

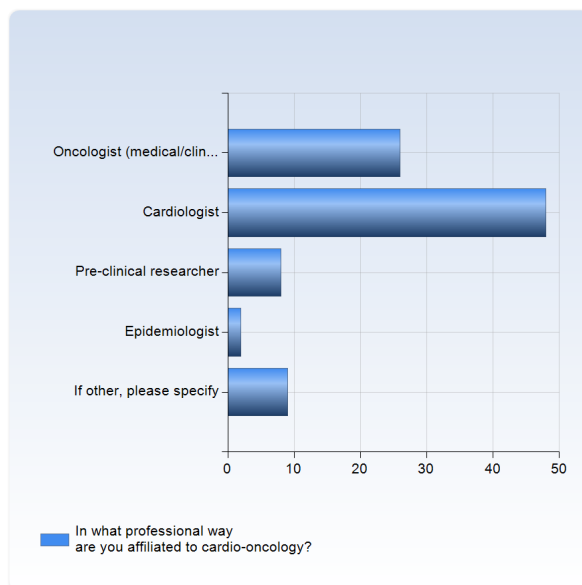


Cardio-oncology Survey Karolinska

Respondents: 372
Answer Count: 93
Answer Frequency: 25.00 %

In what professional way are you affiliated to cardio-oncology?

In what professional way are you affiliated to cardio-oncology?	Number of Responses
Oncologist (medical/clinical/radiation therapy)	26 (28.0%)
Cardiologist	48 (51.6%)
Pre-clinical researcher	8 (8.6%)
Epidemiologist	2 (2.2%)
If other, please specify	9 (9.7%)
Total	93 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
In what professional way are you affiliated to cardio-oncology?	2.1	1.1	53.6 %	1.0	1.0	2.0	2.0	5.0



If other, please specify

Paediatric oncologist

I did a clinical study assessing cardiac function during exercise

clinical researcher

angiologist

Academic researcher

Nurse Academic

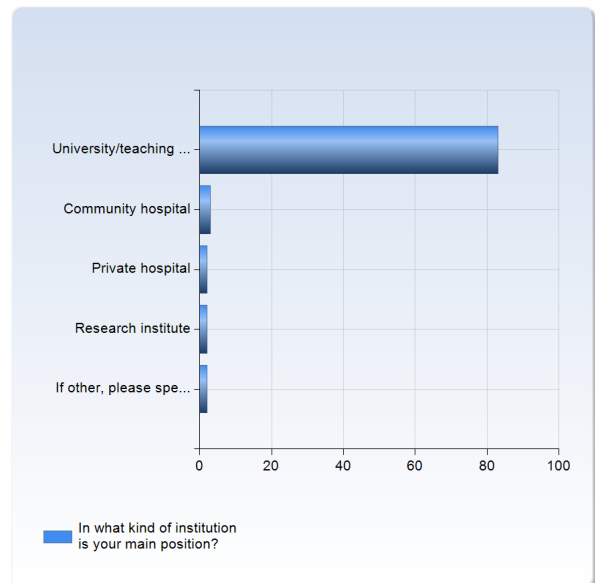
Psychological researcher

Nurse Practitioner

Clinical Pharmacology

In what kind of institution is your main position?

In what kind of institution is your main position?	Number of Responses
University/teaching hospital	83 (90.2%)
Community hospital	3 (3.3%)
Private hospital	2 (2.2%)
Research institute	2 (2.2%)
If other, please specify	2 (2.2%)
Total	92 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
In what kind of institution is your main position?	1.2	0.8	64.0 %	1.0	1.0	1.0	1.0	5.0

If other, please specify

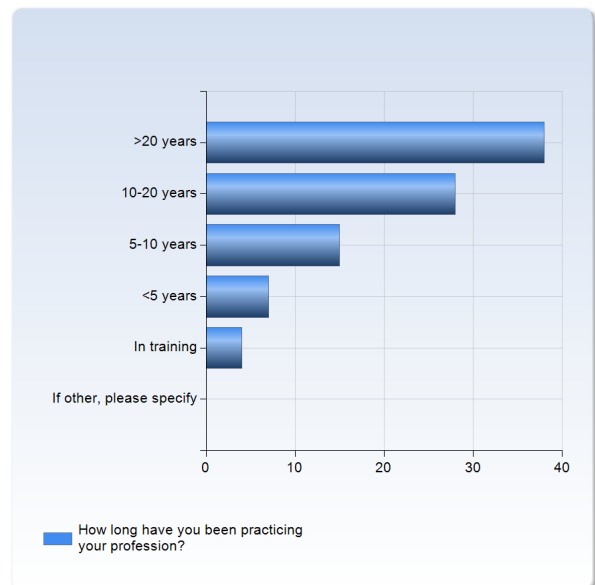
now retired - private practice

Community cardiology outpatient clinic



How long have you been practicing your profession?

