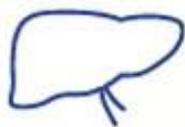


XXV CONGRESO  
**XXV SETH**



*Málaga 2015*

Sociedad Española  
de Trasplante Hepático



7-9 OCTUBRE

**Málaga**

# Gestión de la lista de espera: Modelos Mixtos

Dr Santiago Tome

Hospital Clinico Universitario de Santiago de Compostela

# Principios éticos en la gestión de recursos

JUSTICIA

NO  
MALEFICIENCIA  
( Buena practica clinica)

BENEFICIENCIA

AUTONOMIA

# SISTEMAS GENERICOS DE REPARTO EN TRASPLANTE DE ORGANOS

URGENCIA



“SICKEST FIRST” SE PUEDE REDUCIR LA SUPERVIVENCIA GLOBAL POST TX

UTILIDAD



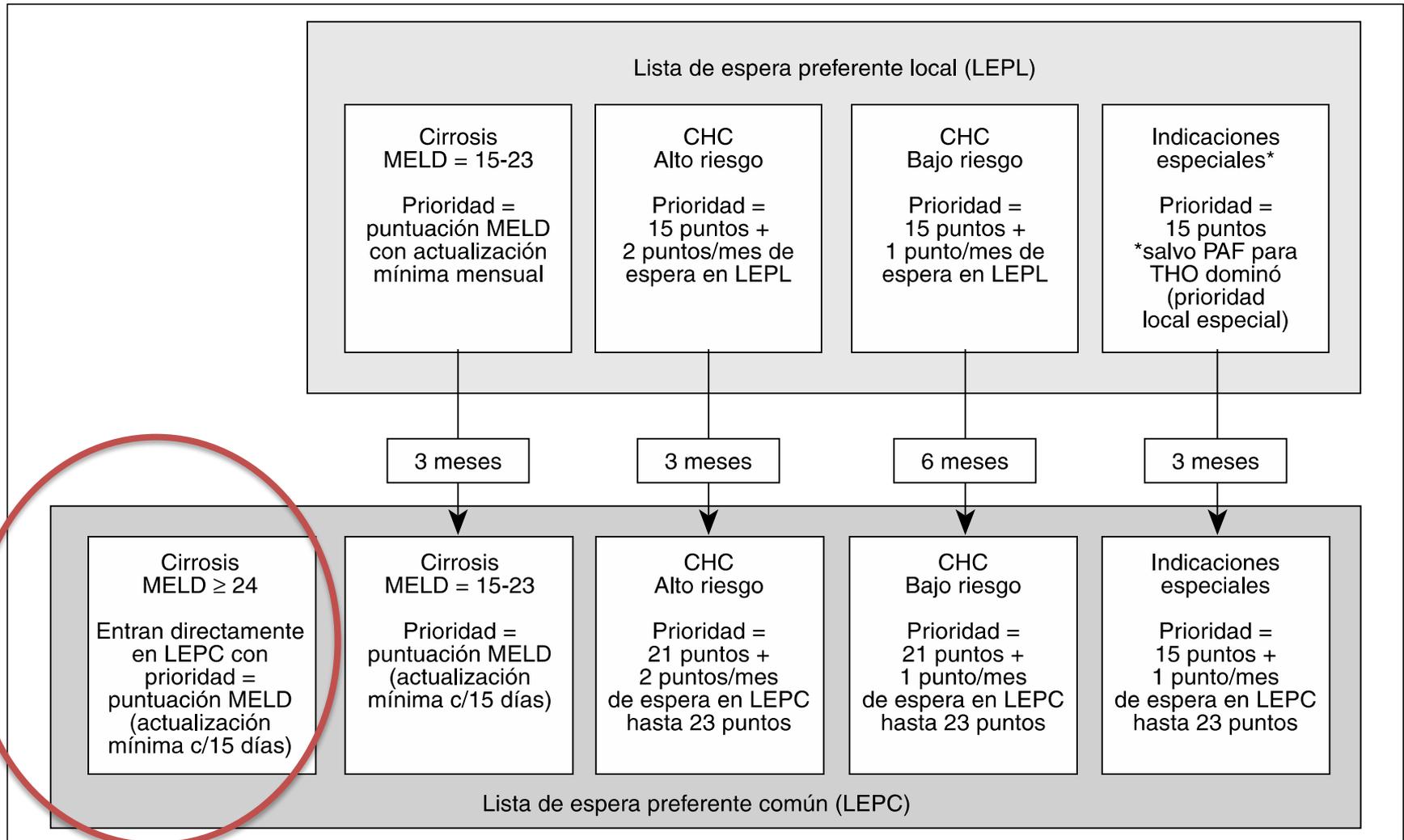
LOS ENFERMOS CON MEJORES RESULTADOS SON LOS QUE POTENCIALMENTE PUEDEN VIVIR MAS PRETRASPLANTE

