

THE HEALTH PASSPORT PROJECT: ASSESSMENT AND RECOMMENDATIONS

FINAL REPORT December 2001

Nancy Pindus
Robin Koralek
Jenny Bernstein

The Urban Institute
2100 M Street, NW
Washington, DC 20037

Barbara Selter
Cheryl Owens

MAXIMUS
Intelligent Technologies Division
3204 Tower Oaks Boulevard
Rockville, MD 20852

This report was prepared for the Western Governors' Association with federal and private funding. The views expressed are those of the authors and should not be attributed to the Western Governors' Association, the funders of this project, MAXIMUS, or to the Urban Institute, its trustees, or its funders.

ABSTRACT

The Health Passport Project (HPP) is an initiative sponsored by the Western Governors' Association (WGA) and conducted in Bismarck, North Dakota; Cheyenne, Wyoming; and Reno, Nevada. HPP is intended to demonstrate how a secure multipurpose electronic health and food benefits card can facilitate information-sharing and improve administrative efficiency among public and private health care providers, nutrition programs, and Head Start educators while placing individuals firmly in control of the information on the card. This evaluation of the HPP demonstration is intended to provide information that decisionmakers in the three participating states need before the states invest in statewide implementation, and to provide critical information to other states considering implementing HPP or related smart card technology.

TABLE OF CONTENTS

Acknowledgments	i
Preface	ii
1.0 Introduction	1
1.1 Purpose of the Demonstration.....	1
1.2 Brief Description of the Demonstration.....	2
1.3 Health Passport Evaluation	2
1.4 Demonstration Context	4
1.5 Organization of This Report	5
2.0 Overview of Implementation Approach	6
2.1 Project Organization and Management.....	6
2.2 Bismarck HPP Demonstration	9
2.3 Cheyenne HPP Demonstration	11
2.4 Reno HPP Demonstration	13
3.0 Does It Work? Summary of System Operations	19
3.1 Overview of the Health Passport System.....	19
3.2 HPP System Technical Architecture.....	20
3.3 Data Center Operations.....	27
3.4 Help Desk Operation.....	27
3.5 Data Quality	28
3.6 Downtime/System Availability.....	31
3.7 Component Response Times.....	33
3.8 Performance of System Interfaces	36
3.9 Help Desk Support/Management.....	40
3.10 System Security	41
3.11 Kiosks	42
3.12 Training and Other Technical Considerations	43
4.0 User Response: Providers and Retailers	44
4.1 HPP Use in Bismarck.....	44
4.2 HPP Use in Cheyenne.....	45

4.3 HPP Use in Reno	46
4.4 Card Issuance and Updates	47
4.5 Implications for Business Process Realignments and Service Provision	50
4.6 HPP Experiences Regarding Efficiency	52
4.7 User Satisfaction and Perceptions.....	54
5.0 Impact of System Operations on Clients	57
5.1 Client Empowerment	57
5.2 Client Overall Satisfaction.....	66
6.0 Conclusions.....	71
6.1 Key Findings of the Evaluation	72
6.2 Lessons Learned.....	73
6.3 Summary of Cost Analysis and Cost Implications	79
6.4 Recommendations for Statewide Rollout	82
6.5 Factors Affecting the Long-Term Evolution of the Health Passport Project.....	88
Appendix A: Research Design and Methods.....	A-1
Appendix B: Demographic Information on Sites and Clients	B-1
Appendix C: Ongoing Costs for the HPP	C-1
Appendix D: Acronyms	D-1
Appendix E: Program Descriptions	E-1

INDEX OF TABLES

Table 3-1: Staff Perceptions of HPP Response Time	36
Table 4-1: Number of Times Information Was Added to HPP Client Cards	48
Table 4-2: Number of Times Information Was Added to HPP Client Cards—Bismarck	49
Table 4-3: Number of Times Information Was Added to HPP Client Cards—Cheyenne	49
Table 4-4: Number of Times Information Was Added to HPP Client Cards—Reno.....	50
Table 4-5: Perceived Changes in Workloads and Time Allocation Since Implementation of HPP	53
Table 4-6: Staff Satisfaction and Response to HPP	55
Table 4-7: Staff Perceptions of Client Use and Reaction to HPP	56
Table 5-1: Client-Reported Card Issuance by Location	58
Table 5-2: Client-Reported Use of HPP Cards by Location.....	60
Table 5-3: Number of HPP Cards Used at Kiosks.....	62
Table 5-4: Number of HPP Cards Used by Kiosk Location in Bismarck	62
Table 5-5: Number of HPP Cards Used by Kiosk Location in Cheyenne.....	63
Table 5-6: Number of HPP Cards Used by Kiosk Location in Reno	63
Table 5-7: Most Frequently Accessed Personal Information at Kiosks	64
Table 5-8: Top Five Client-Reported Uses of HPP Kiosks	65
Table 5-9: Kiosk Use and ATM Experience.....	66
Table 5-10: Client-Perceived Effects of the HPP Card	68
Table 5-11: Client-Reported Barriers to Use of the HPP System.....	69

INDEX OF EXHIBITS

Exhibit 2-1: HPP Project Organization.....	7
Exhibit 2-2: Implementation Time Line	9
Exhibit 2-3: Bismarck Site Profile.....	16
Exhibit 2-4: Cheyenne Site Profile	17
Exhibit 2-5: Reno Site Profile.....	18
Exhibit 3-1: Overview of HPP System Architecture	22
Exhibit 3-2: HPP System–Bismarck Configuration	24
Exhibit 3-3: HPP System–Cheyenne Configuration.....	25
Exhibit 3-4: HPP System–Reno Configuration	26
Exhibit 4-1: Timing of HPP Card Issuance	47

Acknowledgments

We wish to thank the staff and clients at all of the partner programs in the three demonstration sites. They were most generous with their time, participating in interviews, surveys, and focus groups. Their forthright responses form the backbone of this study.

The Health Passport site managers—Roberta Bishop (Bismarck) and Asima Mazhar (Cheyenne), and the former site managers—Ginger Paulsen (Reno) and Marty Brown (Reno) —kept us informed of the progress of the demonstration, scheduled interviews with partner staff, and assisted in data collection. In addition, Louise Jones-Ports of Reno was a dependable source of information and assistance throughout the study. The support of these individuals was critical to the evaluation.

We also wish to thank Terry Williams, whose vision and perseverance made everything happen. Western Governors' Association Project Officers Chris McKinnon and Tom Singer (who has since left the association) provided valuable project guidance. U.S. General Services Administration Project Officers Larry Carnes and David Temoshok guided the technical evaluation.

In addition to the authors of this report, Edgar Lee, Amy-Ellen Duke, Toby Douglas, and Alan Moore assisted in site visits. Edgar Lee, Britta Iwen, and Shinta Herwantoro contributed to the data analysis.

Preface

This evaluation report represents the culmination of more than three years of work. Researchers at the Urban Institute and MAXIMUS followed the development and implementation of the Health Passport Project (HPP) demonstration from the outset, with the Urban Institute focusing on the programmatic aspects of the demonstration (its effect on service provision by HPP partner programs), while MAXIMUS addressed the technical aspects of the demonstration (system design and operation of the hardware and software supporting HPP). This work seeks to use information from both groups to provide an objective assessment of what has been learned from the HPP demonstration.

Monitoring the demonstration involved extensive data collection, including systems testing, observations, interviews, structured surveys, and analyses of HPP server data. However, the practical realities of demonstrating a new and complex technology in multiple settings limit the conclusions that can be drawn from this evaluation. The focus of this report is on those findings that can be substantiated to date and on lessons learned that can enhance the value of this promising technology.

1.0 Introduction

The Health Passport Project (HPP) is an initiative sponsored by the Western Governors' Association (WGA) and conducted in Bismarck, North Dakota; Cheyenne, Wyoming; and Reno, Nevada. HPP provides a versatile, multipurpose electronic card to streamline access to and delivery of a variety of public and private services and benefits. Participating programs serve a common population and share a common goal: improving the health of individuals and their families. The HPP is intended to demonstrate how a secure health card can facilitate information-sharing and improve administrative efficiency among public and private health care providers, nutrition programs, and Head Start educators while placing individuals firmly in control of the information on the card.

The evaluation of the HPP demonstration is intended to provide information that decisionmakers in the three participating states need before the states invest in statewide implementation, and to provide critical information to other states that are considering implementing HPP or related smart-card technology. This document represents a broad assessment of the activities associated with the implementation of this complex smart card initiative, including both technical and programmatic aspects of the HPP implementation in the three demonstration sites, beginning in June 1999 in Bismarck. Much has been learned along the way. The feasibility of public-private cooperation has been explored, as have the difficulties inherent in cross-program collaboration. This historic project has provided invaluable lessons for the implementation of a multiapplication card platform.

1.1 Purpose of the Demonstration

The vision for the HPP arose from a successful Wyoming demonstration using smart cards to deliver benefits under the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Recognizing the potential of the smart cards not only for delivering WIC benefits more efficiently but for storing important health data as well, the western governors asked the WGA to conduct a feasibility study of using the technology for this purpose. Based on the conclusions of the feasibility study, the Governors of Wyoming, North Dakota, and Nevada stepped forward to serve as lead governors and pilot states for a demonstration effort. HPP objectives are to:

- lower administrative barriers to care by reducing the paperwork associated with a patient/client visit;
- improve quality of care and resource utilization by providing timely and accurate clinical information;
- promote personal responsibility for health care by placing individuals in control of the information on the card;
- make the delivery of nutritional benefits more efficient and less stigmatized by replacing paper vouchers with a Personal Identification Number (PIN)-secured card;
- enhance the tracking of health care outcomes and medical decisionmaking by increasing the availability and accuracy of health statistics; and
- create model public-private partnerships for the development of health information systems.

1.2 Brief Description of the Demonstration

The HPP demonstration includes three sites in three states: Bismarck, North Dakota; Cheyenne, Wyoming; and Reno, Nevada. As described in chapter 2, different programs, services, and providers and applications of HPP technology are included in each state, so that the demonstration tests a range of HPP system capabilities. Some programs focus on sharing basic demographic information and clinical data. Other applications demonstrate insurance eligibility verification, electronic benefits transfer (EBT), and/or access to appointment information. While each site's demonstration is unique, all are based on common card technology and a common base software platform.

The original HPP schedule called for the system design to be completed in December 1997 and the pilot to be implemented in all sites between January 1998 and June 1999. There were numerous delays and changes to this ambitious schedule, most notably a change in project management by the prime contractor. Ultimately, a staged implementation resulted, beginning in June 1999 in Bismarck, followed by the implementation of two partner programs in Cheyenne in June 1999, the launch of programs in Reno in June 2000, and the addition of WIC in Cheyenne in March 2001. As a result, the demonstrations and the evaluation process provided opportunities for learning and feedback among states as they brought on applications that had been tested elsewhere.

The funding for the demonstration was originally planned for an 18-month period. Because of the staggered start dates of the pilots and available funding, WGA has made a commitment to the three states to maintain operations through at least December 31, 2001, and, if WGA obtains additional federal and private-sector funding, it will continue to support the sites beyond that date.¹ Siemens Business Communications, Inc., completed its responsibilities under its contract with WGA in April 2001. WGA is now managing and coordinating the subcontractors, who continue to provide hardware, software, and Help Desk support.

1.3 Health Passport Evaluation

In assessing the ability of HPP to meet its objectives, the evaluation focuses on four research domains: efficiency, quality, client empowerment, and customer satisfaction. Data collection addressed these four areas. Indicators that address each research area include:

- **Efficiency**
 - waiting time
 - duplication of services
 - allocation of staff time
- **Quality**
 - appropriateness and timing of services
 - coordination of services and referrals
 - accuracy and completeness of patient information

¹ Note, however, that the demonstration period for purposes of the evaluation was *not* extended beyond 18 months (12 months in Reno).

- **Client Empowerment**
 - scheduling and keeping of appointments
 - client participation and utilization of HPP
- **Customer Satisfaction**
 - user-friendliness
 - convenience

The basic design of this evaluation is a pretest-posttest comparison² focusing on implementation at each of the sites. Delays in HPP implementation and the decision to stage implementation rather than have all three sites begin using HPP at one time reduce the power of the pretest-posttest design, although the staged approach did prove advantageous for the demonstration overall. Furthermore, at each site, partners or features of HPP were phased in over time (see chapter 2 for descriptions of site-by-site implementation). This more gradual planning and implementation process blurs the distinction between “pre” and “post,” making it difficult to measure differences over the demonstration period. Additional detail about the research questions and the research design is provided in appendix A.

Baseline data collection conducted at each of the three demonstration sites in March 1998 involved interviewing administrators and staff of partner programs (including retailers in the Cheyenne and Reno sites), collecting program caseload and management information, and conducting focus groups with clients of partner programs. Because implementation was delayed, in May 1999 a limited data collection effort was undertaken to update baseline information for Bismarck and Cheyenne, in anticipation of a June 1999 implementation. In November 1999, the evaluation team conducted an early implementation site visit to Bismarck. Because the June 1999 implementation in Cheyenne was quite limited (it did not include the WIC program or electronic benefits on the HPP card, key components of the Cheyenne demonstration), telephone interviews were conducted in lieu of an early implementation site visit. The evaluation team conducted an early implementation site visit to Reno in November 2000. Each site was visited again in April–May 2001.

Limitations in available program information (for baseline comparisons) and in report capabilities of the HPP system necessitated the selection of a limited number of indicators and reliance on more qualitative findings from interviews and surveys. For example, all of the partner programs do not routinely collect information on waiting times, client participation in other programs, and missed appointments. Data from the HPP system are available via an Internet server and consist of a list of transactions that can be grouped and sorted by date, location, and type. HPP server data reflect actual numbers of transactions, but they cannot identify the reasons for a particular transaction. Thus, the transaction “open card” may include card tests, opening a wrong card, opening a card to view information, and so on. Counting the total number of “open card” transactions may not accurately reflect use of the card for client services. This evaluation

² In a pretest-posttest design, the basis of comparison is two sets of data from the same group, one set collected and analyzed before and one set after the group members receive an intervention. (Joseph S. Wholey, Harry P. Hatry, and Kathryn E. Newcomer, eds. 1994. *Handbook of Practical Program Evaluation*. San Francisco: Jossey-Bass Publishers.)

uses HPP server data to provide some measures of overall volume and utilization of cards and kiosks.

In light of the limitations of the reports available from the HPP system (see chapter 3), client and staff satisfaction surveys were added to our data collection strategy. Client surveys were conducted in June 2000 and April 2001 in Bismarck; in November 2000 and May 2001 in Cheyenne; and in March–April 2001 in Reno.³ Client satisfaction surveys were brief, short-answer forms distributed at the partner programs for a two-week period.⁴ Site managers coordinated the distribution and collection of the survey forms. Staff satisfaction surveys were conducted by telephone or personal interview and were limited to users of the HPP system (i.e., administrators and clinicians who did not work directly with HPP did not complete surveys).

Throughout the demonstration, the program and technical evaluators coordinated their activities and preliminary findings. The technical evaluation asks, “Does the system work the way it was designed?” The answers to that question are critical to understanding how HPP affects efficiency, quality, empowerment, and client/user satisfaction. For example, the technical evaluation addresses issues such as length of time for equipment repairs, amount of time needed to replace equipment, quality of Help Desk answers, and percentage of time the system is down. Clearly, this information is critical to understanding the qualitative information provided by staff and clients about their satisfaction with HPP.

Thus, the evaluation draws from multiple sources of data at several points in time. Each source of data has its limitations, though. HPP server data do not clearly indicate type of service and may contain duplicate counts. Client surveys were voluntary, and the response rate was low in relation to the total number of card users. The number of respondents in the staff survey is small, reflecting the small size of many of the partner programs. Of those staff responding on surveys, many had limited experience using HPP because of part-time schedules, delayed implementation of HPP, or low utilization by HPP participants.

1.4 Demonstration Context

A demonstration can provide valuable lessons about a new technology, project, or approach while limiting long-term commitment or cost, but it does not precisely simulate full-scale deployment. Demonstration data cannot provide an accurate estimate of the costs of full-scale, steady-state operation because the conditions of the demonstration are different from those of a permanent installation of new technology or procedures.

By definition, a demonstration is time-limited. Therefore, participating programs limit their reengineering efforts and their investments (time, financial, and emotional) in the new system because it may “go away” at the conclusion of the demonstration. The HPP demonstration evaluation was limited to 18 months (12 months in Reno) and was even shorter for some applications. However, adapting to change takes time, especially when both staff and clients are learning to use a new technology. The results of this demonstration evaluation can address only the earliest responses to HPP and cannot provide a full picture. The focus of attention was on

³ Because of staff turnover and the vacancy of the site manager position in Reno at the time of our November 2000 visit, only one set of client surveys was completed.

⁴ The client surveys did not include any information that could be used to identify individual respondents. In Reno, survey forms were available in English and Spanish.

implementing this complex demonstration, which required considerable energy, commitment, and cooperation from all partners. As a result, less time and attention were paid to full-scale operation of HPP during the period of our evaluation than could be expected in an ongoing deployment with a clear long-term commitment.

1.5 Organization of This Report

The chapters that follow provide background about the HPP demonstration at each site, followed by evaluation findings. Appendices provide additional detail on the study methods, demonstration sites, and cost information for the demonstration. Chapter 2 describes the HPP implementation timeline and approach in each site. Chapter 3 presents our findings on system operations. Chapter 4 describes provider and retailer response. Chapter 5 addresses client response. Chapter 6 concludes the report with a summary of key findings and lessons learned.

2.0 Overview of Implementation Approach

System development and implementation of HPP was a lengthy and complex process, resulting in a demonstration that added partners and functions over an extended period of time. The history of the project is well-documented in the Interim Report of the technical evaluation.⁵ This chapter describes key aspects of the overall project organization, as well as HPP implementation in each site, in order to provide the context for understanding the evaluation findings presented in subsequent chapters.

2.1 Project Organization and Management

The HPP has a highly complex organization, with participants in both the public and private sectors. In addition to the program participants (clients), the local partner programs at each site, and the two evaluation contractors (Urban Institute and MAXIMUS), the principal groups of participants represented are:

- federal partners,
- state partners,
- private partners,
- system development contractors, and
- Western Governors' Association project staff.

Federal partners, who provided funding and technical assistance on the project, were the Public Health Service; Centers for Medicare and Medicaid Services; Maternal and Child Health Bureau; Head Start Bureau; Centers for Disease Control and Prevention; National Library of Medicine; Department of Agriculture, Food and Nutrition Service/WIC program; and General Services Administration. State partners included representatives from each of the HPP demonstration states: North Dakota, Wyoming, and Nevada. In North Dakota the partners were Medicaid of North Dakota, the North Dakota WIC program, the Optimal Pregnancy Outcome Program (OPOP), and the North Dakota immunization program. State partners in Wyoming were Wyoming Maternal and Child Health Services (MCH), the Wyoming Medicaid program, the Wyoming WIC program, the Wyoming Food Stamp program, and the Wyoming immunization program. State partners in Nevada were the Nevada immunization program and the Nevada WIC program. The Inter-Tribal Council of Nevada (ITCN) WIC program and Community Services Agency (CSA) Head Start were also partners in Reno.

In addition, many private partners contributed both financial and in-kind resources to the project at each of the three demonstration sites. These partners included a major immunization manufacturer, an insurance carrier, and health care providers.

The contract to provide the requisite services to design and operate the HPP system was awarded to Siemens Business Communications, Inc., which became the primary contractor for delivery of services. Siemens, in turn, initiated a number of subcontracts for the delivery of specialty areas of service within the scope of the overall contract requirements, such as provision of the EBT

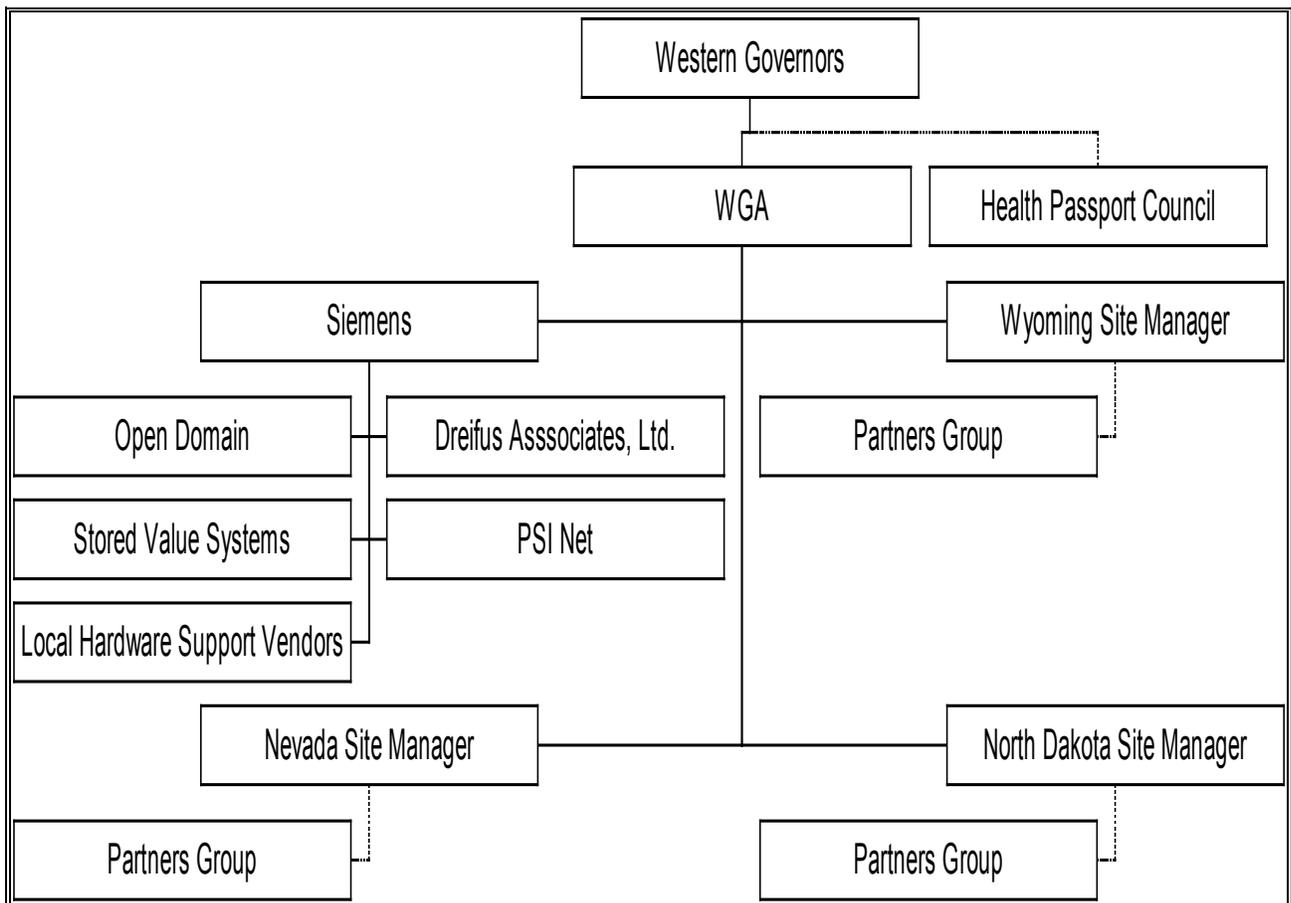
⁵ MAXIMUS. July 2, 1999. *Technical Evaluation and Support for Multi-Application Smart Card Pilots*. Rockville, Md.: MAXIMUS.

systems in Nevada and Wyoming (Stored Value Systems), provision of EBT customer service (Stored Value Systems), provision of the HPP Application Programming Interface (API) (Open Domain), provision of the HPP central server application (Open Domain), design of the HPP data set (DAL), design of HPP card data structures (DAL), and development of training materials (DAL).

WGA served as the umbrella agency for the project—WGA signed the contract for the system and represented the states’ interests. WGA provided an overall Project Manager and a site manager for each of the three sites, as well as some additional part-time staff support for the Cheyenne demonstration.

Exhibit 2-1 provides an overview of the project organization. This exhibit illustrates both the project management and vendor relationships.

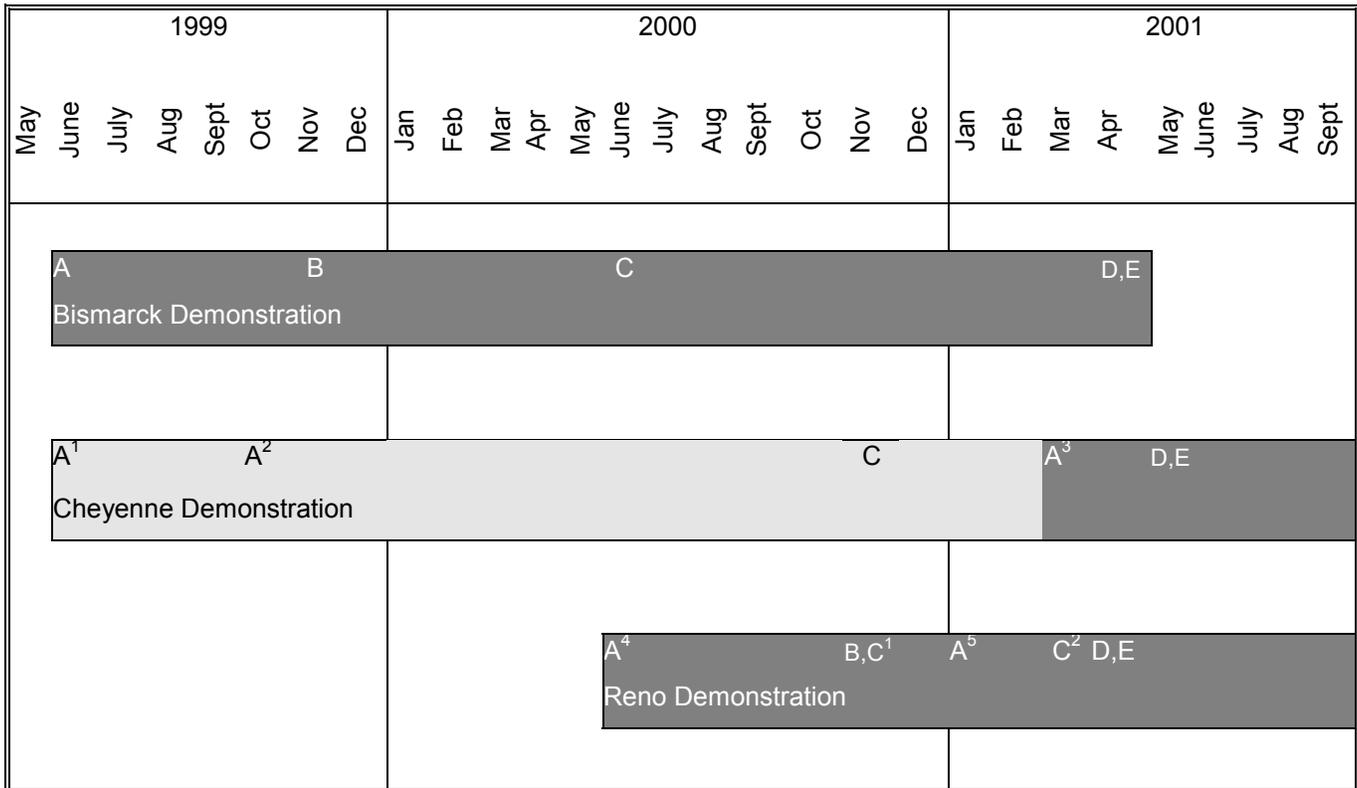
Exhibit 2-1: HPP Project Organization



The challenge of coordinating the interests and monitoring the activities of so many participating organizations was anticipated at the outset of the project. To address this challenge, a council was established as the governing body for the overall project. The HPP Council consisted of representatives from field demonstrations, clients, state program administrators, federal program officials, private sector partners, and technical experts. It was considered critical that the council be an independent authority in making key decisions with regard to the creation of open operating guidelines, open systems, and other issues. The council was to be the policy-making HPP body and provide decision-making support to WGA. The WGA Project Manager established, managed, and conducted meetings of the HPP Council. The HPP Council met several times in the early stages of the HPP design phase and reconvened during the evaluation phase. Ultimately, WGA, the HPP project manager, and the site managers assumed primary responsibility for implementation and contract-monitoring activities.

Exhibit 2-2 shows the staged implementation of the HPP demonstration and key points in the program evaluation. Schedules, partner programs, and HPP applications varied at each demonstration site. Site profiles in this chapter summarize HPP features and program size in Bismarck, Cheyenne, and Reno. Chapter 3 describes the technical features of the HPP application in each site.

Exhibit 2-2: Implementation Time Line



- A Launch
- A¹ Health Department and Head Start
- A² Cheyenne Children's Clinic
- A³ WIC
- A⁴ Washoe County WIC, ITCN WIC, and Immunizations
- A⁵ Head Start
- B Early Implementation Site Visit
- C Staff and Client Surveys #1
- C¹ Only staff surveys were completed in November 2000
- C² Client surveys for Reno
- D Site Visit
- E Staff and Client Surveys #2 (No Client Surveys were completed in Reno in April 2001)

2.2 Bismarck HPP Demonstration

Key points about the Bismarck HPP demonstration:

- Bismarck was the first site to launch the HPP demonstration.
- EBT was not part of the demonstration.
- Several partner programs operate on a part-time basis and many participating staff are part-time employees.
- Bismarck was the only site that had a single site manager from the very beginning of the project.

Site Background

Bismarck, the capital of North Dakota, is a city of about 55,000.⁶ It is located in Burleigh County, which has a population of more than 69,000.⁷ Mandan, just across the river from Bismarck, is a city of about 16,000.⁸ From the Bismarck area, it is 100 miles to the nearest large town or city in three directions. Over the period of the demonstration, Bismarck experienced an economic boom, with an unemployment rate of roughly 2 percent. (See appendix B for further socioeconomic and demographic data on Bismarck, Burleigh County, and North Dakota.) The area has seen an increase in population as people move from rural areas to Bismarck for jobs. Most of the new jobs are part-time, low-wage positions with no benefits.

Bismarck's population is primarily white, with minority populations of Native Americans and Bosnian immigrants. Two major medical centers serve Bismarck and central North Dakota: MedCenter One, one of whose practices is participating in HPP, and St. Alexius Medical Center. Because of the small size of the city, there is a sense of community, and all respondents agreed that coordination among service providers is good.

HPP Partner Programs

Local partners in Bismarck are:

- Burleigh County WIC Program,⁹
- MedCenter One Family Doctors,¹⁰
- Bismarck Early Childhood Education (Head Start) Program, and
- Bismarck Burleigh Nursing Service (BBNS),¹¹ including
 - Optimal Pregnancy Outcome Program (OPOP),
 - Health Tracks Program,¹² and
- North Dakota State Immunization Program.

Clients are required to come to the WIC office once a month to pick up food checks and milk tickets and to participate in nutrition education. The WIC program still prepares checks manually

⁶ Metropolitan Area and Central City Population Estimates for July 1, 1999.
<http://www.census.gov/population/estimates/metro-city/ma99-05.txt>. (Accessed June 2001.)

⁷ U.S. Census Bureau. State and County *Quick Facts*.
<http://quickfacts.census.gov/qfd/states/38/38015.html>. (Accessed June 2001.) Estimates are for 2000.

⁸ <http://www.cityofmandan.com/demographics/demographics.html>. (Accessed July 2001.)

⁹ Currently known as Custer Health WIC, but referred to throughout this document as Burleigh County WIC, the name that was in use during the demonstration period.

¹⁰ Currently known as Family Medical Center South, but referred to throughout this document as MedCenter One Family Doctors, the name that was in use during the demonstration period.

¹¹ Currently known as Bismarck Burleigh Public Health, but referred to throughout this document as Bismarck Burleigh Nursing Service (BBNS), the name that was in use during the demonstration period.

¹² Medicaid's Early Periodic Screening, Diagnosis, and Treatment (EPSDT) program is known in North Dakota as Health Tracks.

(i.e., vouchers are not computer-generated), so participants must purchase all WIC items for the month at once. The Family Doctors clinic, which is part of the larger MedCenter One umbrella, is a small private practice that sees patients of all ages, especially young families. Head Start is located in one stand-alone building and two elementary schools. The Bismarck Head Start program has two registered nurses on staff. They are responsible for health screenings and assessments, including height, weight, and hemoglobins, and for administering medications.

BBNS is the city-county public health nursing service that oversees OPOP, Health Tracks, and Immunizations, among other programs. OPOP is a state-funded prevention program for pregnant women, designed to increase access and utilization of comprehensive prenatal care services. OPOP is intended to augment primary physician care, not replace it. The main goal of the program is education, accomplished through a three-pronged approach involving a nurse, a social worker, and a WIC nutritionist. Medicaid is billed for OPOP services (when appropriate), which include prenatal care and two postnatal follow-up appointments. The program operates four days a month. Nurses conduct Health Tracks screenings three days a week at BBNS and once a month at the WIC clinic. The immunization program is also staffed by nurses at BBNS and serves the Bismarck-Burleigh population. The nurses administer immunizations at BBNS four times each month. For five years, BBNS has offered immunization clinics twice a month at WIC. The nurses also visit Head Start twice a year to provide immunizations. Bismarck's Head Start program is under the umbrella of the Bismarck Early Childhood Education Program, a division of the Bismarck Public School System.

Implementation

Exhibit 2-3 presents a profile of the demonstration in Bismarck. HPP was officially launched in Bismarck on June 2, 1999, at the WIC program offices. The other partners were added over the next three weeks (week 2: OPOP; week 3: Immunizations; week 4: MedCenter One and Head Start). This staggered launch worked well because there were not enough people to help with the launch at all sites simultaneously. Facility administrators at each partner program made decisions about which data elements and features to include in the system for their program.

Kiosks were installed in early October 1999. In late October 1999, upgrades were made to the HPP system that noticeably increased the speed of reading the cards. In November 1999, WIC started activating the magnetic stripes on the HPP card so that the cards could be used to verify Medicaid eligibility.

2.3 Cheyenne HPP Demonstration

Key points about the Cheyenne HPP demonstration:

- Initial implementation of HPP was very limited and programs were added slowly, with the WIC launch occurring shortly before the end of the demonstration period.
- WIC clients, staff, and retailers had prior EBT experience using the PayWest smart card.¹³
- WGA provided staff to assist in the implementation.

¹³ PayWest is a smart card for WIC and Food Stamps EBT that was first piloted in Laramie County, Wyoming, and is now in use statewide.

