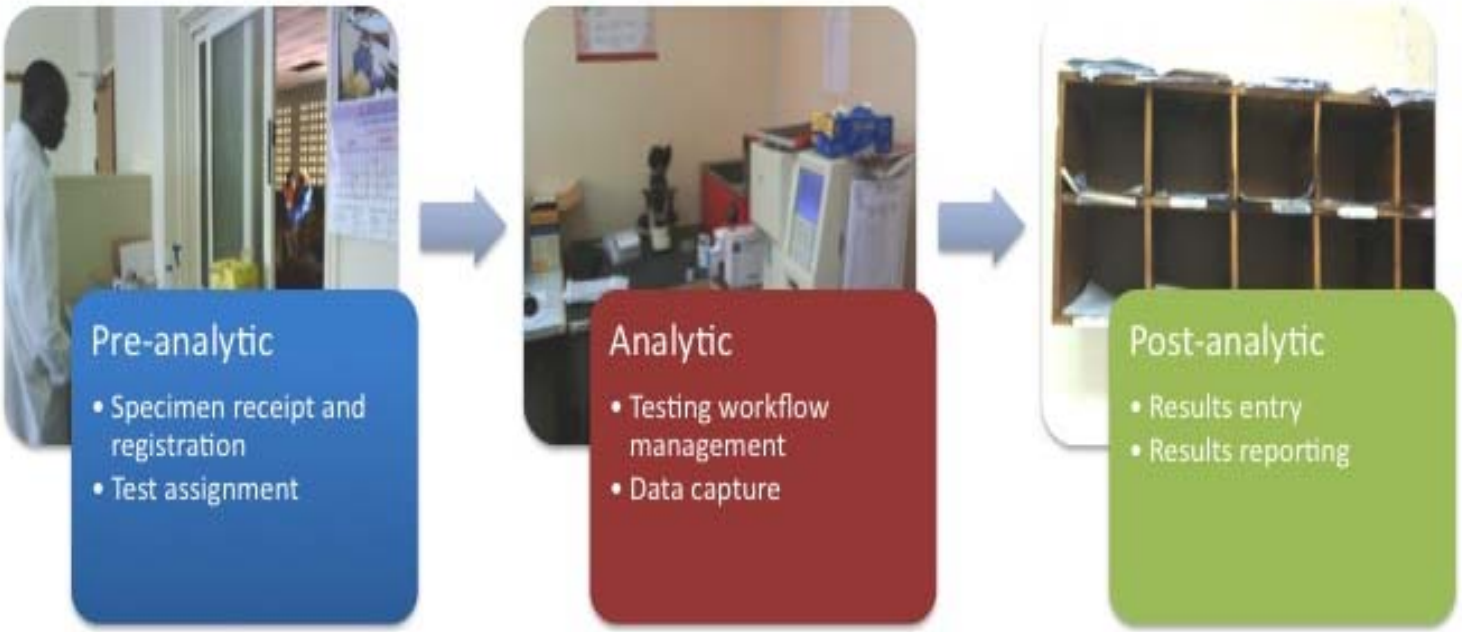
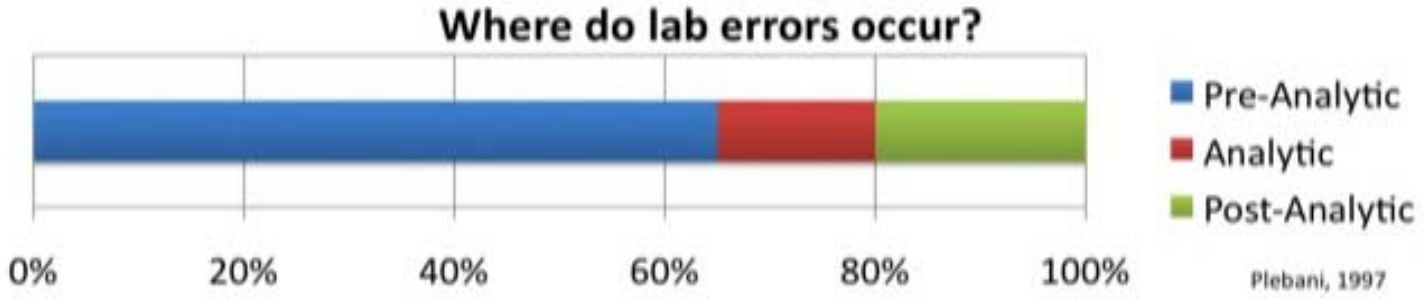
Basic Laboratory Information System (BLIS)

