Artificial Intelligence & MDR

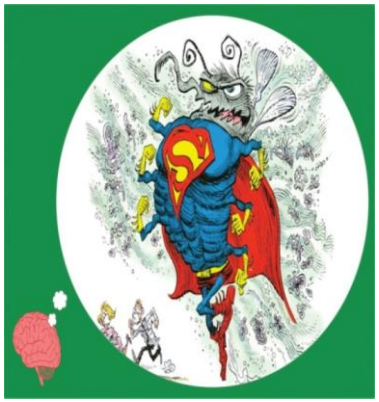
Carolina Garcia Vidal

Infectious Diseases Department, Hospital Clínic, Barcelona

CLÍNIC
BARCELONA
Hospital Universitari

Cancer patients → Difficult to treat infections

NEUTROPENIA FEBRIL



MULTIRESISTANCE

- More antibiotics
- Broad spectrum
- Higher resistance
- More toxicity
- Higher cost

Martinez-Nadal G, et al. Inappropriate empiric antibiotic treatment in high-risk neutropenic patients with bacteremia in the era of multi-drug resistance. *Clin Infect Dis 2019*; *doi:* 10.1093/cid/ciz319.

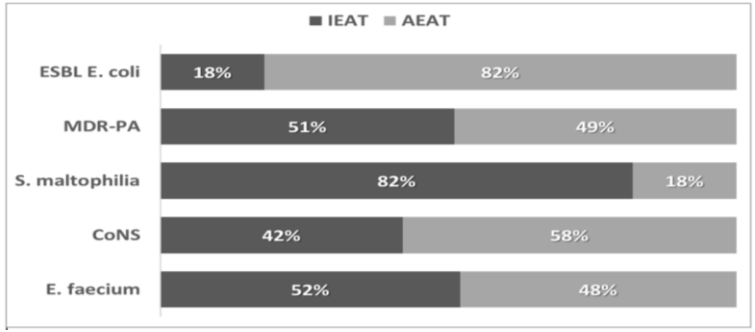
1615 episodes of BSI in neutropenic patients

MOST FREQ CAUSATIVE AGENTS

E. coli	24%
CoNS	20%
P. aeruginosa	16%
Enterococcus spp	13%
Klebsiella spp	9%

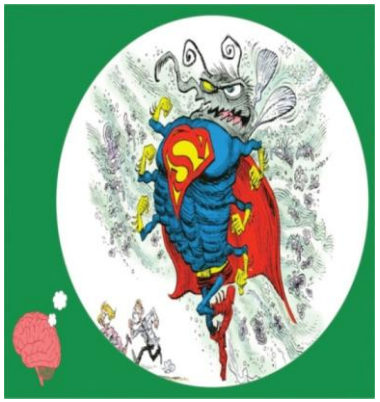
IDSA recommendations were followed in 87% of cases

A total of 24% received IEAT



Cancer patients → Difficult to treat infections

NEUTROPENIA FEBRIL



MULTIRESISTANCE

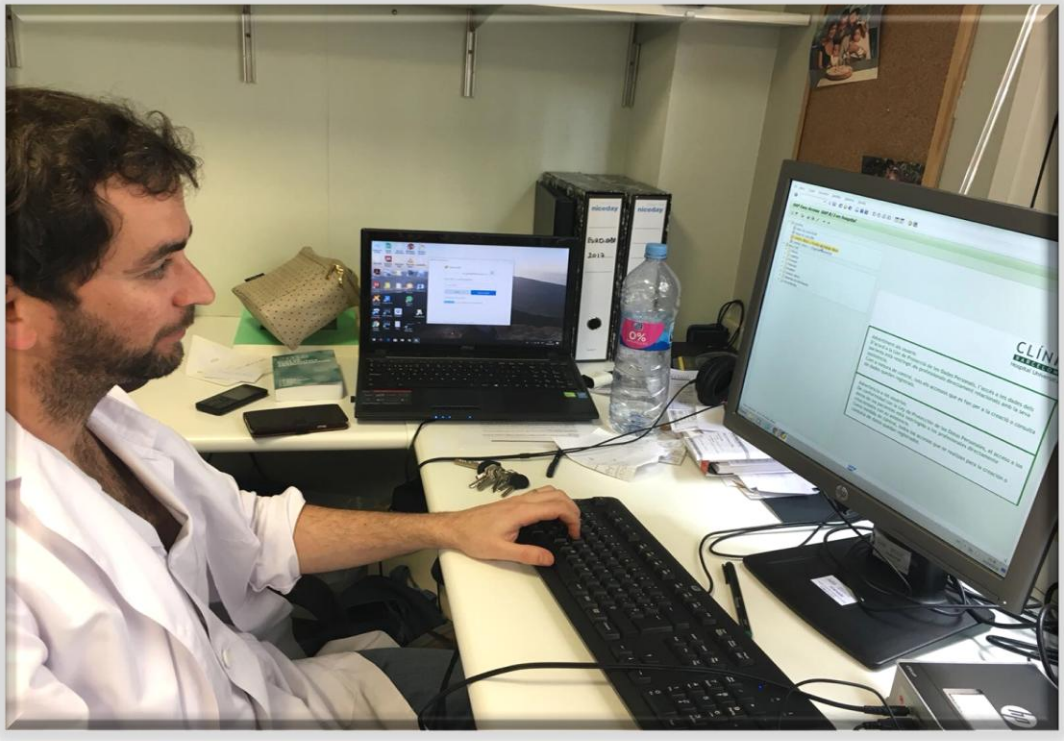
- More antibiotics
- Broad spectrum
- Higher resistance
- More toxicity
- Higher cost

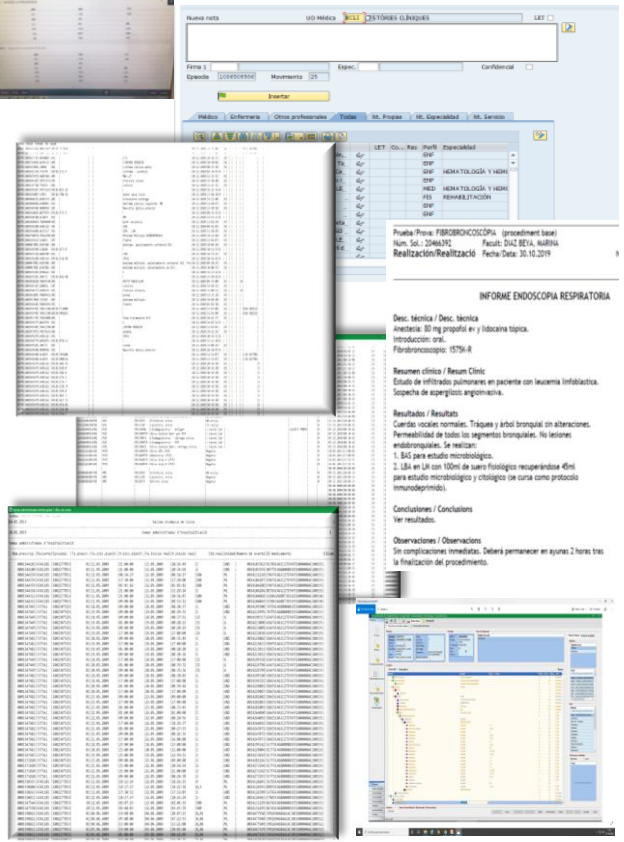
Personalized medicine

Can a computer make predictions that help in the clinical decision-making process?


-I HAVE DATA
-I'M BETTER AT PROBABILITY
THAN YOU ARE
No doubt!!!!!

Searching for solutions





TIPO DE DATOS NECESARIOS

Tellez A, et al. Identifying the most important data for research in the field of infectious diseases: thinking on the basis of artificial intelligence. *Submitted*

Medical workflow variables Total variables = 4488	Structured data in our EHR n (%)	Unstructured data in our EHR n (%)
Epidemiology	203 (4.5)	185 (4.1)
Admission	84 (1.9)	0
Demographics	664 (14.8)	251 (5.6)
Comorbidities	547 (12.2)	9 (0.2)
Clinical manifestations	195 (4.3)	325 (7.2)
Laboratory	317 (7.1)	0
Microbiology	513 (11.4)	13 (0.3)
Other diagnosis	477 (10.6)	11 (0.2)
Treatment	487 (10.9)	2 (0)
Outcomes	180 (4)	21 (0.5)
Other	1 (0)	3 (0.1)

We need 100% optimal data quality!

This article has been retracted: N Engl J Med. DOI: 10.1056/NEJMc2021225.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Cardiovascular Disease, Drug Therapy, and Mortality in Covid-19

Mandeep R. Mehra, M.D., Sapan S. Desai, M.D., Ph.D.,
SreyRam Kuy, M.D., M.H.S., Timothy D. Henry, M.D., and Amit N. Patel, M.D.

ABSTRACT

BACKGROUND

Coronavirus disease 2019 (Covid-19) may disproportionately affect people with cardiovascular disease. Concern has been aroused regarding a potential harmful effect of angiotensin-converting–enzyme (ACE) inhibitors and angiotensin-receptor blockers (ARBs) in this clinical context.

METHODS

Using an observational database from 169 hospitals in Asia, Europe, and North America, we evaluated the relationship of cardiovascular disease and drug therapy with in-hospital death among hospitalized patients with Covid-19 who were admitted between December 20, 2019, and March 15, 2020, and were recorded in the Surgical Outcomes Collaborative registry as having either died in the hospital or survived to discharge as of March 28, 2020.

From Brigham and Women's Hospital Heart and Vascular Center and Harvard Medical School, Boston (M.R.M.); Surgisphere, Chicago (S.S.D.); Baylor College of Medicine and Department of Veterans Affairs, Houston (S.K.); Christ Hospital, Cincinnati (T.D.H.); the Department of Biomedical Engineering, University of Utah, Salt Lake City (A.N.P.); and HCA Research Institute, Nashville (A.N.P.). Address reprint requests to Dr. Mehra at Brigham and Women's Hospital, 75 Francis St., Boston, MA 02115, or at mmehra@bwh.harvard.edu.

This article was published on May 1, 2020, and updated on May 8, 2020, at NEJM.org.

Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis

RETRACTED

Mandeep R Mehra, Sapan S Desai, Frank Ruschitzka, Amit N Patel

Summary

Background Hydroxychloroquine or chloroquine, often in combination with a second-generation m[illegible]ide, are b[illegible] widely used for treatment of COVID-19, despite no conclusive evidence of their benefit. Althoug[illegible]erall[illegible]fe whe[illegible] used for approved indications such as autoimmune disease or malaria, the safety and bene[illegible] th[illegible] treatment regimens are poorly evaluated in COVID-19.

Methods We did a multinational registry analysis of the use of hydroxychloroquine [illegible]oquine wit[illegible]thout a macrolide for treatment of COVID-19. The registry comprised data from 671 hosp[illegible] in s[illegible]ntinents. We included patients hospitalised between Dec 20, 2019, and April 14, 2020, with a positive laboratory [illegible]g for SARS-CoV-2. Patients who received one of the treatments of interest within 48 h of diagno[illegible] included in [illegible]f four treatment groups (chloroquine alone, chloroquine with a macrolide, hydroxychlor[illegible]ine alone, or hydroxychloroquine with a macrolide), and patients who received none of these treatments formed [illegible] control gr[illegible]. Patients for whom one of the treatments of interest was initiated more than 48 h after diagnosis o[illegible]le they w[illegible] on mechanical ventilation, as well as patients who received remdesivir, were excluded. The main outc[illegible] of int[illegible]t were in-hospital mortality and the occurrence of de-novo ventricular arrhythmias ([illegible]tained or [illegible]ed ventricular tachycardia or ventricular fibrillation).

Findings 96 032 patients (mean age 53·8 years, 46·3% women) [illegible]OVID-19 were hospitalised during the study period and met the inclusion criteria. Of thes[illegible] patie[illegible] were in the treatment groups (1868 received chloroquine, 3783 received chloroquine with [illegible]macro[illegible]e, 3016 [illegible]eived hydroxychloroquine, and 6221 received hydroxychloroquine with a macrolide) and [illegible] pat[illegible] in the control group. 10 698 (11·1%) patients died in hospital. After controlling for multiple c[illegible]fou[illegible] [illegible] sex, race or ethnicity, body-mass index, underlying cardiovascular disease and its risk fac[illegible] diabete[illegible]derlying lung disease, smoking, immunosuppressed condition, and baseline disease severity), w[illegible]mpared w[illegible]ortality in the control group (9·3%), hydroxychloroquine (18·0%; hazard ratio 1·335, 95%[illegible]1·22[illegible]457), hydro[illegible]ychloroquine with a macrolide (23·8%; 1·447, 1·368–1·531), chloroquine (16·4%; 1·365, [illegible]18–1·531), [illegible]chloroquine with a macrolide (22·2%; 1·368, 1·273–1·469) were each independently associated [illegible] an increased [illegible]f in-hospital mortality. Compared with the control group (0·3%), hydroxychloroquine (6[illegible]; 2·36[illegible]935–2·900), hydroxychloroquine with a macrolide (8·1%; 5·106, 4·106–5·983), chloroquine (4·3%; [illegible]1, [illegible]–4·596), and chloroquine with a macrolide (6·5%; 4·011, 3·344–4·812) were independently associat[illegible] an incr[illegible]ed risk of de-novo ventricular arrhythmia during hospitalisation.

Interpretat[illegible] We w[illegible] unabl[illegible]nfirm a benefit of hydroxychloroquine or chloroquine, when used alone or with a macro[illegible] on in[illegible]spital outcomes for COVID-19. Each of these drug regimens was associated with decreased in-hospita[illegible]eased frequency of ventricular arrhythmias when used for treatment of COVID-19.

Funding William[illegible]vey Distinguished Chair in Advanced Cardiovascular Medicine at Brigham and Women's Hospital.

[illegible]d Online [illegible]22, 2020
https://doi.org/10.1016/S0140-6736(20)31180-6

This online publication has been corrected. The corrected version first appeared at thelancet.com on May 29, 2020

See Online/Comment https://doi.org/10.1016/S0140-6736(20)31174-0

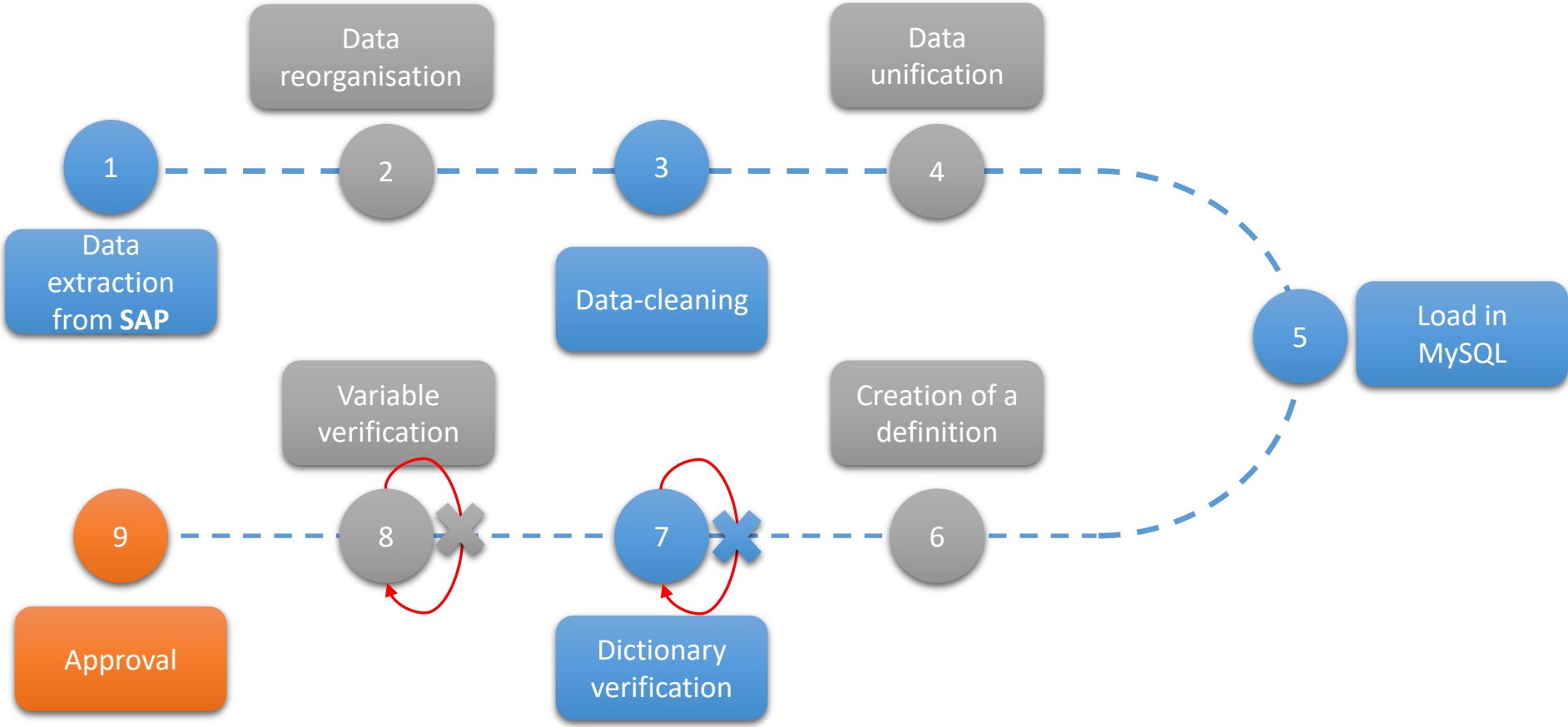
Brigham and Women's Hospital Heart and Vascular Center and Harvard Medical School, Boston, MA, USA (Prof M R Mehra MD); Surgisphere Corporation, Chicago, IL, USA (S S Desai MD); University Heart Center, University Hospital Zurich, Zurich, Switzerland (Prof F Ruschitzka MD); Department of Biomedical Engineering, University of Utah, Salt Lake City, UT, USA (A N Patel MD); and HCA Research Institute, Nashville, TN, USA (A N Patel)

