For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*

- **Seasonality:**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

- **Seasonality:** **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both.

- **Seasonality**: VKC (*vernal* means ‘spring’). VKC can be **year-round**, however.

  Year-round VKC is associated with what sort of climate?
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

- **Seasonality**: **VKC** (*vernal* means ‘spring’). VKC can be **year-round**, however.

  *Year-round VKC is associated with what sort of climate?*
  *Tropical*
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.

- **Seasonality**: VKC (vernal means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**.

- **Seasonality**: VKC (*vernal* means ‘spring’). VKC can be year-round, however.

  *One form of allergic conjunctivitis is seasonal in nature. What is it called? It is called ‘seasonal allergic conjunctivitis’ (SAC)*
For each of the following, state whether it is associated with
**Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

- **Seasonality**: VKC (*vernal* means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called **seasonal allergic conjunctivitis** (SAC)

*By what other name is SAC known?*
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*.

- **Seasonality**: VKC (*vernal* means ‘spring’). VKC can be year-round, however.

  One form of allergic conjunctivitis is seasonal in nature. What is it called?
  It is called ‘seasonal allergic conjunctivitis’ (SAC)
  *hay-fever conjunctivitis*  

  By what other name is SAC known?
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

- **Seasonality**: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called? It is called ‘seasonal allergic conjunctivitis’ (SAC)

*Just as VKC and AKC are closely related, SAC has a ‘partner in crime’ as well. What is this closely-related condition?*
Seasonality: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called ‘seasonal allergic conjunctivitis’ (SAC)

Just as VKC and AKC are closely related, SAC has a ‘partner in crime’ as well. What is this closely-related condition?
**Perennial** allergic conjunctivitis (PAC)
Seasonality: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called ‘seasonal allergic conjunctivitis’ (SAC)

Just as VKC and AKC are closely related, SAC has a ‘partner in crime’ as well. **Perennial** allergic conjunctivitis (PAC)

Is PAC seasonal?
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*.

- **Seasonality**: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called ‘seasonal allergic conjunctivitis’ (SAC)

Just as VKC and AKC are closely related, SAC has a ‘partner in crime’ as well. What is this closely-related condition?
**Perennial** allergic conjunctivitis (PAC)

Is PAC seasonal?
No (note that in this context, perennial means ‘year round’).
Seasonality: VKC (vernal means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called ‘seasonal allergic conjunctivitis’ (SAC)

Which type of hypersensitivity reaction is VKC (and AKC)?
Seasonality: VKC (vernal means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called ‘seasonal allergic conjunctivitis’ (SAC)

Which type of hypersensitivity reaction is VKC (and AKC)?

Before we answer this, let’s drill down on hypersensitivity reactions
Firstly: What is a Hypersensitivity Reaction?
Firstly: What is a Hypersensitivity Reaction?
An exaggerated version of a normal immune response—ie, too much of a good thing
How many Hypersensitivity Reactions of the Ocular Surface are there?
How many *Hypersensitivity Reactions of the Ocular Surface* are there?

Type I  Type II  Type III  Type IV
Firstly: How many Hypersensitivity Reactions of the Ocular Surface are there?

Note: The conceptualization of distinct and separatable hypersensitivity reactions is considered outdated by modern immunologists in that most clinical hypersensitivity presentations involve a blend of the purportedly distinct mechanisms.
Note: The conceptualization of distinct and separable hypersensitivity reactions is considered **outdated** by modern immunologists in that most clinical hypersensitivity presentations involve a *blend* of the purportedly distinct mechanisms. That said, this framework for categorizing hypersensitivity reactions persists in the literature, and thus familiarity with it remains an obligation of ophthalmos-in-training.
Hypersensitivity Reactions of the Ocular Surface

Type I reactions involve...
Type II reactions involve...
Type III reactions involve... Immune-complex reactions
Type IV reactions involve...

Type I reactions involve... [One word that captures the nature of this rxn]
Type II reactions involve...
Type III reactions involve...
Type IV reactions involve...
Hypersensitivity Reactions of the Ocular Surface

**Type I**

Type I reactions involve... Anaphylaxis

**Type II**

Type II reactions involve... Immune-complex reactions

**Type III**

Type III reactions involve... Immune-complex reactions

**Type IV**

Type IV reactions involve...
Type I reactions involve...Anaphylaxis
Type II reactions involve... [Two words capturing this rxn]
Type III reactions involve...
Type IV reactions involve...
Hypersensitivity Reactions of the Ocular Surface

Type I reactions involve...
Anaphylaxis

Type II reactions involve...
Cytotoxic antibodies

Type III reactions involve...
Immune-complex reactions

Type IV reactions involve...
Cell-mediated reactions

Type I reactions involve... Anaphylaxis
Type II reactions involve... Cytotoxic antibodies
Type III reactions involve...
Type IV reactions involve...
**Hypersensitivity Reactions of the Ocular Surface**

