CARDIO-ONCOLOGY

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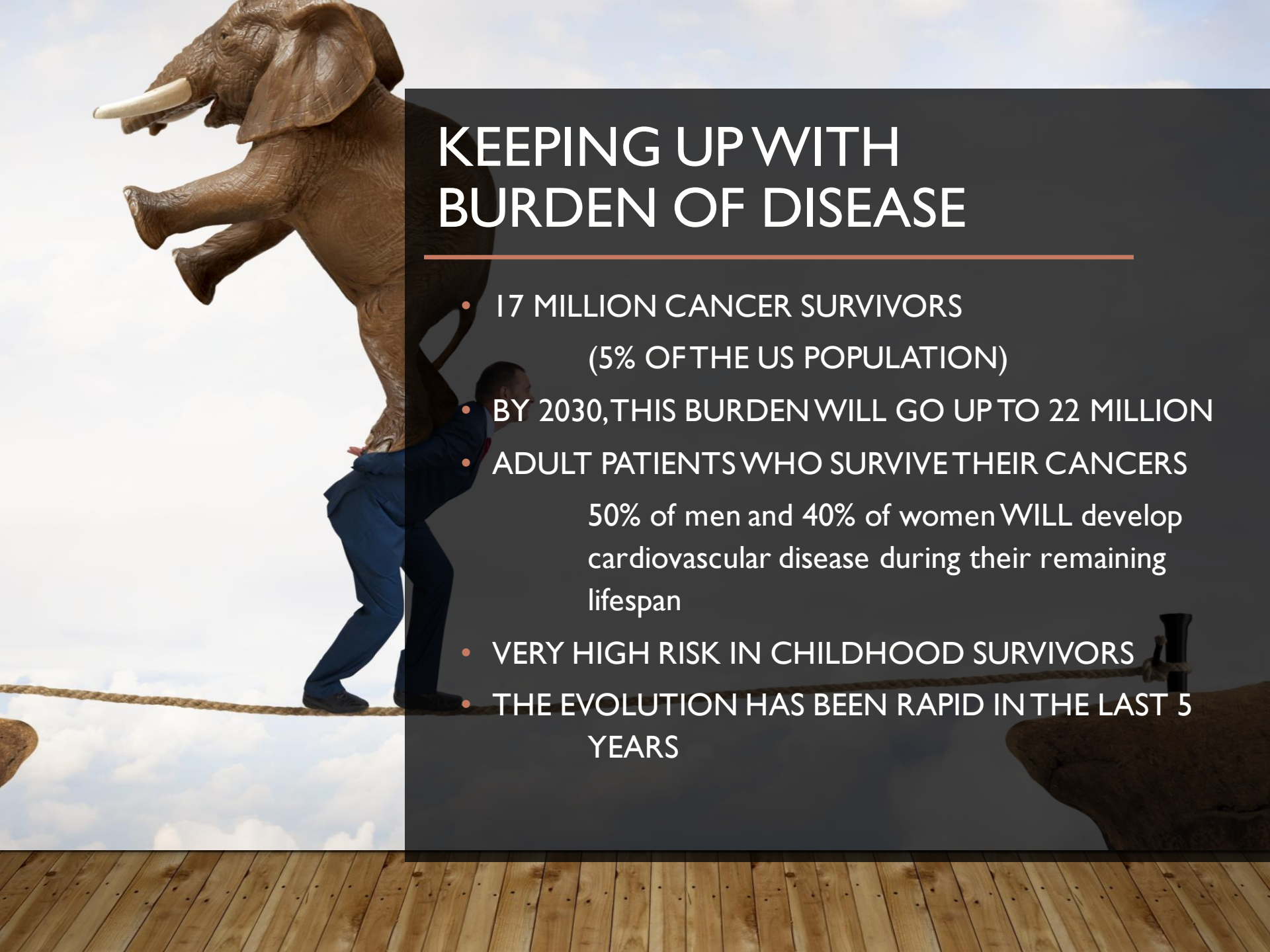
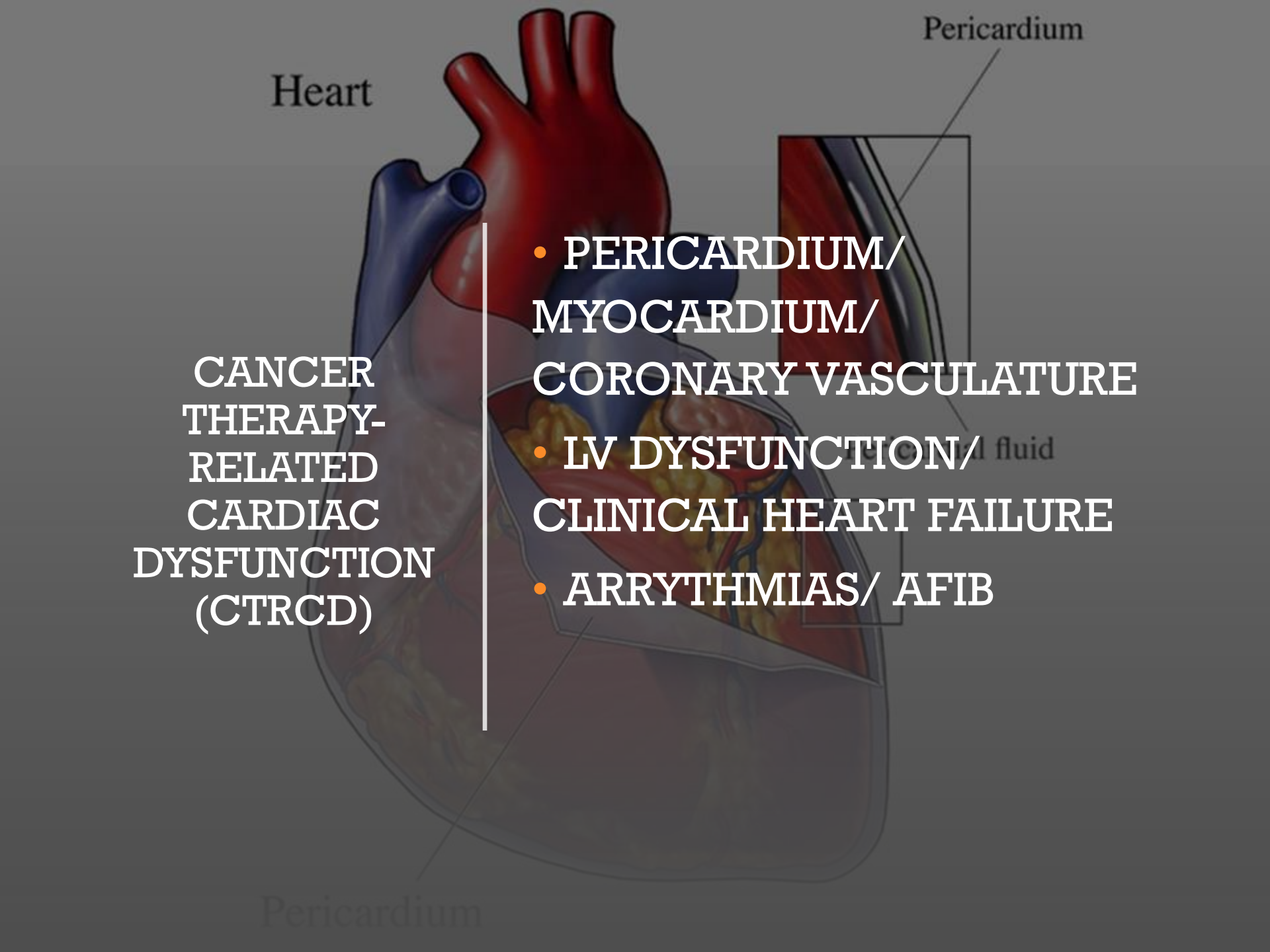
OBJECTIVES

