# Cardiovascular Safety During Active Cancer Treatment: What it means in 2025?

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# DISCLOSURES

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  -
- **Non-financial:**
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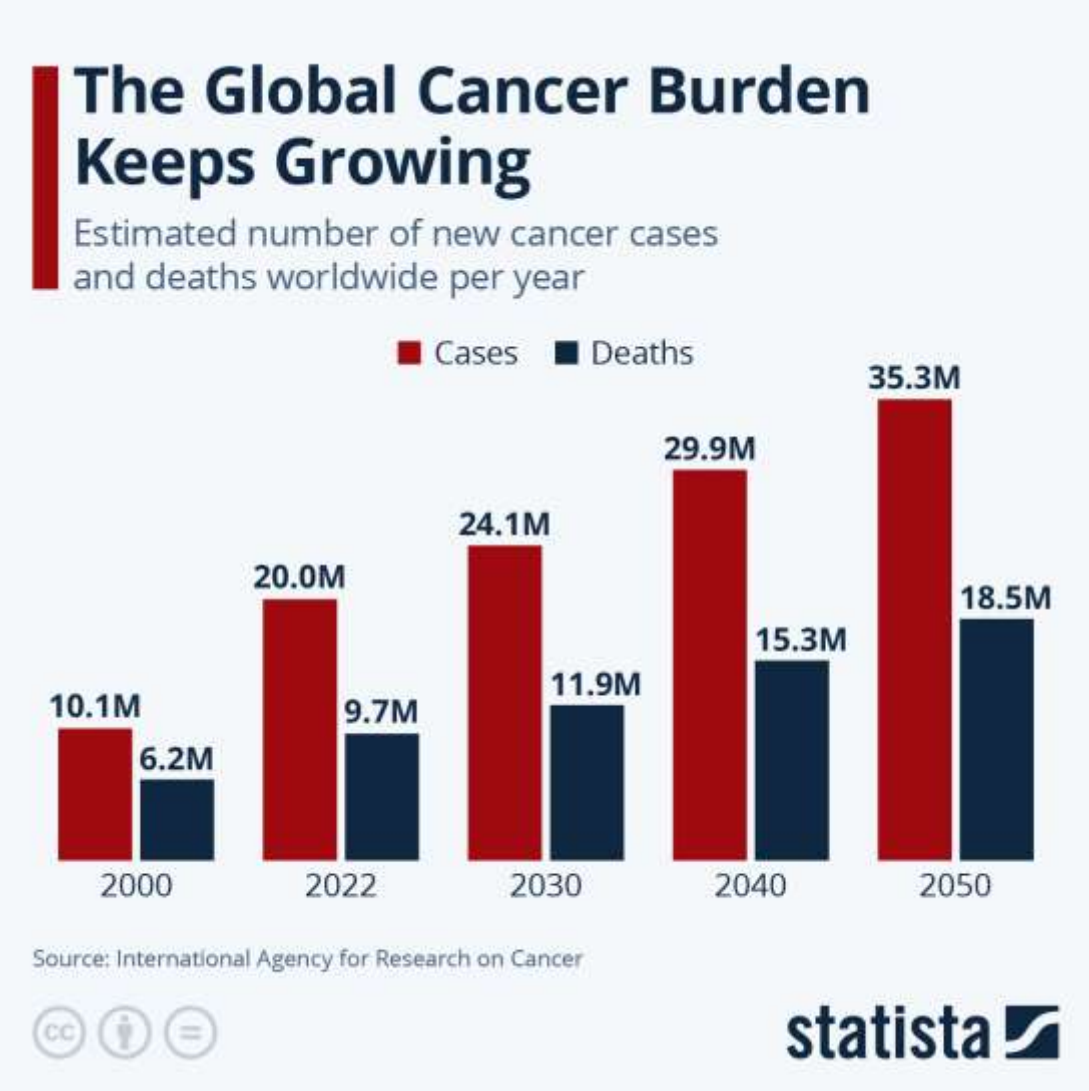
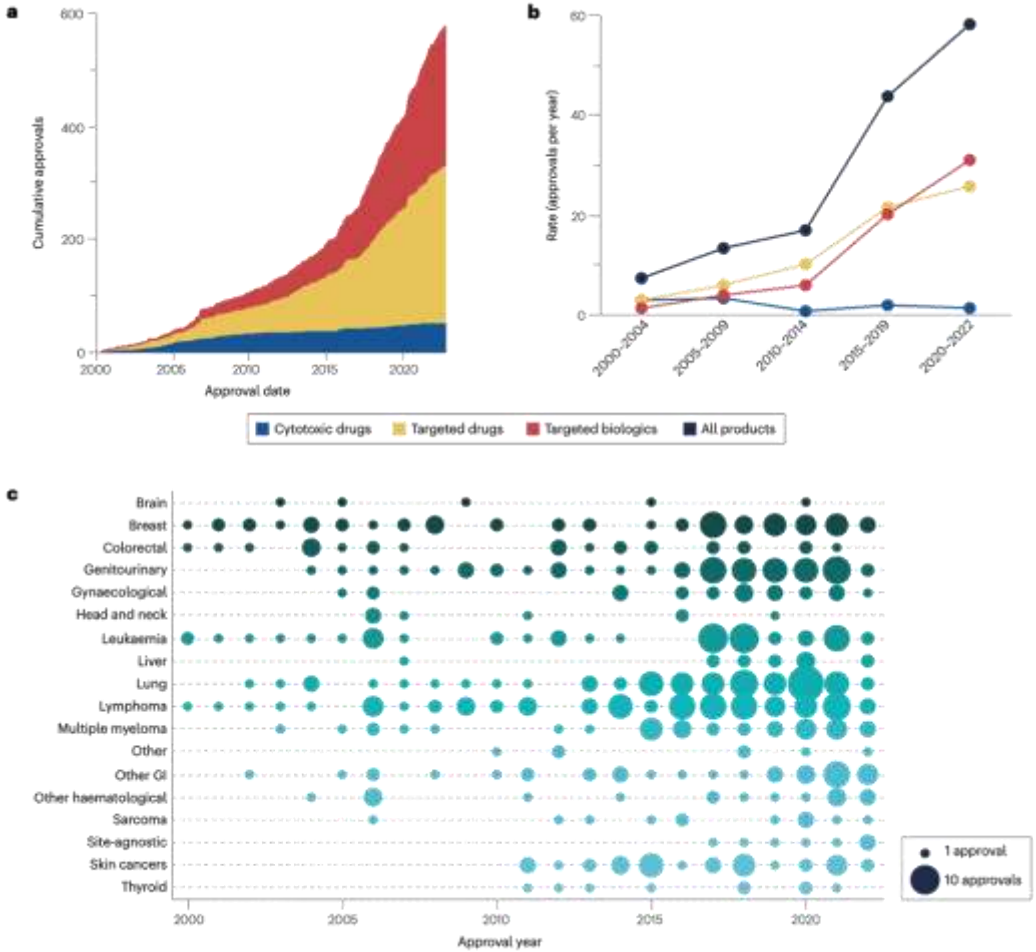
  - BIG Executive Board member 2025-2026

