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DE TRANSPORTES, MOVILIDAD
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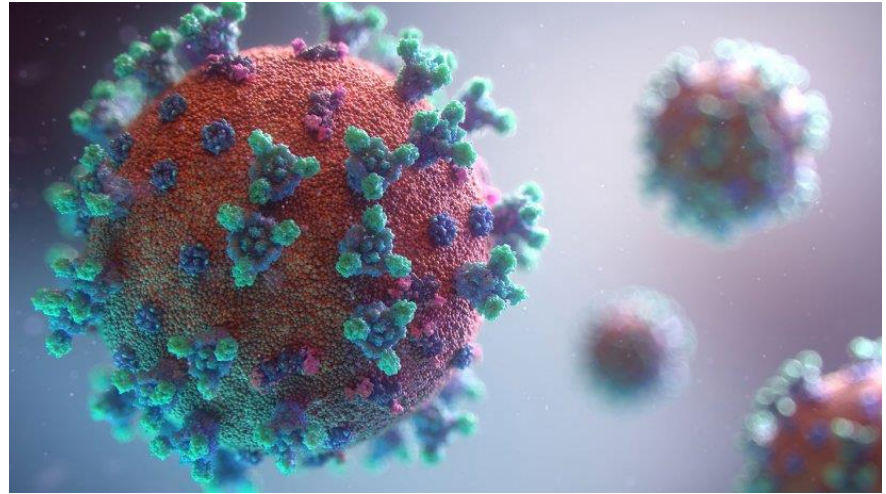
**Medical consequences for Flight Personnel under COVID-19:
Considerations, long term effects on health and fitness to fly and AME's Guidance.**

Dr. Francisco Rios Tejada
AESA Chief Medical Assessor

 Webinar

15th October 2020

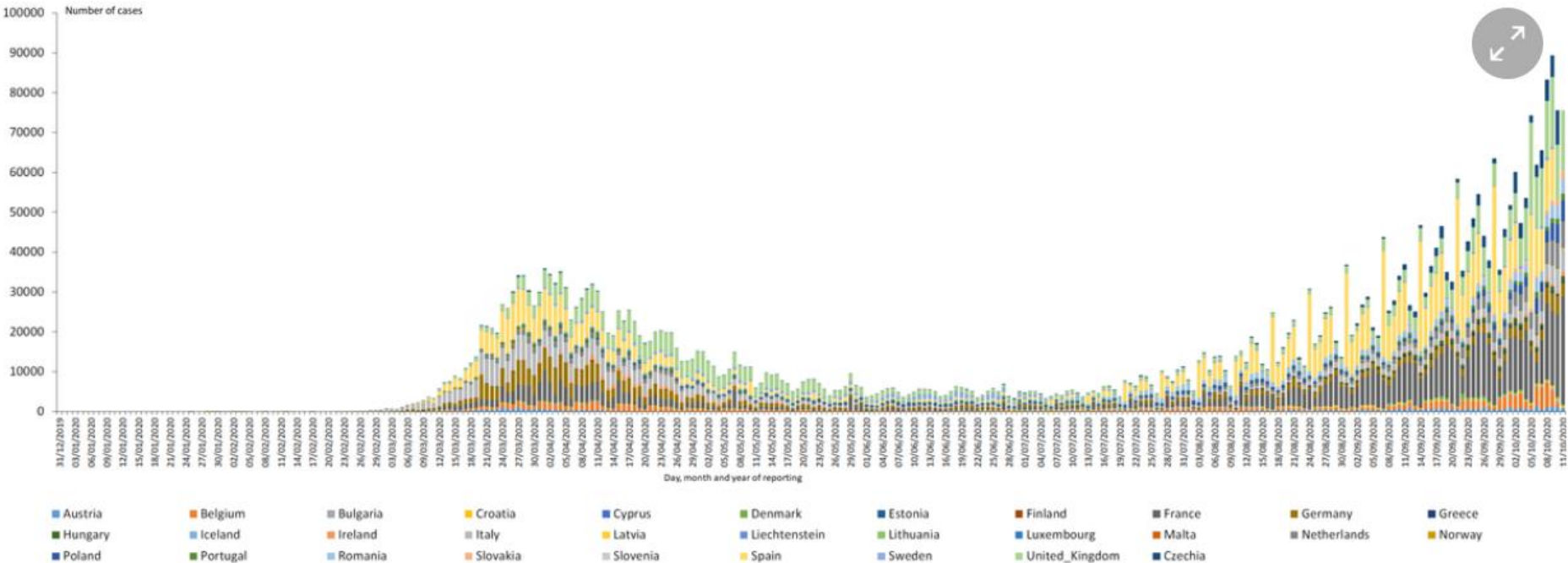
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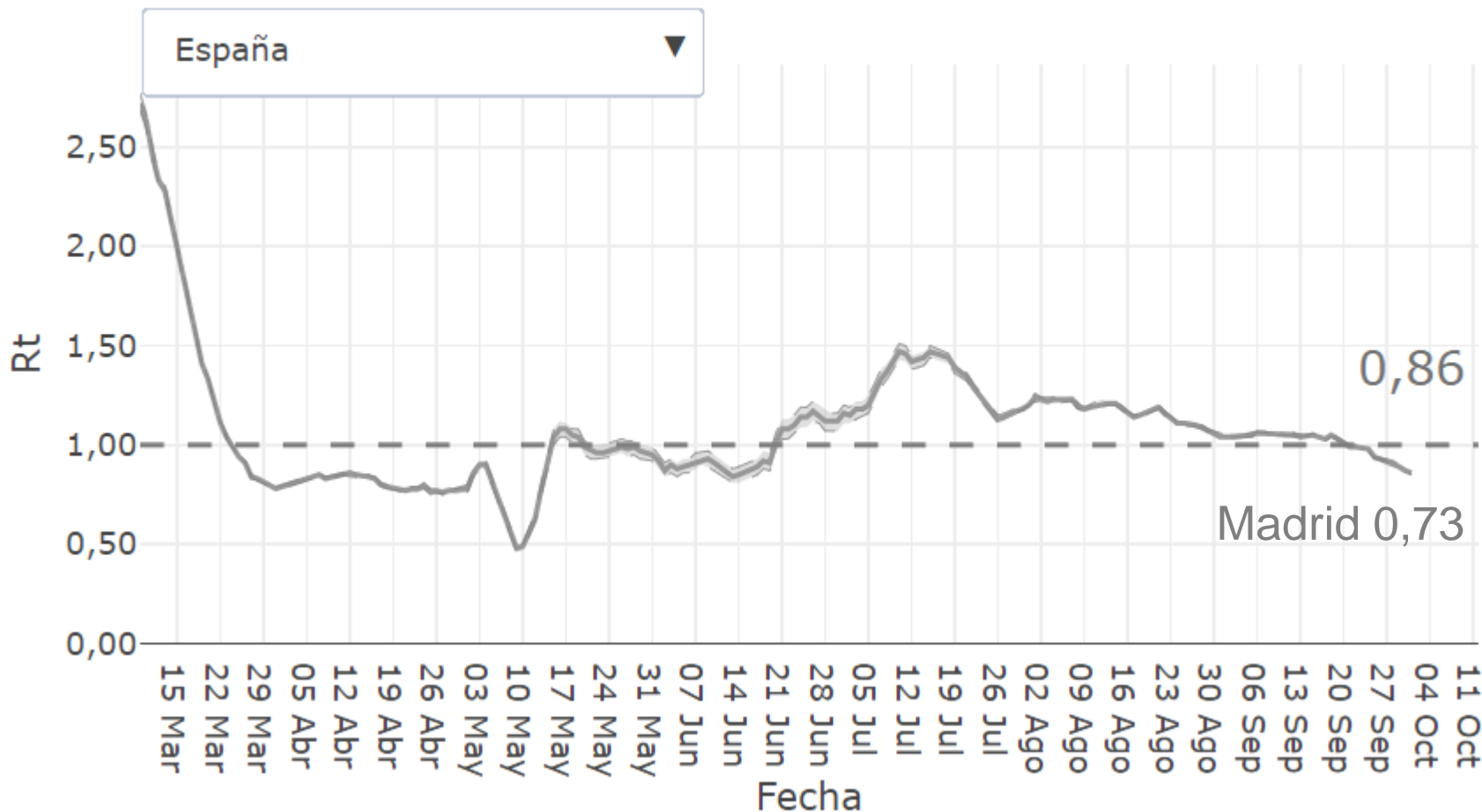