- The need and importance of Cardio-Oncology
- The new definition of CTRCD
- General management considerations
- Which patients benefit from referral/ evaluation



KEEPING UP WITH BURDEN OF DISEASE

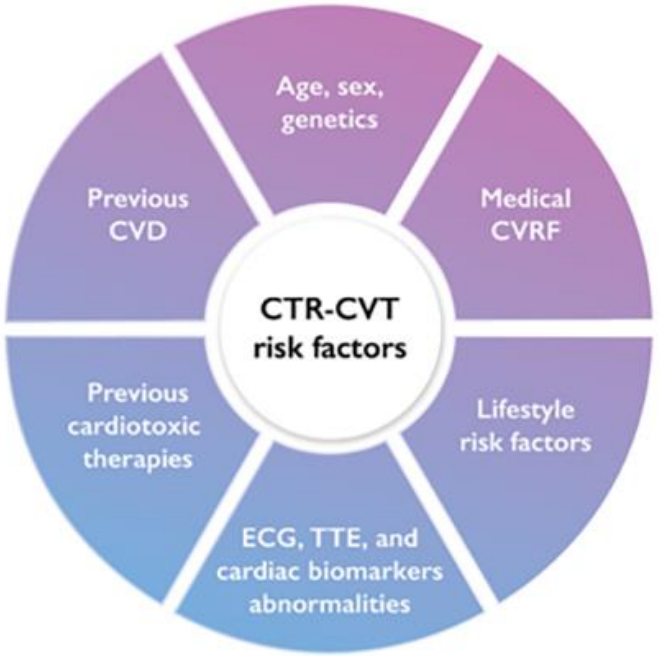
- 17 MILLION CANCER SURVIVORS
  (5% OF THE US POPULATION)
- BY 2030, THIS BURDEN WILL GO UP TO 22 MILLION
- ADULT PATIENTS WHO SURVIVE THEIR CANCERS
  50% of men and 40% of women WILL develop cardiovascular disease during their remaining lifespan
- VERY HIGH RISK IN CHILDHOOD SURVIVORS
- THE EVOLUTION HAS BEEN RAPID IN THE LAST 5 YEARS



CANCER THERAPY-RELATED CARDIAC DYSFUNCTION (CTRCD)