# WHY CARDIO-ONCOLOGY MATTERS *NOW*

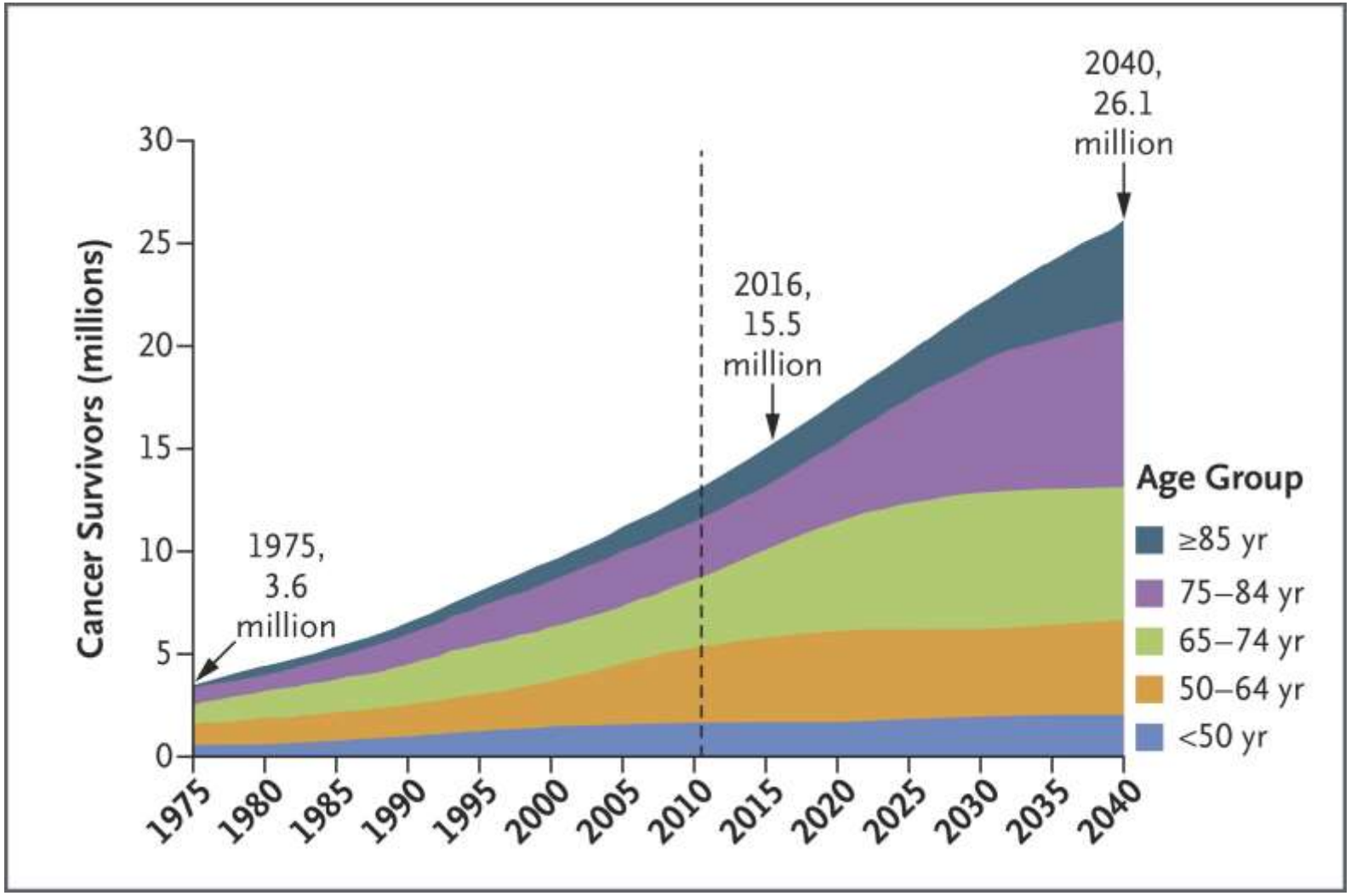



## Drug approval in oncology




https://cdn.statcdn.com/Infographic/images/normal/20706.jpeg; Scott EC, Nat Rev Drug Discovery 2023

# Changing demographic characteristics of cancer survivors in the United States




Shapiro CL. N Engl J Med2018;379:2438-2450

# WHY CARDIO-ONCOLOGY MATTERS *NOW*

CV safety is no longer a late toxicity issue - it directly impacts treatment feasibility and outcomes.

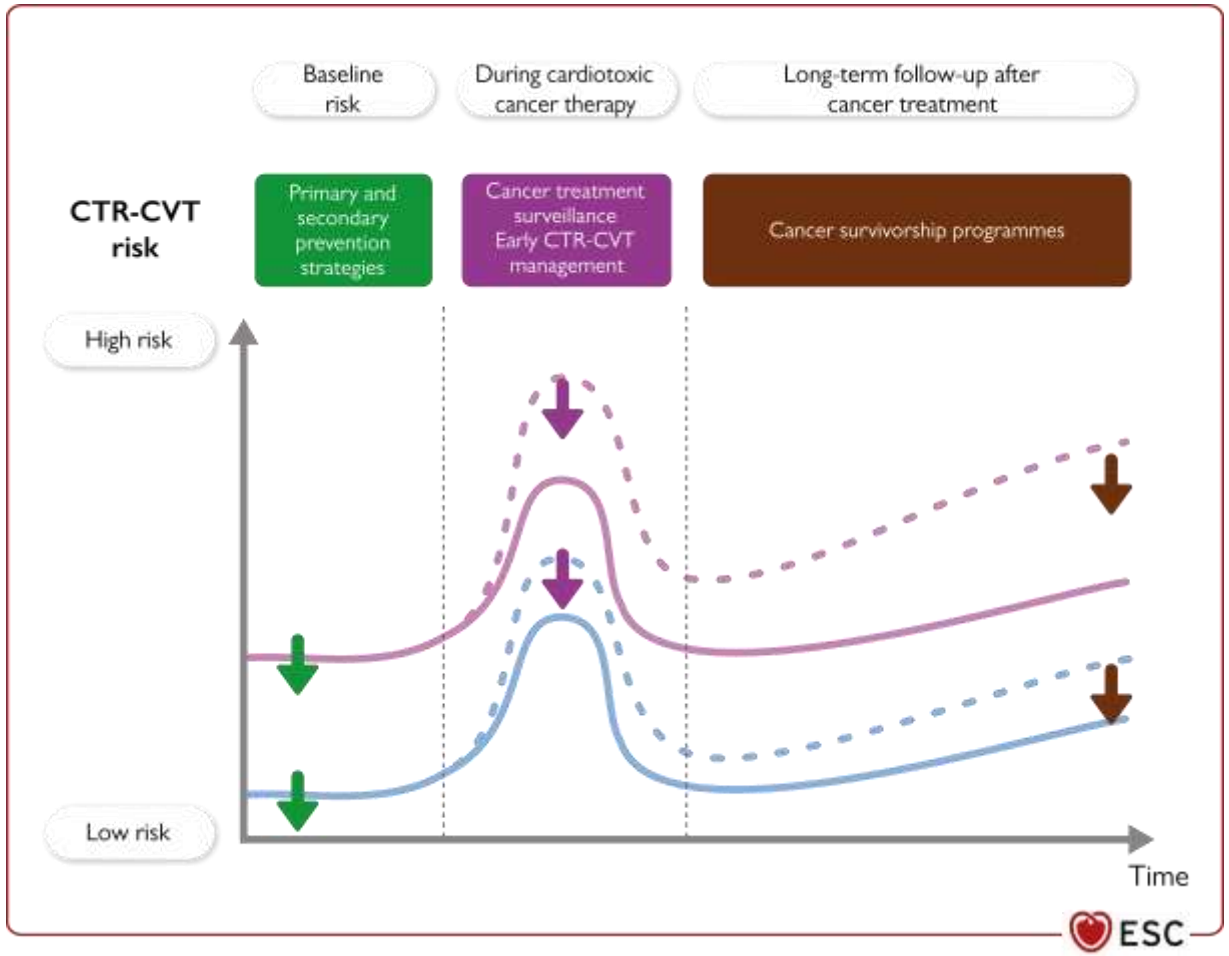
- Improved cancer survival → more patients exposed to **longer and combined therapies**

- CV events are now:
  - a **leading cause of treatment interruption**
  - a **determinant of real-world effectiveness**

- Shift from “managing toxicity” to **enabling safe continuation of cancer therapy**

