



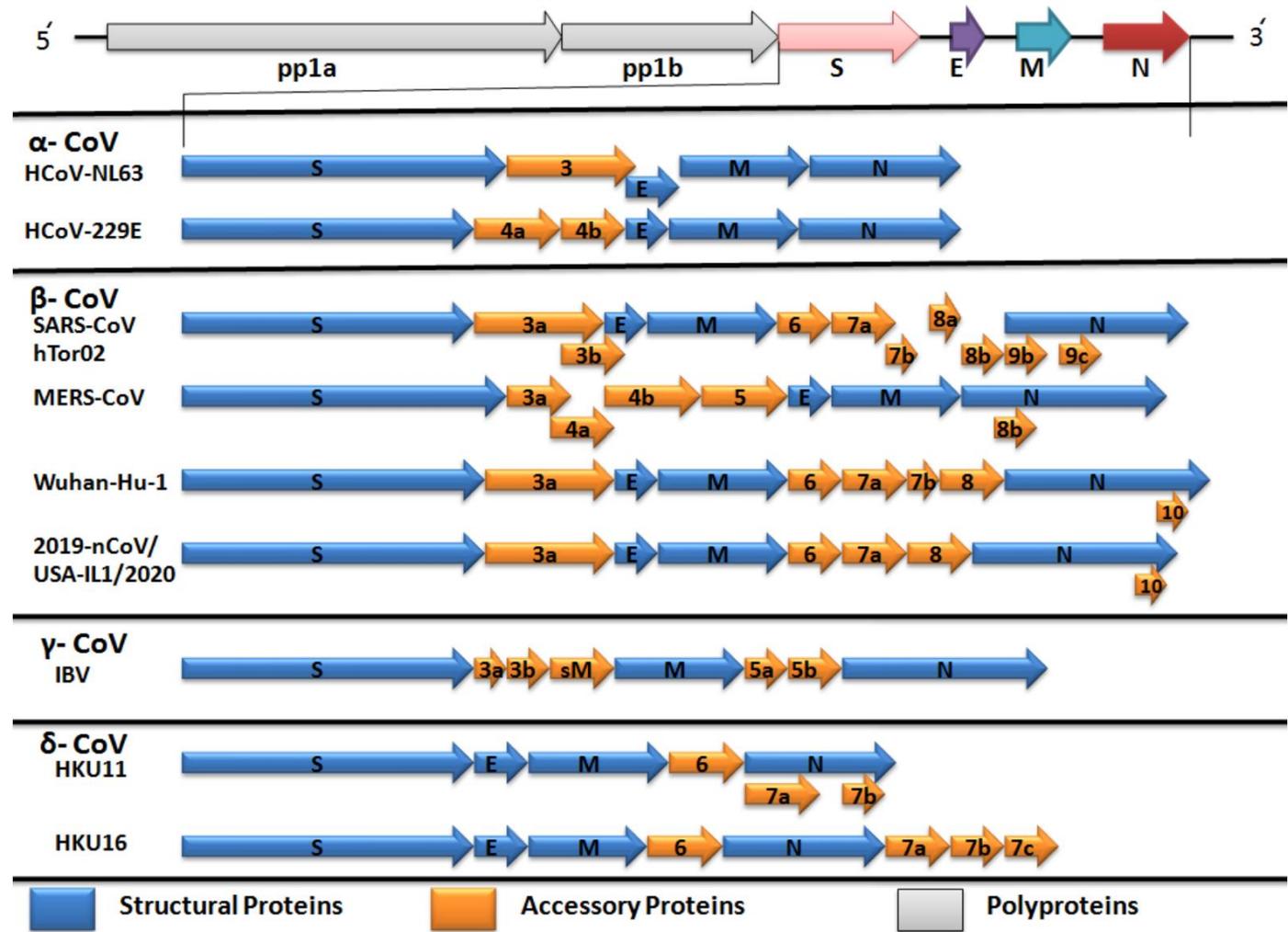
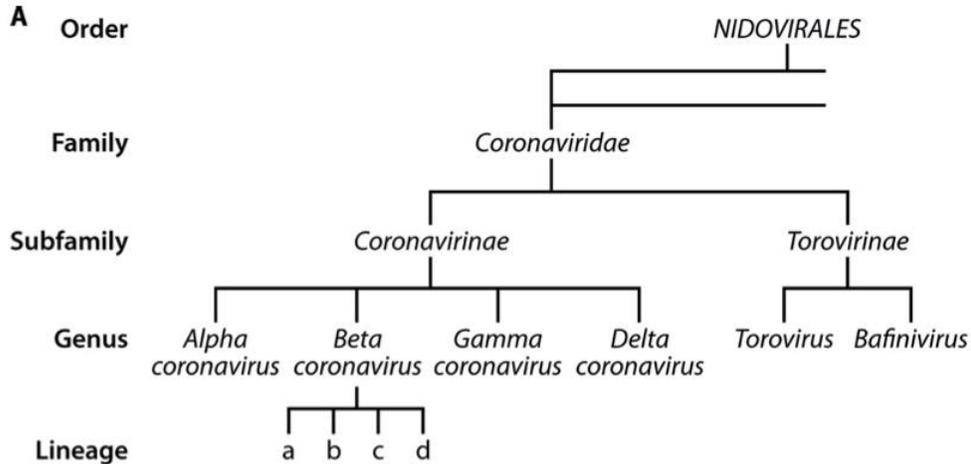
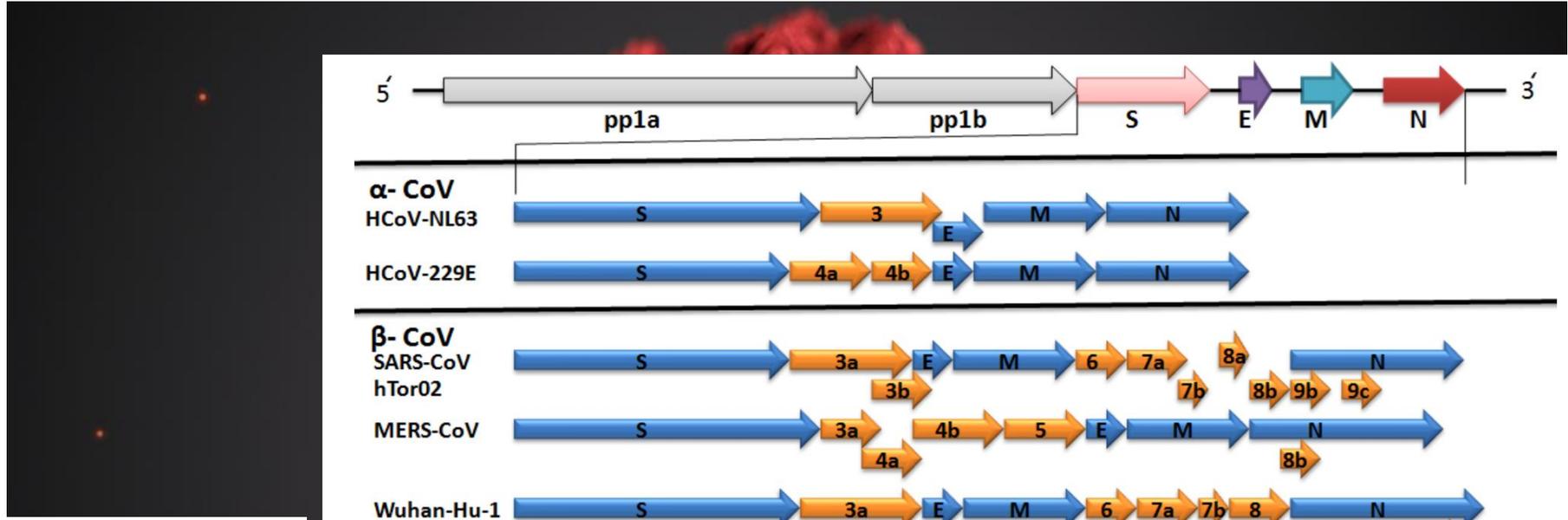
# A PANDEMIA POR SARS-COV-2

MAX IGOR BANKS FERREIRA LOPES

HC - FMUSP

# O VÍRUS

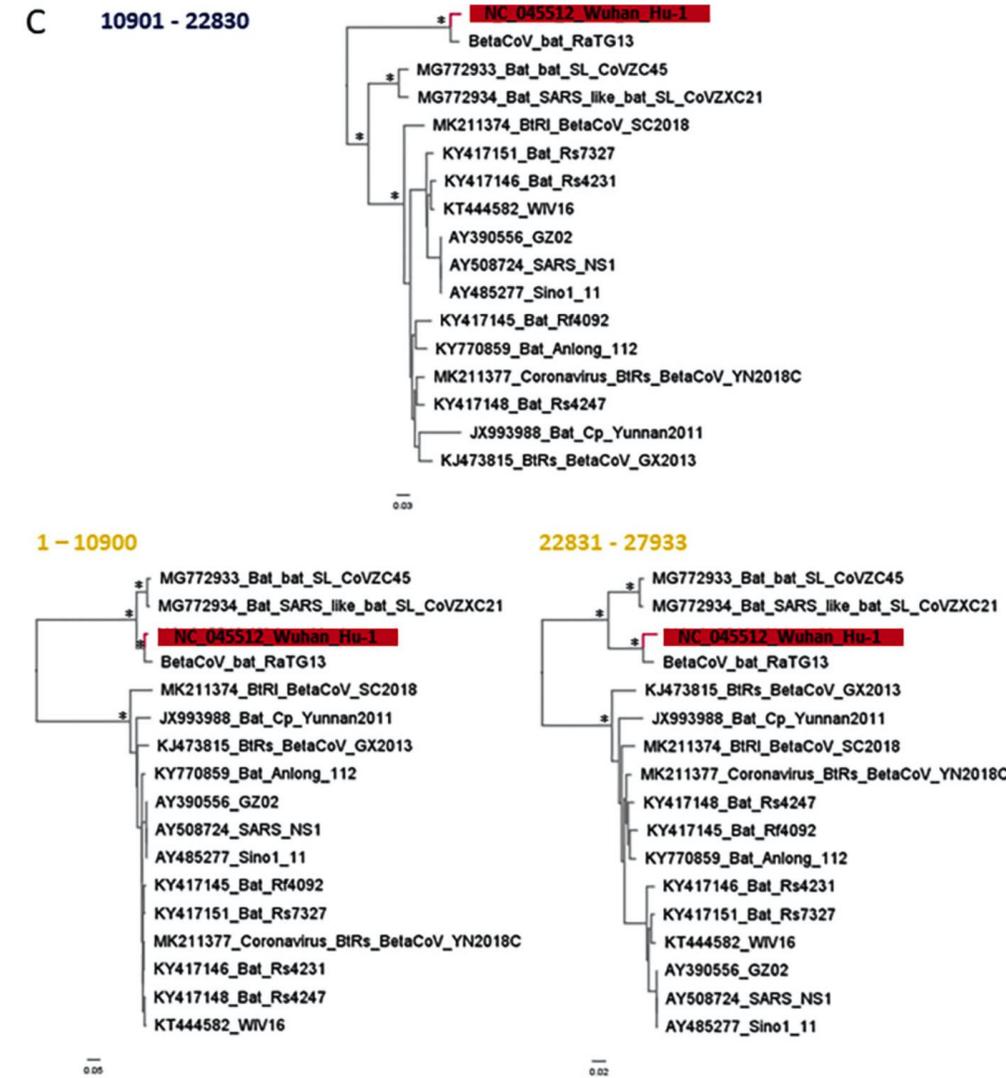
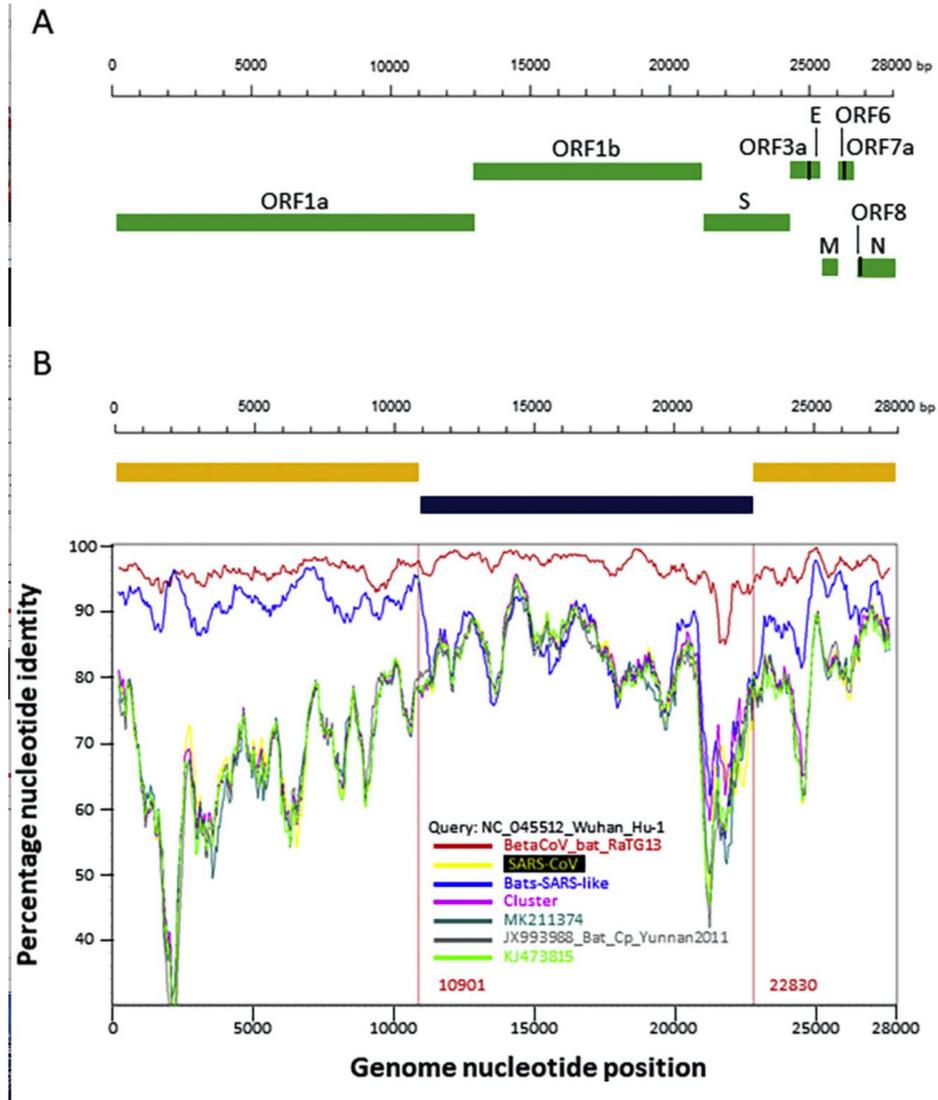
- Vírus RNA, envelopado
- Fita única de RNA+
- Família ampla de vírus em humanos, outros mamíferos e pássaros.
- Síndrome hepática, entérica, neurológica e respiratória