- **Type I**: Anaphylaxis
- **Type II**: Cytotoxic antibodies
- **Type III**: Immune-complex reactions
- **Type IV**: Cell-mediated reactions

**Q**

Firstly: How many Hypersensitivity Reactions of the Ocular Surface are there?
Hypersensitivity Reactions of the Ocular Surface

Type I: Anaphylaxis
Type II: Cytotoxic antibodies
Type III: Immune-complex reactions
Type IV: Cell-mediated reactions

**Type I reactions involve**...Anaphylaxis
**Type II reactions involve**...Cytotoxic antibodies
**Type III reactions involve**...Immune-complex reactions
**Type IV reactions involve**...
Hypersensitivity Reactions of the Ocular Surface

Type I reactions involve... Anaphylaxis
Type II reactions involve... Cytotoxic antibodies
Type III reactions involve... Immune-complex reactions
Type IV reactions involve... [Three words again]
**Hypersensitivity Reactions of the Ocular Surface**

- **Type I** reactions involve...Anaphylaxis
- **Type II** reactions involve...Cytotoxic antibodies
- **Type III** reactions involve...Immune-complex reactions
- **Type IV** reactions involve...Cell-mediated reactions

**Firstly:** How many Hypersensitivity Reactions of the Ocular Surface are there?
For each of the following, state whether it is associated with 
*Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both

- **Seasonality**: VKC (vernial means ‘spring’). VKC can be year-round, however.

  *One form of allergic conjunctivitis is seasonal in nature. What is it called?*
  It is called ‘seasonal allergic conjunctivitis’ (SAC)

  *Which type of hypersensitivity reaction is VKC (and AKC)?*

  Now, *let’s answer this question*
Seasonality: VKC (vernal means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called ‘seasonal allergic conjunctivitis’ (SAC)

Which type of hypersensitivity reaction is VKC (and AKC)?
Type IV
Seasonality: **VKC** (vernal means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called?
It is called ‘seasonal allergic conjunctivitis’ (SAC)

Which type of hypersensitivity reaction is VKC (and AKC)?
**Type IV**

*Let’s sidebar a bit to drill down on Type IV reactions*
Hypersensitivity Reactions of the Ocular Surface

Type I
- Anaphylaxis

Type II
- Cytotoxic antibodies

Type III
- Immune-complex reactions

Type IV
- Cell-mediated reactions

Q: ‘Cell-mediated reaction’…Which sort of immune cell is doing the mediating?
### Hypersensitivity Reactions of the Ocular Surface

<table>
<thead>
<tr>
<th>Type I</th>
<th>Type II</th>
<th>Type III</th>
<th>Type IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anaphylaxis</td>
<td>Cytotoxic Ab</td>
<td>Immune-complex reactions</td>
<td>Cell-mediated reactions</td>
</tr>
</tbody>
</table>

**Type I reactions involve…**Anaphylaxis
**Type II reactions involve…**Cytotoxic antibodies
**Type III reactions involve…**Immune-complex reactions
**Type IV reactions involve…**Cell-mediated reactions

‘Cell-mediated reaction’…Which sort of immune cell is doing the mediating? T-helper cells
Hypersensitivity Reactions of the Ocular Surface

Anaphylaxis  |  Cytotoxic Ab  |  Immune-complex reactions  
---|---|---
**Type I** | **Type II** | **Type III**

**Type I reactions involve...** Anaphylaxis
**Type II reactions involve...** Cytotoxic antibodies
**Type III reactions involve...** Immune-complex reactions
**Type IV reactions involve...** Cell-mediated reactions

‘Cell-mediated reaction’...Which sort of immune cell is doing the mediating?
T-helper cells

In what way are T-helper cells mediating the reaction?
Hypersensitivity Reactions of the Ocular Surface

<table>
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Type I reactions involve...Anaphylaxis
Type II reactions involve...Cytotoxic antibodies
Type III reactions involve...Immune-complex reactions
Type IV reactions involve...Cell-mediated reactions

‘Cell-mediated reaction’...Which sort of immune cell is doing the mediating? T-helper cells

In what way are T-helper cells mediating the reaction? In Type IV reactions, T-helpers interact with antigens, thereby becoming activated.
Type I reactions involve...Anaphylaxis
Type II reactions involve...Cytotoxic antibodies
Type III reactions involve...Immune-complex reactions
Type IV reactions involve...Cell-mediated reactions

‘Cell-mediated reaction’...Which sort of immune cell is doing the mediating?
T-helper cells

In what way are T-helper cells mediating the reaction?
In Type IV reactions, T-helpers interact with antigens, thereby becoming activated. Once activated, the T-helpers release chemotactic factors that recruit and activate macrophages.
**Hypersensitivity Reactions of the Ocular Surface**

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**Type I reactions involve...** Anaphylaxis

**Type II reactions involve...** Cytotoxic antibodies

**Type III reactions involve...** Immune-complex reactions

**Type IV reactions involve...** Cell-mediated reactions

‘Cell-mediated reaction’... *Which sort of immune cell is doing the mediating?*

T-helper cells

*In what way are T-helper cells mediating the reaction?*

In Type IV reactions, T-helpers interact with antigens, thereby becoming activated. Once activated, the T-helpers release chemotactic factors that recruit and activate macrophages.

