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**Medical report**

**Date:** April 2, 2030

**Author:** Dr. Ethan Calder, MD

**Subject:** Initial Findings on the Current Epidemic in Sycala

Following an official request by Mr. Jacques Healwell, Director of the Sycala Medical Agency, I have been commissioned to assist the junior epidemiology team in their investigation of the ongoing epidemic in the region. My primary responsibilities include managing clinical evaluations, ensuring timely consultations for symptomatic individuals, and creating a comprehensive database of infected, recovered, and hospitalized patients.

This database, which I initiated with the help of local authorities and businesses, captures critical information on infected individuals and is updated approximately every 10 days. It will serve as a cornerstone for tracking the progression of the epidemic and will aid in identifying trends and potential risks.

**Analysis of Symptoms and Database Observations**

As of April 1, 2030, the database includes records of symptomatic individuals presenting with a variety of clinical signs. These symptoms include high-grade fever, intermittent chills, and profuse sweating. Patients frequently report severe abdominal pain, nausea, and, in some cases, vomiting. Additional observations include generalized myalgia, arthralgia and, in some cases, skin manifestations such as a transient maculopapular rash. These clinical signs present a spectrum of severity, ranging from mild discomfort to debilitating systemic symptoms.

Prompt action by the authorities has ensured that patients displaying symptoms are swiftly directed to medical consultation under my supervision. The database - as of April 1st - includes 97 records with details such as initial symptoms, current state, and the number of days spent in that state. With the assistance of Hugo Byte, an ambitious first-year bioinformatics intern, this information was sued to compute essential values, including the number of recovered individuals until today (as displayed in Fig.1).

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Figure 1: Evolution of the number of recovered individuals from 20 days ago until yesterday

Mr. Byte also asserts the following: the data file we have allows us to calculate both the number of recovered individuals and the number of hospitalized or deceased patients over time. Meanwhile, the daily reports from the Sycala Health Agency, which detail the number of new infections each day, naturally provide the cumulative number of infected individuals. By subtracting, at any given time  *t*, the total number of recovered and deceased patients from the cumulative number of infections, we could deduce the number of individuals currently infected—what we refer to as prevalence, a metric of significant interest in understanding the progression of the epidemic.

In addition, Mr. Byte also analyzed the following figures 2 and 3.

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Figure 2: Distribution of Current States: This bar chart illustrates the number of patients who are currently infected, recovered, or hospitalized/deceased (April 1st).

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Figure 3: Distribution of Initial Consultation Reasons: This horizontal bar chart displays the frequency of different symptoms reported at the first consultation, highlighting the clinical presentation of the disease.

Previous visualizations provide a foundation for tracking and managing the epidemic, ensuring that interventions are informed by data-driven insights.

**Patient Outcomes and Observations**

From the data collected so far, it appears that most individuals experience symptoms for a few days before either recovering or requiring hospitalization. A small subset of patients deteriorates to the point of needing intensive care at the overseas hospital. Hospitalized patients are no longer tracked upon transfer, as they remain under convalescence for an indefinite period. While the majority of patients recover, a non-negligible proportion faces severe outcomes, raising concerns about the potential impact on Sycala should the epidemic spread further.

I have closely followed six individual cases to provide a detailed account:

1. Patient 12629 (Ferdinand Chailleux) died on March 28. The patient was initially diagnosed because of a fever. He was infected for approximately 4,5 days.
2. Patient 11474 (Eloi Desfontaine) recovered on April 1st. He initially presented a symptom of muscle pain. He was sick during a bit more than 4.5 days.
3. Patient 14407 (Deniz Delort) initially presented a high-grade fever. He recovered some days ago, after having presented symptoms for almost 6 days.
4. Patient 14838 (Ninho Dormois) recovered from their skin rash 3 days ago, after a bit less than 4 days of symptoms
5. Patient 14033 (Maryama Favard) recovered some days ago. The patient initially presented a severe headache and was symptomatic for a bit more than 5 days.
6. Patient 11194 (Liaam Mondot), initially diagnosed because of muscle pain, recovered today after 4.5 days during which he was infected.

**Epidemiological Considerations**

While the exact nature of this disease remains unknown, there is currently no evidence to suggest immunity within the population. Biomarker-based analyses, such as serological testing, could confirm whether individuals have been previously exposed or possess natural immunity. Additionally, it is worth noting that, while no asymptomatic individuals have been identified, some symptomatic patients present with milder clinical signs and shorter durations of illness. We currently assume that asymptomatic cases are unlikely, but this should be confirmed through targeted analyses, such as PCR testing to detect potential viral RNA in individuals with minimal symptoms. These observations also raise the question of whether factors such as age or sex influence the severity of symptoms. A more detailed statistical analysis may provide clarity on these correlations.

**Future Recommendations**

To enhance the precision of our monitoring efforts, I propose integrating this medical database with demographic data, including residential and workplace information. This could potentially help trace transmission pathways and determine whether contact patterns influence the spread. While initial information does not indicate clear contact clustering, continued updates and a larger dataset may provide further clarity.

Although the situation is concerning, our systematic efforts to track and analyze the epidemic provide a strong foundation for understanding and mitigating its impact on Sycala.

**Signed,**

Dr. Ethan Calder, MD