BENEFICIO NETO DE TRASPLANTE



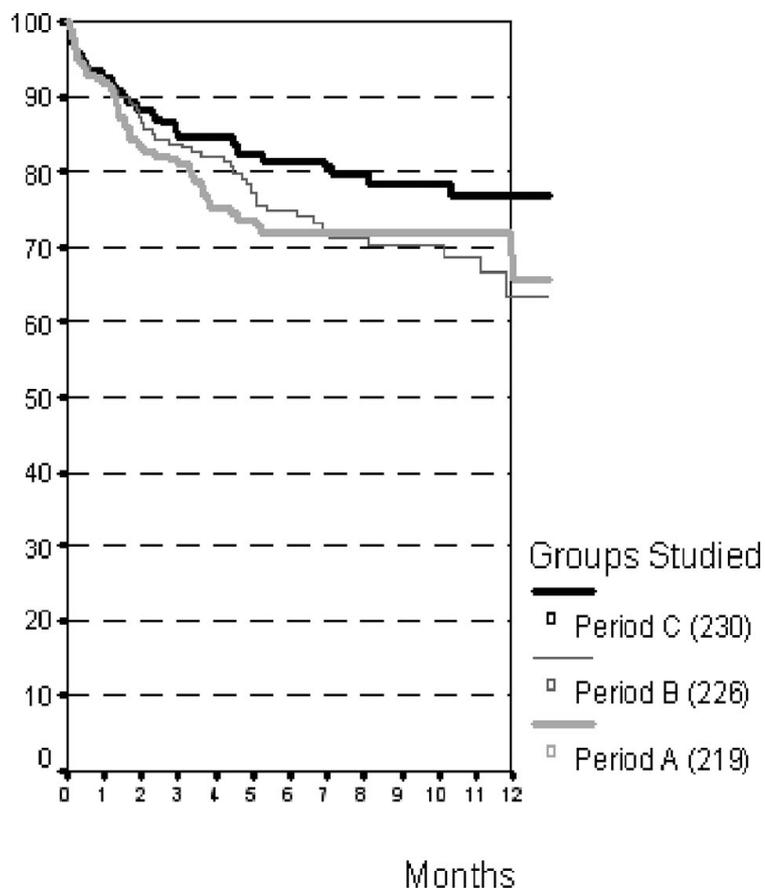
BUSCA MAXIMALIZAR LA VIDA DEL ENFERMO y DEL CONJUNTO DE LA LE POR EL TRASPLANTE

# Modelo mixto de gestión de lista de espera ( Andalucía )



# Model for End-Stage Liver Disease Score–Based Allocation of Donors for Liver Transplantation: A Spanish Multicenter Experience

Manuel de la Mata,<sup>1,6</sup> Natividad Cuende,<sup>2</sup> Jesús Huet,<sup>2</sup> Angel Bernardos,<sup>3</sup> Jose Antonio Ferrón,<sup>4</sup> Julio Santoyo,<sup>5</sup> Juan Manuel Pascasio,<sup>3</sup> Juan Rodrigo,<sup>5</sup> Guillermo Solórzano,<sup>1</sup> Rafael Martín-Vivaldi,<sup>4</sup> and Manuel Alonso<sup>2</sup>

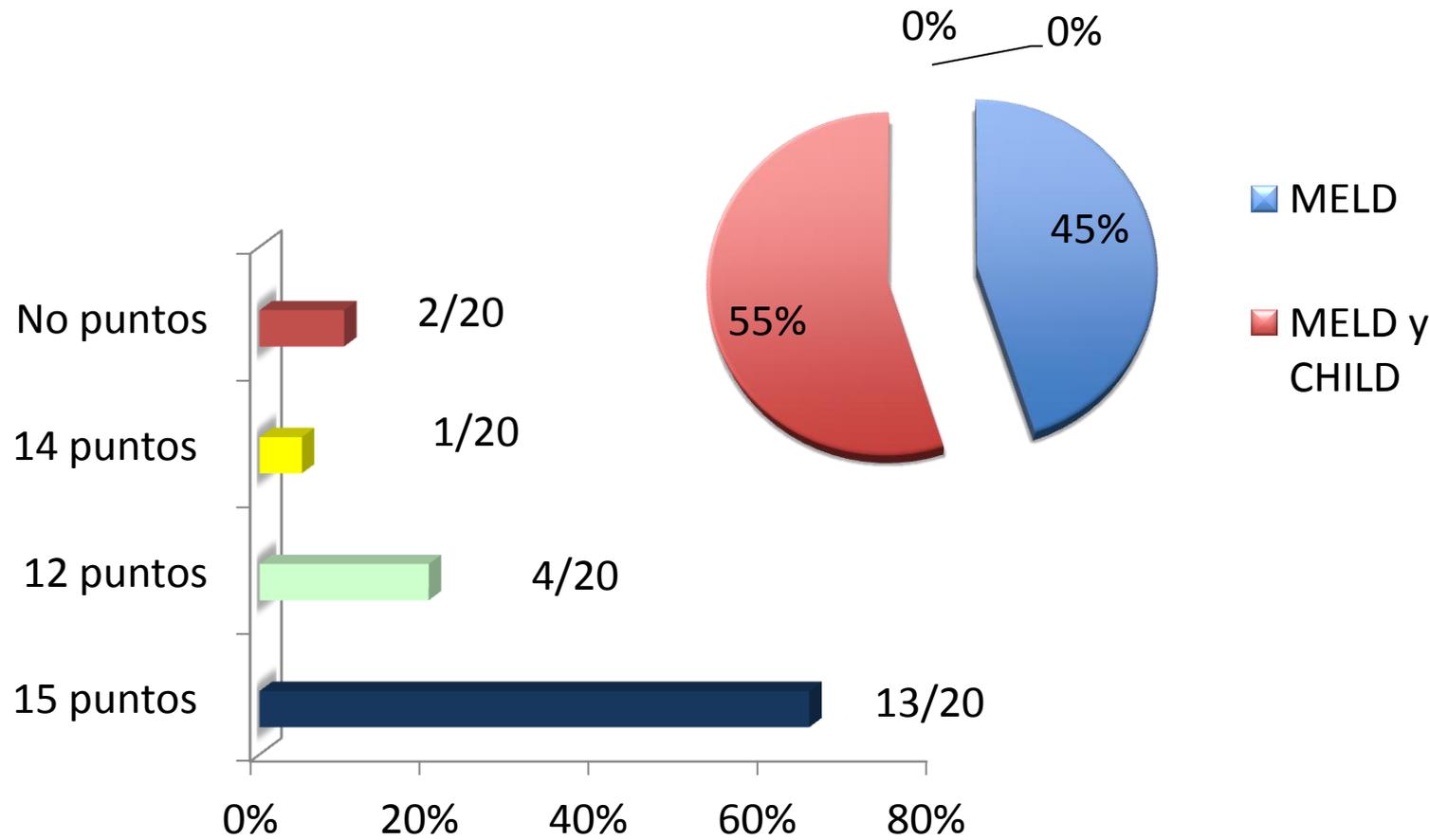


1. Period A: before implementing the WL prioritization criteria based on the MELD score.
2. Period B: after implementing the initial WL prioritization criteria based on the MELD score.
3. Period C: after modifying the WL prioritization criteria based on the MELD score using the current criteria.

