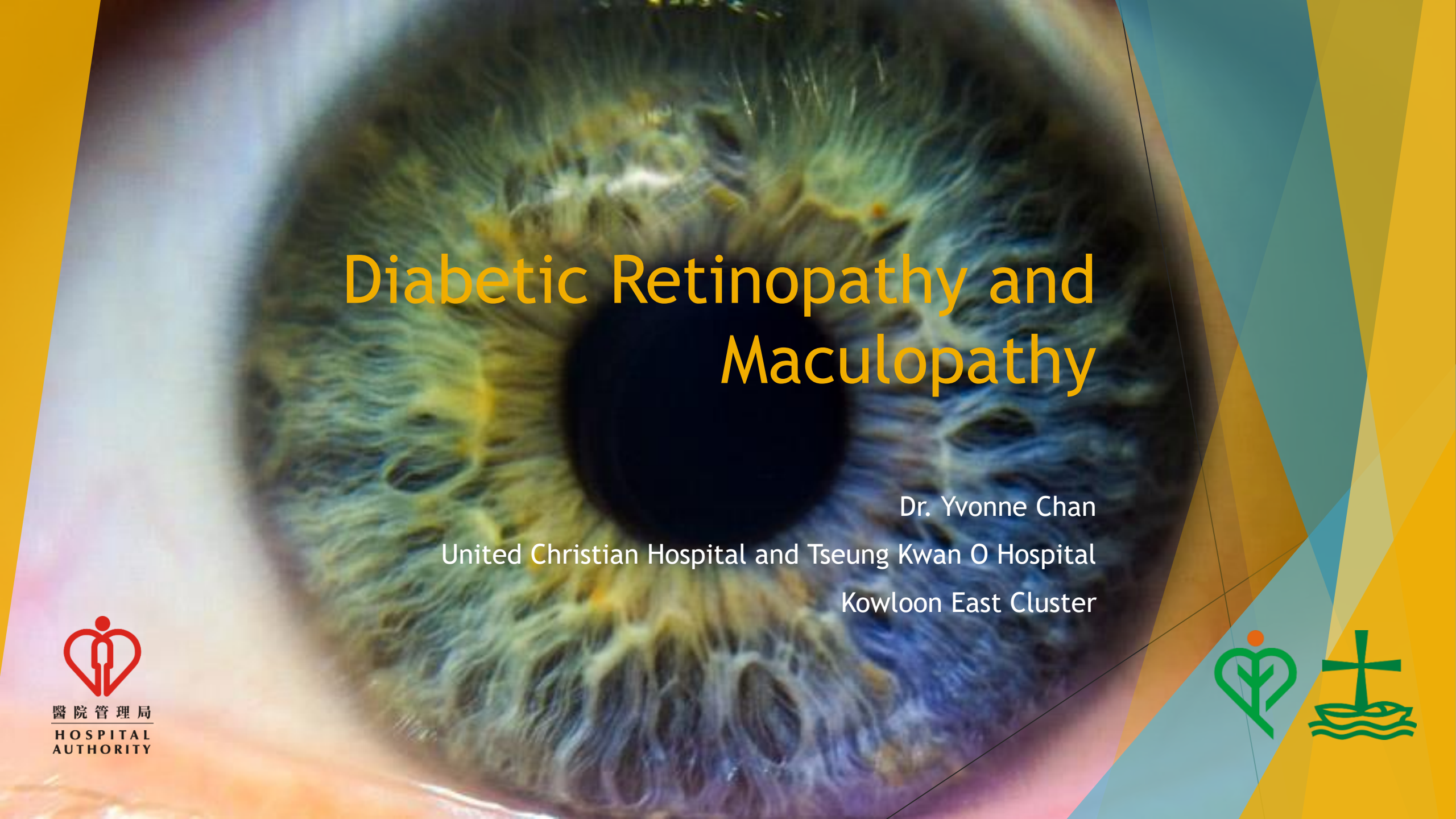


Diabetic Retinopathy and Maculopathy

Dr. Yvonne Chan
United Christian Hospital and Tseung Kwan O Hospital
Kowloon East Cluster

醫院管理局
HOSPITAL AUTHORITY

Outline

- Introduction
- Pathogenesis
- Diabetic Complications
- Management of Diabetic retinopathy and macukopathy
- Postoperative care

RESTRICTED

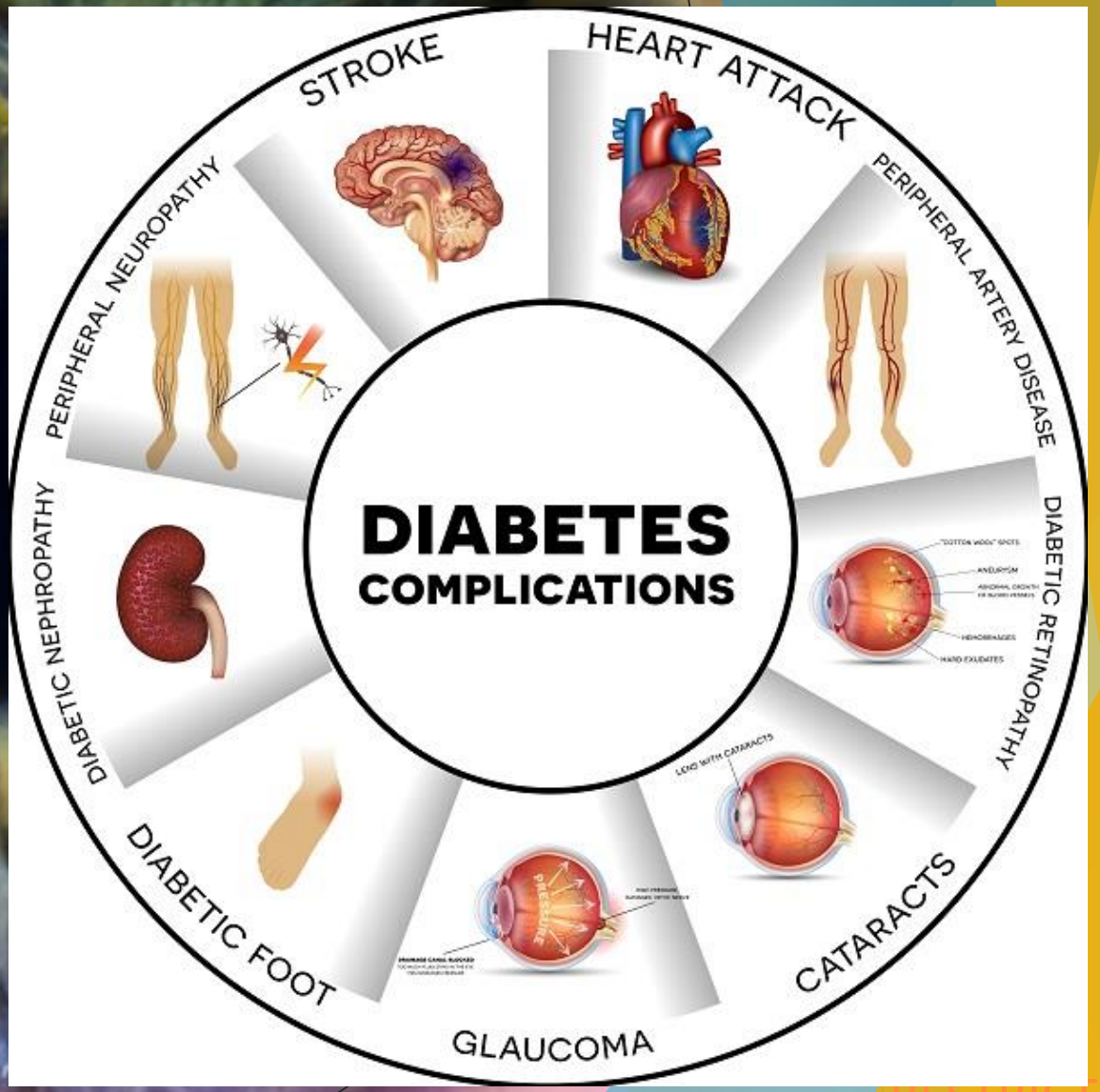
Diabetes Mellitus

- Globally aproximately 537 million adults (20-79 years) are living with diabetes.
- In HK, 8.4% population has diabetes mellitus.
- Classification:
- - Type 1 Diabetes (insulin insufficiency)
- - Type 2 Diabetes (insulin deficiency)
- - Gestational diabetes