- PERICARDIUM/ MYOCARDIUM/ CORONARY VASCULATURE
- LV DYSFUNCTION/ CLINICAL HEART FAILURE
- ARRYTHMIAS/ AFIB

Baseline CV toxicity risk assessment checklist



Clinical assessment

- Cancer treatment history
- CV history
- CVRF
- Physical examination
- Vital signs measurement [a]

Complementary tests

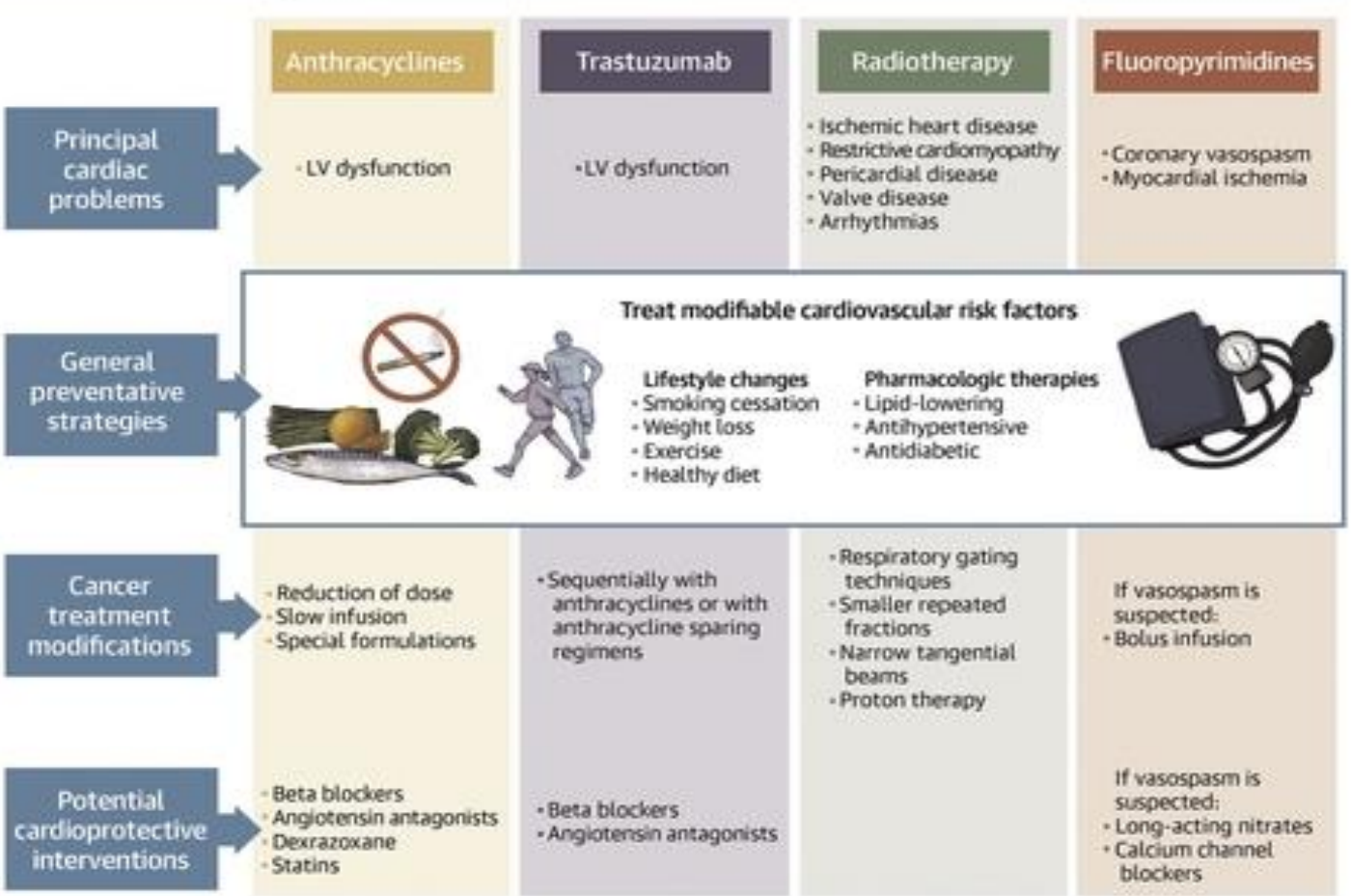
- BNP or NT-proBNP [b]
- cTn [b]
- ECG
- Fasting plasma glucose / HbA1c
- Kidney function / eGFR
- Lipid profile
- TTE [c]

ESC

UNIQUE MANAGEMENT CONSIDERATIONS

- CANCER AND CV SYMPTOM BURDEN
- CANCER PROGNOSIS
- CANCER TREATMENT
- DRUG INTERACTIONS
- PATIENT PREFERENCES/ ALTERNATIVES

CENTRAL ILLUSTRATION: Selected Cardiotoxicities and Potential Preventive Strategies



Omland, T. et al. J Am Coll Cardiol CardioOnc. 2022;4(1):19–37.

Torbjørn Omland et al. *J Am Coll Cardiol CardioOnc* 2022; 4:19-37.

