

# Pediatric Cardiology

# PEDIATRIC CARDIOLOGY

Proceedings of the III World Congress of Pediatric  
Cardiology, Bangkok,

26 November - 1 December 1989

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EXCERPTA MEDICA, Amsterdam - New York - Oxford

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International Congress Series No. 906  
ISBN 0 444 81143 5

*This book is printed on acid-free paper.*

*Published by:*  
Elsevier Science Publishers B.V.  
(Biomedical Division)  
P.O. Box 211  
1000 AE Amsterdam  
The Netherlands

*Sole distributors for the USA and Canada:*  
Elsevier Science Publishing Company Inc.  
655 Avenue of the Americas  
New York, NY 10010  
USA

*Library of Congress Cataloging in Publication Data:*

World Congress of Pediatric Cardiology (3rd : 1989 : Bangkok, Thailand)

Pediatric cardiology : proceedings of the III World Congress of Pediatric Cardiology, Bangkok, 26 November-1 December 1989 / editors, Boonchob Pongpanich, Viroj Sueblinvong, Choompol Vongprateep.

p. cm. -- (International congress series ; no. 906)

Includes indexes.

ISBN 0-444-81143-5 (alk. paper)

1. Pediatric cardiology--Congresses. I. Pongpanich, Boonchob. II. Sueblinvong, Viroj. III. Vongprateep, Choompol. IV. Title. V. Series.

[DNLM: 1. Cardiovascular Diseases--in infancy & childhood--congresses. W3 EX89 no. 906 / WS 290 H9]

RJ421.W65 1989

618.92'12--dc20

DNLM/DLC

for Library of Congress

Printed in The Netherlands

## PREFACE

The First World Congress of Pediatric Cardiology in London in 1980 and the Second one in New York in 1985 were very successful and left behind interesting and valuable proceedings. Dr. Choornpol Vongprateep was designated by the International Committee to organize the Third World Congress in Bangkok, Thailand. Both the local organizing committee and the international organizing committee worked hand in hand to make this third meeting as popular and memorable as possible. The format of the scientific sessions was planned to include all possible fields related to pediatric cardiology drawn from the basic sciences, investigations, diagnosis, management and prevention. The main objective was to update this rapidly growing field by global experiences and to explore future directions.

There were 28 presentations in the plenary sessions and 118 presentations in the symposia, with 689 free papers and poster sessions. The plenary and symposia sessions were all invited speakers who were selected on the basis of their expertise as well as geographic distribution. There was an overwhelming exchange of experiences and knowledge which should be kept on permanent record as a medical reference work. This book is an attempt, therefore, by the authors to publish the available highlights of the scientific material from the plenary and symposia sessions. Basically it includes recent developments such as catheter intervention, prenatal and perinatal cardiology, etc., as well as those topics relating to problems in terms of scientific viewpoint and global public health management such as rheumatic fever, infectious diseases, Kawasaki disease, etc.

It is hoped that this book will serve the needs of the participants wishing to attend every concurrent session and also serve as a record of the organization of the Third World Congress of Pediatric Cardiology which was in fact the very first world congress in the medical field ever to be held in Thailand.

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# **PRESENT AND FUTURE INVESTIGATION IN CARDIOLOGY**



## ADVANCES IN ULTRASOUND IMAGING FOR CONGENITAL HEART DISEASE DIAGNOSIS AND MANAGEMENT

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### INTRODUCTION

The past four years since the Second World Congress of Pediatric Cardiology has seen continued major growth in ultrasound technologies relevant to pediatrics. This paper will review technologies and applications which have improved both two-dimensional imaging and Doppler echocardiography and provided methods which continue to change pediatric cardiology<sup>1,2</sup>. The areas to be discussed in this paper include: 1) Improvements in the technology used for color flow mapping and improved understanding of flow mapping results and their quantification. 2) Optimization of color flow map techniques for cardiac evaluation and congenital heart disease detection and management in the fetus. 3) Development of high resolution, high frequency ultrasound devices above 7.5MHz for phased array application both in the neonate and extension of the miniaturized high frequency technologies for evaluation of infants undergoing surgical repair of congenital malformations using epicardial and especially transesophageal echo.

### NEW QUALITY AND NEW METHODS FOR COLOR FLOW: DOPPLER IMAGING

The introduction of color flow mapping echocardiography excited pediatric cardiologists since they saw immediate applications of this technology for studying complex shunting patterns, studying ductus arteriosus<sup>3</sup>, studying the natural history of congenital heart disorders<sup>4</sup>. Nonetheless, at the time of the last Pediatric Cardiology World Conference, the color flow map technologies were not as high in resolution as their non-color counterparts, nor did they have near the accuracy for velocity determination of pulsed and continuous wave Doppler. The continued evolution of color flow technology towards complete instrumentation with zoom modes, capable of showing in magnified, high resolution fashion, quantitative color flow information along with high quality continuous wave and pulsed wave Doppler has provided instruments for the pediatric cardiologist now capable of performing the majority of his evaluations, even down to those of small neonates. Additional and important applications of color flow mapping in standard clinical settings include detailed analysis of pulmonary venous