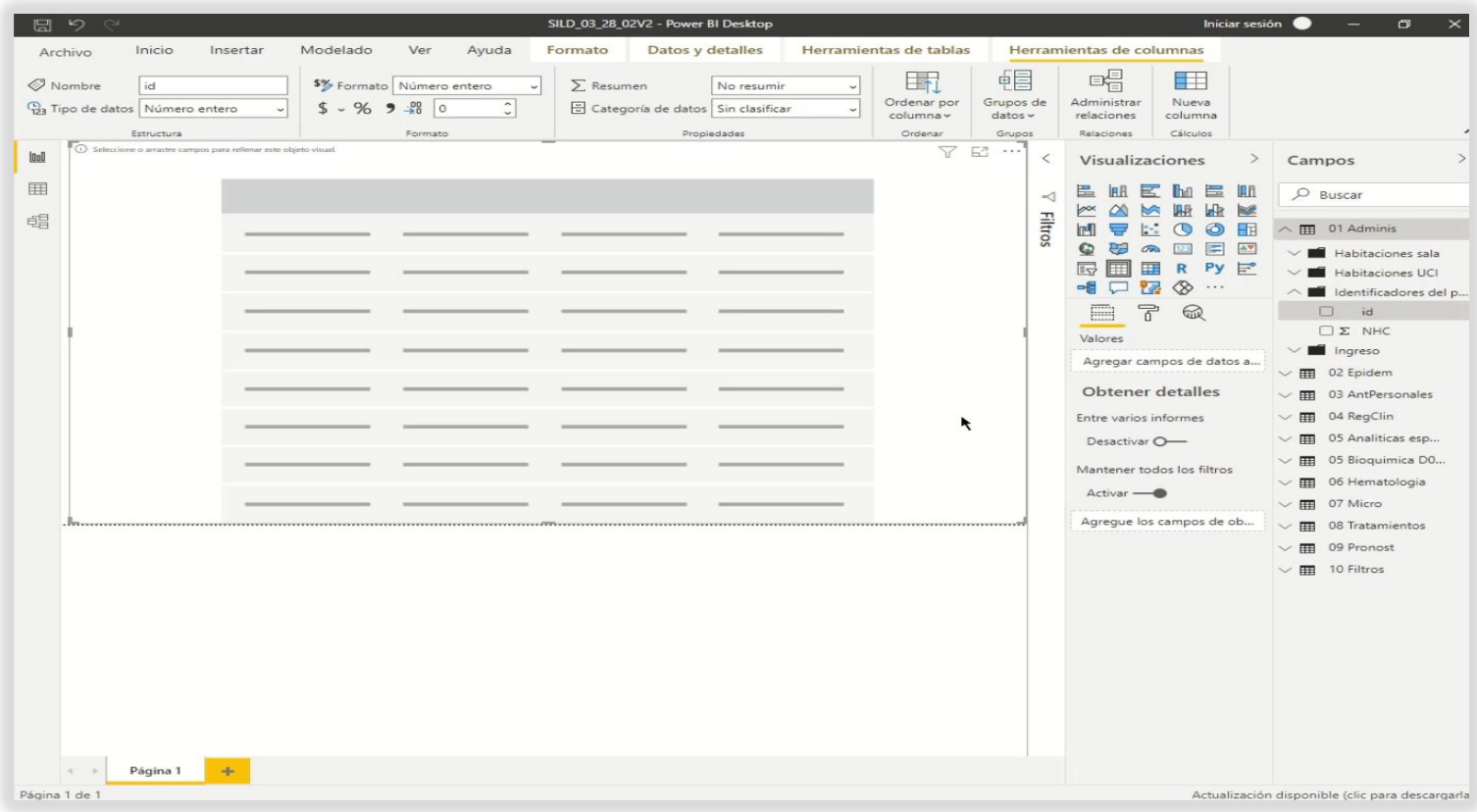
Correspondence to: Prof Mandeep R Mehra, Brigham and Women's Hospital Heart and Vascular Center and Harvard Medical School, Boston, MA 02115, USA mmehra@bwh.harvard.edu

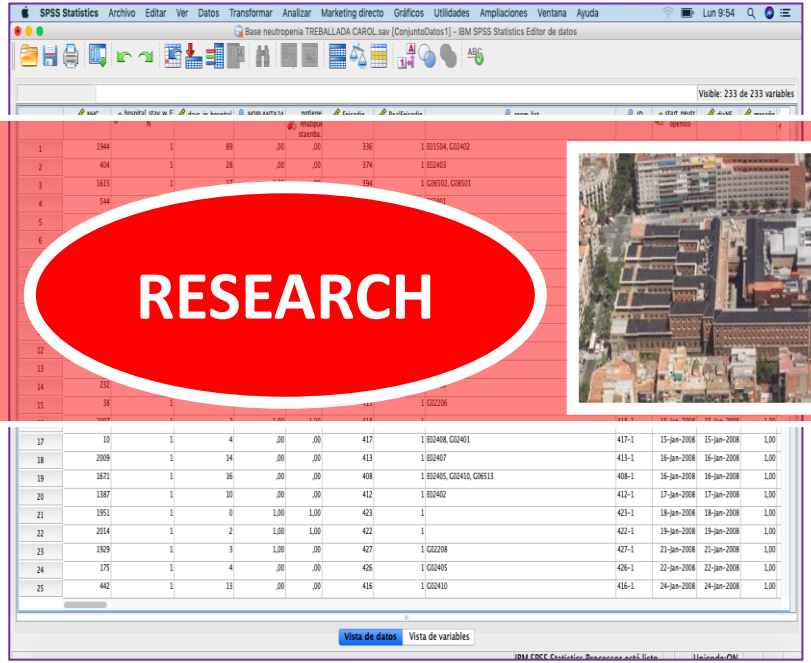
Introduction

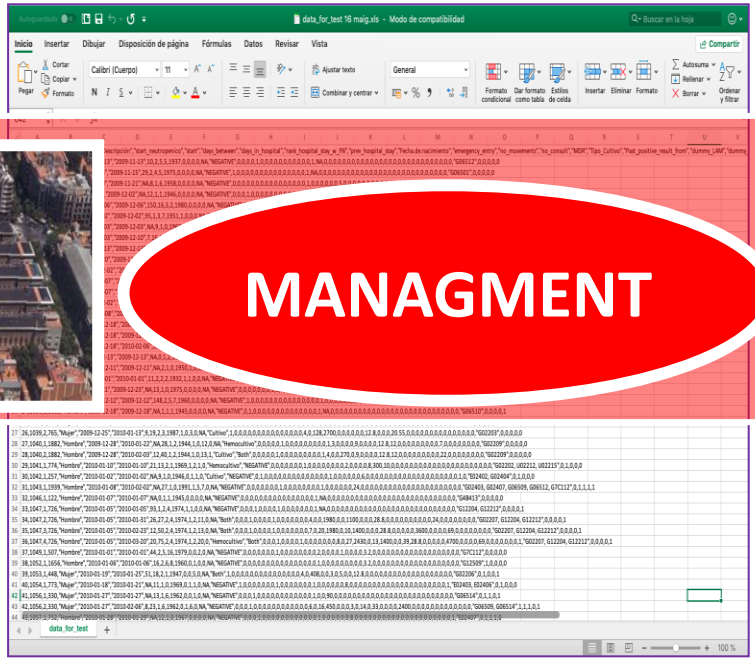
The absence of an effective treatment against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection has led clinicians to redirect drugs that are known to be effective for other medical conditions to the treatment of COVID-19. Key among these repurposed therapeutic agents are the antimalarial drug chloroquine and its analogue hydroxychloroquine, which is used for the treatment of autoimmune diseases, such as systemic lupus erythematosus and rheumatoid arthritis.[1,2] These drugs have been shown in laboratory conditions to have antiviral properties as well as immunomodulatory effects.[3,4] However, the use of this class of drugs for COVID-19 is based on a small number of anecdotal experiences that have shown variable responses in uncontrolled observational analyses, and small, open-label, randomised trials that have largely been inconclusive.[5,6] The combination of hydroxychloroquine with a second-generation macrolide, such as azithromycin (or clarithromycin), has also been advocated,

Data circuit




SILD_03_28_02V2 - Power BI Desktop
Iniciar sesión
Archivo
Inicio
Insertar
Modelado
Ver
Ayuda
Formato
Datos y detalles
Herramientas de tablas
Herramientas de columnas
Nombre
id
Tipo de datos
Número entero
Formato
Número entero
Resumen
No resumir
Categoría de datos
Sin clasificar
Ordenar por columna
Grupos de datos
Administrar relaciones
Nueva columna
Estructura
Formato
Propiedades
Ordenar
Grupos
Relaciones
Cálculos
Seleccione o arrastre campos para rellenar este objeto visual.
Filtros
Visualizaciones
Valores
Agregar campos de datos a...
Obtener detalles
Entre varios informes
Desactivar
Mantener todos los filtros
Activar
Agregue los campos de ob...
Campos
Buscar
01 Adminis
Habitaciones sala
Habitaciones UCI
Identificadores del p...
id
NHC
Ingreso
02 Epidem
03 AntPersonales
04 RegClin
05 Analiticas esp...
05 Bioquimica D0...
06 Hematologia
07 Micro
08 Tratamientos
09 Pronost
10 Filtros
Página 1
Página 1 de 1
Actualización disponible (clic para descargarla





RESEARCH

MANAGMENT

EBioMedicine 46 (2019) 27–29

Contents lists available at ScienceDirect

EBioMedicine

journal homepage: www.ebiomedicine.com

EBioMedicine
Published by THE LANCET

Commentary

Artificial intelligence to support clinical decision-making processes

Carolina Garcia-Vidal [a,*,1], Gemma Sanjuan [b,1], Pedro Puerta-Alcalde [a], Estela Moreno-García [a], Alex Soriano [a]

[a] Infectious Diseases Department, Hospital Clínic-IDIBAPS, University of Barcelona, Barcelona, Spain.
[b] Smart Support System for Medicine, Spain

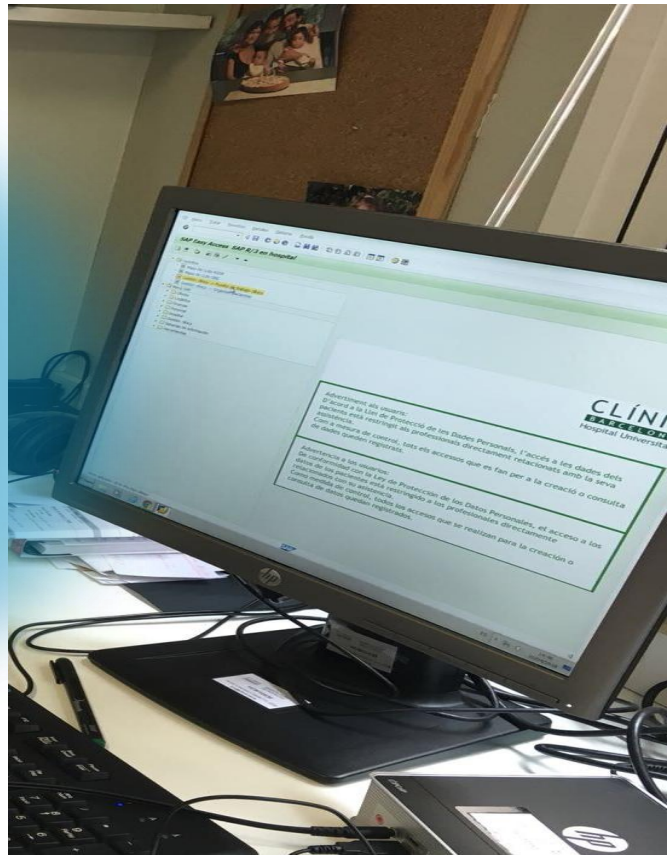
1. Introduction

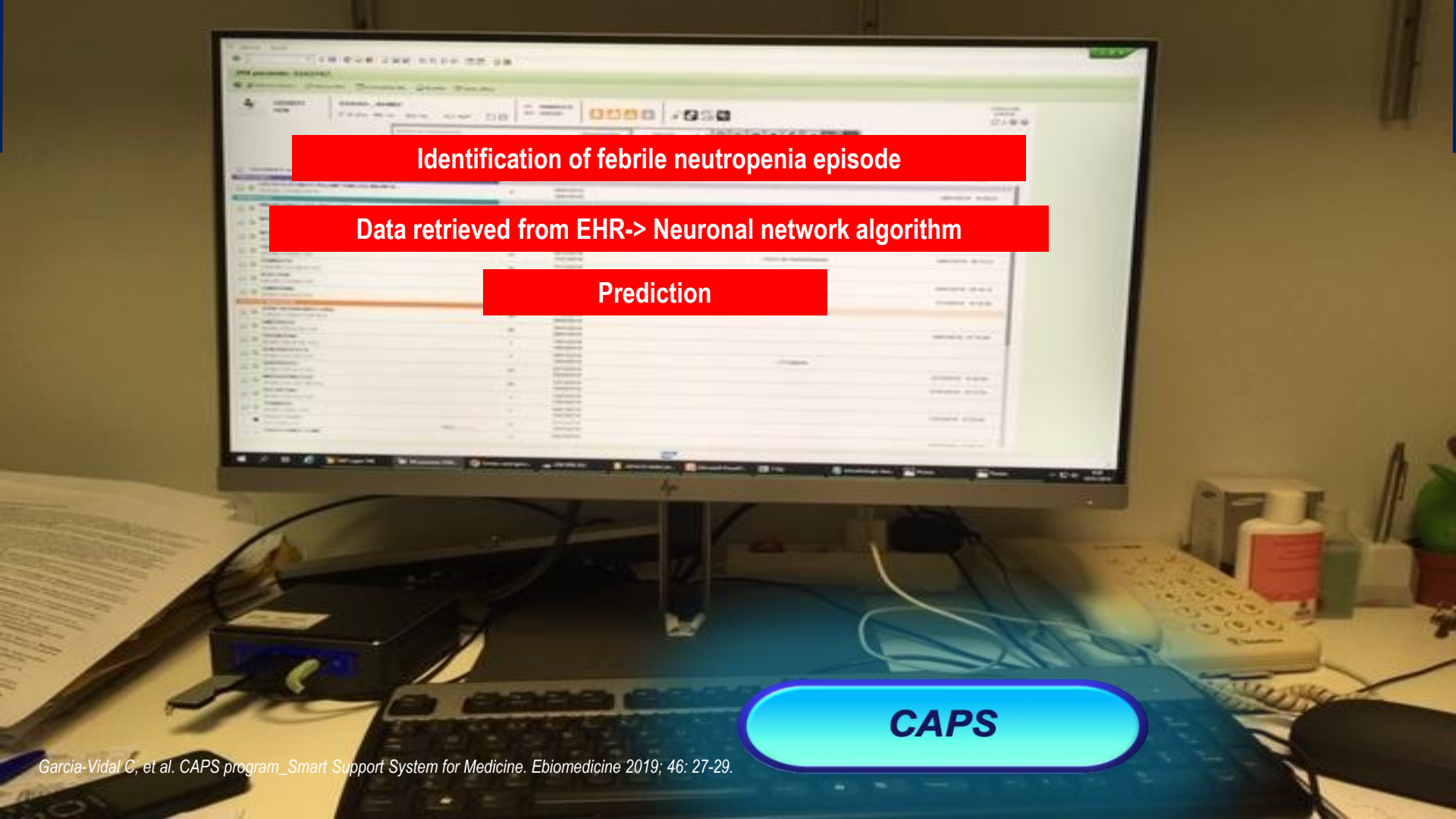
Artificial intelligence (AI) proffers the ability of computer systems to perform human brain tasks across various topics in all aspects of everyday life. Most clinical physicians are sceptical about the help that AI may provide in their current medical practice. In this commentary, we aim to provide readers with insight on our experience -including all the benefits and pitfalls- since the implementation of an AI programme in our

