What are the four basic anatomic locations for uveitis?
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Uveitis: Anterior

Key distinction
(not uni- vs bilateral)

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: Anterior

Granulomatous

Nongranulomatous

Key distinction (not uni- vs bilateral)

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

1) The uveitis is profiled  
2) The profiled case is meshed  
3) A differential diagnosis list is generated  
4) Studies are obtained to identify the etiology  
5) Treatment appropriate for the etiology is initiated

- Granulomatous
- Nongranulomatous

**Key distinction**
Uveitis: *Anterior*

- Granulomatous
- Nongranulomatous

**Key distinction**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Key distinction

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

- Acute
- Chronic

Key distinction

- Unilateral
- Bilateral

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: *Anterior*

**Granulomatous**

**Nongranulomatous**

- **Acute**
  - Unilateral

- **Chronic**
  - Bilateral

These three causes are in the DDx for every case of uveitis, including acute bilateral nongranulomatous uveitis. What are they?
Uveitis: \textit{Anterior}

- Granulomatous
- Nongranulomatous
  - Acute
    - Unilateral
  - Chronic
    - Bilateral
  
  \textit{These three causes are in the DDx for every case of uveitis, including acute bilateral nongranulomatous uveitis. What are they?}

- Syphilis
- Sarcoid
- TB
Uveitis: **Anterior**

- **Granulomatous**
  - Acute
  - Unilateral
- **Nongranulomatous**
  - Chronic
  - Bilateral
    - Syphilis
    - Sarcoid
    - ?
    - TB

**What are the others?**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

1. The uveitis is profiled
2. The profiled case is meshed
3. A differential diagnosis list is generated
4. Studies are obtained to identify the etiology
5. Treatment appropriate for the etiology is initiated

- **Granulomatous**
  - Acute
    - Unilateral
  - Chronic
    - Bilateral
      - TINU
      - Behçet
      - Drug rxn
      - Leptospirosis
      - Sarcoid
      - Syphilis
      - IBD/PA
      - TB

What are the others?
Uveitis: **Anterior**

Granulomatous  
Nongranulomatous

Acute  
Chronic

Unilateral  
Bilateral

**What does TINU stand for?**

- Tubulointerstitial nephritis and uveitis (syndrome)
- The typical TINU pt is a female age 16-30
- TINU typically presents in three phases:
  - First is a **systemic** phase: Fever, weight loss, fatigue, abdominal pain; this is followed by...
  - The **nephropathy** phase: Proteinuria, hypergammaglobulinemia, anemia; followed by...
  - The **uveitis** phase: A bilateral nongranulomatous anterior uveitis

- Note that because not all pts read the book, some will present in the 'wrong' order
- The etiology of TINU is unknown at this time
Uveitis: **Anterior**

Granulomatous

**Nongranulomatous**

Acute

Bilateral

**Chronic**

**Unilateral**

**What does TINU stand for?**
Tubulointerstitial nephritis and uveitis (syndrome)

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

- **TINU**

- **Leptospirosis**

- **Behçet**

- **Drug rxn**

- **Posner-Schlossman**

- **Syphilis**

- **Sarcoid**

- **IBD/PA**

- **A female age 16-30**

- **First is a systemic phase: Fever, weight loss, fatigue, abdominal pain; this is followed by…**

- **the nephropathy phase: Proteinuria, hypergammaglobulinemia, anemia; followed by…**

- **the uveitis phase: A bilateral nongranulomatous anterior uveitis** (Note that because not all pts read the book, some will present in the ‘wrong’ order)

- **It is unknown at this time**
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

- Acute
  - Unilateral
  - Bilateral

- Chronic

**TINU**

*What does TINU stand for?*
Tubulointerstitial nephritis and uveitis (syndrome)

*Who is the typical TINU pt?*

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Uveitis: **Anterior**

- Granulomatous
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**TINU**

*What does TINU stand for?*
Tubulointerstitial nephritis and uveitis (syndrome)

*Who is the typical TINU pt?*
A female age 16-30
**What does TINU stand for?**
Tubulointerstitial nephritis and uveitis (syndrome)

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(Note that because not all pts read the book, some will present in the 'wrong' order)

**What is the etiology of TINU?**
It is unknown at this time

---

**Uveitis:** *Anterior*

- Granulomatous
- Nongranulomatous

- Acute
- Chronic

- Unilateral
- Bilateral

**TINU**
1) The uveitis is profiled
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Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

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Bilateral

**TINU**

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What does TINU stand for’?
Tubulointerstitial nephritis and uveitis (syndrome)

Who is the typical TINU pt?
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- Granulomatous
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- Bilateral

**Chronic**

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- Leptospirosis
- Behçet
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Uveitis: **Anterior**

- **Granulomatous**
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**What does TINU stand for?**
Tubulointerstitial nephritis and uveitis (syndrome)

**Who is the typical TINU pt?**
A female age 16-30

**TINU typically presents in three phases—what are they?**
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Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**TINU**

*What does TINU stand for?*

Tubulointerstitial nephritis and uveitis (syndrome)

*Who is the typical TINU pt?*

A female age 16-30

*TINU typically presents in three phases--what are they?*

--First is a **systemic** phase: Fever, weight loss, fatigue, abdominal pain; this is followed by…

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(Note: Not all pts read the book, so some will present in the ‘wrong’ order)

*How much time typically elapses between phases?*

A few weeks to a couple of months
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Unilateral
  - Bilateral
  - **TINU**

**What does TINU stand for?**
Tubulointerstitial nephritis and uveitis (syndrome)

**Who is the typical TINU pt?**
A female age 16-30

**TINU typically presents in three phases--what are they?**
--**First** is a _systemic_ phase: Fever, weight loss, fatigue, abdominal pain; this is followed by…
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Uveitis: **Anterior**

Granulomatous  →  Nongranulomatous

Acute  →  Chronic

Unilateral  →  Bilateral

**TINU**

What does TINU stand for’?
Tubulointerstitial nephritis and uveitis (syndrome)

Who is the typical TINU pt?
A female age 16-30

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What is the etiology of TINU?
**Uveitis: Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

