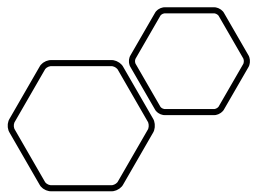




COVID-19 and the eye

Dr. Stephen Gichuhi
Department of Ophthalmology



Scope

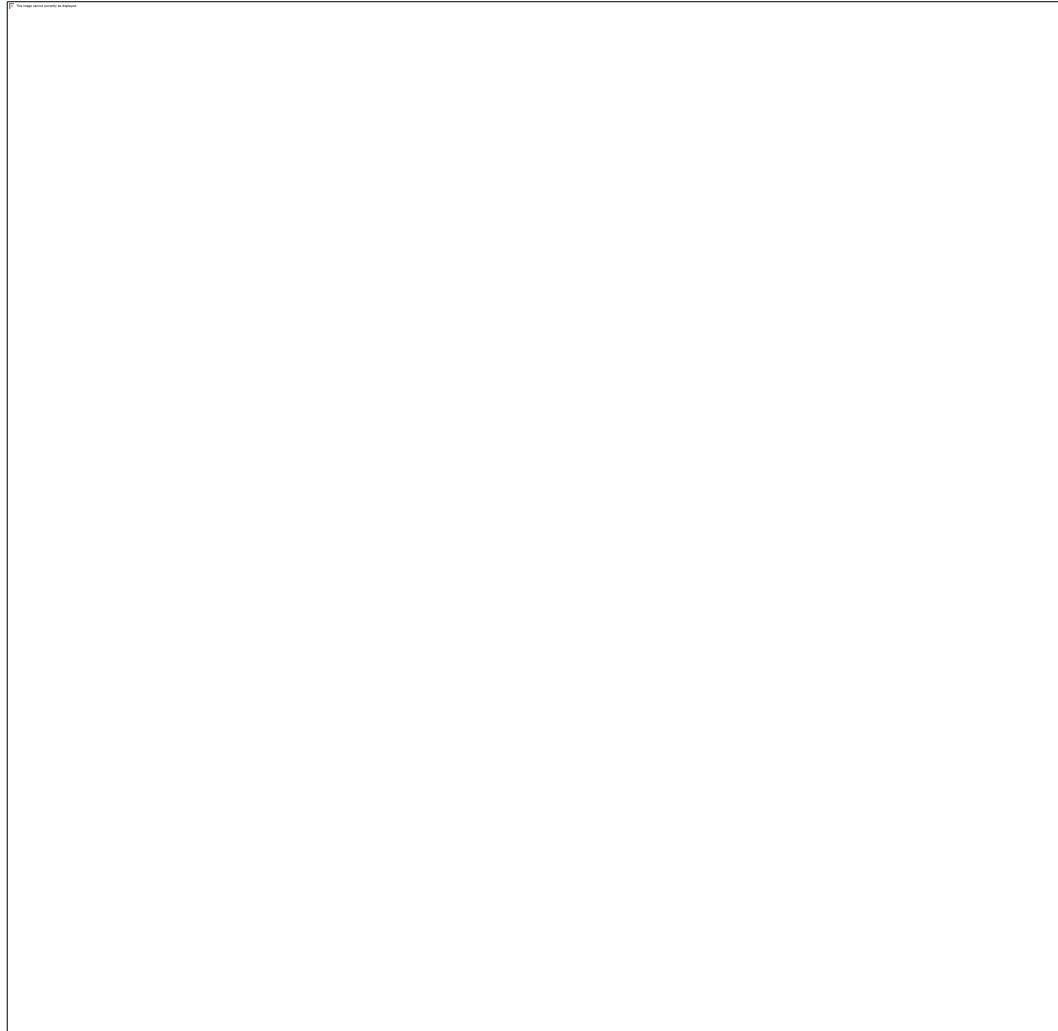
Clinical course of a COVID-19 case

Ocular manifestations of COVID-19

Safety measures in eye clinics

Impact on other eye diseases

SARS-CoV-2



30/12/2019

Sees a patient's report SARS +ve

8/1/2020

Attends to patient with acute angle closure glaucoma
Storekeeper at Huanan seafood market.

9/1/2020

Patient develops fever

10/1/2020

Li develops fever + cough

12/1/2020

Li admitted ICU

12th – 30th

Li tested
several times

30/1/2020

Tests +ve

1/2/2020

Diagnosed
COVID +ve

5/2/2020

Critical

6/2/2020


O₂ saturation
falls to 85%.