*(Transplantation 2006;82: 1429–1435)*

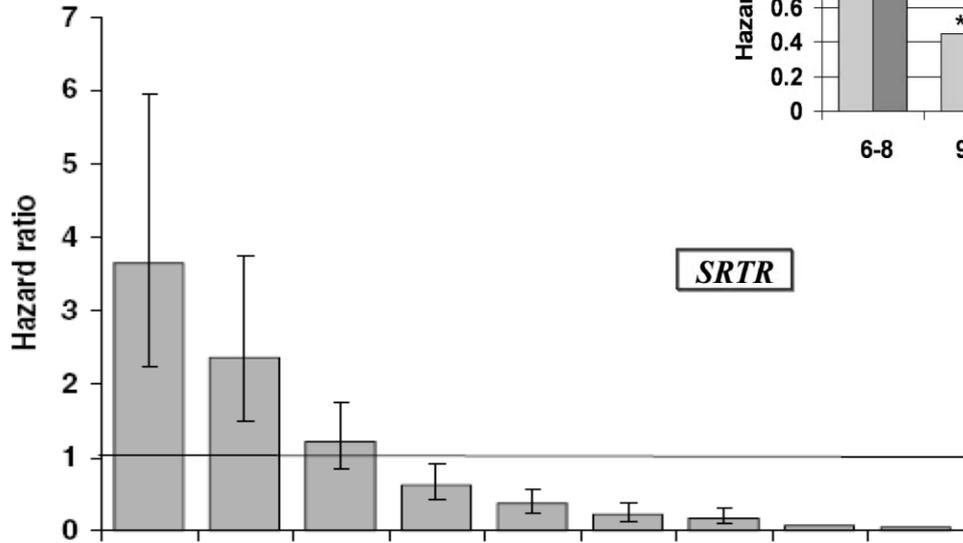
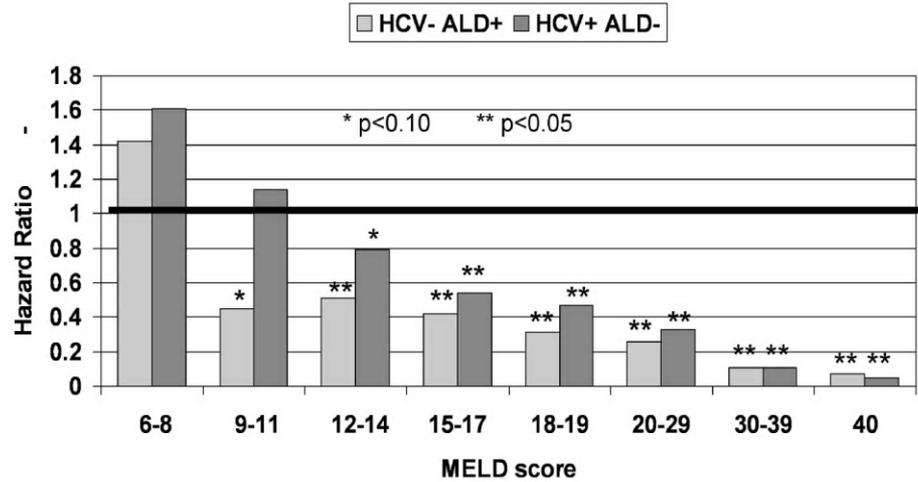
# Como se introducen los enfermos en lista de espera en España?

Encuesta (2º trimestre del 2015) a 20/24 Unidades de Tx Hepatico de adultos



# MELD score y Mortalidad

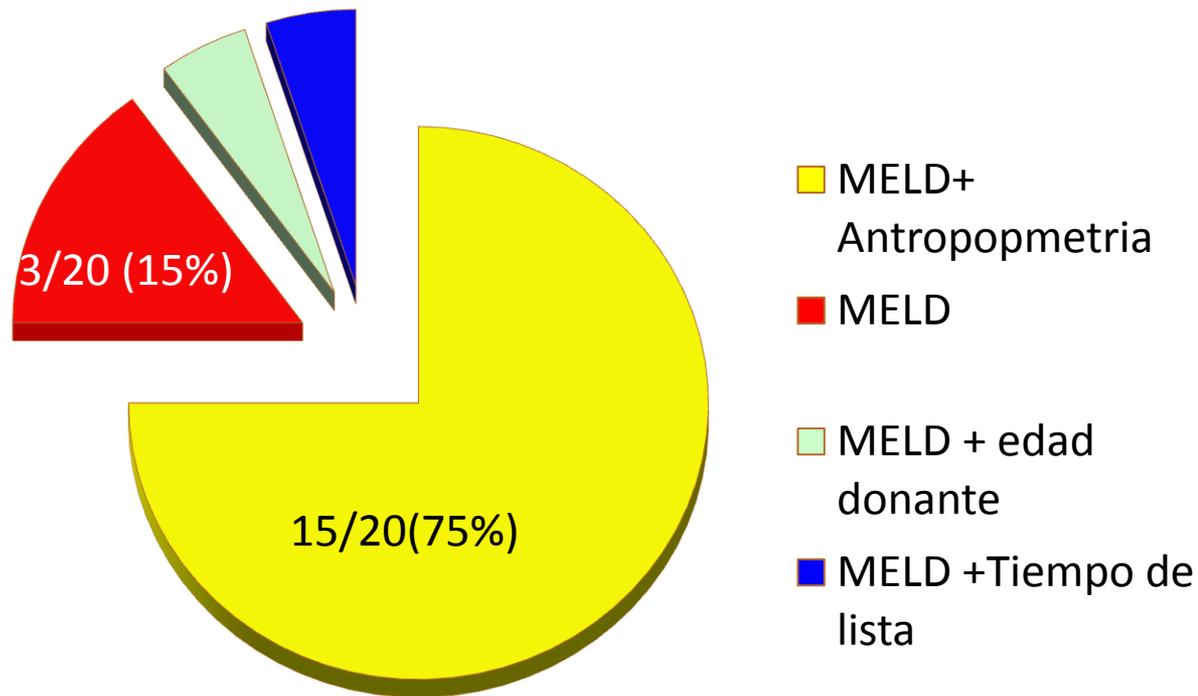
## Transplant survival benefit, by diagnosis and MELD score



**SRTR**

MELD	6-11	12-14	15-17	18-20	21-23	24-26	27-29	30-39	≥40
Hazard Ratio	3.64	2.35	1.21	0.62	0.38	0.22	0.18	0.07	0.04
p-values	<0.001	<0.001	0.41	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001

# Como se empareja el donante en el momento de la oferta?



Antes de la aparición de los antivirales frente al VHC el 70% de los grupos reconocen elegir un donante mas joven para un receptor VHC