What does TINU stand for?
Tubulointerstitial nephritis and uveitis (syndrome)

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What is the etiology of TINU?
It is unknown at this time
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**TINU**

What does TINU stand for?
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What is the etiology of TINU?
It is unknown at this time

Urine levels of what specific gammaglobulin is usually elevated?
β2-microglobulin. (This is a ‘buzzword’ for TINU, so try to remember it)

Do TINU pts spill glucose because their serum glucose is elevated?
No, it is a normoglycemia glycosuria; ie, they spill glucose not because serum levels are high (like poorly-controlled diabetics do), but rather because the nephritis impairs glucose filtration/reclamation
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**TINU**

---

**What does TINU stand for?**

Tubulointerstitial nephritis and uveitis (syndrome)

**Who is the typical TINU pt?**

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---

**What is the etiology of TINU?**

It is unknown at this time
Acute Chronic Uveitis:

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Uveitis: Anterior

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

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TINU

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Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**TINU**

---

**What does TINU stand for?**

Tubulointerstitial nephritis and uveitis (syndrome)

**Who is the typical TINU pt?**

A female age 16-30

**TINU typically presents in three phases**—what are they?

-- **First is a systematic phase:** Fever, weight loss, fatigue, abdominal pain; this is followed by…

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Uveitis: **Anterior**

Granulomatus → Nongranulomatus

Unilateral → Acute

---

Nongranulomatus → Chronic

Bilateral → Bilateral

---

**TINU**

---

**What does TINU stand for?**

Tubulointerstitial nephritis and uveitis (syndrome)

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(Note that because not all pts read the book, some will present in the 'wrong' order)

**What is the etiology of TINU?**

It is unknown at this time

**How is the diagnosis of TINU made?**

Formally, it can be made only via renal biopsy

If TINU is suspected, what steps should the ophtho take?

1) Treat the uveitis with topical steroids and cycloplegia

2) Order labs:
   ----Serum creatinine and BUN (will indicate impaired renal function)
   ----ESR (will be significantly elevated)
   ----H/H (anemia will be present)
   ----Urinalysis (will be abnormal as described previously)

3) Refer to Nephrology
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

**TINU**

---

**What does TINU stand for?**

Tubulointerstitial nephritis and uveitis (syndrome)

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**What is the etiology of TINU?**

It is unknown at this time

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Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
  - **Chronic**
    - **Unilateral**
    - **Bilateral**
      - **TINU**

---

**What does TINU stand for?**

*Tubulointerstitial nephritis and uveitis (syndrome)*

**Who is the typical TINU pt?**

*A female age 16-30*

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**What is the etiology of TINU?**

*It is unknown at this time*

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Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

<table>
<thead>
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<th>Granulomatous</th>
<th>Nongranulomatous</th>
</tr>
</thead>
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<td>Acute</td>
<td>Chronic</td>
</tr>
<tr>
<td>Unilateral</td>
<td>Bilateral</td>
</tr>
</tbody>
</table>

**What does TINU stand for?**
Tubulointerstitial nephritis and uveitis (syndrome)

**Who is the typical TINU patient?**
A female age 16-30

**TINU typically presents in three phases—what are they?**

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3) Refer to Nephrology

---

**What is the etiology of TINU?**
It is unknown at this time
**Uveitis: Anterior**

- **Granulomatous**
  - Acute
  - Unilateral

- **Nongranulomatous**
  - Acute
  - Bilateral
  - TINU

**1) The uveitis is profiled**
2) The profiled case is meshed
3) A differential diagnosis list is generated
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**What does TINU stand for?**
- Tubulointerstitial nephritis and uveitis (syndrome)

**Who is the typical TINU pt?**
- A female age 16-30

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- **First is the systemic phase**: Fever, weight loss, fatigue, abdominal pain; this is followed by...
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Acute Chronic Uveitis:

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Unilateral Bilateral

Granulomatous Nongranulomatous

Acute Chronic

TINU

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TINU has a very strong HLA association--what is it?

HLA-DRB1*0102
Uveitis: **Anterior**

Granulomatous ➔ Nongranulomatous

Unilateral ➔ Bilateral

**Acute** ➔ **Chronic**

-- First is a **systemic** phase: Fever, weight loss, fatigue, abdominal pain; this is followed by...
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--- TINU has a very strong HLA association--what is it? **HLA-DRB1*0102**

--- TINU typically presents in three phases--what are they?

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--- What is the etiology of TINU?

It is unknown at this time

--- How is the diagnosis of TINU made?

Formally, it can be made only via renal biopsy

--- What does TINU stand for?
Uveitis: **Anterior**

Acute Chronic

**Granulomatous**

**Nongranulomatous**

**Unilateral**

**Bilateral**

**Acute**

**Chronic**

---

**1)** The uveitis is profiled

**2)** The profiled case is meshed

**3)** A differential diagnosis list is generated

**4)** Studies are obtained to identify the etiology

**5)** Treatment appropriate for the etiology is initiated

---

What does TINU stand for? **Tubulointerstitial nephritis and uveitis (syndrome)**

Who is the typical TINU pt? A female age 16-30

TINU typically presents in three phases—what are they?

---

**First** is a **systemic** phase: Fever, weight loss, fatigue, abdominal pain; this is followed by...

**Nephropathy** phase: Proteinuria, hypergammaglobulinuria, glycosuria; followed by...

**Uveitis** phase: A bilateral nongranulomatous anterior uveitis

(Note that because not all pts read the book, some will present in the 'wrong' order)

What is the etiology of TINU? It is unknown at this time

How is the diagnosis of TINU made? Formally, it can be made only via renal biopsy

If TINU is suspected, what steps should the ophtho take?

---

1) Treat the uveitis with topical steroids and cycloplegia

2) Obtain labs...

---

Serum creatinine and BUN (will indicate impaired renal function)

ESR (will be significantly elevated)

H/H (anemia will be present)

Urinalysis (will be abnormal as described previously)

---

3) Refer to Nephrology

TINU has a **very strong** HLA association—what is it? HLA-DRB1*0102

How strong is very strong?

