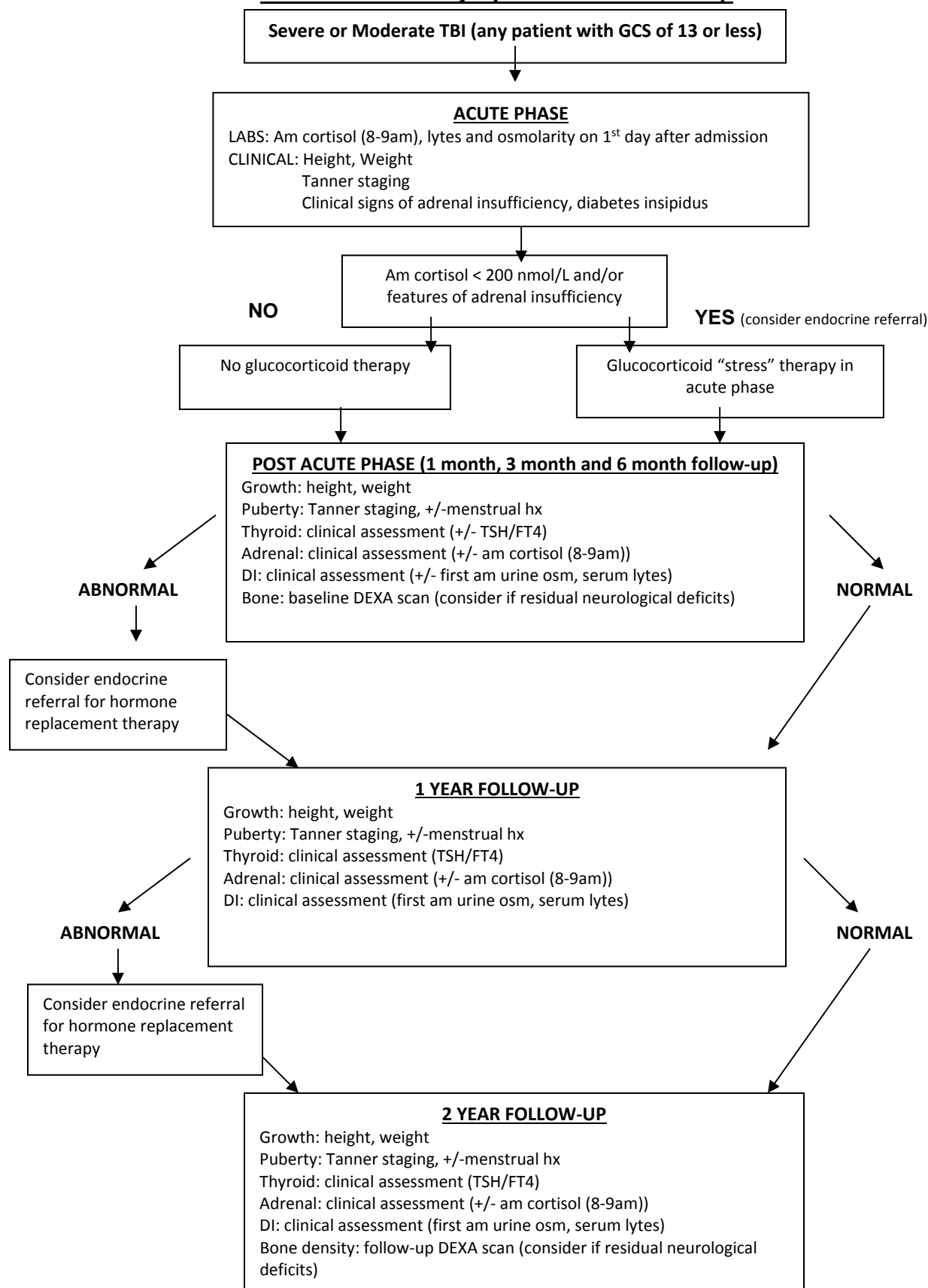


## Traumatic Brain Injury Endocrine Follow-Up



## Description of Potential Endocrine Complications

Yearly screening for endocrine complications is recommended for these children and could include the following items outlined below. Any child presenting with signs or symptoms of an endocrinopathy should be assessed and evaluated immediately rather than waiting for their yearly screening.

### **GROWTH**

Growth parameters should be monitored for all patients. *Height should be assessed using an accurate stadiometer which is properly calibrated a minimum of once per year.*

#### ***Recommended yearly assessment:***

- Height (using a stadiometer) and weight measurement plotted on growth chart

#### ***Consider referral to endocrinology*** if evidence of abnormal linear growth:

- Falling off growth curve for height (change from baseline)
- Decreased growth velocity: less than 4-5 cm/ year

### **PUBERTY**

#### ***Recommended yearly assessment:***

- Clinical review for signs of pubertal development and progression of puberty
- Girls: thelarche, menarche, adrenarche, growth spurt
- Boys: genital & testicular growth, growth spurt, voice changes, adrenarche
- Physical exam: Tanner staging

#### ***Consider referral to endocrinology*** if evidence of gonadal dysfunction:

- Precocious pubertal development (girls < 8 years and boys < 9 years)
- Delayed pubertal development (girls > 13 years and boys >14 years)
- Hypergonadotropic hypogonadism (direct gonadal damage): elevated LH/FSH, low estradiol in girls, low testosterone in boys
- Hypogonadotropic hypogonadism (injury to hypothalamic-pituitary axis): low LH/FSH, low estradiol in girls, low testosterone in boys (may require GnRH stimulation test)

### **THYROID**

#### ***Recommended yearly assessment:***

- Clinical review for symptoms of hypothyroidism (fatigue, weight gain, cold intolerance, dry hair/skin, constipation, poor linear growth)
- Consider blood work: TSH and free T4

#### ***Consider referral to endocrinology*** if evidence of thyroid abnormality:

- Primary hypothyroidism: elevated TSH, low free T4
- Secondary/Tertiary hypothyroidism: low TSH, low freeT4

## **ADRENAL**

### ***Recommended yearly assessment:***

- Clinical review for symptoms of adrenal insufficiency (fatigue, abdominal pain, vomiting, hypoglycaemia, hypotension)
- Consider blood work: 8-9am cortisol

### ***Consider referral to endocrinology*** if evidence of adrenal insufficiency

- May need ACTH stimulation test

## **DIABETES INSIPIDUS**

### ***Recommended yearly assessment:***

- Clinical review for symptoms of diabetes insipidus (polyuria, polydipsia)
- Consider blood work: first morning void for urine osmolarity, serum electrolytes

### ***Consider referral to endocrinology*** if evidence of diabetes insipidus

- May need water deprivation test

## **BONE DENSITY**

Bone density should be assessed in patients who have significant neurological impairment and decreased mobility.

### ***Recommended yearly assessment:***

- Clinical review for evidence of low impact pathologic fractures, back pain, (compression fractures of spine), bone pain
- Assess appropriate nutritional intake (vitamin D and calcium)
- Consider DEXA scan

### ***Consider referral to endocrinology*** if evidence of decreased bone mineral density:

- Pathological bone fractures
- DEXA lumbar spine z-score of -2.5 or less