7:00-12:00    Registration
8:00-10:30    Executive Board Meeting (Happo-En Room Aioi)
10:30-12:45   Board Meeting (Lunch served) Hakuho-Kan

12:50-13:15   Opening Ceremony

S Takatani, Tokyo Medical and Dental University, Tokyo Japan
Congress President
Leonard R Golding, Cleveland Clinic Foundation, Cleveland, OH, USA
President
George Wieselthaler, University of Vienna, Vienna, Austria
Secretary General
Yukihiko Nose, Baylor College of Medicine, Houston, TX, USA
Founder and Past President

13:15-15:10   “Helmut Reul Young Investigator Award Competition”

Part I
Co-Chair: T Masuzawa, Ibaraki University, Hitachi, Japan
H Schima, Medical University of Vienna, Vienna, Austria

13:15-13:28   Initial design and in vivo testing the microdiagonal pump (HRA-1)
M. Akdis, Helmholtz Institute for Biomedical Engineering, RWTH Aachen, Germany:

13:28-13:41   A compact and low hemolytic centrifugal rotary blood pump with a magnetically
levitated impeller. (HRA-2)
J Asama, Tokyo Institute of Technology, Yokohama, Japan.

13:41-13:54   Integration of a micro axial pump in an intravascular blood oxygenator: (HRA-3)
G Cattaneo, Helmholtz Institute for Biomedical Engineering, RWTH Aachen, Germany.

13:54-14:07   Development of Lorentz force type self-bearing motor for an alternative axial
flow blood pump design: (HRA-4)
Z Dongsheng, Nanyang Technological University, Singapore.

14:10-14:15   Short Break

Part II
Co-Chair: C Nojiri, Terumo Heart Inc., Michigan, USA
U Steinseifer, Helmholtz Institute RWTH, Aachen, Germany
Detection of LV function from the mag-lev impeller behavior: (HRA-5)

H Hoshi, Tokyo Medical and Dental University, Tokyo, Japan.

Development of the axial flow pump with hydrodynamic bearing as a ventricular assist device: (HRA-6)

Y Kakiuchi, Mitsubishi Heavy Industry, Ltd., Takasago, Japan.

Predicting VAD reliability through systematic component modeling: (HRA-7)

SM Patel, University of Virginia, Charottesville, VA, USA

Computational fluid dynamics (CFD) study of the rotary blood pumps and its application to the design improvement: (HRA-8)

T. Yano, Akita Prefectural University, Akita, Japan.

15:10-15:25

Coffee Break

15:25-18:30

Symposium I:
“Pediatric Applications of Rotary Blood Pumps”

Part I: Status in Europe and US

Co-Chair: B Duncan, Cleveland Clinic Foundation, Cleveland, OH, USA
          S Sano, Okayama University, Okayama, Japan

15:25-15:40 Implantable Blood Pumps for children, Design Aspects: (S-1-1)

J Mueller, Berlin Heart Inc., Berlin, Germany

15:40-15:55 Development status of a microaxial blood pump – The Micro VAD: (S-1-2)

B Meyns, Center of Experimental Cardiac Surgery, KU Leuven, Belgium

15:55-16:10 NIH initiative on Pediatric VAD: (S-1-3)

T Baldwin, NIH, Bethesda, MD, USA

16:10-16:25 The University of Pittsburgh PediaFlow: (S-1-4)

H Borovetz, The University of Pittsburgh, Pittsburgh, USA

16:25-16:40 The Cleveland Clinic PediPump: (S-1-5)

B Duncan, Pediatric and Congenital Heart Surgery, Cleveland Clinic Foundation, Cleveland, USA

16:40-16:50

Short Break

Part II: Status in US and Japan

Co-Chair: B Duncan, Cleveland Clinic Foundation, Cleveland, OH, USA
          T Katogi, Saitama Medical University, Saitama Japan

16:50-17:05 Benefits of pulsatile perfusion in pediatric patients: (S-1-6)