Now, training a high number of data with machine learning (ML) or neural networks (NN), predictions on the results that will be obtained by cultures at febrile neutropenia onset are possible. This new and revolutionary reality is composed of two main tenets. First, a high number of data available from EHRs can be retrieved in real time. Second, advances made in computational performance allows extensive mathematical operations to dramatically optimise big data result training with ML and NN models

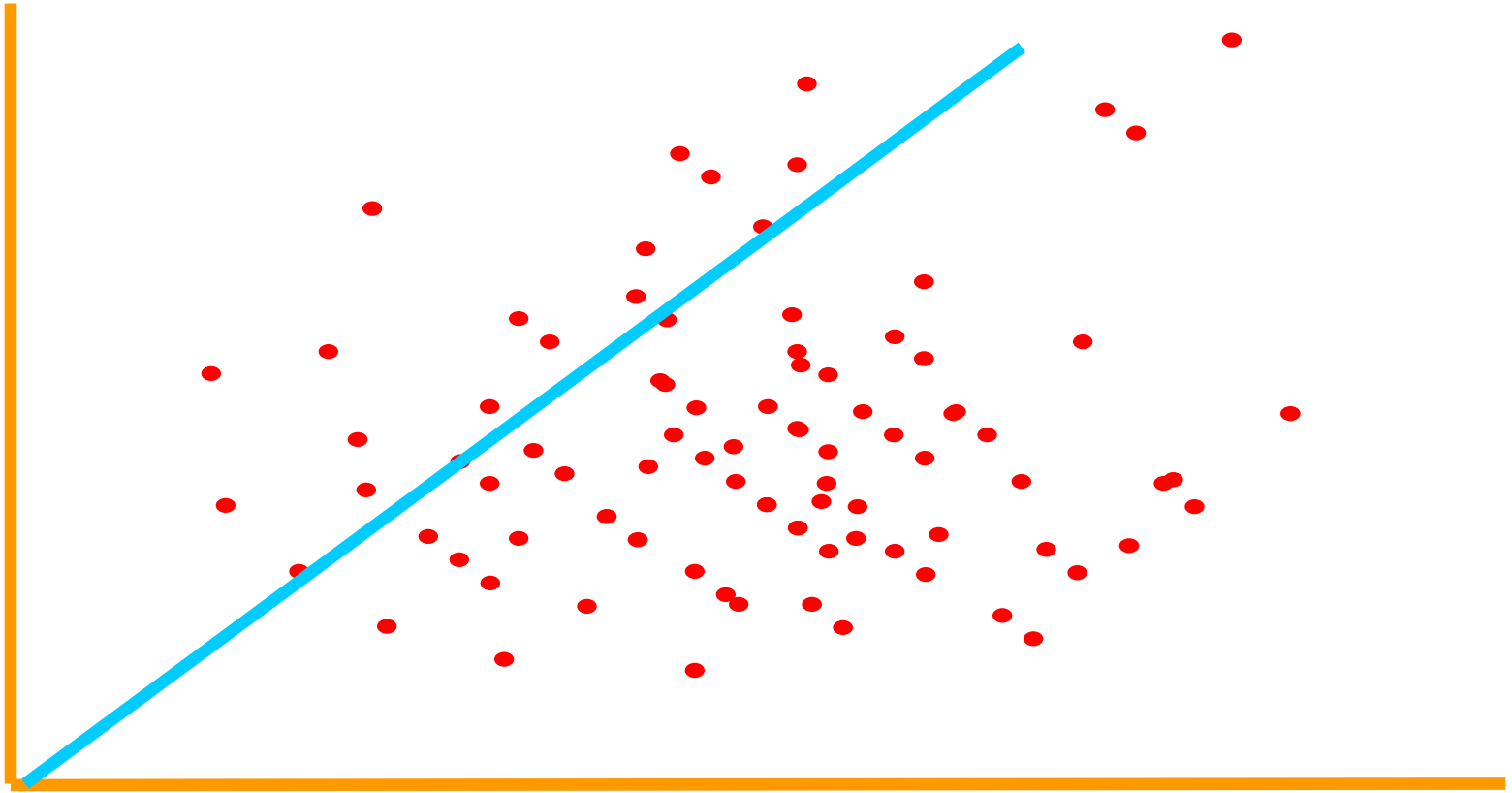
Garcia-Vidal C, et al. Artificial intelligence to support clinical decision-making process. EBioMedicine 2019; 46: 27-29.

