



*The City of New York
Office of the Comptroller
Bureau of Financial Audit
EDP Audit Division*

WILLIAM C. THOMPSON, JR.
Comptroller

**Audit Report on the
Development and Implementation of the
Health Information Profiling System by the
Administration for Children's Services**

7A02-064

June 13, 2002

*The City of New York
Office of the Comptroller
Bureau of Financial Audit
EDP Audit Division*

**Audit Report on the
Development and Implementation of the
Health Information Profiling System by the
Administration for Children's Services**

7A02-064

EXECUTIVE SUMMARY

Background

The fundamental responsibility of the Administration for Children's Services (ACS) is the protection of children subjected to neglect and abuse. The ACS Office of Medical Services and Planning Division (MSP) is responsible for monitoring the medical care of children in foster care. Foster children are cared for by contracted agencies or directly by the City.

ACS hired Integrated Partners, Inc., in June 1999 to act as the project manager to design and develop its Health Information Profiling System (HIPS)—a customized computer application—to provide a centralized computer repository of health information for each child. HIPS allows ACS' contract agencies to enter children's medical records into the system and to review the medical information of all children in their care. In addition, the system allows MSP personnel to monitor a child's medical condition to ensure that the contract agencies are providing adequate care and maintaining adequate medical records for children in their care.

HIPS Phase I was completed in December 2000. ACS is currently working on HIPS Phase II, which will provide additional enhancements, including report generating capabilities, the integration of import-export features, a document scanning feature, a medical service appointment tracking feature, and HIPS access through the Internet.

Objectives

Our objectives were to determine whether:

- ACS followed a structured methodology for developing HIPS;
- HIPS meets the users' needs,
- HIPS allows future enhancements and upgrades;
- users are satisfied with the system.

Scope and Methodology

Our fieldwork was conducted from October 2001 to March 2002. To achieve our objectives we reviewed and analyzed these ACS documents:

- *Health Information Profiling System Specification for Reports;*
- *User System Request;*
- *Final Functional Specifications (Business and System Requirements);*
- *Technical Profile;*
- Issue Resolution log;
- *Quality Assurance Plan/Process: HIPS1;* and
- HIPS development and implementation plans.

In addition, we interviewed ACS officials, verified whether the system met design specifications, and conducted a user satisfaction survey.

Since the City does not have a formal System Development Methodology, we used the following as criteria for this audit:

- New York City Comptroller's Internal Control and Accountability Directive 18 (Directive 18), "Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems,"
- Federal Information Processing Standards (FIPS), and
- National Institute of Standards and Technology Special Publication 500-223, *A Framework for the Development and Assurance of High Integrity Software* (NIST).

The audit was conducted in accordance with generally accepted government auditing Standards (GAGAS) and included tests of the records and other auditing procedures considered necessary. This audit was performed in accordance with the City Comptroller's audit responsibilities as set forth in Chapter 5, § 93, of the New York City Charter.

Results in Brief

ACS followed a structured methodology for developing HIPS. The system, as currently developed, allows for future enhancements and upgrades, and Phase I meets the users' needs. The contract agency users were generally satisfied with HIPS, according to the results of our user satisfaction survey. However, those agencies have difficulty in accessing HIPS via a dial-in modem. In addition, ACS does not maintain adequate records of user accounts, User-IDs are not reviewed and updated, and HIPS users are not required to periodically change their passwords.

Recommendations

ACS should:

1. Instruct its MIS division to determine whether dial-in access can be made easier.
2. Review the list of User-IDs to identify and remove duplicate entries.
3. Maintain a list of current users, in accordance with FIPS Standard 112 and Directive 18. The list should associate the User-ID with an individual and contract agency. In addition, ACS officials should require that contract agencies notify them whenever users have to be added or deleted from the system.
4. Require that users periodically change their passwords.

Agency Response

The matters covered in this report were discussed with officials from ACS during and at the conclusion of this audit. A preliminary draft was sent to ACS officials and discussed at an exit conference held on May 15, 2002. On May 17, 2002, we submitted a draft report to ACS officials with a request for comments. We received a written response from ACS on June 3, 2002. ACS agreed with the audit's findings and recommendations.

The full text of the ACS's comments is included as an Addendum to this report.

