How many ‘age-related’ types of cataracts are there?
How many ‘age-related’ types of cataracts are there? Three
Cataracts: The Big Three

What are the three age-related types of cataracts?
What are the three age-related types of cataracts?

NSC (Nuclear sclerotic cataract)

Cortical

PSC (Posterior subcapsular cataract)
What are the three age-related types of cataracts?

- **NSC**
  - Risk factors: 

- **Cortical**
  - Risk factors: 

- **PSC**
  - Risk factors: 

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Steroids**
What are the three age-related types of cataracts?

**NSC**
Risk factors:

**Cortical**
Risk factors:

**PSC**
Risk factors:
-- Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Steroids**
Which of the following routes of steroid administration have been associated with cataract formation:

--Topical?
--Subconjunctival?
--Sub-Tenon’s?
--Intravitreal?
--PO?
--IV?
--Inhaled?
--Intranasal?
What are the three age-related types of cataracts?

Risk factors:
- Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one): Steroids

Which of the following routes of steroid administration have been associated with cataract formation:
- Topical
- Subconjunctival
- Sub-Tenon’s
- Intravitreal
- PO
- IV
- Inhaled
- Intranasal

All have been associated with PSC formation!

Steroids

Risk factors:
- Steroids

Pts with a propensity to develop a steroid-induced PSC are susceptible to another steroid-related complication—what is it?

Ocular hypertension

Steroid-induced PSCs in children differ in an important way from steroid-induced PSCs in adults. What is it?

Cessation of steroid therapy in children may result in regression and resolution of the PSC; this does not occur in adults.
Which of the following routes of steroid administration have been associated with cataract formation:
--Topical
--Subconjunctival
--Sub-Tenon’s
--Intravitreal
--PO
--IV
--Inhaled
--Intranasal

Pts with a propensity to develop a steroid-induced PSC are susceptible to another steroid-related complication—what is it?

Steroids
Which of the following routes of steroid administration have been associated with cataract formation:
--Topical
--Subconjunctival
--Sub-Tenon’s
--Intravitreal
--PO
--IV
--Inhaled
--Intranasal

Pts with a propensity to develop a steroid-induced PSC are susceptible to another steroid-related complication—what is it? Ocular hypertension
Which of the following routes of steroid administration have been associated with cataract formation:
--Topical
--Subconjunctival
--Sub-Tenon’s
--Intravitreal
--PO
--IV
--Inhaled
--Intranasal

Pts with a propensity to develop a steroid-induced PSC are susceptible to another steroid-related complication—what is it?
Ocular hypertension

Steroid-induced PSCs in children differ in an important way from steroid-induced PSCs in adults. What is it?

Steroids
Which of the following routes of steroid administration have been associated with cataract formation:

--Topical
--Subconjunctival
--Sub-Tenon’s
--Intravitreal
--PO
--IV
--Inhaled
--Intranasal

Pts with a propensity to develop a steroid-induced PSC are susceptible to another steroid-related complication—what is it?
Ocular hypertension

Steroid-induced PSCs in children differ in an important way from steroid-induced PSCs in adults. What is it?
Cessation of steroid therapy in children may result in regression and resolution of the PSC (this does not occur in adults)
What are the three age-related types of cataracts?

- **NSC**
  - Risk factors:

- **Cortical**
  - Risk factors:

- **PSC**
  - Risk factors:
    - Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Miotics**
What are the three age-related types of cataracts?

- **NSC**
  - Risk factors: Miotics

- **Cortical**
  - Risk factors: Miotics

- **PSC**
  - Risk factors: Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Miotics**
What are the three age-related types of cataracts?

- **NSC**
  - Risk factors:
    - Miotics

- **Cortical**
  - Risk factors:
    - Miotics

- **PSC**
  - Risk factors:
    - Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Statins**
What are the three age-related types of cataracts?

**NSC**
Risk factors:
-- Miotics
-- Statins

**Cortical**
Risk factors:
-- Miotics

**PSC**
Risk factors:
-- Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one): **Statins**
What are the three age-related types of cataracts?

- **NSC**
  - Risk factors: Miotics, Statins

- **Cortical**
  - Risk factors: Miotics

- **PSC**
  - Risk factors: Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- **Infrared radiation**
What are the three age-related types of cataracts?

NSC
Risk factors:
--Miotics
--Statins

Cortical
Risk factors:
--Miotics
--Infrared radiation

PSC
Risk factors:
--Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Infrared radiation
What are the three age-related types of cataracts?

NC
- Risk factors:
  - Miotics
  - Statins

Cortical
- Risk factors:
  - Miotics
  - Infrared radiation

PSC
- Risk factors:
  - Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

UV radiation
What are the three age-related types of cataracts?

**NSC**
- Risk factors:
  - Miotics
  - Statins

**Cortical**
- Risk factors:
  - Miotics
  - Infrared radiation
  - UV radiation

**PSC**
- Risk factors:
  - Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**UV radiation**
What are the three age-related types of cataracts?

NSC
Risk factors:
--Miotics
--Statins

Cortical
Risk factors:
--Miotics
--Infrared radiation
--UV radiation

PSC
Risk factors:
--Steroids

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus
What are the three age-related types of cataracts?

