
COMBINED EMERGENCY MEDICINE &
PEDIATRICS RESIDENCY
THE UNIVERSITY OF ARIZONA
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# Hide-and-Seek: Preventing Delays in Serious Pediatric Diagnoses

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# Objectives



- Describe rates and complications of diagnoses where delay can cause serious consequences
- Suggest high risk features that should prompt further investigation for these often missed diagnoses
- Suggest appropriate return precautions for common illness mimics to limit delays in the diagnosis of missed conditions.

# Disclosure



- I have no relevant financial disclosures

# Delayed Diagnoses



> JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672.

## Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions

Kenneth A Michelson [1], Chris A Rees [2], Todd A Florin [1], Richard G Bachur [3]

Affiliations + expand

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DOI: 10.1001/jamapediatrics.2023.6672

# Delayed Dx Methods



**Table. Demographic Features of the Cohort of 58 998 Children**

| Characteristic | Total, No. (%) |
|---|---|
| Condition | |
| Bacterial meningitis | 2007 (3.4) |
| Compartment syndrome | 774 (1.3) |
| Complicated pneumonia | 6409 (10.9) |
| Craniospinal abscess | 770 (1.3) |
| Deep neck infection | 2527 (4.3) |
| Ectopic pregnancy | 375 (0.6) |
| Encephalitis | 2055 (3.5) |
| Intussusception | 5841 (9.9) |
| Kawasaki disease | 4611 (7.8) |
| Mastoiditis | 3103 (5.3) |
| Myocarditis | 958 (1.6) |
| Necrotizing fasciitis | 161 (0.3) |
| Nontraumatic intracranial hemorrhage | 3252 (5.5) |
| Orbital cellulitis | 4121 (7.0) |
| Osteomyelitis | 1778 (3.0) |
| Ovarian torsion | 1460 (2.5) |
| Pulmonary embolism | 1029 (1.7) |
| Pyloric stenosis | 5396 (9.1) |
| Slipped capital femoral epiphysis | 1280 (2.2) |
| Septic arthritis | 2969 (5.0) |
| Sinus venous thrombosis | 116 (0.2) |
| Stroke | 1913 (3.2) |
| Testicular torsion | 6093 (10.3) |

## Delay

- ED discharge within 7 days of diagnosis

## Complications

- Condition specific
- Critical procedures
- ICU and hospital LOS
- Subsequent ED encounters

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Delayed Dx Results

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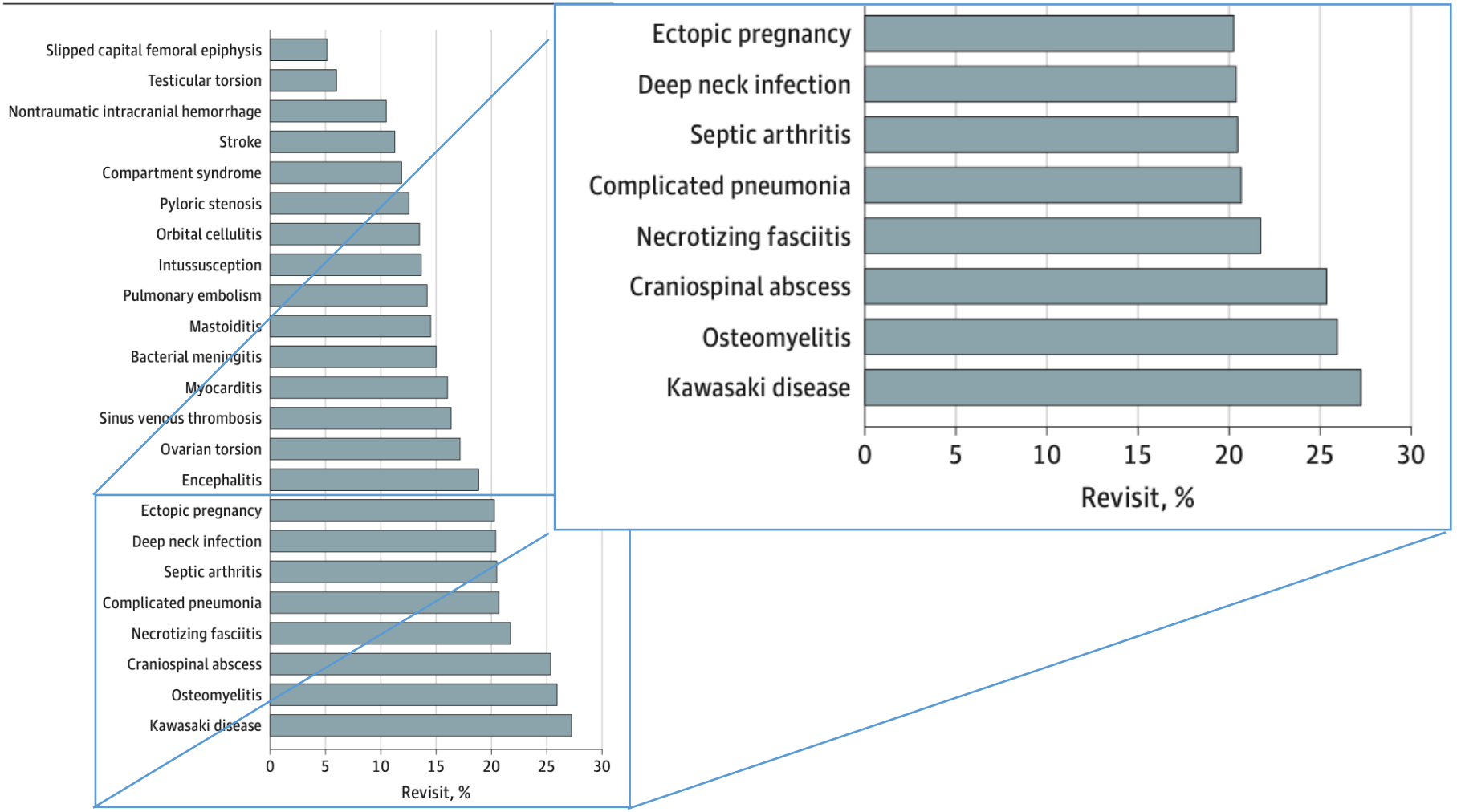
**Figure 1. Proportions of Patients With a Possible Delayed Diagnosis by Condition**




Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Why the Delay?



- Progression of common disease
- Diagnostic limitations in early disease
- Unrecognized disease
    - Availability bias
    - Confirmation bias
    - Premature closure
    - Diagnostic momentum
    - Unfamiliarity

# High Risk Diagnoses



| Total Delayed Diagnoses | 9296 |
|---|---|
| Upper respiratory infection | 649 (7.0%) |
| Viral Infection | 366 (3.9%) |
| Otitis Media | 221 (2.4%) |
| Skin & Soft Tissue Infection | 180 (1.9%) |
| Lymphadenitis | 135 (1.5%) |

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# High Risk Symptoms



| Total Delayed Diagnoses | 9296 |
|---|---|
| Fever | 744 (8.0%) |
| Nausea and Vomiting | 452 (4.9%) |
| Abdominal Pain | 341 (3.7%) |
| Headache | 136 (1.5%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Ectopic Pregnancy



## Epidemiology

- Rate of delayed diagnosis: 2.1% but OR 16 for delay in a Pediatric ED
- Odds of complication from delay: 0.45
- Complication:
  - Surgery
  - Loss of ovary or fallopian tube

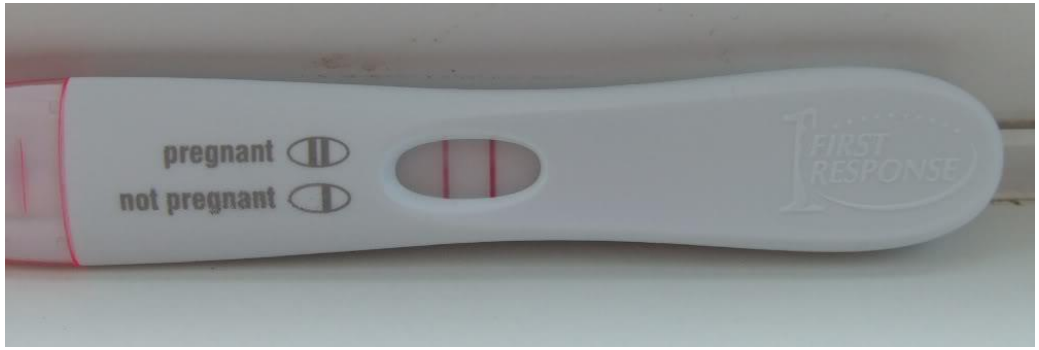
Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Ectopic Pregnancy



## Recognition

- Amenorrhea or 6-8 weeks gestational age
- Abrupt abdominal pain
- Vaginal bleeding
- Current IUD use
- History of PID




Della-Giustina D, Denny M. Ectopic pregnancy. Emerg Med Clin North Am. 2003 Aug;21(3):565-84. doi: 10.1016/s0733-8627(03)00036-1. PMID: 12962347.