7/1/2020

Reported
dead



Dr Li Wenliang
Ophthalmologist



JAMA Ophthalmology | **Brief Report**

Characteristics of Ocular Findings of Patients With Coronavirus Disease 2019 (COVID-19) in Hubei Province, China

Ping Wu, MD; Fang Duan, MD; Chunhua Luo, MD; Qiang Liu, MD; Xingguang Qu, MD;
Liang Liang, MD; Kaili Wu, MD

JAMA Ophthalmol. doi:[10.1001/jamaophthalmol.2020.1291](https://doi.org/10.1001/jamaophthalmol.2020.1291)
Published online March 31, 2020.



Participants

38 patients with
COVID-19

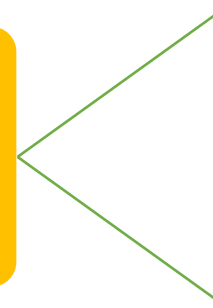
COVID-19 case
definition

Median age 68
years

Males 66%

fever and/or
respiratory
symptoms

lung CT scan
features of COVID-
19 pneumonia



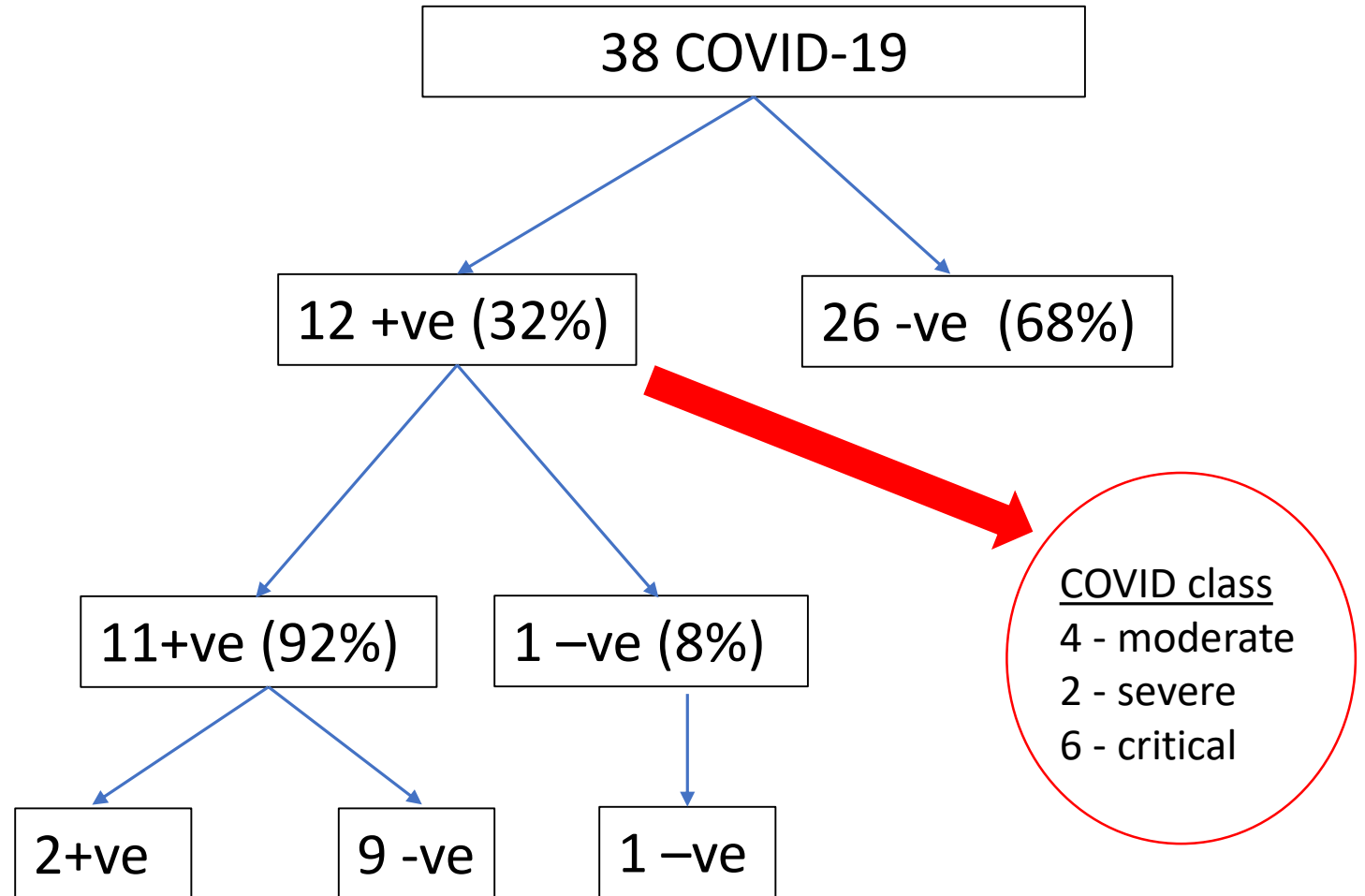
Ocular manifestations

Conjunctivitis:

