

MUSKEGON i-NET:

A Web-based Case Management Solution for Providers of Health Care to the Indigent
NARRATIVE (Revised 8/7/01)

I. Purpose

Problem: Muskegon and Muskegon Heights, Michigan are Federally designated "Enterprise Communities; Muskegon Heights is also a "Weed and Seed" community. Like many other urban communities around the nation, Muskegon County has an "invisible" population of indigent people, 90% of whom live in urban areas. These are adults earning less than \$250 per month. They do not qualify for Medicaid or Medicare because they do not have either dependent children or are not classified as medically disabled. Unable to access many of the health and social services in a community, the indigent have a significant impact on the health resources of every community.

In Muskegon County 1,700 people (unduplicated cases) are currently classified as indigent and receive limited health care through the State Medical Plan (SMP)—up 79% since 1998. Of these about 700 are in active treatment, 225 of whom comprise a “Chronically-Ill” subgroup. The In-Treatment group consumes over 75% of the annual expenditure for non-hospital medical care-- a staggering \$1.2 million in 2000. The estimated cost for FY2001 is over \$1.5 million. More alarming is the fact that the primary cost burden is for pharmaceuticals. Last year, \$641,000 of state funds was spent on prescription drugs alone in for the Chronically-Ill subgroup. During the past 12 months, the SMP population grew 19 % to a monthly average census of 1,053 and the In-Treatment group increased 40% to 700.

Through its affiliate Access Health, Inc., the Muskegon Community Health Project (MCHP) was recently designated to manage Muskegon County’s State Medical Plan (SMP), called “Muskegon Care.” Muskegon Care patient data shows high rates of diabetes (20%), high blood pressure (25%), heart condition (10%), asthma or other lung disease (17%), arthritis (19%), muscular-skeletal pain (51%), depression (25%) and substance abuse (12%). Each disease is a primary risk factor for expensive specialty services such as MRI, CT-SCAN, dialysis, and cardiovascular intervention. In-hospital care for SMP patients is uncompensated and these high-end medical costs are shifted to the rest of the community as charitable care. At a time of increasing financial pressures on health care resources, this high usage group presents a serious challenge to the entire community as an opportunity for significant cost savings.

Solutions: In order to connect the indigent population with existing community support services, MCHP proposes to implement a web-based, case management safety net software program among medical, dental, behavior health, mental health and human service providers. The “Muskegon i-Net,” will be modeled on another successful program developed by MCHP for the case-management of serious habitual youthful offenders (See Appendix B. Exhibit 1). Based on MCHP's experience, we know it is extremely difficult for case-managers to effectively track the daily activities of their clients. The current fragmented health services infrastructure prohibits the delivery of the appropriate care at the right setting for a population lacking the means to access these services. Technology now exists to manage the needs of this population through multi-disciplinary case management.

After seeing the effectiveness of technology in the coordinated case management of juvenile offenders, MCHP proposes: (1) transferring its knowledge of web-based case management to the needs of the SMP

group; (2) reducing the cost of uncompensated care; and (3) improving individual health status. The Muskegon i-Net models a solution to close the “digital divide” for a population that exists in every urban community. Case managers will be able to coordinate and manage individual treatment programs with health and human service providers on a daily basis. For example, nurse case managers can communicate with social service case-managers to insure that soup kitchens can properly feed diabetic clients. Similar collaborations can occur among mental health and other disciplines, as well.

MCHP proposes to test the coordinated case management program on the 700 indigent persons in active health treatment with a targeted 225 in a Chronically Ill sub-group for intensified case management. Access Health projects this sub-group will consume over half of the projected \$1.5 million total 2001 SMP expenditure. The chronically ill patients generally end up hospitalized, increasing the effects of cost-shifting to charitable care expenses.

