Trivandrum Heart Failure Registry

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Additional Professor
Sree Chitra Tirunal Institute for Medical Sciences and Technology,
Trivandrum, India.
Heart Failure

• No data on incidence and prevalence from India.

• No data on the profile of HF and the practice patterns.

• Is likely to be a major disease burden in India.
TRIVANDRUM HEART FAILURE REGISTRY

• First heart failure registry in India.

• Supported by ICMR – Indian Council for Medical Research.

• Covered all hospitals in an urban area in South India - Trivandrum and a nearby rural area- 25 Kms from the city.
Trivandrum HF registry

- **Urban Area** –
  Tvm City corporation -  Area 141 Sq Km, 7,45,000 Population.

- **Rural Area** –
  Athiyannoor block panchayat (Area 42 Sq Km, Population 4.5 Lakhs.)
The Hospitals Participating in The Registry.

**Trivandrum Urban Area**

1. Ananthapuri Hospitals and Research Institute - Dr. C. G. Bahuleyan
2. Cosmopolitan Hospital - Dr. Biju R.
3. Govindan's Hospital - Dr. K. Krishnakumar
4. General Hospital, Trivandrum - Dr. Jayapal A.
5. Jubilee Hospital - Dr. B.V.R. Kumar
6. Kerala Institute of Medical Sciences - Dr. G. Vijayaraghavan
7. Medical College Hospital, Trivandrum - Dr. Sunitha Viswanathan
8. PRS Hospital - Dr. Tiny Nair
9. S. K. Hospital - Dr. K. Suresh
10. SCTIMST - Dr. Harikrishnan S.
11. Sree Uthradam Tirunal Hospital - Dr. C. Bharathchandran
Athiyanoor Block Panchayat (Trivandrum Rural Area)

a. NIMS Hospital, Neyyattinkara – Dr. Madhu Sreedharan
b. PHC - Venpakal – Dr. SivaKumar
c. PHC - Pulluvila - Dr. Preetha
d. PHC - Vizhinjam - Dr. Mini
e. District Hospital, Neyyattinkara - Dr. S. Krishna Kumar

- 5 Hospitals -
Hospitals – 13 Urban, 5 rural

Mix of hospitals..

Public – Private

Cardiologist – Non-cardiologist

Interventional facilities – No interventional facilities

Academic - Non-academic
Investigators Meet
Trivandrum
Heart Failure Registry

Organised by
Sree Chitra Tirunal Institute for
Medical Sciences and Technology
Trivandrum

26th November 2012
Monday, 7pm

Hotel Taj Vivanta
Vazhuthacaud
Tvm HF Registry –
Investigators meet

- Investigators meet – We had in-depth discussion about the proforma, data collection techniques.
- The nurse-co-ordinators also participated, they were trained.
Tvm HF Registry – Data collection techniques

• The cardiologist will identify all HF admissions – ESC 2012 Criteria.

• The nurse / research co-ordinators who were trained, enter the data in the paper proforma.

• The study co-ordinators – Two research nurses and two social workers (stationed at SCTIMST), physically visit each hospital twice a week in bikes and collect data.
Tvm HF Registry

• Started on Jan 1\textsuperscript{st} 2013 – Ended 31\textsuperscript{st} December 2013
• One year.
• All patients with Heart Failure.
• Readmissions of the same pt. were not counted.
## Table 1: Etiology of HF