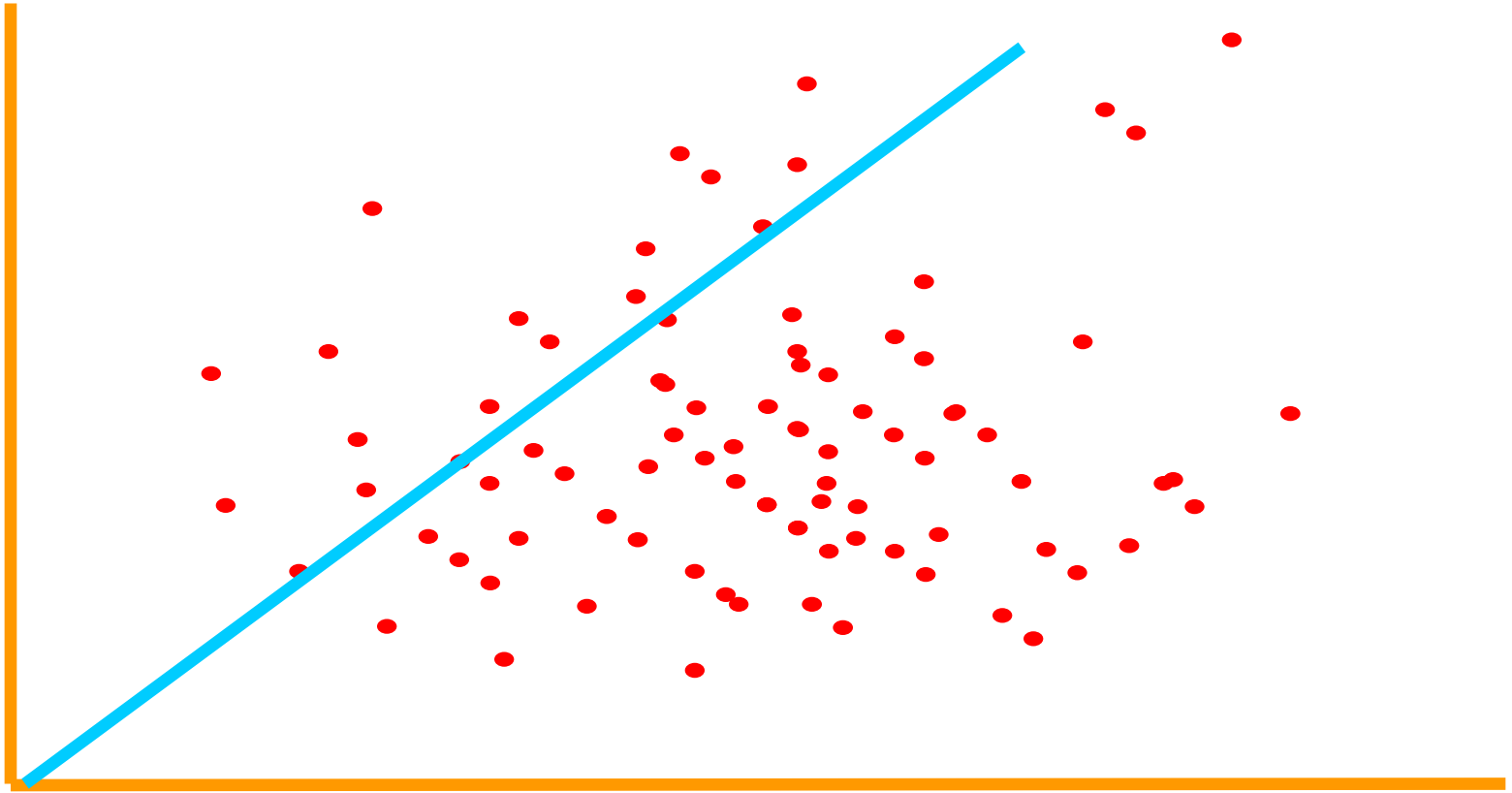
CAPS

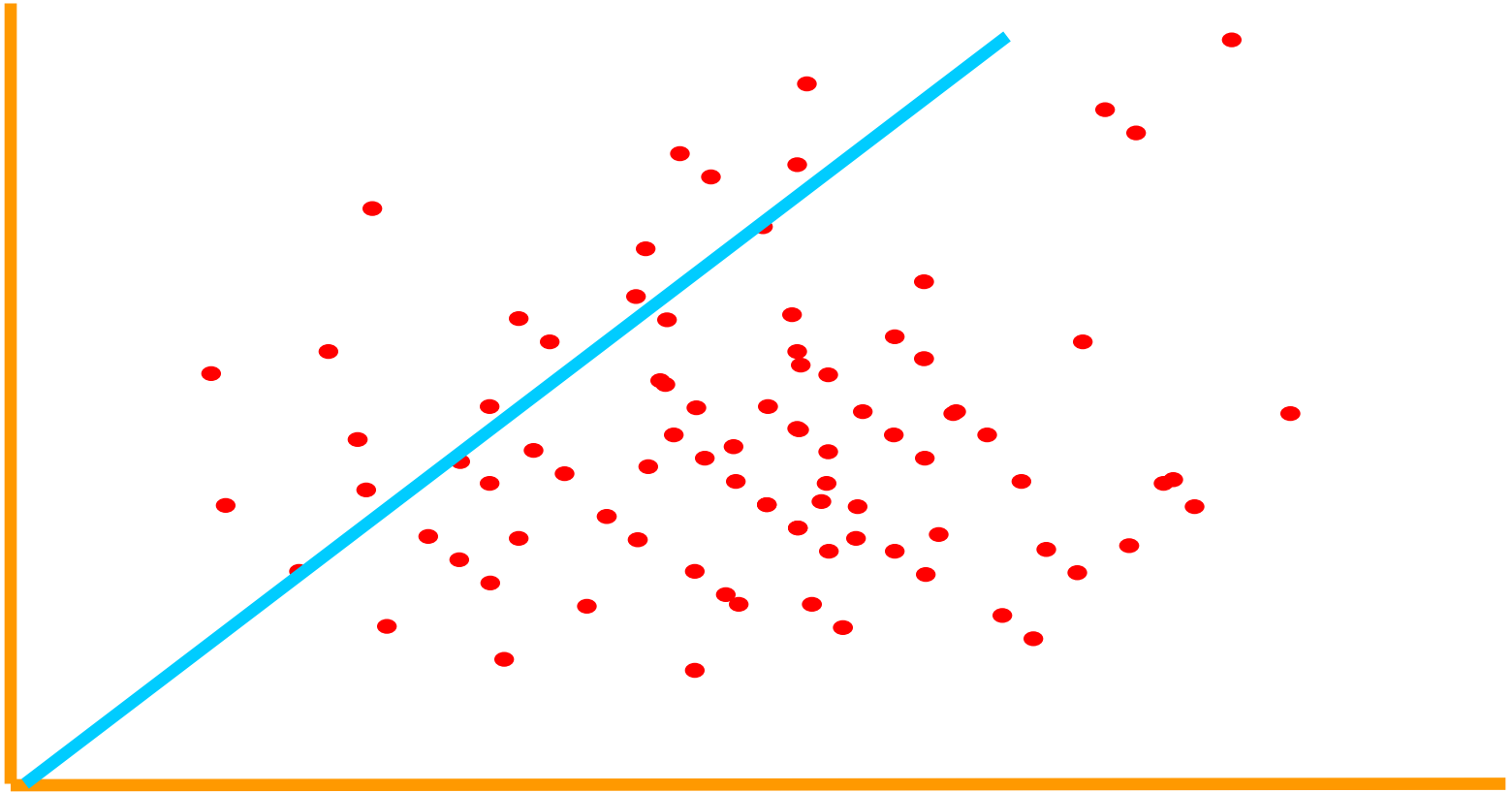


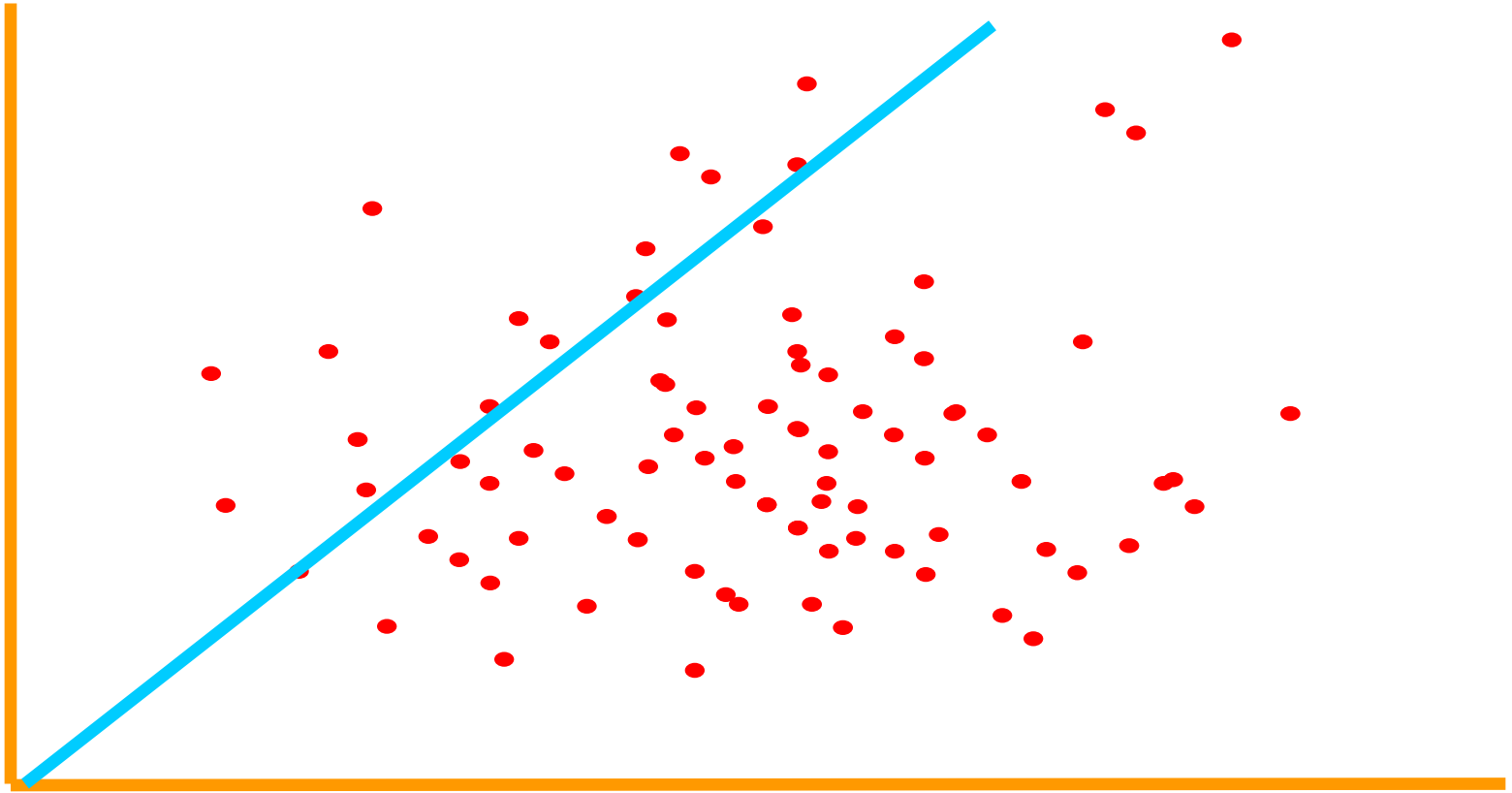


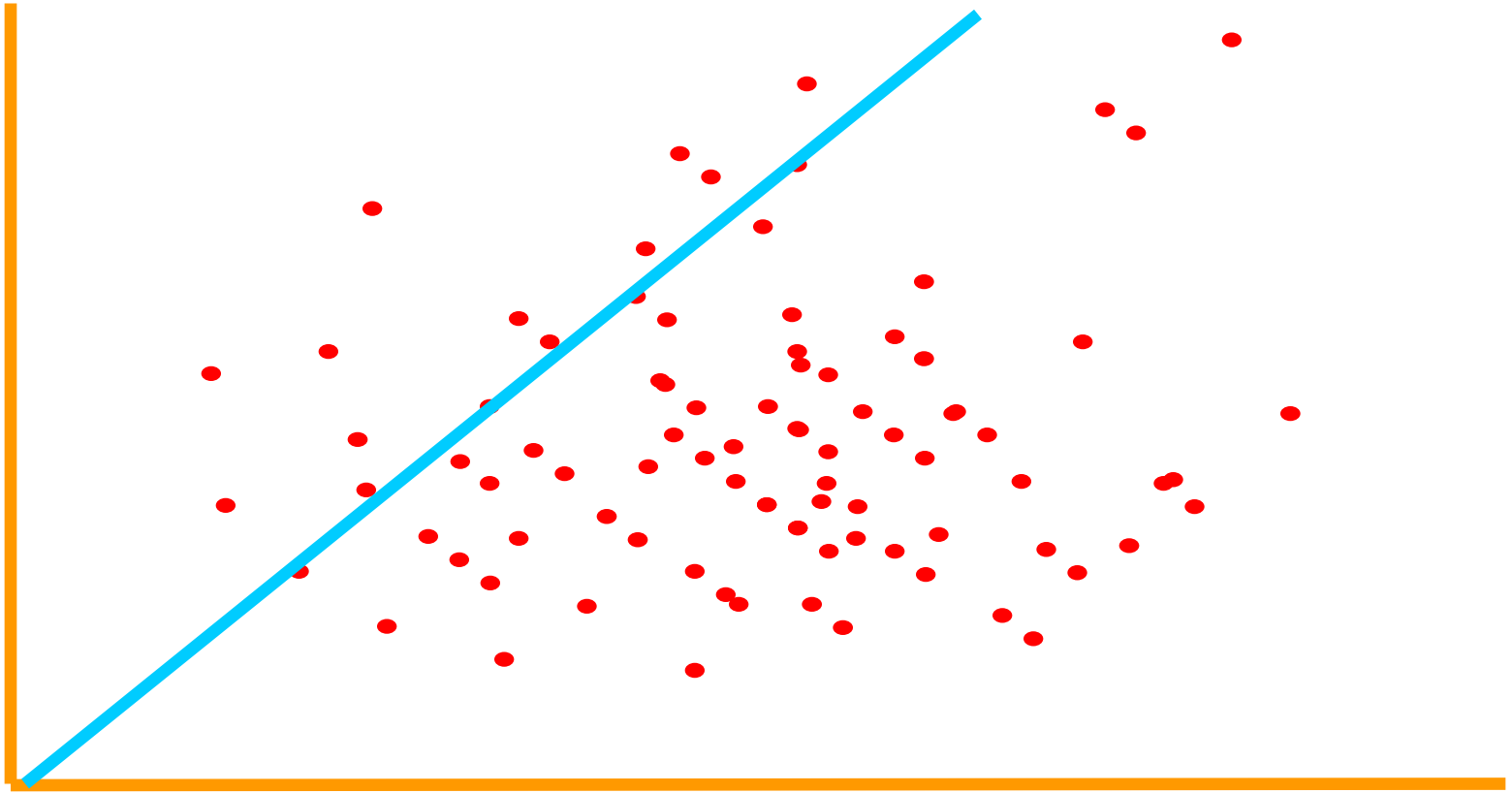
Garcia-Vidal C, et al. CAPS program_Smart Support System for Medicine. Ebiomedicine 2019; 46: 27-29.