*That’s a convoluted process. How long does it take to become clinically apparent?*
Hypersensitivity Reactions of the Ocular Surface

Type I reactions involve...
Anaphylaxis

Type II reactions involve...
Cytotoxic Ab

Type III reactions involve...
Immune-complex reactions

Type IV reactions involve...
Cell-mediated reactions

‘Cell-mediated reaction’...Which sort of immune cell is doing the mediating?
T-helper cells

In what way are T-helper cells mediating the reaction?
In Type IV reactions, T-helpers interact with antigens, thereby becoming activated.
Once activated, the T-helpers release chemotactic factors that recruit and activate macrophages.

That’s a convoluted process. How long does it take to become clinically apparent?
24-72 hours, which is why this reaction is often referred to as delayed hypersensitivity.
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.

- **Seasonality**: VKC (vernāl means ‘spring’). VKC can be year-round, however.

  One form of allergic conjunctivitis is seasonal in nature. What is it called?
  It is called ‘seasonal allergic conjunctivitis’ (SAC)

  Which type of hypersensitivity reaction (ie, I-IV) is VKC (and AKC)?
  Type IV

  Which type of hypersensitivity reaction is SAC (and PAC)?
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

- **Seasonality:** VKC (*vernal* means ‘spring’). VKC can be year-round, however.

  *One form of allergic conjunctivitis is seasonal in nature. What is it called?*
  It is called ‘seasonal allergic conjunctivitis’ (SAC)

  *Which type of hypersensitivity reaction (ie, I-IV) is VKC (and AKC)?*
  Type IV

  *Which type of hypersensitivity reaction is SAC (and PAC)?*
  Type I
Seasonality: VKC (vernal means ‘spring’). VKC can be year-round, however.

One form of allergic conjunctivitis is seasonal in nature. What is it called? It is called ‘seasonal allergic conjunctivitis’ (SAC)

Which type of hypersensitivity reaction (ie, I-IV) is VKC (and AKC)? Type IV

Which type of hypersensitivity reaction is SAC (and PAC)? Type I

And lastly, a sidebar on Type I reactions
Hypersensitivity Reactions of the Ocular Surface

Type I reactions involve...Anaphylaxis
Type II reactions involve...Cytotoxic antibodies
Type III reactions involve...Immune-complex reactions
Type IV reactions involve...Cell-mediated reactions

Briefly, how does an anaphylactic reaction proceed?
**Type I reactions involve...Anaphylaxis**

Type II reactions involve...Cytotoxic antibodies

Type III reactions involve...Immune-complex reactions

Type IV reactions involve...Cell-mediated reactions

**Briefly, how does an anaphylactic reaction proceed?**

The binding of [one word, + its abb.] to [Ig...] receptors on [cell type] cells causes the cells to [one word]
Hypersensitivity Reactions of the Ocular Surface

**Type I** reactions involve...**Anaphylaxis**

**Type II** reactions involve...**Cytotoxic Ab**

**Type III** reactions involve...**Immune-complex reactions**

**Type IV** reactions involve...**Cell-mediated reactions**

**Briefly, how does an anaphylactic reaction proceed?**
The binding of **antigen (Ag)** to **IgE** receptors on **mast** cells causes the cells to **degranulate**.
Briefly, how does an anaphylactic reaction proceed?
The binding of antigen (Ag) to IgE receptors on mast cells causes the cells to degranulate, with the subsequent release of one word and other pre-formed inflammatory mediators.
**Type I reactions involve…Anaphylaxis**

**Type II reactions involve…Cytotoxic antibodies**

**Type III reactions involve…Immune-complex reactions**

**Type IV reactions involve…Cell-mediated reactions**

Briefly, how does an anaphylactic reaction proceed?

The binding of antigen (Ag) to IgE receptors on mast cells causes the cells to degranulate, with the subsequent release of histamine and other pre-formed inflammatory mediators.
Briefly, how does an anaphylactic reaction proceed?
The binding of antigen (Ag) to IgE receptors on mast cells causes the cells to degranulate, with the subsequent release of histamine and other pre-formed inflammatory mediators.

Sounds fast. How long does it take to become clinically apparent?
**Type I reactions involve...Anaphylaxis**

**Type II reactions involve...Cytotoxic antibodies**

**Type III reactions involve...Immune-complex reactions**

**Type IV reactions involve...Cell-mediated reactions**

*Briefly, how does an anaphylactic reaction proceed?*

The binding of antigen (Ag) to IgE receptors on mast cells causes the cells to degranulate, with the subsequent release of histamine and other pre-formed inflammatory mediators.