# MONITORING BEFORE, DURING, AND AFTER TREATMENT

Dynamics of cardiovascular toxicity risk of patients with cancer

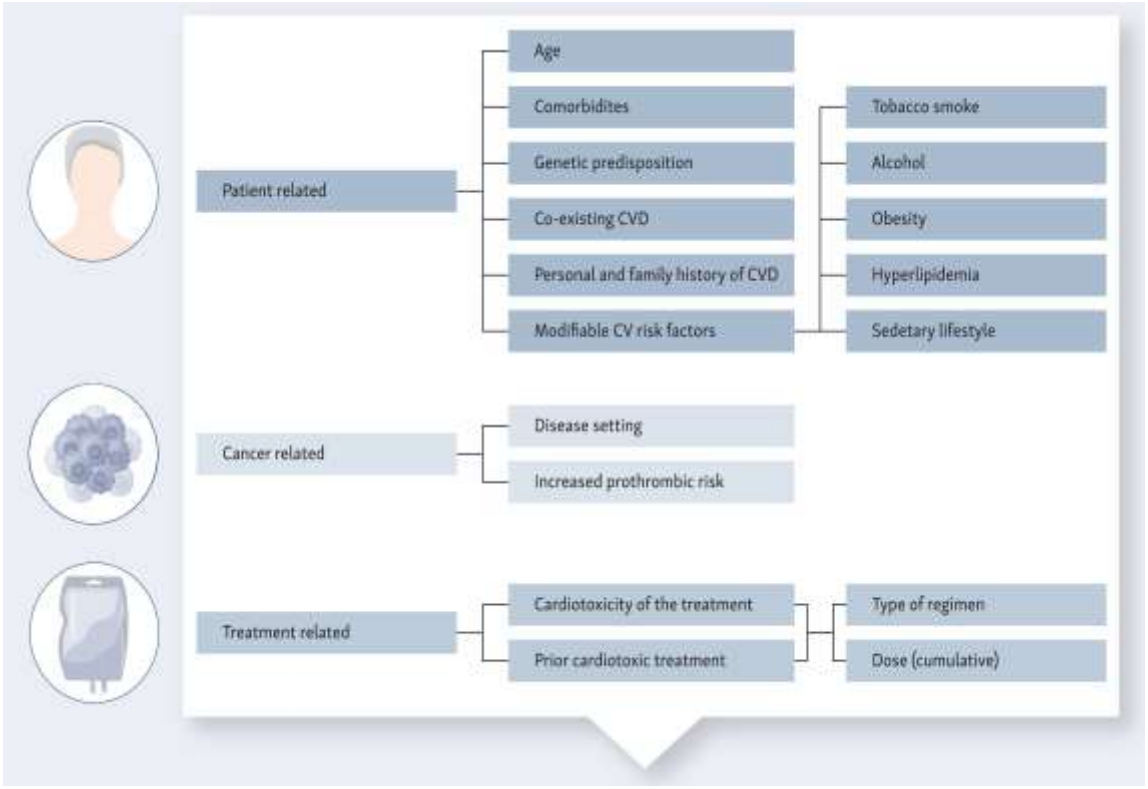


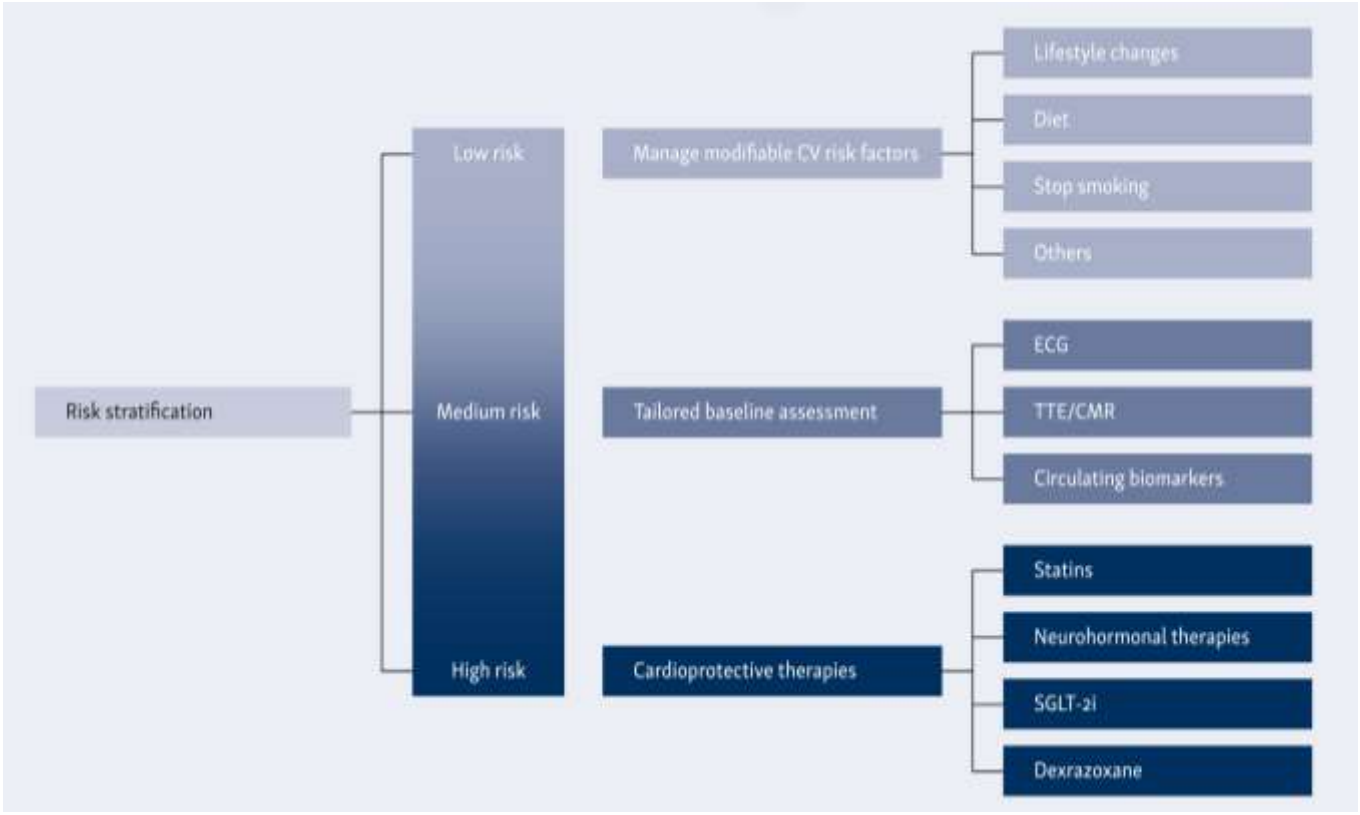
# MONITORING OF CV RISK

- Monitoring should be **dynamic** (before, during, and after treatment)