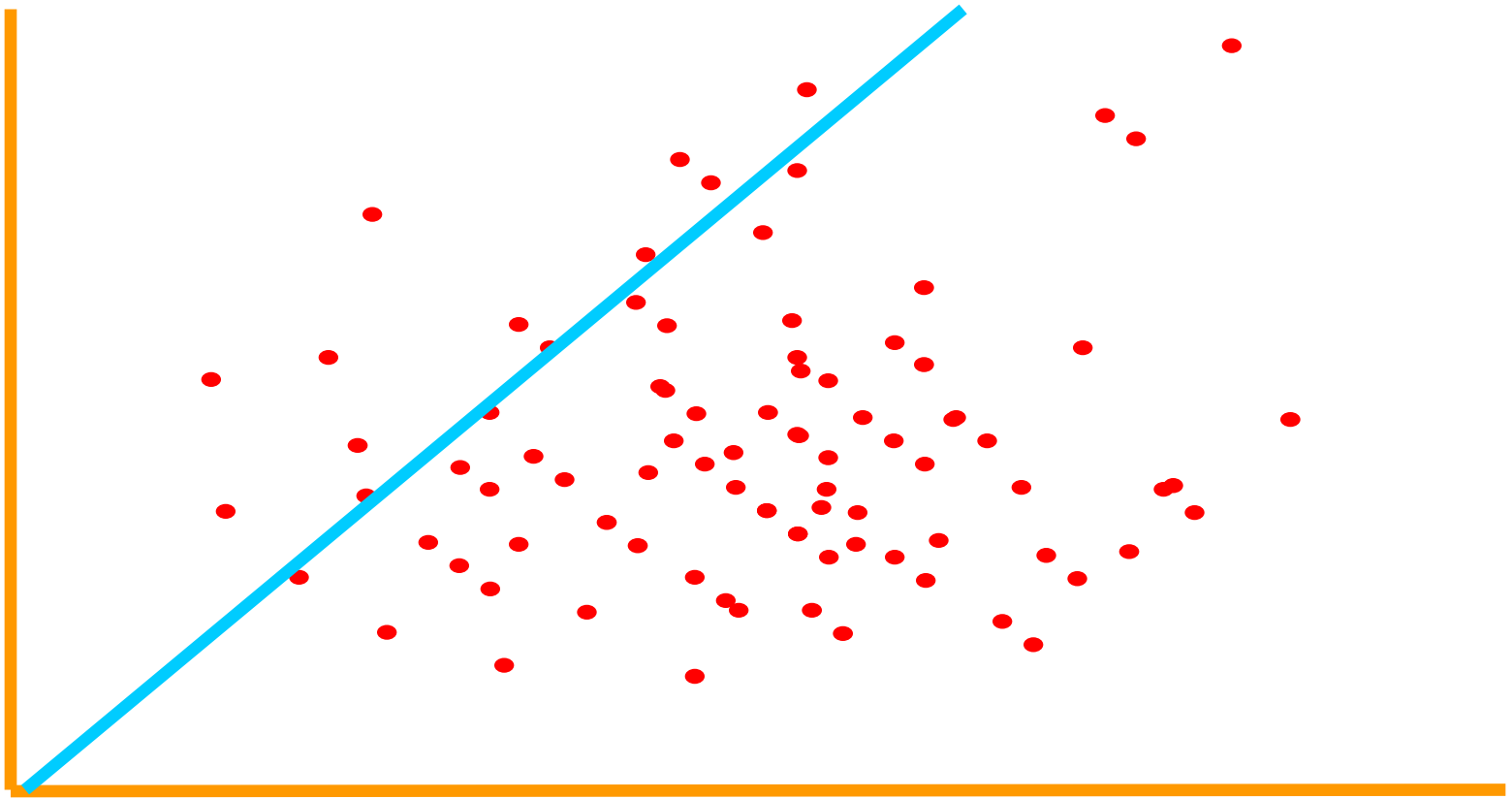


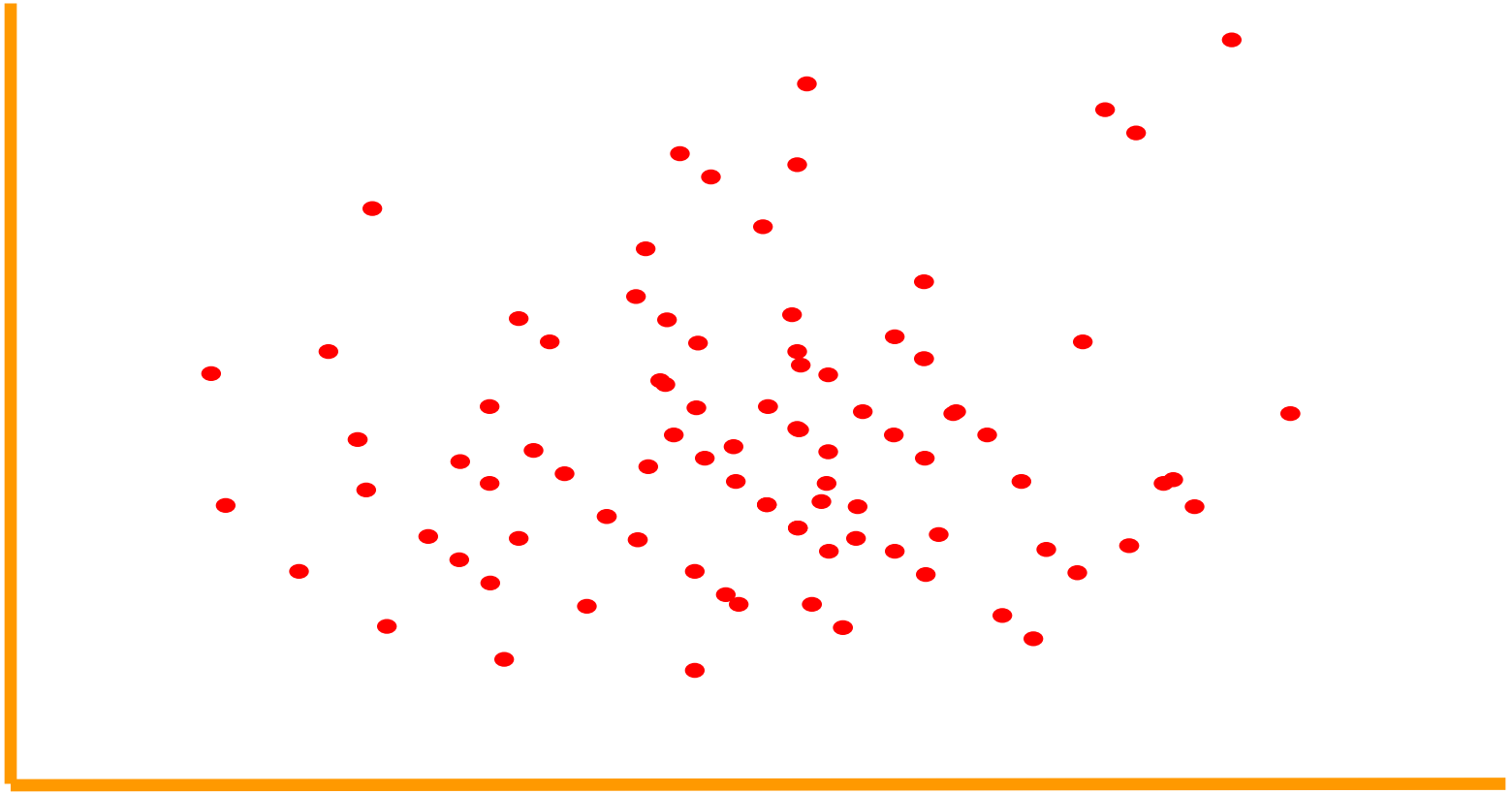


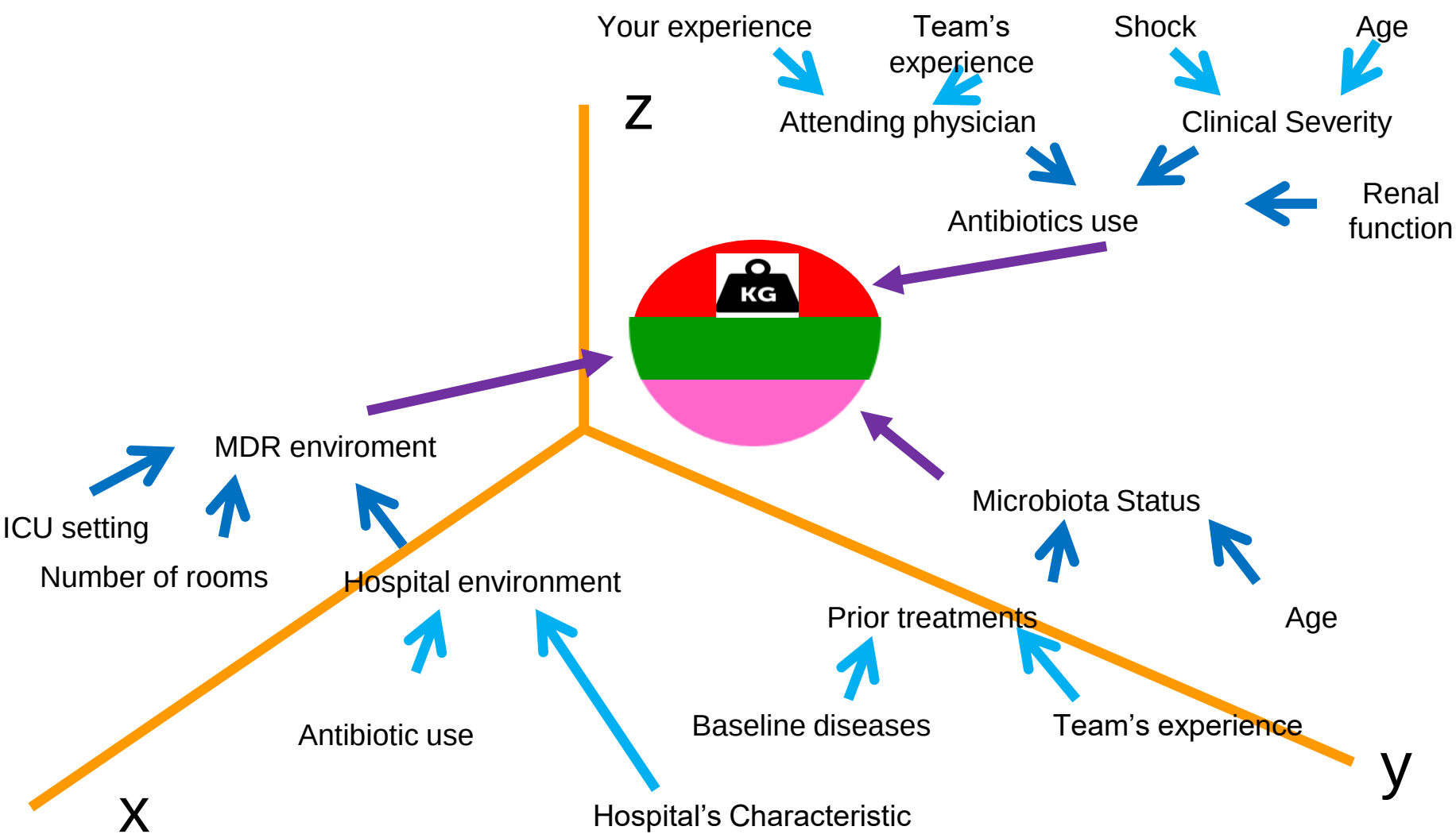


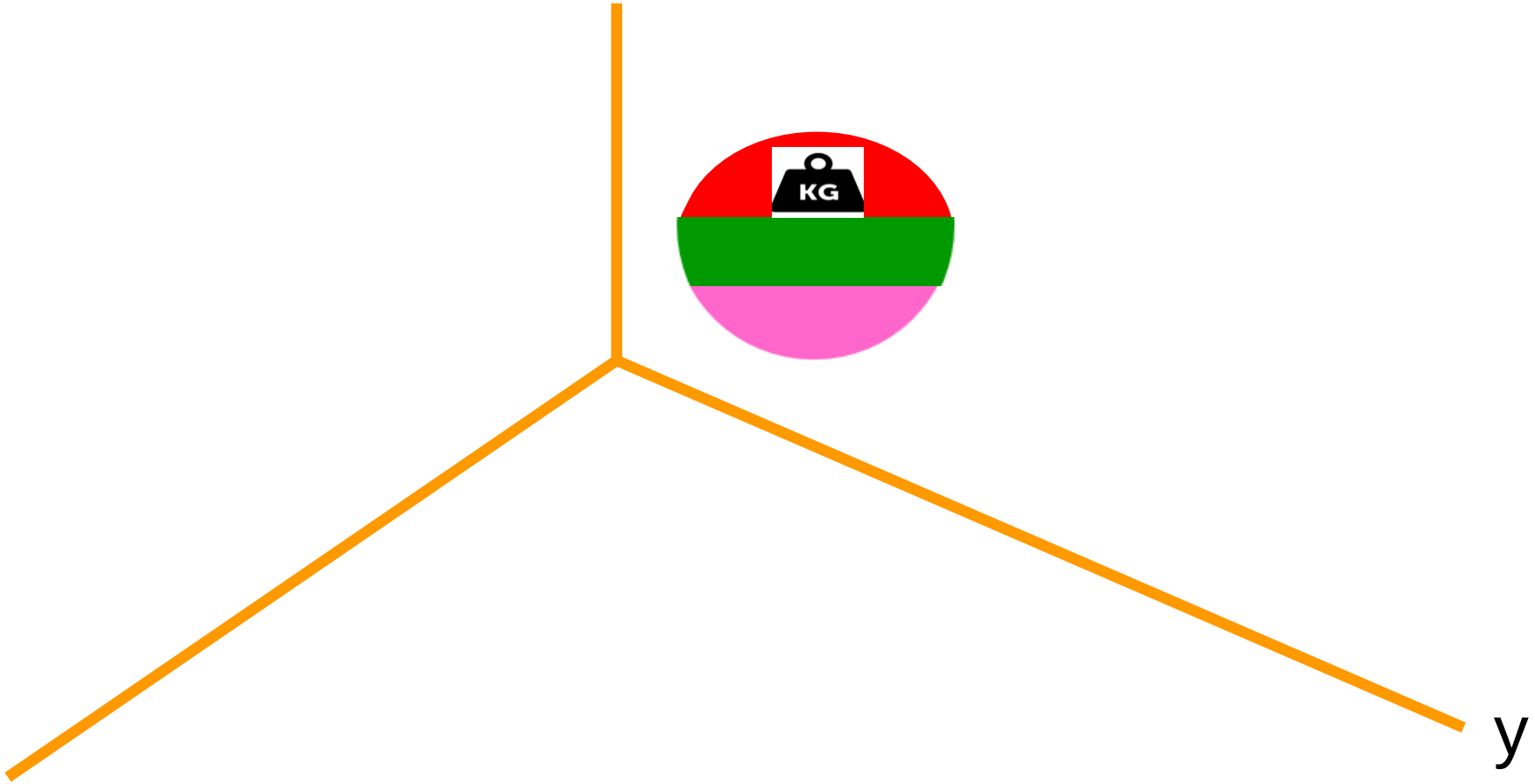




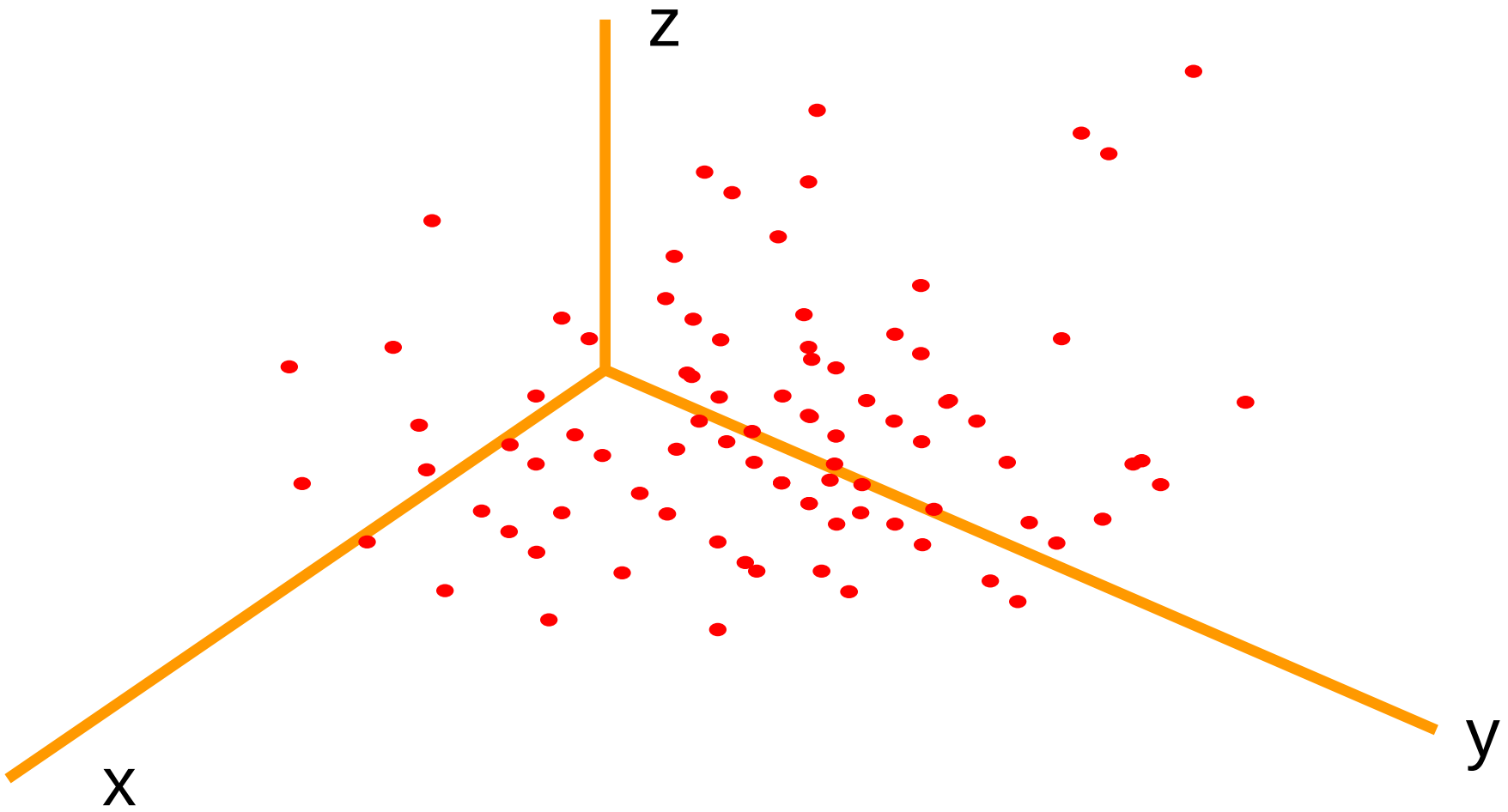


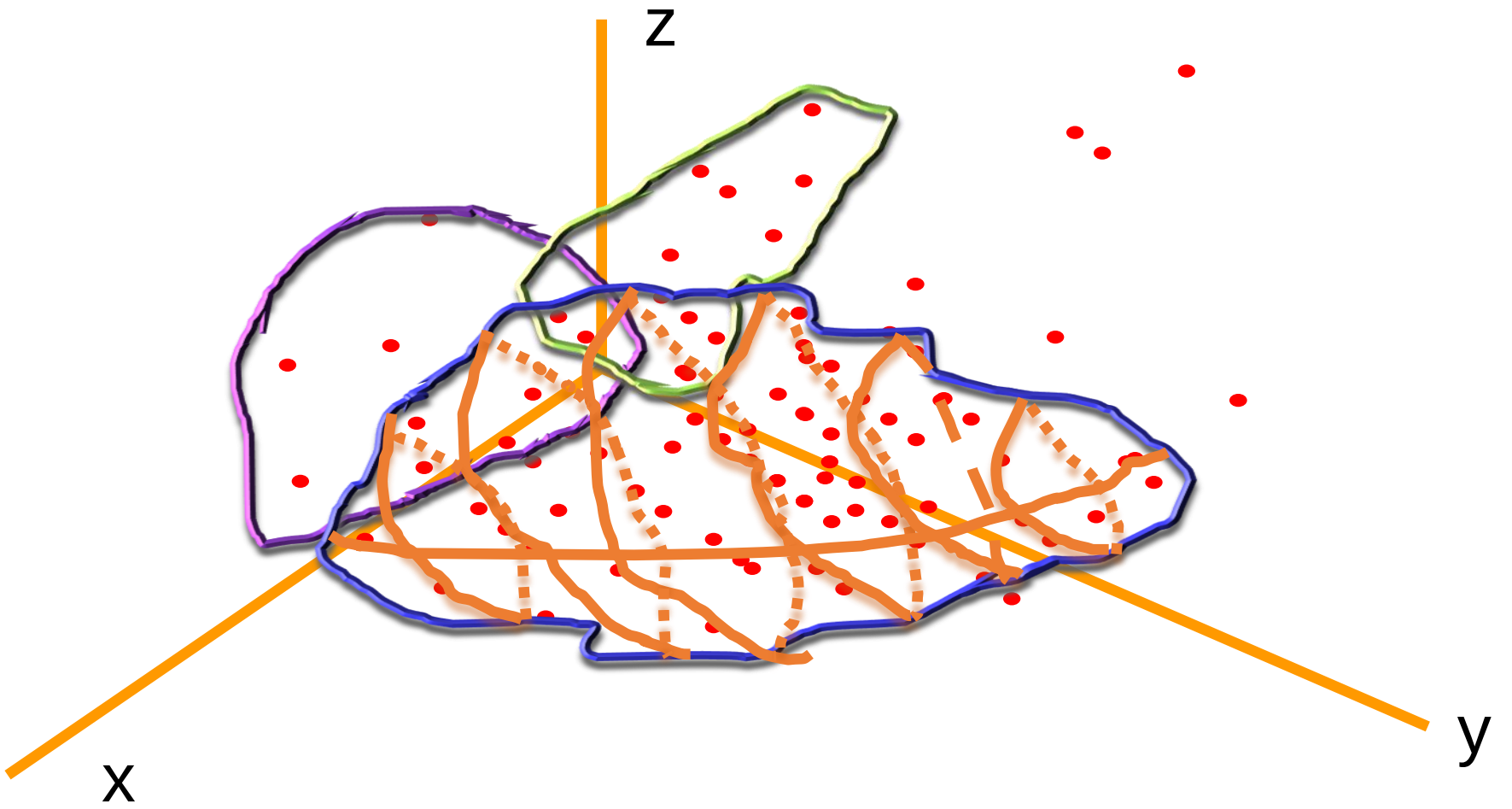



Your experience
Team's experience
Shock
Age
z
Attending physician
Clinical Severity
Renal function
Antibiotics use
KG
MDR enviroment
ICU setting
Number of rooms
Hospital environment
Microbiota Status
Prior treatments
Age
Antibiotic use
Baseline diseases
Team's experience
x
Hospital's Characteristic
y


KG
y

Análisis en tres dimensiones

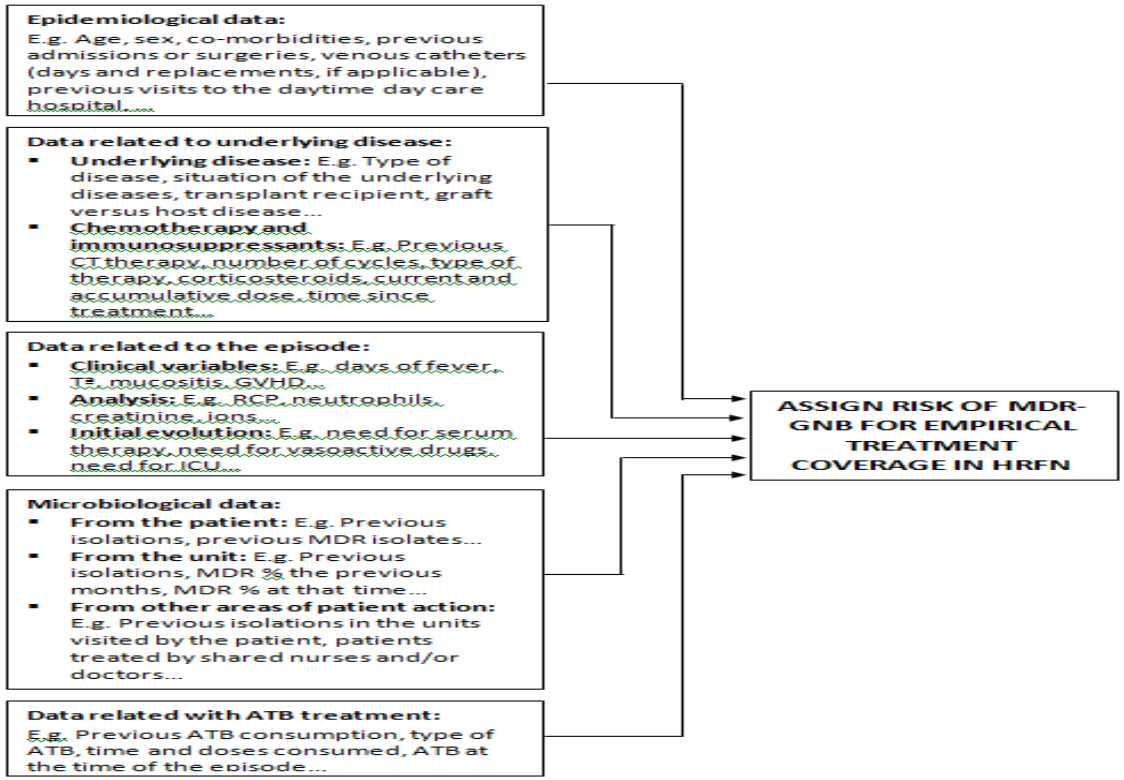



z
x
y

Garcia-Vidal C, et al. Machine learning to assess the risk of multidrug-resistant Gram-negative bacilli infections in febrile neutropenic haematological patients. *Infectious Diseases and Therapy*, 2021.