<table>
<thead>
<tr>
<th>Etiology of Patients enrolled in January &amp; February 2013</th>
<th>TOTAL NUMBER OF PATIENTS  : 207</th>
<th>MALE : 137</th>
<th>FEMALE : 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 IHD - ACS</td>
<td>75 (36.23%)</td>
<td>47 (22.71%)</td>
<td>28 (13.53%)</td>
</tr>
<tr>
<td>2 CHD - CHRONIC CAD /ICMP</td>
<td>61 (29.47%)</td>
<td>48 (23.19%)</td>
<td>13 (6.28%)</td>
</tr>
<tr>
<td>3 CHD-ASD</td>
<td>05 (2.42%)</td>
<td>03 (1.45%)</td>
<td>02 (0.97%)</td>
</tr>
<tr>
<td>4 DCM</td>
<td>30 (14.49%)</td>
<td>23 (11.11%)</td>
<td>07 (3.38%)</td>
</tr>
<tr>
<td>5 HCM/DIASTOLIC HF/RCM</td>
<td>07 (3.38%)</td>
<td>03 (1.45%)</td>
<td>04 (1.93%)</td>
</tr>
<tr>
<td>6 NON RHD VALVE</td>
<td>03 (1.45%)</td>
<td>00 (---)</td>
<td>03 (1.45%)</td>
</tr>
<tr>
<td>7 RHD</td>
<td>22 (10.63%)</td>
<td>13 (6.28%)</td>
<td>09 (4.35%)</td>
</tr>
<tr>
<td>8 PULMONARY HYPERTENSION</td>
<td>01 (0.48%)</td>
<td>00 (---)</td>
<td>01 (0.48%)</td>
</tr>
<tr>
<td>9 PERIARTUM CARDIOMYOPATHY</td>
<td>01 (0.48%)</td>
<td>00 (---)</td>
<td>01 (0.48%)</td>
</tr>
<tr>
<td>10 PULMONARY EMBOLISM</td>
<td>01 (0.48%)</td>
<td>00 (---)</td>
<td>01 (0.48%)</td>
</tr>
<tr>
<td>11 COR-PULMONALE</td>
<td>01 (0.48%)</td>
<td>00 (---)</td>
<td>01 (0.48%)</td>
</tr>
</tbody>
</table>

**CHD** - Congenital Heart Disease, **DCM** - Dilated cardiomyopathy, **HCM** - Hypertrophic cardiomyopathy, **RHF** - Right Heart Failure, **IHD** - Ischemic heart disease, **NHHD** - Non Rheumatic Heart Disease, **RCM** - restrictive cardiomyopathy, **RHD** - rheumatic heart disease, **ACS** - Acute coronary Syndrome, **CMP** - Cardiomyopathy, **ICMP** - Ischemic Cardiomyopathy

## Table 2: Risk factors of patients enrolled in HF registry.

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>HTN</th>
<th>DM</th>
<th>COPD</th>
<th>CKD</th>
<th>SMOKING</th>
<th>ALCOHOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>59</td>
<td>65</td>
<td>19</td>
<td>18</td>
<td>101</td>
<td>26</td>
</tr>
<tr>
<td>Female</td>
<td>31</td>
<td>20</td>
<td>06</td>
<td>06</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Total</td>
<td>90 (43.48%)</td>
<td>85 (41.06%)</td>
<td>25 (12.07%)</td>
<td>24 (11.59%)</td>
<td>101 (48.7%)</td>
<td>26 (12.56%)</td>
</tr>
</tbody>
</table>

**HTN** - Hypertension, **DM** - Diabetes Mellitus, **COPD** - Chronic Obstructive Pulmonary Disease, **CKD** - Chronic Kidney Disease.
Tvm HF Registry –
Preliminary data analysis

- 1232 patients admitted
- 27 readmitted in another hospital were excluded.
- 1205 cases – one year period
- 833 (69%) males, 372 (31%) females.
TVM

- Male: 69%
- Female: 31%

ADHERE (US)

- Male: 52%
- Female: 48%
% Females

<table>
<thead>
<tr>
<th></th>
<th>ADHERE*</th>
<th>OPTIMIZE-HF**</th>
<th>ESC HF Pilot***</th>
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<td>US</td>
<td>Europe</td>
<td>Japan</td>
<td>India</td>
</tr>
<tr>
<td>Females</td>
<td>52%</td>
<td>52%</td>
<td>37%</td>
<td>42%</td>
<td>31%</td>
</tr>
</tbody>
</table>

**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
Age distribution

Mean age 61.2 +/- 13.7 Yrs

% Sex wise

- M
- F

Age groups: 18-20, 21-30, 31-40, 41-50, 51-60, 61-70, 71-80, 81-90, 91-99
## Age distribution

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<td>Japan</td>
<td>India</td>
</tr>
<tr>
<td>Age</td>
<td>72.4+14</td>
<td>73+14</td>
<td>70+13</td>
<td>73</td>
<td>61.2 +/- 13.7 Yrs</td>
</tr>
</tbody>
</table>

