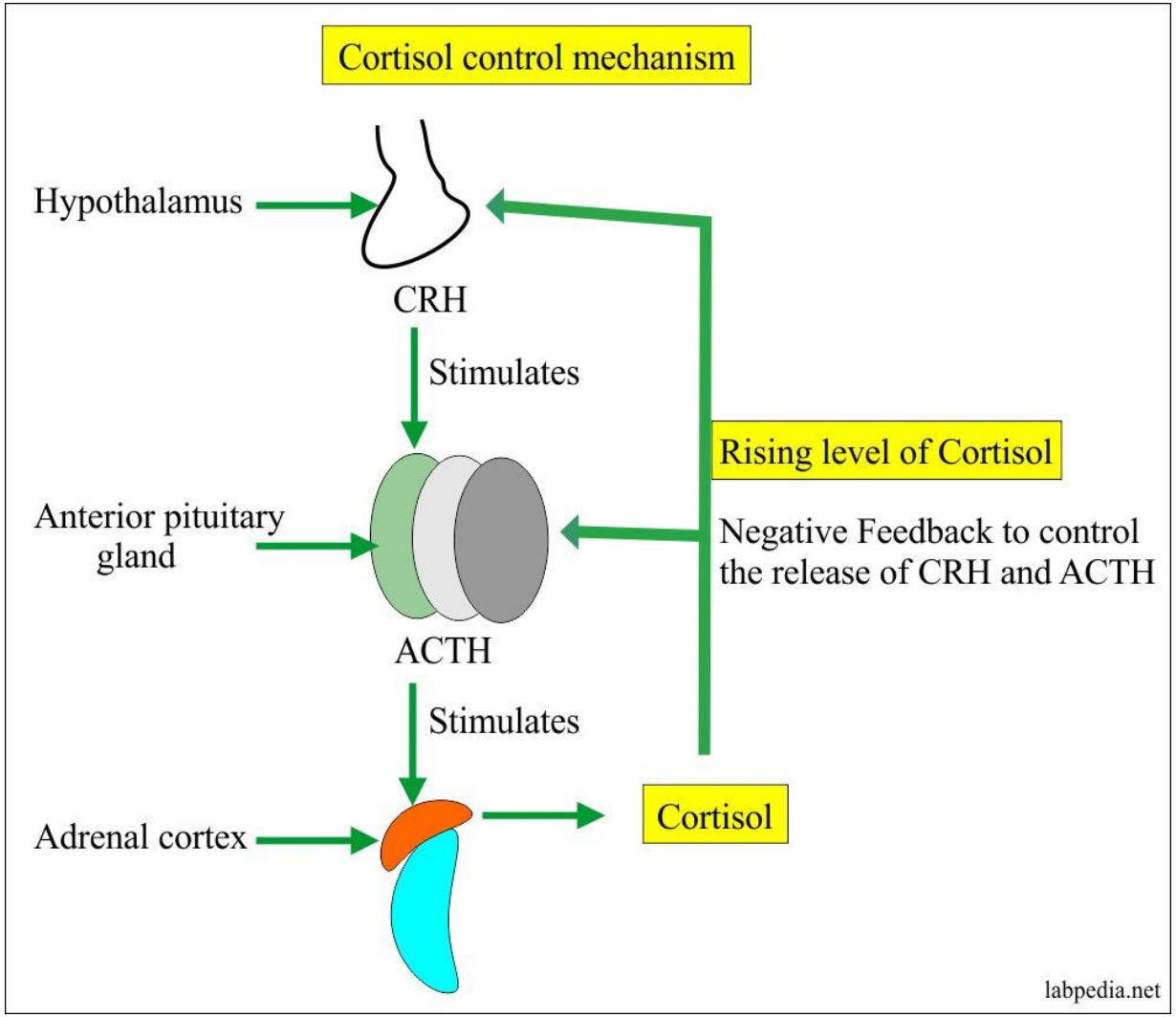
- **Commonly** caused by use of corticosteroid medication (drug induced or exogenous cushion)

- **Infrequently** the result of excessive corticosteroid production by adrenal or pituitary glands (Endogenous cushion' syndrome)

