**Appendix 1 –** Major issues concerning SARS-CoV-2 in the neonate born from mother with SARS-CoV-2 infection

| Delivery Room Management  |  | Articles and guidelines  |  |
|---|--|--|--|
| Umbilical<br>cord<br>clamping<br>(early <i>versus</i>   | Given a lack of evidence to the contrary, <b>delayed</b><br><b>cord clamping is still recommended</b> , provided<br>there are no other contraindications.  | WHO guidelines <sup>1</sup><br>Obstetrician and<br>Gynaecologists UK<br>guidelines <sup>2</sup><br>Pregnancy and Labour<br>Portuguese guidelines <sup>3</sup>                                |  |
| delayed<br>cord clamping)   | The baby can be <b>cleaned</b> and <b>dried</b> as normal, while the cord is still intact.   | Obstetrician and<br>Gynaecologists UK<br>guidelines <sup>2</sup>   |  |
|   | <b>Early umbilical cord clamping</b> is recommended with the aim of reducing the possibility of infection.   | Neonatal Portuguese guidelines <sup>4</sup>  |  |
|   | If the mother has suspected SARS-CoV-2 infection<br>and the isolation of both the mother and the newborn<br>is adequate, late cord clamping <b>could be done</b> ,<br>although pros and cons should be analysed<br>individually.   | Neonatal Spanish<br>guidelines⁵  |  |
| Skin-to-skin<br>contact   | If the mother has suspected or confirmed SARS-<br>CoV-2 and if the baby is well and does not require<br>care in the neonatal unit, skin-to-skin contact can be<br>done, although the pros and cons should be<br>analysed individually.<br>If the mother also requests skin-to-skin contact with<br>her infant she should comply with strict preventive<br>precautions. | Obstetrician and<br>Gynaecologists UK<br>guidelines <sup>2</sup> , Neonatal<br>Spanish guidelines <sup>5</sup> ,<br>American neonatal<br>guidelines <sup>6</sup>                             |  |
|   | Skin-to-skin contact is <b>not recommended</b> .   | Pregnancy and Labour<br>and Neonatal<br>Portuguese<br>guidelines <sup>3,4</sup>  |  |
| Neonatal management   |  |  |  |
| Guidelines are consensual in <b>implementing contact and droplet</b><br><b>isolation measures</b> , limiting contacts and clinical and laboratory<br>monitoring of newborns of SARS-CoV-2 suspected or infected<br>mothers.   |  | Neonatal Portuguese <sup>4</sup> ,<br>Spanish <sup>5</sup> , American<br>neonatal guidelines <sup>6</sup><br>and UK guidelines <sup>7</sup>  |  |
|   |  |  |  |
| It is not yet clear whether SARS-CoV-2 can be transmitted via breast<br>milk.<br>Current guidelines recommend breastfeeding in asymptomatic or mild<br>symptomatic infected mothers while ensuring contact and droplet<br>isolation measures. Mechanical extraction of breast milk and<br>administration to the newborn by a healthy caregiver can be an<br>alternative, ensuring preventive isolation measures.<br>Treatment |  | Neonatal Portuguese <sup>4</sup> ,<br>Neonatal Spanish <sup>5</sup> ,<br>American neonatal<br>guidelines <sup>6</sup> ,<br>Pediatrics UK <sup>7</sup> and<br>Italian <sup>8</sup> guidelines |  |
| Until now there is no specific treatment for neonatal SARS-CoV-2 infection.<br>The main goal of treatment should be support measures.   |  | Neonatal Spanish <sup>5</sup> ,<br>Pediatrics UK <sup>7</sup> and<br>Neonatal Portuguese <sup>4</sup>  |  |
| Inappropriate use of antibiotics should be avoided.   |  | guidelines   |  |
| Antiviral<br>drugs  | <b>Lopinavir/Ritonavir</b> is only recommended in<br>neonates with $\geq$ 14 days and after 42 weeks<br>gestational age. Appropriate dosage in preterm<br>infants and neonates < 14 days of age are not known<br>and toxicity in premature infants can be severe. FDA<br>strongly recommends that this drug should be<br>avoided in this age group.                    | Pediatrics Portuguese<br>guidelines <sup>9</sup> , Pediatrics<br>Spanish guidelines <sup>10</sup> ,<br>FDA <sup>11</sup>   |  |