RESTRICTED

Diabetes Mellitus

- Macrovascular Damage
- Microvascular end organs damage



RESTRICTED

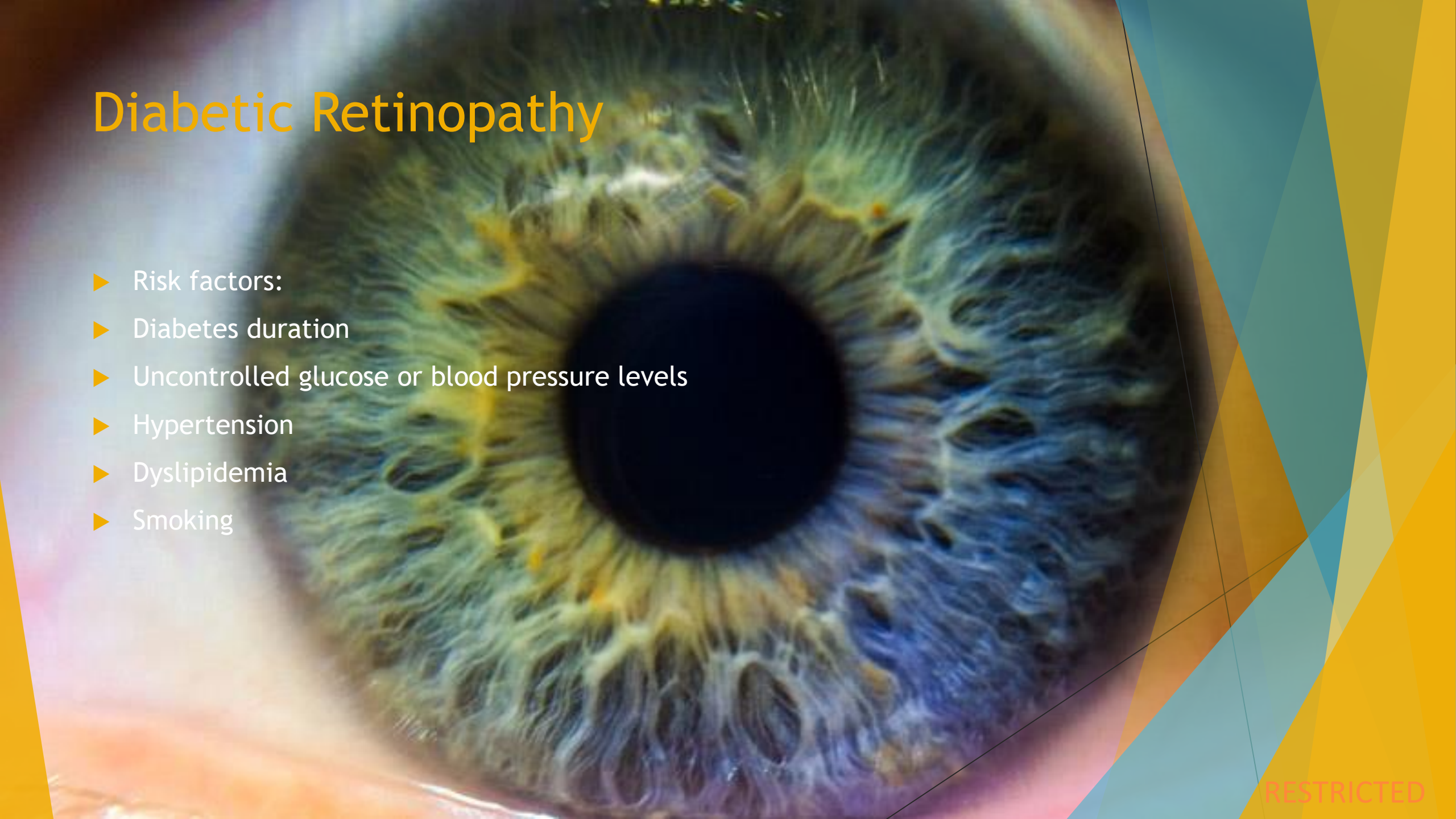
Diabetic Retinopathy

- A leading cause of blindness worldwide
- After 20 years of diabetes mellitus, 99% of patients with type 1 and 60% of patients with type 2 show some degree of retinopathy.

- Worldwide Prevalance:
- - Diabetic retinopathy : 22.27% (95% confidence interval [CI], 19.73%-25.03%)
  - Vision threatening diabetic retinopathy: 6.17% (95% CI, 5.43%-6.98%)
- - CSME: 4.07% (95% CI, 3.42%-4.82%)

RESTRICTED

Diabetic Retinopathy

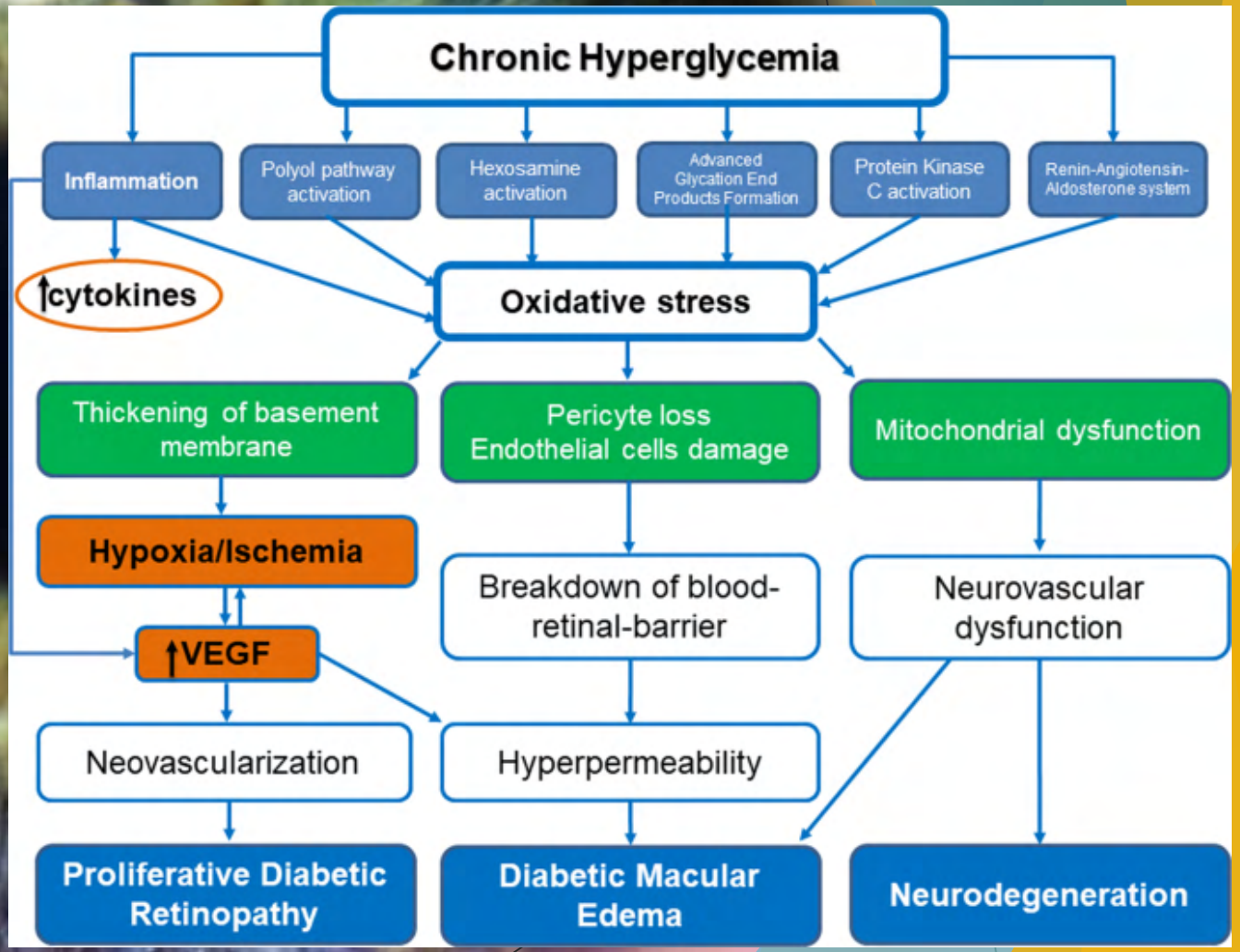


- Risk factors:
- Diabetes duration
- Uncontrolled glucose or blood pressure levels
- Hypertension
- Dyslipidemia
- Smoking

