IHI Call Days | Call 9

COMPASS

Comprehensive Onco-cardiology Multidisciplinary Patient Assistance Solution for Supporting Breast and Prostate cancer cardiotoxicity care

Contact person name: Annamária Csizmadia

Organisation: GE Healthcare

E-mail: annamaria.csizmadia@gehealthcare.com
innovationoffice@gehealthcare.com

Link to the IHI brokerage platform:

- Participant profile: IHI Call Days - Call 9

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Challenges and objectives

Cardiotoxicity from Cancer Treatment:
Not only conventional but also innovative anti cancer drugs have adverse event profile with high cardiotoxicity leading to cardiomyopathy, arrhythmias, or heart failure etc.

Lack of Specialized Guidelines:
Onco-cardiology is a relatively new field, and there are limited standardized protocols for managing cardiac care in cancer patients.

Insufficient Early Detection:
Early markers of cardiotoxicity are not always well-established or widely used, leading to delayed interventions and increased risk of heart damage.

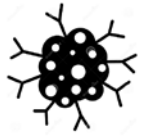
Coordination Between Oncologists and Cardiologists:
Effective communication and care coordination between these specialties are often lacking, which can complicate patient management.

Limited Access to Specialized Care:
Onco-cardiology services are often available only in larger medical centers, making access challenging for many patients.

Costs and burden related to prostate cancer and breast cancer

	Breast Cancer	**Prostate cancer**
Total societal cost /year	**£ 248M (with chemotherapy)** Productivity losses ~ £141M o Premature mortality: £3.2M o Work absence: £133.3M o Secondary malignances: £3.4M Informal care: £1.1M Costs for carer emotional well-being: £82M Out-of-pocket-costs: £4.2M	**€ 281M** Medical costs ~ 62% Informal care ~ 28% Productivity losses ~ 10%
Treatment-related cost	**Productivity loss caused by premature death: $22B - $52B** Cost burden from productivity lost: $127M - $597M Cost of lost productivity arising from informal caregivers: $297B - $30B	1st year after diagnosis **€ 117M-351M** UK: € 117M France: € 234M-351M Germany: € 234M-351M
Prevalence in Europe	**Most common cancer among women** 29.2% of all cancers among women 3.6% of death among women	**Most common cancer among men** 23% of all cancers in men 10% of cancer-related death
Worldwide data and expectations	**Second most common cancer and most common among women** Leading cause of death among women (aged 20-50) Number of new cases by 2050: 3.2M	**By 2040** Number of new cases: 2.3M Number of deaths: 740K
Cardiotoxicity	~16,5% of patients treated with anthracycline experience cardiotoxicity Cardiotoxicity of trastuzumab: 5.7-35.4%[6]	cardiovascular diseases are the most common comorbidities and the second leading cause of mortality among men with PC

Challenges and objectives



Cancer Treatment

Breast cancer

Prostate cancer

Cancer prevention
- Genetic test
- Regular examination
- Medical history

Cancer diagnosis

Cancer treatment planning

Monoclonal antibody

Androgen-deprivation Therapy

Cancer treatment
- Immunotherapy
- Radiotherapy
- Combination Therapies
- Cumulative dosage
- Treatment Duration, Frequency

Cancer survivorship
- Regular examination
- Treatment follow up

Long-term CV monitoring

On-treatment CV monitoring
Preventive Intervention
for High-Risk Patient

Checking CV Risk Factor, treatment selection

CV Risk Factor Management
(Primary CV prevention)
Patient-specific Factors

Cardio-vascular Disease

Cardiomyopathy
Arrhythmia
Myocardial ischemia
Heart failure
Structural heart diseases

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Challenges and objectives

Delayed Onset and Long-Term Risks

Cardiotoxic effects from **cancer therapy** can **emerge months** or even **years post-treatmen**t, complicating direct attribution of heart issues to the therapy itself. **Long-term survivors**, particularly those treated at a young age, **face** an **elevated risk** of **developing heart disease** or **heart failure** later in life, which can significantly affect their longevity and quality of life.

Lack of Predictive Markers

There are currently **limited reliable biomarkers** available to **predict** which **patients** are at **higher risk** of cardiotoxicity. This lack of predictive markers makes it **challenging** for healthcare providers **to identify** individuals who may **benefit** from closer **cardiac monitoring** or **alternative treatment plans**.