# Ectopic Pregnancy



## Mimics

| Total Delayed Diagnoses | 76 |
|---|---|
| Vaginal bleeding | 35 (46.1%) |
| Other Pregnancy Complication | 24 (31.6%) |
| Spontaneous abortion | 4 (5.3%) |
| Normal pregnancy | 4 (5.3%) |
| Abdominal Pain | 4 (5.3%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Ectopic Pregnancy

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## Plain Language Return Precautions

- Vaginal bleeding, especially with clots
- New Abdominal pain
- Changing or worsening abdominal pain
- Passing out

# Kawasaki Disease



## Epidemiology

- Rate of delayed diagnosis: **27.2%**
- Odds of complication from delay: **1.08**
- Complication:
  - Coronary aneurysm +/-dissection or thrombosis
  - Myocarditis +/- cardiogenic shock
  - Other large artery aneurysms

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Kawasaki Disease

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## Recognition

**Table 3. Diagnosis of Classic KD**

Classic KD is diagnosed in the presence of fever for at least 5 d (the day of fever onset is taken to be the first day of fever) together with at least 4 of the 5 following principal clinical features. In the presence of ≥4 principal clinical features, particularly when redness and swelling of the hands and feet are present, the diagnosis of KD can be made with 4 d of fever, although experienced clinicians who have treated many patients with KD may establish the diagnosis with 3 d of fever in rare cases (Figure 2):

1. Erythema and cracking of lips, strawberry tongue, and/or erythema of oral and pharyngeal mucosa
2. Bilateral bulbar conjunctival injection without exudate
3. Rash: maculopapular, diffuse erythroderma, or erythema multiforme-like
4. Erythema and edema of the hands and feet in acute phase and/or periungual desquamation in subacute phase
5. Cervical lymphadenopathy (≥1.5 cm diameter), usually unilateral

McCrindle, Brian W., et al. "Diagnosis, treatment, and long-term management of Kawasaki disease: a scientific statement for health professionals from the American Heart Association." circulation 135.17 (2017): e927-e9

# Kawasaki Disease

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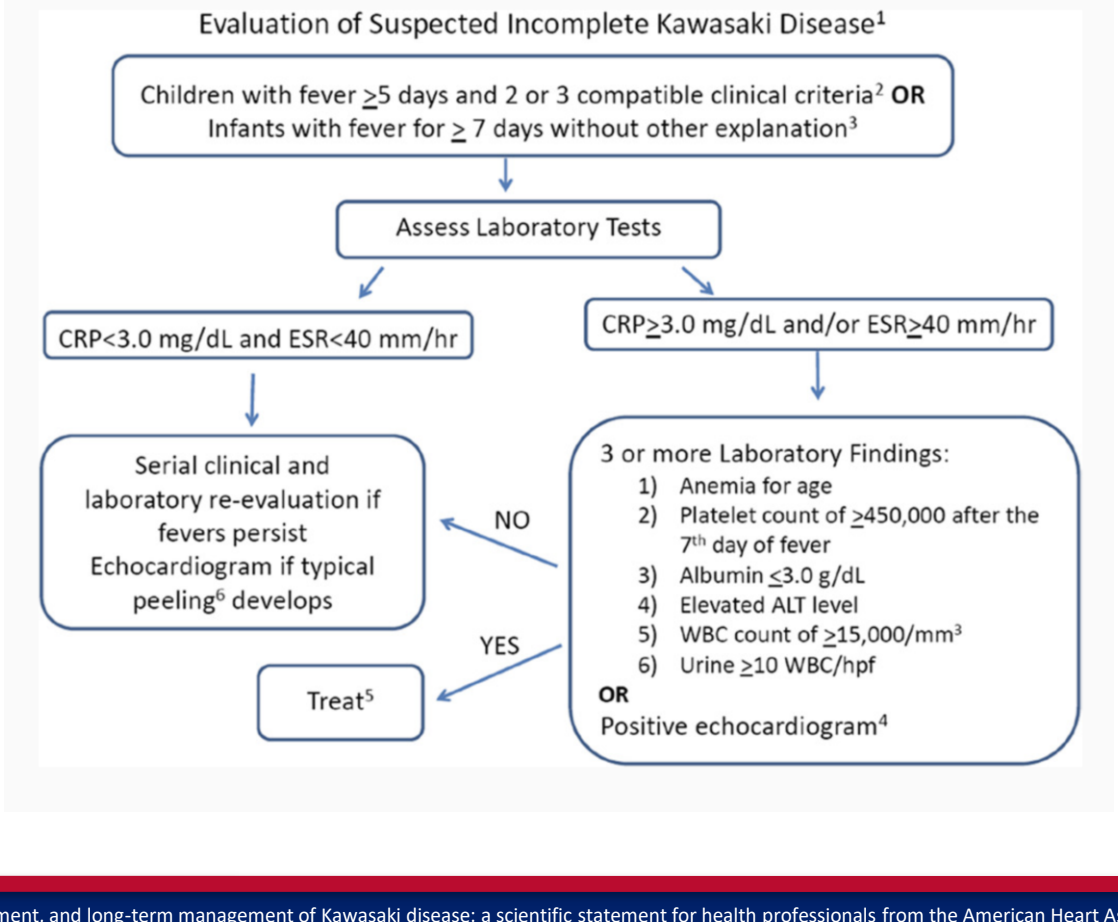
## Recognition




