Acute/Hyperacute Conjunctivitis

What is Conjunctivitis?
**What is Conjunctivitis?**

Like any other -itis, it is an inflammatory condition involving the tissue of interest (in this case, the conj)
Conjunctivitis

Acute/Hyperacute Conjunctivitis

We can divvy conjunctivitis many ways, including in terms of: The **nature** of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**
We can divvy conjunctivitis many ways, including in terms of: 
The **nature** of the inflammatory response

*The Cornea book emphasizes four causes of noninfectious conjunctivitis—what are they?*
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response

The Cornea book emphasizes four causes of noninfectious conjunctivitis—what are they?

Conjunctivitis

Noninfectious → Infectious

- Allergic: This is a class of condition, not a specific dz
- Ligneous: This is a specific dz
- SJS/TEN: This is two closely-related specific dzs
- MMP: This is a specific dz

Acute/Hyperacute Conjunctivitis
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response

Conjunctivitis

- Noninfectious
  - Allergic
    - Seasonal allergic conjunctivitis (SAC)
    - Perennial allergic conjunctivitis (PAC)
    - Vernal keratoconjunctivitis (VKC)
    - Atopic keratoconjunctivitis (AKC)

- Infectious

Acute/Hyperacute Conjunctivitis
We can divvy conjunctivitis many ways, including in terms of: **The nature of the inflammatory response**

**Conjunctivitis**

- **Noninfectious**
  - **Allergic**
    - *What are the four forms of allergic conjunctivitis?*
      - **Seasonal** allergic conjunctivitis (SAC)
      - **Perennial** allergic conjunctivitis (PAC)
      - **Vernal** keratoconjunctivitis (VKC)
      - **Atopic** keratoconjunctivitis (AKC)
    - *How should you group these four in your mind?*

- **Infectious**

**Acute/Hyperacute Conjunctivitis**
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response
Conjunctivitis

Noninfectious

Allergic

- **Seasonal** allergic conjunctivitis (SAC)
- **Perennial** allergic conjunctivitis (PAC)
- **Vernal** keratoconjunctivitis (VKC)
- **Atopic** keratoconjunctivitis (AKC)

**What are the four forms of allergic conjunctivitis?**

**How should you group these four in your mind?**
SAC and PAC constitute one group; VKC and AKC constitute a different, distinct group.

**We can divvy conjunctivitis many ways, including in terms of:**

**The nature of the inflammatory response**
We can divvy conjunctivitis many ways, including in terms of:

The **nature** of the inflammatory response

Conjunctivitis

- **Noninfectious**
  - **Allergic**
    - Seasonal allergic conjunctivitis (SAC)
    - Perennial allergic conjunctivitis (PAC)
    - Vernal keratoconjunctivitis (VKC)
    - Atopic keratoconjunctivitis (AKC)

- **Infectious**

**What are the four forms of allergic conjunctivitis?**

- Seasonal allergic conjunctivitis (SAC)
- Perennial allergic conjunctivitis (PAC)
- Vernal keratoconjunctivitis (VKC)
- Atopic keratoconjunctivitis (AKC)

**How should you group these four in your mind?**

SAC and PAC constitute one group; VKC and AKC constitute a different, distinct group.

**See slide-set K36 to review these**

**See slide-set K6 to review these**
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
Conjunctivitis

We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Acute/Hyperacute Conjunctivitis

Conjunctivitis

Noninfectious

Infectious

Allergic

SJS/TEN

MMP

Ligneous

What is the cardinal clinical sign of ligneous conjunctivitis?
The presence of a firm yellow pseudomembrane on the conj

'Woody' (ligneous means 'consisting of or resembling wood' in Latin)

Plasminogen deficiency

Ligneous firm vs soft color membrane vs pseudomembrane
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious Infectious

- Infectious
- Allergic
- SJS/TEN
- MMP
- Ligneous

What is the cardinal clinical sign of ligneous conjunctivitis?
The presence of a firm **yellow** pseudomembrane on the conj
Firm yellowish lesions of the eyelids characteristic of ligneous conjunctivitis
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

Allergic

Ligneous

SJS/TEN

MMP

Infectious

Conjunctivitis

What is the cardinal clinical sign of ligneous conjunctivitis?

The presence of a firm yellow pseudomembrane on the conj

What's the difference between a membrane and a pseudomembrane?

A membrane is adherent to the conjunctiva, a pseudomembrane isn't.

How can you tell whether it's actually adhering?

A membrane bleeds when peeled; a pseudomembrane doesn't.

Conjunctivitis

Acute/Hyperacute Conjunctivitis

What’s the difference between a membrane and a pseudomembrane?
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of:

**The nature** of the inflammatory response

**Conjunctivitis**

**Noninfectious**

- Allergic
- Ligneous
- SJS/TEN
- MMP

**Infectious**

**Acute/Hyperacute Conjunctivitis**

What is the cardinal clinical sign of ligneous conjunctivitis?

- The presence of a firm yellow pseudomembrane on the conj

What’s the difference between a membrane and a pseudomembrane?

- A membrane is adherent to the conj, a pseudo isn’t

How can you tell whether it’s actually adhering?

**Ligneous**

- 'Woody' (ligneous means 'consisting of or resembling wood' in Latin)

Is ligneous conjunctivitis common, or rare?

- Rare

With what clotting abnormality is it associated?

- Plasminogen deficiency
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The **nature** of the inflammatory response

- Infectious
  - Allergic
  - MMP
  - SJS/TEN

- Noninfectious
  - Ligneous

**What is the cardinal clinical sign of ligneous conjunctivitis?**
The presence of a firm yellow **pseudomembrane** on the conj

**What's the difference between a membrane and a pseudomembrane?**
A membrane is adherent to the conj, a pseudo isn't

**How can you tell whether it’s actually adhering?**
A membrane bleeds when peeled; a pseudomembrane doesn't

**Ligneous**

- Plasminogen deficiency
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

- Infectious
  - SJS/TEN
  - MMP
- Noninfectious
  - Allergic
  - Ligneous

**Conjunctivitis**

**Acute/Hyperacute Conjunctivitis**

What is the cardinal clinical sign of ligneous conjunctivitis?
The presence of a firm yellow pseudomembrane on the conj

What arboreal term is used to describe the degree of firmness of the pseudomembrane?

'Woody' (ligneous means 'consisting of or resembling wood' in Latin)

Is ligneous conjunctivitis common, or rare?

Rare

With what clotting abnormality is it associated?

Plasminogen deficiency
Conjunctivitis

We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Acute/Hyperacute Conjunctivitis

Conjunctivitis

Noninfectious

- Infectious
- Allergic
- Ligneous
- SJS/TEN
- MMP

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Plasminogen deficiency

Rare
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The nature of the inflammatory response

Conjunctivitis

Noninfectious

Infectious

- Allergic
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- SJS/TEN
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Acute/Hyperacute Conjunctivitis
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

- Allergic
- Ligneous
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- MMP

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We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

- Allergic
- Ligneous
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With what clotting abnormality is it associated?

Plasminogen deficiency
We can divvy conjunctivitis many ways, including in terms of:

The **nature** of the inflammatory response

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**Conjunctivitis**

- **Noninfectious**
  - Allergic
  - Ligneous
  - SJS/TEN
  - MMP

- **Infectious**

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**What arboreal term is used to describe the degree of firmness of the pseudomembrane?**

‘Woody’ (*ligneous* means ‘consisting of or resembling wood’ in Latin)

**Is ligneous conjunctivitis common, or rare?**

Rare

**With what clotting abnormality is it associated?**

Plasminogen deficiency
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

What do SJS and TEN stand for in this context?

SJS:

TEN:

Acute/Hyperacute Conjunctivitis

Conjunctivitis

Noninfectious

Infectious

SJS/TEN

In just a few words, how would you describe the pathophysiology of SJS/TEN?

It is an acute inflammatory vesiculobullous reaction of the skin and mucus membranes.

How do SJS and TEN differ? What distinguishes one form the other?

It’s a matter of degree—TEN involves significantly more body surface area than does SJS.

What is the pathogenesis of the acute inflammatory vesiculobullous reaction?