It is the strongest of all known HLA associations
**Acute Chronic Uveitis:**

1. The uveitis is profiled
2. The profiled case is meshed
3. A differential diagnosis list is generated
4. Studies are obtained to identify the etiology
5. Treatment appropriate for the etiology is initiated

**Unilateral Bilateral**

**Granulomatous**

**Nongranulomatous**

**Acute**

**Chronic**

**TINU**

**What does TINU stand for?**
Tubulointerstitial nephritis and uveitis (syndrome)

**Who is the typical TINU pt?**
A female age 16-30

**TINU typically presents in three phases—what are they?**

- **First is a systemic phase:** Fever, weight loss, fatigue, abdominal pain; this is followed by...
- **the nephropathy phase:** Proteinuria, hypergammaglobulinuria, glycosuria; followed by...
- **the uveitis phase:** A bilateral nongranulomatous anterior uveitis (Note that because not all pts read the book, some will present in the ‘wrong’ order)

**What is the etiology of TINU?**
It is unknown at this time

**How is the diagnosis of TINU made?**
Formally, it can be made only via renal biopsy

**If TINU is suspected, what steps should the ophtho take?**
1. Treat the uveitis with topical steroids and cycloplegia
2. Obtain labs:
   - Serum creatinine and BUN (will indicate impaired renal function)
   - ESR (will be significantly elevated)
   - H/H (anemia will be present)
   - Urinalysis (will be abnormal as described previously)
3. Refer to Nephrology

**TINU has a very strong HLA association—what is it?**
HLA-DRB1*0102

**How strong is very strong?**
It is the strongest of all known HLA uveitis associations
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**TINU**

**What does TINU stand for?**
Tubulointerstitial nephritis and uveitis (syndrome)

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It is unknown at this time

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Formally, it can be made only via renal biopsy

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1) Treat the uveitis with topical steroids and cycloplegia
2) Obtain labs:
   - Serum creatinine and BUN (will indicate impaired renal function)
   - ESR (will be significantly elevated)
   - H/H (anemia will be present)
   - Urinalysis (will be abnormal as described previously)
3) Refer to Nephrology

**What is the first-line systemic treatment for TINU?**
PO steroids
**Uveitis: Anterior**

- **Granulomatous**
  - Acute
  - Unilateral
  - Bilateral
- **Nongranulomatous**
  - Acute
  - Unilateral
  - Bilateral
  - TINU

**What does TINU stand for?**

Tubulointerstitial nephritis and uveitis (syndrome)

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A female age 16-30

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PO steroids
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

TINU

Drug rxn

Behçet

Behcet disease is addressed in its own slide-set (U17)

Sarcoid

Syphilis

IBD/PA

TB
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

- Unilateral
- Bilateral

Chronic

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?

- **Systemic?**
- **Topical?**
- **Intravitreal?**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
    - Unilateral
    - Bilateral
      - TINU
      - Behçet
      - **Drug rxn**
      - IBD/PA
      - TB

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

- Systemic
- Topical
- Intravitreal

**All of them!**
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
    - Bilateral
      - TINU
      - Behçet
      - Drug rxn
      - Syphilis
      - Sarcoid
      - IBD/PA
      - TB

*Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?*

--Systemic?
--Topical?
--Intravitreal?

*For each route, does it cause a unilateral, or a bilateral uveitis?*
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
    - Bilateral

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
- Systemic? Can be **either**
- Topical? **Unilateral**
- Intravitreal? **Unilateral**

For each route, does it cause a unilateral, or a bilateral uveitis?
Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--Systemic
--Topical
--Intravitreal

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?
--?
--?
--?
--?

Hints forthcoming…
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

- Acute
- Chronic

- Unilateral
- Bilateral

---

**TINU**
- Behçet
- **Drug rxn**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

- Systemic
- Topical
- Intravitreal

---

**Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?**

- the most notorious of all—if you only remember one, make it this one
Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--Systemic
--Topical
--Intravitreal

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?
--Rifabutin
--?
--?
--?
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
    - Unilateral
  - Chronic
    - Bilateral
      - TINU
      - Behçet
      - Drug rxn

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
- Intravitreal

**Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?**
- Rifabutin
- A class of drugs used most often in elderly women
- ?
- ?

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?

--Systemic
--Topical
--Intravitreal

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?
--Rifabutin
--Bisphosphonates
--?
--?
Acute Chronic Uveitis:

1) The uveitis is profiled
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Unilateral Bilateral
Granulomatous
Nongranulomatous

Acute
Chronic

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--Systemic
--Topical
--Intravitreal

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?
--Rifabutin
--Bisphosphonates

Another drug class; of the four, is the most commonly Rx’d, but the least likely to cause uveitis
Acute Chronic

Uveitis:

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Unilateral Bilateral

Granulomatous

Nongranulomatous

Acute

Chronic

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--Systemic
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Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?
--Rifabutin
--Bisphosphonates
--Sulfonamides
--?
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

**Acute**
- Unilateral
- Bilateral

**Chronic**
- Unilateral
- Bilateral

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- **Systemic**
- **Topical**
- **Intravitreal**

---

**Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?**
- Rifabutin
- Bisphosphonates
- Sulfonamides

---

of the four, the only one that is also delivered intravitreally
Acute Chronic

Uveitis: **Anterior**

1. The uveitis is profiled
2. The profiled case is meshed
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4. Studies are obtained to identify the etiology
5. Treatment appropriate for the etiology is initiated

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral Bilateral

**TINU**

**Leptospirosis**

**Behçet**

**Drug rxn**

**Syphilis**

**Sarcoid**

**IBD/PA**

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

-- **Systemic**

-- **Topical**

-- **Intravitreal**

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?

-- **Rifabutin**

-- **Bisphosphonates**

-- **Sulfonamides**

-- **Cidofovir**
1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
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Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Unilateral → Bilateral

Bilateral
- TINU
- Behçet
- **Drug rxn**
- Sarcoid
- IBD/PA

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
- Intravitreal

What is rifabutin used to treat?

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so.

- **Rifabutin**
- Bisphosphonates
- Sulfonamides
- Cidofovir

What are they?