McCrindle, Brian W., et al. "Diagnosis, treatment, and long-term management of Kawasaki disease: a scientific statement for health professionals from the American Heart Association." circulation 135.17 (2017): e927-e9

# Kawasaki Disease



## Mimics

| Total Delayed Diagnoses | 1256 |
|---|---|
| Fever of unknown origin | 269 (12.4%) |
| Viral infection | 200 (15.9%) |
| Upper respiratory infection | 165 (13.1%) |
| Lymphadenitis | 84 (6.7%) |
| Otitis media | 74 (5.9%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Kawasaki Disease

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## Plain Language Return Precautions

- Fever > 5 days with:
    - Pink eye
    - Rash, especially involving eyes and mouth
    - Hand or foot swelling/skin peeling
- Fever > 7 days for ANY reason

# Osteomyelitis



## Epidemiology

- Rate of delayed diagnosis: **25.9%**
- Odds of complication from delay: **0.81**
- Complication:
  - Septic joint progression
  - Bone abscess
  - Joint/bone destruction

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Septic Arthritis



## Epidemiology

- Rate of delayed diagnosis: **20.5%**
- Odds of complication from delay: **1.68**
- Complication:
  - Sepsis and septic shock
  - Joint/bone destruction

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Osteomyelitis



## Recognition

**Table III**

Presenting features

| Symptom | Incidence* (%) |
|---|---|
| Pain | 81.1 |
| Localised signs/symptoms | 70.0 |
| Fever | 61.7 |
| Reduced range of movement | 50.3 |
| Reduced weight-bearing | 49.3 |

Dartnell, J., M. Ramachandran, and M. Katchburian. "Haematogenous acute and subacute paediatric osteomyelitis: a systematic review of the literature." The Journal of Bone & Joint Surgery British Volume 94.5 (2012): 5