Distribution of laboratory-confirmed cases of COVID-19 in the EU/EEA and the UK, as of 11 October



Instant Basic Reproductive Number (Rt)

Número reproductivo básico instantáneo (Rt)



8th Oct 2020



COVID-19 situation update for the EU/EEA and the UK, as of 11 October 2020

EU/EEA and the UK	Sum of Cases	Sum of Deaths	14-day cumulative number of COVID-19 cases per 100 000	14-day cumulative number of COVID-19 deaths per 100 000
Spain	861 112	32 929	308.1	3.6
France	718 873	32 684	285.7	1.5
United_Kingdom	590 844	42 760	242.4	1.2
Italy	349 494	36 140	68.6	0.5
Germany	322 864	9 615	46.6	0.2
Netherlands	168 082	6 558	344.6	1.2
Belgium	156 838	10 175	364.1	1.7
Romania	152 403	5 358	160.5	3.5
Poland	121 638	2 972	93.9	1.4
Czechia	109 374	905	432.7	2.9
Sweden	98 451	5 894	72.5	0.2



AME

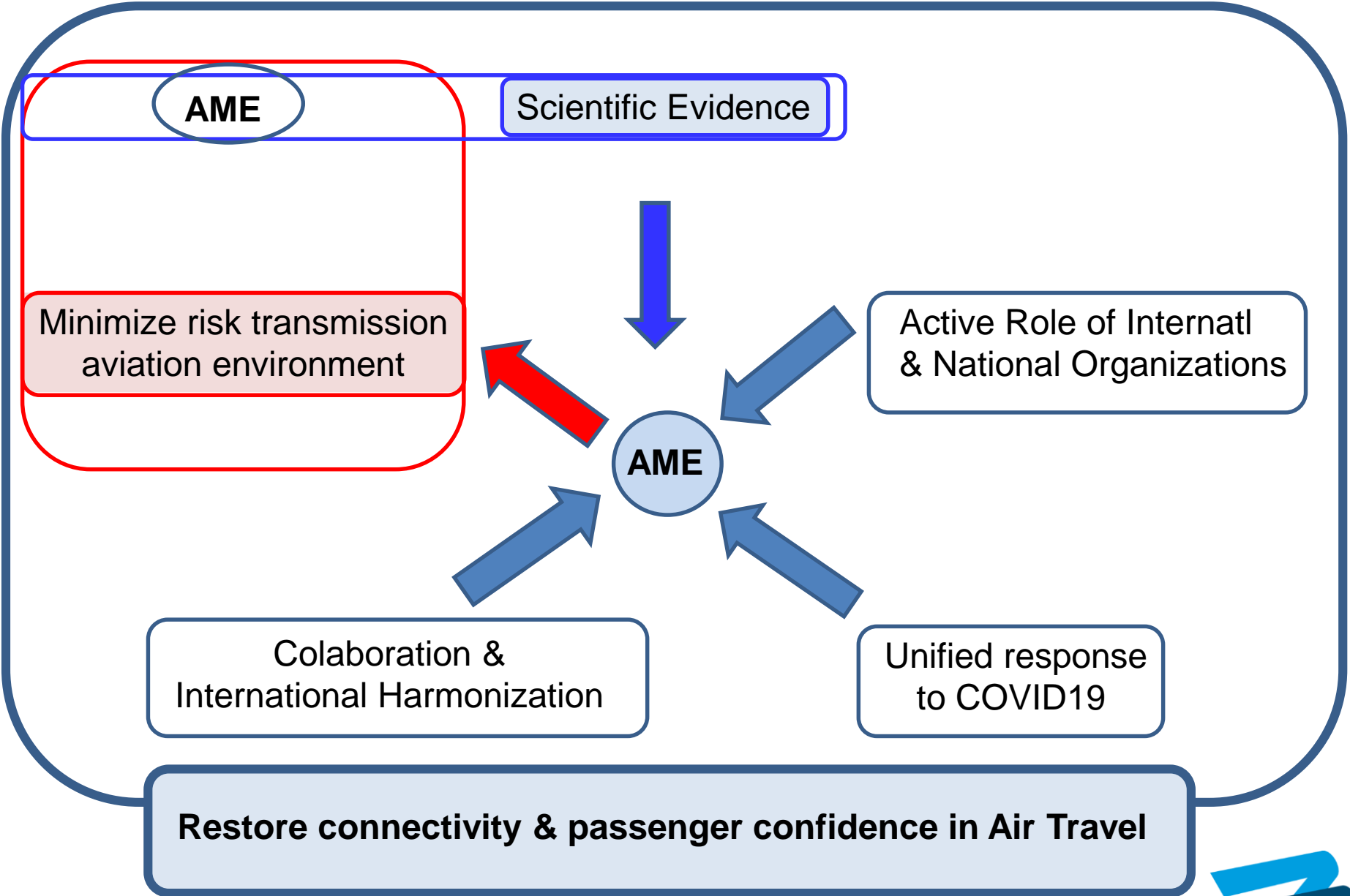
- Still valid procedures and protocols designed in the 1st Wave.
- Protection measures in place during the exam.
- Attention to applicants that will show up by the time of the corresponding renewal or revalidation and got COVID19 during the 1st wave.