Difference clinically

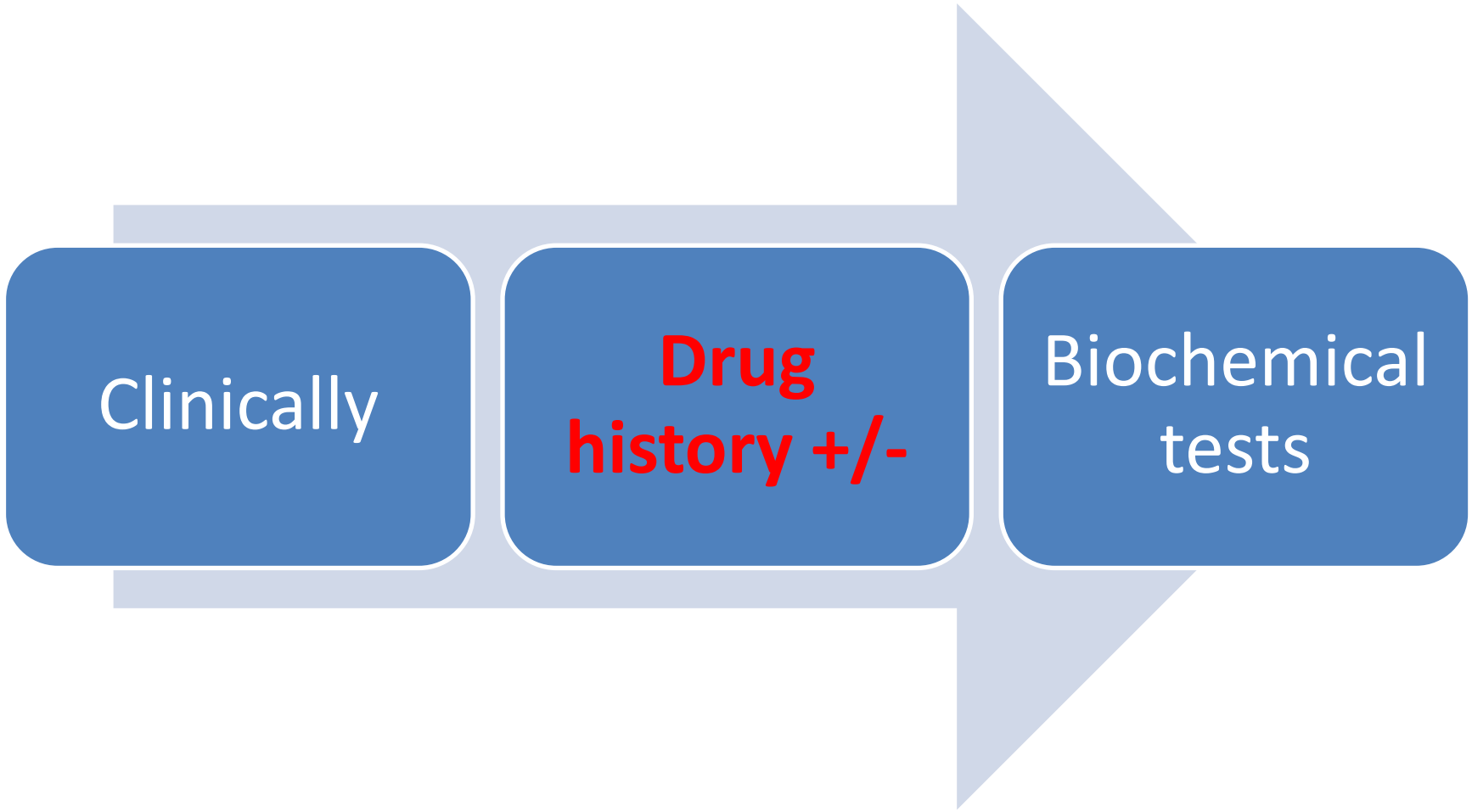
	Drugs induced cushion	Endogenous cushion
Onset	Abrupt	Gradual onset
psychological complications	more	
Virulization		more
Glaucoma, posterior cataract	more	
Hypertension		more
Ostoporosis	more	
Pancratitis	more	
AVN	more	
Mensral irregularity		more
Serum cortisol	supressed	increased
ACTH	supressed	Increased/ decreased

Hypothalamic-Pituitary –Adrenal Axis



How to diagnose Steroid Induced Cushing's Syndrome ?

(Exogenous Cushing's Syndrome)


Clinically
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Steroid Misuse ?