*Sounds fast. How long does it take to become clinically apparent?*

Only minutes (which is why this reaction is often referred to as *immediate hypersensitivity*).
Briefly, how does an anaphylactic reaction proceed? The binding of antigen (Ag) to IgE receptors on mast cells causes the cells to degranulate, with the subsequent release of histamine and other pre-formed inflammatory mediators.

Sounds fast. How long does it take to become clinically apparent? Only minutes (which is why this reaction is often referred to as immediate hypersensitivity).

The binding of antigen (Ag) to IgE receptors on mast cells causes the cells to degranulate, with the subsequent release of histamine and other pre-formed inflammatory mediators.

For more on hypersensitivity reactions of the ocular surface, see slide-set K21.
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both

- **Seasonality**: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*.

- **Seasonality:** **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** **Both**
For each of the following, state whether it is associated with 
**Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

- **Seasonality**: **VKC** *(vernal means ‘spring’)*. VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: **Both**
- **Somewhat smaller papillae**: 
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*.

- **Seasonality:** VKC (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** Both
- **Somewhat smaller papillae:** AKC
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

- **Seasonality**: VKC (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: Both
- **Somewhat smaller papillae**: AKC, VKC

What word is commonly used to describe the size of papillae in VKC?
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*.

- **Seasonality:** *VKC* (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** *Both*
- **Somewhat smaller papillae:** *AKC, VKC*

*What word is commonly used to describe the size of papillae in VKC?*  
**Giant.** VKC is a cause of so-called *giant papillary conjunctivitis (GPC)*.
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.

- **Seasonality**: VKC (vernial means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: Both
- **Somewhat smaller papillae**: AKC, VKC

What word is commonly used to describe the size of papillae in VKC? **Giant**. VKC is a cause of so-called giant papillary conjunctivitis (GPC).

What word is commonly used to describe the shape of the papillae in VKC?
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

- **Seasonality:** VKC (vernal means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** Both
- **Somewhat smaller papillae:** AKC, VKC

**What word is commonly used to describe the size of papillae in VKC?**
**Giant.** VKC is a cause of so-called giant papillary conjunctivitis (GPC)

**What word is commonly used to describe the shape of the papillae in VKC?**
**Cobblestones**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both.

**VKC: Giant ‘cobblestone’ papillae**
Seasonality: **VKC** (vernial means ‘spring’). VKC can be year-round, however.

Causes a chronic papillary conjunctivitis: **Both**

Somewhat smaller papillae: **AKC** **VKC**

What word is commonly used to describe the size of papillae in VKC? **Giant**. VKC is a cause of so-called **giant papillary conjunctivitis (GPC)**.

What word is commonly used to describe the shape of the papillae in VKC? **Cobblestones**

When you hear ‘GPC,’ what cause/etiology should come immediately to mind?
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

- **Seasonality:** VKC (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** Both
- **Somewhat smaller papillae:** AKC VKC

What word is commonly used to describe the size of papillae in VKC? **Giant**. VKC is a cause of so-called **giant papillary conjunctivitis** (GPC).

What word is commonly used to describe the shape of the papillae in VKC? **Cobblestones**

*When you hear ‘GPC,’ what cause/etiology should come immediately to mind?* Contact-lens wear
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both

CL-induced GPC
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*:

- **Seasonality**: VKC (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: Both
- **Somewhat smaller papillae**: AKC, VKC

What word is commonly used to describe the size of papillae in VKC? **Giant**. VKC is a cause of so-called **giant papillary conjunctivitis** (GPC).

What word is commonly used to describe the shape of the papillae in VKC? **Cobblestones**

When you hear ‘GPC,’ what cause/etiology should come immediately to mind? **Contact-lens wear**

Is CL-induced GPC a Type IV hypersensitivity reaction like VKC?
Seasonality: VKC (vernal means ‘spring’). VKC can be year-round, however.

Causes a chronic papillary conjunctivitis: Both

Somewhat smaller papillae: AKC

What word is commonly used to describe the size of papillae in VKC? Giant. VKC is a cause of so-called giant papillary conjunctivitis (GPC).

What word is commonly used to describe the shape of the papillae in VKC? Cobblestones

When you hear ‘GPC,’ what cause/etiology should come immediately to mind? Contact-lens wear

Is CL-induced GPC a Type IV hypersensitivity reaction like VKC? No, it is an inflammatory response to mechanical trauma/irritation caused by the CL itself.
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

- **Seasonality**: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: **Both**
- **Somewhat smaller papillae**: **AKC**
- **Associated with thick ropy discharge**: 
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

- **Seasonality:** **VKC** *(vernal means ‘spring’)*. VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** **Both**
- **Somewhat smaller papillae:** **AKC**
- **Associated with thick ropy discharge:** **VKC**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