RESTRICTED

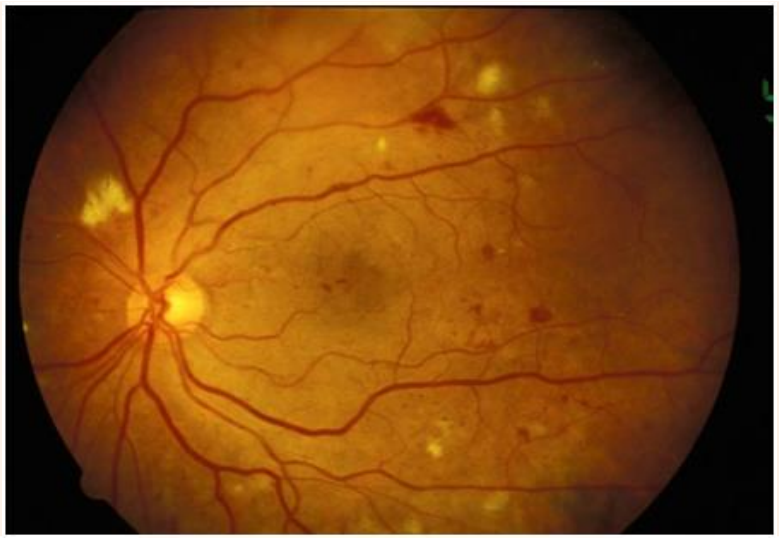
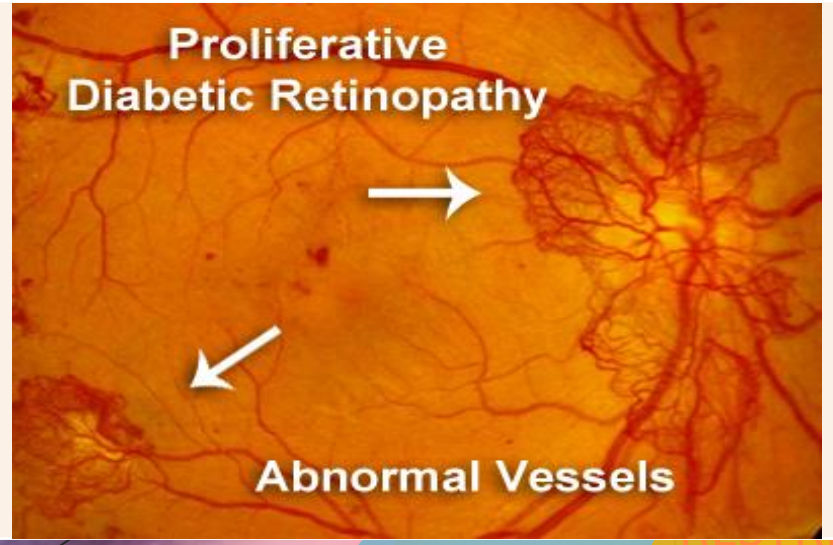
Pathogenesis

- Chronic Hyperglycemia leading to microangiopathy
- - Microvascular occlusion and neovascularisation (Proliferative diabetic retinopathy)
- - Hyperpermeability and leakage (Diabetic macular edema)