- Epiphora (1st symptom)
- Hyperemia
- Chemosis

Nasopharyngeal swab
RT-PCR

Conjunctival swab
RT-PCR



COVID-19 Respiratory disease class

Moderate

- fever
- respiratory symptoms
- and lung CT imaging findings

Severe

- dyspnea (respiratory cycles ≥ 30 cycles/min)
- blood O_2 saturation $\leq 93\%$
- arterial partial pressure O_2 inspiration ratio of ≤ 300

Critical

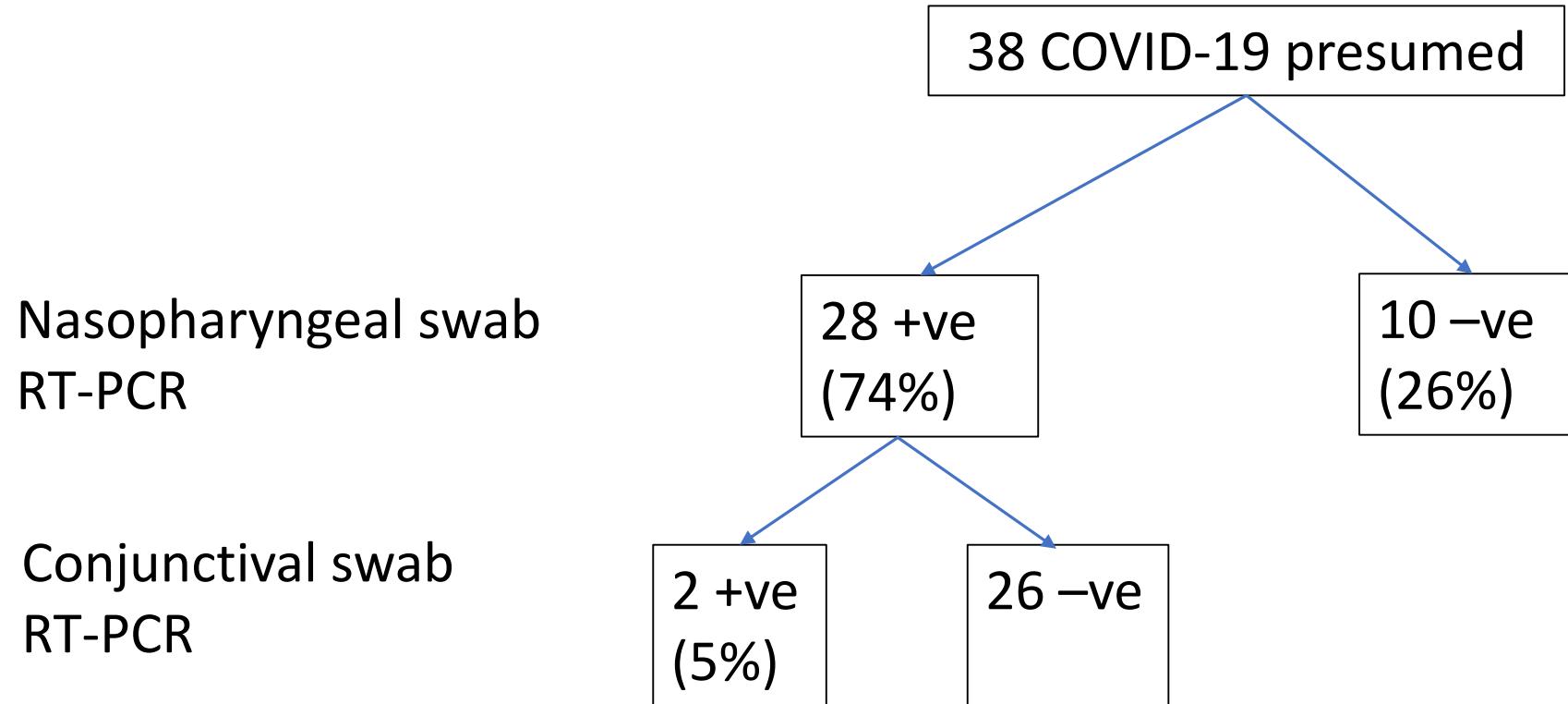
- respiratory failure
- shock
- multiple organ dysfunction/failure

