The Onco-hematologist's View: Integrating Novel Therapies and Cardiovascular Safety

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ESC
European Society of Cardiology

Conflict of interest

ESC Cardiovascular Round Table

Name of Company	Research support	Employee	Stockholder	Speaker's Bureau	Scientific Advisory Board	Other (Honoraria and/or travel support)
GSK					X	X
Menarini/ StemLine					X	X
BMS/Celgene					X	X
Sanofi					X	X
Janssen					X	X
AstraZeneca					X	X
Pfizer					X	X

Cancer is a disease of the “elderly”

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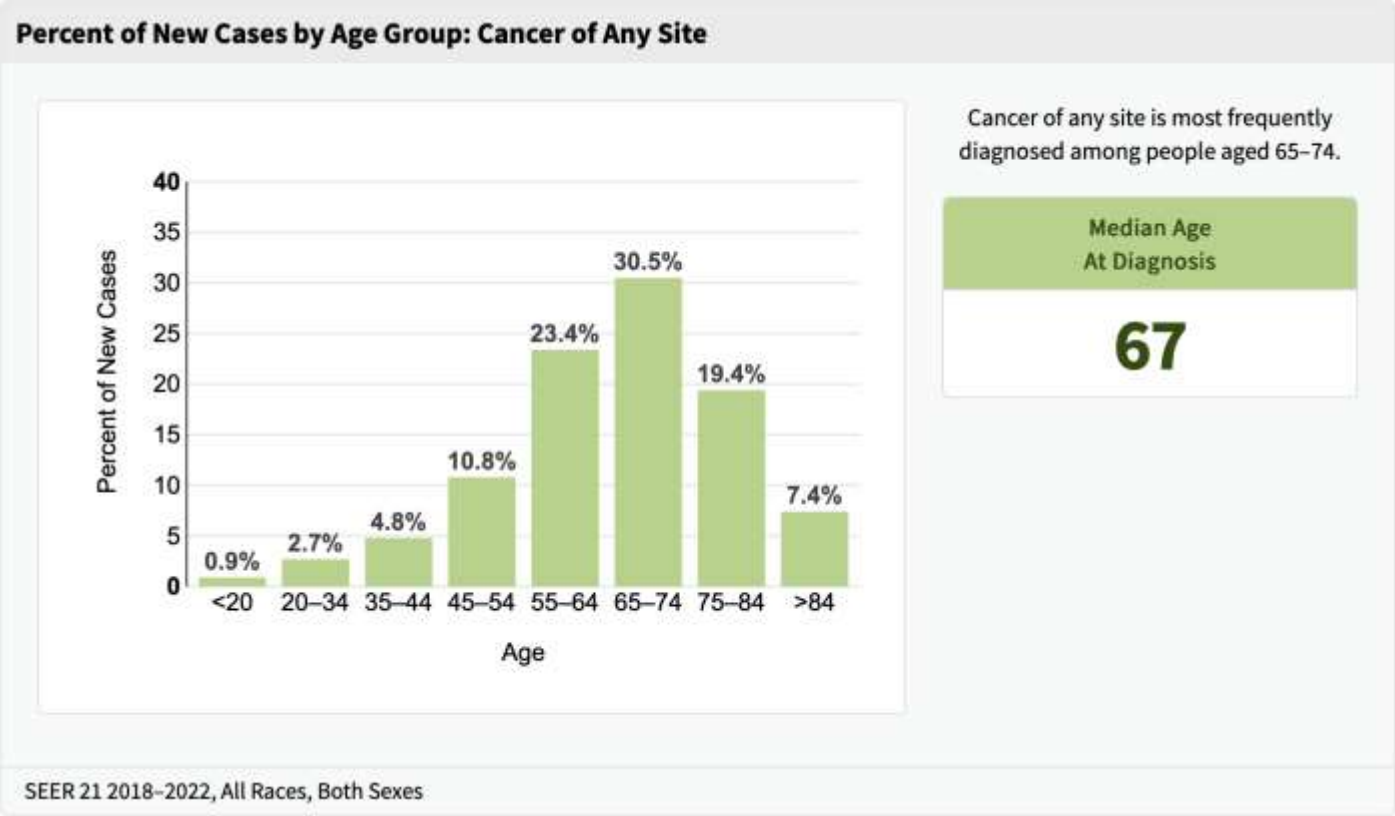

https://seer.cancer.gov/statfacts/html accessed 17 Jan 2026

Age at diagnosis of haematological cancers

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Most haematological cancers are diagnosed around 70 years of age

Non-Hodgkin lymphoma is most frequently diagnosed among people aged 65–74.