# O COMEÇO DE TUDO....

Full-genome evolutionary analysis of the novel corona virus (2019-nCoV) rejects the hypothesis of emergence as a result of a recent recombination event

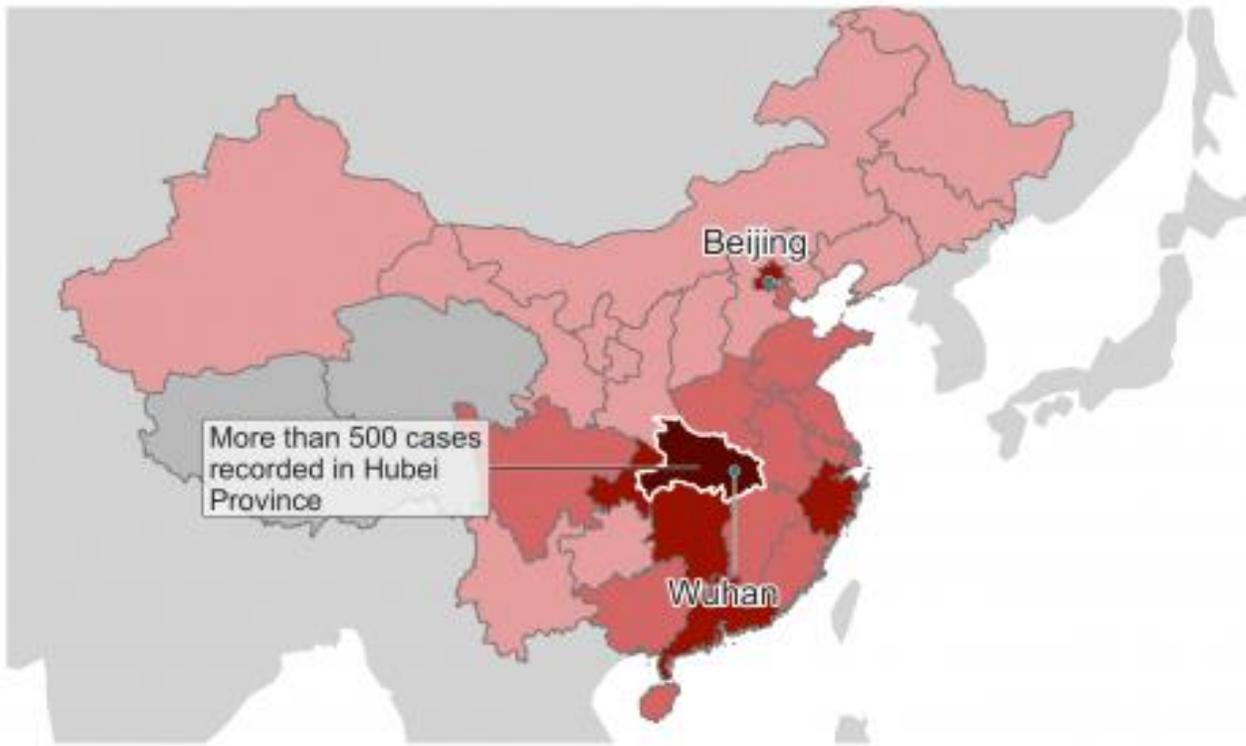
D. Paraskevis<sup>a,\*</sup>, E.G. Kostaki<sup>a</sup>, G. Magiorkinis<sup>a</sup>, G. Panayiotakopoulos<sup>b</sup>, G. Sourvinos<sup>c</sup>, S. Tsiodras<sup>d</sup>



# A EPIDEMIA.....

## More than 800 cases confirmed in China

■ No cases ■ 1 to 5 ■ 6 to 20 ■ 21 to 100 ■ More than 100



Source: China National Health Commission, BBC Research, 24 Jan



# A EPIDEMIA.....

## Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia

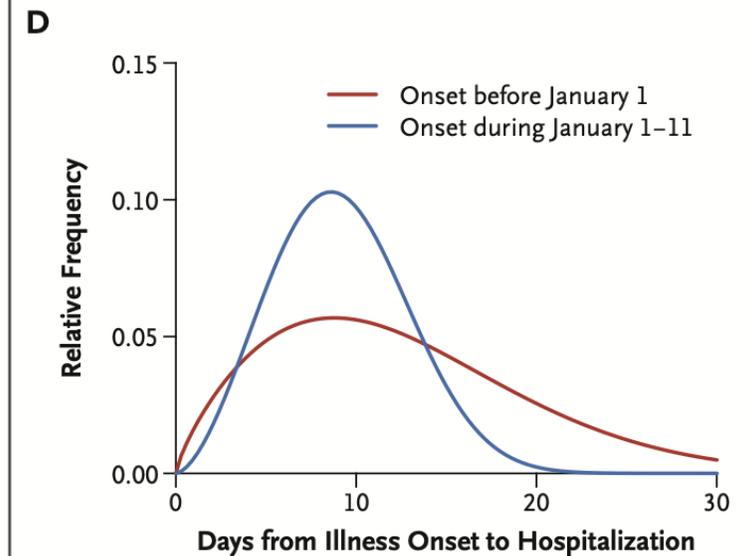
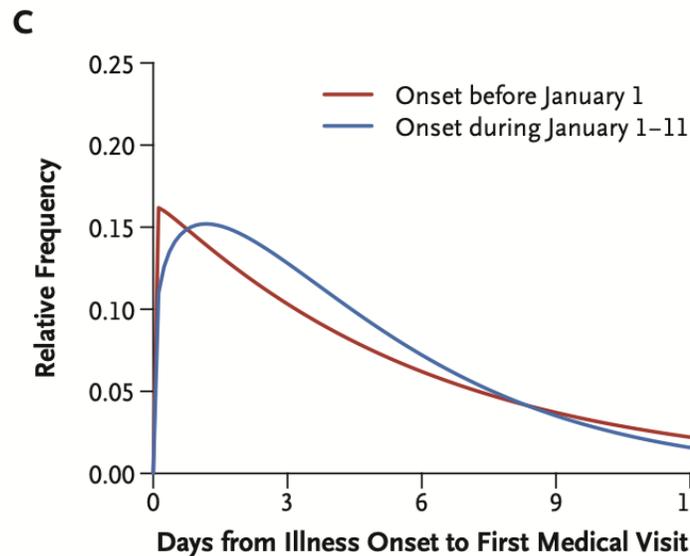
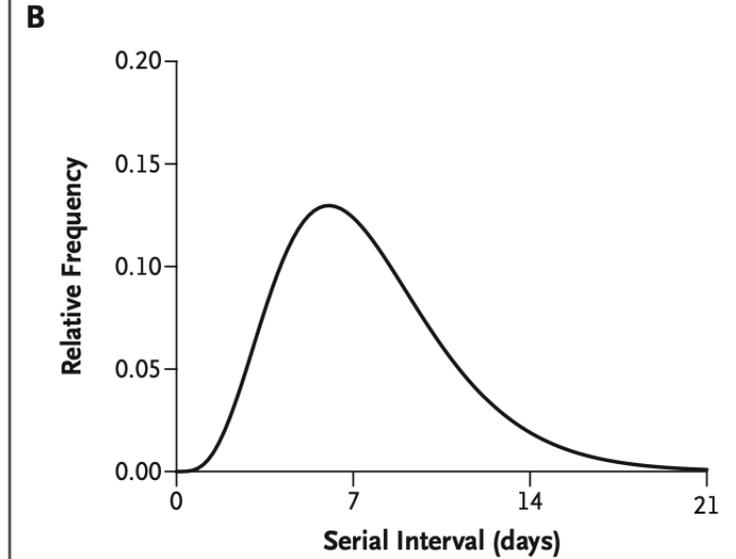
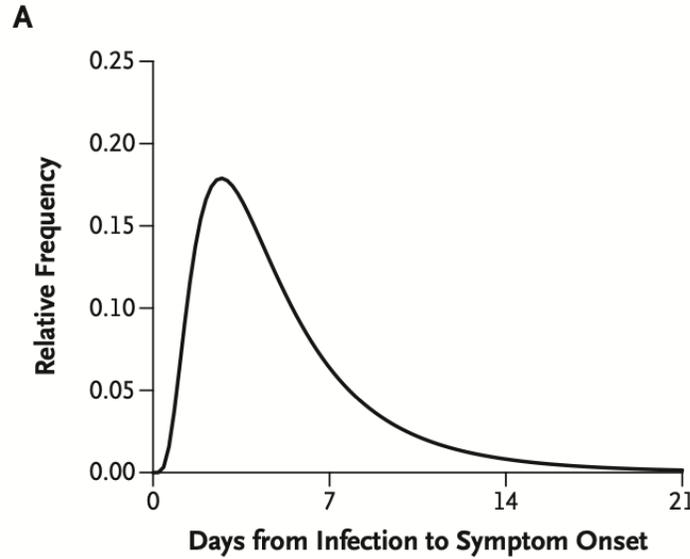
**Table 1.** Characteristics of Patients with Novel Coronavirus–Infected Pneumonia in Wuhan as of January 22, 2020.\*

Characteristic	Before January 1 (N=47)	January 1 –January 11 (N=248)	January 12 –January 22 (N=130)
Median age (range) — yr	56 (26–82)	60 (21–89)	61 (15–89)
Age group — no./total no. (%)			
<15 yr	0/47	0/248	0/130
15–44 yr	12/47 (26)	39/248 (16)	33/130 (25)
45–64 yr	24/47 (51)	106/248 (43)	49/130 (38)
≥65 yr	11/47 (23)	103/248 (42)	48/130 (37)
Male sex — no./total no. (%)	31/47 (66)	147/248 (59)	62/130 (48)
Exposure history — no./total no. (%)			
Wet market exposure	30/47 (64)	32/196 (16)	5/81 (6)
Huanan Seafood Wholesale Market	26/47 (55)	19/196 (10)	5/81 (6)
Other wet market but not Huanan Seafood Wholesale Market	4/47 (9)	13/196 (7)	0/81
Contact with another person with respiratory symptoms	14/47 (30)	30/196 (15)	21/83 (25)
No exposure to either market or person with respiratory symptoms	12/27 (26)	141/196 (72)	59/81 (73)
Health care worker — no./total no. (%)	0/47	7/248 (3)	8/122 (7)

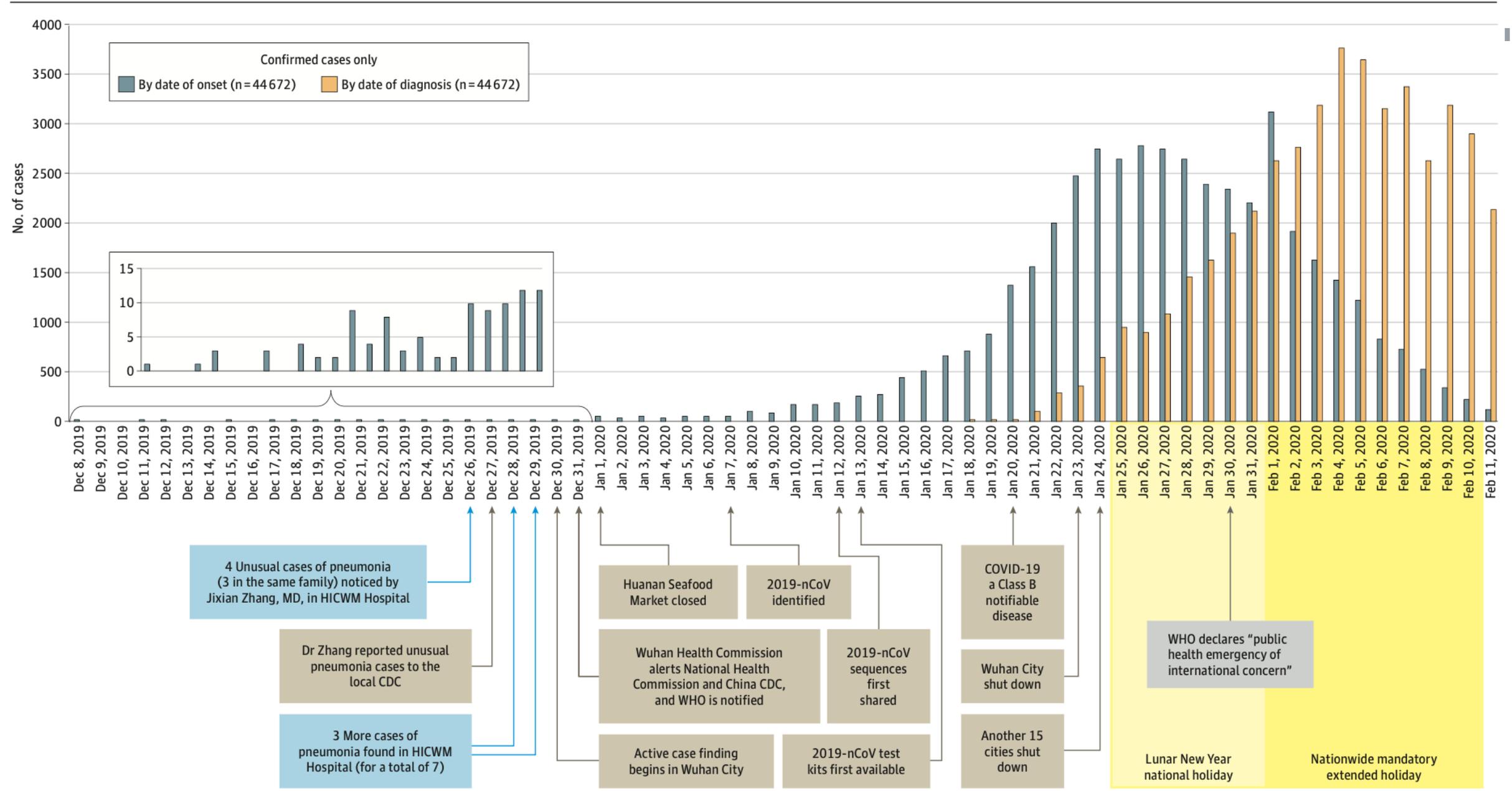
\* Reduced denominators indicate missing data. Percentages may not total 100 because of rounding.