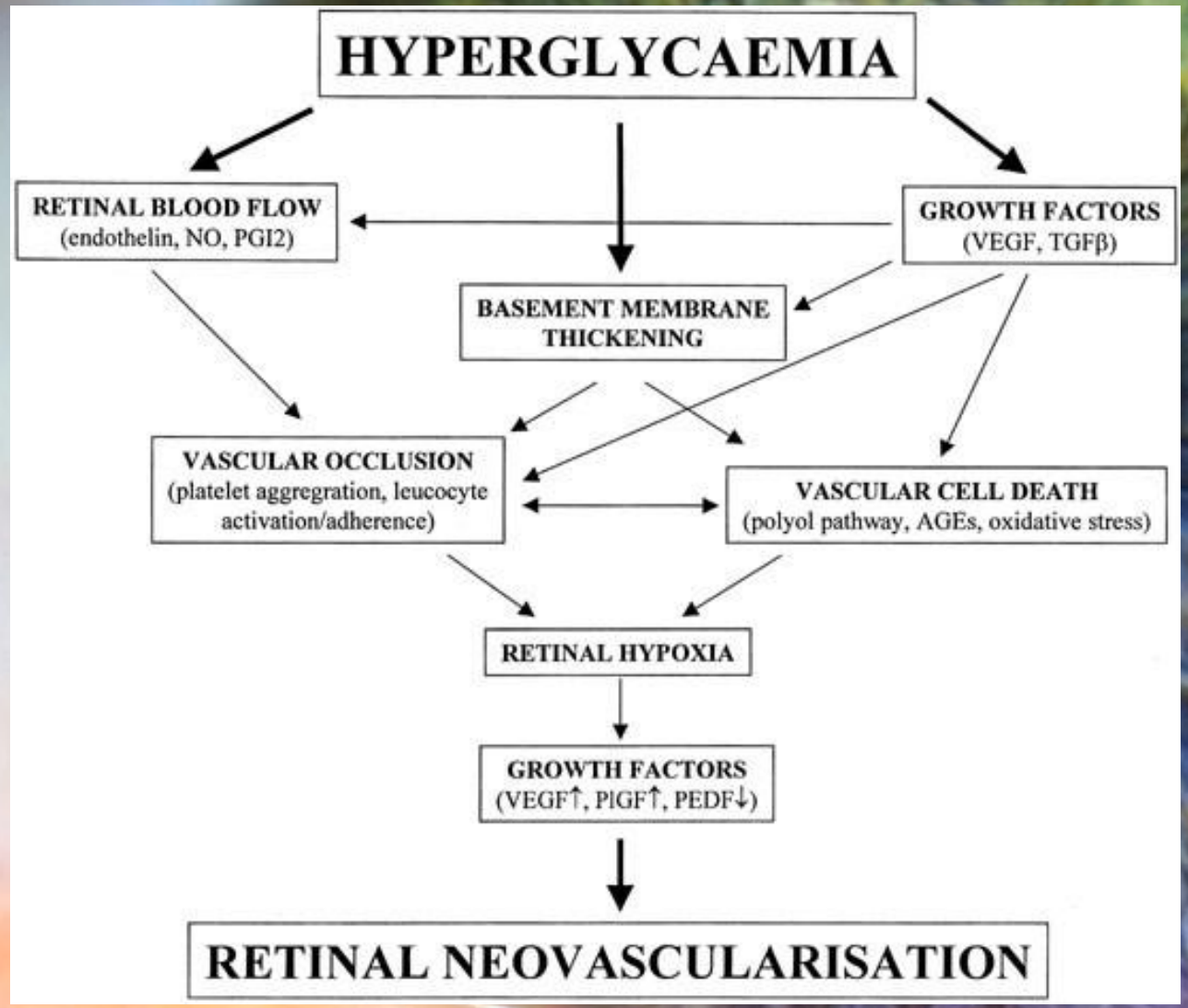


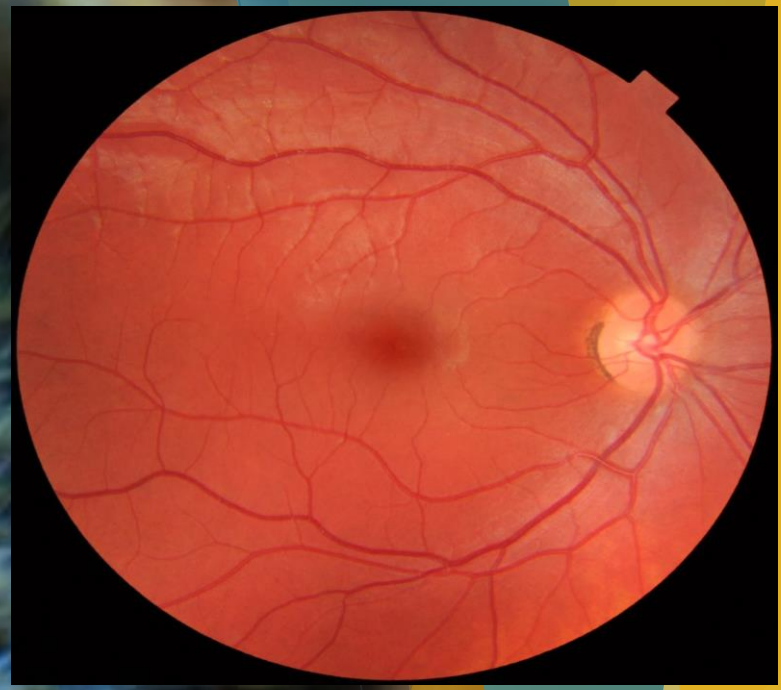
RESTRICTED

Diabetic Retinopathy - Classification

Non-proliferative diabetic retinopathy	Proliferative diabetic retinopathy
Mild: few microaneurysms Moderate: increased number of microaneurysms and dot-blot hemorrhages. Cotton wool spots and hard exudates may be present. Severe: "4-2-1 rule" - 4 quadrants of diffuse retinal hemorrhages and microaneurysms, 2 or more quadrants of venous beading, or 1 or more quadrant of IRMA	Presence of neovascularisaion of the disc (NVD)/neovascularisaion elsewhere (NVE)
	

Proliferative diabetic retinopathy







Complications of Proliferative diabetic retinopathy



Vitreous Haemorrhage

Tractional Retinal Detachment

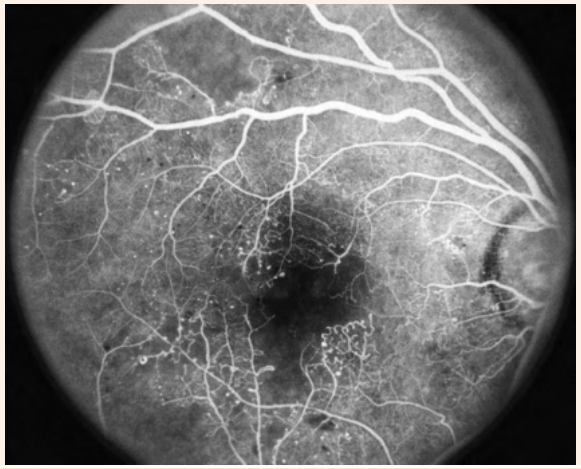
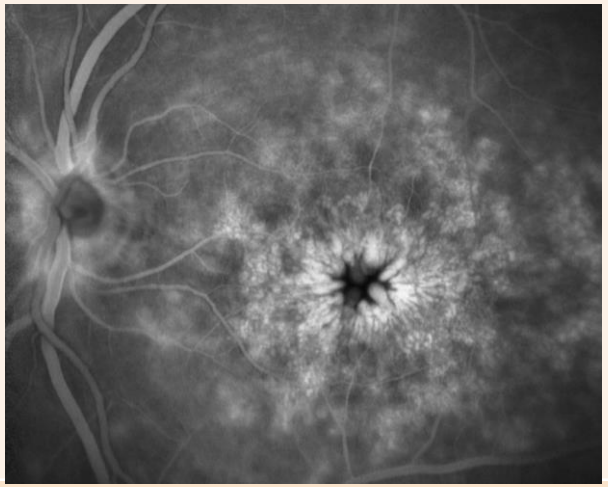
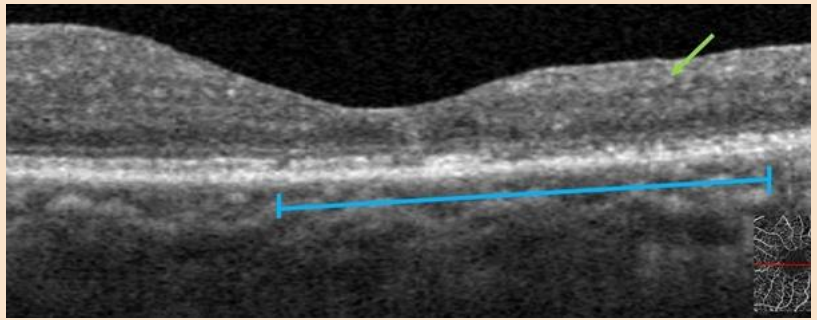
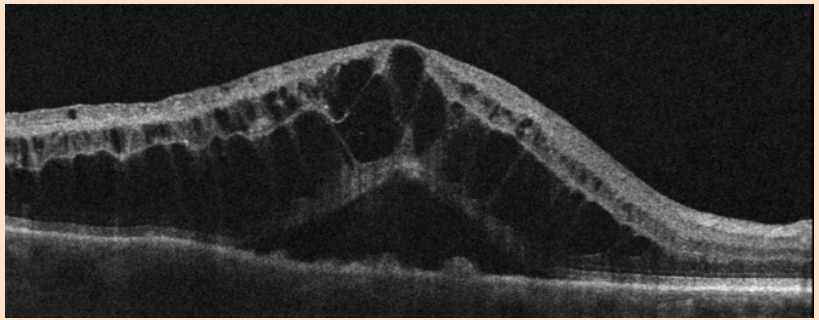