- Monitoring should be **risk-adapted (not one-size-fits-all approach)**

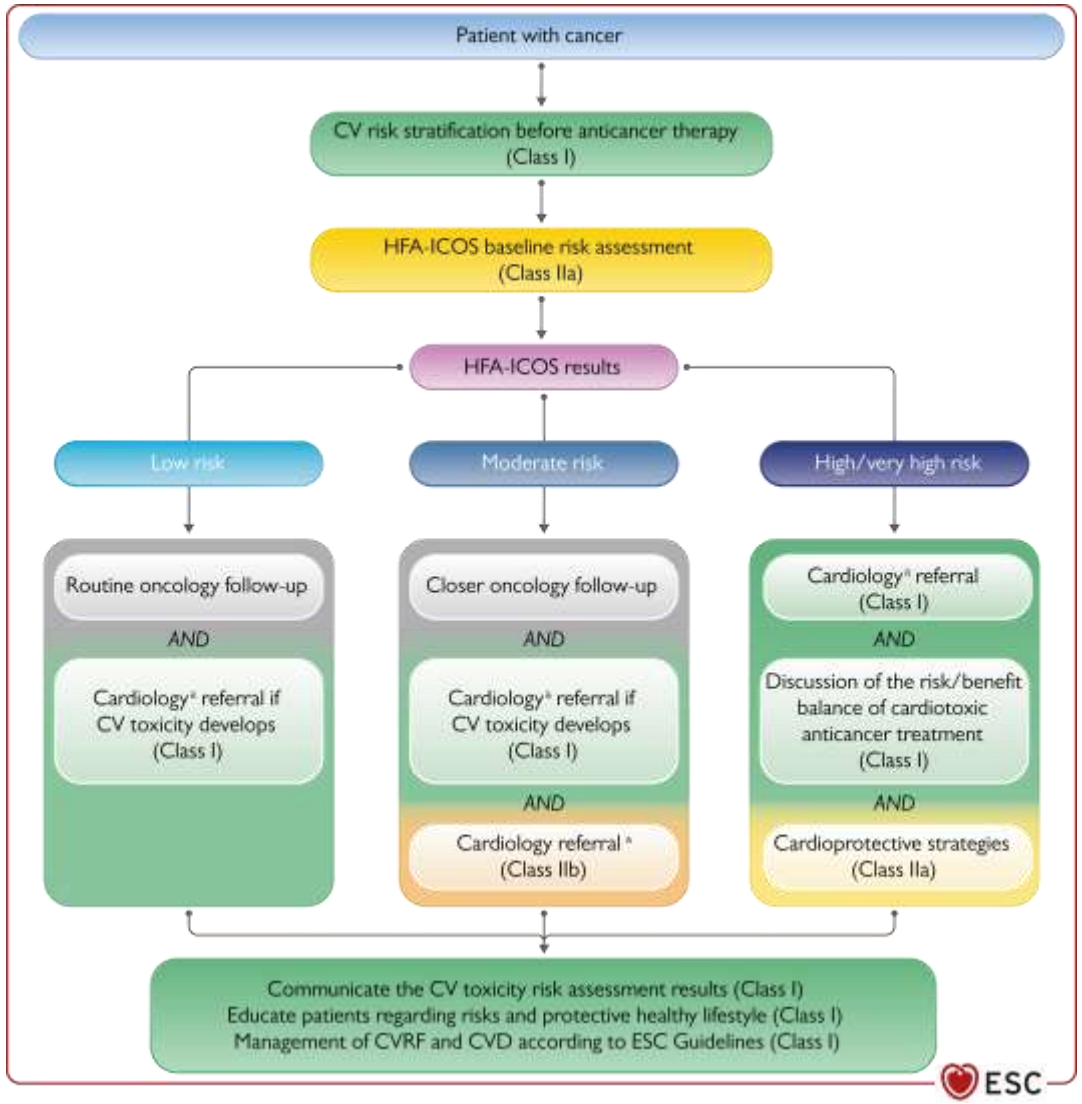
# BASELINE RISK ASSESSMENT

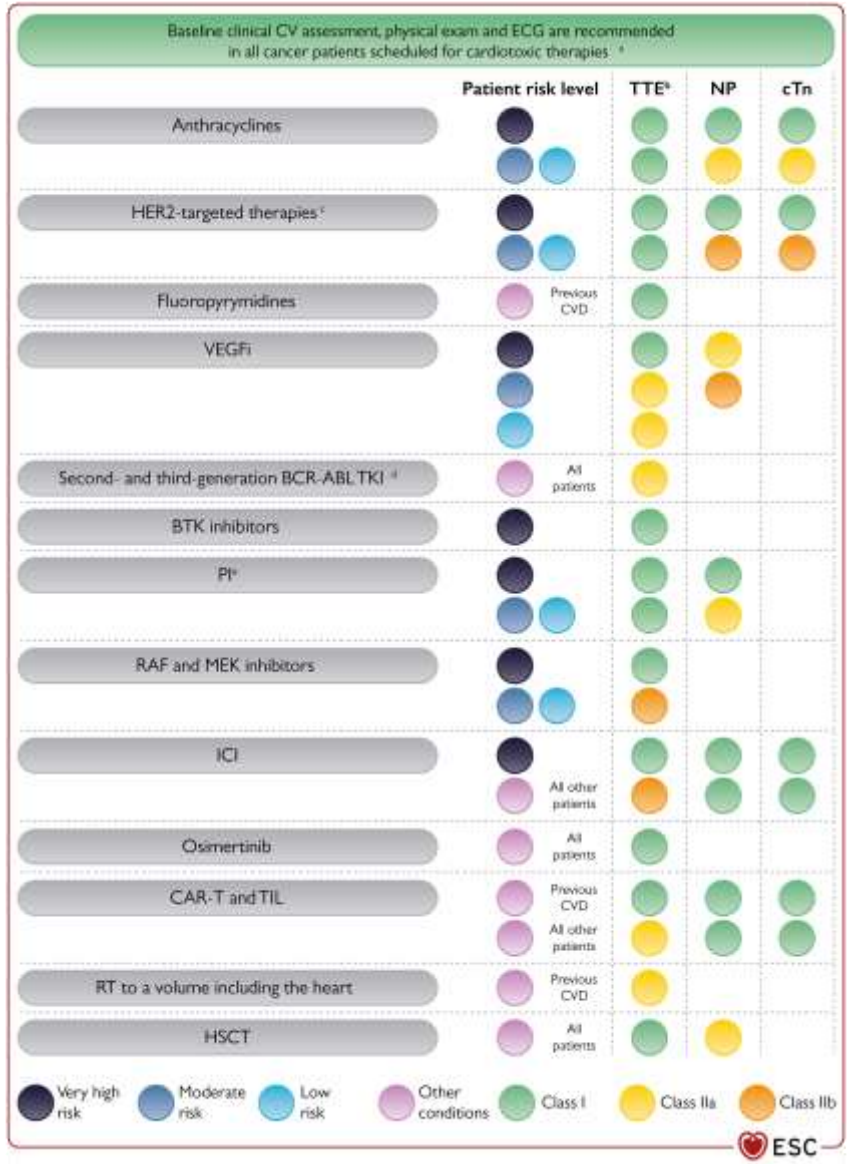



Dauccia C et al, ESMO OPEN 2025

# BASELINE RISK ASSESSMENT – ESC GUIDELINES



# BASELINE RISK ASSESSMENT

Baseline CV risk assessment is now mandatory, structured, and actionable.

- What “baseline CV risk” means in 2025:
  - Patient factors (age, comorbidities)
  - Cancer therapy-specific risk
- ESC / ESMO guidance alignment
- Practical tools:
  - Baseline echocardiography (when indicated)
  - Biomarkers (HS troponin, NT-proBNP) (when indicated)
- Regulatory relevance:
  - Stratification informs **trial eligibility**, **label warnings**, and **RMPs**