# Osteo/Septic Arthritis

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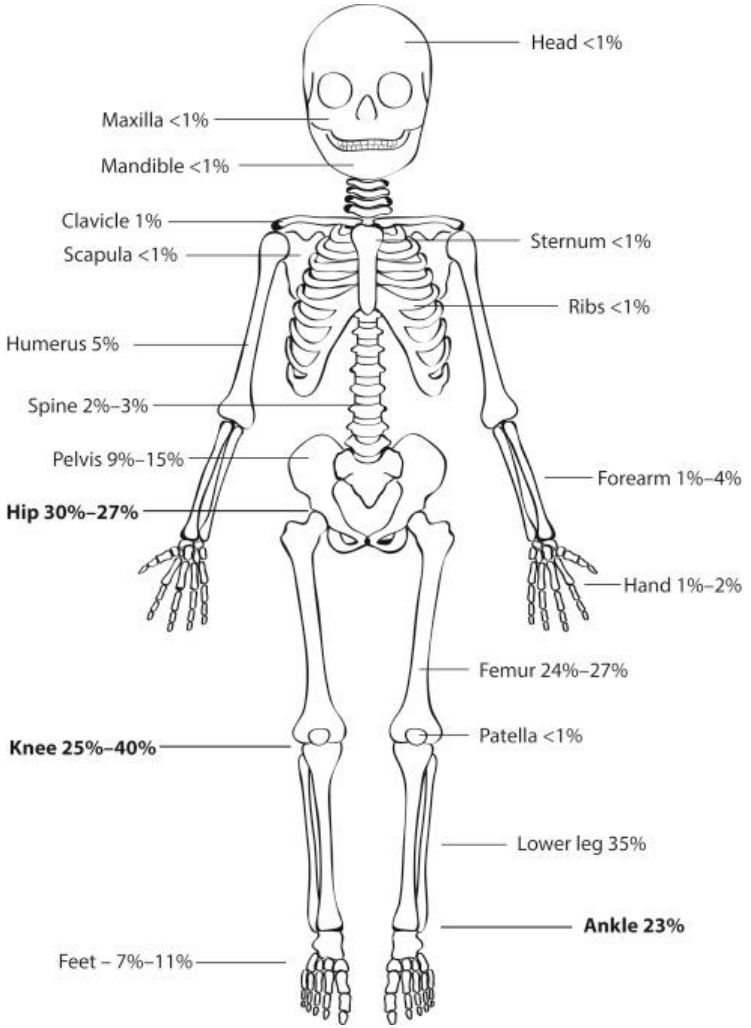
## Recognition

- Observe for abnormal posturing, movement or guarding
- Careful repetitive palpation of potential sites
- X-rays for localizing pain or limp
- Consider CRP, ESR and blood cultures




Arnold, John C., and John S. Bradley. "Osteoarticular infections in children." Infectious Disease Clinics 29.3 (2015): 557-574.

# Osteomyelitis



## Mimics

| Total Delayed Diagnoses | 461 |
|---|---|
| Localized pain, etc | 76 (16.5%) |
| Myalgia/Transient Synovitis, etc | 60 (13.0%) |
| Fever of unknown origin | 44 (9.5%) |
| Sprain and strains | 43 (9.3%) |
| Skin and subcutaneous tissue infections | 35 (7.6%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Septic Arthritis



## Mimics

| Total Delayed Diagnoses | 608 |
|---|---|
| Localized pain | 146 (24.0%) |
| Myalgia/Transient Synovitis, etc | 79 (13.0%) |
| Fever of unknown origin | 61 (10.0%) |
| Sprain and strains | 36 (5.9%) |
| Skin and subcutaneous tissue infections | 34 (5.6%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Osteo/Septic Arthritis

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## Plain Language Return Precautions

- Fever > 5 days
- Persistent, worsening symptoms
- Limp
- Red, hot, swollen areas on the skin
- Refusal to move an extremity
- Holding their body in an odd position of comfort

# Deep Neck Infection



## Epidemiology

- Rate of delayed diagnosis: 20.4%
- Odds of complication from delay: 1.56
- Complication:
  - Intubation, Tracheostomy
  - Mechanical ventilation
  - Repeat Surgery

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Deep Neck Infection

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## Recognition

### History

- Neck pain (38%)
- Fever (17%)
- Sore throat (17%)
- Neck mass (16%)
- Stridor (5%)

### Physical Exam

- Limited neck movement (94%)
  - Limited neck extension (45.0%)
  - Torticollis (36.5%)
  - Limited of neck flexion (12.5%)

Craig, Frances W., and Jeff E. Schunk. "Retropharyngeal abscess in children: clinical presentation, utility of imaging, and current management." Pediatrics 111.6 (2003): 1394-1398.G

# Deep Neck Infection

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## Recognition

### < 4 years

- Agitation (50%)
- Cough (35%)
- Drooling (27%)
- Lethargy (46%)
- Trismus (14%)

### > 4 years

- Agitation (14%)
- Cough (14%)
- Drooling (12%)
- Lethargy (33%)
- Trismus (53%)

Coticchia, James M., et al. "Age-, site-, and time-specific differences in pediatric deep neck abscesses." Archives of Otolaryngology–Head & Neck Surgery 130.2 (2004): 201-207.