AUTHORITY

- Follow up available data of COVID19: Incidence & consequences (Risk Assessment).
- Up to date procedures
- Re-arrange oversight: On site very complicate.
- Education: turn into e-learning/webinar/distant learning.
- EASA guidelines, recomendations and standarization among MS

General Principles

CLASIFICACION DE SEGURIDAD



AME

Scientific Evidence

Minimize risk transmission aviation environment

Active Role of Internatl & National Organizations

AME

Colaboration & International Harmonization

Unified response to COVID19

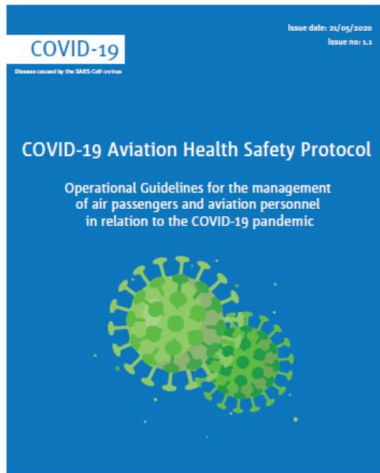
Restore connectivity & passenger confidence in Air Travel

Source: modified from ACI-IATA Report





ECDC monitoring framework
Process and timeline



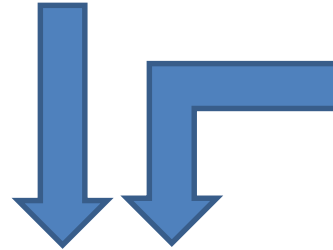
IATA
The International Air Transport Association



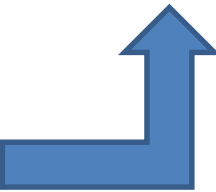
Biosecurity for Air Transport
A Roadmap for Restarting Aviation
v.2



Clinical Bibliography



AME



National Law



ICAO

Doc 10144

ICAO Handbook for CAAs on the
Management of Aviation Safety Risks
related to COVID-19



World Health
Organization

Coronavirus disease (COVID-19)

Situation Report - 151

Data as received by WHO from national authorities by 10:00 CEST, 19 June 2020

OTHER SOURCES

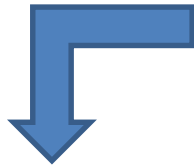


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Air transport has been demonstrated a powerful vector of transmission, therefore we must assure the actual fitness, which means free COVID disease in aircrew members and ATCOs, if we want to secure the aviation activity.



The aeromedical evaluation either by AME or AeMCs, seems to be critical in those individuals who might be exposed to the disease in any of the aspects or domains showed by COVID19.



MED.B.040 Infectious diseases

a) Applicants will be considered unfit if any clinical diagnosis or medical history of any infectious disease that might interfere with the safe exercise of the privileges of the licence.

AMC1 MED.B.040 Infectious disease

(a) Infectious disease General

In cases of infectious disease, consideration should be given to a history of, or clinical signs indicating, underlying impairment of the immune system.

ATCO.MED.B.040 Infectious Diseases

b) applicants with symptoms or diagnosis of infectious disease such (*):

1) Syphilis; 2) active tuberculosis; 3) infectious hepatitis; 4) tropical diseases,

Should be deferred to the authority in order to be evaluated. A fit assessment can be evaluated after a complete recovery and report of specialist will demonstrate that treatment does not interfere with the privileges of the licence.

(*) can be extrapolated to COVID-19

Pay attention to Target Organ complications or side effects



- To assist the AME by furnishing guidelines and management instructions able to identify Aircrew and ATCO applicants, that in any way have been associated with the COVID19.



Help AME

- To identify the compatibility of the exposed candidate and what it is established in the EASA Regulation, concerning Infectious diseases and hence COVID19, to assure flight safety.