The application of the Muskegon i-Net in a fragmented information system will benefit the indigent population, as case managers are able to link patients with appropriate health and human services. Preliminary case management outcomes data from the “Denver Health Community Voices” project showed significant reductions in costs for ambulance trips, emergency and urgent care, and a 75% reduction of indigent hospitalizations, based on information presented by Dr. Richard Wright at the HRSA “Community Access Program” workshop (3/9/00, Chicago, IL). A complete analysis of Denver Health’s data is expected *circa* May 2001. We also anticipate data to show health status improvements for substance abuse, diabetes management, hypertension, asthma, and pain management among the targeted SMP patients. Our experience with this population tells us that the case management approach affects two significant short-term results: (1) more patients remain in active treatment for longer periods of time, as treatment they are transitioned into primary care; and (2) there is an increased demand by patients for services. Thus, more efficient use of financial and human resources is key to positive program outcomes.

Expected Measurable Outcomes:

- A web-based case management program for the indigent population of Muskegon County; and creation of a replication model.
- Reduced public cost of indigent care by: *a*) decreasing the cost of uncompensated care borne by the two area health systems and low-income FQHC clinics; and *b*) increasing the number of primary care visits and other health contacts (e.g., substance abuse and mental health counseling; pain management, relaxation, diet and nutrition; and support groups).
- Improved group health status of the In-Treatment population, per specific health indicators (see Sec.VII, Evaluation and Documentation).
- Improved individual health status of the Chronically Ill sub-group, per specific health status indicators (see Sec. VII, Evaluation and Documentation).
- Improved quality of life of the In-Treatment population, per specific indicators, measured by pre- and post testing (see Sec. VII, Evaluation and Documentation).

II. Innovation

Currently there is no system of managed care for this population. These patients lack resources and support to manage their health care needs. Health service providers lack the systemic structure to effectively provide health care through case management. This combination results in an at-risk population without benefit of the medical or the technological advances of the information age. The application of our web-based case management solution overcomes technological barriers to information sharing that are common to government, health and human service agencies. Muskegon i-Net will provide a cost-effective solution to facilitating coordinated care and to reducing disparity in access and service delivery for the indigent through patient/client information sharing among different health and human service networks.

Technology Applied to Reducing Uncompensated Care. There have been recent successes in developing case management programs that address financial management in the managed care environment. The Muskegon i-Net is unique as a community-driven, web-based network that facilitates managed care for a population without a significant health coverage revenue stream. Non-profit health systems are required by law to provide charitable care, but they are not offering services as “managed care.” Muskegon i-Net affords the application of managed care efficiencies to an indigent population, across a highly fragmented delivery system.

III. Diffusion Potential

Common Problem. Even in a robust economy, Virtually every urban community has an indigent health care problem that affects significant cost burden on local health systems. This is at a time when the rising cost of care is a national priority health issue. While the Muskegon i-Net is not a panacea for the financial problems of health systems, it does advance two valuable outcomes: (1) managed health care and (2) reduced cost of uncompensated care. The Denver Health Community Voices Project’s experience so far is an important indicator of the potential benefits. In 1999, there were 30,373 persons enrolled in Michigan’s SMP, with a total expenditure of \$27.5 million. That price tag rose to \$32.8 million in 2000. Currently, twelve Michigan communities are considering local management of their SMP programs. Thus, it is likely that these and other communities will have need for the Muskegon i-Net project.

Advantages and Replication. Given the prospect of wide interest in Muskegon i-Net, this proposal also provides an innovative model for replication in other communities. While some may choose to develop their own case management software, others may prefer to customize the Muskegon model for their own needs. Using the recent developments of Application Service Providers (ASP), we will be able to clone Muskegon i-Net and customize it at very reasonable costs for other communities.

The opportunity to model Muskegon i-Net as an ASP enhances the dissemination potential. Unlike the traditional "shrink-wrap" style software, the ASP approach provides server-side hosting of remote databases that are browser accessible. This eliminates the hardware and software compatibility issues, as well as cost and set-up time barriers.

Knowledge Dissemination. We envision the creation of a website to educate interested parties in the benefits and outcomes of the Muskegon i-Net model, including a demonstration of Muskegon I-Net. An evaluation of the measured outcomes in Muskegon County will include utilization data.

The application of communications technology to hard-to-manage populations can return large dividends to the community, as well as to showcase and market these web-based solutions. MCHP will draw upon its extensive experience in making presentations to health care professionals, elected officials and others to publicize the results and lessons learned from the Muskegon i-Net project. MCHP recently presented to several national forums on its successful community-driven programs, including "Access Health" (AH). AH extends health coverage to uninsured, low-income workers and is the companion to the "Muskegon Care" program, which manages health coverage of the County's SMP indigent population. (see Appendix B, Exhibit 2).