A hypersensitivity reaction, usually to a drug or infectious agent.
Conjunctivitis

We can divvy conjunctivitis many ways, including in terms of:
The nature of the inflammatory response

Acute/Hyperacute Conjunctivitis

Conjunctivitis

Noninfectious

Infectious

What do SJS and TEN stand for in this context?

SJS: Stevens-Johnson syndrome
TEN: Toxic epidermal necrolysis

It is an acute inflammatory vesiculobullous reaction of the skin and mucus membranes.

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We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

- Infectious

- Acute/Hyperacute Conjunctivitis

- Infectious

- Infliximab

- Ligneous

- MMP

What do SJS and TEN stand for in this context?

**SJS**: Stevens-Johnson syndrome

**TEN**: Toxic epidermal necrolysis

In just a few words, how would you describe the pathophysiology of SJS/TEN?

It is an acute inflammatory reaction of the skin and mucous membranes.

How do SJS and TEN differ? What distinguishes one from the other?

It’s a matter of degree—TEN involves significantly more body surface area than does SJS.
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
Conjunctivitis

We can divvy conjunctivitis many ways, including in terms of:
The nature of the inflammatory response

Noninfectious

Infectious

What do SJS and TEN stand for in this context?
SJS: Stevens-Johnson syndrome
TEN: Toxic epidermal necrolysis

In just a few words, how would you describe the pathophysiology of SJS/TEN?
It is an acute inflammatory vesiculobullous reaction of the skin and mucus membranes

How do SJS and TEN differ? What distinguishes one form the other?
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

**Conjunctivitis**

- **Noninfectious**
  - **Infectious**

- **Acute/Hyperacute Conjunctivitis**

**What do SJS and TEN stand for in this context?**

**SJS**: Stevens-Johnson syndrome

**TEN**: Toxic epidermal necrolysis

**In just a few words, how would you describe the pathophysiology of SJS/TEN?**

It is an acute inflammatory vesiculobullous reaction of the skin and mucus membranes

**How do SJS and TEN differ? What distinguishes one form the other?**

It’s a matter of degree—TEN involves significantly more body surface area than does SJS
Acute/Hyperacute Conjunctivitis

SJS

TEN
SJS/TEN. Early, severe involvement of the conjunctiva, right eye
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:
The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**

**Conjunctivitis**

- **Noninfectious**
  - **I**nfectious
  - **Acute/Hyperacute Conjunctivitis**
    - What do SJS and TEN stand for in this context?
    - **SJS**: Stevens-Johnson syndrome
    - **TEN**: Toxic epidermal necrolysis

    **SJS/TEN**
    - In just a few words, how would you describe the pathophysiology of SJS/TEN?
      - It is an acute inflammatory vesiculobullous reaction of the skin and mucus membranes
    - How do SJS and TEN differ? What distinguishes one form the other?
      - It’s a matter of degree—TEN involves significantly more body surface area than does SJS
    - What is the pathogenesis of the acute inflammatory vesiculobullous reaction?
      - A hypersensitivity reaction, usually to a drug or infectious agent
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

**Conjunctivitis**

**Noninfectious**

**Infectious**

**SJS/TEN**

**What do SJS and TEN stand for in this context?**
- **SJS**: Stevens-Johnson syndrome
- **TEN**: Toxic epidermal necrolysis

**Which four drugs/drug classes are most commonly implicated?**
- ?
- ?
- ?
- ?

**The mnemonic is…**

**In just a few words, how would you describe the pathophysiology of SJS/TEN?**

It is an acute inflammatory vesiculobullous reaction of the skin and mucus membranes.

**How do SJS and TEN differ? What distinguishes one from the other?**

It’s a matter of degree—TEN involves significantly more body surface area than does SJS.

**What is the pathogenesis of the acute inflammatory vesiculobullous reaction?**

A hypersensitivity reaction, usually to a drug or infectious agent.
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

Infectious

What do SJS and TEN stand for in this context?

SJS: Stevens-Johnson syndrome
TEN: Toxic epidermal necrolysis

In just a few words, how would you describe the pathophysiology of SJS/TEN?

It is an acute inflammatory vesiculobullous reaction of the skin and mucus membranes.

How do SJS and TEN differ? What distinguishes one form the other?

It’s a matter of degree—TEN involves significantly more body surface area than does SJS.

What is the pathogenesis of the acute inflammatory vesiculobullous reaction?

A hypersensitivity reaction, usually to a drug or infectious agent.

Which four drugs/drug classes are most commonly implicated?

--NSAIDs
--Anticonvulsants
--Sulfonamides
--Allopurinol

Within 8 weeks of the start of drug use.
We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**

- Infectious
- Noninfectious

### Infectious

**Acute/Hyperacute Conjunctivitis**

*What do SJS and TEN stand for in this context?*

**SJS**: Stevens-Johnson syndrome

**TEN**: Toxic epidermal necrolysis

*Which infectious agent is most commonly implicated in SJS/TEN?*

A hypersensitivity reaction, usually to a drug or **infectious agent**

*Which infectious agent is most commonly implicated in SJS/TEN?*

- **M pneumoniae**: by far the most common cause (EyeWiki attributes almost 90% of non-drug-induced cases to it).
- However, in the most recent version of the BCSC Cornea/External Disease book, *M pneumoniae* isn’t even mentioned as a cause--HSV, strep and adeno are. On the other hand, the Peds book states that infection-related cases are usually secondary to "Mycoplasma species or herpes simplex virus." (Of course, this difference could be because *M pneumoniae* is a more common cause in kids.) At any rate, caveat emptor.
Conjunctivitis

We can divvy conjunctivitis many ways, including in terms of:

The **nature** of the inflammatory response

**Noninfectious**

**Infectious**

- **Acute/Hyperacute Conjunctivitis**

**Noninfectious**

- Infectious
- Allergic
- Ligneous
- MMP

**Infectious**

- Infectious

**What do SJS and TEN stand for in this context?**

- **SJS**: Stevens-Johnson syndrome
- **TEN**: Toxic epidermal necrolysis

**Which infectious agent is most commonly implicated in SJS/TEN?**

Depends on who you ask. Per both *EyeWiki* and *UpToDate*, *Mycoplasma pneumoniae* is by far the most common cause (*EyeWiki* attributes almost 90% of non-drug-induced cases to it).

However, in the most recent version of the *BCSC* *Cornea/External Disease* book, *M pneumoniae* isn’t even mentioned as a cause—HSV, strep and adeno are. On the other hand, the *Peds* book states that infection-related cases are usually secondary to "*Mycoplasma species or herpes simplex virus.*" (Of course, this difference could be because *M pneumoniae* is a more common cause in kids.) At any rate, caveat emptor.
We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**

**Conjunctivitis**

- **Noninfectious**
- **Infectious**

**Acute/Hyperacute Conjunctivitis**

**What do SJS and TEN stand for in this context?**

- **SJS**: Stevens-Johnson syndrome
- **TEN**: Toxic epidermal necrolysis

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Conjunctivitis

Noninfectious

Infectious

We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

What do SJS and TEN stand for in this context?

SJS: Stevens-Johnson syndrome
TEN: Toxic epidermal necrolysis

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A hypersensitivity reaction, usually to a drug or infectious agent.

Acute/Hyperacute Conjunctivitis
We can divvy conjunctivitis many ways, including in terms of:

The **nature** of the inflammatory response

---

**Acute/Hyperacute Conjunctivitis**

---

**Conjunctivitis**

---

**Noninfectious**

---

**Infectious**

---

**What do SJS and TEN stand for in this context?**

**SJS**: Stevens-Johnson syndrome

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---

**Which infectious agent is most commonly implicated in SJS/TEN?**

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

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A hypersensitivity reaction, usually to a **drug** or **infectious agent**.
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

Allergic

Ligneous

SJS/TEN

MMP

Infectious

Viral

Bacterial

What does MMP stand for in this context?
Mucus membrane pemphigoid

MMP

SJS/TEN is an immune condition—a hypersensitivity reaction. In contrast, MMP is an autoimmune condition.

We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

Allergic

Ligneous

SJS/TEN

MMP

Infectious

Viral

Bacterial

What does MMP stand for in this context?
Mucus membrane pemphigoid

MMP

SJS/TEN is an immune condition—a hypersensitivity reaction. In contrast, MMP is an autoimmune condition.

