Summary: The aim of this study was to improve the accuracy of early diagnosis of cardiovascular disorders and the effectiveness of individual dynamic observation of children in long-term catamnesis after cardiac surgery of congenital heart defects by allocating functional classes of the cardiovascular system.

To solve this problem, during 8 years 168 school-age children with congenital heart disease in late period after surgical correction have been examined at Regional Children's Cardiological Centre of Kharkov regional children's hospital. Protocol of examination included electrocardiography, Doppler echocardiography, dosed physical activity test, and estimation of serum activity of brain natriuretic propeptide and troponin I. The average age of the patients was 8,98±1,05 years with postoperative catamnesis of 6,92±0,76 years. The structure of diagnoses included 67,5% of simple CHD and 32,5% of combined heart defects. Distribution is based on data from discriminant analysis and multivariate regression analysis, which allowed to identify the most informative indicators with subsequent scoring of each. The selected indicators were grouped in the original "Evaluation scale of the cardiovascular system functional state of a patient operated on for congenital heart defect."

These data allowed to distribute the patients to 4 functional classes of the CVS state basing on clinical symptoms of heart failure (shortness of breath, tachycardia), hemodynamic characteristics of congenital heart disease and the presence of postoperative residual disease (interventricular defects re-shunting, restenosis, presence and extent of transvalvular regurgitation, pulmonary hypertension, signs of left and right ventricular outflow tracts obstruction, signs of aortic re-coarctation). Also the state of systolic and diastolic ventricular function, presence and severity of left ventricular remodeling, myocardial asynergy, the state of exercise tolerance were taken into account in relation to the results of biochemical blood marker of cardiomyocyte damage (troponin I) and preclinical marker of heart failure (pro-BNP).

Analysis of differences in the status of CVS in patients who were assigned to different functional classes according to instrumental methods testified to
increased frequency of postoperative residual disease, systolic and diastolic myocardial dysfunction, severity of cardiac remodeling in children with different functional classes of CVS state.

The authors propose to determine the functional class of the cardiovascular system using "Evaluation scale of the cardiovascular system functional state of a patient operated on for congenital heart defect" as an additional criteria for objectification of examination. Integrated assessment of the key indicators of functioning of the heart after surgical correction will allow to improve long-term dynamic monitoring and rehabilitation of child to adult («grown-up congenital heart disease»), will improve the possibilities of proper follow-up and can be the basis for optimizing an individual rehabilitation process. Monitoring of patients with defined functional classes can also be used for early diagnosis and prevention of the chronic heart failure progression.

**Keywords:** congenital heart defect, operative correction, diagnostics, functional class.