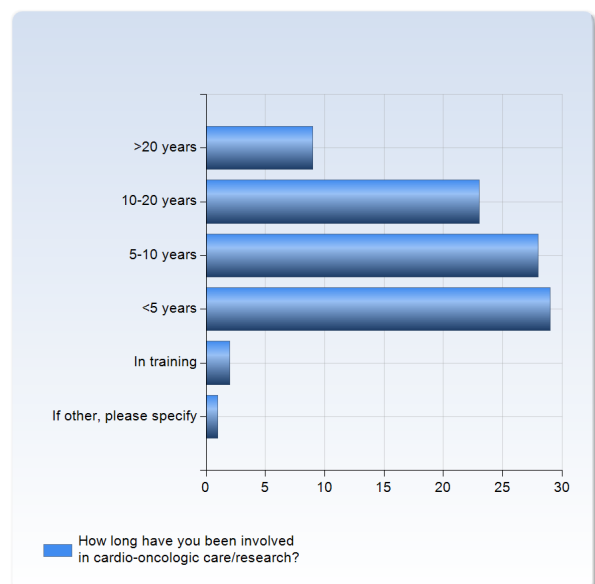
How long have you been practicing your profession?	Number of Responses
>20 years	38 (41.3%)
10-20 years	28 (30.4%)
5-10 years	15 (16.3%)
<5 years	7 (7.6%)
In training	4 (4.3%)
If other, please specify	0 (0.0%)
Total	92 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
How long have you been practicing your profession?	2.0	1.1	55.8 %	1.0	1.0	2.0	3.0	5.0

How long have you been involved in cardio-oncologic care/research?

How long have you been involved in cardio-oncologic care/research?	Number of Responses
>20 years	9 (9.8%)
10-20 years	23 (25.0%)
5-10 years	28 (30.4%)
<5 years	29 (31.5%)
In training	2 (2.2%)
If other, please specify	1 (1.1%)
Total	92 (100.0%)

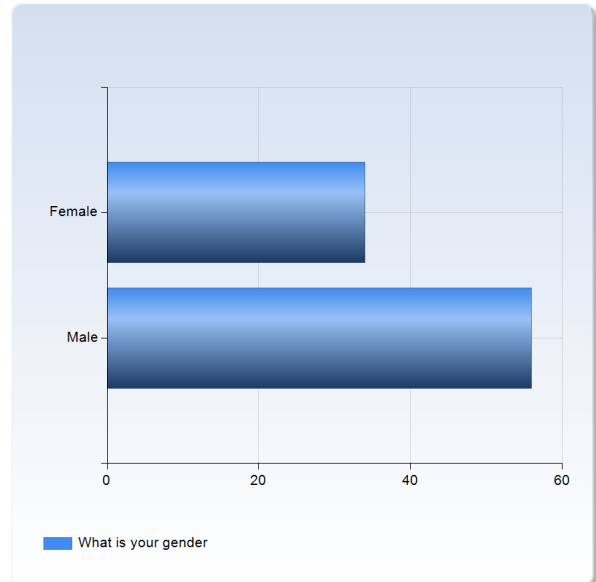


	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
How long have you been involved in cardio-oncologic care /research?	2.9	1.1	36.4 %	1.0	2.0	3.0	4.0	6.0



What is your gender

What is your gender	Number of Responses
Female	34 (37.8%)
Male	56 (62.2%)
Total	90 (100.0%)

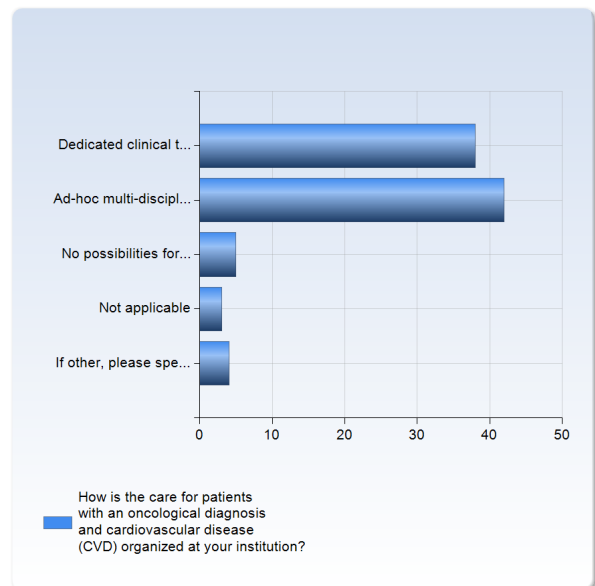


	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
What is your gender	1.6	0.5	30.1 %	1.0	1.0	2.0	2.0	2.0



How is the care for patients with an oncological diagnosis and cardiovascular disease (CVD) organized at your institution?

How is the care for patients with an oncological diagnosis and cardiovascular disease (CVD) organized at your institution?	Number of Responses
Dedicated clinical team with scheduled multi-disciplinary conferences	38 (41.3%)
Ad-hoc multi-disciplinary discussions and referrals	42 (45.7%)
No possibilities for this	5 (5.4%)
Not applicable	3 (3.3%)
If other, please specify	4 (4.3%)
Total	92 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
How is the care for patients with an oncological diagnosis and cardiovascular disease (CVD) organized at your institution?	1.8	1.0	53.7 %	1.0	1.0	2.0	2.0	5.0

If other, please specify

referral to dedicated cardiologists in Cardiology

Well taken care of up to 18 years of age. After that we refer those in need of surveillance through our late effects clinic.