| Consider using oseitamivir until influenza virus   Pediatrics   Portuguese<br>guidelines®     Some guidelines suggest the use of chloroquine<br>and hydroxychloroquine to treat SARS-CoV-2<br>infection in children but there is insufficient<br>information about dosages and toxicity in the<br>neonatal period.   Spanish guidelines®   Pediatrics   Portuguese<br>guidelines     Some guidelines suggest the use of remdesivir to<br>rentically ill patients with mechanical ventilation, but<br>there is insufficient information about dosages and<br>toxicity in the neonatal period.   Pediatrics   Portuguese<br>guidelines <sup>10</sup> Clinical signs in neonates born from mothers with SARS-CoV-2<br>infection   Infection   Chen HJ, et al. <sup>12</sup> 1) – total 9 newborns.   Shortness of breath (n = 6), fever (n = 2), increased heart rate (n = 1),<br>vomiting feeding intolerance (n = 1), refusing milk (n = 1) and gastric<br>bleeding (n = 2), prematurity (n = 6), disseminated intravascular<br>coagulation (n = 2), refractory shoctk, multiple organ failure and death<br>(n = 1) - total 3 newborns.   Zeng L, et al. <sup>14</sup> Pneumonia (n = 3, all newborns with SARS-CoV-2 identified), lethargy<br>vomiting, and fever (n = 1 newborn with SARS-CoV-2 identified), lethargy<br>vomiting, and fever (n = 1 newborn.   Wang S, et al. <sup>15</sup> SARS-CoV-2 PCR screening in neonates born from mothers with<br>SARS-CoV-2 if antified in the same same segnitive (n = 9) - total<br>10 newborns.   Chen HJ, et al. <sup>13</sup> Samples form neonatel throat swab were negative (n = 9) - total<br>10 newborns.   Chen HJ, et al. <sup>14</sup> Samples from nasopharyn  |   |   |                               |
|--|---|---|-------------------------------|
| and hydroxychloroquine to treat SARS-CoV-2<br>infection in children but there is insufficient<br>information about dosages and toxicity in the<br>neonatal period.   guideliness, Pediatrics<br>Spanish guidelines     Some guidelines suggest the use of remdesivir to<br>treat SARS-CoV-2 infection in children, especially in<br>critically ill patients with mechanical ventilation.   Pediatrics     Clinical signs in neonates born from mothers with SARS-CoV-2<br>infection   Pediatrics   Spanish guidelines*, Pediatrics     No clinical symptoms (n = 9), prematurity (n = 4), low birthweight (n =<br>1) – total 9 newborns.   Chen HJ, et al. <sup>12</sup> Zhu H, et al. <sup>13</sup> Shortness of breath (n = 6), fever (n = 2), increased heart rate (n = 1),<br>vomiting feeding intolerance (n = 1), refusing milk (n = 1) and gastric<br>bleeding (n = 2), refractory shock, multiple organ failure and death<br>(n = 1) – total 10 newborns.   Zeng L, et al. <sup>14</sup> Pneumonia (n = 3, all newborns with SARS-CoV-2 identified), lethargy,<br>vomiting, and fever (n = 1 other newborn with SARS-CoV-2 identified).   Wang S, et al. <sup>14</sup> SARS-CoV-2 PCR screening in neonates born from mothers with<br>SARS-CoV-2 identified).   Zhu H, et al. <sup>13</sup> Samples collected from annotic fluid, cord blood and neonatal throat<br>swab were negative (n = 6) – total 9 newborns.   Zhu H, et al. <sup>14</sup> All samples from neonatal throat swab were negative (n = 9) – total<br>10 newborns.   Zhu H, et al. <sup>14</sup> Other Haboratory test findings in neonates   Zeng L, et al. <sup>14</sup> Nails apples from neospharyng   |   |   |                               |
| Ireat SÅRS-CoV-2 infection in children, especially in guidelines <sup>9</sup> , Pediatrics Spanish guidelines <sup>10</sup> guidelines <sup>9</sup> , Pediatrics Spanish guidelines <sup>10</sup> Clinical signs in neonates born from mothers with SARS-CoV-2 infection No clinical symptoms (n = 9), prematurity (n = 4), low birthweight (n = 1), -total 9 newborns.   Shortness of breath (n = 6), fever (n = 2), increased heart rate (n = 1), vomting/ feeding intolerance (n = 1), effusing milk (n = 1) and gastric bleeding (n = 2), prematurity (n = 6), disseminated intravascular coagulation (n = 2), refractory shock, multiple organ failure and death (n = 1) - total 30 newborns. Znu H, et al. <sup>13</sup> Pneumonia (n = 3, all newborns with SARS-CoV-2 identified), lethargy and fever (n = 1 other newborn with SARS-CoV-2 identified), lethargy and fever (n = 1 other newborn with SARS-CoV-2 identified), lethargy vomiting, and fever (n = 1 the third newborn. Wang S, et al. <sup>14</sup> SARS-CoV-2 PCR screening in neonates born from mothers with SARS-CoV-2 identified), respiratory distress syndrome, shortness of breath, cyanosis and feeding intolerance (n = 1 the third newborn. Wang S, et al. <sup>15</sup> Samples collected from amniotic fluid, cord blood and neonatal throat swab were negative (n = 6) - total 3 newborns. Zhu H, et al. <sup>13</sup> All samples from neonatal throat swab were negative (n = 9) - total 3 newborns. Zhu H, et al. <sup>14</sup> Positive paryngeal swab at 36 hours after birth. Negative cord blood, placenta and breastmilk specimens – 1 newborn. Zhu H, et al. <sup>14</sup> Positive igM antibodies to SARS-CoV-2 (2 hours after birth) – 1 Dong L, et al. <sup>16</sup> Nang S, et al. <sup>16</sup> <td></td> <td>and hydroxychloroquine to treat SARS-CoV-2 infection in children but there is insufficient information about dosages and toxicity in the neonatal period.