

# COVID-19:

The use of Jafron Adsorber in severely ill patients

*“Early intervention sees better outcomes”*

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# Executive summary

- In the absence of safe and effective pharmacological treatments, increasing evidence shows **early intervention** with **haemoperfusion** (HP) can have a positive impact on mortality rates and reduce ICU time
- **Early intervention is important:** COVID-19 patients that develop AKI can have a ~5.3 times higher mortality risk than those who don't
- HP using the Jafron Adsorber should be considered in **patients with pre-existing serious life limiting conditions** or in patients who meet the **high risk criteria** (full criteria outlined on slide 8)
- **Significant benefits** in COVID-19 patients showed decreased serum cytokine levels at 72h, improved oxygen supply, decreased mortality rate at day 28 day and longer ICU-free days
- Assessment of patient eligibility at **day 10 of infection** or earlier if patient has deteriorated
- For any patients who don't show enough benefit within 24h (slide 10), 2 Adsorbers will be replaced **free of charge**



# Relevant recommendations for ICUs in COVID-19 management



Early recognition  
and treatment of  
critical patients

- Identify biomarkers to predict severity and outcomes in patients e.g. severe lymphopenia, high levels of CRP associated with higher mortality risk<sup>1,4,11</sup>



Disease  
management in  
the ICU

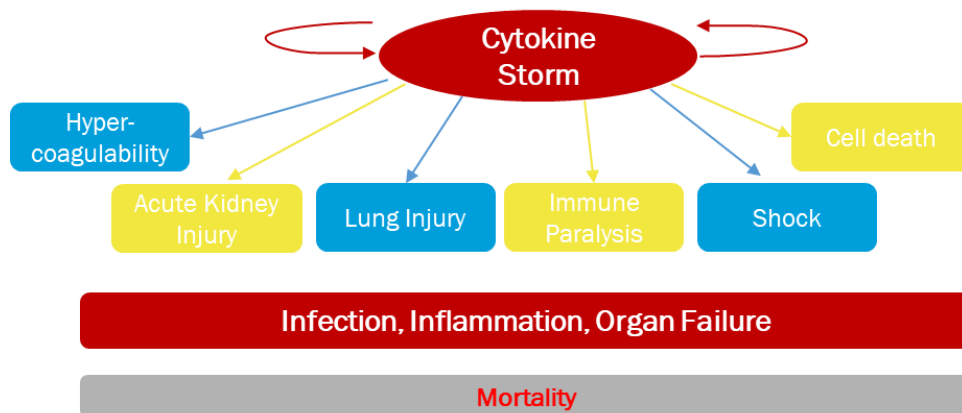
- Focus on high risk patients e.g. male, >63, comorbidities etc.
- In the absence of safe and effective pharmacological treatments consider extracorporeal organ support (ECOS) therapies for haemodynamic support and organ function recovery<sup>1,2,7</sup>
- Shift focus from antivirals: over 300 clinical trials testing targeted therapeutic drugs to treat COVID-19 yet results so far are inconclusive<sup>5,15</sup>



# COVID-19: Context



- The virus infects the respiratory epithelium of the lower airways, causing widespread damage<sup>12</sup>



- In severely ill COVID-19 patients, cytokine storm has been widely reported<sup>12, 13, 14</sup>
- Can lead to a number of a number of serious complications including hyper-coagulability and AKI<sup>14</sup>
- Within a short time cytokine storm can lead to multiple organ failure and mortality<sup>7, 13, 14</sup>
- Cytokine storm has been sited as one of the key causes of mortality in severely ill COVID-19 patients<sup>3</sup>

A number of recently published papers, reports and guidelines recommend blood purification for severe and critically ill patients with early or mid-term cytokine storm<sup>2,3,7</sup>