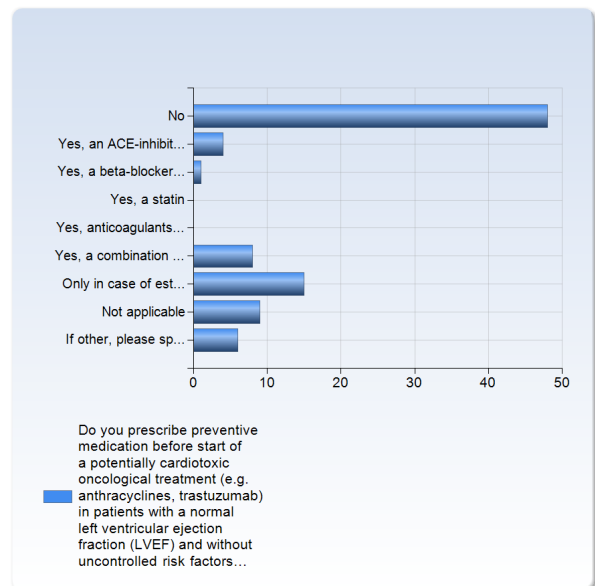
I think there is a specialty clinic but not sure given that oncologist has moved

Certain providers specialize in this



Do you prescribe preventive medication before start of a potentially cardiotoxic oncological treatment (e.g. anthracyclines, trastuzumab) in patients with a normal left ventricular ejection fraction (LVEF) and without uncontrolled risk factors for cardiovascular disease (CVD)?

Do you prescribe preventive medication before start of a potentially cardiotoxic oncological treatment (e.g. anthracyclines, trastuzumab) in patients with a normal left ventricular ejection fraction (LVEF) and without uncontrolled risk factors for cardiovascular disease (CVD)?	Number of Responses
No	48 (52.7%)
Yes, an ACE-inhibitor/angiotensin receptor antagonist	4 (4.4%)
Yes, a beta-blocker	1 (1.1%)
Yes, a statin	0 (0.0%)
Yes, anticoagulants	0 (0.0%)
Yes, a combination of the abovementioned	8 (8.8%)
Only in case of estimated increased risk for cardiotoxicity based on published risk scores (e.g., Ezaz et al, J Am Heart Assoc 2014; Herrmann et al, Mayo Clin Proc 2014)	15 (16.5%)
Not applicable	9 (9.9%)
If other, please specify	6 (6.6%)
Total	91 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Do you prescribe preventive medication before start of a potentially cardiotoxic oncological treatment (e.g. anthracyclines, trastuzumab) in patients with a normal left ventricular ejection fraction (LVEF) and without uncontrolled risk factors for cardiovascular disease (CVD)?	4.2	3.8	90.7 %	1.0	1.0	1.0	8.0	10.0

If other, please specify

If I can, but the collaboration is still in childrens's shoes

If they are considered high risk, yes (prior anthra, Radiation, etc) and would first use a RAS inhibitor

Based on pre-CT clinical risk assessment

I refer to cardiologists who often do

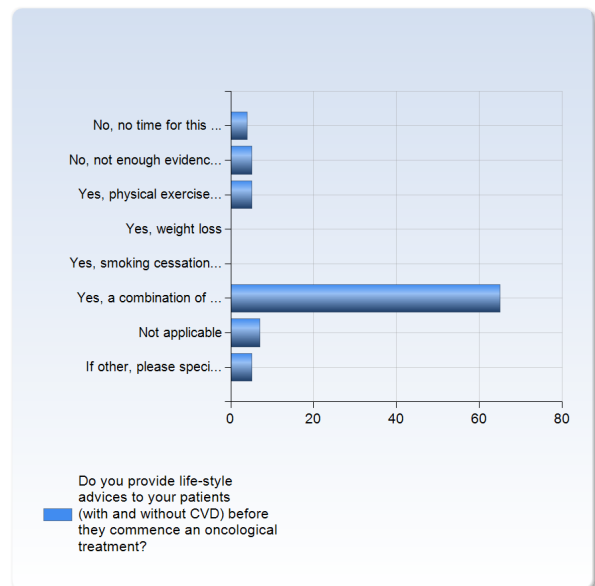
I'm not a clinician, but I think that I should prescribe an ACE-inhibitor/angiotensin receptor antagonist

Do not know



Do you provide life-style advices to your patients (with and without CVD) before they commence an oncological treatment?

Do you provide life-style advices to your patients (with and without CVD) before they commence an oncological treatment?	Number of Responses
No, no time for this	4 (4.4%)
No, not enough evidence to support such recommendations	5 (5.5%)
Yes, physical exercise	5 (5.5%)
Yes, weight loss	0 (0.0%)
Yes, smoking cessation	0 (0.0%)
Yes, a combination of the abovementioned	65 (71.4%)
Not applicable	7 (7.7%)
If other, please specify	5 (5.5%)
Total	91 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Do you provide life-style advices to your patients (with and without CVD) before they commence an oncological treatment?	5.6	1.6	29.0 %	1.0	6.0	6.0	6.0	8.0

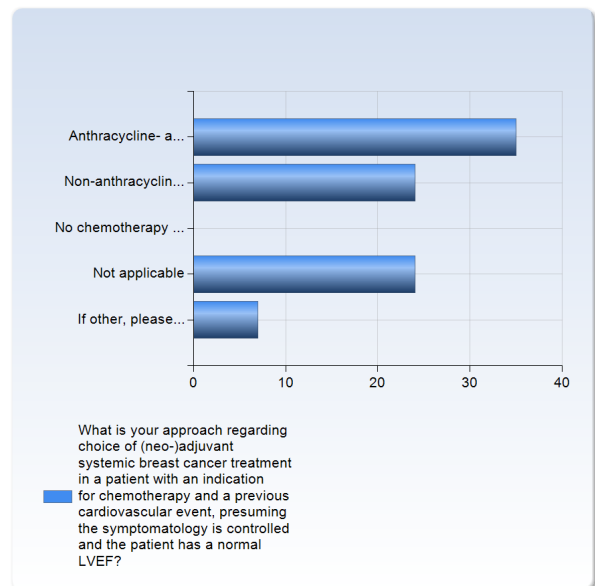
If other, please specify
we are planning to do so
we are starting exercise counselling
I only see a subset of these patient in cardiology, but yes I do advise all of the above
Do not know



What is your approach regarding choice of (neo-)adjuvant systemic breast cancer treatment in a patient with an indication for chemotherapy and a previous cardiovascular event, presuming the symptomatology is controlled and the patient has a normal LVEF?

