HOSPITALIZATION COSTS OF TYPE 2 DIABETES MELLITUS (T2DM) PATIENTS IN A PUBLIC HOSPITAL IN BRAZIL

Saad R², Piedade AD¹, Wiens A¹, Baptista DR¹, Pontarolo R¹.
DIABETES

Normal situation

Type 1 diabetes

Type 2 diabetes

gestational diabetes

(IDF, 2014)
DIABETES

WORLD
387 M
people living with diabetes
PREVALENCE
8.3%

46.3% undiagnosed

25 M
people living with diabetes
PREVALENCE
8.1%

SOUTH AND CENTRAL AMERICA (SACA)

27.4% undiagnosed

(IDF, 2014)
Global health expenditure due to diabetes (20-79 years)

Diabetes caused 5.1 million deaths in 2013. Every six seconds a person dies from diabetes.

(IDF, 2014)
METHODS
METHODS

2012 - 2014
Previous year
METHODS
METHODS

ABSORPTION COSTING
EXCHANGE RATE:
1USD = 3,21BRL
METHODS

38 people hospitalized

727

T2DM

CHARTS

DEMographics

OTHER INFO

T2DM RELATED HOSPITALIZATION

LENGTH
CAUSE
COSTS

22
19

KANTAR HEALTH

ISPOR 5th Latin America Conference – Santiago – Chile
METHODS

38 people hospitalized

53 hospitalizations

T2DM related hospitalization

T2DM

727

CHARTS

DEMographics

OTHER info

Length

Cause

Costs

22 females

19 males

Universidade Federal do Paraná

Evidências

A Kantar Health Company
# RESULTS

<table>
<thead>
<tr>
<th>HOSPITALIZATION CAUSES</th>
<th>QTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACUTE CORONARY SYNDROME</td>
<td>14</td>
</tr>
<tr>
<td>DECOMPENSATED DIABETES</td>
<td>8</td>
</tr>
<tr>
<td>CHRONIC HEART FAILURE (CHF)</td>
<td>6</td>
</tr>
<tr>
<td>STROKE</td>
<td>4</td>
</tr>
<tr>
<td>CHEST PAIN</td>
<td>3</td>
</tr>
<tr>
<td>ACUTE KIDNEY FAILURE</td>
<td>3</td>
</tr>
<tr>
<td>CKD (CHRONIC KIDNEY DISEASE)</td>
<td>2</td>
</tr>
<tr>
<td>CORONARY ARTERY DISEASE</td>
<td>2</td>
</tr>
<tr>
<td>ACUTE MYOCARDIAL INFARCTION</td>
<td>2</td>
</tr>
<tr>
<td>ANGINA PECTORIS</td>
<td>2</td>
</tr>
<tr>
<td>ANGIOPLASTY</td>
<td>2</td>
</tr>
<tr>
<td>AMPUTATION</td>
<td>1</td>
</tr>
<tr>
<td>ANEMIA</td>
<td>1</td>
</tr>
<tr>
<td>PENILE IMPLANT</td>
<td>1</td>
</tr>
<tr>
<td>HYPERTENSIVE CRISIS</td>
<td>1</td>
</tr>
<tr>
<td>LAPAROTOMY</td>
<td>1</td>
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</table>

<table>
<thead>
<tr>
<th>GROUPED CAUSES</th>
<th>QTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>CARDIAC PROBLEMS</td>
<td>31</td>
</tr>
<tr>
<td>DECOMPENSATED DIABETES</td>
<td>9</td>
</tr>
<tr>
<td>KIDNEY PROBLEMS</td>
<td>5</td>
</tr>
<tr>
<td>STROKE</td>
<td>4</td>
</tr>
<tr>
<td>AMPUTATION</td>
<td>1</td>
</tr>
<tr>
<td>ANEMIA</td>
<td>1</td>
</tr>
<tr>
<td>UROLOGIC</td>
<td>1</td>
</tr>
<tr>
<td>HYPERTENSION</td>
<td>1</td>
</tr>
</tbody>
</table>
RESULTS

GROUPS

38 patients

AGES

44 to 84
\( \bar{x}: 64 \) years

HOMEOSTATIZED

HbA1c < 7.0
10 patients

UNHOMEOSTATIZED

HbA1c > 7.0
28 patients

HOMEOSTATIZED

44 to 79
\( \bar{x}: 61 \) years

UNHOMEOSTATIZED

60 to 84
\( \bar{x}: 73 \) years
RESULTS

**HbA1c**
- **Controlled:** 4.9 to 6.9, $\bar{x}: 6.0$
- **Uncontrolled:** 7.0 to 15.4, $\bar{x}: 9.5$

**Days Hospitalized**
- **Controlled:** 1 to 32, $\bar{x}: 14$ days
- **Uncontrolled:** 6 to 39, $\bar{x}: 19$ days
RESULTS

