Table. Current Clinical Trials Involving Mesenchymal Stem Cells for Acute Organ Injury

Acute Organ Injury	Inclusion Criteria	Intervention	Route of MSC administration	Status	Results/Outcomes
Lung : ARDS	-NCT01775774 (University of California San Francisco, United States of America) ✓ 18 years old ✓ MV with PaO_2/FiO_2 < 200 and PEEP > 8 cmH_2O ✓ Bilateral infiltrates on the chest X-ray ✓ No clinical evidence for left atrial hypertension	-Phase I/II multicenter, non randomized, dose escalation clinical study. -Allogeneic bone marrow-derived human MSC. -Comparison of treatment and adverse event rates between the 1, 5 and 10 x 10^6 cells/kg dose cohorts.	IV	Recruiting	-Safety of IV infusion of allogeneic bone marrow-derived human MSC in patients with ARDS.
	-NCT01902082 (Shaoxing Second Hospital, China) ✓ 18-90 years old ✓ ARDS Berlin criteria ✓ Bilateral infiltrates in chest X-ray ✓ No cardiac failure ✓ PaO_2/FiO_2 < 200	-Phase I, controlled, randomized, double blinded clinical study. -Allogeneic adipose-derived human MSC. -1 x 10^6 cells/kg dose versus placebo.	IV	Recruiting	-Safety/Efficacy. -Adverse events. -ICU free days at day 28. -Ventilator free days at day 28. -IL-6, IL-8, SP-D, TNF-α levels.
Kidney : AKI	-NCT00733876 (Inter Mountain Medical Center, Murray, Utah, United States of America) ✓ >18 years old ✓ Elective CABG or cardiac valve surgery ✓ High risk for postoperative AKI ✓ Patent femoral artery without aortic aneurysm ✓ Ability to give informed consent	-Phase I monocenter, non randomized dose escalation clinical study. -Allogeneic bone marrow-derived human MSC.	Intra aortic	On going Not recruiting	-Prevention and treatment of postoperative AKI. -Results: absence of MSC-specific adverse or serious adverse events, potential preventive effects in postoperative AKI.
	-NCT01602328 (multicenter, United States of America) ✓ >21 years old ✓ Cardiopulmonary bypass ✓ Baseline serum creatinine ✓ Able to comply with visit schedule ✓ Ability to give informed	-Phase II multicenter, randomized, double blind, placebo-controlled study. -Allogeneic human bone marrow-derived MSC. -Single administration at a target dose of 2 x 10^6 cells/kg.	Route of administration unspecified	Recruiting	-Safety/efficacy study. -Time to kidney recovery. -All cause mortality or dialysis (composite endpoint). -Long-term follow up time up to 36 months.

	consent ✓ AKI defined as ≥ 0.5 mg/dL rise in serum creatinine from baseline within 48 hours of removal from cardiopulmonary bypass				
	- NCT01275612 (Ospedali Riuniti of Bergamo, Italy) ✓ 18-80 years old ✓ Requiring cisplatin therapy (>80 mg/m2) ✓ ECOG PS <2 ✓ Normal renal, hepatic, and bone marrow function ✓ Physician's assessment of life expectancy : 4-10 months ✓ Evidence of acute renal injury ✓ Written informed consent	-Phase I, monocenter, non randomized pilot, explorative, dose escalation study. -*Ex vivo*-expanded MSC. -Comparison of treatment adverse event rates between the 1, 2 and 5 x 10^6 cells/kg dose.	IV	Recruiting	-Safety/efficacy study. -Serum creatinine concentration. -To evaluate the rate of renal function loss up to 15 days post cisplatin infusion. -Neutrophil gelatinase-associated lipocalin (NGAL). and N-acetyl-p- D glucosaminidase enzyme (NAG) urine levels.
Brain : Stroke	-NCT00875654 (University Hospital, Grenoble, France) ✓ 18-70 years old ✓ Carotid ischemic stroke in the previous 14 days ✓ NIHSS ≥ 7 ✓ Optimal medical treatment ✓ General state compatible with functional rehabilitation	-Phase II, monocenter, randomized, open label, placebo-controlled study. -Autologous MSC less than 6 weeks after stoke. -Group placebo *vs* dose 1 and dose 2 groups (therapeutic doses unknown).	IV	Recruiting	-Feasability and tolerance at 2 weeks and at 1, 2, 4, 6 months and 1, 2 years. -Clinical and functional effects at 2 weeks and at 1, 2, 4, 6 months and 1, 2 years. -Determination of the most effective dose of stem cells. -Define best criteria for a future trial (phase III).
	-NCT01849887 (University of California, Irvine, United States of America) ✓ 18-80 years old ✓ Middle cerebral artery ischemic stroke on MRI ✓ NIHSS 7-20 ✓ Standard post stroke medical care reasonably possible	-Phase I/II, monocenter, randomized, double blind, placebo-controlled, escalating dose study. -Allogeneic bone marrow-derived MSC. -Placebo *vs* treated group (therapeutic doses unknown).	IV	Not yet recruiting	-Adverse events at 1 month after MSC infusion.
	-NCT01716481 (Samsung Medical Hospital, South Korea) ✓ 30-75 years old ✓ Middle cerebral artery	-Phase III, monocenter, randomized, open label, placebo-controlled study. -Autologous bone marrow-derived-MSC cultured with	IV	Recruiting	-Functional outcome, cognition, quality of life improvement at 90 days. -Immediate reaction and long term adverse effects at 90