A Undar, Penn State University, Hershey USA

17:05-17:20 Status of pediatric circulatory support and need of pediatric devices in Japan: (S-1-7)
S Sano, Okayama University, Okayama, Japan  
17:20-17:35 **Clinical outcome of assisted circulation in the pediatric patients**: (S-1-8)  
H Asano, Saitama Medical College, Saitama, Japan  
17:35-17:50 **The use of miniature cardiopulmonary bypass circuit and crystalloid prime: Modifications to reduce postcardiotomy inflammation in children.** (S-1-9)  
M Ando, Pediatric Cardiac Surgery, Sakakibara Heart Institute, Tokyo, Japan  
17:50-18:05 **TMDU centrifugal “TinyPump” for children and infants**: (S-1-10)  
S Takatani, Tokyo Medical and Dental University, Tokyo, Japan  
18:05-18:30 Overall Discussion  

18:45-19:30  
**Move to Tokyo Metropolitan Government Tower by Chartered Buses**  
19:30-21:30  
**Welcome Reception** (47th Floor Tokyo Metropolitan Government Tower, Shinjuku, Tokyo)  
Sponsored by Arrow International and Arrow Japan  

● **September 15, 2005**  
7:00-8:00 Registration, Breakfast, Exhibit, Poster Viewing  
8:00-9:00 **Session I: “Devices on Horizon”**  

**Co-Chair**: Y Fukui, Tokyo Denki University, Saitama, Japan  
K Sun, Korea University, Seoul, Korea  
8:00-8:15 **Antithrombogenicity of a monopivot centrifugal pump for circulatory assist** (OS-1-1)  
T Yamane, National Institute of AIST, Tsukuba, Japan  
8:15-8:30 **HeartQuest(TM) magnetically levitated centrifugal pump**: (OS-1-2)  
G Bearnson, MedQuest Products, Inc., Salt Lake City, USA  
8:30-8:45 **Development of a novel axial flow blood pump in Korea**: (OS-1-3)  
JJ Lee, Korea Artificial Organ Center, Korea University, South Korea  
8:45-9:00 **MagLev pump and zero power control**: (OS-1-4)  
T Masuzawa, Ibaraki University, Hitachi, Japan  
9:00-10:00  
**Session II : “CFD, In Vitro Evaluation I”**  

**Co-Chair**: M Umezu, Waseda University, Tokyo, Japan  
H Wood, University of Virginia, Charlottesville, VA, USA
9:00-9:15  
**CFD and digital particle-image velocimetry study of the flow through three micro-axial blood pump prototypes: (OS-2-1)**  
M Triep, Aerodynamisches Institut, RWTH Aachen, Germany

9:15-9:30  
**A review of leakage flow in centrifugal blood pumps: (OS-2-2)**  
WK Chan, Nanyang Technological University, Singapore

9:30-9:45  
**Hemolysis resulting from surface roughness under shear flow conditions using a rotational shear stressor: (OS-2-3)**  
O Maruyama, National Institute of AIST, Tsukuba, Japan

9:45-10:00  
**An in vitro study to estimate particle release from centrifugal pumps (OS-2-4)**  
Y Takami, Kasugai Municipal Hospital, Kasugai, Japan

10:00-10:45  
**Coffee Break, Exhibit, Poster Viewing**

10:45-12:00  
**Session III : “Extracorporeal Applications I”**

Co-Chair: M Shiono, Nihon University, Tokyo, Japan  
C Sivathasan, National Heart Center, Singapore

10:45-11:00  
**Clinical experience with the Levitronix CentriMag ventricular assist system:** (OS-3-1)  
J Linneweber, Charite, Humboldt University of Berlin, Germany

11:00-11:15  
**Comparison of a conventional extracorporeal perfusion system to minimal extracorporeal pump systems using RotaFlow or DeltaStream:** (OS-3-2)  
K Minami, NRW Heart Center, Ruhr University, Bad Oeynhausen, Germany

11:15-11:30  
**Clinical experience with extracorporeal membrane oxygenation support for adult patients:** (OS-3-3)  
TE Tan, National Heart Center, Singapore

11:30-11:45  
**Extracorporeal life support for elderly patients:** (OS-3-4)  
S Saito, National Cardiovascular Center, Osaka, Japan

11:45-12:00  
**Short and mid-term results of PCPS for primary left ventricular failure due to acute myocardial infarction:** (OS-3-5)  
N Kimura, Omiya Medical Center, Jichi Medical School, Omiya, Japan

12:00-13:00  
**Lunch, General Assembly**

13:00-13:45  
**Keynote Lecture**

Chair: Dr. George Wieselthaler, Medical University of Vienna, Vienna Austria

"**BLOOD COMPONENT ACTIVATION IN ROTARY BLOOD PUMPS: CONSIDERATIONS FOR ANTI-COAGULATION**"
Dr. Vincent T Turitto  
Pritzker Institute of Biomedical Science and Engineering  
Illinois Institute of Technology, Chicago, IL USA