7 million pieces of data

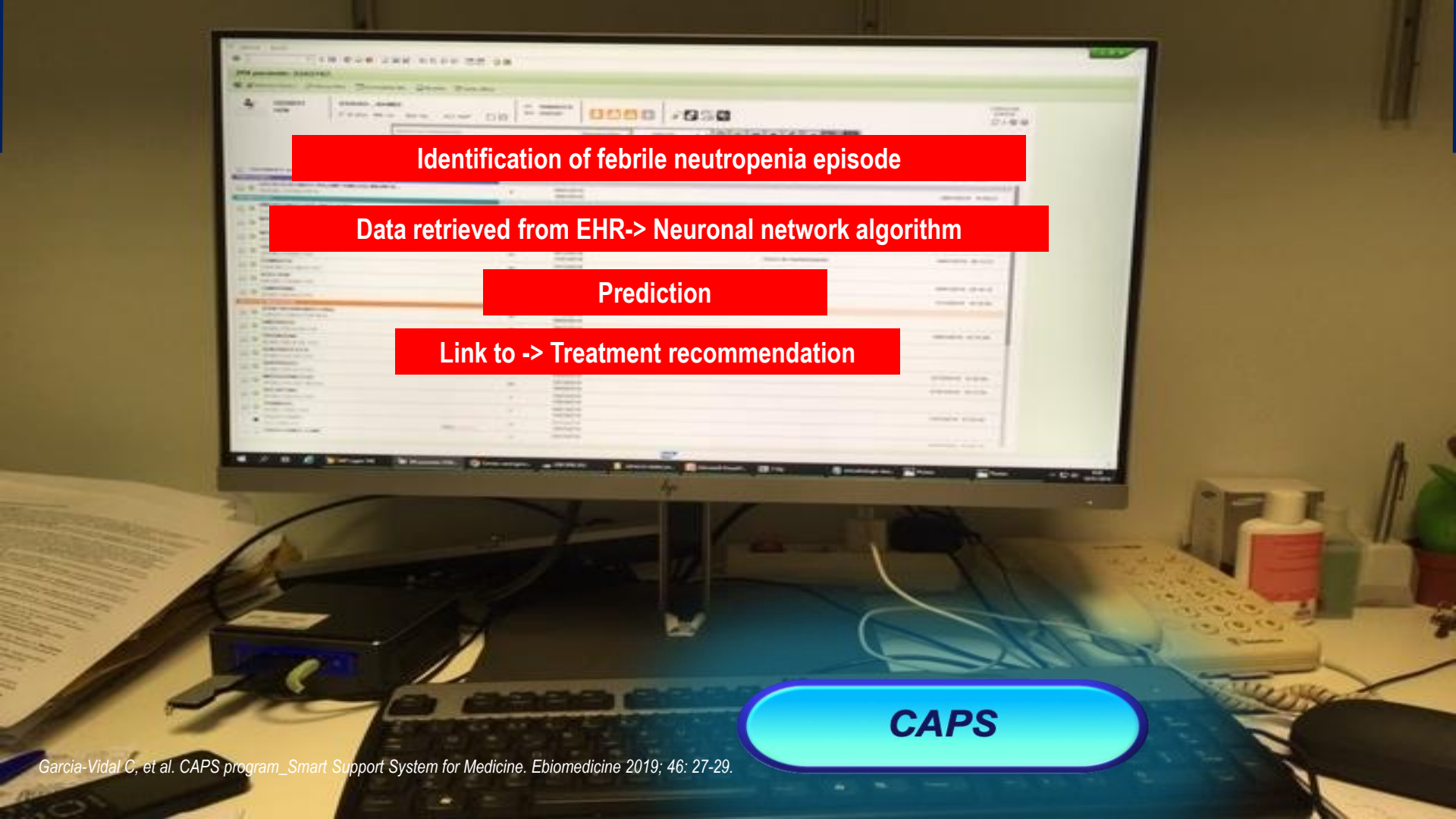
Figure 1. Main variables in dataset generation



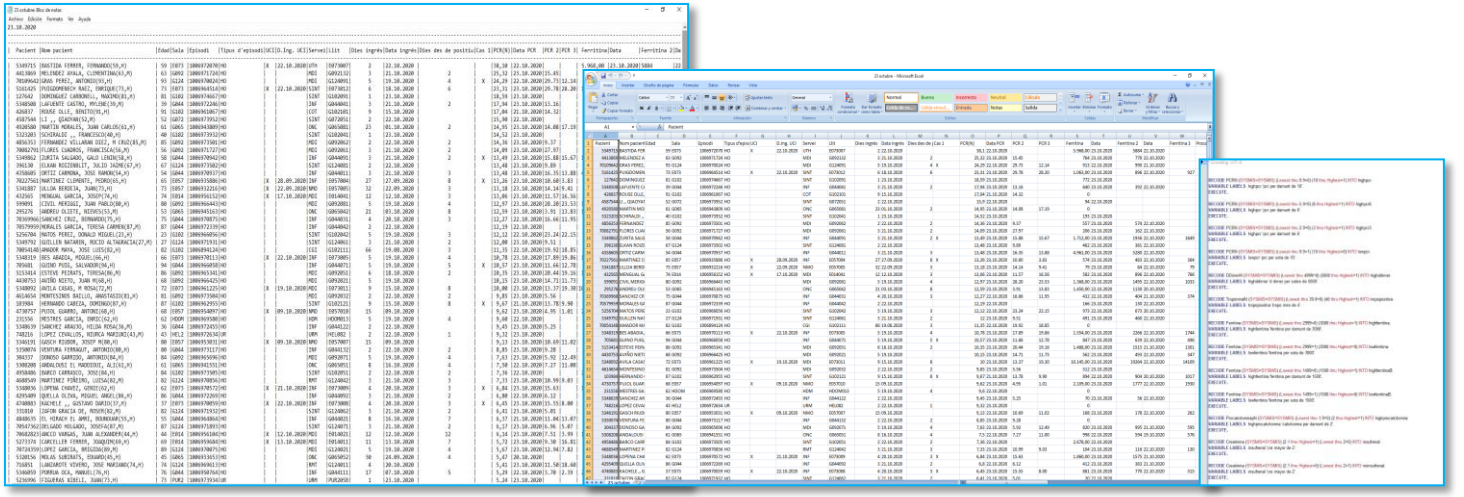
Garcia-Vidal C, et al. Machine learning to assess the risk of multidrug-resistant Gram-negative bacilli infections in febrile neutropenic haematological patients. *Infectious Diseases and Therapy*, 2021.

Table 2. Metrics of ML models to predict the need of MDR-GNB coverage in HRFN patients.

Models	AUC	F1_Score	Sensitivity	Specificity	Negative Predictive Value	Positive Predictive Value
GBM	0.7872	0.9705	0.4583	0.9988	0.9438	0.9778
XGBoost	0.7945	0.9670	0.4895	0.9886	0.9464	0.8246
Random Forest	0.7896	0.9711	0.4583	1.00	0.9439	1.0
GLM	0.7827	0.9716	0.4687	1.00	0.9449	1.0



Garcia-Vidal C, et al. CAPS program_Smart Support System for Medicine. Ebiomedicine 2019; 46: 27-29.



WE ACHIEVED MORE THAN 3 TRILLION PIECES OF HIGH QUALITY

OF DATA FROM PATIENTS WITH COVID-19 IN FOUR MONTHS

Journal of Antimicrobial Chemotherapy

J Antimicrob Chemother
doi:10.1093/jac/dkab321

Impact of remdesivir according to the pre-admission symptom duration in patients with COVID-19

Carolina Garcia-Vidal[1]†, Rodrigo Alonso[1]†, Ana M. Camon[1], Celia Cardozo[1], Laia Albiach[1], Daiana Agüero[1], M. Angeles Marcos[1,3], Juan Ambrosioni[1], Marta Bodro[1], Mariana Chumbita[1], Lorena de la Mora[1], Nicole Garcia-Pouton[1], Gerard Dueñas[1], Marta Hernandez-Meneses[1], Alexy Inciarte[1], Genoveva Cuesta[1,2,3], Fernanda Meira[1], Laura Morata[1], Pedro Puerta-Alcalde[1,3], Sabina Herrera[1], Montse Tuset[4], Pedro Castro[5], Sergio Prieto-Gonzalez[6], Alex Almuedo-Riera[1,3,7], Josep Mensa[1], José Antonio Martinez[1], Gemma Sanjuan[1,8], J. M. Nicolas[5], A. del Rio[1], José Muñoz[1,3,7], Jordi Vila[1,3], Felipe Garcia[1] and Alex Soriano[1]* on behalf of the Hospital Clinic of Barcelona COVID-19 Research Group‡

[1]Department of Infectious Diseases, Hospital Clinic of Barcelona- IDIBAPS, University of Barcelona, Barcelona, Spain; [2]Department of Microbiology, Hospital Clinic of Barcelona, University of Barcelona, Barcelona, Spain; [3]Institute for Global Health (ISGlobal), Barcelona, Spain; [4]Department of Pharmacy, Hospital Clinic, IDIBAPS, University of Barcelona, Barcelona, Spain; [5]Department of Internal Medicine, Hospital Clinic, IDIBAPS, Hospital Clinic, IDIBAPS, University of Barcelona, Barcelona, Spain; [6]Department of International Health, Hospital Clinic of Barcelona, University of Barcelona, Barcelona, Spain; [7]Department of International Health, Hospital Clinic of Barcelona, University of Barcelona, Barcelona, Spain; [8]Computer System Unit, Hospital Clinic, Barcelona, Spain

*Corresponding author. E-mail: asoriano@clinic.cat
†Contributed equally.
‡Members are listed in the Acknowledgements section.

Received 22 May 2021; accepted 8 August 2021

Background: The use of remdesivir has demonstrated a significant reduction in the time to recovery in patients with COVID-19. However, the impact on mortality is still controversial. Therefore, it is necessary to evaluate whether there is a specific subgroup of patients in whom an active antiviral therapy also reduces the mortality.

Methods: Patients admitted for >48 h in our hospital for a SARS-CoV-2 confirmed or suspected infection from February 2020 to February 2021 were retrospectively analysed. The primary outcome of the study was mortality at 30 days. Univariate and multivariate analyses were performed to identify predictors of mortality.

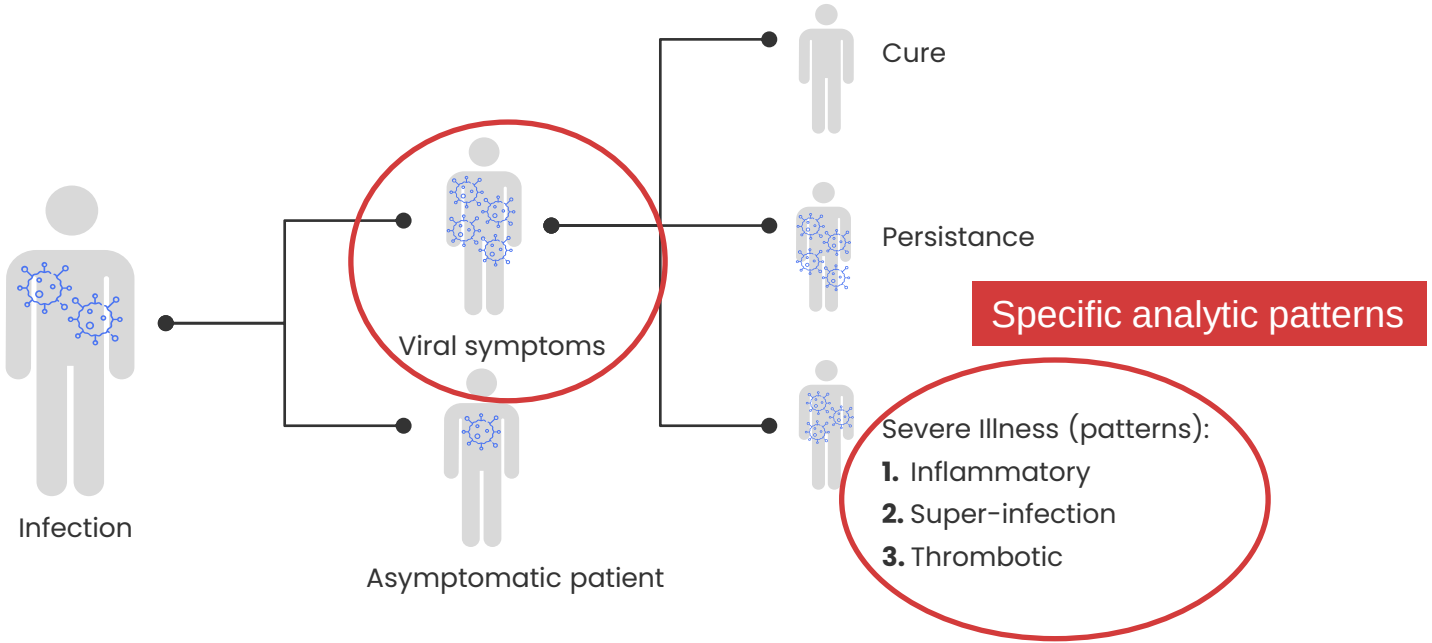
Results: In total, 2607 patients (438 receiving remdesivir and 2169 not) were included with a median (IQR) age of 65 (54–77) years and 58% were male. Four hundred and seventy-six were admitted to the ICU (18.3%) and 264 required invasive mechanical ventilation (10.1%). The global 30-day mortality rate was 10.7%. Pre-admission symptom duration of 4–6 days and ≤3 days was associated with a 1.5- and 2.5-fold increase in the mortality rate, respectively, in comparison with >6 days and treatment with remdesivir was independently associated with a lower mortality rate (OR = 0.382, 95% CI = 0.218–0.671). The analysis showed that the major difference was among patients with shorter pre-admission symptom duration (<6 days).

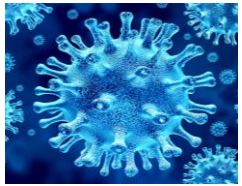
Conclusions: Patients with ≤3 days and 4–6 days from symptom onset to admission are associated with a 2.5- and 1.5-fold higher risk of death, respectively. Remdesivir was associated with 62% reduced odds of death versus standard-of-care and its survival benefit increased with shorter duration of symptoms.

Introduction

Up to April 2021, more than 140 million cases of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection had been detected around the world with more than 3 million related deaths. A recent analysis of 44 415 confirmed cases in China described that 81% were asymptomatic or mild, 14% were severe and 5% were critical with an overall mortality of 2.3%.[1] Among patients that require hospitalization, both the rate of ICU admission and mortality are around 20%.[2–4] On 1 May 2020, remdesivir received FDA emergency use authorization for hospitalized patients with COVID-19 and was officially approved on 22 October 2020 and received a conditional marketing authorization valid throughout the EU on 3 July 2020. Initial clinical trials using a control arm demonstrated the superiority of remdesivir in terms of clinical status improvement at day 28[5] or at day 11,[6] however,

Garcia-Vidal C, et al.Personalized therapy approach for hospitalized patients with COVID-19. Clinical Infectious Disease 2020; doi: 10.1093





Dyspnea, fever, cough, … → SUBJECTIVE

Day 1
Day 2

OBJECTIVE →

Days from symptoms onset CT-PCT Lymphocite count	C-RP Ferritin LDH	Procalcitonin/ Cr Urinary antigen Sputum culture	Dimer-D CT scan Troponin	Others

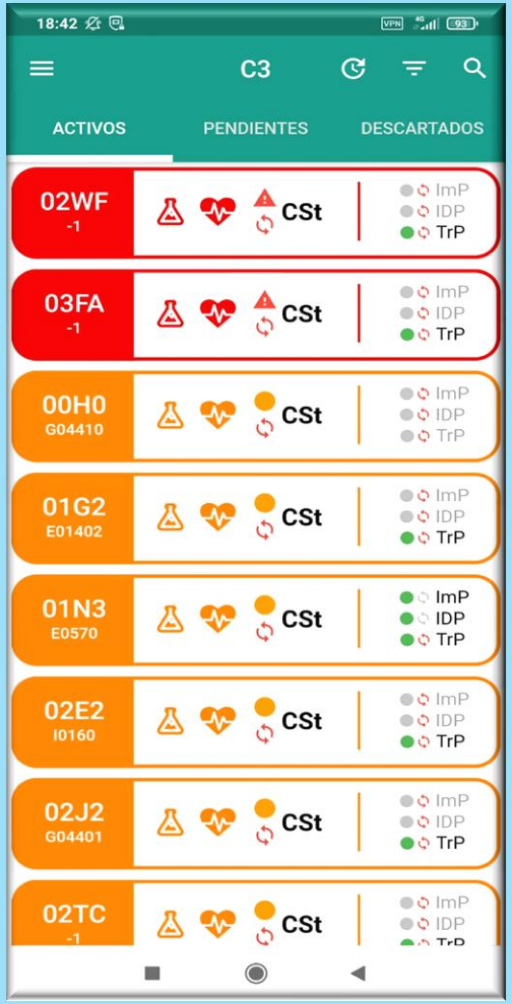
	Virus	Inflammation	Co-infection	Thrombopaty	Others
Pacient 1	x x	x			
Pacient 2	x	x x	x		
Pacient 3		x	x	x	
…	Remdesivir Plasma Monoclonal antibodies Paxlovid Molnupinavir	Tocilizumab Dexametasona Anakinra Baricitinib …	Antibiotics Antifungals	Anticoagulation	Others

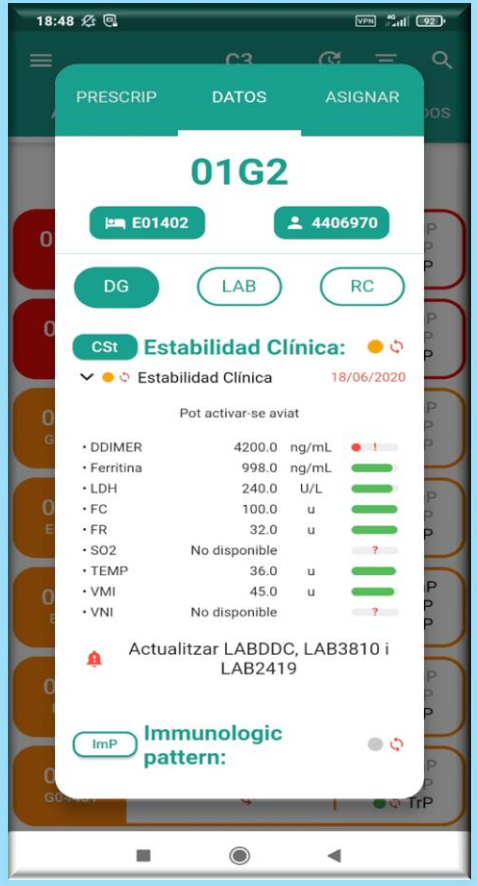
Hospital Clinic- COVID19 Treatment guidelines

EIT health award 2020

(European Union-Innovative Technology Department)!!!!