Median Age At Diagnosis
68

Myeloma is most frequently diagnosed among people aged 65–74.

Median Age At Diagnosis
69

Leukemia is most frequently diagnosed among people aged 65–74.

Median Age At Diagnosis
68

Exception: Hodgkin Lymphoma

Hodgkin lymphoma is most frequently diagnosed among people aged 20–34.

Median Age At Diagnosis
39

…but HL is rare! (5% of HC)

https://seer.cancer.gov/statfacts/html accessed 17 Jan 2026; Siegel R et al., CA Cancer J Clin. 2026 Jan 13:76(1):e70043

Prevalence of cardiac comorbidities in the general population

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- 70% of people 70 yrs or older will develop CVD
- CVD frequently coexists with diabetes (37%–47%), anaemia (39%–51%), and arthritis (41%–46%)
- 70% of people 65 yrs or older have hypertension
- Prevalence of heart disease (coronary heart disease, angina pectoris or myocardial infarction) in US: 14.3% in adults aged 65–74, and 24.2% in adults aged 75 or older
- Prevalence of chronic ischemic heart disease in a German cohort (median age 74 yrs): 27.5%

Yrs: years; CVD: chronic vascular disease

Aïdoud A et al., J Am Heart Assoc 2023; 12: e026850; Mozaffarian D et al., Circulation 2015; 131: e29-322

Major CV toxicities in haematologic cancers

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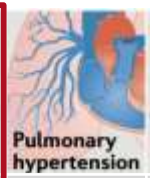
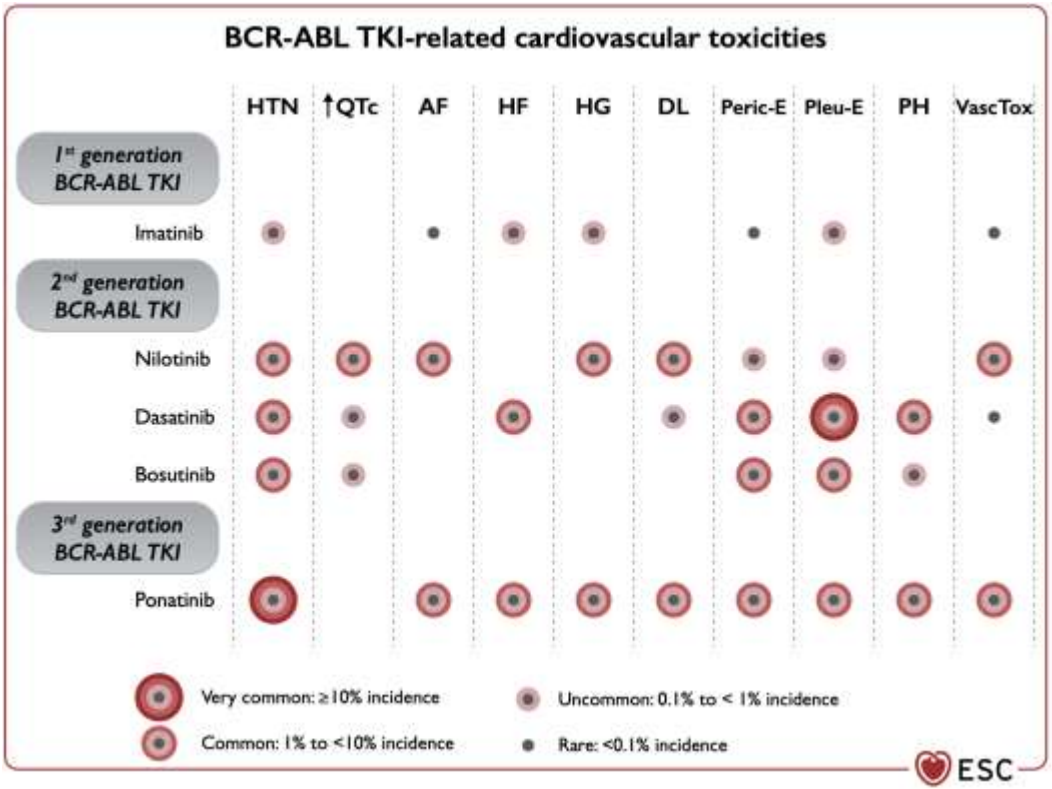
	 Arrhythmia	 Cardio-myopathy	 Arterial vascular disease	Venous thrombo-embolism	 Pulmonary hypertension	 Systemic hypertension	 Pericardial disease	 Valvular heart disease
Conventional chemotherapy								
Antracyclins (doxorubicin)		X						
Alkylating agents (cyclophosphamide, melphalan)	X	X	X					
Antimetabolites (cytarabine)							X	
Arsenic trioxide	X							
Targeted agents								
Immunomodulatory drugs (thalidomide, lenalidomide)	X			X				
Proteasome inhibitors (bortezomib, carfilzomib)		X	X			X		
BCR::ABL1 inhibitors (dasatinib, nilotinib, ponatinib)	X		X	X	X (dasatinib)			
BTK inhibitors(ibrutinib)	X							