13:45-14:45  **Session IV : “Magnetic, Hydraulic and Contact Bearings”**

**Co-Chair:** T Yamane, National Institute of AIST, Tsukuba, Japan  
P Allaire, University of Virginia, Charlotteville, VA USA

13:45-14:00  *Relation between impeller stability and hemolysis of a centrifugal blood pump with a magnetic and hydrodynamic bearing:* (OS-4-1)  
H Kataoka, Tokyo Medical and Dental University, Tokyo, Japan

14:00-14:15  *A hydrodynamically suspended, magnetically sealed mechanically non-contact axial flow blood pump:* (OS-4-2)  
Y Mitamura, Hokkaido University, Sapporo, Japan

14:15-14:30  *Minimizing an axial flow blood pump with active and passive magnetic bearings:* (OS-4-3)  
M Glauser, University of Virginia, Charlottesville, USA

14:30-14:45  *Development of an enclosed-impeller type axial flow blood pump with hydrodynamic conical bearing:* (OS-4-4)  
H Sumikura, Tokyo Denki University, Saitama, Japan

14:45-15:45  **Session V : “Physiology, Monitoring, Control I”**

**Co-Chair:** S Takamoto, University of Tokyo, Tokyo Japan  
K Fukamachi, Cleveland Clinic Foundation, Cleveland OH, USA

14:45-15:00  *Cardiac arrest under rotary blood pump assistance:* (OS-5-1)  
T Yambe, Tohoku University, Sendai, Japan

15:00-15:15  *Physiologic control of mag lev. centrifugal pumps: An initial human experience with CorAide LVAD:* (OS-5-2)  
Aly El-Banayosy, NRW, Ruhr University Heart Center, Bad Oeynhausen, Germany

15:15-15:30  *Final summary of the first clinical trial with an automatic speed control system for axial blood pumps:* (OS-5-3)
**M Vollkron**, University of Vienna, Vienna, Austria

15:30-15:45 *The magnetically suspended axial-flow blood pump “INCOR”: Improved features for patient monitoring*: (OS-5-4)

**P Nuesser**, Berlin Heart, Inc., Berlin, Germany

15:45-16:15 Coffee Break, Exhibit, Poster Viewing

16:15-16:45 *Presidential Address*

Chair: Dr. S Takatani, Tokyo Medical and Dental University, Tokyo, Japan

*“IT HAS BEEN A LONG JOURNEY”*

**Dr. L R Golding**  
Dept of Biomedical Engineering  
Cleveland Clinic Foundation, Cleveland, OH USA

16:45-18:30 *Symposium II: “Continuous Flow BVAS or TAH”*

Co-Chair: P Portner, Stanford University School of Medicine, Stanford, USA  
Y Taenaka, National Cardiovascular Center, Osaka, Japan

16:45-17:00 *Development of a bi-ventricular replacement system using two axial flow pumps*: (S-2-1)

**R Benkowski**, MicroMed Technology, Inc., Houston, USA

17:00-17:15 *Initial experiments with dual continuous flow pumps flow total heart replacement*: (S-2-2)

**E Tuzun**, Texas Heart Institute, Houston, USA

17:15-17:30 *Centrifugal BVAD for functional total artificial heart application*: (S-2-3)

**T Motomura**, Baylor College of Medicine, Houston, USA

17:30-17:45 *Counter flow bi-ventricular assist device (BVAD) as an implantable total artificial heart*: (S-2-4)
ACC Tan, Queensland University of Technology, Australia

17:45-18:00 Valveless undulation pump total artificial heart-feasibility study: (S-2-5)
Y Abe, University of Tokyo, Tokyo, Japan

18:00-18:15 A New, small, implantable CorAide right ventricular assist device: Initial in vitro and in vivo evaluations: (S-2-6)
K Fukamachi, Cleveland Clinic Foundation, Cleveland, USA