# A EPIDEMIA.....

## Early Transmission Dynamics in Wuhan, China, of Novel Coronavirus–Infected Pneumonia



**Figure 1. Epidemic Curve of the Confirmed Cases of Coronavirus Disease 2019 (COVID-19)**



# QUADRO CLÍNICO

- 41 pacientes internados

## Signs and symptoms

Fever	40 (98%)
Highest temperature, °C	..
<37.3	1 (2%)
37.3–38.0	8 (20%)
38.1–39.0	18 (44%)
>39.0	14 (34%)
Cough	31 (76%)
Myalgia or fatigue	18 (44%)
Sputum production	11/39 (28%)
Headache	3/38 (8%)
Haemoptysis	2/39 (5%)
Diarrhoea	1/38 (3%)
Dyspnoea	22/40 (55%)
Days from illness onset to dyspnoea	8.0 (5.0–13.0)
Days from first admission to transfer	5.0 (1.0–8.0)
Systolic pressure, mm Hg	125.0 (119.0–135.0)
Respiratory rate	12 (29%)
>24 breaths per min	

- 201 pacientes internados

## Initial common symptoms

Fever	188 (93.5)
Cough	163 (81.1)
Productive cough	83 (41.3)
Dyspnea	80 (39.8)
Fatigue or myalgia	65 (32.3)

## Chest imaging, infiltrate<sup>a</sup>

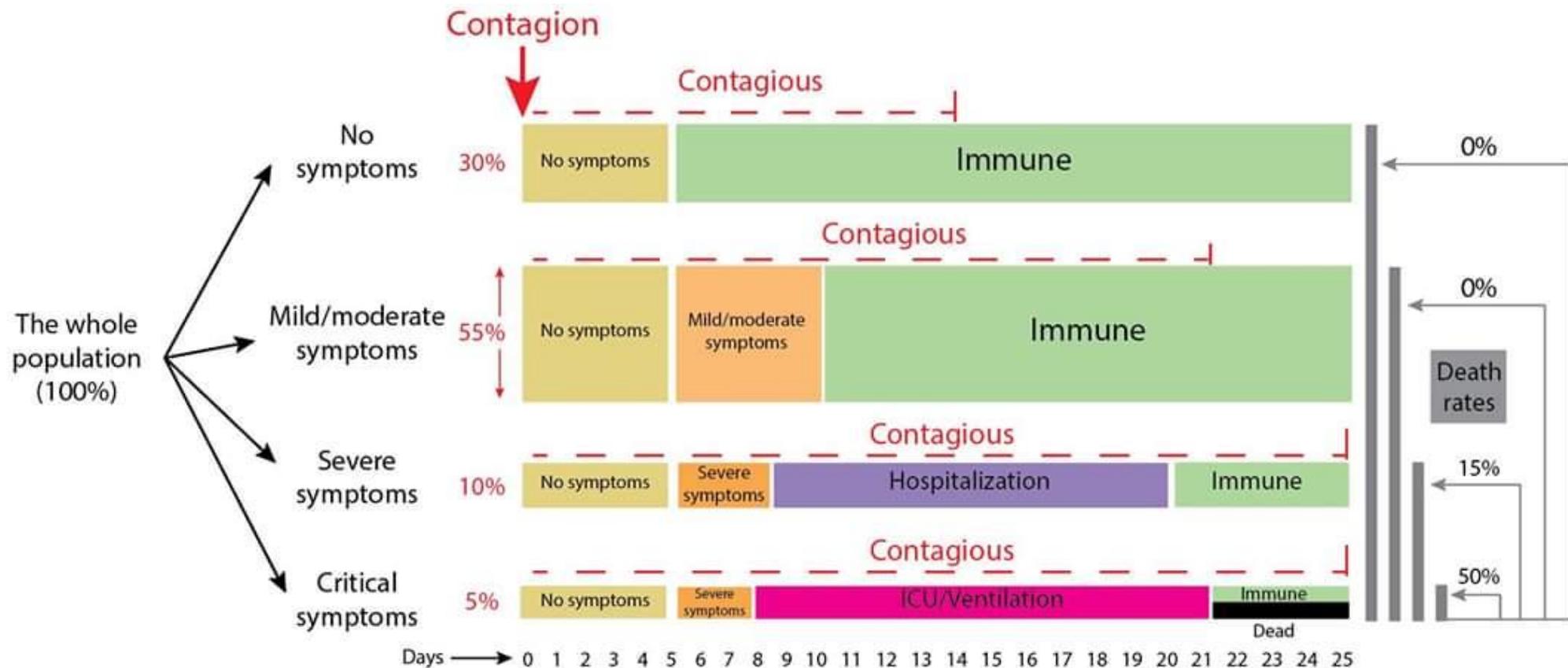
Unilateral	10 (5.0)
Bilateral	191 (95.0)

## Comorbidities

Hypertension	39 (19.4)
Diabetes	22 (10.9)
Cardiovascular disease	8 (4.0)
Liver disease	7 (3.5)
Nervous system disease	7 (3.5)
Chronic lung disease	5 (2.5)
Chronic kidney disease	2 (1.0)
Endocrine system disease <sup>b</sup>	2 (1.0)
Tumor	1 (0.5)

Somente febre – 13 (6,5%)  
Febre e tosse – 154 (76,6%)  
Febre e dispneia – 74 (36,8%)  
Febre e cansaço ou mialgia ou cefaleia (32,8%)

# EVOLUÇÃO CLÍNICA



## References:

1. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. Lauer SA et al. Ann Intern Med. 2020 Mar 10.
2. Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand. Neil M Ferguson et al. Imperial College COVID-19 Response Team. 16 March 2020.
3. Viral dynamics in mild and severe cases of Covid-19. Yang Liu et al. The Lancet, March 19, 2020.

## LETALIDADE

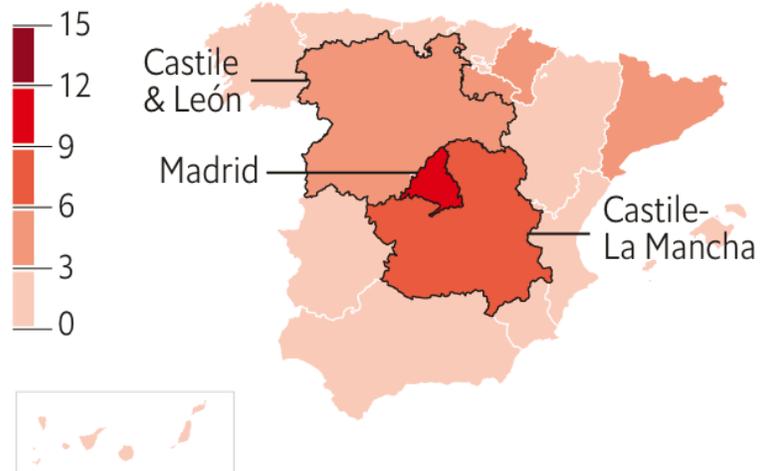
### The many estimates of the COVID-19 case fatality rate

#### Qual a verdadeira taxa de letalidade de COVID-19?

- Impressão que é maior que Influenza e menor que o SARS (?)
- **CFR – 15% no reporte inicial (6/41)**
  - Após entre 4,3% e 11% - (*Lancet* 2020; **395**: 507–13)
  - Após 3,4% (OMS em 03/03/20)
- **CFR em Singapura – 0,3%**
  - (631 casos notificados em 25/03)
- **Cruzeiro Diamond Princess – 0,99%**
  - 3.711 passageiros (7 óbitos)
- **Concluindo:** CFR – SARS (9,5%) – MERS (34,4%) - Influenza (0,1%)

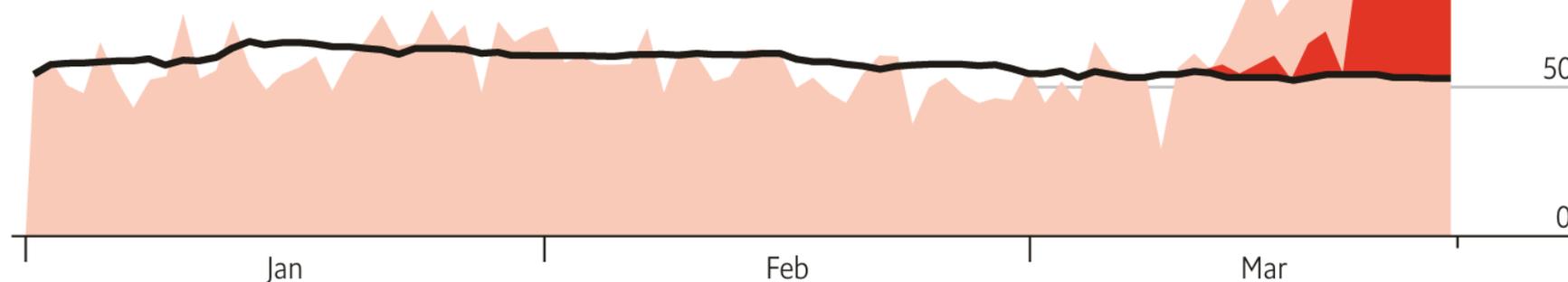
# TAXA DE LETALIDADE

## Spain, confirmed covid-19 deaths per 100,000 people per week\*



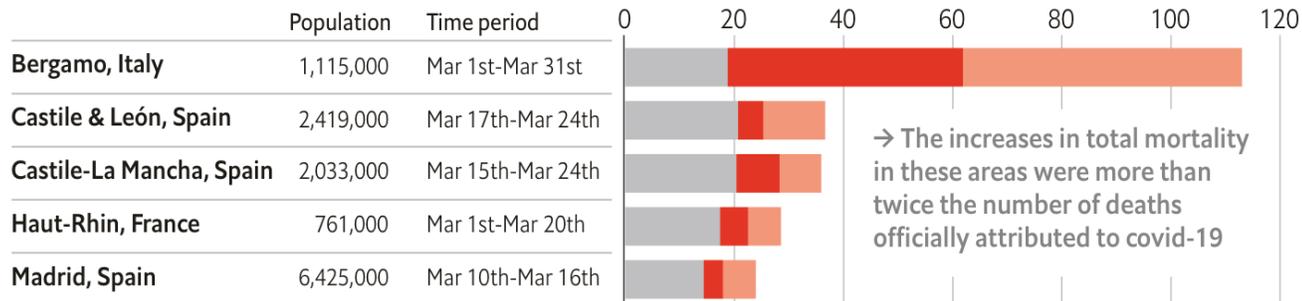
## Castile-La Mancha, region

■ All deaths, 2020    — Expected deaths, based on past years  
■ Sum of expected deaths and confirmed covid-19 deaths



## Deaths per 100,000 people per week, selected regions

Region's normal death rate    ■ Confirmed covid-19 deaths    ■ Excess deaths not attributed to covid-19



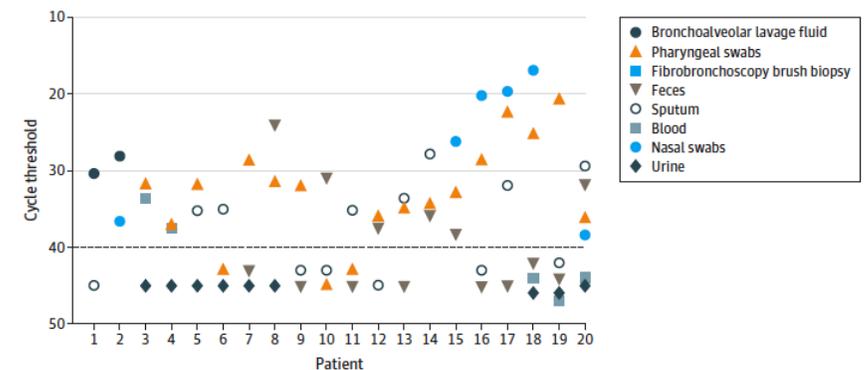
# DIAGNÓSTICO

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

Table. Detection Results of Clinical Specimens by Real-Time Reverse Transcriptase–Polymerase Chain Reaction

Specimens and values	Bronchoalveolar lavage fluid (n = 15)	Fibrobronchoscope brush biopsy (n = 13)	Sputum (n = 104)	Nasal swabs (n = 8)	Pharyngeal swabs (n = 398)	Feces (n = 153)	Blood (n = 307)	Urine (n = 72)
Positive test result, No. (%)	14 (93)	6 (46)	75 (72)	5 (63)	126 (32)	44 (29)	3 (1)	0
Cycle threshold, mean (SD)	31.1 (3.0)	33.8 (3.9)	31.1 (5.2)	24.3 (8.6)	32.1 (4.2)	31.4 (5.1)	34.6 (0.7)	ND
Range	26.4-36.2	26.9-36.8	18.4-38.8	16.9-38.4	20.8-38.6	22.3-38.4	34.1-35.4	
95% CI	28.9-33.2	29.8-37.9	29.3-33.0	13.7-35.0	31.2-33.1	29.4-33.5	0.0-36.4	

Figure. Severe Acute Respiratory Syndrome Coronavirus 2 Distribution and Shedding Patterns Among 20 Hospitalized Patients



