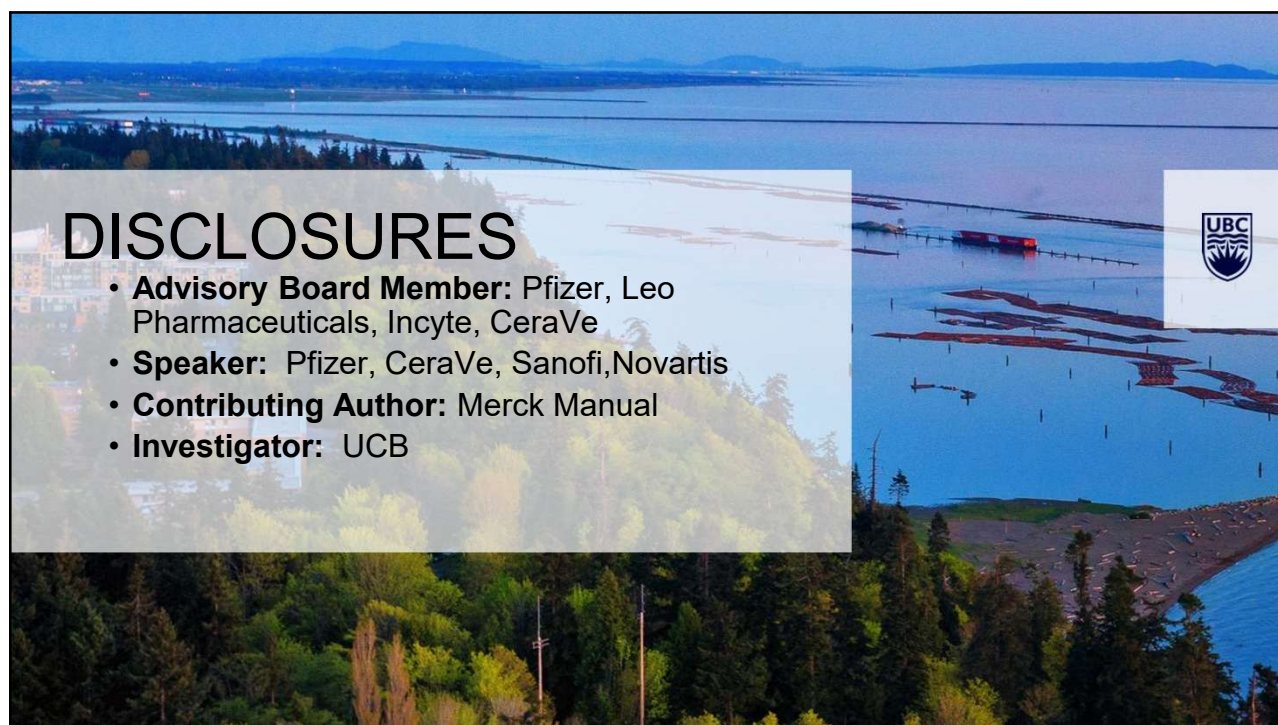




# LUMPS AND BUMPS IN PEDIATRICS


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# DISCLOSURES

- **Advisory Board Member:** Pfizer, Leo Pharmaceuticals, Incyte, CeraVe
- **Speaker:** Pfizer, CeraVe, Sanofi, Novartis
- **Contributing Author:** Merck Manual
- **Investigator:** UCB



## Learning Objectives

- 1. Identify and diagnose common lumps and bumps in children
- 2. Design treatment plans for common conditions such as warts and molluscum
- 3. Recognize when skin lesions require high priority referral for review

## Ways to classify lumps and bumps

- Size
  - Small: molluscum, milia, Gottron's papules
  - Large: congenital nevi
- Etiology
  - Infection: warts, molluscum, furuncle
  - Vascular proliferation: hemangioma, pyogenic granuloma
  - Cyst: inclusion cyst, dermoid, pilomatricoma
  - Inflammatory: granuloma annulare, Gottron's papules
  - Cancer: cutaneous lymphoma
- Level of concern
  - Benign: granuloma annulare, nevi
  - Markers for syndrome: neurofibroma, angiofibroma
  - Contagious: molluscum
  - Cancer: lymphoma, melanoma