**NSC**
- Miotics
- Statins
- DM

**Cortical**
- Miotics
- Infrared radiation
- UV radiation
- DM

**PSC**
- Steroids
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

*Diabetes mellitus*
What are the three age-related types of cataracts?

**NSC**
Risk factors:
--Miotics
--Statins
--DM

**Cortical**
Risk factors:
--Miotics
--Infrared radiation
--UV radiation
--DM

**PSC**
Risk factors:
--Steroids
--DM

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

*Diabetes mellitus*
What are the three age-related types of cataracts?

- **NSC**
  - Risk factors:
    - Miotics
    - Statins
    - DM

- **Cortical**
  - Risk factors:
    - Miotics
    - Infrared radiation
    - UV radiation
    - DM

- **PSC**
  - Risk factors:
    - Steroids
    - DM

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
What are the three age-related types of cataracts?

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

Risk factors:

- Miotics
- Statins
- DM
- Steroids
- DM
- Infrared radiation
- UV radiation
- DM

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

*Diabetes mellitus*
What are the three age-related types of cataracts?

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract? A ‘snowflake’ cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
What are the three age-related types of cataracts?

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract? A ‘snowflake’ cataract.

How does a snowflake cataract present initially?

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
What are the three age-related types of cataracts?

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract? A ‘snowflake’ cataract

How does a snowflake cataract present initially?
With the abrupt appearance of subcapsular grayish-white opacities

Risk factors:

- Miotics
- Statins
- DM

Risk factors:

- Miotics
- Infrared radiation
- UV radiation
- DM

Risk factors:

- Steroids
- DM

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
Cataracts: The Big Three

Snowflake cataract
What are the three age-related types of cataracts?

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract? A ‘snowflake’ cataract

How does a snowflake cataract present initially?
With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?
It becomes a completely opacified/white cortical cataract

Risk factors:

- Miotics
- Statins
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus
What are the three age-related types of cataracts?

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract? A ‘snowflake’ cataract

How does a snowflake cataract present initially? With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change? It becomes a completely opacified/white cortical cataract

Risk factors:

- Miotics
- Statins
- DM
- Steroids
- Infrared radiation
- UV radiation
- DM

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
Cataracts: The Big Three

Completely opacified diabetic cataract
Cataracts: The Big Three

What are the three age-related types of cataracts?

**NSC Cortical PSC**

Risk factors:
- Miotics
- Statins
- DM

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics? Poorly controlled.

Are snowflake cataracts more likely to occur in younger, or older individuals? Younger.

Do they tend to occur unilaterally, or bilaterally? Bilaterally.

Do they progress slowly, or rapidly? Rapidly.

How does a snowflake cataract present initially?
With the abrupt appearance of subcapsular grayish-white opacities.

As it progresses, how does its appearance change?
It becomes a completely opacified/white cortical cataract.

*‘snowflake’ cataract*

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
What are the three age-related types of cataracts?

- NSC: Cortical PSC

Risk factors:
- Miotics
- Statins
- DM

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

There is a DM-related cataract, which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract

A snowflake cataract presents initially with the abrupt appearance of subcapsular grayish-white opacities.

As it progresses, it becomes a completely opacified/white cortical cataract.

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly
What are the three age-related types of cataracts?

There is a DM-related cataract. What is this cataract? 

A 'snowflake' cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

- Miotics
- Statins
- DM

- Infrared radiation
- UV radiation
- DM

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics? Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals? Younger

As it progresses, how does a snowflake cataract present initially? With the abrupt appearance of grayish-white subcapsular opacities

As it progresses, how does its appearance change? It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics? Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals? Younger

Do they tend to occur unilaterally, or bilaterally? Bilaterally

Do they progress slowly, or rapidly? Rapidly
What are the three age-related types of cataracts?

**NSC (Nuclear Sclerotic Cataract):**
- Miotics
- Statins
- DM

**Corticinal Cataract:**
- Miotics
- Infrared radiation
- UV radiation
- DM

**PSC (Posterior Subcapsular Cataract):**
- Steroids
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

What is the weather-related name of this special form of cataract? A ‘snowflake’ cataract.

How does a snowflake cataract present initially?
With the abrupt appearance of subcapsular grayish-white opacities.

As it progresses, how does its appearance change?
It becomes a completely opacified/white cortical cataract.

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
- Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?
- Younger

For diabetes-related NSCs, cortical cataracts, and PSCs, do they tend to occur unilaterally, or bilaterally?
- Bilaterally

Do they tend to progress slowly, or rapidly?
- Rapidly
What are the three age-related types of cataracts?

NSC Cortical PSC

Risk factors:
--Miotics
--Statins
--DM

Risk factors:
--Steroids
--DM

Risk factors:
--Miotics
--Infrared radiation
--UV radiation
--DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?
They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Do snowflake cataracts occur in T1DM, T2DM, or both?

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
Poorly controlled

How does a snowflake cataract present initially?
With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?
It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?
Younger

Do they tend to occur unilaterally, or bilaterally?
Bilaterally

Do they progress slowly, or rapidly?
Rapidly

Do snowflake cataracts occur in T1DM, T2DM, or both?
They occur almost exclusively in T1DM.
What are the three age-related types of cataracts?

**NSC Cortical PSC**

Risk factors:
- Miotics
- Statins
- DM

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

Do snowflake cataracts occur in T1DM, T2DM, or both?