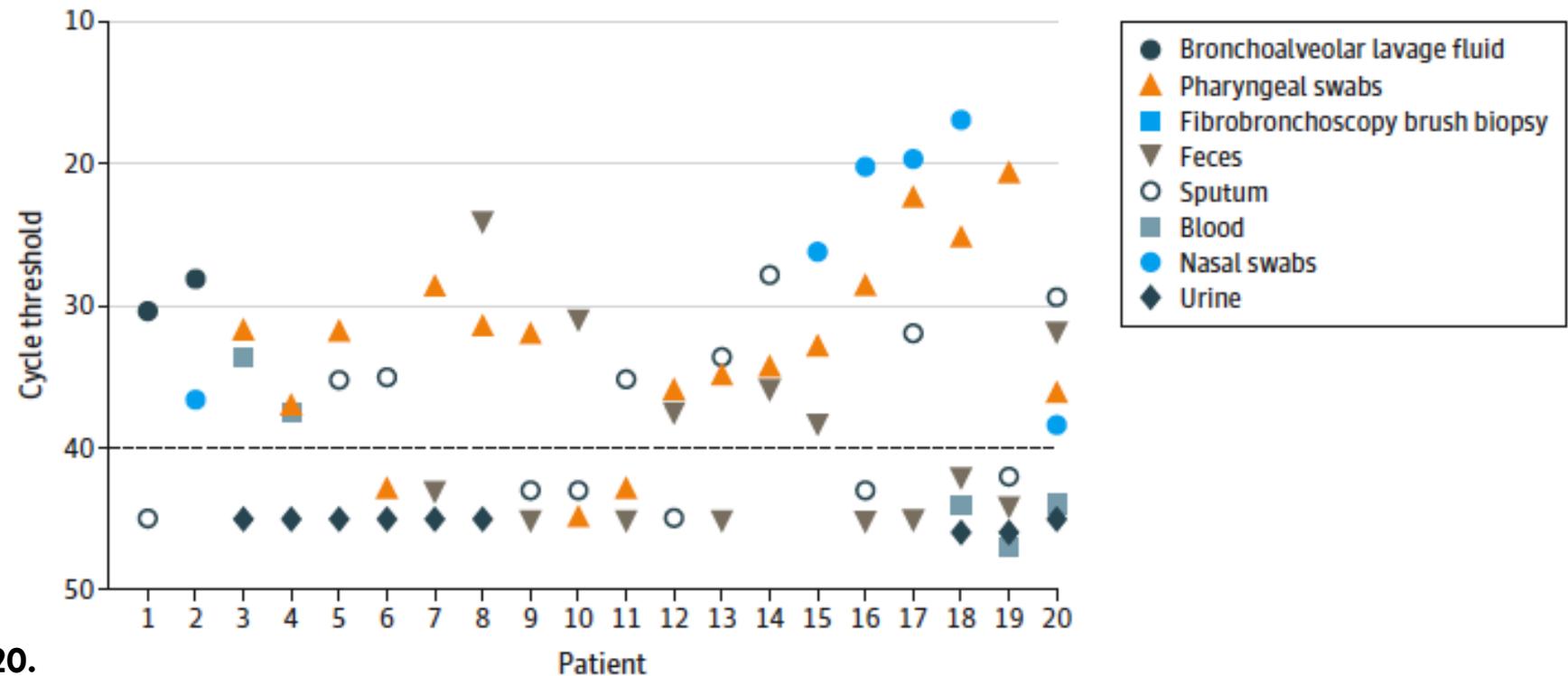
# DIAGNÓSTICO

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

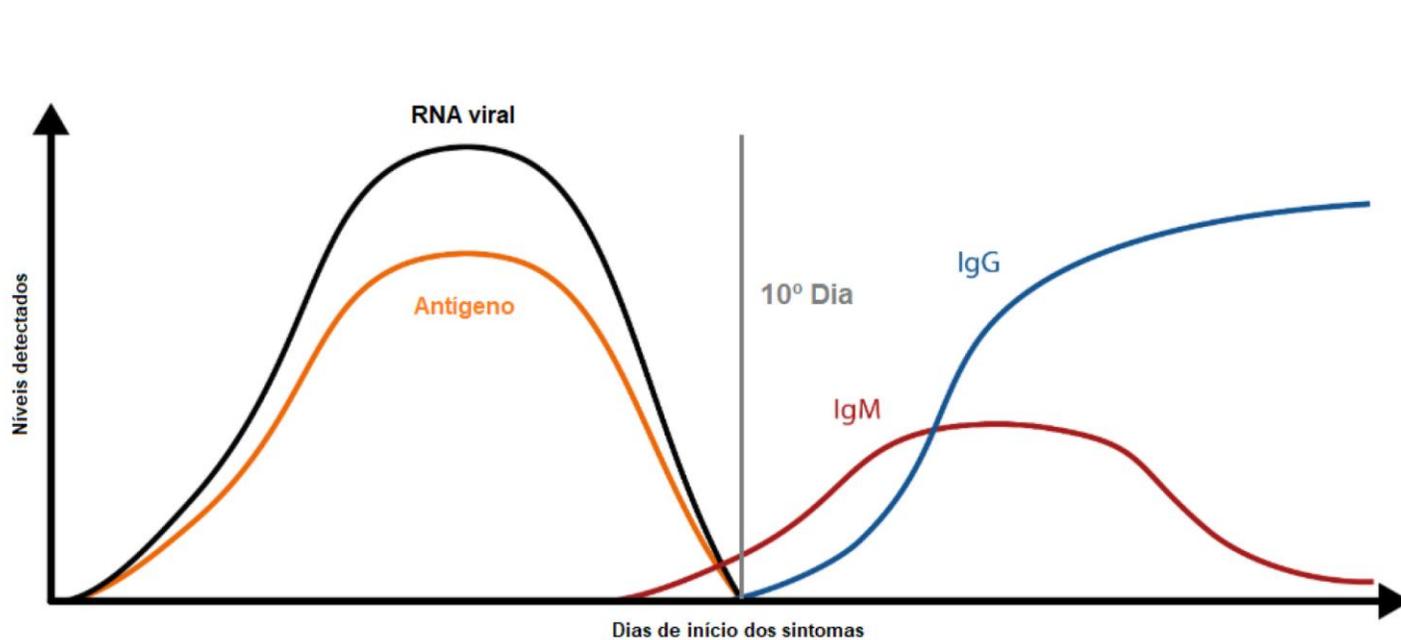
Table. Detection Results of Clinical

Specimens and values	Bronchoalveolar lavage (n = 14)
Positive test result, No. (%)	14 (100)
Cycle threshold, mean (SD)	31.1 (2.1)
Range	26.4-38.1
95% CI	28.9-33.3

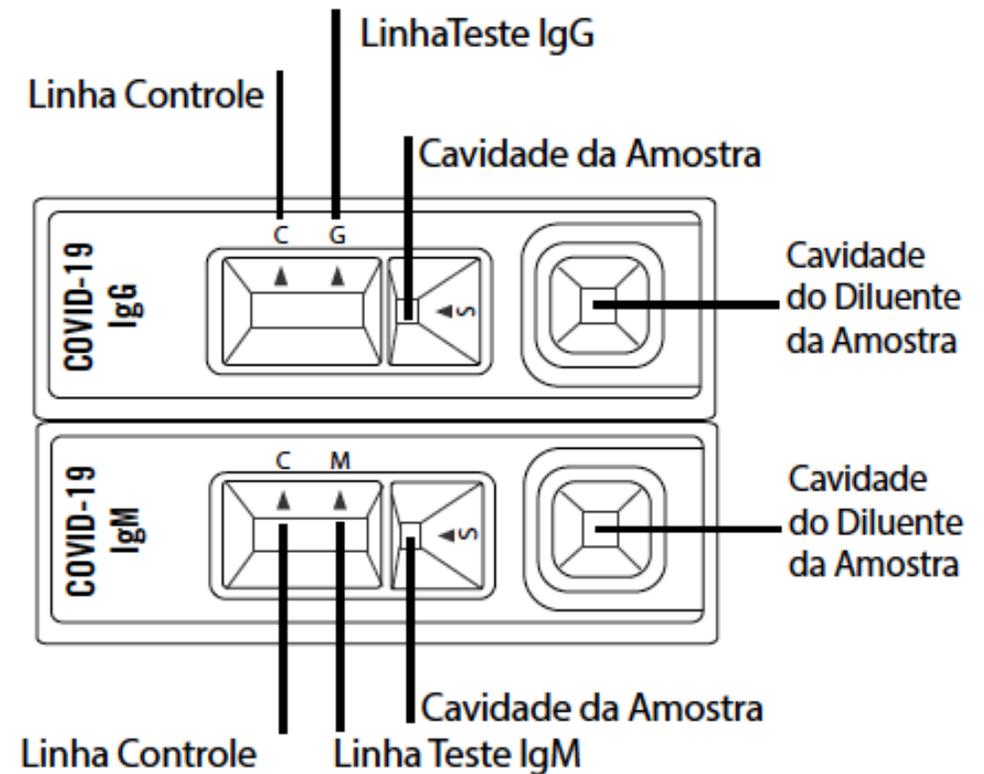
Figure. Severe Acute Respiratory Syndrome Coronavirus 2 Distribution and Shedding Patterns Among 20 Hospitalized Patients



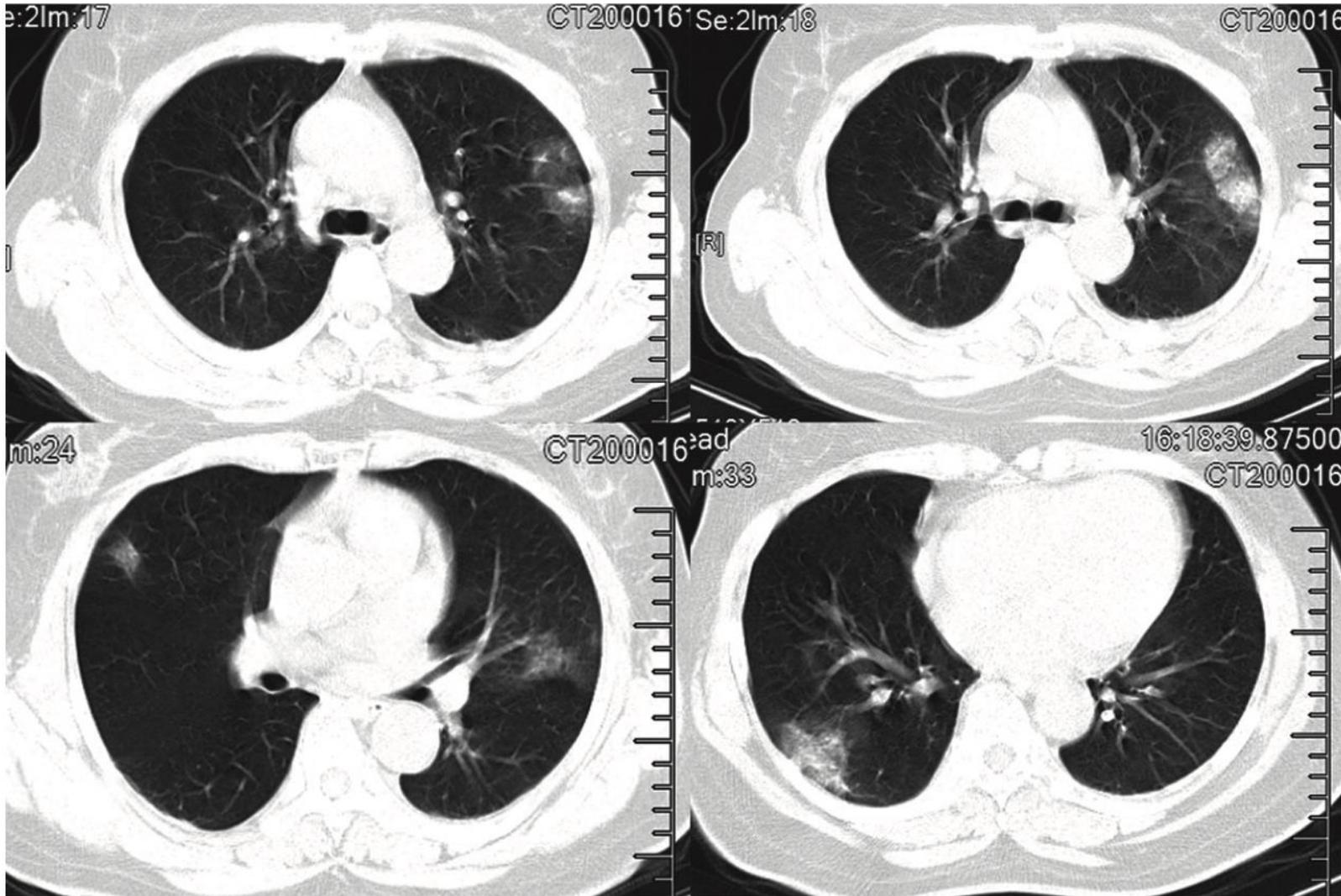
# DIAGNÓSTICO – SOROLOGIA (TESTE RÁPIDO)



Fonte: COVID-19. Recomendação de uso de exames laboratoriais. Dasa, 2020 (adaptado).



# DIAGNÓSTICO

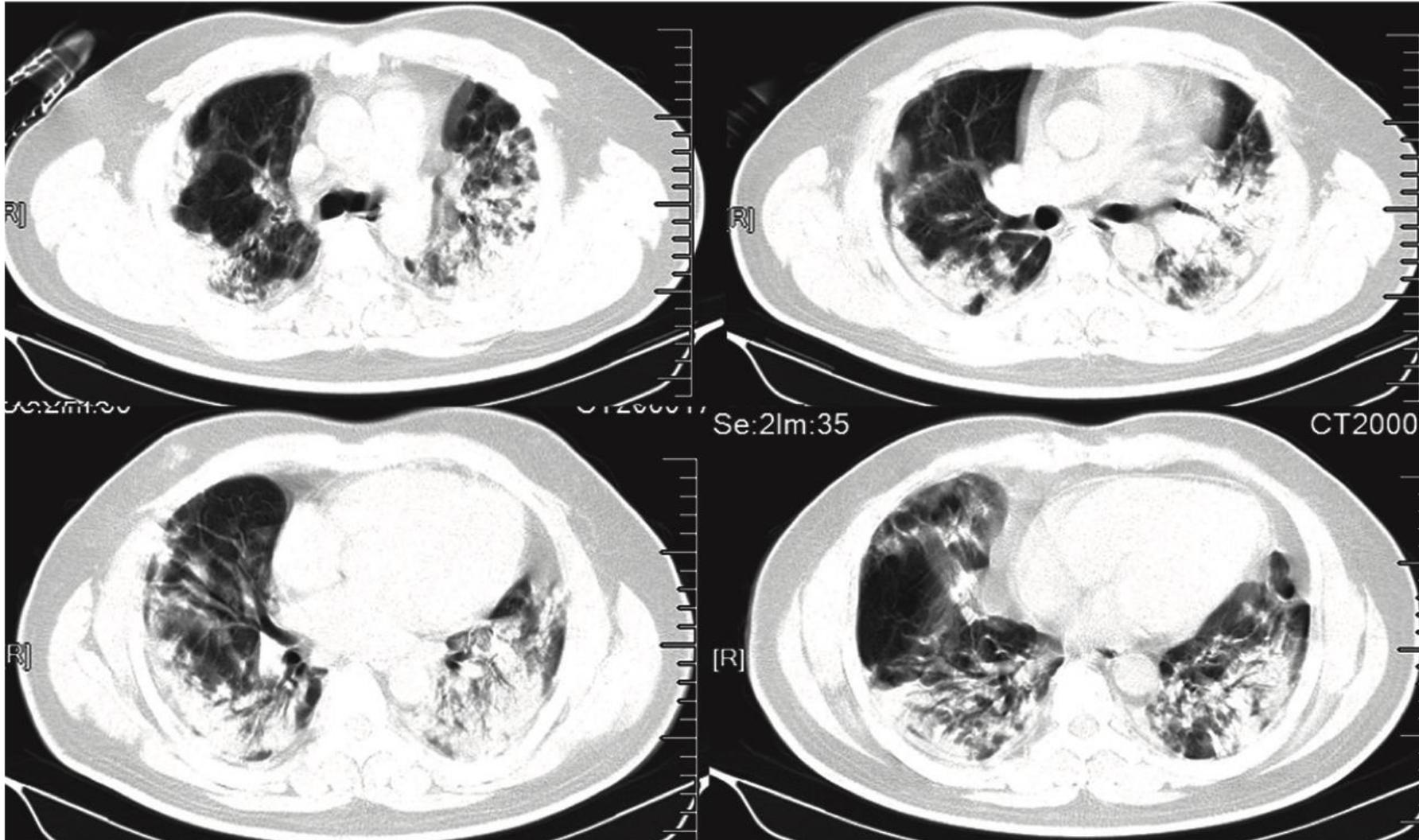


**Mulher 53 anos**

**8o dia de doença**

Infiltrado bilateral em vidro  
fosco e áreas de  
consolidação subsegmentares

# IMAGEM



**Homem 40 anos**  
**15o dia de doença**  
áreas de consolidação  
lobar e subsegmentar

# FATORES PROGNÓSTICOS

JAMA Internal Medicine | Original Investigation

## Risk Factors Associated With Acute Respiratory Distress Syndrome and Death in Patients With Coronavirus Disease 2019 Pneumonia in Wuhan, China