What is your approach regarding choice of (neo-)adjuvant systemic breast cancer treatment in a patient with an indication for chemotherapy and a previous cardiovascular event, presuming the symptomatology is controlled and the patient has a normal LVEF?

	Number of Responses
Anthracycline- and taxane-based chemotherapy	35 (38.9%)
Non-anthracycline containing chemotherapy	24 (26.7%)
No chemotherapy because of co-morbidity	0 (0.0%)
Not applicable	24 (26.7%)
If other, please specify	7 (7.8%)
Total	90 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
What is your approach regarding choice of (neo-)adjuvant systemic breast cancer treatment in a patient with an indication for chemotherapy and a previous cardiovascular event, presuming the symptomatology is controlled and the patient has a normal LVEF?	2.4	1.4	60.0 %	1.0	1.0	2.0	4.0	5.0

If other, please specify

I'm cardiologist

The oncologist decides

I am a cardiologist, so I advise about risk but dont dictate the chemo chosen. I would suggest the best therapy for optimal cancer outcome

Anthracycline + trastuzumab

individualized

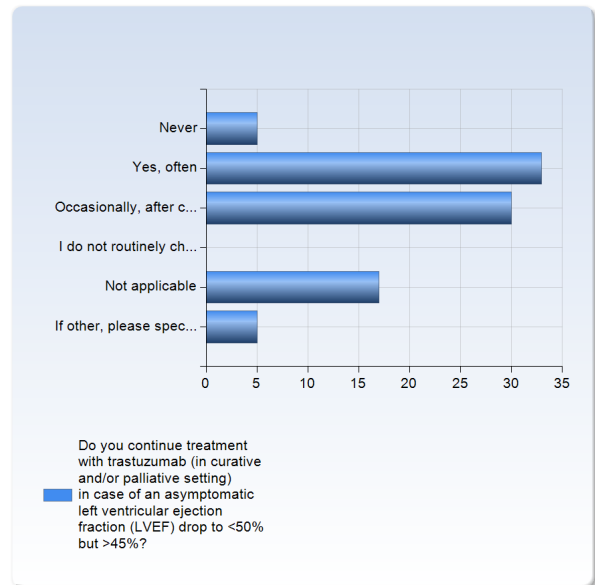
varies

Do not know



Do you continue treatment with trastuzumab (in curative and/or palliative setting) in case of an asymptomatic left ventricular ejection fraction (LVEF) drop to <50% but >45%?

Do you continue treatment with trastuzumab (in curative and/or palliative setting) in case of an asymptomatic left ventricular ejection fraction (LVEF) drop to <50% but >45%?	Number of Responses
Never	5 (5.6%)
Yes, often	33 (36.7%)
Occasionally, after consultation with cardiologist when adequate anti-congestive treatment is initiated	30 (33.3%)
I do not routinely check LVEF during trastuzumab treatment if patients do not have any clinical signs of heart failure	0 (0.0%)
Not applicable	17 (18.9%)
If other, please specify	5 (5.6%)
Total	90 (100.0%)



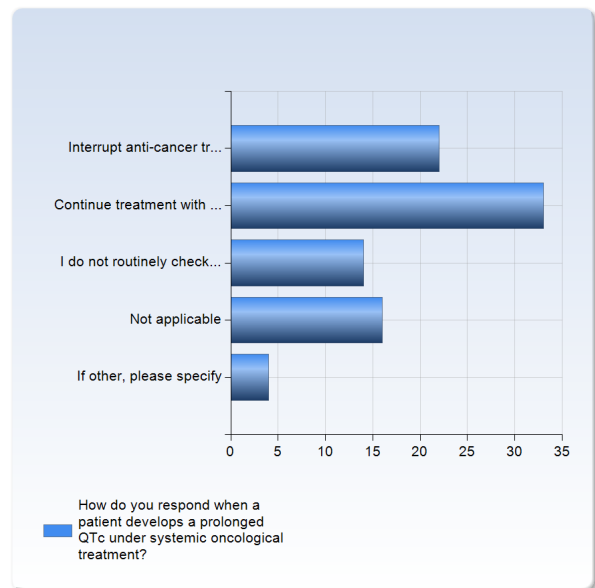
	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Do you continue treatment with trastuzumab (in curative and/or palliative setting) in case of an asymptomatic left ventricular ejection fraction (LVEF) drop to <50% but >45%?	3.1	1.4	44.5 %	1.0	2.0	3.0	3.0	6.0

If other, please specify
yes, but providing ARB at the same time
I advocate for continuing but it depends on oncologists comfort
I'm counseling the oncologist for this possibility
sometimes, with close monitoring
Stop if drop is more than 10% but restart if LVEF goes back to normal



How do you respond when a patient develops a prolonged QTc under systemic oncological treatment?