VKC: Ropy discharge
• **Seasonality:** VKC (*vernal* means ‘spring’). VKC can be year-round, however.
• **Causes a chronic papillary conjunctivitis:** Both
• **Somewhat smaller papillae:** AKC
• **Associated with thick ropy discharge:** VKC
• **Lower-lid involvement:**
For each of the following, state whether it is associated with
*Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*

- **Seasonality:** VKC (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** Both
- **Somewhat smaller papillae:** AKC
- **Associated with thick ropy discharge:** VKC
- **Lower-lid involvement:** AKC. Lower-lid involvement is rare in VKC.
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

- **Seasonality**: VKC (*vernial* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: Both
- **Somewhat smaller papillae**: AKC
- **Associated with thick ropy discharge**: VKC
- **Lower-lid involvement**: AKC. Lower-lid involvement is rare in VKC.

To be clear--is the upper lid involved in AKC?
Seasonality: **VKC** *(veral means ‘spring’). VKC can be year-round, however.*

*Causes a chronic papillary conjunctivitis: Both*

*Somewhat smaller papillae: **AKC***

*Associated with thick ropy discharge: **VKC***

**Lower-lid involvement: **AKC**. Lower-lid involvement is rare in VKC.***

*To be clear--is the upper lid involved in AKC? Yes. AKC typically affects both the upper and lower lids, whereas VKC typically affects the upper lid only.*
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both

- **Seasonality:** **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** **Both**
- **Somewhat smaller papillae:** **AKC**
- **Associated with thick ropy discharge:** **VKC**
- **Lower-lid involvement:** **AKC**. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years:**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.

- **Seasonality**: VKC (*vernial* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: Both
- **Somewhat smaller papillae**: AKC
- **Associated with thick ropy discharge**: VKC
- **Lower-lid involvement**: AKC. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years**: VKC
For each of the following, state whether it is associated with 
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- **Seasonality**: **VKC** (vernal means ‘spring’). VKC can be year-round, however.
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- **Starts before age 10 years**: **VKC**
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*(But the association is much stronger with AKC)*
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- **Starts before age 10 years:** **VKC**
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Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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*(Again, the association is much stronger with AKC)*
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*

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- **Starts before age 10 years:** **VKC**
- **Associated with a history of atopy:** **Both**
- **Associated with asthma:** **Both**
- **Associated with eczema:**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both.

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<thead>
<tr>
<th>Statement</th>
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*(On the other hand…Just kidding. Once again, the association is much stronger with AKC)*
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.

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*What does the term atopy mean in this context?*
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

- **Seasonality:** VKC (vernial means ‘spring’). VKC can be year-round, however.
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- **Associated with eczema:** Both

*What does the term atopy mean in this context?*

It means ‘genetically predisposed to developing allergic diseases’
For each of the following, state whether it is associated with 
Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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- Starts before age 10 years: **VKC**
- Associated with a history of atopy: **Both**
- Associated with asthma: **Both**
- Associated with eczema: **Both**

**What does the term atopy mean in this context?**
It means ‘genetically predisposed to developing allergic diseases’

**What are two classic manifestations of atopy?**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both.

- **Seasonality**: VKC ([*vernal* means ‘spring’]). VKC can be year-round, however.
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- **Starts before age 10 years**: VKC
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**What does the term atopy mean in this context?**

*It means ‘genetically predisposed to developing allergic diseases’*

**What are two classic manifestations of atopy?**

*Asthma and eczema*
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

- **Seasonality**: **VKC** *(vernal means ‘spring’). VKC can be year-round, however.*
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- **Associated with a history of atopy**: **Both**
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**What does the term atopy mean in this context?**
It means ‘genetically predisposed to developing allergic diseases’

**What are two classic manifestations of atopy?**
Asthma and eczema

**What is the other common name for eczema?**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*:

- Seasonality: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
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- Starts before age 10 years: **VKC**
- Associated with a history of **atopy**: **Both**
- Associated with asthma: **Both**
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*What does the term atopy mean in this context?*

It means ‘genetically predisposed to developing allergic diseases’

*What are two classic manifestations of atopy?*

Asthma and eczema

*What is the other common name for eczema?*

Atopic dermatitis
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis* (VKC), *Atopic Keratoconjunctivitis* (AKC), or Both.

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- **Associated with thick ropy discharge**: VKC
- **Lower-lid involvement**: AKC. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years**: VKC
- **Associated with a history of atopy**: Both
- **Associated with asthma**: Both
- **Associated with eczema**: Both
- **Clumps of degenerated eosinophils and epithelial cells at limbus**: Both
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*

- **Seasonality:** **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
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- **Clumps of degenerated eosinophils and epithelial cells at limbus:** **VKC**
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**:

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- **Clumps of degenerated eosinophils and epithelial cells at limbus**: **VKC**

‘Clumps of degenerated eos/epi cells at limbus’—what eponymous VKC finding is this referring to?
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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‘Clumps of degenerated eos/epi cells at limbus’—what eponymous VKC finding is this referring to?
Horner-Trantas dots
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*:

**VKC: Horner-Trantas dots**
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‘Clumps of degenerated eos/epi cells at limbus’—what eponymous VKC finding is this referring to?