18:15-18:30 Overall Discussion

18:30-19:30 Wine/Cheese, Exhibit, Poster Viewing

19:30-22:30 Gala Dinner/Award Presentation

1) Gala Dinner
2) Award Presentation
   i) Tribute to Helmut Reul (HR): Ulrich Steinseifer
   ii) Presentation of HR Award: Sylvia and Julian Reul
   iii) Presentation of Asian Pacific Fellowship: S Takatani
   iv) Presentation of Poster Award: S Takatani
   v) Presentation of Korea Artificial Heart Award: K Sun
   vi) Presentation of Medforte/Olsen Clinical Award: D Olsen
   vii) Presentation of Barney Clark Award: D Olsen
   viii) Presentation of Sezai Innovative Research Award: Y Sezai
   ix) Presentation of Koyanagi Young Investigator Travel Award: H Koyanagi
   x) Presentation of ICMT Award: Y Nose
3) Entertainment:
   Introduction of musicians
4) Passing of a traditional hat: Takatani to Meyns

● September 16, 2005

7:00-8:00 Breakfast, Exhibit, Poster Viewing

8:00-10:45 Symposium III: “Implantable Clinical VADs”

Part I: Axial Flow Devices

Co-Chair: T Nakatani, National Cardiovascular Center, Osaka, Japan
B Meyns, Katholic University, Leuven, Belgium.

8:00-8-15 Jarvik 2000 LVAD clinical experience (S-3-1)
8:15-8:30  **MicroMed DeBakey VAD European clinical experience**
         **W Roethy**, Univ of Vienna, Vienna Austria (S-3-2A)

8:30-8:45  **MicroDeBakey VAD United States clinical experience**
         **GP Noon**, Baylor College of Medicine, Houston USA (S-3-2B)

8:45-9:00  **Three years of experience with the magnetically levitated axial flow pump INCOR**
         **J Mueller**, Berlin Heart, Berlin, Germany (S-3-3)

9:00-9:15  **Continued Development of the” HeartMate II” LVAD** (S-3-4)
         **K Butler**, Thoratec Inc., USA

9:15-9:45  **Invited Lecture**

         **Chair**: Dr. Y Sezai, Nihon University, Tokyo, Japan

         “**INITIAL OUT-OF-HOSPITAL EXPERIENCE WITH THE DURA-HEART**”

         **Dr. Aly El-Banayosy**
         Heart and Diabetes Center NRW, Bad Oeynhausen, Germany

**Part II: Centrifugal Devices**

**Co-Chair**: H Matsuda, Hyogo Medical College, Hyogo Japan
         GP Noon, Baylor College of Medicine, Houston TX USA

9:45-10:00  **The “CorAide”; Automatic control mode----Initial clinical experience** (S-3-5)
         **L R Golding**, Cleveland Clinic Foundation, Cleveland, USA

10:00-10:15  **VentrAssist program status** (S-3-6)
         **J Woodard**, VentraCor, Inc., Sydney, Australia

10:15-10:30  **The EVAHEART an implantable centrifugal blood pump; Clinical trial in Japan**
         **K Yamazaki**, Tokyo Women’s Medical University, Tokyo, Japan (S-3-7A)

10:30-10:45  **Initial experience of the implantable LVAS with new centrifugal blood pump at NCVC**
T Nakatani, National Cardiovascular Center, Osaka, Japan (S-3-7B)

10:45-11:30
Coffee Break, Exhibit, Poster Viewing

11:30-12:30
Session VI: “CFD, PIV, System Performance II”

Co-Chair: K Imachi, Tohoku University, Sendai, Japan
H Borovetz, University of Pittsburgh, Pittsburgh, PA USA

11:30-11:45
Experimental study on the fluid-induced vibration of the centrifugal pump impeller: (OS-6-1)
T Tsukiya, National Cardiovascular Center, Osaka, Japan

11:45-12:00
Geometry variations analysis of the Arrow CorAide LVAD by means of CFD: (OS-6-2)
M Hormes, Helmholtz Institute of Biomedical Engineering, RWTH Aachen, Germany

12:00-12:15
Computational and experimental design validation of the first prototype of the Lev-VAD axial flow blood pump: (OS-6-3)
A Untaroiu, University of Virginia, Charottesville, USA

12:15-12:30
Development of integrated electronic unit for drive and control of undulation pump LVAD: (OS-6-4)
E Okamoto, Hokkaido Tokai University, Sapporo, Japan