# MELD score.

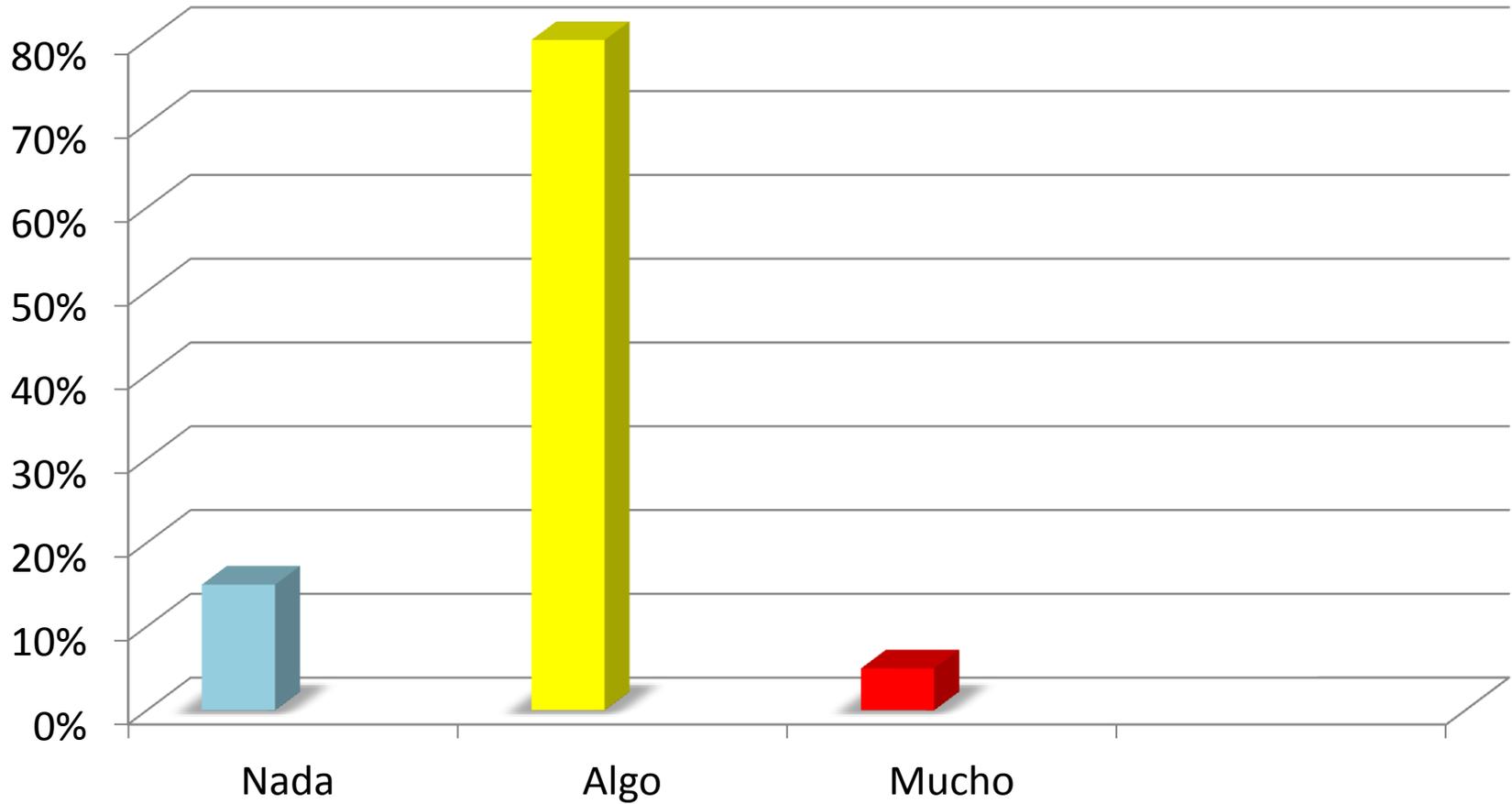
Excesivo peso asignado a la función renal?

Paciente 1	
Bi T :	1.5
Creatinina :	3
<u>INR :</u>	<u>1.1</u>
Total :	19.5

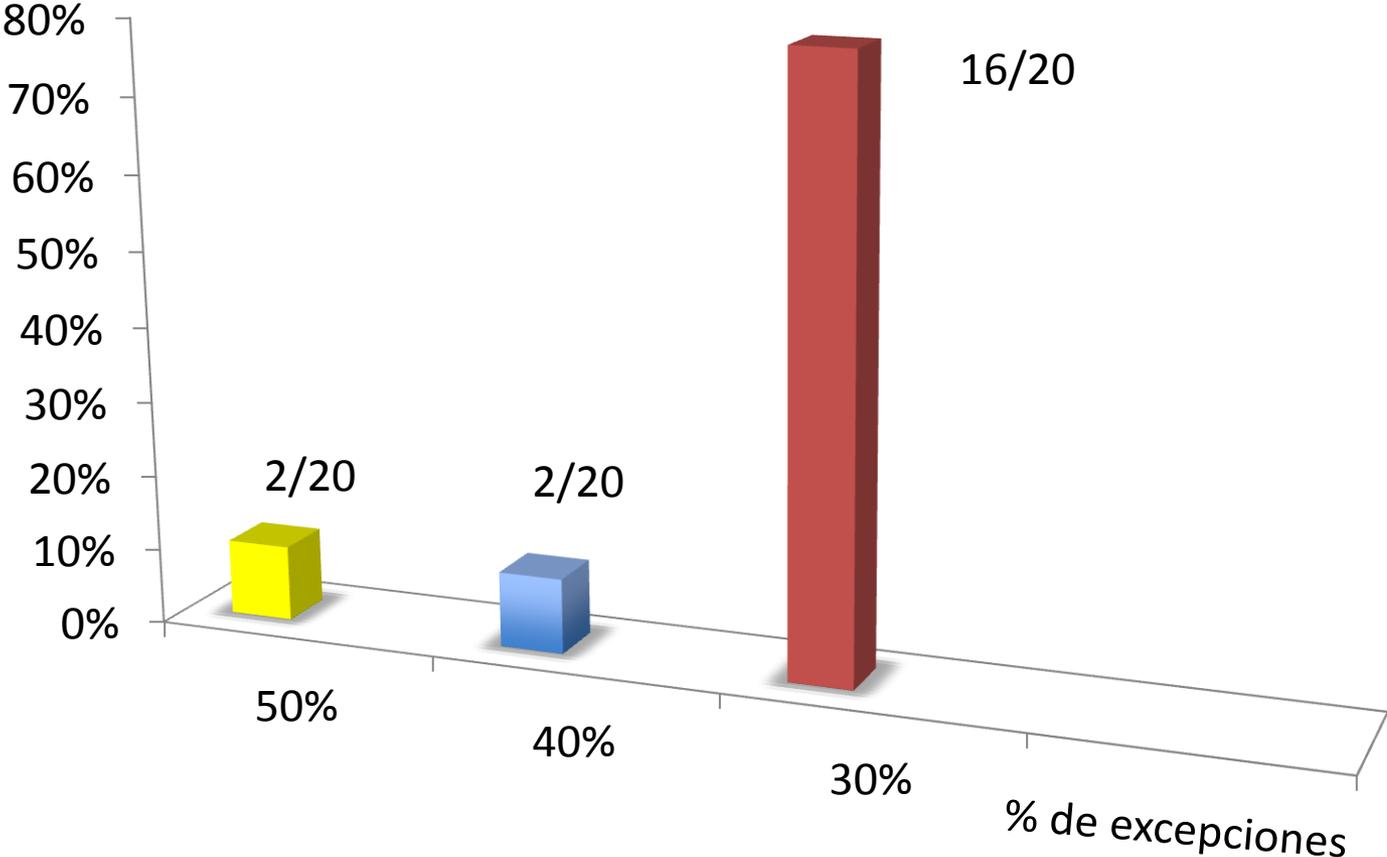
Paciente 2	
Bi T :	12
Creatinina :	1.1
<u>INR :</u>	<u>1.4</u>
Total :	19.5