## Lumps and Bumps by Color

- **Yellow:** nevus sebaceous, JXG
- **White:** calcinosis, milia, molluscum
- **Blue:** pilomatricoma, blue nevus
- **Red:** hemangioma, pyogenic granuloma
- **Pink:** Spitz nevi, Gottron's papules, granuloma annulare, papular urticaria
- **Purple:** deep hemangioma
- **Brown:** nevi, mastocytoma



## Case # 1

- 1 year old with 2 mo history of papule on forehead
- Began as red-brown papule
- Growing and becoming yellow over time







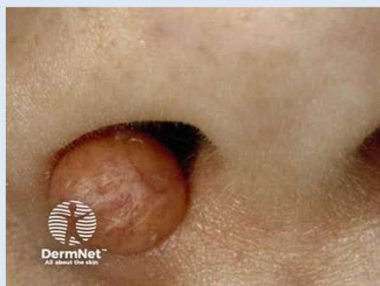
## Juvenile Xanthogranuloma

- Non-Langerhans Cell Histiocytosis
- Young children (85% before 1 year of life)
- Most frequent on head and neck
- Most are solitary and cutaneous only
  - can be multiple, ocular, hepatic
- Etiology is unclear
- Seen in up to 10% of those with NF1
- Natural history: appear dome shaped, progress from red to yellow to brown and fade within 3-6 years



## JXG: Management

- Solitary and not problematic: monitor only
- Large and causing distress: excision
- Multiple:
  - consider referral to dermatology
  - evaluation of eyes
  - CBC/LFT/creat



## Nevus Sebaceous

- Yellow plaques from birth
- Often linear in shape
- Often flat at birth and then become elevated with time esp puberty
- May develop growths within – majority benign, but should be removed
- Management: excision if they become problematic or develop localized growth



## Mastocytoma

- Red-brown plaque
- Infants and young children
- Solitary or multiple
- May have “peau d’orange” appearance
- History of intermittent inflammation
- Darier’s sign is positive



## Mastocytoma management

- Avoid mast cell degranulation
  - Friction
  - Extreme temperatures
  - NSAIDs/aspirin
  - Codeine/ morphine
  - Polysporin
  - Anticholinergics
  - Certain anesthetics
- Antihistamines if many and symptomatic
- Topical mid-potency steroid or tacrolimus





## Acquired nevi

- May be fleshy and raised or flat
- Scalp nevi often larger than elsewhere
  - Often have fried egg or eclipse pattern
- Less likely to be dome-shaped
- Less likely to have yellow hue
- Unlikely to self-resolve



## Case # 2

- 4-year-old presents with 3-month history of dome shaped papules
- Began on chin
- Spreading in the area
- Otherwise well



## Molluscum contagiosum

- Papules are pearly and discrete
- Central white appearance
  - May extrude white material
- Some may be umbilicated
- Potentially background eczema



## Molluscum Potential Complications

- Dermatitis
- Pitted scars
- Secondary infection
- Id reactions
- Treatment complications
- Social stigma and fear of contagion





## Id reaction



## Molluscum Management

- Reassurance
- Treat background eczema
- Antiseptics
  - Hydrogen peroxide
  - Apple cider vinegar
  - Dilute bleach bath
- Topical retinoids
- Salicylic acid
- Manual extraction
- Liquid nitrogen
- Cantharadin
- Berdazimer (Nitric oxide gel)



Severe reaction to Cantharadin left on too long

## Milia

- Small white papules
- Often periorcular
- Seen in early infancy particularly over the nose
- More frequent in children with Trisomy 21



## Facial angiofibromas

- Skin colored to slightly pink or brown papules
- Smooth and dome shaped
- Central face esp around nose and mouth
- Associated with Tuberous Sclerosis
- Treatment laser or topical rapamycin/sirolimus 0.1% and covered by Pharmacare