We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**

- **Viral**
- **Bacterial**
- **Fungal**
- **Parasitic**
- **Infectious**
- **Allergic**
- **Ligneous**
- **SJS/TEN**

**What does MMP stand for in this context?**

Mucus membrane pemphigoid

**By what other name—less preferred, but frequently used—is it known?**

**Ocular cicatricial pemphigoid, OCP**

**In just a few words, what is the clinical manifestation of MMP?**

It is a chronic cicatrizing conjunctivitis

**Other than timeframe of presentation (ie, acute vs chronic), in what fundamental way does MMP differ from SJS/TEN?**

SJS/TEN is an immune condition—a hypersensitivity reaction. In contrast, MMP is an autoimmune condition.
We can divvy conjunctivitis many ways, including in terms of:

The **nature** of the inflammatory response

**Conjunctivitis**

**Noninfectious**
- Allergic
- Ligneous
- SJS/TEN
- MMP

**Infectious**
- Viral
- Bacterial

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The nature of the inflammatory response

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The nature of the inflammatory response

Conjunctivitis

Noninfectious
- Allergic
- Ligneous
- SJS/TEN
- MMP

Infectious
- Viral
- Bacterial

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Mucus membrane pemphigoid

By what other name—less preferred, but frequently used—is it known?
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In just a few words, what is the clinical manifestation of MMP?
It is chronic conjunctivitis

We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response
Conjunctivitis

We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

- Infectious
  - Viral
  - Bacterial
- Noninfectious
  - Allergic
  - Ligneous
  - SJS/TEN
  - MMP

What does MMP stand for in this context?
Mucus membrane pemphigoid

By what other name—less preferred, but frequently used—is it known?
Ocular cicatricial pemphigoid, OCP

In just a few words, what is the clinical manifestation of MMP?
It is a chronic cicatrizing conjunctivitis
MMP: Subepithelial fibrosis, symblepharon, and shortening of the inferior fornix
Conjunctivitis

Noninfectious
- Allergic
- Ligneous
- SJS
- MMP

Infectious
- Viral
- Bacterial

What does MMP stand for in this context?
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The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**

**Conjunctivitis**

- **Infectious**
  - Viral
  - Bacterial

- **Noninfectious**
  - Allergic
  - Ligneous
  - SJS/TEN
  - MMP

**What does MMP stand for in this context?**
Mucus membrane pemphigoid

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**Other than timeframe of presentation (ie, acute vs chronic), in what fundamental way does MMP differ from SJS/TEN?**
SJS/TEN is an immune condition—a hypersensitivity reaction
Conjunctivitis

**Noninfectious**
- Allergic
- Ligneous
- SJS/TEN
- MMP

**Infectious**
- Viral
- Bacterial

**Acute/Hyperacute Conjunctivitis**

What does MMP stand for in this context?
Mucus membrane pemphigoid

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The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The **nature** of the inflammatory response

**Conjunctivitis**

- Noninfectious
  - Allergic
  - Ligneous
  - SJS
  - MMP

- Infectious
  - Viral
  - Bacterial

**What does MMP stand for in this context?**

**Mucus membrane pemphigoid**

**By what other name—less preferred, but frequently used—is it known?**

**Ocular cicatricial pemphigoid, OCP**

**In just a few words, what is the clinical manifestation of MMP?**

It is a chronic cicatrizing conjunctivitis

**Other than timeframe of presentation (ie, acute vs chronic), in what fundamental way does MMP differ from SJS/TEN?**

SJS/TEN is an immune condition—a hypersensitivity reaction. In contrast, MMP is an **autoimmune** condition.

For more on MMP, see slide-set K29
Conjunctivitis

**Noninfectious**
- Allergic
- Ligneous
- SJS/TEN
- MMP

**Infectious**
- ?
- ?
- ?
- ?

*The Cornea book emphasizes four classes of organism implicated in infectious conjunctivitis—what are they?*

---

We can divvy conjunctivitis many ways, including in terms of:  
**The nature** of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

- The nature of the inflammatory response

The Cornea book emphasizes four classes of organism implicated in infectious conjunctivitis—what are they?
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The nature of the inflammatory response

Conjunctivitis

- Infectious
  - Viral
  - Bacterial
  - Fungal
  - Allergic
  - Ligneous
  - SJS/TEN
  - MMP
- Noninfectious

When you hear ‘parasitic conjunctivitis,’ what bug should come to mind?

Microsporidia

What sort of bug is Microsporidia?

A protozoan

Broadly speaking, what are protozoa?

They are unicellular eukaryotes capable of some form of motility. Protozoa feed on organic material, and many are parasites. The term protozoa is considered outdated by modern biologists, but it persists in the ophthalmic literature.

What group of individuals is at particular risk for Microsporidia conjunctivitis?

AIDS pts

What is the classic presentation of Microsporidia conjunctivitis?

Bilateral irritation, photophobia, decreased vision, and conjunctival injection.
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response.
Conjunctivitis

Noninfectious  Infectious

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*What sort of bug is Microsporidia?*
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We can divvy conjunctivitis many ways, including in terms of:

The nature of the inflammatory response

Conjunctivitis

Noninfectious

Infectious

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Acute/Hyperacute Conjunctivitis
Conjunctivitis

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The nature of the inflammatory response

Conjunctivitis

Noninfectious

Infectious

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We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**

Conjunctivitis

- Noninfectious
- Infectious

Viral

- Bacterial
- Fungal
- Allergic
- Ligneous
- SJS/TEN
- MMP

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**The nature of the inflammatory response**

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Conjunctivitis

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AIDS pts

Infectious

Viral

Bacterial

Fungal

Allergic

Ligneous

SJS/TEN

Noninfectious

Acute/Hyperacute Conjunctivitis
We can divvy conjunctivitis many ways, including in terms of:

**The nature of the inflammatory response**

- **Viral**
- **Bacterial**
- **Fungal**
- **Allergic**
- **Ligneous**
- **SJS/TEN**
- **MMP**

**Noninfectious**

**Acute/Hyperacute Conjunctivitis**

When you hear ‘parasitic conjunctivitis,’ what bug should come to mind?
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AIDS pts

What is the classic presentation of Microsporidia conjunctivitis?
Bilateral irritation, photophobia, decreased vision, and conjunctival injection
We can divvy conjunctivitis many ways, including in terms of: The nature of the inflammatory response.
Acute/Hyperacute Conjunctivitis

*Microsporidia* keratoconjunctivitis
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response

What does a papillary reaction look like clinically?
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.

What does a papillary reaction look like clinically?
Flattened nodules—sort of a cobblestone appearance.
We can divvy conjunctivitis many ways, including in terms of:
The **histology** of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response
Conjunctivitis

Papillary

Follicular

We can divvy conjunctivitis many ways, including in terms of:

The histology of the inflammatory response

What does a papillary reaction look like clinically?
Flattened nodules—sort of a cobblestone appearance

What does it look like histologically?
Each nodule contains a vascular core surrounded by mast cells, eos, and other inflammatory cells

Acute/Hyperacute Conjunctivitis
“The conj epithelium (blue line) extends over fine projections of blood vessels (red) and fibrous tissue, and the stroma contains eosinophils (pink circles), lymphocytes, and plasma cells (blue circles).”

Conj papilla per the *Path* book
“The conj epithelium (*blue line*) extends over fine projections of blood vessels (*red*) and fibrous tissue, and the stroma contains eosinophils (*pink circles*), lymphocytes, and plasma cells (*blue circles*).”