**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
Japanese (ATTEND) Registry
> 80 yrs – 36.5%

** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
AETIOLOGY OF HEART FAILURE - TVM HF Reg.

<table>
<thead>
<tr>
<th>Cause</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ischemic Cardiomyopathy</td>
<td>36%</td>
</tr>
<tr>
<td>ACS</td>
<td>35%</td>
</tr>
<tr>
<td>DCM</td>
<td>13%</td>
</tr>
<tr>
<td>RHD</td>
<td>8%</td>
</tr>
<tr>
<td>HFpEF (&gt;45%)</td>
<td>25%</td>
</tr>
<tr>
<td>MISC.</td>
<td>5%</td>
</tr>
</tbody>
</table>
### AETIOLOGY OF HEART FAILURE - TVM HF Reg.

#### Miscellaneous

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>NON-RHD VALVE</td>
<td>2.5%</td>
</tr>
<tr>
<td>RIGHT HEART FAILURE</td>
<td>1.5%</td>
</tr>
<tr>
<td>Congenital HD</td>
<td>1.3%</td>
</tr>
<tr>
<td>PERI-PARTUM CMP</td>
<td>0.25%</td>
</tr>
</tbody>
</table>
## AETIOLOGY OF HEART FAILURE - COMPARISON

<table>
<thead>
<tr>
<th></th>
<th>WESTERN*</th>
<th>ATTEND – JAPANESE**</th>
<th>INDIA - THFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISCHEMIC</td>
<td>63%</td>
<td>31</td>
<td>71%</td>
</tr>
<tr>
<td>DCM</td>
<td>17%</td>
<td>13</td>
<td>13%</td>
</tr>
<tr>
<td>Non RHD Valve</td>
<td>5%</td>
<td>19</td>
<td>2.5%</td>
</tr>
<tr>
<td>RHD</td>
<td>-</td>
<td></td>
<td>8%</td>
</tr>
<tr>
<td>HYPERTENSION</td>
<td>4%</td>
<td>17</td>
<td>2%</td>
</tr>
</tbody>
</table>


**Sato et al. ATTEND Registry Circ J 2013; 77: 944 – 951**
## RISK FACTORS (%) - COMPARISON

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>ADHERE</th>
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<td>India</td>
</tr>
<tr>
<td>Hypertension</td>
<td>73</td>
<td>71</td>
<td>62</td>
<td>72</td>
<td>58</td>
</tr>
<tr>
<td>Diabetes</td>
<td>44</td>
<td>42</td>
<td>35</td>
<td>31</td>
<td>55</td>
</tr>
<tr>
<td>Smoking</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>43</td>
<td>41 (M=69%)</td>
</tr>
<tr>
<td>CKD</td>
<td>30</td>
<td>20</td>
<td>26</td>
<td>-</td>
<td>18</td>
</tr>
</tbody>
</table>

**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951*
# ATRIAL FIBRILLATION/FLUTTER (%)

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<td>US</td>
<td>Europe</td>
<td>Japan</td>
<td>India</td>
</tr>
<tr>
<td>Atrial Fibrillation / Flutter</td>
<td>31</td>
<td>31</td>
<td>44</td>
<td>35</td>
<td>16</td>
</tr>
</tbody>
</table>

**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
Duration of therapy and mortality

• The mean duration of hospitalization was 8 +/- 6.2 days.

• The total in-hospital mortality was 8.4% (102 patients).

• Females had higher mortality 9.9 % Vs 7.4 in males (P =NS)
# DURATION OF HOSPITAL STAY (DAYS)

<table>
<thead>
<tr>
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<td>US</td>
<td>Europe</td>
<td>India</td>
</tr>
<tr>
<td><strong>LENGTH OF HOSP STAY</strong></td>
<td>4.3</td>
<td>5.3</td>
<td>-</td>
<td>8</td>
</tr>
</tbody>
</table>

**** Sato et al. ATTEND Registry - *Circ J* 2013; 77: 944 – 951
### In-Hospital Mortality

<table>
<thead>
<tr>
<th>Country</th>
<th>ADHERE</th>
<th>OPTIMIZE-HF</th>
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<td>US</td>
<td>US</td>
<td>Europe</td>
<td>Japan</td>
<td>India</td>
</tr>
<tr>
<td>In Hospital Mortality</td>
<td>4.0</td>
<td>3.8</td>
<td>3.8</td>
<td>6.4</td>
<td><strong>8.4</strong></td>
</tr>
</tbody>
</table>