</td> <td>guidelines9, Pediatrics</td> |   | and hydroxychloroquine to treat SARS-CoV-2 infection in children but there is insufficient information about dosages and toxicity in the neonatal period.   | guidelines9, Pediatrics       |
| Infection   Infection     No clinical symptoms (n = 9), prematurity (n = 4), low birthweight (n =   Chen HJ, et al. <sup>12</sup> Shortness of breath (n = 6), fever (n = 2), increased heart rate (n = 1), vomiting/ feeding intolerance (n = 1), refusing milk (n = 1) and gastric bleeding (n = 2), prematurity (n = 6), disseminated intravascular cagulation (n = 2), refractory shock, multiple organ failure and death (n = 1) – total 10 newborns.   Zhu H, et al. <sup>13</sup> Pneumonia (n = 3, all newborns with SARS-CoV-2 identified), lethargy, vomiting, and fever (n = 1 other newborn with SARS-CoV-2 identified), lethargy, vomiting, and fever (n = 1 the third newborn with SARS-CoV-2 identified), lethargy, identified – total 33 newborns.   Zeng L, et al. <sup>14</sup> SARS-CoV-2 PCR screening in neonates born from mothers with SARS-CoV-2 identified), lethargy and fever negative (n = 6) – total 9 newborns.   Wang S, et al. <sup>15</sup> Samples collected from anniotic fluid, cord blood and neonatal throat swab were negative (n = 6) – total 9 newborns.   Chen HJ, et al. <sup>12</sup> All samples from neonatal throat swab were negative (n = 9) – total   Zhu H, et al. <sup>13</sup> 10 newborns.     3 samples from nasopharyngeal and anal swabs were positive on days 2 and 4 – total 33 newborns.   Wang S, et al. <sup>14</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood, placenta and breastmik specimens – 1 newborn.   Wang S, et al. <sup>15</sup> Diacenta and breastmik specimens – 1 newborn.   Chen HJ, et al. <sup>13</sup> 10 newborns.     Cherel  |   | treat SARS-CoV-2 infection in children, especially in critically ill patients with mechanical ventilation, but there is insufficient information about dosages and toxicity in the neonatal period. | guidelines9, Pediatrics       |
| 1) - total 9 newborns. Zhu H, et al. <sup>13</sup> Shortness of breath (n = 6), fever (n = 2), increased heart rate (n = 1), zhort and gastric bleeding (n = 2), prematurity (n = 6), disseminated intravascular coagulation (n = 2), refractory shock, multiple organ failure and death (n = 1) - total 10 newborns. Zhu H, et al. <sup>13</sup> Pneumonia (n = 3, all newborns with SARS-CoV-2 identified), lethargy, and fever (n = 1 other newborn with SARS-CoV-2 identified), lethargy, vomiting, and fever (n = 1 other newborn with SARS-CoV-2 identified), respiratory distress syndrome, shortness of breath, cyanosis and feeding intolerance (n = 1 the third newborn with SARS-CoV-2 identified), respiratory distress syndrome, shortness of breath, cyanosis and feeding intolerance – total 1 newborn. Wang S, et al. <sup>14</sup> SARS-CoV-2 PCR screening in neonates born from mothers with SARS-CoV-2 identified). SARS-CoV-2 identified).   Samples collected from amniotic fluid, cord blood and neonatal throat swab were negative (n = 6) – total 9 newborns. Chen HJ, et al. <sup>12</sup> All samples from neonatal throat swab were negative (n = 9) – total 3 newborns. Zhu H, et al. <sup>13</sup> 3 samples from nasopharyngeal and anal swabs were positive on days 2 and 4 – total 3 newborns. Wang S, et al. <sup>16</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood, placenta and breastmilk specimens – 1 newborn. Wang S, et al. <sup>16</sup> Nild increase in myocardial enzymes (n = 1) – total 9 newborns. Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) – Zhu H, et al. <sup>13</sup> Zeng   |   |   |                               |