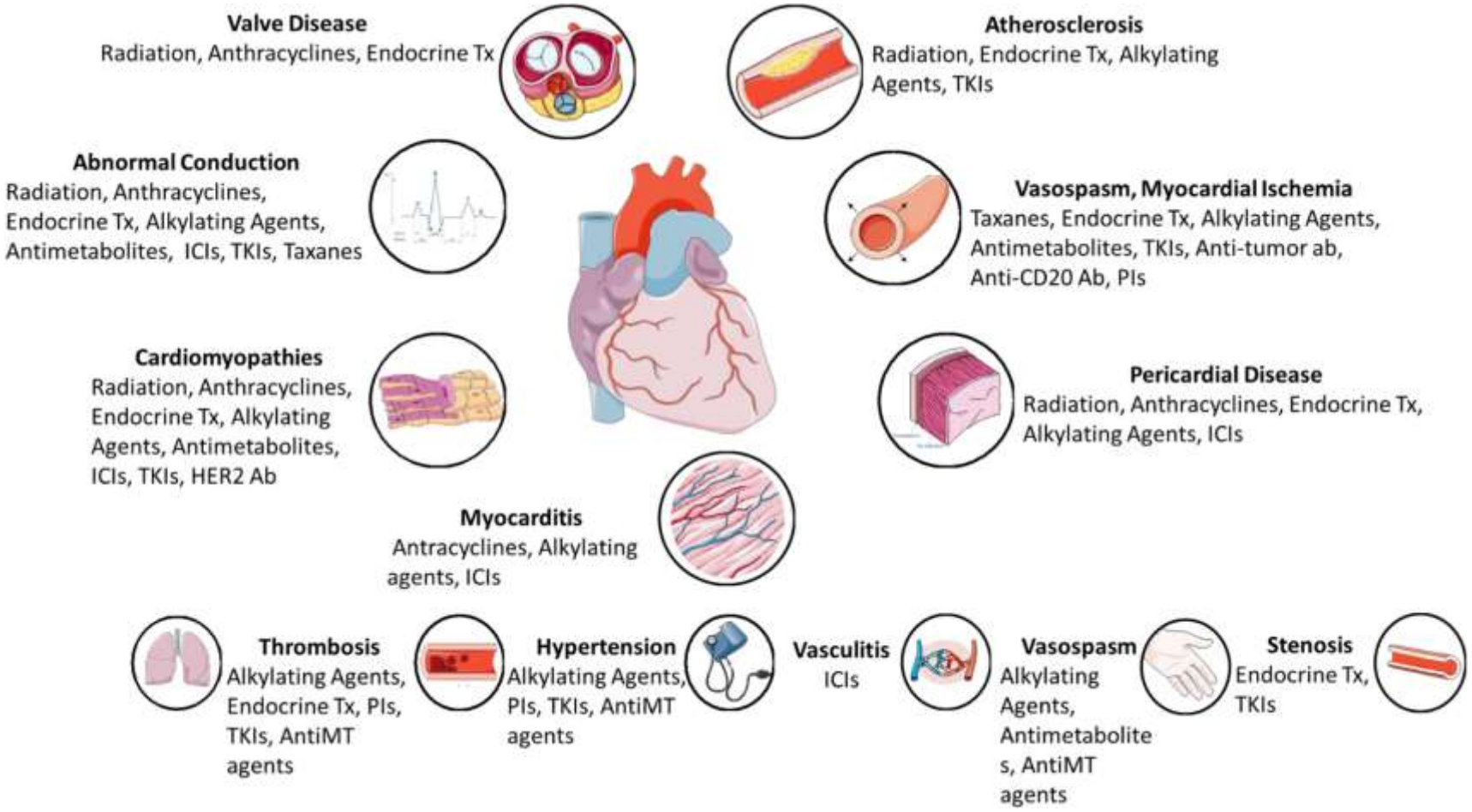
# WHAT HAS CHANGED IN CV RISK AS OF TODAY

## Cardiotoxicity profiles have evolved with modern oncology

- **Targeted therapies & immunotherapy**
  - TKIs → hypertension, arterial events
  - HER2-targeted agents → refined risk stratification
  - ICIs → myocarditis (rare but high lethality)
- **Combination and sequencing strategies**
  - Additive/subclinical toxicity
- **Earlier use of therapies (adjuvant / neoadjuvant)**
  - Lower tolerance for long-term CV harm

**→ CV risk is heterogeneous and therapy-specific, not "one-size-fits-all"**

# INCREASING COMPLEXITY IN THE CLINICAL MANIFESTATIONS OF CARDIOTOXICITY




*De Boer et al., Cardio-Oncology, 2021*

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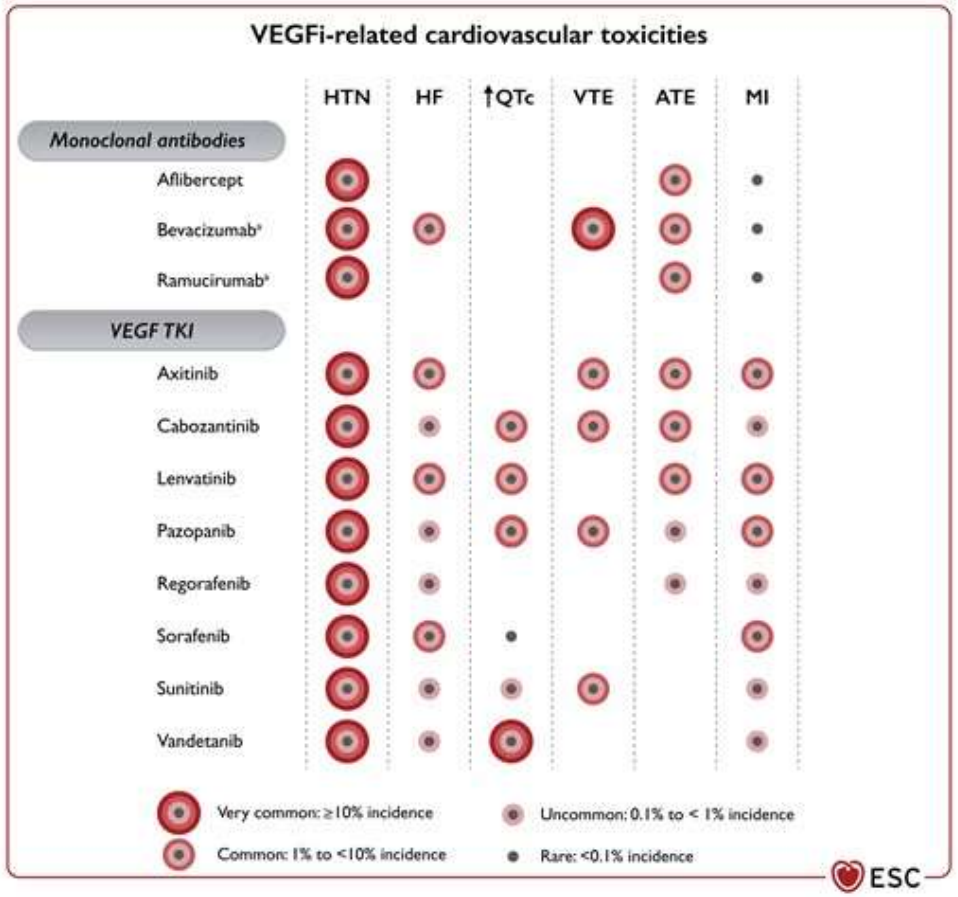
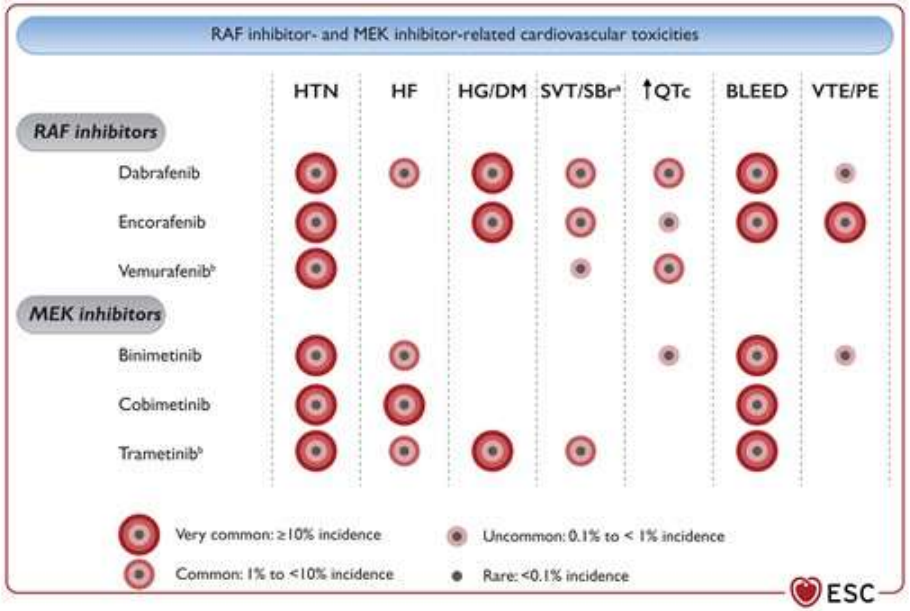