Fig. modified from: Herrmann J., Nat Rev Cardiology 2020; 17: 474-502

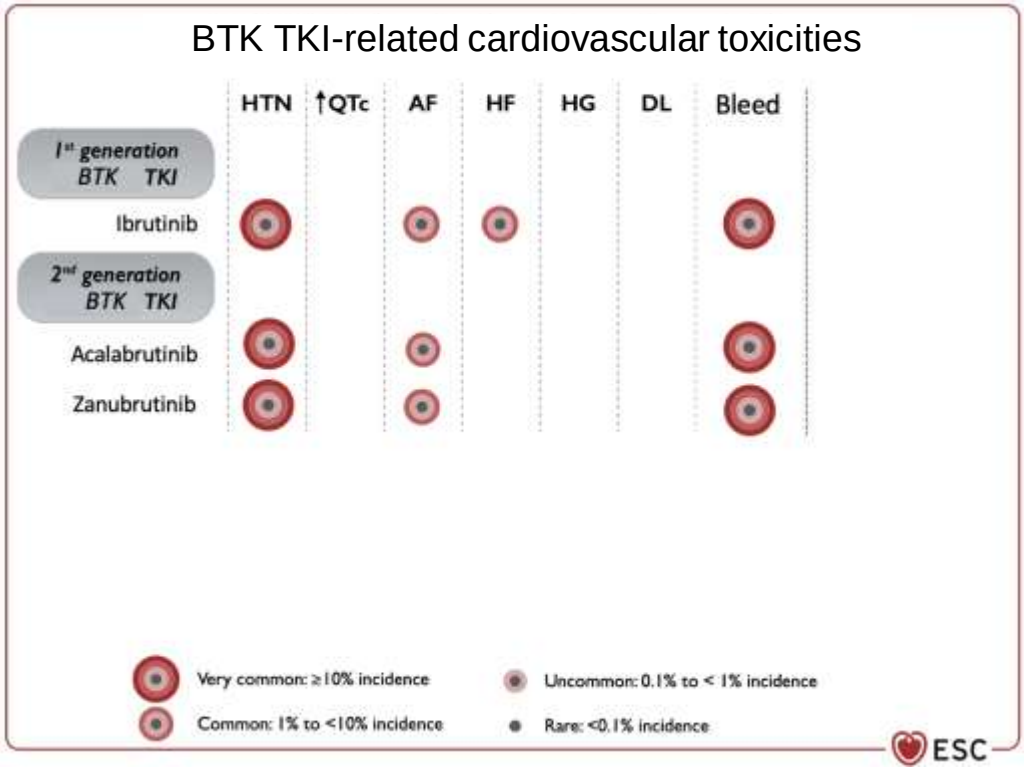
CV toxicities of BCR::ABL inhibitors



Cardiovascular complications of BCR::ABL1 TKI are due to their typical off target effects