**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
Tvm HF Registry – Drug therapy

<table>
<thead>
<tr>
<th>Medication</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEI/ARB</td>
<td>48</td>
</tr>
<tr>
<td>Aldo Blockers</td>
<td>45</td>
</tr>
<tr>
<td>BB</td>
<td>58</td>
</tr>
<tr>
<td>Digoxin</td>
<td>28</td>
</tr>
<tr>
<td>Diuretics</td>
<td>94</td>
</tr>
<tr>
<td>Vasodilators</td>
<td>26</td>
</tr>
</tbody>
</table>
OPTIMAL TREATMENT

ACEI/ARB + BB + ALDOSTERONE BLOCKER

Only 25% (95% CI: 21.8-27.4) of the patients with LV systolic dysfunction received optimal treatment at discharge.
Optimal treatment and outcomes.

ACEI/ARB + Beta Blockers + Aldosterone blockers
3 Month follow-up data

The 90-day follow-up rate was 97% (35 patients lost to follow-up)

116 patients died during the 90 day follow-up period. (9.6%).

Cumulative mortality at 90 days was 18.6%
3 Month follow-up data – Cause of death

Pump failure – 43 /116

SCD - 72 /116

Hepatic encephalopathy – 1 /116
One year follow-up data.

1170 patients followed-up out of 1205 patients (97% follow-up)

265 patients died on follow-up after discharge.

Total mortality at 1 year – 31.7%
One year follow-up data.


The unadjusted 1-year mortality rate for HF hospitalization was.

31.7% in 1999 and 32.0% in 2008*
Figure 2. Death rates for patients hospitalized with heart failure across the globe. Each symbol represents data from a published study. Vertical shaded areas show the range in reported death rates within each time frame. Horizontal shaded areas show regions. The data categorized as ‘Europe’ is from the EuroHeart Failure Survey (24 countries),21 the EuroHeart Failure Survey II (30 countries)23 and the ESC-HF pilot survey (12 countries).22 The data are not age-adjusted.

In hospital – 2 - 17%
One year -- 17 – 45%

One year follow-up data EUROPE
**Cohort.**

We are now converting this registry to a cohort.

Trivandrum heart failure cohort.
Compared to data from the west, Indian patients are

- Younger by 10 yrs; have male predominance,
- More have CAD and
- In-hospital stay was longer and
- In – hospital mortality was higher.
- One year mortality was 31.7% - similar to data from the US ad Europe

- Usage of evidenced based therapy was not very different from the west but sub-optimal.
Trivandrum HF Registry

• Data regarding HF is different from West.

• This has implications at the physician level and also at policy levels.

• Quality improvement programs may help to improve the outcomes.
Thank you
# PATTERN OF HF ADMISSIONS

<table>
<thead>
<tr>
<th>Type of HF</th>
<th>GENDER</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td><strong>ACUTE DENovo HF</strong></td>
<td>335</td>
<td>144</td>
</tr>
<tr>
<td><strong>ACUTE ON CHRONIC HF</strong></td>
<td>499</td>
<td>227</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>834</td>
<td>371</td>
</tr>
</tbody>
</table>

**ACUTE DE-NOVO HF**
- Italian Registry (IN-CHF) – 43 %
- Japanese (ATTEND) – 64%

*Sato et al. ATTEND Registry - *Circ J* 2013; 77: 944 – 951
**Oliva et al. IN CHF Registry European Journal of Heart Failure (2012) 14, 1208–1217
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<td>227</td>
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116 patients died during the 90 day follow-up period (9.6%)

Cumulative mortality at 90 days was 18%

Pump failure – 43 /116
SCD – 72 /116
Hepatic encephalopathy – 1/116
34/292 F – 11.6% 
82/660 M – 12.4%
### RISK FACTORS (%) - COMPARISON

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**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
Trivandrum HF Registry

• All cardiologists, physicians in that area contacted and invited, good response.

• Discussions with cardiologists and physicians from all hospitals in Trivandrum urban and Athiyannoor block and its drainage area.

• Proforma was drafted and circulated.
IN HOSPITAL THERAPY

• **Inotropic support**  – 11%
  (Dobutamine, Dopamine, NE, Milrinone).