- Surreptitious use of steroids (anabolic steroid)?
- Unknowingly receives glucocorticoid therapy(alternative or herbal medicine) ?
- Over-the-counter and traditional curatives contain significant amounts of potent glucocorticoids ?

Drug history

→Use? , Misuse?

Both …..

** Exogenous steroid suppress HPA axis

Corticosteroid (anti-inflammatory medicine)

Use = Short-term or Long-term for medical conditions

- **Risks < Benefits**
- **Lowest effective dose**
- **Shortest duration**
- **Monitoring**
- **Apply - Measures to reduce adverse effects**

Misuse = Unpredictable dose /contents (? Myanmar)

- **Fever**
- **Joint Pain and ache**
- **Skin problems**
- **Bronchial asthma**
- **For well being/Weight gain**

- Intraarticular
- Aerosol
- Topical
- Oral
- IM
- SC

Dose ?

Route ?

Duration

Misuse = there is no safety dose/route/duration

Use = more systematic, tapering,monitoring

S/S of Exogenous cushion depend on pharmacokinetics , dose , duration , route of steroid

PREDICTING GLUCOCORTICOID-INDUCED HPA AXIS SUPPRESSION

Greater risk

- High dose
- Long acting steroid
- Split doses
- Nighttime doses
- Daily doses
- Systemic use
- Prolonged use

Lesser risk

- Maintenance dose
- Single dose
- Morning dose
- Alternate day dose
- Short action corticosteroids
- Short term use

(Less than 1 week therapy)