They occur almost exclusively in T1DM.
What are the three age-related types of cataracts?

There is a DM-related cataract, the diabetic cataract. What is the weather-related name of this special form of cataract?

A 'snowflake' cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

Risk factors:

--Miotics
--Statins
--DM

Risk factors:

--Steroids
--DM

Risk factors:

--Miotics
--Infrared radiation
--UV radiation
--DM

Do snowflake cataracts occur in T1DM, T2DM, or both?
They occur almost exclusively in Type 1
Cataracts: The Big Three

Is there any relationship between T2DM and cats?

There is a DM-related cataract. What is the weather-related name of this special form of cataract?

A 'snowflake' cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

- Miotics
- Statins
- DM

- Infrared radiation
- UV radiation
- DM

- Steroids
- DM

- Miotics
- Infrared radiation
- UV radiation
- DM
What are the three age-related types of cataracts?

- NSC Cortical PSC
- Risk factors:
  - Miotics
  - Statins

- DM

- Risk factors:
  - Steroids
  - DM

- Risk factors:
  - Miotics
  - Infrared radiation
  - UV radiation
  - DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

Is there any relationship between T2DM and cats?

Just that, as mentioned, pts with Type 2 seem to develop age-related cats at a slightly earlier age than do their non-DM compatriots.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus
Cataracts: The Big Three

What are the three age-related types of cataracts?

1. **NSC (Nuclear Sclerotic Cataract)**
   - Risk factors: Miotics, Statins, DM

2. **Cortical Cataracts**
   - Risk factors: DM

3. **PSC (Posterior Subcapsular Cataract)**
   - Risk factors: Steroids, DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts...
What are the three age-related types of cataracts?

1. NSC Cortical PSC
2. Risk factors: Miotics, Statins
3. DM

1. Risk factors: Steroids
2. DM

1. Risk factors: Miotics, Infrared radiation, UV radiation
2. DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

Are there diabetes-related cataracts, cortical cataracts, and PSCs differing from those associated with age?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM.

There is a DM-related cataract. What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts...
Cataracts: The Big Three

What are the three age-related types of cataracts?

- NSC Cortical PSC
- Risk factors:
  - Miotics
  - Statins
  - DM

- Risk factors:
  - Steroids
  - DM

- Risk factors:
  - Miotics
  - Infrared radiation
  - UV radiation
  - DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

*Snowflake* cataract

- Younger
- With the abrupt appearance of subcapsular grayish-white opacities
- As it progresses, it becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.
Cataracts: The Big Three

What are the three age-related types of cataracts?

**NSC Cortical PSC**

Risk factors:
- Miotics
- Statins
- DM

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DBC at diagnosis is commonplace), the presence of cataracts...
What are the three age-related types of cataracts?

- NSC (Nuclear Sclerotic Cataract)
- PSC (Posterior Subcapsular Cataract)
- Cortical Cataract

Risk factors:
- Miotics
- Statins
- DM

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common that diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts...
Cataracts: The Big Three

What are the three age-related types of cataracts?

NSC Cortical PSC

Risk factors:
--Miotics
--Statins
--DM

Risk factors:
--Steroids
--DM

Risk factors:
--Miotics
--Infrared radiation
--UV radiation
--DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

There is a DM-related cataract, which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract

How does a snowflake cataract present initially?
With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?
It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?
Younger

Do they tend to occur unilaterally, or bilaterally?
Bilaterally

Do they progress slowly, or rapidly?
Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?
Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common than diabetic retinopathy in this population?
Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts This is why some experts advocate for screening ophthalmic exams upon diagnosing T1DM—not to look for retinopathy (which is essentially never present), but to check for cataracts

No question—proceed when ready

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age

Diabetes mellitus
There is a DM-related cataract, which is not simply an early-onset version of a senescent cataract. What is it?

A ‘snowflake’ cataract

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

Risk factors:

-- Miotics
-- Statins
-- DM

Risk factors:

-- Steroids
-- DM

Risk factors:

-- Miotics
-- Infrared radiation
-- UV radiation
-- DM

Wait—is it really called diabetic lensopathy?

No question—proceed when ready.
**What are the three age-related types of cataracts?**

- NSC Cortical PSC

**Risk factors:**
- Miotics
- Statins
- DM

- Steroids
- DM

- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

There is a DM-related cataract. What is it called?

A ‘snowflake’ cataract

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Wait—is it really called diabetic lensopathy?

Bruh, seriously? SMDH

For screening ophthalmic exams upon diagnosing T1DM—not to look for retinopathy (which is essentially never present), but to check for cataracts—No question—proceed when ready

Is diabetic lensopathy more common than diabetic retinopathy in this population? Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts may be the presenting sign of DM in this cohort.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):
Cataracts: The Big Three

What are the three age-related types of cataracts?

NSC (Nuclear Sclerotic Cataract)
- Cortical
- Posterior subcapsular

Risk factors:
- Miotics
- Statins
- DM

PSC (Posterior Subcapsular Cataract)

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?
They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

A ‘snowflake’ cataract

There is a DM-related cataract that is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract

How does a snowflake cataract present initially?
With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?
It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?
Younger

Do they tend to occur unilaterally, or bilaterally?
Bilaterally

Do they progress slowly, or rapidly?
Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?
Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common that diabetic retinopathy in this population?
Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts is much more common in young diabetics. This is why some experts advocate for screening ophthalmic exams upon diagnosing T1DM—not to look for retinopathy (which is essentially never present), but to check for cataracts. No question—proceed when ready.