- Rifabutin is used to treat Mycobacterium avium complex infections in AIDS patients.
- How long after initiation of treatment does the uveitis typically occur? Weeks to months.
- Is it associated with development of a hypopyon? Yes! Always consider rifabutin when evaluating hypopyon uveitis.
Uveitis: **Anterior**

- **Granulomatous**
  - Acute
    - Unilateral
  - Chronic
    - Bilateral
  - Nongranulomatous
    - Acute
      - Unilateral
    - Chronic
      - Bilateral

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
- Intravitreal

**What is rifabutin used to treat?**
*Mycobacterium avium* complex infections in AIDS pts

*Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so.*

- Rifabutin
- Bisphosphonates
- Sulfonamides
- Cidofovir

*Is it associated with development of a hypopyon?*
Yes! Always consider rifabutin when evaluating hypopyon uveitis.

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2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Acute Chronic

Uveitis: **Anterior**

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Granulomatous

Nongranulomatous

- Acute
  - Unilateral
  - Bilateral

- Chronic
  - Unilateral
  - Bilateral

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
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- Bisphosphonates
- Sulfonamides
- Cidofovir

**What is rifabutin used to treat?**
*Mycobacterium avium* complex infections in AIDS pts

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Weeks to months

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Yes!
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**Uveitis: Anterior**

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Nongranulomatous

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--Systemic
--Topical
--Intravitreal

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--Rifabutin
--Bisphosphonates
--Sulfonamides
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Uveitis: **Anterior**

- **Granulomatous**
  - Acute
  - Unilateral

- **Nongranulomatous**
  - Acute
    - Bilateral
      - TINU
      - Behçet
      - Drug rxn

1) The uveitis is profiled
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**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
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Uveitis: **Anterior**

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- **Nongranulomatous**
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    - **Bilateral**
      - TINU
      - Behçet
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- Bisphosphonates
- Sulfonamides
- Cidofovir
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

**Acute**
- Unilateral
- Bilateral
  - TINU
  - Behçet
  - **Drug rxn**

**Chronic**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

- **Systemic**
- **Topical**
- **Intravitreal**

**What are bisphosphonates used to treat?**

*Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so.*

- **Rifabutin**
- **Bisphosphonates**
- **Sulfonamides**
- **Cidofovir**

---

**What are bisphosphonates used to treat?**

- The most common indication is osteoporosis prevention. They are used also to treat hypercalcemia associated with various conditions.

- **IV pamidronate** is associated with conjunctivitis, episcleritis, and scleritis.

---

**Studies are obtained to identify the etiology**

**Treatment appropriate for the etiology is initiated**
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

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Bilateral

Chronic

1) The uveitis is profiled
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5) Treatment appropriate for the etiology is initiated

- **TINU**
- **Leptospirosis**
- **Behçet**
- **Drug rxn**
- **Syphilis**
- **Sarcoid**
- **IBD/PA**

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- **Systemic**
- **Topical**
- **Intravitreal**

**What are bisphosphonates used to treat?**

- The most common indication is **osteoporosis** prevention. They are used also to treat **hypercalcemia** associated with various conditions.

**Many systemic drugs have**

- **Rifabutin**
- **Bisphosphonates**
- **Sulfonamides**
- **Cidofovir**

**What are they?**

- **Drug rxn**
- **Behçet**
Uveitis: **Anterior**

**Granulomatous**

**Nongranulomatous**

**Acute**

- Unilateral
- Bilateral

**Chronic**

- TINU
- Behçet
- Drug rxn

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- Topical
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Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so.

- Rifabutin
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Is it associated with development of a hypopyon?

No. But it is associated with conjunctivitis, episcleritis and scleritis.
Uveitis: **Anterior**

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**Granulomatous**

- **Acute**
  - Unilateral
  - **Nongranulomatous**
    - Bilateral
      - TINU
      - Behçet
      - Drug rxn

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- **Systemic**
- **Topical**
- **Intravitreal**

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so.

- **Rifabutin**
- **Bisphosphonates**
- **Sulfonamides**
- **Cidofovir**

What are bisphosphonates used to treat?
The most common indication is osteoporosis prevention. They are used also to treat hypercalcemia associated with various conditions.

Which bisphosphonate is most strongly associated with uveitis?

IV pamidronate is associated with development of a hypopyon. But it is associated with conjunctivitis, episcleritis and scleritis.
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

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**What are bisphosphonates used to treat?**

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- **Rifabutin**
- **Bisphosphonates**
- **Sulfonamides**
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- No. But it is associated with conjunctivitis, episcleritis and scleritis
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

**Acute**
- Unilateral
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- 

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- Topical
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Acute Uveitis:

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Unilateral Bilateral

Granulomatous

Nongranulomatous

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Chronic

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--Systemic
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The most common indication is osteoporosis prevention. They are used also to treat hypercalcemia associated with various conditions.

Which bisphosphonate is most strongly associated with uveitis?
IV pamidronate

Is it associated with development of a hypopyon?
No. But it is associated with another...
Acute Chronic Uveitis:

1) The uveitis is profiled
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5) Treatment appropriate for the etiology is initiated

Unilateral Bilateral

Granulomatous

Nongranulomatous

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Bilateral

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Bilateral

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Drug rxn

Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so.

What are they?

--Rifabutin
--Bisphosphonates
--Sulfonamides
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Uveitis: **Anterior**

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5. Treatment appropriate for the etiology is initiated

Granulomatosus

Nongranulomatosus

**Acute**

- Unilateral
- Bilateral
  - TINU
  - Behçet
  - **Drug rxn**
    - Leptospirosis
    - Drug reaction
    - Syphilis
    - Sarcoid
    - IBD/PA

**Chronic**

**Of the following drug-delivery routes, which have been associated with drug reaction uveitis?**

- Systemic
- Topical
- Intravitreal

**Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?**

- Rifabutin
- Bisphosphonates
- **Sulfonamides**
- Cidofovir

**What are sulfonamides?**

Most are antimicrobials. They are commonly used to treat bacterial UTIs, but have efficacy against toxoplasmosis, pneumocystis and other bugs. Some have been found to be effective anti-seizure meds. At least one is a diuretic.