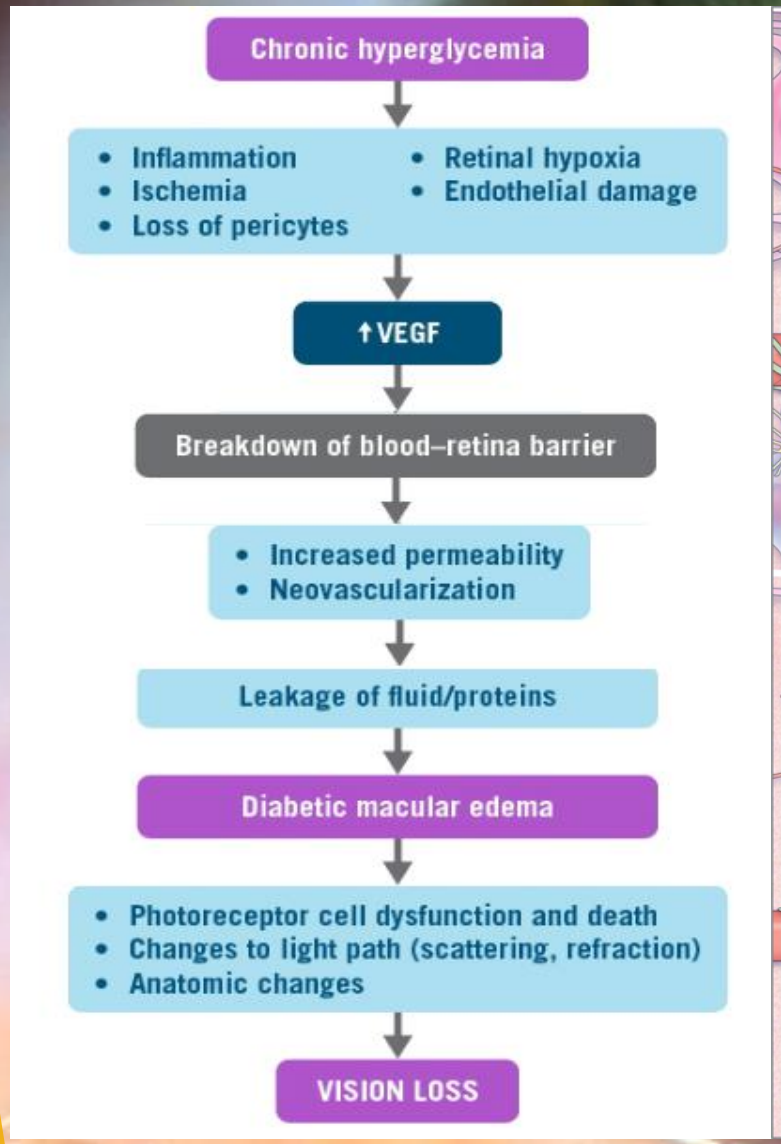
Neovascular glaucoma

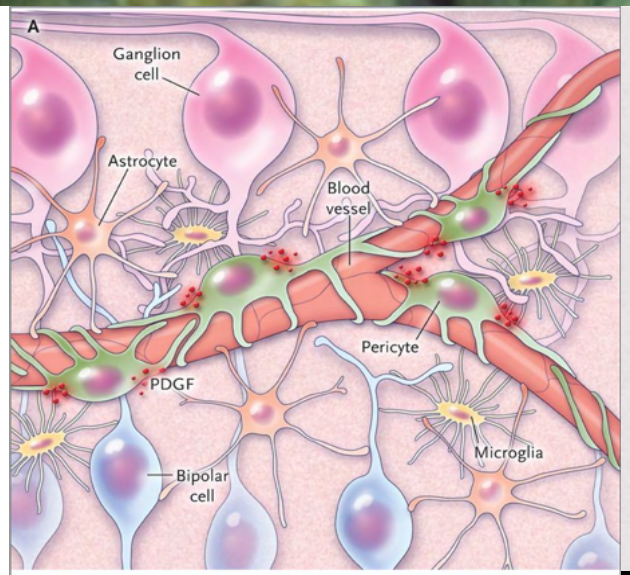
RESTRICTED

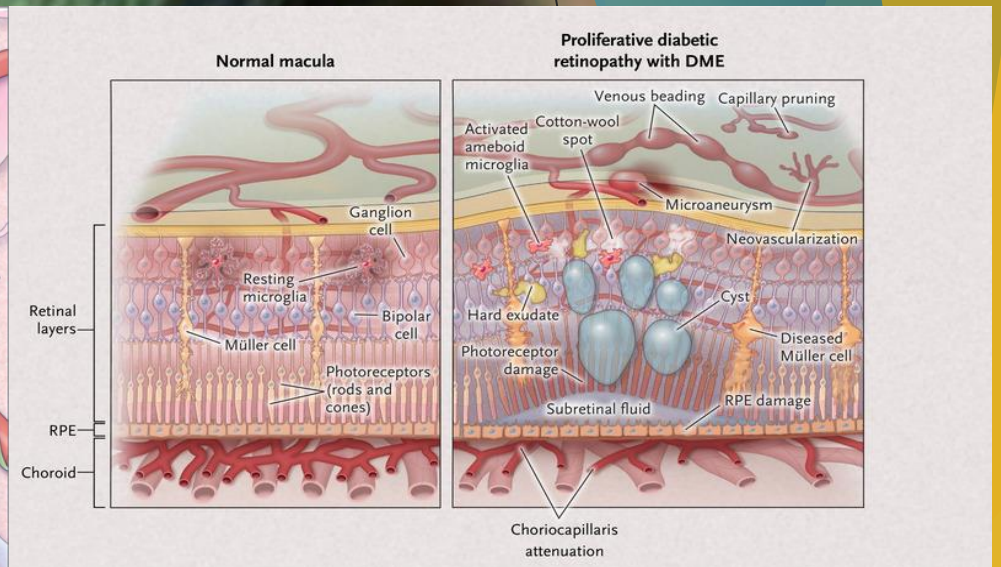
Diabetic maculopathy - Classification

Ischemic Maculopathy	Macular edema
the presence of occlusion, atrophy and/or loss of retinal capillaries in the macula, with narrowing or obliteration of precapillary arterioles	Cenre- involving DME Non centre involving DME
	
	

Diabetic macular edema









Diagnosis

- History
- Decreased vision or fluctuating vision (diabetic maculopathy / vitreous haemorrhage)
- Presence of floaters (vitreous hemorrhage)
- Visual field defects (tractional detachment)

RESTRICTED

Diagnosis

- Clinical Exam
- Visual acuity
- Pupillary reaction
- Intraocular pressure
- Anterior segment: Neovacularisaion of iris or angle, cataract
- Posterior segment:
- Vitreous: Vitreous haemorrhage
- Retina: Neovascularisation, Pre-retinal haemorrhage, tractional retinal detachment
- Macula: Cystoid macular edema, Exudates, macular thickening

RESTRICTED

Diagnosis



- Investigations
- Blood tests: Hba1c, Lipid level, Renal function
- Optical Coherance Tomography (OCT)
- Fluorescein angiography (FFA)

RESTRICTED

Management



- General
- Systemic optimisation of diabetes, hypertension, hyperlipidemia, and nephropathy

RESTRICTED

Management - Diabetic retinopathy

- When to treat ?
  - Severe NPDR
  - Proliferative retinopathy

RESTRICTED

Management - Diabetic retinopathy

- When to treat ?
  - Severe NPDR
  - Proliferative retinopathy

RESTRICTED

Management - Diabetic retinopathy

- Treatment Options

Non - Surgical

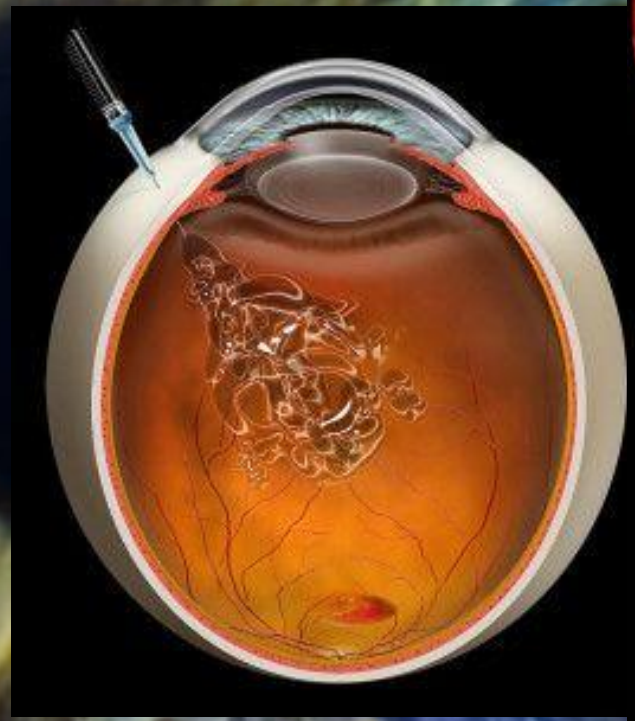
Panretinal photocoagulation (PRP)

Surgical

Intravitreal Anti- VEGF injection

Pars plana vitrectomy in selected cases

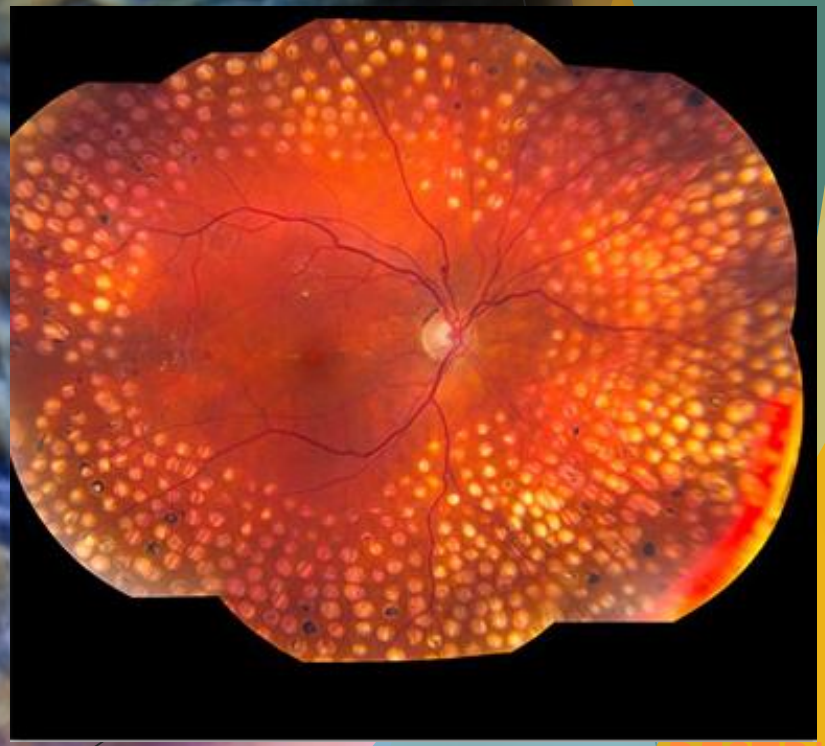






Management - Diabetic retinopathy

- Panretinal photocoagulation (PRP)
- Destroys photoreceptors at peripheral retina to reduce oxygen consumption
- Improves oxygenation and reduces hypoxia
- reduces VEGF production