How do you respond when a patient develops a prolonged QTc under systemic oncological treatment?	Number of Responses
Interrupt anti-cancer treatment, follow-up QTc and re-initiate only after QTc has normalized	22 (24.7%)
Continue treatment with continued monitoring of QTc	33 (37.1%)
I do not routinely check QTc under anti-cancer treatment	14 (15.7%)
Not applicable	16 (18.0%)
If other, please specify	4 (4.5%)
Total	89 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
How do you respond when a patient develops a prolonged QTc under systemic oncological treatment?	2.4	1.2	48.9 %	1.0	2.0	2.0	3.0	5.0

If other, please specify

Depends on the QT

case by case basis. depends how long the QT is etc...

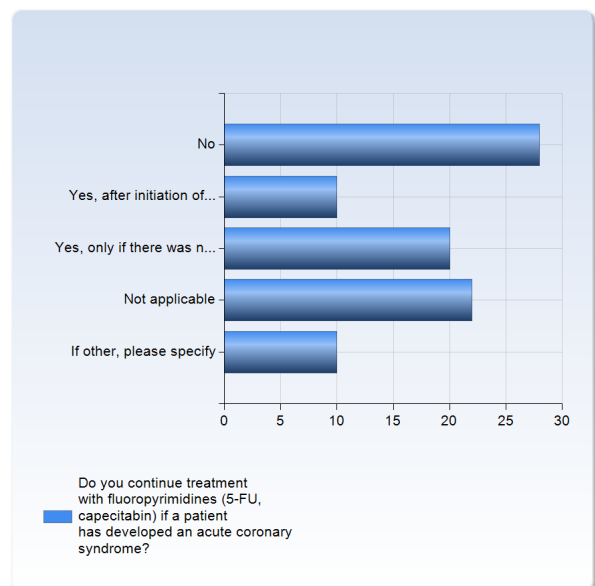
continue and stop offending supportive agents

Depends on degree of QTc prolongation and use of other QT-prolonging medications



Do you continue treatment with fluoropyrimidines (5-FU, capecitabin) if a patient has developed an acute coronary syndrome?

Do you continue treatment with fluoropyrimidines (5-FU, capecitabin) if a patient has developed an acute coronary syndrome?	Number of Responses
No	28 (31.1%)
Yes, after initiation of a calcium-antagonist	10 (11.1%)
Yes, only if there was no enzymatic myocardial infarction and if anti-angina treatment is started	20 (22.2%)
Not applicable	22 (24.4%)
If other, please specify	10 (11.1%)
Total	90 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Lower Min	Lower Quartile	Median	Upper Quartile	Max
Do you continue treatment with fluoropyrimidines (5-FU, capecitabin) if a patient has developed an acute coronary syndrome?	2.7	1.4	51.7 %	1.0	1.0	3.0	4.0	5.0

If other, please specify

Do genetic testing, if negative will start anti-spastic treatment (i.e. amlodipin, nitrates). If symtoms again, stopp 5FU /analogues

I do a re-attempt after temporary discontinuation

individualized

We have rechallange protocol

if patient revascularized

I would consider it after liaising with a cardiologist

sometimes

It depends on the coronary angiography

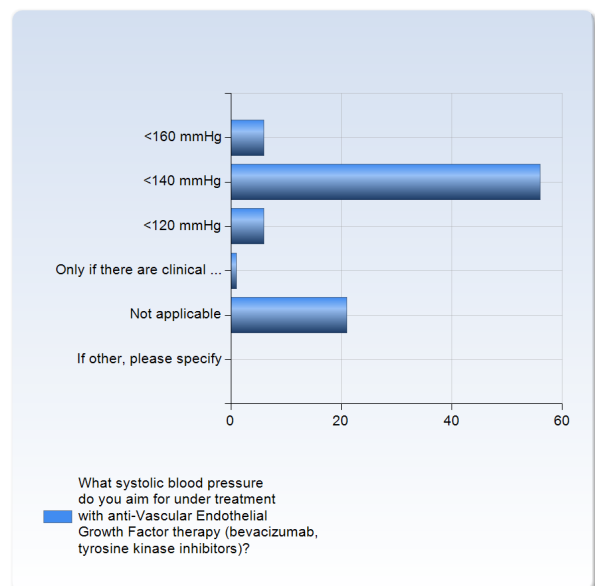
we consult a cardiologist

Yes, but only under CCB and nitrates with monitoring, which may require inpatient setup depending on severity of ACS



What systolic blood pressure do you aim for under treatment with anti-Vascular Endothelial Growth Factor therapy (bevacizumab, tyrosine kinase inhibitors)?