- 201 pacientes com idade mediana 51 anos (21-83)
- Internados no hospital Jinyintan Hospital in Wuhan - entre 2/Dez e 26 janeiro – seguimento até 13/Fev

### Risco de SARA (HR)

- > 65 anos (3,26)
- Tax  $\geq$  39oC (1,77)
- HAS (1,82) e DM (2,34)
- Linfopenia (0,37)
- Globulina (2,32)
- Cistatina C (1,69)
- DHL (1,61)
- PCR >5 (5,81)
- Ferritina >300 (3,53)
- TP (1,56)

### Risco de Obito

- > 65 anos (6,17)
- Tax  $\geq$  39oC (0,56)
- Albumina (0,19)
- Cistatina C (1,80)

Table 4. Bivariate Cox Regression of Factors Associated With ARDS Development or Progression From ARDS to Death

Patient characteristics and findings	ARDS		Death	
	HR (95% CI)	P value	HR (95% CI)	P value
<b>Clinical characteristics</b>				
Age ( $\geq$ 65 vs <65), y	3.26 (2.08-5.11)	<.001	6.17 (3.26-11.67)	<.001
Gender (male vs female)	1.47 (0.92-2.36)	.11	0.56 (0.30-1.05)	.07
Highest patient temperature ( $\geq$ 39 °C vs <39 °C)	1.77 (1.11-2.84)	.02	0.41 (0.21-0.82)	.01
<b>Comorbidities</b>				
Hypertension (yes vs no)	1.82 (1.13-2.95)	.01	1.70 (0.92-3.14)	.09
Diabetes (yes vs no)	2.34 (1.35-4.05)	.002	1.58 (0.80-3.13)	.19
<b>Laboratory findings</b>				
<b>Hematologic</b>				
Neutrophils, 10 <sup>9</sup> /mL	1.14 (1.09-1.19)	<.001	1.08 (1.01-1.17)	.03
Lymphocytes, 10 <sup>9</sup> /mL	0.37 (0.21-0.63)	<.001	0.51 (0.22-1.17)	.11
CD3, 100/mL	0.83 (0.72-0.96)	.01	0.81 (0.59-1.11)	.19
CD4, 100/mL	0.74 (0.59-0.93)	.01	0.83 (0.51-1.35)	.45
CD8, 100/mL	0.74 (0.53-1.04)	.08	0.51 (0.24-1.09)	.08
<b>Biochemical</b>				
Total bilirubin, mg/dL	1.05 (1.02-1.08)	.001	1.07 (1.02-1.12)	.003
AST, U/L	1.02 (1.01-1.03)	<.001	0.99 (0.98-1.01)	.45
ALT, U/L	1.00 (1.00-1.01)	.09	1.00 (0.98-1.01)	.43
Albumin, 10 g/L	0.49 (0.37-0.66)	<.001	0.19 (0.07-0.49)	.001
Globulin, 10 g/L	2.32 (1.45-3.71)	<.001	1.91 (1.01-3.61)	.05
Prealbumin, mg/L	0.99 (0.98-0.99)	<.001	1.00 (0.99-1.00)	.31
Urea, mM	1.13 (1.09-1.18)	<.001	1.13 (1.06-1.20)	<.001
Creatinine, 10 $\mu$ M	1.05 (1.01-1.10)	.02	1.04 (0.97-1.11)	.31
Glucose, mM	1.13 (1.08-1.19)	<.001	1.00 (0.92-1.08)	.92
CK-MB, U/L	1.01 (1.00-1.02)	.12	0.99 (0.97-1.01)	.46
Cholinesterase, $\times$ 10 <sup>3</sup> U/L	0.81 (0.73-0.90)	<.001	0.84 (0.73-0.97)	.02
Cystatin C, mg/L	1.69 (1.31-2.19)	<.001	1.80 (1.28-2.53)	.001
LDH, 100 U/L	1.61 (1.44-1.79)	<.001	1.30 (1.11-1.52)	.001
$\alpha$ -HBDH, 100 U/L	1.74 (1.52-1.99)	<.001	1.34 (1.13-1.60)	.001
LDL, mM	0.63 (0.44-0.88)	.008	0.84 (0.54-1.31)	.45
<b>Infection-related indices</b>				
hs-CRP, mg/L (>5 vs $\leq$ 5)	4.81 (1.52-15.27)	.008	NA	NA
IL-6, pg/L	1.02 (1.00-1.05)	.09	1.03 (1.01-1.05)	.01
ESR, mm/h	1.01 (1.00-1.02)	.19	1.01 (0.99-1.02)	.32
Serum ferritin, ng/mL (>300 vs $\leq$ 300)	3.53 (1.52-8.16)	.003	5.28 (0.72-38.48)	.10
<b>Coagulation function</b>				
PT, s	1.56 (1.32-1.83)	<.001	1.08 (0.84-1.38)	.54
APTT, s	0.97 (0.94-1.01)	.13	0.96 (0.91-1.00)	.06
D-dimer, $\mu$ g/mL	1.03 (1.01-1.04)	<.001	1.02 (1.01-1.04)	.002

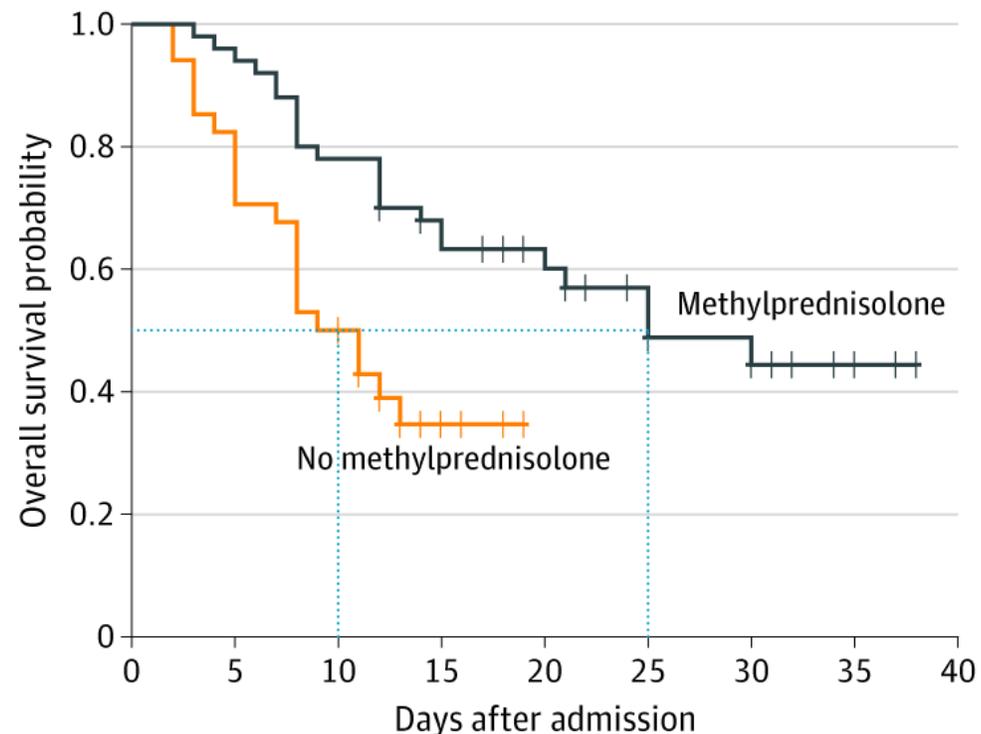
Abbreviations:  $\alpha$ -HBDH,  $\alpha$ -hydroxybutyric dehydrogenase; ALT, alanine aminotransferase; APTT, activated partial thromboplastin time; ARDS, acute respiratory distress syndrome; AST, aspartate aminotransferase; CK-MB, creatine kinase muscle-brain isoform; ESR, erythrocyte sedimentation rate; HR, hazard ratio; hs-CRP, high-sensitivity C-reactive protein; IL-6, interleukin-6; LDH, lactate dehydrogenase; LDL, low-density lipoprotein; NA, not available; PT, prothrombin time.

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Survival Curve in Patients With Acute Respiratory Distress Syndrome Who Did and Did Not Receive Methylprednisolone Treatment Administration of methylprednisolone reduced the risk of death (hazard ratio, 0.38; 95% CI, 0.20-0.72; P = .003).

No. at risk	0	5	10	15	20	25	30	35	40
No methylprednisolone	34	28	17	4	0	0	0	0	0
Methylprednisolone	50	48	39	29	20	14	11	4	0

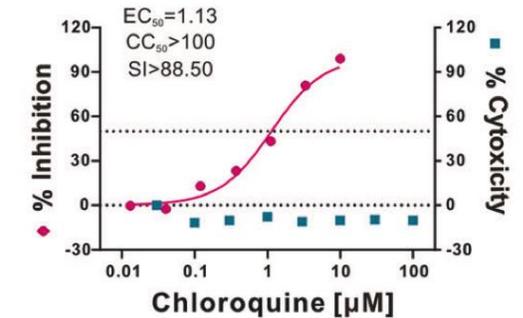
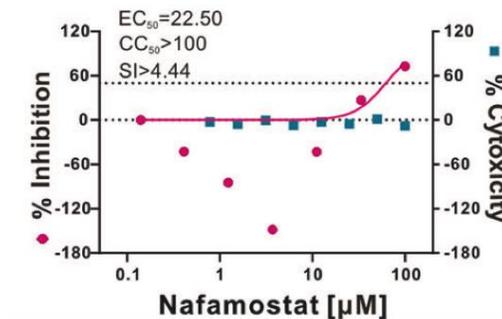
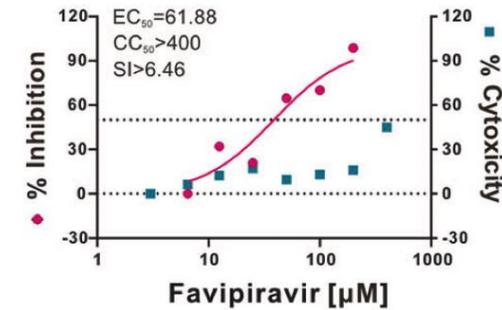
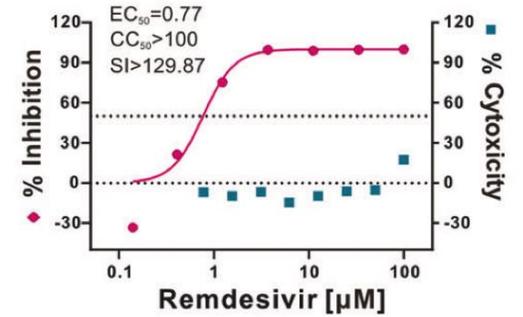
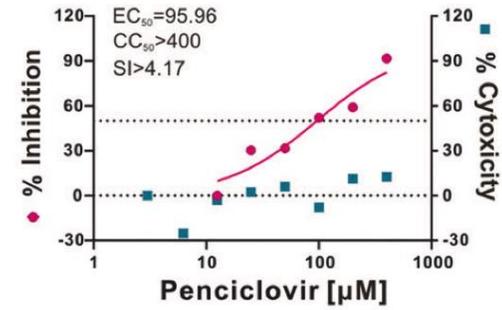
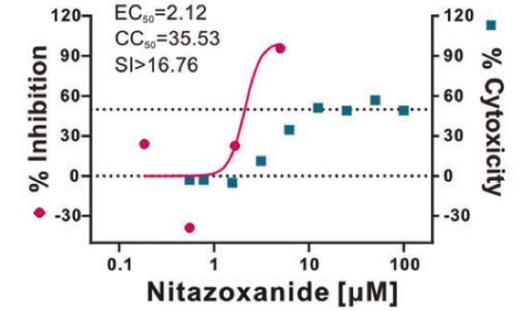
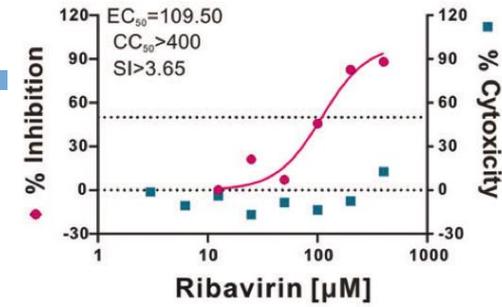
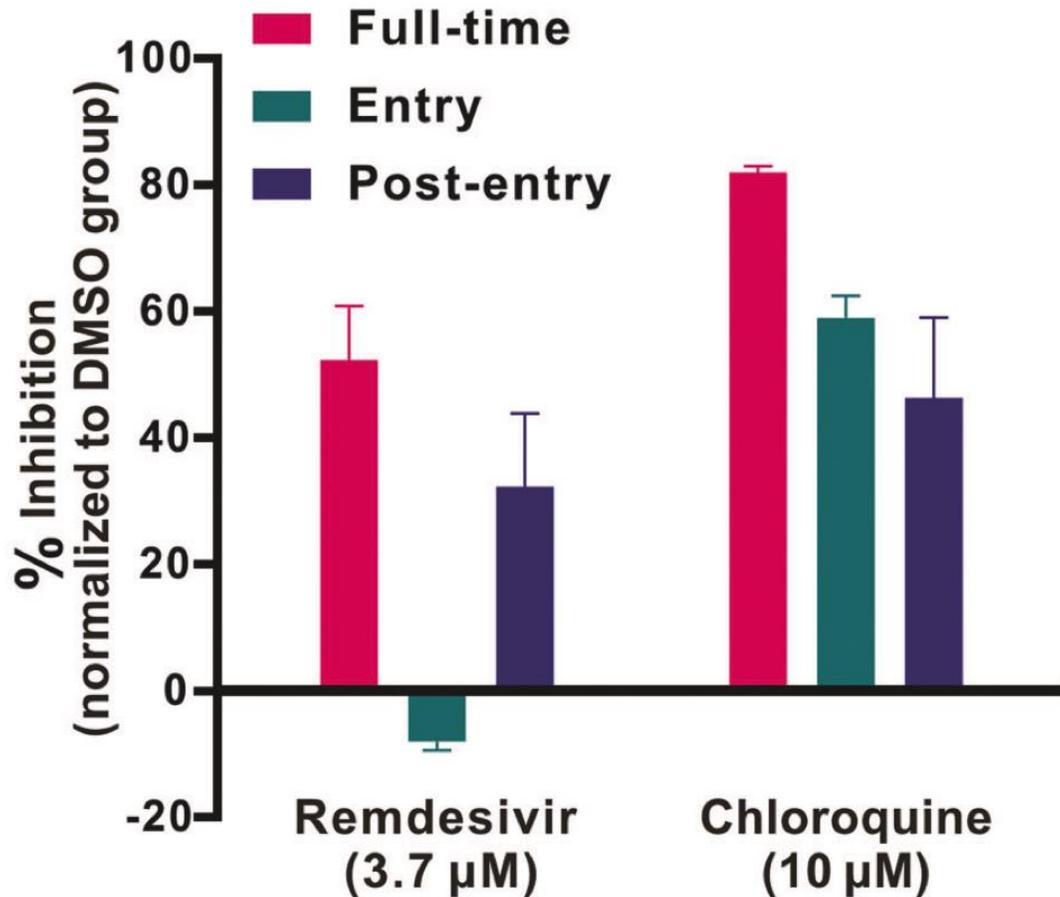
# TRATAMIENTO