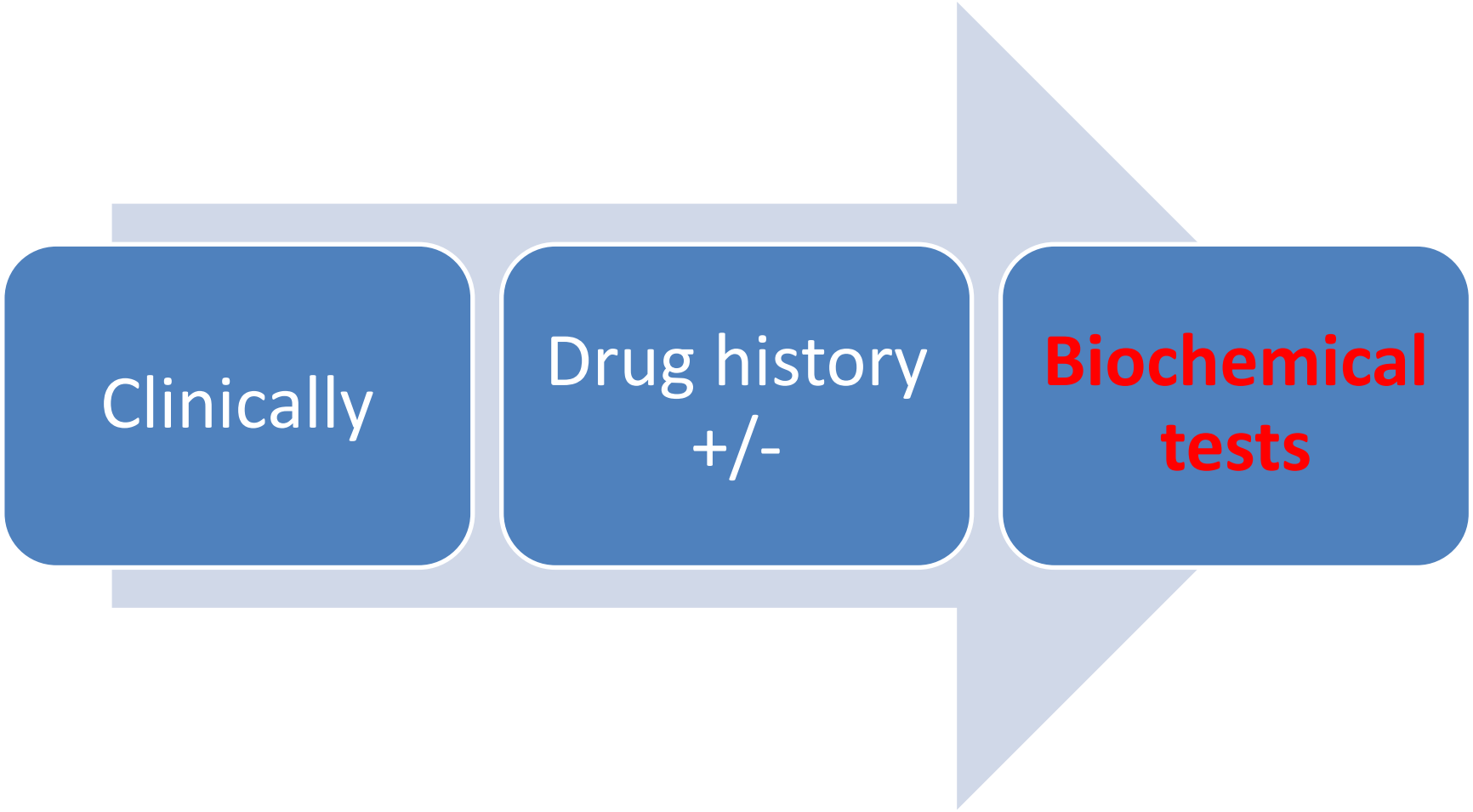
Types

Glucocorticoids	Equivalent dose (mg)	Gluco-corticoid potency	HPA Suppression	Mineralo-corticoid potency	Plasma half-life (min)	Biologic half-life (h)
Short-acting						
Cortisol	20.0	1.0	1.0	1.0	90	8-12
Cortisone	25.0	0.8		0.8	80-118	8-12
Intermediate-acting						
Prednisone	5.0	4.0	4.0	0.3	60	18-36
Prednisolone	5.0	5.0		0.3	115-200	18-36
Triamcinolone	4.0	5.0	4.0	0	30	18-36
Methylprednisolone	4.0	5.0	4.0	0	180	18-36
Long-acting						
Dexamethasone	0.75	30	17	0	200	36-54
Betamethasone	0.6	25-40		0	300	36-54
Mineralocorticoids						
Fludrocortisone	2.0	10	12.0	250	200	18-36
Desoxycorticosterone acetate		0		20	70	

စပ်ဆေးနှင့်ပတ်သက်၍ လိုက်နာရန်အချက်များမှာ -

- ရောဂါကို ပိုမိုဆိုးဝါးလာစေခြင်းနှင့် ဆေး၏ကြောက်စရာ နောက်ဆက်တွဲ ဆိုးကျိုးများ ခံစားရခြင်းတို့အပြင် အသက်ကိုပါ သေစေနိုင်သောကြောင့် ဈေးနှုန်းချိုသာသော်လည်း အလွန် အန္တရာယ်ရှိသည့် စပ်ဆေးများ ဝယ်ယူသုံးစွဲခြင်းကို **လုံးဝရှောင်ကြဉ်သင့်ပါသည်။**
- ဆေးဆိုင်ပိုင်ရှင်များသည်လည်း ဝယ်ယူသုံးစွဲသူများအတွက် ဆိုးကျိုးများသာ ဖြစ်စေနိုင်သည့် စပ်ဆေးရောင်းချခြင်းကို **လူကျင့်ဝတ်အရ ချက်ချင်းရပ်ဆိုင်းသင့်ပါသည်။**

