Case Studies in CardiOncology

Alan T. Kono
Dartmouth Hitchcock Medical Center
Dartmouth Medical School

CSRC and ICOS Meeting White Oaks, MD
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CVD and other major causes of death

Dilated Cardiomyopathy
Prognosis related to Etiology

Breast Ca by Stage

Felker GM NEJM 2000;342:1077
Case 1: Who decides What?

- 45 yo healthy WF, athletic, runs ½ marathons
- New rectal bleeding → Colonoscopy 2007 “normal”
- On going rectal bleeding → sees new PCP 2009 Referred to GI, repeat Colonoscopy “Rectal Mass”
- Biopsy: Well diff Rectal CA Stage IIA T3N0MO
  - CT and US of abdomen normal
- Plan of Care
  - Neoadjuvant Chemotherapy: capecitabine initiated
  - XRT and Surgery to follow
Case 1: Who decides What?

- New chest discomfort & dyspnea with exercise (elliptical trainer) persisted ~ 20 minutes
- Had recurrent symptoms with exertion → PCP
  - EKG normal, no acute ST-T changes
  - Capecitabine held
- Stress Echocardiogram- “normal”
  - 15:00 Bruce Protocol EF=60% No symptoms
  - capecitabine restarted
Case 1: Who decides What?

• Repeat Stress Test
  – 12:43 Bruce Protocol
STRESS TEST: BASELINE EKG AT REST

12-Lead Manual (sequential)
Protocol: 12-Lead Manual (sequential)
Stage: Bruce
Spd/Grd: Rest 03:23

Supine

<table>
<thead>
<tr>
<th>RPE</th>
<th>HR</th>
<th>METs(s)</th>
<th>Target HR</th>
<th>Max HR</th>
<th>LVL</th>
<th>SLP</th>
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<td>73</td>
<td>1.0</td>
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<td>5</td>
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<td>5</td>
<td>1.0</td>
<td>149</td>
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</tbody>
</table>

BP: 120/82
Previous BP: 112/82

1/14/2010 9:22:08 AM

25 mm/sec 10 mm/mV BWF On MAF On Line Off 40Hz Off Page 2
STRESS TEST: EKG AT PEAK STRESS

12-Lead (sequential) Protocol Bruce Stage 4 02:50 11:50
Spd/Grd 4.2 mph 16.0%

RPE 162
METS(a) 12.8 Target HR 149 II
BP 158/78 Max HR 166 V2
Previous BP 148/80 HRxBP 25596 V5
LVL 1.3 SLP -44
LVL 0.0 SLP -15
LVL 0.8 SLP -50

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25 mm/sec 10 mm/mV BWF On MAF On Line Off 40Hz Off Page 6
STRESS TEST: EKG EARLY RECOVERY POST STRESS

[Image of a chest X-ray with a red circle highlighting a specific area]
### STRESS TEST: EKG LATE RECOVERY POST STRESS

<table>
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<tr>
<th>Protocol</th>
<th>Bruce Stage</th>
<th>Spd/Grd</th>
<th>Recov 09:00</th>
<th>RPE</th>
<th>HR</th>
<th>Target HR</th>
<th>BP</th>
<th>Max HR</th>
<th>Previous BP</th>
<th>HRxBP</th>
<th>LVL</th>
<th>SLP</th>
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</thead>
<tbody>
<tr>
<td>12-Lead (sequential)</td>
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<td>15</td>
<td>91</td>
<td>12.8</td>
<td>149</td>
<td>126/64</td>
<td>136/68</td>
<td>11466 V5</td>
<td>0.8</td>
<td>0.5</td>
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</tbody>
</table>

![EKG Diagram]

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25 mm/sec 10 mm/mV BWF On MAF On Line Off 40Hz Off Page 13
Case 1: Who decides What?

- **Conclusion:**
  - There was angina in recovery
  - There were indeterminate ischemic EKG changes
  - Probability of ischemia is low
  - Side comment: transient ST elevations, ?spasm

- **Cardiologist #1: Recommends**
  - *Start amlodipine (calcium channel blocker)*
  - *Avoid strenuous exercise*
  - *ER if chest pain recurs*
  - *Treadmill next week*
Case 1: Who decides What?

- Repeat stress test on amlodipine and capecitabine
  - Bruce 11:08 normal BP response, PVCS, no symptoms or EKG changes, EF = 60% → 65%

- Cardiologist #2:
  - No further chemotherapy, concerns about cardiac effects of medicine
  - Avoid strenuous exercise

- Patient finishes Capecitabine with no symptoms, but leads a sedentary lifestyle

- Patient Receives XRT
Case 1: Who decides What?

• Referred to Heart Failure Clinic (aka CardiOncology Clinic)

• QUESTION: Decision regarding risk of continuing capecitabine or 5FU adjuvant chemotherapy after surgery?

• Additional info:
  – No migraine HA, Raynaud’s
  – LDL chol= 138, Non smoker, pot of coffee/day
  – FHx: Obesity, HTN, HPL, MI, and heart failure
Cardiac Catheterization
Left Coronary Artery
Cardiac Catheterization
Right Coronary Artery
Cardiac Catheterization
Left Ventriculogram
Case 1: Who decides What?

• Who would proceed with chemotherapy?

• Who would choose alternative therapy?

• Who would choose no additional therapy?
Case 1: Who decides What?

• What is the process of decision making?
• This patient had:
  – 2 PCPs
  – 2 Oncologists
  – Radiation Oncologist
  – Surgical Oncologist
  – 2 general Cardiologists
  – Heart Failure Cardiologist
Case 1: Who decides What?