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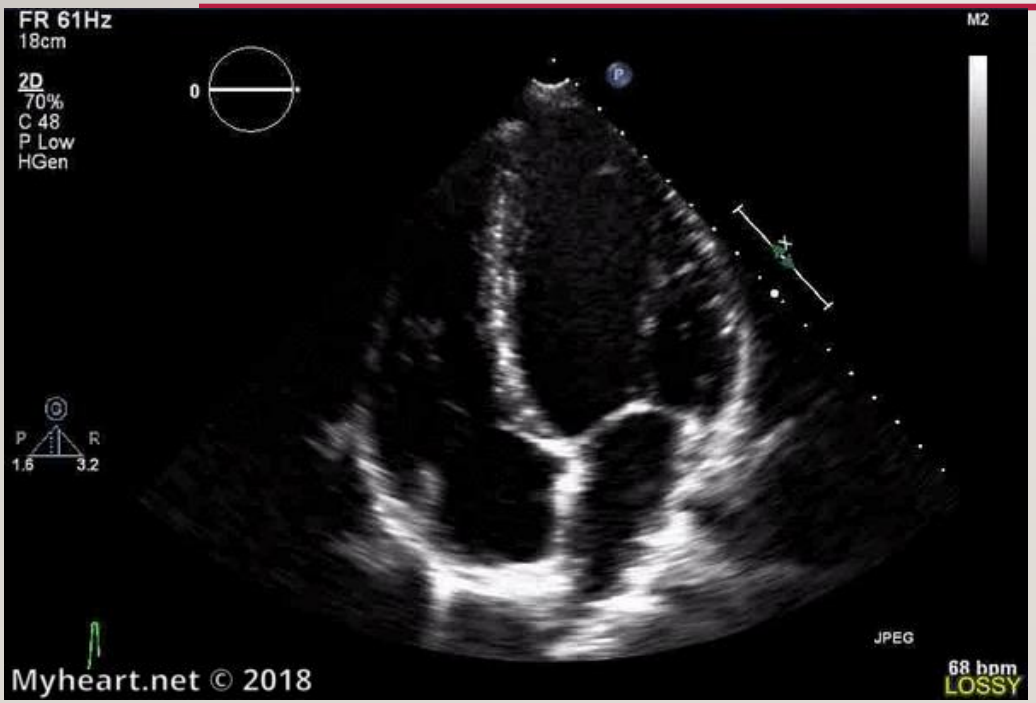
58YO F, WITH METASTATIC HER2+



PRETREATMENT ECHO

- EF 55-60%
- GLS -20

SHE GETS 4 CYCLES OF DOXORUBICIN, FOLLOWED BY ONGOING TRASTUZUMAB AND STARTS COMPLAINING OF PALPITATIONS

SO RECHECK ECHO:

- EF 51%
- GLS -9

COMMON CONSULT QUESTIONS

- ✓ IS THIS CARDIOTOXICITY/ CTRCD?
- ✓ WHAT IS THIS GLS?
- ✓ WAS THERE A CHANGE IN EF?
- ✓ CAN WE PROCEED WITH NEXT CYCLE OF TRASTUZUMAB?
- ✓ WHEN DO WE GET THE NEXT ECHO?
- ✓ IS THIS REVERSIBLE?

GUIDELINES/ UPDATES

ESC European Society of Cardiology

European Heart Journal (2022) **00**, 1–133
https://doi.org/10.1093/eurheartj/ehac244

ESC GUIDELINES

2022 ESC Guidelines on cardio-oncology developed in collaboration with the European Hematology Association (EHA), the European Society for Therapeutic Radiology and Oncology (ESTRO) and the International Cardio-Oncology Society (IC-OS)

Developed by the task force on cardio-oncology of the European Society of Cardiology (ESC)

ESC Congress 2022 Barcelona
ONSITE & ONLINE, 26-29 AUGUST

IC-OS International Cardio-Oncology Society

Journal of the American Heart Association

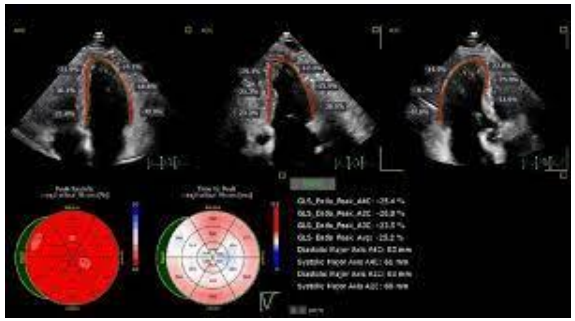
SPECIAL REPORT

Cardiovascular Toxicity Related to Cancer Treatment: A Pragmatic Approach to the American and European Cardio-Oncology Guidelines

Joachim Alexandre, MD, PhD*; Jennifer Cautela, MD*; Stephane Ederhy, MD; Ghandi Laurent Damaj, MD, PhD; Joe-Elie Salem, MD, PhD; Fabrice Barlesi, MD, PhD; Laure Farnault, MD, PhD; Aude Charbonnier, MD; Mariana Mirabel, MD, PhD; Stéphane Champiat, MD, PhD; Alain Cohen-Solal, MD, PhD; Ariel Cohen, MD, PhD; Charles Dolladille, MD; Franck Thuny, MD, PhD