Background

- To address the need for accurate and reliable laboratory data, the Centers for Disease Control and Prevention (CDC) and the Computing 4 Good @ Georgia Institute of Technology group (C4G) initiated a collaboration in 2009 to develop a robust Basic Laboratory Information System (BLIS) designed specifically for the needs of service-delivery level laboratories in resource-limited settings, which represent the majority of the nearly 2,000 laboratories that are supported by PEPFAR.
- BLIS has been developed with ongoing input from CDC field staff, implementing partners, and laboratorians in Botswana, Cameroon, Ghana, Kenya, Nigeria, Tanzania, Uganda, and Zambia.
- The system aims to address the specific needs of laboratory data collection and management from specimen receipt to results reporting.

Laboratory specimen flow





Laboratory data challenges

- Accurate and reliable clinical laboratory test results are a critical component of a public health approach to disease management in resource-limited settings. Laboratory data are essential for clinicians to accurately assess the status of patients' health, make accurate diagnoses, formulate treatment plans, and subsequently monitor the effects of treatment. However, in the majority of PEPFAR-supported laboratories, clinical laboratory data is generally not stored in a manner in which it can be easily accessed, summarized, or analyzed. Moreover, these data are generally recorded in multiple, non-standardized, and often somewhat illegible log books, which presents a significant challenge to any efforts to conduct analyses or reporting.

