New Approaches to Evaluate And Optimize Older Patients for Transplant (Allogeneic)

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Outline

• The influence of Age on MDS and Transplant Use

• Using Physiologic Age to Inform and Optimize Older Transplant Patients: The Chicago Experience
Survey: What Age Does A Person Become Old?

<table>
<thead>
<tr>
<th>Age of respondents</th>
<th>Age of becoming old</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-29</td>
<td>60</td>
</tr>
<tr>
<td>30-49</td>
<td>69</td>
</tr>
<tr>
<td>50-64</td>
<td>72</td>
</tr>
<tr>
<td>65-plus</td>
<td>74</td>
</tr>
</tbody>
</table>

Source: Pew Research Center telephone survey of 2,969 adults, 2009; margin of error: +/- 2.6 percentage points

The Wall Street Journal
Incidence of MDS per age group
Indications for Hematopoietic Stem Cell Transplants in the US, 2013

- Allogeneic (Total N=8,197)
- Autologous (Total N=11,258)

Number of Transplants

- Myeloma / PCD
- AML
- ALL
- CML
- NHL
- HD
- MDS / MPD
- CLL
- Aplastic Anemia
- Other Non-Malignant Disease
- Other Cancer

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The Transplant Triad: Influence of Older Age

Disease

- More frequent
- More difficult disease to control

Donor and Regimen

- Older sibling donors
- Use gentler regimen

Patient

- More Health Issues
- Long-term benefits unclear
Allogeneic Transplant Trends for Age 70 and Greater by Disease

Aging and Transplant

Also see abstracts 678 and 673, ASH 2016
Calendar Age versus Physiologic Age

Stock photo Dr. Artz found on internet

Chau Smith - 7 marathons, 7 days, 7 continents age = 70
Staging the Age: “Geriatric Assessment”

<table>
<thead>
<tr>
<th>Domain</th>
<th>Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comorbidity</td>
<td>Medical History and testing (e.g., diabetes)</td>
</tr>
<tr>
<td>Polypathy</td>
<td>Polypharmacy Number of medications</td>
</tr>
<tr>
<td>Physical Function</td>
<td>Patient survey and bedside tests</td>
</tr>
<tr>
<td>Psychological Health</td>
<td>Patient survey</td>
</tr>
<tr>
<td>Cognition</td>
<td>Provider asking patient questions</td>
</tr>
<tr>
<td>Social Support</td>
<td>Patient survey</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Patient survey</td>
</tr>
</tbody>
</table>

*modified from Hurria, JCO 2011 29(25): 3457-3465

Lawton Instrumental Activities of Daily Living (independence in these tasks)

- Ability to use the telephone
- Shopping
- Food preparation
- Mode of Transportation
- Manages medications
- Manages finances
- Housekeeping

Aging and Transplant
Candidacy: To transplant or not to transplant
# Standard Transplant “Exclusions”

<table>
<thead>
<tr>
<th>Factor</th>
<th>Auto Transplant (Stamina 0702)</th>
<th>Allo Transplant (BMT CTN 0502)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>&gt;70</td>
<td>&gt;74</td>
</tr>
<tr>
<td>Heart</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Liver Function</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Kidney</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Lungs</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Other cancer</td>
<td>&lt;5 years</td>
<td>N/A</td>
</tr>
<tr>
<td>MD rated Function</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

High Prevalence of Vulnerabilities by Geriatric Assessment prior to Transplant: Pts 50+

GA Toolbox

Frailty: Fried Frailty Index
PCS: SF 36 Physical component score
MCS: SF-36 Mental component score
IADL: Instrumental activities of daily living
HCT-CI: Hematopoietic cell transplantation-comorbidity index
CIRS: Cumulative Illness rating scale-Geriatrics
CRP-C-reactive protein

Also see Holmes H.M. J Geriatr Oncol: 2014 5(4):422-430
Transplant Success: Listen to thy patient

