### **Script Documentation: Elixhauser Comorbidity Score Calculation**

#### **Overview**

This SQL script calculates three variations of the Elixhauser Comorbidity Index using predefined scoring methodologies: **van Walraven**, **SID29**, and **SID30**. These scores aggregate patient comorbidities into a single value, providing a quantitative way to predict patient outcomes such as mortality, length of stay, and resource utilization in hospitals.

#### **Key References**

* Quan H, et al. (2007). "Coding Algorithms for Defining Comorbidities in ICD-9-CM and ICD-10 Administrative Data." PubMed Link.
* van Walraven et al. (2009). "Derivation of a novel Elixhauser-based comorbidity index to predict in-hospital mortality using administrative data."

#### **Logic Summary**

* **Score Calculations**: Three different scoring methodologies are used:
  + **van Walraven**: Weighted sum based on clinical research by Quan et al.
  + **SID29**: Includes 29 comorbidities, excluding cardiac arrhythmias.
  + **SID30**: Includes all 30 comorbidities, including cardiac arrhythmias.
* **Comorbidities**: Each comorbidity is multiplied by a predefined weight. If a condition is present for a patient, it contributes to the final score for each method.

#### **Process Steps**

1. **Drop Table**: The script first checks if the elixhauser\_score\_quan table exists and drops it if found.
2. **Table Creation**: It creates a new table elixhauser\_score\_quan, selecting the hadm\_id (hospital admission ID) and computing three scores:
   * **elixhauser\_vanwalraven**: A weighted score, summing the presence of specific comorbidities.
   * **elixhauser\_SID29**: A 29-comorbidity score.
   * **elixhauser\_SID30**: A 30-comorbidity score.
3. **Comorbidity Weights**: For each comorbidity, the script applies a weight and sums it for the respective scoring method.

#### **Output**

The script generates a new table, elixhauser\_score\_quan, containing patient admissions (hadm\_id) with the following three calculated columns:

* **elixhauser\_vanwalraven**: The weighted van Walraven score.
* **elixhauser\_SID29**: The SID29 score (excludes cardiac arrhythmias).
* **elixhauser\_SID30**: The SID30 score (includes cardiac arrhythmias).

#### **Example Query**

To retrieve all patients with a van Walraven score greater than 10:

SELECT hadm\_id

FROM elixhauser\_score\_quan

WHERE elixhauser\_vanwalraven > 10;

#### **Important Notes**

* **Automatic Generation**: This script is automatically generated and should not be manually edited.
* **Comorbidity Weights**: The weights for each comorbidity can be adjusted if clinical guidelines change.
* **Table Dependencies**: The script pulls data from the existing elixhauser\_quan table to compute the scores.

#### **Conclusion**

This script automates the calculation of three widely used Elixhauser comorbidity scores, helping in the evaluation of patient risk and prediction of hospital outcomes, enhancing data-driven decision-making in clinical settings.