HTN: hypertension, AF: atrial fibrillation, HF: heart failure; HG hyperglycaemia, DL: dyslipidaemia, Peric-E: pericardial effusion, Pleu-E pleural effusion, PH: pulmonal hypertension

CV toxicities of BTK inhibitors

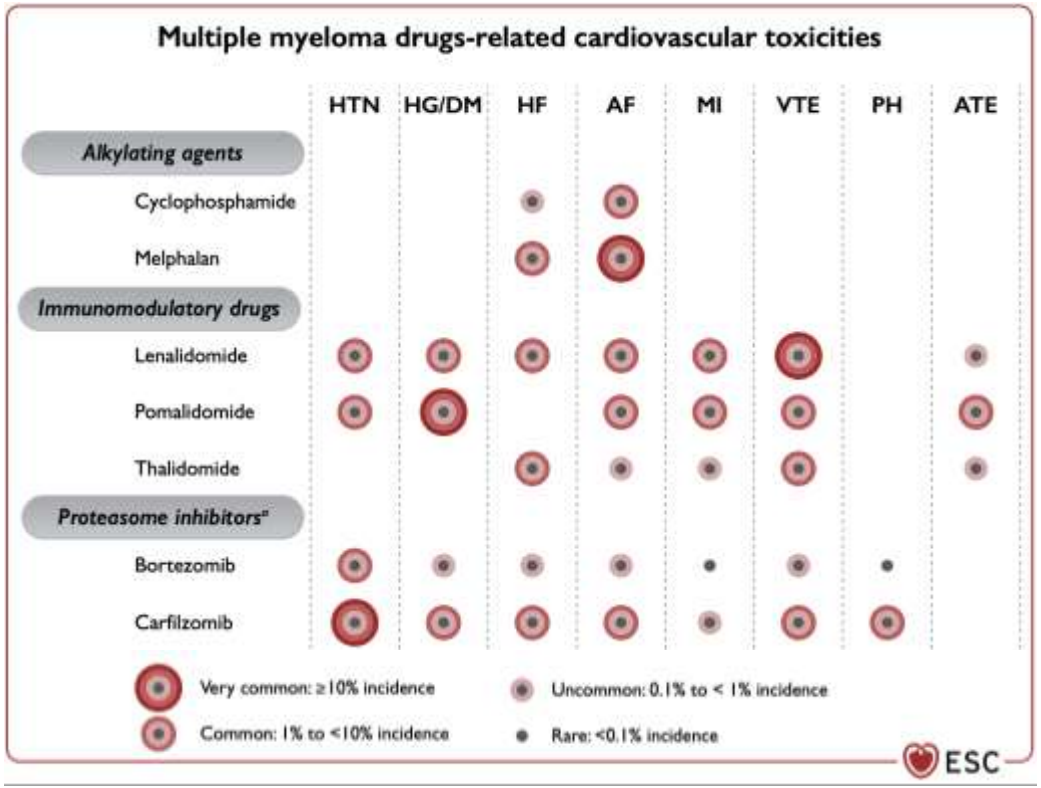


BTK are associated with bleeding diathesis, and an increased risk of hypertension, AF and HF

BTK: Burton tyrosine kinase; HTN: hypertension, AF: atrial fibrillation, HF: heart failure; HG hyperglicaemia, DL: dyslipidaemia, Bleed: bleeding

Fig. modified from 2022 ESC Guidelines on cardio-oncology. European Heart Journal 2022; 43: 4229–4361