CHEST PAIN
$ 691 USD/day

GENERAL SURGERY
$ 390 USD/day

TRAUMATOLOGY
$ 599 USD/day

G.P. - MEN
$ 374 USD/day

G.P. - WOMEN
$ 330 USD/day

HOSPITALIZATION DAILY COSTS

NEUROLOGY: 283 USD
SEMI INTENSIVE CARDIO: 691 USD
\[ \bar{x}: \$ 463 \text{ USD/day} \]
RESULTS

TOTAL COST PER CLINIC

UROLOGY
$ 1,411 USD

OPHTALMOLOGIC: 643 USD
CARDIO: 58,643 USD

INTENSIVE CARDIO
$ 38,688 USD

ADULT THERAPY
$ 24,555 USD
RESULTS

CONTROLLED

$ 2,333 USD to $ 18,096 USD
\[ \bar{x} = $ 5,579 USD \]

UNCONTROLLED

$ 283 USD to $ 13,123 USD
\[ \bar{x} = $ 3,422 USD \]
RESULTS

Mann-Whitney test

$p = 0.037$
RESULTS

**CONTROLLED**

$2,333 USD to $18,096 USD

\[ \bar{x}: $5,579 USD \]

$84,631 USD

**UNCONTROLLED**

$283 USD to $13,123 USD

\[ \bar{x}: $3,422 USD \]

$128,783 USD

**TOTAL HOSPITALIZATION COSTS**

$213,414 USD

\[ \bar{x}: 3,930 USD/\text{patient} \]
RESULTS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
<th>Cost in USD</th>
<th>Hospitalizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td>56%</td>
<td>$120,471</td>
<td>31</td>
</tr>
<tr>
<td>Decompensated Diabetes</td>
<td>13%</td>
<td>$26,952</td>
<td>9</td>
</tr>
<tr>
<td>Kidney</td>
<td>12%</td>
<td>$25,683</td>
<td>5</td>
</tr>
<tr>
<td>Cerebrovascular</td>
<td>5%</td>
<td>$10,808</td>
<td>4</td>
</tr>
<tr>
<td>Others</td>
<td>14%</td>
<td>$29,500</td>
<td>4</td>
</tr>
</tbody>
</table>
RESULTS

- Hospitalization Authorization form
- Reimbursement of public care patients

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>REIMBURSEMENT VALUE (fixed value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFERIOR MEMBER AMPUTATION</td>
<td>$ 702 USD</td>
</tr>
<tr>
<td>ACUTE KIDNEY FAILURE</td>
<td>$ 593 USD</td>
</tr>
<tr>
<td>ACUTE MYOCARDIAL INFARCTION</td>
<td>$ 541 USD</td>
</tr>
<tr>
<td>CKD (CHRONIC KIDNEY DISEASE)</td>
<td>$ 479 USD</td>
</tr>
<tr>
<td>CHRONIC HEART FAILURE (CHF)</td>
<td>$ 403 USD</td>
</tr>
<tr>
<td>STROKE</td>
<td>$ 401 USD</td>
</tr>
<tr>
<td>CORONARY ARTERY DISEASE</td>
<td>$ 370 USD</td>
</tr>
<tr>
<td>ACUTE CORONARY SYNDROME</td>
<td>$ 338 USD</td>
</tr>
<tr>
<td>ANGIOPLASTY</td>
<td>$ 248 USD</td>
</tr>
<tr>
<td>DECOMPENSATED DIABETES</td>
<td>$ 241 USD</td>
</tr>
<tr>
<td>HIPERTENSIVE CRISIS</td>
<td>$ 89 USD</td>
</tr>
</tbody>
</table>
## RESULTS

<table>
<thead>
<tr>
<th>CAUSE (hospitalization days)</th>
<th>HOSPITALIZATION COST</th>
<th>REIMBURSEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hipertensive Crises (17) + Chronic Heart Failure (22)</td>
<td>$ 18096 USD</td>
<td>36x $ 492 USD</td>
</tr>
<tr>
<td>Amputation (30)</td>
<td>$ 17669 USD</td>
<td>25x $ 702 USD</td>
</tr>
<tr>
<td>Acute Kidney Failure (21)</td>
<td>$ 9376 USD</td>
<td>15x $ 593 USD</td>
</tr>
<tr>
<td>Acute Coronary Syndrome (7)</td>
<td>$ 2116 USD</td>
<td>5x $ 370 USD</td>
</tr>
<tr>
<td>Decompensated Diabetes (4)</td>
<td>$ 1320 USD</td>
<td>5x $ 241 USD</td>
</tr>
</tbody>
</table>
CONCLUSION

- Hospitalized patients with T2DM represent a significant burden to healthcare payers.
- The amount spent by the hospital is not necessarily the same reimbursed by the Brazilian Public Healthcare System.
OBRIGADO! GRACIAS! THANK YOU!

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