Table of Contents

INTRODUCTION	1
Background	1
Objectives	2
Scope and Methodology	2
Agency Response	3
FINDINGS AND RECOMMENDATIONS	4
Recommendations	7
ADDENDUM-ACS Response	

*The City of New York
Office of the Comptroller
Bureau of Financial Audit
EDP Audit Division*

**Audit Report on the
Development and Implementation of the
Health Information Profiling System by the
Administration for Children's Services**

7A02-064

INTRODUCTION

Background

The fundamental responsibility of the Administration for Children's Services (ACS) is the protection of children subjected to neglect and abuse. ACS provides preventive services to families to ensure the safety of children and, when necessary, provides children with safe foster care and adoptive homes. ACS also administers, directly or through contracts, child care, early childhood education, and child support enforcement services. The ACS Office of Medical Services and Planning Division (MSP) is responsible for monitoring the medical care of children in foster care. Foster children are cared for by contracted agencies or directly by the City. Currently, more than 60 agencies have contracts with ACS to provide foster care placement and other services.

ACS hired Integrated Partners, Inc., in June 1999 to act as the project manager to design and develop its Health Information Profiling System (HIPS)—a customized computer application—to provide a centralized computer repository of health information for each child. HIPS allows ACS' contract agencies to enter children's medical records into the system and to review the medical information of all children in their care. In addition, the system allows MSP personnel to monitor a child's medical condition to ensure that the contract agencies are providing adequate care and maintaining adequate medical records for children in their care. HIPS runs on the ACS Intranet, which allows ACS to deploy, maintain, modify, and support the system in an effective manner from one site.

HIPS Phase I was completed in December 2000. ACS is currently working on HIPS Phase II, which will provide additional enhancements, including more report generating capabilities, the integration of import-export features, a document scanning feature, a medical service appointment tracking feature, and HIPS access through the Internet.

Objectives

Our objectives were to determine whether:

- ACS followed a structured methodology for developing HIPS;
- HIPS meets the users' needs,
- HIPS allows future enhancements and upgrades;
- users are satisfied with the system.

Scope and Methodology

Our fieldwork was conducted from October 2001 to March 2002. To achieve our objectives we reviewed and analyzed these ACS documents:

- *Health Information Profiling System Specification for Reports;*
- *User System Request;*
- *Final Functional Specifications (Business and System Requirements);*
- *Technical Profile;*
- Issue Resolution log;
- *Quality Assurance Plan/Process: HIPS1;* and
- HIPS development and implementation plans.

In addition, we interviewed ACS officials, verified whether the system met design specifications, and conducted a user satisfaction survey.

Since the City does not have a formal System Development Methodology, we used the following as criteria for this audit:

- New York City Comptroller's Internal Control and Accountability Directive 18 (Directive 18), 'Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems,'
- Federal Information Processing Standards (FIPS), and

- National Institute of Standards and Technology Special Publication 500-223, *A Framework for the Development and Assurance of High Integrity Software* (NIST).

The audit was conducted in accordance with generally accepted government auditing Standards (GAGAS) and included tests of the records and other auditing procedures considered necessary. This audit was also performed in accordance with the City Comptroller's audit responsibilities as set forth in Chapter 5, § 93, of the New York City Charter.

Agency Response

The matters covered in this report were discussed with officials from ACS during and at the conclusion of this audit. A preliminary draft was sent to ACS officials and discussed at an exit conference held on May 15, 2002. On May 17, 2002, we submitted a draft report to ACS officials with a request for comments. We received a written response from ACS on June 3, 2002. ACS agreed with the audit's findings and recommendations.

The full text of the ACS's comments is included as an Addendum to this report.

OFFICE OF THE COMPTROLLER NEW YORK CITY

DATE FILED: June 13, 2002

FINDINGS AND RECOMMENDATIONS

ACS followed a structured methodology for developing HIPS. The system, as currently developed, allows for future enhancements and upgrades, and Phase I meets the users' needs. The contract agency users were generally satisfied with HIPS, according to the results of our user satisfaction survey. However, those agencies have difficulty in accessing HIPS via a dial-in modem. Additionally, ACS does not maintain adequate records of user accounts, User-IDs are not reviewed and updated, and HIPS users are not required to periodically change their passwords.

System Development Life Cycle

The structured methodology used by ACS involved a System Development Life Cycle consisting of several phases—Definition and Analysis Phase, the Design and Programming Phase, the Software Verification and Validation Phase, and the Operation Phase.