# Deep Neck Infection

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## Mimics

| Total Delayed Diagnoses | 515 |
|---|---|
| Upper Respiratory Infection | 144 (28.0%) |
| Fever | 55 (10.7%) |
| Lymphadenitis | 51 (9.9%) |
| Viral Infection | 35 (6.8%) |
| Spondylosis, disc problems | 32 (6.2%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Deep Neck Infection

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## Plain Language Return Precautions

- Holding their neck in an odd position of comfort
- Refusal to open their mouth
- Drooling
- Refusal to eat or drink
- Inconsolably fussy

# Orbital Cellulitis



## Epidemiology

- Rate of delayed diagnosis: 13.5%
- Odds of complication from delay: 2.47
- Complication:
  - Orbital, sinus or cranial abscess
  - Orbital, sinus, ear or cranial surgery
  - Eye enucleation

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Orbital Cellulitis



## Recognition

### Pre-septal

- Trauma (39%)
- Sinus infection (9%)
- Fever (47%)
- Diplopia (<1%)
- Ophthalmoplegia (<1%)
- Proptosis (<1%)

### Post-septal

- Trauma (11%)
- Sinus infection (91%)
- Fever (94%)
- Diplopia (54%)
- Ophthalmoplegia (11%)
- Proptosis (94%)

Botting, A. M., D. McIntosh, and M. Mahadevan. "Paediatric pre-and post-septal peri-orbital infections are different diseases: A retrospective review of 262 cases." International journal of pediatric otorhinolaryngology 7

# Orbital Cellulitis

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## Mimics

| Total Delayed Diagnoses | 557 |
|---|---|
| Skin and Soft Tissue Infection | 107 (19.2%) |
| Inflammation | 71 (12.7%) |
| Upper Respiratory Infection | 63 (11.3%) |
| Other Eyes Disorder | 40 (7.2%) |
| Eye Inflammation/infection | 35 (6.3%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Orbital Cellulitis



## Plain Language Return Precautions

- Fever
- Pain with eye movement
- Eye bulging or swelling
- Double vision
- Sinus symptoms or swelling

# Craniospinal Abscess



## Epidemiology

- Rate of delayed diagnosis: 25.3%
- Odds of complication from delay: 1.49
- Complication:
  - Intubation, mechanical ventilation
  - Cranial or spinal surgery
  - Death

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Craniospinal Abscess



## Recognition

- Classic triad: Fever, Back pain, Focal deficit

Table 1. Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV), and Likelihood Ratios for a Positive (LR+) and Negative (LR−) Test for the Incidence of the "Classic Triad" Versus Risk Factor Assessment in Screening ED Patients with Spine Pain for SEA

| | Sensitivity | Specificity | PPV | NPV | LR+ | LR− |
|---|---|---|---|---|---|---|
| Classic triad | 7.9 | 99.2 | 83.3 | 68.3 | 10.0 | 0.93 |
| Risk factors | 98.4 | 78.6 | 69.7 | 99.0 | 4.6 | 0.02 |

Davis, Daniel P., et al. "The clinical presentation and impact of diagnostic delays on emergency department patients with spinal epidural abscess." The Journal of emergency medicine 26.3 (2004): 285-291.

# Craniospinal Abscess



## Recognition

Table 2. Prevalence of A Priori Risk Factors in SEA Patients

| Risk Factor | Percent |
|---|---|
| Intravenous drug use | 60 |
| Immunocompromised | 21 |
| Alcohol abuse | 19 |
| Recent spine procedure | 16 |
| Distant site of infection | 14 |
| Diabetes | 13 |
| Indwelling catheter | 11 |
| Recent spine fracture | 3 |
| Chronic renal failure | 3 |
| Cancer | 3 |
| Presence of one or more of above | 98 |

Davis, Daniel P., et al. "The clinical presentation and impact of diagnostic delays on emergency department patients with spinal epidural abscess." The Journal of emergency medicine 26.3 (2004): 285-291.

# Craniospinal Abscess



## Recognition

**TABLE 2**

Summary of Clinical Data on 9 Patients With SEA: Symptoms on Presentation

| Pt | Fever | Irritability | Weakness | Enuresis/Encopresis | Musculoskeletal |
|---|---|---|---|---|---|
| 1 | None | Yes | Yes, bilateral lower extremities | Yes, constipation | Refusal to bear weight or sit up |
| 2 | Yes | Yes | Yes, left lower extremity | None | Slight left lower extremity limp |
| 3 | Yes | None | None | None | None |
| 4 | Yes | None | Brisk reflexes bilateral lower extremities | None | None |
| 5 | Yes | None | Yes, bilateral lower extremities | None | Bilateral flank pain |
| 6 | None | None | None | None | Neck pain |
| 7 | None | None | Decreased strength in bilateral hip flexors, increased reflexes bilateral lower extremities with clonus, left scapular protrusion. | None | None |
| 8 | Yes | Ill appearing | None | None | None |
| 9 | Yes | None | None | None | Back pain with significant decreased range of motion, mild swelling of thoracic area, alteration of gait |