Suitable for flying duties





Agencia Estatal
de Seguridad Aérea

PRACTICAL GUIDELINES FOR THE EVALUATION OF COVID19 CASES FOR AMEs & AMCs

GUIA PRÁCTICA PARA EVALUACIÓN DE CASOS COVID19 POR AMES Y AEMCS

A-DMA-CV19-01 L10
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www.reguridadaerea.gob.es



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- 1. AME ask applicant about items 105 (other respiratory diseases), 128 (other diseases), 129 (hospitalization), 130 (medical visit) displayed in the application form and associated to COVID 19.**
- 2. AME will collect whatever medical reports provided by the applicant and will ask about his/her Labour and Social Security Medical Status.**





3. It will be necessary to identify diagnosis, course of treatment and hospital admission.

4. In case of mild disease, what kind of preventive measures has been followed, including quarantine and possible confirmed contacts.

5. A comprehensive review of medical reports will be done in aspects such, clinical data, complementary testing, such Lab testing and image diagnosis, and treatment provided, including oxygen therapy or assisted ventilation.





6. Attention to presence of comorbidity and complications.

7. Once the data related has been collected, we will be able to find out if information provided is good enough for an appropriate aeromedical assessment or if any additional testing we think it might be necessary for a final adequate assessment.

8. In situ: temperature, SpO₂, dipnoea scale (MRC) & Quality of life, 6MWT, ECG (Qt/QTc), Spirometry.

9. Referrals: TC/TCAR, thoracic ecography, pulmonary function test (DLCO), echocardiography, comorbidity, target organs involvement and specialist report.

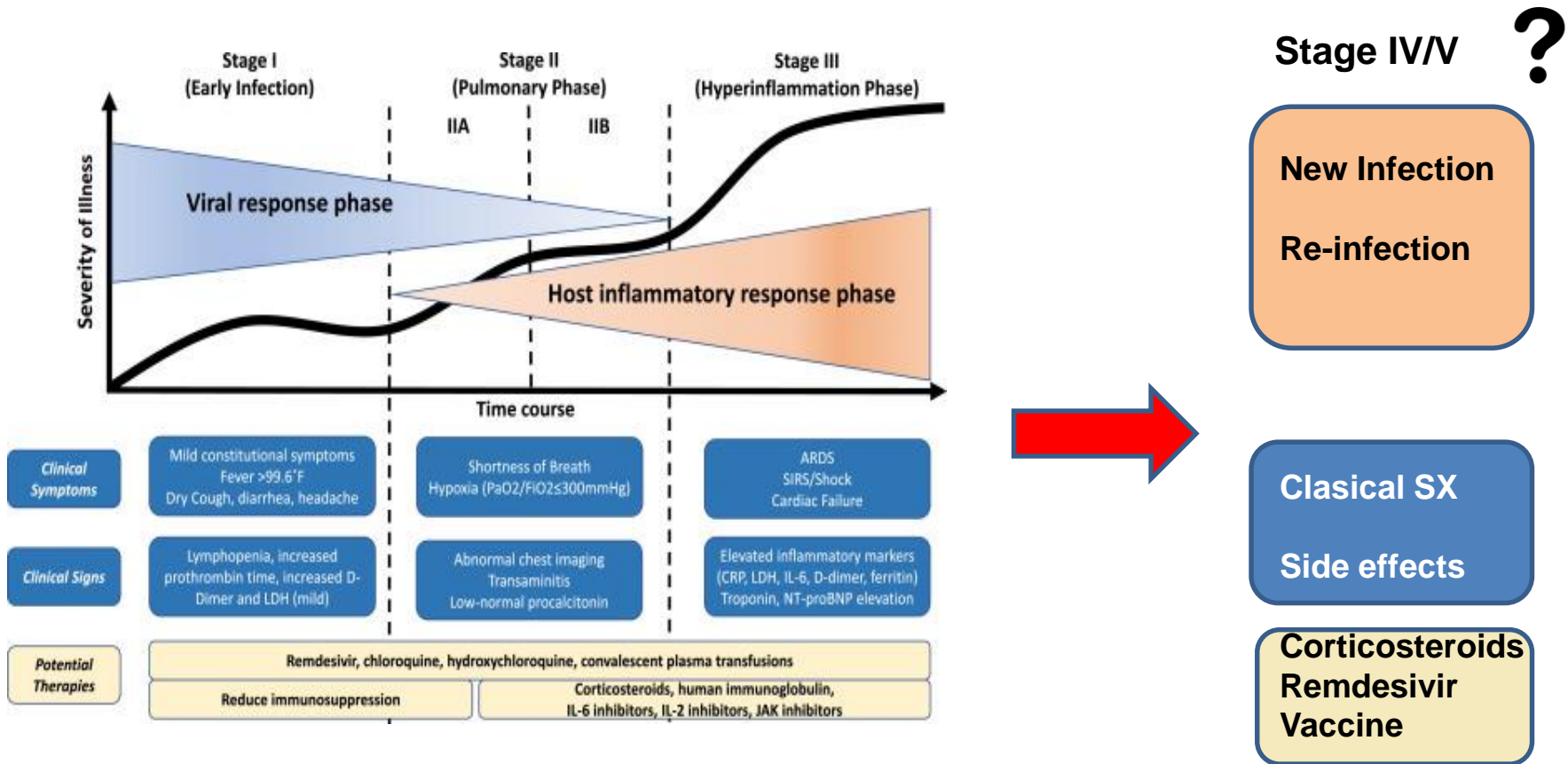




attention

- 1. The ever-changing nature of this illness means that we need to change our focus on the effect of the infection.**
- 2. The AME should considered the changes, the scientific evidence, and the situation of the disease at the time of the applicant examination.**