Other laboratory test results

Test Mean(SD) or n(%)	All (N=38)	Ocular symptoms (N=12)	No ocular symptoms (N=26)	Difference	p- value
WBC/ μ l,	7360 (4480)	10 900 (5580)	5730 (2690)	5160 (2460-7860)	.009
Neutrophil count / μ l,	5920 (4640)	9510 (5820)	4260 (2820)	5250 (2430-8070)	.01
PCT \geq 0.05ng/ mL, n(%)	15 (40.5)	8 (66.7)	7 (28.0)	0.39 (0.06-0.71)	.03
CRP, mg/dL	5.17 (6.30)	8.55 (8.87)	3.61 (4.02)	4.95 (0.7-9.15)	.04
LDH, U/L	281.11 (154.47)	381.7 (196.52)	234.65 (105.89)	147.10 (48.04- 246.15)	.03

WBC = white blood cell count; PCT = Pro-calcitonin; CRP = C-reactive protein; LDH= lactate dehydrogenase

Reverse Transcriptase PCR results



Co-morbidities in COVID-19 patients

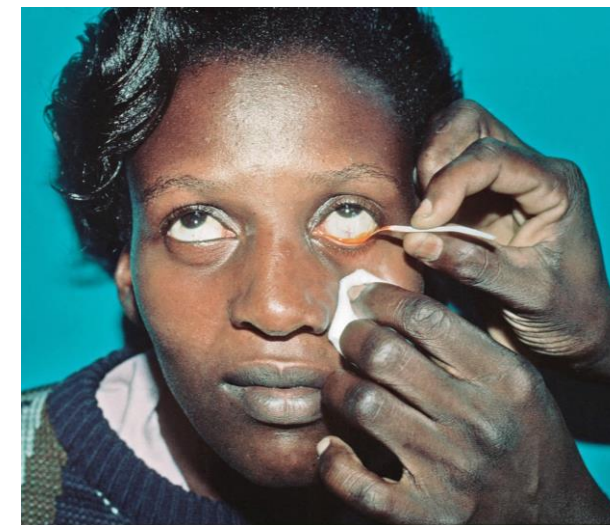
	<u>N=41</u>
Any comorbidity	13 (32%)
Diabetes	8 (20%)
Hypertension	6 (15%)
Cardiovascular disease	6 (15%)
Chronic obstructive pulmonary disease	1 (2%)
Malignancy	1 (2%)
Chronic liver disease	1 (2%)



Lancet 2020; **395**(10223): 497-506.

	<u>N=138</u>
Comorbidities	64 (46.4)
Hypertension	43 (31.2)
Cardiovascular disease	20 (14.5)
Diabetes	14 (10.1)
Malignancy	10 (7.2)
Cerebrovascular disease	7 (5.1)
COPD	4 (2.9)
Chronic kidney disease	4 (2.9)
Chronic liver disease	4 (2.9)
HIV infection	2 (1.4)

JAMA. 2020;323(11):1061-1069. doi:[10.1001/jama.2020.1585](https://doi.org/10.1001/jama.2020.1585)
Published online February 7, 2020. Corrected on February 20, 2020.

Implications for ophthalmic clinical procedures






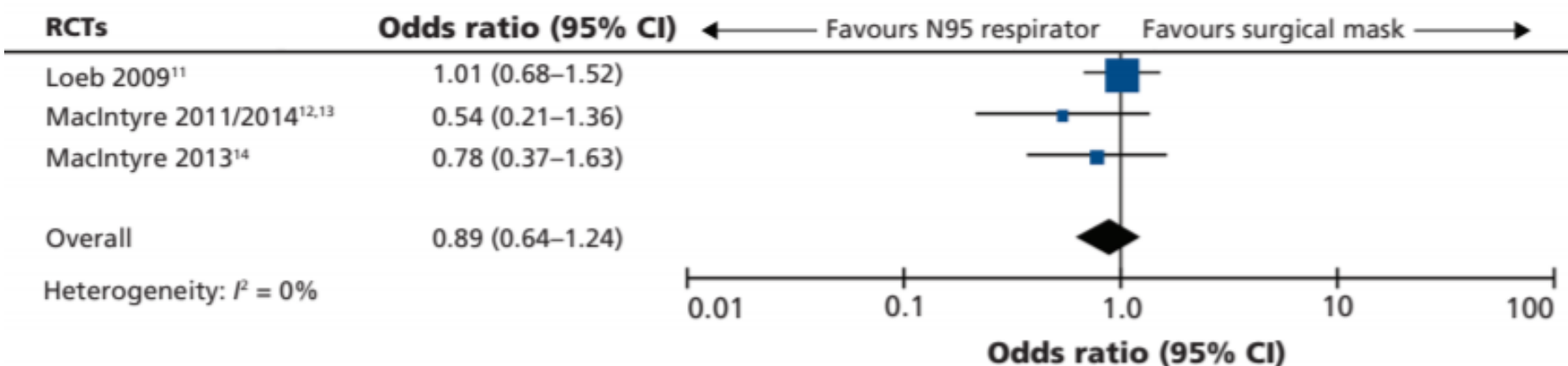
CMAJ. 2016 May 17;188(8):567-574. doi: 10.1503/cmaj.150835. Epub 2016 Mar 7.