| | Description of SEA Location and Features |
|---|---|
| 1 | L3–L4, posterior, no spinal stenosis, no osteomyelitis |
| 2 | T1–T12, posterior, lateral spinal cord displacement, osteomyelitis of fibula |
| 3 | T1–L2, posterior, no spinal stenosis, no osteomyelitis |
| 4 | T7–11, anterior, lateral spinal cord displacement, T9 osteomyelitis |
| 5 | L4–S1, posterior, no spinal stenosis, no osteomyelitis |
| 6 | T1–L1, anterior, no spinal stenosis, T10 osteomyelitis |
| 7 | T3–T6, anterior, no spinal stenosis, T5 anterior wedge fracture, no osteomyelitis |
| 8 | L1–L4, posterior, no spinal stenosis, no osteomyelitis |
| 9 | T5–T6, posterior, no spinal stenosis, T6 osteomyelitis |

Hawkins, Melody, and Michael Bolton. "Pediatric spinal epidural abscess: a 9-year institutional review and review of the literature." Pediatrics 132.6 (2013): e1680-e1685.

# Craniospinal Abscess

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## Mimics

| Total Delayed Diagnoses | 195 |
|---|---|
| Upper Respiratory Infection | 31 (15.9%) |
| Headache | 24 (12.3%) |
| Fever | 22 (11.3%) |
| Viral Infection | 7 (3.6%) |
| Otitis Media | 7 (3.6%) |

Michelson KA, Rees CA, Florin TA, Bachur RG. Emergency Department Volume and Delayed Diagnosis of Serious Pediatric Conditions. JAMA Pediatr. 2024 Apr 1;178(4):362-368. doi: 10.1001/jamapediatrics.2023.6672. PM

# Craniospinal Abscess

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## Plain Language Return Precautions

- Fever
- New loss of bowel or bladder control
- Back pain that is worsening or changing
- Refusal to bear weight or limp
- Holding their body in an odd position of comfort
- Fussy and inconsolable

# Case - H&P



- Peds ED at 0100 in January
- 2 y/o M in ED for fever x 1 hour. No other symptoms.
- Tmax 101, + sick contacts at home
- PMHx: tracheomalacia, GERD, Vaccines (incl flu) UTD
- Rx: Acetaminophen, Diphenhydramine
- ROS neg. More tired, not drinking as much, normal UOP

- T 36.9  HR 163  BP n/o  RR 28  O2 sat 95%
- Normal exam. Active and playful in the room

# Case - ED Course



- No source found for fever on exam
- Patient tolerated PO, easy work of breathing
- Father declined flu swab, felt son looked better
- PCP appt in the AM, requesting discharge
- D/C Vitals: T 38.3  HR 118  BP n/o  RR 24  O2 sat 97%

# Case - Visit #2



- Peds ED at 0100 in January
- 2 y/o M in ED for fever x 25 hours. Still no other symptoms.
- Tmax 103, missed PCP appt
- Rx: alternating acetaminophen/ibuprofen
- Less active, not drinking as much, less UOP

- T 38.9  HR 188  BP n/o  RR 34  O2 sat 97%
- Tired but arousable. Tachypenic with nasal flaring.
- Otherwise normal exam.

# Case - ED Studies



| | | |
|---|---|---|
| WBC | 10.6 | 7.0 - 13.0 K/UL |
| RBC | 4.37 | 4.10 - 5.30 M/UL |
| HGB | 11.7 | 10.8 - 14.8 G/DL |
| HCT | 34.3 | 34.0 - 47.0 % |
| MCV | 78.5 | 75.0 - 85.0 FL |
| MCH | 26.7 (*) | 27.0 - 31.0 PG |
| MCHC | 34.1 | 32.0 - 36.0 G/DL |
| RDW | 11.5 | 11.5 - 14.5 % |
| PLT CNT | 291 | 130 - 450 K/UL |
| MPV | 6.7 (*) | 7.4 - 10.4 FL |
| BANDS | 10 | |
| SEGS | 67 (*) | 15 - 35 % |
| LYMPHS | 11 | |
| MONOS | 12 (*) | 5.5 - 11.7 % |
| PLT EST | ADEQUATE | |
| MICRO | 1+ | |