“Cross-sectional diagram of a conjunctival papilla with a central vascular tuft surrounded by acute and chronic leukocytes.”
Papillary conjunctivitis. A, Clinical photograph. Papillae efface the normal palpebral conjunctival surface and form a confluent cobblestone pattern. B, Low-magnification photo-micrograph shows the characteristic closely packed, flat-topped papillae with central fibrovascular cores (arrows). The normal meibomian glands (M) of the tarsus are also shown.
We can divvy conjunctivitis many ways, including in terms of:  
**The histology** of the inflammatory response
Conjunctivitis

Papillary

Follicular

What does a papillary reaction look like clinically?
Flattened nodules—sort of a cobblestone appearance

What does it look like histologically?
Each nodule contains a vascular core surrounded by mast cells, eos, and other inflammatory cells

What does a follicular reaction look like clinically?
Dome-shaped nodules

We can divvy conjunctivitis many ways, including in terms of:
The histology of the inflammatory response
Acute/Hyperacute Conjunctivitis

Follicles (note this is the lower lid viewed from above)
Follicular conjunctivitis. **A**, Inflammation of the right eye from glaucoma medication. **B**, Right eye showing follicular conjunctivitis in the inferior fornix.
We can divvy conjunctivitis many ways, including in terms of:  
**The histology** of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:
The histology of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

**The histology** of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of:

The histology of the inflammatory response

**Conjunctivitis**

- **Papillary**
  - What does a papillary reaction look like clinically?
    - Flattened nodules—sort of a cobblestone appearance
  - What does it look like histologically?
    - Each nodule contains a vascular core surrounded by mast cells, eos, and other inflammatory cells

- **Follicular**
  - What does a follicular reaction look like clinically?
    - Dome-shaped nodules
  - What does it look like histologically?
    - Each nodule contains a lymphoid follicle consisting of a germinal center and its surrounding corona
Conj follicle per the *Cornea* book

“Cross-section of a conjunctival follicle with mononuclear cells obscuring conjunctival blood vessels.”
“The conj epithelium (*blue line*) overlies lymphoid follicles in the superficial stroma that have a paler germinal center surrounded by a darker corona (*central pale blue surrounded by purple*). The surrounding stroma contains lymphocytes and plasma cells (*small blue circles*).”

“Cross-section of a conjunctival follicle with mononuclear cells obscuring conjunctival blood vessels.”
Follicular conjunctivitis. A, Clinical photograph showing follicles, which occur only in the fornix. B, High-magnification photomicrograph shows a lymphoid follicle and the boundary between the germinal center and the mantle zone (arrowheads). Note the paler, relatively larger, immature lymphocytes in the germinal center compared with the darker, small, mature lymphocytes in the corona.
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response

There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it?
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response

There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it? **Granulomatous** conjunctivitis
We can divvy conjunctivitis many ways, including in terms of:

The **histology** of the inflammatory response

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There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it? **Granulomatous** conjunctivitis

---

**What is a granuloma?**

---

**Acute/Hyperacute Conjunctivitis**
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response

Acute/Hyperacute Conjunctivitis

Conjunctivitis

- Papillary
- Follicular

Granulomatous

What is a granuloma?
A nodular aggregate of inflammatory material

There's a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it? Granulomatous conjunctivitis
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.

There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it? **Granulomatous** conjunctivitis.

Is granulomatous conjunctivitis a commonly-encountered clinical entity?
We can divvy conjunctivitis many ways, including in terms of:

**The histology** of the inflammatory response

**Acute/Hyperacute Conjunctivitis**

*Conjunctivitis*

- Papillary
- Follicular
- Granulomatous

There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it?

**Granulomatous** conjunctivitis

Is granulomatous conjunctivitis a commonly-encountered clinical entity? No, it is vastly less common than its papillary and follicular cousins.
There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it? Granulomatous conjunctivitis.

Is granulomatous conjunctivitis a commonly-encountered clinical entity? No, it is vastly less common than its papillary and follicular cousins.

Granulomatous dz is divvied into two subtypes—what are they? Caseating and noncaseating.

Clinically speaking, does granulomatous conjunctivitis look more like papillary conjunctivitis, or follicular conjunctivitis?

We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it? Granulomatous conjunctivitis.

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Clinically speaking, does granulomatous conjunctivitis look more like papillary conjunctivitis, or follicular conjunctivitis? Follicular.

We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
Granulomatous conjunctivitis looking all follicular
We can divvy conjunctivitis many ways, including in terms of:

**The histology** of the inflammatory response

---

**Acute/Hyperacute Conjunctivitis**

Conjunctivitis

- Papillary
- Follicular

Granulomatous

- ?
- ?

There’s a third histology we must address. You are very familiar with it, but perhaps not in the context of conjunctivitis. What is it?

**Granulomatous** conjunctivitis

Is granulomatous conjunctivitis a commonly-encountered clinical entity?
No, it is vastly less common than its papillary and follicular cousins

Granulomatous dz is divvied into two subtypes—what are they?
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The **histology** of the inflammatory response

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**Acute/Hyperacute Conjunctivitis**

**Conjunctivitis**

- Papillary
- Follicular

**Granulomatous**

- Caseating
- Noncaseating

What does it mean to say a granuloma is ‘caseating’?
We can divvy conjunctivitis many ways, including in terms of: The **histology** of the inflammatory response

**Acute/Hyperacute Conjunctivitis**

Conjunctivitis

- Papillary
- Follicular

Granulomatous

- Caseating
- Noncaseating

What does it mean to say a granuloma is ‘caseating’?
It means the center in necrotic
A well-formed granuloma containing epithelioid macrophages, with a rim of lymphocytes and several giant cells can be seen.
A well-formed granuloma containing epithelioid macrophages, with a rim of lymphocytes and several giant cells can be seen. **Centrally, caseous necrosis is apparent as amorphous pink material.** (What you’re looking for on a test Q to make a caseating/noncaseating call.)
Noncaseating granuloma. Note the absence of central amorphous material.
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response

What does it mean to say a granuloma is ‘caseating’?
It means the center in necrotic

What is the classic cause of caseating granulomatous conjunctivitis?
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
We can divvy conjunctivitis many ways, including in terms of:  
**The histology** of the inflammatory response
We can divvy conjunctivitis many ways, including in terms of:

The **histology** of the inflammatory response

A **unilateral granulomatous conjunctivitis** is one of two hallmarks of **POS**. What is the other?

**Parinaud oculoglandular syndrome (POS)**

What is the classic cause of caseating granulomatous conjunctivitis?

**Parinaud oculoglandular syndrome (POS)**

Parinaud oculoglandular syndrome (POS)
We can divvy conjunctivitis many ways, including in terms of:

The **histology** of the inflammatory response

**Conjunctivitis**

- Papillary
- Follicular

A **unilateral granulomatous conjunctivitis** is one of two hallmarks of POS. What is the other? Preauricular and/or submandibular lymphadenopathy ipsilateral to the affected eye

**Parinaud oculoglandular syndrome (POS)**

What is the classic cause of caseating granulomatous conjunctivitis? **Parinaud oculoglandular syndrome (POS)**

**Acute/Hyperacute Conjunctivitis**
Parinaud oculoglandular syndrome. **A,** Marked follicular reaction in the lower fornix.  
**B,** Massive enlargement of submandibular lymph node on the affected right side.
We can divvy conjunctivitis many ways, including in terms of:

**The histology of the inflammatory response**

- Papillary Follicular Conjunctivitis
- Granulomatous Conjunctivitis
  - Caseating
  - Non-caseating

A unilateral granulomatous conjunctivitis is one of two hallmarks of Parinaud oculoglandular syndrome (POS). What is the other?

Preauricular and/or submandibular lymphadenopathy ipsilateral to the affected eye

What bug is the classic cause of POS?

Parinaud oculoglandular syndrome (POS)

What is the classic cause of caseating granulomatous conjunctivitis?
We can divvy conjunctivitis many ways, including in terms of:

**The histology** of the inflammatory response

**Acute/Hyperacute Conjunctivitis**

Conjunctivitis

Papillary

Follicular

A unilateral granulomatous conjunctivitis is one of two hallmarks of POS. What is the other? Preauricular and/or submandibular lymphadenopathy ipsilateral to the affected eye

What bug is the classic cause of POS? *Bartonella henselae*

What is the classic cause of caseating granulomatous conjunctivitis? Parinaud oculoglandular syndrome (POS)
We can divvy conjunctivitis many ways, including in terms of:

The histology of the inflammatory response

A unilateral granulomatous conjunctivitis is one of two hallmarks of POS. What is the other?
Preauricular and/or submandibular lymphadenopathy ipsilateral to the affected eye

What bug is the classic cause of POS?
Bartonella henselae

What is the other classic ocular manifestation of Bartonella?

What is the classic cause of caseating granulomatous conjunctivitis?