**Which sulfonamide is the most infamous for its ability to induce significant ophthalmic side effects?**

**Trimethoprim-sulfamethoxazole**

**What is the name for the syndrome of these significant side effects?**

**Stevens-Johnson syndrome (SJS)**
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
  - **Chronic**
    - **Unilateral**
    - **Bilateral**
      - TINU
      - Behçet
      - **Drug rxn**

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

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Uveitis: **Anterior**

- **Acute**
  - Granulomatous
  - Unilateral
  - Bilateral
- **Chronic**
  - Nongranulomatous
  - Bilateral

1. The uveitis is profiled
2. The profiled case is meshed
3. A differential diagnosis list is generated
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**Granulomatous**

- Unilateral
- Bilateral

**Nongranulomatous**

- Acute
- Chronic

**Drug rxn**

- TINU
- Behçet
- Trimethoprim-sulfamethoxazole

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

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**Stevens-Johnson syndrome (SJS)**
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

- TINU
- Behçet
- **Drug rxn**
- Syphilis
- Sarcoid
- IBD/PA

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Stevens-Johnson syndrome (SJS)
Uveitis: **Anterior**

- Acute
  - Granulomatous
  - Nongranulomatous
- Chronic
  - Unilateral
  - Bilateral

**Anterior Uveitis:**

1. The uveitis is profiled
2. The profiled case is meshed
3. A differential diagnosis list is generated
4. Studies are obtained to identify the etiology
5. Treatment appropriate for the etiology is initiated

**Unilateral Bilateral**

- **Granulomatous**
- **Nongranulomatous**

---

**Drug rxn**

- TINU
- Behçet
- Syphilis
- Sarcoid
- IBD/PA

---

**Of the following drug-delivery routes, which have been associated with drug reaction uveitis?**

---

**Many systemic drugs**

- Systemic
- Topical
- Intravitreal

---

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      - TINU
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      - Drug rxn
        - Syphilis
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**SJS**

SJS is also known as...

What is the name for the syndrome of these significant side effects?

**Stevens-Johnson syndrome (SJS)**
Uveitis: **Anterior**

**Granulomatous** → **Nongranulomatous**

- **Acute**
  - **Unilateral**
  - **Bilateral**
    - TINU
    - Behçet
    - **Drug rxn**
      - Leptospirosis
      - Syphilis
      - Sarcoid
      - IBD/PA

**Chronic**

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**SJS is also known as**... *erythema multiforme major*

What is the name for the syndrome of these significant side effects?

**Stevens-Johnson syndrome (SJS)**
Uveitis: **Anterior**

**Granulomatous**

**Nongranulomatous**

**Acute**

**Chronic**

Unilateral

Bilateral

1) The uveitis is profiled
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Severe cases may meet the definition of...

What is the name for the syndrome of these significant side effects?

**Stevens-Johnson syndrome (SJS)**
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
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      - Drug rxn

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What is the name for the syndrome of these significant side effects?
- Stevens-Johnson syndrome (SJS)

SJS is also known as... **erythema multiforme major**

Severe cases may meet the definition of... **toxic epidermal necrolysis (TEN)**

What is the name for the syndrome of these significant side effects?
Uveitis: *Anterior*

- Symblephara
- Membranous conjunctivitis
- Corneal epithelial defect and diffuse conjunctival injection
- Oral lesions
- Stevens-Johnson syndrome
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**

**Acute**
- **Unilateral**
- **Bilateral**
  - TINU
  - Behçet
  - **Drug rxn**

**Chronic**

---

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- **Systemic**
- **Topical**
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---

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---

**What are sulfonamides?**
Most are antimicrobials. They are commonly used to treat bacterial UTIs, toxoplasmosis, pneumocystis, and other bugs. At least one is an anti-seizure med. Some have been found to be effective.

**What sulfonamide is the most infamous for its ability to induce significant ophthalmic side effects?**

**Trimethoprim-sulfamethoxazole**

**What is the name for the syndrome of these significant side effects?**

**Stevens-Johnson syndrome (SJS)**

Severe cases may meet the definition of toxic epidermal necrolysis (TEN)

---

**Mnemonic forthcoming…**
Uveitis: Anterior

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Granulomatous — Acute >> Chronic
Nongranulomatous

Unilateral

Bilateral

TINU
Behçet
Drug rxn
Syphilis
Sarcoid
IBD/PA

Of the following drug-delivery routes, which have been associated with drug reaction uveitis?
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What is the name for the syndrome of these significant side effects?
Stevens-Johnson syndrome (SJS)

What is the name for the syndrome of these significant side effects?
erythema multiforme major

Severe cases may meet the definition of toxic epidermal necrolysis (TEN)

Three other drugs/drug classes are most commonly implicated.

What are they?
--N
--A
--Sulfonamides
--A

Severe cases may meet the definition of toxic epidermal necrolysis (TEN)

Stevens-Johnson syndrome (SJS)
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

**Acute**
- Unilateral
- Bilateral

**Chronic**

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---

What is the name for the syndrome of these significant side effects?

- Stevens-Johnson syndrome (SJS)
- Erythema multiforme major
- Toxic epidermal necrolysis (TEN)

---

Three other drugs/drug classes are most commonly implicated.

- NSAIDs
- Anticonvulsants
- Sulfonamides
- Allopurinol
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous

**Acute**
- Unilateral
- Bilateral
  - TINU
  - Behçet
  - **Drug rxn**

**Chronic**

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**For more on SJS, see slide-set K8**

---

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- NSAIDs
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**What is the name of the syndrome of these significant side effects?**
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- Systemic
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- Rifabutin
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Acute Chronic

Uveitis: **Anterior**

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Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

- TINU
- Behçet
- Drug rxn

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
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Many systemic drugs have been implicated in causing uveitis, but four are notorious for doing so. *What are they?*
--Rifabutin
--Bisphosphonates
--Sulfonamides
--**Cidofovir**

Because of its potential nonocular side effects, cidofovir is rarely given systemically anymore. *(For this reason, we will cover it with the Intravitreals)*
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
- Acute
- Chronic
- Unilateral
- Bilateral

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- Rifabutin
- Bisphosphonates
- Sulfonamides
- **Cidofovir**

Because of its potential nephrotoxicity, cidofovir is rarely given systemically anymore. *(For this reason, we will cover it with the Intravitreals)*

1) The uveitis is profiled
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Uveitis: **Anterior**

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      - **Drug rxn**

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Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
- **Systemic**
- **Topical**
- **Intravitreal**

Many topical drugs have been implicated in causing uveitis, but two are notorious for doing so. What are they?
--?
--?