CV toxicities of BTK inhibitors



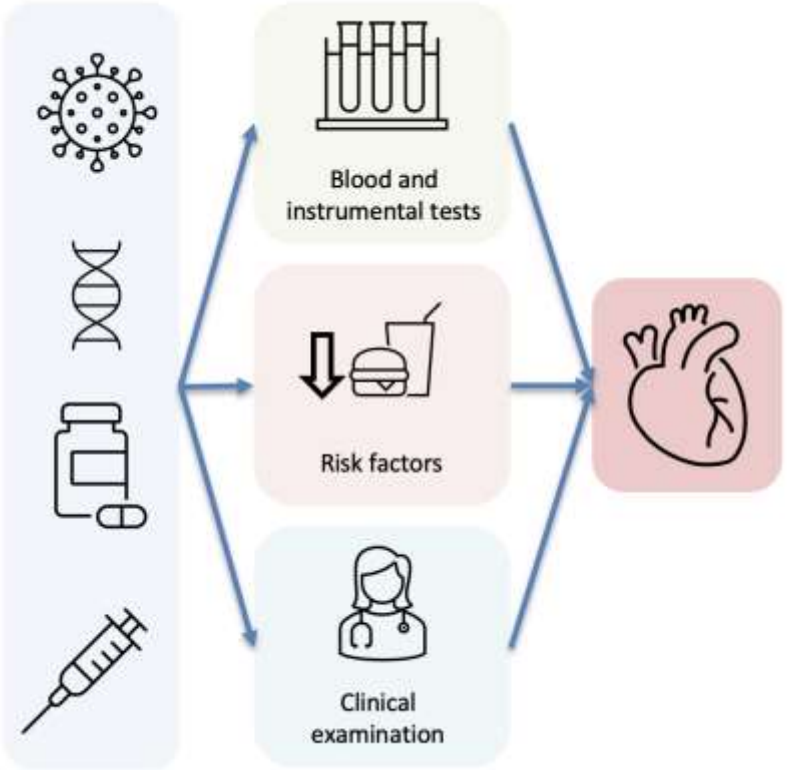
Immunomodulatory drugs are associated with a higher risk of thrombosis.
Among proteasome inhibitors, Carfilzomib is associated with a higher risk of hypertension

HTN: hypertension, AF: atrial fibrillation, HF: heart failure; HG hyperglycaemia, DM: diabetes mellitus, MI: myocardial infarction, VTE: venous thromboembolism, PH: pulmonal hypertension, ATE: arterial thromboembolism

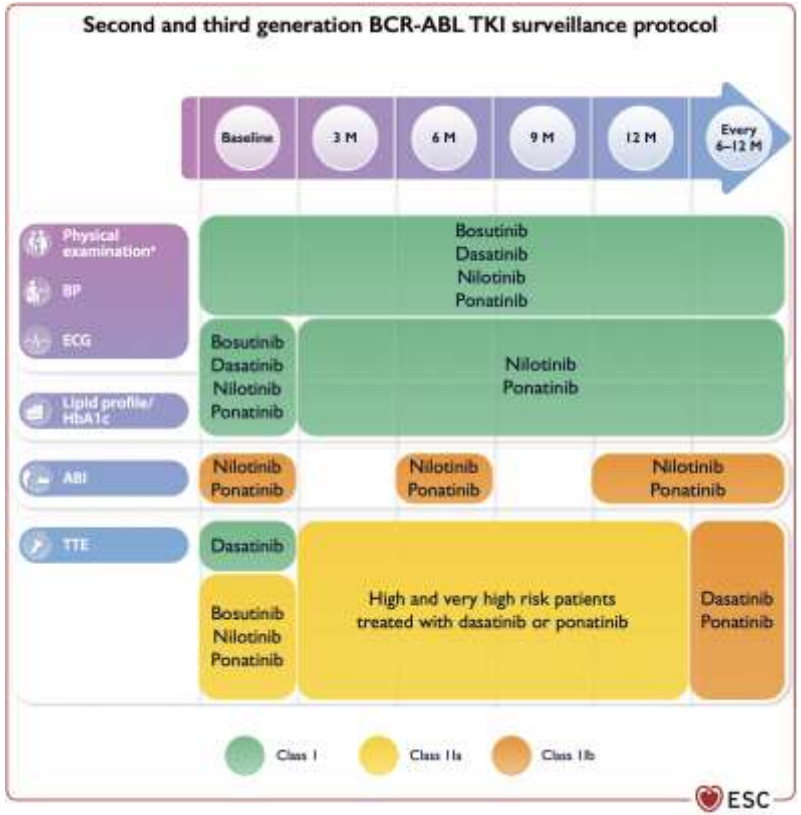
Fig. modified from 2022 ESC Guidelines on cardio-oncology. European Heart Journal 2022; 43: 4229–4361