| vomitling/ feeding intolerance (n = 1), refusing milk (n = 1) and gastric<br>bleeding (n = 2), prematurity (n = 6), disseminated intravascular<br>coagulation (n = 2), refractory shock, multiple organ failure and death<br>(n = 1) – total 10 newborns.   Pneumonia (n = 3, all newborns with SARS-CoV-2 identified), lethargy,<br>vomiting, and fever (n = 1 other newborn with SARS-CoV-2 identified),<br>respiratory distress syndrome, shortness of breath, cyanosis and<br>feeding intolerance (n = 1 the third newborn with SARS-CoV-2<br>identified) – total 33 newborns. Zeng L, <i>et al.</i> <sup>14</sup> Feeding intolerance (n = 1 the third newborn with SARS-CoV-2<br>identified) – total 33 newborns. Wang S, <i>et al.</i> <sup>15</sup> SARS-CoV-2 PCR screening in neonates born from mothers with<br>SARS-CoV-2 infection Chen HJ, <i>et al.</i> <sup>12</sup> Samples collected from amniotic fluid, cord blood and neonatal throat<br>swab were negative (n = 6) – total 9 newborns. Chen HJ, <i>et al.</i> <sup>13</sup> 10 newborns. Zang L, et al. <sup>14</sup> days 2 and 4 – total 33 newborns. Zeng L, et al. <sup>14</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood,<br>placenta and breastmilk specimens – 1 newborn. Wang S, et al. <sup>15</sup> Positive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1<br>newborns. Dong L, et al. <sup>16</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns. Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) –<br>zhu H, et al. <sup>13</sup> Zeng L, et al. <sup>14</sup> Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fractio  | 1) – total 9 newb   |   |                               |
| Pneumonia (n = 3, all newborns with SARS-CoV-2 identified), lethargy, vomiting, and fever (n = 1 newborn with SARS-CoV-2 identified), lethargy, vomiting, and fever (n = 1 other newborn with SARS-CoV-2 identified), respiratory distress syndrome, shortness of breath, cyanosis and feeding intolerance (n = 1 the third newborn with SARS-CoV-2 identified) – total 33 newborns. Zeng L, et al. <sup>14</sup> Feeding intolerance (n = 1 the third newborn with SARS-CoV-2 identified) – total 33 newborns. Wang S, et al. <sup>15</sup> SARS-CoV-2 PCR screening in neonates born from mothers with SARS-CoV-2 infection Wang S, et al. <sup>15</sup> Samples collected from amniotic fluid, cord blood and neonatal throat swab were negative (n = 9) – total 9 newborns. Chen HJ, et al. <sup>12</sup> All samples from neonatal throat swab were negative (n = 9) – total 33 newborns. Zhu H, et al. <sup>13</sup> 3 samples from nasopharyngeal and anal swabs were positive on days 2 and 4 – total 33 newborns. Wang S, et al. <sup>16</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood, placenta and breastmilk specimens – 1 newborn. Dong L, et al. <sup>14</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns. Dong L, et al. <sup>16</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns. Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) – total 10 newborns. Zeng L, et al. <sup>14</sup> Leukocytosis, lymphocytopenia and elevated creatine kinase–MB fraction (n = 1), increased procalcitonin without other changes (n = 1), normal laboratory test r  | vomiting/ feeding<br>bleeding (n = 2<br>coagulation (n =  | Zhu H, <i>et al</i> . <sup>13</sup>   |                               |
| Feeding intolerance – total 1 newborn. Wang S, et al. <sup>15</sup> SARS-CoV-2 PCR screening in neonates born from mothers with<br>SARS-CoV-2 infection Wang S, et al. <sup>15</sup> Samples collected from amniotic fluid, cord blood and neonatal throat<br>swab were negative (n = 6) – total 9 newborns. Chen HJ, et al. <sup>12</sup> All samples from neonatal throat swab were negative (n = 9) – total<br>10 newborns. Zhu H, et al. <sup>13</sup> 3 samples from nasopharyngeal and anal swabs were positive on<br>days 2 and 4 – total 30 newborns. Zeng L, et al. <sup>14</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood,<br>placenta and breastmilk specimens – 1 newborn. Wang S, et al. <sup>15</sup> Positive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1<br>newborn. Dong L, et al. <sup>16</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns. Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) –<br>total 10 newborns. Zhu H, et al. <sup>13</sup> Leukocytosis, lymphocytopenia and clevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns. Wang S, et al. <sup>15</sup> Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn. Wang S, et al. <sup>15</sup> Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1),  | Pneumonia (n = 3<br>and fever (n =<br>vomiting, and fev<br>respiratory distre<br>feeding intolerar  | Zeng L, <i>et al.</i> <sup>14</sup>   |                               |