Site Background

Cheyenne, the capital of Wyoming, is a city of about 54,000.¹⁴ It is 90 minutes north of Denver, Colorado, in Laramie County, which has a total population of more than 81,000.¹⁵ The population is about 89 percent white, 11 percent Hispanic, 3 percent African American, about 1 percent Asian, and about 1 percent Native American.¹⁶ Although the unemployment rate in Cheyenne is only about 3 percent, Wyoming has not experienced the economic growth that has occurred in most states in recent years. (See appendix B for further socioeconomic and demographic data on Cheyenne, Laramie County, and Wyoming.)

Wyoming has had WIC and Food Stamps EBT since spring 1995, using smart card technology. In participating programs in the Laramie County demonstration, HPP replaced the PayWest card.

The primary source of health care for most WIC clients is Public Health Nursing at the City-County Health Department or private providers. Many private physicians accept Medicaid, and the Afternoon Children's Clinic (ACC) at the City-County Health Department serves low-income families. Managed care has not made large inroads in Wyoming.

HPP Partner Programs

HPP partners for the demonstration are:

- Laramie County WIC,
- Cheyenne Children's Clinic (CCC),
- Laramie County Public Health (City-County Health Department),
- Laramie County Head Start, and
- Retail grocers.

Laramie County WIC is located in the City-County Health Department building. Clients are issued benefits for two to three months and must be recertified every six months. CCC is a private pediatrics clinic, the only strictly pediatrics clinic in Cheyenne. About 30 percent of CCC patients are on Medicaid. The City-County Health Department provides a range of child and adult health services. Services participating in the HPP demonstration include the ACC, which provides care for children under age 6; the immunization clinic; Best Beginnings, a referral and prenatal education program; and coordination of Early Periodic Screening, Diagnosis, and Treatment (EPSDT) screening. The main Head Start center is at Warren Air Force Base. Head Start also operates one satellite center in Cheyenne. Provider respondents generally reported that services are available in the community and that coordination is very good for a majority of

¹⁴ Metropolitan Area and Central City Population Estimates for July 1, 1999.
<http://www.census.gov/population/estimates/metro-city/ma99-05.txt>. (Accessed June 2001.)

¹⁵ U.S. Census Bureau. State and County *Quick Facts*.
<http://quickfacts.census.gov/qfd/states/56/56021.html>. (Accessed June 2001.) Estimates are for 2000.

¹⁶ People who identify their origin as Spanish, Hispanic, or Latino may be of any race. Thus, the percent Hispanic should not be added to percentages for racial categories.

clients. The co-location of WIC with public health programs in the City-County Health Department building facilitates coordination.

Implementation

Exhibit 2-4 presents a profile of the demonstration in Cheyenne. HPP was launched in June 1999 at the City-County Health Department and at Head Start. The start-up date for CCC was October 1999. A WGA contractor was placed at the City-County Health Department and at CCC to assist staff with HPP implementation. WIC started issuing secondary HPP cards in August 2000, but the WIC EBT on the HPP cards was not launched until March 2001 (WIC EBT had been available through the PayWest card for four years). Although the Cheyenne demonstration officially started in June 1999, telephone interviews conducted in November 2000 indicated that, because of the limited number of clients with cards, staff had few opportunities to use HPP. At that time, no sites were using the appointment function of HPP, and the City-County Health Department and CCC were entering only immunization data on the card. It was only at our final visit in May 2001, shortly after WIC EBT was started, that HPP volume was beginning to increase.

2.4 Reno HPP Demonstration

Key points about the Reno HPP demonstration:

- Reno is by far the largest of the three sites in terms of total population and number of cards issued.
- While Reno has the most participants, it has the fewest partner programs and it is focused primarily on WIC EBT.
- The Reno site experienced significant staff turnover, including the site manager, WIC director, and local immunization program director positions, as well as staff at ITCN WIC.
- Because the Reno implementation was delayed, the period of the demonstration evaluation was shorter than in the other two sites.

Site Background

Washoe County has a population of approximately 340,000,¹⁷ of whom 95 percent live in the Reno-Sparks area, which is densely populated and has few open spaces. The county's population is predominantly white (75 percent); it has a substantial Hispanic population (more than 16 percent)¹⁸ and very few African Americans. Spanish is the native language of a high proportion of service users for HPP partner programs in Reno. A small population of Native Americans live in and around Reno and use Tribal Social and Health Services, including ITCN WIC. The

¹⁷ U.S. Census Bureau. State and County *Quick Facts*. <http://quickfacts.census.gov/qfd/states/32/32031.html>. (Accessed June 2001.) Estimates are for 2000.

¹⁸ U.S. Census Bureau. State and County *Quick Facts*. <http://quickfacts.census.gov/qfd/states/32/32031.html>. and <http://quickfacts.census.gov/qfd/states/00000.html>. (Accessed June 2001.) Estimates are for 2000. Washoe County estimates of the Hispanic population are higher, about 23 percent.

county's economy is based primarily on the gambling industry, with mining, ranching, and warehouse operations the next biggest employers. Unemployment in Reno was 4 percent in April 2001. (See appendix B for further socioeconomic and demographic data on Reno, Washoe County, and Nevada.)

Reno-Sparks has two major hospitals and several major low-cost clinics: Health Access Washoe County (HAWC), St. Mary's Sun Valley Children's Clinic, Neil Road Neighborhood Clinic, Washoe Pregnancy Center, and the Child Health Clinic (part of Washoe County District Health). Many staff mentioned in interviews that Reno has a shortage of pediatricians and dentists. In addition, they stated that many primary care physicians and dentists are unwilling to offer services to Medicaid clients. Recently the state has moved toward mandatory managed care for its Medicaid recipients. It also plans to use funds from the federal Child Health Insurance Plan (CHIP) to expand health insurance to 25,000 additional children living in households with poor working parents.

HPP Partner Programs

Local partners in Reno are:¹⁹

- Washoe County WIC program,
- ITCN WIC program,
- Washoe County immunization program,
- Community Services Agency (CSA) Head Start program, and
- Retail grocers.

Washoe County WIC operates three WIC offices: a main clinic at the Washoe County Health Department and additional clinics in South Reno and Sun Valley. Before WIC EBT, clients received from one to four vouchers per client, each valid for a one-month supply of WIC-certified foods. Clients were required to use the vouchers at a specific store and to purchase all products on the voucher at the same time. ITCN WIC provides services primarily to Native American clients. In Sparks, ITCN offers clinics three times a month and serves both Washoe County residents and residents of other Nevada counties. CSA Head Start serves families in Washoe County and surrounding rural areas. The immunization program is located at the Washoe County Health Department along with the WIC program.

Washoe County WIC actively shares client information with the Washoe County District Health Department. There is a formal referral process, and client information is shared with the Child Health Clinic, Community Health Nursing (CHN), Family Planning, and the Immunization Program. The immunization program has an active relationship with WIC in order to immunize all WIC clients. WIC clients receive coupons for free immunizations (which usually cost \$12). ITCN rarely coordinates or shares information with any providers other than the Indian Health

¹⁹ Because of delays in implementation, two potential partners, Washoe County Pregnancy Center and Reno-Sparks Tribal Health Center, decided not to participate in the demonstration. Program administrators and site managers noted that as a result of the delay in implementation, other potential partners dropped out of the demonstration as well.

Service (IHS) and Tribal Health Services. Most of its clients have access to similar services within their tribal service system and do not participate in other programs involved in the HPP demonstration.

Implementation

Exhibit 2-5 presents a profile of the demonstration in Reno. The demonstration was launched successfully in June 2000, including the WIC EBT application. Implementation began with Sun Valley WIC, followed by ITCN WIC, South Reno WIC, and Washoe County Health Department WIC within a two-week period. HPP was implemented at the immunization program in the second half of June. Head Start was launched in January 2001. Because WIC did not have EBT before the demonstration, HPP provided an added convenience with less stigma for WIC clients, giving them a wide choice of grocery stores and the ability to purchase WIC items in smaller quantities throughout the month rather than all at once, using a PIN-secured card.

Exhibit 2-3: Bismarck Site Profile^a

Total Cards Issued through May 31, 2001: 2,348 ^b			
Partner Programs:			
Program	# Locations	Enrollment/ Participation	HPP Features Used
WIC	1	942 ^c	Card issuance Demographic information Appointments Medicaid authorization Health information
BBNS			
OPOP	1	180 ^d	Card issuance Demographic information Appointments Health information
Immunizations	1	243 client contacts ^d	Immunization information
Health Tracks	1		Demographic information Appointments Health information Immunization information Custom reports
Head Start	1	270 ^e	Card issuance Health information Immunization information
Family Doctors ^f	1		Immunization information Appointments
Kiosk Locations: Head Start WIC Dan's Supermarket Dan's Supermarket, South			
Key Implementation Dates: June 1999 Launch October 1999 Kiosks installed Late October 1999 System upgrades November 1999 Early implementation site visit November 1999 Magnetic stripes added to cards for Medicaid eligibility April 2001 New Head Start software installed			

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children; BBNS = Bismarck-Burleigh Nursing Service (now called Bismarck Burleigh Public Health); OPOP = Optimal Pregnancy Outcome Program.

^a See appendix B for additional site and state demographic and descriptive information.

^b *Source:* Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.)

^c *Source:* North Dakota WIC program, February 2001.

^d *Source:* North Dakota WIC program, February 2001.

^d *Source:* BBNS Quarterly Report, fourth quarter 2000; does not provide number of clients—some clients may have had more than one contact.

^e *Source:* Staff interviews, April 2001.

^f Now called Family Medical Center South.

Exhibit 2-4: Cheyenne Site Profile^a

Total Cards Issued through May 31, 2001: 991^b			
Partner Programs:			
Program	# Locations	Enrollment/ Participation	HPP/EBT Features Used
WIC	1	1,620 ^c	Card issuance Demographic information Appointments Health information Immunization information EBT
Cheyenne Children's Clinic	1	150–200 patients per day ^d	Demographic information Health information Immunization information Pending update
City-County Health Department	1		Card issuance Demographic information Health information Immunization information Pending update Custom reports
Head Start	2	212 ^e	Card issuance Demographic information Health information Immunization information Appointments
Retail grocers	43		EBT Inquiry terminals Appointments
Kiosk Locations: Head Start Public Health Nursing at City County Health Department Public Library United Medical Center			
Key Implementation Dates: June 1999 Launch at City-County Health Department and Head Start October 1999 Launch at Cheyenne Children's Clinic August 2000 Started issuing HPP secondary cards March 2001 WIC EBT launched—primary cards issued to all new participants			

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children; EBT = electronic benefits transfer.

^aSee appendix B for additional site and state demographic and descriptive information.

^bSource: Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.)

The number of cards issued in Cheyenne includes PayWest cards to which HPP was added, captured by the server transaction "Add HPP to Card."

^c Source: WIC Report, April 2001.

^d Source: Staff interviews, May 2001. Of these, only three to four patients per month have HPP.

^e Source: Staff interviews, April 2001.

Exhibit 2-5: Reno Site Profile^a

Total Cards Issued through May 31, 2001: 8,549^b			
Partner Programs:			
Program	# Locations	Enrollment/ Participation	HPP/EBT Features Used
Washoe County WIC	3	6,719 ^c	Card issuance Demographic information Appointments EBT Health information
ITCN WIC	1 ^e	211 ^e	Card issuance Demographic information Health information Appointments EBT
Immunizations	1	21,565 ^d	Immunizations
Head Start	1	300 ^f	Card issuance Demographic information Health information Immunizations
Retail grocers	30		EBT Inquiry terminals Appointments
Kiosk Locations: Public Library-Reno Public Library-Sparks WIC-Health Department WIC-South Reno WIC-Sun Valley			
Key Implementation Dates: June 2000 Launch for WIC, ITCN WIC, Immunizations January 2001 Head Start launch			

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children; EBT = electronic benefits transfer; ITCN = Inter-Tribal Council of Nevada.

^aSee appendix B for additional site and state demographic and descriptive information.

^b Source: Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.)

^c Source: Staff interviews, November 2000.

^d Source: Site visit, November 2000. Total number of persons (including adults) immunized: District Health Department, 1999.

^e Source: Staff interviews, November 2000. There are several ITCN WIC locations—only one is participating in HPP.

^f Estimated number of children served. Source: Staff interviews, April 2001. The estimated number of families served in Washoe County is 435 for the five-county area.

3.0 Does It Work? Summary of System Operations

The HPP system is up and running successfully in all three pilot sites. Although there were some initial implementation problems, the technical operation of the system has improved over time. Initial problems with card response time have been overcome. The health component is functioning successfully in Bismarck, Cheyenne, and Reno. The EBT component is functioning in Cheyenne²⁰ and Reno, although some technical problems have been encountered in the retailer operations in Reno.

As is typical for a complex pilot of a new technology, the HPP system has strengths and weaknesses. The next section of this chapter provides an overview of the myriad components of the HPP system, to serve as background for the technical evaluation that follows. The remaining sections describe the technical capabilities of the system, pointing out both successes and some technical limitations that should be addressed before future expansion of the HPP system takes place.

3.1 Overview of the Health Passport System

The Health Passport system is a health information management and benefit delivery system that enables health care providers to share client information and allows retailers to provide food benefits to clients electronically. The Health Passport system consists of a Health Passport card, special card readers attached to the health providers' personal computer (PC) applications or retailer's in-lane checkout systems, servers to maintain backup databases, kiosks, and a network. The Health Passport card contains demographic, medical, and benefit information (for the pilot sites with WIC EBT) for clients participating in the project. The HPP is composed of the following applications:

- **HPP Application.** The HPP application provides users with functions for reading and writing data to a smart card. The HPP application allows data to be stored to a local database on the provider's PC or network of PCs. At the end of the day, aggregated transactions are sent to a central database housed on the HPP server, where they are maintained for backup and for reporting purposes. The HPP application exists in two configurations:
 - **Stand-Alone HPP Application.** The stand-alone HPP application runs alone on a computer in a provider's office and is not integrated with any existing applications. The HPP application can run on a single PC or on a server with a local area network (LAN) providing access to multiple computers.
 - **Integrated HPP Application.** The integrated HPP application allows the user to read data from or write to the HPP card through an existing (legacy) information system (thus avoiding double data entry for staff). Data from the legacy system and the card are compared to determine the most accurate and up-to-date information. The user may choose to write data to the card from the legacy

²⁰ Wyoming had implemented the delivery of WIC EBT via the PayWest card before HPP. During the HPP demonstration, both PayWest and HPP cards were accepted at retailer point of sale (POS) terminals for EBT transactions.

system. Alternatively, the user may choose to update the legacy system with data from the card.

- **WIC EBT Application.** The WIC EBT application allows WIC food prescriptions to be written to and read from the HPP card. At the WIC clinic, benefits are authorized in the WIC eligibility system and sent to the WIC EBT server. From the WIC EBT server, the benefits are downloaded to three cardholder-selected retail stores. (Once benefits are downloaded, the client can shop at any participating store). At the retailer, the cardholder accesses a benefit inquiry terminal at which the downloaded benefits are written to the HPP card. At the check-out counter, Point of Sale (POS) devices read the card and obtain the WIC prescription from the card. As eligible WIC items are scanned, the WIC prescription is decreased and the remaining balance is written back to the card. WIC EBT transactions are aggregated and sent to the EBT processor at the end of the day. The EBT processor, in turn, debits the cardholder's account and credits the retailer through electronic funds transfer.
- **Kiosk Application.** The kiosk application operates on freestanding kiosk machines placed in the community. This application allows the card to be read and the cardholder to view benefits, appointments, health information, and other program information through a touch screen. It also allows the printing of reports, such as an immunization certificate, in hard copy.
- **HPP Application Programming Interface (API).** The HPP API is software that allows data to be read from or written to the card through an existing (legacy) system. The HPP API also performs other card and user management functions, containing commands that can be used to interact with the smart card.

Throughout this document, the term HPP system refers to the comprehensive system, including all applications and hardware components. The HPP application refers only to the health component, and the WIC EBT application refers only to the benefit delivery component. The next section details the architecture of the HPP system.

3.2 HPP System Technical Architecture

Exhibit 3-1 provides an overview of the architecture of the HPP system. The HPP system includes the following components:

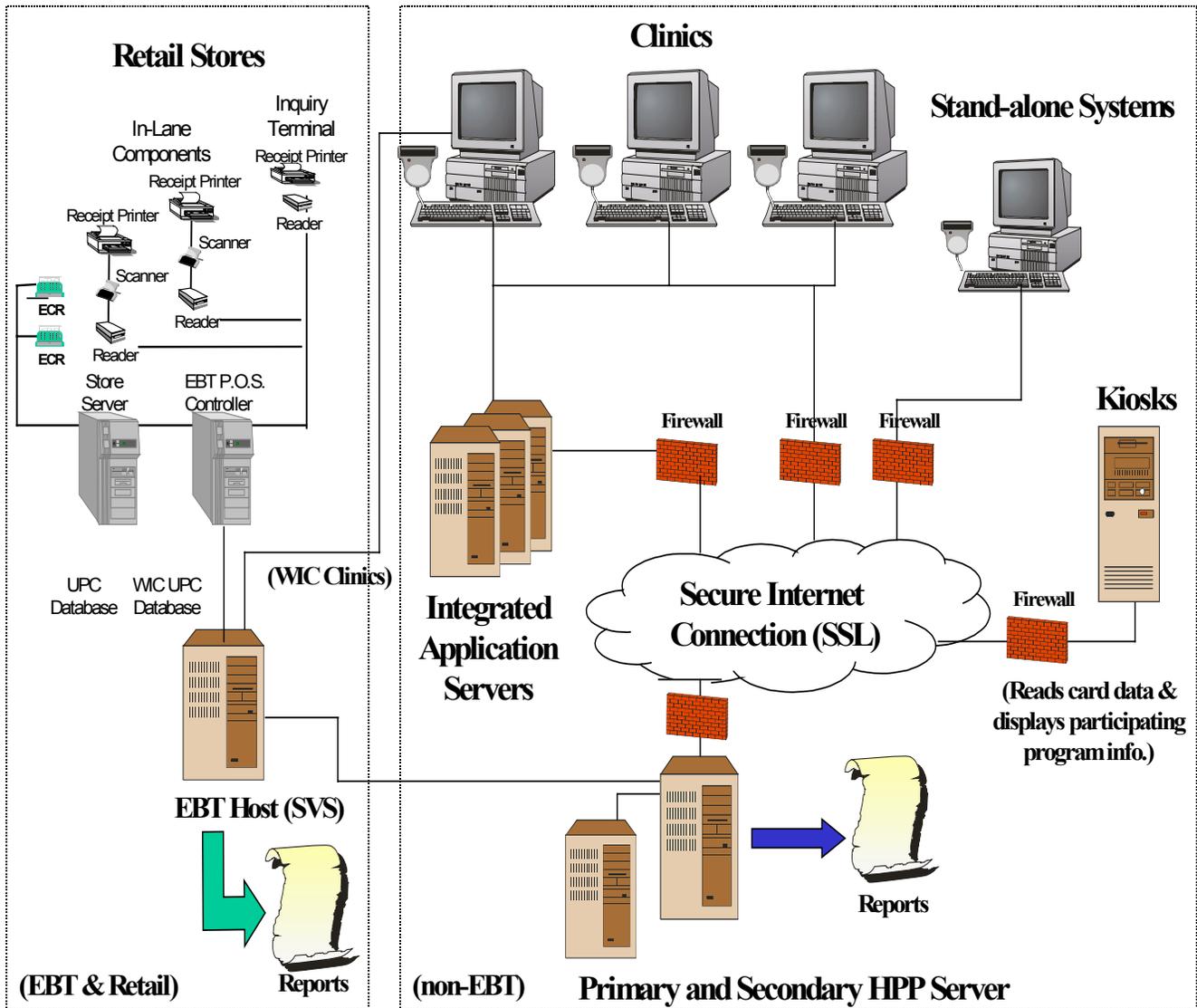
- **Card.** A card contains an 8K integrated circuit chip that is used to carry demographic, health, and benefit information, as well as a magnetic stripe for Medicaid eligibility information.²¹
- **Smart Card Reader.** This is a device used to read from and/or write to the smart card. The smart card reader is linked to the workstation hosting the HPP and WIC EBT applications. The reader has a PIN pad and a liquid crystal display (LCD) that is attached to the serial port of the PC.

²¹ Because it contains both an integrated circuit chip and a magnetic stripe, the HPP card is called a "hybrid."

- **Smart Card Printer.** Printers are used to personalize the smart card with a user's or client's name (and, optionally, other information).
- **HPP Workstation.** The HPP stand-alone or integrated application runs on a PC with a Pentium processor running Windows 95 or Windows NT 4.0. The PC is either stand-alone or connected to a LAN. The PC runs the HPP turnkey application or an integrated HPP application. If the PC is not networked, it is equipped with a modem to provide connection to an Internet service provider (ISP). Each day the workstation has an exchange with the HPP host or the EBT host. The daily exchange includes dial-up to the ISP, upload (send to the host) of the daily transaction log and download (receive from the host) of the hot card list (a list of cards reported lost or stolen). If the workstation is networked on a LAN, then one of the PCs (preferably the server or any HPP workstation with a modem and connection to an ISP) will be assigned as the gateway to the HPP server. In this case, the server collects all transactions in a shared file, and also stores the hot card list in a file that is shared among all connected HPP workstations. The workstation uses Internet Explorer 4.0 to access the Internet.
- **HPP Server.** The HPP server maintains a central database of HPP transactions from all participating clinics. These data are used for backup and for generating server reports. The HPP server runs under Windows NT 4.0 server. Internet access is secured by a firewall (Raptor). The server runs Microsoft's Internet Information Server (IIS) V3.0 and provides Web services for HTTP, HTTPS, and HTTP-FTP protocols. In addition to the firewall, the IIS provides client and server authentication via Secure Socket Layer (SSL) V3. Any client access for transaction logging and data downloading to an HPP workstation requires client and server authentication. The Health Passport data center consists of a router, a firewall, and the HPP primary and backup servers.
- **Legacy System Server.** Some legacy systems with which the HPP application is integrated, such as the Head Start Family Information System, run on a local server.
- **Secure Internet Connection.** The Internet is the primary means of connectivity for the Health Passport system. During the end-of-day settlement process, PCs at the health provider locations download their daily transaction log (containing updated client records for that day) to the HPP server via the Internet. Conversely, the same PCs may receive an updated card list from the HPP server through the Internet. PCs are configured to auto-dial the Internet. System information is carried securely over the Internet using the SSL V3 standard and additional file encryption.
- **Kiosks.** The kiosks are easy-to-use public access terminals at which cardholders may view the contents of their HPP card, print reports containing data from their card, view appointment information, and inquire about the balance of their WIC EBT benefits. The kiosks use touch-screen technology and are connected to the HPP server over the Internet. The HPP kiosk consists of an enclosure with a light box (for signage), a touch screen display, a smart card reader, a PIN pad, a printer, a central processing unit (PC), and a universal power supply (UPS). Kiosks are remotely monitored; they are polled daily to ensure that they remain operational. If this remote monitoring detects a problem, the service contractor is automatically notified.

Exhibit 3-1: Overview of HPP System Architecture

The Health Passport System Design



In addition, exhibit 3-1 shows the WIC EBT components of the HPP system:

- EBT POS Controller.** The EBT POS controller is located in a retail store. It provides connectivity between the retail store and the EBT processing host, to each of the EBT-equipped lanes (an equipped lane consists of a smart card reader, a scanner, and a receipt printer), and to one inquiry terminal (consisting of a smart card reader and a receipt printer).
- Card Management System (CMS) Workstation.** The CMS workstation is located in the WIC office, delivering benefits using EBT mechanisms. The CMS has peripherals, in

some cases, similar to the retail environment (e.g., scanner and receipt printer) for the purposes of client and staff training.

- **EBT POS Device/WIC Receipt Printer.** In each lane, there is a smart card-enabled POS device to read the smart card. This device has an attached PIN pad and LCD display. There is also a receipt printer.
- **Inquiry Terminal.** The inquiry terminal is a combination of a smart card reader and a receipt printer in a retail store that allows WIC recipients to print their WIC prescription balance, load benefits, and obtain a printout of their appointments. The inquiry terminal is connected to the EBT POS controller, which provides the processing necessary for benefits to be loaded to a client's card at the terminal. The inquiry terminal is typically located at or near a customer service counter.
- **Hand-Held Scanner.** A hand-held scanner is used in a WIC stand-alone system to scan items to determine their eligibility for WIC.
- **EBT Processing Host.** This is the server used to maintain a central database of benefits issued and used. The EBT host maintains the client accounts, generates EBT reports, and performs settlement. The WIC clinic system sends the EBT host the benefit authorization file. The EBT host receives uploads of EBT transactions from the EBT POS controller. It provides downloads to the store EBT controller of the hot card list and staged benefits to be loaded onto the HPP card. The EBT host performs the settlement of EBT transactions, debiting client accounts and crediting merchants' bank accounts through the automated clearinghouse.

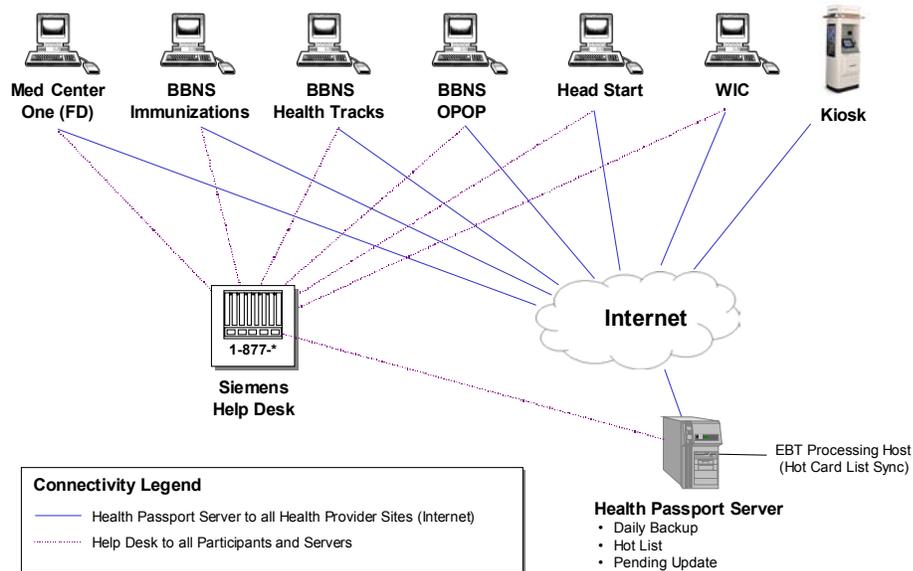
The following sections describe the individual site architectures.

Bismarck Configuration

The Bismarck demonstration has only the HPP application and a Medicaid eligibility component; it does not have an EBT component. Exhibit 3-2 illustrates the configuration in Bismarck, consisting of:

- Burleigh County WIC program—Integrated HPP application (WIC eligibility system in Clipper) running on a LAN that issues cards, as well as encoding Medicaid identification information on the magnetic stripe of the HPP card;
- BBNS Immunizations—Integrated HPP application (NDIIS) that shares information with the North Dakota State Immunization Registry;
- BBNS Health Tracks (EPSDT)—Stand-alone HPP application on stand-alone PC;
- BBNS OPOP—Stand-alone HPP application on stand-alone PC;
- MedCenter One—Stand-alone HPP application on stand-alone PC;
- Head Start—Integrated HPP application running on LAN with Head Start Family Information System (HSFIS) file server; and
- Four kiosks.

Exhibit 3-2: HPP System–Bismarck Configuration



System Configuration

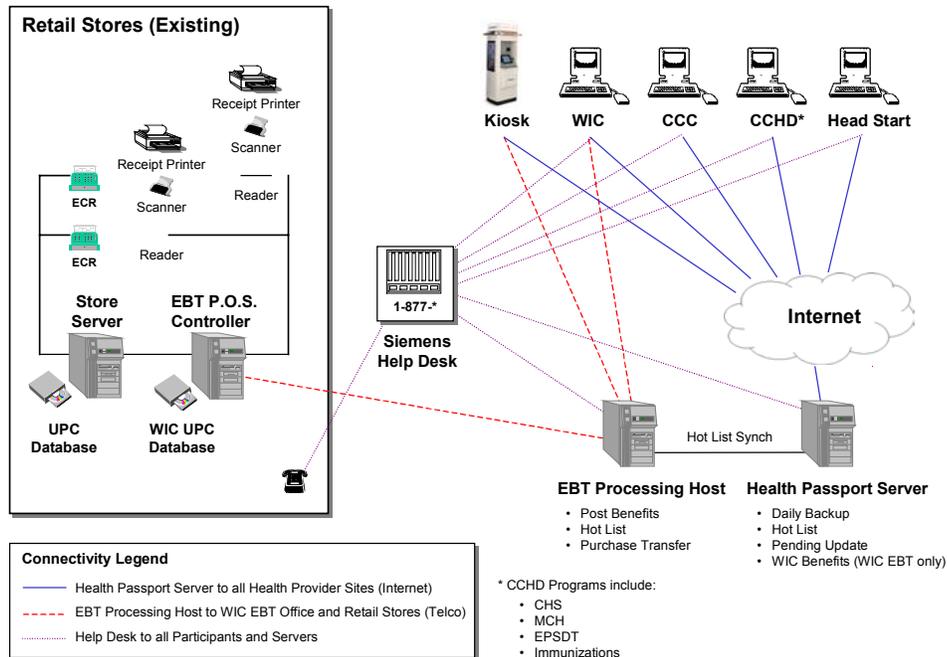
Source: DFS v1.5 Section 3 (8/28/98)

Cheyenne Configuration

The Cheyenne demonstration has both HPP and WIC EBT applications. Cheyenne also requires an interface to the existing PayWest WIC EBT card within the WIC office and the existing PayWest retail stores in Laramie County. Exhibit 3-3 shows the configuration in Cheyenne, which has the following sites:

- Laramie County WIC Program—Integrated with WIC system server/EBT processing host;
- City-County Health Department (County Health Services, MCH, EPSDT, and immunization programs)—Stand-alone HPP and integrated HPP application with State Immunization Registry;
- Cheyenne Children’s Clinic (CCC)—Stand-alone HPP;
- Laramie County Head Start—Integrated HPP with HSFIS server;
- WIC EBT in the retail environment; and
- Four kiosks.

Exhibit 3-3: HPP System—Cheyenne Configuration

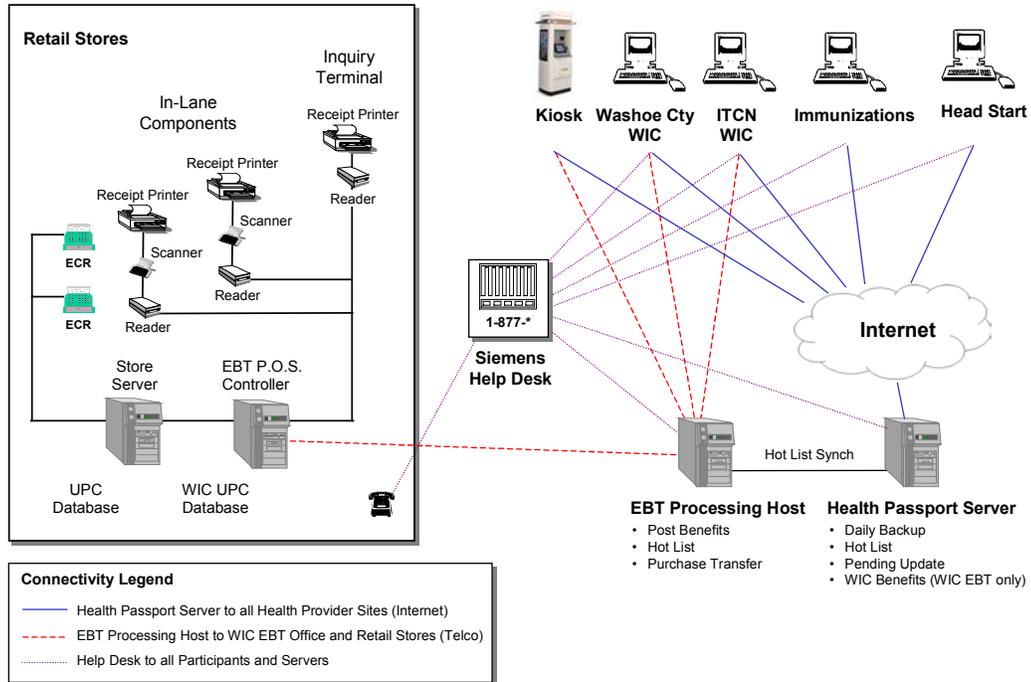


Reno Configuration

The Reno demonstration includes both the HPP application and the WIC EBT application. Exhibit 3-4 shows the configuration of the Reno site, which has these components:

- Washoe County WIC Program—Integrated HPP application with the WIC certification system running on a LAN with the WIC file server, as well as a dial-up line to the EBT processing center;
- Washoe County immunization program—Integrated application with the Nevada State Immunization Registry;
- CSA Head Start—Integrated HPP application running on LAN with HSFIS file server;
- ITCN WIC Program—Integrated HPP application (WIC certification system) running in a stand-alone PC environment and dial-up Telco connection to the EBT processing host;
- WIC EBT in the retail environment; and
- Five kiosks.

Exhibit 3-4: HPP System–Reno Configuration



To summarize, in addition to the stand-alone HPP and WIC EBT applications, the following integrated applications are part of the HPP system:

- WIC program, North Dakota, DOS-based dBase application;
- THOR (The On-Line Resource)—immunization program, North Dakota, Win32 Visual Basic application;
- Head Start Family Information System (HSFIS), Win16, Delphi application;
- Health Master immunization program, Wyoming, DOS-based OMNIS;
- WIC program, Nevada, Win32, FoxPro application;
- Immunization program, Nevada, Win32, Visual Basic;
- WIC program Wyoming, DOS-based, FoxPro; and
- HSFIS, Win32, Delphi, second integration.

3.3 Data Center Operations

Two data centers manage the HPP system data: the HPP Data Center and the EBT Processing Data Center. The data centers are geographically separated as well as functionally distinct. A primary communications link between the two centers allows them to synchronize hot card lists and WIB EBT issuance transaction details.

The HPP Data Center manages all demographic, health, and program-related data that are to be found on a given client's HPP card. The HPP Data Center also provides auditing and transaction history processing functions. It has a backup "spare" HPP server that is available if the primary HPP server fails. If all primary drives fail and the primary backup HPP server fails, the operator can restore from backup tapes to bring the backup HPP server online. Backup and recovery from failed transmissions or lost data are handled through a multi-pronged approach. The EBT processor employs error correction and recovery in the communication between the host and the retail and agency systems. Fault-tolerant hardware is used. The data are stored on tape nightly.