**Hints forthcoming…**
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
    - Bilateral
      - TINU
      - Behçet
      - **Drug rxn**
        - IBD/PA

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- **Topical**
- Intravitreal

---

Many topical drugs have been implicated in causing uveitis, but two are notorious for doing so. What are they?

- **Metipranolol**
  - a glaucoma drug not commonly prescribed in the US
- ?
**Uveitis: **Anterior

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
    - Bilateral
      - TINU
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Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--Systemic
--Topical
--Intravitreal

Many topical drugs have been implicated in causing uveitis, but two are notorious for doing so. What are they?
--Metipranolol

Metipranolol is a class of glaucoma drugs VERY commonly prescribed in the US.
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
  - **Chronic**
    - **Unilateral**
    - **Bilateral**
      - TINU
      - Behçet
      - **Drug rxn**

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?

- **Systemic**
- **Topical**
- **Intravitreal**

Many topical drugs have been implicated in causing uveitis, but two are notorious for doing so. **What are they?**
- Metipranolol
- Prostaglandin analogues
Uveitis: **Anterior**

**Granulomatous**

**Nongranulomatous**

- Acute
- Chronic

- Unilateral
- Bilateral

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

--Systemic
--Topical
--Intravitreal

**Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.**

- Metipranolol
- Prostaglandin analogues

Is anterior uveitis common among metipranolol pts?
Uveitis: **Anterior**

- **Granulomatous**
  - Acute
  - Bilateral
    - TINU
    - Behçet
    - **Drug rxn**

- **Nongranulomatous**
  - Chronic
  - Unilateral

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

- Systemic
- **Topical**
- Intravitreal

---

**Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?**

- Metipranolol
- Prostaglandin analogue

---

**Is anterior uveitis common among metipranolol pts?**

No, it is quite uncommon. Further, it was associated with a formulation no longer commercially available in the US.
Acute Chronic

Uveitis: **Anterior**

Granulomatus

Nongranulomatus

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Unilateral Bilateral

Granulomatous

Nongranulomatous

Acute

Chronic

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--- Systemic
--- Topical
--- Intravitreal

Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.

What are they?
--- Metipranolol
--- Prostaglandin analogues

Is anterior uveitis common among metipranolol pts?
No, it is quite uncommon. Further, it was associated with a formulation no longer commercially available in the US.

What is unusual about the uveitis it induces?
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
    - Bilateral
      - TINU
      - Behçet
      - **Drug rxn**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
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Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so. What are they?
- Metipranolol
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Is anterior uveitis common among metipranolol pts?
No, it is quite uncommon. Further, it was associated with a formulation no longer commercially available in the US.

---

**What is unusual about the uveitis it induces?**
It is **granulomatous**, complete with **mutton-fat KP** and **posterior synechiae**.
Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--- Systemic
--- Topical
--- Intravitreal

Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.

What are they?
--- Metipranolol
--- Prostaglandin analogues
---...
**Uveitis:** *Anterior*

- Granulomatous
- Nongranulomatous

**Acute**
- Unilateral
- Bilateral
  - TINU
  - Behçet
  - **Drug rxn**

**Chronic**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- **Topical**
- Intravitreal

---

**Many topical drugs have caused drug-reaction uveitis:**
- Metipranolol
- Prostaglandin analogues

---

Is anterior uveitis common among metipranolol patients?
No, it is quite uncommon. Further, it was associated with a formulation no longer commercially available in the US.

What is unusual about the uveitis it induces?
It is **granulomatous**, complete with mutton-fat KP and posterior synechiae.

What other topical glaucoma med also causes a granulomatous uveitis (hint: It’s not on the list above)?

---
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**1) The uveitis is profiled**

**2) The profiled case is meshed**

**3) A differential diagnosis list is generated**

**4) Studies are obtained to identify the etiology**

**5) Treatment appropriate for the etiology is initiated**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

--Systemic

--Topical

--Intravitreal

---

Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.

What are they?

--Metipranolol

--Prostaglandin analogues

Is anterior uveitis common among metipranolol pts?

No, it is quite uncommon. Further, it was associated with a formulation no longer commercially available in the US.

What is unusual about the uveitis it induces?

It is **granulomatous**, complete with mutton-fat KP and posterior synechiae.

What other topical glaucoma med also causes a granulomatous uveitis (hint: It’s not on the list above)?

**Brimonidine**
Acute Chronic

Uveitis:

Anterior

Granulomatous

Nongranulomatous

Acute

Bilateral

Unilateral

Chronic

1) The uveitis is profiled
2) The profiled case is meshed
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5) Treatment appropriate for the etiology is initiated

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?

--Systemic
--Topical
--Intravitreal

Is anterior uveitis a common complication of PGA use?

No; it occurs in only ~1% of pts

Is it associated with development of a hypopyon?

No

Does it resolve rapidly upon cessation of the PGA?

Yes

Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.

What are they?

--Metipranolol
--Prostaglandin analogues
Acute Chronic
Uveitis:

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
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Granulomatous

Nongranulomatous

Acute

Bilateral

Unilateral

TINU

Behçet

Drug rxn

Is anterior uveitis a common complication of PGA use?
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--Prostaglandin analogues

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?