*Horner-Trantas dots*

*Do Horner-Trantas dots occur in AKC?*
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‘Clumps of degenerated eos/epi cells at limbus’—what eponymous VKC finding is this referring to? 
Horner-Trantas dots

*Do Horner-Trantas dots occur in AKC?*
Yes, but they are uncommon
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

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AKC: Symblephara
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both

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- **Associated with keratoconus:**
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- **Associated with keratoconus:** **Both**. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common:**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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- **Corneal vascularization common**: **AKC**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*

**AKC: Corneal neovascularization**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

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- **Clumps of degenerated eosinophils and epithelial cells at limbus**: VKC
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- **Associated with keratoconus**: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common**: AKC
- **Usually worse in the morning**: 
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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- **Corneal vascularization common**: **AKC**
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- **Associated with keratoconus**: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common**: AKC
- **Usually worse in the morning**: VKC

*What two-word alliterative term is used to capture the AM burden associated with VKC?*
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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- **Starts before age 10 years:** VKC
- **Associated with a history of atopy:** Both
- **Associated with asthma:** Both
- **Associated with eczema:** Both
- **Clumps of degenerated eosinophils and epithelial cells at limbus:** VKC
- **Symblepharon formation:** AKC. Symblephara are much less common in VKC.
- **Associated with keratoconus:** Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common:** AKC
- **Usually worse in the morning:** VKC

What two-word alliterative term is used to capture the AM burden associated with VKC?
‘Morning misery’
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis* (VKC), *Atopic Keratoconjunctivitis* (AKC), or *Both*

- **Seasonality:** *VKC* (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** *Both*
- **Somewhat smaller papillae:** *AKC*
- **Associated with thick ropy discharge:** *VKC*
- **Lower-lid involvement:** *AKC*. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years:** *VKC*
- **Associated with a history of atopy:** *Both*
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- **Corneal vascularization common:** *AKC*
- **Usually worse in the morning:** *VKC*

*What two-word alliterative term is used to capture the AM burden associated with VKC?*  
‘Morning misery’. VKC is often so bad upon awakening that the child is unable to go to school.
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

- **Seasonality**: **VKC** *(vernal means ‘spring’).* VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: **Both**
- **Somewhat smaller papillae**: **AKC**
- **Associated with thick ropy discharge**: **VKC**
- **Lower-lid involvement**: **AKC**. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years**: **VKC**
- **Associated with a history of atopy**: **Both**
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- **Corneal vascularization common**: **AKC**
- **Usually worse in the morning**: **VKC**
- **Associated with so-called shield ulcers of the cornea**: **Both**
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*:

- **Seasonality:** **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
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- **Usually worse in the morning:** **VKC**
- **Associated with so-called shield ulcers of the cornea:** **VKC**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.

VKC: Shield ulcer
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

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- **Causes a chronic papillary conjunctivitis**: Both
- **Somewhat smaller papillae**: AKC
- **Associated with thick ropy discharge**: VKC
- **Lower-lid involvement**: AKC. Lower-lid involvement is rare in VKC.
- **Speaking of the cornea…** Do VKC and AKC pts manifest punctate epithelial erosions with subsequent epithelial staining? **(Both)**
- Associated with *keratoconus*: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common**: AKC
- **Usually worse in the morning**: VKC
- Associated with so-called shield ulcers of the cornea: VKC
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

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- **Speaking of the cornea… Do VKC and AKC pts manifest punctate epithelial erosions with subsequent epithelial staining?**
  - Indeed they do
- **Associated with keratoconus**: **Both**. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common**: **AKC**
- **Usually worse in the morning**: **VKC**
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- **Speaking of the cornea…Do VKC and AKC pts manifest punctate epithelial erosions with subsequent epithelial staining?**
  - Indeed they do
- **How do the epithelial staining patterns differ among VKC, AKC and dry-eye syndrome?**
  - In VKC, staining is usually found in the…
  - In AKC, staining is usually found in the…
  - In DES, staining is usually found in the…
- **Associated with keratoconus**: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common**: AKC
- **Usually worse in the morning**: VKC
- **Associated with so-called shield ulcers of the cornea**: VKC
Seasonality: VKC (vernal means ‘spring’). VKC can be year-round, however.

Causes a chronic papillary conjunctivitis: Both

Somewhat smaller papillae: AKC

Associated with thick ropy discharge: VKC

Lower-lid involvement: AKC. Lower-lid involvement is rare in VKC.

Speaking of the cornea…Do VKC and AKC pts manifest punctate epithelial erosions with subsequent epithelial staining?

Indeed they do

How do the epithelial staining patterns differ among VKC, AKC and dry-eye syndrome?