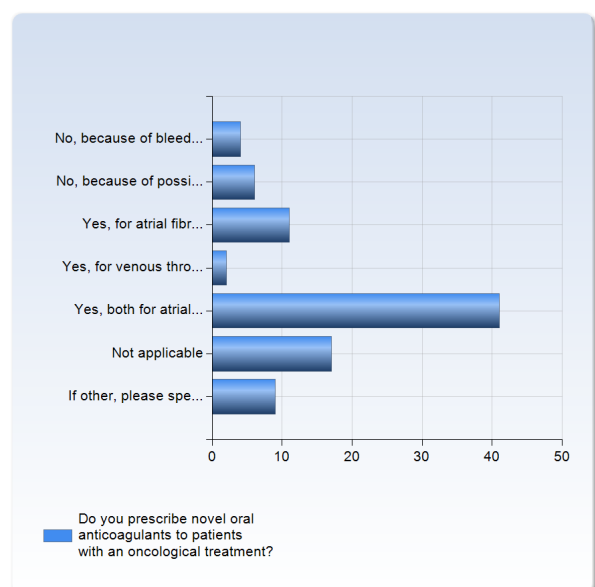
What systolic blood pressure do you aim for under treatment with anti-Vascular Endothelial Growth Factor therapy (bevacizumab, tyrosine kinase inhibitors)?	Number of Responses
<160 mmHg	6 (6.7%)
<140 mmHg	56 (62.2%)
<120 mmHg	6 (6.7%)
Only if there are clinical symptoms of hypertension and /or proteinuria	1 (1.1%)
Not applicable	21 (23.3%)
If other, please specify	0 (0.0%)
Total	90 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Lower Quartile	Median	Upper Quartile	Max
What systolic blood pressure do you aim for under treatment with anti-Vascular Endothelial Growth Factor therapy (bevacizumab, tyrosine kinase inhibitors)?	2.7	1.3	49.0 %	1.0	2.0	3.0	5.0

Do you prescribe novel oral anticoagulants to patients with an oncological treatment?

Do you prescribe novel oral anticoagulants to patients with an oncological treatment?	Number of Responses
No, because of bleeding risk	4 (4.4%)
No, because of possible interactions with oncological treatment	6 (6.7%)
Yes, for atrial fibrillation	11 (12.2%)
Yes, for venous thrombo-embolism	2 (2.2%)
Yes, both for atrial fibrillation and venous thrombo-embolism	41 (45.6%)
Not applicable	17 (18.9%)
If other, please specify	9 (10.0%)
Total	90 (100.0%)





	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Do you prescribe novel oral anticoagulants to patients with an oncological treatment?	4.7	1.5	32.5 %	1.0	4.5	5.0	6.0	7.0

If other, please specify

depends on indication and type of cancer

No, LMWH or VKA. If indicated (AF, VT)

Not used in the paediatric setting

this is a poor question

Depnds on the case

Send to a VTE clinic

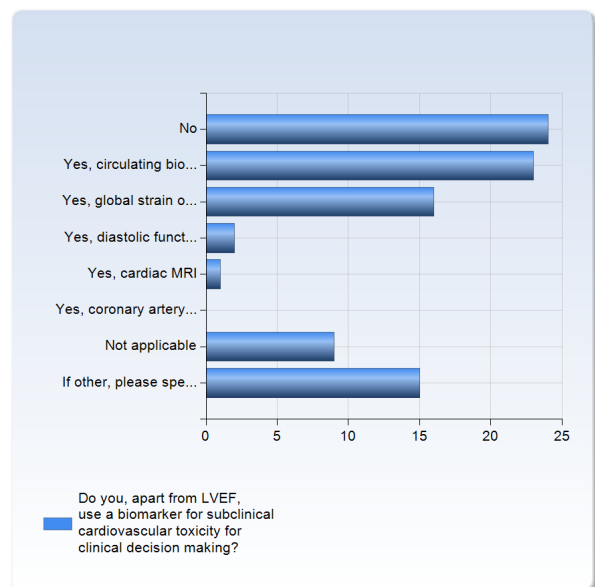
after eview of drug drug interactions

sometimes AF

it depends on other comorbidities especially with atrial fibrillation

Do you, apart from LVEF, use a biomarker for subclinical cardiovascular toxicity for clinical decision making?

Do you, apart from LVEF, use a biomarker for subclinical cardiovascular toxicity for clinical decision making?	Number of Responses
No	24 (26.7%)
Yes, circulating biomarkers (NT-proBNP, troponins)	23 (25.6%)
Yes, global strain on echocardiography	16 (17.8%)
Yes, diastolic function parameters on echocardiography (E/A-ratio, tissue velocities)	2 (2.2%)
Yes, cardiac MRI	1 (1.1%)
Yes, coronary artery calcification scores on computed tomography	0 (0.0%)
Not applicable	9 (10.0%)
If other, please specify	15 (16.7%)
Total	90 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Do you, apart from LVEF, use a biomarker for subclinical cardiovascular toxicity for clinical decision making?	3.5	2.6	75.8 %	1.0	1.0	2.0	7.0	8.0



If other, please specify

not yet

echocardiography parameters

A combination of above depending on what insurance company will permit for testing; can be difficult to get MRI approvals

I use troponins, BNP, strain, CT calcium score and occasionally MRI

Yes, strain, troponin and occasionally MRI

All of them depending on scenario

Combination of above

2-4

Combination of strain, diastolic parameters, and NTproBNP

Combination of above

yes, many biomarkers

NT-proBNP + Trop + strain

Combination of biomarkers and strain

Strain and troponins

Biomarkers AND GLS

What do you regard the best method for prevention of future development of CVD in patients treated for a malignancy?

What do you regard the best method for prevention of future development of CVD in patients treated for a malignancy?

