Clinical Data Analysis

This project uses SQL in performing comprehensive data analysis on a clinical dataset, including conditions, encounters, immunizations, and patients. Leveraging SQL, we can extract meaningful insights that help healthcare providers make informed decisions, streamline processes, and improve service quality.

Quick view of the key findings:

1. **Most Common Condition**: The most frequently reported condition was **psychological or physical stress**, primarily occurring in the **ambulatory encounter class**.

💡 This indicates a need for mental health resources and stress management programs, particularly in outpatient settings.

2. **Condition Duration**: The condition with the highest average duration was **'Septic Shock',** lasting approximately **36 years on average**.

💡 Long-term care strategies and monitoring programs are essential for managing chronic conditions like septic shock.

3. **Conditions Across Demographics**:

Age group	most common condition	number of cases
Children	Unspecified otitis media	1,047
Teens	Acute bronchitis	549
Young Adults	Pregnant state, incidental	4,627
Middle-Aged Adults	Other psychological or physical stress, not elsewhere classified	12,258
Older Adults	Other psychological or physical stress, not elsewhere classified	23,787
Seniors	Other psychological or physical stress, not elsewhere classified	18,862

💡 This shows that tailored healthcare programs can be developed for different age groups to address their specific health issues effectively.

Ethnic Groups:
- The data set includes only two ethnic groups, **Hispanic and non-Hispanic**. Both groups most suffered from "**Other psychological or physical stress, not elsewhere classified**".
- Regardless of ethnicity, the highest counts were recorded for the condition "Other psychological or physical stress, not elsewhere classified." Below is the number of cases for each group.
    - **Asians**: 3,612 cases
    - **Black**: 6,412 cases
    - **Hawaiian**: 1,049 cases
    - **Native**: 245 cases
    - **Other race**: 471 cases

Location: For most counties, most patients suffered from "**Other psychological or physical stress, not elsewhere classified**".

💡 To better address these frequently occurring conditions, it is important to develop health interventions prioritizing mental health services and stress management initiatives.

4. **Wait times**: More than **53%** of people who visit **urgent care spend more than the average recorded time** for urgent care patients.

💡 Operational efficiencies in urgent care settings can be improved to reduce patient wait times and enhance service delivery.

5. **Cost Analysis**:
   - Average base encounter cost: $3,606.52
   - Average total claim cost: $117.02
   - Average payer coverage: $2,813.75

💡Financial planning and budgeting can be optimized by understanding the cost structures and identifying areas to reduce unnecessary expenditures.

6. **High Total Claim Costs**:
   - The condition with the highest total claim cost was "**Malignant neoplasm of bronchus and lung, unspecified**".
   - The second highest was "**High risk pregnancy**".

💡High-cost conditions should be the focus of preventive care and efficient management protocols to control healthcare expenses.

7. **Provider Analysis**: For each encounter class, the provider with the highest number of encounters was identified.
💡This can be helpful in resource allocation and partnership strategies to enhance patient care.

8. **Highest Payer Coverage**: The provider "**4c33f3d8-c263-3c74-ad19-f55f34c2976c**" paid the highest average payer coverage, amounting to **$67,866.32.**
💡Strategies can be developed to negotiate and manage payer contracts more effectively.

9. **Immunizations**

Common Vaccines in 2023: The most common vaccine type was **the seasonal flu vaccine**, followed by **"Five doses of tetanus toxoid, preservative-free and adsorbed, for adults."**
💡Vaccine distribution and public health campaigns can be better planned to address the most demanded vaccines.