Wait—is it really called diabetic lensopathy?
Bruh, seriously? SMDH

Other than cataracts, what DM-induced lens changes can impair vision?
Poorly-controlled diabetics commonly experience a myopic shift

What is responsible for the myopic shift?
Mainly glucose-induced changes to the lens’ refractive index
What are the three age-related types of cataracts?

1. **NSC (Nuclear Sclerotic Cataract)**
   - Risk factors: Miotics, Statins, DM

2. **Cortical Cataract**
   - Risk factors: Miotics, Steroids, DM

3. **PSC (Posterior Subcapsular Cataract)**
   - Risk factors: Miotics, Infrared radiation, UV radiation, DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- **Diabetes mellitus**
- **Miotics**
- **Statins**
- **DM**

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

There is a DM-related cataract that is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract

Other than cataracts, what DM-induced lens changes can impair vision?

- Poorly-controlled diabetics commonly experience a myopic shift

Are diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts is much more common in children with type 1 diabetes. This is why some experts advocate for screening ophthalmic exams upon diagnosing T1DM—not to look for retinopathy (which is essentially never present), but to check for cataracts.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts is much more common in children with type 1 diabetes. This is why some experts advocate for screening ophthalmic exams upon diagnosing T1DM—not to look for retinopathy (which is essentially never present), but to check for cataracts.

No question—proceed when ready

Wait—is it really called diabetic lensopathy?

Bruh, seriously? SMDH

Other than cataracts, what DM-induced lens changes can impair vision?

- Poorly-controlled diabetics commonly experience a myopic shift

What is responsible for the myopic shift?

Mainly glucose-induced changes to the lens' refractive index

refraction
What are the three age-related types of cataracts?

- NSC (Nuclear Sclerotic Cataract)
- PSC (Posterior Subcapsular Cataract)
- Cortical Cataract

Risk factors:

- Miotics
- Statins
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- DM

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Other than cataracts, what DM-induced lens changes can impair vision?

Poorly-controlled diabetics commonly experience a myopic shift.

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

- Poorly-controlled diabetics

Are snowflake cataracts more likely to occur in younger, or older individuals?

- Younger

Do they tend to occur unilaterally, or bilaterally?

- Bilaterally

Do they progress slowly, or rapidly?

- Rapidly

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts is rare in adults with T1DM.
Cataracts: The Big Three

## Diabetics mellitus

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- **Miotics**
  - Risk factors:
    - NSC Cortical PSC
    - PSC
    - Diabetes mellitus
  - For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):
    - Diabetes mellitus
  - What is the name of this special form of cataract in diabetic patients?
    - Poorly-controlled diabetics

## Cataracts

- **NSC Cortical PSC**
  - Risk factors:
    - Miotics
    - Statins

- **PSC**
  - Risk factors:
    - Steroids
    - DM
  - How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?
    - Diabetes mellitus
  - How does it present initially?
    - With the abrupt appearance of subcapsular grayish-white opacities
  - As it progresses, how does its appearance change?
    - It becomes a completely opacified/white cortical cataract

## Snowflake cataract

- Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
  - Poorly controlled
  - Are snowflake cataracts more likely to occur in younger, or older individuals?
  - Younger
  - Do they tend to occur unilaterally, or bilaterally?
  - Bilaterally
  - Do they progress slowly, or rapidly?
  - Rapidly

## Ocular morbidity

- Are cataracts a significant cause of ocular morbidity in young diabetics?
  - Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.
  - Is diabetic lensopathy more common than diabetic retinopathy in this population?
    - Vastly so—unlike adults with T2DM (among whom presenting with DBR at diagnosis is commonplace), the presence of cataracts is rare. This is why some experts advocate for screening ophthalmic exams upon diagnosing T1DM—not to look for retinopathy (which is essentially never present), but to check for cataracts.
  - Wait—is it really called diabetic lensopathy?
    - Bruh, seriously? SMDH

Other than cataracts, what DM-induced lens changes can impair vision?

- Poorly-controlled diabetics commonly experience a myopic shift
- What is responsible for the myopic shift?
  - Mainly glucose-induced changes to the lens' refractive index
What are the three age-related types of cataracts?

There is a DM-related cataract. What is it?

A ‘snowflake’ cataract.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Miotics
- Statins
- DM

Other than cataracts, what DM-induced lens changes can impair vision?

Poorly-controlled diabetics commonly experience a myopic shift.

What is responsible for the myopic shift?

Mainly glucose-induced changes to the lens’ refractive index.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Miotics
- Statins
- DM

There is a DM-related cataract. What is it?

A ‘snowflake’ cataract.

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities.

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract.

What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Miotics
- Statins
- DM

Other than cataracts, what DM-induced lens changes can impair vision?

Poorly-controlled diabetics commonly experience a myopic shift.

What is responsible for the myopic shift?