• **Diuretic administration**  – 94%

• **Vasodilators** (Nitrates, Hydralazine)  – 33%
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<td>1892</td>
<td>4804</td>
<td>1205</td>
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<tr>
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<td>US</td>
<td>US</td>
<td>Europe</td>
<td>Japan</td>
<td>India</td>
</tr>
<tr>
<td>Atrial Fibrillation / Flutter</td>
<td>31</td>
<td>31</td>
<td>44</td>
<td>35</td>
<td>16</td>
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</table>

**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
<table>
<thead>
<tr>
<th></th>
<th>ADHERE</th>
<th>OPTIMIZE-HF</th>
<th>ESC HF Pilot</th>
<th>ATTEND</th>
<th>THFR</th>
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<tr>
<td>N</td>
<td>105388</td>
<td>48612</td>
<td>1892</td>
<td>4804</td>
<td>1205</td>
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<tr>
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<td>US</td>
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<td>Japan</td>
<td>India</td>
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<tr>
<td>ISCHEMIC ETIOLOGY</td>
<td>65</td>
<td>46</td>
<td>50</td>
<td>31</td>
<td>71</td>
</tr>
</tbody>
</table>

**** Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
INVESTIGATIONS

Echocardiography was available in 97% of the patients. (Mandatory)

BNP was available in 363 patients
   Average value at admission – 6214.

S.Creatinine Level : 1.47 mg%
Hemoglobin Level : 12.03 gm%
## PATTERN OF HF ADMISSIONS

<table>
<thead>
<tr>
<th>Type of HF</th>
<th>GENDER</th>
<th>Total</th>
</tr>
</thead>
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<tr>
<td></td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>ACUTE DENOVO HF</td>
<td>335</td>
<td>144</td>
</tr>
<tr>
<td>ACUTE ON CHRONIC HF</td>
<td>499</td>
<td>227</td>
</tr>
<tr>
<td>Total</td>
<td>834</td>
<td>371</td>
</tr>
</tbody>
</table>

**ACUTE DE-NOVO HF**

- Italian Registry (IN-CHF) – 43%
- Japanese (ATTEND) – 64%

*Sato et al. ATTEND Registry - Circ J 2013; 77: 944 – 951
**Oliva et al. IN CHF Registry European Journal of Heart Failure (2012) 14, 1208–1217
The proforma will be checked for omissions/ errors there itself and missing data collected.

The data will be entered into MS Excel sheet.

At the end of the month, the PI / Co-PI will check all proformas for errors, mis-diagnosis etc.
<table>
<thead>
<tr>
<th>RHYTHM</th>
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<tr>
<td>SR</td>
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<td>AFIB</td>
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<tr>
<td>AFL</td>
<td>0.9%</td>
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<tr>
<td>OTHERS (eg. IVCD)</td>
<td>4%</td>
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<tr>
<td>LBBB</td>
<td>9%</td>
</tr>
<tr>
<td>RBBB</td>
<td>5%</td>
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</table>
BNP – Done 363 patients
  Average value at admission - 5753
<table>
<thead>
<tr>
<th>RISK FACTORS</th>
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<th></th>
<th>Total</th>
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<tr>
<td></td>
<td>M</td>
<td>F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HTN</td>
<td>477</td>
<td>57.26%</td>
<td>221</td>
<td>59.41%</td>
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<td>DM</td>
<td>466</td>
<td>55.94%</td>
<td>199</td>
<td>53.49%</td>
<td>665</td>
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<tr>
<td>CKD</td>
<td>159</td>
<td>19.09%</td>
<td>56</td>
<td>15.05%</td>
<td>215</td>
</tr>
<tr>
<td>SMOKING</td>
<td>490</td>
<td>59%</td>
<td>0</td>
<td>0.00%</td>
<td>490</td>
</tr>
</tbody>
</table>
RISK FACTORS -- TVM HF Registry.

DIABETES 52%
HYPERTENSION 55%
SMOKING 44%
CHRONIC KIDNEY DIS. 13.5%
Will Organized Heart Failure programs work?