--In VKC, staining is usually found in the…superior cornea

--In AKC, staining is usually found in the…superior cornea, and possibly the inferior as well

--In DES, staining is usually found in the…interpalpebral cornea (aka the ‘exposure zone’)

Associated with keratoconus: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.

Corneal vascularization common: AKC

Usually worse in the morning: VKC

Associated with so-called shield ulcers of the cornea: VKC

For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both
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- **Associated with so-called shield ulcers of the cornea**: VKC

TL;DR: In VKC and AKC, the cornea stains beneath the lid that is experiencing inflammation; in DES, the cornea that stains is that which experiences chronic evaporation, ie, between the lids.
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

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- **Associated with cataract formation**: **Both**
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- **Usually worse in the morning:** VKC
- **Associated with so-called shield ulcers of the cornea:** VKC
- **Associated with cataract formation:** AKC

**What sort of cataracts occur in AKC?**

Subcapsular (either posterior or anterior)
Seasonality: VKC (vernal means ‘spring’). VKC can be year-round, however.

Causes a chronic papillary conjunctivitis: Both

Somewhat smaller papillae: AKC

Associated with thick ropy discharge: VKC

Lower-lid involvement: AKC. Lower-lid involvement is rare in VKC.

Starts before age 10 years: VKC

Associated with a history of atopy: Both

Associated with asthma: Both

Associated with eczema: Both

Clumps of degenerated eosinophils and epithelial cells at limbus: VKC

Symblepharon formation: AKC. Symblephara are much less common in VKC.

Associated with keratoconus: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.

Corneal vascularization common: AKC

Usually worse in the morning: VKC

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Associated with cataract formation: AKC

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Associated with cataract formation: AKC

What sort of cataracts occur in AKC?
Subcapsular (either posterior or anterior)

When an anterior subcapsular cataract forms in AKC, its appearance is often characterized with a term used previously in this slide-set—what term?

Associated with cataract formation: AKC
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or *Both*

- **Seasonality**: **VKC** *(vernal means ‘spring’)*. VKC can be year-round, however.
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- **Corneal vascularization common**: **AKC**
- **Usually worse in the morning**: **VKC**
- **Associated with so-called shield ulcers of the cornea**: **VKC**
- **Associated with cataract formation**: **AKC**

**What sort of cataracts occur in AKC?**

**Subcapsular** (either posterior or anterior)

*When an anterior subcapsular cataract forms in AKC, its appearance is often characterized with a term used previously in this slide-set—what term? ‘Shield shaped’*

- **Associated with cataract formation**: **AKC**
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

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- **Associated with cataract formation**: **AKC**

**What sort of cataracts occur in AKC?**

**Subcapsular** (either posterior or **anterior**)

**When an anterior subcapsular cataract forms in AKC, its appearance is often characterized with a term used previously in this slide-set—what term?**

‘Shield shaped’. So when you encounter the word *shield* in a question concerning keratoconjunctivitis, don’t assume it’s vernal!

**Associated with cataract formation**: **AKC**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both

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- Associated with keratoconus: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- Corneal vascularization common: AKC
- Usually worse in the morning: VKC
- Associated with so-called shield ulcers of the cornea: VKC
- Associated with cataract formation: AKC – VKC

**What sort of cataracts occur in AKC?**
Subcapsular (either posterior or anterior)

**Under what circumstance might a VKC pt develop a cataract?**
If management has been heavily reliant upon topical steroid use
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

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- Corneal vascularization common: **AKC**
- Usually worse in the morning: **VKC**
- Associated with so-called shield ulcers of the cornea: **VKC**
- Associated with cataract formation: **AKC**—**VKC**

**Q/A**

- What sort of cataracts occur in AKC? Subcapsular (either posterior or anterior)
- Under what circumstance might a VKC pt develop a cataract? If management has been heavily reliant upon topical steroid use.
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

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- Corneal vascularization common: **AKC**
- Usually worse in the morning: **VKC**
- Associated with so-called shield ulcers of the cornea: **VKC**
- Associated with cataract formation: **AKC** or **VKC**

**What sort of cataracts occur in AKC?**
Subcapsular (either posterior or anterior)

**Under what circumstance might a VKC pt develop a cataract?**
If management has been heavily reliant upon topical steroid use
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- **Associated with so-called shield ulcers of the cornea**: **VKC**
- **Associated with cataract formation**: **AKC**
- Palpebral and limbal forms:
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

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- **Associated with cataract formation:** AKC
- **Palpebral and limbal forms:** VKC
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

- VKC: Limbal form
- VKC: Palpebral form

VKC: Limbal form

VKC: Palpebral form
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

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- Usually worse in the morning: **VKC**
- Associated with so-called shield ulcers of the cornea: **VKC**
- Associated with cataract formation: **AKC**
- Palpebral and limbal forms: **VKC**

Can the palpebral and limbal forms present simultaneously?