Parinaud oculoglandular syndrome (POS)
**We can divvy conjunctivitis many ways, including in terms of:**

**The histology of the inflammatory response**

---

A unilateral granulomatous conjunctivitis is one of two hallmarks of POS. What is the other? Preauricular and/or submandibular lymphadenopathy ipsilateral to the affected eye.

What bug is the classic cause of POS? *Bartonella henselae*

What is the other classic ocular manifestation of Bartonella? Neuroretinitis

What is the classic cause of caseating granulomatous conjunctivitis? Parinaud oculoglandular syndrome (POS)
We can divvy conjunctivitis many ways, including in terms of:

The histology of the inflammatory response

A unilateral granulomatous conjunctivitis is one of two hallmarks of POS. What is the other?
Preauricular and/or submandibular lymphadenopathy ipsilateral to the affected eye

What bug is the classic cause of POS?
*Bartonella henselae*

What is the other classic ocular manifestation of Bartonella?
Neuroretinitis

What is the classic macular manifestation of Bartonella neuroretinitis?

Parinaud oculoglandular syndrome (POS)
We can divvy conjunctivitis many ways, including in terms of:

The **histology** of the inflammatory response

- Papillary Follicular Conjunctivitis
- Granulomatous Caseating Noncaseating

**Parinaud oculoglandular syndrome (POS)**

A unilateral granulomatous conjunctivitis is one of two hallmarks of POS. What is the other? Preauricular and/or submandibular lymphadenopathy ipsilateral to the affected eye

What bug is the classic cause of POS? *Bartonella henselae*

What is the other classic ocular manifestation of Bartonella? Neuroretinitis

What is the classic macular manifestation of Bartonella neuroretinitis? Exudate that takes on a star shape

What is the classic cause of caseating granulomatous conjunctivitis?
We can divvy conjunctivitis many ways, including in terms of:
The histology of the inflammatory response
Parinaud oculoglandular syndrome: Optic disc edema and a macular star
We can divvy conjunctivitis many ways, including in terms of: The histology of the inflammatory response.
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The histology of the inflammatory response
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We can divvy conjunctivitis many ways, including in terms of:

The **histology** of the inflammatory response

What is the classic cause of noncaseating granulomatous conjunctivitis? 
Sarcoidosis
Sarcoidosis. A, Clinical photograph shows granulomas (*arrows*) of the conjunctiva in a patient with sarcoidosis. B, Histology shows a noncaseating granuloma with pale-staining histiocytes, including a multinucleated giant cell (*arrowhead*). Note the small cuff of lymphocytes and plasma cells.
If you’re shown a noncaseating conj granuloma, think *sarcoid*
If you’re shown a noncaseating conj granuloma, think \textit{sarcoid}

But if you’re shown a \textit{caseating} conj granuloma, think \textit{infection} (esp POS)
We can divvy conjunctivitis many ways, including in terms of:

The age of the pt
We can divvy conjunctivitis many ways, including in terms of: The age of the pt

Note: This part changed again.
We can divvy conjunctivitis many ways, including in terms of:

**The age of the pt**
We can divvy conjunctivitis many ways, including in terms of: The age of the pt
We can divvy conjunctivitis many ways, including in terms of:

The age of the pt
We can divvy conjunctivitis many ways, including in terms of: The age of the pt.

**Acute/Hyperacute Conjunctivitis**

Conjunctivitis

- **Child**
- **Adult**

Ophthalmia neonatorum

*What is the most common sort of conjunctivitis in kids?* Bacterial, specifically *H flu* and *Strep pneumo*

*What is the most common sort of conjunctivitis in adults?*
We can divvy conjunctivitis many ways, including in terms of: The age of the pt.
We can divvy conjunctivitis many ways, including in terms of:

The age of the pt
We can divvy conjunctivitis many ways, including in terms of: 

The age of the pt
We can divvy conjunctivitis many ways, including in terms of:  

The age of the pt

Conjunctivitis

Child

Adult

Ophthalmia neonatorum

What is the most common sort of conjunctivitis in kids?  
Bacterial, specifically \textit{H flu} and \textit{Strep pneumo}

What is the most common sort of conjunctivitis in adults?  
Viral, specifically \textit{adoeno} and \textit{HSV}

To what does the term ophthalmia neonatorum refer?  
To conjunctivitis in the first month of life (see set $K1$)
We can divvy conjunctivitis many ways, including in terms of: 

The nature of the response
We can divvy conjunctivitis many ways, including in terms of:

The nature of the response
Acute/Hyperacute Conjunctivitis

**Conjunctivitis**

- Acute
- Hyperacute

*In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?*

?  
?


In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?

**Course of onset**

**Severity**
In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?

What constitutes an acute vs hyperacute course of onset?
In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?

- **Hours to days**
  - Acute: Hours to days
  - Hyperacute: <24 hrs

**Course of onset**

What constitutes an acute vs hyperacute course of onset?
In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?

**Course of onset**

- Acute: Hours to days
- Hyperacute: <24 hrs

**Severity**

*To what does severity refer here?*
In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?

- **Hours to days**: Acute conjunctivitis can last for hours to days, while hyperacute conjunctivitis presents in less than 24 hours.
- **Severity**: The severity refers to the amount of purulent discharge and the extent of conjunctival chemosis.

**Severity**

*To what does severity refer here?*
To the amount of purulent discharge and the extent of conjunctival chemosis.
In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?

Hours to days  \(\textbf{Course of onset}\)  <24 hrs

?  \(\textbf{Severity}\)  ?

What constitutes acute vs hyperacute severity?
In terms of presentation, what two factors differentiate between acute and hyperacute conjunctivitis?

**Course of onset**
- Hours to days
- <24 hrs

**Severity**
- ‘Moderate to severe’
- ‘Very severe’

What constitutes acute vs hyperacute severity?
Acute bacterial conjunctivitis
Acute/Hyperacute Conjunctivitis

Hyperacute bacterial conjunctivitis
Conjunctivitis

Bugs:

1) S pneumo: #1
2) S aureus: Less severe
3) H flu

Acute/Hyperacute Conjunctivitis

Acute

Hyperacute
Conjunctivitis

**Acute**

**Hyperacute**

**Bugs:**

1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
**Conjunctivitis**

**Acute**

- **Bugs:**
  1) *S. pneumoniae*: #1
  2) *S. aureus*: Less severe
  3) *H. influenzae*

**Hyperacute**

---

**Who is at risk for H. influenzae conjunctivitis?**
Bugs:
1) *S. pneumo*: #1
2) *S. aureus*: Less severe
3) *H. flu*
   -- Kids with [two words]
   -- Adults with [two words]

Who is at risk for H. flu conjunctivitis?
Conjunctivitis

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with **otitis media**
   --Adults with **chronic lung dz**

Who is at risk for *H flu* conjunctivitis?
Conjunctivitis

Acute

1) **S. pneumoniae**: #1
2) **S. aureus**: Less severe
3) **H. flu**: 
   --Kids with **otitis media**
   --Adults with **chronic lung dz**

Who is at risk for H. flu conjunctivitis?

Cultures/stains needed?

--- yes/no/maybe so
Conjunctivitis

Acute

Bugs:
1) *S. pneumoniae*: #1
2) *S. aureus*: Less severe
3) *H. influenzae*
   --Kids with *otitis media*
   --Adults with *chronic lung dz*

Who is at risk for *H. influenzae* conjunctivitis?

Cultures/stains needed?
--No, unless:
   1)
   2)
   3)
Conjunctivitis

Bugs:
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with *otitis media*
   --Adults with *chronic lung dz*

Who is at risk for *H flu* conjunctivitis?