The EBT Processing Data Center manages all WIC EBT data and processing on behalf of WIC-eligible clients. This data center handles all EBT processing functions between clients and users at the WIC clinic, between clients and retailers at the store, and between the financial institutions involved in settlement of WIC EBT transactions conducted at retail store locations.

3.4 Help Desk Operation

The Help Desk operation provides ongoing support for the clients, retailers, and staff using the HPP system. It includes an automated response unit (ARU) that answers calls and routes each call to the appropriate Help Desk component, as well as customer service representatives, who answer questions. The Help Desk provides assistance to clients on:

- Lost/stolen cards;
- Application questions;
- WIC EBT balance inquiries;
- Providing replacements of consumables such as printer paper and ribbons;
- Hardware/software/telecommunications malfunctions; and
- Miscellaneous other problems.

As with the data center operations, there are two Help Desk operations: one for the HPP application and one for the WIC EBT application. A call-in number, operated by Siemens, was established to provide a single point of contact for users and cardholders and to triage calls. Calls from clients and providers pertaining to the HPP application are directed to the Siemens HPP Help Desk. WIC EBT calls from clients, clinics, or retailers are transferred to the Stored Value Systems Help Desk.

Under the original contract with WGA, Siemens was to provide Help Desk support for the entire HPP system, including both the HPP and WIC EBT applications. Siemens designed the Help Desk to function in two tiers—the first-level Help Desk and HPP application support was to be provided by Siemens, and the WIC EBT application was to be serviced by Stored Value Systems, under subcontract to Siemens. Open Domain, Siemens's subcontractor, provided second-level Help Desk support, assisting with software or HPP server-related problems.

The Help Desk for the Health Passport system went through an evolution during the pilot. Originally, the Help Desk function was a component of Siemens's prime contract with WGA. Over the course of the project, the Help Desk was moved among several internal divisions of Siemens—initially it was operated at a Siemens location in California through Kenzler Associates, a subcontractor, and then it was moved to Siemens's offices in Massachusetts, where it was operated in-house. Following some problems with the internal Help Desk operations, Siemens subcontracted with Aspen Systems, Inc., to operate the HPP segment of the Help Desk. After this change in Help Desk management, Aspen Systems was responsible for handling initial client calls and either providing support for HPP questions or referring WIC EBT questions to Stored Value Systems. Stored Value Systems continued to operate the Help Desk for retailers, as well as for clients who had WIC EBT questions. On completion of the prime contract with Siemens, WGA contracted directly with Open Domain to provide HPP Help Desk support. Stored Value Systems continues to provide WIC EBT Help Desk services.

3.5 Data Quality

A key component of the technical evaluation of any system is the assessment of the system's capability to ensure that the quality of data maintained in the system is high. Data quality depends on the accuracy, consistency, timeliness, and reliability of the data. Data quality is of critical importance because system users depend so heavily on the accuracy and reliability of data stored in and reported from the system in performing their respective business processes. Different types of data, such as the health data and the benefits data in HPP, are important to different users. But for all users, quality is of the utmost importance. Inaccurate health data could lead to serious consequences for the treatment of patients and liabilities for providers. Inaccurate benefit information could undermine the confidence of cardholders and retailers in the concept of WIC EBT.

Systems depend on editing processes to ensure data quality. Typically, data edit routines are specified in the detailed design of a system and are subject to approval by the user community before they are incorporated into the system. Systems generally make use of the following types of data edits to ensure the quality of data entered and maintained in the system:

- **Data Type.** Data type edits ensure that the “right” type of data (e.g., alphabetic, numeric, and alphanumeric) are entered in the relevant field.
- **Data Format.** Data format edits ensure that data adhere to the defined format (e.g., dates are entered in the format month/day/year).
- **Data Range.** Data range edits ensure that data lie within the allowable range of values defined by the user. For example, a head circumference of 100 centimeters would clearly be outside the acceptable range of head circumference values.
- **Relational Edits.** Relational edits ensure the consistency in meaning among several different data fields. For example, if the value of the “sex” field is “male,” the value of the “client classification” field cannot be “pregnant.”

Enhanced editing procedures in the HPP stand-alone application could have improved the overall data quality of the system, which in turn would have affected the ability of the HPP system to interface with other systems. In addition, enhanced data quality could improve the usefulness of system reports.

Editing

The role of the HPP card is that of a portable data carrier, and the HPP API serves as an extension, giving an integrated program access to data on the card. The HPP API provides field-level or data type edits (i.e., it makes sure a valid date is entered into a date field, numbers are entered in numeric fields, etc.). It does not provide program-specific business logic or relational (i.e., cross-field) edits. The business logic and the burden of edits belong to the integrated program and not to the card interface. Therefore, an integrated program needs to treat data from the card the same way it would treat data entered by a user. To ensure the quality of the data throughout the total HPP system, it is critical that the HPP stand-alone application, as well as all integrated HPP applications, have adequate editing procedures.

Although data type and data format edits were incorporated, additional data range and relational edits were not provided in the HPP stand-alone application. This deficiency had an impact on the data quality in the HPP stand-alone application and on the ability of the system to share data with other integrated applications. For example, when data entered onto the card from the HPP stand-alone application were shared with the integrated HPP/HSFIS system, because of insufficient data edits, the HSFIS system would not accept data from the HPP card. As a result, the system crashed during the initial acceptance testing of the HPP/HSFIS interface in Cheyenne. While the HSFIS developers created a “work around” for this situation, they did not add edits to the HPP stand-alone system to correct this deficiency at that time. The lack of complete data edits in the HPP stand-alone system could continue to compromise integration with new systems in the future. Before the system is expanded beyond the pilot, the evaluators suggest that edit routines in the HPP stand-alone application be enhanced to improve the quality of data input into the overall HPP system.

While program staff were actively involved in the development of the data map, not all legacy system integrators participated in this process. Clearly, all of the integration programmers, who have detailed knowledge of the individual legacy systems to be integrated with HPP, should have been involved in the original development of the card data map and the subsequent design process. The idiosyncrasies of each of the legacy systems could have been accounted for earlier in the process, which would have resulted in a greater level of integration earlier in the systems development life cycle.

Reports

Large-scale, complex systems generally provide several types of reporting capabilities:

- **Standard Reports.** These are predefined report formats that can be routinely requested and generated by the system for individuals or groups of users. Standard reports are generally programmed as part of the system development before the system is delivered to the system owner.
- **Ad Hoc Reports.** These reports are generated on demand, based on user-entered selection parameters. These selection criteria can be a single parameter to find an individual record, or a set of parameters to identify groups of records (e.g., date range combined with program participation codes to identify common programs used by a population over a specified period of time). Typically, either a commercial off-the-shelf report-generator package is used, or the developer includes an ad hoc report capability as

part of the application. Once this capability is provided, no programmers are needed to generate ad hoc reports for clients.

- **Custom Reports.** These are individualized reports requested by a user after the system has been delivered to the system owner. These reports require custom programming for each request.

The design document needed additional attention to reporting requirements. Although the lack of clarity in the report designs in the detailed functional specifications (DFS) was noted repeatedly, the system development proceeded without user confirmation of the reports. Many of the resulting reports are of limited value to managers of partner programs and evaluators. Because of unclear definitions of transaction types, reports on number of transactions can be misleading. There may be no clear way to distinguish between “legitimate” card transactions and other activities. For example, the transaction type “open card” is ambiguous. The open card transaction could be for card tests, opening a wrong card, opening a card to verify that the card had been written to, or a number of other scenarios. Therefore, card-opening and -closing transactions may occur and be counted even when the card is not used for any specific purpose within the clinic environment. If a user makes a mistake in using the system and inadvertently closes a card without saving data, for example, the number of transactions will increase to account for additional openings and closings to reenter the lost data. Other ambiguous transaction statistics are generated for log-on or log-off. Because some computer users log on and off many times a day, these transaction figures are not an accurate reflection of system use. Transaction definitions that may be of interest to a technical evaluator may be meaningless to a clinical service provider. For example, a report indicating that WIC EBT transactions are occurring in Bismarck could be of interest to the technical staff because it might signal some problem with the system. But such a report would be irrelevant to a WIC staff member in Bismarck.

In addition, kiosk use statistics do not clearly indicate the type of activities taking place at the kiosk. Use of the kiosk for non-card-related transactions cannot be differentiated easily from transactions that involve use of a card at the kiosk. Although it is possible to distinguish between card-related and non-card-related transactions by using the session response time, doing so requires custom queries provided by a programmer.

Another problem with the server reports was specific to Reno. Although the ITCN and Washoe County WIC programs are entirely separate, they were treated as a single entity and their data were aggregated by the WIC EBT server. Because the EBT server aggregated data for these two separate entities, statistical information generated by the reports was useless to the staff. In fact, additional time was required for the staff to try to reconcile the WIC EBT server reports, and still these reports provided no meaningful information. The ninth digit on the card primary account number (PAN) could be used in a custom-designed query to create separate reports, but doing so requires additional programmer support. On the other hand, fiscal reconciliation between the two providers for payment of client benefits was working as designed.

In the final round of evaluation interviews, users repeatedly indicated that they did not use the reports provided in the HPP system because the reports did not meet their needs. While the HPP system has the potential for providing information that could be used for better planning by state agencies and program managers, the existing reports do not adequately address this need. Going forward, the evaluators recommend that more emphasis be placed on the uses of aggregate cross-program reports for strategic planning purposes and better resource allocation.

To meet the needs of clinics better, the contractor developed a custom report feature. Up to three ad hoc reports can be defined, grouping card data for a specific purpose such as a medical summary sheet or nutritional information. While this feature is available to all HPP users, it had limited use during the demonstration period. One of the few examples of report use was a customized client report, which was developed by one clinic in Bismarck to update clients' records. While there was early interest in improving the client report, with the goal of replacing the manually completed form in patients' charts, this effort lost momentum because of the small number of HPP clients. A well-child custom report, including immunizations history and other health information, was being used at the City-County Health Department in Cheyenne. Additional training may be required to inform other users of the ad hoc report capability and to encourage its use in the future.

3.6 Downtime/System Availability

The HPP system has proven to be generally reliable, with few, if any, extended periods of outage. Once the system was stabilized in reaction to initial response time problems in Bismarck, downtime has not been an issue. Minor problems with system configurations occurred on several occasions after software was updated, but no long-term outages occurred in the demonstration sites. The only scheduled downtime was for software upgrades, which were scheduled at the least busy times and were not disruptive for the clinics. In recent interviews in Cheyenne, retail grocers perceived that there was very little downtime—far less than they had expected. In the Reno retail environment, system downtime was highly problematic at first. In a survey of retailers conducted by the Nevada WIC program, 30 percent of respondents indicated that downtime was the biggest problem with WIC EBT.²² However, retailers indicate that downtime has improved and now occurs only about once or twice a month.

Hardware Reliability

In general, the hardware components have been reliable; very few replacements were needed within the time frame of the demonstration. For example, in Bismarck, only one monitor and one reader had to be replaced during the entire demonstration period. While problems initially occurred with printers in Bismarck, once they were resolved the printers functioned without incident for the remainder of the demonstration. ITCN WIC in Reno similarly had good experience with the hardware. Local partners rated the HPP equipment easy to maintain and said little staff time was needed to service the equipment, including the kiosks. Retailers in Reno and Cheyenne also reported that maintenance of the WIC EBT equipment was simple and did not take much time.

Retailers in Cheyenne said there had been very few card reader problems or component failures since HPP was installed. Interview results indicated no component failures in Cheyenne.²³ Help Desk reports confirm that, despite occasional terminal and printer calls, relatively few calls resulted from hardware problems. During the period from October 1999 to April 2000, Help

²² Nevada WIC EBT retailer phone survey, May 2001.

²³ There are 30 authorized EBT retailers in Cheyenne, 12 of them authorized for WIC EBT.

Desk reports indicate that calls for hardware-related issues (problems with PC, card reader, or card printer) made up only 5 percent of calls in Bismarck and 6 percent in Cheyenne.²⁴

In the Nevada WIC retailer survey, only 2 out of 30 respondents indicated that hardware was the biggest problem with WIC EBT.²⁵ Interviews with retailers in Reno also uncovered very few hardware component failures in the retail environment. However, when card-reader problems did occur in the retail environment, there was a long turnaround time (up to 60 days) for card-reader replacement. Retailers in Reno suggested that a spare equipment inventory would help to alleviate the inconvenience associated with card-reader replacement. As would be expected, stores with higher volumes experienced more reader failures.

Card Reliability

Similarly, the cards presented few reliability problems, with about 2 out of 100 cards malfunctioning at the Bismarck site and fewer than 4 or 5 cards per month failing. Cheyenne WIC staff and retailers confirmed this low card-failure rate during site visit interviews. However, Reno had problems with the cards and sent back six cases of 2,000 to 3,000 cards per case because the chip had not been programmed correctly. Although retailers in Reno generally concurred with the assessment of the relative reliability of the cards, one grocer did comment that the card sometimes worked only after two or three tries and that having to put the card in repeatedly was a drawback of the system. This may have been a result of user error more than technology error.

Staff in Bismarck commented during interviews that some cards would inexplicably become locked and could not be unlocked (i.e., data could not be accessed). The cause of the locking problem was never determined, but the volume of cards with the problem was limited, so this did not pose a major problem to the staff. Help Desk reports confirm the small number of card problems encountered. During the period from October 1999 to April 2000, Help Desk reports indicate that calls for card-related problems made up only 1 percent of calls in Bismarck and 4 percent in Cheyenne.²⁶

Software Reliability

Because of the complexity of the software integration, telecommunications and local network outages, and problems with existing systems, it was often difficult for users to distinguish HPP-related software problems from other types of problems. Some perceived system problems may not have been related to HPP software issues. Users indicated that software problems were encountered more often than hardware problems, especially with end-of-day settlement in Bismarck and retail operations in Reno. During the period from October 1999 to April 2000, HPP Help Desk reports indicate that software problems accounted for 21 percent of Help Desk calls in Bismarck and 12 percent in Cheyenne. HPP Help Desk reports further show server end-of-day settlement as the cause of a high number of calls (14 percent of problems in Bismarck and

²⁴ Health Passport Help Desk Reports, August–November 2000.

²⁵ Nevada WIC EBT retailer phone survey, May 2001.

²⁶ Health Passport Help Desk Reports, October 1999–April 2000.

8 percent in Cheyenne).²⁷ Settling continues to be a problem in Bismarck when the server is down and problems are encountered with the gateway dial-up program.

Similarly, in Reno, users reported some problems with connections to the Internet, which were necessary to perform end-of-day settlement. Also in Reno there were problems with the WIC EBT application when it was installed. Stored Value Systems identified a WIC EBT software bug that caused system start-up and reboot problems.

Downloading benefits to the card continues to be a problem in Reno, and there were more problems in the stores than at the clinics. Six retailers in Reno commented that the biggest problem with the WIC EBT system was that benefits that were supposed to be loaded on the card could not be accessed—the terminal displayed “Contact County WIC” when the client tried to access benefits at the store. While the card provides this error message when the balance inquiry terminal or POS device tries to read benefits in the retail environment, the card can be loaded with benefits from an inquiry terminal when participants return to the WIC clinic. Initially, WIC staff were not sure of the reason for the problem—whether it was a problem with the inquiry terminal, with the staging of benefits, or with cardholder training. Further investigation by HPP project staff indicated that the user, rather than the staging of benefits from Stored Value Systems to the vendor, was the likely problem. Among the possible causes they suggested were that the client was not at the proper retailer location (one of the three designated by the client for downloading benefits), that the client was trying to get benefits before the proper benefit issuance date, that the client had missed an appointment, or that benefits had not yet been staged. Another possibility they raised was that the card reset time at stores might have been set inaccurately. Regardless of the cause, both retailers and clinic staff feel that the error messages encountered when this problem occurs should be made more descriptive of the particular problem being identified (e.g., the card is attempting benefit load at the wrong store, the downloading of benefits is malfunctioning, the card is locked).

Aside from the problem with benefits being loaded to the card, fewer software problems were encountered in Reno than in the other sites. It appears that many of the defects in the earliest versions of HPP had been identified and corrected before the software was imported to Reno.

In Cheyenne, WIC EBT using the HPP card was implemented smoothly, possibly because the retailers were accustomed to smart card-based Food Stamp and WIC delivery through the PayWest card. In a recent survey of WIC retailers (using the PayWest system) in Cheyenne, 51.5 percent rated the WIC EBT system good, 18.2 percent rated it very good, and 15.2 percent rated it excellent.²⁸

3.7 Component Response Times

Although anecdotal evidence (user perceptions of response time in surveys and interviews) varied substantially, actual measurements at demonstration sites indicated that the response times of card readers, the HPP software application, card issuance, and card update were within industry norms,²⁹ as was kiosk response time. Measurements were taken of the following:

²⁷ Health Passport Help Desk Reports, October 1999–April 2000.

²⁸ Retailer and field office survey results, December 2000.

²⁹ Industry norms were derived based on researching performance metrics specified in various requests for proposals and other published measures of acceptable response times.

- Time to log on to the HPP system;
- Time to enter a PIN and receive a response;
- Time to enter card issuance data into the HPP stand-alone application;
- Time to write new data to the card (when no data existed on the card);
- Time to write data updates to the card;
- Time to print a card;
- Time to enter a card and get a response from the kiosk;
- Time to validate the card PIN at the kiosk;
- Time to move from screen to screen at the kiosk;
- Time to view data from the card through the kiosk viewer;
- Time to print an immunization report at a kiosk;
- Time to view and print out medical and appointment data from the kiosk; and
- Time to view benefit balances at the kiosk.

The provider survey and technical interview guide asked staff about how often the HPP system was not available when needed and about component response times. It is important to note that the evaluators question the degree to which the users fully understood the technical survey questions—that is, how exactly to define system “downtime” and to distinguish its cause, as well as how to measure system response time. User perceptions of downtime varied, in part because staff did not always fully understand the operations of the system. For example, it was difficult for the staff to distinguish between outages of the HPP system and problems with the existing system (e.g., WIC or immunization system), network, computer hardware, or other software problems. Generally, both the survey and anecdotal interview responses indicated that downtime did not affect user satisfaction with the system. In addition, because so few staff actually worked directly with the system, the number of survey responses on technical questions was low.³⁰

Response time for card update was a significant issue in the initial implementation in Bismarck. Both actual measurements and client perceptions showed that software upgrades improved response time from the early implementation in Bismarck. As shown in table 3-1, early user perceptions of response time in Bismarck ranged from 1 to 18 minutes, and in 2001 they declined to a range of 0.5 to 6 minutes.³¹

User perceptions about response time and its acceptability varied substantially, though. Some users said issuing a card took at least 10 minutes and that that was an acceptable time frame; others reported response times that were much shorter but that they considered unacceptable. It was difficult for staff to distinguish whether slow responses were the result of integration of the HPP system with the native system, problems with hardware or software, or poor telecommunication links. In Reno, for example, some staff indicated slow system operation at the WIC clinic, which may have been the result of problems with the county system. In 2000,

³⁰ Staff surveys in Reno and Bismarck, 2000–2001.

³¹ Staff surveys in Reno and Bismarck, 2000–2001.

staff in Bismarck and Reno generally indicated that the HPP card reader and software responded quickly enough. In Cheyenne, more staff believed that the two were not responding quickly enough. A year later, staff interviewed in Reno notably changed their opinion about the software application—fewer than half the respondents felt it responded quickly enough. This change may have been due to the relatively slow speed of T1 lines or problems with the county's server during this period. Staff responses at the other two sites did not indicate substantial changes in their opinions.

Reaction to response time for the WIC EBT application was similarly mixed. Retailers in Cheyenne noted that terminal response times were about what was expected for WIC EBT and that there was no impact on speed during peak times, even though balance inquiry terminals were handling large loads at the time of downloading benefits. Yet when asked about the impact of EBT on the length of the average WIC transaction, several retailers interviewed in both Cheyenne and Reno said it took from two to six times longer to do a WIC EBT transaction than to use the paper voucher. In light of findings of other EBT studies, it seems likely that this perception was related more to the dual scanning and hand-keying of WIC item price information than to system response time. One retailer in Cheyenne noted that the dual scanning almost doubled the time for a WIC transaction. This retailer receives nightly batch uploads from the store's corporate office to its electronic cash register (ECR) system. The uploads contain item pricing information, and because the information is electronic, the store manager cannot ascertain which item prices have changed and cannot enter cost data into the EBT terminal. Therefore, when the WIC item is scanned by the EBT terminal, the clerk must also hand-key the item's price into the terminal. On the other hand, a retailer in Cheyenne that did not have an ECR system with scanning capabilities and that controlled the prices on food items within the store, said it takes about the same time as paper, maybe a little less, to perform the WIC EBT transaction. This retailer loaded cost data into the EBT terminal when new items were added or prices changed, allowing the clerk to scan the item with the EBT scanner without having to enter each item's price into the EBT terminal.

Because users do not appear to fully understand the relationship between particular system components (software, hardware, telecommunications links, etc.) and system downtime and response times, the evaluators caution that anecdotal evidence in this area may be misleading. Time measurements are a more reliable source of information on component response time and availability than are published performance metrics.

	Bismarck		Cheyenne		Reno	
	2000	2001	2000	2001	2000	2001
	n = 20	n = 9*	n = 8	n = 7*	n = 20	n = 19*
Number who feel the HPP card reader responds quickly enough	14	7	4	3	15	13
Number indicating HPP software application responds quickly enough	16	6	4	3	15	9
Range of HPP card update time reported (minutes)	1–18	0.5–6	2–20	1–10	1–10	1–5
Number who feel this amount of time is:						
More time than expected	6	3	2	2	4	5
About what expected	8	4	3	1	11	7
Less time than expected	1	0	1	0	3	2
Not applicable	5	2	2	4	2	4

Note:

*The second round of site visits did not include interviews with all HPP users.

Source: Urban Institute HPP staff survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: November 2000, April 2001).

3.8 Performance of System Interfaces

One of the most challenging technical aspects of the HPP system implementation was the integration of the legacy systems with the HPP card application. A number of different software programs were integrated into the HPP API. Special code was required to integrate the different legacy systems—Clipper for the North Dakota WIC system, C++ for the Wyoming WIC system, and Visual Foxpro for the Nevada WIC system. Because the integration effort posed so many technical and management challenges, integration problems were a major cause of delay in the demonstration's rollout and resulted in some partner frustration during the early phases of the project. Although there were initial problems with various interfaces, eventually the interfaces were stabilized and operated effectively.

Despite problems with implementing some of the system interfaces, once they became operational, the interfaces have proven, in general, to be a popular feature with system users. Interviews indicated that the users clearly liked being able to go into their own systems, rather than learning a new system, to use the HPP card. In addition, the integration made training far easier for clinic staff. Thus, although the integration of HPP with the legacy systems provided substantial technical challenges and added to the time to deploy, the impact on user satisfaction was clearly worth the wait for certain programs.

Integration Success Factors

Different levels of integration were attempted with different systems. Both the degree and the success of integration varied depending on the specific legacy system in the individual

demonstration sites. Success of an integration effort can be assessed by considering a number of factors. One key measure is the amount of information actually shared between the two systems being integrated. Another important factor is the level of transparency of the interface to the user—that is, the degree to which the user is aware of the coexistence of the integrated systems (the more transparent to the user, the more successful the integration). A third measure of success is the degree to which the integration effort is incorporated into the overall project plan and its effect on the implementation schedule.

On the basis of these criteria, many of the integration efforts were considered successful. Although there were some delays along the way, three WIC systems and three immunization registries were successfully integrated into the HPP system. While the HSFIS effort encountered significant problems, eventually even this interface was enhanced so as to be more effective. The successes achieved by those involved in the systems integration efforts are noteworthy. The HPP pilot required complex integration of state-of-the-art technology into aging legacy systems. Such integration had never been successfully accomplished before the HPP project.

Perhaps the greatest challenge confronting the integration effort was the complexity of the organizational relationships inherent in the integration process. From the first, there was a lack of clarity about ownership, management, and control of the integration effort. In the future, it will be critical to establish clear management lines between the prime contractor and the integration programmers. Contractual relationships among all the parties involved in the integration process should be initiated at the outset of the project. Checkpoints at each stage of the integration process should be established so that every affected program has a mechanism to track and sign off on the progress of the integration.

Integration and Systems Methodology

The problems in the integration effort underscore the adverse impact of a Rapid Application Development methodology for a complex system development effort. Typically in a project as large and complex as the HPP system, there is a requirements traceability matrix that tracks the implementation of each requirement throughout the development cycle (see section 6.2). The lack of a formalized requirements document had an adverse effect on the development of the integrated HPP applications. No comprehensive requirements traceability matrix existed for the integration programmers to follow. System development efforts requiring substantial integration with legacy systems usually include interface specifications, which document all of the data elements to be passed between each integrated system, as part of the detailed design document. Although the HPP API programmer's manual was released as early as January 1997, it was not finalized until many of the integration programmers had begun work. The HPP API did not include a detailed interface specification for each integration effort. Similarly, while the data map was being developed early on, not all integration programmers participated in the sign-off of the data model. The evaluators believe that the technical staffs of the participating programs (and especially the integration programmers), who were most knowledgeable about the specific data in the legacy systems, should have played a lead role in the acceptance of the data map.

Without the full participation of these key players and detailed interface specifications, examples abound of less than optimal integration capabilities. For example, the integration with HSFIS encountered problems with address information, health data, and appointments. HSFIS tracks at least four different addresses, while the HPP card maintains space for only the mailing and physical addresses. Had this requirement been specified in a requirements traceability matrix, it

would have been relatively simple to add more addresses to the HPP data map. Similarly, both systems track the fact that hearing and vision tests have been conducted (HPP tracks whether a hearing or vision test was performed and by whom, while HSFIS also tracks the result), but they use incompatible data elements that require use of a translation table. Although both the HSFIS and HPP applications track appointments, HSFIS provides unlimited appointment tracking and the HPP card is limited to eight appointments. Because the HPP design does not address how to select the priority for overwriting appointments once the card is full, the HPP card could potentially lose appointment data from other providers that could have been shared with the HSFIS system. This is not a problem now, with the limited scope of the pilot, but as the HPP system expands to include additional providers, it could become a barrier to effective data-sharing.

Integration Assessment

On the basis of the criteria suggested above for successful integrations, the HPP/HSFIS integration was judged less effective than the others. The operation of the interface in the initial testing was far from seamless. In the initial integration program, few data elements were included in the HPP/HSFIS interface, severely limiting the ability of Head Start to view data from other programs. The Head Start program chose to abandon the use of the HPP card for its initial student enrollment period because of the limited ability to exchange HPP/HSFIS data elements. It was not until the HPP/HSFIS interface was enhanced that the Head Start program actually started using the card in the later stages of the demonstration.

Although the initial HSFIS/HPP integration was one of the few unsuccessful integration efforts, its failure was particularly significant to the pilot evaluation. Head Start was expected to be the program most likely to benefit from the efficiencies and streamlining made possible by viewing other programs' data written to the card. Because the limited integration caused Head Start to abandon the card for enrollment, there was a missed opportunity to demonstrate the value of the HPP card. Where it was hoped that the demonstration would span two Head Start enrollment cycles, only one enrollment period using HPP occurred at each site, and the use of HPP during enrollment occurred late in the demonstration.

Design issues also affected the integration of HPP with legacy systems maintaining immunization data. Both HSFIS and the THOR integrated immunization system in North Dakota are unable to exchange full immunization records with the HPP card because the card maintains fewer immunizations than these systems do. Thus, when the card is full, immunizations existing in the systems are simply dropped from the card. This may be only a theoretical problem for the pilot (because the HPP card can store up to 30 immunizations, which should be sufficient for the current client population), but it is a consideration for expanded rollout. If children were to keep the card through adulthood, the limitation could become problematic. Immunization clinic staff have indicated in interviews that because immunizations could be lost, they were reluctant to rely on the HPP immunization record.

Further, several interviewees commented that the HPP immunization record does not organize the immunizations in an order that makes it is easy for clients to understand what immunizations within a set are still needed. The HPP API provides access only to data that are stored on the card; it does not provide the business logic for organizing immunization data or recommending needed immunizations. That functionality must be incorporated into the integrated immunization program or the HPP stand-alone system. Because the immunization record on the card is not

user-friendly, the staff tend to rely on the immunization registry for reports, rather than on the HPP system, thereby reducing the HPP card's ability to share meaningful information with other programs.

In addition, there are procedural issues with the sharing of immunization data in the Reno demonstration site. The immunization record on the HPP card is not certified, so it cannot be used as an authoritative record. Although the interface between the immunization registry and the card is working, it is an additional step for immunization program staff to update the immunization information on the card. If other programs and clients at kiosks are not accessing this information because it does not produce a certified immunization record (one that is accepted for day care/school registration, for instance), the immunization program staff are questioning whether this extra step is worth the additional staff effort.

Both retailers and clients have identified the WIC EBT system's lack of full integration with the retailers' ECRs as an area in which the WIC EBT system design could be improved. If the systems were integrated, WIC food items would be scanned once, by the retailer's ECR system, and the price would be electronically sent to the EBT terminal, eliminating the need for a second scan and keying the price of the food item into the terminal. This could improve the accuracy of data by preventing input errors. In addition, the design does not allow item mistakes in the checkout process to be voided without starting over for the entire order. In a telephone survey of retailers conducted by the Nevada WIC program,³² 4 of 30 retailers cited inability to "void last item" as the biggest problem with WIC EBT, and one retailer responded that having to double scan items was the biggest problem with WIC EBT. Five of a total of six retailers interviewed at site visits in Cheyenne and Reno said that inability to "void last item" was a problem, and four of the six noted that double scanning was a drawback of the WIC EBT system. Nevertheless, most retailers like the EBT system and expect that with EBT they will have fewer losses resulting from outdated checks or checks with errors. Further, the issue of user fraud has been virtually eliminated because each transaction has an electronic "fingerprint." Notwithstanding satisfaction with the current WIC EBT system, most retailers indicated in interviews that integration of the WIC EBT and the retailer's ECRs would be a highly advantageous technical enhancement.

Integration Summary

While the challenges of integration were significant, so were the achievements. Had the HPP system documentation clearly specified the individual data elements passed between HPP and each of the legacy systems, some of the inconsistencies might have been identified and resolved earlier in the design phase, and delays in the testing and implementation phases could have been avoided. Critical to any successful integration effort is the clear delineation of roles and responsibilities between the prime vendor and the integration programmers, full participation of integration programmers in the design of the card data model, and sign-off by functional and technical analysts on key milestones achieved in the integration process. While some mistakes were made, and enhancements for the future can be identified, one of the overarching technical achievements of the HPP project was successfully demonstrating the integration of emerging technologies with such a broad range of legacy systems.

³² Nevada WIC EBT retailer phone survey, May 2001.

3.9 Help Desk Support/Management

System users across the pilot sites consistently cited dissatisfaction with the quality and availability of HPP Help Desk support. In response to the user surveys, as well as in anecdotal comments during interviews, clinic staff highlighted the lack of available support, as well as the limited knowledge of the Help Desk staff. In fact, several pilot sites commented that HPP Help Desk call lines occasionally went unanswered during regular service hours.

Respondents to interview questions indicated that they often preferred to call the site managers or other knowledgeable staff when they encountered problems with the HPP system because site managers resolved problems faster and more satisfactorily. Many respondents saw the HPP Help Desk operation as little more than a service dispatch operation. Computerland staff in Bismarck, providing on-site equipment support, reported trouble reaching the second-level support offered by system developers when malfunctions resulted from software rather than hardware problems. The difference in time zones between the second-level Help Desk and the demonstration sites caused this availability problem.

There is a marked discrepancy between interviewees' perceptions of the HPP Help Desk service and HPP Help Desk reports. The HPP Help Desk reports are confusing and difficult to interpret because of gaps in reporting, changing formats, and incompatible scales across the demonstration period. Because different subcontractors were responsible for providing HPP operations at different points in the pilot (see section 3.4 for the chronology of HPP Help Desk subcontractors), the report formats and content changed several times over the course of the pilot. Generally, the HPP Help Desk reports indicated that service provider subcontractors (Computerland in Bismarck, Connecting Point in Cheyenne, and Computerland in Reno) initially showed problems in meeting service-level agreements for acknowledging requests, contacting customers, on-site performance, and closing problem tickets. Subcontractors improved their performance in later months of the demonstration, though. From October 2000 through December 2000, subcontractors continued to perform close to or under the service-level agreements for average time to acknowledge Help Desk ticket, time to call customers, and time on-site to repair the problem. Subcontractors continued to have problems meeting the service-level agreements for time to close tickets; however, the Help Desk subcontractor (Aspen Systems) worked with the service provider subcontractors to encourage more prompt ticket closings.³³

Improved HPP Help Desk reports are now available. Open Domain has assumed responsibility for the Help Desk operation with site manager support as of April 2001. Survey respondents indicate greater satisfaction with HPP Help Desk support since the change in operations. But survey respondents also noted that their use of the HPP Help Desk has declined as they have become more familiar with the HPP system and more reliant on site managers for support.

Reaction to Help Desk support for WIC EBT, provided by Stored Value Systems, is mixed. According to the telephone survey of retailers in Reno conducted by Nevada WIC, Help Desk support for the WIC EBT application has been more satisfactory for retailers. Eighty-three percent of respondents to the WIC EBT retailer survey rated the customer service WIC EBT Help Desk a score of seven or higher out of ten on the effectiveness of resolving retailer EBT problems. Further, 40 percent rated the WIC EBT Help Desk as much better, and 20 percent

³³ Help Desk Reports, August–November 2000.

indicated some improvement in WIC EBT Help Desk operations since the initial EBT launch in June 2000 in Reno. Only 2 out of 30 retailers said the WIC EBT application needed better technical support.³⁴ In interviews in Reno, the consensus was that the WIC EBT Help Desk support was problematic at first but improved over time. Only one retailer said response to requests took at least a day rather than hours. WIC clinic staff interviewed in Reno indicated less satisfaction with Help Desk responses to EBT problems than did the retailers. Retailers in Cheyenne also commented that the WIC EBT Help Desk support was inadequate in the beginning but has substantially improved with time. Recent retailer satisfaction surveys conducted through an industry newsletter in Wyoming show a high level of user satisfaction with the system—close to 75 percent of WIC retailers rate the system good, very good, or excellent. Retailer comments collected in this survey are somewhat mixed—many comments indicate that customer service has improved, as has the response to problems, but some retailers are still concerned that downtime sends customers to the competition.³⁵

3.10 System Security

In addressing the security of the HPP system, both the characteristics of the card itself and the infrastructure that issues, supports, and uses the card must be considered. Typically, for each component of a card system infrastructure, an information system security policy is written and used in the development of security requirements, evaluation of alternative system design architectures, and assessment of the security effectiveness of the system design. In the development of the HPP system, no such comprehensive security policy was offered, although the DFS does provide an appendix on privacy and security that touches on the security of various components of the system, as well as on features of the system that ensure client privacy. A comprehensive security program typically addresses the following elements of system security:

- **Card Security.** The security required for the card will vary depending on the sensitivity of the data and applications on the card. Card security generally includes such topics as key management, data security (including authentication, confidentiality, and access), and application access control.
- **System Security.** System security encompasses the measures necessary to ensure the secure operation of all components of the system, including such areas as control of card stock, communications access controls, and system access audit controls.
- **Card/System Physical Security.** Card security includes the physical characteristics of the card to provide tamper deterrence, as well as the systems to limit access to any facilities used to produce cards, process data, or house sensitive data. Physical security includes measures to ensure that unauthorized persons do not have access to the physical facilities housing any components of the card system.
- **Application Security.** Application security refers to the mechanisms (e.g., application security module) used to contain and protect application passwords, algorithms, or keys.