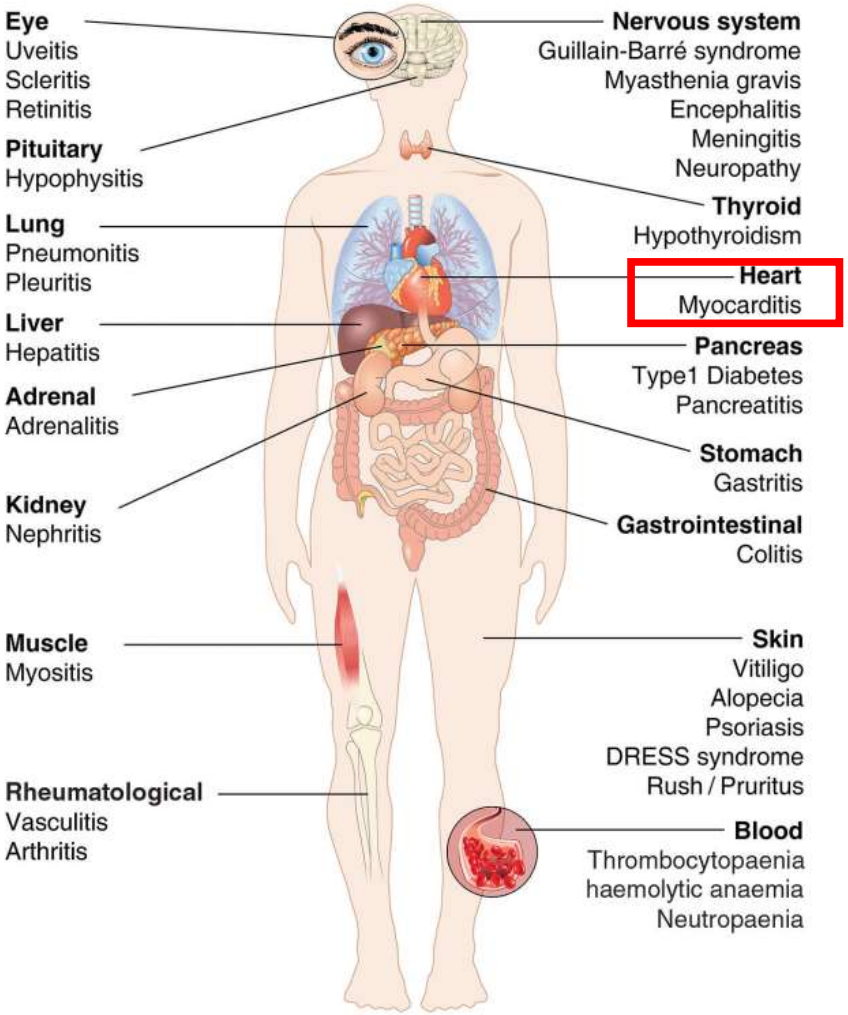



# CARDIOTOXICTY MANAGEMENT

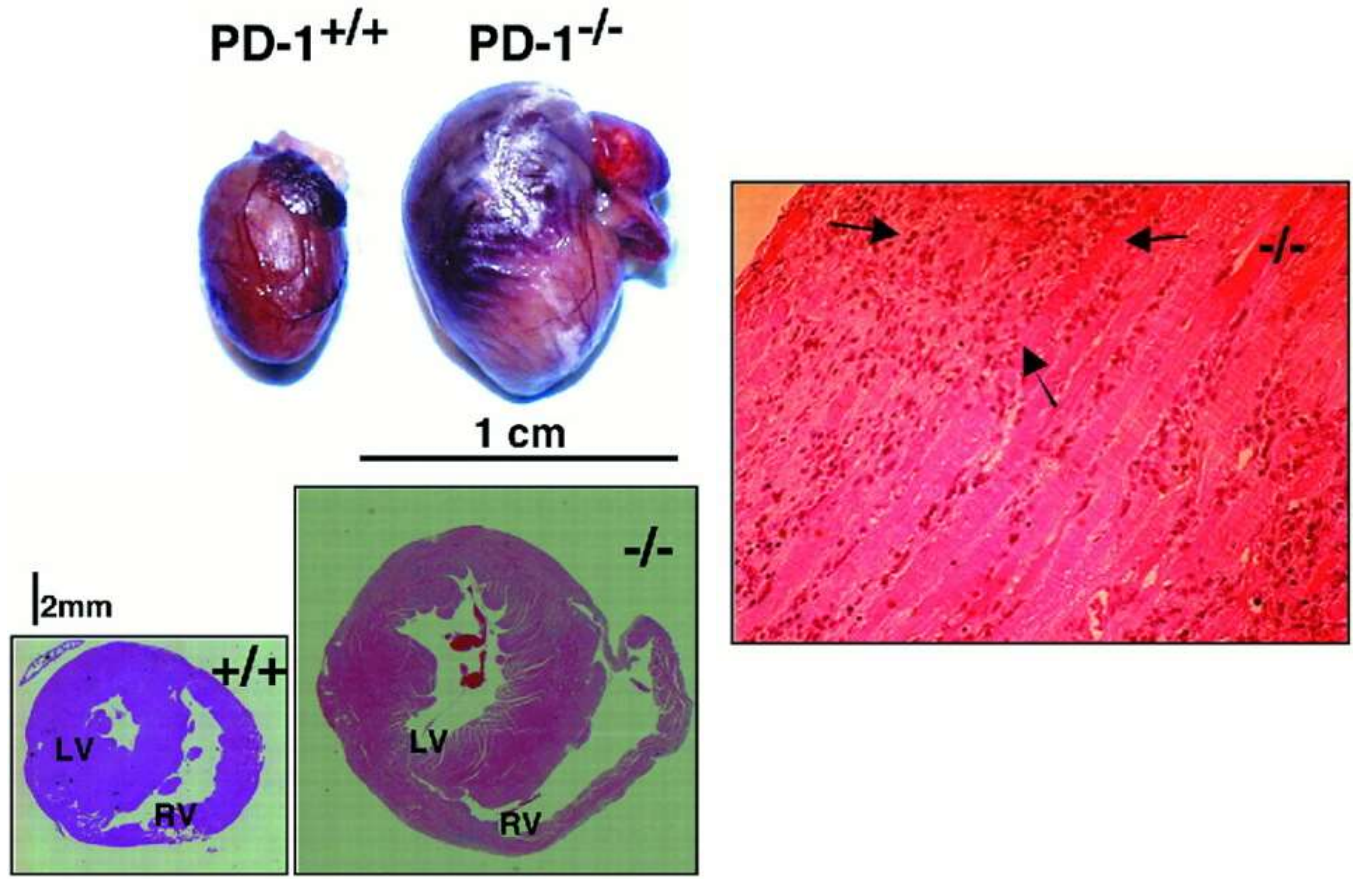
CV toxicity management aims to **maintain oncologic efficacy:**

- Early cardiology intervention → better treatment continuation rates
- Role of cardioprotective strategies (when evidence-based)
- Multidisciplinary decision-making:
  - Cardio-oncology boards
  - Shared responsibility