Laboratory data challenges

Figure 1. Specimen labeling and workflow

Laboratory data challenges

Figure 2. Non-standardized laboratory data registers

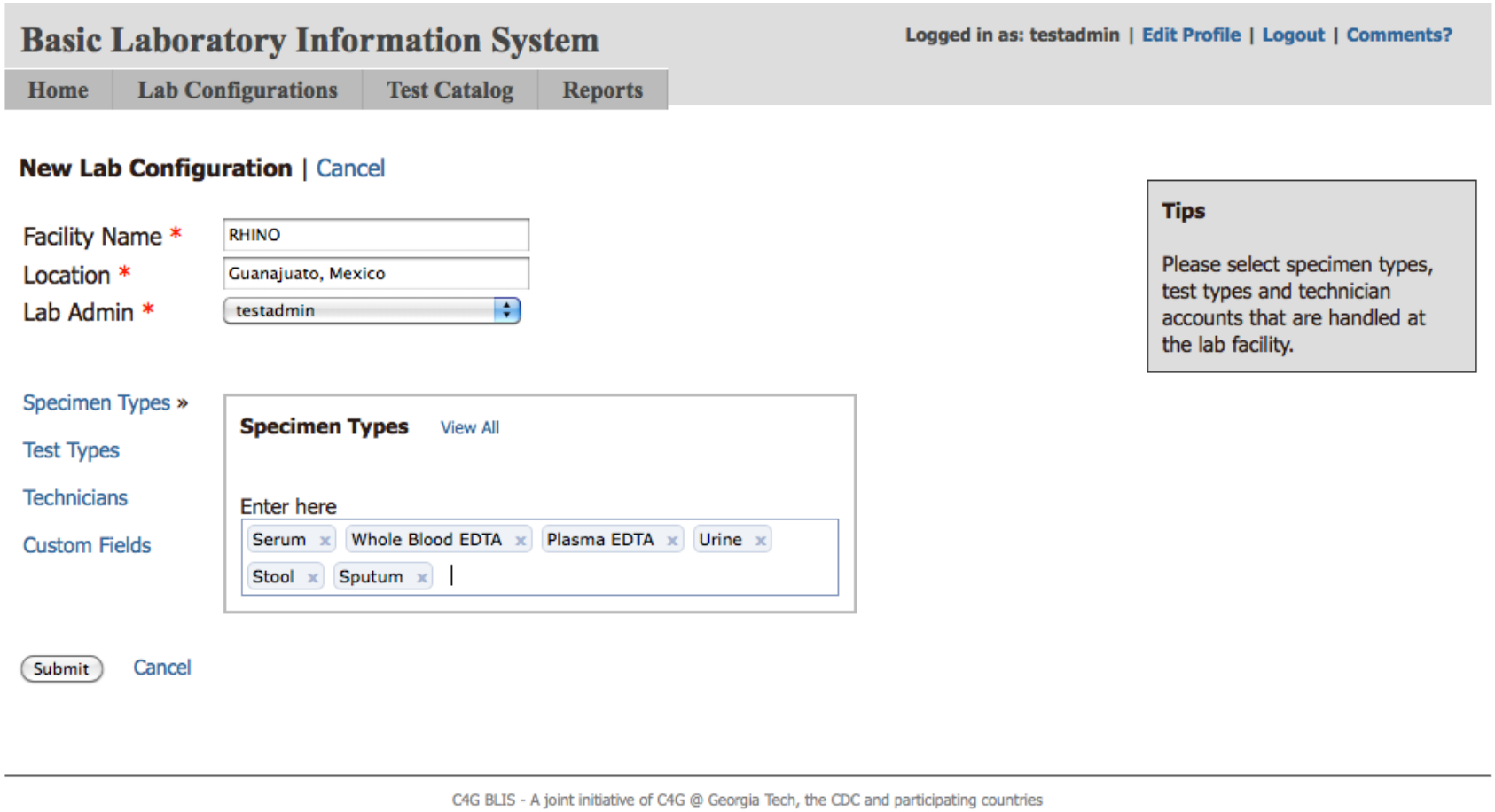
Laboratory data challenges

Figure 3. Data storage, retrieval, and analysis

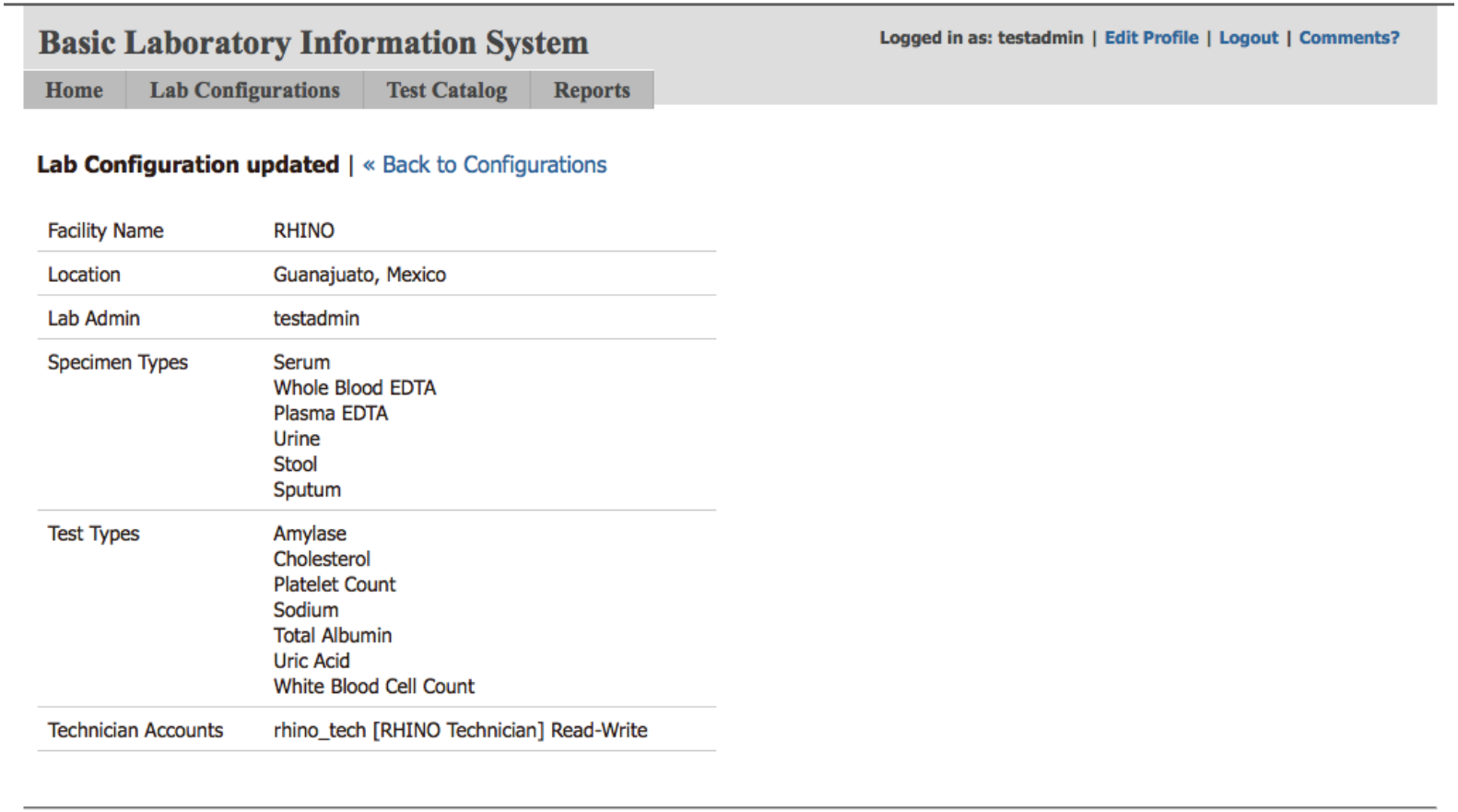
BLIS

- BLIS is designed to be highly-customizable by a laboratory manager and extremely user-friendly for all laboratorians.
- It is built with a MySQL back-end with a PHP front-end, which enables it to be run from a standard internet browser.
- The system can be run locally on a single machine or on a local area network. It can also be run in a hosted or wide area network configuration.

BLIS


Basic Laboratory Information System
Logged in as: testadmin | Edit Profile | Logout | Comments?
Home
Lab Configurations
Test Catalog
Reports
New Lab Configuration | Cancel
Facility Name *
RHINO
Location *
Guanajuato, Mexico
Lab Admin *
testadmin
Tips
Please select specimen types, test types and technician accounts that are handled at the lab facility.
Specimen Types »
Test Types
Technicians
Custom Fields
Specimen Types
View All
Enter here
Serum
Whole Blood EDTA
Plasma EDTA
Urine
Stool
Sputum
Submit
Cancel
C4G BLIS - A joint initiative of C4G @ Georgia Tech, the CDC and participating countries

BLIS


Basic Laboratory Information System
Logged in as: testadmin | Edit Profile | Logout | Comments?
Home
Lab Configurations
Test Catalog
Reports
Lab Configuration updated | « Back to Configurations
Facility Name
RHINO
Location
Guanajuato, Mexico
Lab Admin
testadmin
Specimen Types
Serum
Whole Blood EDTA
Plasma EDTA
Urine
Stool
Sputum
Test Types
Amylase
Cholesterol
Platelet Count
Sodium
Total Albumin
Uric Acid
White Blood Cell Count
Technician Accounts
rhino_tech [RHINO Technician] Read-Write
C4G BLIS - A joint initiative of C4G @ Georgia Tech, the CDC and participating countries