³⁴ Nevada WIC EBT retailer phone survey, May 2001.

³⁵ Retailer and field office survey results, survey conducted through *Retailer Newsletter*, December 2000.

- **Administrative and Personnel Security.** Administrative and personnel security generally covers the organizational controls, supervisory and management controls, internal controls, and security training needed to ensure adequate training at all levels.

Although the prime contractor did not provide specific documentation that covered each of the topics described above, the HPP system appears to have no security problems. On the contrary, users were generally satisfied with the quality and adequacy of the HPP system security. Most staff and clients felt that the security features of the system were sufficient to provide necessary security and confidentiality of patient data. In the initial rollout in Bismarck, when the response time of the card reader was problematic, staff indicated annoyance with the time to read the user card and the inconvenience of having to insert a card to log on to the WIC system. Over time, though, they have grown accustomed to this practice. In general, users say the security features of the HPP system are convenient and do not adversely affect their perceptions of the system.

A number of staff did question the convenience of PIN usage for the target clientele. Especially in the beginning, forgotten or incorrect entry of PINs was common and staff had to spend a lot of time resetting cards. Retailers in Cheyenne commented in the retailer survey that clients often forget their PINs, and they urged the WIC program to emphasize to clients the importance of PINs. It was suggested that clients be encouraged to pick PINs that are easy to remember. When this suggestion was implemented in Bismarck, card resets decreased. While card resets were very common in the beginning of the demonstration, the number of resets has dropped over time (to fewer than 10 per month in Bismarck, for instance). The reset PIN rate is 3.2 percent, a relatively low number for card implementations.³⁶ To date, no security breaches have been reported in any of the demonstration sites. Because few security reports are available in the system, it is difficult to gauge accurately the extent of security problems, if any. The card reissue rate for lost, stolen, or damaged cards is 7.8 percent.³⁷ This is a relatively low reissue rate for card implementations, which may indicate that clients value the cards and are careful with them.

3.11 Kiosks

The upward trend in kiosk use (see chapter 5 for details) indicates that kiosks, once fully operational, were a popular component of this project. Initial kiosk technical performance was problematic. Help Desk reports indicate that the most frequent kiosk problems were no end-of-day upload, kiosk dial-up, the application not being active, and problems with the kiosk application/smart card reader terminal interface. Kiosk performance was particularly problematic in Reno, because of differences in hardware and manufacturer configurations from other HPP pilot sites. HPP Help Desk reports indicate that the kiosk problems declined from September to December 2000, but some problems, particularly with kiosk availability and dial-up, remain.³⁸

When first installed, the kiosks were not operational much of the time, causing client confusion and staff annoyance. Once the technical problems with the kiosks were overcome, clients used them, although not extensively (see chapter 5 for a discussion of client use of kiosks). On our final site visits, we encountered several kiosks that were not operational.

³⁶ HPP Server Reports

³⁷ HPP Server Reports

³⁸ Health Passport Help Desk Reports, August–November 2000.

Among other technical issues mentioned were: the location of the key pad within easy reach of children creates an “attractive nuisance” that contributes to the incidence of kiosk malfunctions; the touch screen varies in its sensitivity and sometimes does not respond; kiosk images are being “burned” onto the kiosk screens; and kiosks do not have a Spanish language option. Several respondents requested that screensavers be installed. Staff in Reno commented that the kiosk had a design flaw that affected ease of servicing. Because paper in the kiosk does not come out far enough, it often jams, requiring that the kiosk be opened to remove paper. In addition, when a child pulls out the kiosk plug, the kiosk cannot be rebooted, but instead must be opened to perform a total kiosk restart. Many of these issues are not chronic ongoing problems associated with the kiosk hardware, but rather problems related to the inexperience of first-time users. Several of the issues cited could be resolved through modifications to the kiosk design.

3.12 Training and Other Technical Considerations

Users interviewed consistently expressed satisfaction with the training they received and generally approved of the timing of the training. Staff indicated that the training was provided in sufficient time for them to be ready for the system launch, yet close to when they actually would be using the system to perform their jobs.

It is difficult for the evaluators to determine the extent to which user perceptions of technical problems with the HPP system could be caused or compounded by training deficiencies. Client training was the responsibility of staff at the individual programs, so any limitations in staff understanding may have been conveyed to clients. Even if staff fully understand how to use the card, their limited experience with the system may prevent them from offering key pointers to clients. Problems with the loading of benefits to the card at the retail sites in Reno may be caused not by system problems but rather by inadequate training. For example, cardholders may not understand that they must go to one of three preselected sites to download their benefits. Or because cardholders may not understand that card updates take time, they may remove their cards from the card reader prematurely.

In addition to training, the performance of, and user satisfaction with, other system components may be unduly influenced by the telecommunications infrastructure. For example, the type of line used may reduce the speed of Internet transactions, thus contributing to user perceptions of slow HPP system response. Breakdowns in the communications infrastructure, including both local and wide area networks, as well as the Internet, may affect user perceptions of HPP system reliability and availability.

Particularly in integrated applications, problems with the legacy software, hardware, or telecommunications infrastructure may also be mistaken for technical problems in the HPP system. In Reno, for example, users indicated dissatisfaction with the HPP system availability. On further investigation, it was determined that the problems actually resulted from periodic crashes of the county server. Other instances of breakdowns in the existing systems were also provided to the evaluators. Thus, when technically assessing the HPP system, the evaluators used multiple data points (e.g., user/client interviews, transaction reports, help desk logs, timings, site manager reviews, and discussions with other knowledgeable staff) to clarify the circumstances and confirm problems.

4.0 User Response: Providers and Retailers

Staff use of HPP varied considerably from site to site and across providers. Because many of the partner programs are small, the total number of users was limited, and even fewer staff used the system regularly. Working with the HPP system got easier with use and over time; staff who did not use the system on a regular basis reported that they continued to struggle with it because they were not using it often enough to become very proficient. How HPP was used by providers and the volume of use relates to the system's impact on quality and efficiency, as well as to user satisfaction.

4.1 HPP Use in Bismarck

The HPP demonstration was launched in Bismarck in June 1999. Between our early implementation visit in November 1999 and our final visit in April 2001, staff became considerably more comfortable with and faster at using the HPP system.

Bismarck WIC staff issued cards and put Medicaid eligibility, nutritional, and appointment information on the HPP cards. The receptionist was responsible for making appointments and entering them into the WIC appointment scheduler; nutritionists then wrote appointments to the HPP cards during clients' visits. Nutritionists also issued cards and recorded nutritional information on them.

The OPOP secretary scheduled appointments on the HPP card when clients checked in. WIC nutritionists issued cards for new babies and entered measurements and other information about clients they saw at OPOP. The OPOP coordinator used the card on a limited basis and generated reports from HPP when the OPOP family was also seeking services at MedCenter One.

Head Start staff used the HPP system primarily at enrollment. Because most children came to Head Start by bus, parents often did not come into the building, making it difficult to access or add information to the card.

Many of the clients seen by BBNS Health Tracks staff were from the neighboring Standing Rock Reservation and were not enrolled in Bismarck WIC. Therefore, Health Tracks staff saw very few clients with HPP cards. When the Health Tracks nurse saw a client who was an HPP cardholder, she updated the client's card with height, weight, hemoglobin, assessment, lead screening, urinalysis, hearing, and vision information. The receptionist did not use HPP to check in clients because, according to interview respondents, it was too time-consuming.

Nurses in the BBNS immunization clinic entered updated immunization information to THOR (the state immunization registry). Typically, they saw few clients with HPP—the majority of cardholders were seen during immunization clinics held at the WIC offices.

Staff at the Family Doctors clinic rarely used the HPP system. The clinic receptionist and a certified nursing assistant were the only staff who used HPP. If a patient presented an HPP card at the reception desk, staff printed the patient's immunization record for the medical charts and scheduled appointments on the card; however, routine check-in procedures did not include asking patients whether they had an HPP card. Staff at the Family Doctors practice stopped using HPP in January 2001 because they "thought the demonstration was over."

4.2 HPP Use in Cheyenne

Cheyenne launched the HPP demonstration in three stages, starting in June 1999. Cheyenne was unique among the three sites in that WGA contracted for a part-time clerical staff person specifically to enter data at WIC and download data to nonprimary HPP cards. WGA also provided a staff person under contract for eight months to enter data at CCC and the City-County Health Department. WIC (using the WGA contract employee) began issuing secondary HPP cards in August 2000 and implemented WIC EBT on HPP in March 2001, shortly before our final visit to Cheyenne.

All WIC staff in Cheyenne—clerks, nurses, nutritionists, and dieticians—were using the HPP system at the time of our visit. Staff issued cards, used the HPP appointment scheduler, loaded EBT benefits, and updated nutritional information. Nearly all WIC staff in Cheyenne, with the exception of the director, worked part-time and thus (as in Bismarck) were not using HPP as frequently as their counterparts in Reno. It should be noted that in Cheyenne, the PayWest card has been used in the WIC clinic for the past four years. Instead of issuing new cards to PayWest cardholders, staff put a “P” in front of the card’s primary account number to indicate that it was the primary card containing EBT benefits.³⁹

Two certified nursing assistants carried out most of the HPP functions at the City-County Health Department, primarily issuing cards and printing a well-child custom report (including immunizations history and other health information) with the HPP system. Health Department staff also used the pending update function if they did not have time to update information during a patient visit. Early in the demonstration, the data entry staff person provided by WGA used the appointment function, but at the time of our visit, appointments were handled by other staff who did not have access to the HPP system, so the appointment function was not used. The computer and card printer had recently been moved from a separate room to the check-in counter, and staff felt this change was helping to integrate HPP into clinic operations.

Staff at the CCC used HPP infrequently. In fact, because of the volume of patients the clinic served, patients were not always asked for their HPP cards. If a patient did present a card and staff were too busy to update information at the time of the patient’s visit, they used the “pending update” function. Staff noted that they had accessed immunization information from patients’ HPP cards. At the time of our visit, the new receptionist had not yet used the HPP system.

When we visited, Head Start staff were entering data into HSFIS and then loading the data onto HPP cards. Starting in March 2001, Head Start began to expand the role of family development specialists with respect to HPP, using laptops and portable card readers to update client information and appointments on HPP and in HSFIS during visits to families’ homes, which would make the cards more valuable to clients. While this activity was limited at the time of our visit in May 2001, it was expected to increase in September 2001 with the start of a new school year.

Cashiers at participating retailers in Cheyenne used the HPP card for WIC transactions the same way they had used the PayWest card.

³⁹ The addition of the “P” on PayWest cards assisted clients and staff in identifying cards that had HPP added to them, but it was not necessary to activate electronic benefits.

4.3 HPP Use in Reno

Launched in June 2000, the HPP demonstration evaluation period in Reno was shorter than in the other two sites. Therefore, partners focused much of their energy on getting the fundamental aspects of HPP operations in place. Head Start implemented HPP in January 2001, shortly after our early implementation visit in November 2000. At the time of our last visit in April 2001, they continued to work out the basics of HPP and consider how best to integrate it into their day-to-day operations.

In Reno, Washoe County WIC staff were by far the most frequent users of the HPP system. The system was used mostly by office staff—the individuals issuing cards and handling appointment check-ins, scheduling appointments, and handling benefits issuance. At the time of our visit, the WIC clinics were planning a transition to a case management system in which one staff person would handle all aspects of a client's visit to WIC, with the exception of high-risk nutritional counseling. Staff were being cross-trained to handle both clinic and office tasks, so all staff were learning HPP functions. WIC supervisors were also using HPP to handle appointments and benefit issuance. Nutritionists were using HPP to schedule appointments and load benefits as time permitted. Often they did this to help the office staff if there was a client backlog.

The director of ITCN WIC was more involved in the day-to-day use of HPP than other agency directors. Because of a small office staff and high staff turnover, she used HPP herself for card issuance, benefit issuance, and appointment functions. She also handled all report functions, including EBT balancing. At the time of our final visit, other ITCN WIC office staff were very new and were just learning to use the HPP system.

Immunization office assistants used HPP at client check-in to transfer information from the immunization registry to HPP cards. Asking clients whether they had an HPP card was not a routine part of the check-in process. Staff indicated that they could not access any client information from the cards; they understood their role to be limited to adding immunization information to the cards. Other immunization staff were not using the HPP system.

As noted earlier, Head Start staff have had limited opportunity to use HPP because of the recent implementation of the system. At the time of our final visit, the receptionist had issued cards to Head Start families and new applicants. Other staff had been trained on the system but had not yet used it. Staff were hoping to train family service providers to use HPP in the future. They also hoped to update HPP cards with physical examination and hemoglobin information from HSFIS after families provided this information from physicians and clinic visits.

Cashiers at the various retailers participating in the HPP demonstration regularly processed sales using HPP cards. Store managers and other supervisory staff were trained on the system and assisted with sales when necessary.

4.4 Card Issuance and Updates

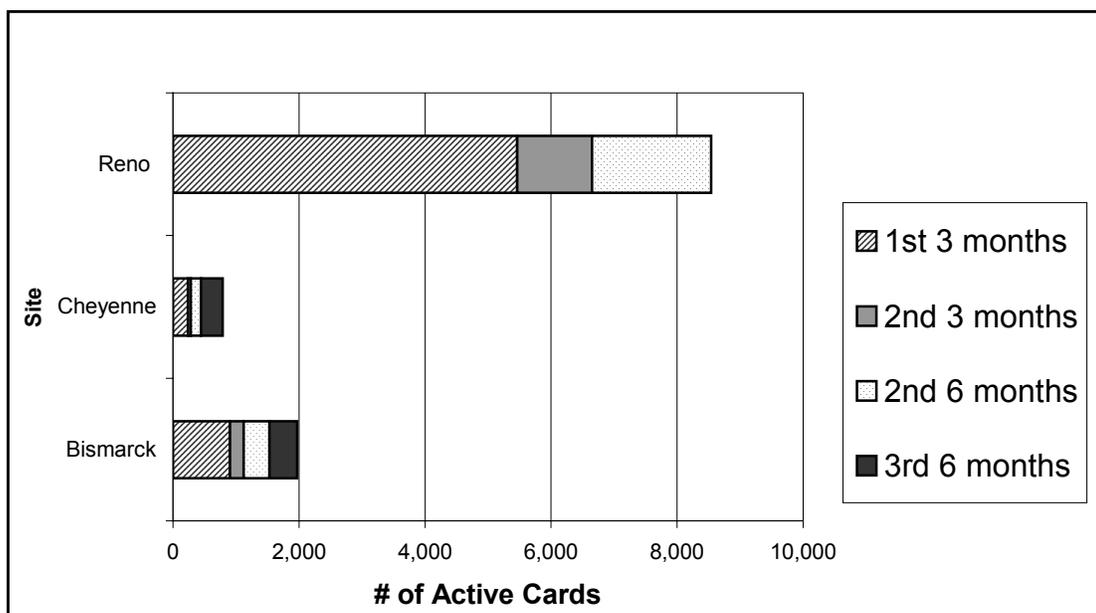
The three HPP demonstration sites varied considerably in terms of the number of client cards issued, reflecting both the size of the programs and the implementation timetable. As of May 31, 2001, total cards issued were:⁴⁰

- Bismarck 2,348
- Cheyenne 991
- Reno 8,549

Exhibit 4-1 shows the timing of card issuance. In Reno, most cards were issued during the first three months of the demonstration. Card issuance in Cheyenne reflects the staged implementation in that site, with a substantial number of cards issued during the first three months of the demonstration period and another period of high card issuance after the addition of WIC EBT to the HPP card. We would expect card issuance in Cheyenne to increase in the future. In Bismarck, card issuance was more evenly spread across the period of the demonstration.

The number of times information was added to HPP cards⁴¹ varied across sites as well (see table 4-1). Information was added to client cards in Bismarck far more often than it was added to cards in the other sites. Cards in Bismarck were updated an average of 4.2 times. In contrast, in Reno, cards were updated an average of 2.5 times, and cards in Cheyenne were updated an average of 1.7 times.

Exhibit 4-1: Timing of HPP Card Issuance



⁴⁰ Source: Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.) Because of client turnover, the total number of cards issued is greater than the total number of enrolled clients at any given time. The number of cards issued in Cheyenne includes PayWest cards to which HPP was added, captured by the server transaction “Add HPP to card.”

⁴¹ We used the HPP transaction “write card.” This transaction is recorded each time information is written to the card. For Cheyenne, we also included the transaction “write card (pending update).”

Table 4-1: Number of Times Information Was Added to HPP Client Cards			
(as of May 2001)			
	Bismarck	Cheyenne	Reno
Number of times information was added to HPP cards	9,957	1,643	21,328
Average number of times information was added to each HPP card*	4.2	1.7	2.5

Note:

*Reflects the total number of instances of information being written to cards in proportion to the total number of cards issued. Includes all card-writing transactions since implementation.

Source: Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.)

The number of times the cards are updated is affected by the volume and frequency of client visits, the number of partners, and the degree to which clients visit more than one partner program. Some programs, such as Head Start, have fewer opportunities to write to HPP cards because parents generally bring in their cards only at enrollment. HPP partners at each site differed in how often they added information to cards. In both Bismarck and Reno, cards were updated most often by staff at the WIC clinics (tables 4-2 and 4-3). In Bismarck, cards were updated an average of 3.67 times at the WIC clinic. Staff at two county WIC clinics in Reno added information to cards more frequently than did staff at other Reno providers—an average of 1.09 times at the Wells Avenue clinic and 0.92 times at the South Reno Clinic. The other partners in Bismarck and Reno updated cards much less frequently. For example, the Head Start program in Reno launched HPP in January 2001 and therefore was not using or updating cards until late in the demonstration. In Cheyenne, where implementation was limited in the first six months of the demonstration, the City-County Health Department added information to cards most often—an average of 1.06 times (table 4-4). The Cheyenne WIC office did not launch HPP until March 2001.

Table 4-2: Number of Times Information Was Added to HPP Client Cards— Bismarck						
(as of May 2001)						
	WIC	BBNS OPOP	BBNS Health Tracks	BBNS Immunizations	Head Start	MedCenter One
Number of times information was added to HPP cards	8,612	464	186	579	75	41
Average number of times information was added to each HPP card*	3.67	0.20	0.08	0.25	0.03	0.02

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children; BBNS = Bismarck-Burleigh Nursing Service; OPOP = Optimal Pregnancy Outcome Program.

*Reflects the total number of instances of information being written to cards in proportion to the total number of cards issued. Includes all card-writing transactions since implementation.

Source: Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.)

Table 4-3: Number of Times Information Was Added to HPP Client Cards— Cheyenne				
(as of May 2001)				
	WIC	Cheyenne Children's Clinic	City-County Health Department	Head Start
Number of times information was added to HPP cards	169	253	1017	204
Average number of times information was added to each HPP card*	0.18	0.26	1.06	0.21

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

*Reflects the total number of instances of information being written to cards (including additions using the pending update function) in proportion to the total number of cards issued. Includes all card-writing transactions since implementation.

Source: Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.)

	WIC, Wells Avenue	WIC, South Reno	WIC, Sun Valley	Immunization	Head Start	ITCN WIC
Number of times information was added to HPP cards	9,282	7,896	3,079	369	42	646
Average number of times information was added to each HPP card*	1.09	0.92	0.36	0.04	0.005	0.08

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children; ITCN = Inter-Tribal Council of Nevada.

*Reflects the total number of instances of information being written to cards in proportion to the total number of cards issued. Includes all card-writing transactions since implementation.

Source: Health Passport server. http://www.hpp.dhs.org/hppserver/reports/Transaction_Log_Summary_Crosstab_Query.asp. (Accessed June 2001.)

4.5 Implications for Business Process Realignments and Service Provision

Because of the relatively short period that staff had to master the technology, there has not been enough time to perform the extensive business process realignments that would result in additional efficiencies from using the card. Partners spent much of their time learning to enter information on the card and generally had not yet turned their attention to using information on the card. In addition, it is difficult during a demonstration to implement long-term changes that could enhance value. While HPP implementation resulted in some changes to client flow, it has not had as great an impact on client flow and processes as it could have had. Implementation of the HPP demonstration affected service delivery structures of each of the partners somewhat differently.

Tailoring HPP to Specific Partner Needs

The use of HPP was modified to meet the needs of each partner and incorporated into the partner's existing operations, generally in ways that allowed staff to use their existing systems and procedures with as little disruption as possible. For example, because staff in Cheyenne do not perform a hemoglobin test for infants under nine months of age, their standard procedure is to enter "99.9" into the WIC system. HPP software was modified so that it would read this entry as a blank when information was uploaded from the WIC system.

The combined WIC and Food Stamps EBT in Cheyenne sometimes requires the issuance of primary cards to heads of household who are not WIC participants. HPP software was modified in Cheyenne so that a "head of household" could be a primary cardholder even if he or she is not a WIC participant.

Some retailers also developed their own solutions to problems encountered when implementing HPP. In Cheyenne, for example, one grocery store built its own stands for the EBT terminals to

minimize the terminal “footprint” at an already crowded checkout area. In Reno, cashiers learned that there was a sequence of scanning specific food items (e.g., peanut butter and then beans) that would lock the EBT system. They also split large orders to avoid the potential problem of EBT cutting off in midstream.

In Bismarck and Reno, HPP operated in the background simultaneously with the county WIC management information system and was virtually transparent to system users. In other locations, such as Head Start and Immunizations in Reno, the transfer of information from one system to another was much more apparent. The new HSFIS software, which was installed in April 2001, provided a more transparent interface for HPP users at Head Start.

Changes in Clinic Flow

In some cases, HPP led programs to change specific aspects of the way they conducted client visits. For example, in Bismarck, the receptionist does not use HPP because the reception area does not have a private space in which to interview clients. WIC staff modified the way they scheduled appointments so that new appointments are now scheduled by the receptionist at check-in. This information is subsequently provided to the nutritionist, who enters the appointments into the system while entering other nutritional information. Previously, appointments were scheduled after each visit.

Implementation of HPP and WIC EBT allowed both Washoe County and ITCN WIC to reduce the number of client appointments by staging benefits—that is, electronically adding monthly benefits through the EBT system and having clients download benefits at the grocery store instead of coming back to the WIC clinic for paper vouchers. Staging benefits has virtually eliminated visits for voucher issuance, thus reducing clinic visits by one-third. Staff noted that they do spend more time dealing with clients who are unable to download their benefits in the grocery store. Staff respondents varied in their comments on the troubleshooting of problem cards—some felt that the problems were occasional, while others felt they were spending a lot of time on client problems with cards. Both Washoe County and ITCN WIC continued to issue paper vouchers to clients for whom it was inconvenient to use the HPP card (e.g., clients who use very specialized formula or clients who live outside the target area, such as in rural areas outside of Reno or Sparks)—about 0.1 percent of all clients—and to clients who repeatedly lost their cards and were put back on the paper system.

Staff at the City-County Health Department and CCC in Cheyenne use the “pending update” function if they are too busy to enter information on the card during a client appointment. Staff at other partner sites are not using this function. Cheyenne WIC staff usually wait until the end of the morning or the afternoon to issue benefits. They are considering using the pending update function to update health information at these times as well when they are too busy to update a card at the end of a visit. The pending update function has not been introduced in Reno. When there are appointment backlogs or the system is down, Reno staff will ask the client to return for the information to be updated or ask the client to call later to schedule an appointment. Staff also developed other methods to deal with their backlogs. For example, staff at the Washoe County WIC office asked clients to write down their PIN on a piece of paper so that information such as benefits and appointments could be updated on their HPP cards while they were in nutrition education classes. This procedure, which presents a security concern, has been addressed since our last site visit in April 2001.

Other Data Systems and Reporting Requirements

Because of the nature of a pilot project, many offices continued to use paper charts for tracking client information and used little, if any, information from HPP cards. In addition, few partners were generating or using HPP reports. These capabilities had not been integrated into client or office monitoring. The existence of other management information systems may have impeded the use of HPP. In some cases, existing systems reduced the need to access data on HPP. In other cases, HPP duplicated functions of other systems that the partner programs were required to use. Because HPP was a pilot, programs were required to maintain their paper or other management systems as a backup.

Head Start programs were already tracking extensive quantities of data on the HSFIS system, so they were not reliant on HPP for standard family and child information. At the time of our visits, most partner programs still required paper documentation for physical exams and immunizations. Because most physicians were not using HPP, there was no way for this information to be shared via the card. Statewide immunization registries in North Dakota and, in the future, Wyoming will provide more accurate and complete information than was available through HPP. In addition, providers, including schools and child care facilities, required official, certified hard copies of immunization records. While the HPP printout was considered official in Bismarck and Cheyenne, it was not in Reno.

As HPP use continues to evolve at partner sites, additional changes are expected. Head Start partners in both Cheyenne and Reno hope to have those staff who work most closely with families (family development specialists in Cheyenne and family service providers in Reno) start using HPP as part of their home visits and other routine interactions with families. Staff at the City-County Health Department in Cheyenne were encouraged by the effect of simply relocating the HPP equipment and plan to consider additional ways to use the system better.

4.6 HPP Experiences Regarding Efficiency

The HPP demonstration required staff to develop new skills and take on new responsibilities. As a result, neither caseload numbers nor numbers of full-time equivalent (FTE) staff tell the whole story. No additional staff were hired by the partner programs for HPP, but there were some staffing changes associated with HPP. An important caveat here is that we can describe only staffing changes associated with the start-up of a demonstration. Any impact on staffing during the period of the evaluation is not likely to represent staffing requirements of steady-state operations.

In Bismarck, the state did not add any FTEs in WIC for HPP implementation because the site manager, who also served as WIC Director, did the implementation work. BBNS sent an additional nurse to work at WIC on WIC immunization clinic days because of the additional time needed to add immunization information to cards. In Cheyenne, WGA provided an additional part-time staff person for eight months (January through August 2000) to enter information on HPP cards at CCC and at the City-County Health Department. When that contract ended, WGA contracted to support a clerk at WIC for approximately four hours a week through mid-June 2001 to enter information on secondary cards. This additional support and the increased efficiency attributed to HPP enabled Cheyenne WIC to serve a larger caseload with no increases in permanent staff.

Interview data support the staff survey responses summarized in table 4-5. The majority of staff using the HPP system indicated that their workload had increased; only in Bismarck did the

proportion of respondents reporting an increased workload decrease from the 2000 survey to the 2001 survey. Most staff said the time they spent in direct contact with clients either increased or stayed the same with HPP. In WIC clinics, many reported that the time staff members spent with the client increased because they sat with the client while waiting for the system to read or load information. Staff and administrators viewed this as a positive outcome. In training, WIC staff were encouraged to use this time to talk with the clients about nutritional issues and to discuss their questions and concerns.

HPP was considered particularly time-consuming at the front desks, where cards were being issued or information was being added to cards. For example, at BBNS it was estimated that HPP takes the receptionist an additional two to three minutes per client. At WIC, when there is a new client with several cards to be issued (e.g., a mother and her children), the process can be time-consuming. Staff are concerned about keeping other clients waiting for service.

There were mixed responses on whether having appointment and immunization information on the card reduced calls from clients. One respondent in Cheyenne noted that having appointments printed on the grocery receipt reduced time the office manager spent looking up appointments for clients. WIC staff in Reno reported that HPP “greatly reduced” the number of calls for appointment information. In Bismarck, however, several staff respondents noted that HPP has not had an impact on the volume of calls from clients for information; clients call rather than check their card for appointments, and program staff do not routinely remind clients that they can access this information at the kiosks. In Bismarck, clients can access appointment information only from kiosks, whereas in Cheyenne and Reno, the EBT function provides an additional way of accessing appointment information.

Table 4-5: Perceived Changes in Workloads and Time Allocation Since Implementation of HPP						
	Bismarck		Cheyenne		Reno	
	2000	2001	2000	2001	2000	2001
	n = 20	n = 9*	n = 8	n = 7*	n = 20	n = 19*
Respondents reporting a change in workload since using HPP system						
Increased	13	5	4	5	10	15
Decreased	1	1	0	0	3	1
Stayed the same	5	3	3	2	7	3
Not applicable	1	0	1	0	0	0
Respondents reporting a change in time spent in <i>direct</i> contact with client						
Increased	7	2	4	3	6	7
Decreased	6	1	0	0	5	6
Stayed the same	4	6	3	4	8	6
Not applicable	3	0	1	0	0	0
Respondents reporting a change in time spent on recordkeeping and reports						
Increased	6	2	5	2	3	6
Decreased	1	2	0	0	4	6
Stayed the same	10	5	3	4	11	7
Not applicable	2	0	0	1	2	0

Note:

*The second round of site visits did not include interviews with all HPP users.

Source: Urban Institute HPP staff survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: November 2000, April 2001).

4.7 User Satisfaction and Perceptions

In surveys and interviews, HPP partner staff and retailers were asked about their own satisfaction with HPP as well as their perceptions of client satisfaction with HPP.

Staff Satisfaction

When surveyed about their general satisfaction with the HPP system, more than 80 percent of staff said they had average satisfaction or were very satisfied, giving a rating of 3 or above on a scale of 1 to 5, with 5 being the best (see table 4-6).⁴² Most staff had previously used a computer and were comfortable using one. The majority of respondents found the HPP system to be user-friendly. Overall, staff seem somewhat less enthusiastic about HPP in 2001 than in 2000: 46 percent were very satisfied in 2000 compared with 37 percent in 2001; 12.5 percent were very dissatisfied in 2000, 17 percent in 2001.

⁴² Because the total number of responses to the staff surveys is low, the ratings 1 through 5 were collapsed into three categories to increase the number of responses in each category. Response ratings 1 and 2 were combined; rating 3 (average) was unchanged; and response ratings 4 and 5 were combined. The lowest rating of 1 accounted for only two responses (Cheyenne in 2000 and Reno in 2001).

Table 4-6: Staff Satisfaction and Response to HPP

	Bismarck		Cheyenne		Reno	
	2000	2001	2000	2001	2000	2001
	n = 20	N = 9*	n = 8	n = 7*	n = 20	n = 19*
Staff satisfaction						
Very satisfied	6	2	3	5	13	6
Average satisfaction	10	4	2	2	7	10
Very dissatisfied	4	3	2	0	0	3
Number of staff who had used a computer before HPP	19	9	6	6	20	17
Number of staff who were comfortable with a computer	19	9	7	7	20	19
Number of staff who feel HPP is						
Not user-friendly	3	1	1	1	0	1
Average user-friendly	9	3	2	1	10	11
Very user-friendly	7	5	3	5	10	7

Note:

*The second round of site visits did not include interviews with all HPP users.

Source: Urban Institute HPP staff survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: November 2000, April 2001).

Retailer Response

In general, retailers like the WIC EBT application. In a survey of Reno retailers conducted by Nevada WIC, half the respondents rated the WIC EBT system 8 or higher on a scale of 1 to 10 (10 being the best rating) on overall ease of use. Many commented on the ease of performing end-of-day settlement. When asked to indicate the best thing about WIC EBT, 87 percent of respondents said they liked the accuracy, convenience, and ease of use of the electronic WIC application. Further, 67 percent of retailers ranked EBT as a better mechanism than checks for providing food benefits to WIC participants.⁴³ However, attitudes toward the ease of using the WIC EBT system varied substantially in retailer interviews conducted by the evaluation team in Cheyenne and Reno. Retailers were asked to rate ease of use for the client and for the cashier. Generally, the rankings for ease of use were higher for the client (on a scale of 1 to 5, the scores ranged from 2 to 5, with an equal number of respondents giving a rating of 2 and 5) than for the cashier (on a scale of 1 to 5, the scores ranged from 2 to 4, with more scores in the 2 range).

Sufficient training for both retail staff and WIC clients is essential to user satisfaction with the system. Respondents in Reno suggested that if retailer training was good, grocery staff generally liked the system. However, with high turnover in the stores in Reno, if adequate training was not always available, problems with the system would ensue. When asked about the biggest problem with WIC EBT, 6 out of 30 respondents said additional training was needed for retail staff and customers. When asked for any additional comments about the WIC EBT implementation, 3 out of 30 retailers said more training for retail staff and customers would improve customer acceptance.⁴⁴

⁴³ Nevada WIC EBT retailer telephone survey, May 2001.

⁴⁴ Nevada WIC EBT retailer telephone survey, May 2001.

Staff Perceptions of Client Response to HPP

Although not widespread, some staff reported client concerns about confidentiality and had encountered clients who refused an HPP card (table 4-7). Across the three sites, fewer than one-third of staff members encountered a client who expressed concerns about confidentiality. In interviews, staff said few clients indicated reluctance to participate in the HPP demonstration because of concerns about privacy and confidentiality. For example, staff interviewed in Bismarck said they were aware of only two participants who declined to have a card, one of whom was concerned about the stigma of the card rather than security of the data.

When first surveyed in 2000, staff thought that cardholders were using HPP cards at more than one facility. While many still believed this to be true in 2001, some staff reported that clients were not using their cards at multiple facilities.

	Bismarck		Cheyenne		Reno	
	2000	2001	2000	2001	2000	2001
	<i>n</i> = 20	<i>n</i> = 9 [*]	<i>n</i> = 8	<i>n</i> = 7 [*]	<i>n</i> = 20	<i>n</i> = 19 [*]
Number of staff encountering a client who refused an HPP card	10	5	5	4	7	14
Number of staff encountering a client expressing concerns about confidentiality	6	4	6	5	2	2
Number of staff who think cardholders are using HPP cards at more than one facility	16	4	7	3	18	16

Note:

*The second round of site visits did not include interviews with all HPP users.

Source: Urban Institute HPP staff survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: November 2000, April 2001).

In summary, staff use of the HPP system reflected the phased implementation, with some programs having greater opportunities than others to add information to the card. Most staff found the system easy to use and had mastered the mechanics of using it. Changes in client flow and clinic operations have been limited so far, but efficiencies have been noted, particularly with the introduction of WIC EBT in Reno.

