Kidney cancer accounts for approximately 3% of all cancers in France(1). In 2012, there were 11,573 new cases of kidney cancer and 3,957 deaths in France(2).

Renal cell carcinoma (RCC) accounts for 85% to 92% of kidney cancer cases (1,3-4). Approximately 25% to 30% of patients with RCC have metastasis at diagnosis and up to 50% of patients who undergo curative renal resection are likely to develop metastatic renal cell carcinoma (mRCC)(4).

With the availability of novel therapeutic strategies, it is important, from a public health perspective, to assess the clinical and economic burden of mRCC.

### Context & Objective

A retrospective analysis was performed using the French national hospital database (PMSI), an exhaustive hospital discharge database that covers all hospitals stay in public and private hospitals in France. For each hospital stay, the PMSI provides a compilation of administrative data (i.e. age, gender, residence code) and medical data (i.e. diagnosis, medical procedures performed during hospital stays). Each hospital stay is then classified in a diagnosis related group (DRG) and can be linked to a patient using the unique patient identification number.

We extracted all hospital stays from 2007 to 2013 with the ICD-10 codes for both renal cell carcinoma (C64*) and metastasis (C77*, C78*, C79*). Among hospital stays for mRCC, we extracted incident cases identified by the absence of hospitalization for mRCC and the absence of metastasis in the previous year. Hospital stays for which the patient identification number was not adequately recorded as well as recorded hospital stays that could not be classified into a DRG were excluded. Hospital stays for non incident cases and patients aged under 18 were also excluded.

Included patients were followed until death and data were censored on December 2013 for living patients.

Descriptive analysis were performed in terms of hospital stays and patients.

The cost of hospitalizations for mRCC was calculated from the perspective of the French national health insurance. For this purpose, the DRG tariffs for both public and private settings were used.

### Methods

#### HOSPITAL STAYS & PATIENTS

<table>
<thead>
<tr>
<th>102,613 hospital stays corresponding to 15,752 patients hospitalized for mRCC between 2008 and 2013 were included in the analysis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>169,297,857 hospital stays</td>
</tr>
<tr>
<td>155,541,077 hospital stays*</td>
</tr>
<tr>
<td>108,021 hospital stays for mRCC</td>
</tr>
<tr>
<td>15,752 patients</td>
</tr>
</tbody>
</table>

*Hospital stays between 2007 and 2013 that could be classified into a DRG and for which the patient identification number was adequately recorded.

### Results

#### PATIENT’S CHARACTERISTICS

The male/female sex ratio was 68%/32% and the mean age at diagnosis differed by gender: 67 years in men (SD: 12) and 71 years in women (SD: 13).

The most common sites of metastasis were: lung (54%), bone & bone marrow (40%).

37% of patients (5,801/15,752) died at hospital.

### ECONOMIC BURDEN OF METASTATIC RENAL CELL CARCINOMA

#### EDEL HOSPITAL STAYS

- 44% (6,485/102,613) of hospital stays were performed during an outpatient hospitalization.
- For inpatient hospital stays, the median length of stay was 7 days (1–282).
- 41% of hospital stays were related to chemotherapy and immunotherapy sessions.
- 80% of hospital stays related to mRCC were performed in a public setting.

#### ECONOMIC BURDEN OF METASTATIC RENAL CELL CARCINOMA

Over the study period, the total cost of all public & private hospitalizations for mRCC, was estimated to 205,843,950 € in France.

The total annual cost of hospitalizations for mRCC as well as the average annual cost per patient increased between 2008 and 2012. However a slight decrease was observed between 2012 and 2013.

### Discussion & Conclusion

This study aimed at assessing the economic burden of hospitalizations for metastatic renal cell carcinoma in France. The annual cost of hospitalizations for mRCC in France was estimated to 205,843,950 € in 2011. This overall annual cost per patient increased between 2008 and 2012. However, a slight decrease was observed between 2012 and 2013.

### Evolution of the Number of Patients between 2008 & 2013

The number of new patients slightly declined while the total number of patients remained stable over the study period.

### Evolution of the Number of Patients between 2008 & 2013

#### Year Average annual costs \( ^{\circ} \) of hospitalizations for mRCC per patient

<table>
<thead>
<tr>
<th>Year</th>
<th>Average annual costs( ^{\circ} ) of hospitalizations for mRCC per patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>7,988€</td>
</tr>
<tr>
<td>2009</td>
<td>8,444€</td>
</tr>
<tr>
<td>2010</td>
<td>8,679€</td>
</tr>
<tr>
<td>2011</td>
<td>8,867€</td>
</tr>
<tr>
<td>2012</td>
<td>9,276€</td>
</tr>
<tr>
<td>2013</td>
<td>9,171€</td>
</tr>
</tbody>
</table>

\( ^{\circ} \) Costs do not include expensive drugs administered at hospital.

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