• Methods of Communication

• Communication consisted of:
  – Formal Consult with recommendations
  – 14 emails between providers
  – 4 phone calls...with patient
  – 5 phone calls...with providers
Case 2: Aware but not Aware

48 y/o WF with Breast Cancer 2009

- ER/PR(+), Her2 (-), node + invasive ductal carcinoma w/ lobular features (T3N3M0)
- Therapy under protocol S0221 08/09
- 6th and final cycle of AC given 10/09
- Total Doxorubicin dose 360 mg/M2
- weekly Paclitaxel (12 cycles) began 11/09
- tamoxifen started on 2/10
- XRT to left chest wall; supraclavicular 4/10 (28 fractions; total 5040cGy)
Case 2: Aware but not Aware

- After cycle 6 AC, during Paclitaxel ➔ Developed Chestpain with + TnT
- Inpt Gen Cardiology Consult ➔ Cardiac cath
  – Normal Coronary Arteries
- Serial Echocardiograms during Rx ➔ normal EF

- New ALL diagnosed 1/11
  ➔ CardiOncology Consult requested
Case 2: Aware but not Aware

- Baseline LVEF=72%  Normal chamber sizes

- Recommended:
  - High risk patient for additional myeloablative therapy with anthracyclines (Prior +Tn, Total AC dose, XRT to Left Chest)
  - Monitor Tn and proBNP after each cycle
  - Monitor Echo (3D/ doppler) before each cycle
  - Low threshold to initiate ACE now
  - We will follow with you, please contact us when patient admitted
Case 2: Aware but not Aware

- Heme felt strongly to proceed with Daunorubicin, Cytarabine, Cyclophosphamide
  - Additional Dose~240 mg/M2= 590 mg/M2
- Tn and proBNP monitored with Cycle 1 → nl
- No Echo or biomarkers for Cycle 2
- Presents with ADHF and new Afib/Flutter requiring CCU admission 3 months later
  - Tn + 0.09  proBNP 138 → 11,800
Case 2: Aware but not Aware

Index Echocardiogram 1/11    EF = 72%
Case 2: Aware but not Aware

Echocardiogram 4/11  EF= 25%
Case 2: Aware but not Aware

• No coordination of care between services

• New Heme inpt attending not aware of prior Heart Failure SVC consult/recommendations

• HF SVC not informed of second admission
Silos of Care
Silos of Care
Highly Specialized Care

• CARDIOLOGY
  • Invasive
  • Interventional
  • Non Invasive
  • Electrophysiology
  • Heart Failure/Transplant

• HEMATOLOGY-ONCOLOGY
  • Hematology
  • Medical
  • Surgical
  • Radiation
  • Interventional
Silos of Care
Highly Specialized Care

• **CARDIOLOGY**
  – Acute Care
    • MI  ACS  Arrhythmias
    • Heart Failure
  – Subacute Care
  – Chronic Care
  – Treatments
    • Invasive/Interventional
    • Surgery
    • Pharmacotherapy
    • Devices
    • Palliative Care

• **ONCOLOGY**
  – Acute Care
    • AML  Blast Crisis
    • Lymphomas
  – Subacute Care
  – Chronic Care
  – Treatments
    • XRT
    • Surgery
    • Pharmacotherapy
    • Palliative Care
    • Invasive/Interventional
Forums To Discuss Case

- **CARDIOLOGY**
  - Grand Rounds
  - Multidiscipline Mtg
  - Cath Conference

- **ONCOLOGY**
  - Grand Rounds
  - Multidiscipline Mtg
  - Tumor Board

Shared Decision Making

EFFECTIVE COMMUNICATION
The Chronic Care Model

Community
- Resources and Policies
  - Self-Management Support

Health Systems
- Medical Home
  - Delivery System Design
  - Decision Support
  - Clinical Information Systems

Informed Activated Patient

Supportive Integrated Community

Prepared, Proactive Practice Team

Family Centered
Timely & Efficient
Coordinated
Evidence Based and Safe
Essential Elements of Good Chronic Illness Care

- Supportive Integrated Community
- Informed Activated Patient
- Productive Interactions
- Prepared Practice Team
What characterizes an “informed, activated patient”?

They have the motivation, information, skills, and confidence necessary to effectively make decisions about their health and manage it.
What characterizes a “prepared” practice Team?

At the time of the interaction they have the patient information, decision support, and resources necessary to deliver high-quality care.
How would I recognize a productive interaction?

- Assessment of self-management skills and confidence as well as clinical status.
- Tailoring of clinical management by stepped protocol.
- Collaborative goal-setting and problem-solving resulting in a shared care plan.
- Active, sustained follow-up → coordination of care
Prepared Proactive Practice Team

Cardiology

Oncology

Informed Activated Patient

PCP

EFFECTIVE COMMUNICATION
Possible Solutions to Silo Medicine

- Heart Failure AM Team Huddle
- Member of Tumor Board(s)
- Member of HemOnc P & T committee
- Present at HemOnc Grand Rounds
- Hold Combined CardiOncology Grand Rounds
- Initiate combined Cancer Survivor Cardiac Risk Assessment clinic in the NCI center
- Collaborate on research and data collection
- Educate Cardiology Colleagues and Trainees
- Educate HemOnc Colleagues and Trainees
- Educate and integrate nursing and associate providers
Cardiology Consults requested by HemOnc Service

Cardiology consults for patients admitted on 1 West and HSCU
July 2006 - June 2011

- All Cardiology consults per 100 admissions
- HF Team consults per 100 admissions
Summary

• Build communities of shared expertise around patient centered care ➔ Connect those Silos!

• Have more conversations and less textual harassment ➔ Collaborate and Synergize

• Move field from “We don’t know” to “We see this” to “We know this”