• Meta-analysis of 30 trials*
  
  HF program Vs routine care
  
  Reduces hospital admissions
  Reduces mortality
  Reduces costs

• ACC – AHA (2005) given Class I recommendation for utilization of such programs**

*Holland et.al. heart 2005 91: 899-906.
** ACC AHA Circulation 2009;119e391-479
Challenges – Budget

- Budget – Clearly planned.
- Job description which we want and ICMR do not match.
- Rigid
- We will not be able to initiate the project as planned.
- Project extension $##&!!!

- Quality personnel?
- We appointed male nurses who own a bike – Job description was clear, - no separate money for data collection, travel expenses included in salary.
There is relevance for a Comprehensive HF Management Program
The Program..

Comprehensive Heart Failure Intervention Program
Current Status
ICMR – Supported – Adhoc Research Project. (5/4/1-11-11 NCD2)

56 Lakhs rupees sanctioned FOR 3 years
(1st year funds transferred.)

1. Trivandrum HF registry

2. Comprehensive heart failure intervention program
ICMR – CHITRA HEART FAILURE PROGRAM

- TRIVANDRUM HEART FAILURE REGISTRY

- First heart failure registry in the country
- Planning to cover all hospitals in Tvm City and one rural area in Tvm District (Athiyannoor Panchayat)

This data will form the basis of planning and research of future heart failure programs in the country
Comprehensive Heart Failure Intervention Program.

- Two groups
  
  Routine care Vs
  Care under dedicated HF program
Comprehensive Heart Failure Intervention Program

ICMR Study protocol

Heart Failure patients admitted to SCTIMST (Next one year – 2012-13, n=300) → Newly devised, evidence based HF intervention program

GROUP I

GROUP II

Mortality, Readmissions, Quality of life → Compared to historical controls admitted in 2011-12, n=300
ICMR – CHITRA HEART FAILURE PROGRAM

Co-location of HF patients through a dedicated management protocol

Heart Failure OPD, ward and ICU

Re-orientation of services based on evidence

a. Optimizing medical management

b. Patient follow-up – telephonic and Research Nurse based.

(Developing and testing a model for India, 7 nurses and 2 MSWs allotted in ICMR Project)
Co-location of HF patients

HEART FAILURE OPD -

Already started functioning – Wednesdays 11 PM
125 patients are in the register and are on regular follow-up

HF – ICU
HF - Ward

We are currently utilizing the existing ward and ICU facilities
Advanced HF management

• **Cardiology side**
  Arrhythmia management and re-synchronisation – Electrophysiology team
  - RF ablation, ICD, CRT
  Coronary re-vascularisation
    - Bypass graft angioplasty, mitral/aortic valvotomy.

• **Cardiac Surgical side**
  Mitral valve procedures
    - Mitral valve repair
  LV reduction therapies
    - Dorr procedure, Aneurysm plication
Evaluation of the HF Intervention program

Group I Vs Group II at the end of one year follow-up

IMPACT on..

1. Mortality
2. Hospital admissions
3. Quality of life

Based on the results from the ongoing ICMR study…

To develop a HF management model suitable for India, logistically feasible and economically viable.

Use the data from the HF registry to plan future strategies.
POTENTIAL IMPACT OF THE ONGOING ICMR STUDY

- Possible to develop a HF management model suitable for India, logistically feasible and economically viable.

- Use the data from the HF registry to plan future strategies.
Center for Comprehensive Heart Failure Management, SCTIMST

Future plans
Dedicated “state of the art”
Heart Failure management facility
Dedicated HF management facility

• 1. HF ICU – 10 bedded
  (2 cubicles for post- transplant care, laminar air flow)
• 2. Cardiac Operating rooms for Tx, Specialised procedures
• 2. HF ward – 10 bedded
• 3. HF OPD – 2 physician cubicles
  Infusion suite with 2 cots for inotrope/diuretic infusions on OPD basis.
Cardiac transplant program

No good cardiac transplant network/system in the country.

