ilumens
mieux former pour mieux soigner

USPC
Université Sorbonne Paris Cité

Columbia University

Could we predict from lab values that patient's condition is worsening, even if usual vital parameters appear normal ?

We aimed to analyze all biological parameters,
(and in fact made a special insight into **10 parameters)**
in the last **48H before leaving the ICU**
and compared them in **surviving** or **in-hospital deceased** patients

#Team 16

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The TEAM

- **Intensivists**
  - Dr François Antonini
  - Dr Camille Francois
  - Dr Florent Perin-Dureau
  - Pr Alexandre Mignon
- **Datascientists**
  - Simon Berda
  - Hatem Bouabana
  - Remi Lapeyre
  - Theophile Chevalier
  - Arthur Talpaert

BLACK BOX

The Biological Values

pH
PaO2
Lactates
Natremia
Kalemia
Chloride
Hemoglobin
Creatinine
Albumin
Bilirubin

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Methods

- Data cleaning & Extraction
- Transformation
- Feature Engineering
- POC with pH
- **Decision Tree**
- **Precision** and **Recall** calculation

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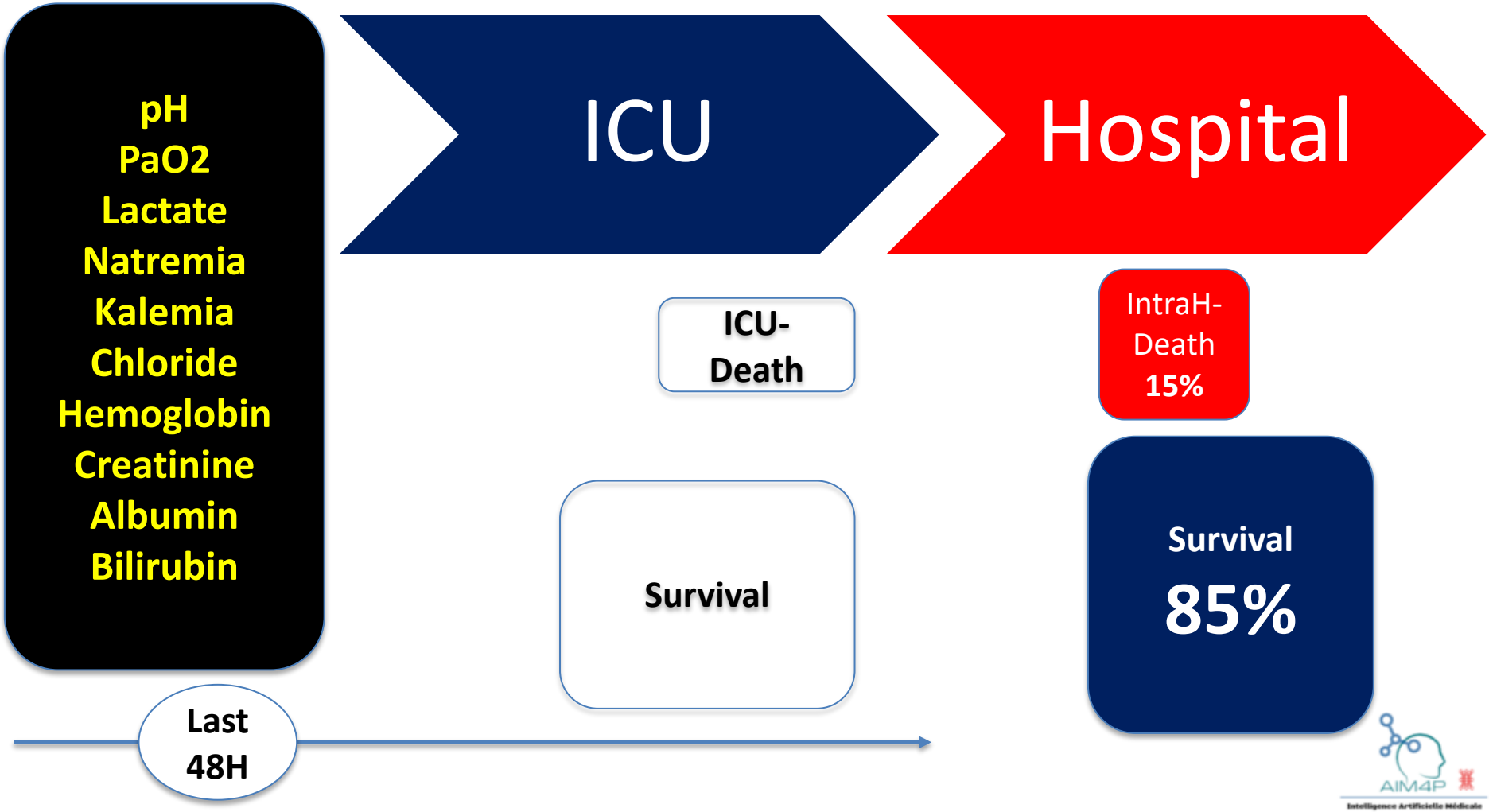
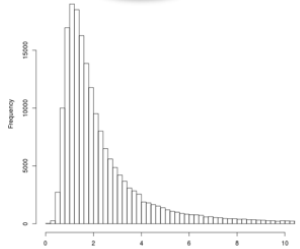
RESULTS