ကျန်းမာရေးနှင့်အားကစားဝန်ကြီးဌာန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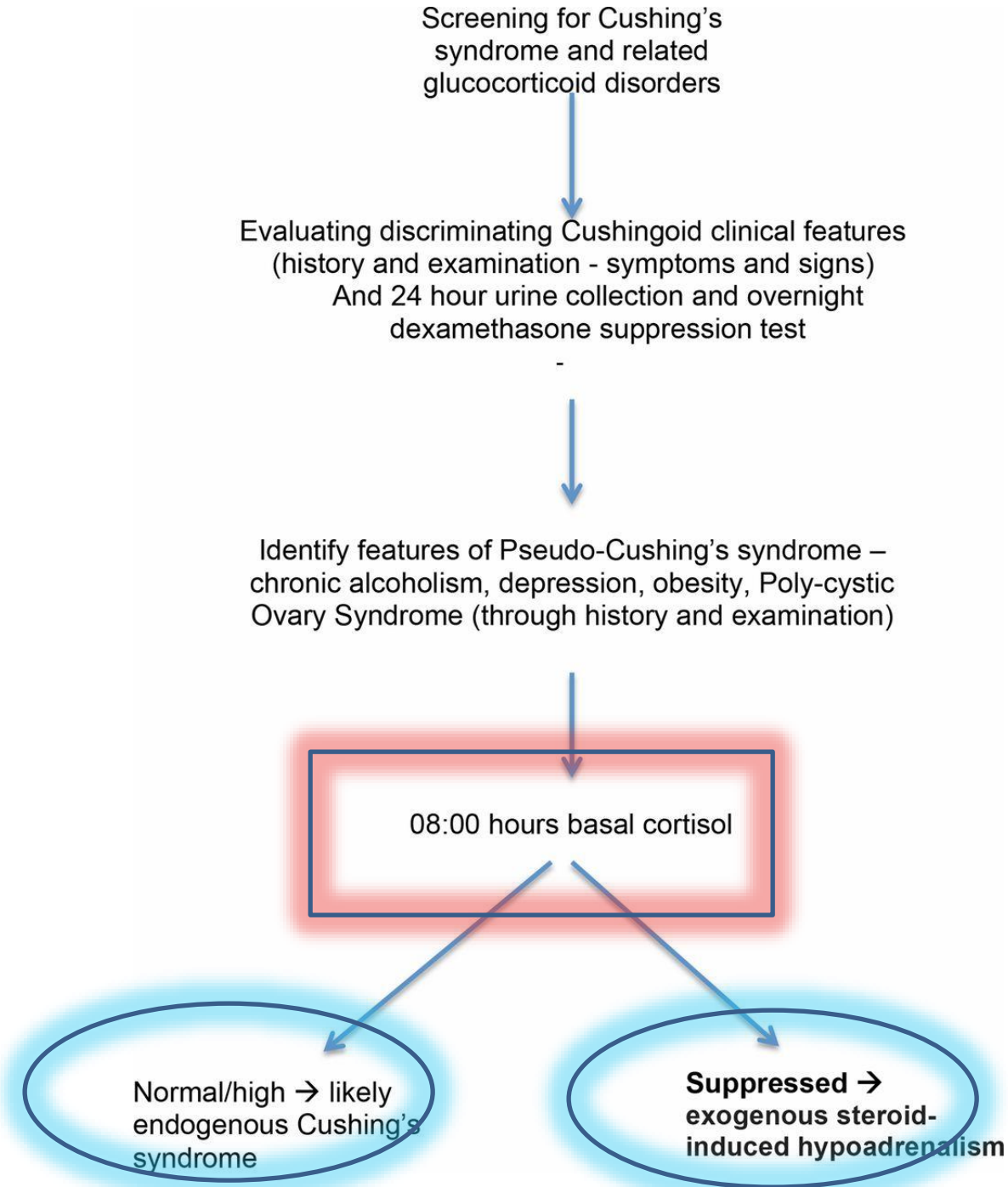
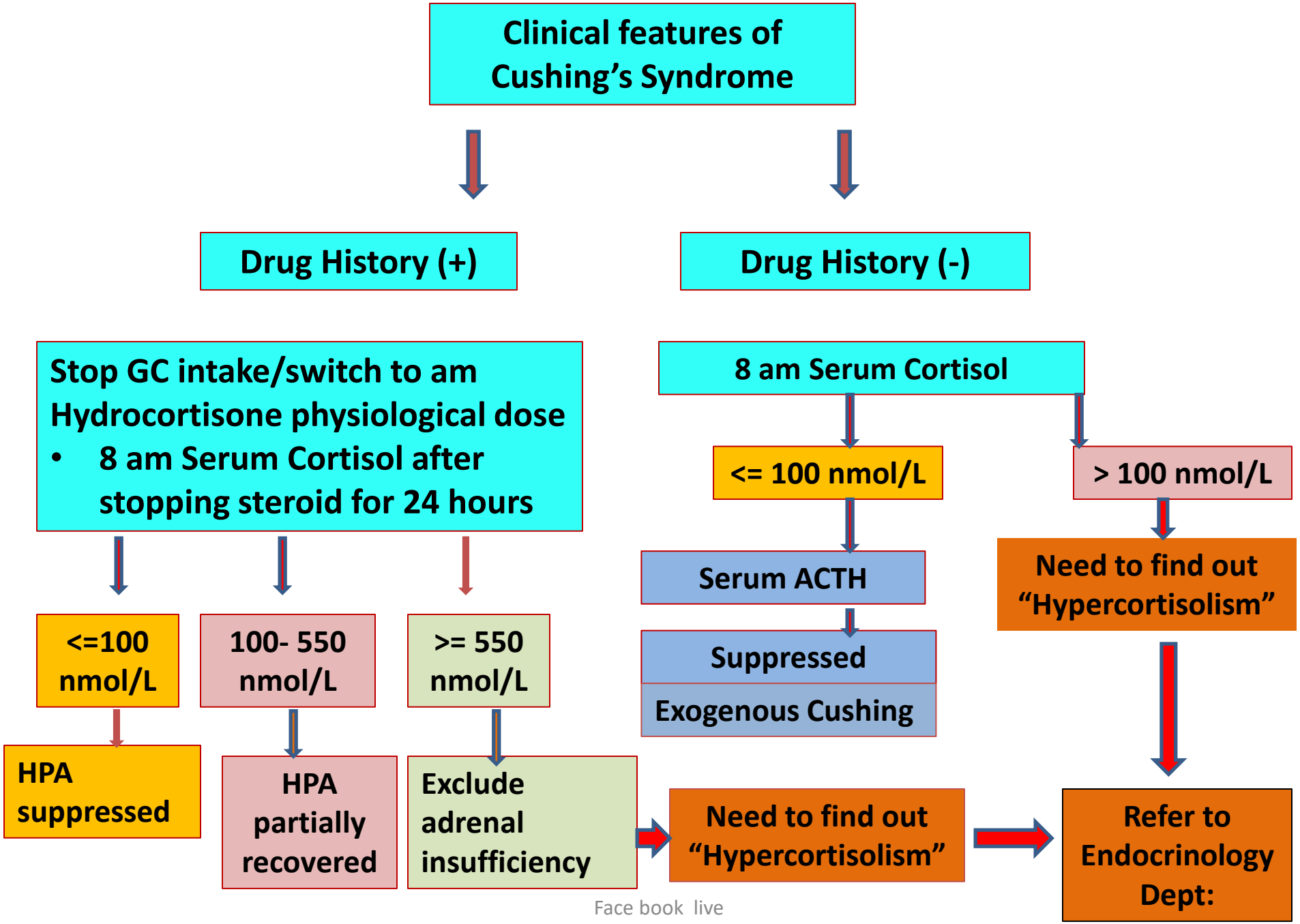