Number of Responses

Cardiovascular risk management according to general guidelines, with treatment initiation based on accepted thresholds (blood pressure, lipid profile, glucose)

48 (53.3%)

Preventive medication such as ACE-inhibitors, ARBs, beta-blockade independent of risk factors

6 (6.7%)

Preventive medication such as ACE-inhibitors, ARBs, beta-blockade in patients with rises in troponin /NT-proBNP

16 (17.8%)

Life style management (e.g., physical exercise, weight loss)

8 (8.9%)

Not applicable

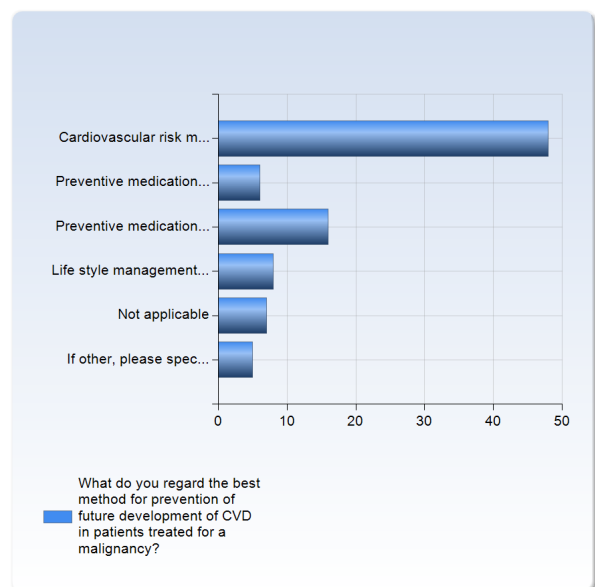
7 (7.8%)

If other, please specify

5 (5.6%)

Total

90
(100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
What do you regard the best method for prevention of future development of CVD in patients treated for a malignancy?	2.3	1.6	70.9 %	1.0	1.0	1.0	3.0	6.0



If other, please specify

Fibrosis on Cardiac MRI

Combination of the above

I would do optimal risk management according to guidelines but specific high risk characteristics to cancer therapy, I would use preventive strategies

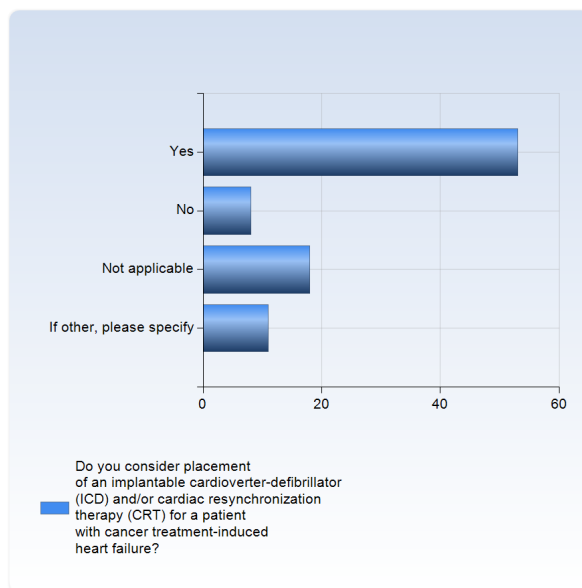
Life-style management plus CV risk management according GLs

Cardiovascular risk management according to general guidelines, with treatment initiation based on accepted thresholds (blood pressure, lipid profile, glucose); Preventive medication such as ACE-inhibitors, ARBs, beta-blockade in patients with rises in troponin/NT-proBNP; Life style management (e.g., physical exercise, weight loss)

Do you consider placement of an implantable cardioverter-defibrillator (ICD) and /or cardiac resynchronization therapy (CRT) for a patient with cancer treatment-induced heart failure?

Do you consider placement of an implantable cardioverter-defibrillator (ICD) and/or cardiac resynchronization therapy (CRT) for a patient with cancer treatment-induced heart failure?

	Number of Responses
Yes	53 (58.9%)
No	8 (8.9%)
Not applicable	18 (20.0%)
If other, please specify	11 (12.2%)
Total	90 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Do you consider placement of an implantable cardioverter-defibrillator (ICD) and /or cardiac resynchronization therapy (CRT) for a patient with cancer treatment-induced heart failure?	1.9	1.1	60.8 %	1.0	1.0	1.0	3.0	4.0



If other, please specify

if the prognosis of cancer is good, otherwise no

depends life expectancy

No experience with this

depends

We routinely implant ICDs and even do heart transplant if the cancer is cured

yes according to cancer prognosis

it depends

A cardiologist would advise on this

Depends life expectancy

it depends on other comorbidities

we will let a cardiologist decide

Is there a standardized follow-up schedule that you use for patients treated with potentially cardiotoxic cancer treatments?

Is there a standardized follow-up schedule that you use for patients treated with potentially cardiotoxic cancer treatments?

Number of Responses

Yes, according to the ASCO guideline (Prevention and Monitoring of Cardiac Dysfunction in Survivors of Adult Cancers, 2016)

28 (31.1%)

Yes, according to childhood cancer survivorship guidelines

4 (4.4%)

Yes, we have our own local/regional guideline

24 (26.7%)

No, pragmatic and/or individualized schemes

20 (22.2%)

Not applicable

12 (13.3%)