Mainly glucose-induced changes to the lens’ refractive index.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DR at diagnosis is commonplace), the presence of cataracts is a significant cause of ocular morbidity in young diabetics.

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Miotics
- Statins
- DM

Other than cataracts, what DM-induced lens changes can impair vision?

Poorly-controlled diabetics commonly experience a myopic shift.

What is responsible for the myopic shift?

Mainly glucose-induced changes to the lens’ refractive index.

Is diabetic lensopathy more common than diabetic retinopathy in this population?

Vastly so—unlike adults with T2DM (among whom presenting with DR at diagnosis is commonplace), the presence of cataracts is a significant cause of ocular morbidity in young diabetics.

Are cataracts a significant cause of ocular morbidity in young diabetics?

Indeed they are—cataract is the #1 cause of visual impairment among children and adolescents with DM. In fact, cataracts may be the presenting sign of DM in this cohort.
What are the three age-related types of cataracts?

There is a DM-related cataract, or poorly-controlled diabetic cataract. What is this cataract called?

A ‘snowflake’ cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

**Risk factors:**
- Miotics
- Statins
- DM

**Risk factors:**
- Steroids
- DM

**Risk factors:**
- Miotics
- Infrared radiation
- UV radiation
- DM

Other than cataracts, what DM-induced lens changes can impair vision?

Poorly-controlled diabetics commonly experience a myopic shift.

What is responsible for the myopic shift?

Mainly glucose-induced changes to the lens’ refractive index.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Wait—is it really called diabetic lensopathy?

Bruh, seriously? SMDH.

Other than cataracts, what DM-induced lens changes can impair vision?

Poorly-controlled diabetics commonly experience a myopic shift.

What is responsible for the myopic shift?

Mainly glucose-induced changes to the lens’ refractive index.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.
What are the three age-related types of cataracts?

**NSC Cortical PSC**

Risk factors:
- Miotics
- Statins
- DM

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Cataracts: The Big Three**

- Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
  - Poorly controlled

- Are snowflake cataracts more likely to occur in younger, or older individuals?
  - Younger

- Do they tend to occur unilaterally, or bilaterally?

**Snowflake cataract**

With the abrupt appearance of subcapsular grayish-white opacities.

As it progresses, how does its appearance change?
- It becomes a completely opacified/white cortical cataract.

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
What are the three age-related types of cataracts?

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Cortical Cataract</th>
<th>PSC</th>
<th>NSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statins</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steroids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Miotics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrared radiation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UV radiation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**

There is a DM-related cataract that is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

A ‘snowflake’ cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

Younger

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

**Diabetes mellitus**
What are the three age-related types of cataracts?

- NSC (Nuclear Sclerotic Cataract)
- PSC (Posterior Subcapsular Cataract)
- Cortical Cataract

Risk factors:
- Miotics
- Statins
- DM

Risk factors:
- Steroids
- DM

Risk factors:
- Miotics
- Infrared radiation
- UV radiation
- DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Diabetes mellitus
- How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age? They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

As it progresses, a ‘snowflake’ cataract...

- With the abrupt appearance of subcapsular grayish-white opacities
- It becomes a completely opacified/white cortical cataract

Do they tend to occur unilaterally, or bilaterally?
- Bilaterally

Do they progress slowly, or rapidly?
- Rapidly

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
- Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?
- Younger

Do they tend to occur unilaterally, or bilaterally?
- Bilaterally

Do they progress slowly, or rapidly?
- Rapidly

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
- Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?
- Younger

Do they tend to occur unilaterally, or bilaterally?
- Bilaterally

Do they progress slowly, or rapidly?
- Rapidly
What are the three age-related types of cataracts?

- NSC Cortical PSC
- Risk factors:
  - Miotics
  - Statins
  - DM

- Risk factors:
  - Steroids
  - DM

- Risk factors:
  - Miotics
  - Infrared radiation
  - UV radiation
  - DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- Diabetes mellitus
- How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?
  - They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

**Cataracts: The Big Three**

**Snowflake cataract**

- Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?
  - Poorly controlled

- Are snowflake cataracts more likely to occur in younger, or older individuals?
  - Younger

- Do they tend to occur unilaterally, or bilaterally?
  - Bilaterally

- Do they progress slowly, or rapidly?
  - Rapidly

There is a DM-related cataract which is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

- A ‘snowflake’ cataract

How does a snowflake cataract present initially?

- With the abrupt appearance of subcapsular grayish-white opacities

As it progresses:

- It becomes a completely opacified/white cortical cataract

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

- They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Do they tend to occur unilaterally, or bilaterally?

- Bilaterally

Do they progress slowly, or rapidly?

- Rapidly

Are snowflake cataracts more likely to occur in well-controlled, or poorly-controlled diabetics?

- Poorly controlled

Are snowflake cataracts more likely to occur in younger, or older individuals?

- Younger

Do they tend to occur unilaterally, or bilaterally?

- Bilaterally

Do they progress slowly, or rapidly?

- Rapidly

Diabetes mellitus
Cataracts: The Big Three

What are the three age-related types of cataracts?

NSC Cortical PSC

Risk factors:
--Miotics
--Statins
--DM

Risk factors:
--Steroids
--DM

Risk factors:
--Miotics
--Infrared radiation
--UV radiation
--DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

How does poorly-controlled diabetes lead to total cortical cataracts?