BASIC METABOLIC PANEL

*Collection Time*
*2/16/13 1:15 AM*

| Component | Value | Range |
|---|---|---|
| GLUCOSE | 124 (*) | 60 - 100 mg/dL |
| BUN | 7 | 4 - 19 mg/dL |
| CREATININE | 0.2 | 0.18 - 0.35 mg/dL |
| CALCIUM | 10.0 | 8.8 - 10.8 mg/dL |
| NA | 131 (*) | 136 - 145 mmol/L |
| K | 4.6 | 3.4 - 5.1 mmol/L |
| CL | 97 (*) | 98 - 107 mmol/L |
| CO2 | 22 | 22 - 29 mmol/L |

# Case - ED Course #2



- CXR: perihilar infiltrates without focal consolidation. No effusions. No cardiomegaly
- Influenza A&B: negative
- IV placed and 20mL/kg bolus given
- Labs and blood cultures sent
- Patient perked up, tolerated PO, more active
- Return precautions explained, PCP follow up
- D/C Vitals: T 37.8  HR 135  BP n/o  RR 28  O2 sat 98%

# Case - Visit #3



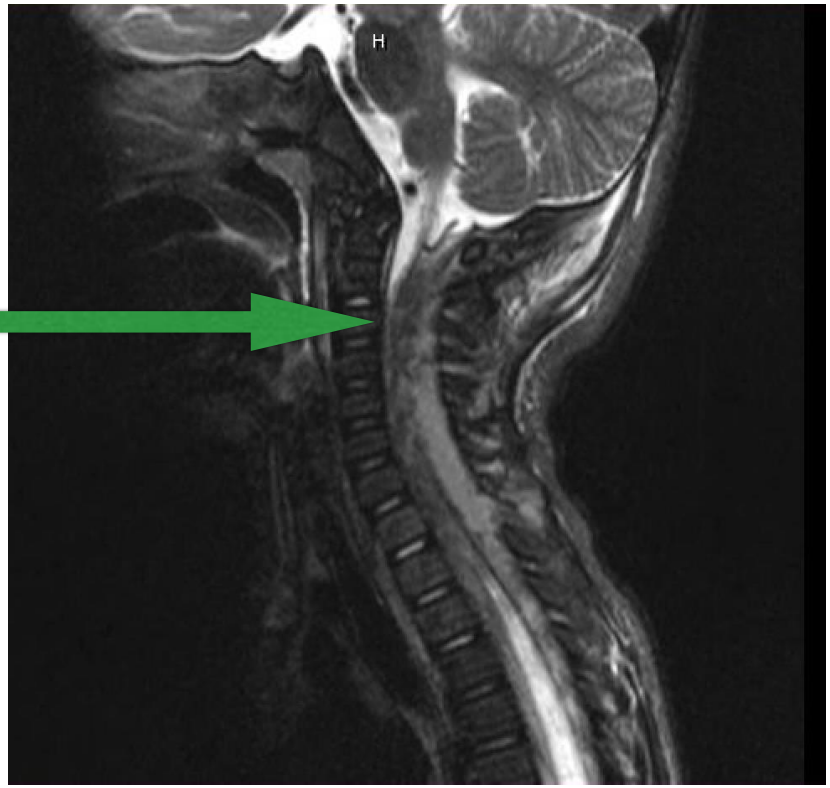
- 2 y/o M in ED for fever x 4 days.
- Tmax 103.8. Patient developed a rash on left foot that spread cephalic last night
- Rx: alternating acetaminophen/ibuprofen
- ROS otherwise neg. Poorly arousable,poor PO, less UOP

- T 39.5  HR 194  BP n/o  RR 42  O2 sat 95%
- Ill-appearing, responsive to only to stimuli.
- Tachypenic with nasal flaring. Tachycardic with 2/6 SEM
- Petechial rash on LLE only. Pain with flexion of neck

# Case - ED Studies



- Blood cultures from Visit #2 positive for MRSA
- LP: pleocytosis with negative culture
- MRI Brain/Spine: C2-T4 epidural abscess
- Echo: 13mm vegetation on mitral valve



# Summary



- Be vigilant to consider and rule out the needles in the haystack
- Be cautious with the quick diagnosis of URI, viral syndrome or otitis media
- Provide specific, disease-oriented return precautions
- Return precautions should be plain language and actionable

# Questions?



# Thank you

Combined Emergency Medicine & Pediatrics Residency
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*Adults are just big kids*