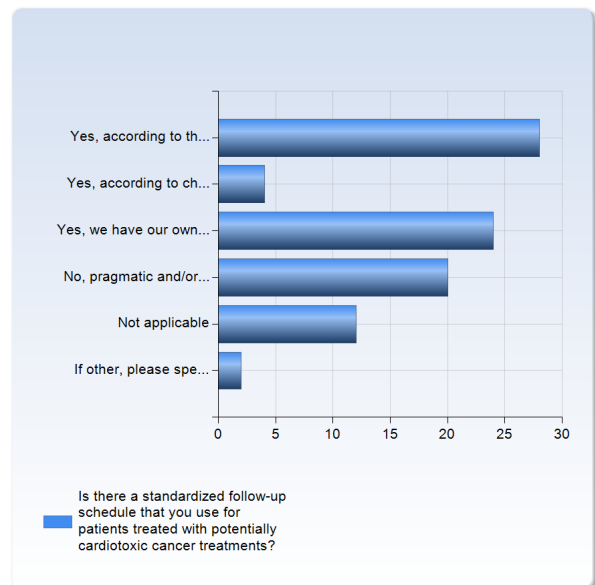
If other, please specify

2 (2.2%)

90

Total

(100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Lower Quartile	Median	Upper Quartile	Max
Is there a standardized follow-up schedule that you use for patients treated with potentially cardiotoxic cancer treatments?	2.9	1.5	52.0 %	1.0	3.0	4.0	6.0

If other, please specify

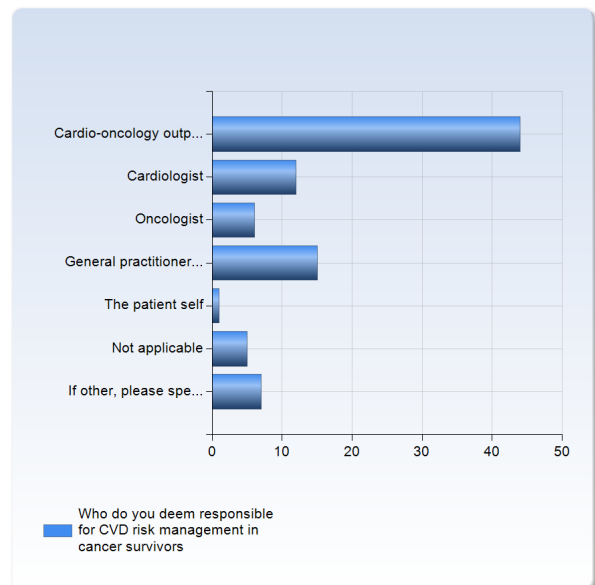
Shared decision making with the patient; often they may be overwhelmed by their cancer condition and are not excited about followup for the cardiovascular prevention

Both ASCO and local regional guidelines



Who do you deem responsible for CVD risk management in cancer survivors

Who do you deem responsible for CVD risk management in cancer survivors	Number of Responses
Cardio-oncology outpatient clinic	44 (48.9%)
Cardiologist	12 (13.3%)
Oncologist	6 (6.7%)
General practitioner	15 (16.7%)
The patient self	1 (1.1%)
Not applicable	5 (5.6%)
If other, please specify	7 (7.8%)
Total	90 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Who do you deem responsible for CVD risk management in cancer survivors	2.6	2.0	77.2 %	1.0	1.0	2.0	4.0	7.0

If other, please specify

A joint venture between the late effects clinic, our cardiologists and the patient

We have a cancer survivorship clinic

The collaboration between Oncologist and Cardiologist

Patient itself + GPs + General Cardiologists + Cardio-oncology specialists

Oncologist-GP-Patient

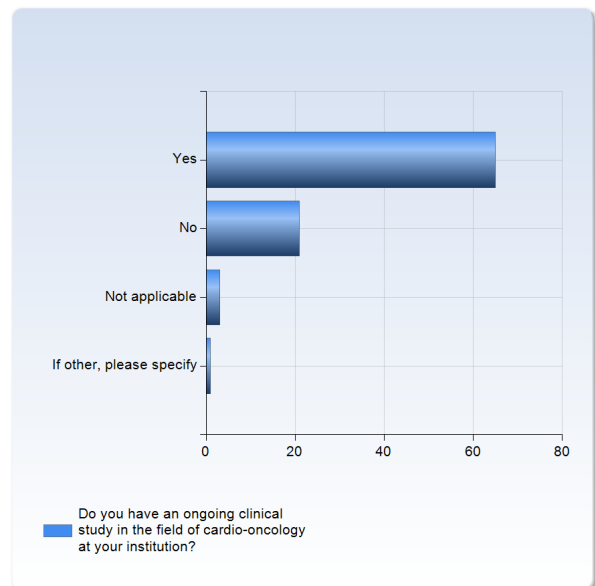
All of the above; not all of the patients have access to a cardio-oncology clinic

Cardio-Oncology service and GP



Do you have an ongoing clinical study in the field of cardio-oncology at your institution?

Do you have an ongoing clinical study in the field of cardio-oncology at your institution?	Number of Responses
Yes	65 (72.2%)
No	21 (23.3%)
Not applicable	3 (3.3%)
If other, please specify	1 (1.1%)
Total	90 (100.0%)



	Mean	Standard Deviation	Coefficient of Variation	Min	Lower Quartile	Median	Upper Quartile	Max
Do you have an ongoing clinical study in the field of cardio-oncology at your institution?	1.3	0.6	45.0 %	1.0	1.0	1.0	2.0	4.0

If other, please specify

PhD project studying current practice at my university

Do you have ongoing experimental/pre-clinical studies in the field of cardio-oncology at your institution?

Do you have ongoing experimental/pre-clinical studies in the field of cardio-oncology at your institution?	Number of Responses
Yes	59 (64.8%)
No	27 (29.7%)
Not applicable	5 (5.5%)
If other, please specify	0 (0.0%)
Total	91 (100.0%)

