Level of Chronic Illness Management in Heart Transplant Centers in 11 countries –
A Multicenter Cross-Sectional Study

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Background

• Long-term outcome post heart transplantation (HTx) are unchanged\(^1,2\)

• HTx patients change from one chronic condition pre-transplant to life-long follow-up post-transplant\(^3,4\)

• HTx patients have to adhere to health behaviours\(^1\)

• HTx patients are chronically ill, different implemented chronic care models are needed\(^3,4\)

\(^1\) Lodhi et al., 2011, \(^2\) Stehlik et al., 2012, \(^3\) Francis et al. 2010, \(^4\) De Geest et al., 2011
Background
Background

• Care models based on principles of Chronic Illness Management (CIM) are a promising path to rearrange transplant follow-up in order to improve outcomes\textsuperscript{2,3,4}

• Evidence shows that transplant follow-up based on principles of CIM results in better clinical and health care utilization outcomes\textsuperscript{5,6}

\textsuperscript{1}De Geest et al., 2012, \textsuperscript{2}Yach et al., 2002; \textsuperscript{3}Pruitt et al., 2005, \textsuperscript{4}Bodenheimer et al., 2002, \textsuperscript{5}Bissonnette et al., 2013, \textsuperscript{6}Hils et al., WTC San Francisco, 2014, Poster presentation
Background

• Variability in delivering health care, e.g., different practice patterns\textsuperscript{1,2}
• Different practice patterns have an impact on patient outcome\textsuperscript{1,2,3}
• Evidence in kidney transplantation\textsuperscript{4}
• No reports available in HTx

\textsuperscript{1}Loberiza, et al., 2003, \textsuperscript{2}Loberiza, et al., 2005, \textsuperscript{3}Berben et al., 2011, \textsuperscript{4}Bissonette et al, 2013
Degree of Chronic Illness Management in your (transplant) center?

- % Decision making support?
- % Adherence monitoring and interventions?
- % self-management support?
- % patient active partner?
- % clinical information system?
- Multidisciplinary team?
- % HCW mastering behavioral interventions?
- % collaboration with community, primary care, and other?

Aims

• To describe level of chronic illness management implemented among heart transplant (HTx) centers in 11 countries from the clinicians’ and patients’ perspective

• Assess the association of the level of CIM implemented from the clinicians’ and patients’ perspective
Design
International, multi-center, cross-sectional survey

4 continents
11 countries
36 HTx centers

Total clinicians sample: 100
Total patient sample: 1397
Sample & Setting

Multi-staged sampling approach

- **Countries:** convenience sample
- **HTx centers:** convenience sample
- **HTx clinicians:** random sample (if >5 eligible clinicians), convenience sample (if ≤ 5 eligible clinicians)
- **Htx patients:** Proportionate random sample within centers (based on number of patients transplanted in last 5 years):
  - **Small** center: 50-74 patients: **N=25**
  - **Medium** center: 75-100 patients: **N=40**
  - **Large** center: >100 patients: **N=60**

Berben et al., 2015, ISHLT, 2015 https://www.ishlt.org/ accessed on 03.03.2015
Variables & Measurement

Demographic information

- **Patient**
  - Age
  - Gender
  - Time since HTx

- **HTx clinician**
  - Age
  - Gender
  - Time working in HTx

- **HTx center**
  - Location center (urban/rural area)
  - Type of hospital (university hospital/other)
  - Number of patients > 1y post Tx in follow up at HTx center
  - Number of beds in hospital
  - Size of HTx center (small, medium, large)

Berben et al., 2015
Variables & measurement

Chronic illness management: 2 perspectives

- **Patient perspective:** Short version of Patient Assessment of Chronic Illness Care (PACIC)\(^1\)
  - 11 items
  - Scoring: 5 point Likert scale, total score: range: 11-55
  - Internal consistency: Cronbach’s $\alpha$ between 0.95 and 0.96

- **Clinician perspective:** Chronic Illness Management Implementation – Building Research Initiative Group: Chronic Illness Management and Adherence in Transplantation (CIMI-BRIGHT)\(^2\)
  - 55 items
  - Scoring: 4 point Likert scale, total score: range: 55-220
  - Content validity: Scale content validity index= 0.87
  - Inter-rater reliability: ranging between 74.8% and 84.6%