MCHP will also develop a national media communications plan to share information on this web-based solution. The dissemination campaign will be similar to the strategy developed for the successful media coverage of Access Health. At least one regional workshop will be hosted by MCHP to share information on the Muskegon i-Net technology and its applications. Scholarships will be offered to enable small organizations to benefit from the knowledge generated. Michigan Features, a West Michigan media and communications firm, will be contracted to assist with website and other media promotional activities.

IV. Project Feasibility:

Technical Approach. The innovative web-based case-management of health care for the SMP population will be modeled on the software developed by MCHP to case-manage youthful serious habitual offenders. This will involve either the modification of a commercial software product, if available, or development of a custom program to query a common, relational database. The program will display information from a broad range of data fields on individual patients, contributed from the systems of different disciplines. The software will also link users to other relevant databases, such as MCHP's on-line *Health and Human Services Directory for Muskegon County* (www.accesspoint.org). In addition to the ability to query shared patient records, case managers will be able to host virtual meetings through a "discussion forum."

Alternative networking technology solutions, such as Local or Wide Area Networks, were not viewed as either achievable or cost effective, given existing hardware and software incompatibilities. The technology disparity between health providers and the community prohibits the use of LANs or WANs. Conversely, a web-based solution bridges the existing technology barriers by allowing use of existing equipment, with minimum investment needed for Internet access and participant training.

The confidentiality of patient medical records will be essential for participation by medical providers, due to the broad range of community-based partners involved in the case management. A separate maintenance section of the website will enable authorized user-participants to input medical and non-medical information to the database. Users will be restricted to their particular data fields. Both read and input access will be password-protected. The use of dedicated server(s), firewalls, encryption, as well as virtual private network (VPN) technology, will be employed to ensure compliance with HIPAA security and privacy regulations. Appropriate patient/client "informed consent" and release-of-information waiver issues will be included.

Project staff and a technical development team (see Appendix B, Exhibit 3) will explore the feasibility of wireless access to the Muskegon I-Net website. Assessing whether wireless Internet technology can

comply with the security and privacy requirements of the new HIPPA regulations is key. If /when all partners are agreed on HIPPA compliance, a “mirror” website will be developed and wireless devices deployed for use by Muskegon Care case managers.

We envision that the Medical Case Manager will be able to input treatment protocols for a patient and coordinate the needed community organizations for “wrap-around “ services. For example, a patient currently using the ambulance services several times a month could be provided transportation through the network of community groups working through a network of community groups, administered by the Salvation Army. The same client may be also enrolled in pain management programs like aqua therapy to reduce the need for ER visits and medications. The case-manager will be able to track daily compliance with the treatment protocols and intervene immediately when a problem arises.

MCHP will maintain the website through a commercial ISP who will provide web hosting, connectivity and 24-by-7 website support services. Programming support will continue through an "as-needed" contract with the selected software program vendor and/or other commercial IS support firm. The vendor/IS support firm will also provide training to a minimum of nine Muskegon i-Net end-users. The initial training will be done using a “train-the-trainer model. Thus re-training will occur as needed for staff turnovers and/or program upgrades by qualified Muskegon i-Net personnel. We expect to implement custom program modifications in response to identified community needs and feedback from the evaluation process. This will result in the capability of generating outcome reports tailored to the needs of local policy-makers. There also may be requests from state agencies and the Legislature for changes to generate pre-defined outcome reports for public policy development purposes. A “Technical Development Diagram” and a “Service Operational Diagram” to illustrate the organization of partners and contractors are included in Appendix B, Exhibits 3 and 4. A “Project Development Model” is shown in Exhibit 5 and a “Project Timeline” is appended as Exhibit 6.