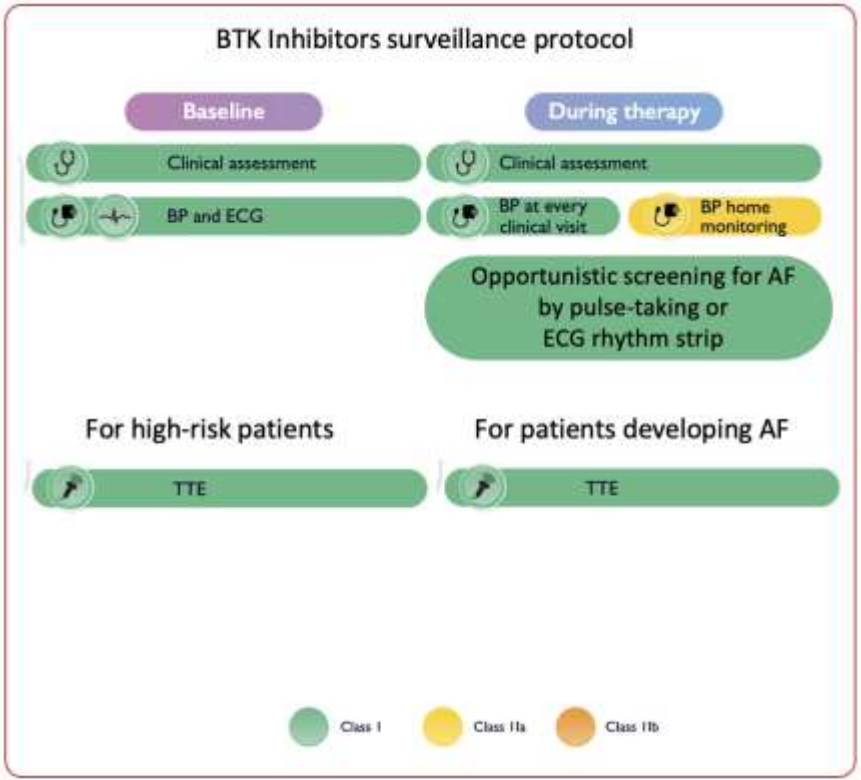
How to integrate these drugs in our therapy

- Optimal monitoring is the key (2022 ESC Guidelines on cardio-oncology)
- Reducing risk factors before starting therapy
- Medical and behavioural therapy
- …don´t underestimate the effect of sport



Examples of monitoring





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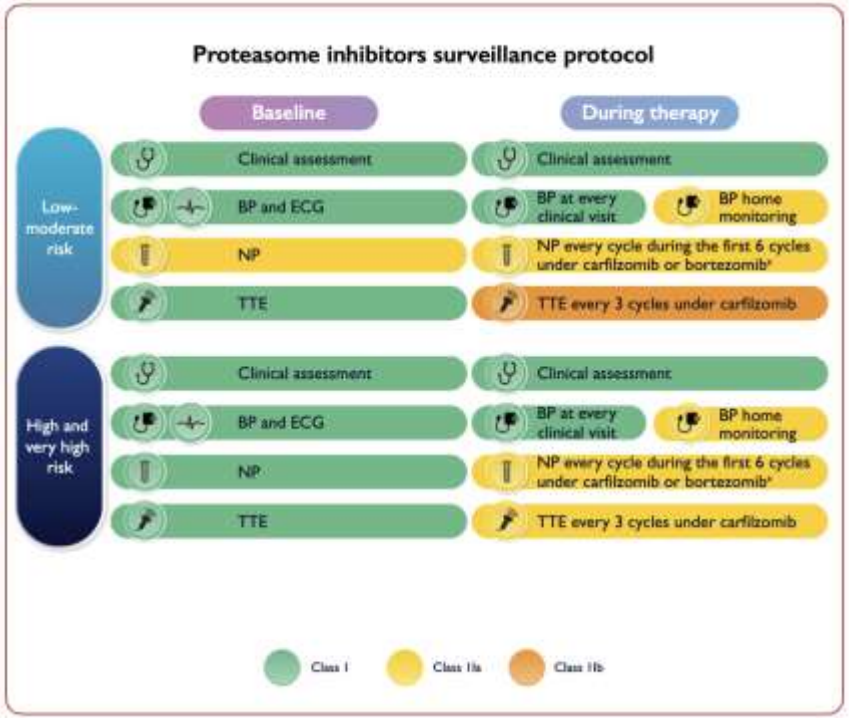
Examples of monitoring