Therapeutic Limitations

Managing cardiotoxicity in cancer treatment often **necessitates dose reduction** or discontinuation, potentially compromising **treatment effectiveness**. Achieving a **balance** between **effective cancer therapy** and minimizing **cardiac risk** is challenging and may **limit therapeutic options** for certain patients.

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Challenges and objectives

Challenges in Early Detection

Standard tools for **detecting cardiotoxicity**, such as echocardiograms and cardiac MRI, may lack the sensitivity **to identify early signs**. Subclinical **cardiac changes** can often go **undetected**, only presenting symptoms after considerable damage has occurred.

Lack of Cardiovascular Expertise in Oncology

Collaboration between **oncologists** and **cardiologists** is essential yet challenging, as **oncologists** may **lack specialized cardiology** training, and **cardiologists** may be **unfamiliar** with **cancer therapies**. Cardio-oncology, the emerging field bridging these disciplines, remains under-resourced in many healthcare settings.

Variability in Patient Response

Patients exhibit varying responses to cancer treatment due to **factors** such as **age**, **genetics**, **comorbidities**, and **prior heart health**. **Predicting individual risk** and customizing cancer treatment accordingly is a challenge, primarily because many treatment protocols are standardized.

Impact on Quality of Life

Cardiotoxicity can severely **hinder** a patient's capacity to **pursue cancer treatment**, engage in physical activity, and **sustain** a **normal lifestyle**. Therefore, addressing these cardiac side effects is crucial for preserving patients' quality of life both during and after their cancer treatment.