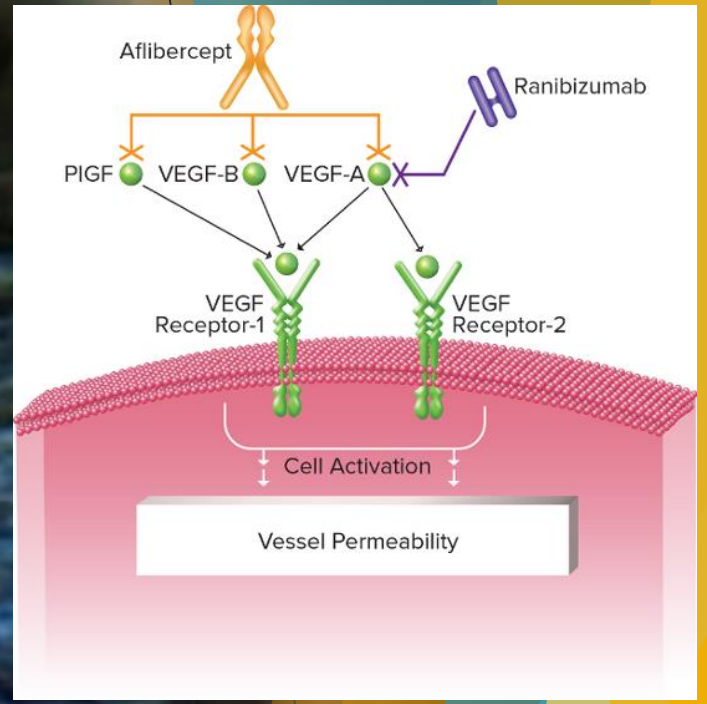


RESTRICTED

Management - Diabetic retinopathy

- Intravitreal Anti- VEGF injection
- Reduces level of VEGF and therefore reduces vessel permeability and neovascularisation

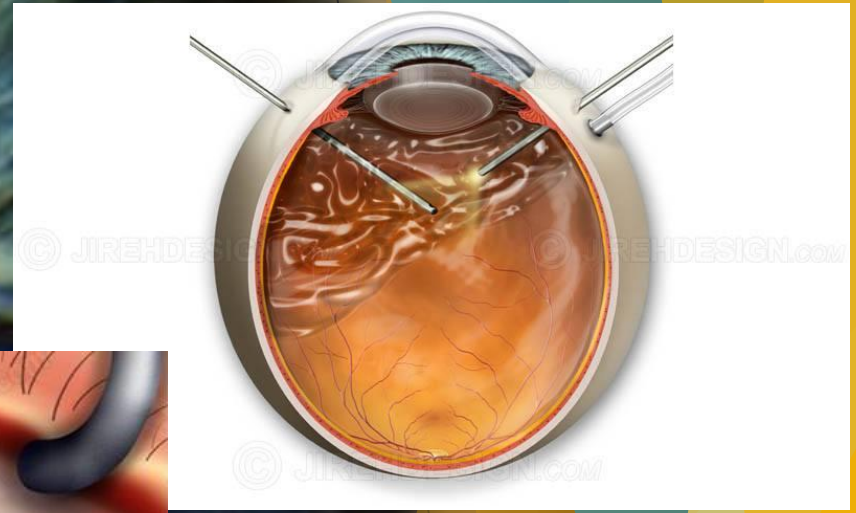
Drug	Unlicensed Bevacizumab	Aflibercept	Ranibizumab	Brolucizumab
Format	Full antibody (IgG1)	VEFGR1/2-Fc Fusion Protein	Fab Fragment	Single-Chain Antibody Fragment
Molecular Structure				
Molecular Weight	= 149 kDa	97-115 kDa	= 48 kDa	26 kDa
Clinical Dose	1.25 mg	2.00 mg	0.50 mg	6.00 mg
Equivalent Molar Dose	0.4-0.5	1.0	0.5-0.6	11.2-13.3

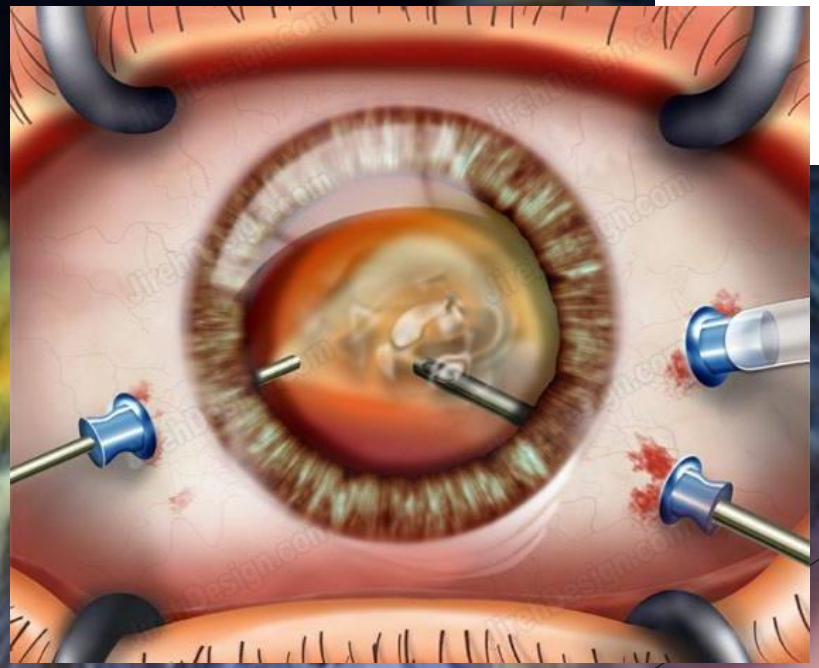


RESTRICTED

Management - Diabetic retinopathy

- Pars plana vitrectomy (PPV)
- - clears vitreous opacity/ Haemorrhage to facilitate endolaser PRP
- - tractional retinal detachment





RESTRICTED

Management - Diabetic macular edema

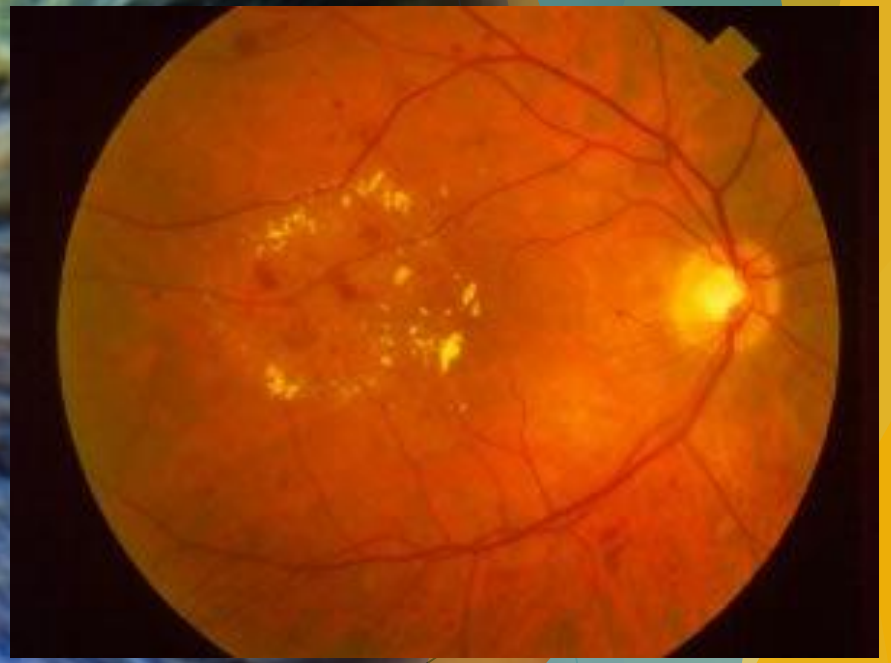
When to treat ?