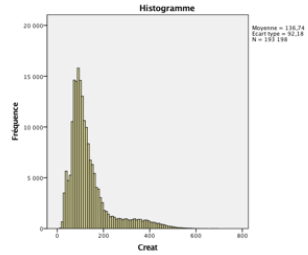

pH
PaO2
Lactate
Natremia
Kalemia
Chloride
Hemoglobin
Creatinine
Albumin
Bilirubin
ICU
Hospital
ICU-
Death
IntraH-
Death
15%
Survival
Survival
85%
Last
48H

Measurements in the last 48H before leaving ICU

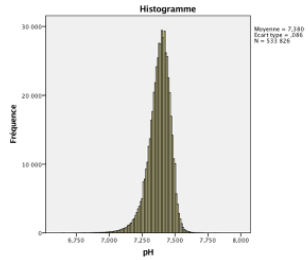
Lactate



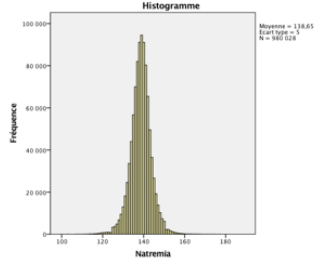
Creat



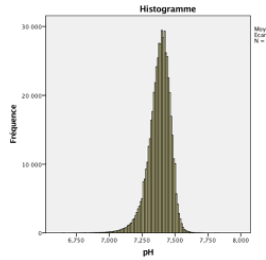
pH

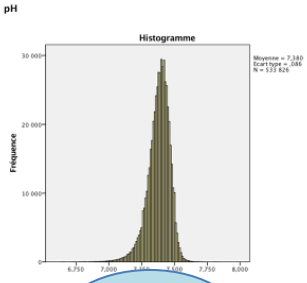


Na

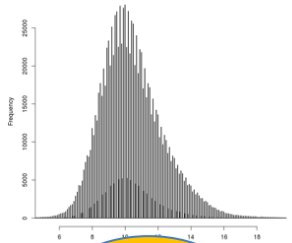


K

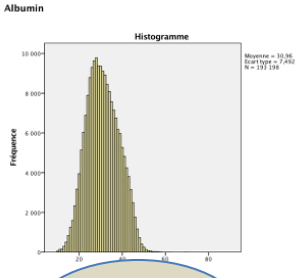




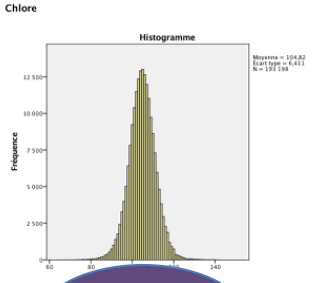
Bili



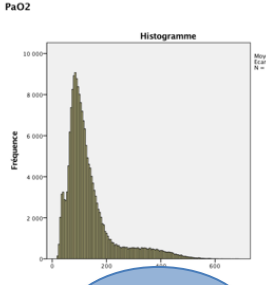
Hb



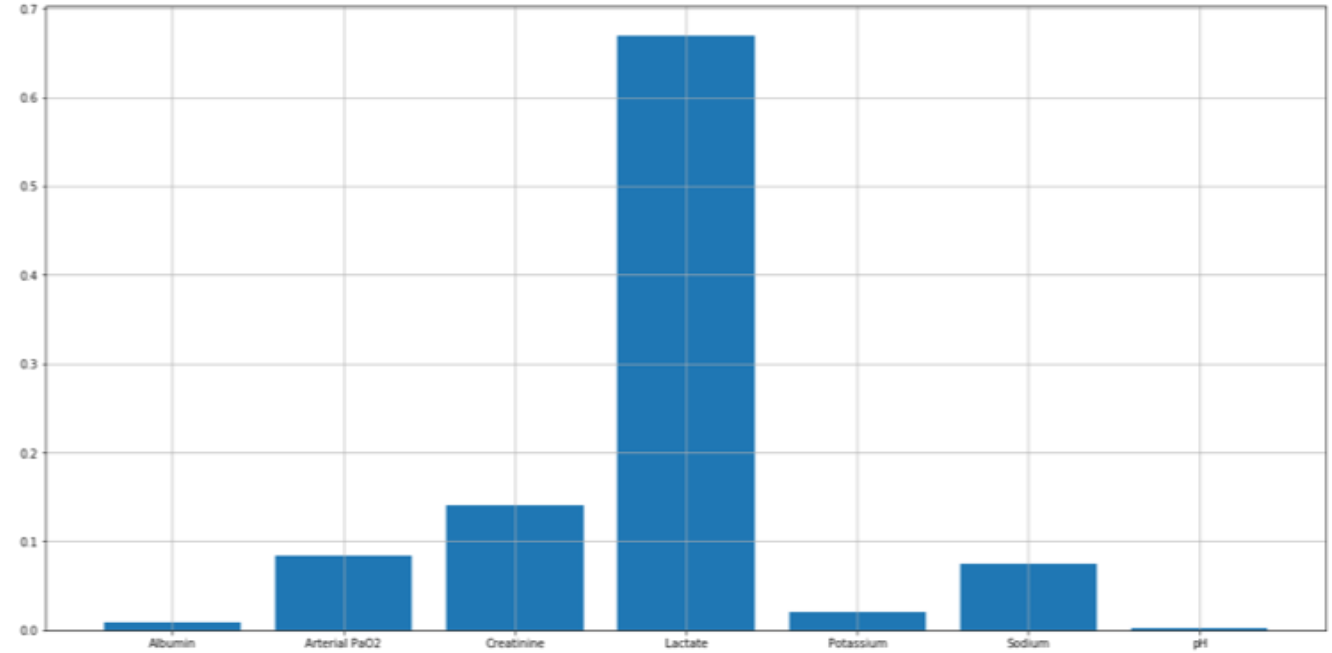
Albumin



Chloride



PO2



98% of patients with normal parameters within the 48H before leaving ICU will survive

75% of deaths could have been detected by abnormal parameters within the 48H before leaving ICU

	precision	recall	f1-score	score
Alive	0.986069	0.54039	0.697552	40334
Dead	0.0492158	0.754283	0.0922745	1265.4

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DISCUSSION

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Next Steps

- Introduce more features in the model
- Test the model between 48/24H before the exit of ICU
- Develop **Biological** Early Warning Score
- Investigate more the Natremia affair
  - Increase or Decrease (since we investigated absolute difference)
- Answer your questions …

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Thanks to our Wonderful Datascientists

Simon Berda, Dauphine
Hatem Bouabana, GE
Remi Lapeyre, Mines
Theophile Chevalier, Mines
Arthur Talpaert, X

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