--Systemic
--Topical
--Intravitreal

What are they?
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
  - **Chronic**
    - **Unilateral**
    - **Bilateral**
      - TINU
      - Behçet
      - Drug rxn

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
- Intravitreal

**Is anterior uveitis a common complication of PGA use?**
- No; it occurs in only ~1% of pts

**What are they?**
- Metipranolol
- Prostaglandin analogues
**Uveitis: Anterior**

- Granulomatous
- Nongranulomatous

**Acute**
- Unilateral
- Bilateral
  - TINU
  - Behçet
  - Drug rxn

**Chronic**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
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---

**Is anterior uveitis a common complication of PGA use?**
No; it occurs in only ~1% of pts

**Is it associated with development of a hypopyon?**
Yes

---

Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.

- Metipranolol
- Prostaglandin analogues
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

--Systemic
--Topical
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--Metipranolol
--Prostaglandin analogues
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

--Systemic

--Topical

--Intravitreal

--- TINU

--- Behçet

--- Drug rxn

--- Others

**Is anterior uveitis a common complication of PGA use?**

No; it occurs in only ~1% of pts

**Is it associated with development of a hypopyon?**

No

**Does it resolve rapidly upon cessation of the PGA?**

Yes

--- Metipranolol

--- Prostaglandin analogues

--- Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.

--- What are they?

--- Prostaglandin analogues
Acute Chronic

Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

- TINU
- Behçet
- **Drug rxn**

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

--Systemic
--**Topical**
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*Many topical drugs have been implicated in causing uveitis, but four are notorious for doing so.*

- **Metipranolol**
- Prostaglandin analogues

**Is anterior uveitis a common complication of PGA use?**
No; it occurs in only ~1% of pts

**Is it associated with development of a hypopyon?**
No

**Does it resolve rapidly upon cessation of the PGA?**
Yes
Uveitis: **Anterior**

- **Granulomatous**
  - Acute
  - Unilateral
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  - Chronic
  - Bilateral
    - TINU
    - Behçet
    - **Drug rxn**

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
- **Intravitreal**

Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so. What are they?

--?

--?

*Hints forthcoming…*
Uveitis: **Anterior**

- **Granulomatous**
  - Acute
  - Unilateral
  - TINU
  - Behçet
  - Drug rxn

- **Nongranulomatous**
  - Acute
  - Bilateral
    - TINU
    - Behçet
    - Drug rxn

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
- **Intravitreal**

*Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so. What are they?*  

- Anti-VEGF agents
- **?**
  - we already mentioned this one…
- **?**
Uveitis: Anterior

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

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Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
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Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so.
What are they?
--Cidofovir
--?
Uveitis: **Anterior**

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- Nongranulomatous
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Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
- Systemic
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- **Intravitreal**

Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so.
*What are they?*
- Cidofovir
- *[Category of IVI drugs]*

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated
Uveitis: **Anterior**

**Granulomatous**

**Nongranulomatous**

**Acute**

**Chronic**

**Unilateral**

**Bilateral**

- TINU
- Behçet
- **Drug rxn**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

--Systemic
--Topical
--**Intravitreal**

---

**Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so. What are they?**

--Cidofovir
--Anti-VEGF agents
Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?
--Systemic
--Topical
--Intravitreal

What is cidofovir?
An antiviral used to treat CMV retinitis in AIDS

Is anterior uveitis common after intravitreal cidofovir?
Very--it occurs after roughly 25% of injections

Is it associated with development of a hypopyon?
No, but it is associated with hypotony, which can, rarely, be severe.

Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so.
--Cidofovir
--Anti-VEGF agents
Acute Chronic

Uveitis: **Anterior**

Granulomatous

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**Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so.**

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    - Yes, it occurs after roughly 25% of injections
  - Is it associated with development of a hypopyon?
    - No, but it is associated with hypotony, which can, rarely, be severe

**What is cidofovir?**
- Intravitreal anti-VEGF agents are notorious for doing so.
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

- TINU
- Behçet
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- Systemic
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  - Acute
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Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Bilateral
    - Unilateral
    - Bilateral
      - TINU
      - Behçet
      - Drug rxn

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
- Topical
- **Intravitreal**

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- Nongranulomatous
  - Acute
  - Chronic
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Uveitis: **Anterior**

**Granulomatous**

**Nongranulomatous**

**Acute**

**Chronic**

**Unilateral**

**Bilateral**

- TINU
- Behçet

Which anti-VEGF agents have been implicated as causing uveitis?

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?

- Systemic
- Topical
- Intravitreal

Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so.

**What are they?**

- Cidofovir
- Anti-VEGF agents

What is the rate of anterior uveitis after intravitreal:

- Ranibizumab: Between .1% and 1%
- Bevacizumab: Same
- Aflibercept: Much less data available; what's there suggests the rate is lower than that of ranibizumab/bevacizumab

Is the uveitis usually mild, or severe?

Mild

Are anti-VEGF agents associated with development of a hypopyon?

In rare cases only (and these likely represent contaminants)
Uveitis: **Anterior**

1. The uveitis is profiled
2. The profiled case is meshed
3. A differential diagnosis list is generated
4. Studies are obtained to identify the etiology
5. Treatment appropriate for the etiology is initiated

Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**TINU**

**Leptospirosis**

**Behçet**

**Drug rxn**

**Syphilis**

**Sarcoid**

**IBD/PA**

---

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**

--Systemic
--Topical
--**Intravitreal**

**Many intravitreal drugs have been implicated in causing uveitis,** but two are notorious for doing so.

---

**Which anti-VEGF agents have been implicated as causing uveitis?**

Pretty much all of them: Ranibizumab, bevacizumab and aflibercept (pegaptanib too)

---

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Uveitis: **Anterior**

- Granulomatous
  - Acute
  - Unilateral
  - TINU
  - Behçet
- Nongranulomatous
  - Acute
  - Bilateral
  - Intravitreal
  - Ranibizumab
  - Bevacizumab
  - Aflibercept
  - Cidofovir
  - Anti-VEGF agents

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- Systemic
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Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so.

