**SESSIONE 6 | Percorso Diagnostico Congiunta Amcli – Esgiai Escmid INFEZIONI DA DEVICE VASCOLARI**

## CARDIOVASCULAR DEVICES: EPIDEMIOLOGICAL AND CLINICAL ISSUES

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Cardiovascular devices emerge bearing a spectacular improvement on the quality and expectancy of patients' life. However, device infections adversely influence the patients' status and Health Resources. Infections are defined as "early ",occurring in <1 year from implantation and late,>1 year.

A. Cardiac device infections: i)Infective endocarditis (IE) of prosthetic valves-PVE, including TAVR (transcatheter aortic valve replacement).PVE occur either as nosocomial post-surgical or latter as community IE and accounts for about 20% of IE. Staphylococci predominate, but also fungi. Post-TAVR IE ranged from 0.3%–1.2% per patient-year, similarly to PVE with the highest risk the first year. Signs and symptoms of IE, but also atypical presentation and up to 50% valve abscess are found. In -hospital and 1-year mortality reach 47% and 66% respectively, the highest in IE. ii. Cardiac Implantable Electronic Device Infection (CIEDI) include Permanent Pacemaker (PPM), or Implantable Cardioverter defibrillator (ICD) infections. Local (Pocket infection at the generator area w/wo device erosion) or systemic infection- LAE (lead associated endocarditis) with electrode vegetations, bacteremia and peripheral embolization. In estimated 1.2-1.4 x106 CIED/ year, infection is 0.8-2.2%, also a risk for long-term mortality. CIEDI disproportionally increased (57%) compared to CIED implantation (12%). Risk factors for CIEDI are comorbidities, steroids, oral anticoagulants, secondary procedures, multiple-leads, hematoma, staphylococcal bacteremia and lack of physician's experience. The risk is higher in ICD than in PPM. iii) Mechanical Circulatory Support Device Recipient :VADs (Ventricular associated device) are used as bridging for heart transplantation. Infections includes pump and/or cannula and the percutaneous pocket or/and BSI w/o endocarditis and mediastinitis. Sepsis occurred in >40% of VADs also due to the immunocompromised status of the host, however rates dropped after the initiation of new generation devices.

B. Vascular device infections (VGI). Risk of VGI increases within age, comorbidities, location, type of graft and material. i)extra-cavitary graft infection located to the extremities(1.5-2%) or the groin (6%). Infection can end up with limb amputation. ii) Endovascular aortic graft (EVAR) or Thoracic endovascular aortic graft (TEVAR) infections (1-5% per annual implantation),have a> 50% mortality. Mostly are caused by Staphylococci, but also Enterobacteriaceae and anaerobes in case of aortoenteric fistula, found in 40% of infected EVAR. Sepsis and recurrences of EVAR/TEVAR are difficult to manage.

C. Catheter –related bloodstream infections (CRBSI). In USA, 15 million central vascular catheter (CVC) days lead to around 250.000 CRBSI /year. Hospital stay and mortality are increased. Emerging antimicrobial resistance induce therapeutic challenges. Special patients' groups are at high risk of CRBSI. In hemodialysis catheters, especially non-tunneled ones, probability of CRBSI compared to arteriovenous native grafts is 10fold. IE in hemodialysis-CRBSI is high (RR= 38.0). Clinical picture could be indolent, therefore high index of suspicion is needed.