BLIS

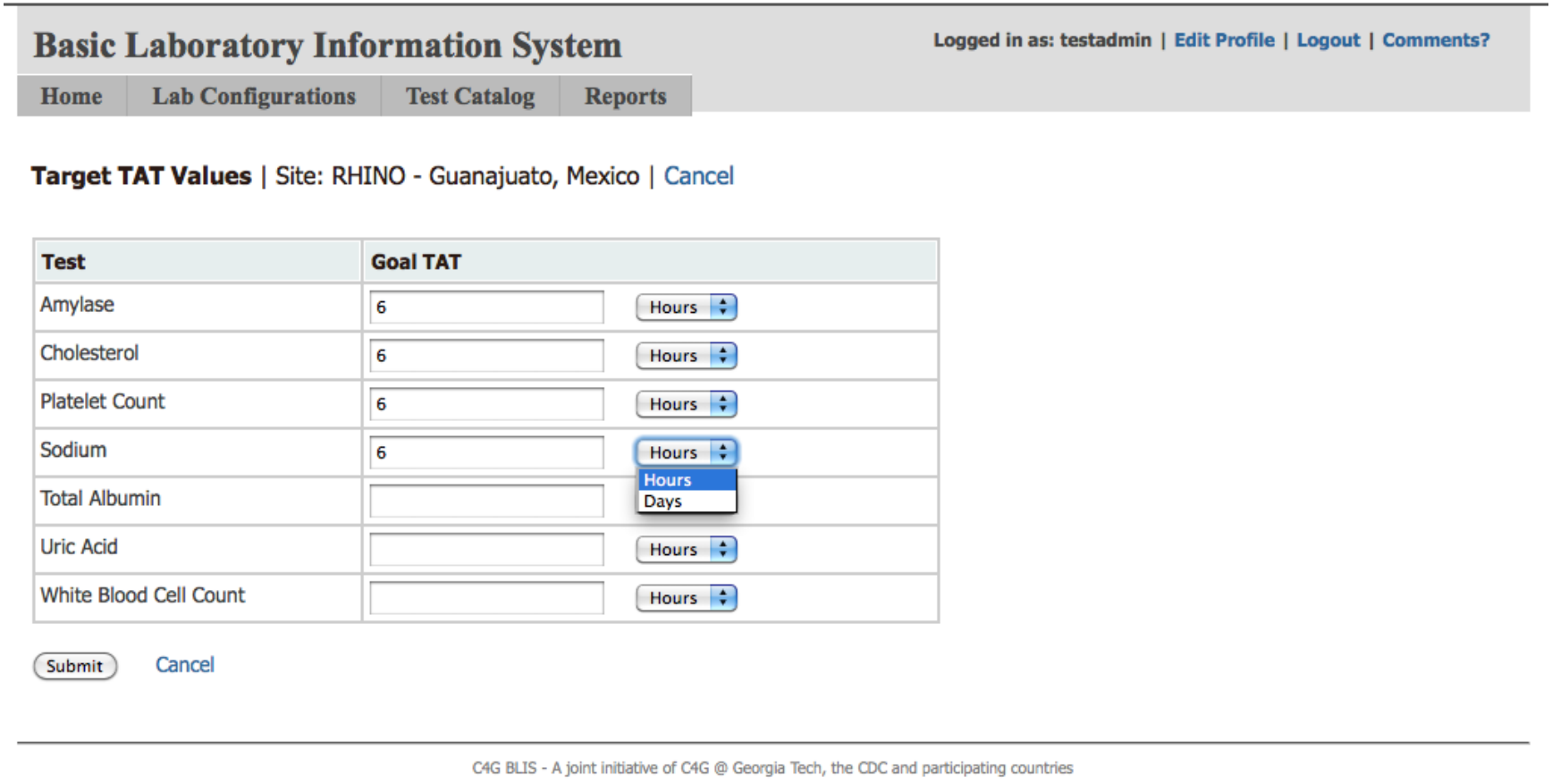


Figure 4. Configuration of new laboratory in BLIS

BLIS

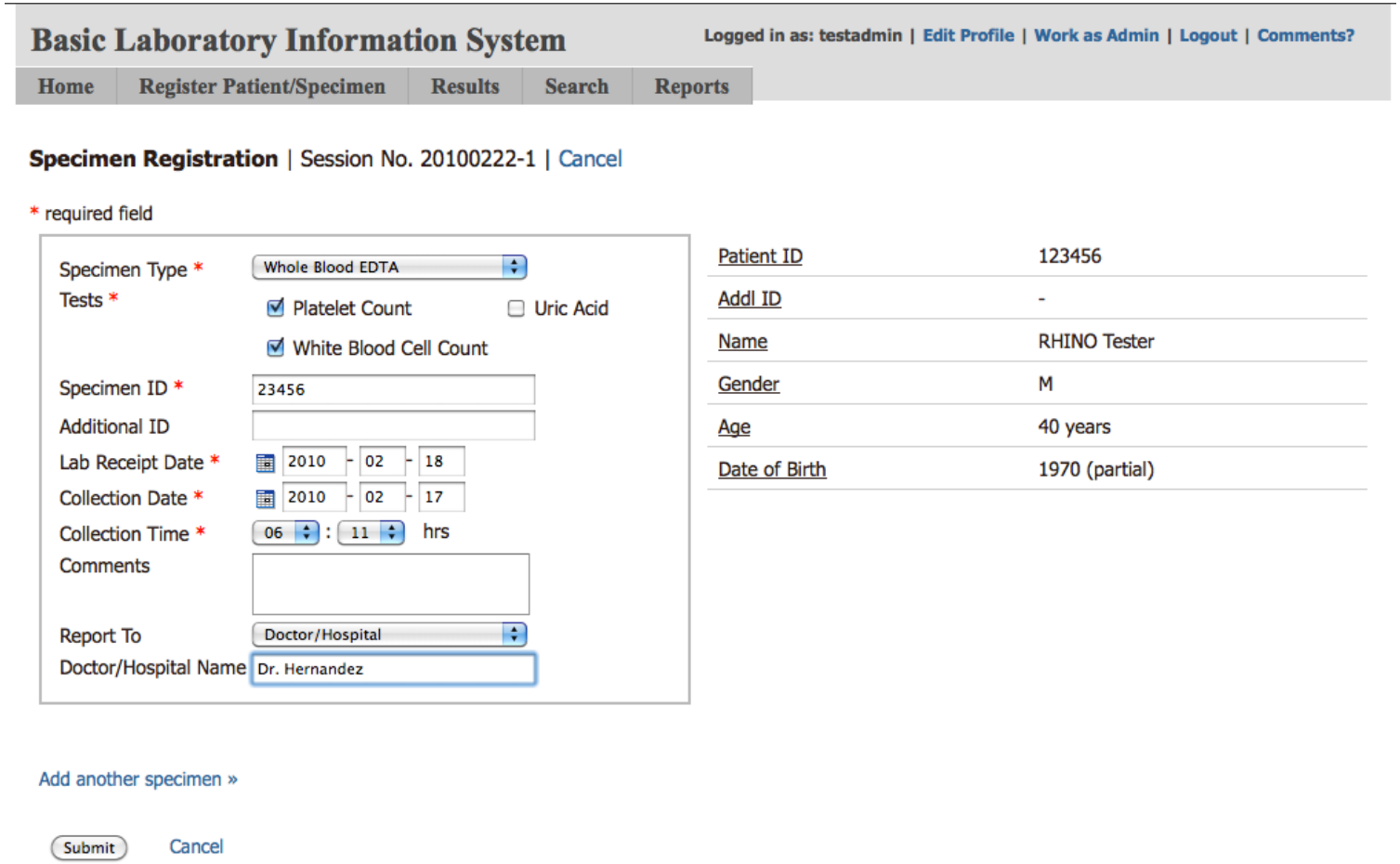


Figure 5. Patient and specimen registration in BLIS

BLIS

- BLIS generates a wide variety of standard and customizable reports for use in the laboratory, for reporting to patients or clinicians, and for aggregate indicator-level reporting.