Clinically significant macular edema (CSME)

- Retinal thickening within 500 µm of the center of the fovea

- Hard, yellow exudates within 500 µm of the center of the fovea with adjacent retinal thickening

- At least 1 disc area of retinal thickening, any part of which is within 1 disc diameter of the center of the fovea



RESTRICTED

Management - Diabetic macular edema

- Treatment Options:
- Non surgical
- - Focal / grid laser therapy
- Surgical
- - Intravitreal Anti- VEGF/ steroid injections
- - Pars plana vitrectomy

RESTRICTED

Post-Operative Care - General



- Monitor systemic vitals
- - BP/P
- - systemic complaints
- Observe for any complications
- - Any bleeding/ discharge
- - Patient's ophthalmic complaints
- Observe for any S/S of increase intraocular pressure (IOP)
- - Eye or head pain
- - Vomiting or nausea
- - Blurred vision/ halo

RESTRICTED

Post-Operative Care - Eye shield

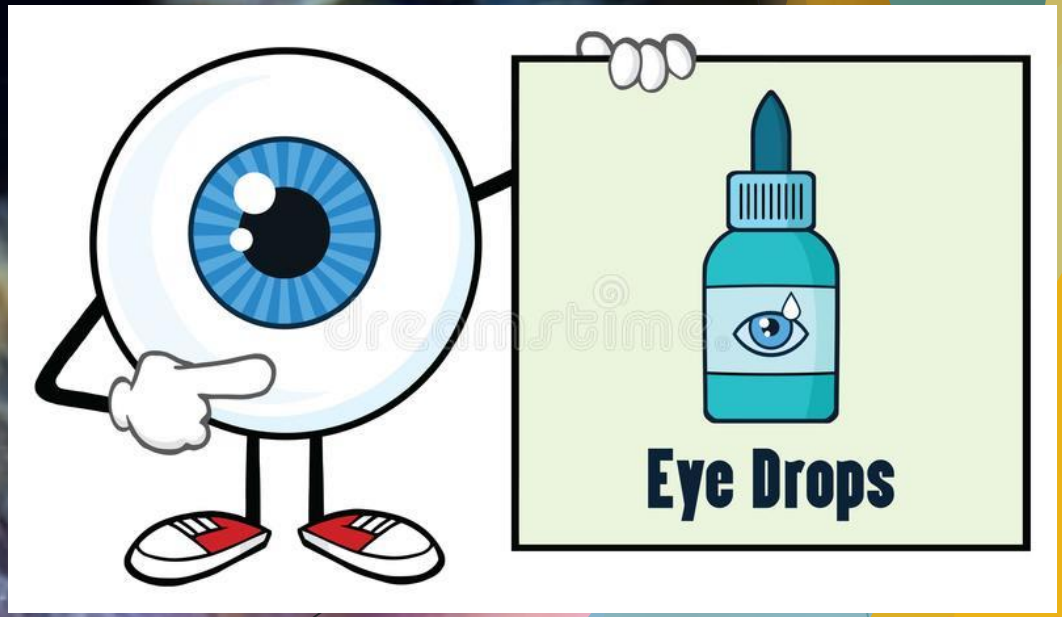
- Maintain the eye patch or eye shield in place - helps prevent inadvertent
- injury to the operative site.



RESTRICTED

Post-Operative Care - Medications

- • Medications are prescribed postoperatively to prevent infection or
- inflammation of the operative site, control intraocular pressure.
- • Eye medications: Nadexin, Pred Forte, Cravit
- • Oral medications: Diamox , Slow K



RESTRICTED

Post-Operative - Patient education

- Lid hygiene
- Preparation
- • Cooled boiled water/ distilled water
- • Clean cotton wool ball or gauze

- • Method
- • Wash and dry your hands.
- • Soak cotton wool ball or gauze with boiled water.
- • Clean eyelids from the inside corner (near the nose) outwards and with
- one swab once only principle.

RESTRICTED

Post-Operative - Patient education

- • Eye drops and ointment administration



使用
眼藥水及眼藥膏
須知

1. 未開啟的眼藥水或眼藥膏是已消毒的，在使用期內要保持清潔。
2. 用眼藥膏後視覺會短暫模糊，不久即回復正常。
3. 眼藥水與眼藥膏同用時應先滴眼藥水。
4. 若同時需用兩種以上藥水，請相隔5分鐘以上，才使用另一種藥物，以助藥物吸收。
5. 切勿將自己的藥物給予他人使用。
6. 切勿用已變色或過期的藥水／藥膏。
7. 藥瓶開啟一個月後不宜再用。
8. 未經醫生指示，切勿自行購買／使用眼藥水或眼藥膏。

眼藥水及眼藥膏之
正確使用方法及須知

使用眼藥水的正確方法

1 確定所用眼藥水，先清潔雙手，然後將頭仰後或躺卧床上。

2 用手指輕輕將眼皮拉下成袋狀，眼向上望，瓶咀距離眼睛一吋。輕按藥瓶底將眼藥水滴入眼袋內（一滴眼藥水已足夠）。
注意：勿把瓶咀接觸眼部，以免損害眼睛及染污藥瓶瓶咀。

3 滴藥後輕閉眼睛，用清潔紙巾拭去流出眼外多餘藥水。同時，以手指輕壓眼角鼻樑處，以防止藥水流失。

4 用後必須立即蓋好藥瓶，並存放在陰涼和兒童不能觸及的地方。

眼藥水

眼藥水及眼藥膏之
正確使用方法及須知

眼藥水及眼藥膏之
正確使用方法及須知

使用眼藥膏的正確方法

1 確定所用眼藥膏，先清潔雙手，然後將頭仰後或躺臥床上。

2 用手指輕輕將眼皮拉下成袋狀，向上望，擠出約4、5毫米（約1粒米大小）的眼藥膏在眼袋內。
注意：不要讓眼藥膏咀接觸眼部，以免損害眼睛及染污藥膏。

3 搽藥膏後輕眨眼睛，使藥膏均勻分佈眼內，然後閉上眼睛，用清潔紙巾拭去眼外多餘藥膏。

4 用藥後必須立即蓋好眼藥膏筒，並存放在陰涼和兒童不能觸及的地方。

眼藥膏

眼藥水及眼藥膏之
正確使用方法及須知

資料由九龍東醫院聯網眼科部提供
視覺及美術設計組製作

RESTRICTED

Post-Operative - Patient education

- • Post-operative positions
- Posturing is used after some operations.
- Posture as instructed during the day with a 10-15 minute break every
- hour.
- • Head allowed to be upright for toilet purposes and for meals.

RESTRICTED

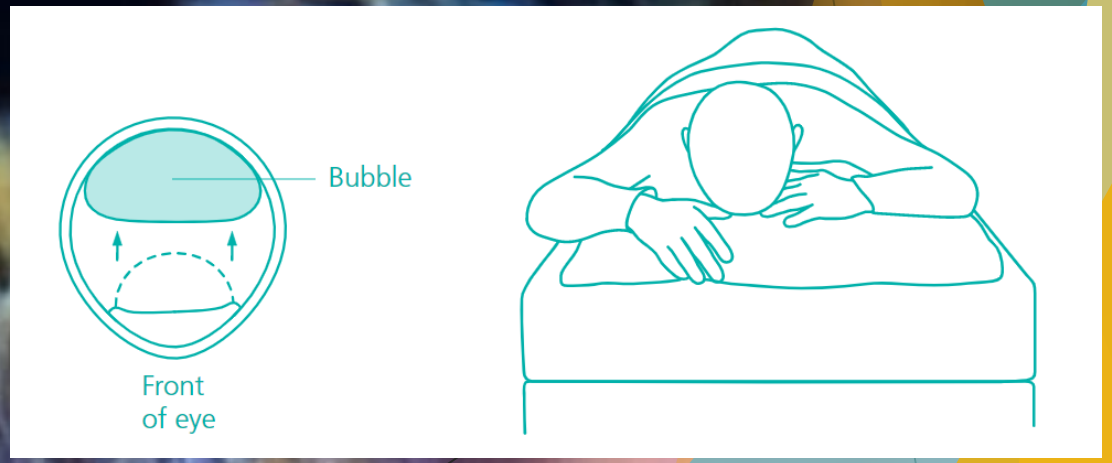
Post-Operative - Positions

- Face down

- Head must be positioned so face is parallel to the floor.
- • An inflatable travel pillow and a neck massage helps with posturing.





