CLOVIZ: Clinical Outcomes Visualization of IMDC Criteria in Metastatic Renal Cell Carcinoma for Patient-Centered Decision Making

Anobel Y. Odisho¹, MD MPH, Sumanta K. Pal², MD, Michael Shapiro¹, BS, Ashley Dixon¹, MD, J. Connor Wells³, BS, Jose Ruiz Morales³, MD, Daniel Y. Heng³, Toni K. Choueiri, MD⁴, MD MPH, John L. Gore¹, MD MS

¹Department of Urology, University of Washington
²Department of Medical Oncology, City of Hope National Medical Center
³Department of Medical Oncology, Tom Baker Cancer Center, University of Calgary
⁴Dana-Farber Cancer Institute
# Preoperative Nomogram for Prostate Cancer Recurrence

<table>
<thead>
<tr>
<th>Points</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
<th>70</th>
<th>80</th>
<th>90</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSA</td>
<td>0.1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Clinical Stage</td>
<td>T2a</td>
<td>T2c</td>
<td>T3a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1c</td>
<td>T1ab</td>
<td>T2b</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biopsy Gleason Sum</td>
<td>&lt;2+3</td>
<td>3+3</td>
<td>&gt;4++</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Points</td>
<td>0</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>120</td>
<td>140</td>
<td>160</td>
<td>180</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

60 Month Rec. Free Prob. | .96 | .93 | .9 | .85 | .8 | .7 | .6 | .5 | .4 | .3 | .2 | .1 | .05

**Instructions for Physician:** Locate the patient's PSA on the PSA axis. Draw a line straight upwards to the Points axis to determine how many points towards recurrence the patient receives for his PSA. Repeat this process for the Clinical Stage and Biopsy Gleason Sum axes, each time drawing straight upward to the Points axis. Sum the points achieved for each predictor and locate this sum on the Total Points axis. Draw a line straight down to find the patient's probability of remaining recurrence free for 60 months assuming he does not die of another cause first.
Based on the provided risk factors a prostate biopsy performed would have a:

- 6% chance of high-grade prostate cancer,
- 18% chance of low-grade cancer,
- 76% chance that the biopsy is negative for cancer.

About 2 to 4% of men undergoing biopsy will have an infection that may require hospitalization.

Please consult your physician concerning these results. Click here to watch a video overview of these results.
Introduction

> The International Metastatic Renal Cell Carcinoma Database (IMDC) criteria, or Heng criteria, is a validated risk prediction nomogram for patients with metastatic renal cell carcinoma (mRCC)
  • Prior nephrectomy
  • Months to treatment
  • Karnofsky Performance Status
  • Labs: Serum calcium, hemoglobin, neutrophil count, platelets

> Clinical application can be challenging due to limited available tools
Objective

> Create an interactive visualization to facilitate clinical application of IMDC Criteria

> Evaluate usability in lay users and clinicians
Methods

> Multi-institutional cohort of 436 patients with mRCC was used to create an interactive visualization depicting IMDC criteria at the patient level

> Usability testing was performed with non-medical users (n=400) and medical oncology fellows (n = 15)

> Subjects used the tool to calculate median survival times in 6 increasingly complex clinical scenarios

> Survey assessed confidence using the tool
Available online at http://faculty.washington.edu/odisho
Fifteenth International Kidney Cancer Symposium

November 4-5, 2016
Marriott Miami Biscayne Bay, Miami, Florida, USA

www.kidneycancersymposium.com
Results

Proportion of answers within 25% of the expected answer remained stable:
- 68-78% for lay-users
- 73-93% for medical oncology fellows
# Results

<table>
<thead>
<tr>
<th>Questions</th>
<th>Lay Users</th>
<th>Fellows</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disagree %</td>
<td>Agree %</td>
</tr>
<tr>
<td>I felt confident selecting medication names</td>
<td>15.2</td>
<td>7.6</td>
</tr>
<tr>
<td>I felt confident selecting lab values</td>
<td>21.7</td>
<td>8.9</td>
</tr>
<tr>
<td>This tool was easy to use</td>
<td>23.3</td>
<td>19.2</td>
</tr>
<tr>
<td>After a few tries, using the tool became more intuitive</td>
<td>12.2</td>
<td>5.2</td>
</tr>
<tr>
<td>I found this tool helpful in understanding survival times in people with kidney cancer</td>
<td>12.7</td>
<td>12.5</td>
</tr>
<tr>
<td>I would want to use a tool like in my clinical practice</td>
<td>0</td>
<td>6.7</td>
</tr>
<tr>
<td>I would want to use a tool like this with my patients/doctor</td>
<td>17.1</td>
<td>14.6</td>
</tr>
</tbody>
</table>

- **Strongly Disagree**
- **Somewhat Disagree**
- **Neutral**
- **Somewhat Agree**
- **Strongly Agree**
Conclusion

> A graphical method of interacting with a validated nomogram for mRCC outcomes provides real-time individual level data

> Can be used by untrained non-medical users and medical oncologists, with potential for use in the clinic setting

> Detailed user testing highlights issues that impede accuracy and comfort

> Applicable to many urological and non-urologic clinical scenarios
Funding

> Urology Care Foundation Research Scholars Award
> Society of Urologic Oncology