Introduction:
Sepsis diagnostics during the pre-clinical stage remains a most complex issue. Research objective: increasing the efficiency of sepsis diagnostics.

Methods:
The research was performed on 200 full-term newborns; no clinical signs of bacterial infection were diagnosed. On the 1, 5, 20 days the plasma concentration of IL-1ß, IL-6, IL-8, TNF-α, G-CSF, sFas, FGF, NO was determined by capture ELISA; CD3CD19, CD3CD4, CD3CD8, CD69, CD71, CD95, HLA-DR, CD34, CD14, CD3CD56, lymphocytes in apoptosis - immunophenotype analysis. By applying the statistical cluster population analysis of the immunological criteria under study we have evaluated the feasibility of sepsis diagnostics at the admission to the intensive therapy unit. The diagnostic rule for sepsis has been formulated By applying the "decision tree" approach to the "R" statistic medium.

Results:
The cluster analysis confirms the presence of two clusters (presence of absence of sepsis: these two components explain the 60.81% of the point variability). The diagnostic rule for the early diagnostics of sepsis is as follows: disease develops providing during the first 48 hours CD95≥16.8%, NO≤9.6 mkmol/l or CD95≤16.8%, CD34≤0.2%, CD69≥4.12% or CD95≤16.8%, CD34≤0.2%, CD69≤4.12% and lymphocytes AnnexinV-FITC+ PI− ≥12.3%. 45 newborns featured the confirmed sepsis development. The accuracy of this diagnostics amounts to 95.41%; sensitivity to 97.06%; specificity to 94.67%; diagnostic false positive share to 5.33%; diagnostic false positive share to 2.94%; positive result accuracy to 89.19%; negative result accuracy to 98.61%.

Conclusion:
The aggregate determination of CD95, CD69, AnnexinV-FITC+ PI−, CD34 and the plasma concentration of NO enables the pre-clinical diagnostics of sepsis development.