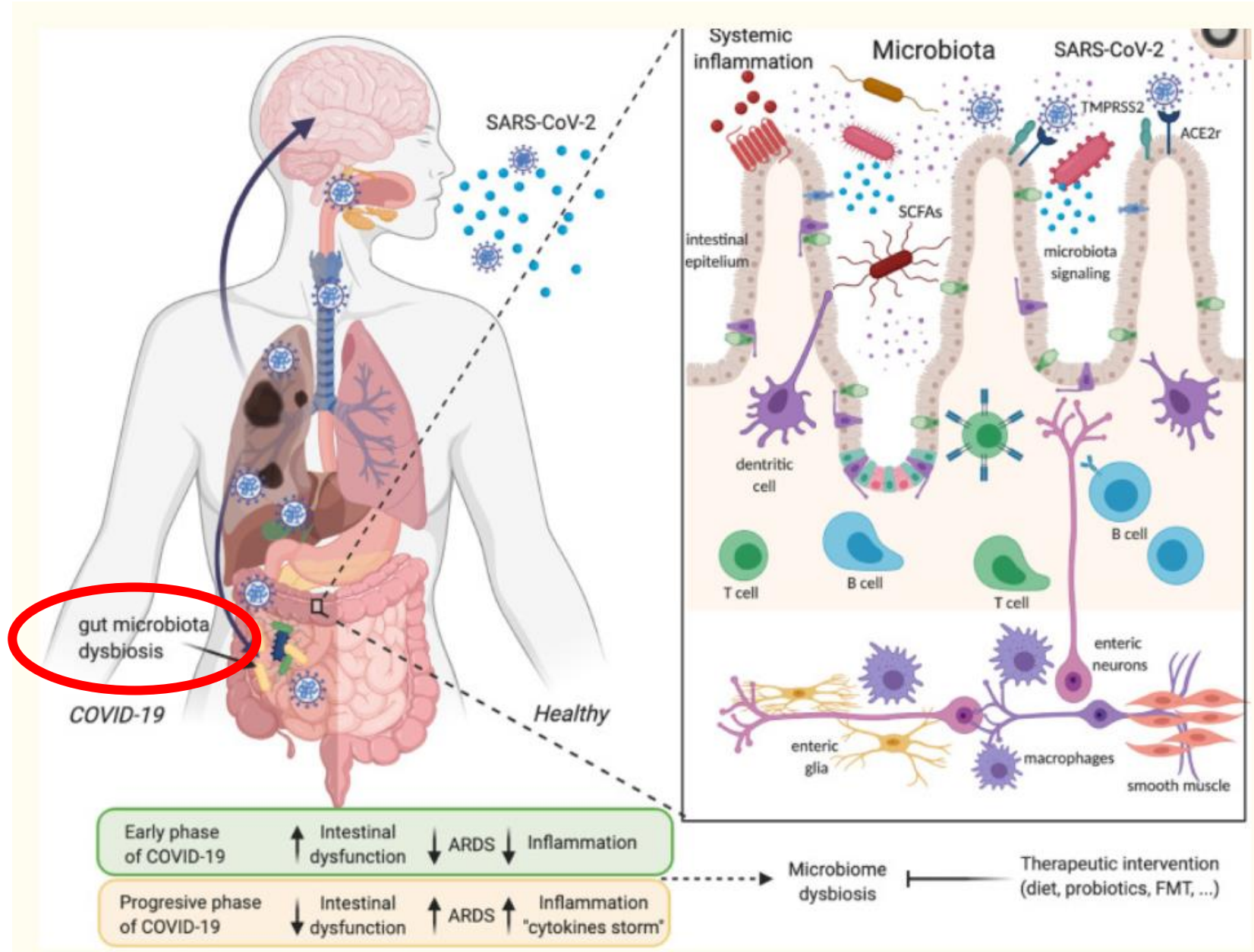
COVID19: Clinical-Therapeutic Staging Proposal. Hasan K. Siddiqi (Modified)



System	Side Effects
Upper Airways	Anosmia, ageusia, cough, mucous.
Lower Airways	Dispnoea, cough, chest pain.
Muscle & Joints	Weakness, erratic pain.
Neurocognitive	Loss of attention, memory loss & sleepness.
Neurological	Neurodegenerative disease, stroke, brain hemorrhage, encephalitis, peripheral nerve damage.
Psychological	Anxiety, depression, psychosis.
Digestive/Renal	Gut microbiota dysbiosis, Electrolytic disturbance, Acute Kidney Injury, Renal replacement therapy.
Others	Loss weight & hair, cutaneous involvement.