| SARS-CoV-2 PCR screening in neonates born from mothers with<br>SARS-CoV-2 infection   Chen HJ, et al. <sup>12</sup> Samples collected from amniotic fluid, cord blood and neonatal throat<br>swab were negative (n = 6) – total 9 newborns.   Chen HJ, et al. <sup>12</sup> All samples from neonatal throat swab were negative (n = 9) – total<br>10 newborns.   Zhu H, et al. <sup>13</sup> 3 samples from nasopharyngeal and anal swabs were positive on<br>days 2 and 4 – total 33 newborns.   Zeng L, et al. <sup>14</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood,<br>placenta and breastmilk specimens – 1 newborn.   Wang S, et al. <sup>15</sup> Positive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1<br>newborn.   Dong L, et al. <sup>16</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns.   Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) –<br>total 10 newborns.   Zhu H, et al. <sup>13</sup> Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns.   Wang S, et al. <sup>14</sup> Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn.   Zhu H, et al. <sup>13</sup> Nonspecific findings (n = 3), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) – total 10 newborns   Zhu H, et al  |   | Wang S, et al. <sup>15</sup>  |                               |
| Samples collected from amniotic fluid, cord blood and neonatal throat<br>swab were negative (n = 6) – total 9 newborns. Chen HJ, et al. <sup>12</sup> All samples from neonatal throat swab were negative (n = 9) – total<br>10 newborns. Zhu H, et al. <sup>13</sup> 3 samples from nasopharyngeal and anal swabs were positive on<br>days 2 and 4 – total 33 newborns. Zeng L, et al. <sup>14</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood,<br>placenta and breastmilk specimens – 1 newborn. Wang S, et al. <sup>15</sup> Positive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1<br>newborn. Dong L, et al. <sup>16</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns. Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) –<br>total 10 newborns. Zeng L, et al. <sup>14</sup> Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns. Zeng L, et al. <sup>14</sup> Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn. Zhu H, et al. <sup>13</sup> Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) – total 10 newborns Zhu H, et al. <sup>14</sup> Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) – total 33 newborns. Zhu H, et al. <sup>1</sup>   |   |   |                               |
| swab were negative (n = 6) - total 9 newborns.All samples from neonatal throat swab were negative (n = 9) - total<br>10 newborns.Zhu H, et al.133 samples from nasopharyngeal and anal swabs were positive on<br>days 2 and 4 - total 33 newborns.Zeng L, et al.14Positive pharyngeal swab at 36 hours after birth. Negative cord blood,<br>placenta and breastmilk specimens – 1 newborn.Other laboratory test findings in neonatesPositive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1<br>newborn.Dong L, et al.16Mild increase in myocardial enzymes (n = 1) - total 9 newborns.Chen HJ, et al.12Thrombocytopenia complicated with abnormal liver function (n = 2) -<br>total 10 newborns.Zhu H, et al.13Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) - total 33 newborns.Wang S, et al.15Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn.Wang S, et al.15Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) - total 10 newbornsZhu H, et al.13Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) - total 33 newborns.Zhu H, et al.14   |   |   |                               |