5.0 Impact of System Operations on Clients

To address the evaluation issues of client empowerment and client satisfaction, we analyzed data from client surveys and the HPP server. Clients who obtained services at participating providers during a designated two-week period were asked to complete surveys. Participation was voluntary and anonymous. The client surveys in Bismarck occurred in June 2000 and April 2001; in Cheyenne, they occurred in November 2000 and May 2001. Reno's single round of surveys began in late March and ended in early April 2001.

It is important to note several limitations of the client survey data. Some of the data sets are quite small when one considers the total number of cards issued at each site. The total number of cards issued as of May 2001 was 2,348 in Bismarck, 991 in Cheyenne, and 8,549 in Reno. The largest sample size obtained from Bismarck was 195; from Cheyenne, 90; and from Reno, 159. Considering the total number of cards issued, this is a low response rate.⁴⁵ Sample sizes are small and do not follow the same group of clients over time, so it is difficult to draw conclusions or compare responses across sites, or even within the same site, over time. In some cases, such as the questions about card and kiosk use, respondents were permitted to check more than one item. Therefore, it is possible for a person to be double counted. However, any client who did not respond to any part of a question was removed from the sample for that question. Regardless of these data collection issues, the client satisfaction surveys give a general indication of client acceptance and perceptions of HPP.

5.1 Client Empowerment

We measured client empowerment through several questions on the client satisfaction surveys. For basic information on card issuance and use, questions asked respondents where they received the card, where they used it, and what they used it for. The surveys also included a series of kiosk questions, including where the respondent used a kiosk and for what purpose. For comparison, we accessed the HPP server for the "most frequently accessed personal information at kiosks." To understand how knowledge of similar current technology affects card use, we examined the number of respondents who do and do not have automated teller machine (ATM) or bank cards, compared with the number of respondents who use kiosks.

Card Issuance

The majority of clients in Bismarck and Reno responded that they were issued their HPP cards at WIC. In Bismarck, 93.8 percent of clients in 2000, and 95.5 percent in 2001, responded that their cards were issued at WIC (table 5-1). In Reno, 96.1 percent of clients responded that they had obtained their cards at WIC and 3.9 percent said their cards were issued at Head Start. In Cheyenne in 2000, the City-County Health Department (Public Health or Immunizations) issued 56.3 percent of HPP cards and Head Start issued 43.8 percent. In 2001, after the launch of HPP at WIC in March, Head Start issued 71.6 percent of the cards, the City-County Health Department 15.9 percent, and WIC 11.4 percent.

⁴⁵ Because some HPP cards are issued to children, the number of potential respondents is about one-third of the total cards issued, but this response rate is still quite low, especially in Reno.

	Bismarck		Cheyenne		Reno*
	2000	2001	2000	2001	2001
	<i>n</i> = 195	<i>n</i> = 156	<i>n</i> = 32	<i>n</i> = 88	<i>n</i> = 155
Percentage of Clients Issued Cards at					
WIC	93.8%	95.5%	0.0%	11.4%	96.1%
Head Start	3.6%	2.6%	43.8%	71.6%	3.9%
Public Health Department or Immunizations	1.5%	1.9%	56.3%	15.9%	N/A

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

* No Reno client survey was completed in 2000.

Source: *Urban Institute HPP client survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: March–April 2001).*

Card Utilization

Use of HPP cards by location (table 5-2) varied in each demonstration site depending on the participating partners and the timing of implementation.

In Bismarck, respondent use of the cards was fairly consistent between 2000 and 2001. WIC has the highest rate of use, at 92.7 percent for 2000 and 91.8 percent for 2001. There is some drop in use of the HPP card at the doctor's office and a slight gain in use at the public health clinic between 2000 and 2001.

In Cheyenne, differences in use over time appear to reflect the staged implementation and staffing changes at this site. The 15.1 percent response to WIC in the second round was expected because of the launch of HPP.⁴⁶ However, there were decreases in the use of the card at all other possible locations. Between 2000 and 2001, the use of HPP at CCC dropped by 28.1 percent. This decrease was apparent during our most recent site visit to Cheyenne, when we learned that CCC had essentially stopped asking patients for, or using, the HPP card. WGA had initially provided funds for an additional worker at CCC to enter patient data and use the system, but this contract ended. In the busy setting of a pediatric practice, the HPP system became a low priority because only a small number of CCC patients were cardholders. The clinic had only recently hired a new receptionist who was to be trained on HPP. There was also a 21.8 percent decrease in use at the public health clinic, where the situation with respect to staffing was similar. When the WGA contract employee who was issuing and updating HPP cards at City-County Health Department left in August 2000, the staff had to reconsider how to incorporate the system into clinic flow. Two staff members have now been trained on the system, and the clinic is reevaluating how to work the card into the pattern of client flow.

In Reno, the majority of clients responding to the survey said they use the HPP card at WIC (56.3 percent) and the kiosks (48.6 percent). The 5.6 percent response at the public health clinic

⁴⁶ Before the launch of HPP at WIC in Cheyenne, clients received WIC EBT using the PayWest card.

most likely indicates card use at the immunization clinic, which is co-located at the county health clinic with WIC.

Client-reported uses of the HPP card are similar in Bismarck and Cheyenne, while Reno has a somewhat different pattern.⁴⁷ The majority of clients in Bismarck in both 2000 and 2001 responded that they most commonly use the card for checking in at health clinics/doctor's office/WIC, making and checking appointments, and checking immunization records. Clients also noted that they used the card for Head Start registration. Cheyenne clients most commonly marked the same uses as the Bismarck population, although in Cheyenne very few clients responded that they were using the card at Head Start registration. The highest number of clients marked the "other" response. The majority of these clients noted that they had been issued a card but had not used it yet. Because most Cheyenne clients were issued cards at Head Start or the public health clinic, it is plausible that most of these clients would not have used the card yet. At the time of the survey, Head Start had used the system only to issue cards at two enrollments, and the HPP system had fallen slightly out of use at Public Health Nursing. WIC, where it is expected that the card will be used most, had just been launched. As the 2001 survey responses in Cheyenne show, clients had just begun to make WIC purchases and check their benefits using their cards. Clients in Reno are most commonly using their HPP cards to make WIC purchases and check benefits. They also reported using the card to make and check appointments. It is clear from our site visit and survey data that the clients in Reno have responded most to the food benefits portion of the card. It is important to note that when a client responds "other," the most common reason is that he or she has not used the card yet or does not use it very often. Many of these respondents say they wish the card were accepted by other providers, which would make it more useful to them. This was an especially common response from clients in Bismarck.

⁴⁷ Respondent use of the card is reported as a simple frequency count.

Table 5-2: Client-Reported Use of HPP Cards by Location

	Bismarck		Cheyenne		Reno*
	2000	2001	2000	2001	2001
	<i>n</i> = 191	<i>n</i> = 147	<i>n</i> = 28	<i>n</i> = 73	<i>n</i> = 144
Percentage of Respondents Using Cards at					
WIC	92.7%	91.8%	N/A	15.1%	56.3%
Head Start	9.4%	10.2%	14.3%	15.1%	N/A
Doctor's office	9.4%	5.4%	50.0%	21.9%	N/A
Public health clinic	5.2%	8.2%	28.6%	6.8%	5.6%
Kiosk	3.7%	21.8%	35.7%	20.5%	48.6%
Number of Respondents Using HPP Cards for					
	<i>n</i> = 174	<i>n</i> = 127	<i>n</i> = 25	<i>n</i> = 59	<i>n</i> = 155
Checking in at health clinic/doctor's office/WIC	103	76	10	18	39
Head Start registration	18	17	2	10	4
Making appointments	64	30	3	4	16
Checking appointments	14	9	3	4	31
Checking immunization records	25	20	13	18	16
Buying WIC food				5	126
Checking benefits				3	79
Other	17	15	6	23	6

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

*No Reno client survey was completed in 2000.

Source: *Urban Institute HPP client survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: March–April 2001).*

Kiosk Use

The kiosks were installed in Bismarck and Cheyenne in October 1999 and in Reno in June 2000. We measure kiosk use by examining both rounds of client satisfaction surveys and HPP server data. We use the satisfaction surveys to identify the percentage of clients who self-report using kiosks. The HPP server data reflect the number of cards read at kiosks, by location, at each site.

Clients at each of the sites report using the kiosks at varying levels. In Bismarck, there appears to have been an increase in the reported use of kiosks, from 3.7 percent of clients in 2000 to 21.8 percent in 2001. Although the percentage increase is relatively high, usage still seems low. Other survey responses and client comments indicate that clients may not have fully understood the survey questions about kiosks. In Cheyenne, there was a 15.2 percent decrease in client-reported kiosk use. One possible explanation for the drop is that the survey period in May was not close to school enrollment, when kiosks are expected to be used for obtaining immunization records. The highest client-reported kiosk use is in Reno, at 48.6 percent.

Statistics from the HPP server (see table 5-3) also indicate that kiosk use increased in all demonstration sites over time: Bismarck increased from 71 to 339; Cheyenne increased from 77 to 356; and Reno from 297 to 692. In our analysis of server data on kiosk usage, we used the data

element “card read,” because it is the element that most accurately captures the number of HPP cardholders using the kiosks to access their personal card information. It is important to keep in mind that this does not mean that these were the only HPP cardholders using the system. In fact, HPP cardholders may have used the kiosk to learn more about the HPP system or other government programs without having their cards read. We selected this measure because some kiosk “hits” may be a result of noncardholder curiosity rather than cardholder use. In addition, kiosk use statistics do not adjust for times that kiosks were out of service. For example, it was reported that the kiosk in the emergency room in Cheyenne had a high rate of downtime, mostly because of misuse of the machine. This includes paper jams and incidents of coins and other items dropped into the card slot.

Location seems to be a significant factor in client use of kiosks. From the server data (see tables 5-4, 5-5, and 5-6), it appears that the majority of clients use kiosks in WIC clinics and (in Bismarck) in grocery stores. In contrast, in the survey, some clients reported using the kiosks at Head Start facilities, while very few reported using the kiosks at the hospital (in Cheyenne) or public libraries (Cheyenne and Reno). According to the server data, Cheyenne’s location of highest use is the City-County Health Department, which is co-located with WIC, allowing HPP clients from both providers to use that kiosk. Kiosks at the Head Start program in Bismarck were not optimally placed, according to Head Start staff interviewed during the final evaluation. Head Start kiosks in both Bismarck and Cheyenne had lower usage than kiosks in other locations because they were not convenient for the parents to access. Interviewees indicated that kiosk usage by parents may be limited in the Head Start program because many working parents drop their children off and do not have time to access the kiosks on their way to or from work. In this program, the greatest usage of kiosks was during registration. Numerous staff mentioned poor placement of the kiosks, and there are similar comments on the client satisfaction surveys. Placement of the kiosks, especially in libraries, appears to be an issue that requires further consideration in order to make the kiosks more convenient for clients.

To determine what personal information is most often accessed from the kiosk, we examined the HPP server data as well as the client surveys. When looking at the most frequently accessed card information pages from the server data, it is important to remember that we did not include the first pages clients would come to. These are the pages clients see once their cards are read. Because all clients who had their cards read would automatically come to these pages, we looked only at the pages in which clients had to actively select information after having their card read. The data reflect kiosk use from the time kiosks were installed until May 2001.

Bismarck and Cheyenne show the same top uses in the same order: immunizations, appointments, health/general medical information, and personal/general client data. The most frequently accessed information in Reno, in order, is EBT benefits, immunizations, provider information, and appointments (see table 5-7). Client-reported uses of the kiosks from the client satisfaction surveys in Bismarck and Cheyenne show the same categories of information, although not in the same order of frequency. Respondents from Bismarck and Cheyenne report using the kiosks most often for appointment functions, immunization records, and checking or printing other health/personal information. Respondents in Reno report using the same functions, contrary to the pattern shown in the server data (see table 5-8). The server data show more common usage of the provider information and EBT benefits functions. The difference between the client surveys and the server data may result from differences in the methodology of data collection, time frame, and/or sample size.

	Bismarck	Cheyenne	Reno
Number of cards used during the first			
3 months	71	77	297
6 months	153	178	468
12 months	266	296	692
18 months	339	356	

Note:

Data reflect the number of cards *read* by the kiosks. Kiosk launch dates are as follows: Bismarck and Cheyenne: October 1999; Reno: June 2000.

Source: Health Passport server. <http://www.hpp.dhs.org/hppserver/Reports/UsageReportCrosstabQuery.asp>. (Accessed June 2001.)

	Head Start	WIC	Dan's Supermarket	Dan's Supermarket South
Number of cards used during the first				
3 months	4	49	8	10
6 months	9	105	19	20
12 months	50	153	29	34
18 months	52	197	45	45

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Data reflect the number of cards *read* by the kiosks.

Source: Health Passport server. <http://www.hpp.dhs.org/hppserver/Reports/UsageReportCrosstabQuery.asp>. (Accessed June 2001.)

Table 5-5: Number of HPP Cards Used by Kiosk Location in Cheyenne				
	Head Start	Public Health Nursing	Public Library	United Medical Center
Number of cards used during the first				
3 months	20	24	10	23
6 months	32	77	26	43
12 months	38	158	39	61
18 months	43	181	58	74

Note:

Data reflect the number of cards *read* by the kiosks.

Source: Health Passport server. <http://www.hpp.dhs.org/hppserver/Reports/UsageReportCrosstabQuery.asp>. (Accessed June 2001.)

Table 5-6: Number of HPP Cards Used by Kiosk Location in Reno					
	Public Library Reno	Public Library Sparks	WIC, Health Department	WIC, South Reno	WIC, Sun Valley
Number of cards used during the first					
3 months	57		120	65	55
6 months	84	10	190	99	85
12 months	114	36	253	158	131

Notes:

WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

Data reflect the number of cards *read* by the kiosks. Kiosk at Sparks Public Library was not in use until September 11, 2000.

Source: Health Passport server. <http://www.hpp.dhs.org/hppserver/Reports/UsageReportCrosstabQuery.asp>. (Accessed June 2001.)

Bismarck	Cheyenne *	Reno
Immunizations	Immunizations	EBT benefits
Appointments	Appointments	Immunizations
Health/general medical information	Health/general medical information	Provider information
Personal/general client data	Personal/general client data	Appointments

Notes:

EBT = electronic benefits transfer.

Data reflect the most frequently viewed kiosk screens containing information stored on individuals' HPP cards.

* In Cheyenne, clients were able to access EBT benefits information through the PayWest inquiry terminals at supermarkets.

Source: Health Passport server. <http://www.hpp.dhs.org/hppserver/Reports/UsageReportCrosstabQuery.asp>. (Accessed June 2001.)

Table 5-8: Top Five Client-Reported Uses of HPP Kiosks^a

Bismarck	Cheyenne	Reno^b
2000	2000	
<i>n</i> = 40	<i>n</i> = 10	
Check appointments (16)	Print child's immunization records (7)	
Check child's immunization records (12)	Check child's immunization records (6)	
Check other health/personal information (9)	Print appointment schedule (1)	
Print other health/personal information (6)	Check other health/personal information (1)	
Print child's immunization records (4)	Print other health/personal information (1)	
2001	2001	2001
<i>n</i> = 31	<i>n</i> = 31	<i>n</i> = 55
Check child's immunization records (12)	Check child's immunization records (9)	Check appointments (32)
Check appointments (10)	Print child's immunization records (5)	Print appointment schedule (9)
Print child's immunization records (8)	Check appointments (2)	Check child's immunization records (7)
Print other health/personal information (6)	Print appointment schedule (2)	Check other health/personal information (3)
Check other health/personal information (5)	Check other health/personal information (2)	Print other health/personal information (3)

Notes:

^a The number of responses for each category does not equal the total number of respondents because (1) clients could check more than one response, and (2) some clients indicated "other" as a reason for using the kiosk.

^b No Reno client survey was completed in 2000.

Source: *Urban Institute HPP client survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: March–April 2001).*

Kiosk Use and ATM Experience

The hypothesis that lack of technological understanding may be a barrier to client use of kiosks is not supported by the data. Survey respondents were asked whether they have an ATM card, and those responses were cross-tabulated with kiosk use data. The responses indicated no direct correlation between client use of kiosks and client experience using ATMs (see table 5-9). Only in the second round of Bismarck surveys was there a higher percentage of clients using kiosks who also had ATM cards: 61.3 percent of clients using kiosks had ATM cards in a sample size of 31 individuals. Otherwise, for all other years and sites, a higher percentage of kiosk-using clients did not have ATM cards.

Table 5-9: Kiosk Use and ATM Experience

	Bismarck		Cheyenne		Reno *
	2000 (n = 20)	2001 (n = 31)	2000 (n = 32)	2001 (n = 70)	2001 (n = 136)
Percentage using kiosks who have an ATM card	40.0%	61.3%	15.6%	8.6%	19.1%
Percentage using kiosks who do not have an ATM card	60.0%	38.7%	18.8%	14.3%	27.2%

Note:

*No Reno client survey was completed in 2000.

Source: Urban Institute HPP client survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: March–April 2001).

In contrast to the general opinion of provider staff, it seems that clients are using the kiosks. It is true, though, that the numbers are small. Technological understanding does not seem to be a serious barrier, but there are other possibilities. Staff members mention kiosk malfunction and language barriers, among other topics, when addressing this issue. The kiosks are self-reporting, meaning that each kiosk automatically sends an end-of-day report. If the kiosk does not send its end-of-day report, the monitoring system notifies the field service contractor. Theoretically, this system ensures that any malfunctioning kiosk will be identified within 24 hours with no intervention required by provider or retailer staff. However, both staff and clients reported that sometimes kiosks were unusable for extended periods of time, and evaluators encountered several instances of malfunctioning kiosks during site visits. There are notes on client surveys by individuals who tried to use kiosks but found they were out of order. The language barrier may be an issue, especially for the Spanish-speaking portion of the population, but we cannot verify this based on the small number of Spanish language surveys we received (53 surveys out of 159). Even at the time of our most recent visits (April and May 2001), many clients were unaware of the purpose of the kiosks, and staff were generally not proactive in encouraging kiosk use. We believe that greater encouragement from staff could result in more use of the kiosks in the future.

5.2 Client Overall Satisfaction

Perceived Effects

We measured what clients thought the effects of the HPP card were with a multipart question in the satisfaction surveys. These various parts have been aggregated into the following categories: improves the process of making or remembering appointments, decreases time spent obtaining services, and improves the process of obtaining health information (see table 5-10). It is important to note that the sample size of the first round in Cheyenne may be too small to support any firm conclusions from the percentages.

A small percentage of clients in Bismarck and Cheyenne felt that the card helped to improve the process of making or remembering appointments.⁴⁸ In Reno, in contrast, 47.0 percent of clients felt that HPP helped with appointments. This may be because, when the HPP card is used to buy

⁴⁸ Few partner programs in Cheyenne were using the appointment field.

groceries, the client's next WIC appointment automatically prints at the bottom of the EBT POS terminal receipt at the grocery store. In Reno, where the greatest use of the card seems to have been use of the EBT benefits, it would be logical that clients would have gained the most from this function. The grocery stores in Cheyenne also have this function, but it may have been too early to tell how clients will respond to the appointment reminders.

Some respondents felt that the card decreased the time spent obtaining services. The high percentage of respondents reporting a decrease in time in Cheyenne is difficult to assess considering the sample size. This category covers elements such as "time filling out forms/answering questions" and "length of visit." During the evaluation period, providers were still fine-tuning the incorporation of the system into their office flow, so the time spent waiting for appointments probably had not changed a great deal. The staged implementation and the timing of initial card issuance affected the length of visits. Appointments take slightly longer for clients who are just getting their cards because cardholders receive information about the HPP program and have information uploaded to the card. Answers to questions about time obtaining services could vary greatly, depending on how long a client had the card when he or she filled out the survey.

A greater percentage of clients noted that the HPP card improves the process of obtaining health information. This category includes elements such as "making calls to get health information," "keeping track of family health information," and "being informed about my child's or my health." The percentages may be greater on this question for several reasons. Considering that accessing immunization records is one of the most common uses of the kiosks, respondents may be referring to the convenience of retrieving their children's immunization records with greater ease. HPP may also cause parents to become more involved in, and informed of, their children's health. Several staff members stated in interviews that they noticed a difference in parent involvement as a result of the introduction of HPP.

Table 5-10: Client-Perceived Effects of the HPP Card

	Bismarck		Cheyenne		Reno ^a
	2000 <i>n</i> = 157	2001 <i>n</i> = 132	2000 <i>n</i> = 15	2001 <i>n</i> = 86	2001 <i>n</i> = 128
Percentage of respondents indicating that HPP					
Improves the process of making or remembering appointments ^b	20.0%	14.0%	27.0%	13.0%	47.0%
Decreases time spent obtaining services ^c	24.0%	13.0%	47.0%	10.0%	20.0%
Improves the process of obtaining health information ^d	34.0%	21.0%	80.0%	20.0%	22.0%
Satisfaction with HPP system ^e	<i>n</i> = 160	<i>n</i> = 142	<i>n</i> = 22	<i>n</i> = 51	<i>n</i> = 140
Dissatisfied	15.0%	29.6%	9.1%	23.5%	12.9%
Neutral	35.0%	29.6%	13.6%	27.5%	14.3%
Satisfied	50.0%	40.8%	77.3%	49.0%	72.9%

Notes:

^a No Reno client survey was completed in 2000.

^b Includes “making appointments” and “remembering appointments.”

^c Includes “time waiting for appointments,” “time filling out forms/answering questions,” “answering questions at the doctor, clinic, etc.,” “ and “length of visit.”

^d Includes “making calls to get health information,” “making return visits because of missing information,” “keeping track of family health information,” “being informed about my child’s or my health,” and “getting health information when I need it.”

^e The ratings 1 through 5, with 1 being very dissatisfied and 5 being very satisfied, were collapsed into three categories to increase the number of responses in each category. Response ratings 1 and 2 were combined; rating 3 (neutral) was unchanged; and response ratings 4 and 5 were combined.

Source: Urban Institute HPP client survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: March–April 2001).

Perceived Barriers to Use

We examined client-reported barriers to use of the HPP system through four measures: (1) “concerned about privacy when using the HPP card,” (2) “carrying the HPP card with them at all times,” (3) “having trouble keeping track of the card,” and (4) “have replaced the card” (see table 5-11). Very few clients expressed concern over the privacy of their information when they use the card or when providers share information. The percentage rose slightly in Bismarck and fell in Cheyenne from the first to the second round, but the numbers are small. Clients from the original focus groups in 1998 felt comfortable with providers sharing information because they had already signed release forms at various locations giving permission to share information. When facing the concept of HPP card technology, those participants suggested continuing the use of permission forms as well as adding a password or some method that would allow them to control the use of the information on the card. It seems that password protection and release forms are sufficient assurance of privacy for the majority of clients.

The number of respondents who carry their cards with them at all times dropped slightly from the 2000 survey to the 2001 survey in both Bismarck and Cheyenne, so that fewer than half the respondents now carry the card consistently. A much higher percentage of respondents in Reno, 77.9 percent, said they carried the card at all times. This may be because of the high rate of card

use in grocery stores for EBT purchases. Small numbers of respondents reported having trouble keeping track of their cards, and even fewer have had to have their cards replaced. The percentage of card replacements is highest in Reno, which corresponds with interviews with provider staff, who noted the high rate of damaged and lost cards. Staff report that they have seen nearly every form of damaged card possible, including cards that were bent and chewed by teething children. Because of the expense, clients in Reno are limited to one replacement card due to damage and one due to loss or theft.

Table 5-11: Client-Reported Barriers to Use of the HPP System

	Bismarck		Cheyenne		Reno*
	2000	2001	2000	2001	2001
Percentage concerned about privacy when using HPP card	7.0% (n = 142)	14.6% (n = 137)	26.9% (n = 26)	6.2% (n = 65)	6.2% (n = 145)
Percentage carrying HPP card with them at all times	56.3% (n = 192)	38.6% (n = 153)	54.5% (n = 33)	45% (n = 80)	77.9% (n = 154)
Percentage having trouble keeping track of card	13.5% (n = 192)	22.2% (n = 153)	15.6% (n = 32)	11.4% (n = 79)	5.8% (n = 155)
Percentage who have replaced card	9.9% (n = 192)	11.8% (n = 153)	0.0% (n = 33)	9.0% (n = 78)	16.2% (n = 154)

Note:

* No Reno client survey was completed in 2000.

Source: Urban Institute HPP client survey (Bismarck: June 2000, April 2001; Cheyenne: November 2000, May 2001; Reno: March–April 2001).

Satisfaction

When surveyed about their general satisfaction with the HPP system, more than 80 percent of clients indicated that they were neutral, satisfied, or very satisfied, giving HPP a rating of 3 or better on a scale of 1 to 5. (For analysis, we collapsed the scale into three levels of satisfaction, as shown in the lower section of table 5-10.) The percentage of satisfied clients fell in the second round of surveys, and the percentage of dissatisfied clients increased. Only Bismarck and Cheyenne are included in the analysis of the first round of surveys, while all three sites are included in the calculations for the second round of surveys. In Bismarck, the percentage of dissatisfied respondents rose from 15.0 percent in the 2000 survey to 29.6 percent in the 2001 survey. The percentage of respondents who were neutral fell from 35.0 percent in the 2000 survey to 29.6 percent in the 2001 survey. Those who were satisfied fell from 50.0 percent to 40.8 percent. It is important to bear in mind that the sample sizes differ slightly across time. Also, the surveys did not follow the same group of individuals, and so the percentages do not show that the same individuals were more satisfied the year before. They simply show that, in general, satisfaction has decreased.

In Cheyenne, the sample sizes of 22 and 51 are quite small. Here again, the number of dissatisfied respondents rose, and the percentage of satisfied respondents fell from 2000 to 2001. However, the percentage of respondents who were neutral rose from 13.6 percent in the 2000 survey to 27.5 percent in the 2001 survey.

Satisfaction surveys were completed only once in Reno, in 2001. The majority of respondents, 72.9 percent, rated their satisfaction at a 4 or 5. This is a very high satisfaction rate compared with the 2001 round of responses in Bismarck and Cheyenne. However, considering Reno's late launch date, these satisfaction rates could be considered first-round responses, and both Bismarck and Cheyenne had higher satisfaction rates in their first survey rounds than in the second rounds.

Satisfaction and Computer Use

To determine whether technological understanding or experience affects client satisfaction with the HPP system, we examined client knowledge of computers compared with their satisfaction. The survey asked whether the respondent has ever used a computer before and, if so, how comfortable he or she is using one.

In both Bismarck and Cheyenne, our sample seems to capture groups of computer-literate respondents. Just as in the 1998 focus groups, we found more computer-knowledgeable people than we expected in both rounds of surveys. In the Bismarck 2000 round, only 10 out of 181 respondents had never used a computer, and 20 respondents who had used computers were uncomfortable with computers. In 2001, 15 out of 152 had never used a computer, and of those who had, only 8 were uncomfortable. The sample size is lower in Cheyenne, but the numbers using computers are similarly high. In 2000, 2 out of 31 had never used a computer, and 3 were uncomfortable using computers. In 2001, 8 out of 78 had never used computers, but only 4 were uncomfortable using them. Reno is different from the other two sites. Forty-six respondents out of 149 had never used a computer, but only 4 of those who had used computers were uncomfortable with them.

Computer use does not seem to have any substantial effect on client satisfaction with the system. It is interesting that in Reno satisfaction appeared to be greater among those who had never used a computer. Of those respondents who had ever used a computer, 50.4 percent were satisfied with HPP, and 72.9 percent of all respondents were satisfied with HPP.

6.0 Conclusions

The HPP demonstration has succeeded in bringing a concept to life. As one respondent said, “Somebody has to go first.” But the time period for this demonstration was very short. Although planned for 18 months, because of the lengthy start-up period and choices made about a phased implementation, most programs and applications (except in Bismarck) were operational for less than a year. This was barely enough time to smooth out the technical wrinkles, a prerequisite to active provider and client utilization of the system. In May 2001, although some applications of HPP were fully operational, HPP was just beginning to take hold in some programs. In others, HPP clearly had not taken hold, and in still others it was just too soon to tell. What the demonstration does offer is a wealth of information that suggests future directions and enhancements that can be applied to HPP to make it more valuable to both providers and clients, and that can be applied to other innovative information technologies in service delivery.

Health Passport’s underlying hypothesis is that electronic health cards can streamline service delivery by improving information-sharing and administrative efficiency among public and private health care providers, nutrition programs, and early childhood education providers. The four overarching questions addressed in this evaluation and our brief answers are as follows:

- ***Did HPP save time and money (or could savings be expected under full deployment)?*** Savings are not apparent yet because of start-up costs and the short time that providers have had to reengineer their business processes. However, the evaluation did find several promising opportunities for cost savings using HPP.
- ***Did HPP improve the quality of care (e.g., by providing timely and accurate clinical information)?*** It is too soon to tell. The phased implementation and limited participation by medical providers reduced the opportunities for cross-program information-sharing.
- ***Did HPP improve parental capacity to manage family health?*** Yes, it appears that clients used the EBT, appointment information, and immunization information functions of the card. Clients used kiosks to access information, but much more can be done to enhance this feature.
- ***Did HPP result in enhanced customer (providers, retailers, and clients) satisfaction?*** Yes. The majority of respondents expressed satisfaction with the HPP system. Staff found the system easy to learn and use. Retailers generally like the accuracy and convenience of the WIC EBT application. The majority of clients were satisfied with HPP and indicated that it helped with obtaining and keeping track of health information.

In the next section, we highlight key findings of the demonstration, based on interviews with program staff, administrators, and retailers; on-site observations; staff, retailer, and client surveys; and HPP server transaction data.

6.1 Key Findings of the Evaluation

- **This demonstration showed that the concept of a multiple-function, user-controlled smart card can be implemented in a clinic setting and used by clients across programs.** However, the limited range of functions and providers included in the pilot and the relatively short demonstration period lead to the conclusion that this demonstration did not test the full capability of the HPP system.
- **A key benefit of the demonstration project, voiced by both project staff and managers, has been the interaction among multiple partners and the ability to work together.** Working together to implement a project as complex as HPP required program staff to really begin to understand each other's systems and goals. While the challenges of coordination and cooperation were difficult at times, program managers felt that they came away with a new appreciation of their partners.
- **Overall, providers liked the HPP concept.** Despite numerous initial technical difficulties and more limited scope than anticipated, providers remained positive in their outlook about the concept of HPP and its potential applications at their local sites.
- **Clients were positive about the card.** Privacy/confidentiality concerns were limited, and most clients looked forward to the acceptance of the card by other providers/settings.
- **The demonstration did not sufficiently develop the business case to engage and retain private medical providers.** Only two private medical practices were included in the three sites, and their participation was minimal throughout the demonstration. A broader population base is needed to make participation in HPP attractive to private providers, and participation of private providers is key to broader acceptance and utilization of HPP.
- **The value of HPP is not in having any *one* application (such as WIC EBT or appointment scheduling) work successfully, but in having *multiple* applications available through a single card-based system.** Other, less expensive technologies are available for specific functions, but HPP enables a client to access a variety of services with a single card. In the case of HPP, the whole is more than the sum of its parts.
- **Kiosks have enormous potential for client learning and empowerment, and for expansion of the HPP system.** But the early technical problems with this aspect of the demonstration limited the experience with kiosks. Now that kiosks appear to be operating more dependably, some kiosks should be relocated for optimum access. More attention should be focused on the use of kiosks (for checking appointments, printing immunization records, obtaining nutrition education, etc.) by educating providers and patients on the benefits of using them and expanding the information available on the kiosks to include more general health information and community service announcements.

6.2 Lessons Learned

The *Initial Feasibility Assessment* of HPP concluded that HPP is an “unprecedented and highly viable model for improving health care for low-income women and children.”⁴⁹ In addition to suggesting programs for further feasibility assessment and demonstration design for each state, the *Assessment* also identified several strategies to improve the feasibility of, and benefits derived from, the HPP. These “enabling strategies” included:

- expanding the population of potential HPP cardholders so that the card could serve as a portable medical record or access key for a majority of providers’ patients;
- extending the duration of the demonstration to distribute the relatively high start-up and fixed costs more effectively;
- designing HPP to interface fully with existing provider systems so as to minimize the perceived administrative impact of this service enhancement and maximize potential administrative savings; and
- identifying other functions beyond improved health information that will create incentives for providers to participate in the project.

It is noteworthy that, of these enabling strategies, only one, designing HPP to interface fully with existing provider systems, was actually incorporated into the demonstration. One clear lesson from this demonstration is that the other enabling strategies are critical to sustaining HPP.

Technical Lessons

The HPP system clearly works and is fully operational at all sites. Response to the system has been positive. Users have found the system and the accompanying training materials easy to understand and say they feel comfortable adopting the system after minimal training. The HPP application provides an attractive user interface and highly intuitive navigation.

However, the required change in the contractor’s management team and technical issues affected the partners’ initial reactions to the system. Implementation was not always smooth at the sites, and it is a testament to the strength of the concept that local partners continued to persevere with the system despite these initial technical setbacks. In the very early phases of implementation, response time was a significant problem at the Bismarck site. Once this problem was corrected, users seemed less concerned about system operations. Although minor operational problems were encountered from time to time, no major system outages affected the sites. While initial operating problems with kiosks were eventually resolved (although not without significant user frustration), kiosks are still frequently out of service. Problems encountered with WIC EBT operations in Reno are being resolved, but operations in Reno continue to present problems for retailers and for WIC staff. WIC staff must spend time on calls from retailers and clients with problems.

Compounding the technical problems for local users is the perception that assistance provided by the HPP Help Desk was often less than exemplary. Throughout the evaluation interviews, the local partners were consistent in their concerns about the availability and adequacy of the HPP

⁴⁹ Price Waterhouse and Phoenix Planning and Evaluation, Ltd. March 1995. *Initial Feasibility Assessment*. Price Waterhouse and Phoenix Planning and Evaluation, Ltd.

Help Desk support, as opposed to that offered by the EBT Help Desk, operated by Stored Value Systems. But despite these technical issues, users generally seemed satisfied with the operation of the HPP system and indicated a reasonable level of satisfaction with the response time and system availability in the final evaluation interviews.