12:30-13:30
Abiomed Luncheon Lecture

Chair: Dr. H Harasaki, Fukuoka Wajiro Hospital, Fukuoka, Japan

“BRINGING ACTIVE FLOW TO CARDIOLOGY: A SYSTEM ANALYSIS OF AN EMERGING TECHNOLOGY”

Dr. Thorsten Siess,
Abiomed Impella Cardiosystem AG, Aachen, Germany
13:30-14:30  

**Session VII : “Extracorporeal System II”**

**Co-Chair:** H Nishida, Tokyo Women’s Medical University, Tokyo, Japan  
S Topaz, SP Tech, Inc., St Helens, OR USA

13:30-13:45  
**Clinical indications for a Ventricular Unloading Catheter (VUCath) in cardiology:** (OS-7-1)  
**C Nix,** Impella Cardiosystem, Inc., Aachen, Germany

13:45-14:00  
**“Plug and Play” Transventricular Pump Completely Unloads Left Ventricle (LV) and Generates Pulsatile Flow in Sheep:** (OS-7-2)  
**D Wang,** University of Texas Medical Branch, Galveston TX, USA

14:00-14:15  
**SELCAB (Self-Lung Cardiac Bypass) procedures using Gyro Centrifugal Blood Pumps:** (OS-7-3)  
**T Oda,** Baylor College of Medicine, Houston, USA

14:15-14:30  
**Experimental study of V-A bypass using Abiomed BVS 5000:** (OS-7-4)  
**M Taoka,** Nihon University, Tokyo, Japan

14:30-15:45  

**Session VIII “ Physiology, Monitoring and Control II “**

**Co-Chair:** K Tabayashi, Tohoku University, Sendai Japan  
D Olsen, University of Utah, Salt Lake City, Utah USA

14:30-14:45  
**Pulmonary hypertension in patients treated with pulsatile and continuous flow left ventricular assist devices as bridge to transplant:** (OS-8-1)  
**D Zimpfer,** University of Vienna, Vienna, Austria

14:45-15:00  
**Performance and reliability of the magnetically levitated impeller of the DuraHeart; Mag Lev Centrifugal Blood Pump:** (OS-8-2)  
**S Schulte-Eistrup,** Heart Center Northrhine Westphalia, Ruhr-University Bochum, Bad Oeynhausen, Germany

15:00-15:15  
**Evaluation for accuracy of flow rate estimation in NEDO Gyro pump:** (OS-8-3)  
**D Ogawa,** Tohoku University, Sendai, Japan

15:15-15:30  
**Is it possible to detect the difference of VAD inlet or outlet stenosis by analyzing the pressure waveform ?** (OS-8-4)  
**E Hansen,** Baylor College of Medicine, Houston, USA

15:30-15:45  
**Resonant Frequency Control Method for Artificial Heart: In Vitro Study:** (OS-8-5)  
**R Kosaka,** National Institute of Advanced Industrial Science and Technology, Tsukuba, Japan

15:45-16:15  
**Coffee Break**

16:15-17:45  

**Mini Symposium : “How to deal with FDA “**
Co-Chair: Y Nose, Baylor College of Medicine, Houston, TX USA
K Minami, Nihon University, Tokyo, Japan

16:15-16:30  FDA Perspective: Rotary Blood Pumps as Mid and Long Term VAD: (MS-1)
Eric Chen, MS, United States FDA, Bethesda, MD, USA

16:30-16:45  Face-to-Face” Advice for Medical Devices (MS-2)
Yuzuru Okazaki, Pharmaceuticals and Medical Devices Agency (PMDA), Japan

16:45-17:00  Ken Butler, Thoratec Inc.
17:00-17:15  Kurt Dasse, Levitronix, Inc
17:15-17:30  John Woodard, VentraCor, Inc

17:30-17:45  Panel Discussion

17:45  Closing Ceremony
Setsuo Takatani, Tokyo Medical and Dental University, Tokyo Japan
President of ISRB
Leonard R Golding, Cleveland Clinic Foundation, Cleveland, USA
Immediate Past President of ISRB
Bart Meys, Katholic University, Leuven Belgium
President-elect of ISRB
POSTER PRESENTATION

A. Hemo-Compatibility

PA-1: Study on hemolysis in cross flow blood pump
N Takahashi, Tokyo Denki University, Saitama, Japan

PA-2: Centrifugal pump hemolysis and clinical requirement
T Motomura, Baylor College of Medicine, Houston, USA