| 10 newborns. Zeng L, et al. <sup>14</sup> 3 samples from nasopharyngeal and anal swabs were positive on days 2 and 4 - total 33 newborns. Zeng L, et al. <sup>14</sup> Positive pharyngeal swab at 36 hours after birth. Negative cord blood, placenta and breastmilk specimens – 1 newborn.   Other laboratory test findings in neonates   Positive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1 Dong L, et al. <sup>16</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns. Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) – Zhu H, et al. <sup>13</sup> Zeng L, et al. <sup>14</sup> Ital 10 newborns. Leukocytosis, lymphocytopenia and elevated creatine kinase–MB fraction (n = 1), increased procalcitonin without other changes (n = 1), suspected sepsis, with an Enterobacter positive blood culture, leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal laboratory test results (n = 30) – total 33 newborns. Wang S, et al. <sup>15</sup> Lymphopenia, increased aminotransferase, increased total bilirubin and elevated creatine kinase – total 1 newborn. Wang S, et al. <sup>15</sup> Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax (n = 1), normal (n = 3) – total 10 newborns Zhu H, et al. <sup>13</sup> Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory Zeng L, et al. <sup>14</sup> Zeng L, et al. <sup>14</sup>  | swab were nega  |   |                               |
| days 2 and 4 - total 33 newborns.Wang S, et al.15Positive pharyngeal swab at 36 hours after birth. Negative cord blood,<br>placenta and breastmilk specimens - 1 newborn.Other laboratory test findings in neonatesPositive IgM antibodies to SARS-CoV-2 (2 hours after birth) - 1<br>newborn.Dong L, et al.16Mild increase in myocardial enzymes (n = 1) - total 9 newborns.Chen HJ, et al.12Thrombocytopenia complicated with abnormal liver function (n = 2) -<br>total 10 newborns.Zhu H, et al.13Leukocytosis, lymphocytopenia and elevated creatine kinase-MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) - total 3 newborns.Wang S, et al.15Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase - total 1 newborn.Wang S, et al.15Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) - total 10 newbornsZhu H, et al.13Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) - total 33 newborns.Zeng L, et al.14  |   | Zhu H, et al. <sup>13</sup>   |                               |
| Positive pharyngeal swab at 36 hours after birth. Negative cord blood,<br>placenta and breastmilk specimens – 1 newborn.Wang S, et al.15Other laboratory test findings in neonatesDong L, et al.16Positive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1<br>newborn.Dong L, et al.16Mild increase in myocardial enzymes (n = 1) – total 9 newborns.Chen HJ, et al.12Thrombocytopenia complicated with abnormal liver function (n = 2) –<br>total 10 newborns.Zhu H, et al.13Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns.Wang S, et al.15Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn.Wang S, et al.15Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) – total 10 newbornsZhu H, et al.13Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) – total 33 newborns.Zhu H, et al.14   |   |   | Zeng L, et al. <sup>14</sup>  |
| Other laboratory test findings in neonatesPositive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1Dong L, et al. <sup>16</sup> newborn.Mild increase in myocardial enzymes (n = 1) – total 9 newborns.Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) –Zhu H, et al. <sup>13</sup> total 10 newborns.Leukocytosis, lymphocytopenia and elevated creatine kinase–MBZeng L, et al. <sup>14</sup> fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns.Wang S, et al. <sup>15</sup> Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn.Wang S, et al. <sup>15</sup> Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) – total 10 newbornsZhu H, et al. <sup>13</sup> Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) – total 33 newborns.Zeng L, et al. <sup>14</sup>   | Positive pharyng  | Wang S, et al. <sup>15</sup>  |                               |
| Positive IgM antibodies to SARS-CoV-2 (2 hours after birth) – 1<br>newborn.Dong L, et al. <sup>16</sup> Mild increase in myocardial enzymes (n = 1) – total 9 newborns.Chen HJ, et al. <sup>12</sup> Thrombocytopenia complicated with abnormal liver function (n = 2) –<br>total 10 newborns.Zhu H, et al. <sup>13</sup> Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns.Zeng L, et al. <sup>14</sup> Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn.Wang S, et al. <sup>15</sup> Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) – total 10 newbornsZhu H, et al. <sup>13</sup> Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) – total 33 newborns.Zeng L, et al. <sup>14</sup>  |   |   |                               |