ABSTRACT: The considerable progress made in the field of cancer treatment has led to a dramatic improvement in the prognosis of patients with cancer. However, toxicities resulting from these treatments represent a cost that can be harmful to short- and long-term outcomes. Adverse events affecting the cardiovascular system are one of the greatest challenges in the overall management of patients with cancer, as they can compromise the success of the optimal treatment against the tumor. Such adverse events are associated not only with older chemotherapy drugs such as anthracyclines but also with many targeted therapies and immunotherapies. Recognizing this concern, several American and European governing societies in oncology and cardiology have published guidelines on the cardiovascular monitoring of patients receiving potentially cardiotoxic cancer therapies, as well as on the management of cardiovascular toxicities. However, the low level of evidence supporting these guidelines has led to numerous discrepancies, leaving clinicians without a consensus strategy to apply. A cardio-oncology expert panel from the French Working Group of Cardio-Oncology has undertaken an ambitious effort to analyze and harmonize the most recent American and European guidelines to propose roadmaps and decision algorithms that would be easy for clinicians to use in their daily practice. In this statement, the experts addressed the cardiovascular monitoring strategies for the cancer drugs associated with the highest risk of cardiovascular toxicities, as well as the management of such toxicities.

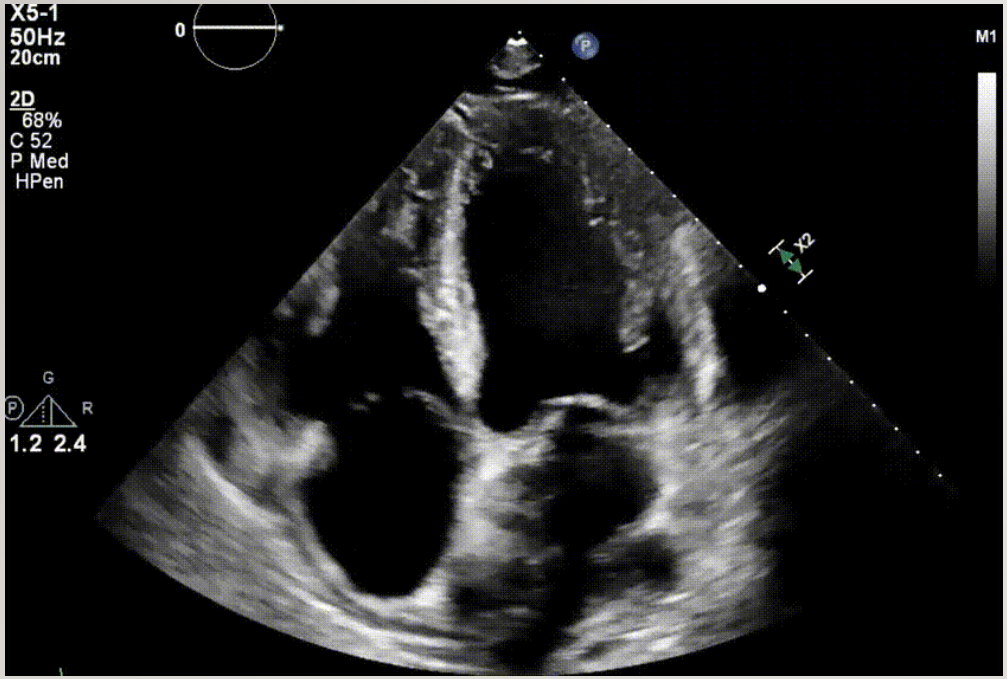
Fernando Cardona Vargas
Fellow Cardiología
UMNG-HMC



GLS CAN IDENTIFY SUBENDOCARDIAL

CHANGES IN STRAIN PREDATES CHANGES IN EF!

3 MONTHS LATER, SURVEILLANCE ECHO



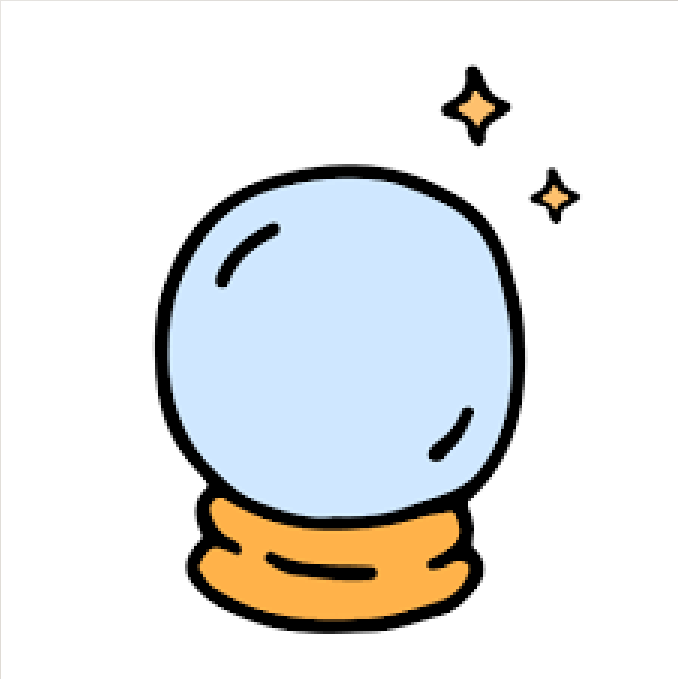
EF 35%
SIGNIFICANT CHANGE WHEN COMPARED TO PRIOR