# NICE technology appraisal: Jafron Adsorber

## NICE

National Institute for  
Health and Care Excellence



### KEY POINTS OF EVIDENCE

- Main points of evidence from a non-randomised comparative single arm observational study & case reports including 56 COVID-19 patients with respiratory failure<sup>17</sup>
- Indicators for starting treatment in COVID-19 patients include **severe ARDS** with/without suspected **AKI, raised inflammatory biomarkers** or **hypotension**<sup>17</sup>
- **Early intervention is key**<sup>17</sup>: if patients develop AKI stage II/III and/or are ventilated/with severe ARDS, outcomes and clinical management is negatively impacted

### EXPERT EXPERIENCE & OPINION

- **5 experts** contributed to the technology appraisal<sup>17</sup>
- They acknowledged the technology may result in patient benefits such as, **increased rate of recovery, reduced complications** because of elevated cytokine levels and **reduced mortality**<sup>17</sup>
- The technology was described as a **simple, and relatively fast acting safe treatment** that can be repeated<sup>17</sup>
- Experts acknowledged that this technology could be **cost saving**<sup>17</sup>

### RESOURCE IMPACT

- 3 technologies assessed with costs ranging from £450 - £1,785<sup>17</sup>
- The **Jafron Adsorber** is reported as having the **lowest cost**<sup>17</sup>
- Haemofiltration machines are available across all NHS trusts and ECMO machines in ~8 trusts<sup>17</sup>



# Rationale for HP using the Jafron Adsorber



- Cytokine adsorption is an **established and safe therapeutic option** and can demonstrate a reduction in cytokines<sup>3,6,7</sup>
- **Since 2002**, the Jafron Adsorber has been used safely in **~30,000 treatments/year** in a variety of conditions<sup>6</sup>



- **Fast response:** outcome of cytokine adsorption therapy is usually clear within 24h<sup>3</sup>

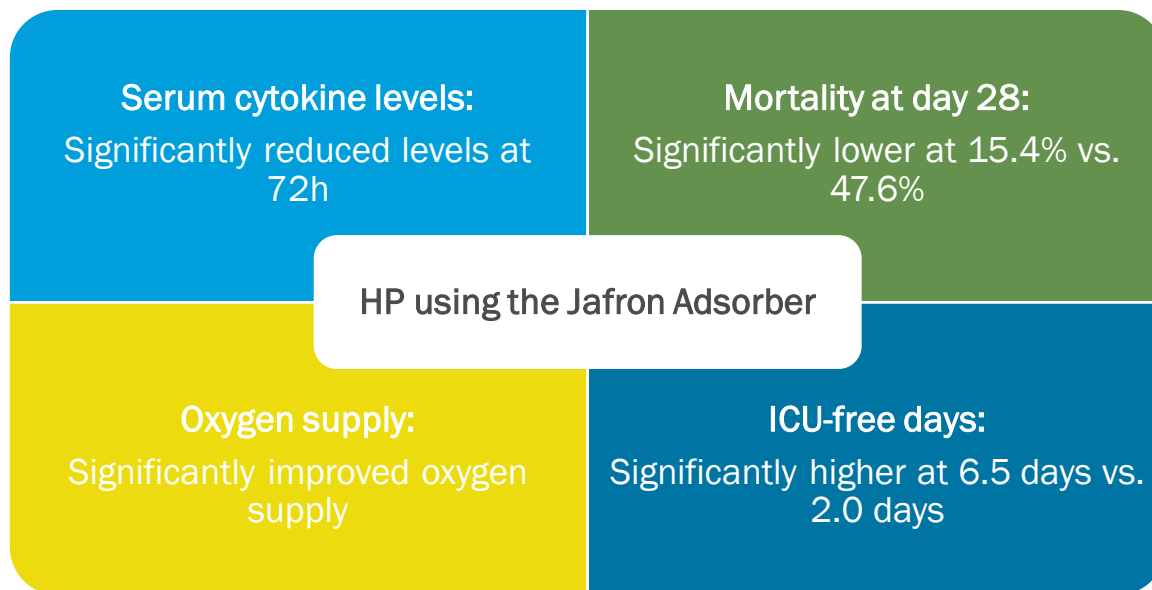


- **Early intervention**, by day 10 of infection, allows a **high probability of significant clinical improvement after the first 24h of therapy** and continues over the next 48h<sup>3,11</sup>