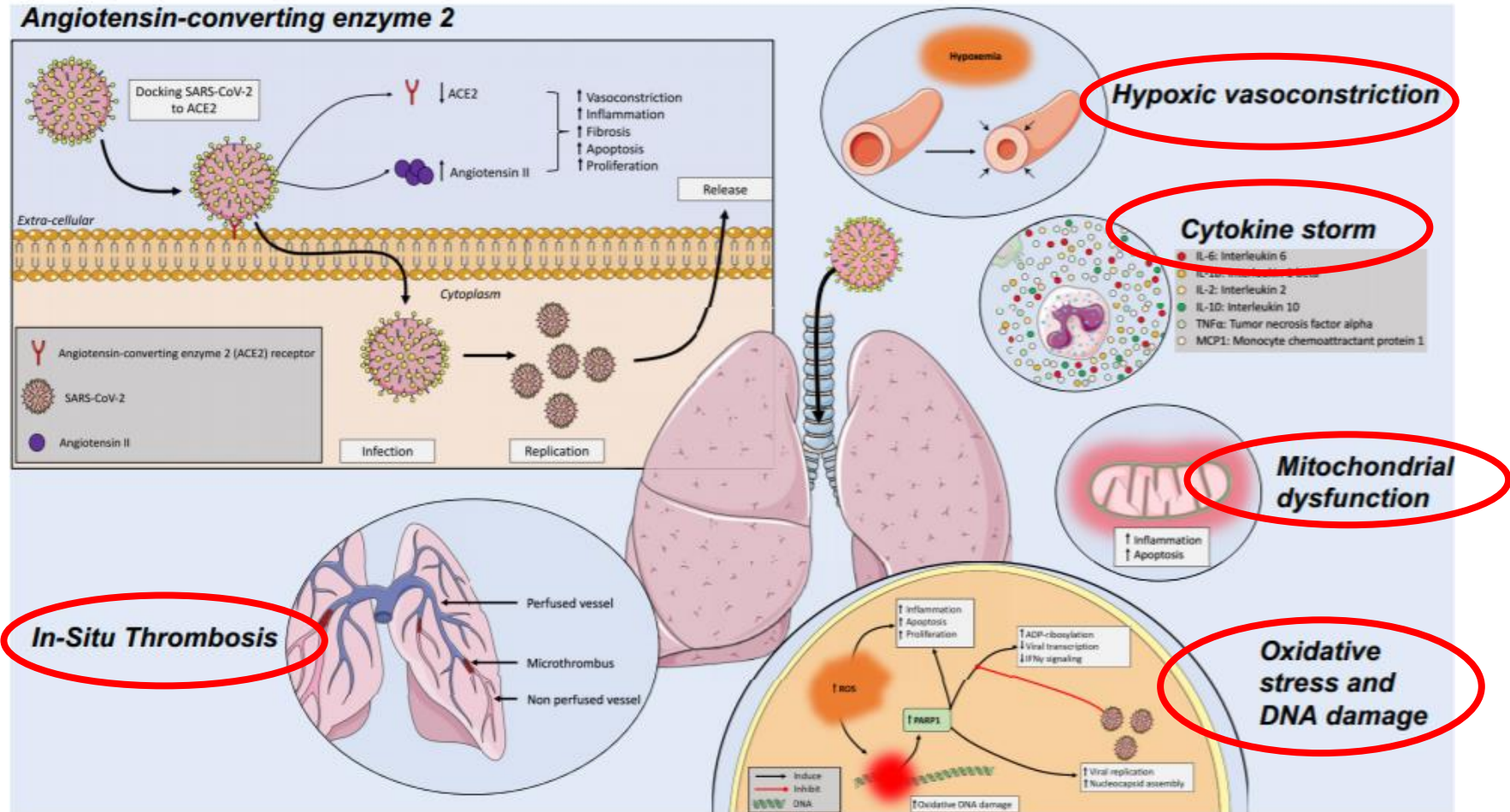


G-I Side Effects



Pulmonary Side Effects

COVID-19 AND PULMONARY VASCULAR DISEASES



F-DEA-PDO-09 1.0 CLASIFICACION DE SEGURIDAD



6MWD increased from 16% to 43% of theoretical values among participants.

Fatigue, exercise intolerance, and poor concentration can be particularly problematic. Unfortunately, optimal management remains unclear.

While the effects of COVID-19 for the pulmonary circulation are being defined, several lines of evidence suggest that the molecular features of SARS-CoV-2 infection are strikingly similar to what is seen in **pulmonary vascular disease development, promoting endothelial dysfunction, lung coagulopathy and microthrombi, and hemodynamic impairments.**

A pragmatic approach to primary care management might include **first line investigations such chest radiography and oxygen saturation measurements, with referral to secondary care where lung pathology needs investigation.**

BMJ 2020; 370 doi: <https://doi.org/10.1136/bmj.m3001> (Published 03 August 2020) Cite this as: BMJ 2020;370:m3001

Am J Physiol Lung Cell Mol Physiol 319: L277–L288, 2020. First published June 17, 2020; doi:10.1152/ajplung.00195.2020



Pulmonary Fibrosis?



Just a few data so far



Extrapolate from:

- SARS-CoV: 62% of Pt with Interstitial Pattern at discharge time. After 15 years a 4,6 % still affected.
- MERS-CoV: Fibrotic changes in 1/3 of Pt at discharge time.

COVID19

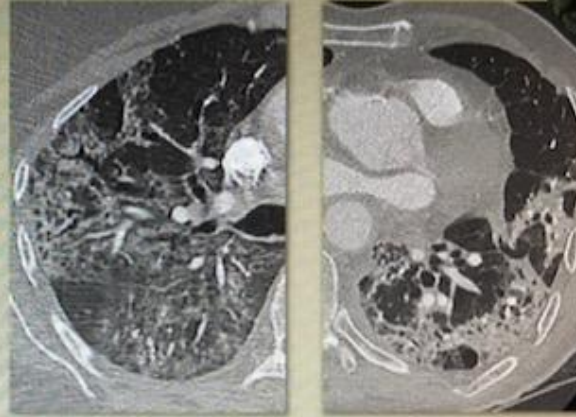
- At discharge time 8,1% normal radiology and **53% normal after 3 weeks.**
- **Very slow and torpid recovery:** several months after, Pts still symptomatic, with normal radiolog: **Clinical- Radiological dissociation.**
- Presence of **fibrotic radiological pattern more associated to severe COVID19 findings.**
- Discussion: many Pulmonary specialist agree on **dissociation in between clinical findings and Spo2, Espirometry and radiological status.**
- **Need to study other causes:** Muscular, Cardiac, Trombotic....

•Fibrosis en COVID-19:

- Bandas parenquimatosas
- Reticulación
- Bronquectasias de tracción
- Interfases irregulares.