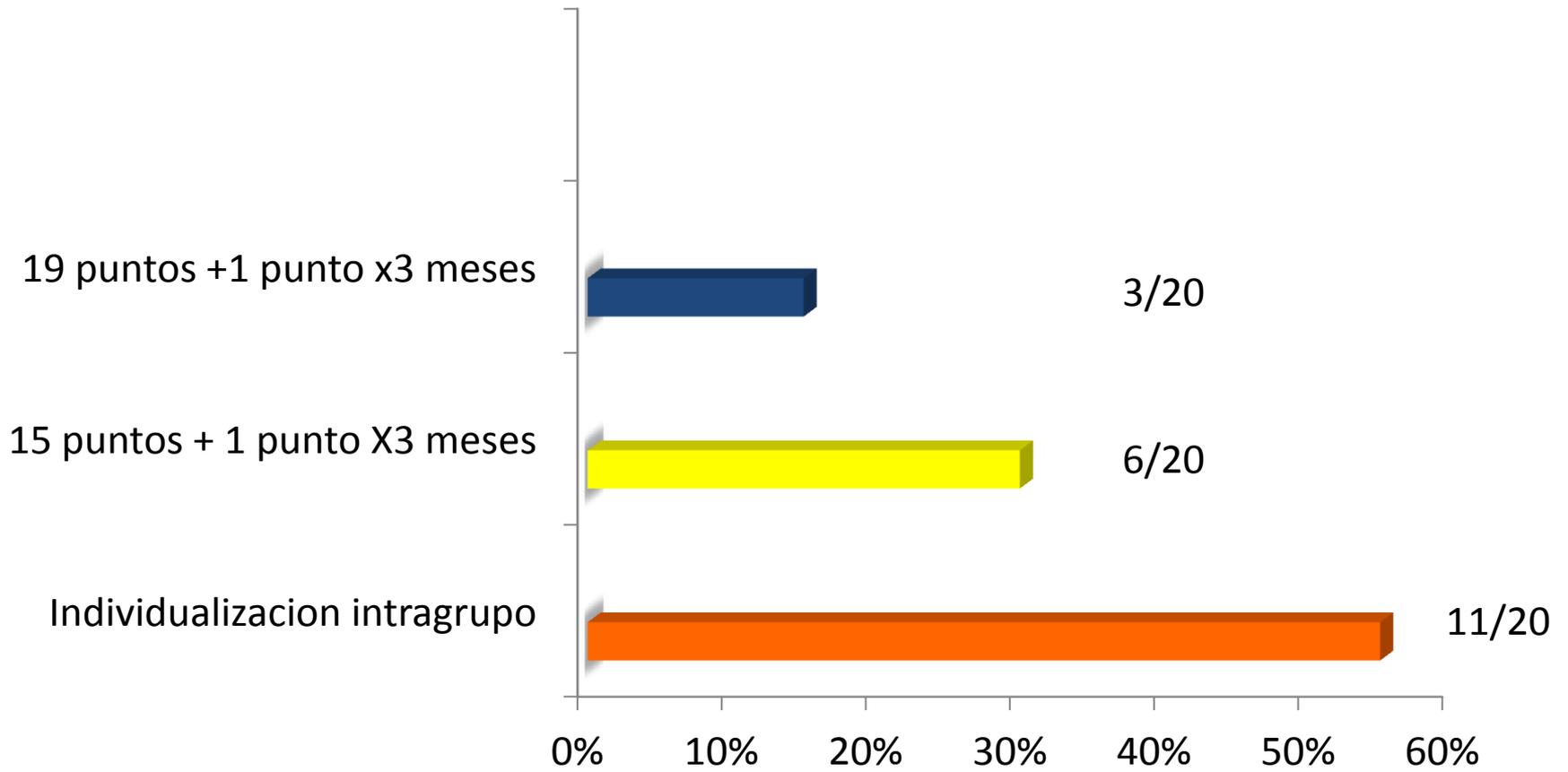
# Importa el tiempo en lista?