	ischemic stroke on MRI ✓ NIHSS 6-21 ✓ Informed consent ✓ Standard post stroke medical care reasonably possible	serum obtained from the patient at the acute phase of stroke (ischemic preconditioning). -Dose : 1 x 10^6 cells/kg.			days. -Biomarkers.
	-NCT01461720 (National University of Malaysia, Bangi Selangor, Malaysia) ✓ 30-70 years old ✓ Stroke onset within 1 week to 2 months ✓ NIHSS 10-30 ✓ Never received thrombolysis ✓ Unilateral middle cerebral artery infarct on MRI	-Phase II, monocenter, randomized, open label, placebo-controlled study. -Autologous bone marrow-derived MSC. -Placebo *vs* autologous bone marrow-derived MSC (dose unspecified).	IV	Not yet recruiting	-Change in NIHSS, functional recovery, Rankin scale, MRI size of infarct at 6 weeks and at 3, 9 and 12 months. -Change in quality of life at 12 months.
	-NCT01678534 (Instituto de Investigacion Hospital Universitario, La Paz, Bolivia) ✓ 60-80 years old ✓ <12 hours of stroke onset ✓ Middle cerebral artery territory (CT or MRI) ✓ NIHSS 8-20 ✓ Signed informed consent	-Phase II, monocenter, randomized, double blind, placebo-controlled study. -Allogeneic adipose-derived MSC. -Placebo vs MSC group at a target dose of 1 x 10^6 cells/ kg.	IV	Recruiting	-Safety at 24 months. -Adverse events, neurological and systemic complications. -Development of tumors.
	-NCT01468064 (Southern Medical University, China) ✓ 18-80 years old ✓ Within 7 days of the onset of symptoms ✓ Middle cerebral artery territory by MRI ✓ NIHSS ≥ 7 ✓ Signed informed consent	-Phase I/II, multicenter, randomized, double blind, placebo-controlled study. -Autologous bone marrow-derived MSC at 2.5 x 10^6 cells/kg or endothelial progenitor cells at 2.5 x 10^6 cells/kg. -Second instillation of same dose of cells, 1 week after initial dose. -Placebo *vs* MSC group *vs* endothelial progenitor cells group.	IV	Not yet recruiting	-Feasability, safety, efficacy. -Number of adverse events at 1 year. -Functional outcomes at 1 year.

	-NCT01091701 (Stempeutics Research Pvt Ltd, Malaysia) ✓ 20-80 years old ✓ Within 10 days of onset of symptoms ✓ Intracranial hemorrhage excluded by CT or MRI ✓ Stroke symptoms present for at least 30 minutes and have not improved prior to treatment ✓ Able to comply with study procedures for the entire length of the study	-Phase I/II, multicenter, randomized, double blind, placebo-controlled study. -*Ex vivo* cultured allogeneic MSC (origin unknown) at the dose of 2 X 10^6 cells/kg. -Placebo vs MSC group.	IV	Not yet recruiting	-Safety and efficacy. -Types and number of adverse events at 1 year. -Improvement of neurologic recovery at 1 year. -Improvement of functional recovery, global neurological outcome, infarct size by MRI.
	-NCT01922908 (The University of Texas Health Science Center, Houston, United States of America) ✓ 18-83 years old ✓ Acute ischemic stroke ✓ NIHSS 7-25 ✓ Stroke onset within 3-10 days	-Phase I/II, monocenter, randomized, double blind, placebo-controlled study. -Allogeneic bone marrow-derived MSC. -Placebo vs 3 different MSC therapeutic doses (doses unspecified).	IV	Recruiting	-Maximum tolerated dose. -Improved functional outcomes.
	-NCT01962233 (Heibei Medical University, China) ✓ Clinical and laboratory tests meet the criteria of hypoxic ischemic encephalopathy.	-Phase I, monocenter, non randomized, open label study. -Allogeneic, umbilical cord-derived MSC at the dose of 100-800 X 10^6 cells per infusion. -Single group assignment.	IV	Recruiting	-NIHSS score, neurological outcomes, adverse events at 15, 90 and 180 days.

AKI = acute kidney injury; ARDS = acute respiratory distress syndrome; CABG = coronary artery bypass surgery; CT = computerized tomography; ECOG PS = Eastern Cooperative Oncology Group performance status; FiO_2 = inspiratory oxygen fraction; ICU = intensive care unit; IL = interleukin; IV = intravenous; MRI = magnetic resonance imaging; MSC = mesenchymal stem cells; MV = mechanical ventilation; NIHSS = National Institutes of Health stroke scale; PaO_2 = partial pressure of oxygen; PEEP = positive end-expiratory pressure; SP-D = surfactant protein D; TNF-α = tumor necrosis factor alpha.