•Factores de riesgo para fibrosis

- Edad↑
- Hipertensión
- Disnea y RPM↑
- Linfopenia
- ↑PCR e IL6
- ↑días de estancia hospitalaria
- Ingreso en UCI
- Más días de tratamiento con corticoides y antirretrovirales



Findings

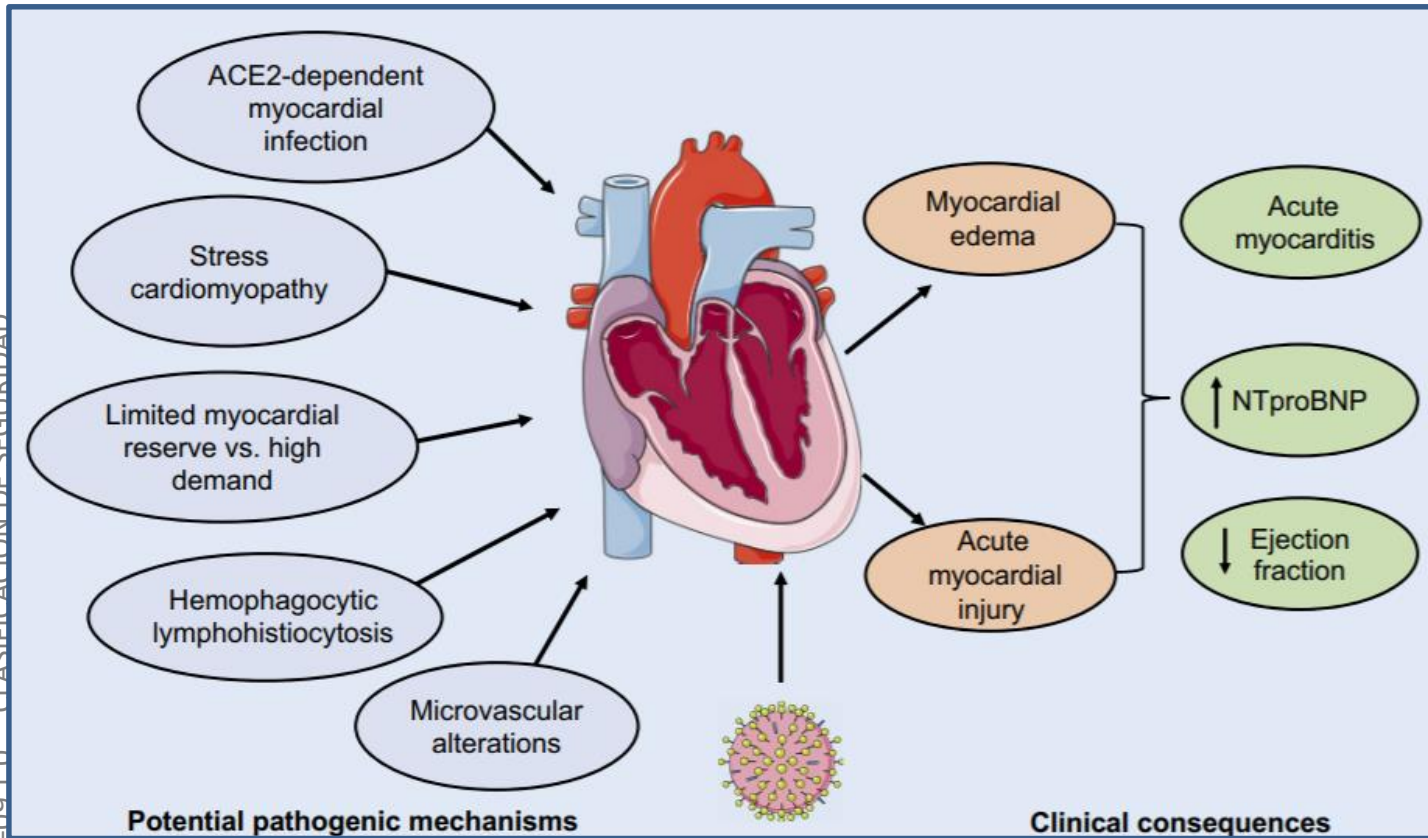
- Parenchymal bands
- Reticulation
- Traction Bronchiectasis
- Irregular interphases

Risk Factors for Fibrosis

- Age
- Hypertension
- Dispnoea
- Lymphopenia
- PCR and IL6 elevated
- Number of Hospitalization days
- ICU
- TX Steroids and antiretrovirals



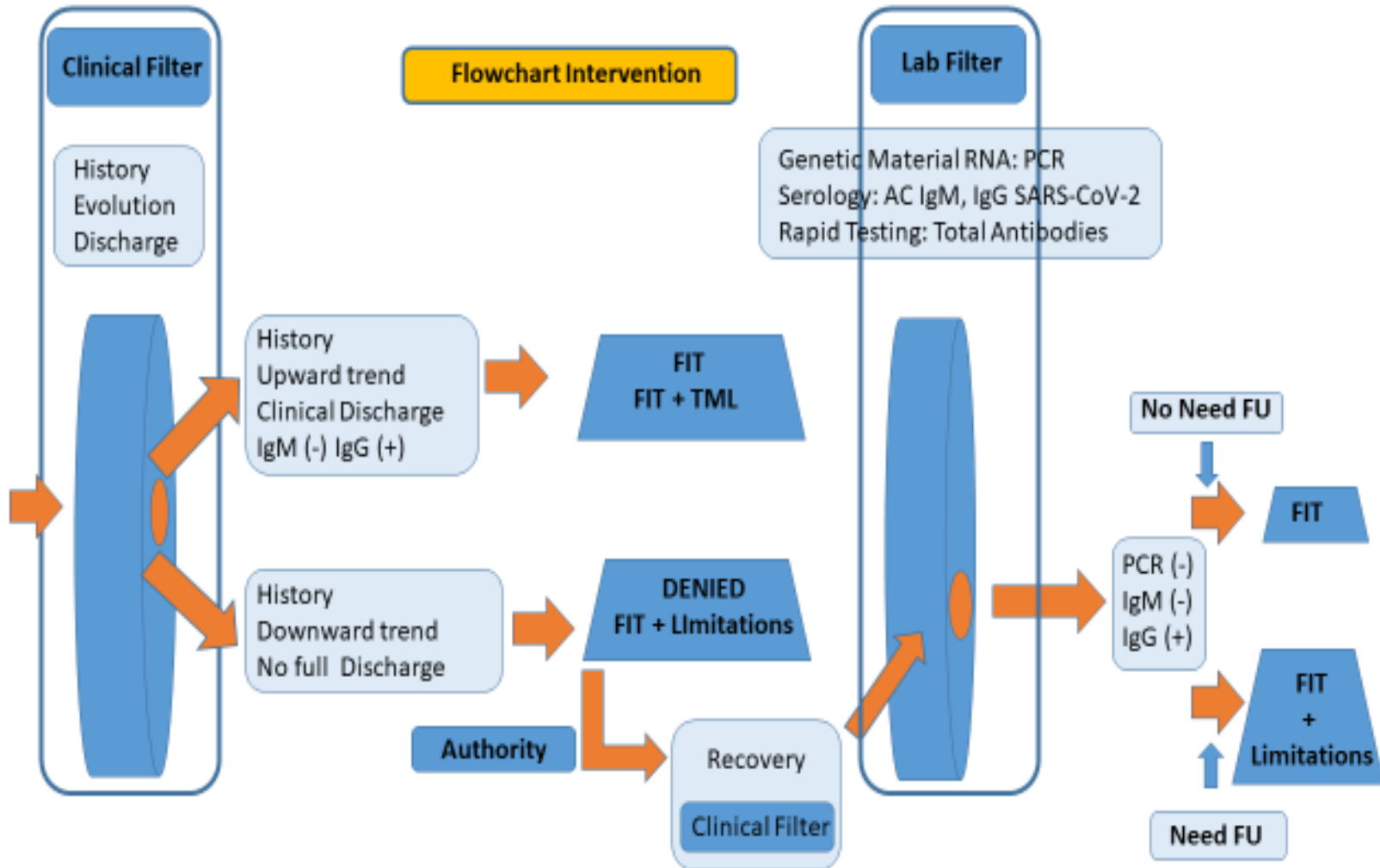
COVID-19 AND PULMONARY VASCULAR DISEASES



