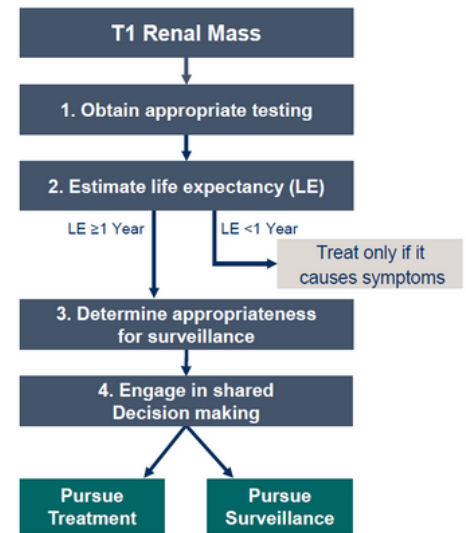


## Evaluation Phase

The Evaluation Phase involves four important steps to determine whether to pursue immediate treatment or initial surveillance for a renal mass up to 7 cm in size (T1):

- Step 1: Make sure you've had appropriate testing
- Step 2: Figure out your estimated Life Expectancy
- Step 3: Review appropriateness for surveillance based on MUSIC criteria\*
- Step 4: Participate in shared-decision making

\*Some patients will choose treatment even if they are a candidate for surveillance based on their preference or uncertainty about surveillance.



## Step 1: Obtain Appropriate Testing



High quality imaging (CT or MRI)



Chest imaging (such as X-ray) for mass if >3cm, CT thorax preferred for >5cm



Baseline labwork: Complete Blood Count, CMP, urinalysis, (consider albumin:creatinine ratio, CRP )



Consider renal mass biopsy (for solid, accessible masses)




## Step 2: Estimate Life Expectancy

1. Based on any serious medical conditions you have, you can calculate the cardiovascular index (CVI) score (range: 0-6) by assigning points as follows:

Points	Condition
2	Congestive heart failure (CHF)
1	Chronic kidney disease (CKD)
1	Chronic lung disease, such as COPD
1	Stroke or TIAs
1	Other major diseases, such as liver failure or Peripheral vascular disease (PVD)

2. We have developed tables for masses from 1 to 7 cm, with color schemes to indicate an estimated life expectancy that is >10 years, between 6 and 10 years, or between 1 and 5 years. This is the table for patients with a 3 cm renal mass:

	Sex	Female							Male							
		Age	50	55	60	65	70	75	80	85	50	55	60	65	70	75
CVI	0	[Hatched pattern]														
	1	[Hatched pattern]														
	2	[Hatched pattern]														
	3	[Hatched pattern]														
	4	[Hatched pattern]														
	5	[Hatched pattern]														
	6	[Hatched pattern]														

 = Life Expectancy > 10 years  
 = Life Expectancy 6 - 10 years  
 = Life Expectancy 1 - 5 years

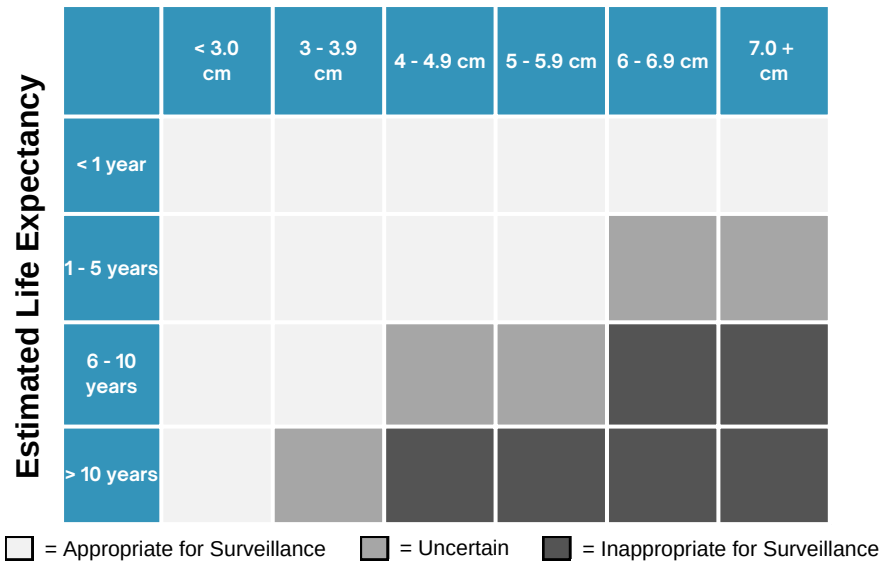
For information on your specific situation, scan this QR code:



# Step 3: Determine Appropriateness for Surveillance

Using initial imaging of your tumor and your life expectancy results, the appropriateness of surveillance has been established by the MUSIC Consensus Panel.