Cultures/stains needed?
--No, unless:
  1) *debilitated*
  2) *immunocompromised*
  3) *unresponsive to treatment*
Conjunctivitis

**Acute**

**Bugs:**
1. *S pneumo*: #1
2. *S aureus*: Less severe
3. *H flu*
   - Kids with **otitis media**
   - Adults with **chronic lung dz**

**Who is at risk for H flu conjunctivitis?**

**Cultures/stains needed?**
--**No**, unless:
1. **debilitated**
2. **immunocompromised**
3. **unresponsive to treatment**

**Treatment:**
-- **Polytrim** (has good *H flu* coverage)
Conjunctivitis

Acute

Hyperacute

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   - Kids with *otitis media*
   - Adults with *chronic lung dz*

*Who is at risk for *H flu* conjunctivitis?*

**Cultures/stains needed?**
-- **No**, unless:
   1) *debilitated*
   2) *immunocompromised*
   3) *unresponsive to treatment*

**Treatment:**
-- **Polytrim** (has good *H flu* coverage)
Conjunctivitis

Acute

Hyperacute

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with **otitis media**
   --Adults with **chronic lung dz**

*Who is at risk for H flu conjunctivitis?*

**Cultures/stains needed?**
--**No**, unless:
   1) **debilitated**
   2) **immunocompromised**
   3) **unresponsive to treatment**

**Treatment:**
--**Polytrim** (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
  (to prevent dz/dz)

---
Conjunctivitis

Acute

Bugs:
1) *S. pneumo*: #1
2) *S. aureus*: Less severe
3) *H. flu*
   --Kids with *otitis media*
   --Adults with *chronic lung dz*

Who is at risk for *H. flu* conjunctivitis?

Cultures/stains needed?
--No, unless:
1) *debilitated*
2) *immunocompromised*
3) *unresponsive to treatment*

Treatment:
--*Polytrim* (has good *H. flu* coverage)
--Consider PO abx if *H. flu* in kids
   (to prevent *otitis/pharyngitis*)
Acute/Hyperacute Conjunctivitis

Conjunctivitis

Acute

Hyperacute

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with *otitis media*
   --Adults with *chronic lung* dz

**Cultures/stains needed?**
--**No**, unless:
   1) *debilitated*
   2) *immunocompromised*
   3) *unresponsive to treatment*

**Treatment:**
--**Polytrim** (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
   (to prevent *otitis/pharyngitis*)
Conjunctivitis

**Acute**

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with *otitis media*
   --Adults with *chronic lung* dz

**Cultures/stains needed?**
--No, unless:
   1) *debilitated*
   2) *immunocompromised*
   3) *unresponsive to treatment*

**Treatment:**
--*Polytrim* (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
   (to prevent *otitis/pharyngitis*)

**Hyperacute**

**Bugs:**
1) *N gonorrhea*
2) *N menigitidis* (much less common)
Conjunctivitis

Acute

Bugs:
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with *otitis media*
   --Adults with *chronic lung dz*

*Cultures/stains needed?*
--No, unless:
   1) *debilitated*
   2) *immunocompromised*
   3) *unresponsive to treatment*

*Treatment:*
--*Polytrim* (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
   (to prevent *otitis/pharyngitis*)

Hyperacute

Bugs:
1) *N gonorrhea*
2) *N menigitidis* (much less common)

*Cultures/stains needed?*
--?
Conjunctivitis

**Acute/Hyperacute Conjunctivitis**

**Acute**

*Bugs:*
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with *otitis media*
   --Adults with *chronic lung dz*

*Cultures/stains needed?*
--**No**, unless:
   1) *debilitated*
   2) *immunocompromised*
   3) *unresponsive to treatment*

*Treatment:*
--**Polytrim** (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
  (to prevent *otitis/pharyngitis*)

**Hyperacute**

*Bugs:*
1) *N gonorrhea*
2) *N menigitidis* (much less common)

*Cultures/stains needed?*
--**Yes**
Acute/Hyperacute Conjunctivitis

Conjunctivitis

Acute

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with **otitis media**
   --Adults with **chronic lung dz**

**Cultures/stains needed?**
--**No**, unless:
   1) **debilitated**
   2) **immunocompromised**
   3) **unresponsive to treatment**

**Treatment:**
--**Polytrim** (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
   (to prevent **otitis/pharyngitis**)

Hyperacute

**Bugs:**
1) *N gonorrhea*
2) *N menigitidis* (much less common)

**Cultures/stains needed?**
--**Yes**

**Treatment:**
--If no corneal involvement:

| Inpt or Outpt? Med + route? | (not shown) |
Acute/Hyperacute Conjunctivitis

Conjunctivitis

Acute

Bugs:
1) *S. pneumoniae*: #1
2) *S. aureus*: Less severe
3) *H. influenzae*
   --Kids with **otitis media**
   --Adults with **chronic lung** dz

Cultures/stains needed?
--No, unless:
   1) debilitated
   2) immunocompromised
   3) unresponsive to treatment

Treatment:
--**Polytrim** (has good *H. influenzae* coverage)
--Consider PO abx if *H. influenzae* in kids
   (to prevent **otitis/pharyngitis**)

Hyperacute

Bugs:
1) *N. gonorrhoea*
2) *N. meningitidis* (much less common)

Cultures/stains needed?
--Yes

Treatment:
--If no corneal involvement:
   Outpatient w/ 1g Rocephin IM x 1
Acute/Hyperacute Conjunctivitis

Conjunctivitis

**Acute**

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with **otitis media**
   --Adults with **chronic lung dz**

**Cultures/stains needed?**
--**No**, unless:
   1) **debilitated**
   2) **immunocompromised**
   3) **unresponsive to treatment**

**Treatment:**
--**Polytrim** (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
   (to prevent **otitis/pharyngitis**)

**Hyperacute**

**Bugs:**
1) *N gonorrhea*
2) *N menigitidis* (much less common)

**Cultures/stains needed?**
--**Yes**

**Treatment:**
--If no corneal involvement:
   **Outpatient w/ 1g Rocephin IM x 1**
--If with corneal involvement:
   **Inpt or Outpt? Med + route?**
**Conjunctivitis**

**Acute/Hyperacute Conjunctivitis**

**Bugs:**
1) *S pneumo*: #1
2) *S aureus*: Less severe
3) *H flu*
   --Kids with *otitis media*
   --Adults with *chronic lung dz*

**Cultures/stains needed?**
--No, unless:
   1) debilitated
   2) immunocompromised
   3) unresponsive to treatment

**Treatment:**
--Polytrim (has good *H flu* coverage)
--Consider PO abx if *H flu* in kids
   (to prevent *otitis/pharyngitis*)

**Hyperacute**

**Bugs:**
1) *N gonorrhea*
2) *N menigitidis* (much less common)

**Cultures/stains needed?**
--Yes

**Treatment:**
--If no corneal involvement:
   Outpatient w/ 1g Rocephin IM x 1
--If with corneal involvement:
   Inpatient, 1g Rocephin IV q12o x 3d
### Acute/Hyperacute Conjunctivitis

#### Bugs:
1. *S. pneumoniae*: #1
2. *S. aureus*: Less severe
3. *H. influenzae*
   - Kids with otitis media
   - Adults with chronic lung dz

#### Cultures/stains needed?
-- No, unless:
   1. debilitated
   2. immunocompromised
   3. unresponsive to treatment

#### Treatment:
-- Polytrim (has good *H. influenzae* coverage)
-- Consider PO abx if *H. influenzae* in kids (to prevent otitis/pharyngitis)

---

### Conjunctivitis

#### Acute

#### Bugs:
1. *S. pneumoniae*: #1
2. *S. aureus*: Less severe
3. *H. influenzae*

#### Cultures/stains needed?
-- Yes

#### Treatment:
-- If no corneal involvement:
   Outpatient w/ 1g Rocephin IM x 1
-- If with corneal involvement:
   Inpatient, 1g Rocephin IV q12h x 3d

---

### Hyperacute

#### Bugs:
1. *N. gonorrhoeae*
2. *N. meningitidis* (much less common)

#### Cultures/stains needed?
-- Yes

#### Treatment:
-- If no corneal involvement:
-- If with corneal involvement:

---

*When ulcerative keratitis develops in gonococcal conjunctivitis, where is the ulcer likely to be located?*
Acute/Hyperacute Conjunctivitis

Conjunctivitis

Acute

Bugs:
1) \textit{S pneumo}: #1
2) \textit{S aureus}: Less severe
3) \textit{H flu}
   --Kids with \textit{otitis media}
   --Adults with \textit{chronic lung dz}

Cultures/stains needed?
--No, unless:
   1) debilitated
   2) immunocompromised
   3) unresponsive to treatment