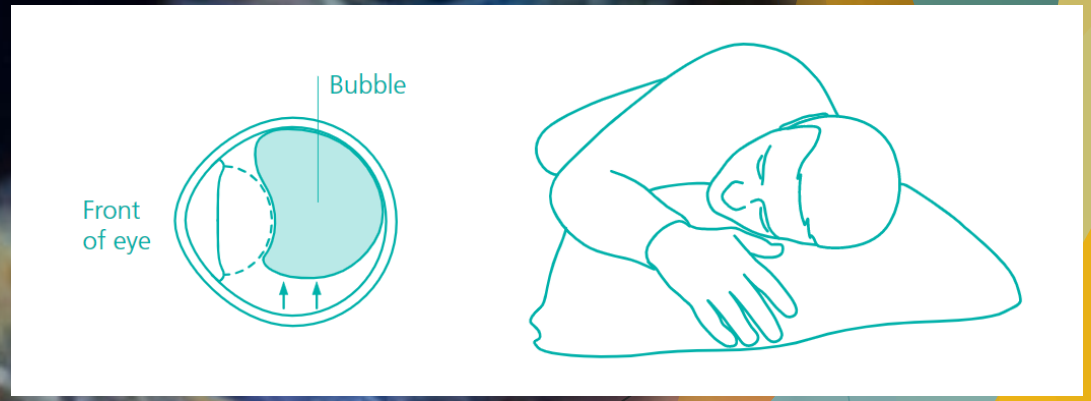


RESTRICTED

Post-Operative - Positions

- Right lateral/ right cheek to pillow
- Left lateral/ left cheek to pillow

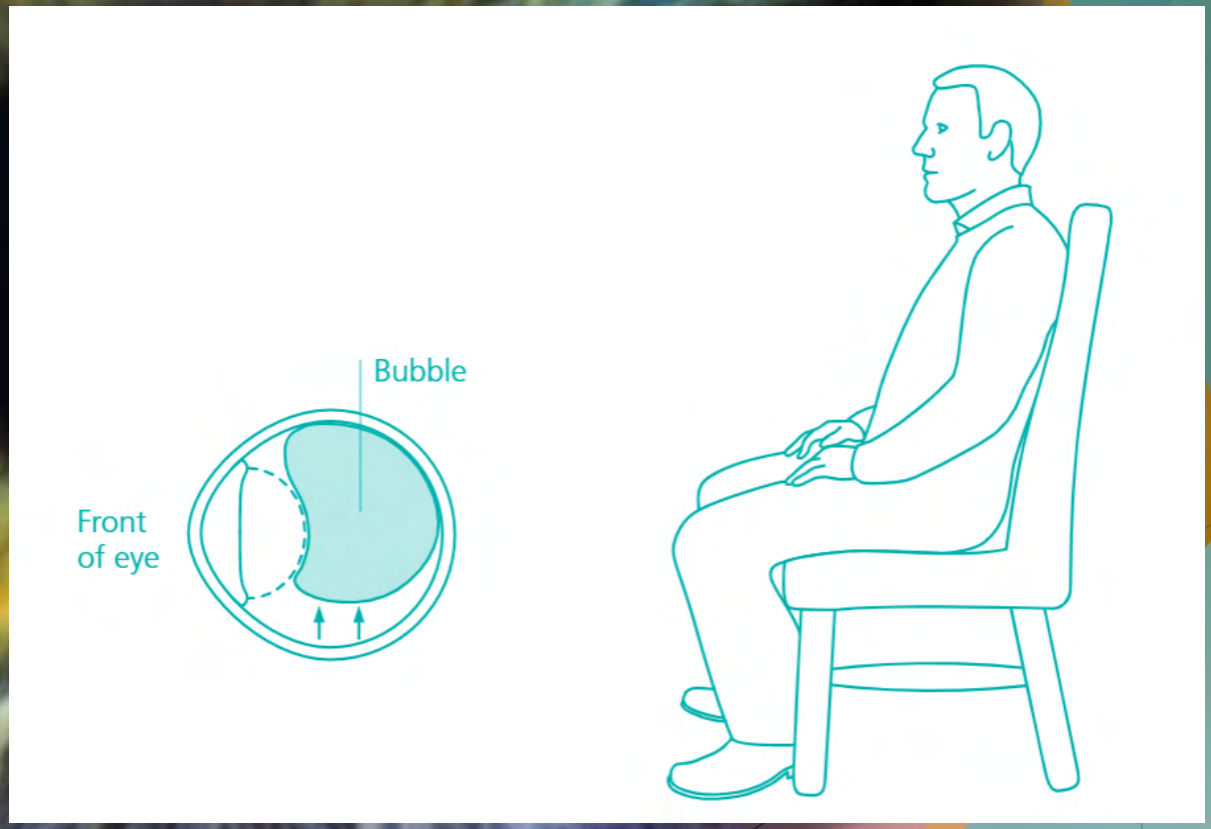




RESTRICTED

Post-Operative - Patient education

- •Sit up position



RESTRICTED

Post-Operative - Patient education

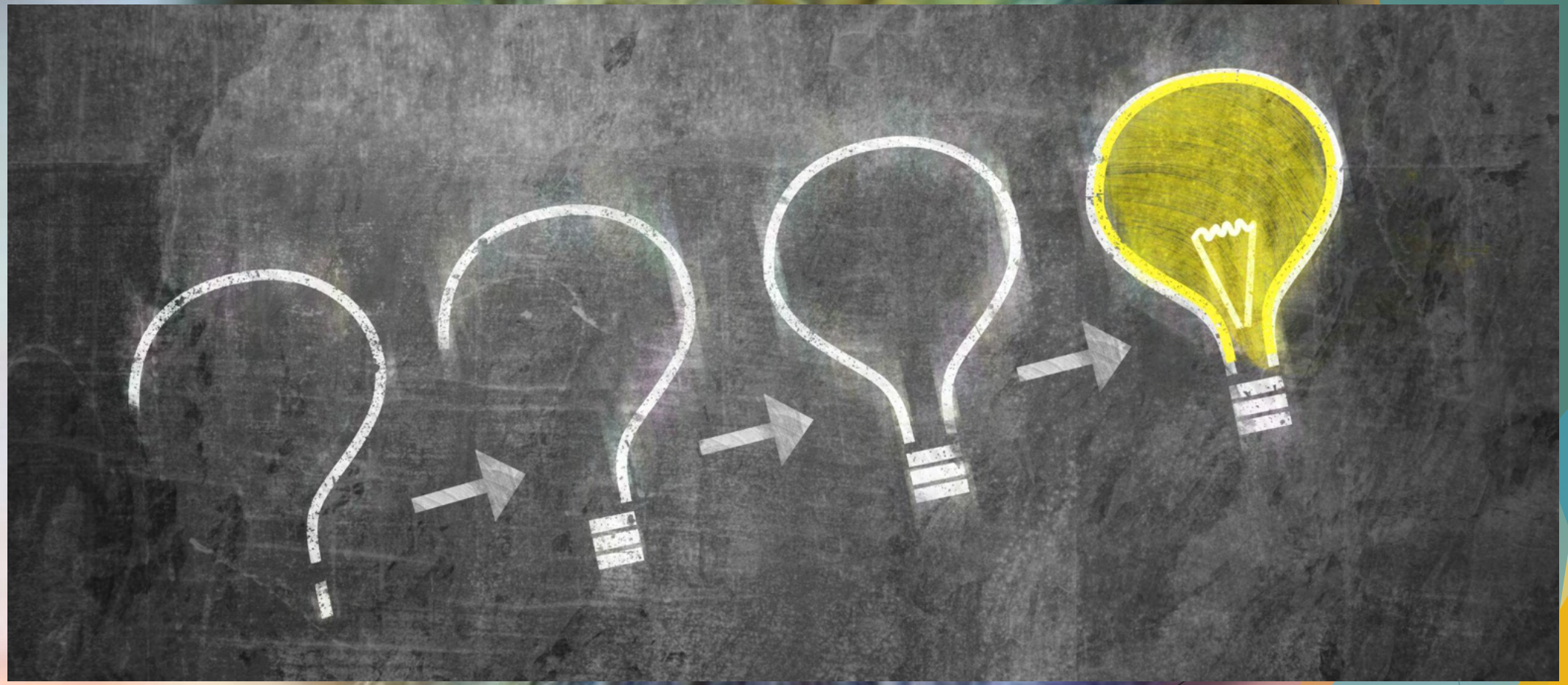
- Avoid excessive coughing.
- • Avoid strenuous activity. (e.g. weight lifting & swimming)
- • Avoid constipation.
- • Maintain post-operative posture.
- • Do not fly in a plane or mountain climbing until intraocular gas is fully absorped.





RESTRICTED

Questions



RESTRICTED