BLIS

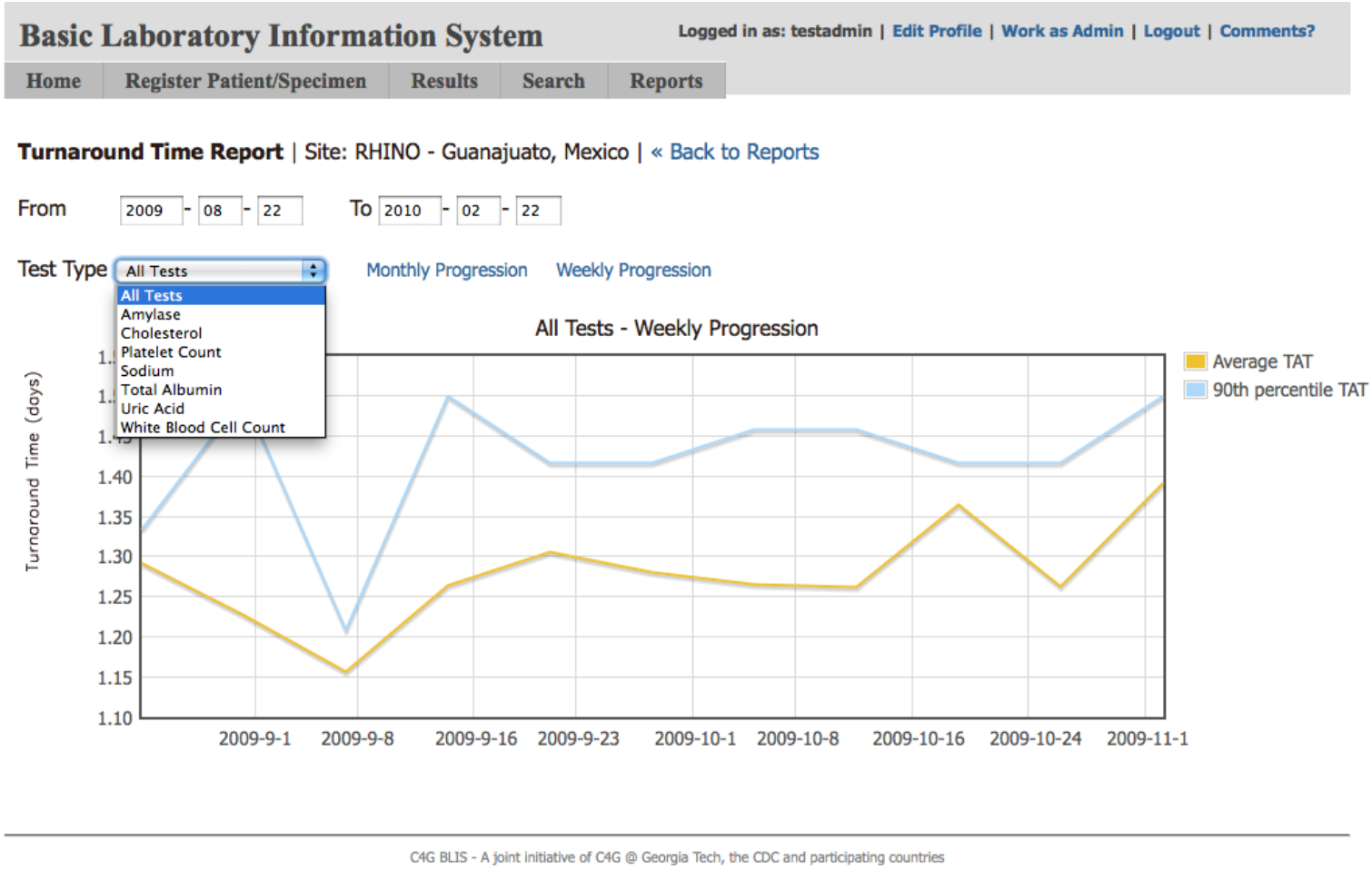


Figure 5. Example turn around time report

BLIS

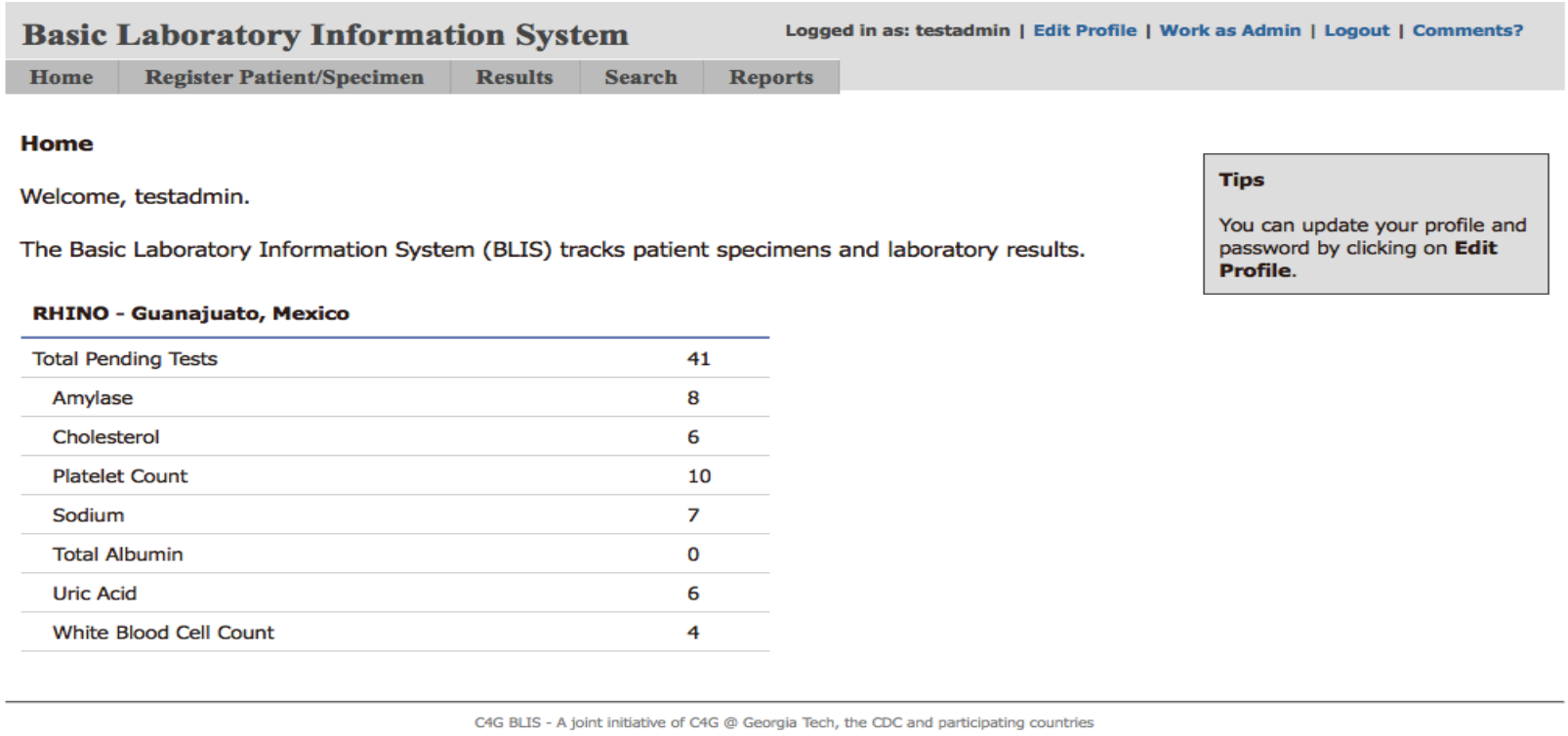


Figure 6. Example login screen for laboratory technician. BLIS aims to empower lab technicians and laboratory managers to improve the quality of results generated in the laboratory even as the quantity of testing increases.

Next steps

- Pilot implementations of BLIS are currently being planned in Uganda, Tanzania, Cameroon, and Ghana through the guidance of the respective Ministries of Health in each country, CDC headquarters and CDC in-country staff, and with implementing partners.
- The African Field Epidemiology Network (AFENET) will lead implementations in Uganda and Tanzania
- Global Health Systems Strengthening (GHSS) will lead implementations in Cameroon and Ghana.
- We aim to have a reliable, robust and free system ready for ongoing development ready to share within one year.

For further information

We welcome your feedback.
Please feel free to contact Mark DeZalia at mdezalia@cdc.gov with questions, suggestions or comments.

We also welcome you to try BLIS!
The online version can be accessed at: lis.cc.gatech.edu
Generic administrator login User: testadmin / Password: admin123
Generic technician login User: testlab1_tech1 / Password: tech123

If you would like a custom account, please contact Mark DeZalia.