## Rationale for HP using the Jafron Adsorber

The report entitled “Cytokine adsorbers for the treatment of cytokine storm in people with severe coronavirus infection” highlights the following in severe COVID-19 patients receiving HP treatment<sup>3</sup>:



Early intervention, before AKI develops, sees mortality risk drop ~5.3 times<sup>14</sup>



# Clinical criteria for Jafron Adsorber usage in severely ill COVID-19 patients

- Patients with pre-existing serious life limiting conditions<sup>1</sup>
- OR**
- Patients aged >63<sup>1</sup>. At day 10 (or earlier if condition has deteriorated) of infection note clinical presentation and send bloods for assessment of laboratory parameters associated with COVID-19 patient outcomes<sup>11</sup>
  - **Patient setting: COVID-19 ward, high dependency unit or ICU**

## CLINICAL PRESENTATION

1. Respiratory function:
  - Respiratory rate >24/min<sup>11</sup>,
  - Oxygen saturation <92%<sup>2</sup>
  - PaO<sub>2</sub>/FiO<sub>2</sub> ratio >200, <300 mmHg<sup>2,9</sup>
2. Pulse rate >105 beats/min<sup>13</sup>
3. AKI stage 1
4. Vasopressor support<sup>2</sup>
5. Temperature >37.3<sup>13</sup>

## LABORATORY TESTS

1. Lymphocyte count <0.8<sup>4</sup>
2. LDH > 245 U/L<sup>8,9,11</sup>
3. D-Dimer >0.8ug/ml<sup>8, 10, 11</sup>
4. Serum ferritin >500 ug/L<sup>11</sup>
5. CRP > 40mg/L<sup>4,8</sup>
6. Lactate level >1.6 mmol/L<sup>9</sup>
7. Creatine Kinase >190U/L (M) or >155U/L (F)<sup>8,11</sup> or high sensitivity cardiac troponin 1 > 22 pg/ml<sup>16</sup>

**Early intervention offer criteria: If 3 of the clinical presentations are met and 4 of the laboratory results commence cytokine adsorption**





# Expected clinical and laboratory test outcomes

## CLINICAL PRESENTATION\*

1. Respiratory function:
  - Respiratory rate  $>24/\text{min}$  - **20% improvement**,
  - Oxygen saturation  $<92\%$  - **Increase expected**,
  - PaO<sub>2</sub>/FiO<sub>2</sub> ratio  $>200 <300 \text{ mmHg}$  - **20% improvement**
2. Pulse rate  $>105 \text{ beats/min}$  – **Reduction expected**
3. AKI stage 1 – **No progression expected**
4. Vasopressor support – **50% reduction**
5. Temperature  $>37.3$  - **Reduction expected**