| Thrombocytopenia complicated with abnormal liver function (n = 2) –<br>total 10 newborns.Zhu H, et al.13Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns.Zeng L, et al.14Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn.Wang S, et al.15Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) – total 10 newbornsZhu H, et al.13Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) – total 33 newborns.Zeng L, et al.14   | Positive IgM an   |   | Dong L, et al. <sup>16</sup>  |
| total 10 newborns.Zeng L, et al.14Leukocytosis, lymphocytopenia and elevated creatine kinase–MB<br>fraction (n = 1), increased procalcitonin without other changes (n = 1),<br>suspected sepsis, with an Enterobacter positive blood culture,<br>leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal<br>laboratory test results (n = 30) – total 33 newborns.Zeng L, et al.14Lymphopenia, increased aminotransferase, increased total bilirubin<br>and elevated creatine kinase – total 1 newborn.Wang S, et al.15Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax<br>(n = 1), normal (n = 3) – total 10 newbornsZhu H, et al.13Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia (n = 1) – total 33 newborns.Zeng L, et al.14   | Mild increase in r  | myocardial enzymes (n = 1) – total 9 newborns.  | Chen HJ, et al. <sup>12</sup> |
| Leukocytosis, lymphocytopenia and elevated creatine kinase–MB Zeng L, et al. <sup>14</sup> fraction (n = 1), increased procalcitonin without other changes (n = 1), Zeng L, et al. <sup>14</sup> suspected sepsis, with an Enterobacter positive blood culture, leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal   laboratory test results (n = 30) – total 33 newborns. Wang S, et al. <sup>15</sup> Lymphopenia, increased aminotransferase, increased total bilirubin and elevated creatine kinase – total 1 newborn. Wang S, et al. <sup>15</sup> Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax Zhu H, et al. <sup>13</sup> (n = 1), normal (n = 3) – total 10 newborns Zhu H, et al. <sup>14</sup> Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory Zeng L, et al. <sup>14</sup>   |   |   | Zhu H, et al. <sup>13</sup>   |
| and elevated creatine kinase – total 1 newborn.   Chest radiographic image   Infections (n = 4), neonatal respiratory distress (n = 2), pneumothorax   (n = 1), normal (n = 3) – total 10 newborns   Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory   Zeng L, et al. <sup>14</sup> distress and pneumonia (n = 1) – total 33 newborns.   | fraction (n = 1), increased procalcitonin without other changes (n = 1), suspected sepsis, with an Enterobacter positive blood culture, leukocytosis, thrombocytopenia and coagulopathy (n = 1), normal |   | Zeng L, et al. <sup>14</sup>  |
| Infections (n = 4), neonatal respiratory distress (n = 2), pneumothoraxZhu H, et al.13 $(n = 1)$ , normal $(n = 3) - total 10$ newbornsZhu H, et al.13Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratory<br>distress and pneumonia $(n = 1) - total 33$ newborns.Zeng L, et al.14  |   | Wang S, et al. <sup>15</sup>  |                               |
| (n = 1), normal $(n = 3)$ – total 10 newbornsNonspecific findings $(n = 30)$ , pneumonia $(n = 2)$ , neonatal respiratoryZeng L, et al. <sup>14</sup> distress and pneumonia $(n = 1)$ – total 33 newborns.  |   |   |                               |
| Nonspecific findings (n = 30), pneumonia (n = 2), neonatal respiratoryZeng L, et al.14distress and pneumonia (n = 1) – total 33 newborns. $Zeng L, et al.14$   |   | Zhu H, et al. <sup>13</sup>   |                               |
|  | Nonspecific findi   | Zeng L, et al. <sup>14</sup>  |                               |
|  |   | Wang S, et al. <sup>15</sup>  |                               |

## REFERENCES

- 1- World Health Organization. Guideline: Delayed umbilical cord clamping for improved maternal and infant health and nutrition outcomes. Geneva: WHO; 2013.