\(^1\)Gugiu et al., 2009, \(^2\)Berben et al., 2014
Data analysis

• **Descriptive statistics**
  (frequencies, percentages, measures of central tendency and dispersion):
  – Demographic information (patients, clinicians, HTx centers)
  – Level of Chronic Illness Management (CIM) (center level)
  → Aggregated on center level

• **Associations between patient and clinicians scores:**
  – Pearson correlation coefficients of 5 dimensions with total PACIC score
### Results:
**Demographic characteristics HTx centers**

<table>
<thead>
<tr>
<th></th>
<th>HTx centers (n=36)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location of HTx center:</strong></td>
<td></td>
</tr>
<tr>
<td>Urban area</td>
<td>89%</td>
</tr>
<tr>
<td>Rural area</td>
<td>11%</td>
</tr>
<tr>
<td><strong>Type of hospital:</strong></td>
<td></td>
</tr>
<tr>
<td>University hospital</td>
<td>83%</td>
</tr>
<tr>
<td>Other (community, ...)</td>
<td>17%</td>
</tr>
<tr>
<td><strong>Size of HTx center:</strong></td>
<td></td>
</tr>
<tr>
<td>Small (50-74 HTx performed last 5 y)</td>
<td>25%</td>
</tr>
<tr>
<td>Medium (75-100 HTx performed last 5 y)</td>
<td>22%</td>
</tr>
<tr>
<td>Large (&gt;100 HTx performed last 5 y)</td>
<td>53%</td>
</tr>
<tr>
<td><strong>Number of beds hospital, Mean ± SD</strong></td>
<td>721 ± 402</td>
</tr>
<tr>
<td><strong>Number of HTx patients &gt;1y post Tx followed up at HTx center, Mean ± SD</strong></td>
<td>371 ± 274</td>
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</tbody>
</table>
# Results:

Demographic characteristics HTx patients & clinicians

<table>
<thead>
<tr>
<th></th>
<th>Patients (n= 1397)</th>
<th>Clinicians (n= 100)</th>
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<tbody>
<tr>
<td>Age: Years, Mean ± SD</td>
<td>53.6 ± 13.2</td>
<td>47.6 ± 10.2</td>
</tr>
<tr>
<td>Gender: Male, %</td>
<td>73</td>
<td>13</td>
</tr>
<tr>
<td>Years post HTx: Mean ± SD</td>
<td>3.3 ± 1.5</td>
<td>/</td>
</tr>
<tr>
<td>Years working in HTx: Mean ± SD</td>
<td>/</td>
<td>11.9 ± 7.8</td>
</tr>
<tr>
<td>Number of nurses with certification in Tx: yes, %</td>
<td>/</td>
<td>58.6</td>
</tr>
</tbody>
</table>
Results:

Level of CIM implemented in HTx Centers

*CIM clinician perspective /CIMI-BRIGHT (Mdn)
Overal median clinician perspective (CIMI-BRIGHT)
CIM patient perspective/PACIC (Mdn)
Overall median patient perspective (PACIC)

*only data from 1 clinician available
Results

Association of the level of CIM implemented from the clinicians’ and patients’ perspective

- $r = 0.16$ (promoting continuity & coordination - PACIC)
- $r = 0.46$ (supporting self-management & prevention - PACIC)
- $r = 0.37$ (encouraging quality through leadership & incentive - PACIC)
- $r = 0.35$ (using information systems - PACIC)
- $r = 0.32$ (organization & equipping teams - PACIC)
Limitations

• Cross-sectional study design
• Small sample size at center level  N=36

Strengths

• CIM levels as system factor assessed from both patients’ and clinicians’ perspective
Conclusions

• Variability in CIM among HTx centers exist

• Results provide clinicians, researchers and politicians valuable information about the variability in CIM in HTx centers and among centers

• Results provides a basis to identify areas for improvements to beneficial strengthening long-term outcomes for heart transplanted patients
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