## Verruca vulgaris

- Generally flat topped or rough surface
- Not umbilicated
- May be filiform
- Common on hands, feet, around the mouth





## Verruca management

- Similar to Molluscum – nothing magic
- Salicylic acid OTC with or without plasters
- Liquid nitrogen
- Topical 5FU (Efudex, Tolak)
- Contact sensitization – Squaric acid or DPCP
- Cantharadin
- Consider zinc supplementation
- Flat warts – tretinoin 0.05% cream or similar



## Spitz nevus

- Pink to brown papules
- Usually young children
- Not umbilicated or pearly
- Usually solitary, but can be agminated (in a cluster)
- Management: Will be discussed by Dr. Kalia tomorrow



## Papular Urticaria



## Prurigo nodularis

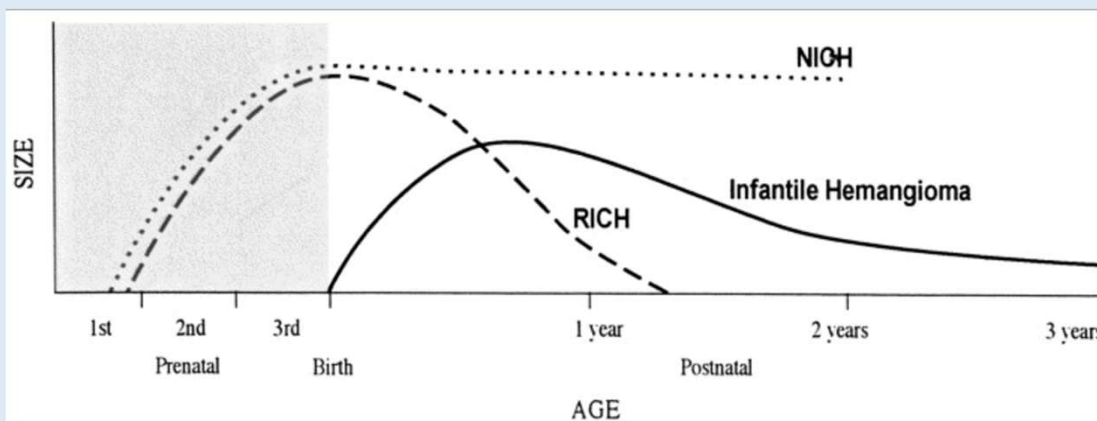


## Case # 3

- 2 mo old girl presents with growing mass above the eye
- Nothing was noted at birth
- Retrospectively there was a subtle change
- Born at 38 weeks
- Uncomplicated pregnancy and otherwise well



## Infantile Hemangioma: Typical Growth Pattern



J Am Acad Dermatol 2004 Jun;50(6):875-82. doi: 10.1016/j.jaad.2003.10.670



## What are treatment options for infantile hemangioma?

- Watchful waiting
- Topical beta-blocker (timolol 0.5% gel/solution – 1-2 drops BID)
- Systemic beta-blocker (**propranolol**, atenolol, nadolol)
- Intralesional or systemic corticosteroids
- Laser
- Surgery
- Expectation of resolution without any follow-up is not appropriate treatment option except for the smallest ones

## What are the indications for treatment?

- Function threatening
  - Vision, Airway, Feeding,
- Potentially disfiguring
  - Nasal tip, ear, lip, breast, central face
- Ulceration
  - Genital, segmental, folds
- PHACE (segmental facial hemangioma)
- LUMBAR/SACRAL/PELVIS (segmental pelvic girdle hemangioma)
- Hepatic – can occur and usually in setting of >5 on skin



## Hemangiomas: When to treat?

- Potential for ulceration
- Functional compromise
- Potential for disfigurement



A: large segmental hemangioma – risk of ulceration



B: Bulbous nasal tip – cosmetic challenge



C: Flat anterior chest – No treatment needed



D: Ulcerated hemangioma

## Propranolol

- Side effects

- Hypotension/bradycardia
- Bronchial irritation
- Hypoglycemia
- Sleep disturbance