Applicant Staff Qualifications. MCHP's qualifications for successfully developing the proposed project are based on its earlier work with two separate web-based solutions dealing with juvenile violence, viz., Juvenile Violence Reporting System (JVRS) and Serious Habitual Offender Comprehensive Assistance Program (SHOCAP-Muskegon). A SHOCAP-Muskegon demonstration can be viewed from MCHP's homepage at www.mchp.org (see Appendix B, Exhibit 7). To our knowledge, these are the only such initiatives in the country. Additionally, MCHP has already developed a searchable community *Health and Human Services Directory* database, accessible on a website called "Accesspoint.org" or by link from MCHP's home page (see Appendix B, Exhibit 7). All of these sites were designed, developed and implemented by MCHP. They have been operational for more than a year and are used extensively. Several human service organizations, led by the United Way, are now proposing to combine the on-line Directory with an interactive information and referral system. Key project staff resumes and proposed job descriptions are included in Appendix C.

Sustainability: The Muskegon i-Net program for managing health care is designed to minimize sustaining costs. Actual health service costs by providers are current expenditures and need no additional revenue to support the delivery of services. The sustaining costs will be primarily those related to the technology operations of the i-Net. Apart from non-recurring equipment costs, the technology needs for sustainability will be limited to server hosting and technical support. It is estimated that these costs will be on par with the

cost of one FTE personnel. Program income that exceeds the cost of sustainability will be used by MCHP to support their other community efforts. MCHP is a self-sustaining, 501(c)(3) non-profit entity that funds its community-based programs through grants and program revenue.

According to our technology advisors, MCHP can anticipate the ability to build the cost of the server into licensing fees charged to other communities. One plan under consideration would provide this service to other communities for a low monthly user fee, as opposed to selling or leasing a "shrink-wrap" software application. The result of this "Application Service Provider (ASP)" approach would allow Muskegon's entire server costs to be covered. Another approach to program sustainability would be to absorb the cost in the SMP administration budget for Muskegon Care, which is funded by the state. This funding strategy will be appropriate if the results are as expected and indigent health care costs are significantly reduced. This may also be a sustainability option for other communities to explore. A third option would be to demonstrate the cost savings to the local health systems in the form of reduced uncompensated care expenses, thereby justifying contractual agreement to continue the program with a percentage of the savings returned to MCHP.

V. Community Involvement

The very existence of MCHP is based on a history of community partnerships. Founded by the W.K. Kellogg Foundation seven years ago as a community health model, MCHP has enjoyed stakeholder relationships with most of the partners cited in the proposed Muskegon i-Net initiative. For example, both FQHCs have contracted with Access Health to provide medical services for Muskegon Care. They also partner in MCHP's dental initiatives. The County Health Department is a partner in countywide health assessments and our successful Diabetes prevention and education program. Centromine, Inc. has been consulted on the development of the SHOCAP-Muskegon case management software for juvenile serious habitual offenders.

While grant-related partnerships with the Salvation Army, Community Mental Health, Child and Family Services, and West Michigan Therapy have not previously existed, all of them have worked with MCHP on various "Leadership Teams," task forces and community collaboratives since 1996. These organizations have benefited from working with MCHP in improving access to health care and information in Muskegon County. The proposed Muskegon i-Net project presents an excellent opportunity to include these new partners in MCHP's expanding community collaborations.

We envision that the experience gained from this effort will lend itself to creating more web-based solutions to case manage other community problems like the needs of the homeless and victims of domestic violence. As positive results become evident, the participating agencies will tend to sustain Muskegon i-Net in their respective budgets (see Letters of Support, Appendix A). The "Project Partner Task Matrix" in Appendix B, Exhibit 8, shows principal activities, by project objectives, and indicates partner responsibilities and anticipated outcomes.

VI. Reducing Disparities

It is presumed that indigent people cannot afford even the simplest access to Internet technology. Moreover, their current health status suggests that they cannot effectively access the existing range of health services or related technology. The Muskegon i-Net project will create access to community resources for this under-served, albeit "invisible" population.

Local indigent population data suggests a 1:1 ratio between male and female, 60% ethnic minority, and average age of 40 years. For this segment of the community, it is as though there are two disparate systems of health care -- one that serves insured people with appropriate care at appropriate settings, the other that serves indigent people by continuous medication and uncompensated hospital admissions. Neither segment of society benefits from this disparity in health service delivery. The former bears the burden of cost, while the latter suffers from a lack of health care management.