Aim to develop a cardiac transplant program.
Bridge to transplant

• 1. LV assist devices
• 2. RV assist devices
• 3. LV centrifugal pumps – Impella.
• 4. IABP

• Transplant wait list
• Referral for transplant
Transplant work-up

• Recipients – Transplant list and STATUS LIST will be prepared and maintained
• List will be ranked based on standard guidelines pertaining to India
• The HF team will decide the candidate – Necessary regulations will be followed.
**Transplant – Donor flow**

Neurosurgery ICU – MCH Tvm

(Evaluation by HF team, donor found suitable, Brain death declaration)

(Matching recipient identified, admitted and prepared in HF ICU)

Donor shifted to SCTIMST, HF ICU/ Cardiology ICU

CAG, Echocardiography, Serology and other work-up

Shifted to CSOT – Transplant

Shifted to CSICU

3RD Day post transplant shifted to HF ICU Cubicles
Post-transplant follow-up

- HF ICU/ward
- Periodic Endomyocardial biopsies, CAG if needed.
- Sinus node function assessment.
- Periodic echocardiography – Tissue Doppler imaging.
- Immunosuppression protocol.
- Immunosuppressive drug levels - Cyclosporine, Tacrolimus

**DISCHARGE**.....

- **Weekly – Monthly – Yearly follow-up**
Non-invasive imaging...

Echocardiographic evaluation –

development of training programs and teaching modules
Echo evaluation in HF

1. Assessment of cardiac dys-synchrony
2. Tissue Doppler assessment
3. Stress echocardiography
4. Contrast echocardiography
5. 3D echocardiography
6. Trans-esophageal echocardiography
7. Intra-operative echocardiography

Conducting training programs and developing study materials and conducting workshops to train physicians
Cardiac Rehabilitation
PALLIATIVE CARE IN HF – Almost non-existent in India

For those not-eligible for transplant and for HF patients

- Exercise programs
- Opioids
- Management of sleep apnoea.
- Counseling
- Anti-arrhythmics to prevent SCD.

- To develop a good rehab program suitable to our country
RESEARCH COMPONENTS
Research components

• **1. Bio-Medical Device development.**
  VAD is already under development in BMT wing. This program will augment the development.

  New devices may be developed
  Centrifugal LV pumps (Impella like)

• **2. Testing of newly evolving therapies.**
  Cardio-regenerative therapy (stem cell therapy).
Training programs
Training programs which is planned

1. **HF Fellowship**
   One year dedicated course – Post DM
   
   Imaging, transplant work-up and follow-up management

2. **HF Nurses**
   To develop a course to train nurses who can manage HF at the community level

3. **Physician training modules and CMEs.**
   To develop training and evaluation modules to certify eligible physicians to enable community level management of HF.
Overview

HF patients -> HF OPD / Ward / ICU
Optimizing medical management

Detailed evaluation for correctable causes
(Echo – Dysynchrony, CAG – Cath study)

Cardiac Resynchronisation
Intracardiac defibrillator
Balloon valvotomy
CABG / Valve replacement

Cardiac Transplant

Palliative care

- Research
- Training
- Bio-medical device development
Dr. Ajanth Patel received his undergraduate and medical degree from the University of Cambridge. He completed residency programs in Internal Medicine at Guy's Hospital in London, UK and the Cleveland Clinic Foundation and a fellowship in Cardiology at the Ronald Reagan UCLA Medical Center. Dr. Patel also holds a PhD from UCLA in Physiology (Vascular biology). He currently serves as the Medical Director of the Heart Transplant Program at the Cedars-Sinai Heart Institute and is Associate Professor of Medicine/Cardiology at the David Geffen School of Medicine at UCLA.

Mark Hoffman, MD, MPH, FACC is an Assistant Professor of Preventive Medicine and Medicine-Cardiology at the Northwestern University Feinberg School of Medicine and adjunct faculty at the Northwestern Center for Global Health. He is an active member of the American Heart Association and is a member of the Statistics Committee for the AHA's Council on Epidemiology and Prevention. He also serves on the senior advisory committee for the Young Professionals' Chronic Disease Network and is on the editorial staff for the Cochrane Heart Group and Global Heart.

Organised by
Sree Chitra Tirunal Institute for Medical Sciences and Technology
Thiruvananthapuram

Academic Partners:
Medtronic
SUN Pharmaceuticals Pvt. Ltd.
Dear Doctor,

Heart failure (HF) is emerging as a major public health problem. The number of HF deaths has increased steadily despite advances in treatment. The increasing recognition of the existence of clinical HF in patients with a normal ejection fraction (EF) has also led to heightened awareness of the limitations of evidence-based therapy for this important group of patients. In India also we know that the number of HF admissions are increasing.