# TRATAMENTO

Remdesivir and chloroquine effectively inhibit the recently emerged novel coronavirus (2019-nCoV) in vitro

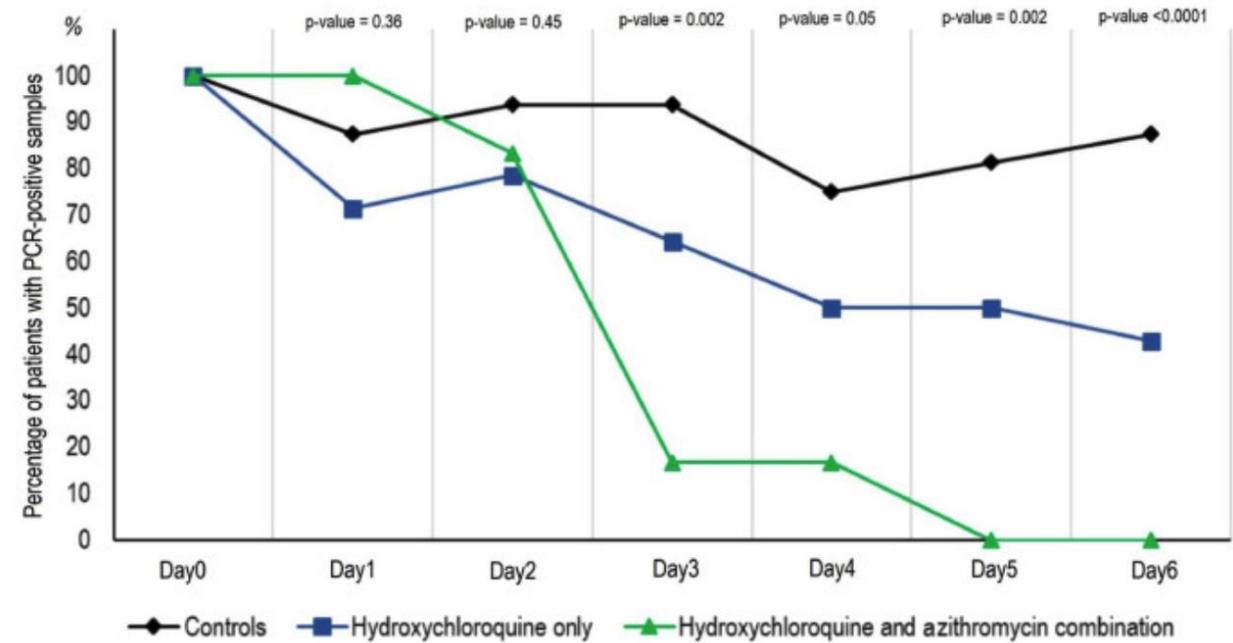
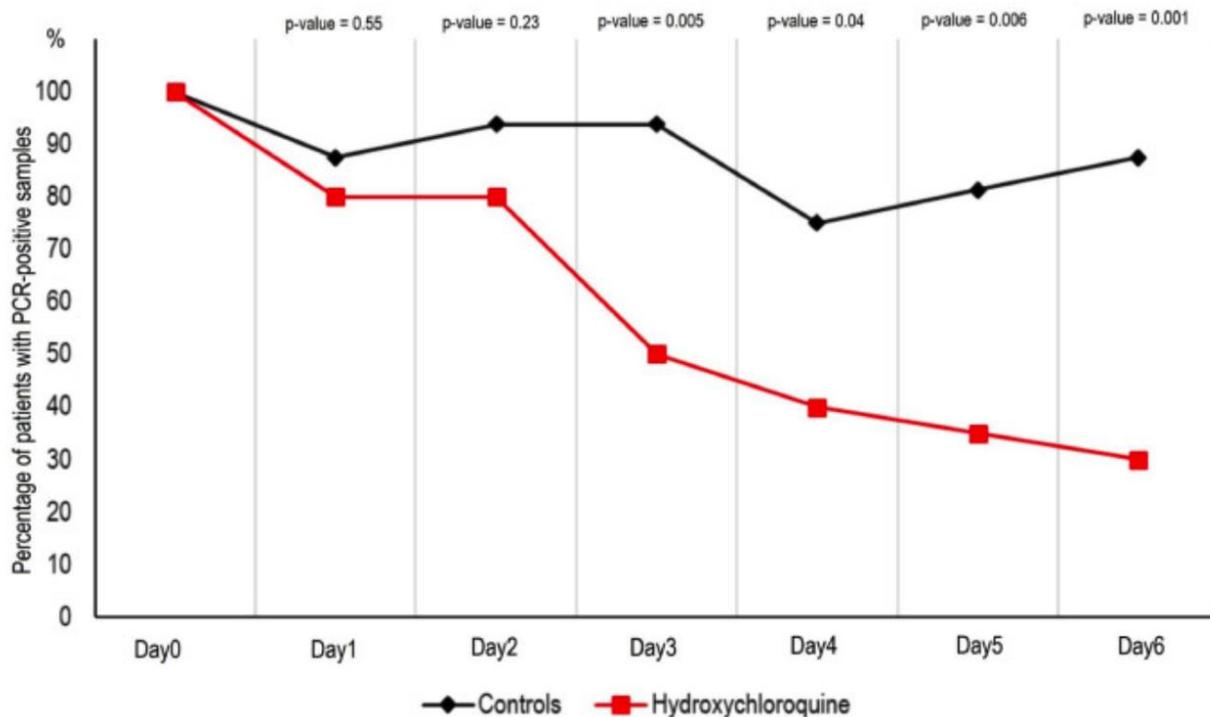
Cell Research (2020) 30:269–271; <https://doi.org/10.1038/s41422-020-0282-0>



# TRATAMENTO

Hydroxychloroquine and azithromycin as a treatment of COVID-19:  
results of an open-label non-randomized clinical trial  
Didier Raoult

- Sulfato de hidroxicloroquina 200mg 8/8hs por 10 dias
- 42 com critério de inclusão e 36 incluídos
  - 26 HCLQ vs 16 Controles
  - 6 HCLQ descontinuam precocemente



# TRATAMENTO

## **A pilot study of hydroxychloroquine in treatment of patients with common coronavirus disease-19 (COVID-19)**

- 30 pacientes
- Desfecho primário – RT PCR em orofaringe no dia 7 pós randomização
- Swab **neg** no D7
  - 13/15 (86,7%) para HCLQ
  - 14/15 (93,3%) para placebo
- Mediana de hospitalização → equivalente – aprox. 4 dias
- Mediana para normalização da temperatura → equivalente – aprox. 1 dia

# TRATAMENTO

- 62 pacientes entre 4 e 28 de fevereiro - Renmin Hospital of Wuhan University
- 31 randomizados a receber 5 dias de hidroxiclороquina 400mg/d
- Avaliado tempo para recuperação clínica, características clínicas e resultados radiológicos (basal x 5d)
- **Menor do tempo para recuperação da tosse, resolução da febre. 4 com piora no grupo controle.**

Characteristics	All	Control	HCQ	P value
Cases, n	62	31	31	
Age, mean (SD)	44.7 (15.3)	45.2 (14.7)	44.1 (16.1)	0.8809
Sex, n (%)				0.7991
Male	29 (46.8%)	15 (48.3%)	14 (45.2%)	
Female	33 (53.2%)	16 (51.7%)	17 (54.9%)	
Fever, day (SD) <sup>a</sup>	2.6 (1.0)	3.2 (1.3)	2.2 (0.4)	0.0008
Cough, day (SD) <sup>b</sup>	2.4 (1.1)	3.1 (1.5)	2.0 (0.2)	0.0016
Progressed to severe illness	4 (6.5 %)	4 (12.9 %)	0	
Adverse effects	2 (3.2 %)	0	2 (6.4 %)	

Group	All	Exacerbated	Unchanged	Improved		
				Moderate	Significant	Total
All	62	11 (17.7 %)	9 (14.5 %)	18 (29.0 %)	24 (38.7 %)	42 (67.7 %)
Control, n (%)	31	9 (29.0 %)	5 (16.1%)	12 (38.7 %)	5 (16.1%)	17 (54.8%)
HCQ, n (%)	31	2 (6.5 %)	4 (12.9 %)	6 (19.4%)	19 (61.3%)	25 (80.6%)
P value	0.0476					

Table 2: Absorption of pneumonia on chest CT.

## TRATAMENTO

# A Trial of Lopinavir–Ritonavir in Adults Hospitalized with Severe Covid-19

- Estudo, randomizado, controlado, aberto.
- Pacientes com  $\text{Sat O}_2 \leq 94\%$  ou relação  $\text{pO}_2/\text{fiO}_2 < 300$
- Desfecho → Melhora clínica ou alta
- 99 pacientes LPV/r 10 dias vs 100 pacientes tratamento padrão
  
- Sem melhora em relação ao tempo para melhora clínica – HR=1,24 (0,9 a 1,72)
- Mortalidade em 28 dias equivalente – 19,2% LPV/r vs 25%
- Sem diferença em relação a taxa de detecção viral em vários pontos
- Na análise por intenção de tratamento modificada – LPV/r apresentou melhora clínica 1 dia antes – HR 1,39 (1,0 a 1,91)
- LPV/r interrompido precocemente em 13 pacientes (13,8%)

# TRATAMENTO

## Effective Treatment of Severe COVID-19 Patients with Tocilizumab

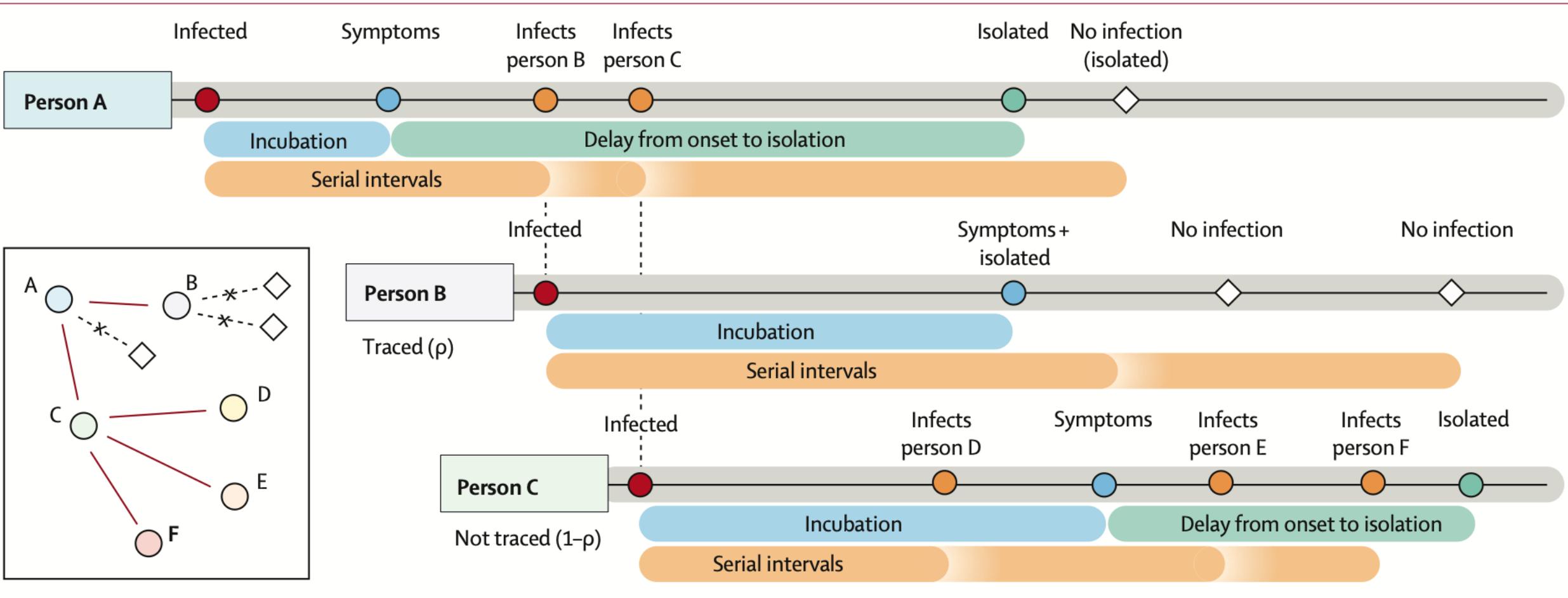
Xiaoling Xu<sup>1,#\*</sup>, Mingfeng Han<sup>2,#</sup>, Tiantian Li<sup>1</sup>, Wei Sun<sup>2</sup>, Dongsheng Wang<sup>1</sup>, Binqing Fu<sup>3,4</sup>, Yonggang Zhou<sup>3,4</sup>, Xiaohu Zheng<sup>3,4</sup>, Yun Yang<sup>5</sup>, Xiuyong Li<sup>6</sup>, Xiaohua Zhang<sup>2</sup>, Aijun Pan<sup>5</sup>, Haiming Wei<sup>3,4\*</sup>

- 21 pacientes no Hospital da Provincia de Anhui
- Pacientes com critério de infecção grave ou critica
  - Grave – FR  $\geq 30$ ; PaO<sub>2</sub>/fiO<sub>2</sub>  $\leq 300$ ; SatO<sub>2</sub>  $\leq 93\%$
  - Críticos – Ventilação mecânica; choque; insuficiência orgânica outra com admissão na UTI
- Todos receberam metilprednisolona, O<sub>2</sub>, lopinavir e tocilizumab (400mg)
- RESULTADOS:
  - Febre retornou ao normal em dias
  - 75% (15/20) diminuiu a necessidade de O<sub>2</sub> e um suspendeu O<sub>2</sub>
  - Melhora da CT em 90,5% (19)
  - Linfopenia inicial 85% após tratamento em 47,4%
  - PCR reduziu em 84,2%
  - 90,5% (19) pacientes alta após media de 13,5 dias.