ASE DEFINITION OF CTRCD

A DECREASE IN EF >10% AND TO A VALUE <50%

Changes in GLS occur earlier than change in LVEF

An early falling GLS by >15% over a patients baseline GLS predicts subsequent cardiotoxicity (including both asymptomatic and symptomatic decrease in LVEF



Lifetime cumulative dose thresholds for cardiotoxicity from anthracyclines and related agents in adults

Drug	Cumulative lifetime limit (mg/m^2)
Daunorubicin[1]	400 to 550
Doxorubicin[2]	400
Epirubicin[3]	900
Idarubicin*[4,5]	150
Mitoxantrone[6]	140

Anthracycline cardiotoxicity is dose-dependent. If the cumulative lifetime dose exceeds the thresholds above, the risk of cardiotoxicity increases substantially.

* For idarubicin, there is no consensus on threshold cumulative dose. Some guidelines suggest 150 mg/m^2, but others disagree. Refer to UpToDate content on anthracycline cardiotoxicity for further details.

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1. *Daunorubicin hydrochloride injection, solution. US National Library of Medicine: DailyMed. Revised February 9, 2021. Hisun Pharmaceuticals USA, Inc. Available online at https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=9705fa12-499e-41a3-8fb4-f6df0858b851 (Accessed on October 24, 2022).*
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Incidence of LV dysfunction with chemotherapy drugs

Chemotherapy agents	Incidence of heart failure (%)	Incidence of decline in LVEF (%)
Anthracyclines (cumulative dose)		
Doxorubicin (Adriamycin)		
100	0	0.5
150 mg/m^2	0.2	7
300 mg/m^2	0.6	16
400 mg/m^2	3 to 5	32
550 mg/m^2	7 to 26	65
700 mg/m^2	18 to 48	86
Idarubicin (>90 mg/m^2)	5 to 18	
Epirubicin (>900 mg/m^2)	0.9 to 11.4	
Mitoxantrone (>120 mg/m^2)	2.6	
Liposomal anthracyclines (>900 mg/m^2)	2	

LVEF: left ventricular ejection fraction. Decline in LVEF is defined as a decline in absolute value of at least 20 percent in LVEF from baseline, a decline in absolute value of at least 10 percent in LVEF from baseline and to below the institution's lower limit of normal, a postbaseline decline in absolute value of at least 5 percet in LVEF below the institution's lower limit of normal, or the occurrence of heart failure.

Data from:

1. *Zamorano JL, Lancellotti P, Rodriguez Muñoz D, et al. 2016 ESC Position Paper on cancer treatments and cardiovascular toxicity developed under the auspices of the ESC Committee for Practice Guidelines: The Task Force for cancer treatments and cardiovascular toxicity of the European Society of Cardiology (ESC). Eur Heart J 2016; 37:2768.*
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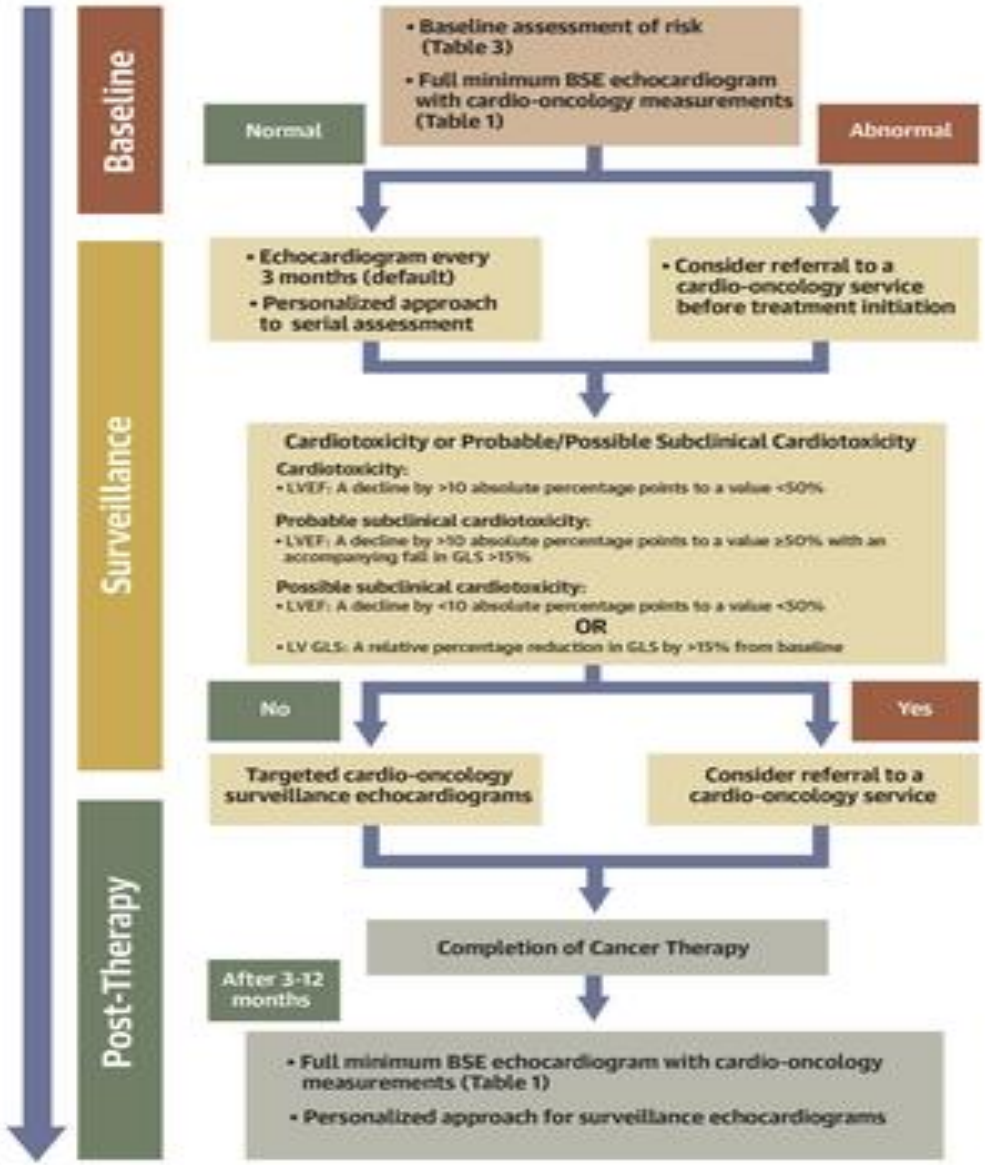
CENTRAL ILLUSTRATION: Echocardiography Protocol in Patients Undergoing Treatment With Anthracyclines/HER2-Positive-Targeted Therapy