CLÍNIC
BARCELONA
Hospital Universitari
Usuario
Password
He olvidado la contraseña
Acceder


18:42
C3
ACTIVOS
PENDIENTES
DESCARTADOS
02WF
-1
CSt
ImP
IDP
TrP
03FA
-1
CSt
ImP
IDP
TrP
00H0
G04410
CSt
ImP
IDP
TrP
01G2
E01402
CSt
ImP
IDP
TrP
01N3
E0570
CSt
ImP
IDP
TrP
02E2
I0160
CSt
ImP
IDP
TrP
02J2
G04401
CSt
ImP
IDP
TrP
02TC
-1
CSt
ImP
IDP

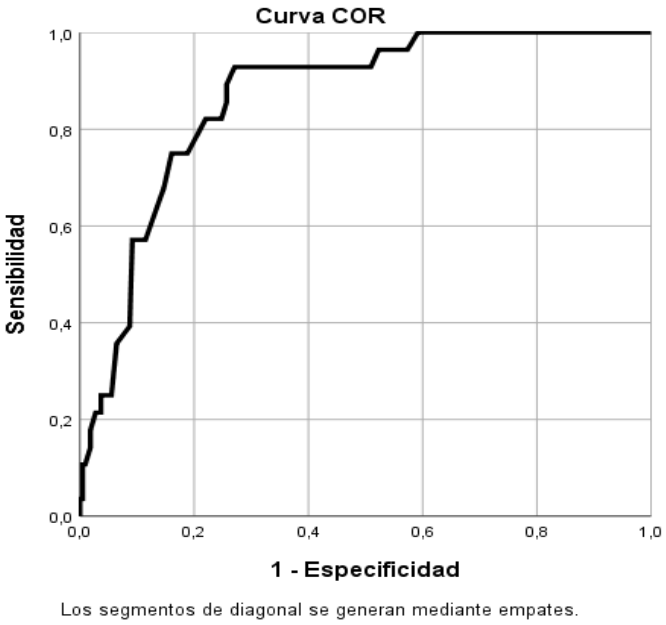

18:48
PRESCRIP
DATOS
ASIGNAR
01G2
E01402
4406970
DG
LAB
RC
CSt
Estabilidad Clínica:
Estabilidad Clínica
18/06/2020
Pot activar-se aviat
• DDIMER 4200.0 ng/mL
• Ferritina 998.0 ng/mL
• LDH 240.0 U/L
• FC 100.0 u
• FR 32.0 u
• SO2 No disponible
• TEMP 36.0 u
• VMI 45.0 u
• VNI No disponible
Actualitzar LABDDC, LAB3810 i LAB2419
ImP
Immunologic pattern:

S4M
Smart Support System for Medicine

COVID-19 Central Control (C3)

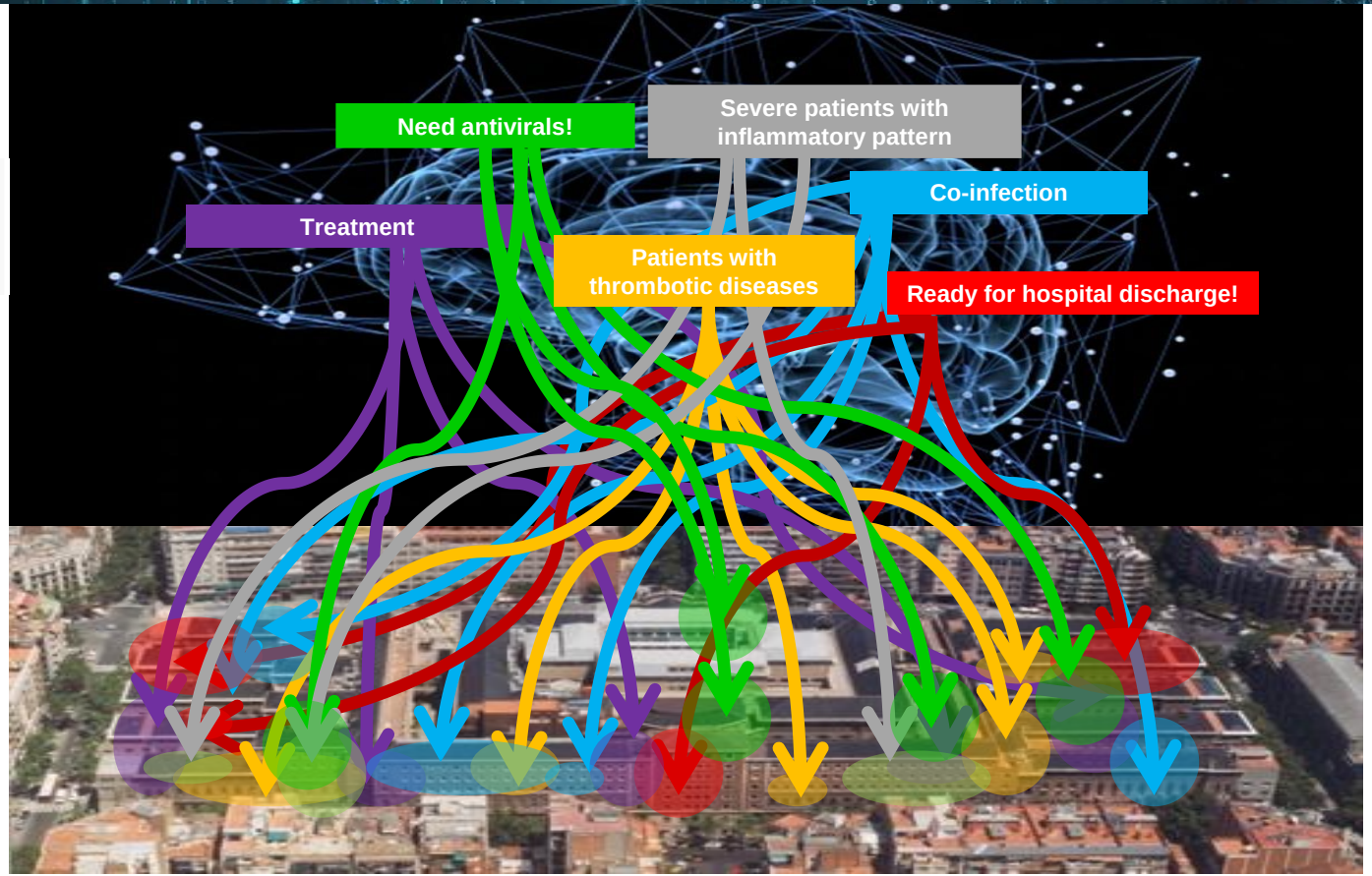
- Co-infection
- Patients with suspiction of thrombotic diseases
- Ready for hospital discharge!
- Antiinflammatory Treatment

Garcia-Vidal C, et al.Personalized therapy approach for hospitalized patients with COVID-19. Clinical Infectious Disease 2020; doi: 10.1093



- **Multivariate analyses showed that personalized therapy was independently associated with decreased early mortality (OR 0.144; 95% confidence interval [CI], 0.03–0.686; p=0.015).**
- **Increasing age (OR 1.06; 95% CI, 1.003-1.121; p=0.038) and therapeutic effort limitation (OR 9.684; 95% CI, 2.934-31.959; p<0.001) were found as independent factors associated with higher mortality.**
- **The goodness of fit of the model -> Hosmer-Lemeshow test (p=0.275). The discriminatory power of the model had an AUC of 0.907 (95% CI, 0.847–0.967), demonstrating an excellent ability to predict mortality.**

COVID-19 Central Control (C_3)



https://www.naftaliharris.com/blog/visualizing-k-means-clustering/

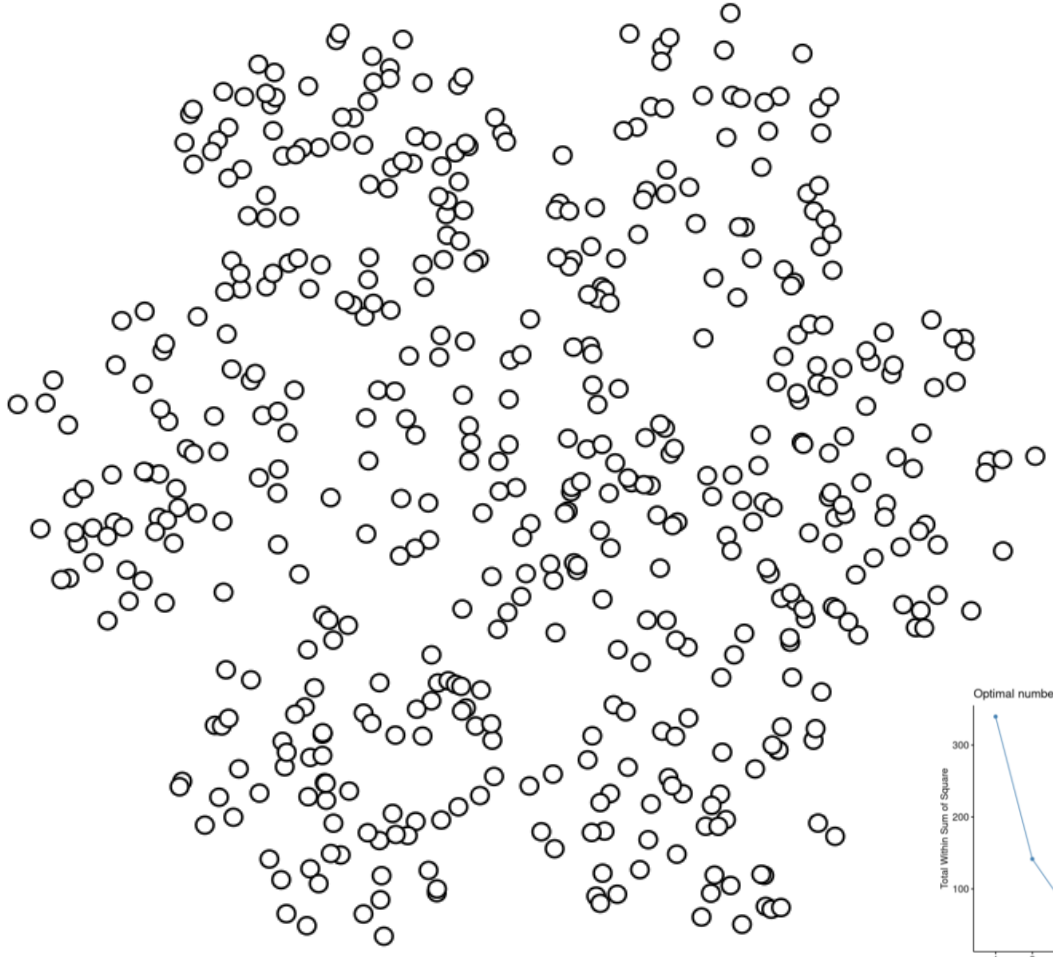
Visualizing K-Means Clustering

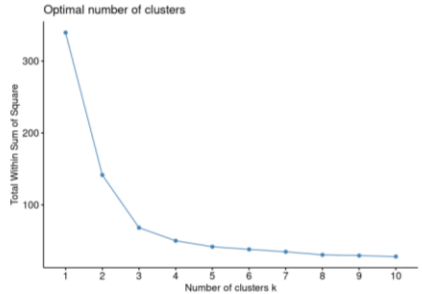
January 19, 2014

Suppose you plotted the screen width and height of all the devices accessing this website. You'd probably find that the points form three clumps: one clump with small dimensions, (smartphones), one with moderate dimensions, (tablets), and one with large dimensions, (laptops and desktops). Getting an algorithm to recognize these clumps of points without help is called *clustering*. To gain insight into how common clustering techniques work (and don't work), I've been making some visualizations that illustrate three fundamentally different approaches. This post, the first in this series of three, covers the k-means algorithm. To begin, click an initialization strategy below:

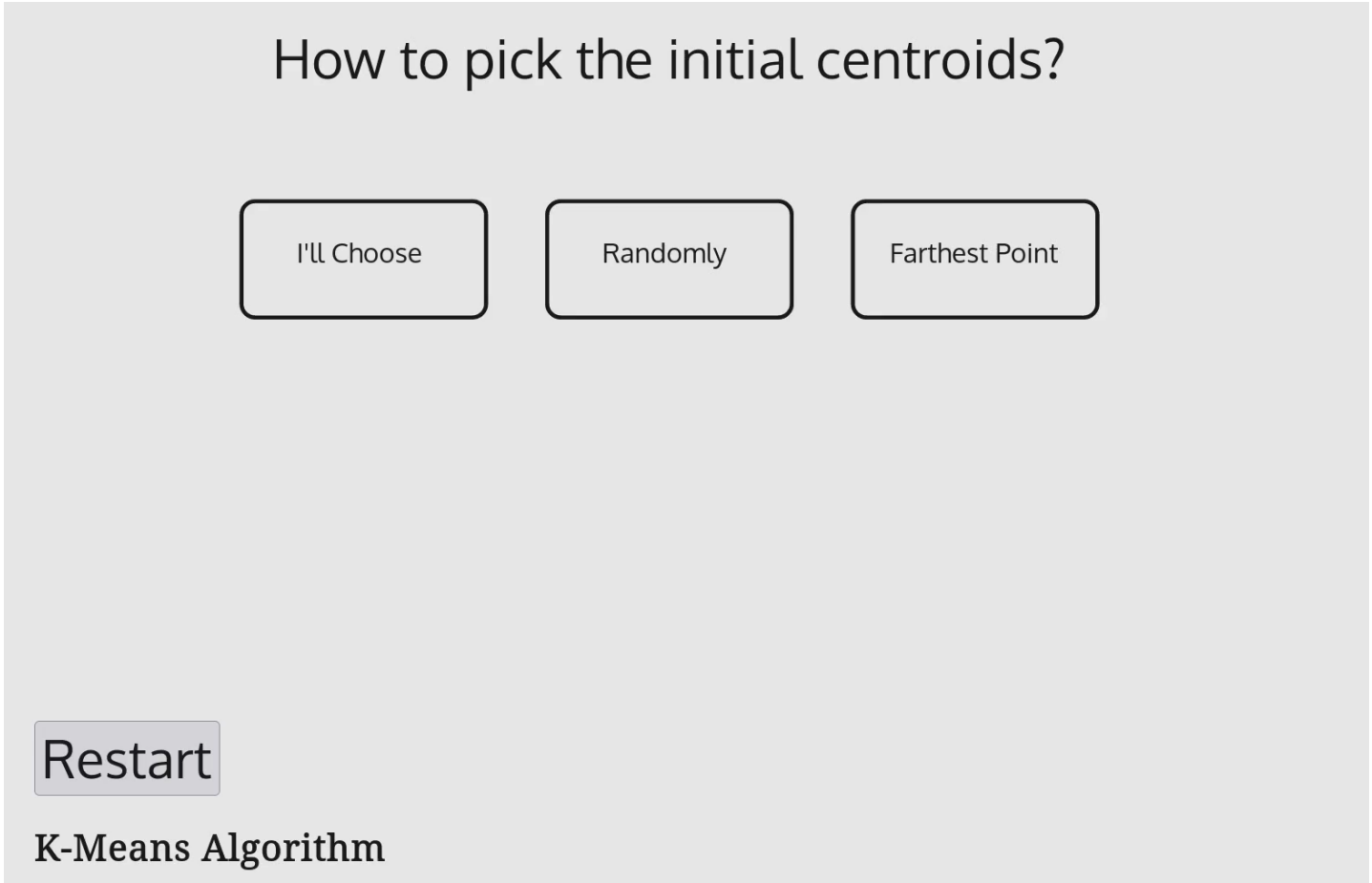
How to pick the initial centroids?