PA-3: Hemolytic performance evaluation of new designed magnetic levitated disposable extracorporeal centrifugal blood pump system
H Hoshi, Tokyo Medical and Dental University, Tokyo, Japan

PA-4: Accuracy enhancement of flow visualization analysis for hemocompatibility evaluation of rotary blood pumps
M Nishida, National Institute of AIST, Tsukuba, Japan

PA-5: Similarities on mechanical hemolysis between simple shear flow and pump flow
H Mizunuma, Tokyo Metropolitan University, Tokyo, Japan

PA-6: Numerical analysis of blood trauma in an enclosed-impeller axial flow pump
TM Lim, Nanyang Technological University, Singapore

B. Pump, Bearing System

PB-1: Magnetically-levitated disposable centrifugal blood pump utilizing an integrated magnetic coupling
T Shinshi, Tokyo Institute of Technology, Yokohama, Japan

PB-2: System integration of totally implantable ventricular assist device
I Saito, University of Tokyo, Tokyo, Japan

PB-3: Reynolds, Earnshaw and Lomakin: Bridging science for rotary VAD-systems
M Akdis, HIA, Aachen, Germany

PB-4: Bearing concepts in rotary blood pumps
M Akdis, HIA, Aachen, Germany

C. CFD

PC-1: CFD prediction of a pump performance in an axial flow blood pump with an enclosed-impeller
Y Sakane, Tokyo Denki University, Saitama, Japan

PC-2: CFD modeling of transient flow in the LEV-VAD axial flow blood pump
A Untaroiu, University of Virginia, Charottesville, USA

PC-3: CFD is a powerful tool to design a safe and reliable rotary blood pump:
Quantification of secondary flow and associated hemolysis rate
N Watanabe, Tokyo Medical and Dental University, Tokyo, Japan

D. System Analysis
PD-1: Motor Component Failure Analysis to Increase VAD Reliability
SM Patel, University of Virginia, Charottesville, USA
PD-2: Hydraulic efficiency of a forward lines casualty management system: A hypothermia study
F Casas, Cleveland Clinic Foundation, Cleveland, USA
PD-3: Is it possible to monitor the stenosis by analyzing the flow waveform using Fast Fourier Transform?
T Okahisa, Baylor College of Medicine, Houston, USA
PD-4: Early detection of pump thrombus formation (EDOPT) in patients supported with continuous flow ventricular assist devices
W Roethy, University of Vienna, Vienna, Austria.
PD-5: Estimation of early stage malfunction using implantable artificial heart sound in animal experiments
T Makino, Hokkaido Tokai University, Sapporo, Japan.
PD-6: Dependency of coronary flow and myocardial oxygen consumption on the unloading by a rotary pump
H Schima, University of Vienna, Vienna, Austria
PD-7: Endurance testing of Gyro centrifugal blood pump
S Igo, Baylor College of Medicine, Houston, USA
PD-8: BVAS assessment in a complete mock circulation loop
D Timms, The Prince Charles Hospital, Australia

E. Pediatric Devices
PE-1: A tiny rotary centrifugal blood pump (TinyPump) for children and infants: Comparative study in a simulated heart failure model
K Tajima, Tokyo Medical and Dental University, Tokyo, Japan.
PE-2: Computational fluid dynamics (CFD) analysis of the pediatric tiny centrifugal blood pump(Tiny Pump).
K Kido, Tokyo Medical and Dental University, Tokyo, Japan
PE-3: Hydraulic performance testing of an axial flow pediatric VAD to support design predictions
A Throckmorton, University fo Virginia, Chartottesville, USA

F. Extra-Corporeal Systems
PF-1: Compact ECMO system with a magnetically levitated blood pump
Z Deckert, Dept. of Cardiothoracic Surgery, Med. Univ. Vienna, Austria.
PF-2: Preliminary clinical experience with the CentriMag Pump as ECMO in cardiogenic shock patients
Aly El-Banayosy, NRW Heart Center, Ruhr University, Bad Oeynhausen, Germany.

G. Miscellaneous

PG-1: Non-invasive treatment of biofilm infections

T Mussivand, Medical Devices Centre at the University of Ottawa Heart Institute, Ottawa, Canada

PG-2: Clinical monitoring of mechanical circulatory support devices using wireless Bluetooth technology

KS Holmes, Medical Devices Centre at the University of Ottawa Heart Institute, Canada