Definition and Analysis Phase

The end result of the Definition and Analysis phase is a document that should describe the performance requirements for the system, such as the details on all deliverables, including hardware, software, training, system documentation, and warranties. The ACS document, *Final Functional Specifications (Business and System Requirements)* spelled-out those requirements.

Design and Programming Phase

The end result of the design and programming phase is the system architecture—or the technical design specification—document that is used by project programmers to construct the application. ACS's *User System Request, Health Information Profiling System Specification for Reports, Final Functional Specifications (Business and System Requirements)*, and the *Technical Profile* describe HIPS in technical terms. We compared the deliverables as defined in these documents and concluded that all deliverables were provided. Table I, following, shows the specific deliverables.

Table IHIPS Specific Deliverables

Specific Deliverables	Provided
Develop an Intranet system.	Yes
Ability to access by: direct access through the ACS network, CONNECTIONS and dial-in.	Yes
Navigation Main Tab that includes Main Menu, Reports, and Administration.	Yes
Main Menu that includes ten major parts of the HIPS application: Case, Assigned Provider, Allergies, Screening Done, Immunization Series, Diagnosis, Medications, Follow-up Needs, Acute Care Occurrences, and Health History Ongoing Notes.	Yes
Specific screen requirements for each major part of the HIPS application.	Yes
Report Menu that includes Child Summary, Agency Compliance, and Provider Information.	Yes
Administration Menu that includes Maintain Code Tables, Maintain Provider Information, Security Maintenance, Master Search, and Agency Assignment Adjustment.	Yes
Data/logic of the system as listed in the system and business requirement.	Yes
The source of the core data that will be extracted from the New York State source system. These data cannot be modified through the HIPS application.	Yes
Non-editable data fields on each of the screens that make up the HIPS Main Tab (Foster Child Last Name, First Name, Case name, Sex, CIN Number, date of birth, UCR Due Date, and Assessment Period).	Yes
Develop the Official Health Summary Form and the Ongoing Health Summary Form. The Official Health Summary Form cannot be changed.	Yes
Access restriction—contracted agencies can view and modify the data of only those children assigned to them.	Yes
Color code to show which data field is editable and which is non-editable.	Yes
Ability to move from one screen to another that contain information on the same child without having to save or being prompted to save the files.	Yes
Maintain Providers Utility-information on the provider institution, site, and practitioner.	Yes
“Magic Window” Utility—scroll-down windows that list allergy codes, diagnostic codes, and description.	Yes
Ability to track a child’s medical report by name or CIN number.	Yes
Generate a child’s health summary report.	Yes
Generate compliance reports.	Yes
Generate provider summary reports.	Yes
Generate a child’s medical condition reports.	Yes

Software Verification and Validation Phase

The Software Verification and Validation Phase involves testing all system components to ensure that they work individually and together as intended and according to specifications. ACS conducted functional design tests, application integration tests, and user acceptance tests. ACS also created a separate database (the Issue Resolution Log) to track quality assurance issues. We reviewed the Issue Resolution Log and verified that such issues have been resolved.

Operation Phase

The Operation Phase occurs when the new system is turned over to the users for day-to-day use. We confirmed that ACS implemented Phase I of HIPS but also determined through our user satisfaction survey that 57 percent of the contract agency users found it difficult to access HIPS when they dial into the system. The users, however, indicated that they are generally satisfied with HIPS once they are connected to the system.¹ Specifically, the survey indicated that:

- 69% of users found it relatively easy to enter data into HIPS;
- 100% of the users found the data from HIPS to be generally accurate;
- 92% of the users found it easy to work on the information displayed on the HIPS screens;
- 89% of the users found that HIPS is easy to use; and
- 88% of the users are satisfied with HIPS.

Other Issues

Access Control: User IDs and Passwords

The ACS list of User-IDs did not always identify the names of users and the contract agencies. It is important that User-IDs be associated with an individual so that an audit trail is maintained. FIPS Standard 112, “Password Usage,” states:

“Passwords shall be distributed in a way that an audit record, containing date and time of a password change and the identifier² associated with the password can be made available to the Security Officer.”

In addition, the ACS list contained duplicate User-IDs and was not updated to exclude inactive user accounts, apparently because contract agencies fail to inform ACS of the current

¹ We selected 30 out of 300 contracted agencies’ users to complete a HIPS Phase I User Satisfaction Survey. Twenty-six surveys were completed, and the remaining four did not respond.

