Objective was to determine if delayed cyclosporine treatment was still effective in protecting asphyxiated piglets. We hypothesized that both early and delayed treatment with cyclosporine A would improve cardiac recovery during resuscitation of asphyxiated newborn piglets.

Methods Thirty piglets (1–4 days-old) were instrumented for continuous monitoring. After stabilization, normocapnic alveolar hypoxia (10–15% oxygen) was instituted for 2h followed by reoxygenation for 6h. Piglets were block-randomized to receive either early (5 min of reoxygenation) or delayed (120 min reoxygenation) intravenous bolus of cyclosporine (10-mg/kg) or saline (control) at identical times during reoxygenation (n=8/group). Myocardial and intestinal lactate concentrations as well as histological examinations were determined.

Results Hypoxic piglets had cardiogenic shock (cardiac output 52±1% of baseline), hypotension and acidosis. Although both early and delayed cyclosporine treatment improved cardiac output (P<0.05 vs. controls), only early cyclosporine treatment improved stroke volume and systemic oxygen delivery (p<0.05 vs. controls). Left ventricle and intestinal lactate were higher in controls than in both cyclosporine-treated groups. Early, but not delayed, cyclosporine treatment also attenuated intestinal injury compared to controls (P<0.05).

Conclusion This study demonstrates that both early and delayed cyclosporine treatment during resuscitation improves cardiac recovery in asphyxiated newborn piglets. However, early treatment with cyclosporine may offer superior cardioprotection and attenuates H-R intestinal injury.