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Pretty much all of them: Ranibizumab, bevacizumab and aflibercept (pegaptanib too)

What is the rate of anterior uveitis after intravitreal:
- Ranibizumab?
- Bevacizumab?
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Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
    - Bilateral
      - TINU
      - Behçet

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- Systemic
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- Cidofovir
- Anti-VEGF agents (including pegaptanib too)

**Which anti-VEGF agents have been implicated as causing uveitis?**
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  - (Ranibizumab, bevacizumab and aflibercept)

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Granulomatous → Nongranulomatous

Acute → Chronic

Unilateral → Bilateral

**Granulomatous**
- TINU
- Leptospirosis
- Behçet

**Nongranulomatous**
- Drug rxn
- Syphilis
- Sarcoid
- IBD/PA

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
- Systemic
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Many intravitreal drugs have been implicated in causing uveitis. What are they?
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- Granulomatous
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**Many intravitreal drugs have been associated with uveitis?**

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---

Higher vs lower
Uveitis: **Anterior**

- **Granulomatous**
- **Nongranulomatous**
  - **Acute**
  - **Chronic**
    - **Unilateral**
    - **Bilateral**
      - **TINU**
      - **Behçet**

**Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?**
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Acute Chronic

Uveitis: **Anterior**

Granulomatous

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1) The uveitis is profiled
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--Systemic
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**Is the uveitis usually mild, or severe?**
Mild

**In rare cases only (and these likely represent contaminants)**

--TINU
--Behçet
Uveitis: **Anterior**

- **Granulomatous**
  - Acute
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Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
  - Chronic
    - Unilateral
    - Bilateral
      - TINU
      - Behçet

**Of the following drug-delivery routes,** which have been associated with drug-reaction uveitis?
- Systemic
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Many intravitreal drugs have been implicated in causing uveitis, but two are notorious for doing so.

Which *anti-VEGF agents* have been implicated as causing uveitis?
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Is the uveitis usually mild, or severe?
- Mild

Are *anti-VEGF agents* associated with development of a hypopyon?

**Recommended citation:** Source: [Link to PDF]
Uveitis: **Anterior**

- Granulomatous
- Nongranulomatous
  - Acute
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      - Behçet

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- In rare cases only (and these likely represent contaminants)
Uveitis: Anterior

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Granulomatous

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For more on drug-induced uveitis, see slide-set U29

Of the following drug-delivery routes, which have been associated with drug-reaction uveitis?

-- Systemic
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Uveitis: *Anterior*

Granulomatous

Nongranulomatous

Acute

Bilateral
- TINU
- Behçet
- Drug rxn
- Leptospirosis

While leptospirosis can present as an acute bilateral anterior uveitis, it is far more likely to present as a panuveitis, and will be covered as such in the review slides.

Chronic

Unilateral
Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

- TINU
- Behçet
- Drug rxn
- **Leptospirosis**

While leptospirosis can present as an acute bilateral anterior uveitis, it is far more likely to present as a **panuveitis**, and will be covered as such in the review slides.

- IBD/PA
- TB

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
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Uveitis: **Anterior**

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

**How common is uveitis in inflammatory bowel disease?**

- Syphilis
- IBD/PA
- TB

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Unilateral Bilateral

Granulomatous Nongranulomatous

- TINU
- Leptospirosis
- Behçet
- Drug rxn
- Posner-Schlossman
- Syphilis
- Sarcoid
- IBD/PA
- TB

- Only 2-10% of IBD pts develop anterior uveitis. It is somewhat more common in PA, with a rate as high as 25%.
Uveitis: *Anterior*

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

How common is uveitis in inflammatory bowel disease? Only 2-10% of IBD pts develop anterior uveitis.
The uveitis is profiled. The profiled case is meshed. A differential diagnosis list is generated. Studies are obtained to identify the etiology. Treatment appropriate for the etiology is initiated.

How common is uveitis in inflammatory bowel disease? In psoriatic arthritis?
Only 2-10% of IBD pts develop anterior uveitis.
Uveitis: **Anterior**

Granulomatous → Nongranulomatous

Acute → Unilateral

Bilateral → Chronic

---

**How common is uveitis in inflammatory bowel disease?** In *psoriatic arthritis*? Only 2-10% of IBD pts develop anterior uveitis. It is somewhat more common in PA, with a rate as high as 25%.
Acute Chronic Uveitis: **Anterior**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

Granulomatous

Nongranulomatous

Acute

Chronic

Unilateral

Bilateral

**How common is uveitis in inflammatory bowel disease? In psoriatic arthritis?**

Only 2-10% of IBD pts develop anterior uveitis. It is somewhat more common in PA, with a rate as high as 25%.

**What nonocular findings are common in psoriatic arthritis?**
**Uveitis: Anterior**

1) The uveitis is profiled
2) The profiled case is meshed
3) A differential diagnosis list is generated
4) Studies are obtained to identify the etiology
5) Treatment appropriate for the etiology is initiated

**Granulomatous**

**Nongranulomatous**

**Acute**

**Chronic**

**Unilateral**

**Bilateral**

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The name of the condition provides a helpful way to remember these:
--'Psoriatic':
--'Arthritis':

- Syphilis
- IBD/PA
- TB
Acute Chronic

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--'Psoriatic': Pts get a rash, along with nail changes

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\[ \begin{align*}
\text{Granulomatous} & \quad \text{Nongranulomatous} \\
\quad \text{Acute} & \quad \text{Chronic} \\
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\end{align*} \]
Uveitis: *Anterior*

Psoriatic arthritis: Skin and nail changes
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What nonocular findings are common in psoriatic arthritis?
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--'Psoriatic': Pts get a scaly, erythematous rash, along with nail changes
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Acute Chronic

Uveitis: **Anterior**

Granulomatous  Nongranulomatous

Acute  Chronic

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How common is uveitis in inflammatory bowel disease? In *psoriatic arthritis*? Only 2-10% of IBD pts develop anterior uveitis. It is somewhat more common in PA, with a rate as high as 25%.

What nonocular findings are common in *psoriatic arthritis*? The name of the condition provides a helpful way to remember these:

-- *Psoriatic*: Pts get a scaly, erythematous rash, along with nail changes
-- *Arthritis*: The classic finding is **sausage digits**—swelling of the distal interphalangeal joints
Uveitis: *Anterior*

Psoriatic arthritis: Sausage digits