# CONTROLE DA EPIDEMIA

## Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts

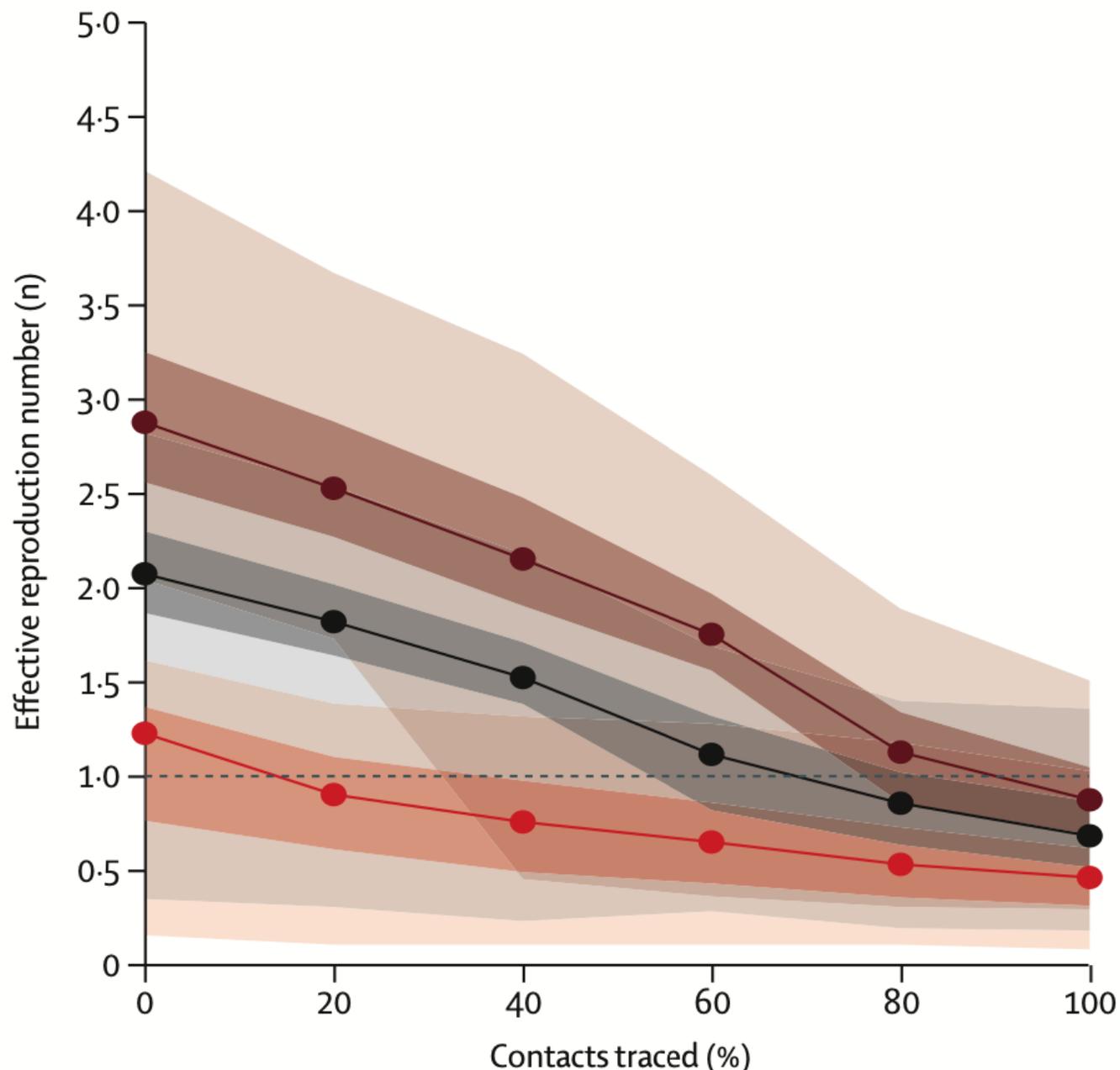
Joel Hellewell, Sam Abbott\*, Amy Gimma\*, Nikos I Bosse, Christopher I Jarvis, Timothy W Russell, James D Munday, Adam J Kucharski, W John Edmunds, Centre for the Mathematical Modelling of Infectious Diseases COVID-19 Working Group, Sebastian Funk†, Rosalind M Eggo†



# CONTROLE DA EPIDEMIA

## Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts

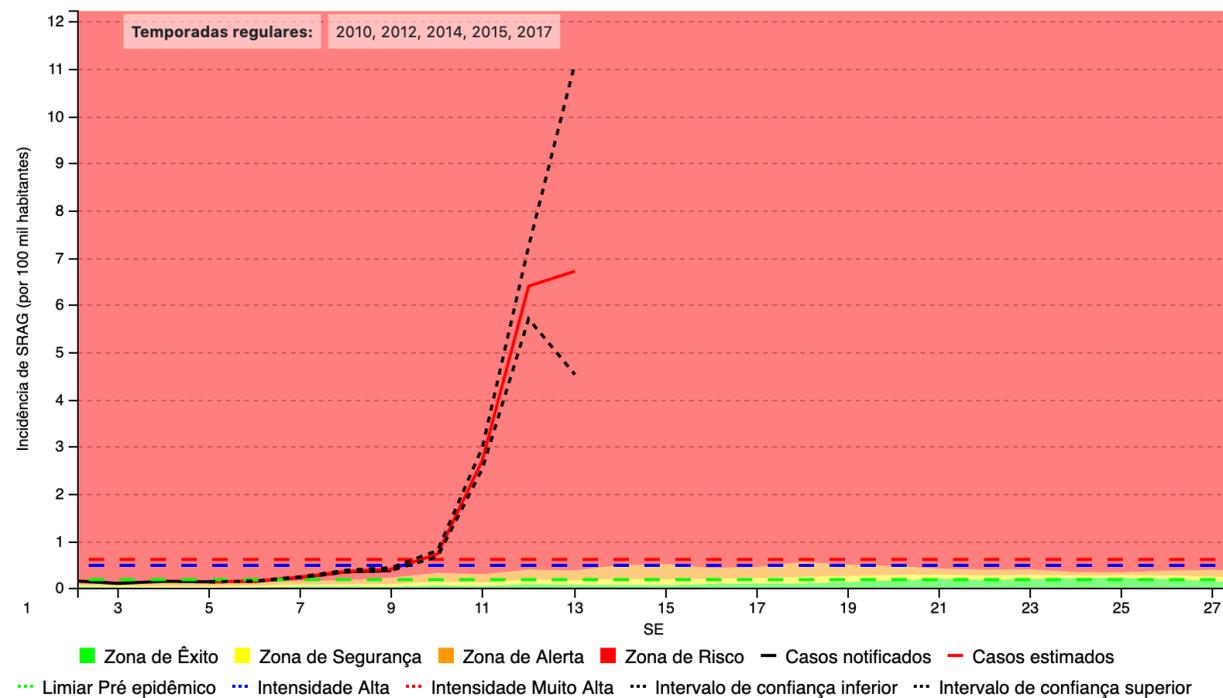
Joel Hellewell, Sam Abbott\*, Amy Gimma\*, Nikos I Bosse, Christopher I Jarvis, Timothy W Russell, James D Munday, Adam J Kucharski, W John Edmunds, Centre for the Mathematical Modelling of Infectious Diseases COVID-19 Working Group, Sebastian Funk†, Rosalind M Eggo†