# Que % suponen la excepciones en la lista de espera?

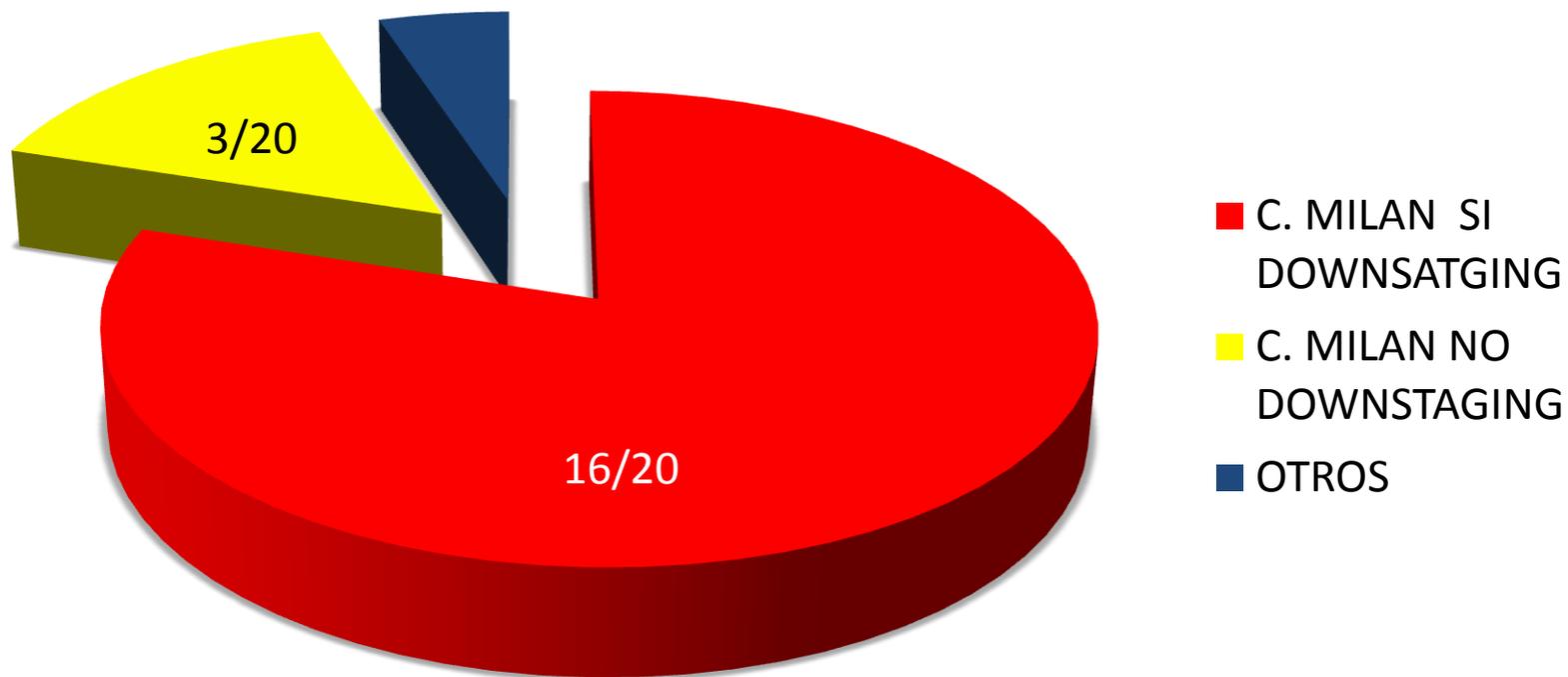


# Como se manejan las excepciones ?



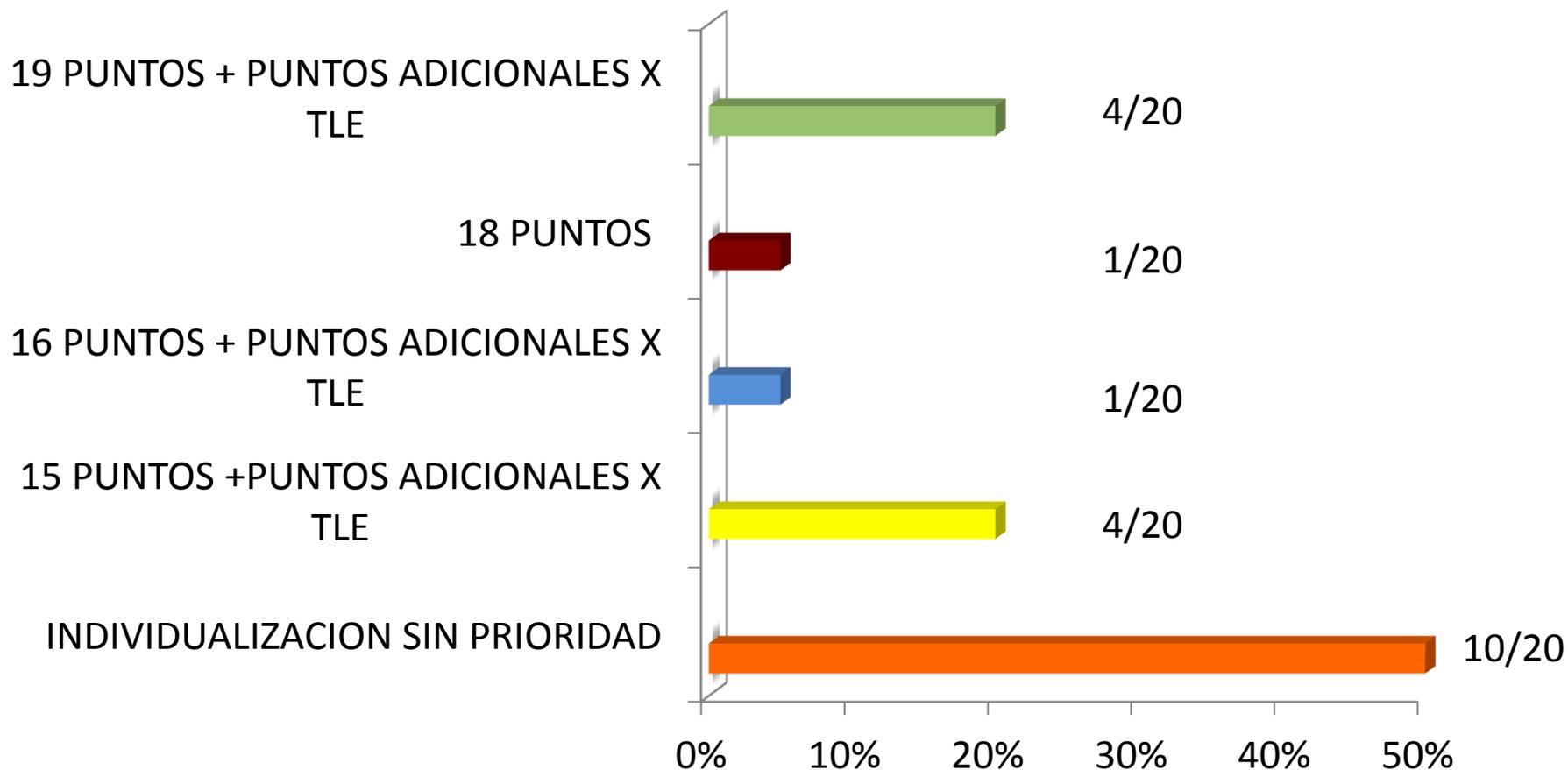
# EXCEPCIONES : HCC.