**Table 2: Summary of Adverse Events**

Toxicity category	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Unknown
Sleep disturbance	57	23	0	0	0	0
Respiratory	10	16	1	0	0	0
GI	9	11	0	0	0	0
Hypotension	4	1	0	0	0	0
Bradycardia	1	0	0	0	0	0
Hypoglycemia	2	0	2	0	0	0
Seizure	0	2	0	0	0	1
Cold extremities	47	0	0	0	0	0
Other	11	11	0	0	0	2
Total	141	64	3	0	0	3

- No long-term neurological sequela noted, but large and long-term studies are underway

## Propranolol Dosing

- Initiation of therapy 1mg/kg/day divided BID
- Increase after 1 week to 2mg/kg/day divided BID
- Can increase to 3mg/kg/day if needed
- Start slower or divide TID for smaller babies, concern for PHACES and special considerations
- Give with feeds and hold when child not eating well or URTI symptoms
- Maintain dose of 1mg/kg/day if hemangioma is ulcerated



> J Am Acad Dermatol. 2020 Apr 11;S0190-9622(20)30553-3. doi: 10.1016/j.jaad.2020.04.013.  
Online ahead of print.

### Limited Utility of Repeated Vital Sign Monitoring During Initiation of Oral Propranolol for Complicated Infantile Hemangioma

Katherine B Püttgen<sup>1</sup>, Leanna M Hansen<sup>2</sup>, Christine Lauren<sup>3</sup>, Nicole Stefanko<sup>2</sup>, Erin Mathes<sup>4</sup>, Gerilyn M Olsen<sup>2</sup>, Megha M Tollefson<sup>5</sup>, Denise Adams<sup>6</sup>, Eulalia Baselga<sup>7</sup>, Sarah Chamlin

- Retrospective multi-center study
- 783 subjects
- Median age initiation 112 days
- 1148 episodes of prolonged monitoring – NONE warranted immediate intervention or drug discontinuation
- No symptomatic bradycardia/hypotension during monitoring

### Pyogenic granuloma

- Benign proliferation of capillaries
- Common in children and youth
- Often preceded by minor trauma
- Increased with hormonal influence and some medications
- Painless bright red papule, usually pedunculated, may have collarette
- Frequent bleeding -> bandaid sign



## Pyogenic Granuloma management

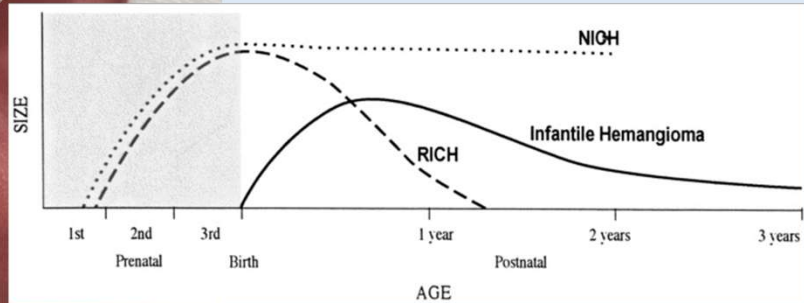
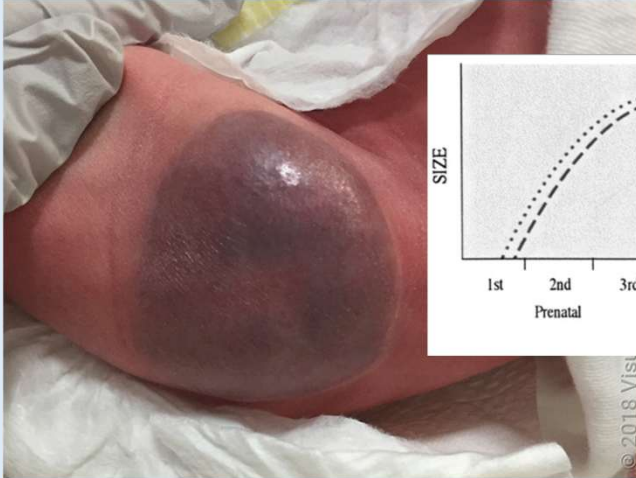
- Topical timolol 0.5%
- Table salt??
- Curettage and cautery
- Surgical excision
- Vascular lasers