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Comprehensive Ecosystem

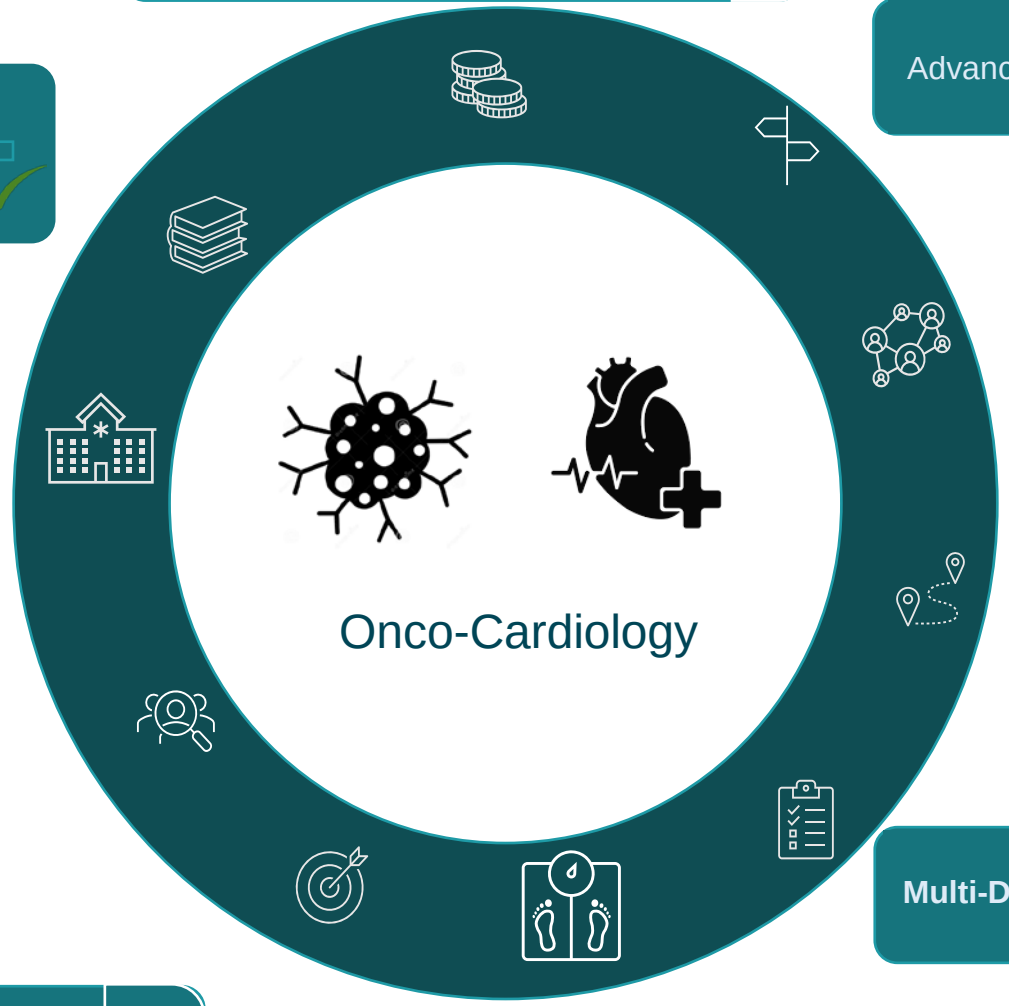
Health Economy evaluation

Education, training, guidelines, dissemination
Education and Training Programs for Healthcare Providers
Patient Education and Engagement Platforms

Advanced **Cardiac Imaging Biomarkers**

Telehealth Follow-Up **Protocols**

Real-Time Data Analytics for **Treatment Monitoring**



Biomarker Discovery and Validation

Digital Solutions – Predictive AI / CDS
to predict cardiotoxicity development

Multi-Disciplinary Care Pathways

Early timely diagnosis,
Treatment plan, patient follow up, home monitoring

Wearable Technology for
Continuous Monitoring

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Outcomes and Impact

Patient Care and Outcomes

Early Detection and Monitoring

An oncocardiology ecosystem with advanced diagnostics could enable early detection of cardiotoxic effects in high-risk cancer patients.

Personalized Treatment Plans

Collaboration between cardiology and oncology enables clinicians to tailor treatments to each patient's cardiac and cancer profile, optimizing safety and efficacy.

Improved Survival Rates

Proactive heart health management may extend life-saving cancer treatments, improving survival and quality of life.

Research Advancements

Understanding Mechanisms of Cardiotoxicity

Integrated onco-cardiology research could reveal how cancer therapies affect the heart, enabling predictive diagnostics and preventive treatments.

Drug Development and Safety

A collaborative ecosystem could drive the development of new drugs and therapies with reduced cardiac risk, benefiting both oncology and cardiology.

Cross-Disciplinary Innovation

By promoting cross-specialty research, such an ecosystem could drive innovations in genomics, molecular biology, and imaging that benefit both cancer and cardiac care.

Healthcare System Efficiency

Coordinated Care Pathways

The ecosystem could streamline care by connecting oncologists and cardiologists through shared records and protocols, reducing fragmented care and minimizing hospital readmissions.

Lower Long-Term Costs

Preventing or mitigating cardiac complications in cancer patients could reduce the costs associated with emergency interventions and long-term cardiac care, making the overall care pathway more cost-effective.

Data Sharing and Integration

A shared onco-cardiology database could allow for better patient tracking, research data collection, and insights.

Outcomes and Impact

Patient Education and Empowerment

Awareness of Cardiac Risks

A new ecosystem could implement awareness programs to educate cancer patients about potential cardiac side effects, enabling early symptom recognition and informed lifestyle choices.

Support Networks

A new ecosystem could implement awareness programs to educate cancer patients about potential cardiac side effects, enabling early symptom recognition and informed lifestyle choices.

Long-Term Impact on Survivorship

Reduced Late-Onset Cardiotoxicity

Regular cardiac monitoring for survivors can reduce late-onset cardiovascular complications and enhance their post-treatment quality of life.

Support for Aging Survivors

A proactive onco-cardiology approach ensures continuous heart care for aging cancer survivors, effectively managing their increased risk of cardiovascular disease.

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Expertise and Resources

- We have:

Diagnostic solutions

- Echocardiography
- Cardiac Magnetic Resonance Imaging (CMR)
- Electrocardiography (ECG)
- Positron Emission Tomography (PET)
- Cardiac Computed Tomography (CT)
- Remote Cardiac Monitoring Solutions

AI solutions

- Artificial Intelligence (AI) and Machine Learning in Cardiotoxicity Monitoring
- AI analytic platform

- We are looking for:
  - Academic partners
  - Industry partners – MedTech Company, Pharma Company, Digital Company
  - SMEs
  - Research organizations

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