## QUAL ES EL CRITERIO DE ENTRADA EN LISTA?

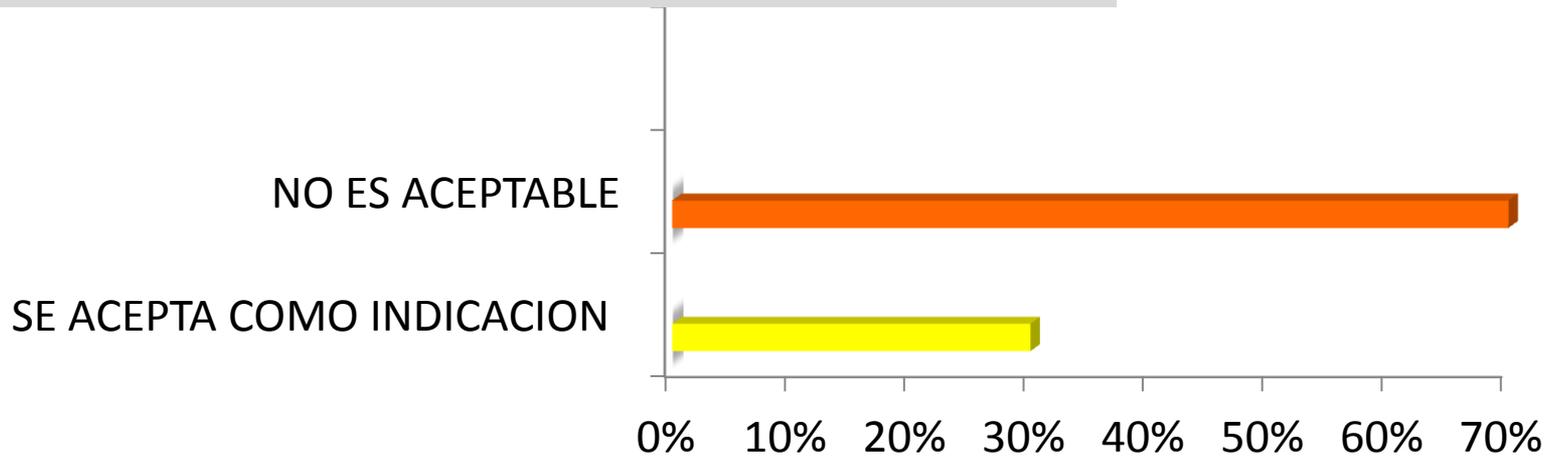


# EXCEPCIONES : HCC.

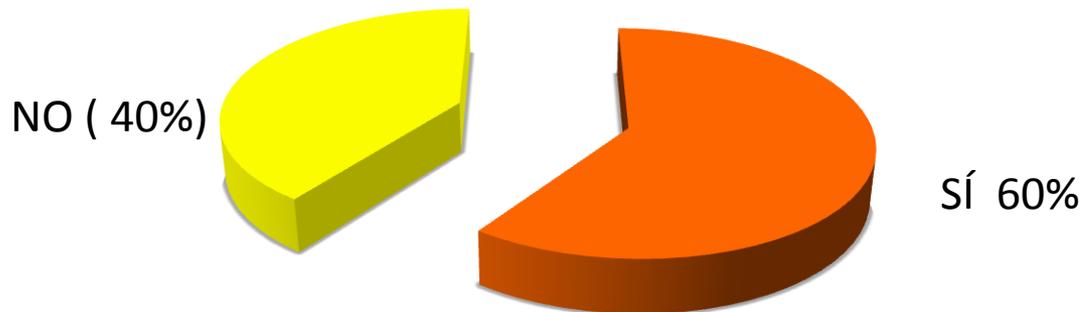
## COMO PRIORIZAMOS EL HCC DE ALTO RIESGO?