# THE EXAMPLE OF CARDIOTOXICITY OF IMMUNOTHERAPY

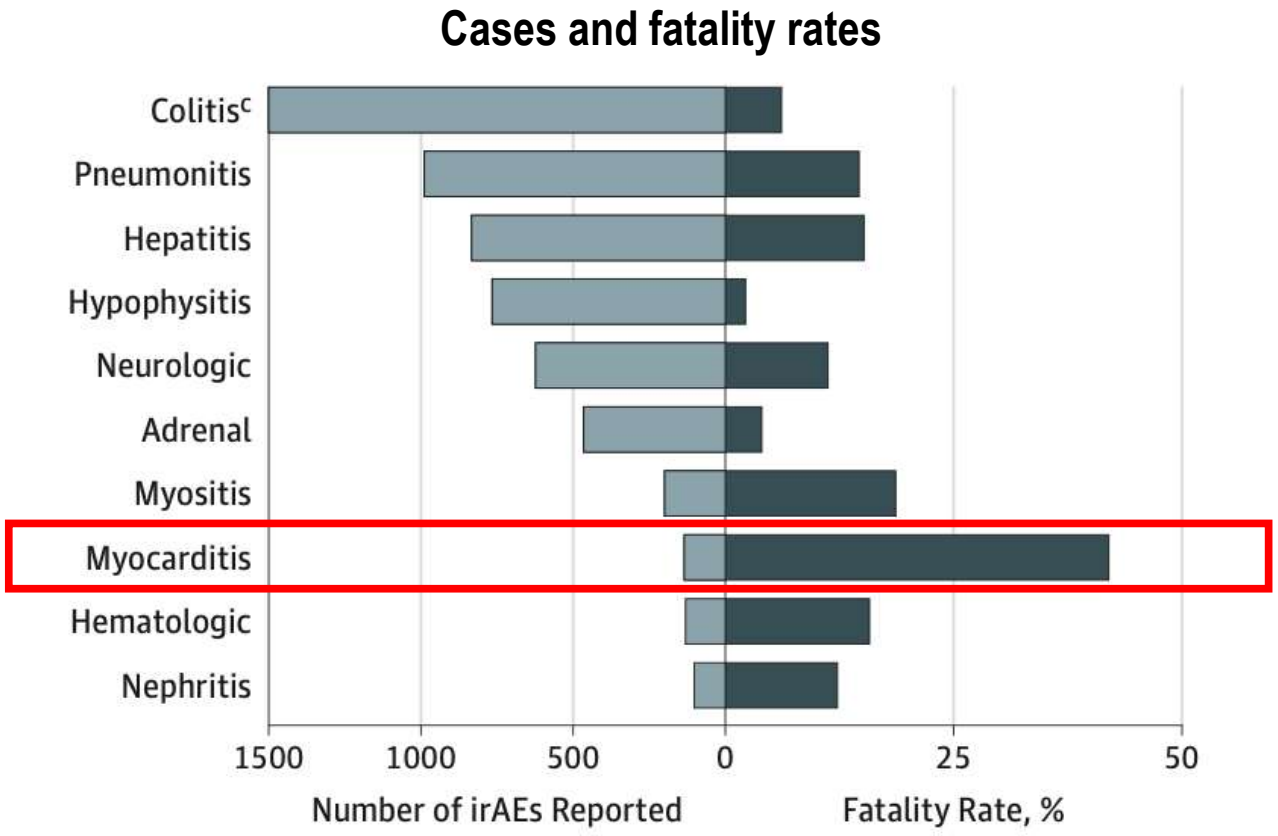


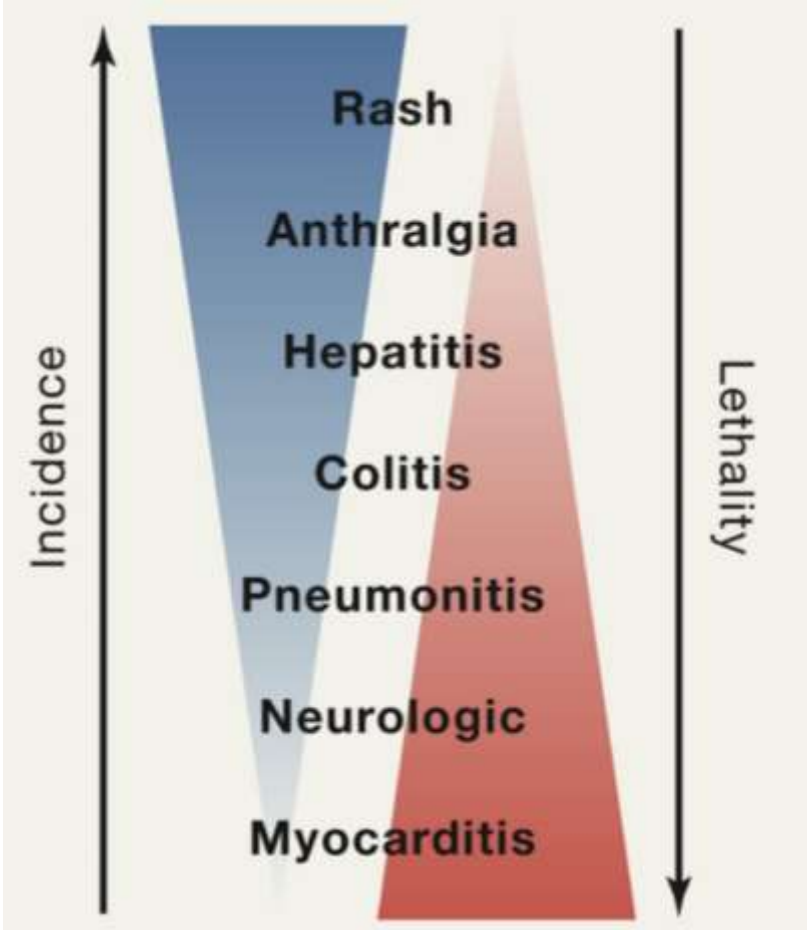

*Varicchi et al., ESMO Open, 2017*




*Nishimura H, et al. Science 2001;291(5502):319-22.*

# Myocarditis from ICI: a rare, yet lethal complication

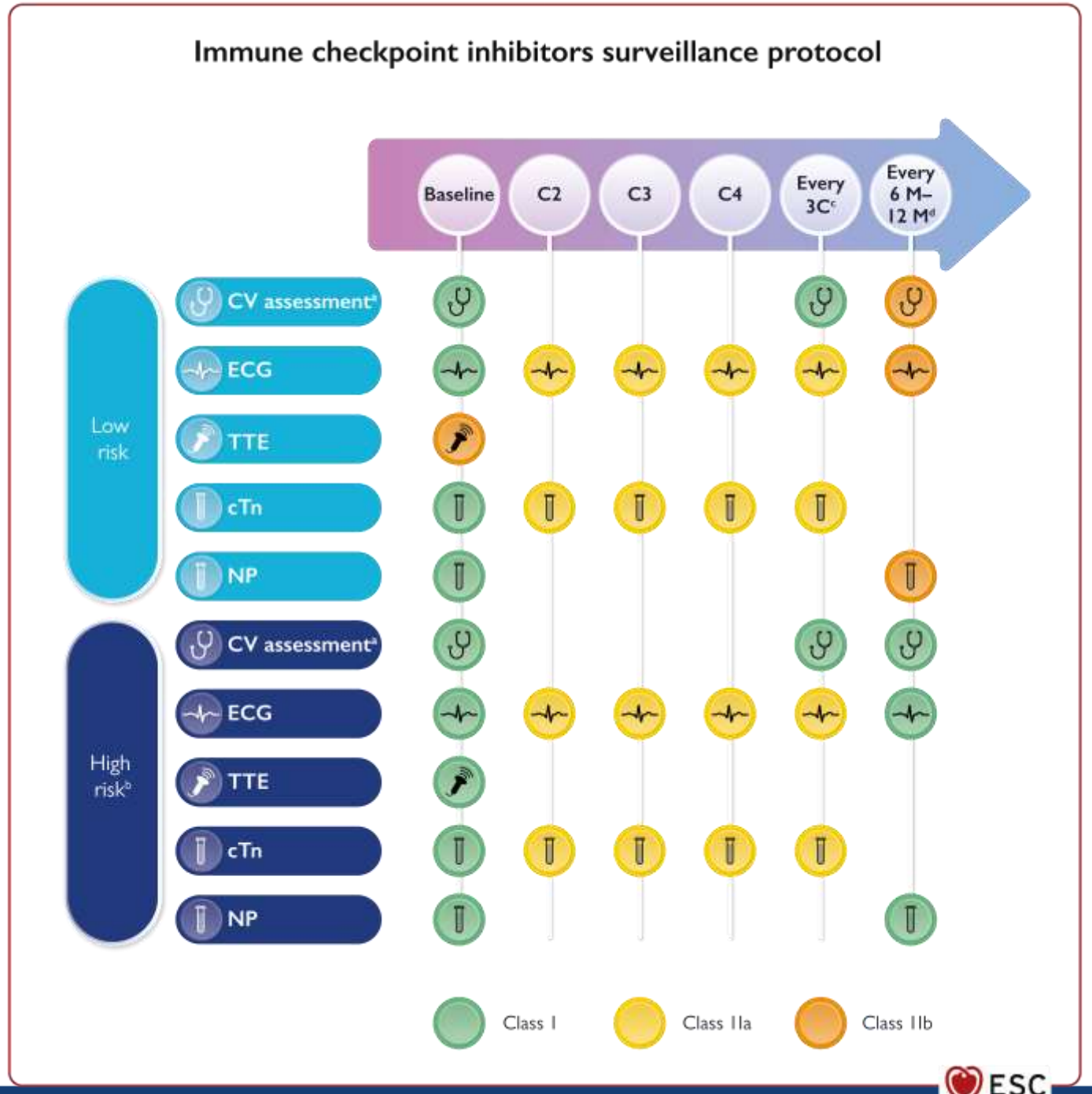


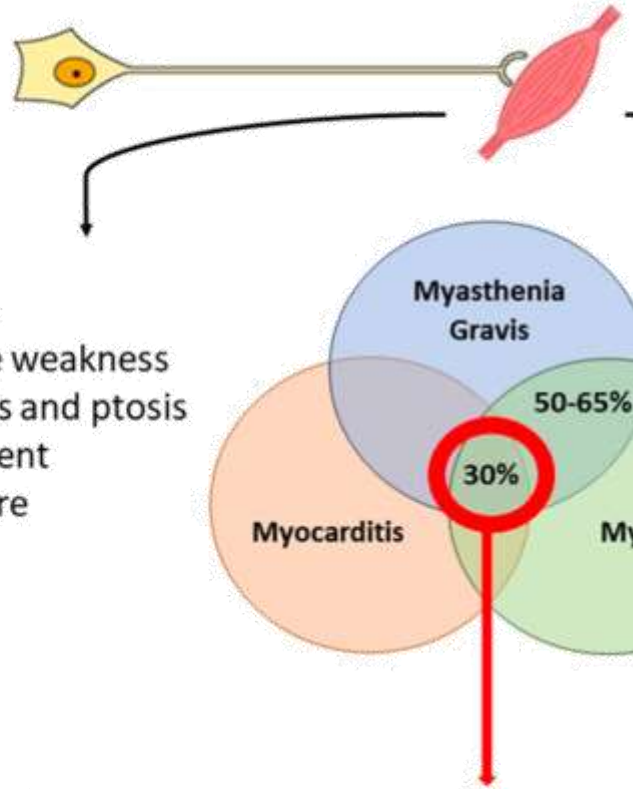

*Wang DY, et al. JAMA Oncol. 2018 Dec 1;4(12):1792*

*Dougan M, et al. Cell. 2021;184(6):1575-1588*

# CV surveillance of patients treated with ICI



# Overlap syndrome



**Myasthenia Gravis**
- Fatigable muscle weakness
- Opthlomoparesis and ptosis
- Bulbar involvement
- Respiratory failure




**Myositis**
- Myalgia and absence of muscle fatigability
- Limb-girdle pattern with proximal limbs weakness

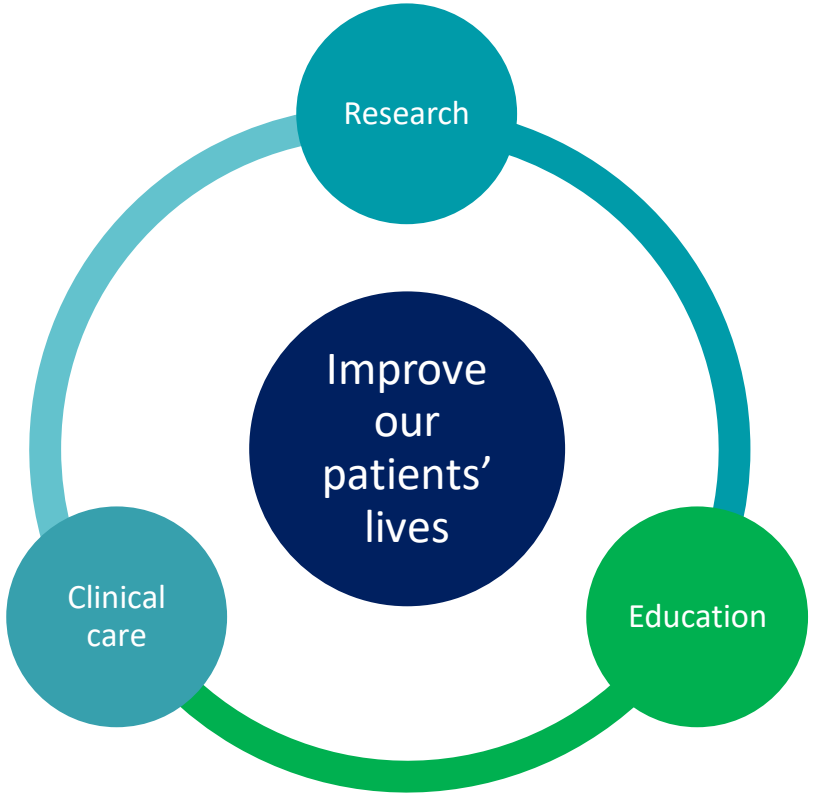
**Myocarditis/myositis/myasthenia overlap syndrome**
- Early onset (median after 1 dose)
- Extremely rare (incidence < 0.1%)
- High mortality rate (57%)

*Raschi E, et al. Drug Saf. 2023;46(9)*

# THE IMPORTANCE OF MULTIDISCIPLINARY COLLABORATION

**Our mission:**

**To improve the lives of Cancer Patients and survivors**




**What are our goals?  What are our strategies?**

Lenihan DJ et al, J Am Coll Cardiol CaardioOnc 2019

# Cardiotoxicity With Immune Checkpoint Inhibitors (ICI)

Meta-analysis of 66 studies of ICI (N=34,664 patients)