² FIPS Standard 112 defines an identifier as a “data item associated with a specific individual which represents the identity of that individual.”

status of employees. Finally, HIPS's access security feature does not require that users periodically change their password. Directive 18, § 8.1.2, states that:

“User identifications and passwords are among the most widely used and visible forms of access control. The user identification identifies the individual to the system. Passwords control the applications or system information an individual is permitted to access. Access authorization must be carefully designed to insure that employees have access only to files or programs that are necessary for their job function.”

It is very important that the above issues be resolved and that access be limited to authorized users only, because HIPS contains medical records and other personal information.

Recommendations

ACS should:

1. Instruct its MIS division to determine whether dial-in access can be made easier.

Agency Response: “ACS has purchased software to improve dial up access to the ACS network and the HIPS application. The software is expected to be installed by 06/15/02.”

2. Review the list of User-IDs to identify and remove duplicate entries.
3. Maintain a list of current users, in accordance with FIPS Standard 112 and Directive 18. The list should associate the User-ID with an individual and contract agency. In addition, ACS officials should require that contract agencies notify them whenever users have to be added or deleted from the system.

Agency Response to Recommendations #2 and #3: “ACS has compiled an up-to-date comprehensive list of users associated with their corresponding contract agency. This list has been reviewed at HIPS user meetings. All duplicate and/or unused logins have been identified and removed.

“ACS has developed forms and procedures to provide contract agencies with the ability to (1) notify ACS when users are added or deleted from the system and (2) confirm receipt of User-IDs for the associated user. Periodically, ACS will send a list of users to their corresponding contract agency for verification. ACS will disable any User-ID that is not confirmed by the contract agency.”

4. Require that users periodically change their passwords.

Agency Response: “ACS will administer a periodic mailing to users that will request that they change their password.”



Administration for Children's Services

150 William Street - 18th Floor
New York, New York 10038

William C. Bell
Commissioner

June 3, 2002

Mr. Roger D. Liwer
Assistant Comptroller for Audits
The City of New York Office of the Comptroller
1 Centre Street, Room 1100
New York, New York 10007-2341

Re: NYC Comptroller's Audit Report 7A02-064
Development and Implementation of the
Health Information Profiling System (HIPS)

Dear Mr. Liwer:

Thank you for sharing with us the Draft Report for the above captioned audit.

Attached is our response to your recommendations and appropriate Audit Implementation Plans (AIPs). ACS looks forward to working with your office to improve the delivery of services to the children of the City of New York.

If you have any questions, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'William C. Bell', is written over a faint grid background.

William C. Bell

Attachments

City of New York Office of the Comptroller
Development and Implementation of the
Health Information Profiling System (HIPS)
Audit Number 7A02-064

**Administration for Children's Services (ACS)
Response to Recommendations**
June 3, 2002

ACS was pleased to learn from the Comptroller's audit report that:

ACS followed a structured methodology for developing HIPS. The system, as currently developed, allows for future enhancements and upgrades, and Phase 1 meets the users' needs. The contract agency users were generally satisfied with HIPS, according to the results of our [NYCC's] user satisfaction survey.

ACS has implemented or partially implemented some of the Comptroller's recommendations and will work to implement the remainder.

Recommendation 1

ACS has purchased software to improve dial up access to the ACS network and the HIPS application. The software is expected to be installed by 06/15/02.

Recommendations 2 and 3

ACS has compiled an up-to-date comprehensive list of users associated with their corresponding contract agency. This list has been reviewed at HIPS user meetings. All duplicate and/or unused logins have been identified and removed.

ACS has developed forms and procedures to provide contract agencies with the ability to (1) notify ACS when users are added or deleted from the system and (2) confirm receipt of User-IDs for the associated user. Periodically, ACS will send a list of users to their corresponding contract agency for verification. ACS will disable any User-ID that is not confirmed by the contract agency.

Recommendation 4

ACS will administer a periodic mailing to users that will request that they change their password.

ADMINISTRATION FOR CHILDREN'S SERVICES AUDIT IMPLEMENTATION PLAN
 NEW YORK CITY COMPTROLLER'S AUDIT NUMBER 7A02-064
 THE DEVELOPMENT AND IMPLEMENTATION OF THE HEALTH INFORMATION PROFILING SYSTEM
 BY THE NEW YORK CITY ADMINISTRATION FOR CHILDREN'S SERVICES

RECOMMENDATION # 1: ACS should instruct its MIS division to determine whether dial-in access can be made easier.