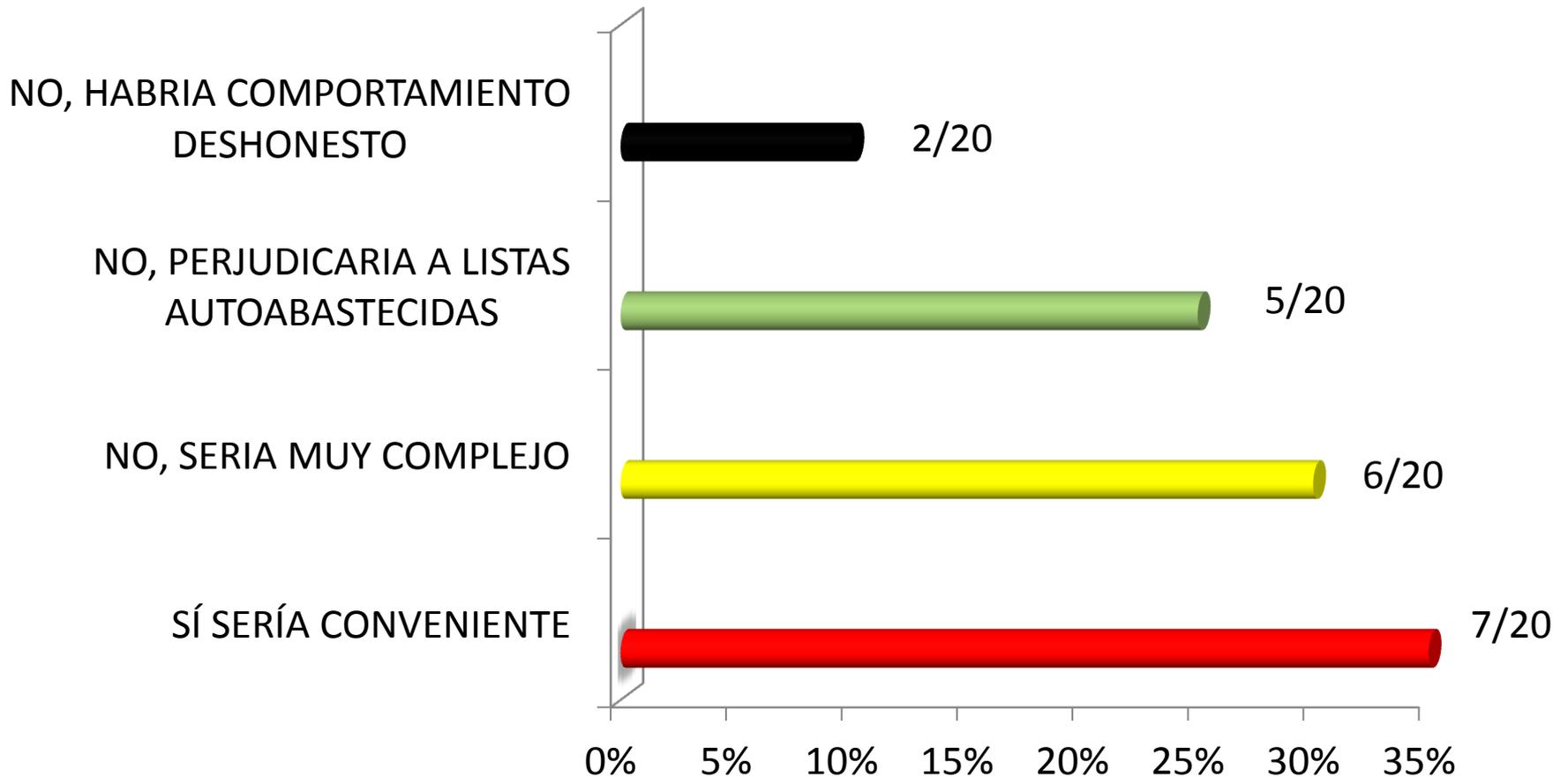
# ACEPTA SU GRUPO LA HAA COMO INDICACION PARA TRASPLANTE?



# SE DEBERIA DE FLEXIBILIZAR EL CRITERIO DE ENTRADA PARA CODIGO CERO EN LA HEPATITIS FULMINANTE MAS ALLA DE 8 SEMANAS?



# SERIA POSIBLE UN SISTEMA DE PRIORIZACION SUPRAREGIONAL?



# Use of artificial intelligence as an innovative donor-recipient matching model for liver transplantation: Results from a multicenter Spanish study

Javier Briceño<sup>1,\*</sup>, Manuel Cruz-Ramírez<sup>2</sup>, Martín Prieto<sup>3</sup>, Miguel Navasa<sup>4</sup>, Jorge Ortiz de Urbina<sup>5</sup>, Rafael Orti<sup>1</sup>, Miguel-Ángel Gómez-Bravo<sup>6</sup>, Alejandra Otero<sup>7</sup>, Evaristo Varo<sup>8</sup>, Santiago Tomé<sup>8</sup>, Gerardo Clemente<sup>9</sup>, Rafael Bañares<sup>9</sup>, Rafael Bárcena<sup>10</sup>, Valentín Cuervas-Mons<sup>11</sup>, Guillermo Solórzano<sup>12</sup>, Carmen Vinaixa<sup>3</sup>, Ángel Rubín<sup>3</sup>, Jordi Colmenero<sup>4</sup>, Andrés Valdivieso<sup>5</sup>, Rubén Ciria<sup>1</sup>, César Hervás-Martínez<sup>2</sup>, Manuel de la Mata<sup>1</sup>

**Background & Aims:** There is an increasing discrepancy between the number of potential liver graft recipients and the number of organs available. Organ allocation should follow the concept of benefit of survival, avoiding human-innate subjectivity. The aim of this study is to use artificial-neural-networks (ANNs) for donor-recipient (D-R) matching in liver transplantation (LT) and to compare its accuracy with validated scores (MELD, D-MELD, DRI, P-SOFT, SOFT, and BAR) of graft survival.

**Methods:** 64 donor and recipient variables from a set of 1003 LTs from a multicenter study including 11 Spanish centres were included. For each D-R pair, common statistics (simple and multiple regression models) and ANN formulae for two non-complementary probability-models of 3-month graft-survival and -loss were calculated: a positive-survival (NN-CCR) and a negative-loss (NN-MS) model. The NN models were obtained by using the Neural Net Evolutionary Programming (NNEP) algorithm. Additionally, receiver-operating-curves (ROC) were performed to validate ANNs against other scores.

**Results:** Optimal results for NN-CCR and NN-MS models were obtained, with the best performance in predicting the probability of graft-survival (90.79%) and -loss (71.42%) for each D-R pair, significantly improving results from multiple regressions. ROC curves for 3-months graft-survival and -loss predictions were significantly more accurate for ANN than for other scores in both NN-CCR (AUROC-ANN = 0.80 vs. -MELD = 0.50; -D-MELD = 0.54; -P-SOFT = 0.54; -SOFT = 0.55; -BAR = 0.67 and -DRI = 0.42) and NN-MS (AUROC-ANN = 0.82 vs. -MELD = 0.41; -D-MELD = 0.47; -P-SOFT = 0.43; -SOFT = 0.57, -BAR = 0.61 and -DRI = 0.48).

**Conclusions:** ANNs may be considered a powerful decision-making technology for this dataset, optimizing the principles of justice, efficiency and equity. This may be a useful tool for predicting the 3-month outcome and a potential research area for future D-R matching models.

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# Conclusiones

- La gestión de la lista de espera se encuentra basada en la urgencia.
  - Existe margen de mejora por :
    - 1.- Los propios scores que miden la gravedad
    - 2.- Los scores categorizan mal las excepciones. En nuestro país suponen entre un 30-50% de las listas y existe una gran heterogeneidad en el manejo de las mismas
- Los sistemas mixtos con priorización zonal o incluso nacional deberían de considerarse como paso intermedio: mejoran la mortalidad en lista y no parecen empeorar la supervivencia pos-trasplante. Sería deseable su implantación al menos zonal.
- La incorporación de la inteligencia artificial constituye una herramienta potencialmente mas completa para realizar una gestión mas eficiente.