Screening for Cushing's syndrome and related glucocorticoid disorders
Evaluating discriminating Cushingoid clinical features (history and examination - symptoms and signs)
And 24 hour urine collection and overnight dexamethasone suppression test
-
Identify features of Pseudo-Cushing's syndrome – chronic alcoholism, depression, obesity, Poly-cystic Ovary Syndrome (through history and examination)
08:00 hours basal cortisol
Normal/high → likely endogenous Cushing's syndrome
Suppressed → exogenous steroid-induced hypoadrenalism


Clinical features of Cushing's Syndrome
Drug History (+)
Drug History (-)
Stop GC intake/switch to am Hydrocortisone physiological dose
• 8 am Serum Cortisol after stopping steroid for 24 hours
<=100 nmol/L
100- 550 nmol/L
>= 550 nmol/L
HPA suppressed
HPA partially recovered
Exclude adrenal insufficiency
8 am Serum Cortisol
<= 100 nmol/L
> 100 nmol/L
Serum ACTH
Suppressed
Exogenous Cushing
Need to find out "Hypercortisolism"
Need to find out "Hypercortisolism"
Refer to Endocrinology Dept:

How to proceed ?

How to assess adverse effects/Comorbid conditions

- Diabetes mellitus
- Poorly controlled hypertension
- Heart failure and peripheral edema
- Cataract or glaucoma
- Peptic ulcer disease
- Presence of infection
- Low bone density or osteoporosis
- Psychiatric illness

Use - Can be stopped ? / Not ?

- Lowest effective dose
- Monitoring of SE and Tx of complications
- **Underlying conditions/ disease – Controlled or not ?**

Misuse ?

How to withdraw drugs?

Sick days rule

How to withdraw ?