Although end-user satisfaction with the technical performance of the HPP system ultimately improved, the lengthy implementation process and ongoing delays were difficult for the local partners. Difficulties have been most significant with the integrated HPP applications. Although eventually successful, seamless integration of the HPP and WIC EBT applications took a long time to achieve. Because of delays caused by technical problems, changes in organization and management, and other factors such as Y2K that extended the length of the implementation, the evaluators believe that local partners did not have sufficient time to integrate the HPP system fully into their ongoing clinic operations and maximize the use of the card. In some sites, potential partners were actually lost because of these delays. Delays encountered were the result of both internal project issues and outside events, such as the bankruptcy of the Nevada Immunization Registry contractor and delayed rollout of the Wyoming WIC EBT applications. Nevertheless, a number of technical lessons have been learned that can provide valuable insights for future enhancements of this and other multiapplication card projects.

A key problem, encountered early in the project, was the lack of a coherent and consistent System Development Life Cycle (SDLC). This shortcoming continued to affect the project throughout its development. An SDLC is a structured and phased methodology for planning, designing, developing, and implementing automated systems. The SDLC methodology, which includes policies, techniques, procedures, standards, and tools, provides a framework for the managed evolution of any systems project. Throughout the SDLC, quality assurance processes and checkpoints are built into the cycle to ensure that the project does not move to the next phase until the client is satisfied with the results of the current phase. The following describes the typical activities included in the SDLC:

- **Project planning and initiation.** In this stage, the project staff defines the business problem and projects the scope and overall project approach. At the conclusion of this phase, a project charter and work plan are created.
- **System analysis.** In this stage, project staff analyze the business requirements. Staff typically build process and data models, define key system requirements, identify and analyze alternatives, determine the best solution, and create a high-level conceptual design. A functional requirements document, requirements traceability matrix, alternatives analysis, and conceptual design are generally produced at this point in the project. In addition, project staff plan the technical architecture and determine infrastructure requirements. Training and implementation plans are usually developed during this phase as well.
- **System design.** Designing the solution is the key activity in this phase, and the activities vary depending on the type of implementation planned. In a Package Delivery implementation, product specifications are developed, options are reviewed, and a recommendation is made.

- **System development.** This phase includes the programming or acquisition of the system. For acquired systems, the packages are acquired, configured, and installed. In a development project, the system is built and tested. Testing includes functional, installation, compatibility, and usability testing. Operating procedures and user documentation are developed during this phase.
- **System implementation.** During this phase, the system is implemented in its operational environment. Often included are equipment and software installation and configuration, conversion of data, and training.
- **System maintenance.** During this phase, system problems are corrected and enhancements are made.

The technical evaluators identified issues with documentation in various phases of the Systems Development Life Cycle. Deviations from industry standards in the documentation of life cycle phases have subjected the HPP to risks and delays. Issues were encountered in the following:

- **Requirements definition.** Although information about program operations and high-level functional requirements was gathered during the feasibility phase, no detailed, comprehensive, systemwide requirements document was ever produced for the HPP system. This lack of documented, detailed system requirements, approved by all project participants, adversely affected a number of phases of the development process. Consistent mechanisms, such as a requirements traceability matrix, were not developed to document requirements and to ensure that these requirements were addressed in later phases of the system implementation. Had such mechanisms been used, it is likely that fewer problems would have occurred in subsequent stages of the implementation process.
- **Design documentation.** The design documentation (known in this project as the Detailed Functional Specification, or DFS), at a minimum, must provide sufficient information about design details to assist in the review of system acceptance testing documents, plans, and criteria. The functional demonstration testing is the opportunity to confirm that the Health Passport system meets the full range of required system functionality, as well as to demonstrate all user interfaces with system components. A key issue with the early versions of the DFS was that it focused almost exclusively on the HPP application, which was only a part of the total HPP system. In the case of HPP, although the API and the data map were developed, a complete and comprehensive system design was not finalized when the integration programming was being performed. Further, there were no specific integration specifications. Therefore, there was some uncertainty about the functionality required in the integrated HPP applications. Some problems with the legacy systems interfaces (section 3.4) were created because of these inadequacies in the HPP design documentation. Because the DFS was revised several times, it was difficult to use this document to create test scripts or evaluate the system for acceptance testing. The lack of clarity about functionality in the design caused confusion in the development and testing phases for both the evaluators and the integration programmers.
- **Test documentation.** Lack of a comprehensive, systemwide testing plan that covered all HPP system modules (including the integrated system components and WIC EBT components) had a significant impact on the testing. Although the test plans and test scripts were available, they focused primarily on the HPP application, leaving a gap in the systems planning process for other HPP system components. A comprehensive

schedule that outlined, in a single location, the dates for each testing phase (i.e., what applications were to be tested at each pilot site) would have made test planning far easier for all participants. In the acceptance testing, the lack of comprehensive, systemwide test planning caused delays and problems in the testing of the HPP system. Without proper installation of equipment, appropriate cards to perform test functions, the needed test data, and the expected test outcomes, many test scripts could not be performed according to the schedule, leading to inconclusive testing and return visits to testing sites. While particularly problematic in early testing phases, testing procedures did improve in sites that implemented later.

- **Implementation planning documentation.** The HPP contractors delivered neither an HPP systemwide implementation plan nor a comprehensive disaster recovery plan, although they were required deliverables.⁵⁰ While each site had its own version of these plans, there was no overall, projectwide approach maintained in a single location to which all partners had access. The lack of implementation planning across sites made coordination of the HPP rollout more difficult for local partners. The contractors were subject to some external factors outside of their control and strove to accommodate local clinic schedules, but a better-planned implementation might have resulted in less disruption to partner operations. The partners were subjected to changes in the implementation schedule that affected use of the card, participation of some potential partners, and user perceptions of the system. For example, implementation delays resulted in the loss of some partners in Reno. In Cheyenne, delays with the Head Start integration meant less use of the card because deadlines for participant registration were missed. Because of the delays, cards were not used as planned in the Head Start registration process at some sites, resulting in missed opportunities to promote the sharing of information among programs.
- **Reporting documentation.** From the earliest days of the project, the evaluators provided the prime contractor with listings of specific reports and statistics that would be required for the evaluation. While the prime contractor was repeatedly advised of the need for detailed report specifications, they were not made available until the very latest version of the DFS. At that point, both HPP users and evaluators indicated that the existing reports did not fully meet their needs. Early documentation on how users would use reports and what formats would be most useful to them might have improved the ultimate reporting capability of the system.

In summary, the technical lessons learned from this pilot underscore the critical importance of following a disciplined System Development Life Cycle methodology to ensure ongoing progress in development, timely documentation, successful integration across myriad contractors and developers, and faithful adherence to user requirements. Too little attention to up-front design caused significant problems at later stages in the project, affecting the implementation schedule as well as the fulfillment of user requirements. Implementation problems could have been reduced and user satisfaction improved had more emphasis been placed on the design and

⁵⁰ The overall implementation plan and a comprehensive disaster recovery plan were required from the prime contractor. Although individual disaster recovery and implementation plans were developed at the pilot sites, the HPP systemwide plans were not available at the time of the initial rollout.

integration of functions. Further, the HPP project would have benefited from user sign-off at each stage of the SDLC.

Lessons for Project Management and Oversight

The HPP demonstration was an ambitious project that required the participation of many organizations and several levels of staff within those organizations. The following lessons apply to the overall management of the project.⁵¹ We believe they apply to future expansion of HPP and to other multiapplication projects.

- **Phased implementation is highly beneficial, allowing one site to learn from the technical problems encountered by other sites.** The technical implementation improved over time, as “fixes” added to the software to resolve problems found in one site made the software more stable for the next site. For example, issues with the reader response time in Bismarck were resolved before the software was rolled out in Cheyenne, thereby avoiding that problem in Cheyenne. The WIC HPP application incorporated improvements from Reno that led to a smoother implementation of WIC EBT in Cheyenne. Interview respondents overwhelmingly approved of a staggered launch, arguing that starting small and slowly adding sites reduces the potential problems associated with staffing and training and enables sites to adopt best practices identified along the way. In future demonstrations, the timeline should be adjusted to accommodate a phased implementation so that a longer period of full operations can be evaluated.
- **Formalized agreements should be developed among stakeholders.** Interagency agreements must be put in place that clearly specify reporting relationships, spans of control, timelines and participant roles and responsibilities. While interagency agreements did exist between some partners in the HPP project, they were not a project requirement. Agreements should ensure that no ambiguity remains as to the nature of the interrelationships among the participating parties. Furthermore, the agreements should provide an organizational framework for enforcement of agreed-on roles, responsibilities, liabilities, deliverables, and schedules. Agreements must also be established between management and the multiple contractors participating in the project, so that a clear control structure is delineated and responsibilities for problem resolution are defined.
- **Administrative guidelines and common business processes should be developed across programs.** A set of administrative guidelines is needed to supplement the technical specifications and ensure that there are common operational procedures for implementation of a multiapplication platform across programs. These guidelines should address common business practices for card issuance, establishment of data access rights, maintenance of data security and privacy, backup of data, reporting, and other operational concerns to support interoperability. While this was successfully accomplished for some programs, comprehensive guidelines and procedures will become increasingly important as HPP moves forward and adds new partners.
- **Use of existing management and communication structures should be improved.** Although several mechanisms were put in place to ensure communication and

⁵¹ A number of these recommendations were previously presented by Phoenix Planning and Evaluation, Ltd., in “Interim Assessment: Health Passport Technical Evaluation” (Unpublished).

coordination among participants, they have not been optimally utilized. The HPP Council should be reactivated and possibly reorganized to make it more effective. For example, task forces might be formed to address specific issues, such as data definition questions and legacy applications, project operating policies and procedures, regional interoperability issues that may arise during the operational phase of the demonstrations as they evolve on a common platform, and requirements for future enhancements to the HPP application.

Lessons for Program/Partner Management

The HPP demonstration provided the opportunity to observe and discuss management and organizational issues from many perspectives, because each partner had its own procedures and priorities. A number of lessons apply to each of the partner programs and to future partners as they introduce and manage change in an organization:

- **Support from top management is critical.** As with any change introduced in an organization, support from top management is a key ingredient for staff acceptance. In the case of the HPP demonstration, “top management” refers to directors of each local program, as well as to state or corporate officials for programs that are part of a larger organization. For example, support on the part of the local WIC director was critical, and because WIC is administered by the state health department, state support is important as well.
- **Participation in HPP is an excellent opportunity for improving coordination across programs.** Involvement in a common project led to increased communications between programs about their organizational settings and operating procedures. HPP also offered new opportunities for community networking as partners educated others about the project. The formation of cross-program user groups to share reengineering ideas and answers to common questions would build on this improved coordination and help to optimize use of the system.
- **Effective technology alone is not enough; it must be accompanied by a critical mass of participation and thoughtful use of the technology to achieve success.** Although staff of the participating programs generally liked the smart card technology and found their clients to be surprisingly technologically savvy, staff encouragement is clearly critical to successful client adoption of the technology. Even in a pilot setting, the duplication of duties, especially the additional data entry required for updating the card, affected user satisfaction. When staff became busy, they did not always take the time to enter data on the card, or (in Cheyenne) they used the “pending update” function. This affected the timeliness and value of the data. When partners did not fully participate in card use, the value of the card to other partners declined. The HPP card must be fully integrated into the clinic setting—becoming the standard way of doing business—if programs are to realize its full potential. Clinic staff will have to experiment to find the best ways to incorporate the HPP card into the patient flow so that it actually delivers the added value it has the potential to offer.

- **All staff must understand the HPP concept and feel they are part of the demonstration.** Both staff and clients must rethink some of their old ways, finding creative and flexible uses of the card's capabilities to streamline rather than complicate their business processes. All levels of staff can contribute ideas, but first they need to understand the HPP concept and how it can enhance and facilitate their jobs. In the pressure to implement the demonstration and minimize the disruption for clinic staff, responsibility for HPP implementation tended to fall on a few individuals at each site. However well-intentioned, this approach left other staff with little understanding of the potential offered by this new technology and limited their sense of ownership in the system.

6.3 Summary of Cost Analysis and Cost Implications

In many implementations of automated systems, increased efficiency and reductions in cost occur only when operational environments have had an opportunity to consider the optimal use of the technology and to reengineer business processes. In this demonstration, the technology was in place far too briefly for programs to fully acclimate themselves to the impact on client flow and program procedures. Different programs used the card in different ways. Some programs integrated the card into the office operations more effectively than others, thereby gaining greater efficiencies in office operations. In many sites, the users were still learning to use the system effectively at the end of the demonstration and therefore had not had the opportunity to maximize the system's potential. Thus, the evaluators believe that it is too early to provide meaningful cost/benefit analysis.

The total cost of the design, development, and implementation of Health Passport, factoring in the delays and staggered launch, was approximately \$4.2 million. However, this figure is unreliable, as it is believed that Siemens Communications, Inc., incurred costs above the contract price, which the company had to absorb. Estimates of ongoing costs per site are included in appendix C. While these figures can provide some ballpark estimates of costs, they may be far from realistic costs for ongoing statewide operations of a card-based benefit delivery system.

In a pilot environment, most of the costs are encountered up front, and limited opportunities exist to spread shared costs among multiple partners. Therefore, the economies of scale that can reduce per partner costs are rarely realized in pilot operations. In addition, the sparse population of the HPP pilot sites made it difficult to achieve significant economies of scale.

A similar phenomenon was seen in the very early EBT pilots, in which costs per case-month were demonstrated to be astronomically high. For example, in one of the earliest EBT pilots—the Reading, Pennsylvania, EBT pilot—there was a substantial difference between the initial pilot cost and the price for the statewide operational system. The pilot measured three categories of costs: Food Stamp program functions, database/EBT center functions, and terminal/telecommunications functions. The total cost breakdowns, on a cost per-case month basis, were as follows:⁵²

- ATP⁵³ System \$2.74
- Original/Prototype EBT \$27.22
- Final State-Operated EBT \$9.14

The high pilot costs were misleading because economies of scale in the pilot environment were not realized, efficiencies in operating procedures had not yet been identified to offset initial investment, and appropriate cost allocations were not considered. As the scale of EBT grew, states initiated coalitions, and procedures were revamped to take better advantage of the efficiencies offered by electronic transactions, the cost of EBT became more realistic. Subsequent studies in Maryland, New Mexico, and Ramsey County, Minnesota, showed that costs per case-month continued to decline as the volume went up and other programs (e.g., AFDC) were bundled with Food Stamps. As EBT has matured over the years, the cost per case-month for magnetic stripe, on-line financial EBT (used for Food Stamps and Cash Assistance programs) has declined even further to between \$2.50 to \$3.00 per case-month, depending on the volume and the circumstances of the individual state.

The discrepancy between pilot and statewide rollout can be seen in the case study provided by the Wyoming Food Stamp program and WIC EBT. While the cost trend is substantially downward from pilot costs, even within states EBT costing can vary from year to year, based on a variety of factors. For example, EBT costs in Wyoming are a moving target by program. For Food Stamps EBT, Wyoming is spending \$3.03 per household case-month in 2001–2002 and the state expects the cost to rise about a dollar, to \$4.03, in 2003–2004.⁵⁴ This monthly unit cost is still more than \$1.00 lower per case-month than the maximum allowed by the federal Food and Nutrition Service in the Wyoming cost cap.

For WIC EBT, with 6,875 households for FY 2001, the shared EBT unit and WIC state office costs were estimated to be \$511, 427, or \$6.20 per household. Once fully operational in 2002, the shared cost is estimated to be \$5.00 per household, and for 2003, the shared estimate is \$4.81 per

⁵² Kirlin, John, Christopher W. Logan, Mark G. Menne, Elizabeth E. Davis, and Kit van Stelle. (1990). *The Impacts of State-Operated Electronic Benefits Transfer System in Reading Pennsylvania*. Cambridge, Massachusetts: Abt Associates Inc.

⁵³ This stands for Authorization To Participate.

⁵⁴ These costs include (1) a percentage of the state-owned EBT equipment, \$48,000; (2) a Wyoming contribution (with Ohio) for the mandated SAS 70 audit of the processor, \$80,040; (3) routine Food Stamp software maintenance/upgrade, \$24,000; (4) payment for the secure dedicated line between the Wyoming mainframe and the Stored Value Systems Host, \$14,000; (5) Food Stamp card replacements, \$25,974; and (6) the inflation-based adjustment to the Stored Value Systems contract, \$22,800.

household. While these costs are high, they are well below the 1997 Wyoming estimates of \$10.80 per Food Stamp case-month and \$7.64 for WIC.⁵⁵

In the case of HPP, the cost of the pilot technologies (e.g., cards, readers, kiosks, PCs) has declined dramatically since the original HPP request for proposal was released, so start-up costs are unrealistically high. One of the original HPP enabling strategies was to extend the duration of the demonstration to distribute the relatively high start-up and fixed costs more effectively.

Further, baseline data were not collected from each local partner on the actual costs of paper operations in both the nutrition and the health benefit delivery processes. Therefore, meaningful cost comparisons would be difficult to construct. For a full understanding of the cost implications, time and motion studies (which were outside the scope of this evaluation) of both the paper and electronic environments are needed to gauge the cost and benefit implications of the transition to an electronic environment.

Despite the difficulty of providing meaningful cost data from a demonstration environment, the demonstration can offer some insights about efficiency and costs. The demonstration has helped us learn whether retailers gained financial advantages and operational efficiencies, how providers viewed HPP's impact on service to clients, and how efficiency can be improved for HPP or similar projects in the future.

While HPP did not necessarily effect staff reductions in all sites, more cost-effective and beneficial use of staff and greater empowerment of clients seem to have resulted. Additional data entry was often required in the demonstration for two reasons—the demonstration had the burden of maintaining two systems (the electronic system and the paper system), and the HPP and legacy systems were not totally integrated. Because of the additional data entry, many staff members perceived that the HPP project resulted in more, not less, work. In some cases, temporary staff were supplied to help with the additional data entry tasks. Offsetting this additional data entry, some clinics pointed out that the download of benefits for three months at a time at the retailer locations freed WIC staff time, because WIC had to schedule fewer appointments with clients than were normally required to provide paper WIC benefits. A number of positive effects on efficiency and quality were noted:

- Staff in Reno indicated that the reduction in appointment time for picking up benefit checks could be redirected to nutrition education and enhanced counseling for the client, thereby improving the quality of service.
- WIC EBT has significantly reduced participant and vendor abuse, allowing staff time previously devoted to policing tasks in Reno to be redirected to more service-oriented functions.
- Staff who used the computer processing time to speak with clients about health issues and improved nutrition felt that HPP helped to improve the quality of their time with the clients. Clients, in turn, perceived benefits in improved communication with the staff, more freedom to purchase the right foods at their convenience, and the opportunity to take more responsibility for attending clinic appointments.

⁵⁵ Abt Associates, Inc. *Costs and Impacts of the Wyoming Smartcard EBT System*. 1997. Alexandria, VA: Food and Consumer Service, U.S. Department of Agriculture.

6.4 Recommendations for Statewide Rollout

Looking ahead and building on what we learned during the demonstration experience, we recommend proceeding with caution. Despite a complex organizational structure, technical challenges, staff turnover, and long delays, HPP did begin to operate as intended, and many providers and clients are responding positively to it. Some providers are using the card to share information and prevent duplication (e.g., checking to see whether a hemoglobin test has been performed in the past 60 days); some are using it to check appointments and print their children's immunization records; and many clients in Reno are enjoying the convenience of WIC EBT for the first time. However, using and sharing the information on the cards requires that the information first be entered. Issuing cards and putting information on the cards in a busy clinic setting are challenging and time-consuming tasks that were successfully accomplished during the demonstration. There has been too little time for staff and clients to really work with the card information. The numbers are small, and the extent of cross-program use appears to be quite limited so far. Several conditions are needed to ensure longer-term and broader success.

A key question to be addressed by policymakers and funders is "What can this technology do that a cheaper technology or paper system cannot do?" This demonstration has offered a glimpse of what is possible and has addressed key issues such as privacy, security, and client convenience and access. But to build a strong case for HPP, use of its multifunction capability must increase. This can be accomplished by:

- improving the integration of HPP in the existing partner sites;
- increasing the number of users by expanding the number of partners, while carefully considering client service use patterns in selecting partners; and
- increasing the motivation to use the card (for providers and clients) by adding functions.

There is much to be done. For this reason, we believe full statewide rollout is premature. Expansion beyond the existing demonstration site boundaries, and in some cases statewide expansion, may be appropriate for some programs or functions as a way to quickly increase the critical mass needed for the card to catch on. The circumstances differ in each state and in the various partner programs. Our recommendations for each site are presented below.

Bismarck

A key ingredient missing from the Bismarck demonstration is WIC EBT, yet the state does not expect implementation of WIC EBT for about three years. Sustaining HPP until it can be used for WIC EBT will be a serious challenge, especially as many current WIC families will have aged out of the program before WIC EBT is implemented. However, we see many opportunities for improving the utility of the card. If pursued aggressively, the success of such efforts will provide a better foundation for the WIC EBT application. In the case of Bismarck, we recommend that the focus for adding partners remain at the local level, in order to address the following:

- **Aggressive recruitment of private clinics**—not individual clinics, but health systems, including their hospitals and outpatient clinics. The Medicaid eligibility feature on Bismarck's HPP is a selling point, and the level of contact should not be individual clinic administrators but rather the physicians and chief executive officers who own and operate the local health systems.

- **Intensive hands-on work with all partner staff about how HPP can facilitate their work and empower clients.** Staff seemed to have mastered the mechanics of the system, but they saw little purpose in what they were doing. Staff need to feel a sense of ownership of the technology, and clients need to be trained and encouraged to take advantage of all features of HPP that are available to them.
- **Keeping abreast of the changing technological environment in Bismarck.** A number of new systems and upgrades that are being explored by organizations in Bismarck potentially complement or duplicate functions of HPP. HPP supporters need to be at the table as these systems and plans are being considered. For example, we learned on our last site visit that the state is researching a new computer program for the Bismarck public schools that will include children's immunizations and health information and will be accessible to parents. We also learned that MedCenter One is in the process of converting to an electronic medical record with its parent hospital. This system is expected to be operational at all MedCenter One clinics in one year. The state is about to Web-enable its immunization registry, which will include an algorithm that analyzes the immunization record and recommends the immunizations needed. Each of these examples provides either an opportunity or a challenge to HPP, depending on timing, creativity, and organizational relationships.

Cheyenne

In our opinion, HPP is farthest along in Cheyenne, and this site offers the most potential for expansion in the near term. Cheyenne has the advantage of prior experience with WIC EBT as well as strong top-level state support of the pilot. These circumstances have shortened the learning curve and improved staff attitudes immeasurably. Programs are starting to take ownership and think about how to make better use of HPP by integrating the technology into program operations. However, the number of HPP users in Laramie County is very small. This is due in part to late implementation of HPP at WIC (March 2001), but it is also a reflection of the fact that, like Bismarck, the target population (e.g., families participating in WIC, public health programs, and Head Start) in Cheyenne is small. Because Cheyenne has both WIC and Food Stamp EBT functions on the card and a clientele and retailers who are accustomed to these features, this site is well-positioned to expand its population base. Suggestions include the following:

- **Continue efforts to include Medicaid eligibility on the card** as an additional selling point for aggressive recruitment of private clinics. Other features that private providers said would be helpful on the card are fields that indicate the responsible party for treatment of a child and historical information about health screening.
- **If the planned changes in Head Start (e.g., using HPP on laptop computers at home visits with families) are successful, consider expanding the program statewide for Head Start families.** This would also require reconsidering which data elements would be most useful to Head Start and preparing educational materials that are better suited to these families (e.g., families with lower literacy levels and limited familiarity with computers).
- **Building on the Food Stamp EBT function, expand use of the card to clients of the Department of Family Services.** Work with this agency to determine other uses these families may have for the card (acceptance by Medicaid providers, applications at one-stop career centers, informational materials that can be added to kiosks, etc.).

- **At the same time, broaden the population base and the image of the card** by expanding beyond the low-income population (e.g., to families of school-age children).

Reno

While a defining characteristic of Bismarck may be the lack of WIC EBT, Reno's concerns for the future are related to the relative success of WIC EBT. At the time of our last visit (April 2001), clients were still having problems using their HPP cards at grocery stores, and WIC staff were spending time checking HPP cards and working with frustrated clients.⁵⁶ Nevertheless, electronic WIC benefits were well received in Reno and were considered an important upgrade for clients as well as for WIC staff. Unfortunately, the card has been used for little else in Reno. Thus, the advantages of the more expensive multifunction smart card are not apparent in Reno at this time. Because the Reno demonstration has been in place only since June 2000, this is an early finding, and it may simply be a matter of time before staff and clients can begin to look beyond resolving the technical issues associated with implementation.

Of all the sites, Reno theoretically offers the most potential for success because of its larger population base. However, the Reno site was adversely affected by delays, staff turnover, and lack of leadership at critical points in the demonstration. This site is also at a disadvantage with respect to our evaluation because it was implemented one year later than the other sites, and thus the evaluation was shorter. We recommend that Reno continue the demonstration before a statewide rollout is considered, but only after rethinking and restructuring the existing pilot.

- **Current partners, such as Immunizations at the Washoe County Health Department and CSA Head Start, need to be reeducated about HPP and the opportunities it offers for both staff and clients.** Providers need to participate in planning how HPP will be used in their programs, and they must take ownership of the system for it to work. Staffing issues are a concern in Reno, and consideration should be given to providing extra staff support in a way that relieves some of the burden on busy staff but does not set HPP apart from mainstream clinic operations.
- **Partnerships with private providers and with other public providers need to be pursued.** This demonstration did not include private partners, but, as noted in the recommendations for Bismarck and Cheyenne, such participation is critical to the acceptance and increased utility of HPP. The identification and recruitment of private and public providers must consider the service utilization patterns of the participating clients. For example, most ITCN WIC clients do not attend the Head Start program that participates in HPP.
- **HPP materials, outreach, and kiosks need to be better adapted for the large Spanish-speaking population in Reno.** Respondents noted that this may require translation services by individuals well versed in health care applications who have worked with the target population.

⁵⁶ After the period of our evaluation, this was identified as a problem with cables, and we understand that it has been resolved.

Cross-Site Recommendations

At the same time that expanded and enhanced HPP operations are being investigated in the three pilot sites, the evaluators recommend a review of technological options for the expansion of the HPP system. By considering new technologies, HPP may provide additional incentives for private provider participation and identify more cost-effective solutions for WIC EBT. Currently, WGA is negotiating with federal and state partners to identify additional pilots that test the same concepts as HPP but use different technologies. Working with the General Services Administration, the state of California, and local medical providers, WGA is planning a pilot to test the use of the Internet for secure exchange of medical information. In this pilot, both card- and network-based data sharing will be studied, focusing on the use of the smart card for identity authentication and for limited emergency medical information. The results of this pilot could have a significant impact on how HPP moves forward. Therefore, the evaluators suggest that the results of these planned pilots be considered before any wide-scale deployment of the HPP system. Enhancements from this next phase of piloting should be incorporated into HPP to help build the case for statewide rollout.

From a technical perspective, the HPP project is at a crossroads. To provide added value to participants and encourage user acceptance, HPP needs improved integration with existing systems, widespread participation, and new card functionality. As the pilots come to an end in each of the sites, this is the appropriate time to consider how advancing technology could better support the increased integration, expanded scope, and added card functionality that is critical to achieving greater use of the card platform. Both card- and network-based sharing of data should be explored, as should the viability of both online and offline WIC EBT. The following points should guide future cross-site expansion of HPP:

- The sharing of health and EBT applications across jurisdictions offers the potential to save time and resources.
- As card management and customer service capabilities are shared across an increasing number of programs, individual programs can potentially achieve administrative savings.
- The costs of implementing the card platform are not necessarily borne by the same entities that are realizing the benefits.
- Governments should consider partnerships with the commercial sector to reduce the cost of the card platform.
- The benefit delivery platform must be flexible and open to ever-changing technology.
- Leaders at the highest levels of state and federal government should champion the HPP platform.
- With HPP, top executives will gain access to strategic information, improving program management and funding decisions.

A key finding from this pilot was the ease with which the WIC EBT application could be transported from Wyoming to Reno. Adopting the existing PayWest WIC EBT application for the design of the HPP WIC EBT application across both Wyoming and Nevada took some time, but it required far less time and money than Nevada would have needed to develop its own WIC EBT application. A variety of Systems Development Life Cycle deliverables were shared across the two states. When the HPP WIC EBT application was finally implemented in Cheyenne, it

leveraged testing results and implementation lessons gained from Reno. Similarly, the HPP immunization and health applications could be shared across several programs in multiple states, reducing the potential cost of developing the same functionality for each program using it. Because the HPP system software was developed with federal funding, it is in the public domain and can be transferred to other jurisdictions.

Integration of standard systems provides substantial economies, but such integration is very costly when each state has different legacy systems. The benefit of standardization has been clearly demonstrated in the HPP pilot. Efforts to integrate HSFIS, while difficult, were well worth the cost, because such efforts can now be leveraged across Head Start programs throughout the country. Virtually any Head Start program using HSFIS could use the same HPP software and initiate a card program by installing necessary hardware. On the other hand, state-specific WIC and immunization systems were more difficult and costly to integrate. Work had to be duplicated over and over again from state to state to achieve integration with the separate systems. While costly, seamless integration with legacy systems was very important to user acceptance. In building new benefit and health care delivery systems (e.g., immunization registries, family service eligibility systems, and WIC management information systems), states should consider standardization/open platform concepts to help make integration more viable and less costly in the future.

As card management and customer service capabilities are shared across an increasing number of programs, individual programs can potentially achieve administrative savings. Every card program requires a card personalization and distribution function, a data management function, and a customer service function. Such services are very costly to duplicate across each program issuing a separate card. Thus, the more programs sharing a card platform, the lower the overall card management fees will be for each individual program sharing the cost. As volume increases, costs often decline for both commodities (cards, card readers, printers, etc.) and services (call centers, card personalization, etc.). Because the cost of cards has decreased while memory capacity of chips has increased, the evaluators suggest that the HPP participants consider consolidating individual health information onto a single family card to reduce card costs and decrease issuance time.

Further, the evaluators suggest that multiple programs (Food Stamps, Temporary Assistance for Needy Families, Supplemental Security Income, General Assistance, transit subsidies, subsidized child care, foster care, Workforce Investment Act (WIA), Medicaid, etc.) share a card platform and card management services to reduce the cost per program. In addition to benefit programs, other government agencies might use the card for appropriate e-government services. Additional economies may be gained if states form coalitions to provide in-house EBT processing, training, card management, and customer service functions for a group of programs, sharing skills and experience across jurisdictional boundaries.

While few cost studies now exist to document WIC EBT savings, studies showing cost savings through platform-sharing are more readily available in the EBT arena. On the basis of those findings, it is logical to hypothesize that as the number of partners sharing the fixed costs of a card platform increases, the cost of individual participation in the platform is likely to decline. Many of the costs of implementing a card platform, including cards, card readers, and other hardware infrastructure; issuance; personalization; and customer service, remain relatively stable or decline as the volume of cardholders and the number of participating programs increase.

Therefore, it is reasonable that cost-sharing agreements be based on the degree of program participation. The cost to the programs, and eventually to commercial partners as commercial applications are added, should be distributed based on the degree of benefit received from card use by different participants. Both the participating programs and the retailers have the potential to save costs by reducing fraud and errors. For the retailer, WIC EBT performs in-lane editing so the loss of payments caused by errors is virtually eliminated. Because of the electronic footprint of an EBT transaction, fraud and abuse are also likely to be eliminated. It is anticipated that both the retailers and the participating programs will benefit from this trend.

The costs of implementing the card platform, however, are not necessarily borne by the same entities that are realizing the benefits. To date, the majority of costs for the project have been borne by federal and state governments (or government coalitions such as WGA). But it is the clients and retailers who are realizing the most time savings, convenience, and availability of enhanced information. It is clear that the government, in the short term, will likely bear a considerable portion of the direct costs for use of the card to deliver health and WIC EBT services. However, in the future, it is conceivable that retailers and private providers will achieve savings from increased efficiencies gained from the transition to electronic service delivery. Studies of e-government efforts to date have demonstrated cost reductions achieved through electronic transaction processing. If such savings actually materialize with HPP, the retailers and providers may use these savings to share in the costs of a card platform. For example, medical providers may experience reductions in insurance costs thanks to increased accuracy of drug and other medical data. Providers may also benefit from faster and more accurate claims reimbursement. Commercial vendors might provide support as a business expense or investment if their applications and brands could be included on the card.

Depending on government policy, various potential sources of revenue could offset government costs for the card system. Governments should partner with members of the commercial sector to take advantage of these revenue-producing opportunities and create a win-win scenario for the government and for commercial stakeholders. Such possibilities include “renting” space for a commercial application on a government card. For example, transit authorities may choose to put a transit application on an EBT card. Other ideas include electronic tickets to local events, electronic purse (i.e. a mechanism that allows end users to pay electronically for goods and services using a pool of value that is decremented as transactions are performed), or loyalty applications.

The small number of clients with HPP cards seen in private practices reduced the data-sharing that could benefit these private providers. Pilot participants have suggested that expanding the target audience to a broader base of all mothers and children in the states could make the concept more viable for the health care industry while providing an attractive market for commercial partners. Adding Medicaid eligibility to the platform is yet another means to make HPP attractive to private providers by reducing their costs for this labor-intensive process. Using the card to support an automated billing process could also prove beneficial to private providers.

Available technology has evolved significantly since the pilot began. During this period, a number of standards have been developed, and the industry has evolved from proprietary to open solutions. Because of the inevitable advancements in card and Internet technology during the course of this pilot, the evaluators suggest that the partners take this opportunity to review the existing technology platform before moving ahead with expanded rollout. The partners should consider how evolving technology could be incorporated into the HPP project to achieve its goals with less cost, greater efficiency, and a more open platform. Leaders at the highest levels

of state and federal governments need to champion the HPP platform if it is to expand across additional programs. The HPP program must be fully integrated into the statewide strategic planning efforts of the state health departments. Leadership at the federal level should pursue opportunities to incorporate this platform into its transition plans to migrate to electronic government and health care delivery.

Assuming that adequate security and procedures for safeguarding client privacy are in place, the potential to use cross-program information available through the HPP and WIC EBT servers is enormous. Such data could be used anonymously by program executives to plan program directions, monitor performance outcomes, and allocate resources. Program managers could identify more and less effective operations, improve staff utilization, and distribute scarce resources better. These servers provide a rich source of data to support efficient and economic delivery of health care and benefits. Longitudinal studies of demographic groups could identify patterns in service needs and utilization and could be used to monitor important health indicators.