Poorly controlled

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities.

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract.

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

How do poorly-controlled NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

Diabetes mellitus
What are the three age-related types of cataracts?

- **NSC (Nuclear Sclerotic Cataract)**
  - Risk factors: Statins, DM

- **Cortical Cataract**
  - Risk factors: Miotics, Statins, DM

- **PSC (Posterior Subcapsular Cataract)**
  - Risk factors: Miotics, DM

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- **Miotics**: NSC, Cortical, PSC
- **Statins**: Cortical, PSC
- **DM**: NSC, Cortical, PSC

**Risk factors**:

- Miotics
- Statins
- DM

**DM-related cataract**

There is a DM-related cataract that is not simply an early-onset version of a senescent cataract. What is the weather-related name of this special form of cataract?

A 'snowflake' cataract

How does a snowflake cataract present initially?

With the abrupt appearance of subcapsular grayish-white opacities

As it progresses, how does its appearance change?

It becomes a completely opacified/white cortical cataract

Do they tend to occur unilaterally, or bilaterally?

Bilaterally

Do they progress slowly, or rapidly?

Rapidly

How do diabetes-related NSCs, cortical cataracts, and PSCs differ from those associated with age?

They don’t; rather, DM seems to cause age-related cataracts to occur at an earlier age.

For each risk factor, identify which type of cataract it is associated with (some will be associated with more than one):

- **Diabetes mellitus**: NSC, Cortical, PSC
What is the primary substrate in lens metabolism?
What is the primary substrate in lens metabolism?

Glucose
What is the primary process by which glucose is used to generate energy?

Glucose → Hexokinase → G6P → (two ? words) → (majority of glucose) → F6P → Pyruvate → Krebs/TCA
What is the primary process by which glucose is used to generate energy?

- Glucose $\xrightarrow{\text{Hexokinase}}$ G6P
- G6P $\rightarrow$ Anaerobic Glycolysis (majority of glucose)
  - F6P $\rightarrow$ Pyruvate $\rightarrow$ Krebs/TCA

Cataracts: The Big Three

A
What secondary process accounts for most of the rest?

Glucose $\xrightarrow{\text{Hexokinase}}$ G6P

Anaerobic Glycolysis
(majority of glucose)

F6P $\xrightarrow{\text{two ? words}}$ (5% of glucose)

Pyrurate $\rightarrow$ Krebs/TCA

Q Cataracts: The Big Three
Cataracts: The Big Three

Glucose $\xrightarrow{\text{Hexokinase}}$ G6P

**What secondary process accounts for most of the rest?**

- **Anaerobic Glycolysis**
  - (majority of glucose)
- **HMP Shunt**
  - (5% of glucose)

- $\text{G6P} \xrightarrow{} \text{F6P}$
- $\text{F6P} \xrightarrow{} \text{Pyruvate}$
- $\text{Pyruvate} \xrightarrow{} \text{Krebs/TCA}$
The top-line point: **Lens metabolism is dependent upon the presence of glucose, not oxygen.**
Glucose

In a high-glucose environment (eg: poorly-controlled DM)…

No question—proceed when ready
In a high-glucose environment (eg: poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient pathway.
In a high-glucose environment (e.g., poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway.
In a **high-glucose environment** (e.g., poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway.

But the (normal) lens is avascular. How does high serum glucose levels come to influence lens metabolism?
But the (normal) lens is avascular. How does high serum glucose levels come to influence lens metabolism? Glucose levels in the aqueous track with blood levels.

In a high-glucose environment (e.g., poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway.
A

**Glucose**

- Hexokinase → G6P
- ‘Polyol pathway’
- Anaerobic Glycolysis (majority of glucose)
- HMP Shunt (5% of glucose)
- F6P → Pyruvate → Krebs/TCA

**Cataracts: The Big Three**

**But the (normal) lens is avascular. How does high serum glucose levels come to influence lens metabolism?**
Glucose levels in the aqueous track with blood levels.

**In a high-glucose environment** (e.g., poorly-controlled DM)…
The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway.
In a high-glucose environment (eg: poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway.

What is the intermediate product of this pathway?
In a high-glucose environment (e.g., poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway. What is the intermediate product of this pathway?
By what other name is the polyol pathway known?

In a high-glucose environment (e.g., poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway. What is the intermediate product of this pathway?
Glucose

By what other name is the polyol pathway known?
The sorbitol pathway

In a high-glucose environment (eg: poorly-controlled DM)… The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway. What is the intermediate product of this pathway?
What role does sorbitol play in the development of diabetic cataracts?

The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway. What is the intermediate product of this pathway?
What role does sorbitol play in the development of diabetic cataracts? A very central one. The conversion of sorbitol to fructose is slow and inefficient, the result being the accumulation of sorbitol within lens epithelial cells. This accumulation produces an osmotic gradient across the lens capsule, resulting in an influx of water into the lens and its cells.

The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway. What is the intermediate product of this pathway?
What role does sorbitol play in the development of diabetic cataracts? A very central one. The conversion of sorbitol to fructose is slow and inefficient, the result being the accumulation of sorbitol within lens epithelial cells. This accumulation produces an osmotic gradient across the lens capsule, resulting in an influx of water into the lens and its cells. This fluid influx causes the cells to swell, ultimately damaging their cytoskeletal elements and producing a diabetic cataract.