How to stop? (Tapering regimen)

Step(1) Tapering from pharmacological to physiological dose

a)Reduced corticosteroid 20-25% for two weekly or longer until near physiological dose

c)When near physiological dose , switch prednisolone to hydrocortisone twice a day (2/3 dose in morning)

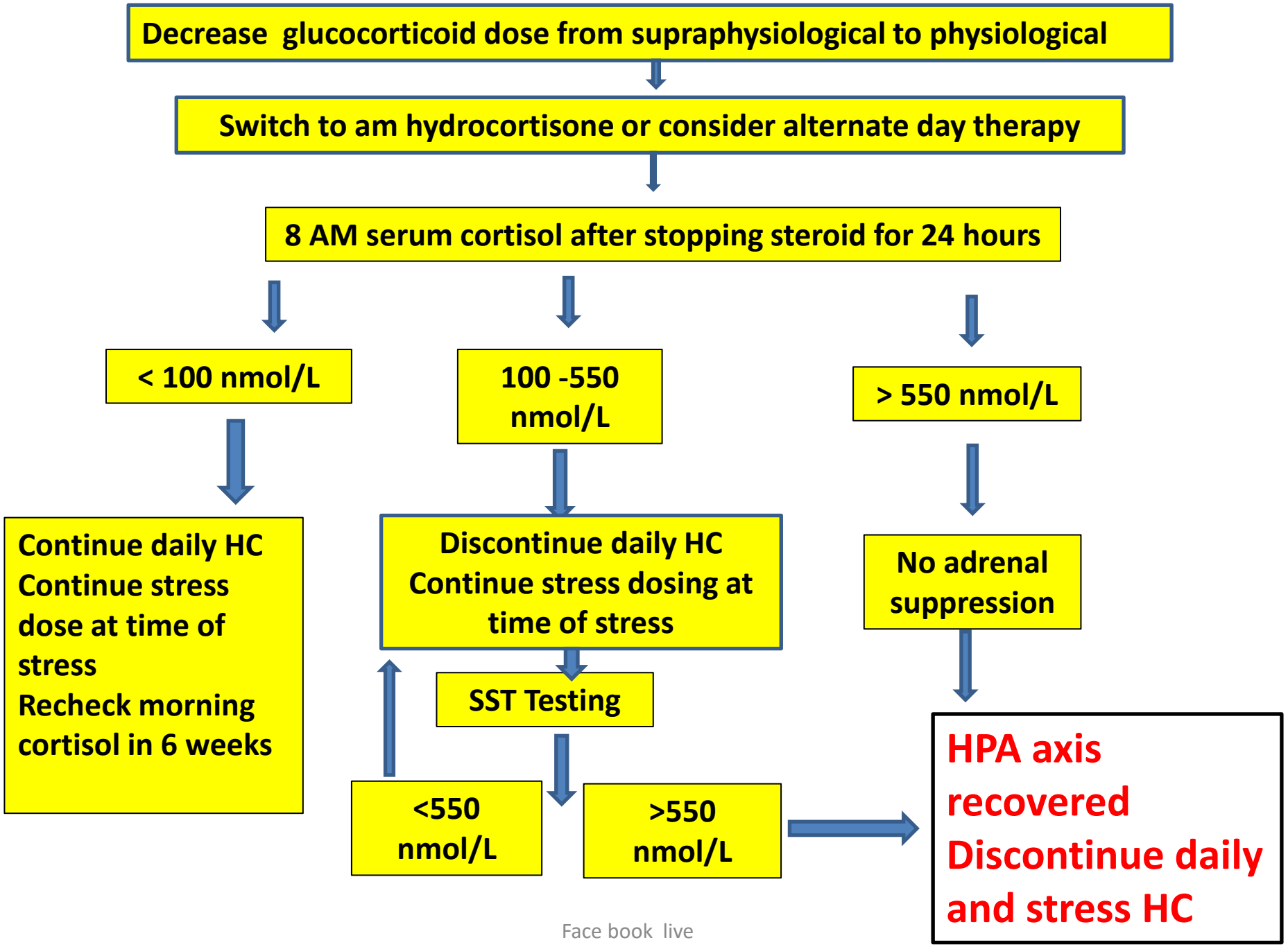
d)Educate patients and caregiver on AI and stress dosing