In this context it would be appropriate to have a discussion on the recent trends in the management of heart failure. Dr. Jignesh Patel, of the Cedars-Sinai Heart Institute and Dr. Mark Huffman of the Northwestern University are the invited faculty.

We hope the program will generate good discussion and we invite you to participate in the program.

Dr. V. K. Ajit Kumar
Professor

Dr. J. A. Tharakan
Professor and HOD

8 pm - Welcome Note and Introduction to The Symposium
Prof. V. K. Ajit Kumar

8.05 pm - Heart Failure Burden on The Rise
Dr. Mark Huffman, Assistant Professor of Northwestern University, Chicago, USA
Chairpersons: Prof. G. Vijayaraghavan
C. Bharathchandran

8.20 pm - Medical Management of Heart Failure - Current Concepts
Dr. Harikrishnan S.
(Additional Professor, Sree Chitra Tirunal Institute for Medical Sciences and Technology)
Chairpersons: Prof. J. M. Tharakan
K. Jayakumar

8.40 pm - Changing Concepts in Advanced Heart Failure Management
Dr. Jignesh Patel
(Associate Clinical Professor, UCLA and Medical Director,
Heart Transplant Program, Cedars - Sinai Heart Institute)
Chairpersons: Prof. C. G. Bahuleyan
S. Viswanathan

Discussion - 9 pm

9.15 pm
Dinner
Compared to data from the west, Indian patients are

- Younger; have male predominance,
- More have CAD and
- Very few present with diastolic HF.

- In-hospital stay was longer and
- Mortality was higher, especially among females.

- Usage of evidenced based therapy was not very different.
Challenges

• (1) Bringing the physicians together

• Skepticism
• Why should I participate?.
• What is my role?

• Intra-hospital issues – Different units – Only one PI!!
Challenges

• (1) **Bringing the physicians together**

- Define each one’s roles.
- Who will play the lead roles – Clear information.
- Clear plan about the outcome form the study
  - Publications – Authorship Criteria
  - Presentations in conferences – Who?
- Finances – who will handle? How? Budget should be discussed in detail
- Staffs – under whom? Which hospital?
Challenges

• (1) **Bringing the physicians together**

• **OUR “SUCCESS”**.

• We are a governmental, academic Institution.
• Most of the participating cardiologists – Teachers, friends.
• Defined the roles, Discussed each and every detail with all participating physicians from beginning.
• Investigators meeting was the key to success.
• Each one felt they were part of developing the protocol.
Challenges

• (2) Developing the protocol and proforma.

• Suited to our region.
• To identify the most important data to be captured.

• Discussions and re-do.
Challenges – Data collection

- Wrong data.
- Missing data.
- False data
Challenges – Data collection

• Training
• Trial run of 5 cases in each center.
• The co-ordinators were personally visiting each center – So clarifications possible.
• Investigator’s brochure
• Verification by PIs.
• Data collection fee given only after submitting a fully filled proforma.
• Filled by staff nurses who are treating the pts – So reliable to some extent.

STILL OUR DATA IS NOT PERFECT.
Challenges –
Loss of interest over time

- First months – 120 cases
- Third month 100 cases.

- Losing interest by the Physicians

- News letter
- Periodic telephonic reminders.
- Rapport with the Data co-ordinators and the Hospital staff.
Challenges – Too much details in data

- Echocardiography – Limited data only need to be captured.
- ECG – SR/AF, LBBB/RBBB, QRS Duration, Evidence of CAD.

Too many details – will not be analysed, will be difficult to capture.
Challenges – Staff

• Appointment of staff takes 2-3 months.
• We will not be able to initiate the project as planned.
• Project extension %#$##&!!!

• Quality personnel?
• We appointed male nurses who own a bike – Job description was clear, - no separate money for data collection, travel expenses included in salary.
Challenges – Follow-up

- Hospital follow-up, not practical
- Wrong address, Changing mobile numbers, Vanishing landlines.
- Dis-interest from patient's side, ignorance.

- Mortality – > 15% mortality.
- Difficult to follow-up telephonically after a mortality – Un-reliable data or no-data.

- Get two tel.numbers
- Call once you get the numbers when patient is still in hospital and confirm.