# CONTROLE DA EPIDEMIA – SRAG 06/04/20 E 13/04

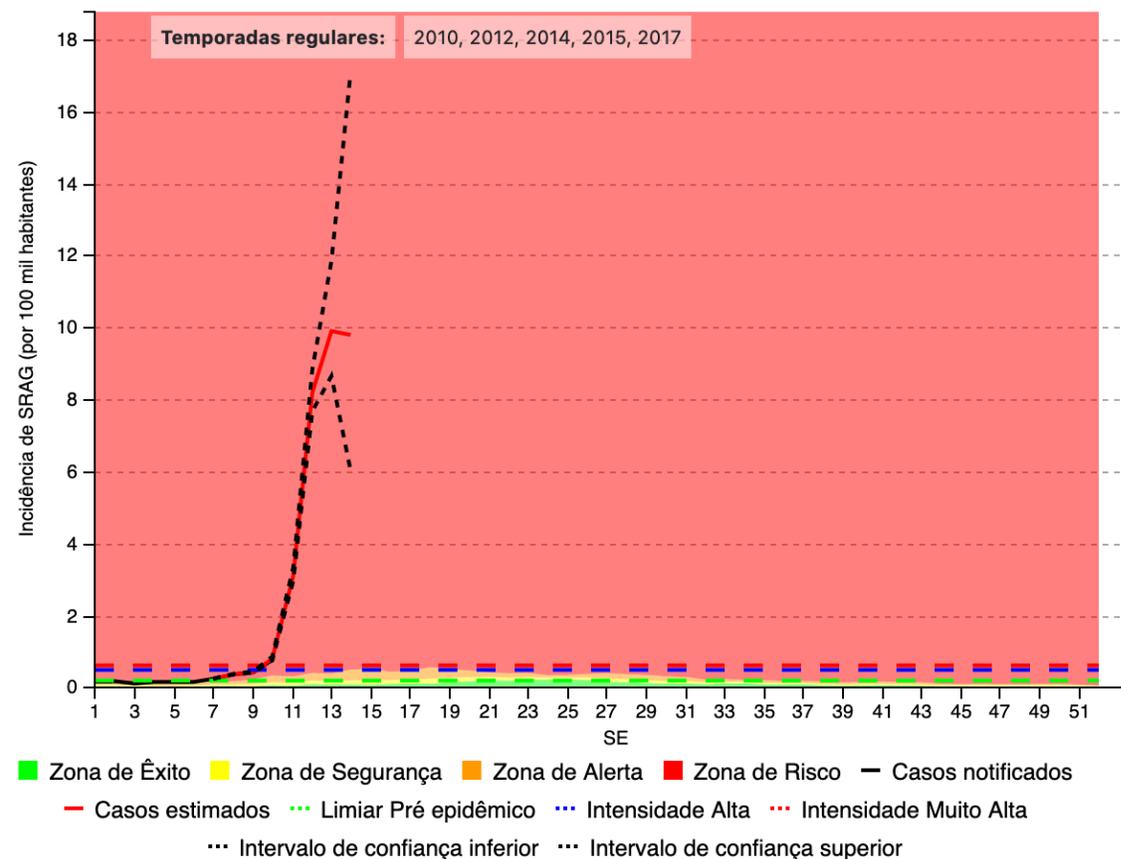
Curva de incidência de SRAG - São Paulo

Salvar imagem



Curva de incidência de SRAG - São Paulo

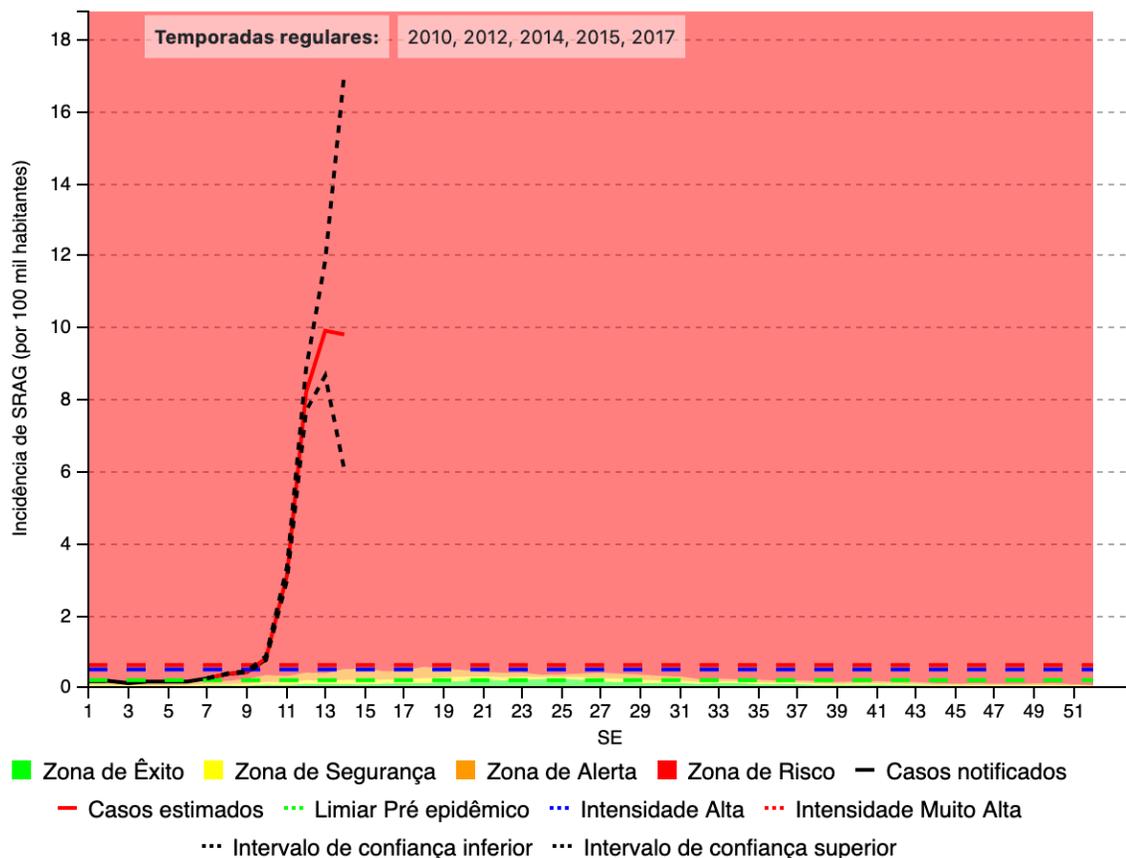
Salvar imagem



# CONTROLE DA EPIDEMIA – SRAG 13/04

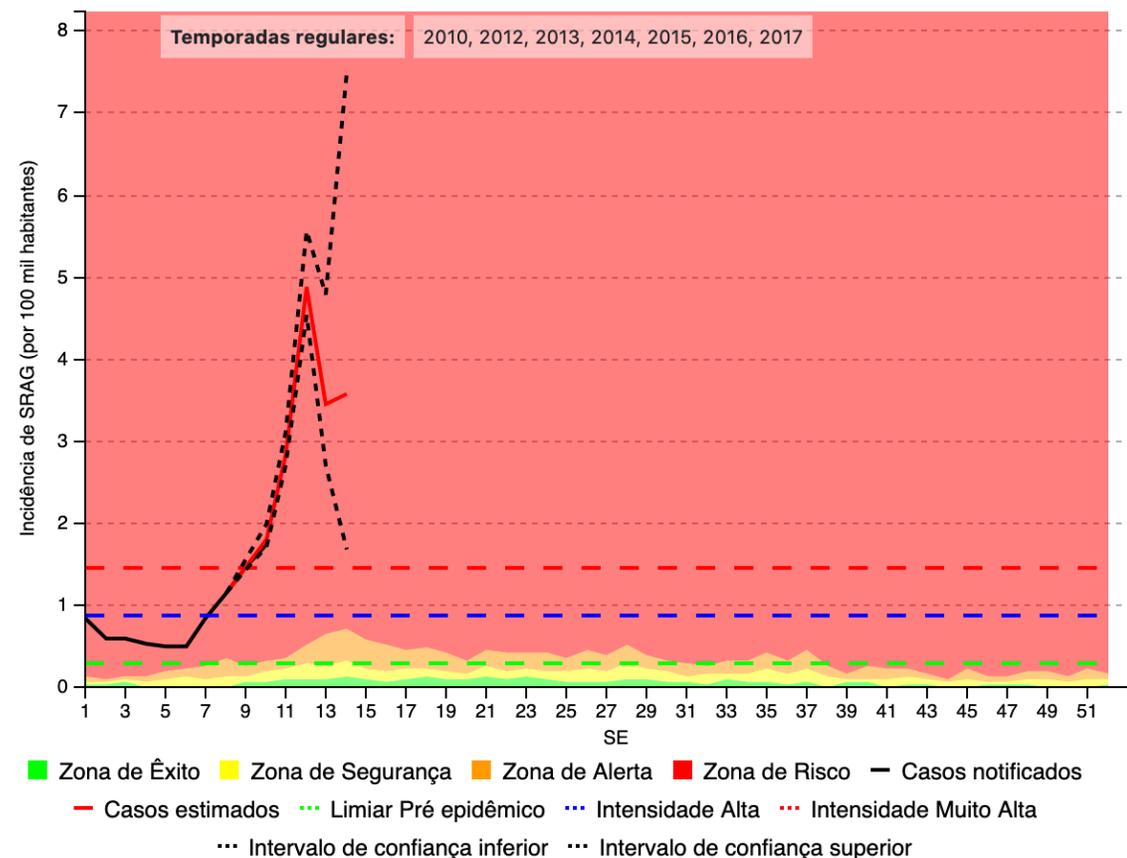
Curva de incidência de SRAG - São Paulo

Salvar imagem



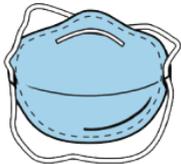
Curva de incidência de SRAG - Distrito Federal

Salvar imagem



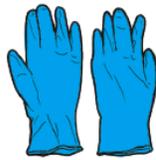
# EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL (EPI)

## Duração dos EPIs



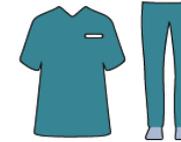
### MÁSCARA N95/PPF2

Trocar a cada 7 dias corridos ou antes se sujidade ou umidade; guardar em envelope de papel identificado na entrada da unidade contendo nome do profissional e data do início do uso. Descartar em lixo infectante (máscara e envelope)



### LUVAS DE PROCEDIMENTO

Descartar a cada uso em lixo infectante



### ROUPA PRIVATIVA

Trocar a cada turno (descartar no hamper)



### MÁSCARA CIRÚRGICA

Descartar a cada uso ou a cada **6 horas** em lixo infectante  
Não é permitido o uso de máscara de tecido na assistência



### TOUCA

Descartar após cada uso em lixo infectante. Proibido o uso de touca de tecido



### ÓCULOS DE PROTEÇÃO/ MÁSCARA FACIAL

Desinfetar após cada uso com álcool a 70% líquido embebido em algodão. Não utilizar gaze.

Ascensoristas  
Segurança patrimonial  
Recepção  
DAM

Trocar a cada turno ou se apresentar sujidade ou umidade e descartar em lixo comum



### AVENTAL

Trocar a cada procedimento ou se coorte de casos confirmados, a cada turno de 6 horas.

## Recomendações HCFMUSP

### Referências:

1. World Health Organization 2020. Ra disease 2019 (Covid-19). Interim Gui <https://apps.who.int/iris/bitstream/handle/10665 eng.pdf>
2. Anvisa. NOTA TÉCNICA No 04/2020 GVI ORIENTAÇÕES PARA SERVIÇOS DE SAÚDE - <http://portal.anvisa.gov.br/documents/33852/271 GGTES-ANVISA/ab598660-3de4-4f14>
3. Center of Diseases Control <https://www.cdc.gov/coronavirus/2019>

# MASCARAS – PEÇA SEMIFACIAL FILTRANTE

- **PFF 2 – Peça semiFacial Filtrante** – É um EPR (equipamento de proteção respiratória) com Certificado de Aprovação (CA) deve apresentar gravado no seu próprio corpo o número do CA, o lote e/ou data de fabricação e o nome do fabricante ou importador

\* O EPR deve possuir Registro na ANVISA/MS (RDC 185, 2001). Por ser um EPI, o EPR deve possuir também o Certificado de Aprovação (CA) emitido pelo Ministério do Trabalho e Emprego.

- **N95** – Eficiência de 95% de bloqueio em partículas de 0,1 a 0,3 micra (NIOSH - National Institute for Occupational Safety and Health)

**Quadro 4:** Porcentagem do aerossol de teste (NaCl<sup>1</sup>) que atravessa a camada filtrante da PFF (Penetração)

Classe da PFF	Penetração (%)
PFF 1	20
PFF 2	6
PFF 3	3

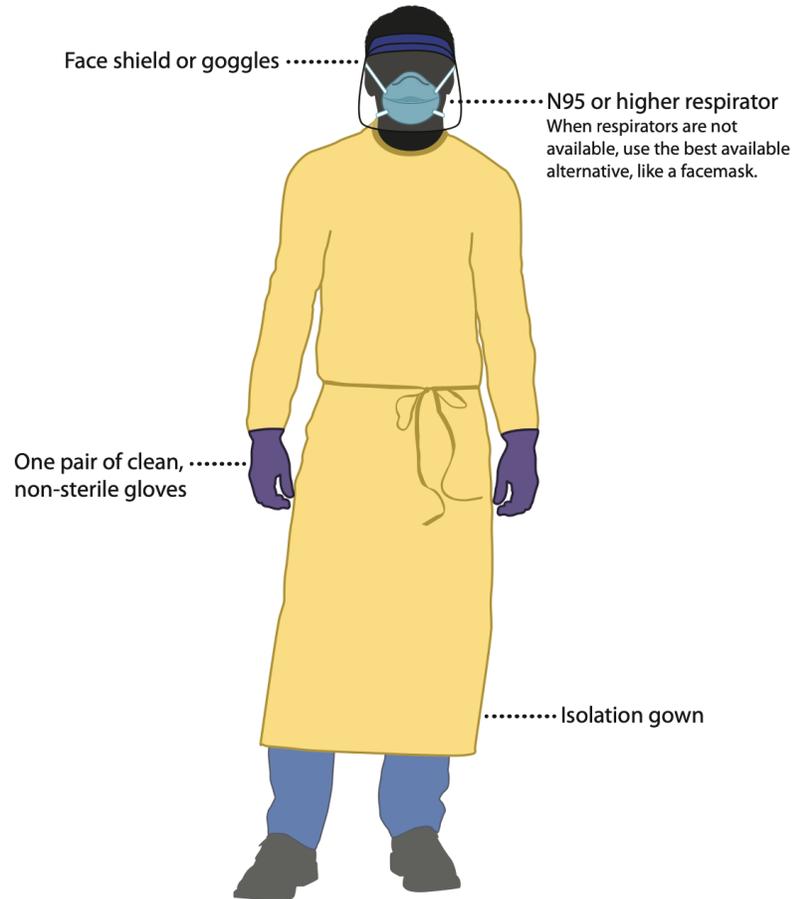
Partícula NaCl = 0,08 micra

Fonte: ASSOCIAÇÃO BRASILEIRA DE NORMAS TÉCNICAS. Norma Brasileira. Norma Brasileira 13698 – Equipamento de Proteção Respiratória – Peça semifacial filtrante para partículas - Especificação. Rio de Janeiro:ABNT,1996.<sup>9</sup>

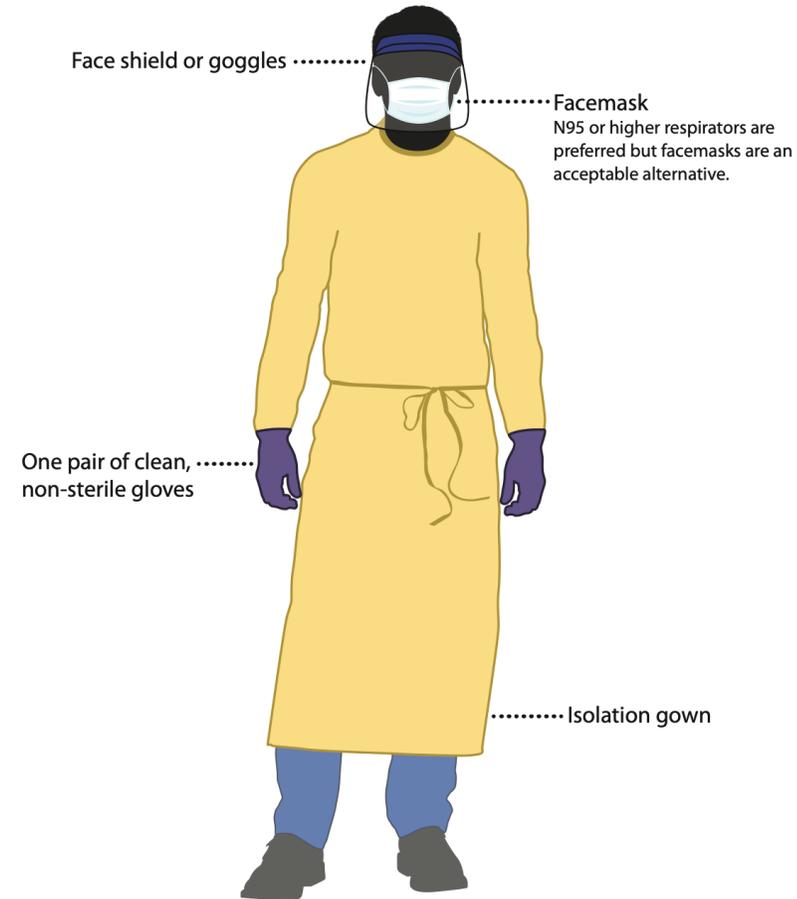
# EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL (EPI)

## Para cuidado de pacientes suspeitos/confirmados COVID-19

### Preferred PPE – Use N95 or Higher Respirator



### Acceptable Alternative PPE – Use Facemask



# ORIENTAÇÕES GERAIS – USO DE EPI

<b>Ambulatórios – PAMB</b> Triagem respiratória na entrada do paciente Fornecer máscara cirúrgica ao paciente sintomático Separar uma sala de atendimento para sintomáticos respiratórios	<b>Profissionais da saúde na assistência direta</b> <ul style="list-style-type: none"><li>• Médicos da unidade</li><li>• Enfermagem</li><li>• Auxiliares de higiene da unidade</li></ul>	Para atendimento de pacientes <b>SINTOMÁTICOS</b> respiratórios	<ul style="list-style-type: none"><li>• Máscara cirúrgica</li><li>• Avental</li><li>• Luvas de procedimento</li></ul> 
		Para atendimento de pacientes <b>ASSINTOMÁTICOS</b> respiratórios	Não indicado
	<b>Profissionais administrativos</b>	<b>SOMENTE</b> na área da recepção	<ul style="list-style-type: none"><li>• Máscara cirúrgica ou máscara facial</li></ul> 
		<b>Profissionais da saúde na assistência direta</b> <ul style="list-style-type: none"><li>• Médicos</li><li>• Enfermagem</li><li>• Instrumentadores</li><li>• Auxiliares de higiene da unidade</li></ul>	Ao entrar na unidade
Ao entrar na sala cirúrgica	<b>Acrescentar:</b> <ul style="list-style-type: none"><li>• Avental impermeável</li><li>• Touca</li><li>• Óculos de proteção ou máscara facial</li><li>• Luvas</li></ul> O profissional que estiver em campo cirúrgico deverá utilizar avental e luvas estéreis 		

## Recomendações HCFMUSP

### Referências:

1. World Health Organization 2020. Ra disease 2019 (Covid-19). Interim Gui [https://apps.who.int/iris/bitstream/handle/10665 eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/eng.pdf)
2. Anvisa. NOTA TÉCNICA No 04/2020 GVI ORIENTAÇÕES PARA SERVIÇOS DE SAÚDE - <http://portal.anvisa.gov.br/documents/33852/271 GGTES-ANVISA/ab598660-3de4-4f14>
3. Center of Diseases Control <https://www.cdc.gov/coronavirus/2019>

A 3D rendering of a virus particle, likely a coronavirus, centered against a dark background. The virus has a grey, textured, spherical core with a porous appearance. The surface is covered with numerous red, crown-shaped proteins (spikes) that give it a characteristic "crown" appearance. There are also some smaller orange and yellow particles scattered on the surface. The word "OBRIGADO!" is written in white, bold, uppercase letters across the center of the virus.

**OBRIGADO!**