- Very Important
  - Function by questions, high measure of inflammation or low albumin
- Intermediate
  - Other conditions (comorbidity), disease control, slow walk speed
<table>
<thead>
<tr>
<th>Factor</th>
<th>Auto</th>
<th>Allo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High/\textbf{Exclude or trial}</td>
<td>High/\textbf{Exclude or trial}</td>
</tr>
<tr>
<td>Age</td>
<td>70+/	extbf{&gt;79}</td>
<td>&gt;60/	extbf{&gt;79}</td>
</tr>
<tr>
<td>Disease</td>
<td>Not controlled</td>
<td>Not controlled</td>
</tr>
<tr>
<td>KPS (%)</td>
<td>60-70/\textbf{&lt;60}</td>
<td>70-80/\textbf{&lt;70}</td>
</tr>
<tr>
<td>Comorbid</td>
<td>severe or HCT-CI 5+/none</td>
<td>HCT-CI 3-4/ 5+ or Severe</td>
</tr>
<tr>
<td>Cognitive Impair</td>
<td>Mild/\textbf{Moderate}</td>
<td>Mild/\textbf{Moderate}</td>
</tr>
<tr>
<td>Function</td>
<td>IADL limitation, Frail function, falls /combination</td>
<td>IADL limitation,Frail function, falls /combination</td>
</tr>
</tbody>
</table>

HCT-CI: hematopoietic cell transplantation comorbidity index, KPS-Karnofsky performance score, IADL: Instrumental activity of daily living
Optimization: A case study

- 41 year old female with MDS (IPSS intermediate 2)
- Potential perfect matched unrelated donor
- MD function-OK (KPS-80%), Diabetes, depression
- Other symptoms: forgetful at times, knee and hip pain,
- Social: Widowed, children in area
Eligibility to Resilience: Transplant Optimization Program (TOP) for older adults

Physiologic vs Chronologic
## TOP: GA to Inform and Optimizing Transplant

<table>
<thead>
<tr>
<th>Domain</th>
<th>Comments</th>
<th>Vulnerability (V) or Asset (A)</th>
<th>Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comorbidity</td>
<td>Diabetes, Depression, arthritis, kidney function mild impaired</td>
<td>V</td>
<td>endocrine on admit Change arthritis medication</td>
</tr>
<tr>
<td>Functional</td>
<td>Good strength, limited endurance +/-</td>
<td>A</td>
<td>Pre-habilitation with PT</td>
</tr>
<tr>
<td>Cognition</td>
<td>Normal</td>
<td>A</td>
<td>Detailed education in writing</td>
</tr>
<tr>
<td>Emotional Health</td>
<td>Coping, anxiety</td>
<td>V</td>
<td>Engage family, psych referral</td>
</tr>
<tr>
<td>Social support</td>
<td>Initially poor, later strong</td>
<td>A</td>
<td>Family meeting Caregivers in room</td>
</tr>
<tr>
<td>Nutrition</td>
<td>No weight loss, partial dentures</td>
<td>A</td>
<td>Educate on supplements</td>
</tr>
<tr>
<td>Polypharmacy</td>
<td>3 Rx medication One supplement</td>
<td>A</td>
<td>Safety of other medications, stop supplement</td>
</tr>
</tbody>
</table>
Conclusions

• Calendar age important but physiologic age essential to guide decision to pursue transplant in older patients

• Multi-disciplinary team approach tailored to physiologic age holds promise to expand transplant and transplant success for older adults
Acknowledgements-Too Many Thanks

University of Chicago Transplant Team

Program Director: M. Bishop

MDs-Transplant, Leukemia, Myeloma and Lymphoma

Transplant Coordinators

Fellows, residents and interns:

Transplant Optimization Program

Geriatrics: S. Chow, W. Dale., J. Wallace

Dietician: V. Reynolds, L. Chavez

CRA: J. Scott, A. Small

NP: J. Ridgeway

PT: B. Campione, R. Spigel

ID: J. Pisano

Social Work: M. Paloma

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