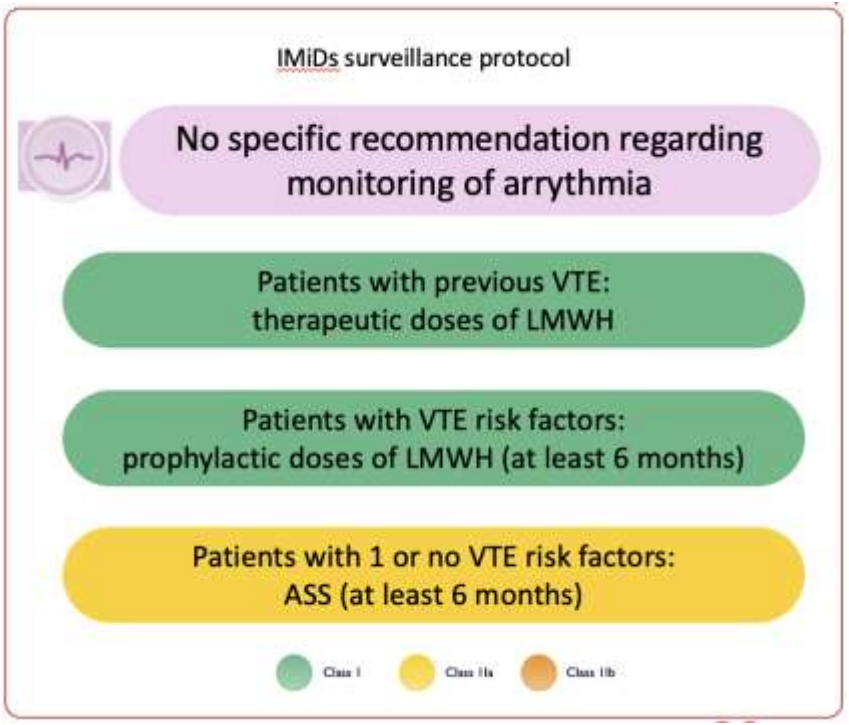


Fig. modified from 2022 ESC Guidelines on cardio-oncology. European Heart Journal 2022; 43: 4229–4361

Let´s spice things up a little bit…

It is not all that easy…comorbidities and side effects of drugs are different also according to sex at birth

Example of multiple myeloma

	Male, *N* = 363 (55%), *n/N* (%)	Female, *N* = 292 (45%), *n/N* (%)	*p* value
Risk according to IMWG			
High	31/137 (23)	32/119 (27)	0.378
Standard	89/137 (65)	78/119 (65)	
Low	17/137 (12)	9/119 (8)	

	Male, *n* = 179 (57%), *n/N* (%)	Female, *n* = 134 (43%), *n/N* (%)	*p* value
Toxicity*			
Haematological	168/171 (98)	132/132 (100)	0.260
Infections	131/179 (73)	93/134 (69)	0.527
Gastrointestinal	91/179 (51)	88/133 (66)	0.107
Mucositis	39/173 (23)	54/132 (41)	0.001
Cardiovascular tox	18/179 (10)	13/134 (10)	0.792
ICU admission	2/172 (1)	3/131 (2)	0.655
Comorbidities*			
Renal insufficiency CKD > Grade 2 before SCT	25/110 (23)	21/100 (21)	0.868
Cardiac (general)	122/179 (68)	73/134 (55)	0.018
Hypertension	111/179 (62)	65/134 (49)	0.021
Coronary heart disease	23/179 (13)	2/134 (2)	<0.001
COPD	13/179 (7)	3/134 (2)	0.067
DM type II	18/179 (10)	8/134 (6)	0.220

Conclusions

- We have wonderful drugs that significantly increase survival of our patients
- Most of these compounds have a cardiovascular toxicity, often underestimate by onco-haematologist
- Patients bring their own burden of comorbidities which also affect cardiovascular risk profile
- Younger patients → evaluation of long-term survival and side effects

We are getting there, but we still need to improve cardiovascular safety assessment by improving risk stratification including better representation of diverse patient profiles (age, sex, behaviour, etc)

LET´S DO THIS TOGETHER

Grazie!