| | ICI-group (%) | Non-ICI group (%) | RR (95% CI) |
|---|---|---|---|
| Any cardiac AE | 3.78 | 3.40 | 1.14 (0.88-1.48) |
| Myocarditis | 0.12 | 0.01 | 1.11 (0.64-1.92) |
| Myocardial infarction | 0.41 | 0.27 | 1.19 (0.63-2.23) |
| Pericarditis | 0.51 | 0.22 | 1.14 (0.62-2.10) |
| Arrhytmias | 1.79 | 1.49 | 1.32 (0.94-1.84) |
| Heart failure | 0.43 | 0.63 | 0.61 (0.35-1.07) |
| Valvular disease | 0 | 0.03 | 0.63 (0.24-1.64) |
| Cardiac arrest | 0.24 | 0.09 | 1.23 (0.61-2.47) |
| Cardiac death | 0.33 | 0.21 | 1.07 (0.72-1.59) |

**Under-reporting in clinical trials: standardisation in AE reporting is needed**

Agostinetto E, et al. Eur Journal of Cancer 2021

# UNMET NEEDS & REGULATORY CHALLENGES

## Gaps remain between trials, real-world practice, and regulation:

- Under-representation of CV high-risk patients in trials
- Limited long-term CV data for newer agents
- Need for:
  - Post-marketing CV registries
  - Real-world evidence integration
- Toward 2025+:
  - CV safety as a core component of oncology drug development

# CONCLUSIONS

## Take-home messages:

- CV safety is fundamental to modern cancer care
- Risk-adapted assessment and monitoring are the 2025 standard
- Regulatory frameworks must evolve with clinical practice

# *Thank you for your attention!*