Myocarditis
Pericarditis
Arrhythmias



COVID19: AME Pathway Approach





Review: 1 March- 15 July 2020

- 104 AMEs
- 13 AeMCs

102 VML.128 OML. SIC. Colectomía por adenocarcinoma de colon en 2014 y Diabetes mellitus tipo II. Actualmer
128-ARTROSCOPIA DE RODILLA IZDA (APORTO INFORMES) EL 19-02-20. BUENA RECUPERACIÓN; 130- TEST SER
Covid-19

101 Hipertensión ocular107 HTA130 Revisiones médicas y Baja por COVIDPadres con HTA e Hipercolesterolemia
Gafas de cercaCovid positivo marzo 2020

Entre el 24 de marzo y el 27 de abril estuve de baja por COVID-19.

NO HA PRESENTADO CLINICA DE COVID19 Y LA PRUEBA DE ANTIGENO NEGATIVAHERMANA ASMA

Operación cataratas ojo izqd.Diabetes tipo 2 en control médicogafas de lecturaDiagnostico COVID marzo. Asintó

Visita médico: Urólogo chequeo rutinario, test COVID PCR y serología negativos en mayo

105 NEUMONIA BILATERAL (COVID-19)107 HPA CON TRATAMIENTO BALZAK 40-10, 1/DIA111 PERDIDA AUDITIVA

102. TIENE VNL POR PRESBICIA104. ALERGIA AL POLEN; NECESITA OCASIONALMENTE BILASTINA. BIEN TOLERA

102. GAFAS POR MIOPÍA, LLEVA VDLNOTA: ANAMNESIS NEGATIVA PARA COVID19

EN LA ANAMNESIS NO PRESENTA DATOS DE HABER PADECIDO COVID, NI RESEÑA CONTACTOS.

EN MARZO DE 2020 EPISODIO DE PROBABLE CORONAVIRUS DE SU HIJA DE 7 AÑOS Y LUEGO ESTUVO SU MUJER



INCIDENCE OF COVID19

1 May-15 July 2020	Num Physicals	Num COVID19	%
Class 1	2280	34	1,21
Class 2	912	8	0,87
LAPL	870	5	0,57
CC	707	3	0,42
Class 3	472	9	1,90
TOTAL	5848	59	1,00
1 May-15 July 2019	Num Physicals	% Decrease 2019 vs 2020	
TOTAL	9196	36,5	



54 males out of 59
5 females out of 59:

- 4 Class 3
- 1 Class CC

Mean Age	Class 1	Class 2	LAPL	Class CC	Class 3
	47	57	44,5	51	46

Mean Age	Severe	Moderate	Mild
	60,3	51,5	42



	Severe (ARDS)	Moderate/Pneumonia	Mild
Class 1	3	2	29
Class 2	1	0	7
LAPL	0	2	3
CC	1	1	1
Class 3	0	3	6
Total	5	8	46
%	8,47	13,55	79,96

Class 1 Severe Cases:

- Rotary wing. ARDS. Issue TML 3 m
- Commercial. Bilateral Neumonia. Good recovery. Issue TML
- Commercial. Bilateral Neumonia. Severe sequelae. Attention & focus disorder. Denied




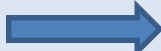
Total of 59 {

- 40:** Clinical + Lab
- 19:** Clinical (mild cases)

Mental Health issues: 3 cases

- Class 1, family problem related to COVID
- Class 1, Medevac pilot, close involvement COVID
- Class 1, Comercial, ARDS, Attention disorder, loss memory



- AME guidelines has been demonstrated as an useful tool.
- AME approach under scientific up to date + EASA, ICAO, IATA
- 2nd Wave in place: AMEs alertness.
- AME preventive measures: Safety distance, protection, hygiene, etiquette.
- AME: Search for COVID19 HX, followup and potential side effects.
- Low incidence of COVID19 in aircrews.
- COVID19 severity  age related.
- Higher rates in Class 1 and 3.
- Most cases  mild and moderate outcomes.





Thanks for your Attention

senasa.frt@externomf.es

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