\*All expected clinical presentation outcomes after 24h

## LABORATORY TESTS

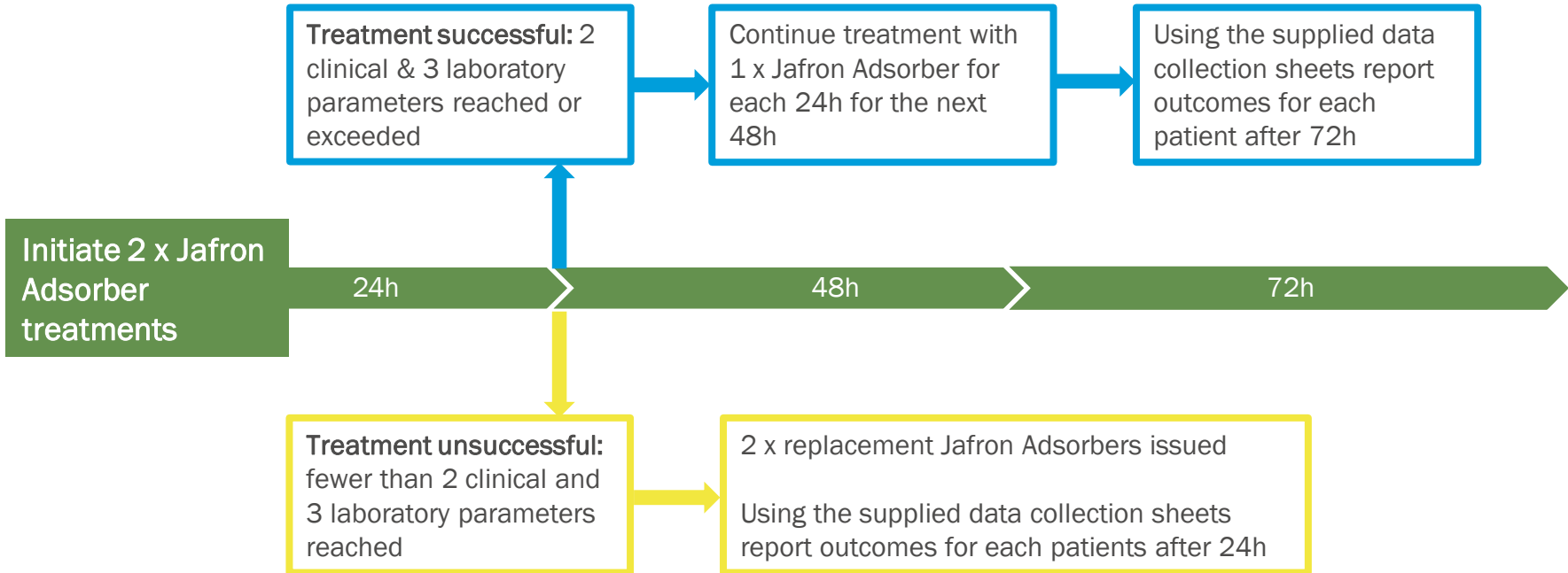
1. Lymphocyte count  $<0.8$  - **Increase expected after 72h**
2. LDH  $>245 \text{ U/L}$  – **20% reduction after 24h**
3. D-Dimer  $>1\mu\text{g/ml}$  - **20% reduction after 24h**
4. Serum ferritin  $>500 \text{ }\mu\text{g/L}$  - **20% reduction after 24h**
5. CRP  $>40\text{mg/L}$  - **20% reduction after 24h**
6. Lactate level  $>1.6 \text{ mmol/L}$  - **20% reduction after 24h**
7. Creatine Kinase  $>190\text{U/L}$  (M) or  $>155\text{U/L}$  (F) - **20% reduction after 24h** or high sensitivity cardiac troponin  $1>22 \text{ pg/ml}$  - **Reduction expected**

**Treatment is concluded as successful if at least 2 clinical and 3 laboratory parameters achieved**

\*\* Please note, clinical and laboratory outcome values based on general physician consensus of improved prognosis and treatment success



## Early intervention offer: treatment scenarios and reporting



\* Patients on immunosuppressive medication may need dose adjustments or additional monitoring. A list of medications that could be affected will be supplied.

\*\* This is not a clinical trial. Returning all relevant data on laboratory and clinical parameters will help to better understand the management of COVID-19 infections and to optimise the outcomes criteria. We will produce a registry of patient data that will be shared with clinicians in due course.



## Summary of benefits and economic considerations

Since 2002, it has been used safely in approximately 30,000 treatments per year in a variety of conditions<sup>6</sup>

Early intervention, before AKI develops, **mortality risk drops ~5.3 times** <sup>14</sup>

Decrease in serum cytokine levels at 72h  
Improved oxygen supply  
Decrease in mortality rate at day 28 day  
Longer ICU-free days<sup>3</sup>



**Jafron  
Adsorber**

- **Offer cost** (patient criteria met):  
£600 + VAT

**Laboratory testing:** 14-26 tests/patient expected during intervention (some of which may already be in the process of monitoring and therefore could be excluded from economic considerations)

**This therapeutic strategy and early intervention offer is now available. Please get in touch if you would like to know more about this offer and further information on how to adopt this in your patients. Note: early intervention is key to maximising benefits of the outcomes and offer.**



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