I'll Choose | Randomly | Farthest Point



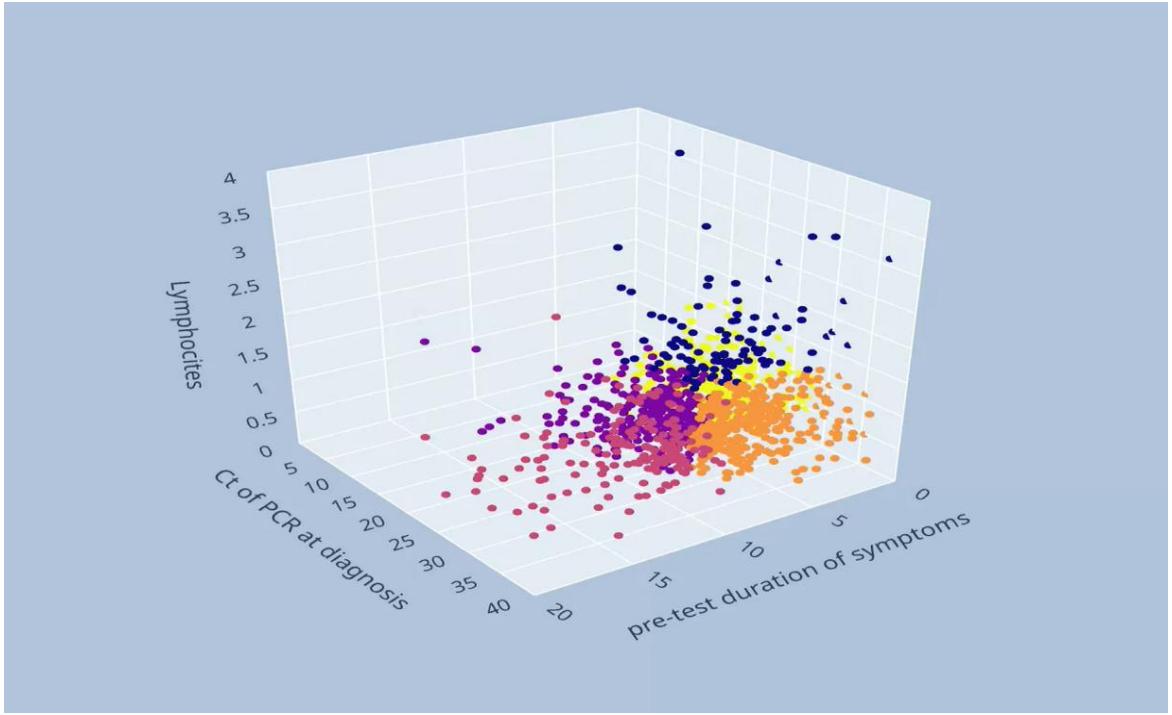


Data provided by the author for educational purposes.



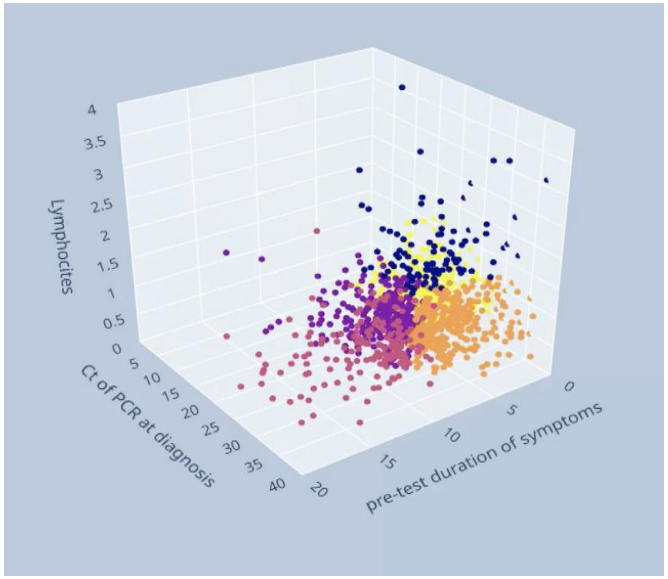
Data provided by the author for educational purposes.

Garcia-Vidal C, et al. Clustering and validation of clinical phenotypes of hospitalized patients with COVID-19 and their various responses to remdesivir . Submitted

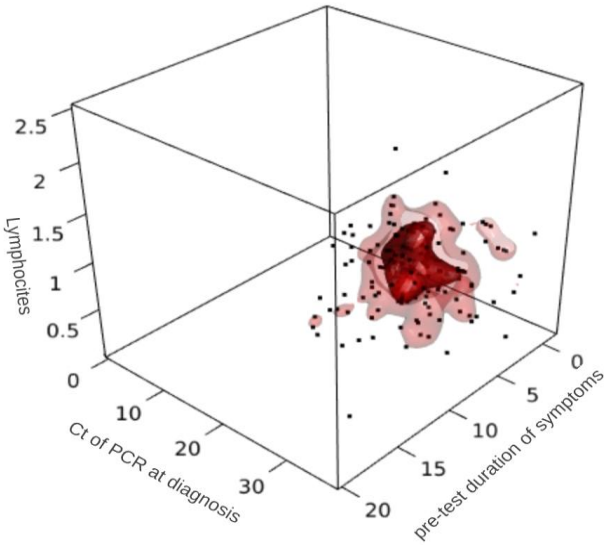


Data provided by the author for educational purposes.

Garcia-Vidal C, et al. Clustering and validation of clinical phenotypes of hospitalized patients with COVID-19 and their various responses to remdesivir . Submitted



Clusters



Mortality

Data provided by the author for educational purposes.

Garcia-Vidal C, et al. Clustering and validation of clinical phenotypes of hospitalized patients with COVID-19 and their various responses to remdesivir . Submitted

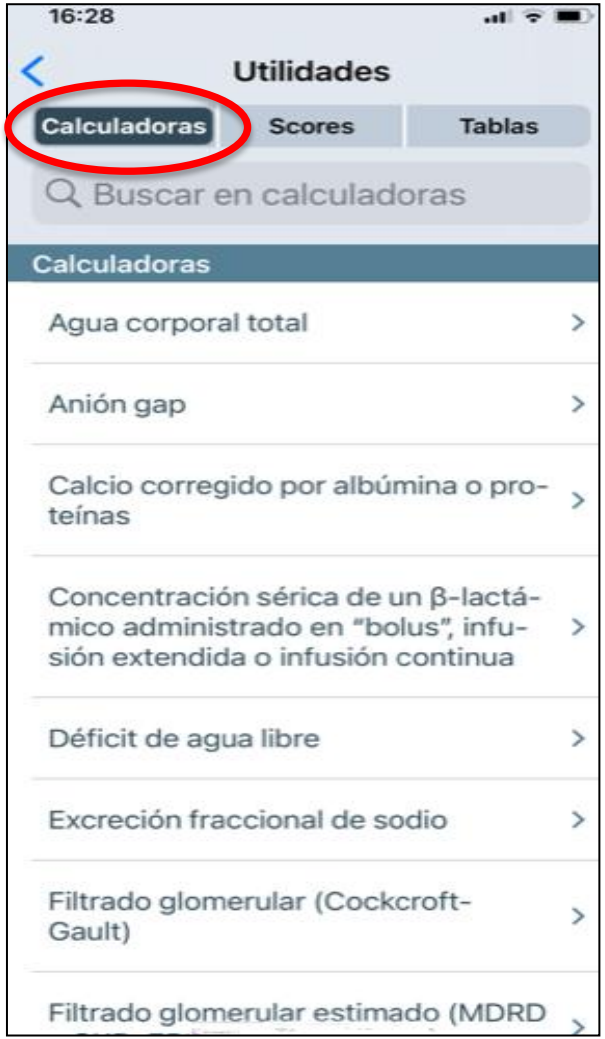
K-means cluster		Median Ct (IQR)	Median days of pre-test duration of symptoms (IQR)	Median lymphocyte count (IQR)	60-d mortality (%)	60-d mortality/ pts receiving remdesivir (%)	60-d mortality/ pts who did not receive remdesivir (%)	p value
Cluster 1	Derivation cohort n=100	26 (23-30)	5 (3-7)	1.7 (1.5-2)	2	0	2.4	0.53
Cluster 2	Derivation cohort n=273	24 (22-26)	8 (7-9)	0.8 (0.6-1)	11	0	11	0.34
Cluster 3	Derivation cohort n=183	31 (28-34)	11 (10-13)	0.8 (0.6-1.1)	8.2	NA	8.2	NA
Cluster 4	Derivation cohort n=318	31 (29-33)	5 (4-7)	0.8 (0.6-1)	10.4	2.9	11.3	0.13
Cluster 5	Derivation cohort n=284	21 (17-23)	3 (1-4)	0.7 (0.5-0.9)	29.7	10.5	36.7	< 0.001

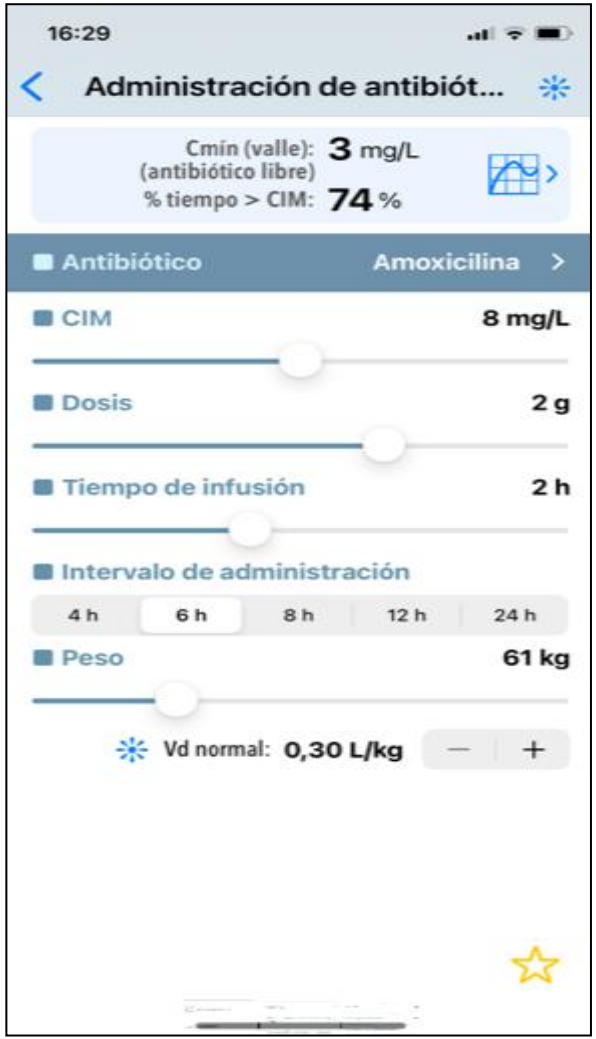
Antimicrobial book

IOS

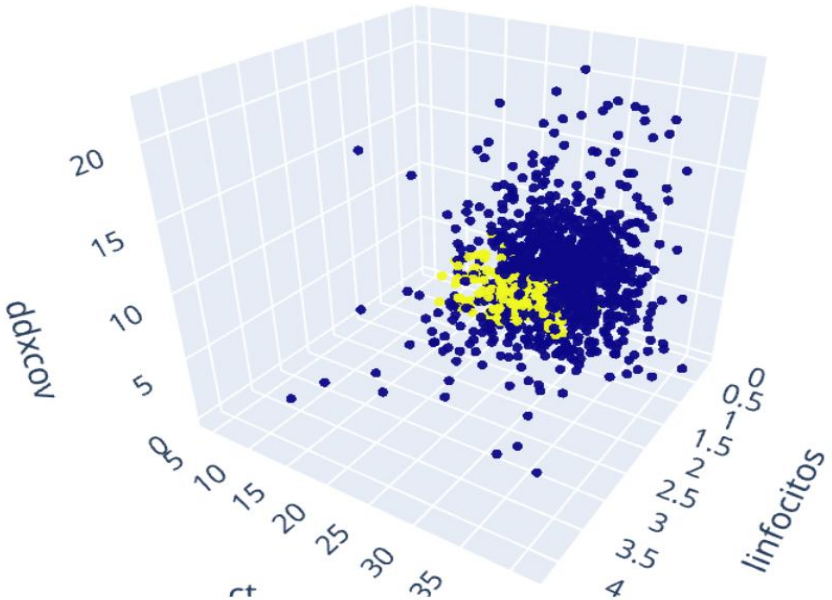
ANDROID


16:28
Guía Mensa
Buscar
Antimicrobianos
Microorganismos
Síndromes
Prevención
Utilidades
Favoritos
Última actualización: 23 ene 2023


16:28
Utilidades
Calculadoras
Scores
Tablas
Buscar en calculadoras
Calculadoras
Agua corporal total
Anión gap
Calcio corregido por albúmina o proteínas
Concentración sérica de un β-lactámico administrado en "bolus", infusión extendida o infusión continua
Déficit de agua libre
Excreción fraccional de sodio
Filtrado glomerular (Cockcroft-Gault)
Filtrado glomerular estimado (MDRD


16:29
Administración de antibiót...
Cmín (valle): 3 mg/L
(antibiótico libre)
% tiempo > CIM: 74 %
Antibiótico
Amoxicilina
CIM
8 mg/L
Dosis
2 g
Tiempo de infusión
2 h
Intervalo de administración
4 h
6 h
8 h
12 h
24 h
Peso
61 kg
Vd normal: 0,30 L/kg

Garcia-Vidal C, et al. Artificial intelligence with deep learning identify patients hospitalised with COVID-19 in whom remdesivir decreased mortality. Work in process



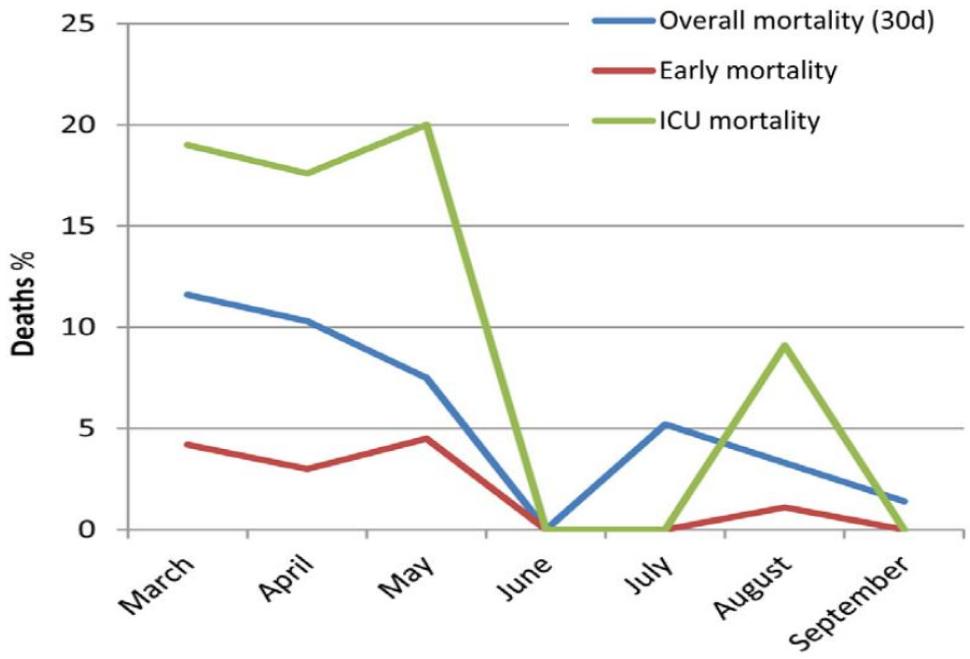
Derivation cohort

	n	%	n Remde	n No Remde	% Death Remde	% Death No Remde	% Death	pvalue
cluster								
1	972	84.6	87	885	4 (4.6%)	98 (11.1%)	102 (10.5%)	0.060124
2	177	15.4	45	132	5 (11.1%)	57 (43.2%)	62 (35.0%)	0.000077

Validation cohort

	n	%	n Remde	n No Remde	% Death Remde	% Death No Remde	% Death	pvalue
cluster								
1	895	91.2	94	801	7 (7.4%)	73 (9.1%)	80 (8.9%)	0.592543
2	86	8.8	24	62	4 (16.7%)	26 (41.9%)	30 (34.9%)	0.027466

Garcia-Vidal C, et al. Trends in mortality of hospitalized COVID-19 patients: A single centre observational cohort study from Spain. The Lancet Regional Health 2021



Overall mortality decreased from 11.6% in the first month to 1.4% in the last month, reflecting a progressive, significant downward trend (p for trend <0.001).

Fig. 1. Overall mortality trends for patients admitted with COVID-19 (distribution by months).

Thanks for you attention

cgarciav@clinic.cat
@c_garciavidal -> *follow me!*