The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway. What is the intermediate product of this pathway?
Cataracts: The Big Three

**For more on lens metabolism, see slide-set L10**

**What role does sorbitol play in the development of diabetic cataracts?**
A very central one. The conversion of sorbitol to fructose is slow and inefficient, the result being the accumulation of sorbitol within lens epithelial cells. This accumulation produces an osmotic gradient across the lens capsule, resulting in an influx of water into the lens and its cells. This fluid influx causes the cells to swell, ultimately damaging their cytoskeletal elements and producing a diabetic cataract.

The glycolysis and HMP shunt pathways become saturated, and glucose heads down the less efficient polyol pathway. **What is the intermediate product of this pathway?**
For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)
Cataracts: The Big Three

For each statement, identify the associated type of cataract:
nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon:
Associated with the *second sight* phenomenon: NSC
Associated with the *second sight* phenomenon: **NSC**

What is the *second sight* phenomenon?
For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC

*What is the *second sight* phenomenon?*
NSC progression often produces lenticular myopia. In some patients this myopia rehabilitates the near vision loss they experienced due to presbyopia, thus restoring the ability to read without glasses.
Cataracts: The Big Three

For each statement, identify the associated type of cataract:
nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status:
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
Cataracts: The Big Three

For each statement, identify the associated type of cataract:
- nuclear sclerotic (NSC);
- cortical;
- posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision:
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision:
For each statement, identify the associated type of cataract:
- **nuclear sclerotic (NSC)**; **cortical**; **posterior subcapsular (PSC)**

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
Associated with the second sight phenomenon: NSC
Related to lens hydration status: Cortical
Affects scotopic > photopic vision: NSC
Affects photopic > scotopic vision: PSC

Define these terms:
Scotopic: Related to vision in...
Photopic: Related to vision in...
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the second sight phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- Affects photopic > scotopic vision: PSC

Define these terms:
Scotopic: Related to vision in...dim illumination
Photopic: Related to vision in...bright illumination
For each statement, identify the associated type of cataract:

- **nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)**

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- Affects photopic > scotopic vision: PSC

**Define these terms:**

- **Scotopic**: Related to vision in... *dim illumination*
- **Photopic**: Related to vision in... *bright illumination*

What is the term describing vision under low (e.g., twilight) illumination conditions?
Cataracts: The Big Three

For each statement, identify the associated type of cataract: 
- nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the second sight phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- Affects photopic > scotopic vision: PSC

Define these terms:
- Scotopic: Related to vision in...dim illumination
- Photopic: Related to vision in...bright illumination

What is the term describing vision under low (e.g., twilight) illumination conditions?
- Mesopic vision
For each statement, identify the associated type of cataract:
nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision:
For each statement, identify the associated type of cataract:
nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
For each statement, identify the associated type of cataract:
nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- **Affects photopic > scotopic vision:** PSC
- Affects near > distance vision: PSC

*Photopic vision, near vision--what do these have in common?*
For each statement, identify the associated type of cataract:

- **nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)**

1. Associated with the *second sight* phenomenon: NSC
2. Related to lens hydration status: Cortical
3. Affects scotopic > photopic vision: NSC
4. **Affects photopic > scotopic vision: PSC**
5. Affects near > distance vision: PSC

*Photopic vision, near vision--what do these have in common?*

Pupillary miosis
For each statement, identify the associated type of cataract:
- nuclear sclerotic (NSC);
- cortical;
- posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- Affects photopic > scotopic vision: PSC
- Affects near > distance vision: PSC

*Photopic vision, near vision--what do these have in common?*
Pupillary miosis

*Why is vision through a PSC worse when the pupil is miosed?*
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- **Affects photopic > scotopic vision:** PSC
- Affects near > distance vision: PSC

**Photopic vision, near vision--what do these have in common?**
Pupillary miosis

**Why is vision through a PSC worse when the pupil is miosed?**
PSCs tend to be centrally located. Thus, when the pupil is dilated, incoming light can ‘go around’ the PSC, and vision is less affected. But when the pupil is miosed, incoming light is limited to that which is passing through the densest portion of the PSC, and thus results in maximally-degraded visual acuity.
For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- Affects photopic > scotopic vision: PSC
- Affects near > distance vision: PSC
- Associated with monocular diplopia:
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare:
Cataracts: The Big Three

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare: **Cortical**
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare: **Cortical**
- Least likely to c/o glare:
For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare: **Cortical**
- Least likely to c/o glare: **NSC**
For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare: **Cortical**
- Least likely to c/o glare: **NSC**
- Most likely in a younger adult:
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare: **Cortical**
- Least likely to c/o glare: **NSC**
- Most likely in a younger adult: **PSC**
For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare: **Cortical**
- Least likely to c/o glare: **NSC**
- Most likely in a younger adult: **PSC**
- Gives rise to Morgagnian cataract:
For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: **NSC**
- Related to lens hydration status: **Cortical**
- Affects scotopic > photopic vision: **NSC**
- Affects photopic > scotopic vision: **PSC**
- Affects near > distance vision: **PSC**
- Associated with monocular diplopia: **All**
- Most likely to c/o glare: **Cortical**
- Least likely to c/o glare: **NSC**
- Most likely in a younger adult: **PSC**
- Gives rise to Morgagnian cataract: **Cortical**
Cataracts: The Big Three