Effectiveness of N95 respirators versus surgical masks in protecting health care workers from acute respiratory infection: a systematic review and meta-analysis.

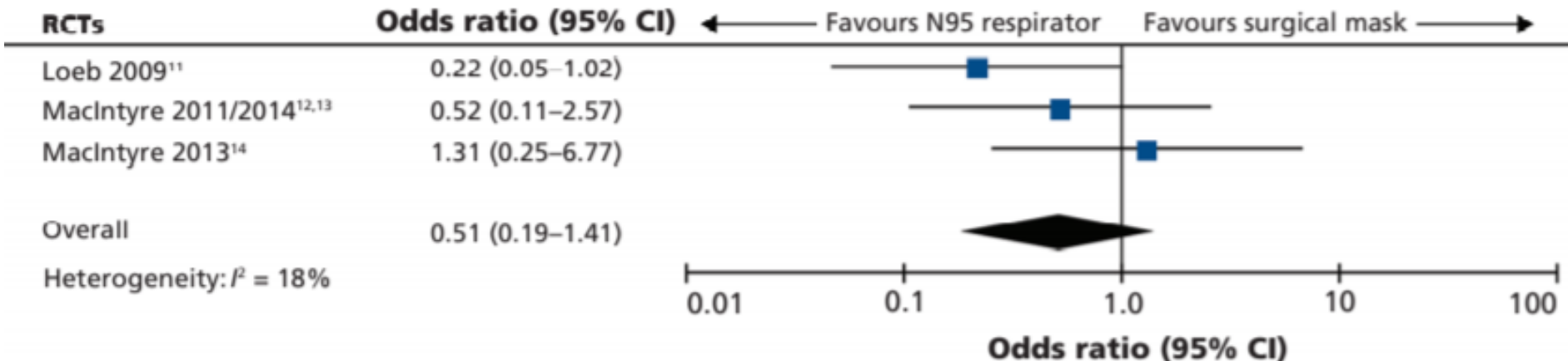
Smith JD¹, MacDougall CC¹, Johnstone J¹, Copes RA¹, Schwartz B¹, Garber GE².



A: Laboratory-confirmed respiratory infection



B: Influenza-like illness





March 11, 2020

Detection of SARS-CoV-2 in Different Types of Clinical Specimens

Wenling Wang, PhD¹; Yanli Xu, MD²; Ruqin Gao, MD³; et al

» [Author Affiliations](#) | [Article Information](#)

JAMA. Published online March 11, 2020. doi:10.1001/jama.2020.3786



Detection of SARS-CoV-2 by Real-Time Reverse Transcriptase–Polymerase Chain Reaction

Sample	Positive test n(%)
Bronchoalveolar lavage fluid (n = 15)	14 (93)
Fibro-bronchoscope brush biopsy (n = 13)	6 (46)
Sputum (n = 104)	75 (72)
Nasal swabs (n = 8)	5 (63)
Pharyngeal swabs (n = 398)	126 (32)
Feces (n = 153)	44 (29)
Blood (n = 307)	3 (1)
Urine (n = 72)	0

Implications for eye surgery

- Emergency surgery – orbital abscess \pm FESS (high risk exposure from nasal discharge)
- Dacryocystorhinostomy (DCR)
- Theatre air circulation/conditioning systems

Post -COVID19 impact

- Patients may present with more severe disease from delays
 - eg tumours and chronic diseases (retinoblastoma, OSSN, diabetic retinopathy)

Recap

Clinical course of a COVID-19 case

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graph TD; A[Clinical course of a COVID-19 case] --> B[Ocular manifestations of COVID-19]; B --> C[Safety measures in eye clinics]; C --> D[Impact on other eye diseases];
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Ocular manifestations of COVID-19

Safety measures in eye clinics

Impact on other eye diseases

Thank you