

The Density of Disciplinary Knowledge Motivated by the Natural History of Valvular Heart Diseases

Max Grinberg and Tarso Augusto Duenhas Accorsi

Instituto do Coração - InCor, São Paulo, SP - Brazil

Tertiary care breeds specialists. Specialists nurture tertiary care. "Multiconsultism" should not break down the figure of the doctor in conducting the case.

Morgenstern L., Will the real doctor please stand up?

Three out of 04 recommendations to take care of patients with valvular heart disease are based on level C of evidence¹. It is the reality that emphasizes the value of the actual experience lived at the bedside in making up the experience collectivized in literature.

Assisting the clinical situation of "your patient" being "his cardiologist," backed by your own and your colleagues' knowledge (present or present through publications), shaped up through disciplinary knowledge, with in-depth detailing, brings safety to the doctor-patient relationship. The central educational role at the bedside is the feedback that makes it possible to recognize what is essential in a mix of knowledge to build a sound and strong professional identity (belief and power) for the needs of patients with cardiac valve defects².

To a certain extent, Cardiology in Brazil is consistent with the universal memory on valvular heart diseases. As for those countries that are leading the globalization of guidelines, the Brazilian stethoscope captures a greater number of repetitions of heart sounds and diverse valvular heart diseases. Several Brazilian services act as a reservoir of an infinite potentiality of clinical cases and referral centers (high experience) on valve disease that provide excellent pedagogical support³.

Prospects for updating the Brazilian guideline⁴ bump specifically into financial obstacles and, in general, into a current minimization of adoption of the Brazilian guidelines, compared to the high credibility of the American and European societies of cardiology.

The frequency of rheumatic etiology - which some peculiarities to health care provided to Brazilians - must remain

steady in the coming years⁵. Increased life expectancy in Brazil also increases valve injury among the elderly. This short term increase brings the prospect of an increased number of patients with valvular heart disease included in a population of nearly 200,000,000 inhabitants evenly distributed in socioeconomic terms across an immense territory of 8,500,000 km², covered by the Brazilian Public Health System⁶.

This renewed continuity of qualitative and quantitative expression of heart valve diseases is enough to bring about well-designed plans to educate young Brazilian cardiologists⁷. Graduate programs should be structured to develop valvular clinical expertise that is able to carry good practices throughout the patient's life, ranging from children and teenagers to nonagenarians.

The excellence of useful and effective strategies for patients with valvular heart disease is built from multiple disciplinary pieces of knowledge. Professional training is of essence. The patient with valvular heart disease is the one who demonstrates the most suitable pedagogical physical workup of the heart. There are complexities that require wide opening of the borders of disciplinary fragmentation - associated with hyper-specialization - created by an avalanche of scientific and technological innovations. Methods and standards used in the specificity of each discipline must "talk" at the bedside of patients with valvular heart disease, and this intertextuality should lead to the implementation of best the clinical equation between clinical beneficence and patient safety. Professional cardiologists should be trained to, once called to interact in the natural history of valvular heart diseases, play the role of a moderator in the dialogue of disciplines, both for direct application or for a critical review of the actions of others, whether individually or in a team.

The intimacy of the endocardium with the circulating blood is the foundation of mutual hemodynamic and structural influences observed at the bedside of patients with valvular heart diseases. On the one hand, morphological valvular lesion causes innate adaptations through concentric or eccentric myocardial hypertrophy. On the other hand, the impact of structural modification on the physics of blood circulation causes thrombi, or even bacteria may invade the blood and add further damage to the endocardium⁸.

The composition of disciplines required is large. For example, making a therapeutic decision on a valve that causes severe heart failure associated with the recent occurrence of cerebrovascular accident in patients under anticoagulation involves a strong plurality consisting of cardiology, cardiac surgery, anesthesiology, neurology, hematology, and imaging.

Keywords

Heart valve disease/history; health services/trends; cardiology/education.

Mailing address: Max Grinberg •

Rua Manoel Antonio Pinto, 04/21A - Paraisópolis - 05663-020 - São Paulo, SP - Brazil

E-mail: max@cardiol.br, grinberg@incor.usp.br

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Below are 10 disciplinary components:

1. *Hematology* - Prevention of thromboembolism is the rationale for the interest of cardiologists in getting acquaintance with anticoagulation. Greatness in clinical practice, primarily consisting of atrial fibrillation and/or the presence of metallic prosthesis, is expressed by the prescription of warfarin in approximately 50% of prescriptions issued in the outpatient clinic of the Valvopathy Clinic (*Unidade Clínica de Valvopatias*) of the InCor, representing a consumption of 400,000 tablets of 5 mg/year and 250,000 INR analyses. Cardiologists should be able to: a) initiate, advise on food and drug interactions and make further adjustments to the control of anticoagulation levels; b) perform periprocedural warfarin-heparin-warfarin bridge, c) detect early and handle complications of anticoagulation, considering that 7.6 out of every 100 patients/year present bleedings when anticoagulated. Out of these, 14% are major bleedings and in up to 0.04% of these patients, bleeding is fatal⁹.
 2. *Cardiac surgery* - Poor prognosis of the natural history of valvular heart diseases has triggered the emergence and development of cardiac surgery. Cardiologists should acquire expertise in indicating the best time to stop the course of cardiac remodeling to adapt to hemodynamic abnormalities and provide a post-operative history to benefit patient's quality of life and/or myocardial function. Since there is no zero iatrogenesis, cardiologists should be aware of the etiopathogenesis of the surgical treatment, expressed in immediate and mediate complications of a hemodynamic and infectious nature. Mortality from valvular cardiac surgery ranges from 1.7 to 10.1% in literature, and may be greater in the presence of greater numbers of comorbidities¹⁰.
 3. *Pediatrics* - Rheumatic fever is a condition affecting those who are born with a genetic predisposition to autoaggressive immune reaction to *Streptococcus pyogenes*. The peculiarities of the clinical management of children/adolescents, including differential diagnosis of carditis and/or arthritis, doses of drugs such as penicillin and corticosteroids, and interaction with the legal guardian should be known to the cardiologist in charge of taking care of the patient with rheumatic valve disease in childhood/youth¹¹.
 4. *Infectious diseases* - Patients with valve disease are under constant risk of getting an infection at the location of the morphological valvular abnormality. The education of cardiologists should provide skills for them to engage in differential diagnosis of an outbreak of fever in the presence of valvular heart disease, to suspect of infectious agents that cause a negative blood culture and can be recognized by serology, and to conduct various clinical patient responses against antibiotics therapy¹².
 5. *Neurology* - The brain can be a shock organ joined to the heart during rheumatic fever. Sydenham's chorea (*Thomas Sydenham -1624-1689*) is one of the 05 major Jones' criteria (*Thomas Duckett Jones - 1899-1954*). Blood or vegetation cerebral embolism, caused by impairment of the valvular or parietal endocardium, is a complication of valvular heart disease or infective endocarditis that usually worsens considerably the clinical picture and brings sequels and worse prognosis¹.
 6. *Dentistry* - gums and tooth socket are traditional entrance halls for the viridans streptococcal endocarditis¹³. The cardiologist should be the one in charge of helping to raise the awareness of patients with valvular heart diseases on the desirability of primary and secondary prevention of oral health. Due to the frequency with which concomitant anticoagulation and tooth extraction/endodontics occur in patients with valvular heart disease, the education of cardiologists should include knowledge of the combination of techniques to reconcile the need for dental intervention with quality thromboembolism prevention¹⁴.
 7. *Imaging* - Morphologic abnormalities of valves, thrombus apposition and vegetation, measures of cardiac function and remodeling are useful complements for decision making in valvopathies. It is part of the education of cardiologists to acquire experience in the critical analysis of the images compared to clinical data in order to assign hierarchy of clinical value and be capable of dealing with situations of dissociation between clinical picture and image. By enabling an anatomical view and functional analysis, echocardiography has been a valuable support - both pedagogical and clinical - to consolidate a clinical reasoning based on a greater volume of evidence collected from the patient.
 8. *Obstetrics* - The childbearing age is cause for particular attention by cardiologists taking care of patients with valvular heart diseases. Family planning and care during the puerperal pregnancy cycle require analysis of prognosis and treatment decisions on maternal-fetal risk^{1,10}.
 9. *Gastroenterology* - Gastric protection by omeprazole is part of 42% of prescriptions issued in the outpatient clinic of the Heart Valve Disease Unit of InCor. Moreover, the identification of *Streptococcus bovis* brings high probability of the presence of an asymptomatic intestinal tumor (either benign or malignant)¹².
 10. *Multidisciplinary professional* - Cardiologists should be aware of the complementary value of Nursing, Psychology, Physiotherapy, Nutrition and Human Services knowledge for the effectiveness in managing valvular heart diseases. The bedside is where the combination of multiprofessional knowledge leads to an efficient pedagogical impact of the interaction between science and humanity of its application in the education of cardiologists¹⁵⁻¹⁷.
- Patients with valvular heart disease have a set of clinical needs and influences on their quality of life throughout their

natural history and high chances of experiencing postoperative history. In this interdisciplinary context, the education of cardiologists cannot lack close contact with the rational history that led to the creation of special functions of guidance and supervision of the ethical foundations of the medical practice, performed by committees of professionals in the hospital. Among these committees, the following stand out: the In-Hospital Infection Control Commission, the Commission of Pharmacology, the Medical Records Review Commission, the Commission for the Analysis of Deaths, the Medical Ethics Committee, and the Committee on Bioethics.

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