Treatment:
--Polytrim (has good \textit{H flu} coverage)
--Consider PO abx if \textit{H flu} in kids
 (to prevent \textit{otitis/pharyngitis})

Hyperacute

Bugs:
1) \textit{N gonorrhea}
2) \textit{N menigitidis} (much less common)

Cultures/stains needed?
--Yes

Treatment:
--If no corneal involvement:
   Outpatient w/ 1g Rocephin IM x 1
--If with corneal involvement:
   Inpatient, 1g Rocephin IV q12° x 3d

When ulcerative keratitis develops in gonococcal conjunctivitis, where is the ulcer likely to be located?
In the corneal \textit{periphery}, ie, they develop PUK
Conjunctivitis

- **Acute**
  - Bugs:
    - 1) *S pneumo*
    - 2) *S aureus*: Less severe
    - 3) *H flu* --Kids with otitis media--Adults with chronic lung dz
  - Cultures/stains needed? --No, unless:
    - 1) debilitated
    - 2) immunocompromised
    - 3) unresponsive to treatment
  - Treatment:
    - Polytrim (has good *H flu* coverage)
    - Consider PO abx if *H flu* in kids (to prevent otitis/pharyngitis)

- **Hyperacute**
  - Bugs:
    - 1) *N gonorrhea*
    - 2) *N menigitidis* (much less common)
  - Cultures/stains needed? --Yes
  - Treatment:
    - If no corneal involvement:
      - Outpatient w/ 1g Rocephin IM x 1
    - If with corneal involvement:
      - Inpatient, 1g Rocephin IV q12o x 3d

---

**But gonococcus is a venereal disease. How does it get in the eye?**

**OK then, if we're talking STDs here, should we be concerned about other 'love bugs'?**

Yes—about 1/3 of pts with *GC* conjunctivitis will have a concurrent *Chlamydial* infection.

What implication does this have for managing *GC* conjunctivitis?

In addition to Rocephin for the *GC*, they should receive an empirical dose of PO *zithromycin*.
Conjunctivitis

Acute

Hyperacute

**Acute/Hyperacute Conjunctivitis**

**Bugs:**
1) *S pneumo*
2) *S aureus*: Less severe
3) *H flu* -- Kids with otitis media -- Adults with chronic lung dz

**Treatment:**
-- Polytrim (has good *H flu* coverage)
-- Consider PO abx if *H flu* in kids (to prevent otitis/pharyngitis)

**Hyperacute Conjunctivitis**

**Bugs:**
1) *N gonorrhrea*
2) *N menigitidis* (much less common)

**Cultures/stains needed?**
-- Yes

**Treatment:**
-- If no corneal involvement:
  Outpatient w/ 1g Rocephin IM x 1
-- If with corneal involvement:
  Inpatient, 1g Rocephin IV q12o x 3d

*But gonococcus is a venereal disease. How does it get in the eye? Seriously?*
**Acute/Hyperacute Conjunctivitis**

**Bugs:**

1) *S pneumo*
2) *S aureus* (less severe)
3) *H flu* --- Kids with otitis media --- Adults with chronic lung dz

**Treatment:**

--- Polytrim (has good *H flu* coverage)
--- Consider PO abx if *H flu* in kids (to prevent otitis/pharyngitis)

**Acute**

**Conjunctivitis**

**Hyperacute**

**Bugs:**

1) *N gonorrhea*
2) *N menigitidis* (much less common)

**Cultures/stains needed?**

--- Yes

**Treatment:**

--- If no corneal involvement:
   - Outpatient w/ 1g Rocephin IM x 1
--- If with corneal involvement:
   - Inpatient, 1g Rocephin IV q12h x 3d

But gonococcus is a venereal disease. How does it get in the eye? Seriously?

OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?

---Polytrim (has good *H flu* coverage)
Conjunctivitis

Acute/Hyperacute Conjunctivitis

Bugs:
1) *S. pneumo*  #1
2) *S. aureus* (Less severe)
3) *H. flu*
   - Kids with otitis media
   - Adults with chronic lung dz

Treatment:
- Polytrim (has good *H. flu* coverage)
- Consider PO abx if *H. flu* in kids
  (to prevent otitis/pharyngitis)

Hyperacute

Bugs:
1) *N. gonorrhea*
2) *N. menigitidis* (much less common)

Cultures/stains needed?
--Yes

Treatment:
--If no corneal involvement:
  Outpatient w/ 1g Rocephin IM x 1
--If with corneal involvement:
  Inpatient, 1g Rocephin IV q12o x 3d

---

But gonococcus is a venereal disease. How does it get in the eye?
Seriously?

OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?
Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent *Chlamydial* infection.

--Polytrim (has good *H. flu* coverage)
--Consider PO abx if *H. flu* in kids
  (to prevent otitis/pharyngitis)
Bugs:
1) *S. pneumo*  
2) *S. aureus* (less severe)  
3) *H. flu*  --Kids with otitis media  --Adults with chronic lung disease

Treatment:
--Polytrim (has good *H. flu* coverage)  
--Consider PO abx if *H. flu* in kids  (to prevent otitis/pharyngitis)

Acute/Hyperacute Conjunctivitis

**Conjunctivitis**

- **Acute**
  - Bugs:
    1) *N. gonorrhea*
    2) *N. meningitidis* (much less common)
  - Cultures/stains needed?  --Yes
  - Treatment:
    --If no corneal involvement:  
      **Outpatient w/ 1g Rocephin IM x 1**
    --If with corneal involvement:  
      **Inpatient, 1g Rocephin IV q12h x 3d**

But gonococcus is a venereal disease. How does it get in the eye? Seriously?

OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?  
Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.

*But gonococcus is a venereal disease. How does it get in the eye? Seriously?*

*OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’? Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.*
**Conjunctivitis**

- **Acute**
  - Bugs:
    - **S pneumo**: #1
    - **S aureus**: Less severe
    - **H flu** -- Kids with otitis media -- Adults with chronic lung dz

  **Treatment**:
  - **Polytrim** (has good *H flu* coverage)
  - Consider PO abx if *H flu* in kids (to prevent otitis/pharyngitis)

- **Hyperacute**
  - Bugs:
    - 1) **N gonorrhoea**
    - 2) **N menigitidis** (much less common)

  **Cultures/stains needed?**
  -- Yes

  **Treatment**:
  -- If no corneal involvement:
    - **Outpatient w/ 1g Rocephin IM x 1**
  -- If with corneal involvement:
    - **Inpatient, 1g Rocephin IV q12o x 3d**

---

**But gonococcus is a venereal disease. How does it get in the eye?**
Seriously?

**OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?**
Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.

**What implication does this have for managing GC conjunctivitis?**

---
Acute/Hyperacute Conjunctivitis

Conjunctivitis

Acute

Hyperacute

Bugs:

1) **S. pneumo**
2) **S. aureus**: Less severe
3) **H. flu** — Kids with otitis media — Adults with chronic lung dz

Treatment:
- Polytrim (has good H flu coverage)
- Consider PO abx if H flu in kids (to prevent otitis/pharyngitis)

---

**Acute/Hyperacute Conjunctivitis**

Bugs:

1. **N. gonorrhoea**
2. **N. menigitidis** (much less common)

Cultures/stains needed?
-- Yes

Treatment:
-- If no corneal involvement:
   Outpatient w/ 1g Rocephin IM x 1
-- If with corneal involvement:
   Inpatient, 1g Rocephin IV q12h x 3d
   (plus PO ‘just in case’)

But gonococcus is a venereal disease. How does it get in the eye? Seriously?

OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?
Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.

What implication does this have for managing GC conjunctivitis?
In addition to Rocephin for the GC, they should receive an empirical dose of PO

-- Polytrim (has good H flu coverage)
-- Consider PO abx if H flu in kids (to prevent otitis/pharyngitis)
**Acute/Hyperacute Conjunctivitis**

### Conjunctivitis

**Acute**

**Bugs:**

1) *S. pneumo*

2) *S. aureus* (Less severe)

3) *H. flu*
   - Kids with otitis media
   - Adults with chronic lung dz

**Treatment:**

- Polytrim (has good *H. flu* coverage)
- Consider PO abx if *H. flu* in kids
  (to prevent otitis/pharyngitis)

**Hyperacute**

**Bugs:**

1) *N. gonorrhea*
2) *N. menigitidis* (much less common)

**Cultures/stains needed?**

--Yes

**Treatment:**

--If no corneal involvement:
  Outpatient w/ 1g Rocephin IM x 1

--If with corneal involvement:
  Inpatient, 1g Rocephin IV q12o x 3d
  (plus azithromycin PO ‘just in case’)

---

**But gonococcus is a venereal disease. How does it get in the eye?**

Seriously?

**OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?**

Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydia infection.

**What implication does this have for managing GC conjunctivitis?**

In addition to Rocephin for the GC, they should receive an empirical dose of PO zithromycin

--Polytrim (has good *H. flu* coverage)

--Consider PO abx if *H. flu* in kids
Acute/Hyperacute Conjunctivitis

Conjunctivitis

Acute

Hyperacute

Bugs:
1) *S pneumo*
2) *S aureus* (less severe)
3) *H flu* - kids with otitis media - adults with chronic lung disease

Treatment:
- Polytrim (has good *H flu* coverage)
- Consider PO abx if *H flu* in kids (to prevent otitis/pharyngitis)

---

Bugs:
1) *N gonorrhea*
2) *N menigitidis* (much less common)

Cultures/stains needed?
-- Yes

Treatment:
-- If no corneal involvement:
   Outpatient w/ 1g Rocephin IM x 1
-- If with corneal involvement:
   Inpatient, 1g Rocephin IV q12o x 3d
   (plus azithromycin PO 'just in case')

---

But gonococcus is a venereal disease. How does it get in the eye?
Seriously?

OK then, if we're talking STDs here, should we be concerned about other 'love bugs'?
Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.

What implication does this have for managing GC conjunctivitis?
In addition to Rocephin for the GC, they should receive an empirical dose of PO zithromycin
-- Polytrim (has good *H flu* coverage)
-- Consider PO abx if *H flu* in kids (to prevent otitis/pharyngitis)

In addition to antibiotics, what therapeutic maneuver should be performed?
**Conjunctivitis**

**Acute**

**Bugs:**
1) *S pneumo*
2) *S aureus*: Less severe
3) *H flu* -- Kids with otitis media -- Adults with chronic lung dz

**Treatment:**
-- Polytrim (has good *H flu* coverage)
-- Consider PO abx if *H flu* in kids (to prevent otitis/pharyngitis)

**Hyperacute**

**Bugs:**
1) *N gonorrhea*
2) *N menigitidis* (much less common)

**Cultures/stains needed?**
-- Yes

**Treatment:**
-- If no corneal involvement: Outpatient w/ 1g Rocephin IM x 1
-- If with corneal involvement: Inpatient, 1g Rocephin IV q12o x 3d
(plus azithromycin PO ‘just in case’)

*But gonococcus is a venereal disease. How does it get in the eye? Seriously?*

*OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’? Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.*

**What implication does this have for managing GC conjunctivitis?**
In addition to Rocephin for the GC, they should receive an empirical dose of PO zithromycin

**In addition to antibiotics, what therapeutic maneuver should be performed?**
Copious irrigation with normal saline to remove inflammatory debris, cells, and proteases from the ocular surface
Acute/Hyperacute Conjunctivitis

Conjunctivitis

Bugs:
1) S. pneumoniae
2) S. aureus: Less severe
3) H. influenzae
   -- Kids with otitis media
   -- Adults with chronic lung disease

Treatment:
-- Polytrim (has good H. influenzae coverage)
-- Consider PO abx if H. influenzae in kids (to prevent otitis/pharyngitis)

Acute/Hyperacute Conjunctivitis

Bugs:
1) *N. gonorrhoeae*
2) *N. meningitidis* (much less common)

Cultures/stains needed? -- Yes

Treatment:
-- If no corneal involvement:
  -- Outpatient w/ 1g Rocephin IM x 1
-- If with corneal involvement:
  -- Inpatient, 1g Rocephin IV q12h x 3d

But gonococcus is a venereal disease. How does it get in the eye? Seriously?

OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?

Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent *Chlamydia* infection.

What implication does the presence of GC conjunctivitis have? In addition to Rocephin for the GC, they should receive an empirical dose of PO azithromycin.

-- Polytrim (has good H. influenzae coverage)
-- Consider PO abx if H. influenzae in kids (to prevent otitis/pharyngitis)

For completeness’ sake: The Cornea book lists *N. gonorrhoeae* and *N. meningitidis* as sexually-transmitted causes of conjunctivitis (not including the very rare N meningitidis).

In addition to antibiotics, what therapeutic maneuver should be performed?
Copious irrigation with normal saline to remove inflammatory debris, cells, and proteases from the ocular surface.
Conjunctivitis

Acute/Hyperacute Conjunctivitis

Bugs:

1) S pneumo
2) S aureus: Less severe
3) H flu
   --Kids with otitis media
   --Adults with chronic lung dz

Treatment:
-- Polytrim (has good H flu coverage)
-- Consider PO abx if H flu in kids (to prevent otitis/pharyngitis)

But gonococcus is a venereal disease. How does it get in the eye? Seriously?

OK then, if we’re talking STDs here, should we be concerned about other “love bugs”?

Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.

What implication does this have for managing GC conjunctivitis?
In addition to Rocephin for the GC, they should receive an empirical dose of PO azithromycin
--Polytrim (has good H flu coverage)
--Consider PO abx if H flu in kids (to prevent OTI)

For completeness’ sake: The Cornea book lists five sexually-transmitted causes of conjunctivitis (not including the very rare N meningitidis).

In addition to antibiotics, what therapeutic maneuver should be performed? Copious irrigation with normal saline to remove inflammatory debris, cells, and proteases from the ocular surface.
Bugs:
1) *S. pneumoniae*
2) *S. aureus*: Less severe
3) *H. influenzae* --Kids with otitis media --Adults with chronic lung dz

Treatment:
--Polytrim (has good *H. influenzae* coverage)
--Consider PO abx if *H. influenzae* in kids (to prevent otitis/pharyngitis)

**Acute Hyperacute Conjunctivitis**

Bugs:
1) *N. gonorrhoeae*
2) *N. menigitidis* (much less common)

Cultures/stains needed?
--Yes

Treatment:
--If no corneal involvement:
  Outpatient w/ 1g Rocephin IM x 1
--If with corneal involvement:
  Inpatient, 1g Rocephin IV q12h x 3d

But gonococcus is a venereal disease. How does it get in the eye? Seriously?

OK then, if we’re talking STDs here, should we be concerned about other ‘love bugs’?

Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent *Chlamydia* infection.

**For completeness’ sake:** The Cornea book lists five sexually-transmitted causes of conjunctivitis (not including the very rare *N meningitidis*).

What are the other three?
--Chlamydia
--Neisseria gonorrhoeae
--?
--?
--?
Conjunctivitis

Acute/Hyperacute Conjunctivitis

**Bugs:**

1. S pneumo
2. S aureus: Less severe
3. H flu -- Kids with otitis media -- Adults with chronic lung dz

**Treatment:**

-- Polytrim (has good H flu coverage)
-- Consider PO abx if H flu in kids (to prevent otitis/pharyngitis)

Acute Hyperacute Conjunctivitis

**Bugs:**

1. N gonorrhea
2. N menigitidis (much less common)

**Cultures/stains needed?**

-- Yes

**Treatment:**

-- If no corneal involvement:
  - Outpatient w/ 1g Rocephin IM x 1
-- If with corneal involvement:
  - Inpatient, 1g Rocephin IV q12o x 3d

But gonococcus is a venereal disease. How does it get in the eye? Seriously?

OK then, if we’re talking STDs here, should we be concerned about other 'love bugs'?

Yes—about 1/3 of pts with GC conjunctivitis will have a concurrent Chlamydial infection.

**For completeness’ sake: The Cornea book lists five sexually-transmitted causes of conjunctivitis (not including the very rare N meningitidis).**

What are the other three?

-- Chlamydia
-- Neisseria gonorrhoeae
-- Syphilis
-- HSV
-- HIV

In addition to antibiotics, what therapeutic maneuver should be performed?

Copious irrigation with normal saline to remove inflammatory debris, cells, and proteases.