Dobson, R. et al. J Am Coll Cardiol CardioOnc. 2021;3(1):1–16.

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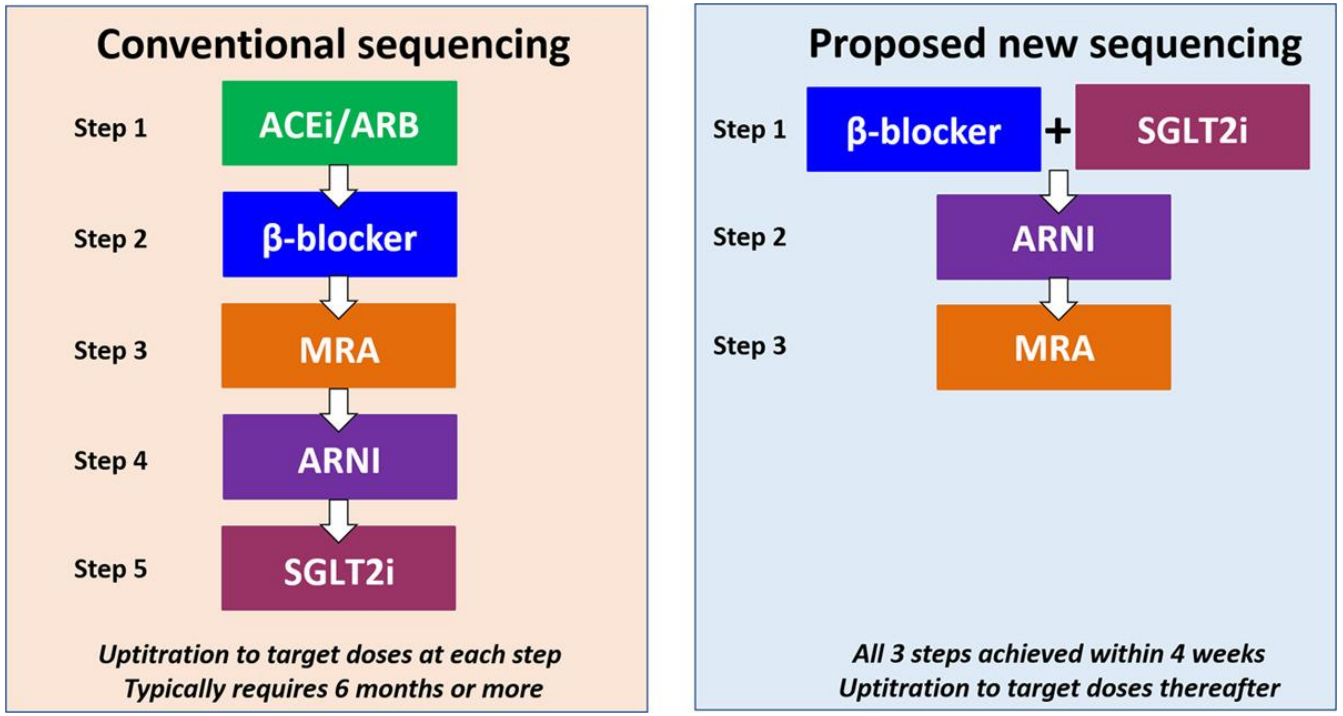
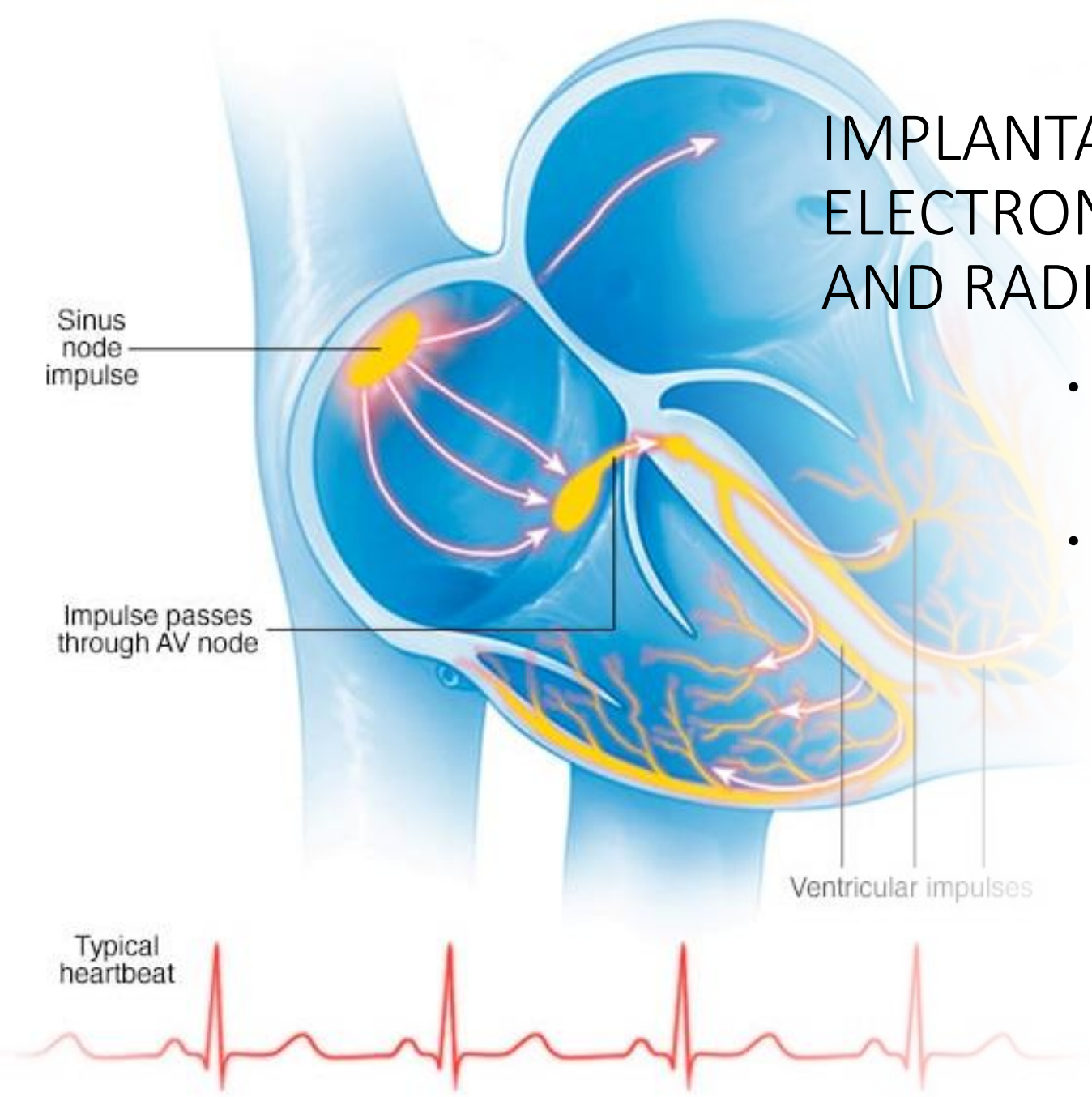
How can goal-directed medical therapy (GDMT) help?



John J.V. McMurray. Circulation. How Should We Sequence the Treatments for Heart Failure and a Reduced Ejection Fraction?, Volume: 143, Issue: 9, Pages: 875-877, DOI: (10.1161/CIRCULATIONAHA.120.052926)

IMPLANTABLE ELECTRONIC DEVICES AND RADIATION



- Patients who NEED a device
- Patients who already HAVE a device

HOW DO WE CREATE COLLABORATION

Identify cardio-oncologists in your area who can fast track your patients

Educating your community physicians (primary care, surgeons, rad/onc)

Imaging focusing on cardio-onc problems

GOALS OF ANY CARDIOONC PROGRAM

Interdisciplinary patient-centered program for the management of heart failure in patients with cancer

Early identification of risk factors for cardiotoxicity, prevention of exacerbation and readmissions

Ensure provision of appropriate care and education and follow up

REFERENCES

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- The Role of Cardioprotection in Cancer Therapy Toxicity, JACC: State of the Art Review 2022
- Cardio-oncology: a new and developing sector of research therapy in the field of cardiology, NIH 2022
- Cardiovascular therapy related to Cancer Treatment, JAHA 2020
- Precision Cardio-Oncology: understanding the cardiotoxicity of Cancer Therapy, Nature 2017
- AHA; ACC/HFSA Guidelines for the Management of Heart Failure


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7

Thanks!


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