RESPONSIBLE MANAGERS' NAME: Dan Sedlis, Associate Commissioner ACS/MIS

CORRECTIVE ACTIONS TO BE TAKEN	RESPONSIBLE PERSON	DATES		DOCUMENTATION	COMMENTS
		START	END		
ACS has purchased software to improve dial up access to the ACS network and the HIPS application. The software is expected to be installed by 06/15/02.	Aryeh Norensberg, Director of Network Operations ACS/MIS	05/02	06/15/02		

ADMINISTRATION FOR CHILDREN'S SERVICES AUDIT IMPLEMENTATION PLAN
NEW YORK CITY COMPTROLLER'S AUDIT NUMBER 7A02-064
THE DEVELOPMENT AND IMPLEMENTATION OF THE HEALTH INFORMATION PROFILING SYSTEM
BY THE NEW YORK CITY ADMINISTRATION FOR CHILDREN'S SERVICES

RECOMMENDATION # 2: ACS should review the list of User-IDs to identify and remove duplicate entries.

RESPONSIBLE MANAGERS' NAME: Dan Sedlis, Associate Commissioner ACS/MIS

CORRECTIVE ACTIONS TO BE TAKEN	RESPONSIBLE PERSON	DATES		DOCUMENTATION	COMMENTS
		START	END		
ACS has compiled an up-to-date comprehensive list of users associated with their corresponding contract agency. This list has been reviewed at HIPPS user meetings. All duplicate and/or unused logins have been identified and removed.	Chris Flynn, Project Manager ACS/MIS	05/02	Completed		

**ADMINISTRATION FOR CHILDREN'S SERVICES AUDIT IMPLEMENTATION PLAN
 NEW YORK CITY COMPTROLLER'S AUDIT NUMBER 7A02-064
 THE DEVELOPMENT AND IMPLEMENTATION OF THE HEALTH INFORMATION PROFILING SYSTEM
 BY THE NEW YORK CITY ADMINISTRATION FOR CHILDREN'S SERVICES**

RECOMMENDATION # 3: ACS should maintain a list of current users, in accordance with FIPS Standard 112 and Directive 18. The list should associate the User-ID with an individual and contract agency. In addition, ACS officials should require that contract agencies notify them whenever users have to be added or deleted from the system.

RESPONSIBLE MANAGERS' NAME: Dan Sedlis, Associate Commissioner ACS/MIS

CORRECTIVE ACTIONS TO BE TAKEN	RESPONSIBLE PERSON	DATES START	DATES END	DOCUMENTATION	COMMENTS
A list of users was established that associates the User-ID with an individual and contract agency.	Chris Flynn, Project Manager ACS/MIS	05/02	Completed		
ACS has developed forms and procedures to provide contract agencies with the ability to (1) notify ACS when users are added or deleted from the system and (2) confirm receipt of user-ids for the associated user.	Chris Flynn, Project Manager ACS/MIS	05/02	Completed		
ACS will provide and administer the procedures for using the forms managing the User-IDs.	Chris Flynn, Project Manager ACS/MIS	05/02	Continuing		
Periodically, ACS will send a list of users to their corresponding contract agency for verification. ACS will disable any User-ID that is not confirmed by the contract agency.	Chris Flynn, Project Manager ACS/MIS	07/02	Continuing		

ADMINISTRATION FOR CHILDREN'S SERVICES AUDIT IMPLEMENTATION PLAN
 NEW YORK CITY COMPTROLLER'S AUDIT NUMBER 7A02-064
 THE DEVELOPMENT AND IMPLEMENTATION OF THE HEALTH INFORMATION PROFILING SYSTEM
 BY THE NEW YORK CITY ADMINISTRATION FOR CHILDREN'S SERVICES

RECOMMENDATION # 4: ACS should require that users periodically change their passwords.

RESPONSIBLE MANAGERS' NAME: Dan Sedlis, Associate Commissioner ACS/MIS

CORRECTIVE ACTIONS TO BE TAKEN	RESPONSIBLE PERSON	DATES		DOCUMENTATION	COMMENTS
		START	END		
ACS will administer a periodic mailing to users that will request that they change their password.	Chris Flynn, Project Manager ACS/MIS	08/02	Continuing		