## Diameter of Mass

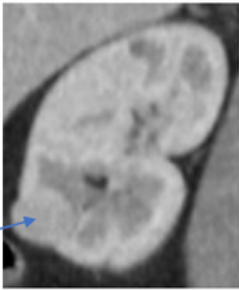

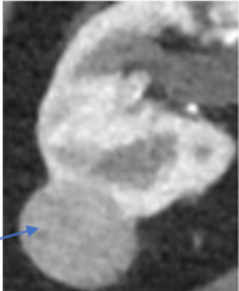
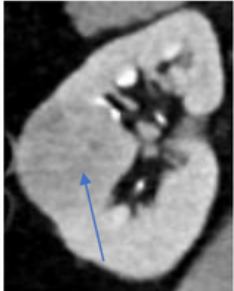

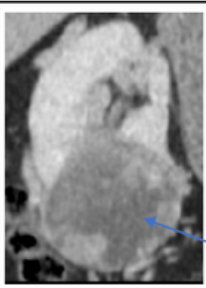


## Other Exclusion Criteria

- Radiologic suspicion of T3 disease or infiltrative features
- Renal mass biopsy showing grade 4 renal cell carcinoma (RCC)
- Renal mass biopsy showing these uncommon subtypes:
  - Collecting duct carcinoma
  - Renal medullary carcinoma
  - Rhabdoid variant of RCC
  - Sarcoma
  - Sarcomatoid RCC

## Images of Renal Tumors

These images show examples of renal tumors of varying size and complexity. Larger and more complex tumors may require radical nephrectomy. Tumors can grow to > 7 cm as well. Larger size makes the chance of cancer and cancer spread (metastasis) higher.

	Low Complexity	High Complexity	Malignant/Metastatic Potential												
Small	 <p>1.9 cm RENL = 4</p>	 <p>1.6 cm RENL = 10</p>	<table border="1"> <thead> <tr> <th>Renal Mass Size (cm)</th> <th>Likelihood Of Cancer</th> <th>Likelihood of Metastasis</th> </tr> </thead> <tbody> <tr> <td>0.1 – 1.0</td> <td>50-68%</td> <td>0%</td> </tr> <tr> <td>1.1 – 2.0</td> <td>75-81%</td> <td>0%</td> </tr> <tr> <td>2.1 – 3.0</td> <td>79-89%</td> <td>3%</td> </tr> </tbody> </table>	Renal Mass Size (cm)	Likelihood Of Cancer	Likelihood of Metastasis	0.1 – 1.0	50-68%	0%	1.1 – 2.0	75-81%	0%	2.1 – 3.0	79-89%	3%
Renal Mass Size (cm)	Likelihood Of Cancer	Likelihood of Metastasis													
0.1 – 1.0	50-68%	0%													
1.1 – 2.0	75-81%	0%													
2.1 – 3.0	79-89%	3%													
Medium	 <p>3.1 cm RENL = 5</p>	 <p>4.2 cm RENL = 10</p>	<table border="1"> <thead> <tr> <th>Renal Mass Size (cm)</th> <th>Likelihood Of Cancer</th> <th>Likelihood of Metastasis</th> </tr> </thead> <tbody> <tr> <td>3.1 – 4.0</td> <td>81-89%</td> <td>3%</td> </tr> <tr> <td>4.1 – 5.0</td> <td>88%</td> <td>13%</td> </tr> </tbody> </table>	Renal Mass Size (cm)	Likelihood Of Cancer	Likelihood of Metastasis	3.1 – 4.0	81-89%	3%	4.1 – 5.0	88%	13%			
Renal Mass Size (cm)	Likelihood Of Cancer	Likelihood of Metastasis													
3.1 – 4.0	81-89%	3%													
4.1 – 5.0	88%	13%													
Large	 <p>5.0 cm RENL = 6</p>	 <p>6.9 cm RENL = 10</p>	<table border="1"> <thead> <tr> <th>Renal Mass Size (cm)</th> <th>Likelihood Of Cancer</th> <th>Likelihood of Metastasis</th> </tr> </thead> <tbody> <tr> <td>5.1 – 6.0</td> <td>87-91%</td> <td>18%</td> </tr> <tr> <td>6.1 – 7.0</td> <td>92-93%</td> <td>24%</td> </tr> </tbody> </table>	Renal Mass Size (cm)	Likelihood Of Cancer	Likelihood of Metastasis	5.1 – 6.0	87-91%	18%	6.1 – 7.0	92-93%	24%			
Renal Mass Size (cm)	Likelihood Of Cancer	Likelihood of Metastasis													
5.1 – 6.0	87-91%	18%													
6.1 – 7.0	92-93%	24%													

