Elucidating the Opaque Costs of Aneurysmal rupture: A Pilot Cost of Illness Prospective Study

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Disclosures

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Introduction

Subarachnoid hemorrhage (SAH) is a devastating disease affecting 1/10,000 adults globally with a mortality of more than 30%

SAH is financially straining for both the patient and caretaker due to its invasive treatment, long hospital stays, and involved recovery.

SAH patients often have many complications such as rebleeding and cerebral ischemia which can contribute to longer hospital stays and costs.

The aim of this pilot prospective cost-of-illness study is to quantify the total direct and indirect costs in the year following aneurysmal rupture.
Methods

Patient Population:

Between November 2018 and February 2020 patients admitted for with aneurysmal SAH were eligible for enrollment

The study was paused in March due to COVID-19

Patients and their primary caregivers were prospectively followed during the year following aneurysmal subarachnoid hemorrhage

Patient information collected includes demographics, clinical course, and outcomes as well as expense data obtained from hospital records and patient/caregiver interviews.

Patients and their caregivers were interviewed at monthly intervals after discharge
# Methods: Cost Breakdown

<table>
<thead>
<tr>
<th>Types of Costs</th>
<th>Direct</th>
<th>Indirect</th>
<th>Intangible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct</strong></td>
<td>Hospital Costs* (Nursing, surgery, ICU, imaging, ED…)</td>
<td>Costs of transportation</td>
<td>Burdens patients &amp; caregivers face</td>
</tr>
<tr>
<td></td>
<td>Rehab Costs</td>
<td>Personal Items</td>
<td>Side effects of treatment/medication</td>
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<tr>
<td></td>
<td>Outpatient follow-up</td>
<td>Accommodations</td>
<td>Stress &amp; Anxiety caused by disorder itself &amp; treatment process</td>
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<tr>
<td></td>
<td>Medications</td>
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<td></td>
<td>Laboratory Testing</td>
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<td>Insurance</td>
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*Direct costs include modern SAH treatment which will be gathered both from the hospital and patient perspective*
Results: Demographics

Patients

Gender

- Male: 54%
- Female: 46%

Age Distribution

- 60+: 15
- ≤ 59: 12

Marital Status

- Never Married & Single: 26%
- Married: 45%
- Widowed: 7%
- Divorced: 11%
- Partnership: 11%

Caregivers

Caregiver Relationship to Patient

- Spouse/Partner: 33%
- Children: 53%
- Sibling: 7%
- Parent: 7%

Preliminary results indicate that ICU level costs are highest followed by imaging, pharmacy and surgery.

Average ICU costs to the hospital ~$38,300 per SAH patient

ICU length of stay is the major driver of cost.
## Results: Preliminary Total Cost

<table>
<thead>
<tr>
<th>Average Cost to Hospital</th>
<th>Average Direct Costs to Patient (Pre-Insurance)</th>
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<tr>
<td>$181,600</td>
<td>$95,000</td>
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Costs Calculations Include:
- Surgery
  - OR time, surgical supplies, OR/PACU staff
  - MD cost not included
- ICU
- Nursing staff
- Labs
- Pharmacy
- Emergency Department
- Imaging
- In-hospital Rehab
- Respiratory

![Preliminary Reported Indirect Costs: Patient + Caregiver (In Hospital)](image-url)
Conclusion

This ongoing study has the potential to uncover the opaque costs of a disease associated with significant financial burdens for both patients and their support networks.

Identifying the major source of cost in the treatment of aneurysmal SAH and subsequent recovery may inform policy and increase awareness of the severe impact of this disease on both the patient and society.