## Deep infantile hemangioma



## Congenital hemangioma

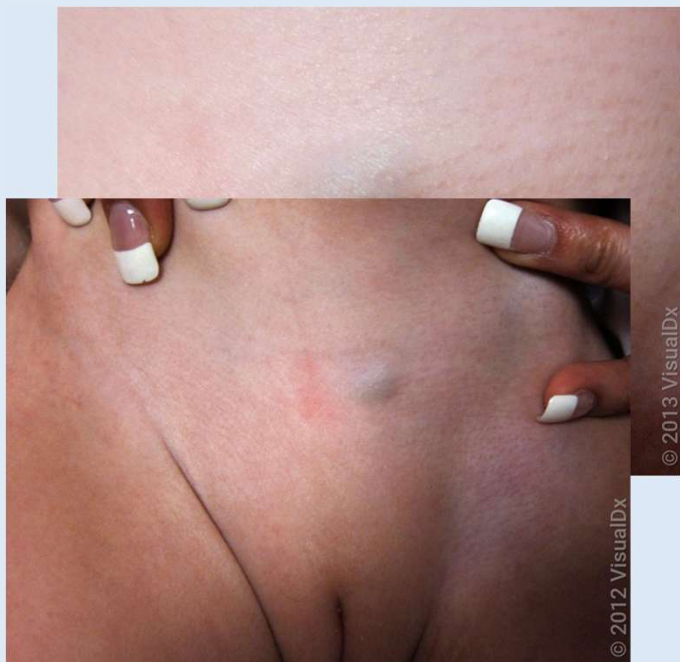






## Case # 4

- 8-year-old girl presents with 6 month history of hard nodule
- Blue hue overlying
- Not painful, only slightly tender
- Feels very hard



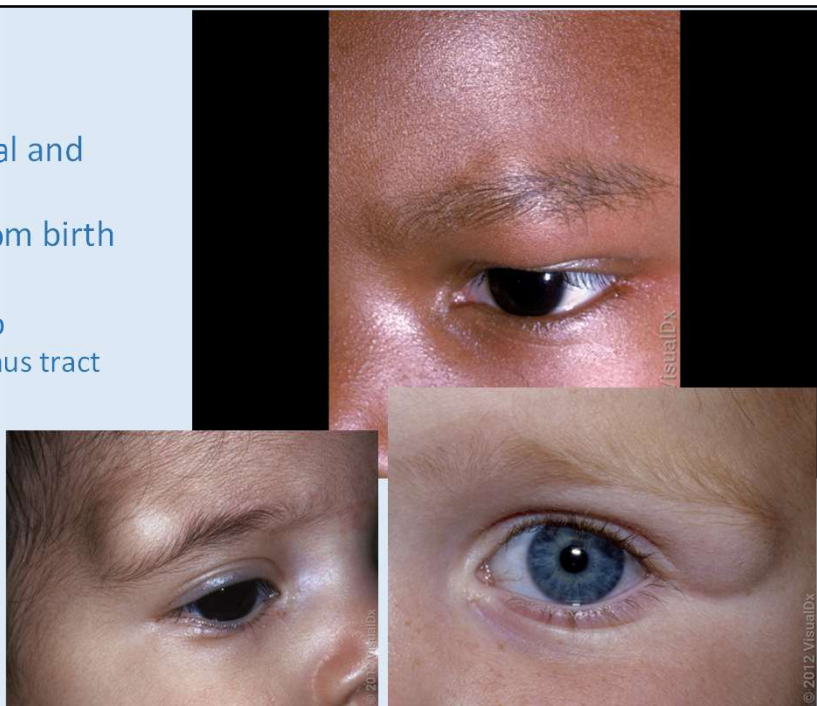
## Pilomatricoma

- Benign hair follicle tumor derived from hair matrix cells
- Most common in young children
- Usually head and neck, but can be anywhere
- Calcify leading to rock hard consistency – teeter totter sign
- Can extrude the calcium
- Ultrasound usually characteristic due to shadowing
- Do not self-resolve so usually excised