Demographically speaking, what sort of pt is more likely to have the limbal form?

Those with more heavily pigmented skin (eg, black; Mediterranean, Asian descent)
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

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*Can the palpebral and limbal forms present simultaneously?*

Yes
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- Associated with asthma: **Both**
- Associated with eczema: **Both**
- Clumps of degenerated eosinophils and epithelial cells at limbus: **VKC**
- Symblepharon formation: **AKC**. Symblephara are much less common in VKC.

Can the palpebral and limbal forms present simultaneously? **Yes**

Demographically speaking, what sort of pt is more likely to have the limbal form? **Those with more heavily pigmented skin (eg, black; Mediterranean, Asian descent)**

- Palpebral and limbal forms: **VKC**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both.

- Seasonality: **VKC** (vernial means ‘spring’). VKC can be year-round, however.
- Causes a chronic papillary conjunctivitis: **Both**
- Somewhat smaller papillae: **AKC**
- Associated with thick ropy discharge: **VKC**
- Lower-lid involvement: **AKC**. Lower-lid involvement is rare in VKC.
- Starts before age 10 years: **VKC**
- Associated with a history of atopy: **Both**
- Associated with asthma: **Both**
- Associated with eczema: **Both**
- Clumps of degenerated eosinophils and epithelial cells at limbus: **VKC**
- Symblepharon formation: **AKC**. Symblephara are much less common in VKC.
- Can the palpebral and limbal forms present simultaneously? Yes
- Demographically speaking, what sort of pt is more likely to have the limbal form? Those with more heavily pigmented skin (eg, black; Mediterranean, Asian descent)
- Palpebral and limbal forms: **VKC**
For each of the following, state whether it is associated with Vernal Keratoconjunctivitis (VKC), Atopic Keratoconjunctivitis (AKC), or Both:

- **Seasonality**: VKC (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: Both
- **Somewhat smaller papillae**: AKC
- **Associated with thick ropy discharge**: VKC
- **Lower-lid involvement**: AKC. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years**: VKC
- **Associated with a history of atopy**: Both
- **Associated with asthma**: Both
- **Associated with eczema**: Both
- **Clumps of degenerated eosinophils and epithelial cells at limbus**: VKC
- **Symblepharon formation**: AKC. Symblephara are much less common in VKC.
- **Associated with keratoconus**: Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common**: AKC
- **Usually worse in the morning**: VKC
- **Associated with so-called shield ulcers of the cornea**: VKC
- **Associated with cataract formation**: AKC
- **Palpebral and limbal forms**: VKC
- **Resolves in second decade**: 
For each of the following, state whether it is associated with *Vernal Keratoconjunctivitis (VKC)*, *Atopic Keratoconjunctivitis (AKC)*, or Both:

- **Seasonality:** VKC (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis:** Both
- **Somewhat smaller papillae:** AKC
- **Associated with thick ropy discharge:** VKC
- **Lower-lid involvement:** AKC. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years:** VKC
- **Associated with a history of atopy:** Both
- **Associated with asthma:** Both
- **Associated with eczema:** Both
- **Clumps of degenerated eosinophils and epithelial cells at limbus:** VKC
- **Symblepharon formation:** AKC. Symblephara are much less common in VKC.
- **Associated with keratoconus:** Both. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common:** AKC
- **Usually worse in the morning:** VKC
- **Associated with so-called shield ulcers of the cornea:** VKC
- **Associated with cataract formation:** AKC
- **Palpebral and limbal forms:** VKC
- **Resolves in second decade:** VKC. *This is a disease of children.*
For each of the following, state whether it is associated with **Vernal Keratoconjunctivitis (VKC)**, **Atopic Keratoconjunctivitis (AKC)**, or **Both**

- **Seasonality**: **VKC** (*vernal* means ‘spring’). VKC can be year-round, however.
- **Causes a chronic papillary conjunctivitis**: **Both**
- **Somewhat smaller papillae**: **AKC**
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- **Lower-lid involvement**: **AKC**. Lower-lid involvement is rare in VKC.
- **Starts before age 10 years**: **VKC**
- **Associated with a history of atopy**: **Both**
- **Associated with asthma**: **Both**
- **Associated with eczema**: **Both**
- **Clumps of degenerated eosinophils and epithelial cells at limbus**: **VKC**
- **Symblepharon formation**: **AKC**. Symblephara are much less common in VKC.
- **Associated with keratoconus**: **Both**. The association may stem from the aggressive eye-rubbing that VKC/AKC sufferers engage in.
- **Corneal vascularization common**: **AKC**
- **Usually worse in the morning**: **VKC**
- **Associated with so-called shield ulcers of the cornea**: **VKC**
- **Associated with cataract formation**: **AKC**
- **Palpebral and limbal forms**: **VKC**
- **Resolves in second decade**: **VKC**. **This is a disease of children**. In contrast, AKC often continues to progress through adulthood.