- Royal College of Obstetricians & Gynaecologists. Coronavirus (COVID-19) Infection in Pregnancy. London: RCOG; 2020.
- 3- Direção Geral da Saúde. Orientação nº 018/2020 de 30/03/2020. COVID-19: Fase de mitigação. Gravidez e parto. Lisboa: DGS; 2020.
- 4- Sociedade Portuguesa de Neonatologia. Recomendações para a abordagem do recémnascido em contacto com a infeção por SARS-CoV-2 (COVID-19). Lisboa: SPN; 2020.
- 5- Sociedad Española de Neonatología. Recomendaciones para el manejo del recién nacido en relacion con la infeccion por SARSCoV-2. Versión 5.0. Fecha 23/03/2020. Madrid: Seneo; 2020.
- 6- Puopolo KM, Hudak ML, Kimberlin DW, Cummings J. Initial guidance: management of infants born to mothers with COVID-19. Itasca: American Academy of Pediatrics Committee on Fetus and Newborn, Section on Neonatal Perinatal Medicine, and Committee on Infectious Disease; 2020.
- 7- Royal College of Paediatrics and Child Health. COVID-19 guidance for paediatric services. London: RCPCH; 2020.
- Davanzo R, Mosca F. Breastfeeding and SARS-CoV-2 infection. Milano: Societá Italiana di Neonatologia; 2020.
- 9- Sociedade Portuguesa de Pediatria. Orientações para a abordagem e tratamento do doente pediátrico com COVID-19. Lisboa: SPP; 2020.
- 10- Associacion Española de Pediatria. Documento de manejo clinico del paciente pediátrico com infeccion por SARS-CoV-2 -Extracto del Documento de Manejo Clínico del Ministerio de Sanidad. Actualización: 29 de marzo de 2020. Madrid: AEP; 2020.
- 11- Food and Drug Administration. USA: Prescribing information Kaletra. Silver Spring FDA; 2016.
- 12- Chen HJ, Guo J, Wang C, Luo F, Yu XC, Xhang W, et al. Clinical characteristics and intrauterine cervical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. Lancet. 2020;395:809-15.
- **13-** Zhu H, Wang L, Fang C, Peng S, Zhang L, Chang G, et al. Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia. Transl Pediatr. 2020;9:51-60.
- 14- Zeng L, Xia S, Yuan W, Yan K, Xiao F, Shao J, et al. Neonatal Early-Onset Infection with SARS-CoV-2 in 33 Neonates Born to Mothers With COVID-19 in Whuan, China. JAMA Pediatr. 2020 (in press). doi:10.1001/jamapediatrics.2020.0878.
- **15-** Wang S, Guo L, Chen L, Liu W, Cao Y, Zhang J, et al. A case report of neonatal COVID-19 infection in China. Clin Infect Dis. 2020 (in press). doi:10.1093/cid/ciaa225.
- 16- Dong L, Tian J, He S, Zhu C, Wang J, Liu C, et al. Possible vertical transmission of SARS-CoV-2 from as infected mother to her newborn. JAMA. 2020 (in press). doi:10.1001/jama.2020.4621.