In every community there are a number of community-based "safety-net" provider, many suffering from casework overload. Most are without access to the Internet. These organizations provide safety net support services critical to the health of low-income populations: food, shelter, counseling, therapy, spiritual guidance, employment services and transportation. Yet, these organizations also lack effective communications with those responsible for medical treatment for the population. The Muskegon i-Net initiative will bridge this gap through equipment, Internet connectivity and training for those who service the targeted group. With the technological capability to share patient information, service providers will be better able to case-manage patient health care. Health and human service providers will have access to each other in their efforts to provide additional services. Pain management therapy can replace the drug dependency. Diabetes treatment and diets can be monitored. Substance abuse treatment can be provided. In all, the health needs of the community's indigent people can be better served. Thus, Muskegon i-Net will activate an innovative collaboration that will improve the efficiency of an over-burdened delivery system and facilitate more efficient use of community resources, while improving health status and quality of life of this under-served population.

VII. Evaluation and Documentation

The Michigan Public Health Institute (MPHI), Data Systems and Survey Research Program, will formatively and summatively evaluate the Muskegon i-Net project. It will serve also a process and outcome-oriented evaluation (see Appendix B, "Partner Task Matrix," Exhibit 8 and "Muskegon i-Net Evaluation Questions," Exhibit 9).

The research design provides for both formative evaluation feedback to project leadership and a summative evaluation of intended and unintended outcomes, barriers encountered and strategies for addressing barriers throughout the life of the project. A description of intended and unintended stakeholders or change agents will be included, as well as an assessment of the sustainability and added long-term value of the Muskegon i-Net project beyond the grant period. The research questions are contained in the "Evaluation Question Matrix" provided in Appendix 10.

The methodology will employ a mixed methods approach, combining both qualitative and quantitative methods to maximize the validity and reliability of the findings from both the formative and summative components of the evaluation. The qualitative portion of the evaluation will include: documentation from the

original proposal; project workgroup meeting minutes; information transmittals; quarterly semi-structured formative evaluation interviews with key participants; and structured summative key informant interviews with project participants in the eleventh funded quarter of the project. The data collected will address: intended and unintended outcomes; barriers encountered; strategies for addressing barriers; intended and unintended stakeholders; the perceived and planned sustainability; and added long-term value of the Muskegon i-Net project.

Two interview tools will be developed, a semi-structured formative interview instrument to be employed in quarterly conference calls, and a structured interview instrument to be used in the taped and transcribed key informant interviews conducted in the eleventh funded quarter of the project. The quantitative component will consist of the quarterly capturing, analysis and reporting of website traffic, and the capturing of self-reported health and quality of life information from the users of Muskegon i-Net. Quarterly analysis of cost reports provided by AH/MC will be included.

The formative evaluation will consist of quarterly feedback to project leaders from the semi-structured interviews (anonymity will be ensured), coupled with analysis of the quantitative data collected to-date. As the project progresses, this formative effort will include analysis and reporting of trends in both the qualitative and quantitative data.

Indicators. Data will be collected on health, quality of life and financial indicators as determined by the evaluation team in concert with the Technical/Content Development and Service Provider Teams within the first 8-12 weeks of the project. It is anticipated that these data sets will include indicators for the following: (a) health status: Diabetes, muscular/skeletal pain, asthma, heart condition, hypertension, depression, substance abuse; (2) quality of life: pain level, dietary habits, standard risk behaviors, return to work/activity levels, leisure activity involvement; and (3) financial: uncompensated care information, such as emergency room visits, ambulance trips, hospitalizations, clinic visits, out-patient treatment costs.

The summative evaluation report will compile the eleven quarters of formative evaluation efforts, and the qualitative data collected in the taped and transcribed structured key informant interviews. These will capture qualitative data on intended and unintended outcomes, barriers encountered, strategies for addressing barriers, intended and unintended facilitators, and the perceived and planned sustainability and added long-term value of the Muskegon i-Net project.

The analysis plan and interview instruments will undergo a human subjects research review and approval process from MPHI's institutional review board prior to implementing its data collection and analysis plan. The final report will be rich in detail, and present a clear description of the ways in which other communities can learn from the experiences of Muskegon i-Net project.