6.5 Factors Affecting the Long-Term Evolution of the Health Passport Project

The initial phase of the HPP pilot explored the concept of card-based data-sharing across public and private health care providers with reasonable success. Phase I of HPP examined the use of a proprietary smart card platform to share demographic, health, and program information among multiple public and private health providers. The card platform was also used to deliver WIC EBT food benefits to participants in two of the three pilot sites and Medicaid service authorization in the third. Since the HPP pilot was initiated, however, numerous changes in technology and government policy have occurred that may affect the eventual direction of HPP:

- emergence of Internet, wireless communications, data warehousing, telemedicine applications, and other technologies that can be leveraged to redefine how the card will be used;
- amplified importance of identity authentication and nonrepudiation of transactions;
- greater public demand for convenience through electronic forms submission and service delivery;
- development of a business case for private sector participation, building on increased interest in commercial platforms for multiapplication cards;
- reduced resources, necessitating the streamlining of government processes and the improvement of reporting capabilities and project management (but with federal funding available for technology innovation);
- enhanced opportunities to share infrastructure, data, and system costs across multiple government programs and states/jurisdictions; and
- increased need for consistent public policies and standards to support electronic service delivery.

Many recent developments in both the technology and policy arenas have occurred that will profoundly influence how governments at all levels will provide services to their citizens now and in the future. Changes in the government's policy and approach to service, as well as methods of systems acquisition, that have occurred since the original pilot was conceived will have a profound impact on the continuing operation of HPP. Over the past five years, the federal government and many state governments have vigorously pursued the migration of payment

delivery from paper to electronics. Over the next five years, the emergence of digital technology will help everyone move to electronic information delivery.

The new frontier that has the potential for revolutionizing information-sharing across governments is the emergence of Internet and Web-based Internet access tools. The widespread deployment of the Internet has provided the driver and enabler for information-sharing and dissemination using a public, commercially available network. While the government recognizes the urgent need for greater electronic access to benefits and services, the current delivery mechanisms are too often paper-based and tend to be manually intensive. Many of these processes involve completing standard forms and accessing general information, processes that for the most part should not require extensive interaction between a citizen and a government employee. If these processes can be accessed electronically, information and service can be immediate and convenient to the citizen, and governments can save on paper, mail, telephone, and labor expenses. Consequently, social service agencies are increasingly exploring the feasibility of online eligibility applications. Because of these developments, the emphasis in technology has shifted from purely card-based to the card as the vehicle for network-based data-sharing. Furthermore, the growing awareness that health and benefit systems must enable interoperability, not only across states but also across multiple government programs, contributes to a rapidly evolving context within which the HPP system will be expanded.

In addition to the changes in technology, other significant factors have influenced the delivery of medical services in the years since HPP was first conceived. In 1996, the Health Insurance Portability and Accountability Act (HIPAA) was passed, requiring the security and confidentiality of medical information. Medical institutions—public and private, large and small—understand the enormous impact that the HIPAA regulations will have on the exchange of medical information in the future. Because of HIPAA, a key issue in moving forward with the HPP pilot is the ability to ensure the privacy and confidentiality of medical information in conformance with the HIPAA implementing regulations. To meet this challenge, HPP must evolve from a card-based data carrier to a platform that supports both card- and network-based data-sharing. To remain viable in the future, HPP will require an efficient, scalable mechanism for enabling convenient electronic exchange of medical data, as well as a means for providing authentication, access control, and information security and privacy that can be used to ensure HIPAA compliance.

Throughout federal and state agencies, opportunities exist for the use of both network-based and card-based data-sharing to reengineer the delivery of government services. By providing the mechanism for identity authentication, the HPP card can be the key, controlling citizen access to a vast array of electronic government services delivered through Web-based applications. Information gathered by the HPP Phase I pilot in the short term may support the transition to electronic government and the acceptance of public-private partnerships in the longer term.

To meet these challenges, WGA should join with federal- and state-based public and private partners to demonstrate a future smart card (electronic service platform) that operates in concert with Web-based services. To keep pace with the evolving technology and government direction, the HPP card may experience a metamorphosis into an identification and authentication vehicle, an access vehicle to Internet-based services, a personal and portable repository of critical information, and a tool to help manage various health and benefit programs. This “card of the future” concept will take the Phase I integration global by integrating it with the Web.

While the future vision of the HPP card platform may look very different from today's, the conceptual foundation proven in Phase I—the viability of interagency cooperation and the secure sharing of critical client information across multiple programs—will remain the guiding force in any expansion. Its future direction will be molded by the determination and energy of the local partners, as well as the strength of their coalition.

Appendix A: Research Design and Methods

Examples of Research Questions, Measures, and Data Sources

Sample Client Satisfaction Questionnaire

Sample Staff Satisfaction Questionnaire

Summary of HPP Program Evaluation Data Collection

Technical Notes on Survey Data

Appendix A: Research Design and Methods

Examples of Research Questions, Measures, and Data Sources, revised 1/00

RESEARCH QUESTION	MEASURE	DATA SOURCES*	
		Pre	Post
COST / EFFICIENCY			
Does HPP reduce client waiting time?	Average waiting time to be seen by provider.	Program records Interviews Observations	Client and provider surveys Interviews Observations
Does HPP improve allocation of staff time?	Ratio of Staff hours to # patients (separate for clinical versus administrative staff)	Program records	Program records Provider surveys
Does HPP result in increased number of participants served by program?	Number of patients seen per day/ per week Number of patients seen per facility	Program records	HPP data
How does HPP affect retailer time for handling WIC transactions?	Check-out time for WIC transactions Time required for reconciliation, cashier training	Prior EBT studies Retailer interviews	Retailer interviews
QUALITY			
Does HPP improve access to services?	Percent of eligible clients enrolled. Extent to which partner programs serve the same clients	Program records, population data, and interviews.	Population data, HPP data
Does HPP enhance appropriate use and timing of services?	Week of pregnancy for enrollment in prenatal care, WIC	Program records	HPP data
Does HPP improve adherence to clinical guidelines and recommended scheduling?	% of 2 year-olds appropriately immunized	State/county immunization records	State registry information Client immunization record on HPP
Does HPP improve accuracy of information?	Need for reshelving or customer support because products won't scan.	Retailer Interviews	Technical evaluation Retailer interviews
EMPOWERMENT			
Does HPP facilitate compliance with appointments?	Incidence of no-shows Use of card to schedule and access appointment dates.	Appointment logs Staff Interviews	Client access of appointment screen at kiosks. Client and Provider Surveys
Does HPP provide easier access to relevant information?	Access of immunization records by clients. Use of kiosks	N/A	Client access of screen at kiosks.
CUSTOMER SATISFACTION			
Is the system user-friendly?	Client and provider use of the card— incidence and location	Interviews Focus Groups	HPP data Client and provider surveys
Is the information accurate, complete, and timely?	Number of calls to providers to verify information Use of HPP data for reporting, management, etc.	Interviews Program records	Provider surveys Interviews

* It was anticipated that the HPP server data would be used to address a number of research questions. However, the systems contractor was unable to provide the requested reports.

Appendix A: Research Design and Methods

Sample Staff Satisfaction Questionnaire

What Do You Think of Health Passport?

Location: _____ Date: _____

Job Title: _____

Brief description of job responsibilities: _____

1. Which agency/organization do you work for? (*check one*)

- Children's clinic WIC
 Head Start Other (please specify): _____
 Public Health Clinic

2. Do you work at a card issuance site?

- Yes
 No

3. How many years have you been with this agency/organization?

_____ years

4. About how many clients/patients with Health Passport cards do you see?

- Full-time worker** **Part-time Worker** **Provider who participates only**
per week ____ per week ____ **in special clinic/services for**
or or **HPP Clients**
per month ____ per month ____ per week ____
or or per month ____
 Other _____

5. Prior to preparing for the Health Passport demonstration, had you ever used a computer?

- Yes
 No

6. Are you currently comfortable using a computer?

- 1 (not comfortable) 2 3 4 5 (very comfortable)

7. The time frame of interest for this survey is July — October 2000. Overall, how would you compare the operations of the HPP system during this period to the period when HPP was first implemented (June 1999 — June 2000) (September 1999 — June 2000 for Head Start)?

- worse (e.g., slower, harder to use)
 about the same
 better (e.g., faster, easier to use)

Comments (if any) about major changes/improvements: _____

8. Using a scale of 1 (*not at all user-friendly*) to 5 (*very user-friendly*), how “user-friendly” do you think the Health Passport system is? (*check one*)

- 1 (not at all user-friendly) 2 3 4 5 (very user-friendly)

9. Do you think the Health Passport card reader system responds quickly enough when you use it?

- Yes
 No

10. Do you think the Health Passport software application responds quickly enough when you use your PC?

- Yes
 No

11. How often is the Health Passport system not available when you need it (e.g., downtime due to repairs, settlement, etc.)? (*check one*)

- More than daily
 Daily
 Weekly
 Less than weekly
 Other (Explain) _____

11a. Do you think this is (*check one*):

- More often than you expected
 Okay, about what you expected
 Less often than you expected

12. How long does it typically take to issue a new Health Passport card (for a new client)? (*Applies only to card issuance sites*)

___ minutes ___ not applicable

12a. Do you think this is (*check one*):

- More time than you expected
 Okay, about what you expected
 Less time than you expected

13. How long does it typically take to update information on the Health Passport card? (*This does not refer to the "pending update" function*)

___ minutes ___ not applicable

13a. Do you think this is (*check one*):

- More time than you expected
 Okay, about what you expected
 Less time than you expected

14. About how long does it take to load data from another system (e.g. HSFIS, immunization registry, etc.) onto to the Health Passport card ? (*may not apply to all programs, this does not refer to the "pending update" function*)

___ minutes ___ not applicable

14a. Do you think this is (*check one*):

- More time than you expected
 Okay, about what you expected
 Less time than you expected

15. Do you use the "pending update" function? Yes No

15a. If yes, do you use the pending update to (*check all that apply*):

- Enter client data at a later time
- Allow other staff to enter client data at a later time
- Access pending information from another provider

15b. Using a scale of 1 (*not at all helpful*) to 5 (*very helpful*), overall how helpful is the "pending update" function?

- 1 (not at all helpful) 2 3 4 5 (very helpful)

15c. Do you have any problems or concerns with the pending update function ?

- Yes No

If yes, comments on pending update: _____

16. How often do you come across cards that do not work because of system or card failure? (*check one*)

- Often
- Sometimes
- Rarely
- Never

17. How often do you come across cards that have been disabled (due to reported loss, etc.)? (*check one*)

- Often
- Sometimes
- Rarely
- Never

18. Have you ever contacted the Health Passport "help desk?"

- Yes
- No

18a. Using a scale of 1 (*very dissatisfied*) to 5 (*very satisfied*), how satisfied are you with the assistance you received from the "help desk?"

- 1 (very dissatisfied) 2 3 4 5 (very satisfied)

19. Now that you have been using Health Passport for a while, has your workload increased, decreased, or stayed about the same?

- Increased workload
- About the same
- Decreased workload

20. How has Health Passport affected staff time spent on direct patient/client contact?

- Increased
- About the same
- Decreased

21. How has Health Passport affected staff time spent on report/recordkeeping (e.g., recording client information, preparing management reports, if applicable)?

- Increased
- About the same
- Decreased

22. Do you access the following information from Health Passport cards? *(Please mark the correct boxes.)*

Item	Yes	No	Not Applicable
Basic identifying information (age, SSN, address, etc.)			
Medicaid eligibility			
Physical assessment (including growth status)			
Developmental assessment			
Nutritional assessment			
Immunization records			
Hemoglobin/Hematocrit			
Confirmation of pregnancy			
Other health information			
Other dental information			
Food benefit information			
Other <i>(please specify)</i> :			

23. Does the Health Passport card help you with any of the following? *(Please mark the correct boxes.)*

Item	Yes	No	Not Applicable
Reduce time to certify/enroll a client			
Reduce time spent obtaining health information			
Reduce duplication of immunizations			
Increase parental participation			
Reduce duplication of screenings/assessments			
Coordinate with other providers			
Facilitate referrals			
Track case management			
Track tests performed			
Increase client/patient compliance			
Increase percent of students enrolled with proper medical screens, immunizations, etc.			
Increase timeliness of tests, treatment, visits (including well-baby and prenatal), etc.			
Increase compliance with program/clinical guidelines			
Reduce time spent scheduling appointments			
Send appointment reminders			
Reduce "no shows"			
Follow-up missed appointments			
Track week of pregnancy enrolled			
Track number and timing of prenatal visits			
Track adherence to well-baby visit schedules			
Identify client/patient's other providers/program enrollment			
Other <i>(please specify)</i> :			

24. Do you think Health Passport card holders are using their cards at more than one facility?

- Yes
- No

25. Have you heard that your clients/patients are using the Health Passport kiosks?

- Yes
- No

25a. Do your clients/patients like using the kiosks?

- Yes
- No

26. Have any of your clients/patients refused a Health Passport card?

- Yes
- No

If so, why have the clients refused the Health Passport cards?

27. Have your clients/patients expressed any concerns about the confidentiality of information on the Health Passport card?

28. Overall, how would you rate satisfaction with the overall implementation of Health Passport?

28a. From your perspective (*check one*):

- 1 (very dissatisfied)
- 2
- 3
- 4
- 5 (very satisfied)

28b. From your staff's perspective (*check one*):

- 1 (very dissatisfied)
- 2
- 3
- 4
- 5 (very satisfied)

28c. From your clients' perspective (*check one*):

- 1 (very dissatisfied)
- 2
- 3
- 4
- 5 (very satisfied)

Comments: _____

Thank you for your help!

Appendix A – Research Design and Methods

Sample Client Satisfaction Questionnaire

What Do You Think of Health Passport?

Location: _____ Date: _____

1. Do you have a Health Passport card?
 Yes
 No *If no, thank you for your help. You do not need to complete the rest of the survey.*
 2. Where did you receive your card?
 City-County Health Department WIC
 Head Start Other (specify): _____
 3. When did you receive your card? Month/Year _____
 4. Where do you use your Health Passport card? *(Check all that apply.)*
 Children's Clinic Head Start Health Passport "touch-screen kiosk"
 Public health clinic WIC Supermarket
 Other (specify): _____
 5. How often do you use your Health Passport card?
 Once a week Once a month
 More than once a week, Less than once a month
 but less than once a month
 6. What do you use your Health Passport Card for? *(Check all that apply. Some may not apply to you)*
 Checking in at health clinic/doctor's office/WIC Checking my child's immunization record
 Registering my child at Head Start Buying groceries
 Making appointments at health clinic/doctor's office/WIC Checking the benefits left on my card
 Checking to see appointments I have scheduled Other *(specify):* _____
 7. Have you used a Health Passport "touch-screen kiosk"? Yes No
- If you have used a "touch-screen" kiosk:**
- 7a. Where have you used the "touch-screen" kiosk? *(Check all that apply)*
 Head Start Parent FRC
 WIC clinic
 United Medical Center- emergency room
 City-County Health Department
 Laramie County Library
 - 7b. When have you used the "touch-screen kiosk"? *(Check all that apply)*
 Weekdays between 8am and 5pm
 Weekdays/nights after 5pm
 Weekends
 - 7c. What have you used the "touch-screen" kiosk for? *(Check all that apply.)*
 Check appointments Check other health/personal information on the card
 Print out appointment schedule Print out other health/personal information
 Checking my child's immunization record Other *(specify):* _____
 Print child's immunization record
8. Have you ever had any of the following problems using your card? *(Check all that apply.)*
 Doctor, nurse, clinic, store could not use it (card did not work) "Touch-screen" kiosk did not work
 Doctor, nurse, clinic, store, etc. would not use the card Could not remember my PIN number
 9. Do you carry your card with you at all times? Yes No
 10. Do you have trouble keeping track of the card? Yes No

PLEASE TURN OVER

11. Have you ever had to have your card replaced? Yes No
 If Yes, why: Card was lost Card was damaged Other (specify): _____

12. Do you have concerns about your privacy when you use the card? Yes No

13. How has using a Health Passport card affected:

	Better — More convenient	No Change	Worse — More time consuming; inconvenient	Not Applicable
Making appointments				
Remembering appointments				
Time waiting for appointments				
Time filling out forms/answering questions				
Answering questions at the doctor, clinic, etc.				
Length of visit				
Making calls to get health information				
Making return visits because of missing information				
Keeping track of family health information				
Being informed about my child's or my health information				
Getting health information when I need it				
Other (specify):				

14. Using a scale of 1 (*very dissatisfied*) to 5 (*very satisfied*) how satisfied are you with using a Health Passport card (*check one*)?
 1 (very dissatisfied) 2 3 4 5 (very satisfied)

15. Any other comments or suggestions about Health Passport?

* * * * *

We need some general information about our respondents:

16. I am a : Male Female

17. My age is: Less than 20 years 31-40 years 56+ years
 21-30 years 41-55 years

18. My ethnic background is (*check all that apply*):
 Caucasian/white African-American/black Asian/Pacific Islander
 Hispanic/Latino American Indian Other (specify): _____

19. The languages spoken in my home are (*check all that apply*):
 English Spanish Other (specify): _____

20. I am currently (*check one*):
 Not employed Working less than 20 hours/week Working more than 20 hours/week

21. Have you ever used a computer? Yes No
 If you have used a computer, do you feel comfortable using one? Yes No

22. Do you have an ATM (bank) card?

Yes

No

23. Do you receive/have you received any of the following services? *(Check all that apply.)*

WIC

Head Start

Immunizations (shots)

Public health nursing
(through county health centers)

EPSDT (preventive health care program for children)

Prenatal care (health care during pregnancy)

Services at children's clinics

Other *(specify, i.e. Medicaid)*: _____

Thank you for your help! Please return this form to the receptionist.

Appendix A: Research Design and Methods

Summary of HPP Program Evaluation Data Collection

	Bismarck (Launch date: June 1999) wk1 WIC, wk2 OPOP, wk3 Imm, wk4 Medcenter	Cheyenne (Launch date: June 1999- HD and HS limited, Oct 1999- CCC, March 2001- WIC)	Reno (Launch date: June 2000) Jun2- Sun Valley, Jun 5- ITCN, Jun9- South, Jun16- HDs, Jun 19- Imm
Baseline Visit and Data Collection	Date: March 3-5, 1998 Data: Interviews with: site managers, providers, state/regional officials, WIC retailers Client focus groups (participant info form & protocol) Client Information Form, Time Allocation Form, Sign-In Sheet (Britta)	Date: March 10-12, 1998 Data: Same as Bismarck	Date: March 10-12, 1998 Data: Same as Bismarck
Baseline Update	Date: May 1999 Data: Provider Surveys, Site Manager Interview, and a WIC Monthly Participation Report for Apr '99	Date: May 1999 Data: Provider Surveys, WIC Monthly Participation for Apr '99, and HS Program Info Report '97-98	Date: April 2000 Data: Provider Surveys, Retailer Surveys, Site Manager Interview
Early Implementation Site Visit	Date: Nov 2-3, 1999 Data: Provider Surveys, Site Manager Interview, 1999 Immunizations Registry Annual Report, sample HPP client report from BBNS	Date: N/A	Date: Nov 7-9, 2000 Data: Provider Satisfaction Surveys and regular surveys, Retailer surveys, Acting Site Manager Interview, WIC Marketing Coordinator Interview, Admin. Health Service Officer Interview, 1998/99 Health Dep. Annual Report, Immunization Statistics 1999, HD org chart
Staff Surveys (time 1)	Date: June 19-23, 2000 N= 22	Date: Nov 13-15, 2000 N= 8	Date: Nov 7-9, 2000 N= 20
Client Surveys (time 1)	Date: June 2000 (8 th -28 th) N= 195	Date: Nov 2000 (3 rd -14 th) N= 34	N/A
Follow-up (full implementation) Site Visit	Date: Apr 17-19, 2001	Date: May 2-4, 2001	Date: Apr 24-26, 2001
Staff Surveys (time 2)	Date: Apr 17-19, 2001 N=9	Date: May 2-4, 2001 N=6	Date: Apr 24-26, 2001 N=19
Client Surveys (time 2)	Date: April 2001 (12 th -27 th) N=156	Date: May 2001 (3 rd -18 th) N= 90	Date: March 12, 2001 – April 4, 2001 N= 159

Appendix A: Research Design and Methods

Technical Notes on Survey Data

1. Summary of Survey Responses (number of responses received)

Time 1		
	Staff Surveys	Client Surveys
Bismarck (June 2000)	22	195 (204 sent, 9 unusable)
Cheyenne (November 2000)	8	34 sent, 0 unusable)
Reno (November 2000)	20	N/A

Time 2*		
Bismarck (April 2001)	9	156 (177 sent, 21 unusable)
Cheyenne (May 2001)	6	90 (161 sent, 71 unusable)
Reno (April 2001)	19	159 (169 sent, 10 unusable)

*We did not interview all staff using HPP during the second set of site visits.

2. Detail of Staff Satisfaction Responses

Bismarck

2000

2001

	Frequency	Percent		Frequency	Percent
1 (very dissatisfied)	0	0.0%	1 (very dissatisfied)	0	0.0%
2	4	20.0%	2	3	33.3%
3	10	50.0%	3	4	44.4%
4	5	25.0%	4	1	11.1%
5 (very satisfied)	1	5.0%	5 (very satisfied)	1	11.1%

Cheyenne

2000

2001

	Frequency	Percent		Frequency	Percent
1 (very dissatisfied)	1	12.5%	1 (very dissatisfied)	0	0.0%
2	1	12.5%	2	0	0.0%
3	2	25.0%	3	2	28.6%
4	1	12.5%	4	4	57.1%
5 (very satisfied)	2	25.0%	5 (very satisfied)	1	14.3%
N/A	1	12.5%	N/A	0	0.0%

Reno

2000

2001

	Frequency	Percent		Frequency	Percent
1 (very dissatisfied)	0	0.0%	1 (very dissatisfied)	1	5.3%
2	0	0.0%	2	2	10.5%
3	7	35.0%	3	10	52.6%
4	10	50.0%	4	4	21.1%
5 (very satisfied)	3	15.0%	5 (very satisfied)	2	10.5%

3. Detail of Client Satisfaction Responses

Bismarck

2000

2001

	Frequency	Percent		Frequency	Percent
1 (very dissatisfied)	7	4.4%	1 (very dissatisfied)	21	14.8%
2	17	10.6%	2	21	14.8%
3	56	35.0%	3	42	29.6%
4	41	25.6%	4	28	19.7%
5 (very satisfied)	39	24.4%	5 (very satisfied)	30	21.1%
Missing	35	-	Missing	14	-

Cheyenne

2000

2001

	Frequency	Percent		Frequency	Percent
1 (very dissatisfied)	1	4.5%	1 (very dissatisfied)	7	13.7%
2	1	4.5%	2	5	9.8%
3	3	13.6%	3	14	27.5%
4	10	45.5%	4	5	9.8%
5 (very satisfied)	7	31.8%	5 (very satisfied)	20	39.2%
Missing	12	-	Missing	39	-

Reno

2000^a

2001

	Frequency	Percent		Frequency	Percent
1 (very dissatisfied)	-	-	1 (very dissatisfied)	11	7.9%
2	-	-	2	7	5.0%
3	-	-	3	20	14.3%
4	-	-	4	27	19.3%
5 (very satisfied)	-	-	5 (very satisfied)	75	53.6%
Missing	-	-	Missing	19	-

^a Only one round of client satisfaction surveys was completed in Reno in 2001.

Appendix A: Research and Design Methods

Technical Notes on HPP Server Data

General HPP Server Data

On the advice of site managers, we only used the following transactions: “write card,” “issue card,” and, for Cheyenne, the additional data elements “add HPP to card” and “write card-pending update” from the server. According to HPP program staff, other elements may not have been filled in regularly and may also not have been filled in accurately. In contrast, write card captures the number of times information was added to HPP cards.

Kiosk Reports

1. We used the data element “card read” instead of cards inserted because it is the only element that most accurately captures the number of HPP card users using the kiosks in order to access their card information. It is important to keep in mind that this does not mean that these were the only HPP cardholders using the system. In fact, HPP cardholders may have used the kiosk to learn more about the HPP system or other government programs without having their cards read. We avoided using the number of cards inserted because this number appeared to be artificially high and contain more transactions than could be reasonably matched to the number of cards read.
2. When looking at the top five card-information-pages accessed, it is important to remember that we did not include the first pages clients would come to – the page clients see once their card is read – since all clients who had their cards read would automatically come to this page. Instead we only looked at those pages in which the client had to actively select information after having their card read.
3. Similar to the card information pages, the top five general information pages did not include the first screen clients come to since this page contained mostly a table of contents. Hence we selected pages which contained some type of program information.

Appendix B: Demographic Information on Sites and Clients

Site Profile: North Dakota, Burleigh County, and Bismarck

Site Profile: Wyoming, Laramie County, and Cheyenne

Site Profile: Nevada, Washoe County, Reno

**Demographic Characteristics of HPP Clients in 2001
Bismarck/Burleigh County**

**Demographic Characteristics of HPP Clients in 2001
Cheyenne/Laramie County**

**Demographic Characteristics of HPP Clients in 2001
Reno/Washoe County**

Appendix B: Demographic Information on Sites and Clients

Site Profile: North Dakota, Burleigh County, and Bismarck

North Dakota, Burleigh County, and Bismarck Background Information

Table 1: Population Demographic Characteristics

	Population (All 2000 estimates except 1999 Bismarck estimate)		Age Estimates 2000		Gender 2000 ⁴	
	Population Estimate	Percent Change 1990- 2000	Percent of Population under 18 years	Percent of Population 65 years and over ⁴	Percent of Male	Percent of Female
North Dakota ¹	642,200	0.5%	25.0%	14.7%	49.9%	50.1%
Burleigh County ¹	69,416	15.4%	24.7%	N/A	N/A	N/A
Bismarck ³	55,109	N/A	N/A	N/A	N/A	N/A
United States ²	281,412,906	13.1%	25.7%	12.4%	49.1%	50.9%

¹ U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/38/38015.html>. Accessed: June 2001.

² U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/00000.html>. Accessed: June 2001.

³ Metropolitan Area and Central City Population Estimates for July 1, 1999. <http://www.census.gov/population/estimates/metro-city/ma99-05.txt>. Accessed: June 2001.

⁴ Profile of General Demographic Characteristics for North Dakota: 2000. http://www.census.gov/Press-Release/www/2001/tables/dp_nd_2000.pdf and Profile of General Demographic Characteristics for the United States: 2000. http://www.census.gov/Press-Release/www/2001/tables/dp_us_2000.pdf. Accessed: June 2001.

Appendix B - Site Profile: North Dakota, Burleigh County, and Bismarck

Table 1 Continued: Population Demographic Characteristics

	Educational Attainment of Persons 25 and over, 1990 ¹		Public High School Graduates	Race/Ethnicity 2000 ¹				
	High School Graduates	College Graduates		High School Graduates 1999-2000 ³	Percent White Population	Percent Black Population	Percent Asian Population	Percent Hispanic or Latino Origin Population
North Dakota	304,123 (47.4%)	71,639 (11.2%)	8,635	92.4%	0.6%	0.6%	1.2%	4.9%
Burleigh County	31,085 (44.8%)	9,389 (13.5%)	N/A	95.0%	0.3%	0.4%	0.7%	3.3%
Bismarck	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United States	227,424,138 (83.4%) ²	615,588 (25.2%) ²	2,556,184	75.1%	12.3%	3.6%	12.5%	0.9%

¹ Percentages may exceed 100 percent because the race categories are not mutually exclusive. U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/38/38015.html> and U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/00000.html>. Accessed: June 2001.

² Fedstats. MapStats. USA. Estimates for 1999. <http://www.fedstats.gov/qf/states/00000.html>. Accessed: June 2001.

³ National Center for Education Statistics. Quick Tables & Figures. Number of public high school graduates, by state: School years 1995-96 to 1999-2000. <http://nces.ed.gov/quicktables/Detail.asp>. Accessed: June 2001.

Appendix B - Site Profile: North Dakota, Burleigh County, and Bismarck

Table 2: Economic Characteristics

	Unemployment Rate 2001 ¹	Income		Percent Below Poverty Level (1997) ³	
		Median Household Money Income 1997 ³	Per Capita Income 1999 ⁵	Percent Persons	Percent Children under 18 years
North Dakota	2.6%	\$31,764	\$23,273	12.5%	16.8%
Burleigh County	2.2% ²	\$39,664	\$25,993	9.2%	12.3%
Bismarck	2.2%	N/A	\$24,660	N/A	N/A
United States	4.4%	\$40,816 ⁴	\$28,546 ⁶	11.8% ⁴	16.3% ⁴

¹ Bureau of Labor Statistics. Metropolitan Area at a Glance for April 2001. <http://stat.bls.gov/eag/eag.nd.html>, Bureau of Labor Statistics. State at a Glance for April 2001. <http://stat.bls.gov/eag/eag.bismarck.html>, and Bureau of Labor Statistics. Economy at a Glance for May 2001. <http://stat.bls.gov/eag/eag.us.html>. Accessed: June 2001.

² Local Area Unemployment Statistics. Bureau of Labor Statistics. Special Data Tables. Labor Force Data by County, 2000 Annual Averages. <ftp://146.142.4.23/pub/special.requests/la/laucounty.txt>. Accessed: June 2001.

³ Fedstats. MapStats. Burleigh County, North Dakota. Estimates for 1997. <http://www.fedstats.gov/qf/states/38/38015.html>. Accessed: June 2001.

⁴ Fedstats. MapStats. USA. Estimates for 1999. <http://www.fedstats.gov/qf/states/00000.html>. Accessed: June 2001.

⁵ Bureau of Economic Analysis. Regional Accounts Data. Local Area Personal Income. <http://www.bea.doc.gov/bea/regional/reis/drill.cfm>. Accessed: June 2001.

⁶ Bureau of Economic Analysis, Department of Commerce. <http://www.bea.doc.gov/bea/newsrel/mpi0501.txt>. News Release May 3, 2001. Table 1: Per Capita Personal Income by Metropolitan Area, 1997-1999. Accessed: June 2001.

Appendix B - Site Profile: North Dakota, Burleigh County, and Bismarck

Table 3: Health Characteristics

	Birth Rate 1999 (except Burleigh County 1994)	Infant Mortality Rate 1998 (except Burleigh County 1994)	Low Birth Weight Rate 1999 ¹	Percent of Population Uninsured 1999	
				Persons ⁴	Children ⁵
North Dakota	12.1% ¹	8.6% ³	6.2%	11.8%	10.6%
Burleigh County	14.0% ²	4.5% ²	N/A	N/A	N/A
Bismarck	N/A	N/A	N/A	N/A	N/A
United States	14.5% ¹	7.2% ³	7.6%	15.5%	13.9%

¹ U.S. National Center for Health Statistics. *National Vital Statistics Reports. Births: Final Data for 1999*. Vol. 49, No. 1, April 17, 2001.

² USA Counties 1998 Burleigh, ND General Profile. Note: births per 1000 resident population and infant deaths per 1000 live births. <http://www.census.gov/statab/USA98/38/015.txt>. Accessed: June 2001.

³ U.S. National Center for Health Statistics. *National Vital Statistics Reports. Deaths: Final Data for 1998*. Vol. 48, No. 11, July 24, 2000.

⁴ U.S. Census Bureau. Health Insurance Coverage: 1999. <http://www.census.gov/hhes/hlthins/hlthin99/hi99te.html>. Accessed: June 2001.

⁵ U.S. Census Bureau. Health Insurance Detailed Table: 1999. <http://www.census.gov/hhes/hlthins/hlthin99/dtable4.html> and U.S. Census Bureau. Low Income Uninsured Children by State. Number and percent of children under 19 years of age, at or below 200 percent of poverty, by state: Three-year averages for 1997, 1998, and 1999. <http://www.census.gov/hhes/hlthins/liuc99.html>. Accessed: June 2001.

Appendix B - Site Profile - North Dakota, Burleigh County, and Bismarck

Table 4: Characteristics by Public Benefits

	Food Stamps	TANF			Medicaid
	Average Monthly Participation (Households), preliminary 1999¹	Total Number of Recipients FY 1999 (Average)²	Total Number of Families FY 1999 (Average)²	Percent Change in AFDC/TANF Caseloads: Families Jan93-Dec99²	Total Number of Recipients FY 1999 (In Thousands)³
North Dakota	13,936	8,269	3,098	-56%	62
Burleigh County	N/A	N/A	N/A	N/A	N/A
United States	7,668,372	7,187,753	2,642,826	-52%	40,649

¹ Department of Health and Human Services. Food Stamp Program: Average Monthly Participation (Households). Data as of September 25, 2000. <http://www.fns.usda.gov/pd/fsfyhh.html>. Accessed: June 2001.

² Department of Health and Human Services. *Temporary Assistance for Needy Families (TANF) Program. Third Annual Report to Congress*. August 2000. Administration for Children and Families. Office of Planning, Research, and Evaluation. Tables 2.1, 2.2, 2.4.

³ Health Care Financing Administration. Medicaid Recipients by Basis of Eligibility FY 1998. <http://www.hcfa.gov/medicaid/msis/MCD98T02.pdf>. Accessed: June 2001.

Appendix B - Site Profile: North Dakota, Burleigh County, and Bismarck

Table 4 Continued: Characteristics by Public Benefits

	Head Start	Immunizations				WIC
	Enrollment FY 2000 ¹	Estimated Vaccination Coverage Levels: Children 19-35 months ²		Estimated Vaccination Coverage: Children 19-35 months living below poverty level		Total Participation Rate FY 2000 preliminary ⁴
		Vaccination series 4:3:1	Vaccination Series 4:3:1:3	Vaccination series 4:3:1	Vaccination Series 4:3:1:3	
North Dakota	2,042	81.4%	79.2%	82.8% ³	82.8% ³	Department of Health: 13,048 Standing Rock Sioux: 814 Three Affiliated Tribes: 441
Burleigh County	N/A	N/A	N/A	N/A	N/A	N/A
United States	857,664	78.9%	77.3%	74.8%	72.9%	7,198,259

¹ Administration on Children and Families. Head Start Factsheet 2001. <http://www2.acf.dhhs.gov/programs/hsb/about/fact2001.html>. Accessed: June 2001.

² Centers for Disease Control and Prevention. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series Among Children 19-35 Months of Age by State. National Immunization Survey, Q3/1999-Q2/2000. http://www.cdc.gov/nip/coverage/tables/99-00/antigen_state.xls and Centers for Disease Control and Prevention. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series Among Children 19-35 Months of Age Living Below the Poverty Level by State and Immunization Action Plan Area. National Immunization Survey, Q3/1999-Q2/2000. http://www.cdc.gov/nip/coverage/tables/99-00/pov_jap.xls. Accessed: June 2001.

³ Centers for Disease Control and Prevention. Estimated Vaccination Coverage in Percent with Individual Vaccines and Vaccination Series Among Children Aged 19-35 Months Living Below the Poverty Level by Census Division and State. National Immunization Survey, July 1998-June 1999. http://www.cdc.gov/nip/coverage/tables/98-99/pov_st.xls. Accessed: June 2001.