## Dermoid cyst

- Benign tumor of epidermal and dermal components
- Usual early childhood or from birth
- Usually along fusion lines
  - Eyebrow, nose, neck, scalp
  - May have nearby pit or sinus tract
- Management:
  - Ultrasound for size
  - Excision
  - Refer directly to plastics



## Epidermal Inclusion Cyst



- Benign cyst derived from upper hair follicle
- Filled with keratin
- May become inflamed esp if portion of wall ruptures
- Treatment of inflamed cyst
  - Antibiotics
  - Intralesional steroid
  - Incision and drainage
- Recurrently inflamed cysts
  - Excision when not inflamed

## Aseptic facial granuloma

- Idiopathic
  - Possibly rosacea family or reactive to bite/trauma
- Young children and teens only
- Avg age 4 years
- Appear in central face
- Management:
  - Conservative as usually self-resolve
  - Topical or oral antibiotics (usu not tetracyclines given age)
  - Avoid surgery due to scarring



## Case # 5

- 15-year-old previously healthy
- 1 year of slow growing lesion on cheek, waxing and waning
  - Irritated after application of antifungal cream
- Nodules on arms
  - Not painful or pruritic
  - Not transient
- Increasing pain at joints
  - Swelling at wrists
  - Knee pain and R thumb pain
- No fevers, constitutional symptoms
- No headache, no nausea/vomiting, no weight loss, no night sweats



## Case # 5

- Skin biopsy demonstrated diffuse atypical B-cells
- Found to have lytic bone lesions
- B-lineage lymphoblastic lymphoma





## Primary cutaneous lymphoma

### Cutaneous T-cell lymphoma

- Rare in pediatrics
- Usually presents with eczematous plaques around hips/buttocks
- Pediatric form: hypopigmented
- Often requires multiple biopsies for diagnosis

### Primary cutaneous B-cell lymphoma

- Pink to violaceous papules and plaques
- Can present on trunk, scalp, extremities
- Biopsy diagnosis

## Primary cutaneous lymphoma



### Primary cutaneous B-cell lymphoma

- Pink to violaceous papules and plaques
- Can present on trunk, scalp, extremities
- Biopsy diagnosis

## Leukemia cutis



## Granuloma Annulare

- Dermal delayed hypersensitivity reaction
- Slow onset of pink-violaceous papules and plaques
- Characteristically annular
- No scale
- Usually asymptomatic



## Granuloma Annulare Management

- Reassurance and time
  - Localized lesions usually resolve within a few years
- Potent topical steroid or calcineurin inhibitor under occlusion
- Intralesional corticosteroids
- Widespread lesions can be treated systemically if needed



## Deep fungal infections

- Organisms such as aspergillus and sporotrichosis
- Biopsy diagnosis with tissue culture
- Treatment coordinated with ID



## Ways to classify lumps and bumps

- Etiology
  - Infection: warts, molluscum, furuncle, deep fungal infections
  - Vascular proliferation: hemangioma, pyogenic granuloma
  - Cyst: inclusion cyst, dermoid, pilomatricoma, aseptic granuloma
  - Inflammatory: granuloma annulare, Gottron's papules
  - Cancer: cutaneous lymphoma
- Level of concern
  - Benign: granuloma annulare, nevi
  - Markers for syndrome: neurofibroma, angiofibroma
  - Contagious: molluscum
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- **Purple:** deep hemangioma
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## Lumps and Bumps: When to refer

- Diagnosis is unclear
- Not behaving as you expect
- Concern of underlying or associated illness/syndrome
- Symptomatic and requiring specialized therapy

Thank you!



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