# Step 4: Participate in Shared-Decision Making about the Treatment Approach

Approach	Advantages	Disadvantages	Main Indications
Surveillance	<ul style="list-style-type: none"> <li>Least invasive and most kidney-sparing of all strategies</li> <li>Most small masses have limited chance of spreading and can be safely managed with follow-up imaging</li> </ul>	<ul style="list-style-type: none"> <li>Tumor remains in place and untreated</li> <li>Whether the tumor is malignant or benign remains unknown (without biopsy)</li> </ul>	<ul style="list-style-type: none"> <li>Smaller tumors</li> <li>Limited life expectancy</li> <li>Poor surgical candidates</li> </ul>
Ablation	<ul style="list-style-type: none"> <li>Kidney-sparing approach with less impact on renal function than RN</li> <li>Performed outside of OR (percutaneous)</li> <li>For small (&lt; 3 cm) tumors, provides comparable control of metastasis to PN and RN</li> </ul>	<ul style="list-style-type: none"> <li>Cancer is incompletely treated in up to 10% (90% success)</li> <li>Pathologic diagnosis may not be accurate as tumor is not removed</li> <li>Challenges and increased use of radiographic follow-up</li> </ul>	<ul style="list-style-type: none"> <li>Prior surgery for renal tumor in that kidney</li> <li>Poorer surgical candidates and those unwilling to undergo surveillance</li> </ul>
Partial Nephrectomy (PN): Robotic (RPN)	<ul style="list-style-type: none"> <li>Excellent local cancer control (&gt;97%)</li> <li>Kidney-sparing surgery that preserves renal function well when clamping of the blood supply is of limited duration (&lt;20 to 25 min)</li> <li>Minimally invasive surgery, with decreased pain, morbidity, and convalescence compared to OPN</li> </ul>	<ul style="list-style-type: none"> <li>Higher complication rate for high complexity tumors and in less-experienced hands</li> <li>Positive surgical margins and local recurrence rates may be higher in such situations</li> </ul>	<ul style="list-style-type: none"> <li>Most common surgery for masses &lt; 5 cm</li> <li>Best for low to moderate (and selected high) complexity tumors</li> </ul>
Partial Nephrectomy (PN): Open (OPN)	<ul style="list-style-type: none"> <li>Excellent local cancer control (&gt;97%)</li> <li>Maximizes renal functional preservation when performed with precise tumor excision and the kidney is iced</li> </ul>	<ul style="list-style-type: none"> <li>Morbidity of flank incision (increased hospital stay, longer recovery, chance of permanent bulge on the side)</li> <li>Higher complication rate than RN</li> </ul>	<ul style="list-style-type: none"> <li>Select patients with moderate to high-complexity tumors</li> </ul>
Radical Nephrectomy (RN)	<ul style="list-style-type: none"> <li>Excellent local cancer control (&gt;97%)</li> <li>Reproducible and effective surgery for localized tumors</li> <li>Minimally invasive surgery, using robotic or other laparoscopic techniques, has decreased pain, morbidity and convalescence compared to open surgery</li> </ul>	<ul style="list-style-type: none"> <li>Many tumors up to 7 cm can be treated with PN</li> <li>Renal function generally decreases by 35% - 50% when the entire kidney is removed</li> </ul>	<ul style="list-style-type: none"> <li>Medium to large tumors (up to 10-12 cm)</li> <li>High tumor complexity</li> <li>Renal function good enough for GFR to remain &gt;45 after RN</li> </ul>

# Surveillance Phase

After the Evaluation Phase, many patients will decide to pursue Surveillance. This involves regular follow-up evaluations and testing to monitor for changes in the renal mass and risk to their health. The evaluation at each follow-up may include repeat abdominal and chest imaging, renal function assessment and biopsy.

## Surveillance Phase Components



**Urologic  
Assessment**



**Repeat  
Imaging**



**Renal  
Function  
Assessment**

How frequently each patient will be assessed will be determined by your urologist. We have provided upper and lower bounds around surveillance, indicating a "high-intensity" plan and a "low-intensity" plan below.

## How Surveillance is Performed

### High Intensity Surveillance Plan

### Low Intensity Surveillance Plan

Tumor Size	1st Surveillance Imaging	2nd Surveillance Imaging	3rd Surveillance Imaging	Tumor Size	1st Surveillance Imaging	2nd Surveillance Imaging	3rd Surveillance Imaging
0 - 4 cm	3 months after diagnosis	9 months after diagnosis (6 months after previous imaging)	21 months after diagnosis (12 months after previous)	0 - 4 cm	6 months after diagnosis	18 months after diagnosis (12 months after previous imaging)	30 months after diagnosis (12 months after previous imaging)
4 - 6 cm			15 months after diagnosis (6 months after previous)	4 - 6 cm			
> 6 cm		6 months after diagnosis (3 months after previous)	12 months after diagnosis (6 months after previous)	> 6 cm		12 months after diagnosis (6 months after previous imaging)	24 months after diagnosis (12 months after previous imaging)

For additional information regarding this brochure or the Michigan Urological Surgery Improvement Collaborative please contact us at:



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