⁴ Department of Health and Human Services. WIC Program: Total Participation: Data as of May 25, 2001. <http://www.fns.usda.gov/pd/wifypart.html>. Accessed: June 2001.

Appendix B - Site Profile: Wyoming, Laramie County, and Cheyenne
Wyoming, Laramie County, and Cheyenne Background Information

Table 1: Population Demographic Characteristics

	Population (All 2000 estimates except 1999 Cheyenne estimate)		Age Estimates 2000		Gender 2000 ⁴	
	Population Estimate	Percent Change 1990- 2000	Percent of Population under 18 years	Percent of Population 65 years and over ⁴	Percent of Male	Percent of Female
Wyoming¹	493,782	8.9%	26.1%	11.7%	50.3%	49.7%
Laramie County¹	81,607	11.6%	25.8%	N/A	N/A	N/A
Cheyenne³	53,925	N/A	N/A	N/A	N/A	N/A
United States²	281,412,906	13.1%	25.7%	12.4%	49.1%	50.9%

¹ U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/56/56021.html>. Accessed: June 2001.

² U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/00000.html>. Accessed: June 2001.

³ Metropolitan Area and Central City Population Estimates for July 1, 1999. <http://www.census.gov/population/estimates/metro-city/ma99-05.txt>. Accessed: June 2001.

⁴ Profile of General Demographic Characteristics for Wyoming: 2000. http://www.census.gov/Press-Release/www/2001/tables/dp_wy_2000.pdf and Profile of General Demographic Characteristics for the United States: 2000. http://www.census.gov/Press-Release/www/2001/tables/dp_us_2000.pdf. Accessed: June 2001.

Appendix B: Site Profile: Wyoming, Laramie County, and Cheyenne

Table 1 Continued: Population Demographic Characteristics

	Educational Attainment of Persons 25 and over, 1990 ¹		Public High School Graduates	Race/Ethnicity 2000 ¹				
	High School Graduates	College Graduates	High School Graduates 1999-2000 ³	Percent White Population	Percent Black Population	Percent Asian Population	Percent Hispanic or Latino Origin Population	Percent American Indian, Alaska Native Persons Population
Wyoming	230,656 (46.7%)	52,195 (10.6%)	6,300	92.1%	0.8%	0.6%	6.4%	2.3%
Laramie County	38,513 (47.2%)	9,467 (11.6%)	N/A	88.9%	2.6%	1.0%	10.9%	0.8%
Cheyenne	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United States	227,424,138 (83.4%) ²	615,588 (25.2%) ²	2,556,184	75.1%	12.3%	3.6%	12.5%	0.9%

¹ Percentages may exceed 100 percent because the race categories are not mutually exclusive. U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/56/56021.html> and U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/00000.html>. Accessed: June 2001.

² Fedstats. MapStats. USA. Estimates for 1999. <http://www.fedstats.gov/qf/states/00000.html>. Accessed: June 2001.

³ National Center for Education Statistics. Quick Tables & Figures. Number of public high school graduates, by state: School years 1995-96 to 1999-2000. <http://nces.ed.gov/quicktables/Detail.asp>. Accessed: June 2001.

Appendix B: Site Profile: Wyoming, Laramie County, and Cheyenne

Table 2: Economic Characteristics

	Unemployment Rate 2001 ¹	Income		Percent Below Poverty Level (1997) ³	
		Median Household Money Income 1997 ³	Per Capita Income 1999 ⁵	Percent Persons	Percent Children under 18 years
Wyoming	3.5%	\$33,197	\$26,363	12.0%	15.3%
Laramie County	2.9% ²	\$37,168	\$27,361	11.3%	15.8%
Cheyenne	2.8%	N/A	\$27,361	N/A	N/A
United States	4.4%	\$40,816 ⁴	\$28,546 ⁶	11.8% ⁴	16.3% ⁴

¹ Bureau of Labor Statistics. Metropolitan Area at a Glance for April 2001. <http://stat.bls.gov/eag/eag.wy.html>, Bureau of Labor Statistics. State at a Glance for April 2001. <http://stat.bls.gov/eag/eag.cheyenne.html>, and Bureau of Labor Statistics. Economy at a Glance for May 2001. <http://stat.bls.gov/eag/eag.us.html>. Accessed: June 2001.

² Local Area Unemployment Statistics. Bureau of Labor Statistics. Special Data Tables. Labor Force Data by County, 2000 Annual Averages. <ftp://146.142.4.23/pub/special.requests/la/laucounty.txt>. Accessed: June 2001.

³ Fedstats. MapStats. Laramie County, Wyoming. Estimates for 1997. <http://www.fedstats.gov/qf/states/56/56021.html>. Accessed: June 2001.

⁴ Fedstats. MapStats. USA. Estimates for 1999. <http://www.fedstats.gov/qf/states/00000.html>. Accessed: June 2001.

⁵ Bureau of Economic Analysis. Regional Accounts Data. Local Area Personal Income. <http://www.bea.doc.gov/bea/regional/reis/drill.cfm>. Accessed: June 2001.

⁶ Bureau of Economic Analysis, Department of Commerce. <http://www.bea.doc.gov/bea/newsrel/mpi0501.txt>. News Release May 3, 2001. Table 1: Per Capita Personal Income by Metropolitan Area, 1997-1999. Accessed: June 2001.

Appendix B: Site Profile: Wyoming, Laramie County, and Cheyenne

Table 3: Health Characteristics

	Birth Rate 1999 (except Laramie County 1994)	Infant Mortality Rate 1998 (except Laramie County 1994)	Low Birth Weight Rate 1999 ¹	Percent of Population Uninsured 1999	
				Persons ⁴	Children ⁵
Wyoming	12.8% ¹	7.2% ³	8.4%	16.1%	8.7%
Laramie County	15.3% ²	7.5% ²	N/A	N/A	N/A
Cheyenne	N/A	N/A	N/A	N/A	N/A
United States	14.5% ¹	7.2% ³	7.6%	15.5%	13.9%

¹ U.S. National Center for Health Statistics. *National Vital Statistics Reports. Births: Final Data for 1999*. Vol. 49, No. 1, April 17, 2001.

² USA Counties 1998 Cheyenne, WY General Profile. Note: births per 1000 resident population and infant deaths per 1000 live births. <http://www.census.gov/statab/USA98/56/021.txt>. Accessed: June 2001.

³ U.S. National Center for Health Statistics. *National Vital Statistics Reports. Deaths: Final Data for 1998*. Vol. 48, No. 11, July 24, 2000.

⁴ U.S. Census Bureau. Health Insurance Coverage: 1999. <http://www.census.gov/hhes/hlthins/hlthin99/hi99te.html>. Accessed: June 2001.

⁵ U.S. Census Bureau. Health Insurance Detailed Table: 1999. <http://www.census.gov/hhes/hlthins/hlthin99/dtable4.html> and U.S. Census Bureau. Low Income Uninsured Children by State. Number and percent of children under 19 years of age, at or below 200 percent of poverty, by state: Three-year averages for 1997, 1998, and 1999. <http://www.census.gov/hhes/hlthins/liuc99.html>. Accessed: June 2001.

Appendix B: Site Profile: Wyoming, Laramie County, and Cheyenne

Table 4: Characteristics by Public Benefits

	Food Stamps	TANF			Medicaid
	Average Monthly Participation (Households), preliminary 1999¹	Total Number of Recipients FY 1999 (Average)²	Total Number of Families FY 1999 (Average)²	Percent Change in AFDC/TANF Caseloads: Families Jan93-Dec99²	Total Number of Recipients FY 1999 (In Thousands)³
Wyoming	9,248	1,717	811	-90%	46
Laramie County	N/A	N/A	N/A	N/A	N/A
United States	7,668,372	7,187,753	2,642,826	-52%	40,649

¹ Department of Health and Human Services. Food Stamp Program: Average Monthly Participation (Households). Data as of September 25, 2000. <http://www.fns.usda.gov/pd/fsfyhh.html>. Accessed: June 2001.

² Department of Health and Human Services. *Temporary Assistance for Needy Families (TANF) Program. Third Annual Report to Congress.* August 2000. Administration for Children and Families. Office of Planning, Research, and Evaluation. Tables 2.1, 2.2, 2.4.

³ Health Care Financing Administration. Medicaid Recipients by Basis of Eligibility FY 1998. <http://www.hcfa.gov/medicaid/msis/MCD98T02.pdf>. Accessed: June 2001.

Appendix B: Site Profile: Wyoming, Laramie County, and Cheyenne

Table 4 Continued: Characteristics by Public Benefits

	Head Start	Immunizations				WIC
	Enrollment FY 2000 ¹	Estimated Vaccination Coverage Levels: Children 19-35 months ²		Estimated Vaccination Coverage: Children 19-35 months living below poverty level		Total Participation Rate FY 2000 preliminary ⁴
		Vaccination series 4:3:1	Vaccination Series 4:3:1:3	Vaccination series 4:3:1	Vaccination Series 4:3:1:3	
Wyoming	1,468	81.8%	81.2%	69.2% ³	67.3% ³	Department of Health: 10,661 Shoshone & Arapahoe: 0 Shoshone Tribe: 66 N. Arapahoe: 180
Laramie County	N/A	N/A	N/A	N/A	N/A	N/A
United States	857,664	78.9%	77.3%	74.8%	72.9%	7,198,259

¹ Administration on Children and Families. Head Start Factsheet 2001. <http://www2.acf.dhhs.gov/programs/hsb/about/fact2001.html>. Accessed: June 2001.

² Centers for Disease Control and Prevention. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series Among Children 19-35 Months of Age by State. National Immunization Survey, Q3/1999-Q2/2000. http://www.cdc.gov/nip/coverage/tables/99-00/antigen_state.xls and Centers for Disease Control and Prevention. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series Among Children 19-35 Months of Age Living Below the Poverty Level by State and Immunization Action Plan Area. National Immunization Survey, Q3/1999-Q2/2000. http://www.cdc.gov/nip/coverage/tables/99-00/pov_jap.xls. Accessed: June 2001.

³ Centers for Disease Control and Prevention. Estimated Vaccination Coverage in Percent with Individual Vaccines and Vaccination Series Among Children Aged 19-35 Months Living Below the Poverty Level by Census Division and State. National Immunization Survey, July 1998-June 1999. http://www.cdc.gov/nip/coverage/tables/98-99/pov_st.xls. Accessed: June 2001.

⁴ Department of Health and Human Services. WIC Program: Total Participation: Data as of May 25, 2001. <http://www.fns.usda.gov/pd/wifypart.html>. Accessed: June 2001.

**Appendix B: Site Profile: Nevada, Washoe County, Reno
Nevada, Washoe County, and Reno Background Information**

Table 1: Population Demographic Characteristics

	Population (All 2000 estimates except 1999 Reno estimate)		Age Estimates 2000		Gender 2000 ⁴	
	Population Estimate	Percent Change 1990- 2000	Percent of Population under 18 years	Percent of Population 65 years and over ⁴	Percent of Male	Percent of Female
Nevada¹	1,998,257	66.3%	25.6%	11.0%	50.9%	49.1%
Washoe County¹	339,486	33.3%	24.9%	N/A	N/A	N/A
Reno³	313,816	N/A	N/A	N/A	N/A	N/A
United States²	281,412,906	13.1%	25.7%	12.4%	49.1%	50.9%

¹ U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/32/32031.html>. Accessed: June 2001.

² U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/00000.html>. Accessed: June 2001.

³ Metropolitan Area and Central City Population Estimates for July 1, 1999. <http://www.census.gov/population/estimates/metro-city/ma99-05.txt>. Accessed: June 2001.

⁴ Profile of General Demographic Characteristics for Nevada: 2000. http://www.census.gov/Press-Release/www/2001/tables/dp_nv_2000.pdf and Profile of General Demographic Characteristics for the United States: 2000. http://www.census.gov/Press-Release/www/2001/tables/dp_us_2000.pdf. Accessed: June 2001.

Appendix B: Site Profile: Nevada, Washoe County, Reno

Table 1 Continued: Population Demographic Characteristics

	Educational Attainment of Persons 25 and over, 1990 ¹		Public High School Graduates	Race/Ethnicity 2000 ¹				
	High School Graduates	College Graduates	High School Graduates 1999-2000 ³	Percent White Population	Percent Black Population	Percent Asian Population	Percent Hispanic or Latino Origin Population	Percent American Indian, Alaska Native Persons Population
Nevada	622,010 (31.2%)	120,640 (6.0%)	13,922	75.2%	6.8%	4.5%	19.7%	1.3%
Washoe County	139,680 (41.4%)	35,125 (10.3%)	N/A	80.4%	2.1%	4.3%	16.6%	1.8%
Reno	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United States	227,424,138 (83.4%) ²	615,588 (25.2%) ²	2,556,184	75.1%	12.3%	3.6%	12.5%	0.9%

¹ Percentages may exceed 100 percent because the race categories are not mutually exclusive. U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/32/32031.html> and U.S. Census Bureau. State and County *QuickFacts*. <http://quickfacts.census.gov/qfd/states/00000.html>. Accessed: June 2001.

² Fedstats. MapStats. USA. Estimates for 1999. <http://www.fedstats.gov/qf/states/00000.html>. Accessed: June 2001.

³ National Center for Education Statistics. Quick Tables & Figures. Number of public high school graduates, by state: School years 1995-96 to 1999-2000. <http://nces.ed.gov/quicktables/Detail.asp>. Accessed: June 2001.

Appendix B: Site Profile: Nevada, Washoe County, Reno

Table 2: Economic Characteristics

	Unemployment Rate 2001 ¹	Income		Percent Below Poverty Level (1997) ³	
		Median Household Money Income 1997 ³	Per Capita Income 1999 ⁵	Percent Persons	Percent Children under 18 years
Nevada	4.9%	\$39,280	\$31,004	10.7%	15.4%
Washoe County	3.0% ²	\$42,070	\$35,343	9.8%	13.8%
Reno	4.0%	N/A	\$35,343	N/A	N/A
United States	4.4%	\$40,816 ⁴	\$28,546 ⁵	11.8% ⁴	16.3% ⁴

¹ Bureau of Labor Statistics. Metropolitan Area at a Glance for April 2001. <http://stat.bls.gov/eag/eag.nv.html>, Bureau of Labor Statistics. State at a Glance for April 2001. <http://stat.bls.gov/eag/eag.reno.html>, and Bureau of Labor Statistics. Economy at a Glance for May 2001. <http://stat.bls.gov/eag/eag.us.html>. Accessed: June 2001.

² Local Area Unemployment Statistics. Bureau of Labor Statistics. Special Data Tables. Labor Force Data by County, 2000 Annual Averages. <ftp://146.142.4.23/pub/special.requests/la/laucounty.txt>. Accessed: June 2001.

³ Fedstats. MapStats. Washoe County, Nevada. Estimates for 1997. <http://www.fedstats.gov/qf/states/32/32031.html>. Accessed: June 2001.

⁴ Fedstats. MapStats. USA. Estimates for 1999. <http://www.fedstats.gov/qf/states/00000.html>. Accessed: June 2001.

⁵ Bureau of Economic Analysis. Regional Accounts Data. Local Area Personal Income. <http://www.bea.doc.gov/bea/regional/reis/drill.cfm>. Accessed: June 2001.

⁶ Bureau of Economic Analysis, Department of Commerce. <http://www.bea.doc.gov/bea/newsrel/mpi0501.txt>. News Release May 3, 2001. Table 1: Per Capita Personal Income by Metropolitan Area, 1997-1999. Accessed: June 2001.

Appendix B: Site Profile: Nevada, Washoe County, Reno

Table 3: Health Characteristics

	Birth Rate 1999 (except Washoe County 1994)	Infant Mortality Rate 1998 (except Washoe County 1994)	Low Birth Weight Rate 1999 ¹	Percent of Population Uninsured 1999	
				Persons ⁴	Children ⁵
Nevada	16.2% ¹	7.0% ³	7.6%	20.7%	14.1%
Washoe County	15.7% ²	4.1% ²	N/A	N/A	N/A
Reno	N/A	N/A	N/A	N/A	N/A
United States	14.5% ¹	7.2% ³	7.6%	15.5%	13.9%

¹ U.S. National Center for Health Statistics. *National Vital Statistics Reports. Births: Final Data for 1999*. Vol. 49, No. 1, April 17, 2001.

² USA Counties 1998 Washoe, NV General Profile. Note: births per 1000 resident population and infant deaths per 1000 live births. <http://www.census.gov/statab/USA98/32/031.txt>. Accessed: June 2001.

³ U.S. National Center for Health Statistics. *National Vital Statistics Reports. Deaths: Final Data for 1998*. Vol. 48, No. 11, July 24, 2000.

⁴ U.S. Census Bureau. Health Insurance Coverage: 1999. <http://www.census.gov/hhes/hlthins/hlthin99/hi99te.html>. Accessed: June 2001.

⁵ U.S. Census Bureau. Health Insurance Detailed Table: 1999. <http://www.census.gov/hhes/hlthins/hlthin99/dtable4.html> and U.S. Census Bureau. Low Income Uninsured Children by State. Number and percent of children under 19 years of age, at or below 200 percent of poverty, by state: Three-year averages for 1997, 1998, and 1999. <http://www.census.gov/hhes/hlthins/liuc99.html>. Accessed: June 2001.

Appendix B: Site Profile: Nevada, Washoe County, Reno

Table 4: Characteristics by Public Benefits

	Food Stamps	TANF			Medicaid
	Average Monthly Participation (Households), preliminary 1999¹	Total Number of Recipients FY 1999 (Average)²	Total Number of Families FY 1999 (Average)²	Percent Change in AFDC/TANF Caseloads: Families Jan93-Dec99²	Total Number of Recipients FY 1999 (In Thousands)³
Nevada	28,736	20,231	8,034	-52%	128
Washoe County	N/A	N/A	N/A	N/A	N/A
United States	7,668,372	7,187,753	2,642,826	-52%	40,649

¹ Department of Health and Human Services. Food Stamp Program: Average Monthly Participation (Households). Data as of September 25, 2000. <http://www.fns.usda.gov/pd/fsfyhh.html>. Accessed: June 2001.

² Department of Health and Human Services. *Temporary Assistance for Needy Families (TANF) Program. Third Annual Report to Congress.* August 2000. Administration for Children and Families. Office of Planning, Research, and Evaluation. Tables 2.1, 2.2, 2.4.

³ Health Care Financing Administration. Medicaid Recipients by Basis of Eligibility FY 1998. <http://www.hcfa.gov/medicaid/msis/MCD98T02.pdf>. Accessed: June 2001.

Appendix B: Site Profile: Nevada, Washoe County, Reno

Table 4 Continued: Characteristics by Public Benefits

	Head Start	Immunizations				WIC
		Enrollment FY 2000 ¹	Estimated Vaccination Coverage Levels: Children 19-35 months ²		Estimated Vaccination Coverage: Children 19-35 months living below poverty level	Total Participation Rate FY 2000 preliminary ⁴
		Vaccination series 4:3:1	Vaccination Series 4:3:1:3	Vaccination series 4:3:1	Vaccination Series 4:3:1:3	
Nevada	2,035	77.8%	76.7%	77.0% ³	73.9% ³	Division of Health: 37,859 Inter-Tribal Council: 923
Washoe County	N/A	N/A	N/A	N/A	N/A	N/A
United States	857,664	78.9%	77.3%	74.8%	72.9%	7,198,259

¹ Administration on Children and Families. Head Start Factsheet 2001. <http://www2.acf.dhhs.gov/programs/hsb/about/fact2001.html>. Accessed: June 2001.

² Centers for Disease Control and Prevention. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series Among Children 19-35 Months of Age by State. National Immunization Survey, Q3/1999-Q2/2000. http://www.cdc.gov/nip/coverage/tables/99-00/antigen_state.xls and Centers for Disease Control and Prevention. Estimated Vaccination Coverage with Individual Vaccines and Selected Vaccination Series Among Children 19-35 Months of Age Living Below the Poverty Level by State and Immunization Action Plan Area. National Immunization Survey, Q3/1999-Q2/2000. http://www.cdc.gov/nip/coverage/tables/99-00/pov_jap.xls. Accessed: June 2001.

³ Centers for Disease Control and Prevention. Estimated Vaccination Coverage in Percent with Individual Vaccines and Vaccination Series Among Children Aged 19-35 Months Living Below the Poverty Level by Census Division and State. National Immunization Survey, July 1998-June 1999. http://www.cdc.gov/nip/coverage/tables/98-99/pov_st.xls. Accessed: June 2001.

⁴ Department of Health and Human Services. WIC Program: Total Participation: Data as of May 25, 2001. <http://www.fns.usda.gov/pd/wifypart.html>. Accessed: June 2001.

Appendix B: Demographic Characteristics of HPP Clients in 2001

Bismarck/Burleigh County			
	Baseline n= 393	2000 n= 195	2001 n= 156
Percent Female	92.3%	94.0%	95.4%
Percent of Respondents Ages:			
Less than 20 years	17.0%	11.0%	13.7%
21 to 30 years	46.8%	66.5%	58.8%
31 to 40 years	22.1%	17.6%	24.8%
41 to 55 years	9.2%	4.9%	2.0%
56 + years	4.8%	0.0%	0.7%
Percent Who Are:			
Caucasian/White	91.0%	86.8%	87.5%
African-American/Black	0.0%	0.6%	0.7%
Hispanic/Latino	0.8%	0.0%	0.0%
American Indian/Alaskan Native	9.3%	11.5%	13.2%
Asian/Pacific Islander	0.3%	0.6%	0.0%
Other	0.0%	0.6%	0.0%
Percent Whose Native Language is:			
English	92.4%	98.9%	98.7%
Spanish	1.3%	0.6%	1.3%
Other	6.3%	2.2%	2.6%
Percent Who Employed:			
More than 20 Hrs Per Week	40.3%	35.7%	31.4%
Less Than 20 Hrs Per Week	13.3%	15.4%	19.0%
Not Employed	46.4%	48.9%	49.7%
Percent Receiving Benefits from:			
WIC	84.9%	99.5%	96.7%
Head Start	18.1%	23.6%	27.6%
Immunizations	59.9%	48.4%	48.7%
Public Health Nursing	27.2%	25.3%	25.0%
Preventive Health Care for Children	14.6%	10.4%	4.6%
Prenatal Care	45.3%	40.7%	36.2%
Services at Children's Clinics	9.9%	8.8%	7.9%
Other	9.1% ³	1.6% ⁴	3.3% ⁵

Source: Urban Institute HPP Client Survey

¹ On the Baseline surveys, clients were allowed to check more than one of the choices under ethnicity and services.

² On the 2000 and 2001 rounds of surveys, clients were allowed to check more than one of the choices under ethnicity, language, and services.

³ Of those clients who responded other on Baseline: 21.2% responded Food Stamps, 30.3% responded Medicaid/Medical Assistance, 27.3% gave various other reasons, and 9.1% didn't list another service. (n=33)

⁴ Of those clients who responded other in 2000: 0.0% responded Food Stamps, 33.3% responded Medicaid/Medical Assistance, 66.7% gave various other reasons. (n=3)

⁵ Of those clients who responded other in 2001: 20.0% responded Food Stamps, 20.0% responded Medicaid/Medical Assistance, 60.0% gave various other reasons. (n=5)

Appendix B: Demographic Characteristics of HPP Clients in 2001

Cheyenne/ Laramie County			
	Baseline n=324	2000 n=34	2001 n=90
Percent Female	89.9%	93.9%	92.2%
Percent of Respondents Ages			
Less than 20 years	23.4%	6.1%	6.6%
21 to 30 years	48.9%	60.6%	64.5%
31 to 40 years	22.4%	24.2%	17.1%
41 to 55 years	4.7%	9.1%	10.5%
56 + years	0.6%	0.0%	1.3%
Percent Who Are:			
Caucasian/White	71.0%	75.0%	50.6%
African-American/Black	4.7%	6.3%	9.1%
Hispanic/Latino	26.8%	18.8%	42.9%
American Indian/Alaskan Native	0.9%	6.3%	1.3%
Asian/Pacific Islander	0.0%	0.0%	0.0%
Other	0.6%	0.0%	1.3%
Percent Whose Native Language is:			
English	82.2%	100.0%	98.7%
Spanish	12.5%	9.1%	16.7%
Other	5.3%	3.0%	2.6%
Percent Who Employed:			
More than 20 Hrs Per Week	44.1%	45.2%	40.0%
Less Than 20 Hrs Per Week	19.3%	22.6%	21.3%
Not Employed	36.7%	32.3%	38.7%
Percent Receiving Benefits from:			
WIC	86.8%	68.8%	64.9%
Head Start	24.8%	53.1%	82.4%
Immunizations	55.4%	59.4%	50.0%
Public Health Nursing	23.8%	37.5%	16.2%
Preventive Health Care for Children	9.6%	9.4%	2.7%
Prenatal Care	27.7%	28.1%	21.6%
Services at Children's Clinics	35.6%	40.6%	31.1%
Other	7.6% ³	18.8% ⁴	17.6% ⁵

Source: Urban Institute HPP Client Survey

¹ On the Baseline surveys, clients were allowed to check more than one of the choices under ethnicity and services. On the 2000 and 2001 rounds of surveys, clients were allowed to check more than one of the choices under ethnicity, language, and services.

² Of those clients who responded other at Baseline: 4.3% responded Food Stamps, 30.4% responded Medicaid/Medical Assistance, 60.9% gave various other reasons, and 4.3% didn't list another service. (n= 23)

³ Of those clients who responded other in 2000: 33.3% responded Food Stamps, 83.3% responded Medicaid/Medical Assistance, 33.3% gave various other reasons. (n=6)

⁴ Of those clients who responded other in 2001: 7.7% responded Food Stamps, 84.6% responded Medicaid/Medical Assistance, 38.5% gave various other reasons. (n= 13)

Appendix B: Demographic Characteristics of HPP Clients in 2001

Reno/ Washoe County		
	Baseline n= 375	2001 n= 159
Percent Female	94.8%	95.8%
Percent of Respondents Ages		
Less than 20 years	17.5%	17.1%
21 to 30 years	48.9%	54.1%
31 to 40 years	30.4%	23.3%
41 to 55 years	2.7%	5.5%
56 + years	0.5%	0.0%
Percent Who Are		
Caucasian/White	43.0%	41.1%
African-American/Black	3.2%	3.4%
Hispanic/Latino	44.6%	49.3%
American Indian/Native Alaskan	10.8%	7.5%
Asian/Pacific Islander	3.5%	1.4%
Other	0.0%	0.0%
Percent Whose Native Language is:		
English	54.4%	76.7%
Spanish	22.9%	46.0%
Other	22.6%	2.7%
Percent Who Employed:		
More than 20 Hrs Per Week	57.7%	63.2%
Less Than 20 Hrs Per Week	11.6%	11.1%
Not Employed	30.7%	25.7%
Percent Receiving Benefits from:		
WIC	96.0%	97.3%
Head Start	12.5%	12.2%
Immunizations	53.8%	44.6%
Public Health Nursing	8.8%	49.3%
Preventive Health Care for Children	4.8%	2.7%
Prenatal Care	44.5%	39.2%
Services at Children's Clinics	16.4%	12.2%
Other	4.8% ³	2% ⁴

Source: Urban Institute HPP Client Survey

¹ On the Baseline surveys, clients were allowed to check more than one of the choices under ethnicity and services.

² On the 2000 and 2001 rounds of surveys, clients were allowed to check more than one of the choices under ethnicity, language, and services.

³ Of those clients who responded other at Baseline: 0.0% responded Food Stamps, 23.5% responded Medicaid/Medical Assistance, 76.5% gave various other reasons, and 0.0% didn't list another service. (n= 17)

⁴ Of those clients who responded other in 2001: 0.0% responded Food Stamps, 0.0% responded Medicaid/Medical Assistance, 100.0% gave various other reasons. (n= 3)

Appendix C: Ongoing Costs for the HPP

Appendix C: Ongoing Costs for the HPP

The Annual Health Passport Budget was developed by WGA as a projection of anticipated costs for the annualized current operations of Health Passport for the three states of North Dakota, Wyoming and Nevada.

If new partners are added within any of the states, the costs of integrating with an additional legacy application, as well as system testing, equipment installation, maintenance, staff training, etc., would be in addition to these ongoing costs of operation. It is estimated that a new program – unless it is particularly complex – could be added to HPP for approximately \$100,000.

The following is the WGA’s Annual Health Passport Budget for ongoing expenses. The budget is expected to support up to 30,000 clients and the current partner/retailer configuration. If the Nevada WIC/Intertribal WIC increases their WIC caseload, there would be an additional expense of approximately \$1.50 per WIC household per month.

Area	Expense	Notes	Estimated Annual Cost
WGA			
	Project Oversight		\$15,000
	Project Manager		\$35,000
HPP Data Center Contract for 3 States			
	PSI Net		\$122,304
	Kiosk Monitoring by Open Domain		\$8,976
Help Desk			
	WIC – Stored Value Systems	Included in the transaction fees (processing, network, ACH banking and customer services) \$66,000 paid for by Nevada	(\$66,000 by Nevada)
	HPP Open Domain	Calls that are health/health system specific	\$46,512
	Software Support, Open Domain		\$130,500
Sub-Total, WGA Budgeted Expenses			\$358,292

Area	Expense	Notes	Estimated Annual Cost
State Specific			
Nevada			
	WIC EBT Transaction Fees		\$72,000
	Site Manager		\$70,000
	Hardware Support		\$40,000
	Kiosk Programming		\$6,000
	Hardware Maintenance		\$48,000
	Client Additions/churning and replacement cards	5,000 at \$4.35 each	\$21,750
WGA Total for Nevada			\$215,250
North Dakota			
	WGA Site Manager		\$70,000
	Hardware Support/Maintenance by Computerland		\$5,000
	Kiosk Programming		\$6,000
	Cards for New Clients/Replacements	1,500 at \$4.35	\$6,525
North Dakota Total			\$112,525
Wyoming			
	WGA Site Manager		\$70,000
	Hardware Support via Connecting Point		\$5,000
	Kiosk Programming		\$6,000
	Cards for New Clients/Replacements	1,500 at \$4.35	\$6,525
Wyoming Total			\$112,525
WGA Annual Total			\$798,592

Appendix D: Acronyms

Appendix D: Acronyms

ATM	Automated Teller Machine
BBNS	Bismarck Burleigh Nursing Service
CCC	Cheyenne Children's Clinic
CHIP	Child Health Insurance Plan
CHN	Community Health Nursing
CSA	Community Service Agency
DFS	Detailed Functional Specifications
EBT	Electronic Benefits Transfer
ECR	Electronic Cash Register
EPSDT	Early Periodic Screening, Diagnosis, and Treatment
FTE	Full Time Equivalent
GA	General Assistance
GSA	General Services Administration
HIPAA	Health Insurance Portability and Accountability Act
HPP	Health Passport Project
HSFIS	Head Start Family Information System
IHS	Indian Health Service
ITCN	Inter-Tribal Council of Nevada
MCH	Maternal Child Health Services
OPOP	Optimal Pregnancy Outcome Program
PIN	Personal Identification Number
PKI	Public Key Infrastructure
POS	Point of Sale
SSI	Special Supplemental Income
TANF	Temporary Assistance for Needy Families
THOR	The Online Resource
WGA	Western Governors' Association
WIC	Special Supplemental Nutrition Program for Women, Infants and Children

Appendix E: Program Descriptions

Appendix E: Program Descriptions

Most of the programs participating in the HPP demonstration provide a core set of services that are dictated by federal regulation or suggested by program guidelines. Below is a brief description of each program and the core set of services.

Special Supplemental Nutrition Program for Women, Infants and Children (WIC)

WIC is a federally funded nutrition assistance program administered by the U.S. Department of Agriculture's (USDA) Food and Nutrition Service (FNS). Through grants to state and tribal organizations, this program provides supplemental food and nutrition services to lower-income pregnant, breastfeeding, and postpartum women. The program also serves infants and children up to age 5 who are at nutritional risk. The WIC program's regulations apply uniformly to all states. As part of the certification process, a competent professional authority (CPA) must perform a medical or nutritional assessment to determine that a client is nutritionally at-risk. An assessment must include, at a minimum, height and weight measurements and a hematological test for anemia. The results of blood tests for other providers are acceptable if the tests were done within 60 days of the WIC certification. A nutritional assessment also involves the determination of dietary deficiencies, either through a 24-hour recall, a dietary history, or a food frequency questionnaire.

In addition to nutritional assessment, the WIC program provides nutrition education. Nutrition education may be provided on a group or individual basis. WIC provides supplemental foods to its clients. Although states determine which foods are acceptable, every program must provide a standard set of six food packages which are prescribed depending on the age and need of the client. Supplemental foods provided by WIC include infant formula, cereal, juice, milk, eggs, peanut butter, beans, or peas. WIC foods are provided using vouchers or electronic benefit transfer through authorized WIC vendors.

Immunization

Each state, under the auspices of its State Health Department, determines which vaccines are to be provided through its immunization program and the recommended schedule for administration. All states have laws which require certain immunizations for school enrollment. Most states base their immunization list and schedule of recommendations put forth by the Advisory Committee on Immunization Practice (ACIP) which is made up of several medical associations and organizations, such as the American Academy of Pediatrics. The National Immunization Program (NIP) is a part of the federal Centers for Disease Control and provides leadership for the planning, coordination, and conduct of immunization activities nationwide. The Vaccines for Children (VFC), program, which is part of the NIP, buys vaccines for children in certain groups who can't afford to buy vaccines. Doctors can get these vaccines for their patients who qualify by joining the VFC program in their state.

Early Periodic Screening, Diagnosis, and Treatment (EPSDT)

Enacted in 1967 as a mandatory service under Medicaid, the intent of the EPSDT program is to provide all Medicaid-eligible children from birth to 21 years of age with comprehensive and periodic screenings for any illnesses, abnormalities, or treatable conditions, and to correct or ameliorate defects and physical or mental illnesses uncovered during the screening. Screenings include evaluation of nutrition, vision, dental and hearing status; a history and physical examination; and provision of immunizations.

Maternal and Child Health (MCH)

Under this federally funded block grant to states, services are provided in three areas:

Part A: preventative and primary care services for pregnant women and infants

Part B: services to children and adolescents

Part C: community-based and primary services for children with special needs.

Head Start

The Head Start Program is a federal program that offers comprehensive services, including high quality early childhood education, nutrition, health, and social services, along with a strong parent involvement focus, to low income children nationwide. Services are provided through a network of grantee and delegate agencies. As part of the health services component, Head Start grantees must record complete medical, dental, and developmental histories and provide comprehensive health assessments for every enrolled child.