For each statement, identify the associated type of cataract: nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- Affects photopic > scotopic vision: PSC
- Affects near > distance vision: PSC
- Associated with monocular diplopia: All
- Most likely to c/o glare: Cortical
- Least likely to c/o glare: NSC
- Most likely in a younger adult: PSC
- Gives rise to **Morgagnian cataract**: Cortical

What is a **Morgagnian cataract**?
For each statement, identify the associated type of cataract: *nuclear sclerotic (NSC); cortical; posterior subcapsular (PSC)*

- Associated with the *second sight* phenomenon: NSC
- Related to lens hydration status: Cortical
- Affects scotopic > photopic vision: NSC
- Affects photopic > scotopic vision: PSC
- Affects near > distance vision: PSC
- Associated with monocular diplopia: All
- Most likely to c/o glare: Cortical
- Least likely to c/o glare: NSC
- Most likely in a younger adult: PSC
- Gives rise to **Morgagnian cataract**: Cortical

What is a **Morgagnian cataract**?

An end-stage cortical cataract in which the cataractous cortical material has completely liquefied. A concomitant (usually brown) NSC will sink to the bottom of the capsular bag.
What are the first manifestations of a cortical cataract?

- Most likely in a younger adult: PSC
- Gives rise to **Morgagnian cataract**: Cortical
What are the first manifestations of a cortical cataract?
The presence of two words and one word in the cortical region of the lens

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
Cataracts: The Big Three

What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

- Most likely in a younger adult: PSC
- Gives rise to **Morgagnian cataract**: Cortical
Cataracts: The Big Three

Early cortical cataract
What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (called...(two words)) at the lens periphery

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
Cataracts: The Big Three

What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
Cataracts: The Big Three

Direct illumination

Retroillumination

Cortical cataract: Early spokes
What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications ('cortical spokes') at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?
A mature cataract

Most likely in a younger adult: PSC
Gives rise to Morgagnian cataract: Cortical
Cataracts: The Big Three

Cortical cataract: Mature
What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?
A mature cataract

Occasionally, a mature candidate will absorb a clinically significant amount of water. What is the name for such a cataract?

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?
A mature cataract

Occasionally, a mature candidate will absorb a clinically significant amount of water. What is the name for such a cataract?
An intumescent cataract

Most likely in a younger adult: PSC
Gives rise to Morgagnian cataract: Cortical
Cataracts: The Big Three

Intumescent cataract
Cataracts: The Big Three

What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?
A mature cataract

Occasionally, a mature candidate will absorb a clinically significant amount of water. What is the name for such a cataract?
An intumescent cataract

Occasionally, the cortical material of an intumescent or mature cortical cataract will begin to degenerate and leach through the lens capsule. The accompanying loss of cataract mass will leave the anterior capsule with a wrinkled appearance. What is the name for such a cataract?

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?
A **mature** cataract

Occasionally, a mature candidate will absorb a clinically significant amount of water. What is the name for such a cataract?
An **intumescent** cataract

Occasionally, the cortical material of an intumescent or mature cortical cataract will begin to degenerate and leach through the lens capsule. The accompanying loss of cataract mass will leave the anterior capsule with a wrinkled appearance. What is the name for such a cataract?
A **hypermature** cataract

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
Cataracts: The Big Three

Hypermature cataract
Cataracts: The Big Three

What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?
A mature cataract

Occasionally, a mature candidate will absorb a clinically significant amount of water. What is the name for such a cataract?
An intumescent cataract

Occasionally, the cortical material of an intumescent or mature cortical cataract will begin to degenerate and leach through the lens capsule. The accompanying loss of cataract mass will leave the anterior capsule with a wrinkled appearance. What is the name for such a cataract?
A hypermature cataract

Occasionally, the entire hypermature cataract liquefies, leaving only a wrinkled bag with an NSC resting at its bottom. What is the name for such a cataract?

- Most likely in a younger adult: PSC
- Gives rise to Morgagnian cataract: Cortical
Cataracts: The Big Three

What are the first manifestations of a cortical cataract?
The presence of water clefts and vacuoles in the cortical region of the lens

What manifestation typically follows water clefts and vacuoles?
The appearance of wedge-shaped opacifications (‘cortical spokes’) at the lens periphery

Eventually, these spokes will turn white and comprise the entire lens. What is the name for such a cataract?
A **mature** cataract

Occasionally, a mature candidate will absorb a clinically significant amount of water. What is the name for such a cataract?
An **intumescent** cataract

Occasionally, the cortical material of an intumescent or mature cortical cataract will begin to degenerate and leach through the lens capsule. The accompanying loss of cataract mass will leave the anterior capsule with a wrinkled appearance. What is the name for such a cataract?
A **hypermature** cataract

Occasionally, the entire hypermature cataract liquefies, leaving only a wrinkled bag with an NSC resting at its bottom. What is the name for such a cataract?
A **Morgagnian** cataract

- Most likely in a younger adult: PSC
- Gives rise to **Morgagnian cataract**
Cataracts: The Big Three

Morgagnian cataract