****sometime steroid tapering last more than a year****

Tapering regimen cont

Step 2) Taper physiological dose to complete steroid withdrawal

a) Continue taper off hydrocortisone by 20-25%1- 2 weekly
b) If patient has symptoms of AI during taper, back to prior dose for another more wk
c) Omit the evening dose when dose is low
d) Give morning dose for 1-2 wk then every other day dose for 2 wk or longer
e) Discontinue hydrocortisone and watch carefully for features of AI
f) Educate patients to receive stress dose steroid if encountering a serious illness or injury
g) Educate patients to go emergency room if patients have S/S of adrenal crisis


Decrease glucocorticoid dose from supraphysiological to physiological
Switch to am hydrocortisone or consider alternate day therapy
8 AM serum cortisol after stopping steroid for 24 hours
< 100 nmol/L
100 -550 nmol/L
> 550 nmol/L
Continue daily HC
Continue stress dose at time of stress
Recheck morning cortisol in 6 weeks
Discontinue daily HC
Continue stress dosing at time of stress
SST Testing
<550 nmol/L
>550 nmol/L
No adrenal suppression
HPA axis recovered
Discontinue daily and stress HC

Steroid Withdrawal

Abrupt withdrawal of corticosteroid therapy for prolonged or at high doses

3 problems

- Secondary adrenal insufficiency

(suppression of the HPA axis)

- Steroid withdrawal or deprivation syndrome (SWS)

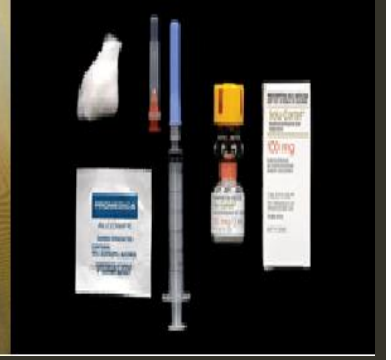
(Normal HPA axis)

- Relapse of the underlying disease

Signs and symptoms of SWS

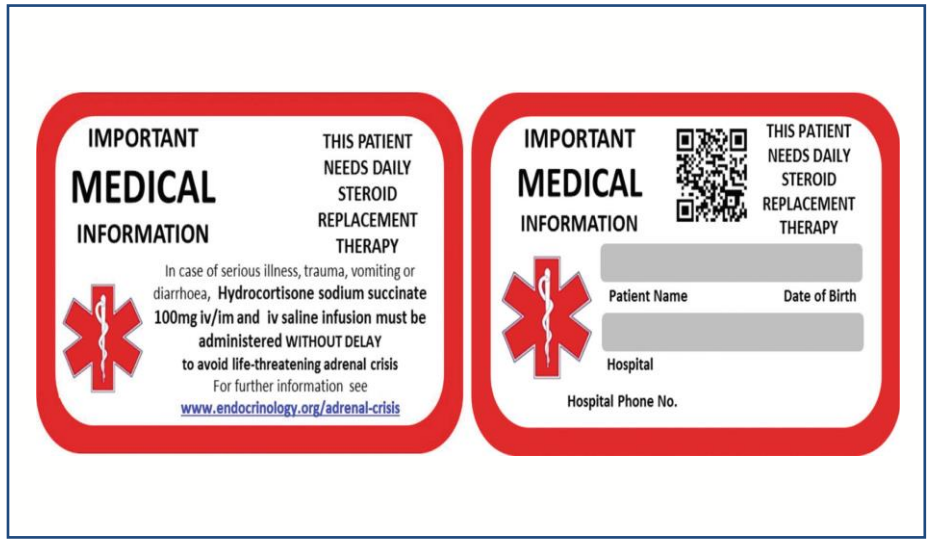
- Fever, anorexia, mood swings, generalized body aching, arthralgia, skin desquamation and weight loss
- Occurs variably after cure of Cushing's syndrome or during taper of pharmacologic glucocorticoid doses
- Features are similar to true adrenal insufficiency

Sick days Rule



Stress dose steroid plan

It is a good idea to purchase a 'MedicAlert' bracelet or necklace and carry a blue steroid card at all times.



Sick Day Rules

- Fever > 100.5 – double the dose
- Fever > 102 – triple the dose
- Vomiting and/or diarrhea – double or triple the dose depending on severity
- Drink extra fluids
- Emergency situations (shock, significant blood loss) or unable to take oral – high dose dexamethasone (4mg SC/IM) or hydrocortisone (100 mg IM)
- *Do not* increase doses for emotionally stressful days, common cold, exercise


THANK YOU